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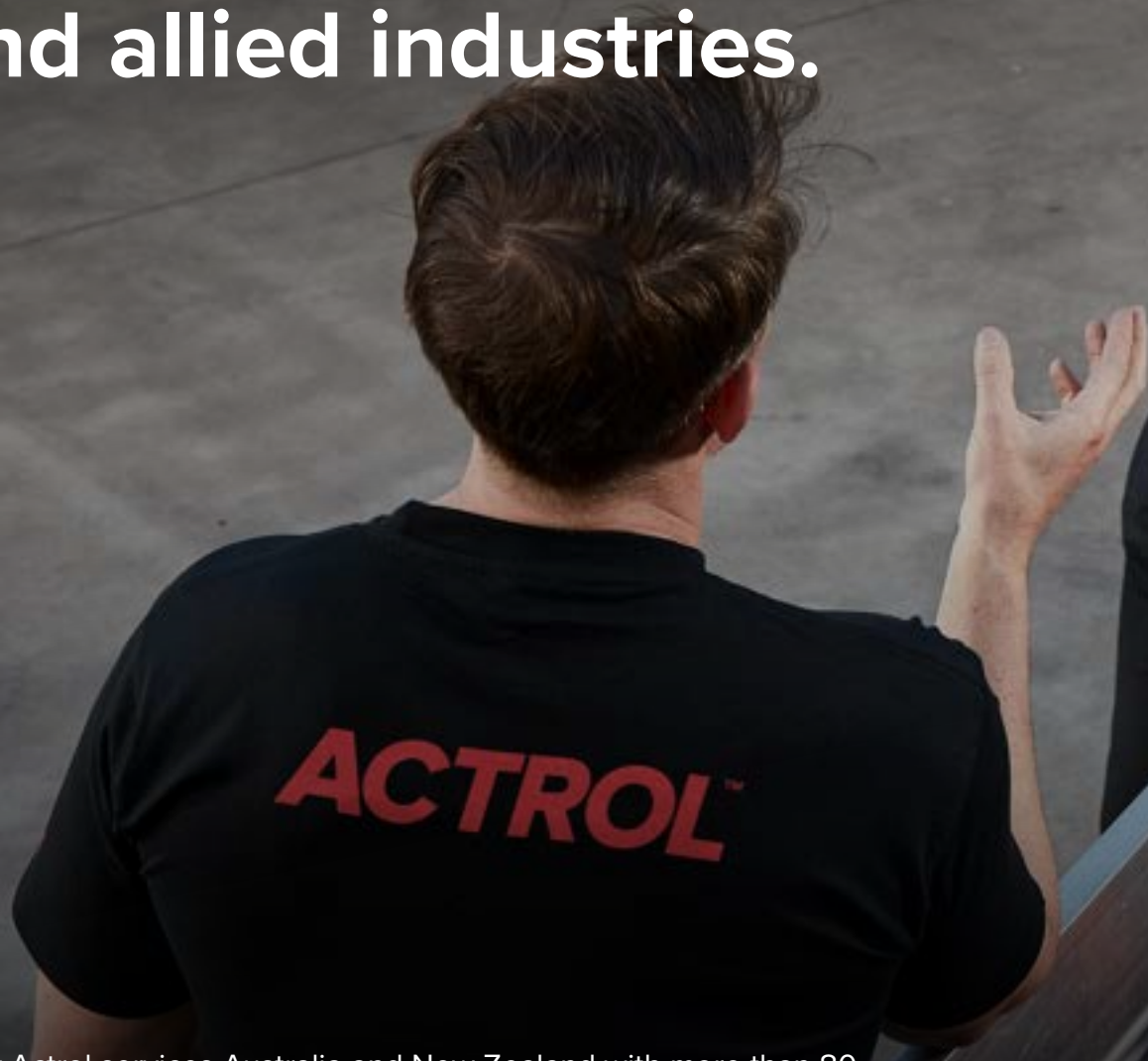
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Actrol is Australia and New Zealand's largest wholesaler of parts to the refrigeration, air conditioning and allied industries.



Today Actrol services Australia and New Zealand with more than 80 branches located in key metropolitan and regional areas. Together with our highly qualified and well trained staff, we offer the best customer service throughout the country. We also offer the broadest range of products strengthened by close associations with some of the biggest world renowned brands.

Using all of our experience and industry knowledge over time we have gained the highest reputation within the industry for exceeding customers requirements, particularly in the area of supplying quality products, meeting our customers' needs in terms of stock levels, product and engineering advice and having convenient branch locations. It is this long term relationship with both our suppliers and customers that is the key to Actrol's continued success.



SCAN FOR
OUR HISTORY

Actrol Engineering

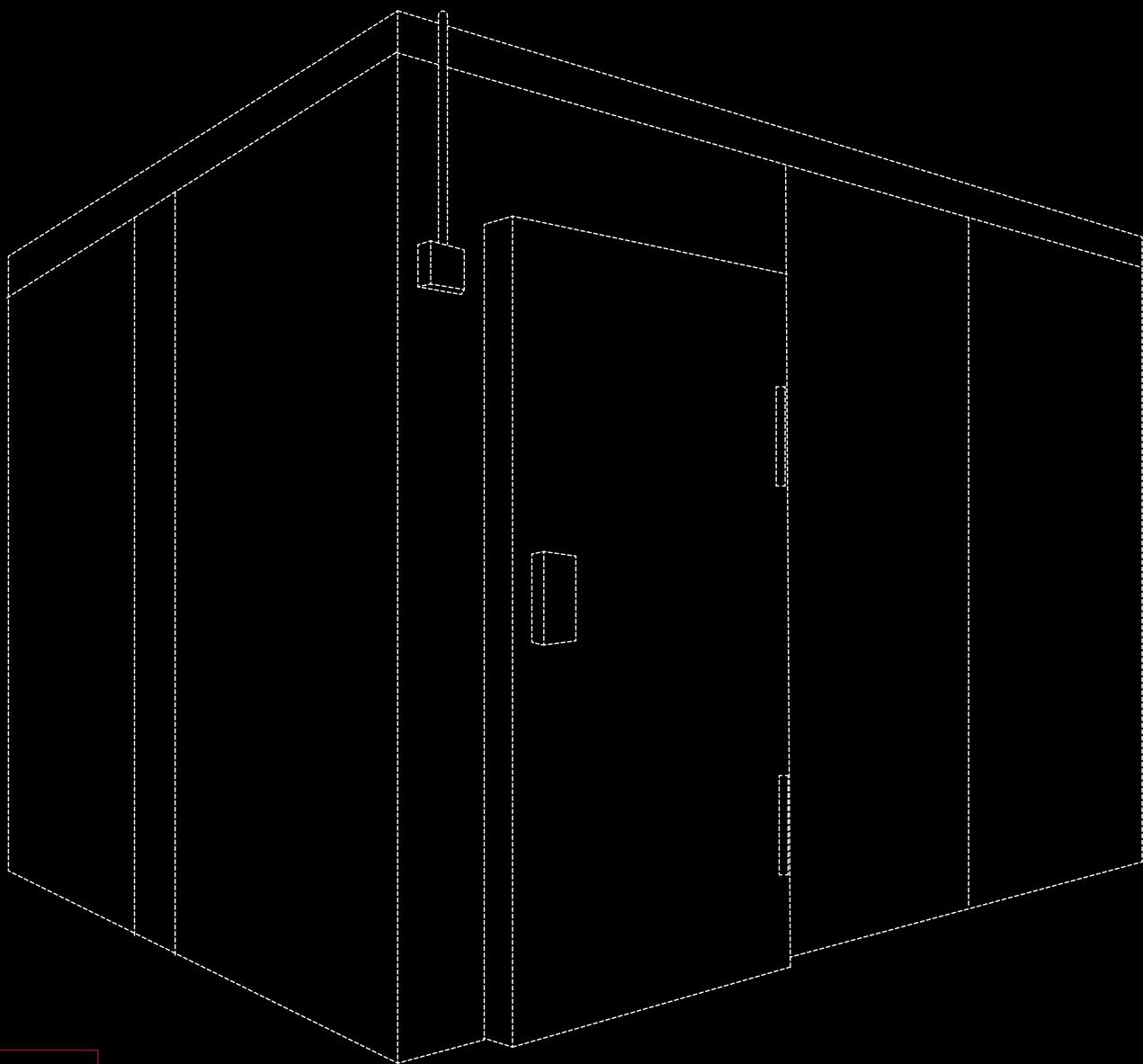
**Supporting you
in every job.**

Actrol's dedicated team of Application Engineers offer unmatched expertise to help you and your business. Our team will work with you to develop tailored solutions for every project. With a team of over 25 experts nation-wide, you'll get fast access to quotes and advice. And if something unexpected happens, Actrol's Application Engineers can provide on-site or remote troubleshooting, using their collective knowledge to solve any problem.

ACTROL
ENGINEERING

Need help selecting the appropriate equipment for your cool room?

The Actrol Engineering team is here to help. Just fill in all the necessary requirements and our team will help you select the best equipment to keep your cool room cold all year round.



Scan the QR code to start your cool room equipment selection today

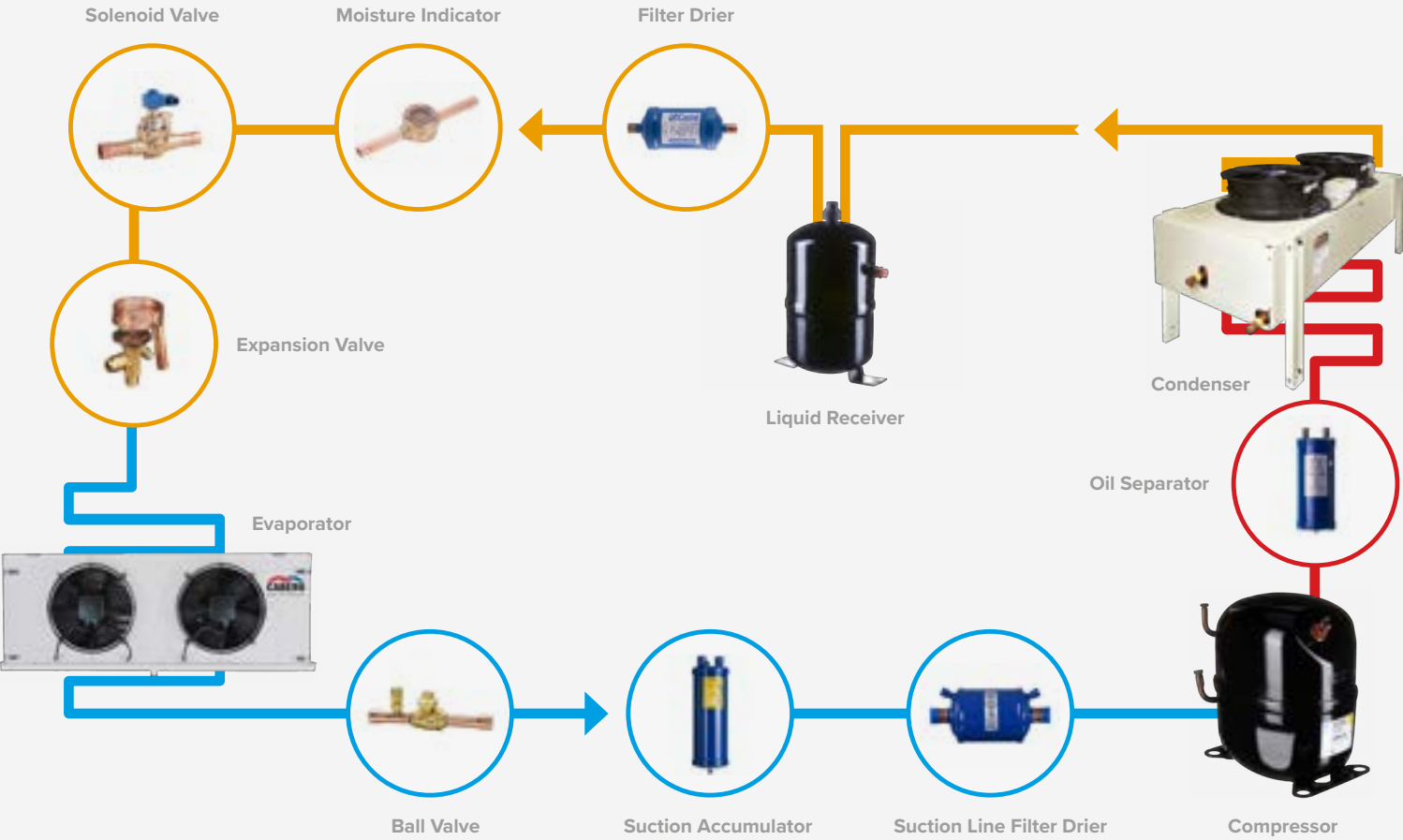
*Actrol can only base equipment selections on the information supplied in the form and are not responsible if this information is incorrect, changed without notice or if assumptions need to be made due to lack of information.

Refrigeration System

Complete Refrigeration Cycle

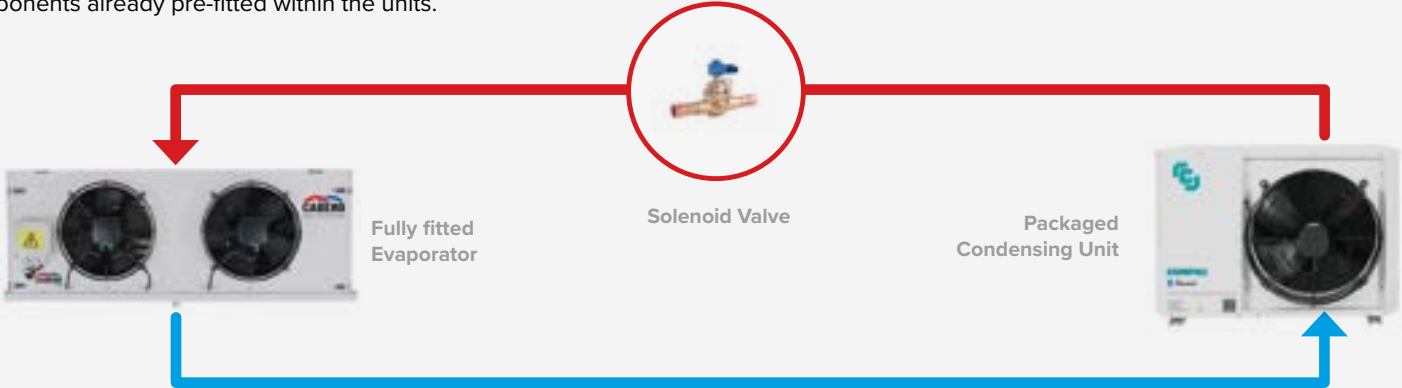
The refrigeration cycle is the removal of heat to attain a desired temperature. This is achieved through removing unwanted heat from one space and transferring it to another. The removal of unwanted heat from the desired space results in a drop in temperature.

The diagram below represents the key components of a typical refrigeration cycle and demonstrates where each part is located throughout the system to ensure the free flowing of refrigerant to remove the unwanted heat.



Fully Fitted Refrigeration System

Using a fully fitted system made up of both a pre-fitted condensing unit and evaporator makes for a much quicker and easier install for the contractor with the majority of the components already pre-fitted within the units.



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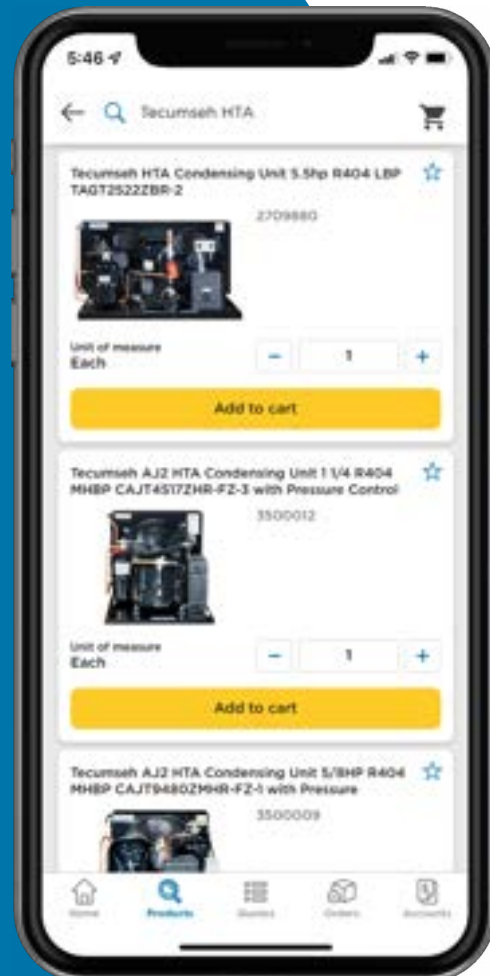
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Capital

The experts in capital refrigeration

Actrol's large range of capital is second to none, home to some of the biggest renowned global brands including Tecumseh and Cabero. Together we are committed to providing the highest quality, most reliable products. Through our rigorous testing procedures, our products are made strong and built to last.

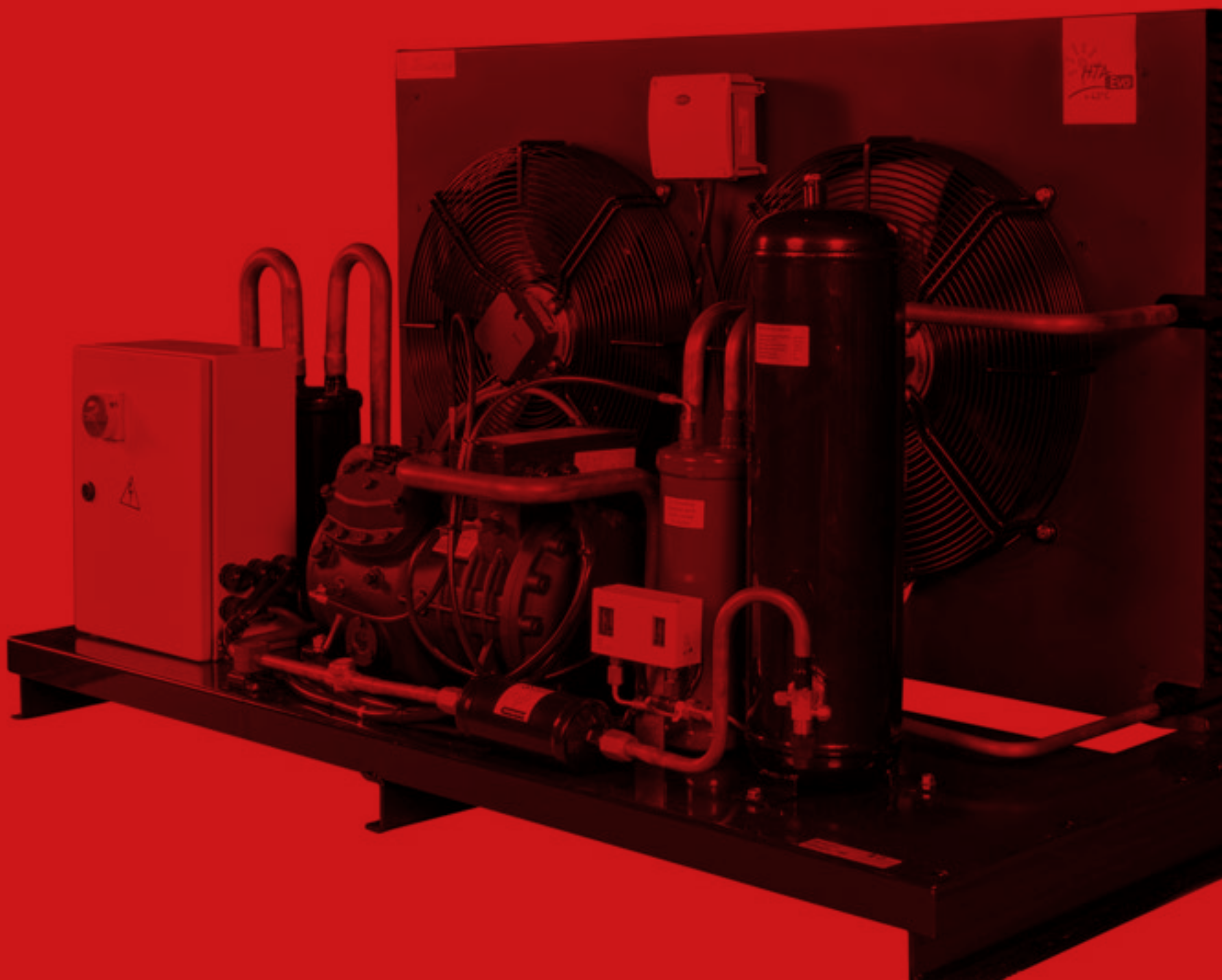
Backed by our expansive network of stores and experts, Actrol is one of the largest wholesalers of capital refrigeration across Aus and NZ, and has been assisting the refrigeration industry with expert advice and products for over 60 years.

Our capital range includes;

- Compressors
- Condensing Units
- Cool Room Kits
- Evaporators
- Condensers



ACTROL™

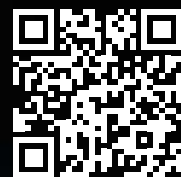




Tecumseh

**MADE
LIKE
NO
OTHER.**

With over 80 years experience engineering compressors, Tecumseh are the undisputed global leader when it comes to real world performance.



Exclusive to Actrol

Discover the difference today,
speak to your local Actrol branch.

Hermetic Reciprocating Compressors



Tecumseh

L'Unite Hermetique



Hermetic Reciprocating

The AE2 compressor series is designed to replace existing AEZ, AE and CAE models. This series offers a wider capacity range from a single platform and new valve plate designs provide coefficient of performance improvements.

The internal mounting springs have been redesigned to minimise sound levels.

Features

- Improved COP
- Reduced energy consumption
- Reduced sound levels

R134a – Medium Temperature Applications

Approved for R513A

Selection Data

Product Code	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C						
				Capacity Watts R134a						
				-15	-10	-5	0	5	10	15
2708777	AE4425Y-FZ1A	1/8	6.69	236	317	411	520	645	790	955
9507020	AE4430Y-FZ1A	1/8	8.02	318	412	526	659	816	998	1207
9507022	AE4440Y-FZ1A	1/8	10.33	429	545	684	847	1038	1260	1517
9507021	AE4450Y-FZ1C	3/8	13.24	569	725	907	1119	1365	1650	1976
9507023	AE4456Y-FZ1C	1/2	14.51	624	792	987	1214	1476	1779	2125
2708780	AE4460Y-FZ3C	1/2	15.09	646	822	1026	1261	1533	1846	2205

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	Motor Type	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight kg	Dimensions mm	
					Suct.	Disch.		Height	Width
2708777	AE4425Y-FZ1A	CSIR	1.84	280	1/4	3/16	9.2	196	247
9507020	AE4430Y-FZ1A	CSIR	2.31	280	1/4	3/16	9.4	207	247
9507022	AE4440Y-FZ1A	CSIR	2.89	280	5/16	1/4	9.8	196	247
9507021	AE4450Y-FZ1C	CSIR	3.71	280	3/8	1/4	11.7	207	247
9507023	AE4456Y-FZ1C	CSIR	4.26	280	3/8	1/4	11.5	207	247
2708780	AE4460Y-FZ3C	CSR	3.56	280	3/8	1/4	12.2	270	247

Motor Types:

- CSIR: Capacitor start, Induction run
 - CSR: Capacitor start and run
 - MOC: Maximum Operating Current
-] 1 Phase, 50 Hz, 220-240 Volt

Hermetic Reciprocating Compressors



Tecumseh

Hermetic Reciprocating

R404A – Medium Temperature Applications

Approved for R448A, R449A, R452A



Selection Data

Product Code	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C						
				Capacity Watts R404A						
				-15	-10	-5	0	5	10	15
2708765	AE4425Z-FZ1A	1/6	4.24	286	362	452	558	681	823	987
9507031	AE4430Z-FZ1A	1/4	5.16	354	445	550	673	816	980	1167
9507032	AE4440Z-FZ1A	1/3	6.69	481	604	747	914	1105	1326	1577
9507000	AE4450Z-FZ1A	3/8	8.85	639	797	978	1187	1425	1697	2006
9507001	AE4460Z-FZ1C	1/2	10.33	787	964	1168	1403	1673	1981	2331
9507002	AE4470Z-FZ3C	1/2	12.01	926	1134	1370	1638	1943	2291	2684

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	Motor Type	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight kg	Dimensions mm	
					Suct.	Disch.		Height	Width
2708765	AE4425Z-FZ1A	CSIR	1.96	280	1/4	3/16	9.9	196	247
9507031	AE4430Z-FZ1A	CSIR	2.33	280	1/4	3/16	10.2	196	247
9507032	AE4440Z-FZ1A	CSIR	3	280	3/8	1/4	10.5	207	247
9507000	AE4450Z-FZ1A	CSIR	3.89	280	3/8	1/4	10.8	207	247
9507001	AE4460Z-FZ1C	CSIR	4.75	280	3/8	1/4	11.6	207	247
9507002	AE4470Z-FZ3C	CSR	4.28	380	3/8	1/4	12.4	207	247

Motor Types:

- CSIR: Capacitor start, Induction run
 - CSR: Capacitor start and run
 - MOC: Maximum Operating Current
- 1 Phase, 50 Hz, 220-240 Volt

R404A – Low Temperature Applications

Approved for R448A, R449A, R452A

Selection Data

Product Code	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C					
				Capacity Watts R404A					
				-35	-30	-25	-20	-15	-10
2708762	AE2420Z-FZ1B	1/2	9.35	246	332	434	555	695	858
2708763	AE2425Z-FZ3C	5/8	12.01	329	441	572	723	899	1100

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	Motor Type	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight kg	Dimensions mm	
					Suct.	Disch.		Height	Width
2708762	AE2420Z-FZ1B	CSIR	2.97	380	3/8	1/4	11.5	205	193
2708763	AE2425Z-FZ3C	CSR	3.22	380	3/8	1/4	11.7	247	207

Motor Types:

- CSIR: Capacitor start, Induction run
 - CSR: Capacitor start and run
 - MOC: Maximum Operating Current
- 1 Phase, 50 Hz, 220-240 Volt

Hermetic Reciprocating Compressors



Tecumseh

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Hermetic Reciprocating for Medium/High Temperatures

- All CAJ/TAJ & FH models have been redesigned with new Te-Connect™ electrical connection
- Anti-vibration mounts supplied
- Crankcase heater on FH2 and TAG models
- Charged with polyolester oil and dry nitrogen
- All models suit capillary tube or expansion valve operation
- Oil sight glass on FH2 and TAG models
- Rotalock suction valve on CAJ/TAJ models
- Rotalock suction and discharge valves on FH2 and TAG models

R134a – Medium Temperature Applications

Approved for R513A

Single Phase

Selection Data

Product Code	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C					
				Capacity Watts R134a					
				-15	-10	-5	0	5	10
3500021	CAJ4476Y-FZ	5/8	21.8	738	988	1280	1621	2017	2474
3500022	CAJ4492Y-FZ	3/4	25.95	925	1230	1590	2013	2507	3081
3500023	CAJ4511Y-FZ	1	32.7	1252	1634	2079	2597	3196	3885
3501928	FH4518N-XC3A	1 1/2	48.5	1687	2277	2979	3810	4787	5928
3501929	FH4525N-XC3A	2	63	2297	3105	4056	5170	6469	7971

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	Motor Type	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight kg	Dimensions mm	
					Suct.	Disch.		Height	Width
3500021	CAJ4476Y-FZ	CSIR	5.66	475	1/2	1/4	18.5	268	178
3500022	CAJ4492Y-FZ	CSIR	6.81	475	1/2	5/16	20.3	280	178
3500023	CAJ4511Y-FZ	CSR	6.43	475	5/8	5/16	21.5	280	178
3501928	FH4518N-XC3A	CSR	8.63	1140	5/8	1/2	29.0	354	192
3501929	FH4525N-XC3A	CSR	11.9	1140	5/8	1/2	30.0	354	192

Hermetic Reciprocating Compressors



Tecumseh

Hermetic Reciprocating

R134a – Medium Temperature Applications

Approved for R513A

Three Phase

Selection Data



Product Code	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C					
				Capacity Watts R134a					
				-15	-10	-5	0	5	10
3500024	TAJ4511Y-TZ	1	32.7	1227	1614	2063	2584	3184	3875
3501926	FH4518N-XG1A	1½	48.5	1648	2222	2904	3709	4654	5754
3501930	FH4525N-XG1A	2	63	2226	3006	3930	5017	6287	7762
2708795	TAG4528Y-TZ	2½	90.2	1963	2953	4176	5621	7276	9129
2708796	TAG4534Y-TZ	2¾	100.7	2793	3913	5287	6901	8744	10802
2708797	TAG4537Y-TZ	3	112.5	3274	4508	6033	7833	9893	12198
2708798	TAG4543Y-TZ	3½	124.4	3443	4693	6313	8283	10585	13200

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	Motor Type	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight kg	Dimensions mm	
					Suct.	Disch.		Height	Width
3500024	TAJ4511Y-TZ	3 Ph	2.55	475	5/8	5/16	19.0	280	178
3501926	FH4518N-XG1A	3 Ph	3.02	1140	5/8	1/2	29.0	354	192
3501930	FH4525N-XG1A	3 Ph	4.33	1140	5/8	1/2	30.0	354	192
2708795	TAG4528Y-TZ	3 Ph	5.28	1960	7/8	5/8	44.0	368	224
2708796	TAG4534Y-TZ	3 Ph	6.01	1960	7/8	5/8	44.0	368	224
2708797	TAG4537Y-TZ	3 Ph	6.53	1960	7/8	5/8	44.0	368	224
2708798	TAG4543Y-TZ	3 Ph	7.35	1960	7/8	5/8	44.0	368	224

Motor Types:

- CSIR: Capacitor start, Induction run
 - CSR: Capacitor start and run
 - MOC: Maximum Operating Current
-] 1 Phase, 50 Hz, 220-240 Volt

Hermetic Reciprocating Compressors



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Hermetic Reciprocating for Low Temperatures

- Rotalock suction valves on CAJ/TAG models
- Oil sight glass on FH2 and TAG models
- Fan cooling required on all models
- Rotalock suction and discharge valves on FH2 and TAG models
- All CAJ/TAJ & FH2 models have been redesigned with new Te-Connect™ electrical connection
- Charged with polyolester oil and dry nitrogen
- Crankcase heater on FH2 and TAG models
- Anti-vibration mounts supplied

R404A – Low Temperature Applications

Approved for R448A, R449A, R452A

Single Phase

Selection Data

Product Code	Model No.	Motor Type	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C					
					Capacity Watts R404A					
					-35	-30	-25	-20	-15	-10
3500016	CAJ2428Z-FZ	CSIR	7/10	15.2	306	434	589	73	991	1246
3500017	CAJ2432Z-FZ	CSR	¾	18.3	391	552	748	981	1257	1577
3500018	CAJ2446Z-FZ	CSR	1	26.2	627	859	1133	1451	1819	2241
3500019	CAJ2464Z-FZ	CSR	1½	34.5	828	1116	1459	1864	2336	2882
3501927	FH2480Z-XC3A	CSR	2	54.3	1281	1847	2531	3345	4303	5419
3501939	FH2511Z-XC3A	CSR	2¾	68	1832	2642	3620	4783	6154	7750

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight kg	Dimensions mm	
				Suct.	Disch.		Height	Width
3500016	CAJ2428Z-FZ	4.38	475	½	¼	19.4	268	178
3500017	CAJ2432Z-FZ	3.88	475	½	5/16	20.1	268	178
3500018	CAJ2446Z-FZ	5.93	475	½	5/16	21.3	280	178
3500019	CAJ2464Z-FZ	8.5	475	5/8	3/8	22.2	280	178
3501927	FH2480Z-XC3A	11.1	1140	5/8	½	28.0	354	192
3501939	FH2511Z-XC3A	12.2	1140	5/8	½	32.0	354	192

Hermetic Reciprocating Compressors



Tecumseh

Hermetic Reciprocating



R404A – Low Temperature Applications

Approved for R448A, R449A, R452A

Three Phase

Selection Data

Product Code	Model No.	Motor Type	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C					
					Capacity Watts R404A					
					-35	-30	-25	-20	-15	-10
3500020	TAJ2464Z-TZ	3 PH	1½	34.5	820	1108	1449	1850	2317	2855
3501938	FH2480Z-XG1A	3 PH	2	54.3	1190	1716	2351	3107	3998	5035
3501940	FH2511Z-XG1A	3 PH	2¾	68	1671	2410	3301	4363	5612	7068
9507056	TAG2516Z-TZ	3 PH	4	112.5	1917	2846	3971	5316	6904	8759
9507058	TAG2522Z-TZ	3 PH	5½	134.8	2685	3793	5136	6747	8661	10914
3501003	TAG2525Z-TZ	3 PH	6¼	145	3012	4230	5665	7342	9288	11529

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight (kg)	Dimensions mm	
				Suct.	Disch.		Height	Width
3500020	TAJ2464Z-TZ	3.02	475	5/8	3/8	21.2	280	178
3501938	FH2480Z-XG1A	3.56	1140	5/8	1/2	29.0	354	192
3501940	FH2511Z-XG1A	5.15	1140	5/8	1/2	30.0	354	192
9507056	TAG2516Z-TZ	7.14	1760	7/8	5/8	43.0	368	224
9507058	TAG2522Z-TZ	9.09	1760	1 1/8	5/8	47.0	393	224
3501003	TAG2525Z-TZ	9.82	1760	7/8	5/8	46.0	393	224

Motor Types:

- CSIR: Capacitor start, Induction run
 - CSR: Capacitor start and run
 - MOC: Maximum Operating Current
-] 1 Phase, 50 Hz, 220-240 Volt

Hermetic Reciprocating Compressors



Tecumseh

L'Unite Hermetique



Hermetic Reciprocating for Medium Temperatures

- All models suit Capillary Tube or Expansion Valve Operation
- Crankcase heater on FH2 and TAG models
- Rotalock suction and discharge valves on FH2 and TAG models
- Oil sight glass on FH2 and TAG models
- Anti-vibration mounts supplied
- Fan cooling required on all models
- Charged with polyolester oil and dry nitrogen

R404A – Medium Temperature Applications

Approved for R448A, R449A, R452A

Single Phase

Selection Data

Product Code	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C					
				Capacity Watts R404A					
				-15	-10	-5	0	5	10
3500025	CAJ9480Z-FZ	2/3	15.2	1032	1294	1598	1950	2355	2820
3500026	CAJ9510Z-FZ	1	18.3	1292	1616	1991	2426	2927	3501
3500027	CAJ9513Z-FZ	1 1/10	24.2	1610	2053	2563	3149	3818	4577
3500028	CAJ4517Z-FZ	1 1/2	25.9	1848	2308	2839	3449	4150	4950
3500030	CAJ4519Z-FZ	1 3/8	34.5	2390	3008	3710	4510	5420	6453
3501931	FH4524Z-XC3A	2	43.3	2710	3505	4422	5476	6686	8067
3501933	FH4532Z-XC3A	2 3/8	50.6	3361	4314	5414	6682	8139	9804
3501935	FH4538Z-XC3A	3 1/8	63.0	4320	5460	6766	8262	9972	11921

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	Motor Type	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight kg	Dimensions mm		Base Mounting mm
					Suct.	Disch.		Height	Width	
3500025	CAJ9480Z-FZ	CSR	5.17	475	1/2	5/16	20.1	268	178	203.2 x 122.2
3500026	CAJ9510Z-FZ	CSR	6.48	475	5/8	5/16	21.4	280	178	203.2 x 122.2
3500027	CAJ9513Z-FZ	CSR	8.14	475	5/8	5/16	21.5	280	178	203.2 x 122.2
3500028	CAJ4517Z-FZ	CSR	9.04	475	5/8	3/8	21.6	280	178	203.2 x 122.2
3500030	CAJ4519Z-FZ	CSR	12	475	5/8	3/8	22.3	280	178	203.2 x 122.2
3501931	FH4524Z-XC3A	CSR	12.4	1140	5/8	1/2	29	354	192	190.5 x 190.5
3501933	FH4532Z-XC3A	CSR	14.1	1140	7/8	1/2	32	354	192	190.5 x 190.5
3501935	FH4538Z-XC3A	CSR	18.6	1140	7/8	1/2	32	354	192	190.5 x 190.5

Hermetic Reciprocating Compressors



Tecumseh

Hermetic Reciprocating



R404A – Medium Temperature Applications

Approved for R448A, R449A, R452A

Three Phase

Selection Data

Product Code	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C					
				Capacity Watts R404A					
				-15	-10	-5	0	5	10
3500029	TAJ4517Z-TZ	1½	25.9	1821	2309	2861	3487	4199	5005
3500031	TAJ4519Z-TZ	1¾	34.4	2369	2958	3626	4385	5248	6225
3501932	FH4524Z-XG1A	2	43.3	2581	3376	4300	5371	6606	8022
3501934	FH4532Z-XG1A	2¾	50.6	3305	4218	5274	6491	7889	9488
3501936	FH4538Z-XG1A	3¾ ₁₀	63.0	4280	5443	6770	8287	10016	11981
3501937	FH4544Z-XG1A	3¾	68.0	4917	6238	7722	9396	11289	13432
9507040	TAG4546Z-TZ	3¾	90.2	4721	6287	8125	10267	12746	15595
9507042	TAG4553Z-TZ	4¾	100.7	5403	7143	9180	11556	14315	17501
9507044	TAG4561Z-TZ	5	112.5	6210	8083	10261	12793	15728	19115
9507046	TAG4568Z-TZ	5.7	124.4	7425	9519	11931	14705	17887	21520
9507048	TAG4573Z-TZ	6¾ ₁₀	134.8	8071	10288	12861	15837	19265	23192

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	Motor Type	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight kg	Dimensions mm		Base Mounting mm
					Suct.	Disch.		Height	Width	
3500029	TAJ4517Z-TZ	3 PH	3.58	475	5/8	3/8	20	280	178	203.2 x 122.2
3500031	TAJ4519Z-TZ	3 PH	4.95	475	5/8	3/8	21.1	280	178	203.2 x 122.2
3501932	FH4524Z-XG1A	3 PH	4.29	1140	5/8	1/2	32	354	192	190.5 x 190.5
3501934	FH4532Z-XG1A	3 PH	4.71	1140	7/8	1/2	28	354	192	190.5 x 190.5
3501936	FH4538Z-XG1A	3 PH	6.83	1140	7/8	1/2	30	354	192	190.5 x 190.5
3501937	FH4544Z-XG1A	3 PH	7.47	1140	7/8	1/2	30	354	192	190.5 x 190.5
9507040	TAG4546Z-TZ	3 PH	8.53	1960	7/8	5/8	44	368	224	190.5 x 190.5
9507042	TAG4553Z-TZ	3 PH	9.69	1960	7/8	5/8	45.6	381	224	190.5 x 190.5
9507044	TAG4561Z-TZ	3 PH	10.3	1960	1 1/8	5/8	46	381	224	190.5 x 190.5
9507046	TAG4568Z-TZ	3 PH	11.7	1960	1 1/8	5/8	47.2	393	224	190.5 x 190.5
9507048	TAG4573Z-TZ	3 PH	13.6	1960	1 1/8	5/8	48	393	224	190.5 x 190.5

• MOC: Maximum Operating Current

Hermetic Reciprocating Compressors

Copeland®

Copeland



CS Series

The Copeland CS welded hermetic compressors are designed for commercial refrigeration applications. They feature a “low-side” gas management system. The steel shell contains cool, low pressure suction gas that surrounds and cools the electric motor and mechanical compressor parts, resulting in lower motor and discharge gas temperatures.

All of Copeland’s newer CS products are based on the proven success of the CR6 technology. The flagship CR6 design employs enhanced gas management, better lubrication, and anti-slug suction. The result is improved energy efficiency, reduced sound and discharge pulse and excellent reliability and durability.

Service Pack Compressors with the -595 BOM are ideal for field replacement applications as they are supplied complete with internal motor protection, rubber mounting kit and electrics (single phase only).

If service valves are required these must be ordered separately.

Features

- Proven Copeland long term performance and reliability
- Optimised motors offer high energy efficiency and COP
- High volumetric efficiency at high ambient conditions
- Designed for low noise, quiet operation Charged with polyester lubricant

Single Phase

Cat. No.	Model No.	Elect. Supply: Volts/Ph.	Nom HP	Displ. cm ³ /rev	Connections		Full Load Amps	Locked Rotor Amps	Capacities Watts			Previous Model
					Suction	Discharge			R404A		R134a	
									-25°C SST	-5°C SST	-5°C SST	
2708756	CS10K6E-PFJ-595	240/1	1 ³ / ₄	38.1	1 ¹ / ₄ "	1"	10.1	55	650	3450	1755	CR18KQ
2708757	CS14K6E-PFJ-595	240/1	2 ¹ / ₄	48.6	1 ¹ / ₄ "	1"	12.5	58	1300	4650	2435	CR28KQ
2708754	CS18K6E-PFJ-595	240/1	2 ³ / ₄	61.4	1 ¹ / ₄ "	1"	13.6	58	1495	6000	3300	CR33KQ

Three Phase

Cat. No.	Model No.	Elect. Supply: Volts/Ph.	Nom HP	Displ. cm ³ /rev	Connections		Full Load Amps	Locked Rotor Amps	Capacities Watts			Previous Model
					Suction	Discharge			R404A		R134a	
									-25°C SST	-5°C SST	-5°C SST	
2708755	CS14K6E-TFD-595	415 Volts 3 Phase	2 ¹ / ₄	48.6	1 ¹ / ₄ "	1"	4.2	28	1300	4650	2435	CR24/28KQ
2708758	CS18K6E-TFD-595	415 Volts 3 Phase	2 ³ / ₄	61.4	1 ¹ / ₄ "	1"	4.7	33	1495	6000	3450	CR33KQ
2708759	CS20K6E-TFD-595	415 Volts 3 Phase	3	74.3	1 ¹ / ₄ "	1"	5.1	40	1705	6800	3850	CR41KQ
2708760	CS27K6E-TFD-595	415 Volts 3 Phase	4	92.4	1 ¹ / ₄ "	1"	8.5	41	2365	8850	5050	CR53KQ
2708761	CS33K6E-TFD-595	415 Volts 3 Phase	5	106.2	1 ¹ / ₄ "	1"	9.9	45	2950	10600	5900	CRN0500

Ratings at ARI conditions, 45°C Condensing temperature, 11k Suction superheat, 8k Subcooling

CS Series Rotalock Valve Selection

Rotalock Size	1"	1"	1 ¹ / ₄ "	1 ¹ / ₄ "
Connection ODS	3/8"	1/2"	3/4"	7/8"
CS10K6E-PFJ-595	D		S	
CS14K6E-PFJ-595	D		S	
CS18K6E-PFJ-595	D		S	
CS14K6E-TFD-595	D		S	
CS18K6E-TFD-595	D		S	
CS20K6E-TFD-595	D		S	
CS27K6E-TFD-595	D		S	
CS33K6E-TFD-595		D		S

Hermetic Reciprocating Compressors

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Hermetic Reciprocating – R404A/R507

Low Temperature Applications



Cat. No.	Model No.	Part No.	Displ. cm ³ /rev	Motor Type	Oil Charge cm ³	Evaporating Temperature °C							
						R404A, R507 Refrigeration Capacities Watts							
						-35	-30	-25	-23.3	-20	-15	-10	-5
2706479	FR6CL	195B3164	6.23	CSIR	450	145	189	243	263	307	383	473	578
2706480	FR8.5CL	195B3205	7.95	CSIR	450	168	222	290	317	372	468	577	
2707384	SC10CL	195B3003	10.29	CSIR	550	168	258	365	405	489	634	800	991
2706545	SC12CL	195B3018	12.87	CSIR	550	237	353	490	541	650	835	1048	1292
2706549	SC15CL	195B3033	15.28	CSIR	550	299	452	615	673	792	988	1208	1458
2706543	SC18CL	195B3011	17.69	CSR	600	395	452	715	781	918	1154	1425	1735
2706551	SC21CL	195B3007	20.95	CSR	600	455	617	813	887	1042	1306	1606	

Rating Conditions: 45°C Condensing Temp., 32°C Ambient and Suction Gas Temp., 45°C Liquid Temp.

R404A/R507

Medium and High Temperature Applications

Cat. No.	Model No.	Part No.	Displ. cm ³ /rev	Motor Type	Oil Charge cm ³	Evaporating Temperature °C								
						R404A, R507 Refrigeration Capacities Watts								
						-20	-15	-10	-5	0	5	7.2	10	15
2707395	FR6DL	195B3165	6.23	CSIR	450	317	385	471	576	698	840	907	999	1177
2706544	SC10DL	195B3078	10.29	CSIR	600	471	611	775	968	1192	1450	1576	1747	2085
2706546	SC12DL	195B3104	12.87	CSIR	600	609	806	1028	1279	1565	1890	2046	2258	2674
2707398	SC15DL	195B3105	15.28	CSR	600	759	964	1207	1493	1825	2210	2397	2652	3156

Rating Conditions: 45°C Condensing Temp., 32°C Ambient and Suction Gas Temp., 45°C Liquid Temp.

Hermetic Reciprocating Compressors

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Hermetic Reciprocating – R134a

Low and Medium Temperature Applications



Cat. No.	Model No.	Part No.	Displ. cm ³ /rev	Motor Type	Oil Charge cm ³	Evaporating Temperature °C									
						R134a Refrigeration Capacities Watts									
						-35	-30	-25	-23.3	-20	-15	-10	-5	0	
2706630	TL5F	195B3377	5.08	RSIR	180	43	60	82	91	110	144	183			
2707414	TLS6F	195B3047	5.70	RSIR	180	58	77	104	115	139	183	235			
2707415	NL6F	195B3370	6.13	RSIR	320	52	77	110	123	151	200	258			
2707422	NL7F	195B3380	7.27	RSIR	320	71	99	136	151	182	238	303			
2706518	NL9F	195B3369	8.35	RSIR	320	80	112	155	172	208	272	346			
2706517	NL11F	195B3381	11.15	RSIR	320	102	144	200	223	271	356	455			
2706540	SC15F	195B3230	15.28	RSIR	550	100	155	230	260	325	439	573			
2707418	SC18F	195B3216	17.69	CSIR	550	129	194	280	314	388	518	669	842		
2707416	SC21F	195B3215	20.95	CSIR	550	185	245	335	375	455	610	780	990		

Rating Conditions: 55°C Condensing Temp., 32°C Ambient and Suction Gas Temp., 55°C Liquid Temp.

R134a

Low, Medium and High Temperature Applications

Cat. No.	Model No.	Part No.	Displ. cm ³ /rev	Motor Type	Oil Charge cm ³	Evaporating Temperature °C												
						R134a Refrigeration Capacities Watts												
						-35	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2707438	PL35G	195B3375	2.00	RSIR	150			28.0	31.6	39.3	53.0	69.4	89.0	112	140	153	172	209
2706628	TL3G	195B3204	3.13	RSIR	280		25.3	40.9	46.7	59.1	80.5	106	136	170	211	231	258	312
2706629	TL4G	195B3090	3.86	RSIR	280		40.8	58.3	65.3	80.3	107	140	180	226	280	306	342	413
2706631	TL5G	195B3032	5.08	RSIR	280		55.6	79.0	87.9	107	139	178	224	278	341	372	414	497
2706474	FR6G	195B3115	6.23	RSIR	450		47.7	83.3	96.5	124	171	226	290	365	452	494	552	
2706475	FR7.5G	195B3084	6.93	RSIR	450		61.7	99.0	113	142	193	254	325	408	505	553	618	
2706476	FR8.5G	195B3048	7.95	RSIR	450		84.9	123	138	171	228	298	381	478	592	647	722	
2707443	FR10G	195B3093	9.05	RSIR	450		91.9	136	152	188	250	324	412	516	638	697	779	
2706478	FR11G	195B3163	11.15	RSIR	450		115	170	191	233	307	395	501	628	780			
2707444	SC10G	195B3052	10.29	RSIR	550	23.0	60.0	113	135	183	268	369	486	618	764	833	925	1100
2706539	SC12G	195B3114	12.87	RSIR	550	64.6	113	175	199	252	348	464	603	768	960	1064	1182	1437
2706541	SC15G	195B3166	15.28	CSIR	550			164	206	290	424	568	728	908	1110	1207	1340	1600
2706542	SC18G	195B3059	17.69	CSIR	550			283	318	394	526	684	870	1087	1337	1459	1624	1950
2706550	SC21G	195B3005	20.95	CSR	550			333	370	453	606	792	1012	1268	1560	1700	1889	2256

Rating Conditions: 55°C Condensing Temp., 32°C Ambient and Suction Gas Temp., 55°C Liquid Temp.

R134a

Low Voltage – 12VDC and 24VDC

Cat. No.	Model No.	Part No.	Description	Suits
2706432	BD35F	195B3202	Compressor with Controller Module	
2706433	BD50F	195B3203	Compressor with Controller Module	
2707420	BD80F	195B3099	Compressor with Controller Module	
2706456		101N0212	Controller Module only	BD35F BD50F

Hermetic Reciprocating Compressors

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Compressor Spare Parts



Model No.	Relay HST		Relay LST		Start Capacitor			Electrical Cover	
	Cat. No.	Part No.	Cat. No.	Part No.	Cat. No.	Part No.	Size µf	Cat. No.	Part No.
FR6CL	2706453	117U6015			2706577	117U5015	80	2706445	103N2010
FR8.5CL	2706452	117U6010			2706577	117U5015	80	2706445	103N2010
SC10CL	2706449	117U6003			2706578	117U5017	80	2711818	103N2009
SC12CL	2706580	117U6005			2706577	117U5017	80	2711818	103N2009
SC15CL	2706454	117U6019			2706577	117U5017	80	2711818	103N2009
SC18CL	2711395	117-7012						2711818	103N2009
SC21CL	2711395	117-7012						2711818	103N2009

Model No.	Relay HST		Relay LST		Start Capacitor			Electrical Cover	
	Cat. No.	Part No.	Cat. No.	Part No.	Cat. No.	Part No.	Size µf	Cat. No.	Part No.
TL4DL	2706447	117U6001			2706576	117U5014	60	2706445	103N2010
FR6DL	2706452	117U6010			2706577	117U5015	80	2706445	103N2010
SC10DL	2706580	117U6005			2706578	117U5017	80	2711818	103N2009
SC12DL	2706454	117U6019			2706578	117U5017	80	2711818	103N2009
SC15DL	2711396	117-7028						2711818	103N2009

Model No.	Relay HST		Relay LST		Start Capacitor			Electrical Cover	
	Cat. No.	Part No.	Cat. No.	Part No.	Cat. No.	Part No.	Size µf	Cat. No.	Part No.
TL3F	2711397	117U6007	2706579	103N0011	2706576	117U5014	60	2706445	103N2010
TL4F	2706451	117U6009	2706579	103N0011	2706576	117U5014	60	2706445	103N2010
TL5F	2706450	117U6004	2706579	103N0011	2706576	117U5014	60	2706445	103N2010
TLS6F	2706450	117U6004	2706579	103N0011	2706576	117U5014	60	2706445	103N2010
NL6F	2706450	117U6004	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
NL7F	2706446	117U6000	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
NL9F	2706447	117U6001	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
NL11F	2706448	117U6002	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
SC15F	2706449	117U6003	2706533	103N0002	2706578	117U5017	80	2706445	103N2010
SC18F	2706580	117U6005			2706578	117U5017	80	2711818	103N2009
SC21F	2706454	117U6019			2706578	117U5017	80	2711818	103N2009

Model No.	Relay HST		Relay LST		Start Capacitor			Electrical Cover	
	Cat. No.	Part No.	Cat. No.	Part No.	Cat. No.	Part No.	Size µf	Cat. No.	Part No.
PL35G	2706455	117U6021	2706579	103N0011	2706576	117U5014	60		103N0491
TL3G	2706451	117U6009	2706579	103N0011	2706576	117U5014	60	2706445	103N2010
TL4G	2706450	117U6004	2706579	103N0011	2706576	117U5014	60	2706445	103N2010
TL5G	2706446	117U6000	2706579	103N0011	2706576	117U5014	60	2706445	103N2010
FR6G	2706446	117U6000	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
FR7.5G	2706447	117U6001	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
FR8.5G	2706453	117U6015	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
FR10G	2706452	117U6010	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
FR10G	2706452	117U6010	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
FR11G	2706452	117U6010	2706579	103N0011	2706577	117U5015	80	2706445	103N2010
SC10G	2706448	117U6002	2706533	103N0002	2706578	117U5017	80	2711818	103N2009
SC12G	2706449	117U6003	2706533	103N0002	2706578	117U5017	80	2711818	103N2009
SC15G	2706580	117U6005			2706578	117U5017	80	2711818	103N2009
SC18G	2706454	117U6019			2706578	117U5017	80	2711818	103N2009
SC21G	2711396	117-7028						2711818	103N2009

Hermetic Reciprocating Compressors



Maneurop

MTZ Series – R404A, R452A, R448A, R449A, R134a, R513A – Hermetic Reciprocating



Features

- Charged with Maneurop Polyolester Oil 175PZ
- Suction and discharge solder sleeves supplied
- Rotalock service valves or angle adaptors sold separately
- Anti-vibration mounts supplied
- Fitted with oil sight glass and oil equalisation fitting

Single Phase

Selection Data

Cat. No.	Model No.	Nominal HP	Displ. cm ³ /rev	Saturated Suction Temperature °C														
				R404A					R452A					R448A				
				-10	-5	0	5	7.5	-10	-5	0	5	7.5	-10	-5	0	5	7.5
2708705	MTZ18-5VI	1.5	30.2	2812	3613	4550	5634	6256	2117	2725	3431	4236	4708	1663	2215	2857	3600	4027
2706653	MTZ22-5VI	1.75	38.1	3672	4676	5830	7147	7894	2975	3736	4616	5628	6200	2600	3370	4260	5330	5970
2706655	MTZ28-5VI	2	48.1	4267	5375	6649	8105	8932	3446	4305	5351	6609	7300	3200	4100	5270	6590	7380
2706657	MTZ32-5VI	2.5	53.9	5003	6236	7644	9244	10147	4016	5044	6243	7629	8530	3700	4780	6000	7500	8300
2706659	MTZ36-5VI	3	60.5	2041	2648	3358	4179	5122	4558	5677	6996	8538	9400	4350	5550	6978	8630	9590

Selection Data

Cat. No.	Model No.	Nominal HP	Displ. cm ³ /rev	Saturated Suction Temperature °C														
				R449A				R134a				R513A						
				-10	-5	0	5	7.5	-10	-5	0	5	10	-10	-5	0	5	10
2708705	MTZ18-5VI	1.5	30.2	1889	2492	3193	4001	4465	1567	2079	2695	3426	4285	1630	2146	2764	3495	4350
2706653	MTZ22-5VI	1.75	38.1	2647	3381	4272	5341	5977	1887	2499	3249	4158	5252	2055	2687	3442	4332	5372
2706655	MTZ28-5VI	2	48.1	3268	4174	5275	6598	7386	2267	2981	3827	4819	6115	2444	3176	4036	5036	6190
2706657	MTZ32-5VI	2.5	53.9	3760	4792	6031	7505	8376	2849	3700	4695	5850	7182	2823	3668	4657	5811	7146
2706659	MTZ36-5VI	3	60.5	4363	5567	6984	8638	9594	1113	1522	2010	2585	3257	1249	1656	2139	2705	3366

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Cat. No.	Model No.	Motor Type	MOC Amps	Oil Charge ml	Oil Type POE	Connections Inch		Conn. Type	Weight kg	Dimensions mm	
						Suct.	Disch.			Height	Width
2708705	MTZ18-5VI	PSC, CSR	8.7	950	175PZ	1	1	Rotalock	21	358	225
2706653	MTZ22-5VI	PSC, CSR	10.7	950	175PZ	1	1	Rotalock	21	358	225
2706655	MTZ28-5VI	PSC, CSR	15.6	950	175PZ	1	1	Rotalock	23	358	225
2706657	MTZ32-5VI	PSC, CSR	17.4	950	175PZ	1¼	1	Rotalock	24	358	225
2706659	MTZ36-5VI	PSC, CSR	22.2	950	175PZ	1¼	1	Rotalock	24	358	225

Motor Types:

- PSC: Permanent Split Capacitor
 - CSR: Capacitor start and run
- 1 phase, 50 Hz, 220-240 Volt

Hermetic Reciprocating Compressors



Maneurop

MTZ Series – R404A, R452A, R448A, R449A, R134a, R513A

– Hermetic Reciprocating



Three Phase

Selection Data

Cat. No.	Model No.	Nominal HP	Displ. cm ³ /rev	Saturated Suction Temperature °C														
				R404A					R452A					R448A				
				-10	-5	0	5	7.5	-10	-5	0	5	7.5	-10	-5	0	5	7.5
2706652	MTZ22-4VI	1.75	38.1	2812	3613	4550	5634	6256	2975	3736	4616	5628	6200	2600	3370	4260	5330	5970
2706654	MTZ28-4VI	2	48.1	3672	4676	5830	7147	7894	3446	4305	5351	6609	7300	3200	4100	5270	6590	7380
2706656	MTZ32-4VI	2.5	53.9	4267	5375	6649	8105	8932	4016	5044	6243	7629	8450	3700	4780	6000	7500	8300
2706658	MTZ36-4VI	3	60.5	5003	6236	7644	9244	10147	4558	5677	6996	8538	9400	4350	5550	6978	8630	9590
2706660	MTZ40-4VI	3.5	67.9	5714	7049	8568	10290	11260	5397	6729	8297	10130	11190	5000	6390	8020	9910	11010
2706661	MTZ44-4VI	3.75	76.2	5749	7270	9031	1106	12215	5691	7226	9013	11080	12200	5120	6680	8500	10700	11970
2706662	MTZ50-4VI	4	85.6	6703	8483	10550	12940	14310	6470	8230	10280	12640	13900	5847	7620	9720	12210	13660
2706663	MTZ56-4VI	4.5	96.1	7189	9143	11420	14060	15575	7200	9100	11400	14050	15500	6500	8460	10810	13570	15100
2706664	MTZ64-4VI	5.5	107.7	8552	10830	13500	16590	18370	8310	10470	12960	15810	17435	7510	9700	12280	15280	17010
2706665	MTZ72-4VI	6	120.9	9555	12040	14920	18250	20150	9570	12050	14920	18200	20070	8650	11180	14140	17590	19500
2706666	MTZ80-4VI	6.5	135.8	11210	13910	17020	20560	24580	10270	12710	15520	18740	20570	10260	13030	16270	20030	22430
2706648	MTZ100-4VI	8.5	171.3	13160	16510	20360	24760	27260	13050	16460	20430	25010	27640	11600	15040	19140	23970	26780
2706649	MTZ125-4VI	10.5	215.4	16830	21110	26080	31790	35050	17040	21490	26660	32610	36020	15600	20240	25750	32220	35990
2706650	MTZ144-4VI	12	241.9	19820	24580	30070	36330	39890	18910	23220	28190	33880	37120	18010	22720	28220	34600	38280
2706651	MTZ160-4VI	13.5	271.6	21760	26960	32950	39780	43660	21080	25890	34500	41410	45360	20650	26050	32360	39680	43900

Selection Data

Cat. No.	Model No.	Nominal HP	Displ. cm ³ /rev	Saturated Suction Temperature °C														
				R449A					R134a					R513A				
				-10	-5	0	5	7.5	-10	-5	0	5	10	-10	-5	0	5	10
2706652	MTZ22-4VI	1.75	38.1	2647	3381	4272	5341	5977	1567	2079	2695	3426	4285	1630	2146	2764	3495	4350
2706654	MTZ28-4VI	2	48.1	3268	4174	5275	6598	7386	1887	2499	3249	4158	5252	2055	2687	3442	4332	5372
2706656	MTZ32-4VI	2.5	53.9	3760	4792	6031	7505	8376	2267	2981	3827	4819	6115	2444	3176	4036	5036	6190
2706658	MTZ36-4VI	3	60.5	4363	5567	6984	8638	9594	2849	3700	4695	5850	7182	2823	3668	4657	5811	7146
2706660	MTZ40-4VI	3.5	67.9	5010	6399	8028	9921	11014	3208	4158	5283	6602	8134	3351	4312	5442	6757	8275
2706661	MTZ44-4VI	3.75	76.2	5145	6692	8533	10700	11970	3029	4040	5275	6766	8545	3365	4473	5784	7315	9086
2706662	MTZ50-4VI	4	85.6	5857	7630	9735	12210	13660	3482	4663	6105	7848	9931	3828	4965	6329	7950	9856
2706663	MTZ56-4VI	4.5	96.1	6512	8480	10820	13580	15190	3649	4912	6482	8405	10730	4041	5350	6914	8756	10900
2706664	MTZ64-4VI	5.5	107.7	7528	9721	12290	15290	17015	4339	5821	7624	9794	12370	4672	6145	7900	9963	12360
2706665	MTZ72-4VI	6	120.9	8666	11190	14150	17600	19588	5109	6700	8619	10910	13600	5326	6944	8877	11160	13810
2706666	MTZ80-4VI	6.5	135.8	10280	13040	16280	20040	22207	5756	7555	9725	12310	15340	6027	7889	10110	12720	15760
2706648	MTZ100-4VI	8.5	171.3	11620	15060	19160	23980	26790	6850	9126	11860	15120	18960	7537	9773	12440	15600	19310
2706649	MTZ125-4VI	10.5	215.4	15630	20270	25770	32230	35995	8597	11390	14730	18670	23300	10140	12960	16370	20430	25240
2706650	MTZ144-4VI	12	241.9	18040	22750	28250	34620	38290	11110	14460	18400	23010	28350	11590	14870	18740	23280	28540
2706651	MTZ160-4VI	13.5	271.6	20690	26080	32390	39690	43905	12660	16260	20520	25520	31340	13170	16790	21070	26050	31830

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Hermetic Reciprocating Compressors



Maneurop

MTZ Series – R404A, R452A, R448A, R449A, R134a, R513A
– Hermetic Reciprocating

Physical Properties



Cat. No.	Model No.	Motor Type	MOC Amps	Oil Charge ml	Oil Type POE	Connections Inch		Conn. Type	Weight kg	Dimensions mm	
						Suct.	Disch.			Height	Width
2706652	MTZ22-4VI	415 Volts 3 Phase	4.3	950	175PZ	1	1	Rotalock	21	358	225
2706654	MTZ28-4VI	415 Volts 3 Phase	5.7	950	175PZ	1	1	Rotalock	23	358	225
2706656	MTZ32-4VI	415 Volts 3 Phase	6.2	950	175PZ	1¼	1	Rotalock	24	358	225
2706658	MTZ36-4VI	415 Volts 3 Phase	7.2	950	175PZ	1¼	1	Rotalock	24	358	225
2706660	MTZ40-4VI	415 Volts 3 Phase	8.6	950	175PZ	1¼	1	Rotalock	24	358	225
2706661	MTZ44-4VI	415 Volts 3 Phase	7.3	1800	175PZ	1¾	1¼	Rotalock	35	415	288
2706662	MTZ50-4VI	415 Volts 3 Phase	8.3	1800	175PZ	1¾	1¼	Rotalock	35	415	288
2706663	MTZ56-4VI	415 Volts 3 Phase	9.5	1800	175PZ	1¾	1¼	Rotalock	37	415	288
2706664	MTZ64-4VI	415 Volts 3 Phase	11.2	1800	175PZ	1¾	1¼	Rotalock	37	415	288
2706665	MTZ72-4VI	415 Volts 3 Phase	12.5	1800	175PZ	1¾	1¼	Rotalock	40	415	288
2706666	MTZ80-4VI	415 Volts 3 Phase	14.5	1800	175PZ	1¾	1¼	Rotalock	40	415	288
2706648	MTZ100-4VI	415 Volts 3 Phase	16.5	3900	175PZ	1¾	1¼	Rotalock	60	540	352
2706649	MTZ125-4VI	415 Volts 3 Phase	21.8	3900	175PZ	1¾	1¼	Rotalock	64	540	352
2706650	MTZ144-4VI	415 Volts 3 Phase	24.2	3900	175PZ	1¾	1¼	Rotalock	67	540	352
2706651	MTZ160-4VI	415 Volts 3 Phase	27.7	3900	175PZ	1¾	1¼	Rotalock	67	540	352

Motor Types:

- PSC Permanent Split Capacitor
 - CSR: Capacitor start and run
 - MOC: Maximum Operating Current
-] 1 phase, 50 Hz, 220-240 Volt

MTZ Compressor Rotalock Valve Selection Guide



Rotalock Size	1"		1¼"			1¾"	
	¾"	½"	⅝"	¾"	⅞"	⅞"	1⅛"
Connection ODS							
Valve Cat. No.	2712251	2712252	2712254	2712255	2712256	2712258	2712259
Seal Cat. No.	2712264	2712264	2712265	2712265	2712265	2712266	2712266
MTZ18	D	S					
MTZ22	D	S					
MTZ28	D	S					
MTZ32		D	S				
MTZ36		D	S				
MTZ40		D	S				
MTZ44				D		S	
MTZ50				D		S	
MTZ56				D		S	
MTZ64				D		S	
MTZ72				D		S	
MTZ80				D			S
MTZ100					D		S
MTZ125					D		S
MTZ144					D		S
MTZ160					D		S

- S = Suction • D = Discharge
- Standard Configuration – other combinations are possible



Hermetic Reciprocating Compressors

Maneurop

Maneurop

NTZ Series – R404A, R507 – Hermetic Reciprocating

Features

- Charged with Maneurop Polyolester Oil 175PZ
- Suction and discharge solder sleeves supplied
- Rotalock service valves or angle adaptors sold separately
- Anti-vibration mounts supplied
- Fitted with oil sight glass and oil equalisation fitting

Single Phase

Selection Data

Cat. No.	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C											
				Capacity Watts R404A						Capacity Watts R452A					
				-35	-30	-25	-20	-15	-10	-35	-30	-25	-20	-15	-10
2708721	NTZ048-5LR1	2.5	48	800	1206	1688	2254	2912	3671	819	1216	1671	2199	2815	3532
2708728	NTZ068-5LR1	3.5	68	1576	2098	2726	3475	4362	5402	1467	2042	2730	3543	4494	5599

Physical Properties

Cat. No.	Model No.	Motor Type	MOC Amps	Oil Charge ml	Oil Type POE	Connections Inch		Conn. Type	Weight kg	Dimensions mm	
						Suct.	Disch.			Height	Width
2708721	NTZ048-5LR1	PSC, CSR	9.34	950	175PZ	1 $\frac{1}{8}$	1	Rotalock	21	358	225
2708728	NTZ068-5LR1	PSC, CSR	17.11	950	175PZ	1 $\frac{1}{8}$	1	Rotalock	23	358	225

Three Phase

Selection Data

Cat. No.	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C											
				Capacity Watts R404A						Capacity Watts R452A					
				-35	-30	-25	-20	-15	-10	-35	-30	-25	-20	-15	-10
2708727	NTZ048-4LR1	2.5	48	847	1239	1700	2236	2856	3567	819	1216	1671	2199	2815	3532
2706645	NTZ068-4LR1	3.5	68	1538	2111	2785	3572	4485	5536	1467	2042	2730	3543	4494	5599
2706646	NTZ096-4LR1	5	96	1686	2431	3364	4512	5899	7551	1688	2396	3307	4441	5818	7458
2708736	NTZ108-4LR1	5.5	108	2109	3008	4079	5342	6819	8529	2111	3087	4188	5465	6967	8743
2706647	NTZ136-4LR1	7	136	2807	3892	5197	6748	8575	10710	2763	3924	5291	6900	8787	10990
2708739	NTZ215-4LR1	10	215	4197	5957	8022	10430	13210	16420	4154	5789	7759	10110	12900	16160
2708740	NTZ271-4LR1	13	271	6115	8375	11040	14170	17790	21970	5408	7616	10230	13300	16890	21060

Physical Properties

Cat. No.	Model No.	Motor Type	MOC Amps	Oil Charge ml	Oil Type POE	Connections Inch		Conn. Type	Weight kg	Dimensions mm	
						Suct.	Disch.			Height	Width
2708727	NTZ048-4LR1	380-415 V / 3ph	3.72	950	175PZ	1 $\frac{1}{4}$	1	Rotalock	21	358	225
2706645	NTZ068-4LR1	380-415 V / 3ph	6.13	950	175PZ	1 $\frac{1}{4}$	1	Rotalock	23	358	225
2706646	NTZ096-4LR1	380-415 V / 3ph	6.99	1800	175PZ	1 $\frac{3}{4}$	1 $\frac{1}{4}$	Rotalock	35	415	288
2708736	NTZ108-4LR1	380-415 V / 3ph	8.01	1800	175PZ	1 $\frac{3}{4}$	1 $\frac{1}{4}$	Rotalock	35	415	288
2706647	NTZ136-4LR1	380-415 V / 3ph	11.11	1800	175PZ	1 $\frac{3}{4}$	1 $\frac{1}{4}$	Rotalock	35	415	288
2708739	NTZ215-4LR1	380-415 V / 3ph	14.91	3900	175PZ	1 $\frac{3}{4}$	1 $\frac{1}{4}$	Rotalock	62	540	352
2708740	NTZ271-4LR1	380-415 V / 3ph	19.49	3900	175PZ	1 $\frac{3}{4}$	1 $\frac{1}{4}$	Rotalock	64	540	352

Capacity Rating Basis: – (R404A) Evap:-35°C, Cond: 40°C, RGT: 20°C, SC: 0K

Motor Types:

- PSC Permanent Split Capacitor
 - CSR Capacitor start and run
 - MOC: Maximum Operating Current
- 1 phase, 50 Hz, 220-240 Volt

Hermetic Reciprocating Compressors

Maneurop

Maneurop

NTZ Series – R404A, R507 – Hermetic Reciprocating

NTZ Compressor Selection Guide

Current Model No.	Superseded Model
NTZ048-5LR1	LT/LTZ 22-5VI
NTZ048-4LR1	LT/LTZ 22-4VI
NTZ068-5LR1	LT/LTZ 28-5VI
NTZ068-4LR1	LT/LTZ 28-4VI
NTZ096-4LR1	LT/LTZ 40-4VI
NTZ108-4LR1	LT/LTZ 44-4VI
NTZ136-4LR1	LT/LTZ 50-4VI
NTZ215-4LR1	LT/LTZ 88-4VI
NTZ271-4LR1	LT/LTZ 100-4VI

NTZ Compressor Rotalock Valve Selection Guide



Rotalock Size	1"	1 1/4"		1 3/4"	
Connection ODS	1/2"	5/8"	3/4"	7/8"	1 1/8"
Valve Cat. No.	2712252	2712254	2712255	2712258	2712259
Seal Cat. No.	2712264	2712265	2712265	2712266	2712266
NTZ048	D	S			
NTZ068	D	S			
NTZ096			D	S	
NTZ108			D	S	
NTZ136			D		S
NTZ215			D		S
NTZ271			D		S

Rotary Compressors



SCI

Rotary – For Air Conditioning Application

Cat. No.	Model No.	Refrig.	Norm. HP	Displ. cc/rev	Nom Cap. Watts	Volts	Current Amps	Run Cap. μ F/VAC	Connections	
									Suct.	Disch.
2707445	RH135-VHAT	R22	0.87	13.5	2279	240	3.45	25/370	3/8"	5/16"
2707446	RH165-VHST	R22	1.07	16.5	2814	240	4.2	25/370	3/8"	5/16"
2707447	RH197-VHRT	R22	1.34	19.7	3610	240	5.12	30/370	1/2"	5/16"
2707448	RH207-VHST	R22	1.34	20.7	3670	240	5.3	30/370	1/2"	5/16"
2707449	RH231-VHAT	R22	1.47	23.1	4011	240	6.2	30/400	1/2"	5/16"
2707450	RH247-VHAT	R22	1.61	24.7	4407	240	6.0	35/400	1/2"	5/16"
2707451	RH277-VHAT	R22	1.74	27.7	4826	240	7.4	35/400	1/2"	5/16"
2707452	PH28-VNET	R22	1.68	28.1	4895	240	7.2	40/370	5/8"	3/8"
2707453	PH33-VPET	R22	2.01	33.8	5977	240	8.6	50/370	5/8"	3/8"
2707454	PH39-VPET	R22	2.28	39	6884	240	10	60/400	5/8"	3/8"
2707455	NH56-VNHT	R22	3.6	56.9	10209	240	16.1	60/420	3/4"	3/8"
2707409	NH47-YDET	R22	2.9	47.4	8372	415	5	N/A	5/8"	3/8"
2707410	NH52-YDTT	R22	3.4	52.4	9442	415	5.5	N/A	3/4"	3/8"

Rating Basis:

- 54.4°C Condensing
- 7.2°C Evaporating
- 35°C Suction Gas
- 46.1°C Liquid Temperature
- 35°C Ambient

Scroll Compressors



Tecumseh

VS Scroll

The Tecumseh VS Series scroll compressor offers the latest in efficiency and reliability. They are designed for commercial refrigeration applications and have passed extensive durability and endurance tests to assure excellent performance.

R404A – Medium Temperature Applications

Approved to also operate on R448A, R449A, R452A, R134a, R513A



Selection Data

Product Code	Model No.	Nominal HP	Displ. cm ³ /rev	Evaporating Temperature °C							
				Capacity Watts R404A							
				-25	-20	-15	-10	-5	0	5	10
3503026	VSE9515ZFZ	2	5.8	2216	2718	3298	3973	4759	5672	6727	7940
3503027	VSE9519ZXG	2½	7.3	2646	3245	3938	4744	5682	6771	8030	9479
3503019	VSE9530ZXG	4	11.8	4308	5283	6411	7724	9251	11025	13075	15434
3503020	VSE9538ZXG	5	14.5	5292	6489	7875	9487	11364	13542	16061	18958
	VSE9545ZXG	6	17.1	6288	7711	9357	11273	13503	16091	19084	22526
3503022	VSE9548ZXG	7	18.8	7076	8677	10531	12686	15196	18109	21477	25350
3503023	VSE9558ZXG	8	21.4	8027	9843	11945	14390	17237	20541	24362	28755
3503024	VSE9566ZXG	9	25.3	9863	12094	14677	17682	21179	25240	29934	35333
3503021	VSE9576ZXG	10	29.1	11116	13632	16543	19930	23872	28448	33739	39825
3503025	VSE9595ZXG	13	34.3	12790	15684	19034	22930	27465	32731	38818	45820

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Physical Properties

Product Code	Model No.	Motor Type	MOC Amps	Oil Charge cm ³ ml	Connections Inch		Weight kg	Dimensions mm			Base Mounting mm
					Suct.	Disch.		Length	Width	Height	
3503026	VSE9515ZFZ	CSR	16.2	1.4	7/8	½	31	239	239	418	190 x 190
3503027	VSE9519ZXG	3 Ph	6.4	1.4	7/8	½	30	239	239	418	190 x 190
3503019	VSE9530ZXG	3 Ph	10.3	1.4	7/8	½	31	239	239	418	190 x 190
3503020	VSE9538ZXG	3 Ph	12.2	1.4	7/8	½	31	239	239	418	190 x 190
	VSE9545ZXG	3 Ph	14.3	1.6	7/8	½	33	239	239	463	190 x 190
3503022	VSE9548ZXG	3 Ph	17.3	2.7	1 1/8	7/8	53	260	244	508	190 x 190
3503023	VSE9558ZXG	3 Ph	18.4	2.7	1 1/8	7/8	53	260	244	508	190 x 190
3503024	VSE9566ZXG	3 Ph	21.0	2.7	1 1/8	7/8	53	260	244	508	190 x 190
3503021	VSE9576ZXG	3 Ph	23.6	2.7	1 1/8	7/8	54	260	244	508	190 x 190
3503025	VSE9595ZXG	3 Ph	27.6	2.7	1 1/8	7/8	54	260	244	508	190 x 190

Motor Types:

- CSR: Capacitor start and run 1 Phase, 50 Hz, 220-240 Volt
- MOC: Maximum Operating Current

Scroll Compressors

Copeland®

Copeland

ZR Series



The Copeland Scroll compressor is the result of large scale research and development efforts underway since 1979. These efforts have led to the production of the most advanced scroll compressor design currently available for air-conditioning, heat pump and medium temperature applications.

System manufacturers choose scroll compressors over other compressor technologies for several reasons: lower sound, superior efficiency and reliability, compatibility with heat pump applications and ease of design.

Features

- Suitable for R22 and R407C air conditioning applications
- Charged with Polyolester oil
- Rotolock valves and electrical accessories to be ordered separately
- Anti-vibration mounts supplied

Single Phase Stub Connection

Cat. No.	Model No.	Elect Supply Volts/Ph.	Displ. m ³ /hr	R22 Nominal Capacity Watts @ 7.2°C	Replacement Oil Charge	Weight kg	Type	Connections		Full Load Amps	Locked Rotor Amps
								Suct.	Disch.		
2709665	ZR24K3E-PFJ-522	240/1	5.92	5900	1.01L	25	Stub Tube	3/4"	1/2"	11.4	58
2700278	ZR28K3E-PFJ-522	240/1	6.83	6900	1.01L	27.2	Stub Tube	3/4"	1/2"	15	61
2700279	ZR34K3E-PFJ-522	240/1	8.03	8250	1.12L	28.6	Stub Tube	3/4"	1/2"	17	76
2709666	ZR36K3E-PFJ-522	240/1	8.61	8850	1.12L	29.5	Stub Tube	3/4"	1/2"	18	82
2700280	ZR40K3E-PFJ-522	240/1	9.43	9760	1.12L	29.9	Stub Tube	3/4"	1/2"	23	100
2709667	ZR42K3E-PFJ-522	240/1	9.95	10250	1.12L	30.4	Stub Tube	3/4"	1/2"	23	97
2700281	ZR47K3E-PFJ-522	240/1	11.02	11500	1.12L	32.2	Stub Tube	7/8"	1/2"	23	114
2709670	ZR48K3E-PFJ-522	240/1	11.4	11400	1.12L	31.1	Stub Tube	7/8"	1/2"	23	114
2700283	ZR61KCE-PFZ-522	240/1	14.37	14900	1.54L	41.3	Stub Tube	7/8"	1/2"	30	150
2700285	ZR68KCE-PFJ-522	240/1	16.18	16700	1.72L	42.6	Stub Tube	7/8"	1/2"	30	150

Three Phase Stub Connection

Cat. No.	Model No.	Elect Supply Volts/Ph.	Displ. m ³ /hr	R22 Nominal Capacity Watts @ 7.2°C	Replacement Oil Charge	Weight kg	Type	Connections		Full Load Amps	Locked Rotor Amps
								Suct.	Disch.		
2700259	ZR28K3E-TFD-522	415/3	6.83	6900	1.01L	25.4	Stub Tube	3/4"	1/2"	5	32
2703050	ZR40K3E-TFD-522	415/3	9.43	10300	1.12L	27.7	Stub Tube	3/4"	1/2"	7	46
2709669	ZR47KCE-TFD-522	415/3	11.16	11500	1.24L	29.9	Stub Tube	7/8"	1/2"	10	48
2709668	ZR48KCE-TFD-522	415/3	11.4	11850	1.24L	28.1	Stub Tube	7/8"	1/2"	10	50
2709671	ZR54KCE-TFD-522	415/3	12.74	13200	1.83L	35.8	Stub Tube	7/8"	1/2"	10	51.8
2703051	ZR57KCE-TFD-522	415/3	13.43	13900	1.83L	36.3	Stub Tube	7/8"	1/2"	11	61.8
2700284	ZR61KCE-TFD-522	415/3	14.37	14900	1.83L	37.2	Stub Tube	7/8"	1/2"	11	65
2703053	ZR68KCE-TFD-522	415/3	16.18	16800	1.66L	38.6	Stub Tube	7/8"	1/2"	13	74
2703054	ZR72KCE-TFD-522	415/3	17.06	17700	1.66L	38.6	Stub Tube	7/8"	1/2"	13	74
2703055	ZR81KCE-TFD-522	415/3	18.75	19900	1.66L	39.9	Stub Tube	7/8"	1/2"	15	101
2703056	ZR94KCE-TFD-522	415/3	22.1	23300	2.4L	57.2	Stub Tube	1 1/8"	7/8"	16	95
2703058	ZR108KCE-TFD-522	415/3	24.9	26400	3.13L	60.3	Stub Tube	1 3/8"	7/8"	17	114
2703059	ZR125KCE-TFD-522	415/3	29.1	31100	3.13L	61.2	Stub Tube	1 3/8"	7/8"	19	125
2703060	ZR144KCE-TFD-522	415/3	33.2	35200	3.13L	61.2	Stub Tube	1 3/8"	7/8"	22	125
2709676	ZR160KCE-TFD-522	415/3	36.4	37700	3.38L	64.9	Stub Tube	1 3/8"	7/8"	28	140
2709678	ZR190KCE-TFD-522	415/3	43.3	45900	3.38L	66.2	Stub Tube	1 3/8"	7/8"	34	174

Scroll Compressors



Copeland

ZR Series

Three Phase Rotalock Connection

Cat. No.	Model No.	Elect. Supply: Volts/Ph.	Displ. m ³ /hr	R22 Nom. Cap. Watts @7.2C	Repl. Oil Charge	Weight kg	Type	Connections		Full Load Amps	Locked Rotor Amps
								Suct.	Disch.		
								Rotalock Size	Rotalock Size		
2703057	ZR94KCE-TFD-523	415/3	22.1	23300	2.4L	57.2	Rotalock	1 ³ / ₄ "	1 ¹ / ₄ "	16	95
2700290	ZR108KCE-TFD-523	415/3	24.9	26400	3.13L	60.3	Rotalock	1 ³ / ₄ "	1 ¹ / ₄ "	17	114
2700291	ZR125KCE-TFD-523	415/3	29.1	31100	3.13L	61.2	Rotalock	1 ³ / ₄ "	1 ¹ / ₄ "	19	125
2700292	ZR144KCE-TFD-523	415/3	33.2	35200	3.13L	61.2	Rotalock	1 ³ / ₄ "	1 ¹ / ₄ "	22	125
2709677	ZR160KCE-TFD-523	415/3	36.4	37700	3.38L	64.9	Rotalock	1 ³ / ₄ "	1 ¹ / ₄ "	28	140
2709679	ZR190KCE-TFD-523	415/3	43.3	45900	3.38L	66.2	Rotalock	1 ³ / ₄ "	1 ¹ / ₄ "	34	174
2709675	ZR250KCE-TWD-523	415/3	56.6	56600	4.7L	140	Rotalock	2 ¹ / ₄ "	1 ³ / ₄ "	41	225

Note: Rotalock valves to be ordered separately.

Service Packs

Copeland's service pack compressors are used for replacement of both rotalock and stub tube ZR16 and ZR19 model.

These compressors will be superseded by ZR160 and ZR190 but please note that the dimensions and footprint will differ.

Refer to Copeland's replacement guidelines for more detail.

Includes

- Rotalock compressor
- Extra 24V INT69SC2 module supplied loose
- Kriwan 110/230V INT69SC2 module mounted on the compressor
- Rotalock adaptor kits for field replacement of brazed version

Cat. No.	Model No.	Elect. Supply Volts/Ph.	Displ. m ³ /hr	R22 Nom. Cap. Watts @7.2C	Repl. Oil Charge	Weight kg	Full Load Amps	Locked Rotor Amps	Type	Connections	
										Suct.	Disch.
2709672	ZR16M3E-TWD-961	415/3	32.55	37500	4.05L	103.1	28	167	Rotalock	1 ³ / ₄ "	1 ¹ / ₄ "
2709674	ZR19M3E-TWD-961	415/3	42.07	46000	4.05L	112.1	34	198	Rotalock	2 ¹ / ₄ "	1 ³ / ₄ "

Note: Rotalock valves to be ordered separately.

Tandem Ready

These compressors are similar to the standard ZR compressors but include additional connection points that are required for use in tandem operation.

Cat. No.	Model No.	Elect. Supply Volts/Ph.	Displ. m ³ /hr	R22 Nom. Cap. Watts @7.2C	Repl. Oil Charge	Weight kg	Type	Connections		Full Load Amps	Locked Rotor Amps
								Suct.	Disch.		
2709661	ZR54KCE-TFD-422	415/3	12.74	13200	1.83L	35.8	Stub Tube	7 ⁸ / ₈ "	1 ² / ₂ "	10	51.8
2709662	ZR61KCE-TFD-422	415/3	14.37	14900	1.83L	37.2	Stub Tube	7 ⁸ / ₈ "	1 ² / ₂ "	11	65
2709663	ZR81KCE-TFD-422	415/3	18.75	19900	1.66L	39.9	Stub Tube	7 ⁸ / ₈ "	1 ² / ₂ "	15	101

Scroll Accessories

Motor Protection Module



Cat. No.	Part No.	Description	Suits
2711140	8564342	INT69 Motor Protection Module	All scroll Model where required including ZF, ZS, ZB, ZP series

Scroll Compressors

Copeland® Copeland

ZR Series Electrical Accessories Selection Chart

Compressor Model No.	Run Capacitor				Start Capacitor				Relay		Crankcase Heater		
	Cat. No.	Part No.	Volt.	mFd	Cat. No.	Part No.	Volt.	mFd	Cat. No.	Part No.	Cat. No.	Part No.	Descr.
ZR22K3E-PFJ-522	2709617	014-0054-12			2709623	014-0058-31	330	88-106	2709615	040-0166-37	2709604	018-0095-00	240V 70W
ZR24K3E-PFJ-522													
ZR28K3E-PFJ-522													
ZR28K3E-TFD-522													
ZR34K3E-PFJ-522	2709619	014-0054-40			2709623	014-0058-31	330	88-106	2709615	040-0166-37			
ZR36K3E-PFJ-522													
ZR40K3E-PFJ-522	2709620	014-0054-39	370	55									
ZR40K3E-TFD-522													
ZR42K3E-PFJ-522	2709621	014-0054-37	370	60	2709623	014-0058-31	330	88-106	2709615	040-0166-37			
ZR47K3E-PFJ-522													
ZR47KCE-TFD-522													
ZR48KCE-TFD-522													
ZR54KCE-TFD-522													
ZR57KCE-TFD-522													
ZR61KCE-PFZ-522	2709622	014-0054-20	440	50	2709624	014-0006-15	330	270-324	2709616	040-0046-24			
ZR61KCE-TFD-522													
ZR68KCE-PFJ-522	2709622	014-0054-20	440	50	2709624	014-0006-15	330	270-324	2709616	040-0046-24			
ZR68KCE-TFD-522													
ZR72KCE-TFD-522													
ZR81KCE-TFD-522													
ZR94KCE-TFD													
ZR108KCE-TFD													
ZR125KCE-TFD													
ZR144KCE-TFD													
ZR160KCE-TFD													
ZR190KCE-TFD													
ZR16M3E-TWD													
ZR19M3E-TWD													
											2709605	018-0091-22	240V 90W
											2709614	018-0091-13	240V 70W

Scroll Compressor Rotalock Valve Selection



Rotalock Size	1 1/4"		1 3/4"		2 1/4"
Connection ODS	3/4"	7/8"	1 1/8"	1 3/8"	1 5/8"
Valve Cat. No.	2712255	2712256	2712259	2712260	2712262
Seal Cat. No.	2712265	2712265	2712266	2712266	2712267
Model No.					
ZR94KCE-TFD-523	D		S		
ZR108KCE-TFD-523	D		S		
ZR125KCE-TFD-523	D		S		
ZR144KCE-TFD-523		D		S	
ZR160KCE-TFD-523		D		S	
ZR190KCE-TFD-523		D		S	
ZR16M3E-TWD-961		D		S	
ZR19M3E-TWD-961			D		S

- S = Suction • D = Discharge
- Standard Configuration – other combinations are possible

Scroll Compressors

Copeland®

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ZP Series R410A

For Air conditioning Applications

Features

- Charged with Polyolester oil
- Electrical accessories to be ordered separately
- Anti-vibration mounts supplied

Cat. No.	Model No.	Elect. Supply Volts/Phase	Displ. m ³ /hr	R410A Capacity Watts @ +7.2°C SST	Connection Type	Connections		Replacement Oil Charge Litres	Amps		Weight kg
						Suct.	Disch.		Rated Load Amps	Locked Rotor Amps	
2709690	ZP36KSE-PFZ-522	240/1	5.988	8750	Stub Tube	7/8"	1/2"	1.12	17.7	98.0	29.4
2709691	ZP36KSE-TFM-522	415/3	5.988	8540	Stub Tube	7/8"	1/2"	1.12	6.6	46.0	29.4
2709692	ZP42KSE-PFZ-522	240/1	6.929	10150	Stub Tube	7/8"	1/2"	1.12	21.7	128.0	33.1
2709693	ZP42KSE-TFM-522	415/3	6.929	10000	Stub Tube	7/8"	1/2"	1.12	6.8	43.0	33.1
2709694	ZP51KSE-PFZ-522	240/1	8.383	12100	Stub Tube	7/8"	1/2"	1.12	22.5	126.0	34.4
2709695	ZP51KSE-TFM-522	415/3	8.383	12100	Stub Tube	7/8"	1/2"	1.12	8.6	51.5	33.0
2709696	ZP54KSE-PFZ-522	240/1	8.896	12979	Stub Tube	7/8"	1/2"	1.12	22.5	115.5	34.4
2709697	ZP54KSE-TFM-522	415/3	8.896	12860	Stub Tube	7/8"	1/2"	1.12	8.6	51.5	33.0
2709698	ZP57K3E-PFJ-522	240/1	9.438	13880	Stub Tube	7/8"	1/2"	1.54	27.3	153.0	41.7
2709699	ZP57K3E-TFD-522	415/3	9.438	13850	Stub Tube	7/8"	1/2"	1.54	10.7	74.0	41.7
2709700	ZP61KCE-PFZ-522	240/1	10.108	14140	Stub Tube	7/8"	1/2"	1.66	29.3	147.0	40.3
2709701	ZP61KCE-TFD-522	415/3	10.108	14580	Stub Tube	7/8"	1/2"	1.66	10.9	64.0	40.3
2709702	ZP67KCE-TFD-522	415/3	10.958	16040	Stub Tube	7/8"	1/2"	1.66	11.8	74.0	40.0
2709703	ZP72KCE-TFD-522	415/3	11.679	17063	Stub Tube	7/8"	1/2"	1.66	12.5	75.0	40.0
2709704	ZP83KCE-TFD-522	415/3	13.430	19830	Stub Tube	7/8"	1/2"	1.66	13.6	101.0	40.0
2709705	ZP90KCE-TFD-522	415/3	14.642	21730	Stub Tube	1 1/8"	7/8"	2.40	16.4	95.0	57.6
2709706	ZP103KCE-TFD-522	415/3	16.763	25080	Stub Tube	1 3/8"	7/8"	3.13	18.6	111.0	61.2
2709707	ZP120KCE-TFD-522	415/3	19.760	29167	Stub Tube	1 3/8"	7/8"	3.13	20.0	118.0	61.2
2709708	ZP137KCE-TFD-522	415/3	22.121	32375	Stub Tube	1 3/8"	7/8"	3.13	20.7	118.0	62.1
2709709	ZP154KCE-TFD-522	415/3	24.867	37040	Stub Tube	1 3/8"	7/8"	3.13	25.0	140.0	64.9
2709710	ZP182KCE-TFD-522	415/3	29.078	43750	Stub Tube	1 3/8"	7/8"	3.13	28.6	174.0	66.2
2709711	ZP385KCE-TWD-522	415/3	60.8	92100	Stub Tube	1 5/8"	1 3/8"	6.3		310.0	177.8

Note: -593 and -522 model variants are interchangeable. -593 is an OEM number and -522 is the aftermarket model. AHRI Standard: +7.2°C SST, 11.11K Superheat 54.44°C SCT, 8.33K Subcooling.

Scroll Compressors

Copeland®

Copeland

ZB Series – R404A, R507 For Refrigeration Applications



Cat. No.	Model No.	Elect. Supply Volts / Phase	Displ. m ³ /hr	Connection Type	Connections		Replacement Oil Charge Litres	Amps		Weight kg
					Suct.	Disch.		Rated Load	Locked Rotor	
2709680	ZB15KQE-PFJ-524	220-240/1	5.92	Tube	3/4"	1/2"	1.18	11.4	58.0	23.0
2709681	ZB19KQE-TFD-524	380-420/3	6.80	Tube	3/4"	1/2"	1.45	4.3	32.0	25.0
2709682	ZB26KQE-TFD-524	380-420/3	9.90	Tube	3/4"	1/2"	1.45	7.1	46.0	28.0
2709683	ZB38KQE-TFD-524	380-420/3	14.50	Tube	7/8"	1/2"	1.89	8.9	65.5	38.0
2709684	ZB48KQE-TFD-524	380-420/3	18.75	Tube	7/8"	1/2"	1.66	14.0	101.0	39.0
256382	ZB50KQE-TFD-551	380-420/3	19.80	Rotalock	1 3/4"	1 1/4"	2.51	14.3	90.0	59.0
2709685	ZB58KQE-TFD-551	380-420/3	22.10	Rotalock	1 3/4"	1 1/4"	2.51	16.4	95.0	60.0
2709686	ZB66KQE-TFD-551	380-420/3	25.70	Rotalock	1 3/4"	1 1/4"	3.25	17.3	111.0	60.0
2709687	ZB76KQE-TFD-551	380-420/3	28.80	Rotalock	1 3/4"	1 1/4"	3.25	19.2	118.0	65.0
2709688	ZB95KQE-TFD-551	380-420/3	36.38	Rotalock	1 3/4"	1 1/4"	3.25	25.0	140.0	65.0
2709689	ZB114KQE-TFD-551	380-420/3	43.35	Rotalock	1 3/4"	1 1/4"	3.25	27.9	174.0	65.0

ZB Series Scroll Compressor Rotalock Valve Selection

Rotalock Size	1 1/4"	
	7/8"	1 1/8"
Connection ODS	7/8"	1 1/8"
Valve Cat. No.	2712256	2712259
Seal Cat. No.	2712265	2712266
ZB50KQE-TFD-551	D	S
ZB58KQE-TFD-551	D	S
ZB66KQE-TFD-551	D	S
ZB76KQE-TFD-551	D	S
ZB95KQE-TFD-551	D	S
ZB114KQE-TFD-551	D	S

ZB Series BOM Chart

Bill of Materials (BOM) numbers identify specific compressor features

BOM	523	524	558	559	550	551
Stub Tube		x	x		x	
Rotalock	x			x		x
Sight Glass			x	x	x	x
Schrader Valve					x	x

- S = Suction • D = Discharge
- Standard Configuration – other combinations are possible

Scroll Compressors

Copeland®

Copeland

ZF Series – R404A For Low Temperature Applications

Features

- Charged with Polyolester oil
- Suitable for R404A low temperature applications
- Anti-vibration mounts supplied
- Rotalock valves and electrical accessories should be ordered separately

Cat. No.	Model No.	Elect. Supply Volts/Phase	Displ. m ³ /hr	R404A Capacity Watts @ -25°C SST	Connection Type	Connections		Replacement Oil Charge Litres	Amps		Winding Resist. Ohm	Weight kg
						Suct.	Disch.		Rated Load Amps	Locked Rotor Amps		
2709595	ZF09K4E-TFD-551	415/3	8.0	2950	Rotalock	1¼"	1"	1.1	6	40	4.83	30
2709596	ZF11K4E-TFD-551	415/3	9.9	3700	Rotalock	1¼"	1"	1.1	7	46	4.03	31
2709597	ZF13K4E-TFD-551	415/3	11.8	4300	Rotalock	1¼"	1"	1.4	8	51.5	3.64	41
2709598	ZF15K4E-TFD-551	415/3	14.5	5250	Rotalock	1¼"	1"	1.7	10	64	2.75	42
2709599	ZF18K4E-TFD-551	415/3	17.2	6400	Rotalock	1¼"	1"	1.7	12	74	2.27	44
2709600	ZF24K4E-TWD-551	415/3	20.9	7900	Rotalock	1¾"	1¼"	4	16.1	99	1.41	100
2709601	ZF33K4E-TWD-551	415/3	28.9	11000	Rotalock	1¾"	1¼"	4	22.3	127	1.02	100
2709602	ZF40K4E-TWD-551	415/3	35.6	13500	Rotalock	1¾"	1¼"	4.1	25.1	167	0.83	110
2709603	ZF48K4E-TWD-551	415/3	42.1	15600	Rotalock	2¼"	1¾"	1.66	30.6	198	0.72	119

Refrigeration Capacity based on +40°C SCT, 20°C Suction Gas Return

Discharge Gas Thermostat (120°C)

Cat. No.	Part No.
2708315	2981196

ZF Series Copeland Scroll Compressor Rotalock Valve Selection

Rotalock Size	1"	1¼"	1¾"	1¾"	2¼"
Connection ODS	½"	7⁄8"	1½"	1¾"	1¾"
Valve Cat. No.	2712252	2712256	2712259	2712260	2712262
Seal Cat. No.	2712264	2712265	2712266	2712266	2712267
ZF09K4E-TFD-551	D	S			
ZF11K4E-TFD-551	D	S			
ZF13K4E-TFD-551	D	S			
ZF15K4E-TFD-551	D	S			
ZF18K4E-TFD-551	D	S			
ZF24K4E-TWD-551		D	S		
ZF33K4E-TWD-551		D		S	
ZF40K4E-TWD-551		D		S	
ZF48K4E-TWD-551			D		S

S = Suction D = Discharge
Standard Configuration – other combinations are possible

Scroll Compressors

Maneurop

Maneurop

SM Series R22

Features

- Anti-Vibration mounts supplied
- Charged with Maneurop Mineral Oil 160P
- Rotalock service valves or angle adaptors sold separately



Cat. No.	Model No.	Elect. Supply Volts/Phase	Displacement		Connection Type	Connections		Oil Charge Litres	Weight kg
			cm ³ /rev	m ³ /hr @ 2900rpm		Suct.	Disch.		
2707457	SM084-4VI	415/3	114.5	19.92	Stub	1 1/8"	3/4"	3.25	72
2707458	SM090-4VI	415/3	120.5	20.97	Stub	1 1/8"	3/4"	3.25	72
2707468	SM100-4VI	415/3	127.2	22.13	Stub	1 1/8"	3/4"	3.25	72
2706557	SM110-4VI	415/3	144.2	25.09	Stub	1 3/8"	7/8"	3.25	80
2706552	SM115-4RI	415/3	155.0	26.97	Rotalock	1 3/4"	1 1/4"	3.80	80
2706558	SM120-4VI	415/3	166.6	28.99	Stub	1 3/8"	7/8"	3.25	80
2706553	SM125-4RI	415/3	166.6	28.99	Rotalock	1 3/4"	1 1/4"	3.80	80
2706559	SM148-4VAI	415/3	199.0	34.60	Stub	1 3/8"	7/8"	3.60	88
2706554	SM160-4RAI	415/3	216.6	37.69	Rotalock	2 1/4"	1 3/4"	4.00	94
2706560	SM161-4VAI	415/3	216.6	37.69	Stub	1 3/8"	7/8"	3.30	86
2706555	SM185-4RI	415/3	249.9	43.48	Rotalock	2 1/4"	1 3/4"	6.60	103

SZ Series R134a, R407C

Features

- Anti-Vibration mounts supplied
- Charged with Maneurop Mineral Oil
- Rotalock service valves or angle adaptors sold separately



Cat. No.	Model No.	Elect. Supply Volts/Phase	Displacement		Connection Type	Connections		Oil Charge Litres	Weight kg
			cm ³ /rev	m ³ /hr @ 2900rpm		Suct.	Disch.		
2707479	SZ084-4VI	415/3	114.5	19.92	Stub	1 1/8"	3/4"	3.30	64
2707481	SZ090-4VI	415/3	120.5	20.97	Stub	1 1/8"	3/4"	3.30	65
2707482	SZ100-4VI	415/3	127.2	22.13	Stub	1 1/8"	3/4"	3.30	65
2707483	SZ110-4VI	415/3	144.2	25.09	Stub	1 3/8"	7/8"	3.30	73
2707484	SZ115-4RI	415/3	155.0	26.97	Rotalock	1 3/4"	1 1/4"	3.80	78
2707485	SZ120-4VI	415/3	166.6	28.99	Stub	1 3/8"	7/8"	3.30	73
2707486	SZ125-4RI	415/3	166.6	28.99	Rotalock	1 3/4"	1 1/4"	3.80	78
2706561	SZ148-4VAI	415/3	199.0	34.60	Stub	1 3/8"	7/8"	3.60	88
2707488	SZ160-4RAI	415/3	216.6	37.69	Rotalock	2 1/4"	1 3/4"	4.00	90
2707489	SZ161-4VAI	415/3	216.6	37.69	Stub	1 3/8"	7/8"	3.60	88
2707490	SZ175-4RI	415/3	233.0	40.54	Rotalock	2 1/4"	1 3/4"	6.20	100
2706556	SZ185-4RI	415/3	249.9	43.48	Rotalock	2 1/4"	1 3/4"	6.20	100
2707492	SZ185-4CAI	415/3	249.9	43.48	Stub	1 5/8"	1 1/8"	6.20	100
2707491	SZ240A4MBI	415/3	347.8	60.50	Rotalock	2 1/4"	1 3/4"	8.00	150

Scroll Compressors

Maneurop

Maneurop

SM & SZ Compressor Rotalock Valve Selection Guide



Rotalock Size	1"	1 $\frac{3}{4}$ "	1 $\frac{3}{4}$ "	2 $\frac{1}{4}$ "	2 $\frac{1}{4}$ "
Connection ODS	1 $\frac{1}{2}$ "	7 $\frac{7}{8}$ "	1 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	1 $\frac{5}{8}$ "
Valve Cat. No.	2712255	2712258	2712259	2712248	2712262
Seal Cat. No.	2712265	2712266	2712266	2712267	2712267
SM115	D		S		
SM125	D		S		
SM160		D		S	
SM175		D		S	
SM185		D		S	
SZ115	D		S		
SZ125	D		S		
SZ160		D		S	
SZ175		D		S	
SZ185		D		S	
SZ240			D		S

Semi-Hermetic Compressors



Tecumseh

SH Series

The SH semi hermetic compressor from Tecumseh has a proven reputation for performance and reliability in refrigeration. Manufactured in Italy the SH compressors are both quiet and energy efficient.



R404A – Medium/Low Temperature Applications

Approved for R448A, R449A, R452A, R134a, R513A

Three Phase

Selection Data

Product Code	Model No.	HP	Displ. m ³ /h	Evaporating Temperature °C						
				Capacity Watts R404A						
				-25	-20	-15	-10	-5	0	5
2712824	SH4521ZYZ	1	5.47	1313	1742	2247	2836	3514	4285	5156
2750468	SH4526ZYZ	1.5	6.91	1782	2320	2963	3723	4611	5638	6816
2750469	SH4536ZYZ	2	9.88	2575	3292	4140	5131	6280	7601	9107
2750470	SH4550ZYZ	3	13.15	3530	4564	5764	7152	8756	10598	12705
2712828	SH4564ZYZ	4	16.40	4584	5882	7394	9147	11169	13488	16131
2750471	SH4567ZYZ	4	17.93	5216	6553	8102	9889	11937	14272	16916
2707557	SH4576ZYZ	5	21.18	5381	7086	9038	11262	13785	16633	19832
2707558	SH4591ZYZ	5	24.69	6637	8507	10702	13262	16228	19641	23541
2707559	SH4610ZYZ	7	28.02	7855	10024	12550	15479	18856	22726	27134
2707560	SH4612ZYZ	7	32.60	9130	11603	14497	17867	21766	26248	31368
2707561	SH4615ZMZ	12	41.32	10713	13866	17573	21889	26869	32568	39041
2707562	SH4620ZMZ	15	51.50	15200	19177	23731	28990	35080	42130	50269
2712834	SH4623ZMZ	20	58.48	15680	20300	25736	32083	39434	47884	57529
2712835	SH4627ZMZ	25	70.77	19031	24517	30983	38552	47345	57486	69095
2712836	SH4632ZMZ	30	83.81	23320	29872	37575	46556	56942	68860	82435
2712837	SH4636ZMZ	32	93.00	23786	31167	39884	50068	61867	75419	90864
2712838	SH4639ZMZ	35	102.86	28646	36353	45211	55406	67121	80540	95848
2712839	SH4641ZMZ	35	106.16	29580	37778	47526	58984	72352	87772	105423
2712840	SH4648ZMZ	40	125.72	34026	43771	55319	68853	84557	102617	123218
2712841	SH4661ZMZ	50	154.38	41691	53664	67691	84002	102824	124386	148915

Capacities based on EN12900 Midpoint ratings: Condensing temp 40°C, Return Vapour 20°C, Subcooling 0K.

Semi-Hermetic Compressors



Tecumseh

SH Series

R404A – Medium/Low Temperature Applications

Approved for R448A, R449A, R452A, R134a, R513A



Three Phase

Physical Data

Product Code	Model No.	No. of Cylinders	Motor Type	MOC A	Locked Rotor Current A		Oil Charge litre	Connections Inch		Weight kg	Dimensions mm			Base Mounting mm
					PWS	DOL		Suct.	Disch.		L	W	H	
2712824	SH4521ZYZ	2	400V/3ph/DOL	3.6		13.6	1	5/8	1/2	36	317	237	275	234 x 194
2750468	SH4526ZYZ	2	400V/3ph/DOL	4.5		20.6	1	5/8	1/2	36	317	237	275	234 x 194
2750469	SH4536ZYZ	2	400V/3ph/DOL	6.7		35.9	1	3/4	5/8	40	334	237	292	234 x 194
2750470	SH4550ZYZ	2	400V/3ph/DOL	8.8		43.7	1.2	1 1/8	5/8	49	374	242	317	234 x 194
2712828	SH4564ZYZ	2	400V/3ph/DOL	11.6		52	1.2	1 1/8	3/4	55	401	242	317	234 x 194
2750471	SH4567ZYZ	2	400V/3ph/DOL	12.5		52	1.2	1 1/8	3/4	55	401	242	317	234 x 194
2707557	SH4576ZYZ	4	400V/3ph/DOL	11.6		63.1	1.6	1 1/8	3/4	79	449	286	325	312 x 246
2707558	SH4591ZYZ	4	400V/3ph/DOL	12.7		63.1	1.6	1 1/8	7/8	79	449	286	325	312 x 246
2707559	SH4610ZYZ	4	400V/3ph/DOL	17.6		87.3	1.6	1 3/8	1 1/8	79	449	286	328	312 x 246
2707560	SH4612ZYZ	4	400V/3ph/DOL	20		87.3	1.6	1 3/8	1 1/8	79	449	286	328	312 x 246
2707561	SH4615ZMZ	4	400V/3ph/PWS-DOL	22.4	59.1	102.29	2.9	1 3/8	1 1/8	120	550	405	405	292 x 266
2707562	SH4620ZMZ	4	400V/3ph/PWS-DOL	32.4	74.8	117.1	2.9	1 5/8	1 1/8	126	550	405	405	292 x 266
2712834	SH4623ZMZ	4	400V/3ph/PWS-DOL	35.3	106.6	180.5	4	1 5/8	1 1/8	174	672	460	463	381 x 305
2712835	SH4627ZMZ	4	400V/3ph/PWS-DOL	43.5	118.3	202.7	4	2 1/8	1 3/8	184	703	460	463	381 x 305
2712836	SH4632ZMZ	4	400V/3ph/PWS-DOL	49.2	132.6	224.4	4	2 1/8	1 3/8	187	703	460	463	381 x 305
2712837	SH4636ZMZ	4	400V/3ph/PWS-DOL	53.1	144.5	239.2	4	2 1/8	1 3/8	192	743	460	463	381 x 305
2712838	SH4639ZMZ	4	400V/3ph/PWS-DOL	61	144.5	239.2	4	2 1/8	1 3/8	193	743	460	463	381 x 305
2712839	SH4641ZMZ	6	400V/3ph/PWS-DOL	60.2	144.5	239.2	3.7	2 1/8	1 3/8	223	806	509	457	381 x 305
2712840	SH4648ZMZ	6	400V/3ph/PWS-DOL	71.9	159.2	273	7.2	2 5/8	1 5/8	240	806	509	536	381 x 305
2712841	SH4661ZMZ	6	400V/3ph/PWS-DOL	90.4	188.6	321.4	7.2	2 5/8	1 5/8	244	794	509	536	381 x 305

Motor Types:

- 3 ph: 3 phase, 50 Hz, 400-440 Volt
- MOC: Maximum Operating Current

Semi-Hermetic Compressors



Tecumseh

SH Series

The Tecumseh SH series of semi-hermetic compressors are designed for HFC refrigerants.

Accessories



Cat. No.	Part No.	Description	Suits Model No.
2709952	7590200	Crankcase Heater	All SH Model
2708344	7590100	Capacity Control Kit	SH4576Z, SH4591Z, SH4610Z, SH4612Z
2708345	7590101	Capacity Control Kit	SH4615Z, SH4620Z
2708346	7590102	Unloaded Start Kit	SH4576Z, SH4591Z, SH4610Z, SH4612Z
2708347	7590103	Unloaded Start Kit	SH4615Z, SH4620Z
2711058	7590206	Head Cooling Fan Assembly	SH4576Z, SH4591Z, SH4610Z, SH4612Z
2711059	7590207	Head Cooling Fan Assembly	SH4615Z, SH4620Z

Spare Parts



Cat. No.	Part No.	Description	Suits Model No.
2708332	7380740	Gasket Kit	SH4576Z, SH4610Z
2708333	7380741	Gasket Kit	SH4591Z, SH4612Z
2708334	7380742	Gasket Kit	SH4615Z
2708335	7380743	Gasket Kit	SH4620Z
2708336	72701749	Valve Plate Kit	SH4576Z, SH4610Z
2708337	7309101	Valve Plate Kit	SH4591Z
2708338	72710907	Valve Plate Kit	SH4612Z
2708339	72710908	Valve Plate Kit	SH4615Z
2708340	72710909	Valve Plate Kit	SH4620Z
2708341	7380710	Oil Sight Glass Kit	All SH Model
2708342	7590204	Kriwan Motor Protection Module	All SH Model
1609597	72710921	Compressor Mount Rubber Kit of 4	SH4576Z, SH4591Z, SH4610Z, SH4612Z
1609598	72710922	Compressor Mount Rubber Kit of 4	SH4615Z, SH4620Z
2708354	7590202	Electrical Connections Plate Kit	SH4576Z, SH4591Z, SH4610Z, SH4612Z
2708355	7590203	Electrical Connections Plate Kit	SH4615Z, SH4620Z

Semi-Hermetic Compressors



Bitzer

Ecoline Series 3 Phase 415V 50Hz

Inclusions: Compressor accessible hermetic (internal motor), oil charge BSE-32 ester oil, 1 x suction and 1 x discharge shut off valves, 4 x vibration dampers, built in thermistor (motor temperature sensors complete with electronic control unit), terminal box enclosure class IP65, and crankcase heater fitted as standard. Integrated varicool option.

All cylinder models supplied with one cylinder head ready for capacity control solenoid valve and coil.



Cat. No.	Part No.	Model No.	Series	No of Cyls.	Elect. Supply Volts/Phase	Nom. HP	Displ. m ³ /hr	Connections		Oil Charge l	Current Amps Maximum Operating	Weight kg	Dimensions mm			Optional Capacity Control
								Suct.	Disch.				L	W	H	
2707624	J04-336	2KES-05Y	CE1	2	415/3	0.5	4.06	5/8"	1/2"	1.0	2.8	43	343	220	273	N
2707625	J04-337	2JES-07Y	CE1	2	415/3	0.7	5.21	5/8"	1/2"	1.0	3.7	43	343	220	273	N
2707626	J04-338	2HES-1Y	CE1	2	415/3	1	6.51	5/8"	1/2"	1.0	3.8	44	343	220	273	N
2707627	J04-339	2HES-2Y	CE1	2	415/3	2	6.51	5/8"	1/2"	1.0	4.5	45	343	220	273	N
2707628	J04-340	2GES-2Y	CE1	2	415/3	2	7.58	5/8"	1/2"	1.0	5.0	45	343	220	273	N
2707629	J04-347	2FES-2Y	CE1	2	415/3	2	9.54	5/8"	1/2"	1.0	5.3	45	343	220	273	N
2707630	J04-348	2FES-3Y	CE1	2	415/3	3	9.54	5/8"	1/2"	1.0	6.1	47	343	220	273	N
2707631	J04-341	2EES-2Y	CE2	2	415/3	2	11.4	7/8"	5/8"	1.5	6.0	68	398	259	307	N
2707632	J04-342	2EES-3Y	CE2	2	415/3	3	11.4	7/8"	5/8"	1.5	7.5	71	398	259	307	N
2707633	J04-343	2DES-2Y	CE2	2	415/3	2	13.4	7/8"	5/8"	1.5	7.5	68	398	259	307	N
2707635	J04-344	2DES-3Y	CE2	2	415/3	3	13.4	7/8"	5/8"	1.5	8.6	71	398	259	307	N
2707636	J04-345	2CES-3Y	CE2	2	415/3	3	16.2	7/8"	5/8"	1.5	9.1	70	398	259	307	N
2707637	J04-346	2CES-4Y	CE2	2	415/3	4	16.2	7/8"	5/8"	1.5	10.0	70	398	259	307	N
2707638	J04-351	4FES-3Y	CE3	4	415/3	3	18.1	7/8"	5/8"	2.0	9.5	82	432	309	347	50%
2707639	J04-352	4FES-5Y	CE3	4	415/3	5	18.1	7/8"	5/8"	2.0	10.8	86	432	309	347	50%
2707640	J04-353	4EES-4Y	CE3	4	415/3	4	22.7	1 1/8"	5/8"	2.0	12.2	84	432	309	352	50%
2707641	J04-354	4EES-6Y	CE3	4	415/3	6	22.7	1 1/8"	5/8"	2.0	13.6	86	432	309	352	50%
2707642	J04-355	4DES-5Y	CE3	4	415/3	5	26.8	1 1/8"	7/8"	2.0	14.5	86	432	309	352	50%
2707643	J04-356	4DES-7Y	CE3	4	415/3	7	26.8	1 1/8"	7/8"	2.0	16.5	89	457	309	352	50%
2707644	J04-357	4CES-6Y	CE3	4	415/3	6	32.5	1 1/8"	7/8"	2.0	17.7	91	457	309	352	50%
2707645	J04-358	4CES-9Y	CE3	4	415/3	9	32.5	1 1/8"	7/8"	2.0	20.2	91	457	309	352	50%

Ecoline Series Single Phase 240V 50Hz

Inclusions: Compressor accessible hermetic (internal motor), oil charge BSE-32 ester oil, 1 x suction and 1 x discharge shut off valves, 4 x vibration dampers, built in thermistor (motor temperature sensors complete with electronic control unit), 1 x start relay, start and run capacitors, terminal box enclosure Class IP65, and crankcase heater fitted as standard.

Integrated Varicool Option

Cat. No.	Part No.	Model No.	Series	No of Cyls.	Elect. Supply Volts/Phase
2707646	J04-461	2HES-2YE	CE1	2	240/1
2707647	J04-462	2GES-2YE	CE1	2	240/1
2707648	J04-463	2FES-2YE	CE1	2	240/1

Accessories

Cat. No.	Part No.	Description	Suits Series
2708322	347019-01	Motor Protection Device SE-B1 (Replaces INT69VS7-11)	
2708326	347023-03	Discharge Gas Temperature Control Device (sensor)	
2709475	347600-47	Capacity Control Solenoid Valve Assembly	
2708331	343309-01	Capacity Control Solenoid Coil Only 240 Volt 50 Hz	
2711051	343021-01	Cooling Fan Assembly	CE1
2711052	343021-26	Cooling Fan Assembly	CE2
2711053	343021-29	Cooling Fan Assembly	CE3

Semi-Hermetic Compressors



Bitzer

Ecoline Series 3 Phase 415V 50Hz – Motor Version 1 and Motor Version 2

Inclusions: Compressor accessible hermetic (internal motor), oil charge BSE-32 ester oil, 1 x suction and 1 x discharge shut off valve, 4 x vibration dampers, built in thermistor (motor temperature sensors complete with electronic control unit), terminal box enclosure class IP65, and crankcase heater fitted as standard.

All cylinder models supplied with one cylinder head ready for capacity control solenoid valve and coil.



Cat. No.	Part No.	Model No.	Series	No of Cyls.	Elect. Supply Volts/Phase	Nom. HP	Displ. m³/hr	Connections		Oil Charge l	Current Amps Maximum Operating	Weight kg	Dimensions mm			Optional Capacity Control
								Suct.	Disch.				L	W	H	
2707649	J04-366	4VES-7Y	CE4	4	415/3	7	34.7	1 1/8"	7/8"	2.6	16.6	129	633	303	385	50%
2707650	J04-361	4VES-10Y	CE4	4	415/3	10	34.7	1 1/8"	7/8"	2.6	19.9	139	633	303	385	50%
2707651	J04-367	4TES-9Y	CE4	4	415/3	9	41.3	1 3/8"	1 1/8"	2.6	19.9	134	633	303	385	50%
2707652	J04-362	4TES-12Y	CE4	4	415/3	12	41.3	1 3/8"	1 1/8"	2.6	25.1	141	633	303	385	50%
2707653	J04-368	4PES-12Y	CE4	4	415/3	12	48.5	1 3/8"	1 1/8"	2.6	22.7	139	633	303	385	50%
2707654	J04-364	4PES-15Y	CE4	4	415/3	15	48.5	1 5/8"	1 1/8"	2.6	28.2	147	658	303	385	50%
2707655	J04-369	4NES-14Y	CE4	4	415/3	14	56.2	1 3/8"	1 1/8"	2.6	26.6	141	633	303	385	50%
2707656	J04-365	4NES-20Y	CE4	4	415/3	20	56.2	1 3/8"	1 1/8"	2.6	33.2	150	658	303	385	50%

Ecoline Series 3 Phase 415V 50Hz – Motor Version 3 – R134a

Inclusions: Compressor accessible hermetic (internal motor), oil charge BSE-32 ester oil, 1 x suction and 1 x discharge shut off valves, 4 x vibration dampers, built in thermistor (motor temperature sensors complete with electronic control unit), terminal box enclosure class IP65, and crankcase heater fitted as standard.

All cylinder models supplied with one cylinder head ready for capacity control solenoid valve and coil.

Cat. No.	Part No.	Model No.	Series	No of Cyls.	Elect. Supply Volts/Phase	Nom. HP	Displ. m³/hr	Connections		Oil Charge l	Current Amps Maximum Operating	Weight kg	Dimensions mm			Optional Capacity Control
								Suct.	Disch.				L	W	H	
2707657	J04-322	4VES-6Y	CE4	4	415/3	6	34.7	1 1/8"	7/8"	2.6	9.4	129	633	303	385	50%
2707658	J04-323	4TES-8Y	CE4	4	415/3	8	41.3	1 3/8"	1 1/8"	2.6	11.4	134	633	303	385	50%
2707659	J04-324	4PES-10Y	CE4	4	415/3	10	48.5	1 3/8"	1 1/8"	2.6	12.9	139	633	303	385	50%
2707660	J04-325	4NES-12Y	CE4	4	415/3	12	56.2	1 3/8"	1 1/8"	2.6	14.9	141	633	303	385	50%

Accessories

Cat. No.	Part No.	Description
2708322	347019-01	Motor Protection Device SE-B1 (Replaces INT69VS7-11)
2707879	347334-03	OLC-K1 Electronic Oil Monitoring Control
2708326	347023-03	Discharge Gas Temperature Control Device (sensor)
2709475	347600-47	Capacity Control Solenoid Valve Assembly
2708331	343309-01	Capacity Control Solenoid Coil Only 240 Volt 50 Hz
2708328	302355-53	Capacity Control Head - Complete
2711054	343021-27	Cooling Fan Assembly
	347051-01	Protection Device Kit and Harness (CM-RC-01)

Semi-Hermetic Compressors



Bitzer

Ecoline Series 3 Phase 415V 50Hz – Motor Version 1 and 2

Inclusions: Compressor accessible hermetic (internal motor), oil charge BSE-32 ester oil, 1 x suction and 1 x discharge shut off valve, 4 x vibration dampers, built in thermistor (motor temperature sensors complete with electronic control unit), terminal box enclosure class IP65, crankcase heater fitted, oil pressure switch MP54, differential pressure relief valve, part winding and oil pump as standard. All 4 and 6 cylinder models supplied with one cylinder head ready for capacity control solenoid valve and coil.

Cat. No.	Part No.	Model No.	Series	No of Cyls.	Elect. Supply Volts/Phase	Nom. HP	Displ. m ³ /hr	Connections		Oil Charge l	Current Amps Maximum Operating	Weight kg	Dimensions mm			Optional Capacity Control
								Suct.	Disch.				L	W	H	
2707661	J04-371	4JE-15Y	BE5	4	415/3	15	63.5	1 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.0	30.8	190	688	456	452	50%
2707662	J04-372	4JE-22Y	BE5	4	415/3	22	63.5	1 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.0	37.2	190	688	456	452	50%
2707663	J04-373	4HE-18Y	BE5	4	415/3	18	73.7	1 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.0	36.7	190	688	456	452	50%
2707664	J04-374	4HE-25Y	BE5	4	415/3	25	73.7	2 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.0	44.0	194	737	456	452	50%
2707665	J04-375	4GE-23Y	BE5	4	415/3	23	84.6	2 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.5	43.9	192	706	456	452	50%
2707666	J04-376	4GE-30Y	BE5	4	415/3	30	84.6	2 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.5	51.2	206	737	456	452	50%
2707668	J04-377	4FE-28Y	BE5	4	415/3	28	101.8	2 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.5	52.8	207	737	456	452	50%
2707669	J04-335	4FE-35Y	BE5	4	415/3	35	101.8	2 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.5	62.1	207	737	456	452	50%
2707670	J04-381	6JE-25Y	BE6	6	415/3	25	95.3	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	46.4	228	766	503	447	33% or 66%
2707671	J04-382	6JE-33Y	BE6	6	415/3	33	95.3	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	53.2	231	797	503	447	33% or 66%
2707672	J04-383	6HE-28Y	BE6	6	415/3	28	110.5	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	53.2	228	766	503	447	33% or 66%
2707673	J04-384	6HE-35Y	BE6	6	415/3	35	110.5	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	64.4	235	797	503	447	33% or 66%
2707674	J04-385	6GE-34Y	BE6	6	415/3	34	126.8	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	65.5	228	766	503	447	33% or 66%
2707675	J04-386	6GE-40Y	BE6	6	415/3	40	126.8	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	73.9	238	797	503	447	33% or 66%
2707676	J04-387	6FE-44Y	BE6	6	415/3	44	151.6	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	83.2	241	790	503	447	33% or 66%
2707677	J04-334	6FE-50Y	BE6	6	415/3	50	151.6	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	96.2	241	790	503	447	33% or 66%

Ecoline Series 3 Phase 415V 50Hz – Motor Version 3

Inclusions: Compressor accessible hermetic (internal motor), oil charge BSE-32 ester oil, 1 x suction and 1 x discharge shut off valves, 4 x vibration dampers, built in thermistor (motor temperature sensors complete with electronic control unit), terminal box enclosure class IP65, crankcase heater fitted, differential pressure relief valve, part winding, oil pump and Delta PII oil pressure switch as standard.

All 4 and 6 cylinder models supplied with one cylinder head ready for capacity control solenoid valve and coil.

Cat. No.	Part No.	Model No.	Series	No of Cyls.	Elect. Supply Volts / Phase	Nom. HP	Displ. m ³ /hr	Connections		Oil Charge: l	Current: Amps Maximum Operating	Weight kg	Dimensions: mm			Optional Capacity Control
								Suct.	Disch.				L	W	H	
2707679	J04-326	4JE-13Y	BE5	4	415/3	13	63.5	1 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.0	18.8	179	688	456	452	50%
2707680	J04-327	4HE-15Y	BE5	4	415/3	15	73.7	1 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.0	21.4	183	688	456	452	50%
2707681	J04-328	4GE-20Y	BE5	4	415/3	20	84.6	2 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.5	24.6	192	706	456	452	50%
2707682	J04-329	4FE-25Y	BE5	4	415/3	25	101.8	2 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	4.5	30.5	196	737	456	452	50%
2707683	J04-330	6JE-22Y	BE6	6	415/3	22	95.3	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	26.6	213	766	503	447	33% or 66%
2707684	J04-331	6HE-25Y	BE6	6	415/3	25	110.5	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	31.3	224	766	503	447	33% or 66%
2707685	J04-332	6GE-30Y	BE6	6	415/3	30	126.8	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	38.0	228	766	503	447	33% or 66%
2707686	J04-333	6FE-40Y	BE6	6	415/3	40	151.6	2 $\frac{1}{8}$ "	1 $\frac{3}{8}$ "	4.75	48.5	238	790	503	447	33% or 66%

Semi-Hermetic Compressors



Bitzer

Ecoline Series

Accessories



Cat. No.	Part No.	Description		Suits Series
2708322	347019-01	Motor Protection Device	SE-B1 (Replaces INT69VS7-11)	
2708325	347028-01	Motor Protection Device	SE-B2 (Replaces INT69VS)	
2707877	347319-11	Delta PII Oil Pressure Switch		
2708326	347023-03	Discharge Gas Temperature Control Device (sensor)		
2709475	347600-01	Capacity Control Solenoid Valve Assembly		4VES-4NES
2708327	347600-03	Capacity Control Solenoid Valve Assembly		4JE-6FE
2708331	343309-02	Capacity Control Solenoid Coil Only 240 Volt 50 Hz		
2708328	302355-12	Capacity Control Head - Complete		4VES-4NES
2708329	302355-20	Capacity Control Head - Complete		4JE-6FE
2711056	343021-04	Cooling Fan Assembly		4JE-4FE
2711057	343021-05	Cooling Fan Assembly		6JE-6FE

Ecoline Series 3 Phase 415V 50Hz – Industrial Compressors

Inclusions: Compressor accessible hermetic (internal motor), oil charge BSE-32 ester oil, 1 x suction and 1 x discharge shut off valves, 4 x vibration dampers, built in thermistor (motor temperature sensors complete with electronic control unit), terminal box enclosure class IP54, crankcase heater fitted, differential pressure relief valve, part Winding and oil pump as standard. All 8 cylinder models supplied with two cylinder heads with built in pulsation mufflers and two cylinder heads ready for capacity control solenoid valve and coil.

Cat. No.	Part No.	Model No.	Series	No of Cyls.	Elect. Supply Volts/Phase	Nom. HP	Displ. m ³ /hr	Connections		Oil Charge l	Current Amps Maximum Operating	Weight kg	Dimensions mm			Optional Capacity Control
								Suct.	Disch.				L	W	H	
2707687	J04-391	8GE -60Y	CE8	8	415/3	60	185	3½"	1½"	5.0	113.0	350	886	485	538	50% or 75%
2707688	J04-392	8FE -70Y	CE8	8	415/3	70	221	3½"	2½"	5.0	139.0	374	902	485	538	50% or 75%

Semi-Hermetic Compressors

Copeland®

DWM Copeland

Standard Series



The Copeland standard K, L and S-series compressors have a range from 0.5 to 70hp for use with R404A, R507, R407C, R134a and R22 refrigerants, offering broad application flexibility. Compressors are charged with Polyolester oil and are supplied with an internal oil pump, shut off valves and mounting kits along with non-active capacity control on 4, 6 and 8 cylinder models. Separate accessories include oil switches, crankcase heaters, capacity control kits, head cooling fans and single phase electric kits.

Cat. No.	Model No.	No of Cyls.	Elect. Supply Volts/Phase	Nom. HP	Displ. m ³ /hr	Connections		Oil Charge l	Current - Amps		Weight kg	Dimensions mm				Optional Capacity Control	Oil Switch Req.
						Suct.	Disch.		Max. Operating	Locked Rotor		L	W	H	Bolt Holes		

K Series

2709625	DKJP-10X-CAG	2	240/1	1	5.1	5/8"	1/2"	0.7	7.1	32.4	41	365	235	280	208 x 162	N/A	N
2709626	DKJP-10X-EWL	2	415/3	1	5.1	5/8"	1/2"	0.7	3.2	15.5	41	365	235	280	208 x 162	N/A	N
2709627	DKSJP-10X-CAG	2	240/1	1	6.3	5/8"	1/2"	0.7	6.7	32.4	42	365	235	280	208 x 162	N/A	N
2709628	DKSJP-15X-CAG	2	240/1	1.5	6.3	5/8"	1/2"	0.7	9.0	43.0	42	365	235	280	208 x 162	N/A	N
2709629	DKSJP-15X-EWL	2	415/3	1.5	6.3	5/8"	1/2"	0.7	3.4	20.4	42	365	235	280	208 x 162	N/A	N
2709630	DKLP-15X-CAG	2	240/1	1.5	7.4	5/8"	1/2"	0.7	8.4	43.0	41	365	235	280	208 x 162	N/A	N
2709631	DKLP-15X-EWL	2	415/3	1.5	7.4	5/8"	1/2"	0.7	3.4	20.4	41	365	235	280	208 x 162	N/A	N
2709632	DKSLP-20X-EWL	2	415/3	2	9.1	5/8"	1/2"	0.7	4.7	20.4	42	365	235	280	208 x 162	N/A	N

L Series

2709640	DLEP-20X-EWL	2	415/3	2	9.9	7/8"	5/8"	2.0	5.7	37.6	84	470	330	385	295 x 279	N/A	N
2709633	DLFP-20X-EWL	2	415/3	2	12.9	7/8"	5/8"	2.0	4.5	37.6	86	470	330	385	295 x 279	N/A	N
2709641	DLFP-30X-EWL	2	415/3	3	12.9	7/8"	5/8"	2.0	7.2	53.0	53.0	470	330	385	295 x 279	N/A	N
2709634	DLLP-30X-EWL	2	415/3	3	18.2	1 1/8"	5/8"	2.0	7.3	53.0	91	470	330	385	295 x 279	N/A	N
2709642	DLLP-40X-EWL	2	415/3	4	18.2	1 1/8"	5/8"	2.0	9.5	68.5	93	470	330	385	295 x 279	N/A	N
2709635	DLSP-40X-EWL	2	415/3	4	22.5	1 1/8"	5/8"	2.0	8.9	68.5	82	470	330	385	295 x 279	N/A	N

S Series

2709636	D2SA-45X-EWL	2	415/3	4.5	22.4	1 1/8"	7/8"	2.4	11.4	68.5	95	560	330	395	295 x 279	N/A	Y
2709643	D2SA-55X-EWL	2	415/3	5.5	22.4	1 1/8"	7/8"	2.4	13.1	67.3	95	560	330	395	295 x 279	N/A	Y
2709637	D2SC-55X-EWL	2	415/3	5.5	26.8	1 1/8"	7/8"	2.4	13.1	74.1	96	560	330	395	295 x 279	N/A	Y
2709644	D2SC-65X-EWL	2	415/3	6.5	26.9	1 1/8"	7/8"	2.4	16.2	85.3	96	560	330	395	295 x 279	N/A	Y
2709638	D2SK-65X-EWL	2	415/3	6.5	31.2	1 1/8"	7/8"	2.4	16.4	85.3	97	560	330	395	295 x 279	N/A	Y
2709639	D3SA-75X-AWM	3	415/3	7.5	32.2	1 3/8"	1 1/8"	3.7	17.9	82.0	174	655	370	480	381 x 305	N/A	Y
2709645	D3SC-75X-AWM	3	415/3	7.5	38.0	1 3/8"	1 1/8"	3.7	18.7	82.0	174	655	370	480	381 x 305	N/A	Y
2709646	D3SC-100X-AWM	3	415/3	10	38.0	1 3/8"	1 1/8"	3.7	21.6	106.0	174	655	370	480	381 x 305	N/A	Y
2709647	D3SS-100X-AWM	3	415/3	10	49.9	1 3/8"	1 1/8"	3.7	26.0	109.0	178	680	370	480	381 x 305	N/A	Y
2709648	D3SS-150X-AWM	3	415/3	15	49.9	1 3/8"	1 1/8"	3.7	30.2	125.0	177	680	370	480	381 x 305	N/A	Y
2709650	D8SH-370X-AWM	8	415/3	37	151.0	2 5/8"	1 5/8"	7.7	70.9	365.0	335	835	475	610	457 x 305	25%	Y
2709651	D8SH-500X-AWM	8	415/3	50	151.0	2 5/8"	1 5/8"	7.7	95.2	458.0	347	835	590	610	457 x 305	25% or 50%	Y
2709652	D8SJ-450X-AWM	8	415/3	45	181.0	3 1/8"	1 5/8"	7.7	90.8	458.0	366	835	625	670	457 x 305	25%	Y
2709653	D8SJ-600X-AWM	8	415/3	60	181.0	3 1/8"	1 5/8"	7.7	102.0	500.0	367	835	625	670	457 x 305	25% or 50%	Y
2709654	D8SK-700X-AWM	8	415/3	70	210.0	3 1/8"	2 1/8"	7.7	127.0	574.0	376	904	541	670	457 x 305	25% or 50%	Y

Standard ordering package

- Compressor
- Oil Switch
- Crankcase Heater
- Electric Kit (single phase only)

Actrol Sales and Application Engineers are able to provide selection advice for replacement applications.

Semi-Hermetic Compressors

Copeland®

DWM Copeland

Discus Series



The Copeland Discus series of compressors incorporate the double walled Discus valve plate. The special design of the valve disk reduces clearance volume and may provide a considerable increase in performance, particularly in the low temperature range. The Discus series have a range from 0.5 to 70hp for use with R404A, R507, R407C, R134a and R22 refrigerants, offering broad application flexibility. Compressors are charged with Polyolester oil and are supplied with an internal oil pump, shut off valves and mounting kits along with non-active capacity control on 4, 6 and 8 cylinder models. Separate accessories include oil switches, crankcase heaters, capacity control kits and head cooling fans.

Cat. No.	Model No.	No of Cyls.	Elect. Supply Volts/Phase	Nom. HP	Displ. m ³ /hr	Connections		Oil Charge l	Current Amps		Weight kg	Dimensions mm				Opt. Capacity Cont.	Oil Switch Req.
						Suct.	Disch.		Max. Operating	Locked Rotor		L	W	H	Bolt Holes		
2709722	D2DD-050X-AWM	2	415/3	5	19.3	1 ³ / ₈ "	7 ⁷ / ₈ "	2.3	10.3	55.0	141	590	330	470	295 x 279	N/A	Y
2709723	D2DL-040X-AWM	2	415/3	4	23.7	1 ³ / ₈ "	7 ⁷ / ₈ "	2.3	10.0	55.0	140	590	330	470	295 x 279	N/A	Y
2709724	D2DL-075X-AWM	2	415/3	7.5	23.7	1 ³ / ₈ "	1 ¹ / ₈ "	2.3	13.0	70.0	145	590	330	470	295 x 279	N/A	Y
2709725	D2DB-050X-AWM	2	415/3	5	28.0	1 ³ / ₈ "	7 ⁷ / ₈ "	2.3	11.5	55.0	140	590	330	470	295 x 279	N/A	Y
2709726	D2DB-075X-AWM	2	415/3	7.5	28.0	1 ³ / ₈ "	1 ¹ / ₈ "	2.3	15.4	70.0	145	590	330	470	295 x 279	N/A	Y
2709727	D3DA5-050X-AWM	3	415/3	5	32.2	1 ³ / ₈ "	7 ⁷ / ₈ "	3.7	12.0	55.0	157	655	370	480	381 x 305	N/A	Y
2709728	D3DA5-075X-AWM	3	415/3	7.5	32.2	1 ³ / ₈ "	1 ¹ / ₈ "	3.7	17.5	106.0	163	680	370	480	381 x 305	N/A	Y
2709729	D3DC5-075X-AWM	3	415/3	7.5	38.0	1 ³ / ₈ "	1 ¹ / ₈ "	3.7	14.0	70.0	161	655	370	480	381 x 305	N/A	Y
2709730	D3DC5-100X-AWM	3	415/3	10	38.0	1 ³ / ₈ "	1 ¹ / ₈ "	3.7	20.5	121.0	175	680	370	480	381 x 305	N/A	Y
2709731	D3DS5-100X-AWM	3	415/3	10	49.9	1 ³ / ₈ "	1 ¹ / ₈ "	3.7	19.5	121.0	173	680	370	480	381 x 305	N/A	Y
2709732	D3DS5-150X-AWM	3	415/3	15	49.9	1 ⁵ / ₈ "	1 ¹ / ₈ "	3.7	29.0	129.0	178	710	370	490	381 x 305	N/A	Y
2709733	D8DL-370X-AWM	8	415/3	37	151.0	2 ⁵ / ₈ "	1 ⁵ / ₈ "	7.7	58.5	365.0	344	835	475	850	457 x 305	25%	Y
2709734	D8DT-450X-AWM	8	415/3	45	181.0	3 ¹ / ₈ "	1 ⁵ / ₈ "	7.7	69.0	458.0	356	835	475	850	457 x 305	25%	Y
2709735	D8DH-500X-AWM	8	415/3	50	151.0	2 ⁵ / ₈ "	1 ⁵ / ₈ "	7.7	88.2	458.0	351	835	590	670	457 x 305	25% or 50%	Y
2709736	D8DJ-600X-AWM	8	415/3	60	181.0	3 ¹ / ₈ "	1 ⁵ / ₈ "	7.7	104.0	500.0	352	835	590	670	457 x 305	25% or 50%	Y

Standard ordering package

- Compressor
- Oil Switch
- Crankcase Heater
- Electrics Kit (single phase only)

Actrol Sales and Application Engineers are able to provide selection advice for replacement applications.

Semi-Hermetic Compressors



DWM Copeland

Accessories – Oil Pressure Switches

The monitoring of the force feed lubrication system with an oil pressure control is compulsory for Discus and S – Series compressors.



Cat. No.	Part No.	Description	Suits Model
2707883	3164918	OPS2 Oil Pressure Switch	All Copeland Semi-Hermetic Compressors with Oil Pumps
2707884	3168329	OPS2 Oil Pressure Switch and Sensor Kit	All Copeland Semi-Hermetic Compressors with Oil Pumps

Crankcase Heaters

In many cases it is necessary to heat the crankcase to avoid excessive refrigerant dissolving in the oil during standstill.

Cat. No.	Part No.	Description	Watts	Suits Model
2709656	2948773	Internal Crankcase Heater	27	DK
2709657	2834369	Internal Crankcase Heater	70	DL,DLHA,D2S
2709658	2834198	Internal Crankcase Heater	70	D2D, D3S, D3D
2709659	6610169	Internal Crankcase Heater	100	D4S, D6SA, D6SF, D6SH, D6SL, D4D, D6DH, D6DL
2709660	2832205	Internal Crankcase Heater	200	D6ST, D6SJ, D6SK, D6SU, D6DJ, D6DT, D8S, D8D

Single Phase Electrics Kits

It is mandatory to fit new electrics kits when installing new single phase compressors.

Cat. No.	Part No.	Description	Suits Model
2711136	2972030	Single Phase Electrics Kit	DKJ, DKSJ10X
2711137	3165080	Single Phase Electrics Kit	DKSJ15X, DKL15X

Capacity Control

Capacity control kits consist of a solenoid valve which is fitted to suitable cylinder heads on 4, 6 and 8 cylinder compressors which provides capacity control and “unloaded” starts.



Cat. No.	Part No.	Description	Suits Model
2708301	2835339	Capacity Control Kit Includes 1 each of Solenoid Valve, Coil and Gasket	All Copeland Semi-Hermetic with Capacity Control Heads Fitted
2711311	ASC2	Replacement Solenoid Coil	All Copeland Semi-Hermetic with Capacity Control Heads Fitted

Head Cooling Fans

Head cooling fans are used to provide additional cooling.

Cat. No.	Part No.	Description	Suits Model
2711000	2998245	Head Cooling Fan Less Brackets	
2711001	3117229	Head Cooling Fan Bracket Kit	D2S
	2988119	Head Cooling Fan Bracket Kit	D2D
2711002	2988095	Head Cooling Fan Bracket Kit	D3S, D3D
2711003	2986260	Head Cooling Fan Bracket Kit	D4S
	2986248	Head Cooling Fan Bracket Kit	D4D
2711004	2987616	Head Cooling Fan Bracket Kit	D6SA, D6SF, D6SH, D6SL, D6ST
	2830710	Head Cooling Fan Bracket Kit	D6SJ
	2987638	Head Cooling Fan Bracket Kit	D6D
2711005	2986282	Head Cooling Fan Bracket Kit	D8SH
	2986293	Head Cooling Fan Bracket Kit	D8SJ, D8SK
	2987649	Head Cooling Fan Bracket Kit	D8D

Motor Protection Module

Cat. No.	Part No.	Description	Suits
2711134	3199825	INT69-2 Motor Protection Module	Semi-hermetic compressors, DK, DL, D2, D3, D9 series
2711135	3133638	INT69-2 Motor Protection Module	Semi-hermetic compressors, D4, D6, D8 series

Semi-Hermetic Compressors

Copeland®

Copeland

Stream Series

The Stream semi-hermetic compressor range comprises innovations such as multi refrigerant capability and CoreSense Diagnostics for advanced protection and preventive maintenance. The standard stream range is suitable for applications using inverter technology for capacity modulation. Sound shell technology makes Stream the quietest compressor on the market for sound critical applications.



Features

- Motor Temp Protection
- Oil Protection
- Missing Phase or Single Phasing Protection
- Low Voltage Protection
- Voltage Imbalance Protection
- Discharge Temperature Protection
- Locked Rotor Protection
- Compressor Power Consumption Measurement
- Modbus® Communication to system controller
- Compressor Asset and Runtime information
- Failure Alarm History
- Status LEDs to indicate the warning, trip and lockout alarms
- Crank Case Heater Control

Cat. No.	Model No.	No of Cyls	Elect. Supply Volts/Phase	Nom. HP	Displ. m³/h	Nominal Capacity kW			Weight kg	Footprint mm
						Med Temp R404A	Med Temp R134a	Low Temp R404A		
2709737	4MF1-13X-AWMD/D	4	415/3	13	62	33.4	18.2	11.4	177	381 x 305
2709738	4MA1-22X-AWMD/D	4	415/3	22	62	33.6	19.1	10.8	178	381 x 305
2709739	4ML1-15X-AWMD/D	4	415/3	15	71	38.7	22.1	13.2	180	381 x 305
2709740	4MH1-25X-AWMD/D	4	415/3	25	71	38.8	21.4	12.5	187	381 x 305
2709741	4MM1-20X-AWMD/D	4	415/3	20	78	42.6	24.7	14.7	182	381 x 305
2709742	4MI1-30X-AWMD/D	4	415/3	30	78	42.8	23.9	13.9	188	381 x 305
2709743	4MT1-22X-AWMD/D	4	415/3	22	88	47.8	27.7	16.5	183	381 x 305
2709744	4MJ1-33X-AWMD/D	4	415/3	33	88	48.0	26.8	16.0	190	381 x 305
2709745	4MU1-25X-AWMD/D	4	415/3	25	99	54.2	31.2	18.7	186	381 x 305
2709746	4MK1-35X-AWMD/D	4	415/3	35	99	54.4	30.1	17.7	202	381 x 305
2709747	6MM1-30X-AWMD/D	6	415/3	30	120	61.8	36.9	21.6	215	381 x 305
2709748	6MI1-40X-AWMD/D	6	415/3	40	120	64.2	35.3	20.3	219	381 x 305
2709749	6MT1-35X-AWMD/D	6	415/3	35	135	70.4	41.3	25.1	221	381 x 305
2709750	6MJ1-45X-AWMD/D	6	415/3	45	135	72.4	40.4	23.6	223	381 x 305
2709751	6MU1-40X-AWMD/D	6	415/3	40	153	79.8	46.3	28.4	225	381 x 305
2709752	6MK1-50X-AWMD/D	6	415/3	50	153	82.1	45.3	26.6	230	381 x 305

Open Drive Compressors



Bitzer

Belt Driven Nos. 1 to 6

Inclusions: Compressor open drive belt driven, 1 x flywheel, oil charge B5 oil, 1 x suction and 1 x discharge shut off valves.



Cat. No.	Part No.	Model No.	Flywheel Incl.
2708184	J02-003	No 1	Y
2708185	J02-004	No 2	Y
2708186	J02-005	No 3	Y
2708187	J02-006	No 4	Y
2708188	J02-007	No 5	Y
2708189	J02-008	No 6	Y

Belt Driven Nos. 2T.2 to 6F.2

Inclusions: Compressor open drive belt driven, 1 x flywheel, oil charge B5 oil, 1 x suction and 1 x discharge shut off valves, crankcase heater, oil pressure switch MP54.

Note: Model No. 6F.2 is direct drive only – flywheel is not included



Cat. No.	Part No.	Model No.	Flywheel Incl.
2708190	J02-002	2T.2S	Y
2708191	J02-001	2N.2S	Y
2708192	J03-005	4T.2S	Y
2708193	J03-004	4P.2S	Y
2708194	J03-003	4N.2S	Y
2708195	J03-002	4H.2S	Y
2708196	J03-001	4G.2S	Y
2708197	J03-008	6H.2S	Y
2708198	J03-007	6G.2S	Y
2708199	J03-006	6F.2	N

Cylinder Management



Flexibility meets accountability

Want to be able to track your cylinder fleet easily and accurately? The Flexitrak cylinder management tool will do just that. After shadowing techs, sitting down with administrators and talking to business owners, we have developed a technician-focused app that will help you not only track, but also measure and transfer your cylinders in one complete management tool.

Here are some of the handy features you'll enjoy with the all-new Flexitrak app.



Transfer cylinders

Transfer a cylinder between techs, clearly passing the responsibility from one to another. You will be notified of the transfer too, so no more arguing over who should have what.



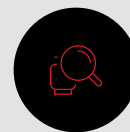
Edit weight

Measure and track your refrigerant. Used 3kgs of R427A at JOB 1234? Punch this in, so you know you have 7kgs left in your cylinder and remember where it went.



My cylinders

Have your techs manage their individual fleet in real time so they have more control over their stock.



View company fleet

Need some R22 but don't want to go and buy a whole 10kgs? See your full company fleet and who's holding what. Give your workmates a call and save time travelling to a branch.

Track.
Measure.
Transfer.



Download the new
Flexitrak app now



Open Condensing Units



Tecumseh



L'Unite Hermetique – HTA Condensing Unit

Tecumseh HTA condensing units provide a robust energy efficient refrigeration solution designed to handle Australia's extreme ambient temperatures. Installation is quick and easy with copper tails on all Rotalock valves and fully wired single phase fan motors on all models. All CAJ, FH2 and TAG models include auto reset HP/LP controls, and all FH2 and TAG models include an oil sight glass.



Features

- Tecumseh Hermetic compressor
- Large HTA condenser
- Factory wired single phase fan motor/s
- Liquid receiver
- Copper tails on all Rotalock valves
- HP/LP control on CAJ, FH2 and TAG models
- Oil sight glass on FH2, and TAG models
- Additional fully galvanized and powder coated unit cover available
- Crankcase heater on FH2 and TAG models

Medium Temperature Applications – R404A/R448A/R452A

Product Code	Unit Model	Compressor							Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Compressor Product Code	Compressor Model	Displ. cm ³ /rev	Suct/Disch	Nominal HP	MOC Amps	Volts/Phase	Quantity/Diameter mm	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
2709824	AET4425ZHR-FZ	2708765	AE4425Z-FZ1A	4.24	1/4 + 3/16	1/8	1.96	240/1	1 x 200	0.40	410	240/1	0.6	0.75
9507070	AET4430ZHR-FZ	9507031	AE4430Z-FZ1A	5.16	1/4 + 3/16	1/4	2.33	240/1	1 x 250	0.40	940	240/1	0.7	0.75
9507071	AET4440ZHR-FZ	9507032	AE4440Z-FZ1A	6.69	3/8 + 1/4	1/8	3	240/1	1 x 250	0.40	940	240/1	0.8	0.75
9507010	AET4450ZHR-FZ	9507000	AE4450Z-FZ1A	8.85	3/8 + 1/4	3/8	3.89	240/1	1 x 300	0.62	1400	240/1	1.5	0.75
9507011	AET4460ZHR-FZ	9507001	AE4460Z-FZ3C	10.33	3/8 + 1/4	1/2	4.75	240/1	1 x 300	0.62	1400	240/1	1.5	0.75
9507012	AET4470ZHR-FZ	9507002	AE4470Z-FZ3C	12.01	3/8 + 1/4	1/2	4.28	240/1	1 x 300	0.62	1400	240/1	1.7	0.75
3500009	CAJT9480ZMHR-FZ-1	3500025	CAJ9480Z-FZ	15.2	1/2 + 5/16	5/8	5.17	240/1	1 x 300	0.62	1400	240/1	1.7	2.35
3500010	CAJT9510ZMHR-FZ-1	3500026	CAJ9510Z-FZ	18.3	5/8 + 5/16	1	6.48	240/1	1 x 300	0.62	1400	240/1	2.1	2.35
3500011	CAJT9513ZMHR-FZ-3	3500027	CAJ9513Z-FZ	24.2	5/8 + 5/16	1 1/8	8.14	240/1	1 x 350	0.62	2285	240/1	3.4	2.35
3500012	CAJT4517ZHR-FZ-3	3500028	CAJ4517Z-FZ	25.9	5/8 + 3/8	1 1/4	9.04	240/1	1 x 350	0.62	2285	240/1	3.4	2.35
3500013	TAJT4517ZHR-TZ-3	3500029	TAJ4517Z-FZ	25.9	5/8 + 3/8	1 1/4	3.58	415/3	1 x 350	0.62	2285	240/1	3.4	2.35
3500014	CAJT4519ZHR-FZ-3	3500030	CAJ4519Z-FZ	34.5	5/8 + 3/8	1 1/2	12	240/1	1 x 400	0.82	3700	240/1	4.5	6.00
3500015	TAJT4519ZHR-TZ-3	3500031	TAJ4519Z-FZ	34.5	5/8 + 3/8	1 1/2	4.95	415/3	1 x 400	0.82	3700	240/1	4.5	6.00
3505282	FHT4524ZHR-XC	3501931	FH4524Z-XC	43.5	5/8 + 1/2	2	12.4	240/1	1 x 400	0.82	3700	240/1	5.3	6.00
3505275	FHT4524ZHR-XG	3501932	FH4524Z-XG	43.5	5/8 + 1/2	2	4.29	415/3	1 x 400	0.82	3700	240/1	5.3	6.00
3505283	FHT4532ZHR-XC	3501933	FH4532Z-XC	56.6	7/8 + 1/2	2 1/2	14.1	240/1	2 x 350	1.20	2285	240/1	6.5	6.00
3505276	FHT4532ZHR-XG	3501934	FH4532Z-XG	56.6	7/8 + 1/2	2 1/2	4.71	415/3	2 x 350	1.20	2285	240/1	6.5	6.00
3505284	FHT4538ZHR-XC	3501935	FH4538Z-XC	63.0	7/8 + 1/2	3	18.6	240/1	2 x 400	1.64	3700	240/1	10.7	6.00
3505277	FHT4538ZHR-XG	3501936	FH4538Z-XG	63.0	7/8 + 1/2	3	6.83	415/3	2 x 400	1.64	3700	240/1	10.7	6.00
2709892	TAGT4546ZHR-2	9507040	TAG4546Z-V	90.2	7/8 + 5/8	4	8.53	415/3	2 x 400	1.64	3700	240/1	11.4	6.00
2709893	TAGT4553ZHR-2	9507042	TAG4553Z-V	100.7	7/8 + 5/8	4 1/2	9.69	415/3	2 x 400	1.64	3700	240/1	11.4	6.00
2709894	TAGT4561ZHR-2	9507044	TAG4561Z-V	112.5	1 1/8 + 5/8	5	10.3	415/3	2 x 400	1.64	3700	240/1	11.4	9.50
2709895	TAGT4568ZHR-2	9507046	TAG4568Z-V	124.4	1 1/8 + 5/8	6	11.7	415/3	2 x 400	1.64	3700	240/1	12.4	9.50
2709896	TAGT4573ZHR-2	9507048	TAG4573Z-V	134.8	1 1/8 + 5/8	6 1/2	13.6	415/3	2 x 400	1.64	3700	240/1	12.4	9.50

Open Condensing Units



Tecumseh



L'Unite Hermetique – HTA Condensing Unit

Medium Temperature Applications – R404A/R448A/R452A

Dimension Properties



Product Code	Unit Model	Unit Connections	Weight	Sound Power Level	Dimensions		
		Suct/Liq	kg	dBA	L mm	W mm	H mm
2709824	AET4425ZHR-FZ	3/8 + 1/4	21	58	400	300	222
9507070	AET4430ZHR-FZ	3/8 + 1/4	24	65	485	330	300
9507071	AET4440ZHR-FZ	3/8 + 1/4	24	69	495	340	300
9507010	AET4450ZHR-FZ	3/8 + 1/4	26	70	480	425	340
9507011	AET4460ZHR-FZ	3/8 + 1/4	29	69	480	425	340
9507012	AET4470ZHR-FZ	3/8 + 1/4	30	69	480	425	340
3500009	CAJT9480ZMHR-FZ-1	1/2 + 1/4	42	69	480	425	340
3500010	CAJT9510ZMHR-FZ-1	5/8 + 3/8	43	70	475	610	390
3500011	CAJT9513ZMHR-FZ-3	5/8 + 3/8	45	76	475	610	440
3500012	CAJT4517ZHR-FZ-3	5/8 + 3/8	51	76	475	610	440
3500013	TAJT4517ZHR-TZ-3	5/8 + 3/8	51	76	475	610	440
3500014	CAJT4519ZHR-FZ-3	5/8 + 3/8	52	81	605	600	560
3500015	TAJT4519ZHR-TZ-3	5/8 + 3/8	52	81	605	600	560
3505282	FHT4524ZHR-XC	5/8 + 3/8	73	74	605	600	560
3505275	FHT4524ZHR-XG	5/8 + 3/8	73	74	605	600	560
3505283	FHT4532ZHR-XC	7/8 + 1/2	80	75	995	590	470
3505276	FHT4532ZHR-XG	7/8 + 1/2	78	76	995	590	470
3505284	FHT4538ZHR-XC	7/8 + 1/2	89	81	1075	590	565
3505277	FHT4538ZHR-XG	7/8 + 1/2	89	81	1075	590	565
2709892	TAGT4546ZHR-2	7/8 + 5/8	100	86	1075	590	565
2709893	TAGT4553ZHR-2	7/8 + 5/8	101	85	1075	590	565
2709894	TAGT4561ZHR-2	1 1/8 + 5/8	101	86	1075	590	565
2709895	TAGT4568ZHR-2	1 1/8 + 5/8	116	84	1075	590	565
2709896	TAGT4573ZHR-2	1 1/8 + 5/8	116	85	1075	590	565

Open Condensing Units



Tecumseh



L'Unite Hermetique – HTA Condensing Unit

Medium Temperature Applications – R404A/R448A/R452A



Product Code	Model Number	Ambient Temp. °C	Capacity Watts														
			Evaporating Temperature °C														
			R404A					R448A					R452A				
			-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10
2709824	AET4425ZHR-FZ	30	378	457	544	640	742	363	448	542	647	762	373	455	545	643	750
		32	364	441	525	616	715	350	432	524	626	737	360	438	525	620	722
		38	324	392	466	547	633	313	387	469	561	662	319	389	466	550	641
		43	291	351	417	489	566	282	350	425	509		286	348	417	492	574
9507070	AET4430ZHR-FZ	30	471	569	677	795	921	453	557	673	802	943	466	567	678	800	931
		32	456	551	655	768	889	439	539	652	777	913	451	548	655	772	899
		38	410	494	586	685	792	395	486	588	700	823	404	491	586	689	801
		43	370	445	527	615	709	358	441	534	636	747	363	441	526	618	718
9507071	AET4440ZHR-FZ	30	624	748	883	1028	1183	599	731	879	1040	1215	616	743	883	1033	1195
		32	602	722	852	992	1140	579	707	850	1006	1176	594	717	852	997	1152
		38	537	644	759	882	1013	518	635	764	906	1060	529	639	758	887	1025
		43	482	578	681	790	906	468	576	694	823		473	573	680	795	918
9507010	AET4450ZHR-FZ	30	836	998	1174	1362	1563	800	973	1163	1372	1596	825	991	1172	1368	1576
		32	808	964	1133	1315	1507	774	941	1126	1327	1545	796	957	1132	1320	1520
		38	723	862	1012	1171	1340	695	847	1014	1195	1392	710	854	1009	1176	1353
		43	650	776	909	1050	1199	629	768	921	1086	1265	638	767	906	1055	1213
9507011	AET4460ZHR-FZ	30	980	1153	1338	1536	1745	937	1124	1329	1553	1792	965	1143	1336	1542	1761
		32	948	1114	1293	1484	1684	907	1088	1288	1504	1737	933	1104	1290	1489	1699
		38	849	997	1155	1323	1499	816	982	1162	1358	1569	834	987	1152	1328	1515
		43	765	898	1039	1187	1342		893	1058	1237		749	888	1036	1193	
9507012	AET4470ZHR-FZ	30	1174	1384	1610	1852	2110	1122	1348	1596	1867	2160	1158	1374	1608	1860	2130
		32	1138	1341	1559	1793	2041	1089	1308	1549	1812	2097	1121	1330	1557	1800	2060
		38	1029	1211	1405	1612	1831	989	1190	1410	1649	1908	1011	1199	1402	1619	1851
		43	936	1100	1274	1458	1653	906	1092	1294	1514		918	1089	1272	1467	1674
3500009	CAJT9480ZMHR-FZ-1	30	1454	1759	2100	2478	2891	1384	1706	2071	2480	2934	1434	1747	2098	2488	2917
		32	1403	1698	2027	2391	2790	1336	1648	2002	2399	2840	1382	1685	2024	2401	2816
		38	1250	1514	1809	2133	2489	1193	1477	1798	2159	2561	1228	1500	1804	2142	2513
		43	1122	1362	1627	1919	2238	1075	1337	1632	1963	2332	1100	1347	1622	1927	2263
3500010	CAJT9510ZMHR-FZ-1	30	1631	1938	2267	2616	2983	1564	1895	2257	2650	3069	1608	1923	2264	2627	3009
		32	1573	1869	2186	2521	2873	1510	1830	2181	2561	2967	1549	1854	2182	2531	2899
		38	1398	1661	1940	2235	2543	1348	1639	1956	2299	2666	1373	1645	1936	2244	2569
		43	1251	1486	1735	1995			1481	1771				1227	1471	1730	2006
3500011	CAJT9513ZMHR-FZ-3	30	2182	2635	3125	3648	4199	2090	2568	3096	3668	4284	2153	2616	3120	3660	4232
		32	2100	2538	3010	3514	4045	2012	2477	2988	3544	4141	2070	2518	3005	3526	4078
		38	1854	2246	2667	3114	3585	1782	2205	2669	3174	3716	1823	2225	2660	3125	3618
		43	1648	2003	2381	2782	3202	1593	1982	2408	2870	3368	1617	1981	2374	2793	3236
3500012	CAJT4517ZHR-FZ-3	30	2401	2859	3353	3881	4438	2295	2785	3324	3910	4540	2365	2836	3346	3894	4474
		32	2315	2757	3234	3743	4279	2214	2690	3213	3781	4393	2279	2733	3226	3755	4315
		38	2056	2452	2876	3326	3800	1975	2407	2882	3399	3954	2019	2427	2867	3338	3836
		43	1840	2197	2576	2978	3400	1778	2176	2611	3084		1803	2172	2568	2990	3438
3500013	TAJT4517ZHR-TZ-3	30	2394	2867	3373	3909	4472	2293	2797	3347	3942	4581	2360	2845	3367	3923	4510
		32	2304	2762	3251	3768	4311	2209	2699	3234	3812	4432	2270	2740	3244	3782	4349
		38	2032	2446	2884	3344	3826	1957	2407	2895	3423	3988	1998	2423	2876	3357	3864
		43	1805	2181	2576	2988	3419	1750	2166	2616	3101		1770	2158	2569	3002	3458
3500014	CAJT4519ZHR-FZ-3	30	3117	3723	4372	5060	5783	2986	3633	4339	5103	5921	3075	3696	4365	5079	5831
		32	3006	3592	4219	4881	5576	2882	3510	4196	4936	5729	2963	3564	4210	4898	5624
		38	2669	3195	3752	4338	4951	2569	3142	3765	4436	5154	2624	3165	3742	4353	4997
		43	2385	2860	3359	3880	4423	2311	2838	3408	4021		2340	2829	3348	3896	4472

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA Condensing Unit

Medium Temperature Applications – R404A/R448A/R452A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts														
			Evaporating Temperature °C														
			R404A					R448A					R452A				
			-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10
3500015	TAJT4519ZHR-TZ-3	30	3081	3663	4288	4951	5647	2946	3569	4250	4987	5776	3037	3635	4280	4968	5694
		32	2974	3538	4141	4780	5451	2847	3453	4114	4830	5596	2930	3510	4133	4797	5498
		38	2652	3161	3699	4266	4859	2550	3106	3710	4361	5058	2606	3131	3690	4283	4907
		43	2379	2842	3327	3834	4362	2303	2819	3376	3975		2333	2812	3318	3852	4412
3505282	FHT4524ZHR-XC	30	3659	4436	5275	6172	7121	3508	4330	5237	6224	7289	3607	4403	5265	6188	7168
		32	3508	4260	5071	5936	6851	3366	4165	5045	6004	7038	3455	4226	5059	5952	6900
		38	3063	3739	4463	5235	6050	2951	3680	4481	5355	6299	3006	3703	4452	5254	6105
		43	2700	3313	3966	4659	5391	2618	3289	4026	4829		2643	3278	3958	4684	5454
3505275	FHT4524ZHR-XG	30	3595	4377	5209	6083	6991	3462	4288	5186	6150	7174	3555	4354	5210	6114	7058
		32	3455	4214	5021	5868	6746	3330	4135	5011	5951	6948	3414	4190	5021	5898	6813
		38	3030	3722	4454	5217	6007	2932	3677	4486	5353	6273	2986	3696	4451	5246	6075
		43	2669	3306	3974	4669	5385	2598	3294	4048	4855		2623	3278	3971	4699	5455
3505283	FHT4532ZHR-XC	30	4499	5451	6485	7593	8770	4321	5331	6449	7673	8998	4442	5420	6482	7626	8844
		32	4328	5250	6250	7321	8458	4161	5143	6230	7421	8710	4269	5217	6246	7354	8533
		38	3820	4652	5549	6509	7527	3689	4589	5585	6676	7859	3755	4615	5545	6544	7609
		43	3402	4159	4971	5837	6756	3306	4141	5061	6070		3335	4122	4970	5879	6849
3505276	FHT4532ZHR-XG	30	4429	5348	6345	7413	8546	4247	5221	6298	7474	8744	4371	5314	6338	7437	8607
		32	4264	5153	6114	7144	8235	4091	5036	6081	7222	8454	4202	5115	6105	7167	8297
		38	3767	4563	5419	6334	7303	3626	4485	5434	6470	7591	3697	4519	5406	6356	7367
		43	3352	4071	4839	5657	6523	3244	4033	4902	5851	6879	3280	4026	4827	5684	6595
3505284	FHT4538ZHR-XC	30	5874	7089	8419	9860	11407	5589	6876	8310	9890	11614	5806	7053	8419	9903	11499
		32	5675	6852	8138	9530	11023	5401	6653	8046	9582	11258	5600	6810	8134	9570	11114
		38	5067	6130	7283	8527	9860	4834	5982	7255	8658	10191	4978	6077	7272	8564	9953
		43	4552	5519	6561	7681	8879	4364	5424	6598	7891	9304	4457	5462	6548	7720	8980
3505277	FHT4538ZHR-XG	30	5876	7101	8439	9886	11439	5621	6915	8352	9935	11661	5779	7027	8395	9880	11478
		32	5665	6853	8147	9546	11045	5422	6681	8079	9618	11296	5569	6780	8105	9542	11088
		38	5023	6100	7265	8519	9860	4822	5980	7261	8669	10205	4933	6032	7226	8519	9909
		43	4479	5465	6523	7656	8866	4323	5398	6583	7884	9304	4400	5403	6488	7660	8920
2709892	TAGT4546ZHR-2	30	6818	8435	10207	12122	14166	6554	8251	10148	12240	14516	6736	8387	10208	12188	14311
		32	6519	8084	9798	11651	13628	6270	7917	9761	11795	14011	6435	8034	9797	11713	13771
		38	5634	7042	8582	10245	12023	5434	6935	8617	10478	12513	5547	6987	8574	10302	12162
		43	4912	6189	7582	9087	10697	4761	6139	7687	9405	11289	4825	6132	7572	9143	10837
2709893	TAGT4553ZHR-2	30	7549	9268	11133	13129	15237	7259	9070	11077	13269	15632	7454	9209	11125	13187	15375
		32	7223	8884	10685	12610	14643	6950	8706	10652	12779	15073	7127	8823	10674	12665	14780
		38	6254	7745	9352	11066	12877	6035	7631	9398	11332	13422	6153	7678	9335	11116	13011
		43	5456	6807	8255	9796	11421	5291	6758	8379	10154		5355	6738	8237	9845	11557
2709894	TAGT4561ZHR-2	30	8326	10103	12008	14022	16121	8005	9892	11960	14196	16582	8217	10035	11996	14080	16266
		32	7985	9703	11543	13485	15509	7683	9515	11522	13693	16010	7875	9633	11528	13542	15653
		38	6966	8512	10156	11885	13685	6728	8401	10230	12208	14323	6853	8438	10138	11941	13832
		43	6120	7528	9012	10565	12179	5946	7492	9178	10999		6006	7453	8994	10623	
2709895	TAGT4568ZHR-2	30	9692	11673	13802	16061	18429	9323	11448	13788	16333	19067	9571	11606	13810	16163	18644
		32	9327	11251	13315	15503	17795	8981	11054	13337	15820	18488	9204	11182	13321	15603	18010
		38	8230	9980	11846	13818	15880	7964	9883	11993	14289	16759	8104	9908	11850	13919	16100
		43	7314	8917	10616	12405		7128	8920	10887			7188	8845	10621	12511	
2709896	TAGT4573ZHR-2	30	10271	12287	14435	16691	19033	9876	12048	14417	16969	19683	10132	12202	14422	16769	19220
		32	9880	11828	13900	16075	18331	9507	11616	13917	16395	19031	9738	11739	13884	16150	18516
		38	8696	10440	12285	14214	16214	8401	10323	12418	14676	17082	8547	10344	12262	14286	16401
		43	7702	9275	10929	12654			9254	11178				7551	9177	10906	

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA Condensing Unit

Medium Temperature Applications – R134a

Product Code	Unit Model	Compressor							Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Compressor Product Code	Compressor Model	Displ. cm ³ /rev	Suct/Disch	Nominal HP	MOC Amps	Volts/Phase	Quantity/Diameter mm	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
2709829	AET4425YHR-FZ	2708777	AE4425Y-FZ1A	6.69	1/4 + 3/16	1/6	1.84	240/1	1 x 200	0.40	410	240/1	0.6	0.75
9507060	AET4430YHR-FZ	9507020	AE4430Y-FZ1A	8.02	1/4 + 3/16	1/4	2.31	240/1	1 x 250	0.40	940	240/1	0.7	0.75
9507062	AET4440YHR-FZ	9507022	AE4440Y-FZ1A	10.33	5/16 + 1/4	1/8	2.89	240/1	1 x 250	0.40	940	240/1	0.8	0.75
9507061	AET4450YHR-FZ	9507021	AE4450Y-FZ1C	13.24	3/8 + 1/4	3/8	3.71	240/1	1 x 300	0.62	1400	240/1	1.5	0.75
9507063	AET4456YHR-FZ	9507023	AE4456Y-FZ1C	14.51	3/8 + 1/4	1/2	4.26	240/1	1 x 300	0.62	1400	240/1	10.5	0.75
9507064	AET4460YHR-FZ	2708780	AE4460Y-FZ3C	15.09	3/8 + 1/4	1/2	3.56	240/1	1 x 300	0.62	1400	240/1	1.7	0.75
3500005	CAJT4476YHR-FZ-1	3500021	CAJ4476Y-FZ	21.8	1/2 + 1/4	5/8	5.66	240/1	1 x 300	0.62	1400	240/1	1.7	1.50
3500006	CAJT4492YHR-FZ-3	3500022	CAJ4492Y-FZ	25.9	1/2 + 5/16	3/4	6.81	240/1	1 x 350	0.62	2285	240/1	3.4	2.35
3500007	CAJT4511YHR-FZ-3	3500023	CAJ4511Y-FZ	32.7	5/8 + 5/16	1	6.43	240/1	1 x 350	0.62	2285	240/1	3.4	2.35
2709845	TAJT4511YHR-TZ-3	3500024	TAJ4511Y-TZ	32.7	5/8 + 5/16	1	2.55	415/3	1 x 350	0.62	2285	240/1	3.4	2.35
3505271	FHT4518NHR-XC	3501928	FH4518N-XC	53.2	5/8 + 1/2	1 1/2	8.63	240/1	2 x 350	1.20	2285	240/1	5.7	6.00
3505281	FHT4525NHR-XC	3501929	FH4525N-XC	74.2	5/8 + 1/2	2	11.9	240/1	2 x 350	1.20	2285	240/1	6.5	6.00
3505272	FHT4525NHR-XG	3501930	FH4525N-XG	74.2	5/8 + 1/2	2	4.33	415/3	2 x 350	1.20	2285	240/1	6.5	6.00
2709848	TAGT4528YHR-2	2708795	TAG4528Y	90.2	7/8 + 5/8	2 1/2	5.28	415/3	2 x 400	1.64	3700	240/1	8.2	6.00
2709849	TAGT4534YHR-2	2708796	TAG4534Y	100.7	7/8 + 5/8	2 3/4	6.01	415/3	2 x 400	1.64	3700	240/1	8.2	6.00
2709850	TAGT4537YHR-2	2708797	TAG4537Y	112.5	7/8 + 5/8	3	6.53	415/3	2 x 400	1.64	3700	240/1	8.2	6.00
2709851	TAGT4543YHR-2	2708798	TAG4543Y	124.4	7/8 + 5/8	3 1/2	7.35	415/3	2 x 400	1.64	3700	240/1	10.7	9.50

Dimension Properties

Product Code	Unit Model	Unit Connections	Weight	Sound Power Level	Dimensions		
		Suct / Liq	kg	dBa	L mm	W mm	H mm
2709829	AET4425YHR-FZ	3/8 + 1/4	19	58	400	300	222
9507060	AET4430YHR-FZ	3/8 + 1/4	22	65	485	330	300
9507062	AET4440YHR-FZ	3/8 + 1/4	23	69	495	340	300
9507061	AET4450YHR-FZ	3/8 + 1/4	25	70	480	425	340
9507063	AET4456YHR-FZ	3/8 + 1/4	26	69	480	425	340
9507064	AET4460YHR-FZ	3/8 + 1/4	26	68	480	425	340
3500005	CAJT4476YHR-FZ-1	1/2 + 3/8	37	37	480	425	340
3500006	CAJT4492YHR-FZ-3	1/2 + 3/8	46	75	610	475	445
3500007	CAJT4511YHR-FZ-3	5/8 + 3/8	40	76	610	475	445
2709845	TAJT4511YHR-TZ-3	5/8 + 3/8	41	74	610	475	445
3505271	FHT4518NHR-XC	5/8 + 1/2	80	76	995	590	470
3505281	FHT4525NHR-XC	5/8 + 1/2	79	78	995	590	470
3505272	FHT4525NHR-XG	5/8 + 1/2	79	78	995	590	470
2709848	TAGT4528YHR-2	7/8 + 3/8	97	83	1075	590	565
2709849	TAGT4534YHR-2	7/8 + 3/8	98	82	1075	590	565
2709850	TAGT4537YHR-2	7/8 + 3/8	98	82	1075	590	565
2709851	TAGT4543YHR-2	7/8 + 3/8	104	81	1075	590	565

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA Condensing Unit

Medium Temperature Applications – R134a



Condensing Units

Product Code	Model Number	Ambient Temperature °C	Capacity Watts				
			Evaporating Temperature °C				
			R134a				
			-10	-5	0	5	10
2709829	AET4425YHR-FZ	30	331	419	515	621	734
		32	322	407	501	604	714
		38	293	372	459	552	653
		43	269	342	423	509	602
9507060	AET4430YHR-FZ	30	434	541	662	798	947
		32	422	527	645	777	923
		38	388	484	593	714	849
		43	359	448	549	662	787
9507062	AET4440YHR-FZ	30	555	678	816	968	1133
		32	541	661	795	943	1104
		38	500	610	733	869	1016
		43	465	568	682	807	943
9507061	AET4450YHR-FZ	30	760	929	1120	1331	1562
		32	740	906	1091	1297	1522
		38	680	834	1005	1195	1404
		43	630	774	934	1111	1304
9507063	AET4456YHR-FZ	30	819	999	1198	1418	1657
		32	799	974	1169	1383	1615
		38	736	899	1078	1275	1489
		43	684	836	1002	1185	1383
9507064	AET4460YHR-FZ	30	824	1004	1203	1420	1653
		32	804	980	1173	1384	1612
		38	742	906	1084	1278	1486
		43	689	843	1009	1189	1381
3500005	CAJT4476YHR-FZ-1	30	1116	1410	1747	2128	2555
		32	1079	1367	1696	2069	2486
		38	965	1234	1541	1888	2277
		43	868	1121	1409	1734	2098
3500006	CAJT4492YHR-FZ-3	30	1359	1715	2121	2577	3085
		32	1316	1663	2058	2503	2998
		38	1185	1507	1872	2282	2738
		43	1074	1376	1717	2099	2524
3500007	CAJT4511YHR-FZ-3	30	1754	2178	2654	3180	3754
		32	1703	2117	2581	3093	3652
		38	1547	1931	2359	2831	3346
		43	1414	1774	2172	2611	3089
2709845	TAJT4511YHR-TZ-3	30	1737	2164	2642	3170	3748
		32	1685	2103	2569	3083	3646
		38	1526	1914	2344	2818	3336
		43	1393	1754	2154	2594	3074
3505271	FHT4518NHR-XC	30	2480	3146	3901	4745	5678
		32	2389	3037	3771	4593	5502
		38	2130	2726	3401	4158	4997
		43	1929	2486	3115	3819	4601
3505281	FHT4525NHR-XC	30	3284	4155	5137	6230	7431
		32	3167	4017	4975	6041	7213
		38	2825	3613	4500	5487	6573
		43	2551	3288	4116	5038	6054

Open Condensing Units



Tecumseh



L'Unite Hermetique – HTA Condensing Unit

Medium Temperature Applications – R134a



Product Code	Model Number	Ambient Temperature °C	Capacity Watts				
			Evaporating Temperature °C				
			R134a				
			-10	-5	0	5	10
3505272	FHT4525NHR-XG	30	3383	4270	5266	6373	7589
		32	3259	4126	5099	6180	7368
		38	2899	3704	4608	5613	6718
		43	2611	3367	4214	5156	6192
2709848	TAGT4528YHR-2	30	3144	4348	5726	7250	8892
		32	3041	4213	5555	7041	8642
		38	2734	3808	5044	6414	7892
		43	2477	3470	4617	5892	7267
2709849	TAGT4534YHR-2	30	4062	5353	6822	8434	10156
		32	3928	5186	6617	8188	9867
		38	3528	4684	6002	7451	8999
		43	3194	4265	5490	6837	8277
2709850	TAGT4537YHR-2	30	4602	5994	7576	9308	11148
		32	4451	5806	7347	9034	10827
		38	3994	5240	6659	8214	9866
		43	3614	4768	6087	7532	9066
2709851	TAGT4543YHR-2	30	4881	6408	8204	10218	12396
		32	4720	6208	7958	9920	12042
		38	4239	5606	7218	9027	10982
		43	3837	5105	6603	8284	10099

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA Condensing Unit

Low Temperature Applications – R404A/R448A/R452A

Product Code	Unit Model	Compressor							Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Compressor Product Code	Compressor Model	Displ. cm ³ /rev	Suct/Disch	Nominal HP	MOC Amps	Volts/Phase	Quantity/Diameter (mm)	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
2709827	AET2415ZBR-FZ	n/a	AEZ2415Z	6.69	3/8 + 1/4	3/8	2.41	240/1	1 x 200	0.40	410	240/1	0.6	0.75
2709825	AET2420ZBR-FZ	2708762	AE2420Z	8.02	3/8 + 1/4	1/2	2.97	240/1	1 x 250	0.40	940	240/1	0.8	0.75
2709828	AET2425ZBR-FZ	2708763	AE2425Z	10.33	3/8 + 1/4	5/8	3.22	240/1	1 x 300	0.62	1400	240/1	2.0	0.75
3500000	CAJT2428ZBR-FZ-1	3500016	CAJ2428Z	15.2	1/2 + 1/4	1/2	4.38	240/1	1 x 300	0.62	1400	240/1	2.0	1.50
3500001	CAJT2432ZBR-FZ-1	3500017	CAJ2432Z	18.3	1/2 + 5/16	5/8	3.88	240/1	1 x 300	0.62	1400	240/1	2.0	1.50
3500002	CAJT2446ZBR-FZ-1	3500018	CAJT2446Z	26.2	1/2 + 5/16	3/4	5.93	240/1	1 x 300	0.62	1400	240/1	2.0	1.50
3500003	CAJT2464ZBR-FZ-3	3500019	CAJ2464Z	34.5	5/8 + 3/8	1 1/2	8.5	240/1	1 x 350	0.60	2285	240/1	3.4	1.50
2709876	TAJT2464ZBR-TZ-3	3500020	TAJ2464Z	34.5	5/8 + 3/8	1 1/2	3.02	415/3	1 x 350	0.60	2285	240/1	3.4	1.50
3505279	FHT2480ZBR-XC	3501927	FH2480Z-XC	53.2	5/8 + 3/8	2	11.1	240/1	1 x 350	0.60	2285	240/1	3.4	3.90
3505273	FHT2480ZBR-XG	3501938	FH2480Z-XG	53.2	5/8 + 1/2	2	3.56	415/3	1 x 350	0.60	2285	240/1	3.4	3.90
3505285	FHT2511ZBR-XC	3501939	FH2511Z-XC	74.2	5/8 + 1/2	2 1/2	12.2	240/1	2 x 350	1.20	4570	240/1	3.4	6.00
3505274	FHT2511ZBR-XG	3501940	FH2511Z-XG	74.2	5/8 + 1/2	2 1/2	5.15	415/3	2 x 350	1.20	4570	240/1	3.4	6.00
2709879	TAGT2516ZBR-2	9507056	TAG2516Z	112.5	7/8 + 5/8	4	7.14	415/3	2 x 350	1.20	4570	240/1	6.5	6.00
2709880	TAGT2522ZBR-2	9507058	TAG2522Z	134.8	1 1/8 + 5/8	5 1/2	9.09	415/3	2 x 400	1.64	7400	240/1	10.7	6.00

Dimension Properties

Product Code	Unit Model	Unit Connections	Weight	Sound Power Level	Dimensions		
		Suct/Liq	kg	dBA	L mm	W mm	H mm
2709827	AET2415ZBR-FZ	3/8 + 1/4	24	59	400	300	222
2709825	AET2420ZBR-FZ	3/8 + 1/4	24	69	485	330	300
2709828	AET2425ZBR-FZ	3/8 + 1/4	26	69	480	425	340
3500000	CAJT2428ZBR-FZ-1	1/2 + 1/4	33	69	480	425	340
3500001	CAJT2432ZBR-FZ-1	1/2 + 1/4	35	70	480	425	340
3500002	CAJT2446ZBR-FZ-1	1/2 + 3/8	38	71	480	425	340
3500003	CAJT2464ZBR-FZ-3	5/8 + 3/8	45	76	475	610	445
2709876	TAJT2464ZBR-TZ-3	5/8 + 3/8	45	76	475	610	445
3505279	FHT2480ZBR-XC	5/8 + 3/8	59	76	475	610	445
3505273	FHT2480ZBR-XG	5/8 + 3/8	59	75	475	610	445
3505285	FHT2511ZBR-XC	5/8 + 3/8	106	77	995	590	470
3505274	FHT2511ZBR-XG	5/8 + 3/8	106	78	995	590	470
2709879	TAGT2516ZBR-2	7/8 + 3/8	109	81	995	590	470
2709880	TAGT2522ZBR-2	1 1/8 + 3/8	107	81	1075	590	565

Open Condensing Units



Tecumseh



L'Unite Hermetique – HTA Condensing Unit

Low Temperature Applications – R404A/R448A/R452A

Capacity



Product Code	Model Number	Ambient Temp. °C	Capacity Watts											
			Evaporating Temperature °C											
			R404A				R448A				R452A			
			-30	-25	-20	-15	-30	-25	-20	-15	-30	-25	-20	-15
2709827	AET2415ZBR-FZ	30	277	348	427	513	245	318	403	497	263	335	416	505
		32	267	336	412	495	236	307	389	481	254	323	401	488
		38	237	299	368	441	209	275	350	434	224	287	358	436
		43	212	269	330	397	188	249	319	397	200	257	321	392
2709825	AET2420ZBR-FZ	30	354	457	572	698	334	439	558	690	337	440	557	688
		32	341	441	552	675	320	423	539	667	324	424	538	665
		38	300	392	493	605	281	376	482	600	285	376	480	596
		43	266	351	444	545	250	338	436	545	252	336	432	538
2709828	AET2425ZBR-FZ	30	491	619	761	919	432	563	714	884	466	594	740	902
		32	474	598	737	889	416	544	691	856	449	574	715	873
		38	423	536	661	799	371	489	624	776	400	514	642	785
		43	379	484	598	723	334	444	570	712	358	463	580	711
3500000	CAJT2428ZBR-FZ-1	30	487	631	793	973	431	578	748	942	464	607	771	955
		32	465	604	761	935	411	553	719	907	443	581	740	918
		38	399	525	666	822	352	481	633	806	378	503	646	807
		43	345	459	588	730	305	424	564	725	325	439	569	716
3500001	CAJT2432ZBR-FZ-1	30	602	778	973	1185	534	714	920	1151	564	738	935	1153
		32	576	745	934	1139	510	684	884	1109	538	706	897	1108
		38	496	648	817	1001	439	597	780	986	460	611	782	972
		43	431	569	721	888	383	528	696	887	396	533	688	860
3500002	CAJT2446ZBR-FZ-1	30	907	1142	1397	1670	802	1046	1319	1621	864	1099	1358	1639
		32	869	1097	1343	1606	768	1004	1270	1564	827	1054	1305	1577
		38	756	961	1182	1416	668	884	1128	1397	716	921	1146	1390
		43	662	848	1048	1258	589	789	1014	1264	625	811	1015	1236
3500003	CAJT2464ZBR-FZ-3	30	1256	1590	1968	2387	1103	1447	1844	2297	1194	1528	1910	2341
		32	1207	1531	1897	2304	1059	1393	1780	2221	1147	1470	1841	2259
		38	1062	1356	1686	2054	930	1236	1591	1998	1004	1297	1633	2013
		43	942	1210	1511	1846	827	1110	1440	1819	887	1155	1462	1809

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

■ Additional Cooling Required .

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA Condensing Unit

Low Temperature Applications – R404A/R448A/R452A

Capacity



Product Code	Model Number	Ambient Temp. °C	Capacity Watts											
			Evaporating Temperature °C											
			R404A				R448A				R452A			
			-30	-25	-20	-15	-30	-25	-20	-15	-30	-25	-20	-15
2709876	TAJT2464ZBR-TZ-3	30	1252	1585	1959	2373	1100	1441	1835	2280	1191	1522	1900	2325
		32	1203	1526	1889	2289	1055	1387	1770	2203	1143	1464	1831	2242
		38	1057	1350	1677	2038	925	1229	1580	1978	1000	1291	1623	1996
		43	937	1203	1501	1829	822	1103	1428	1799	882	1148	1451	1791
3505279	FHT2480ZBR-XC	30	1936	2500	3124	3799	1739	2314	2969	3699	1670	2144	2682	3301
		32	1847	2395	3000	3655	1655	2217	2855	3567	1598	2061	2581	3176
		38	1582	2081	2630	3222	1408	1927	2517	3175	1376	1811	2281	2809
		43	1364	1822	2324	2863	1205	1689	2238	2852	1181	1598	2033	2509
3505285	FHT2511ZBR-XC	30	2876	3732	4692	5745	2578	3445	4441	5562	2727	3594	4573	5655
		32	2746	3579	4511	5533	2456	3302	4274	5369	2596	3440	4391	5443
		38	2359	3120	3969	4898	2094	2877	3776	4791	2205	2977	3847	4808
		43	2040	2740	3519	4370	1797	2527	3367	4315	1883	2595	3397	4282
3505273	FHT2480ZBR-XG	30	1840	2384	2989	3649	1651	2203	2833	3541	1745	2295	2913	3592
		32	1757	2285	2873	3514	1573	2111	2726	3417	1661	2196	2796	3457
		38	1508	1990	2525	3106	1340	1838	2407	3047	1409	1899	2447	3050
		43	1303	1746	2236	2768	1149	1613	2145	2742	1203	1654	2159	2714
3505274	FHT2511ZBR-XG	30	2662	3463	4364	5360	2384	3192	4124	5178	2525	3335	4254	5275
		32	2543	3321	4197	5164	2272	3061	3970	4999	2404	3192	4086	5079
		38	2186	2898	3696	4575	1938	2668	3510	4464	2043	2765	3582	4491
		43	1891	2546	3280	4086	1664	2344	3131	4023	1746	2412	3165	4003
2709879	TAGT2516ZBR-2	30	3116	4085	5152	6302	2779	3764	4888	6140	2992	3954	5026	6197
		32	2962	3899	4931	6042	2638	3593	4684	5900	2836	3768	4806	5940
		38	2506	3348	4272	5266	2230	3095	4087	5200	2378	3219	4156	5178
		43	2136	2898	3733	4628	1907	2699	3611	4638	2007	2775	3628	4558
2709880	TAGT2522ZBR-2	30	4257	5497	6894	8439	3764	5032	6502	8175	4056	5290	6703	8289
		32	4068	5269	6621	8116	3592	4822	6251	7880	3871	5066	6434	7973
		38	3510	4595	5814	7164	3095	4217	5526	7027	3325	4405	5642	7036
		43	3057	4047	5158	6386	2705	3741	4956	6354	2883	3869	4998	6273

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required .

Open Condensing Units



Tecumseh



L'Unite Hermetique – HTA EVO Series

The Tecumseh Evo condensing unit range is fully factory fitted allowing an exceptionally quick installation. Every Evo unit includes all the required vessels and is fully wired to a factory fitted electrical enclosure with contactor, overload, circuit breakers and HP/LP control. All FH2 and TAG models also include a crank case heater and an oil sight glass.



Features

- Tecumseh Hermetic compressor
- Oil separator
- Single phase fan motor/s
- Liquid Receiver
- Crankcase heater and oil sight glass on all FH2 and TAG models
- Additional fully galvanized and powder coated unit cover available
- Complete factory wiring: compressor contactor – Thermal overload | HP/LP control Circuit breakers
- Full wiring to the fan motor/s
- Large HTA condenser
- Suction accumulator on low temperature models
- Liquid line assembly – Filter drier Moisture indicator | Line valve
- Copper connections

Medium Temperature Applications – R404A/R448A/R452A

Product Code	Unit Model	Compressor							Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Compressor Product Code	Compressor Model	Displ. cm ³ /rev	Suct/ Disch	Nominal HP	MOC Amps	Volts/ Phase	Quantity/ Diameter mm	MOC Amps	Air Flow m ³ /hr	Volts/ Phase		
3500038	EPCH9510Z-1(1PH)	3500026	CAJ9510Z	18.3	5/8 + 5/16	1	6.48	240/1	1 x 300	0.62	1400	240/1	2.1	2.35
3500039	EPCH9513Z-1(1PH)	3500027	CAJ9513Z	24.2	5/8 + 5/16	1 1/8	8.14	240/1	1 x 350	0.62	2285	240/1	3.4	2.35
3500040	EPCH4517Z-1(1PH)	3500028	CAJ4517Z	25.9	5/8 + 3/8	1 1/4	9.04	240/1	2 x 350	0.62	2285	240/1	3.4	2.35
3500041	EPCH4519Z-1(1PH)	3500030	CAJ4519Z	34.5	5/8 + 3/8	1 1/2	12	240/1	1 x 400	0.82	3700	240/1	4.5	6.00
2709913	EPCH4524Z-1(1PH)	9507034	FH4524Z-XC3A	43.5	5/8 + 1/2	2	12.4	240/1	1 x 400	0.82	3700	240/1	5.3	6.00
3507125	EPCH4532-XC(1PH)	9507036	FH4532Z-XC3A	56.6	7/8 + 1/2	2 1/2	14.1	240/1	2 x 350	1.24	2285	240/1	6.5	6.00
3507126	EPCH4532-XG(3PH)	9507037	FH4532Z-XG1A	56.6	7/8 + 1/2	2 1/2	4.71	415/3	2 x 350	1.24	2285	240/1	6.5	6.00
2709917	EPCH4546Z(3PH)	9507040	TAG4546Z	90.2	7/8 + 5/8	4	8.53	415/3	2 x 400	1.64	3700	240/1	11.4	6.00
2709918	EPCH4553Z(3PH)	9507042	TAG4553Z	100.7	7/8 + 5/8	4 1/2	9.69	415/3	2 x 400	1.64	3700	240/1	11.4	6.00
2709919	EPCH4561Z(3PH)	9507044	TAG4561Z	112.5	1 1/8 + 5/8	5	10.3	415/3	2 x 400	1.64	3700	240/1	11.4	9.50
2709920	EPCH4568Z(3PH)	9507046	TAG4568Z	124.4	1 1/8 + 5/8	6	11.7	415/3	2 x 400	1.64	3700	240/1	12.4	9.50
2709921	EPCH4573Z(3PH)	9507048	TAG4573Z	134.8	1 1/8 + 5/8	6 1/2	13.6	415/3	2 x 400	1.64	3700	240/1	12.4	9.50

Dimension Properties

Product Code	Unit Model	Unit Connections	Weight	Sound Power Level	Dimensions		
		Suct/Liq	kg	dBA	L mm	W mm	H mm
3500038	EPCH9510Z-1(1PH)	5/8 + 3/8	43	70	475	610	390
3500039	EPCH9513Z-1(1PH)	5/8 + 3/8	45	76	475	610	440
3500040	EPCH4517Z-1(1PH)	5/8 + 3/8	51	76	475	610	440
3500041	EPCH4519Z-1(1PH)	5/8 + 3/8	52	81	605	600	560
2709913	EPCH4524Z-XC	5/8 + 3/8	73	74	605	600	560
3507125	EPCH4532-XC	7/8 + 1/2	80	75	995	590	470
3507126	EPCH4532-XG	7/8 + 1/2	78	76	995	590	470
2709917	EPCH4546Z(3PH)	7/8 + 5/8	100	86	1075	590	565
2709918	EPCH4553Z(3PH)	7/8 + 5/8	101	85	1075	590	565
2709919	EPCH4561Z(3PH)	1 1/8 + 5/8	101	86	1075	590	565
2709920	EPCH4568Z(3PH)	1 1/8 + 5/8	116	84	1075	590	565
2709921	EPCH4573Z(3PH)	1 1/8 + 5/8	116	85	1075	590	565

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA EVO Series

Medium Temperature Applications – R404A/R448A/R452A

Capacity



Product Code	Model Number	Ambient Temp. °C	Capacity Watts														
			Evaporating Temperature °C														
			R404A					R448A					R452A				
			-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10
3500038	EPCH9510Z-1ph	30	1631	1938	2267	2616	2983	1560	1891	2253	2645	3064	1606	1921	2261	2624	3006
		32	1573	1869	2186	2521	2873	1506	1827	2177	2557	2963	1547	1852	2180	2529	2896
		38	1398	1661	1940	2235	2543	1345	1635	1952	2295	2662	1372	1643	1934	2242	2567
		43	1251	1486	1735	1995			1478	1767				1225	1469	1729	2004
3500039	EPCH9513Z-1ph	30	2182	2635	3125	3648	4199	2085	2563	3089	3661	4276	2150	2613	3117	3656	4228
		32	2100	2538	3010	3514	4045	2007	2471	2982	3537	4133	2068	2515	3001	3522	4074
		38	1854	2246	2667	3114	3585	1778	2200	2664	3168	3710	1820	2222	2657	3122	3614
		43	1648	2003	2381	2782	3202	1589	1977	2403	2865	3362	1614	1979	2371	2790	3233
3500040	EPCH4517Z-1ph	30	2401	2859	3353	3881	4438	2289	2779	3317	3903	4533	2363	2832	3343	3890	4470
		32	2315	2757	3234	3743	4279	2209	2684	3206	3774	4385	2276	2730	3223	3751	4311
		38	2056	2452	2876	3326	3800	1970	2402	2877	3392	3948	2017	2424	2864	3335	3833
		43	1840	2197	2576	2978	3400	1774	2171	2606	3079			1801	2169	2565	2988
3500041	EPCH4519Z-1ph	30	3117	3723	4372	5060	5783	2979	3625	4330	5094	5911	3071	3692	4361	5074	5826
		32	3006	3592	4219	4881	5576	2875	3503	4187	4927	5720	2959	3560	4206	4894	5619
		38	2669	3195	3752	4338	4951	2563	3136	3757	4428	5146	2621	3161	3738	4350	4993
		43	2385	2860	3359	3880	4423	2306	2832	3401	4014			2337	2826	3345	3893
2709913	EPCH4524Z-1ph	30	3659	4436	5275	6172	7121	3499	4320	5225	6212	7276	3603	4398	5259	6182	7162
		32	3508	4260	5071	5936	6851	3358	4155	5034	5992	7026	3450	4221	5054	5946	6894
		38	3063	3739	4463	5235	6050	2943	3671	4471	5344	6288	3002	3698	4448	5249	6099
		43	2700	3313	3966	4659	5391	2611	3281	4017	4820			2639	3274	3954	4679
3507125	EPCH4532Z-XC-1ph	30	4499	5451	6485	7593	8770	4310	5319	6436	7658	8981	4437	5413	6475	7618	8835
		32	4328	5250	6250	7321	8458	4150	5131	6217	7406	8694	4263	5210	6239	7346	8525
		38	3820	4652	5549	6509	7527	3679	4578	5573	6662	7845	3750	4609	5539	6538	7602
		43	3402	4159	4971	5837	6756	3297	4131	5050	6058			3330	4118	4965	5874
3507126	EPCH4532Z-XG-3ph	30	4429	5348	6345	7413	8546	4236	5209	6285	7459	8728	4366	5308	6331	7430	8599
		32	4264	5153	6114	7144	8235	4080	5025	6068	7208	8439	4197	5109	6098	7160	8289
		38	3767	4563	5419	6334	7303	3616	4475	5422	6457	7577	3692	4514	5400	6350	7361
		43	3352	4071	4839	5657	6523	3236	4024	4892	5840	6867	3275	4021	4822	5678	6590
2709917	EPCH4546Z-3ph	30	6818	8435	10207	12122	14166	6535	8229	10125	12214	14488	6726	8376	10196	12174	14296
		32	6519	8084	9798	11651	13628	6252	7897	9738	11770	13984	6426	8024	9785	11701	13757
		38	5634	7042	8582	10245	12023	5418	6916	8596	10455	12488	5539	6978	8564	10291	12150
		43	4912	6189	7582	9087	10697	4747	6123	7669	9385	11267	4818	6124	7563	9133	10826
2709918	EPCH4553Z-3ph	30	7549	9268	11133	13129	15237	7239	9048	11052	13242	15603	7444	9198	11113	13173	15361
		32	7223	8884	10685	12610	14643	6930	8684	10628	12753	15045	7117	8812	10662	12652	14766
		38	6254	7745	9352	11066	12877	6018	7612	9377	11308	13397	6145	7668	9324	11105	12999
		43	5456	6807	8255	9796	11421	5276	6740	8360	10133			5347	6730	8227	9835
2709919	EPCH4561Z-3ph	30	8326	10103	12008	14022	16121	7984	9868	11935	14169	16553	8207	10023	11983	14067	16251
		32	7985	9703	11543	13485	15509	7663	9492	11498	13667	15983	7864	9622	11516	13528	15639
		38	6966	8512	10156	11885	13685	6710	8381	10208	12185	14298	6844	8428	10128	11930	13820
		43	6120	7528	9012	10565	12179	5929	7474	9158	10978			5998	7444	8984	10613
2709920	EPCH4568Z-3ph	30	9692	11673	13802	16061	18429	9299	11422	13759	16302	19034	9559	11593	13795	16148	18628
		32	9327	11251	13315	15503	17795	8958	11029	13309	15789	18456	9193	11170	13307	15589	17994
		38	8230	9980	11846	13818	15880	7943	9860	11968	14261	16730	8094	9897	11838	13906	16087
		43	7314	8917	10616	12405			7109	8899	10864			7179	8835	10610	12499
2709921	EPCH4573Z-3ph	30	10271	12287	14435	16691	19033	9852	12021	14389	16938	19650	10120	12189	14407	16754	19204
		32	9880	11828	13900	16075	18331	9484	11591	13889	16365	19000	9726	11727	13870	16136	18501
		38	8696	10440	12285	14214	16214	8380	10300	12393	14649	17054	8537	10333	12250	14274	16388
		43	7702	9275	10929	12654				9233	11156			7542	9167	10895	

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA EVO Series

Medium Temperature Applications – R134a/R513A

Product Code	Unit Model	Compressor							Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Compressor Product Code	Compressor Model	Displ. cm ³ /rev	Suct/ Disch	Nominal HP	MOC Amps	Volts/ Phase	Quantity/ Diameter (mm)	MOC Amps	Air Flow m ³ /hr	Volts/ Phase		
3507127	EPCH4518N-XC	3501928	FH4518N-XC	53.2	5/8 + 1/2	1 1/2	8.63	240/1	2 x 350	1.20	2285	240/1	5.7	6.00
3507128	EPCH4518N-XG	3501926	FH4518N-XG	53.2	5/8 + 1/2	1 1/2	3.02	415/3	2 x 350	1.20	2285	240/1	5.7	6.00
3507129	EPCH4525N-XC	3501929	FH4525N-XC	74.2	5/8 + 1/2	2	11.9	240/1	2 x 350	1.20	2285	240/1	6.5	6.00
3507130	EPCH4525N-XG	3501930	FH4525N-XG	74.2	5/8 + 1/2	2	4.33	415/3	2 x 350	1.20	2285	240/1	6.5	6.00
2709926	EPCH4528Y-3HP	2708795	TAG4528Y	90.2	7/8 + 5/8	2 1/2	5.28	415/3	2 x 400	1.64	3700	240/1	8.2	6.00
2709927	EPCH4537Y-3HP	2708797	TAG4537Y	112.5	7/8 + 5/8	3	6.53	415/3	2 x 400	1.64	3700	240/1	8.2	6.00
2709928	EPCH4543Y-3HP	2708798	TAG4543Y	124.4	7/8 + 5/8	3 1/2	7.35	415/3	2 x 400	1.64	3700	240/1	10.7	9.50

Dimension Properties

Product Code	Unit Model	Unit Connections	Weight	Sound Power Level	Dimensions		
		Suct / Liq	kg	dBA	L mm	W mm	H mm
3507127	EPCH4518N-XC	5/8 + 3/8	80	76	995	590	470
3507128	EPCH4518N-XG	5/8 + 3/8	81	76	995	590	470
3507129	EPCH4525N-XC	5/8 + 3/8	79	78	995	590	470
3507130	EPCH4525N-XG	5/8 + 3/8	79	78	995	590	470
2709926	EPCH4528Y-3HP	7/8 + 3/8	97	83	1075	590	565
2709927	EPCH4537Y-3HP	7/8 + 3/8	98	82	1075	590	565
2709928	EPCH4543Y-3HP	7/8 + 3/8	104	81	1075	590	565

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA EVO Series



Medium Temperature Applications – R134a/R513A

Condensing Units



Product Code	Model Number	Ambient Temp. °C	Capacity Watts									
			Evaporating Temperature °C									
			R134a					R513A				
			-10	-5	0	5	10	-10	-5	0	5	10
2709922	EPCH4518Y-1ph	30	2434	3140	3945	4853	5865	2522	3222	4022	4924	5928
		32	2353	3046	3835	4725	5716	2433	3119	3901	4783	5764
		38	2101	2752	3494	4329	5258	2159	2801	3530	4350	5262
		43	1881	2498	3199	3987	4865	1925	2528	3213	3981	4836
2709923	EPCH4518Y-3ph	30	2442	3152	3965	4884	5910	2530	3235	4043	4955	5973
		32	2363	3058	3854	4763	5756	2443	3132	3920	4811	5803
		38	2118	2768	3511	4350	5285	2177	2817	3547	4370	5289
		43	1908	2519	3217	4004	4884	1952	2550	3230	3998	4854
2709924	EPCH4525Y-1ph	30	3574	4499	5538	6692	7954	3693	4603	5627	6763	8003
		32	3460	4365	5382	6510	7743	3570	4459	5457	6564	7773
		38	3114	3959	4906	5956	7104	3194	4020	4943	5965	7081
		43	2818	3614	4503	5488	6565	2877	3650	4512	5463	6502
2709925	EPCH4525Y-3ph	30	3494	4399	5426	6575	7846	3608	4499	5512	6645	7896
		32	3369	4253	5256	6380	7623	3473	4341	5328	6434	7654
		38	3002	3822	4755	5802	6964	3079	3880	4791	5813	6945
		43	2707	3475	4349	5333	6427	2764	3510	4358	5312	6370
2709926	EPCH4528Y-3ph	30	3144	4348	5726	7250	8892	4180	5252	6467	7824	9319
		32	3041	4213	5555	7041	8642	4027	5070	6252	7572	9025
		38	2734	3808	5044	6414	7892	3574	4535	5619	6827	8158
		43	2477	3470	4617	5892	7267	3201	4097	5103	6221	7451
2709927	EPCH4537Y-3ph	30	4602	5994	7576	9308	11148	5035	6295	7706	9263	10952
		32	4451	5806	7347	9034	10827	4849	6076	7449	8961	10603
		38	3994	5240	6659	8214	9866	4299	5429	6688	8071	9571
		43	3614	4768	6087	7532	9066	3845	4899	6066	7345	8729
2709928	EPCH4543Y-3ph	30	4881	6408	8204	10218	12396	5660	7090	8700	10484	12430
		32	4720	6208	7958	9920	12042	5452	6845	8410	10144	12035
		38	4239	5606	7218	9027	10982	4836	6119	7554	9140	10869
		43	3837	5105	6603	8284	10099	4328	5524	6855	8322	9917
3507127	EPCH4518N-XC	30	2530	3213	3989	4858	5816	2720	3397	4151	4982	5888
		32	2438	3103	3858	4704	5638	2616	3275	4010	4821	5705
		38	2178	2790	3483	4261	5123	2317	2924	3602	4349	5166
		43	1975	2546	3191	3915	4717	2083	2648	3277	3972	4733
3507128	EPCH4518N-XG	30	2480	3146	3901	4745	5678	2668	3326	4060	4867	5749
		32	2389	3037	3771	4593	5502	2564	3206	3921	4708	5568
		38	2130	2726	3401	4158	4997	2267	2859	3518	4246	5041
		43	1929	2486	3115	3819	4601	2036	2587	3200	3878	4619
3507129	EPCH4525N-XC	30	3383	4270	5266	6373	7589	3627	4502	5468	6526	7674
		32	3259	4126	5099	6180	7368	3486	4342	5287	6321	7444
		38	2899	3704	4608	5613	6718	3074	3871	4750	5712	6757
		43	2611	3367	4214	5156	6192	2745	3491	4313	5214	6192
3507130	EPCH4525N-XG	30	3284	4155	5137	6230	7431	3523	4384	5337	6381	7515
		32	3167	4017	4975	6041	7213	3390	4231	5162	6182	7289
		38	2825	3613	4500	5487	6573	2998	3778	4641	5587	6615
		43	2551	3288	4116	5038	6054	2683	3411	4216	5099	6058

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA EVO Series

Low Temperature Applications – R404A/R448A/R452A

Product Code	Unit Model	Compressor							Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Compressor Product Code	Compressor Model	Displ. cm ³ /rev	Suct/Disch	Nominal HP	MOC Amps	Volts/Phase	Quantity/Diameter mm	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
3507121	EPCL2480Z -XC	3501927	FH2480Z-XC	53.2	5/8 + 3/8	2	11.1	240/1	1 x 350	0.62	2285	240/1	3.4	3.90
3507122	EPCL2511Z -XC	3501939	FH2511Z-XC	74.2	5/8 + 1/2	2 1/2	12.2	240/1	2 x 350	1.24	4570	240/1	3.4	6.00
3507123	EPCL2511Z -XG	3501940	FH2511Z-XG	74.2	5/8 + 1/2	2 1/2	5.15	415/3	2 x 350	1.24	4570	240/1	3.4	6.00
2709904	EPCL2516Z-3ph	9507056	TAG2516Z	112.5	7/8 + 5/8	4	7.14	415/3	2 x 350	1.24	4570	240/1	3.4	6.00
2709905	EPCL2522Z-3ph	9507058	TAG2522Z	134.8	1 1/8 + 5/8	5 1/2	9.09	415/3	2 x 400	1.64	7400	240/1	10.7	6.00

Dimension Properties

Product Code	Unit Model	Unit Connections	Weight	Sound Power Level	Dimensions		
		Suct/Liq	kg	dBA	L mm	W mm	H mm
3507121	EPCL2480Z -XC	5/8 + 3/8	59	76	475	610	445
3507122	EPCL2511Z -XC	5/8 + 3/8	106	77	995	590	470
3507123	EPCL2511Z -XG	5/8 + 3/8	106	78	995	590	470
2709904	EPCL2516Z-3ph	7/8 + 1/2	109	81	995	590	470
2709905	EPCL2522Z-3ph	1 1/8 + 3/8	107	81	1075	590	565

Open Condensing Units



Tecumseh

L'Unite Hermetique – HTA EVO Series



Low Temperature Applications – R404A/R448A/R452A

Condensing Units



Product Code	Model Number	Ambient Temp. °C	Capacity Watts											
			Evaporating Temperature °C											
			R404A				R448A				R452A			
			-30	-25	-20	-15	-30	-25	-20	-15	-30	-25	-20	-15
3507121	EPCL2480Z -XC	30	1936	2500	3124	3799	1733	2307	2961	3690	1667	2141	2679	3297
		32	1847	2395	3000	3655	1650	2210	2848	3559	1595	2058	2578	3172
		38	1582	2081	2630	3222	1403	1921	2510	3167	1373	1808	2278	2806
		43	1364	1822	2324	2863	1201	1683	2232	2846	1179	1596	2031	2506
3507122	EPCL2511Z -XC	30	2876	3732	4692	5745	2568	3434	4429	5549	2723	3589	4567	5648
		32	2746	3579	4511	5533	2447	3292	4262	5355	2592	3434	4385	5436
		38	2359	3120	3969	4898	2086	2868	3766	4779	2201	2973	3842	4802
		43	2040	2740	3519	4370	1789	2518	3357	4304	1880	2591	3392	4277
3507123	EPCL2511Z -XG	30	2662	3463	4364	5360	2376	3182	4113	5166	2521	3330	4248	5269
		32	2543	3321	4197	5164	2264	3051	3959	4987	2400	3187	4080	5073
		38	2186	2898	3696	4575	1931	2659	3500	4453	2040	2761	3577	4485
		43	1891	2546	3280	4086	1657	2336	3121	4013	1743	2408	3161	3998
2709904	EPCL2516Z-3ph	30	3116	4085	5152	6302	2768	3752	4874	6125	2986	3948	5020	6190
		32	2962	3899	4931	6042	2628	3581	4670	5886	2831	3762	4800	5933
		38	2506	3348	4272	5266	2221	3084	4075	5187	2373	3214	4150	5172
		43	2136	2898	3733	4628	1899	2689	3600	4626	2004	2770	3623	4552
2709905	EPCL2522Z-3ph	30	4257	5497	6894	8439	3751	5016	6484	8155	4050	5283	6694	8279
		32	4068	5269	6621	8116	3580	4807	6234	7861	3865	5059	6426	7963
		38	3510	4595	5814	7164	3084	4203	5510	7009	3319	4398	5634	7027
		43	3057	4047	5158	6386	2694	3729	4941	6338	2878	3863	4991	6265

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

■ Additional Cooling Required

Open Condensing Units

RYKER Ryker



GH Fully Fitted Hermetic Reciprocating

Features

- Larger condenser that provides lower energy consumption and higher capacity at any given ambient
- Condenser fans are single phase 240V ensuring economical efficiency and reduced risk of failure
- Manufactured using a reliable, robust and highly efficient compressor
- Compressors are fitted with an internal line break protection to ensure maximum motor protection for long life operation
- Condensing units are supplied with sight glass, oil separator, filter drier, suction filter drier and solenoid valve and fully wired electrical enclosure
- Designed for use with most common HFC and HFO/HFC refrigerant blends
- All models are fully pre-wired for quick installation (DOL)
- All models come pre-fitted with a HP/LP control
- All models are fitted with a Carel condenser fan speed control
- Powder coated exterior for long wearing durability
- Range of units to suit applications from 5.2kW to 25.6kW

Medium Temperature Applications – R404A/R448A/R452A/R134a/R513A

Product Code	Unit Model	Compressor					Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Maneurop Model	Displ. cm ³ /rev	Nominal HP	MOC Amps	Volts/Phase	Quantity/Diameter mm	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
3518000	GH087MHA1-2	MTZ050	85.6	4.2	8.3	415/3	1 x 450	2.36	4420	240/1	16.3	12.0
3518001	GH112MHA1-2	MTZ064	107.7	5.7	11.2	415/3	2 x 350	1.40	4210	240/1	28.5	12.0
3518002	GH144MHA1-2	MTZ080	135.8	7	14.5	415/3	2 x 450	4.72	8840	240/1	30.6	12.0
3518003	GH168MHA1-2	MTZ100	171.3	8	16.5	415/3	2 x 450	4.72	8840	240/1	37.5	14.5
3518004	GH209MHA1-2	MTZ125	215.4	9	21.8	415/3	2 x 500	6.00	11530	240/1	40.8	14.5
3518005	GH271MHA1-2	MTZ160	271.6	12	27.7	415/3	2 x 500	6.00	11530	240/1	65.1	14.5

Dimension Properties

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
3518000	GH087MHA1-2	1 $\frac{3}{8}$ "	1 $\frac{1}{2}$ "	115	83	980	770	695
3518001	GH112MHA1-2	1 $\frac{3}{8}$ "	5 $\frac{5}{8}$ "	131	83	980	770	655
3518002	GH144MHA1-2	1 $\frac{3}{8}$ "	5 $\frac{5}{8}$ "	153	83	1270	870	680
3518003	GH168MHA1-2	1 $\frac{3}{8}$ "	5 $\frac{5}{8}$ "	185	84	1270	870	820
3518004	GH209MHA1-2	1 $\frac{3}{8}$ "	5 $\frac{5}{8}$ "	197	84	1270	870	930
3518005	GH271MHA1-2	1 $\frac{3}{8}$ "	5 $\frac{5}{8}$ "	213	85	1270	870	930

Open Condensing Units

RYKER Ryker

GH Fully Fitted Hermetic Reciprocating

Medium Temperature Applications – R404A/R448A/R452A/R134a/R513A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts														
			Evaporating Temperature °C														
			R404A					R448A					R452A				
			-15	-10	-5	0	5	-15	-10	-5	0	5	-15	-10	-5	0	5
3518000	GH087MHA1-2	30	6108	7520	9071	10746	12529	5442	6908	8565	10406	12420	5925	7358	8936	10647	12475
		32	5873	7236	8732	10349	12069	5248	6670	8277	10063	12017	5714	7099	8624	10276	12041
		38	5181	6399	7731	9170	10702	4663	5955	7413	9034	10813	5062	6306	7669	9143	10719
		43	4620	5716	6911	8200	9574	4173	5358	6693	8179		4501	5626	6854	8180	
3518001	GH112MHA1-2	30	7825	9647	11672	13883	16262	7097	8933	10996	13280	15774	7737	9517	11477	13603	15880
		32	7535	9298	11255	13391	15690	6833	8616	10621	12841	15267	7452	9177	11074	13130	15333
		38	6667	8251	10003	11914	13971	6055	7681	9510	11539	13761	6597	8152	9857	11703	13680
		43	5944	7378	8958	10680	12535	5425	6920	8602	10471		5882	7294	8835	10503	12290
3518002	GH144MHA1-2	30	10146	12275	14589	17067	19687	9481	11729	14239	16999	19988	9491	11493	13694	16081	18633
		32	9794	11853	14089	16480	19008	9165	11348	13785	16464	19367	9178	11115	13242	15547	18011
		38	8746	10596	12592	14722	16971	8217	10205	12421	14858	17504	8214	9954	11857	13913	16112
		43	7879	9552	11346	13255	15270	7429	9253	11285	13521		7385	8957	10669	12517	
3518003	GH168MHA1-2	30	12061	14856	17906	21182	24650	10964	13851	17124	20774	24782	12151	14965	18076	21463	25101
		32	11642	14341	17280	20433	23769	10554	13353	16527	20070	23963	11708	14429	17434	20703	24215
		38	10361	12779	15390	18177	21121	9355	11892	14772	17993	21545	10372	12818	15505	18424	21560
		43	9265	11454	13796	16284	18904	8389	10711	13349	16304	19572	9248	11468	13894	16524	19350
3518004	GH209MHA1-2	30	15552	19019	22849	27010	31466	14632	18456	22780	27585	32844	15778	19418	23435	27801	32480
		32	14971	18325	22026	26046	30352	14086	17795	21990	26656	31767	15198	18721	22603	26821	31343
		38	13276	16280	19590	23184	27036	12484	15850	19661	23910	28580	13448	16618	20098	23873	27924
		43	11908	14617	17595	20827	24297	11190	14272	17765	21669		11980	14855	17999	21407	25067
3518005	GH271MHA1-2	30	19794	23939	28453	33292	38404	19200	23561	28403	33705	39432	19610	23475	27721	32324	37251
		32	19106	23115	27475	32144	37074	18525	22759	27461	32611	38176	18912	22654	26761	31212	35976
		38	17046	20642	24531	28684	33064	16555	20417	24701	29395	34477	16820	20192	23879	27869	32143
		43	15330	18573	22064	25780	29696	14973	18532	22472	26790		15077	18138	21472	25076	

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Open Condensing Units

RYKER Ryker

GH Fully Fitted Hermetic Reciprocating

Medium Temperature Applications – R404A/R448A/R452A/R134a/R513A



Product Code	Model Number	Ambient Temp. °C	Capacity Watts											
			Evaporating Temperature °C											
			R134a						R513A					
			-15	-10	-5	0	5	10	-15	-10	-5	0	5	10
3518000	GH087MHA1-2	30	3210	4234	5457	6887	8528	10379	3550	4560	5743	7102	8639	10350
		32	3085	4080	5269	6660	8259	10066	3433	4414	5562	6882	8376	10041
		38	2729	3643	4733	6011	7485	9156	3092	3987	5033	6237	7600	9125
		43	2451	3302	4314	5501	6872	8432	2820	3645	4607	5713	6970	8378
3518001	GH112MHA1-2	30		5263	6802	8612	10703	13076	4355	5672	7206	8961	10936	13126
		32	3836	5088	6590	8357	10399	12720	4197	5478	6971	8681	10605	12742
		38	3411	4572	5964	7602	9500	11662	3739	4912	6282	7852	9625	11600
		43	3070	4155	5454	6985	8762	10792	3379	4460	5724	7177	8822	10660
3518002	GH144MHA1-2	30	5264	6824	8666	10802	13237	15973	5569	7205	9108	11277	13707	16387
		32	5085	6606	8403	10490	12871	15548	5370	6961	8813	10926	13295	15912
		38	4566	5968	7630	9566	11783	14285	4801	6250	7945	9887	12072	14493
		43	4156	5457	7005	8813	10892	13246	4363	5689	7247	9041	11068	13323
3518003	GH168MHA1-2	30		8209	10594	13373	16552	20130	6999	9007	11357	14061	17123	20538
		32	5998	7956	10282	12992	16092	19582	6781	8735	11020	13648	16624	19946
		38	5380	7196	9346	11846	14709	17936	6126	7925	10018	12420	15141	18184
		43	4864	6562	8565	10892	13556	16564	5577	7253	9189	11407	13919	16732
3518004	GH209MHA1-2	30		10413	13321	16695	20545	24871	9309	11840	14827	18288	22230	26648
		32	7680	10083	12921	16213	19970	24193	9070	11534	14436	17798	21628	25923
		38	6845	9078	11707	14753	18229	22140	8336	10601	13253	16319	19812	23738
		43	6142	8232	10685	13524	16765	20415	7703	9804	12250	15070	18286	21906
3518005	GH271MHA1-2	30	11570	14700	18344	22519	27232	32479	12288	15468	19129	23276	27904	33000
		32	11217	14274	17834	21915	26525	31661	11895	14993	18561	22603	27116	32089
		38	10180	13013	16317	20112	24408	29206	10739	13587	16868	20590	24753	29350
		43	9346	11987	15072	18623	22653	27166	9806	12439	15475	18924	22789	27068

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Semi Hermetic Condensing Units



Tecumseh

SHT Series

The new range of Tecumseh semi-hermetic condensing units is fully fitted and fully wired to make installation fast and efficient. SHT has been designed to operate efficiently in both the hot and cold extremes of the Australian environment. This range is designed for R134a, R513A, R404A, R448A, R452A and can be applied in low, medium and high temperature applications. For ratings with other refrigerants please contact an Actrol application engineer.

Features

- High ambient temperature capability up to 43°C
- Carel fan speed control
- Liquid line with filter drier and moisture indicator
- Ebm condenser fans
- Fully Wired panel including circuit breakers, contactor, electronic overload and spare DIN rail in an enclosure
- Tecumseh semi-hermetic compressor with electronic protection module
- Suction accumulator
- Automatic reset HP/LP control
- Oil separator and Liquid Receiver
- Weathershield covers are optional



Low, Medium and High Temperature Applications – R404A/R448A/R452A/R134a/R513A

Product Code	Unit Model	Compressor						Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. m ³ /hr	Nominal HP	Motor Type	MOC Amps	Volts/Phase	No. Diam. (mm)	MOC Amps	Air Flow m ³ /hr	Volts/Phase	kW	
3506011	SHT4521ZHR-TZ	SH4521ZY	5.47	1	400V/3PH/DOL	3.6	415/3	2 x 400	1.46	8470	240/1	7.66	6.0
3506015	SHT4526ZHR-TZ	SH4526ZY	6.91	1.5	400V/3PH/DOL	4.5	415/3	2 x 400	1.46	8470	240/1	7.66	6.0
3506012	SHT4536ZHR-TZ	SH4536ZY	9.88	2	400V/3PH/DOL	6.7	415/3	2 x 400	1.46	8470	240/1	10.62	6.0
3506013	SHT4550ZHR-TZ	SH4550ZY	13.15	3	400V/3PH/DOL	8.8	415/3	2 x 400	1.46	8470	240/1	15.36	9.5
3506014	SHT4564ZHR-TZ	SH4564ZY	16.40	4	400V/3PH/DOL	11.6	415/3	2 x 400	1.46	8470	240/1	15.36	9.5
2707551	SHT4576ZHR	SH4576ZY	21.18	5	400V/3PH/DOL	11.6	415/3	2 x 500	6.00	11530	240/1	18.68	12.0
2707552	SHT4591ZHR	SH4591ZY	24.69	5	400V/3PH/DOL	12.7	415/3	2 x 500	6.00	11530	240/1	26.35	12.0
2707553	SHT4610ZHR	SH4610ZY	28.02	7	400V/3PH/DOL	17.6	415/3	2 x 500	6.00	11530	240/1	29.65	12.0
2707554	SHT4612ZHR	SH4612ZY	32.66	7	400V/3PH/DOL	20.0	415/3	2 x 500	6.00	11530	240/1	29.65	12.0
2707555	SHT4615ZHR	SH4615ZM	41.32	12	400V/3PH/PWS	22.4	415/3	3 x 500	9.00	17295	240/1	42.4	17.2
2707556	SHT4620ZHR	SH4620ZM	51.50	15	400V/3PH/PWS	32.4	415/3	3 x 500	9.00	17295	240/1	42.4	17.2
3506027	SHT4627ZHR	SH4627ZM	70.77	25	400V/3PH/PWS	43.5	415/3	3 x 630	14.34	29880	415/3	70.40	17.2
3506028	SHT4632ZHR	SH4632ZM	83.81	30	400V/3PH/PWS	49.2	415/3	3 x 630	14.34	29880	415/3	70.40	25.0

Dimension Properties

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
3506011	SHT4521ZHR-TZ	5/8"	1/2"	81.00	64	1072	631	568
3506015	SHT4526ZHR-TZ	5/8"	1/2"	82.50	66	1072	631	568
3506012	SHT4536ZHR-TZ	3/4"	1/2"	89.00	68	1072	631	568
3506013	SHT4550ZHR-TZ	1 1/8"	1/2"	97.50	68	1060	690	673
3506014	SHT4564ZHR-TZ	1 1/8"	1/2"	97.50	70	1060	690	673
2707551	SHT4576ZHR	1 1/8"	5/8"	258.00	76	1600	890	936
2707552	SHT4591ZHR	1 1/8"	5/8"	260.00	76	1600	890	936
2707553	SHT4610ZHR	1 3/8"	5/8"	274.00	76	1600	890	936
2707554	SHT4612ZHR	1 3/8"	5/8"	282.00	76	1600	890	936
2707555	SHT4615ZHR	1 3/8"	7/8"	414.00	77	1880	1100	840
2707556	SHT4620ZHR	1 3/8"	7/8"	416.00	78	1880	1100	840
3506027	SHT4627ZHR	2 1/8"	1 1/8"	856.50	80	3250	1150	1370
3506028	SHT4632ZHR	2 1/8"	1 1/8"	859.50	80	3250	1150	1370

Semi Hermetic Condensing Units



Tecumseh

SHT Series

Low, Medium and High Temperature Applications –
R404A/R448A/R452A/R134a/R513A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R404A							
			-30	-25	-20	-15	-10	-5	0	5
3506011	SHT4521ZHR-TZ	30	1207	1612	2088	2636	3258	3952	4719	5558
		32	1154	1545	2005	2536	3137	3809	4552	5365
		35	1074	1446	1883	2386	2957	3596	4302	5076
		38	996	1347	1761	2237	2778	3384	4054	4789
		43	868	1186	1560	1992	2483	3032	3642	4313
3506015	SHT4526ZHR-TZ	30	1606	2100	2683	3358	4128	4996	5962	7029
		32	1547	2024	2588	3241	3988	4830	5769	6807
		35	1460	1912	2447	3068	3780	4584	5483	6479
		38	1374	1802	2308	2898	3575	4341	5200	6153
		43	1228	1617	2077	2615	3234	3938	4730	5612
3506012	SHT4536ZHR-TZ	30	2319	2981	3754	4642	5648	6775	8026	9401
		32	2241	2883	3631	4491	5466	6560	7774	9109
		35	2128	2739	3451	4269	5198	6240	7399	8675
		38	2018	2599	3275	4051	4933	5924	7028	8246
		43	1844	2373	2988	3696	4500	5406	6418	7539
3506013	SHT4550ZHR-TZ	30	3165	4125	5223	6471	7875	9442	11175	13076
		32	3043	3979	5047	6257	7617	9135	10813	12655
		35	2866	3766	4788	5942	7237	8680	10276	12030
		38	2694	3560	4536	5633	6863	8232	9746	11411
		43	2420	3228	4128	5133	6254	7499	8877	10393
3506014	SHT4564ZHR-TZ	30	4033	5194	6525	8034	9724	11598	13654	15892
		32	3895	5029	6325	7790	9430	11247	13241	15410
		35	3691	4783	6025	7425	8989	10720	12619	14686
		38	3491	4541	5728	7061	8548	10192	11995	13960
		43	3167	4143	5236	6457	7813	9311	10954	12780
3506551	SHT4576ZHR	30	4842	6441	8257	10297	12568	15071	17808	20780
		32	4636	6195	7961	9942	12144	14570	17223	20104
		35	4326	5825	7516	9408	11508	13819	16346	19091
		38	4014	5454	7071	8874	10871	13068	15469	18079
		43	3494	4835	6328	7984	9811	11817	14010	16394
2707552	SHT4591ZHR	30	5982	7686	9662	11923	14477	17327	20473	
		32	5771	7427	9344	11534	14006	16764	19809	
		35	5454	7040	8868	10951	13300	15920	18814	
		38	5136	6652	8391	10367	12593	15075	17819	
		43	4603	6003	7593	9393	11414	13666	16158	
2707553	SHT4610ZHR	30	7045	9029	11307	13893	16796	20022	23571	
		32	6805	8735	10946	13454	16267	19392	22831	
		35	6445	8294	10405	12794	15472	18446	21721	
		38	6083	7852	9863	12133	14675	17498	20608	
		43	5473	7107	8951	11023	13340	15911	18746	
2707554	SHT4612ZHR	30	8178	10376	12909	15788	19017	22595	26518	
		32	7893	10035	12496	15287	18414	21877	25672	
		35	7465	9524	11877	14536	17508	20797	24401	
		38	7037	9012	11256	13782	16600	19714	23127	
		43	6321	8156	10217	12520	15079	17902	20993	
2707555	SHT4615ZHR	30	9739	12593	15894	19659	23901	28626	33840	
		32	9348	12119	15324	18981	23103	27700	32775	
		35	8766	11412	14473	17968	21912	26314	31183	
		38	8192	10713	13629	16962	20726	24935	29597	
		43	7253	9562	12237	15298	18765	22651	26968	
2707556	SHT4620ZHR	30	13478	17032	20998	25428	30367	35844	41881	48486
		32	13007	16496	20367	24675	29466	34772	40618	47015
		35	12292	15684	19414	23539	28109	33161	38721	44809
		38	11568	14864	18454	22398	26749	31547	36824	42604
		43	10344	13482	16840	20485	24473	28852	33661	
3506027	SHT4627ZHR	30	17236	22187	27929	34501	41933	50244	59442	69529
		32	16570	21379	26948	33320	40526	48588	57517	67318
		35	15577	20174	25486	31559	38427	46117	54644	64018
		38	14593	18980	24036	29811	36343	43662	51789	60736
		43	12969	17010	21644	26926	32901	39606	47068	55310
3506028	SHT4632ZHR	30	20812	26601	33261	40821	49296	58690	69000	80215
		32	20044	25665	32127	39461	47683	56802	66817	77719
		35	18907	24275	30440	37433	45276	53981	63551	73984
		38	17790	22904	28768	35420	42882	51173	60298	70261
		43	15973	20660	26022	32100	38926	46522	54905	

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Semi Hermetic Condensing Units



Tecumseh

SHT Series

Low, Medium and High Temperature Applications –
R404A/R448A/R452A/R134a/R513A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R448A							
			-30	-25	-20	-15	-10	-5	0	5
3506011	SHT4521ZHR-TZ	30	1083	1466	1918	2449	3067	3778	4587	5500
		32	1037	1409	1848	2363	2962	3652	4439	5327
		35	967	1322	1742	2233	2805	3464	4217	5068
		38	895	1235	1634	2102	2647	3276	3995	4809
		43	774	1088	1455	1884	2384	2962	3625	4379
3506015	SHT4526ZHR-TZ	30	1414	1891	2453	3109	3866	4730	5706	6799
		32	1356	1821	2366	3002	3736	4575	5524	6586
		35	1268	1713	2234	2840	3541	4342	5250	6267
		38	1178	1603	2100	2677	3345	4109	4975	5948
		43	1024	1417	1874	2404	3017	3719	4517	5417
3506012	SHT4536ZHR-TZ	30	2070	2757	3564	4503	5583	6814	8200	9747
		32	1991	2658	3442	4353	5402	6597	7944	9448
		35	1868	2508	3257	4127	5129	6270	7559	9000
		38	1743	2356	3071	3900	4854	5943	7174	8552
		43	1527	2096	2755	3518	4396	5398	6534	7808
3506013	SHT4550ZHR-TZ	30	3067	4006	5107	6389	7871	9568	11494	13660
		32	2956	3871	4943	6191	7636	9291	11172	13288
		35	2791	3669	4697	5896	7283	8876	10689	12732
		38	2626	3468	4452	5601	6932	8462	10207	12178
		43	2350	3132	4045	5110	6347	7774	9406	11257
3506014	SHT4564ZHR-TZ	30	3916	5052	6378	7920	9700	11736	14045	16637
		32	3777	4883	6174	7676	9412	11400	13657	16194
		35	3570	4631	5870	7313	8982	10898	13077	15532
		38	3366	4383	5569	6953	8556	10400	12502	14875
		43	3033	3977	5077	6362	7856	9581	11555	13793
3506551	SHT4576ZHR	30	4983	6473	8229	10290	12693	15468	18644	22243
		32	4798	6248	7957	9964	12306	15015	18120	21643
		35	4525	5914	7552	9478	11731	14341	17339	20750
		38	4256	5586	7154	9000	11163	13675	16568	19866
		43	3824	5055	6506	8220	10235	12586	15304	18417
2707552	SHT4591ZHR	30	5778	7506	9532	11894	14628	17763	21325	25334
		32	5569	7250	9221	11520	14184	17243	20722	24643
		35	5257	6868	8756	10961	13521	16465	19820	23609
		38	4948	6488	8293	10405	12859	15689	18921	22578
		43	4441	5863	7530	9484	11764	14403	17430	20869
2707553	SHT4610ZHR	30	6501	8467	10770	13455	16562	20125	24172	28726
		32	6262	8175	10416	13031	16059	19536	23490	27944
		35	5907	7741	9888	12397	15307	18654	22469	26774
		38	5556	7309	9363	11766	14557	17775	21449	25606
		43	4981	6599	8496	10720	13314	16315	19757	23666
2707554	SHT4612ZHR	30	7769	10036	12683	15755	19289	23317	27861	32939
		32	7507	9714	12289	15278	18720	22647	27082	32045
		35	7116	9231	11698	14563	17867	21643	25915	30704
		38	6726	8748	11107	13849	17014	20638	24747	29364
		43	6077	7945	10121	12656	15591	18962	22800	27128
2707555	SHT4615ZHR	30	9456	12334	15726	19704	24333	29665	35745	42606
		32	9107	11906	15203	19072	23578	28777	34712	41420
		35	8590	11272	14429	18135	22459	27458	33178	39658
		38	8079	10647	13665	17211	21354	26154	31661	37914
		43	7238	9619	12411	15695	19542	24015	29169	35048
2707556	SHT4620ZHR	30	10917	14396	18481	23244	28744	35027	42128	50070
		32	10468	13849	17816	22444	27792	33909	40833	48588
		35	9801	13036	16828	21252	26374	32244	38902	46378
		38	9140	12231	15849	20072	24968	30591	36986	44184
		43	8054	10906	14236	18127	22650	27865	33823	40562
3506027	SHT4627ZHR	30	17027	22069	27937	34735	42549	51453	61505	72750
		32	16417	21335	27054	33676	41291	49974	59787	70774
		35	15502	20233	25725	32083	39400	47752	57205	67808
		38	14588	19130	24395	30488	37506	45528	54621	64839
		43	13072	17297	22180	27831	34348	41819	50314	59893
3506028	SHT4632ZHR	30	20157	26006	32777	40560	49425	59425	70594	82948
		32	19470	25168	31755	39323	47944	57674	68550	80592
		35	18437	23909	30218	37462	45716	55041	65479	77054
		38	17405	22647	28678	35597	43484	52405	62404	73514
		43	15690	20546	26110	32486	39761	48007	57278	67614

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Semi Hermetic Condensing Units



Tecumseh

SHT Series

Low, Medium and High Temperature Applications –
R404A/R448A/R452A/R134a/R513A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R452A							
			-30	-25	-20	-15	-10	-5	0	5
3506011	SHT4521ZHR-TZ	30	1142	1529	1997	2545	3172	3878	4660	5518
		32	1089	1462	1913	2442	3047	3729	4486	5316
		35	1009	1362	1788	2288	2862	3508	4227	5016
		38	929	1262	1664	2136	2678	3289	3970	4718
		43	797	1097	1460	1887	2377	2932	3550	4232
3506015	SHT4526ZHR-TZ	30	1520	1994	2568	3244	4024	4909	5898	6990
		32	1461	1917	2471	3124	3879	4737	5697	6759
		35	1372	1803	2326	2946	3664	4482	5400	6417
		38	1282	1689	2184	2771	3453	4231	5107	6080
		43	1128	1497	1946	2481	3105	3820	4628	5529
3506012	SHT4536ZHR-TZ	30	2192	2829	3590	4480	5500	6650	7931	9340
		32	2115	2729	3465	4325	5312	6426	7667	9035
		35	1999	2582	3279	4096	5033	6094	7277	8583
		38	1884	2437	3097	3871	4761	5768	6894	8140
		43	1701	2204	2805	3509	4321	5242	6275	7421
3506013	SHT4550ZHR-TZ	30	2994	3915	4995	6244	7665	9262	11033	12977
		32	2874	3769	4816	6024	7399	8942	10655	12537
		35	2696	3553	4551	5700	7005	8470	10097	11887
		38	2521	3342	4292	5383	6620	8008	9551	11249
		43	2240	3004	3879	4875	6002	7265	8669	10217
3506014	SHT4564ZHR-TZ	30	3816	4933	6245	7755	9465	11372	13472	15756
		32	3677	4764	6037	7501	9157	11004	13038	15252
		35	3468	4510	5726	7121	8698	10455	12392	14502
		38	3260	4259	5418	6745	8242	9912	11752	13758
		43	2926	3852	4918	6132	7500	9023	10704	12541
3506551	SHT4576ZHR	30	4588	6118	7900	9937	12230	14775	17571	20609
		32	4384	5870	7598	9571	11790	14253	16959	19901
		35	4071	5494	7142	9020	11130	13472	16045	18845
		38	3753	5115	6686	8471	10475	12697	15139	17799
		43	3221	4486	5932	7567	9397	11425	13654	16084
2707552	SHT4591ZHR	30	5651	7290	9238	11503	14087	16989	20201	23713
		32	5439	7026	8910	11099	13596	16400	19506	22904
		35	5114	6627	8417	10494	12861	15521	18470	21700
		38	4784	6226	7925	9891	12131	14649	17443	20508
		43	4235	5562	7112	8899	10933	13219	15759	18552
2707553	SHT4610ZHR	30	6659	8564	10808	13399	16339	19626	23252	27206
		32	6416	8264	10436	12942	15786	18967	22477	26309
		35	6045	7808	9875	12257	14959	17981	21321	24970
		38	5668	7350	9314	11573	14135	17003	20174	23643
		43	5035	6586	8384	10445	12780	15393	18288	21462
2707554	SHT4612ZHR	30	7712	9828	12327	15212	18480	22121	26122	30466
		32	7424	9480	11901	14692	17851	21371	25239	29442
		35	6986	8954	11260	13912	16910	20250	23922	27915
		38	6544	8426	10620	13136	15975	19138	22616	26401
		43	5811	7555	9567	11860	14441	17313	20472	23915
2707555	SHT4615ZHR	30	9183	11924	15178	18953	23252	28075	33414	39259
		32	8794	11447	14598	18257	22429	27113	32305	37995
		35	8206	10730	13730	17218	21202	25682	30656	36118
		38	7620	10017	12868	16189	19988	24267	29028	34264
		43	6659	8850	11462	14510	18007	21959	26370	31238
2707556	SHT4620ZHR	30	12706	16124	20034	24480	29491	35084	41261	48017
		32	12231	15574	19380	23694	28548	33962	39942	46486
		35	11502	14739	18394	22515	27139	32290	37979	44210
		38	10763	13899	17409	21343	25743	30636	36041	41964
		43	9531	12511	15789	19425	23463	27940	32881	38304
3506027	SHT4627ZHR	30	16255	21013	26672	33260	40790	49263	58669	68988
		32	15591	20197	25671	32044	39334	47543	56665	66685
		35	14585	18970	24174	30233	37167	44987	53690	63268
		38	13576	17748	22690	28442	35030	42467	50759	59901
		43	11914	15748	20271	25527	31552	38369	45990	54421
3506028	SHT4632ZHR	30	19628	25187	31749	39322	47902	57473	68006	79468
		32	18856	24238	30588	37921	46235	55516	65741	76880
		35	17697	22817	28858	35835	43755	52608	62377	73036
		38	16546	21412	27148	33778	41310	49741	59060	69245
		43	14682	19136	24379	30441	37339	45080	53661	63070

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Semi Hermetic Condensing Units



Tecumseh

SHT Series

Low, Medium and High Temperature Applications –
R404A/R448A/R452A/R134a/R513A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts									
			Evaporating Temperature °C									
			R134a					R513A				
			-10	-5	0	5	10	-10	-5	0	5	10
3506011	SHT4521ZHR-TZ	30	1684	2153	2695	3313	4014	1792	2267	2811	3429	4125
		32	1636	2096	2626	3233	3921	1738	2203	2736	3340	4022
		35	1566	2012	2526	3115	3783	1659	2109	2624	3210	3870
		38	1498	1930	2429	2999	3647	1583	2018	2516	3082	3721
		43	1390	1799	2271	2811	3425	1463	1873	2342	2876	3479
3506015	SHT4526ZHR-TZ	30	2315	2893	3559	4320	5180	2460	3041	3707	4463	5312
		32	2253	2820	3474	4220	5064	2390	2959	3612	4352	5184
		35	2161	2712	3346	4071	4891	2287	2838	3470	4187	4993
		38	2071	2605	3220	3923	4719	2186	2719	3330	4023	4804
		43	1923	2429	3012	3678	4433	2021	2524	3101	3756	4493
3506012	SHT4536ZHR-TZ	30	3456	4308	5283	6384	7613	3671	4527	5500	6591	7801
		32	3363	4197	5150	6227	7429	3566	4402	5352	6418	7599
		35	3223	4029	4951	5992	7155	3409	4215	5131	6158	7298
		38	3084	3863	4753	5758	6882	3253	4030	4912	5901	7000
		43	2853	3586	4423	5369	6428	2997	3724	4550	5478	6508
3506013	SHT4550ZHR-TZ	30	4552	5710	7062	8612	10368	4836	6002	7352	8891	10620
		32	4421	5554	6876	8394	10113	4689	5827	7146	8650	10341
		35	4225	5320	6598	8066	9729	4470	5567	6839	8290	9923
		38	4030	5087	6320	7738	9346	4252	5308	6533	7932	9507
		43	3707	4699	5858	7191	8707	3894	4882	6029	7340	8819
3506014	SHT4564ZHR-TZ	30	5703	7050	8595	10342	12293	6047	7394	8930	10653	12564
		32	5554	6871	8382	10090	11998	5879	7194	8693	10375	12241
		35	5332	6605	8065	9714	11558	5630	6897	8341	9962	11761
		38	5113	6342	7749	9341	11120	5385	6605	7993	9553	11285
		43	4754	5908	7229	8723	10394	4985	6126	7424	8883	10502
3506551	SHT4576ZHR	30	7007	8900	11108	13644	16516	7451	9363	11576	14098	16932
		32	6802	8658	10824	13312	16130	7221	9093	11261	13731	16508
		35	6494	8294	10396	12810	15546	6876	8688	10786	13179	15870
		38	6186	7929	9965	12305	14959	6532	8282	10312	12627	15232
		43	5671	7317	9242	11457	13974	5962	7610	9522	11707	14168
2707552	SHT4591ZHR	30	9079	11180	13606	16378	19515	9653	11773	14201	16952	20033
		32	8864	10922	13296	16009	19078	9414	11487	13858	16542	19548
		35	8540	10534	12831	15454	18421	9055	11057	13342	15926	18819
		38	8214	10144	12365	14898	17764	8695	10625	12824	15308	18086
		43	7671	9494	11585	13969	16665	8091	9902	11956	14271	16859
2707553	SHT4610ZHR	30	9374	11766	14547	17735	21338	9957	12361	15139	18300	21849
		32	9130	11471	14194	17313	20841	9680	12030	14744	17833	21303
		35	8763	11028	13661	16679	20093	9266	11534	14153	17134	20484
		38	8394	10582	13126	16042	19342	8853	11038	13563	16436	19667
		43	7777	9837	12231	14975	18085	8167	10216	12582	15277	18309
2707554	SHT4612ZHR	30	11054	13785	16919	20463	24422	11726	14462	17580	21082	24966
		32	10784	13458	16525	19991	23863	11420	14094	17140	20559	24352
		35	10377	12966	15930	19280	23020	10960	13542	16479	19776	23431
		38	9969	12470	15332	18564	22172	10501	12990	15819	18992	22510
		43	9285	11640	14329	17364	20750	9738	12072	14720	17687	20977
2707555	SHT4615ZHR	30	14512	18053	22098	26666	31772	15406	18960	22990	27504	32508
		32	14097	17572	21544	26032	31050	14941	18423	22374	26802	31714
		35	13477	16853	20715	25081	29968	14248	17623	21456	25755	30528
		38	12861	16137	19887	24131	28886	13562	16830	20544	24715	29348
		43	11844	14950	18513	22552	27084	12436	15525	19042	22997	27400
2707556	SHT4620ZHR	30	18058	22249	27065	32542	38702	19140	23320	28098	33499	39540
		32	17619	21728	26445	31807	37839	18644	22734	27405	32684	38589
		35	16960	20944	25513	30702	36540	17900	21856	26368	31464	37166
		38	16297	20157	24576	29594	35238	17157	20980	25333	30248	35748
		43	15189	18840	23010	27739	33059	15922	19524	23616	28230	33393
3506027	SHT4627ZHR	30	24982	31299	38485	46556	55522	26505	32848	40006	47984	56779
		32	24220	30393	37417	45311	54085	25655	31843	38830	46621	55215
		35	23095	29052	35835	43464	51950	24403	30361	37093	44606	52900
		38	21992	27735	34278	41641	49840	23179	28910	35389	42625	50622
		43	20204	25591	31735	38659	46382	21205	26561	32623	39404	46909
3506028	SHT4632ZHR	30	28161	34970	42717	51423	61103	29859	36673	44369	52954	62428
		32	27405	34075	41663	50192	59678	29010	35673	43198	51595	60866
		35	26274	32734	40084	48348	57544	27742	34179	41451	49568	58535
		38	25146	31397	38508	46508	55414	26483	32697	39717	47556	56220
		43	23275	29176	35891	43450	51874	24408	30254	36858	44237	52403

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Packaged Condensing Units



Acpac

AP Series



Acpac Packaged Condensing Units offer a Complete Refrigeration Solution

The Acpac range is designed in Australia to provide a robust energy efficient, fully fitted packaged range with world leading hermetically sealed reciprocating and semi hermetic reciprocating compressors.

Acpac uses premium compressors and large condensers in combination to ensure reliable refrigeration when you need it most. This is the Acpac packaged advantage.

Applications are diverse and include commercial food, beverage cooling, and freezing in supermarkets, as well as refrigeration applications in convenience stores, pubs and clubs, restaurants, cafes, food processors and many more.

Installation is quick and easy as every Acpac is fully optioned straight out of the box.

All Acpac units include condenser fan controls and epoxy coated condenser fins to ensure superb energy efficient performance in Australia's diverse weather conditions.

Acpac packaged condensing units are a perfect solution for your customers' refrigeration requirements.

Features

- World leading compressors
- Oil Separator on every model
- Liquid Receiver
- Copper tails for easy connections
- Condenser fan control provides stable operation in Australia's diverse weather conditions
- Galvanized powder coated enclosures not only protect the unit but provide a good looking professional finish every time
- Easy to read wiring diagram is permanently attached to inside panel for quick service
- Separate compressor and fan compartments for safe and easy maintenance
- Easy access to all serviceable components
- Large epoxy finned condenser/s
- Suction Accumulator on most models
- Comprehensive electrical board fully wired to all electrical components
- Safety controls offering substantial protection

Medium Temperature Applications – R404A/R448A/R452A

Product Code	Unit Model	Compressor					Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. cm ³ /rev	Nominal HP	MOC Amps	Volts/Phase	No. Diam. mm	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
2709753	AP1.7M1-5	CAJ9480Z	15.20	0.7	5.17	240/1	350MM	0.6	2285	240/1	3.5	3.9
2709754	AP2.1M1-5	CAJ9510Z	18.30	1.0	6.48	240/1	350MM	0.6	2285	240/1	3.47	3.9
2709755	AP2.5M1-5	CAJ9513Z	24.20	1.1	8.14	240/1	350MM	0.6	2285	240/1	3.47	3.9
2709756	AP2.8M1-5	CAJ4517Z	25.90	1.5	9.04	240/1	350MM	0.6	2285	240/1	3.47	3.9
2709757	AP3.9M1-5	CAJ4519Z	34.50	1.6	12	240/1	350MM	0.6	2285	240/1	6.3	3.9
3508127	AP4.1M1-0-XC	FH4524Z-XC3A	43.50	2.0	12.4	240/1	350MM	0.6	2285	240/1	6.3	3.9
3508128	AP5.7M2-0-XG	FH4532Z-XG-1A	56.60	2.6	4.71	415/3	2x 350MM	1.2	4570	240/1	6.8	10
3508129	AP7.8M2-0-XG	FH4538Z-XG-1A	63.00	3.3	6.83	415/3	2x 350MM	1.2	4570	240/1	10.42	10
2709761	AP8.8M2-4	TAG4553Z	100.70	4.4	9.69	415/3	2x 350MM	1.2	4570	240/1	10.42	10
2709762	AP10.7M2-4	TAG4561Z	112.50	5.0	10.3	415/3	2x 350MM	1.2	4570	240/1	13.21	10
2709763	AP13.1M2-4	TAG4573Z	134.80	6.0	13.6	415/3	2x 350MM	1.2	4570	240/1	13.21	10

Packaged Condensing Units



Acpac
AP Series

Medium Temperature Applications – R404A/R448A/R452A

Dimension Properties

Product Code	Unit Model	Unit Connections		Weight kg	Sound Power Level dBA	Dimensions		
		Suction	Liquid			L mm	W mm	H mm
2709753	AP1.7M1-5	5/8"	3/8"	68	62	1070	480	750
2709754	AP2.1M1-5	5/8"	3/8"	70	63	1070	480	750
2709755	AP2.5M1-5	5/8"	3/8"	70	64	1070	480	750
2709756	AP2.8M1-5	5/8"	3/8"	71	65	1070	480	750
2709757	AP3.9M1-5	5/8"	3/8"	71	68	1070	480	750
3508127	AP4.1M1-0-XC	5/8"	3/8"	81	70	1070	480	750
3508128	AP5.7M2-0-XG	5/8"	1/2"	105	69	1285	628	820
3508129	AP7.8M2-0-XG	5/8"	1/2"	118	75	1285	628	820
2709761	AP8.8M2-4	7/8"	5/8"	146	78	1285	628	820
2709762	AP10.7M2-4	7/8"	5/8"	148	78	1285	628	820
2709763	AP13.1M2-4	7/8"	5/8"	150	77	1285	628	C

Packaged Condensing Units



Acpac

AP Series



Medium Temperature Applications – R404A/R448A/R452A



Product Code	Model Number	Ambient Temp. °C	Capacity Watts				
			Evaporating Temperature °C				
			R404A				
			-10	-5	0	5	10
2709753	AP1.7M1	30	1457	1763	2106	2486	2902
		32	1406	1702	2033	2400	2801
		38	1253	1519	1814	2141	2499
		43	1125	1366	1632	1926	2248
2709754	AP2.1M1	30	1770	2132	2533	2972	3449
		32	1710	2060	2446	2870	3330
		38	1528	1841	2186	2563	2972
		43	1375	1658	1968	2306	2672
2709755	AP2.5M1	30	2187	2641	3133	3659	4213
		32	2104	2544	3019	3525	4059
		38	1858	2252	2675	3124	3598
		43	1652	2008	2388	2791	3215
2709756	AP2.8M1	30	2406	2866	3363	3894	4454
		32	2320	2764	3243	3755	4295
		38	2061	2458	2884	3337	3815
		43	1844	2203	2584	2988	3414
2709757	AP3.9M1	30	3285	3954	4685	5478	6329
		32	3172	3820	4527	5293	6115
		38	2827	3413	4047	4730	5462
		43	2536	3068	3640	4253	4909
2709758	AP4.1M1	30	3701	4517	5403	6355	7369
		32	3560	4352	5210	6132	7112
		38	3129	3850	4624	5452	6331
		43	2765	3424	4128	4878	5672
2709759	AP5.7M2	30	4763	5725	6724	7769	8864
		32	4572	5516	6491	7505	8564
		38	3990	4882	5784	6706	7658
		43	3496	4346	5187	6034	6898
2709760	AP7.8M2	30	6016	7279	8639	10081	11595
		32	5821	7046	8360	9753	11213
		38	5217	6329	7511	8755	10053
		43	4689	5709	6783	7906	9072
2709761	AP8.8M2	30	7404	9065	10855	12756	14750
		32	7083	8688	10415	12248	14171
		38	6128	7567	9107	10738	12447
		43	5342	6646	8032	9495	11027
2709762	AP10.7M2	30	8578	10456	12492	14668	16964
		32	8230	10046	12012	14112	16327
		38	7190	8825	10584	12456	14430
		43	6326	7816	9406	11092	12866
2709763	AP13.1M2	30	10417	12488	14707	17052	19499
		32	10023	12026	14167	16428	18787
		38	8829	10625	12534	14544	16639
		43	7826	9447	11162	12962	
3508127	AP4.1M1-0-XC	30					
		32	3625	4422	5290	6227	7230
		38	3168	3885	4663	5500	6396
		43	2796	3447	4149	4903	5709
3508128	AP5.7M2-0-XG	30					
		32	4298	5200	6180	7232	8350
		38	3799	4608	5480	6415	7409
		43	3382	4113	4896	5734	6623
3508129	AP7.8M2-0-XG	30					
		32	5699	6900	8212	9633	11159
		38	5055	6145	7326	8600	9967
		43	4510	5507	6581	7733	8967

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Condensing Units

Packaged Condensing Units



Acpac

AP Series



Medium Temperature Applications – R404A/R448A/R452A

Condensing Units



Product Code	Model Number	Ambient Temp. °C	Capacity Watts				
			Evaporating Temperature °C				
			R448A				
			-10	-5	0	5	10
2709753	AP1.7M1	30	1387	1710	2076	2487	2944
		32	1335	1648	2003	2401	2844
		38	1192	1477	1799	2162	2565
		43	1075	1337	1633	1966	2337
2709754	AP2.1M1	30	1690	2072	2502	2980	3507
		32	1628	1999	2415	2879	3390
		38	1459	1795	2174	2595	3059
		43	1319	1628	1975	2361	2787
2709755	AP2.5M1	30	2094	2574	3103	3679	4297
		32	2011	2476	2989	3547	4146
		38	1781	2205	2670	3177	3722
		43	1592	1982	2409	2873	3373
2709756	AP2.8M1	30	2299	2791	3332	3921	4555
		32	2213	2690	3214	3785	4400
		38	1974	2408	2884	3403	3961
		43	1778	2177	2613	3088	
2709757	AP3.9M1	30	3137	3843	4627	5491	6434
		32	3023	3708	4469	5307	6223
		38	2702	3329	4023	4787	5620
		43	2436	3014	3652	4353	5118
2709758	AP4.1M1	30	3555	4413	5365	6408	7540
		32	3411	4247	5172	6186	7286
		38	3008	3777	4625	5555	6565
		43	2671	3385	4170	5029	5963
2709759	AP5.7M2	30	4568	5585	6673	7840	9092
		32	4382	5381	6446	7585	8804
		38	3850	4802	5802	6862	7988
		43	3403	4319	5269	6264	
2709760	AP7.8M2	30	5781	7112	8569	10147	11833
		32	5581	6876	8292	9823	11460
		38	5015	6208	7506	8906	10400
		43	4529	5641	6845	8138	9516
2709761	AP8.8M2	30	7128	8883	10817	12916	15166
		32	6804	8504	10377	12413	14596
		38	5905	7450	9151	11001	12990
		43	5175	6595	8155	9853	
2709762	AP10.7M2	30	8234	10216	12409	14803	17381
		32	7883	9805	11931	14252	16755
		38	6909	8663	10599	12714	14999
		43	6111	7732	9516	11464	13570
2709763	AP13.1M2	30	10008	12232	14670	17307	20124
		32	9612	11770	14135	16694	19430
		38	8498	10466	12621	14954	17453
		43	7576	9386	11367		
3508127	AP4.1M1-0-XC	30					
		32	3462	4302	5235	6262	7381
		38	3036	3802	4652	5589	6611
		43	2695	3400	4182	5044	5986
3508128	AP5.7M2-0-XG	30					
		32	4111	5068	6128	7289	8547
		38	3644	4515	5478	6533	7677
		43	3262	4061	4943	5910	6960
3508129	AP7.8M2-0-XG	30					
		32	5439	6708	8121	9678	11381
		38	4838	6006	7300	8726	10285
		43	4338	5422	6620	7938	9380

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units



Acpac

AP Series



Medium Temperature Applications – R404A/R448A/R452A



Product Code	Model Number	Ambient Temp. °C	Capacity Watts				
			Evaporating Temperature °C				
			R452A				
			-10	-5	0	5	10
2709753	AP1.7M1	30	1437	1751	2104	2497	2929
		32	1384	1687	2028	2407	2824
		38	1230	1502	1808	2147	2521
		43	1101	1349	1625	1932	2270
2709754	AP2.1M1	30	1747	2118	2531	2986	3481
		32	1684	2042	2441	2880	3358
		38	1500	1822	2179	2571	2999
		43	1347	1638	1960	2314	2699
2709755	AP2.5M1	30	2157	2622	3128	3671	4246
		32	2072	2521	3009	3533	4088
		38	1824	2228	2665	3132	3627
		43	1618	1984	2378	2800	3245
2709756	AP2.8M1	30	2370	2842	3356	3906	4490
		32	2281	2737	3232	3763	4327
		38	2021	2431	2873	3346	3848
		43	1805	2175	2573	2998	3449
2709757	AP3.9M1	30	3242	3928	4681	5501	6386
		32	3124	3788	4516	5309	6164
		38	2777	3377	4032	4743	5508
		43	2484	3031	3624	4265	4956
2709758	AP4.1M1	30	3659	4494	5406	6391	7446
		32	3511	4322	5205	6159	7180
		38	3078	3815	4614	5475	6396
		43	2713	3388	4117	4900	5737
2709759	AP5.7M2	30	4697	5682	6714	7801	8948
		32	4502	5468	6474	7530	8641
		38	3925	4836	5769	6733	7739
		43	3436	4303	5176	6066	6985
2709760	AP7.8M2	30	5956	7248	8645	10135	11706
		32	5750	7003	8354	9794	11311
		38	5137	6277	7497	8790	10149
		43	4603	5652	6765	7940	9169
2709761	AP8.8M2	30	7311	9006	10845	12811	14883
		32	6978	8616	10392	12288	14289
		38	6021	7492	9081	10776	12567
		43	5236	6571	8006	9535	
2709762	AP10.7M2	30	8468	10388	12481	14731	17117
		32	8107	9963	11985	14158	16463
		38	7064	8738	10553	12501	14569
		43	6200	7728	9375	11139	13010
2709763	AP13.1M2	30	10277	12403	14696	17133	19691
		32	9867	11923	14137	16490	18961
		38	8668	10515	12498	14603	16814
		43	7663	9336	11126	13024	
3508127	AP4.1M1-0-XC	30					
		32	3567	4382	5273	6238	7273
		38	3106	3843	4646	5513	6444
		43	2733	3406	4135	4921	5766
3508128	AP5.7M2-0-XG	30					
		32	4231	5157	6164	7248	8404
		38	3724	4558	5461	6432	7467
		43	3305	4062	4879	5754	6689
3508129	AP7.8M2-0-XG	30					
		32	5595	6818	8160	9618	11191
		38	4958	6068	7279	8591	10006
		43	4423	5437	6538	7729	9012

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units



Acpac
AP Series

Condensing Units

Low Temperature Applications – R404A/R448A/R452A

Product Code	Unit Model	Compressor					Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. cm ³ /rev	Nominal HP	MOC Amps	Volts/Phase	No. Diam. mm	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
2709770	AP1.9L1-5	CAJ2464Z	34.50	1.5	8.5	240/1	350mm	0.6	2285	240/1	3.47	3.9
3508130	AP2.9L1-0-XC	FH2480Z-XC	53.20	2.0	11.1	240/1	350mm	0.6	2285	240/1	6.3	3.9
3508131	AP3.3L2-0-XG	FH2511Z-XG	74.20	2.8	5.15	415/3	2 x 350mm	1.2	4570	240/1	6.8	10
2709773	AP4.8L2-4	TAG2516Z	112.50	4.0	7.14	415/3	2 x 350mm	1.2	4570	240/1	10.42	10
2709774	AP6.2L2-4	TAG2522Z	134.80	5.5	9.09	415/3	2 x 350mm	1.2	4570	240/1	13.21	10

Dimensions

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
2709770	AP1.9L1-5	5/8"	3/8"	73	67	1070	480	750
3508130	AP2.9L1-0-XC	5/8"	3/8"	90	69	1070	480	750
3508131	AP3.3L2-0-XG	5/8"	1/2"	130	72	1285	628	820
2709773	AP4.8L2-4	7/8"	5/8"	155	71	1285	628	820
2709774	AP6.2L2-4	7/8"	5/8"	175	76	1285	628	820

Packaged Condensing Units



Acpac
AP Series

Low Temperature Applications – R404A/R448A/R452A

Product Code	Model Number	Ambient Temp. °C	Capacity Watts											
			Evaporating Temperature °C											
			R404A				R448A				R452A			
			-30	-25	-20	-15	-30	-25	-20	-15	-30	-25	-20	-15
2709770	AP1.9L1	30	1257	1593	1972	2393	1105	1449	1848	2302	1196	1530	1913	2346
		32	1209	1534	1901	2309	1057	1391	1778	2220	1147	1471	1842	2261
		38	1064	1358	1690	2059	928	1234	1590	1997	1004	1298	1635	2016
		43	944	1212	1514	1850	825	1109	1439	1818	887	1155	1463	1811
3508130	AP2.9L1-0-XC	30												
		32	2054	2704	3447	4284	1824	2473	3233	4107	1729	2251	2869	3613
		38	1771	2366	3047	3812	1559	2161	2865	3677	1502	1989	2544	3203
		43	1536	2086	2713	3418	1341	1903	2561	3322	1303	1768	2279	2872
3508131	AP3.3L2-0-XG	30												
		32	2618	3433	4359	5393	2327	3146	4099	5186	2472	3296	4238	5297
		38	2254	3001	3847	4790	1987	2746	3629	4639	2104	2860	3723	4694
		43	1953	2642	3421	4288	1708	2416	3241	4186	1801	2499	3296	4193
2709771	AP2.9L1	30	1886	2439	3055	3734	1663	2222	2862	3584	1796	2345	2964	3657
		32	1806	2346	2946	3607	1585	2130	2754	3458	1715	2250	2854	3528
		38	1560	2061	2614	3218	1366	1873	2453	3107	1474	1970	2526	3145
		43	1350	1818	2330	2887	1185	1660	2204	2817	1270	1732	2247	2820
2709772	AP3.3L2	30	2460	3194	4020	4930	2170	2914	3775	4751	2341	3070	3902	4835
		32	2346	3058	3859	4743	2059	2781	3618	4569	2226	2933	3740	4647
		38	2016	2662	3390	4195	1767	2427	3198	4081	1906	2547	3282	4111
		43	1756	2347	3014	3753	1545	2156	2874	3701	1655	2241	2916	3680
2709773	AP4.8L2	30	3373	4479	5734	7132	2993	4103	5399	6879	3241	4337	5595	7010
		32	3211	4281	5495	6848	2832	3905	5161	6598	3070	4131	5347	6718
		38	2727	3691	4785	6002	2397	3368	4510	5823	2581	3540	4640	5880
		43	2332	3208	4200	5304	2052	2940	3988	5200	2186	3061	4064	5196
2709774	AP6.2L2	30	4428	5755	7273	8979	3905	5252	6833	8653	4215	5534	7064	8808
		32	4232	5518	6988	8640	3714	5017	6550	8318	4018	5294	6775	8465
		38	3657	4819	6146	7639	3200	4386	5787	7414	3455	4609	5949	7483
		43	3190	4251	5461	6822	2796	3890	5187	6699	2999	4053	5277	6682

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Packaged Condensing Units



Acpac APS Series



The Acpac APS range is designed in Australia to provide a robust energy efficient, fully fitted packaged range with world leading semi hermetic reciprocating compressors. Acpac uses premium compressors and large condensers in combination to ensure reliable refrigeration when you need it most.

The SH semi hermetic compressor from Tecumseh has a proven reputation for performance and reliability in refrigeration. The APS range has been designed to operate efficiently in both the hot and cold extremes of the Australian environment, with extremely large condensers and fan speed control across all models.

Medium/Low Temperature Applications – R404A/R448A/R452A/R134a/R513A

Product Code	Unit Model	Compressor						Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. m ³ /hr	Nominal HP	Motor Type	MOC Amps	Volts/Phase	No. Diam. mm	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
2701982	APS4.6ML2-1	SH4526Z	6.91	1.5	DOL	4.5	415/3	2 x 350	1.4	4210	240V/1	10.4	10.0
2701983	APS6.0ML2-1	SH4536Z	9.88	2	DOL	6.7	415/3	2 x 350	1.4	4210	240V/1	10.4	10.0
2701984	APS8.3ML2-1	SH4550Z	13.15	3	DOL	8.8	415/3	2 x 350	1.4	4210	240V/1	13.2	10.0
2701985	APS11.7ML3-1	SH4567Z	17.93	4	DOL	12.5	415/3	3 x 350	2.1	6315	240V/1	18.6	10.0
2701986	APS14.4ML3-1	SH4591Z	24.69	5	DOL	12.7	415/3	3 x 350	2.1	6315	240V/1	18.6	10.0
2701987	APS19.0ML2-1	SH4610Z	28.02	7	DOL	17.6	415/3	2 x 500	6.0	11530	240V/1	43.0	12.0
2701988	APS25.8ML2-1	SH4615Z	41.32	12	PWS	22.4	415/3	2 x 500	6.0	11530	240V/1	43.0	12.0
2701989	APS33.6ML2-1	SH4620Z	51.50	15	PWS	32.4	415/3	2 x 500	6.0	11530	240V/1	50.0	12.0
2702252	APS46.5ML2-1	SH4627Z	70.77	25	PWS	43.5	415/3	2 x 710	3.8	25060	415V/3	72.9	25.0
2702253	APS56.4ML2-1	SH4632Z	83.81	30	PWS	49.2	415/3	2 x 710	3.8	25060	415V/3	91.6	25.0
2702254	APS64.2ML2-1	SH4639Z	102.86	35	PWS	61.0	415/3	2 x 710	3.8	25060	415V/3	91.6	25.0

Dimensions

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
2701982	APS4.6ML2-1	7/8"	1/2"	161	65	1420	630	820
2701983	APS6.0ML2-1	7/8"	1/2"	168	67	1420	630	820
2701984	APS8.3ML2-1	7/8"	1/2"	180	67	1420	630	820
2701985	APS11.7ML3-1	1 1/8"	1/2"	195	70	1880	630	820
2701986	APS14.4ML3-1	1 1/8"	1/2"	240	70	1880	630	820
2701987	APS19.0ML2-1	1 3/8"	5/8"	290	72	1770	870	1015
2701988	APS25.8ML2-1	1 3/8"	5/8"	340	75	1770	870	1015
2701989	APS33.6ML2-1	1 3/8"	5/8"	386	77	1770	870	1015
2702252	APS46.5ML2-1	2 1/8"	1 1/8"	615	78	2455	1101	1544
2702253	APS56.4ML2-1	2 1/8"	1 1/8"	650	81	2455	1101	1544
2702254	APS64.2ML2-1	2 1/8"	1 1/8"	670	82	2455	1101	1544

Packaged Condensing Units



Acpac
APS Series

Medium/Low Temperature Applications –
R404A/R448A/R452A/R134a/R513A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R404A							
			-30	-25	-20	-15	-10	-5	0	5
2701982	APS4.6ML2-1	30	1627	2133	2732	3431	4233	5141	6160	7291
		32	1566	2055	2635	3311	4088	4971	5961	7062
		38	1391	1830	2351	2962	3667	4470	5376	6387
		43	1245	1644	2118	2675	3321	4059	4895	5833
2701983	APS6.0ML2-1	30	2306	2962	3725	4600	5588	6693	7915	9255
		32	2229	2865	3604	4450	5408	6480	7666	8967
		38	2008	2582	3249	4014	4880	5850	6928	8114
		43	1834	2358	2965	3661	4451	5337	6325	7414
2701984	APS8.3ML2-1	30	3132	4076	5152	6368	7729	9239	10900	12711
		32	3012	3933	4978	6157	7476	8938	10545	12299
		38	2666	3518	4474	5543	6733	8051	9500	11082
		43	2395	3190	4071	5049	6133	7331	8647	10085
2701985	APS11.7ML3-1	30	4675	5909	7315	8899	10666	12617	14751	
		32	4533	5732	7096	8630	10340	12227	14291	
		38	4123	5214	6446	7827	9361	11053	12905	
		43	3807	4803	5920	7167	8551	10076	11748	
2701986	APS14.4ML3-1	30	5829	7456	9320	11426	13769	16345	19144	
		32	5621	7202	9009	11046	13312	15801	18506	
		38	4995	6439	8074	9906	11938	14168	16592	
		43	4470	5800	7292	8954	10791	12805	-	
2701987	APS19.0ML2-1	30	7188	9243	11624	14354	17451	20932	24807	
		32	6945	8945	11258	13906	16910	20285	24044	
		38	6215	8052	10159	12563	15285	18344	21756	
		43	5600	7300	9236	11436	13924	16720	19842	
2701988	APS25.8ML2-1	30	9749	12608	15916	19690	23943	28684	33917	
		32	9357	12133	15344	19010	23144	27756	32850	
		38	8201	10725	13648	16989	20765	24988	29667	
		43	7260	9574	12254	15324	18801	22700	27033	
2701989	APS33.6ML2-1	30	13651	17273	21339	25911	31044	36779	43150	50175
		32	13178	16735	20704	25152	30134	35694	41867	48676
		38	11734	15095	18780	22857	27388	32426	38011	44176
		43	10503	13705	17154	20926	25086	29692	34792	40427
2702252	APS46.5ML2-1	30	17231	22179	27917	34485	41910	50213	59400	69474
		32	16565	21371	26937	33304	40504	48557	57476	67264
		38	14588	18973	24026	29797	36323	43634	51751	60687
		43	12965	17004	21635	26913	32882	39579	47032	55263
2702253	APS56.4ML2-1	30	21158	27120	34024	41913	50822	60774	71783	83856
		32	20379	26170	32870	40527	49175	58840	69540	81285
		38	18093	23366	29453	36407	44270	53074	62845	73601
		43	16251	21087	26659	33024	40228	48311	57306	67237
2702254	APS64.2ML2-1	30	25728	32642	40435	49158	58849	69528	81206	93881
		32	24777	31529	39111	47580	56976	67326	78644	90935
		38	21853	28174	35180	42939	51505	60918	71207	82394
		43	19434	25458	32045	39273	47206	55895	65383	

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Packaged Condensing Units



Acpac
APS Series

Medium/Low Temperature Applications –
R404A/R448A/R452A/R134a/R513A



Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R448A							
			-30	-25	-20	-15	-10	-5	0	5
2701982	APS4.6ML2-1	30	1436	1924	2502	3179	3965	4869	5896	7054
		32	1378	1853	2414	3071	3834	4712	5710	6837
		38	1199	1634	2145	2743	3437	4237	5151	6184
		43	1044	1446	1917	2466	3104	3840	4683	5640
2701983	APS6.0ML2-1	30	2067	2748	3548	4475	5540	6749	8106	9616
		32	1987	2650	3426	4326	5359	6532	7851	9319
		38	1738	2347	3054	3873	4813	5882	7086	8430
		43	1522	2087	2740	3492	4356	5339	6449	7691
2701984	APS8.3ML2-1	30	3049	3975	5057	6313	7758	9407	11270	13355
		32	2939	3841	4894	6116	7525	9132	10951	12988
		38	2609	3439	4406	5530	6827	8312	9997	11893
		43	2335	3105	4001	5042	6247	7631	9206	10985
2701985	APS11.7ML3-1	30	4308	5561	7028	8734	10706	12964	15526	18406
		32	4159	5379	6807	8470	10393	12597	15102	17921
		38	3716	4838	6152	7685	9463	11510	13844	16482
		43	3352	4395	5615	7041	8701	10617	12811	15300
2701986	APS14.4ML3-1	30	5653	7309	9232	11452	13996	16882	20125	23733
		32	5447	7057	8927	11087	13564	16379	19544	23071
		38	4836	6310	8020	10000	12278	14876	17812	21097
		43	4338	5697	7274	9104	11217	13636	16381	20071
2701987	APS19.0ML2-1	30	6649	8687	11090	13913	17204	21009	25367	30314
		32	6407	8390	10730	13479	16689	20404	24664	29506
		38	5687	7507	9654	12185	15148	18592	22558	27084
		43	5100	6782	8767	11113	13871	17089	20809	25071
2701988	APS25.8ML2-1	30	9495	12383	15788	19783	24432	29789	35899	42796
		32	9145	11953	15263	19148	23674	28897	34862	41606
		38	8113	10689	13719	17280	21442	26265	31799	38085
		43	7269	9658	12461	15758	19623	24117	29297	35207
2701989	APS33.6ML2-1	30	11090	14651	18852	23775	29488	36048	43502	51881
		32	10635	14096	18177	22959	28516	34904	42172	50356
		38	9290	12455	16177	20544	25633	31508	38224	45822
		43	8190	11111	14538	18563	23267	28718	34977	42091
2702252	APS46.5ML2-1	30	17075	22124	28001	34806	42627	51537	61594	72841
		32	16465	21389	27115	33744	41366	50056	59872	70862
		38	14631	19180	24450	30550	37574	45601	54698	64919
		43	13112	17342	22230	27887	34410	41885	50383	59964
2702253	APS56.4ML2-1	30	20507	26517	33515	41613	50900	61453	73330	86571
		32	19814	25671	32482	40359	49395	59669	71241	84154
		38	17727	23120	29365	36577	44859	54293	64950	76882
		43	15992	20992	26759	33414	41064	49798	59694	70810
2702254	APS64.2ML2-1	30	25519	32597	40740	50078	60717	72738	86192	101111
		32	24722	31634	39561	48638	58975	70655	83737	98257
		38	22292	28710	35998	44298	53733	64401	76374	89703
		43	20214	26228	32989	40650	49342	59174	70231	82577

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Packaged Condensing Units



Acpac
APS Series



Medium/Low Temperature Applications –
R404A/R448A/R452A/R134a/R513A

Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R452A							
			-30	-25	-20	-15	-10	-5	0	5
2701982	APS4.6ML2-1	30	1541	2028	2620	3321	4135	5064	6110	7273
		32	1482	1950	2521	3198	3986	4887	5902	7033
		38	1301	1719	2229	2838	3550	4367	5293	6328
		43	1147	1526	1989	2544	3194	3945	4798	5757
2701983	APS6.0ML2-1	30	2184	2814	3567	4444	5446	6574	7825	9197
		32	2106	2715	3442	4290	5259	6351	7564	8896
		38	1877	2424	3076	3839	4713	5700	6801	8013
		43	1694	2192	2786	3480	4278	5180	6190	7305
2701984	APS8.3ML2-1	30	2968	3874	4932	6149	7526	9064	10759	12609
		32	2849	3729	4755	5932	7264	8750	10390	12180
		38	2498	3306	4237	5300	6498	7836	9312	10926
		43	2220	2972	3829	4800	5892	7108	8451	9921
2701985	APS11.7ML3-1	30	4422	5609	6995	8584	10374	12363	14545	16913
		32	4277	5427	6768	8303	10032	11953	14062	16352
		38	3849	4888	6093	7468	9015	10735	12625	14683
		43	3519	4465	5556	6798	8194	9747	11456	13320
2701986	APS14.4ML3-1	30	5513	7075	8910	11015	13382	15997	18846	21907
		32	5301	6814	8588	10621	12906	15433	18185	21146
		38	4653	6026	7624	9447	11495	13760	16231	18896
		43	4113	5377	6834	8491	10347	12399	14642	17065
2701987	APS19.0ML2-1	30	6804	8785	11137	13881	17030	20591	24571	28969
		32	6561	8482	10761	13416	16463	19911	23766	28029
		38	5808	7558	9620	12017	14766	17879	21366	25232
		43	5167	6781	8671	10859	13366	16207	19395	22937
2701988	APS25.8ML2-1	30	9206	11955	15219	19007	23323	28166	33529	39403
		32	8816	11477	14638	18310	22498	27202	32418	38136
		38	7640	10044	12905	16237	20050	24348	29130	34392
		43	6677	8875	11495	14554	18064	22032	26463	31355
2701989	APS33.6ML2-1	30	12890	16381	20399	24999	30221	36092	42627	49832
		32	12414	15829	19741	24205	29264	34948	41277	48256
		38	10940	14143	17749	21821	26407	31548	37270	43593
		43	9695	12737	16105	19866	24076	28780	34014	39805
2702252	APS46.5ML2-1	30	16275	21035	26697	33286	40816	49287	58689	69001
		32	15610	20218	25695	32070	39359	47566	56684	66697
		38	13593	17767	22712	28465	35052	42488	50776	59912
		43	11930	15766	20290	25547	31572	38387	46005	54430
2702253	APS56.4ML2-1	30	19985	25725	32542	40464	49508	59675	70959	83342
		32	19206	24763	31362	39034	47798	57660	68615	80649
		38	16868	21892	27854	34793	42735	51697	61684	72692
		43	14971	19570	25018	31364	38639	46869	56067	66239
2702254	APS64.2ML2-1	30	24271	30916	38599	47350	57179	68079	80027	92992
		32	23308	29781	37242	45724	55244	65800	77377	89949
		38	20338	26371	33238	40988	49655	59254	69786	81243
		43	17927	23674	30128	37350	45386	54264	63999	74598

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Packaged Condensing Units



Acpac APS Series

Medium/Low Temperature Applications –
R404A/R448A/R452A/R134a/R513A



Product Code	Model Number	Ambient Temp. °C	Capacity Watts					
			Evaporating Temperature °C					
			R134a					
			-15	-10	-5	0	5	10
2701982	APS4.6ML2-1	30	1837	2341	2929	3610	4390	5275
		32	1784	2278	2855	3523	4289	5158
		38	1628	2094	2638	3267	3988	4808
		43	1503	1945	2461	3057	3740	4518
2701983	APS6.0ML2-1	30	2709	3438	4282	5247	6333	7544
		32	2632	3345	4171	5114	6177	7361
		38	2402	3067	3838	4718	5710	6816
		43	2211	2837	3562	4390	5323	6365
2701984	APS8.3ML2-1	30	3547	4509	5649	6974	8490	10201
		32	3438	4379	5494	6790	8274	9948
		38	3115	3991	5029	6238	7623	9188
		43	2849	3670	4644	5779	7082	8556
2701985	APS11.7ML3-1	30	5235	6616	8221	10068	12171	14539
		32	5084	6439	8014	9823	11882	14202
		38	4626	5907	7388	9086	11015	13189
		43	4242	5462	6864	8469	10290	12342
2701986	APS14.4ML3-1	30	7140	8881	10896	13203	15814	18739
		32	6959	8667	10641	12897	15451	18310
		38	6416	8024	9872	11979	14358	17023
		43	5961	7486	9229	11210	13445	15947
2701987	APS19.0ML2-1	30	7465	9537	12005	14892	18224	22020
		32	7260	9291	11707	14535	17798	21516
		38	6644	8549	10810	13456	16510	19994
		43	6129	7926	10057	12549	15428	18715
2701988	APS25.8ML2-1	30	11465	14525	18071	22123	26700	31817
		32	11107	14110	17590	21569	26065	31094
		38	10047	12873	16153	19910	24163	28928
		43	9179	11855	14966	18535	22582	27125
2701989	APS33.6ML2-1	30	14581	18243	22513	27439	33063	39418
		32	14206	17803	21989	26816	32324	38547
		38	13077	16475	20410	24935	30093	35922
		43	12131	15361	19085	23357	28223	33723
2702252	APS46.5ML2-1	30	19504	24975	31289	38470	46535	55494
		32	18868	24213	30383	37403	45291	54058
		38	17016	21985	27725	34264	41623	49816
		43	15539	20198	25582	31722	38642	46358
2702253	APS56.4ML2-1	30	22530	28558	35539	43516	52523	62590
		32	21890	27796	34635	42449	51276	61143
		38	19974	25516	31928	39256	47540	56811
		43	18389	23626	29682	36606	44437	53212
2702254	APS64.2ML2-1	30	28657	35788	44082	53610	64426	76569
		32	27925	34925	43054	52383	62968	74849
		38	25718	32327	39960	48691	58582	69679
		43	23870	30152	37370	45603	54917	65361

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Packaged Condensing Units



Acpac APS Series



Medium/Low Temperature Applications – R404A/R448A/R452A/R134a/R513A

Product Code	Model Number	Ambient Temp. °C	Capacity Watts					
			Evaporating Temperature °C					
			R513A					
			-15	-10	-5	0	5	10
2701982	APS4.6ML2-1	30	1980	2491	3084	3767	4544	5421
		32	1919	2420	3001	3670	4431	5290
		38	1743	2213	2758	3384	4097	4904
		43	1603	2047	2561	3152	3825	4588
2701983	APS6.0ML2-1	30	2914	3649	4497	5458	6533	7723
		32	2827	3545	4372	5310	6360	7523
		38	2567	3233	4001	4872	5847	6927
		43	2353	2978	3697	4513	5426	6439
2701984	APS8.3ML2-1	30	3813	4784	5929	7251	8751	10432
		32	3691	4639	5756	7047	8513	10156
		38	3327	4206	5242	6440	7803	9333
		43	3030	3851	4819	5941	7218	8654
2701985	APS11.7ML3-1	30	5647	7048	8657	10485	12541	14833
		32	5480	6852	8425	10212	12222	14461
		38	4978	6262	7728	9391	11261	13345
		43	4559	5769	7146	8706	10458	12413
2701986	APS14.4ML3-1	30	7661	9420	11441	13735	16303	19148
		32	7461	9183	11159	13397	15901	18673
		38	6858	8472	10308	12378	14688	17241
		43	6353	7875	9594	11523	13669	16039
2701987	APS19.0ML2-1	30	8048	10153	12644	15543	18865	22625
		32	7816	9874	12309	15142	18390	22067
		38	7117	9036	11304	13941	16966	20394
		43	6537	8341	10468	12942	15782	19004
2701988	APS25.8ML2-1	30	12328	15421	18981	23018	27542	32559
		32	11926	14956	18444	22402	26840	31764
		38	10738	13576	16850	20571	24750	29395
		43	9770	12449	15543	19067	23031	27444
2701989	APS33.6ML2-1	30	15681	19363	23634	28535	34099	40353
		32	15255	18864	23043	27836	33276	39390
		38	13975	17366	21274	25743	30811	36509
		43	12910	16122	19806	24008	28769	34122
2702252	APS46.5ML2-1	30	20963	26497	32836	39989	47960	56748
		32	20250	25647	31831	38814	46599	55185
		38	18177	23172	28899	35374	42605	50595
		43	16532	21198	26551	32610	39385	46883
2702253	APS56.4ML2-1	30	24242	30334	37344	45298	54216	64113
		32	23518	29475	36330	44109	52833	62518
		38	21358	26918	33312	40571	48718	57773
		43	19581	24817	30833	37663	45336	53872
2702254	APS64.2ML2-1	30	30804	37957	46235	55693	66369	78289
		32	29971	36980	45078	54320	64749	76392
		38	27471	34054	41617	50221	59915	70732
		43	25391	31626	38751	46830	55919	66055

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Packaged Condensing Units



Acpac

Semi Hermetic VSD Series

The variable speed drive (VSD) models of the APS Semi-hermetic ACPAC range include a fully programmed VSD to adjust the compressor speed. Variable Speed Drive (VSD) is specifically tailored for the HVAC-R Industry Controls the refrigeration system to match the system load at all times, resulting in energy and cost savings.

For selection and sizing please contact your local Actrol Engineer.

Medium/Low Temperature Applications – R404A/R448A/R452A/R134a/R513A

Product Code	Unit Model	Compressor						Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. m ³ /hr	Nominal HP	Motor Type	MOC Amps	Volts/Phase	No. Diam. mm	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
3508003	APS6.0ML2-2VSD	SH4536ZYZ	9.88	2	DOL	6.7	415/3	2 x 350	2 x 0.65	4210	240V/1	10.42	10
3508005	APS11.7ML3-2VSD	SH4567ZYZ	17.93	4	DOL	12.5	415/3	3 x 350	3 x 0.65	6315	240V/1	18.63	10
3508007	APS25.8ML2-1VSD	SH4615ZMZ	41.32	12	DOL	22.4	415/3	2 x 500	2 x 3.3	11530	240V/1	43	12
3508011	APS56.4ML2-1VSD	SH4632ZMZ	83.81	30	DOL	49.2	415/3	2 x 710	2 x 1.5	25060	415/3	91.6	25

Dimensions

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
3508003	APS6.0ML2-2VSD	7/8"	1/2"	175	67	1420	630	820
3508005	APS11.7ML3-2VSD	1 1/8"	1/2"	205	70	1880	630	820
3508007	APS25.8ML2-1VSD	1 3/8"	5/8"	350	75	1770	870	1015
3508011	APS56.4ML2-1VSD	2 1/8"	1 1/8"	670	81	2455	1101	1544

Vacon VSD Product code	Vacon Flow Drive Model	Vacon Frame Number	Dimensions (W x H x D) mm	Weight kg
3425001	0100-3L-0009-5-FLOW+IP54	MR4	128 x 328 x 190	6
3425003	0100-3L-0016-5-FLOW+IP54	MR5	144 x 419 x 214	10
3425005	0100-3L-0031-5-FLOW+IP54	MR5	144 x 419 x 214	10
3425008	0100-3L-0061-5-FLOW+IP54	MR6	195 x 557 x 229	20

Packaged Condensing Units

Vacon



VACON Variable Speed Drive

- VACON FLOW Variable Speed Drives (VSD's) are specifically tailored to the HVAC-R industry.
- VSD's offer attractive energy savings to end users and provide stable yet adaptive suction pressure control on Refrigeration systems.
- VACON FLOW VSD's can also be used as a soft starter on motors including pumps and fans.
- Easy to install & commission, they can be pre-programmed prior to dispatch by ACTROL Engineering.

VACON 100 Flow AC Drives

Vacon VSD Product Code	Vacon Flow AC Drive Model	Loadability		Max Current A	Motor Shaft Power		Vacon Frame Number	Dimensions (W x H x D) mm	Weight Kg
		Continuous Current A	10% Overload Current A		10% overload 40°C kW	10% overload 104°F HP			
3425000	0100-3L-0008-5-FLOW+IP54	8	8.8	11.2	3	4	MR4	128 x 328 x 190	6
3425001	0100-3L-0009-5-FLOW+IP54	9.6	10.6	16	4	5	MR4	128 x 328 x 190	6
3425002	0100-3L-0012-5-FLOW+IP54	12	13.2	19.2	5.5	7.5	MR4	128 x 328 x 190	6
3425003	0100-3L-0016-5-FLOW+IP54	16	17.6	24	7.5	10	MR5	144 x 419 x 214	10
3425004	0100-3L-0023-5-FLOW+IP54	23	25.3	32	11	15	MR5	144 x 419 x 214	10
3425005	0100-3L-0031-5-FLOW+IP54	31	34.1	46	15	20	MR5	144 x 419 x 214	10
3425006	0100-3L-0038-5-FLOW+IP54	38	41.8	62	18.5	25	MR6	195 x 557 x 229	20
3425007	0100-3L-0046-5-FLOW+IP54	46	50.6	76	22	30	MR6	195 x 557 x 229	20
3425008	0100-3L-0061-5-FLOW+IP54	61	67.1	92	30	40	MR6	195 x 557 x 229	20
3425009	0100-3L-0072-5-FLOW+IP54	72	79.2	122	37	50	MR7	237 x 660 x 259	37.5
3425010	0100-3L-0087-5-FLOW+IP54	87	95.7	144	45	60	MR7	237 x 660 x 259	37.5
3425011	0100-3L-0105-5-FLOW+IP54	105	115.5	174	55	75	MR7	237 x 660 x 259	37.5

Mains voltage 380-500V, 50/60 hz, 3~.

Packaged Condensing Units



Acpac APB Series



Combined with the Acpac advantage, the Octagon semi hermetic compressor from Bitzer has a highly reputable name throughout the refrigeration industry and provides a great platform for the semi hermetic Acpac.

The recently designed Octagon compressor range offers the end user a very reliable, quiet and energy efficient refrigeration condensing unit. This range is especially well suited in situations requiring longer pipe runs between the Acpac and the evaporator/s.

Medium/Low Temperature Applications – R404A/R448A/R134a/R513A

Product Code	Unit Model	Compressor					Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Bitzer Model	Displ. m ³ /hr	Nominal HP	MOC Amps	Volts/Phase	No. Diam. mm	MOC Amps	Air Flow m ³ /hr	Volts/Phase		
2709801	APB4.9ML2-4	2GES-2Y	7.58	2.0	5.0	415/3	2 x 350	1.4	4210	240/1	6.3	10.0
2709802	APB6.0ML2-4	2FES-3Y	9.54	2.5	6.1	415/3	2 x 350	1.4	4210	240/1	6.8	10.0
2709803	APB8.5ML2-4	2DES-3Y	13.42	3.0	8.6	415/3	2 x 350	1.4	4210	240/1	10.4	10.0
2709804	APB11.5ML3-4	4FES-5Y	18.05	5.0	10.8	415/3	3 x 350	2.1	6315	240/1	18.2	10.0
2709805	APB15.8ML3-4	4DES-7Y	26.84	7.0	16.5	415/3	3 x 350	2.1	6315	240/1	18.2	10.0
2709806	APB20.8ML2-4	4CES-9Y	32.48	9.0	20.2	415/3	2 x 500	6.0	11530	240/1	20.4	12.0
2709807	APB25.8ML2-4	4TES-12Y	41.33	12.0	25.1	415/3	2 x 500	6.0	11530	240/1	34.6	12.0
2709808	APB29.6ML2-4	4PES-15Y	48.50	15.0	28.2	415/3	2 x 500	6.0	11530	240/1	34.6	12.0
2709809	APB36.7ML2-4	4NES-20Y	56.25	20.0	33.2	415/3	2 x 500	6.0	11530	240/1	34.6	12.0

Dimensions

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
2709801	APB4.9ML2-4	5/8"	3/8"	170	68	1420	630	820
2709802	APB6.0ML2-4	5/8"	3/8"	175	65	1420	630	820
2709803	APB8.5ML2-4	7/8"	1/2"	200	69	1420	630	820
2709804	APB11.5ML3-4	7/8"	1/2"	230	71	1880	630	820
2709805	APB15.8ML3-4	7/8"	1/2"	250	72	1880	630	820
2709806	APB20.8ML2-4	1 1/8"	5/8"	290	79	1770	870	1015
2709807	APB25.8ML2-4	1 3/8"	5/8"	350	79	1770	870	1015
2709808	APB29.6ML2-4	1 3/8"	5/8"	360	79	1770	870	1015
2709809	APB36.7ML2-4	1 3/8"	5/8"	390	80	1770	870	1015

Packaged Condensing Units



Acpac
APB Series



Medium/Low Temperature Applications – R404A/R448A/R134a/R513A

Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R404A							
			-30	-25	-20	-15	-10	-5	0	5
2709801	APB4.9	30	1847	2366	2965	3651	4429	5304	6279	7358
		32	1775	2279	2860	3524	4278	5127	6073	7122
		38	1567	2025	2551	3152	3835	4604	5466	6423
		43	1400	1820	2301	2850	3473	4178	4968	5849
2709802	APB6.0	30	2247	2881	3609	4436	5367	6405	7551	8807
		32	2157	2772	3476	4275	5175	6178	7288	8504
		38	1897	2452	3085	3802	4609	5510	6509	7609
		43	1687	2194	2768	3418	4148	4965	5872	6874
2709803	APB8.5	30	3375	4302	5358	6553	7893	9381	11019	12809
		32	3257	4156	5180	6338	7634	9075	10663	12398
		38	2893	3710	4635	5678	6846	8144	9578	11150
		43	2582	3328	4169	5114	6173	7352	8658	10093
2709804	APB11.5	30	4654	5893	7337	8996	10879	12991	15335	17909
		32	4513	5714	7109	8712	10530	12570	14834	17325
		38	4077	5160	6410	7840	9462	11284	13313	15552
		43	3697	4680	5807	7092	8549	10190	12021	14051
2709805	APB15.8	30	6661	8380	10349	12577	15069	17827	20847	24124
		32	6446	8113	10018	12173	14584	17253	20179	23357
		38	5795	7301	9014	10949	13115	15518	18159	21040
		43	5244	6612	8163	9913	11873	14052	16457	19090
2709806	APB20.8	30	8458	10723	13345	16351	19763	23597	27867	32582
		32	8172	10372	12916	15834	19147	22873	27026	31616
		38	7319	9319	11629	14278	17292	20690	24490	28706
		43	6612	8442	10552	12974	15735	18857	22362	26266
2709807	APB25.8	30	10209	13024	16270	19968	24133	28771	33884	39468
		32	9836	12565	15709	19291	23328	27826	32790	38218
		38	8733	11201	14038	17271	20919	24997	29513	34470
		43	7825	10074	12652	15591	18915	22641	26782	31347
2709808	APB29.6	30	11155	14342	18003	22154	26804	31954	37595	43719
		32	10709	13797	17341	21360	25865	30858	36334	42284
		38	9393	12180	15373	18995	23062	27583	32560	37990
		43	8319	10853	13749	17037	20738	24864	29423	34421
2709809	APB36.7	30	14033	17900	22370	27478	33248	39695	46824	54636
		32	13526	17275	21605	26553	32147	38401	45324	52918
		38	12027	15417	19325	23792	28851	34525	40828	47770
		43	10795	13882	17434	21497	26107	31295	37080	43478

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units



Acpac APB Series



Medium/Low Temperature Applications – R404A/R448A/R134a/R513A

Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R448A							
			-30	-25	-20	-15	-10	-5	0	5
2709801	APB4.9	30	1604	2138	2767	3502	4353	5331	6440	7689
		32	1542	2061	2671	3385	4212	5161	6240	7455
		38	1347	1823	2380	3030	3783	4649	5636	6752
		43	1179	1620	2133	2730	3423	4221	5133	6167
2709802	APB6.0	30	2013	2671	3442	4339	5371	6547	7874	9356
		32	1935	2575	3324	4193	5195	6337	7626	9068
		38	1691	2278	2960	3752	4663	5704	6883	8206
		43	1480	2024	2652	3380	4217	5176	6264	7488
2709803	APB8.5	30	3005	3919	4987	6229	7660	9293	11140	13208
		32	2894	3784	4825	6034	7429	9023	10827	12850
		38	2565	3384	4341	5454	6742	8218	9895	11782
		43	2294	3054	3941	4974	6173	7552	9123	10899
2709804	APB11.5	30	4245	5511	6996	8725	10722	13008	15599	18508
		32	4092	5325	6769	8453	10400	12631	15162	18009
		38	3641	4771	6097	7645	9441	11506	13861	16519
		43	3274	4319	5545	6979	8650	10579	12786	15288
2709805	APB15.8	30	5859	7593	9607	11930	14586	17594	20965	24706
		32	5641	7328	9287	11548	14136	17070	20362	24020
		38	5000	6545	8339	10414	12797	15509	18565	21976
		43	4480	5906	7563	9484	11697	14225	17085	
2709806	APB20.8	30	7782	10057	12721	15822	19402	23495	28130	33329
		32	7513	9727	12320	15340	18829	22822	27350	32434
		38	6717	8748	11127	13903	17120	20816	25023	29767
		43	6071	7949	10149	12722	15713	19162	23103	27564
2709807	APB25.8	30	9333	12153	15449	19275	23672	28672	34297	40558
		32	8984	11727	14932	18652	22931	27802	33288	39405
		38	7952	10467	13398	16803	20730	25216	30291	35974
		43	7106	9433	12139	15284	18921	23090	27824	33149
2709808	APB29.6	30	10121	13315	17038	21343	26272	31851	38097	45016
		32	9700	12804	16421	20605	25400	30834	36927	43685
		38	8458	11295	14596	18420	22815	27817	33450	39729
		43	7447	10065	13105	16631	20696	25340	30593	
2709809	APB36.7	30	12843	16711	21245	26521	32600	39533	47354	56085
		32	12371	16133	20540	25670	31587	38342	45972	54501
		38	10975	14422	18451	23147	28578	34802	41862	49791
		43	9832	13021	16739	21076	26106	31891	38480	45911

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.
■ Additional Cooling Required

Packaged Condensing Units



Acpac
APB Series



Medium/Low Temperature Applications – R404A/R448A/R134a/R513A

Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R134a							
			-15	-10	-5	0	5	10	15	20
2709801	APB4.9	30	2051	2602	3244	3983	4826	5780	6849	8039
		32	1997	2538	3167	3892	4719	5654	6704	7872
		38	1839	2348	2940	3621	4399	5280	6270	7374
		43	1709	2192	2752	3397	4134	4970	5910	6961
2709802	APB6.0	30	2578	3266	4065	4980	6018	7183	8480	9910
		32	2498	3171	3950	4844	5858	6998	8267	9667
		38	2268	2893	3616	4447	5390	6453	7638	8950
		43	2086	2672	3350	4128	5013	6011	7128	8366
2709803	APB8.5	30	3732	4753	5941	7305	8852	10588	12517	14640
		32	3629	4627	5788	7120	8632	10330	12217	14296
		38	3327	4256	5334	6573	7980	9562	11324	13270
		43	3080	3952	4962	6123	7442	8929	10587	12422
2709804	APB11.5	30	4811	6162	7756	9609	11732	14132	16814	19782
		32	4673	5992	7548	9357	11429	13774	16396	19300
		38	4259	5483	6925	8600	10523	12703	15146	17858
		43	3912	5058	6405	7971	9770	11814	14109	16663
2709805	APB15.8	30	7198	9126	11376	13960	16881	20141	23733	27649
		32	7004	8886	11081	13601	16453	19635	23145	26974
		38	6418	8163	10195	12528	15170	18124	21388	24959
		43	5928	7561	9458	11636	14104	16869	19932	23289
2709806	APB20.8	30	9120	11563	14440	17776	21591	25898	30705	36015
		32	8890	11276	14084	17340	21065	25272	29972	35167
		38	8196	10412	13015	16033	19489	23401	27779	32630
		43	7613	9689	12123	14945	18180	21846	25958	30524
2709807	APB25.8	30	11244	14316	17882	21970	26602	31792	37550	43882
		32	10927	13926	17409	21402	25928	31003	36638	42840
		38	9991	12772	16001	19707	23917	28647	33912	39720
		43	9224	11822	14838	18305	22249	26692	31647	37128
2709808	APB29.6	30	12584	16093	20152	24785	30008	35830	42250	49265
		32	12199	15624	19587	24111	29214	34906	41188	48057
		38	11061	14233	17904	22102	26845	32148	38015	44447
		43	10128	13089	16516	20440	24884	29862	35383	41452
2709809	APB36.7	30	15403	19616	24516	30142	36526	43690	51650	60413
		32	14972	19086	23871	29366	35606	42613	50404	58987
		38	13699	17514	21952	27056	32862	39396	46678	54722
		43	12656	16222	20369	25146	30588	36728	43587	51182

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units



Acpac APB Series



Medium/Low Temperature Applications – R404A/R448A/R134a/R513A

Product Code	Model Number	Ambient Temp. °C	Capacity Watts							
			Evaporating Temperature °C							
			R513A							
			-15	-10	-5	0	5	10	15	20
2709801	APB4.9	30	2207	2771	3421	4164	5006	5952	7006	8171
		32	2148	2699	3336	4063	4886	5812	6844	7985
		38	1971	2487	3081	3759	4527	5392	6357	7426
		43	1826	2311	2869	3506	4228	5041	5950	6959
2709802	APB6.0	30	2772	3474	4279	5196	6227	7378	8649	10042
		32	2684	3368	4153	5046	6052	7174	8415	9776
		38	2429	3060	3783	4607	5535	6572	7722	8986
		43	2226	2813	3486	4251	5114	6081	7154	8338
2709803	APB8.5	30	4019	5059	6258	7621	9154	10862	12745	14804
		32	3904	4918	6087	7415	8911	10576	12413	14424
		38	3564	4501	5579	6804	8184	9723	11424	13288
		43	3285	4158	5160	6299	7582	9015	10602	12346
2709804	APB11.5	30	5191	6573	8188	10046	12157	14524	17151	20037
		32	5037	6384	7956	9767	11823	14130	16692	19508
		38	4573	5814	7261	8926	10819	12947	15315	17925
		43	4184	5338	6681	8225	9982	11961	14168	16606
2709805	APB15.8	30	7731	9690	11951	14518	17393	20570	24041	27795
		32	7512	9420	11621	14120	16918	20012	23395	27055
		38	6852	8609	10630	12923	15493	18338	21455	24837
		43	6299	7931	9802	11925	14304	16943	19840	22991
2709806	APB20.8	30	9808	12304	15214	18556	22345	26588	31288	36445
		32	9547	11980	14815	18070	21760	25895	30479	35510
		38	8758	11003	13611	16606	20002	23814	28047	32706
		43	8095	10183	12603	15380	18533	22075	26018	30367
2709807	APB25.8	30	12101	15223	18811	22883	27454	32532	38119	44217
		32	11746	14789	18284	22253	26709	31661	37115	43072
		38	10691	13494	16712	20367	24477	29053	34103	39634
		43	9823	12424	15408	18799	22618	26878	31592	36767
2709808	APB29.6	30	13556	17114	21185	25785	30919	36587	42784	49498
		32	13128	16594	20561	25042	30045	35573	41620	48177
		38	11857	15048	18696	22821	27433	32537	38134	44219
		43	10813	13771	17153	20978	25262	30013	35235	40928
2709809	APB36.7	30	16583	20869	25804	31416	37726	44746	52484	60939
		32	16099	20277	25086	30556	36708	43557	51111	59371
		38	14662	18513	22942	27983	33661	39994	46994	54667
		43	13480	17055	21165	25845	31125	37026	43563	50748

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.



Leading the way in the refrigeration industry.



Speak to us about Prime today.



National network
& logistics capability

Huge range of
refrigerant products

A new level of
service and support

Packaged Condensing Units

COMPAC Compac

Hermetic Reciprocating Series



The Compac is a new range of fully fitted packaged units with world leading Tecumseh hermetically sealed reciprocating compressors. Designed with space constraints in mind, the horizontal discharge condenser configuration suits unit placement in carparks, roofs, on the side of buildings and mounted above one another without restricting airflow. Installation is quick and easy, as every Compac is optioned straight out of the box. Once installed, you can relax knowing the premium compressors and large condensers will deliver reliable refrigeration when you need it most. Every Compac is built with high quality, corrosion resistant components, and extensive testing is completed on each unit, to ensure long life in the field.

Features:

- Compactness. Housing is designed to optimise spacing and functionality
- Housing has a maximum length of 913mm for all models
- Powder coated steel casing
- Light in weight
- Easily serviceable as the mechanical and electrical components are in the same compartment
- Factory leak tested
- World leading compressors
- Large epoxy finned curved condenser
- Oil separator on every model
- Suction accumulator on low temperature models
- Comprehensive electrical board fully wired to all electrical components
- Separate compressor and fan compartment for safe and easy maintenance
- Safety controls offering substantial protection

Packaged Condensing Units

COMPAC Compac

Hermetic Reciprocating Series

Medium Temperature Applications – R404A/R448A/R452A

Product Code	Unit Model	Compressor					Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. cm ³ /rev	Nominal HP	MOC Amps	Volts/ Phase	No. Diam. Mm	MOC Amps	Air Flow m ³ /hr	Volts/ Phase		
3508016	PACS4517Z-EVO	CAJ4517Z	25.9	1.50	9.04	240/1	1 x 450	1.15	5050	240/1	8.8	3.9
3508017	PAC4517Z-EVO	TAJ4517Z	25.9	1.50	3.58	415/3	1 x 450	1.15	5050	240/1	8.8	3.9
3508018	PACS4519Z-EVO	CAJ4519Z	34.5	1.60	12	240/1	1 x 450	1.15	5050	240/1	8.8	3.9
3508019	PAC4519Z-EVO	TAJ4519Z	34.5	1.60	4.95	415/3	1 x 450	1.15	5050	240/1	8.8	3.9
3508132	PACS4524Z-EVO-XC	FH4524Z-XC	43.5	2.00	13	240/1	1 x 450	1.15	5050	240/1	8.8	3.9
3508133	PAC4524Z-EVO-XG	FH4524Z-XG	43.5	2.00	5.02	415/3	1 x 450	1.15	5050	240/1	8.8	3.9
3508134	PACS4532Z-EVO-XC	FH4532Z-XC	56.6	2.60	16.7	240/1	1 x 450	1.15	5050	240/1	8.8	3.9
3508135	PAC4532Z-EVO-XG	FH4532Z-XG	56.6	2.60	6.25	415/3	1 x 450	1.15	5050	240/1	8.8	3.9
3508136	PACS4538Z-EVO-XC	FH4538Z-XC	63.0	3.30	22.4	240/1	1 x 500	1.75	6720	240/1	11.7	3.9
3508137	PAC4538Z-EVO-XG	FH4538Z-XG	63.0	3.30	8.86	415/3	1 x 500	1.75	6720	240/1	11.7	3.9
3508026	PAC4546Z-EVO	TAG4546Z	90.2	3.80	8.53	415/3	1 x 500	1.75	6720	240/1	11.7	3.9
3508027	PAC4553Z-EVO	TAG4553Z	100.7	4.40	9.69	415/3	2 x 450	2.30	10100	240/1	17.8	9.5
3508028	PAC4561Z-EVO	TAG4561Z	112.5	5.00	10.3	415/3	2 x 450	2.30	10100	240/1	17.8	9.5
3508029	PAC4568Z-EVO	TAG4568Z	124.4	5.70	11.7	415/3	2 x 450	2.30	10100	240/1	17.8	9.5
3508030	PAC4573Z-EVO	TAG4573Z	134.8	6.00	13.6	415/3	2 x 450	2.30	10100	240/1	17.8	9.5

Dimensions

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
3508016	PACS4517Z-EVO	5/8"	3/8"	69	65	913	416	638
3508017	PAC4517Z-EVO	5/8"	3/8"	67	65	913	416	638
3508018	PACS4519Z-EVO	5/8"	3/8"	69	68	913	416	638
3508019	PAC4519Z-EVO	5/8"	3/8"	67	68	913	416	638
3508132	PACS4524Z-EVO-XC	5/8"	3/8"	81	70	913	416	638
3508133	PAC4524Z-EVO-XG	5/8"	3/8"	77	70	913	416	638
3508134	PACS4532Z-EVO-XC	5/8"	3/8"	78	71	913	416	638
3508135	PAC4532Z-EVO-XG	5/8"	3/8"	78	71	913	416	638
3508136	PACS4538Z-EVO-XC	7/8"	1/2"	94	72	913	416	800
3508137	PAC4538Z-EVO-XG	7/8"	1/2"	91	72	913	416	800
3508026	PAC4546Z-EVO	7/8"	1/2"	102	73	913	416	800
3508027	PAC4553Z-EVO	7/8"	1/2"	125	75	913	416	1149
3508028	PAC4561Z-EVO	7/8"	1/2"	125	75	913	416	1149
3508029	PAC4568Z-EVO	7/8"	1/2"	126	75	913	416	1149
3508030	PAC4573Z-EVO	7/8"	1/2"	127	76	913	416	1149

Packaged Condensing Units

COMPAC Compac

Hermetic Reciprocating Series

Medium Temperature Applications – R404A/R448A/R452A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts														
			Evaporating Temperature °C														
			R404A					R448A					R452A				
			-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10
3508016	PACS4517Z	30	2683	3251	3890	4604	5394	2548	3141	3817	4581	5437	2646	3228	3887	4625	5444
		32	2592	3142	3761	4451	5214	2462	3038	3695	4437	5269	2554	3118	3756	4470	5263
		38	2318	2814	3370	3990	4675	2204	2731	3330	4008	4768	2277	2787	3362	4005	4720
		43	2087	2539	3043	3604	4224	1992	2478	3030	3654	4355	2046	2511	3033	3618	4268
3508017	PAC4517Z	30	2683	3251	3890	4604	5394	2548	3141	3817	4581	5437	2646	3228	3887	4625	5444
		32	2592	3142	3761	4451	5214	2462	3038	3695	4437	5269	2554	3118	3756	4470	5263
		38	2318	2814	3370	3990	4675	2204	2731	3330	4008	4768	2277	2787	3362	4005	4720
		43	2087	2539	3043	3604	4224	1992	2478	3030	3654	4355	2046	2511	3033	3618	4268
3508018	PACS4519Z	30	3406	4122	4916	5789	6743	3246	3996	4840	5782	6823	3364	4097	4915	5818	6808
		32	3293	3987	4756	5601	6523	3138	3868	4689	5604	6617	3248	3960	4752	5627	6586
		38	2944	3574	4267	5025	5851	2811	3481	4231	5068	5993	2895	3542	4257	5045	5908
		43	2647	3222	3850	4535	5281	2538	3157	3849	4619	5472	2597	3187	3838	4553	5336
3508019	PAC4519Z	30	3406	4122	4916	5789	6743	3246	3996	4840	5782	6823	3364	4097	4915	5818	6808
		32	3293	3987	4756	5601	6523	3138	3868	4689	5604	6617	3248	3960	4752	5627	6586
		38	2944	3574	4267	5025	5851	2811	3481	4231	5068	5993	2895	3542	4257	5045	5908
		43	2647	3222	3850	4535	5281	2538	3157	3849	4619	5472	2597	3187	3838	4553	5336
3508132	PAC4524Z-EVO-XC	30	3874	4756	5730	6795	7951	3711	4633	5668	6820	8089	3832	4735	5737	6839	8039
		32	3730	4588	5533	6566	7685	3575	4474	5482	6604	7840	3686	4564	5537	6606	7770
		38	3291	4074	4932	5865	6875	3160	3989	4917	5949	7087	3242	4044	4928	5898	6953
		43	2917	3637	4420	5269	6187	2813	3583	4444	5400	6456	2866	3603	4413	5298	6262
3508133	PAC4524Z-XG	30	3874	4756	5730	6795	7951	3711	4633	5668	6820	8089	3832	4735	5737	6839	8039
		32	3730	4588	5533	6566	7685	3575	4474	5482	6604	7840	3686	4564	5537	6606	7770
		38	3291	4074	4932	5865	6875	3160	3989	4917	5949	7087	3242	4044	4928	5898	6953
		43	2917	3637	4420	5269	6187	2813	3583	4444	5400	6456	2866	3603	4413	5298	6262
3508134	PAC4532Z-EVO-XC	30	4984	6010	7093	8246	9479	4764	5840	7007	8278	9661	4915	5965	7082	8281	9569
		32	4791	5798	6855	7975	9169	4585	5644	6787	8028	9377	4722	5752	6844	8009	9258
		38	4197	5150	6130	7152	8230	4041	5050	6124	7278	8525	4132	5106	6118	7185	8320
		43	3690	4599	5515	6457	7439	3581	4552	5571	6655	7820	3629	4557	5506	6493	7533
3508135	PAC4532Z-XG	30	4984	6010	7093	8246	9479	4764	5840	7007	8278	9661	4915	5965	7082	8281	9569
		32	4791	5798	6855	7975	9169	4585	5644	6787	8028	9377	4722	5752	6844	8009	9258
		38	4197	5150	6130	7152	8230	4041	5050	6124	7278	8525	4132	5106	6118	7185	8320
		43	3690	4599	5515	6457	7439	3581	4552	5571	6655	7820	3629	4557	5506	6493	7533
3508136	PAC4538Z-EVO-XC	30	6107	7409	8819	10327	11922	5864	7230	8736	10374	12138	6049	7380	8828	10384	12037
		32	5912	7174	8539	9995	11534	5678	7009	8473	10065	11779	5849	7141	8543	10049	11646
		38	5307	6454	7683	8986	10357	5108	6335	7678	9134	10699	5233	6409	7677	9031	10465
		43	4777	5831	6949	8127	9361	4618	5762	7008	8354	9798	4697	5780	6938	8169	9468
3508137	PAC4538Z-XG	30	6107	7409	8819	10327	11922	5864	7230	8736	10374	12138	6049	7380	8828	10384	12037
		32	5912	7174	8539	9995	11534	5678	7009	8473	10065	11779	5849	7141	8543	10049	11646
		38	5307	6454	7683	8986	10357	5108	6335	7678	9134	10699	5233	6409	7677	9031	10465
		43	4777	5831	6949	8127	9361	4618	5762	7008	8354	9798	4697	5780	6938	8169	9468

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units

COMPAC Compac

Hermetic Reciprocating Series

Medium Temperature Applications – R404A/R448A/R452A



Product Code	Model Number	Ambient Temp. °C	Capacity Watts														
			Evaporating Temperature °C														
			R404A					R448A					R452A				
			-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10
3508026	PAC4546Z	30	6853	8484	10275	12214	14286	6586	8296	10212	12326	14631	6771	8437	10277	12280	14432
		32	6553	8132	9865	11740	13745	6301	7962	9822	11879	14122	6469	8082	9863	11803	13889
		38	5664	7085	8642	10326	12130	5462	6974	8672	10554	12614	5577	7030	8634	10384	12269
		43	4939	6228	7637	9161	10795	4785	6175	7737	9474	11382	4852	6171	7627	9217	10935
3508027	PAC4553Z	30	8135	10102	12293	14703	17321	7794	9842	12162	14756	17620	8039	10046	12294	14778	17490
		32	7792	9693	11809	14136	16665	7466	9452	11701	14218	17000	7692	9633	11805	14207	16830
		38	6767	8476	10370	12450	14713	6496	8299	10342	12630	15167	6659	8405	10355	12509	14867
		43	5921	7473	9186	11063	13105	5706	7362	9236	11339	13675	5811	7398	9165	11117	13256
3508028	PAC4561Z	30	9009	11063	13333	15806	18469	8624	10775	13191	15871	18807	8896	10996	13326	15879	18641
		32	8648	10636	12827	15215	17786	8282	10369	12713	15314	18166	8533	10564	12817	15285	17955
		38	7572	9362	11326	13460	15758	7269	9172	11305	13674	16277	7450	9283	11307	13522	15921
		43	6678	8311	10090	12016	14088	6440	8197	10161	12342	14742	6554	8228	10067	12075	14252
3508029	PAC4568Z	30	10333	12549	14986	17633	20478	9898	12245	14875	17789	20982	10206	12483	15001	17751	20722
		32	9954	12110	14476	17045	19805	9542	11833	14400	17245	20363	9825	12041	14487	17160	20047
		38	8813	10784	12937	15268	17772	8479	10603	12981	15617	18513	8679	10708	12941	15377	18011
		43	7858	9672	11644	13775	16062	7604	9589	11810	14273	16982	7722	9593	11646	13885	16305
3508030	PAC4573Z	30	11009	13313	15833	18556	21466	10545	12989	15714	18717	21986	10868	13231	15831	18655	21687
		32	10606	12837	15273	17905	20715	10162	12538	15187	18106	21285	10460	12749	15265	17998	20931
		38	9377	11387	13573	15927	18442	9007	11179	13599	16267	19180	9219	11285	13550	16007	18648
		43	8337	10161	12135	14259	16526	8045	10047	12276	14737	17428	8174	10053	12107	14335	16732

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units

COMPAC Compac

Hermetic Reciprocating Series

Medium Temperature Applications – R134a/R513A

Condensing Units

Product Code	Unit Model	Compressor					Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. cm ³ /rev	Nominal HP	MOC Amps	Volts/ Phase	No. Diam. Mm	MOC Amps	Air Flow m ³ /hr	Volts/ Phase		
3508064	PACS4476Y-EVO	CAJ4476Y	21.8	0.7	5.66	240/1	1 x 450	1.15	5050	240/1	4,41	3.9
3508065	PACS4492Y-EVO	CAJ4492Y	25.9	0.75	6.81	240/1	1 x 450	1.15	5050	240/1	4,41	3.9
3508066	PAC4492Y-EVO	TAJ4492Y	25.9	0.75	1.99	415/3	1 x 450	1.15	5050	240/1	4.41	3.9
3508067	PACS4511Y-EVO	CAJ4511Y	32.7	1	6.43	240/1	1 x 450	1.15	5050	240/1	4.41	3.9
3508068	PAC4511Y-EVO	TAJ4511Y	32.7	1	2.55	415/3	1 x 450	1.15	5050	240/1	4.41	3.9
3508143	PAC4518N-EVO-XC	FH4518N-XC	53.2	1.5	9.93	240/1	1 x 450	1.15	5050	240/1	6.86	3.9
3508144	PAC4518N-EVO-XG	FH4518N-XG	53.2	1.5	4.08	415/3	1 x 450	1.15	5050	240/1	6.86	3.9
3508145	PAC4525N-EVO-XC	FH4525N-XC	74.2	2	13.2	240/1	1 x 450	1.15	5050	240/1	6.86	3.9
3508146	PAC4525N-EVO-XG	FH4525N-XG	74.2	2	4.95	415/3	1 x 450	1.15	5050	240/1	6.86	3.9
3508073	PAC4528Y-EVO	TAG4528Y	90.2	2.3	5.28	415/3	1 x 500	1.75	6720	240/1	9.91	3.9
3508074	PAC4534Y-EVO	TAG4534Y	100.7	2.8	6.01	415/3	1 x 500	1.75	6720	240/1	9.91	3.9
3508075	PAC4537Y-EVO	TAG4537Y	112.5	3	6.53	415/3	1 x 500	1.75	6720	240/1	9.91	3.9
3508076	PAC4543Y-EVO	TAG4543Y	124.4	3.6	7.35	415/3	1 x 500	1.75	6720	240/1	9.91	3.9

Dimensions

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
3508064	PACS4476Y-EVO	1/2"	3/8"	67	68	913	465	638
3508065	PACS4492Y-EVO	5/8"	3/8"	67	68	913	465	638
3508066	PAC4492Y-EVO	5/8"	3/8"	66	68	913	465	638
3508067	PACS4511Y-EVO	5/8"	3/8"	67	68	913	465	638
3508068	PAC4511Y-EVO	5/8"	3/8"	66	68	913	465	638
3508143	PAC4518N-EVO-XC	5/8"	3/8"	78	68	913	465	638
3508144	PAC4518N-EVO-XG	5/8"	3/8"	77	68	913	465	638
3508145	PAC4525N-EVO-XC	5/8"	3/8"	79	70	913	465	638
3508146	PAC4525N-EVO-XG	5/8"	3/8"	78	70	913	465	638
3508073	PAC4528Y-EVO	7/8"	1/2"	102	72	913	478	800
3508074	PAC4534Y-EVO	7/8"	1/2"	102	72	913	478	800
3508075	PAC4537Y-EVO	7/8"	1/2"	102	72	913	478	800
3508076	PAC4543Y-EVO	7/8"	1/2"	102	72	913	478	800

Packaged Condensing Units

COMPAC Compac

Hermetic Reciprocating Series

Medium Temperature Applications – R134a/R513A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts									
			Evaporating Temperature °C									
			R134a					R513A				
			-10	-5	0	5	10	-10	-5	0	5	10
3508064	PACS4476Y	30	1136	1439	1788	2184	2632	1173	1477	1830	2239	2706
		32	1099	1396	1737	2125	2563	1131	1428	1774	2173	2629
		38	985	1263	1581	1943	2351	1006	1281	1602	1973	2398
		43	887	1148	1447	1787	2171	899	1158	1458	1806	2204
3508065	PACS4492Y	30	1388	1758	2182	2664	3205	1508	1856	2248	2685	3167
		32	1345	1705	2119	2588	3116	1461	1799	2179	2602	3068
		38	1213	1547	1929	2362	2849	1318	1629	1975	2356	2775
		43	1100	1414	1771	2175	2628	1196	1487	1806	2156	2537
3508067	PACS4511Y	30	1795	2238	2739	3299	3918	1948	2361	2817	3317	3858
		32	1744	2176	2665	3211	3814	1891	2293	2736	3220	3743
		38	1587	1989	2441	2944	3501	1720	2089	2492	2930	3400
		43	1452	1829	2251	2720	3237	1573	1917	2288	2688	3116
3508068	PAC4511Y	30	1778	2224	2727	3289	3911	1929	2347	2807	3309	3854
		32	1726	2162	2653	3202	3808	1871	2278	2725	3213	3740
		38	1566	1972	2426	2933	3493	1695	2069	2477	2919	3395
		43	1431	1810	2233	2705	3225	1547	1893	2268	2671	3105
3508143	PAC4518N-EVO-XC	30	2477	3201	4032	4975	6032	2571	3292	4122	5063	6119
		32	2396	3107	3922	4847	5884	2482	3189	4000	4921	5954
		38	2143	2813	3580	4450	5424	2207	2869	3626	4485	5447
		43	1922	2557	3283	4105	5027	1969	2593	3305	4111	5014
3508144	PAC4518N-EVO-XG	30	2484	3214	4054	5010	6085	2579	3305	4144	5099	6172
		32	2405	3120	3943	4879	5931	2491	3202	4021	4953	6001
		38	2159	2829	3598	4473	5456	2223	2884	3644	4508	5479
		43	1947	2578	3301	4124	5050	1995	2614	3323	4130	5036
3508145	PAC4525N-EVO-XC	30	3597	4532	5585	6757	8043	3720	4641	5680	6836	8102
		32	3483	4398	5429	6574	7831	3596	4496	5509	6636	7871
		38	3136	3991	4951	6018	7188	3219	4055	4993	6033	7173
		43	2840	3644	4546	5547	6646	2901	3683	4558	5528	6590
3508146	PAC4525N-EVO-XG	30	3520	4435	5477	6645	7939	3637	4540	5568	6722	7999
		32	3393	4288	5305	6447	7714	3501	4380	5383	6508	7755
		38	3024	3854	4800	5864	7047	3103	3915	4840	5881	7036
		43	2727	3504	4391	5391	6505	2785	3541	4403	5374	6454
3508073	PAC4528Y	30	3194	4434	5864	7460	9194	4274	5389	6664	8101	9698
		32	3090	4297	5691	7246	8938	4118	5203	6443	7839	9393
		38	2779	3887	5171	6607	8171	3656	4655	5792	7071	8493
		43	2520	3545	4738	6075	7532	3276	4208	5262	6446	7762
3508074	PAC4534Y	30	4143	5484	7021	8723	10562	4701	5915	7297	8845	10557
		32	4008	5314	6812	8472	10265	4529	5711	7054	8559	10223
		38	3603	4804	6185	7718	9374	4019	5107	6338	7716	9238
		43	3264	4378	5663	7090	8633	3600	4614	5755	7029	8436
3508075	PAC4537Y	30	4708	6160	7825	9666	11646	5177	6500	7998	9667	11501
		32	4554	5968	7591	9386	11316	4987	6275	7731	9354	11137
		38	4091	5392	6888	8545	10327	4424	5610	6945	8430	10061
		43	3705	4912	6303	7845	9504	3960	5066	6304	7678	9184
3508076	PAC4543Y	30	4876	6400	8192	10200	12371	5653	7079	8685	10463	12401
		32	4715	6200	7946	9902	12017	5445	6834	8395	10123	12007
		38	4234	5599	7207	9010	10958	4829	6109	7540	9121	10843
		43	3833	5098	6592	8268	10076	4322	5515	6843	8304	9893

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units

COMPAC Compac

Hermetic Reciprocating Series

Low Temperature Applications – R404A/R448A/R452A

Condensing Units

Product Code	Unit Model	Compressor					Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. cm ³ /rev	Nominal HP	MOC Amps	Volts/ Phase	No. Diam. Mm	MOC Amps	Air Flow m ³ /hr	Volts/ Phase		
3508139	PACS2480Z-EVO	FH2480Z-XC3A	54.3	2	11.1	240/1	1 x 450	1.15	5050	240/1	8.8	3.9
3508140	PAC2480Z-EVO	FH2480Z-XG1A	54.3	2	3.56	415/3	1 x 450	1.15	5050	240/1	8.8	3.9
3508141	PACS2511Z-EVO	FH2511Z-XC3A	68	2.75	12.2	240/1	1 x 450	1.15	5050	240/1	8.8	3.9
3508142	PAC2511Z-EVO	FH2511Z-XG1A	68	2.75	5.15	415/3	1 x 450	1.15	5050	240/1	8.8	3.9
3508035	PAC2513Z-EVO	TAG2513Z	100.7	3.20	6.43	415/3	1 x 500	1.75	6720	240/1	11.7	3.9
3508036	PAC2516Z-EVO	TAG2516Z	112.5	4.00	7.14	415/3	1 x 500	1.75	6720	240/1	11.7	3.9
3508037	PAC2522Z-EVO	TAG2522Z	134.8	5.50	9.09	415/3	2 x 450	2.30	10100	240/1	17.8	9.5
3508038	PAC2525Z-EVO	TAG2525Z	145.0	6.20	9.82	415/3	2 x 450	2.30	10100	240/1	17.8	9.5

Dimensions

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
3508139	PACS2480Z-EVO	5/8"	3/8"	86	69	913	416	638
3508140	PAC2480Z-EVO	5/8"	3/8"	82	69	913	416	638
3508141	PACS2511Z-EVO	5/8"	3/8"	86	70	913	416	638
3508142	PAC2511Z-EVO	5/8"	3/8"	82	70	913	416	638
3508035	PAC2513Z-EVO	7/8"	1/2"	104	71	913	416	800
3508036	PAC2516Z-EVO	7/8"	1/2"	103	71	913	416	800
3508037	PAC2522Z-EVO	7/8"	1/2"	130	76	913	416	1149
3508038	PAC2525Z-EVO	7/8"	1/2"	129	77	913	416	1149

Packaged Condensing Units

COMPAC Compac

Hermetic Reciprocating Series

Low Temperature Applications – R404A/R448A/R452A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts											
			Evaporating Temperature °C											
			R404A				R448A				R452A			
			-30	-25	-20	-15	-30	-25	-20	-15	-30	-25	-20	-15
3508139	PAC2480Z-EVO-XC	30	1945	2524	3175	3902	1712	2295	2968	3734	1863	2435	3089	3828
		32	1864	2430	3066	3773	1638	2208	2865	3614	1785	2344	2982	3702
		38	1616	2142	2729	3379	1416	1946	2557	3253	1544	2063	2652	3316
		43	1403	1895	2441	3042	1230	1728	2301	2954	1338	1822	2370	2985
3508140	PAC2480Z-EVO-XG	30	1929	2471	3074	3737	1687	2234	2857	3558	1829	2367	2972	3649
		32	1846	2376	2965	3612	1612	2147	2757	3444	1749	2275	2867	3529
		38	1598	2093	2639	3239	1394	1894	2465	3110	1509	1999	2551	3166
		43	1393	1858	2370	2929	1218	1691	2232	2843	1311	1771	2288	2865
3508141	PAC2511Z-EVO-XC	30	2532	3280	4125	5067	2232	2990	3869	4875	2411	3155	4008	4973
		32	2426	3157	3981	4900	2135	2876	3737	4722	2307	3034	3867	4810
		38	2102	2781	3544	4394	1846	2538	3344	4269	1990	2665	3438	4313
		43	1829	2464	3176	3967	1611	2262	3023	3899	1724	2355	3076	3894
3508142	PAC2511Z-EVO-XG	30	2541	3315	4194	5174	2236	3016	3925	4965	2415	3182	4066	5067
		32	2423	3173	4026	4979	2129	2886	3771	4786	2301	3045	3903	4877
		38	2082	2763	3538	4406	1826	2518	3331	4271	1970	2645	3427	4318
		43	1814	2437	3148	3945	1596	2234	2991	3869	1710	2328	3046	3868
3508035	PAC2513Z	30	2946	3981	5178	6536	2609	3641	4868	6293	2806	3828	5028	6408
		32	2787	3789	4948	6263	2465	3464	4653	6038	2651	3641	4803	6141
		38	2322	3225	4270	5458	2047	2948	4029	5295	2197	3089	4137	5349
		43	1948	2770	3721	4804	1718	2542	3535	4705	1834	2643	3598	4705
3508036	PAC2516Z	30	3424	4556	5850	7299	3035	4170	5501	7030	3290	4413	5709	7176
		32	3259	4356	5608	7011	2884	3983	5275	6761	3122	4210	5465	6887
		38	2770	3759	4887	6151	2442	3437	4612	5969	2628	3611	4746	6032
		43	2371	3270	4294	5442	2092	3001	4080	5332	2227	3124	4159	5334
3508037	PAC2522Z	30	4571	5974	7598	9446	4024	5439	7117	9069	4349	5739	7372	9256
		32	4371	5730	7302	9092	3841	5213	6841	8740	4153	5501	7083	8911
		38	3780	5009	6429	8049	3310	4557	6044	7787	3576	4794	6227	7887
		43	3301	4423	5719	7199	2892	4041	5416	7034	3107	4220	5530	7051
3508038	PAC2525Z	30	5014	6477	8134	9985	4410	5891	7610	9573	4769	6221	7889	9780
		32	4804	6227	7837	9634	4219	5660	7335	9249	4564	5977	7599	9436
		38	4178	5480	6947	8583	3660	4985	6527	8296	3953	5245	6726	8405
		43	3664	4863	6211	7711	3216	4445	5880	7529	3452	4641	6003	7548

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units

COMPAC Compac Scroll

Hermetic Scroll Series

The COMPAC is a range of fully fitted packaged units featuring world leading Tecumseh Scroll compressors.

The Scroll compressor allows for an ultra smooth and efficient operation due to the true rotating motion which enables dynamic balancing. Designed with space constraints in mind, the horizontal discharge condenser configuration suits unit placement in car parks, roofs, on the side of buildings and mounted above one another without restricting airflow.

Featuring

- Tecumseh Scroll compressors
- Can be installed on air conditioning wall brackets
- Extended copper tails suitable for press fittings.
- Housing is designed to optimise spacing
- Oil separator on every model
- Light weight design
- Easy servicing – mechanical and electrical components in same compartment
- Electrical panel is fully wired to all electrical components
- Separate compressor and fan compartment for safe and easy maintenance
- Safety controls
- Horizontal discharge condenser configuration
- Easily accessible range of genuine spare parts
- Small footprint.
- Large epoxy finned condenser
- Powder coated galvanized steel casing
- Factory leak tested



Medium Temperature Applications – R404A/R448A/R452A/R134a/R513A

Product Code	Unit Model	Compressor					Fan(s)				Condenser kW @10K TD, R404A	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. cm ³ /rev	Nominal HP	MOC Amps	Volts/ Phase	No. Diam. Mm	MOC Amps	Air Flow m ³ /hr	Volts/ Phase		
3508116	PAS4524Z-1	VSE9515ZFZ	5.8	2.0	16.2	240/1	1 x 450	1.15	5050	240/1	9	3.9
3508117	PAS4530Z-3	VSE9519ZXG	7.3	2.5	6.4	415/3	1 x 500	1.75	6720	240/1	12	3.9
3508118	PAS4548Z-3	VSE9530ZXG	11.8	4.0	10.3	415/3	1 x 500	1.75	6720	240/1	12	3.9
3508119	PAS4560Z-3	VSE9538ZXG	14.5	5.0	12.2	415/3	2 x 450	2.30	10100	240/1	18	9.5
3508120	PAS4572Z-3	VSE9545ZXG	17.1	6.0	14.3	415/3	2 x 450	2.30	10100	240/1	18	9.5
3508121	PAS4584Z-3	VSE9548ZXG	18.8	7.0	17.1	415/3	2 x 500	3.50	13440	240/1	23	9.5
3508122	PAS4596Z-3	VSE9558ZXG	21.4	8.0	18.4	415/3	2 x 500	3.50	13440	240/1	23	9.5
3508123	PAS4611Z-3	VSE9566ZXG	25.3	9.0	21.0	415/3	2 x 500	3.50	13440	240/1	27	9.5
3508124	PAS4612Z-3	VSE9576ZXG	29.1	10.0	23.6	415/3	2 x 500	3.50	13440	240/1	27	9.5
3508125	PAS4614Z-3	VSE9595ZXG	34.3	12.0	27.6	415/3	4 x 500	7.00	26880	240/1	43	12

Dimensions

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
3508116	PAS4524Z-1	5/8"	3/8"	80	71	913	416	638
3508117	PAS4530Z-3	7/8"	1/2"	82	73	913	416	792
3508118	PAS4548Z-3	7/8"	1/2"	83	73	913	416	792
3508119	PAS4560Z-3	7/8"	1/2"	110	73	913	416	1149
3508120	PAS4572Z-3	7/8"	1/2"	112	74	913	416	1149
3508121	PAS4584Z-3	7/8"	1/2"	140	75	913	416	1271
3508122	PAS4596Z-3	1 1/8"	1/2"	140	75	913	416	1271
3508123	PAS4611Z-3	1 1/8"	1/2"	140	75	913	416	1271
3508124	PAS4612Z-3	1 1/8"	1/2"	141	75	913	416	1271
3508125	PAS4614Z-3	1 1/8"	5/8"	178	79	1715	520	1290

Packaged Condensing Units

COMPAC Compac Scroll

Hermetic Scroll Series

Medium Temperature Applications – R404A/R448A/R452A/R134a/R513A



Product Code	Model Number	Ambient Temp. °C	Capacity Watts				
			Evaporating Temperature °C				
			R404A				
			-15	-10	-5	0	5
3508116	PAS4524Z-1	30	3627	4331	5129	6027	7031
		32	3543	4225	4999	5871	6843
		38	3279	3900	4600	5388	6269
		43	3044	3611	4250	4968	5772
3508117	PAS4530Z-3	30	4366	5221	6194	7294	8526
		32	4265	5095	6040	7106	8302
		38	3953	4709	5566	6533	7617
		43	3675	4368	5151	6034	7026
3508118	PAS4548Z-3	30	6862	8145	9581	11175	12929
		32	6696	7940	9331	10874	12571
		38	6178	7303	8554	9941	11469
		43	5711	6734	7869	9125	10510
3508119	PAS4560Z-3	30	8579	10219	12070	14143	16443
		32	8377	9968	11763	13772	16001
		38	7748	9193	10815	12629	14644
		43	7185	8505	9982	11632	13468
3508120	PAS4572Z-3	30	10046	11932	14045	16395	18982
		32	9806	11634	13680	15954	18460
		38	9052	10706	12550	14596	16852
		43	8373	9879	11552	13407	15455
3508121	PAS4584Z-3	30	9734	11777	13988	16362	18891
		32	9390	11369	13509	15807	18256
		38	8357	10145	12076	14146	16354
		43	7499	9129	10885	12767	14776
3508122	PAS4596Z-3	30	12350	14555	16984	19634	22499
		32	12037	14170	16515	19072	21837
		38	11047	12959	15050	17328	19793
		43	10146	11871	13749	15792	18007
3508123	PAS4611Z-3	30	15692	18620	21897	25532	29526
		32	15313	18152	21325	24841	28707
		38	14128	16694	19548	22709	26188
		43	13058	15393	17980	20842	23996
3508124	PAS4612Z-3	30	17469	20677	24245	28179	32476
		32	17040	20147	23599	27402	31556
		38	15692	18492	21588	24995	28721
		43	14471	17011	19808	22882	26250
3508125	PAS4614Z-3	30	20720	24677	29143	34140	39683
		32	20233	24073	28402	33244	38615
		38	18714	22199	26111	30483	35339
		43	17351	20536	24098	28075	32498

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units

COMPAC Compac Scroll

Hermetic Scroll Series

Medium Temperature Applications – R404A/R448A/R452A/R134a/R513A



Condensing Units

Product Code	Model Number	Ambient Temp. °C	Capacity Watts									
			Evaporating Temperature °C									
			R448A					R452A				
			-15	-10	-5	0	5	-15	-10	-5	0	5
3508116	PAS4524Z-1	30	3554	4263	5077	6007	7061	3520	4253	5090	6036	7094
		32	3475	4169	4963	5869	6899	3430	4145	4960	5881	6911
		38	3220	3867	4605	5446	6401	3150	3813	4564	5410	6356
		43	2982	3593	4287	5076	5972	2902	3522	4221	5006	5883
3508117	PAS4530Z-3	30	4275	5135	6124	7256	8546	4240	5129	6148	7304	8602
		32	4182	5022	5988	7093	8352	4133	5001	5994	7120	8383
		38	3882	4667	5564	6590	7759	3801	4607	5523	6558	7720
		43	3601	4344	5189	6152	7250	3507	4262	5116	6078	7156
3508118	PAS4548Z-3	30	6736	8044	9527	11201	13077	4508	5539	6704	8002	9432
		32	6578	7856	9302	10934	12765	4353	5350	6477	7736	9124
		38	6067	7257	8598	10109	11804	3896	4795	5815	6957	8221
		43	5587	6710	7968	9383	10969	3532	4352	5285	6332	7496
3508119	PAS4560Z-3	30	8411	10072	11969	14125	16559	6347	7812	9466	11312	13349
		32	8222	9845	11696	13799	16174	6124	7541	9140	10925	12898
		38	7609	9124	10842	12792	14996	5473	6748	8187	9795	11575
		43	7035	8466	10082	11911	13978	4956	6117	7426	8891	10514
3508120	PAS4572Z-3	30	9860	11780	13959	16422	19185	7904	9676	11665	13869	16284
		32	9632	11507	13632	16034	18729	7647	9364	11291	13427	15768
		38	8889	10636	12608	14832	17329	6880	8434	10178	12112	14236
		43	8192	9842	11693	13776	16115	6257	7677	9270	11038	12984
3508121	PAS4584Z-3	30	9760	11941	14427	17232	20368	9386	11442	13683	16096	18670
		32	9446	11571	13997	16739	19808	9031	11020	13188	15523	18015
		38	8522	10483	12731	15283	18155	7974	9769	11723	13829	16079
		43	7779	9604	11705	14103	16813	7114	8753	10535	12455	14509
3508122	PAS4596Z-3	30	12142	14421	16971	19809	22947	10789	13060	15552	18246	21120
		32	11836	14060	16544	19308	22365	10400	12592	14999	17602	20380
		38	10839	12903	15198	17746	20565	9244	11207	13363	15697	18195
		43	9902	11843	13988	16364	18990	8304	10082	12035	14151	16420
3508123	PAS4611Z-3	30	15405	18392	21777	25595	29873	13275	16157	19367	22894	26725
		32	15044	17961	21263	24986	29159	12820	15607	18713	22128	25839
		38	13873	16590	19651	23098	26962	11459	13969	16767	19850	23209
		43	12774	15338	18211	21438	25055	10338	12624	15174	17987	21058
3508124	PAS4612Z-3	30	17160	20448	24156	28318	32957	15048	18239	21780	25653	29837
		32	16748	19957	23572	27629	32152	14530	17615	21037	24781	28828
		38	15405	18392	21739	25489	29672	12985	15757	18829	22193	25835
		43	14145	16959	20097	23603	27512	11720	14238	17026	20079	23389
3508125	PAS4614Z-3	30	20317	24326	28902	34102	39970	19007	23323	28166	33529	39403
		32	19860	23777	28242	33314	39041	18310	22498	27202	32418	38136
		38	18378	22033	26179	30882	36195	16237	20050	24348	29130	34392
		43	16990	20444	24342	28753	33735	14554	18064	22032	26463	31355

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Packaged Condensing Units

COMPAC Compac Scroll

Hermetic Scroll Series

Medium Temperature Applications – R404A/R448A/R452A/R134a/R513A



Product Code	Model Number	Ambient Temp. °C	Capacity Watts											
			Evaporating Temperature °C											
			R134a						R513A					
			-15	-10	-5	0	5	10	-15	-10	-5	0	5	10
3508116	PAS4524Z-1	30	1940	2429	3012	3685	4442	5277	2122	2625	3216	3890	4642	5466
		32	1898	2381	2957	3622	4370	5194	2073	2568	3150	3815	4557	5369
		38	1769	2230	2782	3418	4134	4923	1921	2386	2938	3570	4277	5053
		43	1662	2100	2626	3235	3920	4677	1795	2229	2749	3349	4022	4762
3508117	PAS4530Z-3	30	2325	2912	3614	4423	5334	6340	2546	3150	3862	4674	5580	6574
		32	2276	2856	3549	4348	5249	6242	2487	3082	3784	4585	5479	6461
		38	2123	2676	3340	4107	4971	5924	2306	2867	3532	4295	5149	6089
		43	1994	2521	3155	3889	4717	5633	2155	2680	3308	4033	4848	5745
3508118	PAS4548Z-3	30	3720	4651	5758	7030	8452	10012	4060	5012	6127	7394	8798	10329
		32	3639	4557	5649	6903	8306	9843	3964	4899	5996	7242	8625	10132
		38	3390	4262	5303	6498	7835	9299	3670	4545	5578	6756	8066	9495
		43	3184	4010	4999	6139	7414	8812	3429	4242	5212	6324	7565	8922
3508119	PAS4560Z-3	30	4610	5768	7149	8739	10523	12486	5039	6228	7624	9213	10981	12914
		32	4510	5654	7017	8587	10347	12284	4922	6091	7465	9031	10773	12679
		38	4204	5294	6596	8096	9780	11631	4560	5658	6957	8442	10099	11914
		43	3950	4984	6225	7658	9268	11040	4261	5285	6508	7915	9490	11219
3508120	PAS4572Z-3	30	5438	6800	8420	10282	12365	14650	5937	7330	8963	10818	12877	15121
		32	5319	6663	8261	10097	12152	14405	5797	7166	8772	10597	12624	14834
		38	4956	6233	7757	9508	11467	13615	5368	6650	8163	9890	11811	13909
		43	4655	5865	7314	8984	10854	12905	5015	6208	7630	9261	11082	13075
3508121	PAS4584Z-3	30	6054	7561	9349	11397	13678	16170	6597	8132	9925	11955	14199	16634
		32	5920	7405	9167	11184	13432	15885	6439	7944	9706	11701	13907	16301
		38	5512	6920	8594	10512	12647	14976	5958	7362	9015	10894	12976	15238
		43	5176	6507	8096	9918	11951	14167	5565	6868	8415	10184	12149	14290
3508122	PAS4596Z-3	30	6814	8503	10503	12786	15323	18084	7416	9129	11128	13383	15869	18557
		32	6661	8325	10294	12542	15039	17754	7236	8916	10877	13091	15533	18173
		38	6200	7773	9641	11773	14139	16710	6692	8254	10090	12170	14466	16953
		43	5822	7306	9075	11098	13345	15787	6251	7696	9410	11363	13526	15873
3508123	PAS4611Z-3	30	8512	10641	13174	16080	19331	22895	9290	11466	14016	16909	20119	23615
		32	8326	10425	12923	15790	18995	22507	9070	11207	13714	16562	19721	23163
		38	7756	9751	12130	14863	17917	21262	8398	10397	12758	15449	18441	21704
		43	7285	9174	11436	14040	16953	20145	7845	9705	11921	14461	17295	20393
3508124	PAS4612Z-3	30	9535	11913	14736	17970	21579	25524	10396	12819	15654	18865	22417	26278
		32	9325	11668	14451	17639	21194	25079	10148	12526	15311	18467	21961	25758
		38	8683	10907	13553	16585	19966	23658	9391	11611	14227	17204	20504	24095
		43	8156	10257	12769	15654	18874	22391	8772	10834	13285	16088	19208	22609
3508125	PAS4614Z-3	30	11465	14525	18071	22123	26700	31817	11511	14581	18139	22205	26800	31939
		32	11107	14110	17590	21569	26065	31094	11154	14166	17659	21653	26167	31219
		38	10047	12873	16153	19910	24163	28928	10094	12931	16225	19999	24272	29063
		43	9179	11855	14966	18535	22582	27125	9227	11915	15041	18628	22698	27269

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications

Tecumseh SHR Receiver units provide a fully fitted, robust refrigeration solution designed with generous space to allow for the addition of a condenser. The range is compatible with R404A, R134a and HFC/ HFO blend alternatives R448A, R449A, R452A and R513A. This series is compatible with a wide range of air and water cooled condensers.

Speak to your local branch for a suitable condenser selection to match your SHR unit.



Features

- Fully Wired including circuit breakers, contactor, electronic overload in an enclosure
- Tecumseh Semi Hermetic compressor
- Generous Configuration
- Reservoir oil separator on SHR4648ZHR and SHR4661ZHR models
- Internal float oil separator on all other models
- Kriwan INT 280 Oil level control on SHR4648Z and SHR4661ZHR
- Suction accumulator on all models
- Liquid receiver
- HP/LP control on all models
- Crankcase heater on all models 2.0kW 101kW

Selection Data

Product Code	Unit Model	Compressor						Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. m ³ /hr	Nominal HP	Motor Type	MOC Amps	Volts/Phase	
3508077	SHR4521ZHR	SH4521ZYZ	5.47	1.0	400V/3PH/DOL	3.6	415/3	6.0
3508078	SHR4526ZHR	SH4526ZYZ	6.91	1.5	400V/3PH/DOL	4.5	415/3	6.0
3508079	SHR4536ZHR	SH4536ZYZ	9.88	2.0	400V/3PH/DOL	6.7	415/3	6.0
3508080	SHR4550ZHR	SH4550ZYZ	13.15	3.0	400V/3PH/DOL	8.8	415/3	9.5
3508081	SHR4564ZHR	SH4564ZYZ	16.40	4.0	400V/3PH/DOL	11.6	415/3	9.5
3508082	SHR4576ZHR	SH4576ZYZ	21.18	5.0	400V/3PH/DOL	11.6	415/3	12.0
3508083	SHR4591ZHR	SH4591ZYZ	24.69	5.0	400V/3PH/DOL	12.7	415/3	12.0
3508084	SHR4610ZHR	SH4610ZYZ	28.02	7.0	400V/3PH/DOL	17.6	415/3	12.0
3508085	SHR4612ZHR	SH4612ZYZ	32.66	7.0	400V/3PH/DOL	20.0	415/3	12.0
3508086	SHR4615ZHR	SH4615ZMZ	41.32	12.0	400V/3PH/PWS	22.4	415/3	17.2
3508087	SHR4620ZHR	SH4620ZMZ	51.50	15.0	400V/3PH/PWS	32.4	415/3	17.2
3508088	SHR4623ZHR	SH4623ZMZ	58.48	20.0	400V/3PH/PWS	35.3	415/3	17.2
3508089	SHR4627ZHR	SH4627ZMZ	70.77	25.0	400V/3PH/PWS	43.5	415/3	17.2
3508090	SHR4632ZHR	SH4632ZMZ	83.81	30.0	400V/3PH/PWS	49.2	415/3	25.0
3509096	SHR4636ZHR	SH4636ZHR	93.05	32.0	400V/3PH/PWS	53.1	415/3	25.0
3508091	SHR4639ZHR	SH4639ZMZ	102.86	35.0	400V/3PH/PWS	61.0	415/3	25.0
3509097	SHR4641ZHR	SH4641ZHR	106.16	35.0	400V/3PH/PWS	60.2	415/3	25.0
3509098	SHR4648ZHR	SH4648ZHR	125.72	40.0	400V/3PH/PWS	71.9	415/3	25.0
3509099	SHR4661ZHR	SH4661ZHR	154.38	50.0	400V/3PH/PWS	90.4	415/3	25.0

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications

Dimension Properties



Product Code	Unit Model	Unit Connections		Weight kg	Sound Power Level dBA	Dimensions		
		Suction	Liquid			L mm	W mm	H mm
3508077	SHR4521ZHR	5/8"	1/2"	74	63.5	974	590	525
3508078	SHR4526ZHR	5/8"	1/2"	75	64.5	974	590	525
3508079	SHR4536ZHR	7/8"	1/2"	85	66.5	974	590	525
3508080	SHR4550ZHR	1 1/8"	1/2"	92	66.5	1060	690	590
3508081	SHR4564ZHR	1 1/8"	1/2"	92	67	1060	690	590
3508082	SHR4576ZHR	1 1/8"	5/8"	181	70	1600	890	746
3508083	SHR4591ZHR	1 1/8"	5/8"	182	70	1600	890	746
3508084	SHR4610ZHR	1 3/8"	5/8"	190	72	1600	890	746
3508085	SHR4612ZHR	1 3/8"	5/8"	191	73	1600	890	746
3508086	SHR4615ZHR	1 3/8"	7/8"	298	75	1880	1120	667
3508087	SHR4620ZHR	1 5/8"	7/8"	298	77	1880	1120	841
3508088	SHR4623ZHR	1 5/8"	1 1/8"	379	78	1880	1128	841
3508089	SHR4627ZHR	2 1/8"	1 1/8"	390	78	1880	1128	917
3508090	SHR4632ZHR	2 1/8"	1 1/8"	406	81	1880	1128	917
3509096	SHR4636ZHR	2 1/8"	1 1/8"	408	81	1880	1128	898
3508091	SHR4639ZHR	2 1/8"	1 1/8"	412	81	1880	1128	917
3509097	SHR4641ZHR	2 1/8"	1 1/8"	430	82	1880	1153	898
3509098	SHR4648ZHR	2 5/8"	1 3/8"	478	84	1880	1340	1197
3509099	SHR4661ZHR	2 5/8"	1 3/8"	485	84	1880	1340	1197

No condenser
Fully fitted

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications



Condensing Units

Product Code	Model Number	Condensing Temperature °C	Capacity (Q) Power Input (W)	Capacity Watts							
				Evaporating Temperature °C							
				R404A							
				-30	-25	-20	-15	-10	-5	0	5
3508077	SHR4521ZHR	30	Q	1264	1705	2235	2860	3586	4419	5364	6429
		30	W	746	836	921	995	1053	1090	1101	1082
		40	Q	994	1364	1810	2336	2950	3656	4461	5371
		40	W	763	873	982	1085	1178	1255	1311	1341
		50	Q	736	1036	1397	1824	2325	2904	3569	4324
		50	W	769	896	1027	1157	1282	1395	1492	1568
3508078	SHR4526ZHR	30	Q	1694	2246	2914	3708	4640	5724	6969	8389
		30	W	936	1046	1152	1249	1334	1403	1452	1477
		40	Q	1391	1851	2410	3080	3872	4797	5869	7100
		40	W	968	1099	1231	1360	1482	1592	1688	1765
		50	Q	1087	1466	1927	2481	3142	3922	4831	5884
		50	W	988	1136	1289	1445	1599	1747	1885	2009
3508079	SHR4536ZHR	30	Q	2442	3179	4060	5099	6311	7710	9311	11129
		30	W	1524	1695	1858	2007	2134	2231	2291	2307
		40	Q	2050	2675	3422	4304	5336	6534	7913	9487
		40	W	1593	1791	1991	2185	2367	2529	2664	2763
		50	Q	1702	2217	2831	3559	4415	5415	6574	7907
		50	W	1666	1884	2113	2346	2576	2795	2995	3171
3508080	SHR4550ZHR	30	Q	3359	4419	5668	7131	8833	10801	13061	15639
		30	W	1896	2119	2329	2518	2675	2793	2863	2876
		40	Q	2739	3668	4744	5992	7439	9110	11033	13235
		40	W	1984	2247	2510	2763	2998	3206	3379	3507
		50	Q	2190	2994	3903	4942	6139	7520	9112	10942
		50	W	2123	2415	2718	3024	3325	3611	3875	4107
3508081	SHR4564ZHR	30	Q	4314	5615	7155	8962	11064	13491	16273	19439
		30	W	2449	2756	3043	3300	3517	3684	3792	3830
		40	Q	3606	4763	6113	7687	9514	11622	14042	16804
		40	W	2595	2966	3329	3672	3987	4264	4491	4660
		50	Q	2945	3941	5086	6412	7947	9721	11764	14108
		50	W	2701	3132	3565	3990	4398	4778	5121	5416
3508082	SHR4576ZHR	30	Q	5106	6857	8896	11250	13946	17012	20477	24370
		30	W	2615	3036	3405	3712	3949	4109	4183	4163
		40	Q	4046	5591	7365	9397	11714	14344	17316	20660
		40	W	2657	3190	3674	4100	4460	4748	4954	5070
		50	Q	2968	4305	5814	7522	9458	11651	14130	16925
		50	W	2573	3212	3806	4347	4827	5238	5572	5820
3508083	SHR4591ZHR	30	Q	6330	8224	10488	13162	16289	19912	24076	28822
		30	W	3318	3728	4104	4437	4719	4940	5093	5166
		40	Q	5247	6896	8842	11127	13794	16886	20448	24524
		40	W	3461	3981	4479	4947	5376	5756	6080	6338
		50	Q	4147	5550	7178	9073	11279	13841	16802	20208
		50	W	3491	4117	4733	5331	5903	6439	6930	7367
3508084	SHR4610ZHR	30	Q	7462	9675	12291	15355	18915	23020	27716	33053
		30	W	3976	4443	4873	5262	5607	5904	6149	6339
		40	Q	6233	8163	10419	13048	16100	19621	23660	28267
		40	W	4176	4746	5292	5808	6292	6740	7147	7511
		50	Q	4973	6621	8520	10717	13261	16201	19587	23468
		50	W	4322	4993	5650	6290	6909	7503	8069	8604
3508085	SHR4612ZHR	30	Q	8772	11256	14220	17721	21816	26561	32014	38234
		30	W	4567	5079	5605	6117	6587	6989	7295	7478
		40	Q	7298	9487	12060	15073	18583	22648	27326	32678
		40	W	4794	5400	6042	6693	7325	7911	8424	8837
		50	Q	5820	7707	9880	12396	15314	18692	22589	27066
		50	W	5010	5694	6436	7209	7986	8740	9444	10070
3508086	SHR4615ZHR	30	Q	10390	13605	17418	21886	27066	33019	39802	47475
		30	W	4948	5641	6309	6935	7499	7982	8366	8630
		40	Q	8372	11132	14412	18271	22766	27958	33906	40671
		40	W	5060	5901	6744	7570	8359	9094	9754	10321
		50	Q	6438	8736	11476	14719	18524	22951	28061	33917
		50	W	5036	6009	7009	8017	9015	9984	10904	11756

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications



Product Code	Model Number	Condensing Temperature °C	Capacity (Q) Power Input (W)	Capacity Watts							
				Evaporating Temperature °C							
				R404A							
				-30	-25	-20	-15	-10	-5	0	5
3508087	SHR4620ZHR	30	Q	14553	18557	23197	28606	34917	42265	50785	60612
		30	W	6688	7513	8310	9043	9673	10165	10481	10585
		40	Q	12125	15795	19933	24674	30152	36502	43862	52369
		40	W	7204	8194	9199	10181	11103	11930	12623	13146
		50	Q	9568	12908	16548	20623	25270	30626	36829	44021
		50	W	7571	8709	9904	11118	12316	13460	14513	15438
3508088	SHR4623ZHR	30	Q	15136	19808	25364	31904	39527	48334	58424	69902
		30	W	7735	8682	9576	10387	11083	11632	12004	12168
		40	Q	12240	16294	21100	26758	33369	41033	49852	59932
		40	W	8058	9233	10393	11508	12546	13476	14267	14888
		50	Q	9367	12759	16772	21504	27059	33539	41048	49694
		50	W	8118	9494	10895	12288	13642	14927	16111	17162
3508089	SHR4627ZHR	30	Q	18393	23976	30640	38513	47723	58398	70670	84669
		30	W	9312	10540	11727	12835	13831	14677	15339	15780
		40	Q	14965	19776	25483	32213	40097	49265	59848	71981
		40	W	9698	11153	12603	14014	15350	16575	17654	18551
		50	Q	11619	15677	20444	26051	32629	40309	49228	59521
		50	W	9833	11483	13167	14849	16495	18067	19532	20853
3508090	SHR4632ZHR	30	Q	22474	29157	37097	46425	57277	69785	84086	100318
		30	W	11238	12714	14123	15415	16539	17448	18092	18420
		40	Q	18485	24233	31050	39068	48423	59251	71690	85879
		40	W	11674	13390	15091	16726	18246	19602	20745	21624
		50	Q	14742	19536	25211	31902	39745	48879	59444	71583
		50	W	12115	14063	16046	18016	19922	21716	23349	24769
3509096	SHR4636ZHR	30	Q	22781	30320	39314	49911	62257	76501	92793	111285
		30	W	11963	13657	15290	16808	18160	19291	20149	20682
		40	Q	18281	24717	32395	41465	52075	64376	78519	94660
		40	W	11970	13977	15988	17950	19811	21517	23017	24257
		50	Q	14243	19563	25914	33447	42312	52662	64654	78445
		50	W	11779	14038	16367	18714	21025	23247	25329	27217
3508091	SHR4639ZHR	30	Q	27597	35441	44617	55314	67727	82049	98475	117204
		30	W	13494	15386	17296	19134	20806	22222	23288	23914
		40	Q	22761	29768	37785	47007	57627	69843	83851	99852
		40	W	14602	16759	19057	21404	23708	25877	27820	29443
		50	Q	17792	24117	31131	39030	48012	58274	70019	83451
		50	W	15488	17849	20474	23269	26144	29006	31763	34323
3509097	SHR4641ZHR	30	Q	28447	36846	46943	58916	72946	89211	107896	129184
		30	W	13298	15005	16635	18123	19406	20418	21095	21371
		40	Q	23645	30737	39267	49414	61359	75286	91379	109827
		40	W	13963	16021	18082	20080	21950	23630	25052	26154
		50	Q	19213	24983	31931	40238	50088	61667	75163	90771
		50	W	14424	16794	19246	21713	24133	26439	28568	30455
3509098	SHR4648ZHR	30	Q	32394	42336	54244	68309	84728	103696	125410	150072
		30	W	16161	18178	20114	21891	23433	24663	25504	25881
		40	Q	26904	35358	45496	57516	71613	87986	106835	128365
		40	W	16559	18983	21430	23821	26082	28133	29901	31306
		50	Q	21694	28516	36745	46578	58216	71859	87713	105987
		50	W	16627	19358	22215	25120	27997	30770	33361	35695
3509099	SHR4661ZHR	30	Q	39758	51935	66355	83258	102883	125474	151273	180529
		30	W	19095	21860	24525	27019	29267	31198	32737	33811
		40	Q	32773	43323	55779	70381	87371	106994	129499	155136
		40	W	19739	23047	26352	29580	32657	35511	38068	40255
		50	Q	26008	34798	45155	57322	71546	88076	107164	129070
		50	W	19894	23662	27521	31397	35218	38910	42400	45614

Q = Capacity W = Power input Q + W = THR (Total Heat of Rejection)

Additional Cooling Required

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications



Condensing Units

Product Code	Model Number	Condensing Temperature: °C	Capacity (Q) Power Input (W)	Capacity: Watts								
				Evaporating Temperature: °C								
				R448A								
				-30	-25	-20	-15	-10	-5	0	5	10
3508077	SHR4521ZHR	30	Q	1043	1433	1905	2471	3145	3940	4870	5947	7186
		30	W	636	745	847	937	1009	1061	1086	1081	1040
		40	Q	837	1180	1591	2082	2667	3359	4172	5119	6213
		40	W	622	748	873	991	1097	1188	1259	1305	1321
		50	Q	610	906	1255	1671	2167	2755	3451	4267	5216
		50	W	604	743	886	1028	1164	1290	1402	1494	1563
3508078	SHR4526ZHR	30	Q	1378	1874	2473	3191	4046	5052	6226	7585	9146
		30	W	821	951	1072	1178	1264	1324	1352	1343	1291
		40	Q	1121	1560	2084	2710	3454	4332	5362	6559	7941
		40	W	825	974	1122	1262	1389	1498	1581	1635	1653
		50	Q	834	1213	1661	2192	2825	3575	4458	5492	6693
		50	W	826	991	1162	1332	1496	1649	1784	1897	1981
3508079	SHR4536ZHR	30	Q	2015	2729	3592	4626	5853	7296	8978	10920	13146
		30	W	1164	1352	1527	1680	1804	1890	1931	1918	1844
		40	Q	1662	2294	3049	3950	5019	6278	7750	9457	11424
		40	W	1183	1397	1609	1810	1992	2147	2267	2344	2370
		50	Q	1258	1811	2462	3232	4144	5221	6487	7963	9672
		50	W	1220	1456	1700	1943	2177	2395	2589	2751	2872
3508080	SHR4550ZHR	30	Q	3016	3997	5171	6571	8228	10175	12444	15069	18081
		30	W	1506	1736	1954	2152	2321	2449	2528	2548	2499
		40	Q	2515	3384	4421	5657	7125	8859	10889	13251	15976
		40	W	1548	1834	2116	2387	2635	2852	3027	3151	3214
		50	Q	2003	2759	3657	4729	6008	7527	9319	11417	13854
		50	W	1522	1863	2210	2552	2881	3185	3456	3684	3860
3508081	SHR4564ZHR	30	Q	3927	5147	6605	8343	10404	12833	15672	18964	22755
		30	W	1959	2226	2478	2707	2904	3060	3168	3217	3199
		40	Q	3288	4367	5654	7194	9028	11202	13758	16740	20193
		40	W	2037	2375	2706	3021	3311	3568	3783	3947	4052
		50	Q	2667	3599	4712	6048	7651	9566	11835	14503	17615
		50	W	2054	2462	2869	3269	3650	4006	4326	4603	4828
3508082	SHR4576ZHR	30	Q	4916	6473	8338	10571	13227	16367	20046	24325	29261
		30	W	2375	2719	3046	3346	3609	3828	3991	4090	4115
		40	Q	4077	5443	7079	9044	11395	14191	17490	21351	25834
		40	W	2479	2909	3330	3735	4115	4458	4757	5002	5183
		50	Q	3282	4455	5861	7556	9601	12053	14971	18414	22443
		50	W	2512	3021	3533	4038	4527	4992	5421	5807	6139
3508083	SHR4591ZHR	30	Q	5730	7557	9745	12355	15453	19101	23363	28304	33987
		30	W	2778	3188	3580	3938	4247	4491	4655	4724	4683
		40	Q	4777	6385	8310	10614	13362	16618	20445	24908	30073
		40	W	2889	3393	3893	4374	4821	5218	5550	5802	5958
		50	Q	3840	5217	6868	8855	11242	14095	17477	21454	26091
		50	W	2909	3497	4096	4691	5266	5806	6297	6721	7065
3508084	SHR4610ZHR	30	Q	6451	8532	11020	13988	17507	21651	26492	32102	38556
		30	W	3158	3627	4067	4464	4802	5068	5245	5320	5277
		40	Q	5360	7192	9383	12006	15132	18835	23189	28265	34139
		40	W	3241	3821	4390	4932	5433	5878	6252	6540	6728
		50	Q	4294	5863	7743	10006	12726	15975	19828	24358	29641
		50	W	3223	3907	4596	5275	5931	6547	7109	7602	8011
3508085	SHR4612ZHR	30	Q	7745	10179	13097	16582	20715	25579	31257	37833	45389
		30	W	3725	4272	4802	5292	5718	6058	6288	6385	6327
		40	Q	6557	8705	11277	14355	18022	22360	27454	33386	40242
		40	W	3887	4559	5233	5886	6495	7037	7488	7825	8026
		50	Q	5358	7209	9423	12084	15273	19075	23574	28854	35000
		50	W	3965	4746	5549	6350	7126	7854	8511	9073	9518
3508086	SHR4615ZHR	30	Q	9397	12458	16152	20599	25918	32231	39659	48322	58343
		30	W	4447	5137	5765	6314	6768	7109	7321	7388	7291
		40	Q	7793	10474	13695	17577	22240	27805	34394	42128	51132
		40	W	4576	5456	6284	7042	7714	8283	8732	9045	9205
		50	Q	6221	8546	11319	14659	18690	23531	29307	36140	44154
		50	W	4531	5597	6620	7583	8469	9262	9945	10500	10912

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications



Product Code	Model Number	Condensing Temperature °C	Capacity (Q) Power Input (W)	Capacity Watts								
				Evaporating Temperature °C								
				R448A								
				-30	-25	-20	-15	-10	-5	0	5	10
3508087	SHR4620ZHR	30	Q	11042	14840	19443	24995	31644	39534	48813	59628	72128
		30	W	5186	6079	6906	7639	8249	8707	8983	9050	8877
		40	Q	8931	12255	16263	21102	26917	33857	42068	51699	62900
		40	W	5246	6387	7472	8472	9359	10103	10675	11047	11189
		50	Q	6855	9710	13129	17259	22247	28242	35393	43848	53759
		50	W	4970	6350	7683	8941	10095	11115	11974	12641	13088
3508088	SHR4623ZHR	30	Q	13438	17831	23060	29267	36594	45184	55181	66727	79968
		30	W	6242	7195	8099	8928	9657	10259	10710	10985	11059
		40	Q	10994	14922	19573	25090	31614	39291	48263	58677	70677
		40	W	6410	7589	8738	9831	10843	11749	12524	13141	13577
		50	Q	8543	11982	16030	20832	26531	33271	41197	50457	61197
		50	W	6491	7852	9202	10516	11769	12935	13989	14906	15660
3508089	SHR4627ZHR	30	Q	16907	22218	28545	36064	44948	55373	67514	81549	97655
		30	W	7911	8982	10013	10967	11810	12507	13024	13325	13375
		40	Q	14123	18873	24500	31179	39085	48395	59284	71932	86517
		40	W	8218	9545	10859	12125	13308	14373	15285	16009	16511
		50	Q	11296	15442	20325	26121	33006	41157	50754	61975	75002
		50	W	8435	9978	11536	13074	14556	15949	17216	18324	19237
3508090	SHR4632ZHR	30	Q	20136	26410	33902	42806	53320	65640	79963	96489	115418
		30	W	9213	10456	11659	12781	13784	14626	15267	15669	15790
		40	Q	17027	22624	29256	37119	46412	57331	70075	84846	101844
		40	W	9751	11282	12807	14287	15683	16953	18058	18958	19613
		50	Q	13840	18701	24413	31177	39189	48649	59758	72717	87731
		50	W	10161	11935	13740	15534	17279	18934	20459	21814	22959
3509096	SHR4636ZHR	30	Q	21222	28177	36420	46172	57653	71084	86688	104688	125310
		30	W	9879	11315	12685	13944	15052	15964	16637	17029	17097
		40	Q	17428	23664	31037	39768	50080	62195	76336	92728	111599
		40	W	10214	12013	13773	15449	16999	18381	19550	20465	21082
		50	Q	13446	18906	25354	33010	42098	52843	65469	80204	97276
		50	W	10257	12393	14515	16581	18547	20370	22008	23418	24557
3508091	SHR4639ZHR	30	Q	25303	32823	41760	52378	64945	79726	96992	117010	140052
		30	W	11370	12927	14405	15765	16967	17971	18736	19222	19390
		40	Q	21699	28494	36433	45782	56808	69781	84970	102645	123080
		40	W	11987	13897	15768	17563	19239	20758	22079	23163	23968
		50	Q	17837	23910	30852	38932	48420	59585	72699	88036	105870
		50	W	12520	14703	16890	19040	21112	23068	24867	26468	27832
3509097	SHR4641ZHR	30	Q	24746	32586	41929	53009	66059	81313	99005	119373	142654
		30	W	11668	13408	15063	16573	17880	18926	19652	19999	19909
		40	Q	20732	27752	36066	45906	57508	71106	86938	105240	126253
		40	W	12253	14355	16427	18410	20246	21875	23241	24283	24943
		50	Q	16602	22791	30062	38651	48794	60727	74689	90920	109662
		50	W	12685	15056	17451	19814	22084	24204	26115	27759	29076
3509098	SHR4648ZHR	30	Q	29786	38847	49646	62481	77650	95453	116192	140168	167686
		30	W	14244	16084	17831	19443	20877	22092	23045	23693	23996
		40	Q	25227	33357	42913	54194	67501	83134	101397	122592	147028
		40	W	14886	17169	19394	21519	23501	25298	26869	28171	29161
		50	Q	20380	27616	35965	45729	57209	70708	86531	104986	126381
		50	W	15379	18043	20684	23260	25729	28048	30175	32068	33684
3509099	SHR4661ZHR	30	Q	37487	48962	62562	78651	97596	119764	145521	175240	209291
		30	W	17687	20044	22305	24385	26198	27658	28682	29184	29078
		40	Q	31857	42208	54285	68457	85089	104551	127212	153445	183626
		40	W	18538	21400	24228	26936	29439	31653	33491	34870	35703
		50	Q	25756	34980	45533	57782	72098	88851	108413	131162	157475
		50	W	19196	22453	25737	28965	32049	34905	37449	39594	41256

Q = Capacity W = Power input Q + W = THR (Total Heat of Rejection)

Additional Cooling Required

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications



Condensing Units

Product Code	Model Number	Condensing Temperature °C	Capacity (Q) Power Input (W)	Capacity Watts								
				Evaporating Temperature °C								
				R452A								
				-30	-25	-20	-15	-10	-5	0	5	10
3508077	SHR4521ZHR	30	Q	1166	1577	2087	2700	3423	4261	5220	6305	7521
		30	W	703	793	878	953	1013	1054	1070	1057	1011
		40	Q	916	1260	1687	2201	2810	3517	4329	5252	6292
		40	W	714	823	931	1035	1130	1211	1273	1311	1322
		50	Q	663	942	1288	1706	2202	2782	3451	4215	5080
		50	W	724	845	972	1101	1225	1341	1443	1527	1589
3508078	SHR4526ZHR	30	Q	1561	2078	2720	3501	4430	5520	6781	8227	9867
		30	W	882	992	1098	1196	1284	1356	1410	1443	1451
		40	Q	1281	1710	2247	2902	3688	4616	5698	6945	8370
		40	W	907	1037	1168	1297	1421	1536	1639	1727	1795
		50	Q	981	1335	1778	2321	2977	3756	4671	5734	6956
		50	W	930	1072	1221	1374	1528	1679	1823	1958	2080
3508079	SHR4536ZHR	30	Q	2251	2942	3792	4815	6024	7435	9060	10914	13012
		30	W	1435	1607	1772	1923	2054	2157	2226	2254	2235
		40	Q	1887	2471	3189	4055	5083	6286	7680	9279	11096
		40	W	1492	1688	1888	2085	2271	2441	2587	2703	2783
		50	Q	1539	2023	2615	3330	4182	5186	6356	7705	9251
		50	W	1569	1778	2001	2231	2461	2686	2897	3089	3255
3508080	SHR4550ZHR	30	Q	3096	4089	5293	6733	8432	10417	12710	15338	18325
		30	W	1785	2010	2222	2412	2574	2700	2781	2811	2781
		40	Q	2521	3388	4421	5645	7085	8765	10710	12946	15498
		40	W	1858	2119	2381	2636	2876	3094	3281	3432	3536
		50	Q	1981	2732	3605	4624	5814	7200	8808	10663	12792
		50	W	1998	2279	2574	2876	3177	3471	3748	4001	4223
3508081	SHR4564ZHR	30	Q	3976	5197	6683	8462	10562	13011	15835	19064	22727
		30	W	2305	2613	2902	3162	3384	3561	3683	3742	3728
		40	Q	3317	4398	5697	7242	9060	11179	13628	16436	19630
		40	W	2430	2797	3158	3503	3825	4114	4361	4559	4697
		50	Q	2665	3597	4699	6000	7526	9308	11372	13749	16468
		50	W	2542	2955	3376	3794	4203	4592	4953	5277	5556
3508082	SHR4576ZHR	30	Q	4706	6344	8307	10621	13312	16405	19925	23900	28355
		30	W	2462	2880	3247	3557	3801	3972	4064	4068	3978
		40	Q	3727	5165	6865	8854	11156	13798	16806	20206	24026
		40	W	2487	3007	3484	3910	4278	4581	4811	4961	5023
		50	Q	2679	3923	5368	7037	8959	11157	13659	16493	19685
		50	W	2421	3031	3604	4134	4612	5033	5388	5671	5873
3508083	SHR4591ZHR	30	Q	5833	7609	9794	12427	15550	19203	23428	28265	33757
		30	W	3124	3535	3914	4252	4542	4776	4948	5049	5071
		40	Q	4830	6370	8241	10483	13137	16245	19847	23987	28705
		40	W	3241	3754	4248	4719	5157	5555	5905	6201	6434
		50	Q	3750	5064	6629	8489	10683	13254	16243	19694	23649
		50	W	3286	3884	4482	5069	5641	6188	6703	7179	7607
3508084	SHR4610ZHR	30	Q	6877	8953	11479	14498	18057	22199	26971	32416	38583
		30	W	3743	4213	4647	5042	5396	5708	5975	6195	6367
		40	Q	5735	7539	9710	12293	15333	18875	22964	27648	32973
		40	W	3910	4475	5019	5540	6035	6504	6943	7350	7725
		50	Q	4498	6042	7870	10028	12560	15514	18935	22870	27367
		50	W	4069	4713	5351	5981	6602	7210	7805	8383	8944
3508085	SHR4612ZHR	30	Q	8084	10416	13281	16733	20827	25615	31154	37497	44701
		30	W	4299	4817	5346	5861	6339	6755	7086	7306	7393
		40	Q	6715	8763	11240	14199	17697	21786	26523	31962	38160
		40	W	4489	5091	5731	6385	7027	7634	8182	8646	9002
		50	Q	5266	7034	9126	11598	14503	17897	21836	26376	31575
		50	W	4715	5373	6094	6855	7632	8400	9134	9812	10408
3508086	SHR4615ZHR	30	Q	9576	12588	16266	20662	25834	31836	38726	46559	55394
		30	W	4659	5350	6017	6645	7217	7716	8128	8434	8621
		40	Q	7707	10282	13433	17215	21684	26897	32909	39779	47566
		40	W	4736	5563	6397	7221	8019	8776	9474	10098	10632
		50	Q	5815	7962	10596	13773	17550	21983	27131	33052	39807
		50	W	4739	5669	6635	7623	8615	9595	10548	11456	12305

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications



Product Code	Model Number	Condensing Temperature °C	Capacity (Q) Power Input (W)	Capacity Watts								
				Evaporating Temperature °C								
				R452A								
				-30	-25	-20	-15	-10	-5	0	5	10
3508087	SHR4620ZHR	30	Q	13412	17176	21668	27013	33336	40765	49426	59447	70959
		30	W	6297	7125	7926	8664	9309	9826	10182	10344	10279
		40	Q	11146	14584	18573	23240	28712	35115	42579	51231	61205
		40	W	6747	7726	8725	9711	10650	11510	12258	12860	13283
		50	Q	8668	11795	15296	19298	23931	29322	35601	42900	51352
		50	W	7123	8215	9376	10571	11769	12936	14038	15043	15917
3508088	SHR4623ZHR	30	Q	13950	18327	23686	30122	37730	46606	56847	68551	81817
		30	W	7283	8234	9133	9952	10665	11244	11662	11892	11905
		40	Q	11267	15050	19667	25213	31783	39475	48387	58617	70267
		40	W	7546	8706	9859	10977	12035	13003	13856	14565	15104
		50	Q	8462	11631	15485	20120	25634	32123	39688	48430	58451
		50	W	7638	8958	10315	11684	13036	14345	15583	16723	17737
3508089	SHR4627ZHR	30	Q	16951	22182	28612	36362	45555	56315	68765	83033	99243
		30	W	8767	9997	11185	12299	13311	14188	14902	15421	15715
		40	Q	13777	18267	23750	30350	38191	47397	58093	70406	84466
		40	W	9079	10515	11955	13368	14725	15994	17146	18150	18975
		50	Q	10500	14294	18878	24374	30908	38606	47596	58006	69968
		50	W	9255	10836	12468	14120	15761	17362	18891	20319	21615
3508090	SHR4632ZHR	30	Q	20712	26980	34645	43833	54672	67291	81818	98384	117122
		30	W	10581	12059	13469	14770	15917	16866	17574	17999	18095
		40	Q	17011	22382	28939	36808	46119	57000	69582	83998	100381
		40	W	10930	12625	14315	15955	17503	18915	20147	21157	21900
		50	Q	13328	17820	23285	29851	37650	46812	57470	69758	83814
		50	W	11402	13270	15195	17132	19038	20869	22582	24134	25480
3509096	SHR4636ZHR	30	Q	20996	28048	36709	47120	59424	73764	90284	109131	130452
		30	W	11264	12955	14584	16106	17476	18646	19573	20210	20512
		40	Q	16836	22831	30195	39071	49602	61934	76211	92582	111199
		40	W	11203	13177	15166	17124	19005	20764	22355	23732	24850
		50	Q	12861	17828	23926	31297	40087	50443	62513	76448	92402
		50	W	11084	13245	15497	17794	20091	22342	24501	26522	28360
3508091	SHR4639ZHR	30	Q	25431	32794	41667	52227	64654	79128	95831	114945	136656
		30	W	12706	14594	16497	18333	20021	21478	22622	23371	23642
		40	Q	20933	27487	35210	44282	54883	67195	81401	97687	116240
		40	W	13674	15801	18076	20417	22742	24970	27017	28801	30241
		50	Q	16105	22026	28774	36531	45480	55803	67687	81320	96893
		50	W	14567	16832	19377	22122	24983	27879	30728	33446	35953
3509097	SHR4641ZHR	30	Q	26217	34092	43837	55626	69631	86026	104986	126689	151313
		30	W	12521	14231	15865	17366	18675	19736	20492	20884	20856
		40	Q	21762	28390	36597	46556	58441	72428	88694	107419	128785
		40	W	13074	15105	17151	19154	21056	22801	24330	25587	26514
		50	Q	17375	22788	29487	37648	47447	59060	72669	88456	106608
		50	W	13572	15844	18221	20646	23061	25409	27633	29675	31477
3509098	SHR4648ZHR	30	Q	29855	39173	50658	64496	80877	99989	122023	147172	175633
		30	W	15215	17241	19184	20976	22550	23839	24776	25292	25321
		40	Q	24759	32657	42406	54192	68207	84642	103688	125543	150404
		40	W	15502	17898	20328	22724	25200	27147	29038	30626	31844
		50	Q	19611	26004	33931	43581	55147	68822	84802	103287	124480
		50	W	15646	18264	21033	23886	26754	29571	32269	34781	37039
3509099	SHR4661ZHR	30	Q	36642	48058	61971	78611	98206	120988	147190	177047	210797
		30	W	17980	20735	23392	25890	28166	30158	31804	33042	33811
		40	Q	30155	40013	51988	66311	83212	102925	125685	151732	181306
		40	W	18476	21728	24996	28216	31327	34266	36973	39383	41437
		50	Q	23511	31739	41703	53637	67774	84350	103605	125781	151127
		50	W	18721	22325	26057	29853	33653	37393	41013	44450	47642

Q = Capacity W = Power input Q + W = THR (Total Heat of Rejection)

Additional Cooling Required

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications



Condensing Units

Product Code	Model Number	Condensing Temperature °C	Capacity (Q) Power Input (W)	Capacity Watts									
				Evaporating Temperature °C									
				R134a					R513A				
				-10	-5	0	5	10	-10	-5	0	5	10
3508077	SHR4521ZHR	30	Q	1756	2259	2846	3527	4311	1878	2391	2989	3677	4466
		30	W	618	664	704	741	774	654	701	741	778	811
		40	Q	1513	1965	2494	3108	3817	1603	2061	2594	3209	3915
		40	W	684	747	802	850	893	724	788	844	892	936
		50	Q	1298	1701	2171	2718	3352	1363	1767	2237	2780	3405
		50	W	747	826	896	957	1011	791	873	943	1005	1059
3508078	SHR4526ZHR	30	Q	2440	3070	3808	4664	5650	2609	3251	4000	4865	5855
		30	W	807	849	881	905	921	854	895	927	951	966
		40	Q	2121	2692	3360	4137	5034	2248	2824	3496	4272	5164
		40	W	897	961	1015	1059	1094	949	1014	1068	1112	1147
		50	Q	1819	2329	2927	3623	4429	1910	2421	3016	3705	4499
		50	W	968	1055	1132	1198	1253	1024	1114	1192	1258	1314
3508079	SHR4536ZHR	30	Q	3654	4595	5691	6951	8385	3907	4867	5979	7250	8691
		30	W	1179	1241	1267	1249	1181	1248	1309	1333	1312	1237
		40	Q	3175	4019	5001	6132	7423	3366	4217	5203	6333	7616
		40	W	1342	1462	1553	1607	1617	1420	1542	1634	1688	1695
		50	Q	2700	3446	4315	5318	6466	2835	3581	4446	5438	6566
		50	W	1456	1633	1787	1911	1997	1541	1723	1881	2008	2095
3508080	SHR4550ZHR	30	Q	4826	6107	7627	9404	11457	5162	6470	8013	9806	11865
		30	W	1615	1704	1753	1751	1688	1709	1798	1845	1839	1766
		40	Q	4150	5296	6659	8258	10112	4399	5558	6930	8529	10372
		40	W	1746	1900	2029	2124	2171	1847	2004	2136	2230	2275
		50	Q	3481	4486	5687	7103	8753	3656	4664	5862	7266	8891
		50	W	1828	2033	2230	2407	2552	1935	2146	2348	2529	2677
3508081	SHR4564ZHR	30	Q	6111	7636	9426	11501	13883	6536	8089	9904	11997	14388
		30	W	2184	2305	2399	2466	2507	2311	2432	2524	2589	2625
		40	Q	5336	6699	8298	10153	12288	5656	7030	8634	10487	12607
		40	W	2418	2603	2765	2904	3020	2558	2747	2910	3049	3164
		50	Q	4590	5790	7197	8833	10719	4820	6018	7415	9032	10885
		50	W	2594	2844	3073	3283	3474	2746	3001	3236	3450	3643
3508082	SHR4576ZHR	30	Q	7375	9433	11871	14717	17999	7889	9993	12470	15342	18633
		30	W	2143	2304	2428	2502	2516	2267	2431	2555	2627	2634
		40	Q	6320	8185	10400	12992	15989	6700	8591	10822	13417	16398
		40	W	2360	2605	2825	3009	3145	2497	2748	2973	3160	3296
		50	Q	5256	6914	8890	11213	13911	5521	7189	9165	11472	14133
		50	W	2507	2826	3135	3420	3671	2653	2983	3301	3594	3851
3508083	SHR4591ZHR	30	Q	9578	11899	14634	17831	21537	10240	12612	15396	18632	22361
		30	W	2650	2803	2907	2946	2907	2804	2957	3058	3092	3045
		40	Q	8472	10568	13030	15905	19240	9008	11131	13610	16484	19795
		40	W	3024	3277	3493	3658	3757	3199	3456	3675	3840	3937
		50	Q	7351	9221	11409	13960	16922	7760	9629	11797	14304	17192
		50	W	3347	3702	4033	4325	4565	3543	3907	4247	4545	4788
3508084	SHR4610ZHR	30	Q	9907	12548	15682	19352	23602	10595	13290	16473	20180	24452
		30	W	3082	3290	3453	3562	3609	3261	3471	3633	3739	3778
		40	Q	8648	11024	13843	17150	20988	9166	11567	14402	17711	21532
		40	W	3385	3703	3992	4242	4445	3581	3907	4201	4454	4657
		50	Q	7371	9473	11968	14903	18320	7741	9846	12334	15242	18611
		50	W	3601	4022	4429	4813	5166	3811	4245	4663	5057	5417
3508085	SHR4612ZHR	30	Q	11754	14814	18408	22579	27370	12570	15689	19336	23547	28359
		30	W	3748	4060	4279	4377	4325	3965	4283	4504	4595	4529
		40	Q	10362	13125	16366	20125	24447	10981	13771	17027	20786	25084
		40	W	4093	4542	4930	5231	5416	4330	4791	5190	5495	5676
		50	Q	8943	11392	14260	17590	21424	9390	11840	14695	17992	21767
		50	W	4371	4919	5441	5908	6291	4625	5191	5729	6209	6599
3508086	SHR4615ZHR	30	Q	15472	19405	23970	29214	35184	16549	20558	25184	30464	36436
		30	W	4024	4351	4613	4798	4892	4258	4591	4855	5038	5125
		40	Q	13309	16886	21053	25855	31342	14110	17723	21906	26696	32133
		40	W	4419	4900	5332	5704	6002	4676	5170	5613	5991	6290
		50	Q	11188	14395	18149	22497	27487	11753	14966	18703	23002	27901
		50	W	4676	5300	5894	6443	6935	4948	5594	6206	6770	7272

Receiver Units



Tecumseh

SHR Series – Low, Medium and High Temperature Applications



Product Code	Model Number	Condensing Temperature °C	Capacity (Q) Power Input (W)	Capacity Watts									
				Evaporating Temperature °C									
				R134a					R513A				
				-10	-5	0	5	10	-10	-5	0	5	10
3508087	SHR4620ZHR	30	Q	19310	24042	29616	36126	43667	20648	25459	31108	37684	45275
		30	W	5050	5332	5508	5559	5468	5343	5624	5795	5835	5724
		40	Q	17042	21336	26377	32261	39081	18063	22383	27437	33315	40107
		40	W	5751	6223	6608	6888	7044	6084	6565	6954	7232	7379
		50	Q	14737	18583	23082	28329	34420	15478	19313	23778	28965	34965
		50	W	6302	6969	7568	8081	8489	6671	7356	7969	8490	8899
3508088	SHR4623ZHR	30	Q	22974	28701	35439	43297	52386	24564	30390	37222	45163	54319
		30	W	5867	6393	6826	7139	7304	6208	6746	7184	7495	7649
		40	Q	20152	25358	31464	38578	46811	21358	26601	32726	39839	48046
		40	W	6458	7193	7870	8461	8939	6833	7590	8284	8886	9368
		50	Q	17284	21958	27419	33778	41146	18153	22820	28246	34539	41804
		50	W	6885	7806	8704	9550	10319	7287	8240	9165	10035	10822
3508089	SHR4627ZHR	30	Q	26857	34026	42361	51950	62877	28728	36047	44507	54180	65139
		30	W	8393	9074	9647	10086	10366	8881	9575	10153	10589	10855
		40	Q	22851	29205	36613	45160	54934	24226	30651	38098	46639	56348
		40	W	8943	9916	10816	11618	12294	9462	10463	11385	12201	12883
		50	Q	19121	24672	31163	38683	47317	20083	25648	32115	39557	48049
		50	W	9281	10517	11715	12849	13893	9823	11101	12336	13501	14568
3508090	SHR4632ZHR	30	Q	30205	37911	46872	57187	68955	32302	40156	49242	59647	71455
		30	W	9363	10104	10739	11241	11584	9907	10661	11301	11799	12129
		40	Q	26268	33214	41299	50622	61283	27846	34854	42968	52275	62860
		40	W	10216	11249	12203	13053	13773	10809	11869	12844	13706	14429
		50	Q	22357	28538	35741	44068	53617	23484	29665	36827	45056	54440
		50	W	10825	12135	13395	14579	15660	11458	12810	14105	15317	16418
3509096	SHR4636ZHR	30	Q	33867	43318	54321	66980	81399	36226	45889	57063	69835	84292
		30	W	10471	11378	12133	12696	13026	11081	12006	12770	13328	13639
		40	Q	28613	37093	46999	58434	71504	30337	38933	48905	60342	73329
		40	W	11216	12471	13619	14619	15429	11867	13160	14336	15352	16166
		50	Q	23509	31003	39796	49994	61701	24697	32237	41020	51132	62664
		50	W	11620	13193	14702	16107	17365	12299	13926	15482	16923	18207
3508091	SHR4639ZHR	30	Q	38078	47385	58336	71101	85848	40715	50176	61275	74171	89023
		30	W	10732	11695	12470	13005	13248	11355	12340	13124	13652	13872
		40	Q	33617	42048	51930	63434	76730	35629	44108	54015	65509	78751
		40	W	11950	13330	14596	15696	16579	12642	14065	15363	16484	17374
		50	Q	29097	36642	45446	55680	67516	30561	38079	46815	56929	68586
		50	W	12872	14628	16344	17968	19449	13623	15440	17209	18880	20397
3509097	SHR4641ZHR	30	Q	39983	49750	61244	74649	90153	42751	52682	64329	77870	93483
		30	W	9886	10777	11493	11982	12194	10460	11371	12095	12579	12768
		40	Q	35308	44166	54551	66650	80651	37421	46331	56741	68829	82774
		40	W	11002	12272	13433	14435	15227	11640	12948	14139	15160	15957
		50	Q	30562	38497	47760	58540	71026	32100	40008	49199	59853	72151
		50	W	11841	13451	15020	16496	17829	12532	14197	15816	17334	18698
3509098	SHR4648ZHR	30	Q	47450	59177	72977	89078	107710	50735	62661	76650	92923	111703
		30	W	12365	13455	14312	14876	15089	13084	14197	15063	15618	15801
		40	Q	41665	52277	64719	79221	96013	44159	54838	67315	81813	98554
		40	W	13750	15327	16747	17948	18871	14548	16173	17627	18849	19776
		50	Q	35812	45303	56382	69279	84226	37615	47080	58078	70834	85573
		50	W	14739	16766	18709	20508	22103	15600	17696	19700	21548	23179
3509099	SHR4661ZHR	30	Q	57058	71999	89431	109543	132522	61031	76278	93961	114232	137247
		30	W	15565	16886	17972	18759	19183	16468	17816	18913	19692	20088
		40	Q	49494	62848	78467	96540	117257	52470	65964	81656	99701	120255
		40	W	17256	19178	20944	22491	23755	18257	20234	22044	23619	24894
		50	Q	41938	53649	67400	83381	101784	44047	55776	69466	85275	103360
		50	W	18481	20935	23314	25554	27591	19560	22097	24550	26851	28935

Q = Capacity W = Power input Q + W = THR (Total Heat of Rejection)

■ Additional Cooling Required

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Water Cooled Units



Tecumseh EVO Aqua



Tecumseh's line of water cooled condensing units are the perfect alternative when air cooled units are impractical due to excessively high ambient temperatures or excessive fan noise. All water cooled models utilise performance proven reciprocating compressors and high-quality brazed plate condensers. The high energy efficiency and low operating pressures are the primary advantages of the water cooled design ensuring optimum performance.

Features

- Tecumseh Hermetic compressor
- Oil separator
- Complete factory wiring: Compressor contactor
- Liquid line assembly: Filter drier
- Liquid Receiver
- Crankcase heater and oil sight glass on all FH2, TFH2 and TAG models
- Noise advantage compared to air-cooled condensing units
- Consistent operating conditions provided by constant condensing water temperatures
- Brazed plate condenser
- Suction accumulator on low temperature models
- Thermal overload | HP/LP control | Circuit breakers
- Moisture indicator | Line valve
- Copper connections

2.5 kW 13.9kW

- Capacities using R513A & R134a can be provided, contact your nearest branch or application engineer

Medium Temperature Applications – R404A/R448A/R452A

Product Code	Unit Model	Compressor					Condenser Capacity Water Inlet 29.5°C, Water Outlet 34.5°C	Water Pressure Drop	Water Flow Rate	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. cm ³ /rev	Nominal HP	MOC Amps	Volts/Phase				
3508058	CAJ4517ZHR-HE-EVO	CAJ4517Z-FZ	25.9	1.50	9.04	240/1	5.58	27.5	0.966	2.35
3508056	TAJ4517ZHR-HE-EVO	TAJ4517Z-TZ	25.9	1.50	3.58	415/3	5.58	27.5	0.966	2.35
3508059	CAJ4519ZHR-HE-EVO	CAJ4519Z-FZ	34.5	1.60	12	240/1	7.37	12.6	1.277	2.35
3508057	TAJ4519ZHR-HE-EVO	TAJ4519Z-TZ	34.5	1.60	4.95	415/3	7.37	12.6	1.277	2.35
3507134	FH4524ZHR-HE-XC	FH4524Z-XC	43.3	2.00	12.4	240/1	8.99	18.5	1.668	3.90
3508050	TFH4524ZHR-HE-EVO	TFH4524Z	43.5	2.00	5.02	415/3	8.99	18.5	1.668	3.90
3507133	FH4532ZHR-HE-XC	FH4532Z-XC	50.6	2.60	14.1	240/1	11.31	28.7	1.959	3.90
3508049	TFH4531ZHR-HE-EVO	TFH4531Z	56.6	2.60	6.25	415/3	11.31	28.7	1.959	3.90
3507131	FH4538ZHR-HE-XC	FH4538Z-XC	63	3.30	18.6	240/1	14.57	46.9	2.523	3.90
3508048	TFH4540ZHR-HE-EVO	TFH4540Z	74.2	3.30	8.86	415/3	14.57	46.9	2.523	3.90
3508043	TAG4546ZHR-HE-EVO	TAG4546Z	90.2	3.80	8.53	415/3	16.94	29.5	2.934	6.00
3508042	TAG4553ZHR-HE-EVO	TAG4553Z	100.7	4.40	9.69	415/3	18.59	35.3	3.219	6.00
3508041	TAG4561ZHR-HE-EVO	TAG4561Z	112.5	5.00	10.3	415/3	21.64	47.4	3.747	9.50
3508040	TAG4568ZHR-HE-EVO	TAG4568Z	124.4	5.70	11.7	415/3	24.02	34.6	4.16	9.50
3508039	TAG4573ZHR-HE-EVO	TAG4573Z	134.8	6.00	13.6	415/3	25.77	39.7	4.463	9.50

Water Cooled Units



Tecumseh
EVO Aqua



Dimension Properties

Product Code	Unit Model	Line Size Inches		Weight kg	Sound Power Level dBA	Dimensions		
		Suction	Liquid			L mm	W mm	H mm
3508058	CAJ4517ZHR-HE-EVO	5/8"	3/8"	42	64	425	489	604
3508056	TAJ4517ZHR-HE-EVO	5/8"	3/8"	38	62	425	489	604
3508059	CAJ4519ZHR-HE-EVO	5/8"	3/8"	42	68	425	489	604
3508057	TAJ4519ZHR-HE-EVO	5/8"	3/8"	40	68	425	489	604
3507134	FH4524ZHR-HE-XC	5/8"	3/8"	62	73	600	600	604
3508050	TFH4524ZHR-HE-EVO	5/8"	3/8"	58	72	600	600	604
3507133	FH4532ZHR-HE-XC	5/8"	3/8"	59	74	600	600	604
3508049	TFH4531ZHR-HE-EVO	5/8"	3/8"	59	76	600	600	604
3507131	FH4538ZHR-HE-XC	5/8"	3/8"	64	75	600	600	604
3508048	TFH4540ZHR-HE-EVO	5/8"	3/8"	61	79	600	600	604
3508043	TAG4546ZHR-HE-EVO	7/8"	1/2"	78	83	600	600	604
3508042	TAG4553ZHR-HE-EVO	7/8"	1/2"	80	82	600	600	604
3508041	TAG4561ZHR-HE-EVO	7/8"	1/2"	84	83	600	600	604
3508040	TAG4568ZHR-HE-EVO	7/8"	1/2"	87	81	600	600	604
3508039	TAG4573ZHR-HE-EVO	7/8"	1/2"	88	81	600	600	604

Water Cooled Units



Tecumseh
EVO Aqua

Condensing Units



Low Temperature Applications – R404A/R448A/R452A

Product Code	Unit Model	Compressor					Condenser Capacity Water Inlet 29.5°C, Water Outlet 34.5°C	Water Pressure Drop	Water Flow Rate	Liquid Receiver Capacity kg @ 80%
		Tecumseh Model	Displ. cm ³ / rev	Nominal HP	MOC Amps	Volts/ Phase	kW	Kpa	m ³ /h	
3507136	FH2480ZBR-HE-XC	FH2480Z-XC	54.3	2.00	11.1	240/1	4.37	17.2	0.7564	3.90
3508060	TFH2480ZBR-HE-EVO	TFH2480Z	53.2	2.00	4.17	415/3	4.37	17.2	0.7564	3.90
3507135	FH2511ZBR-HE-XC	FH2511Z-XC	68	2.80	12.2	240/1	5.49	26.7	0.9512	3.90
3508061	TFH2511ZBR-HE-EVO	TFH2511Z	74.2	2.80	5.48	415/3	5.49	26.7	0.9512	3.90
3508045	TAG2513ZBR-HE-EVO	TAG2513Z	100.7	3.20	6.43	415/3	6.77	10.7	1.173	6.00
3508047	TAG2516ZBR-HE-EVO	TAG2516Z	112.5	4.00	7.14	415/3	7.97	14.6	1.379	6.00
3508046	TAG2522ZBR-HE-EVO	TAG2522Z	134.8	5.50	9.09	415/3	9.64	21.1	1.67	6.00
3508044	TAG2525ZBR-HE-EVO	TAG2525Z	145.0	6.20	9.82	415/3	10.65	25.6	1.844	6.00

Dimension Properties

Product Code	Unit Model	Unit Connections		Weight	Sound Power Level	Dimensions		
		Suction	Liquid	kg	dBA	L mm	W mm	H mm
3507136	FH2480ZBR-HE-XC	5/8"	3/8"	65	72	600	600	604
3508060	TFH2480ZBR-HE-EVO	5/8"	3/8"	61	72	600	600	604
3507135	FH2511ZBR-HE-XC	5/8"	3/8"	65	75	600	600	604
3508061	TFH2511ZBR-HE-EVO	5/8"	3/8"	61	77	600	600	604
3508045	TAG2513ZBR-HE-EVO	7/8"	1/2"	76	78	600	600	604
3508047	TAG2516ZBR-HE-EVO	7/8"	1/2"	75	77	600	600	604
3508046	TAG2522ZBR-HE-EVO	7/8"	1/2"	79	79	600	600	604
3508044	TAG2525ZBR-HE-EVO	7/8"	1/2"	78	84	600	600	604

Water Cooled Units



Tecumseh
EVO Aqua



R404A – Capacities

Product Code	Model Number	Water Inlet/ Water Outlet Temperature	Capacity Watts				
			Evaporating Temperature °C				
			R404A				
			-10	-5	0	5	10
3508058	CAJ4517ZHR-HE-EVO	29.5 °C/34.5 °C	1933	2352	2829	3374	4004
3508056	TAJ4517ZHR-HE-EVO	29.5 °C/34.5 °C	1933	2365	2852	3406	4044
3508059	CAJ4519ZHR-HE-EVO	29.5 °C/34.5 °C	2489	3041	3661	4359	5155
3508057	TAJ4519ZHR-HE-EVO	29.5 °C/34.5 °C	2471	2992	3575	4233	4985
3507134	FH4524ZHR-HE-XC	29.5 °C/34.5 °C	2678	3312	4026	4839	5787
3508050	TFH4524ZHR-HE-EVO	29.5 °C/34.5 °C	2685	3317	4021	4807	5700
3507133	FH4532ZHR-HE-XC	29.5 °C/34.5 °C	3878	4847	5916	7118	8503
3508049	TFH4531ZHR-HE-EVO	29.5 °C/34.5 °C	3782	4682	5715	6911	8313
3507131	FH4538ZHR-HE-XC	29.5 °C/34.5 °C	4748	5873	7124	8508	10045
3508048	TFH4540ZHR-HE-EVO	29.5 °C/34.5 °C	4893	6004	7257	8675	10296
3508043	TAG4546ZHR-HE-EVO	29.5 °C/34.5 °C	5562	7035	8724	10656	12872
3508042	TAG4553ZHR-HE-EVO	29.5 °C/34.5 °C	6014	7532	9263	11234	13498
3508041	TAG4561ZHR-HE-EVO	29.5 °C/34.5 °C	6873	8569	10499	12696	15218
3508040	TAG4568ZHR-HE-EVO	29.5 °C/34.5 °C	8184	10154	12416	15019	18045
3508039	TAG4573ZHR-HE-EVO	29.5 °C/34.5 °C	8610	10586	12845	15441	18458

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Product Code	Model Number	Water Inlet/ Water Outlet Temperature	Capacity Watts				
			Evaporating Temperature °C				
			R404A				
			-30	-25	-20	-15	-10
3507136	FH2480ZBR-HE-XC	29.5 °C/34.5 °C	1623	2115	2657	3256	3922
3508060	TFH2480ZBR-HE-EVO	29.5 °C/34.5 °C	1623	2115	2657	3256	3922
3507135	FH2511ZBR-HE-XC	29.5 °C/34.5 °C	2165	2860	3655	4558	5584
3508061	TFH2511ZBR-HE-EVO	29.5 °C/34.5 °C	2096	2775	3569	4490	5559
3508045	TAG2513ZBR-HE-EVO	29.5 °C/34.5 °C	2573	3618	4858	6294	7922
3508047	TAG2516ZBR-HE-EVO	29.5 °C/34.5 °C	3098	4085	5217	6515	8010
3508046	TAG2522ZBR-HE-EVO	29.5 °C/34.5 °C	3910	5173	6644	8335	10266
3508044	TAG2525ZBR-HE-EVO	29.5 °C/34.5 °C	4426	5821	7401	9159	11081

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Water Cooled Units



Tecumseh
EVO Aqua

R448A – Capacities



Condensing Units

Product Code	Model Number	Water Inlet/ Water Outlet Temperature	Capacity Watts				
			Evaporating Temperature °C				
			R448A				
			-10	-5	0	5	10
3508058	CAJ4517ZHR-HE-EVO	29.5 °C/34.5 °C	1788	2227	2731	3311	3979
3508056	TAJ4517ZHR-HE-EVO	29.5 °C/34.5 °C	1795	2256	2783	3385	4075
3508059	CAJ4519ZHR-HE-EVO	29.5 °C/34.5 °C	2237	2784	3402	4099	4889
3508057	TAJ4519ZHR-HE-EVO	29.5 °C/34.5 °C	2222	2749	3342	4012	4769
3507134	FH4524ZHR-HE-XC	29.5 °C/34.5 °C	2689	3422	4257	5205	6278
3508050	TFH4524ZHR-HE-EVO	29.5 °C/34.5 °C	2694	3440	4285	5234	6294
3507133	FH4532ZHR-HE-XC	29.5 °C/34.5 °C	3482	4421	5449	6587	7867
3508049	TFH4531ZHR-HE-EVO	29.5 °C/34.5 °C	3422	4314	5325	6474	7783
3507131	FH4538ZHR-HE-XC	29.5 °C/34.5 °C	4268	5446	6807	8365	10148
3508048	TFH4540ZHR-HE-EVO	29.5 °C/34.5 °C	4377	5549	6915	8514	10379
3508043	TAG4546ZHR-HE-EVO	29.5 °C/34.5 °C	5055	6629	8470	10593	13010
3508042	TAG4553ZHR-HE-EVO	29.5 °C/34.5 °C	5645	7343	9314	11568	14112
3508041	TAG4561ZHR-HE-EVO	29.5 °C/34.5 °C	6542	8322	10365	12697	15357
3508040	TAG4568ZHR-HE-EVO	29.5 °C/34.5 °C	7420	9377	11636	14238	17245
3508039	TAG4573ZHR-HE-EVO	29.5 °C/34.5 °C	8272	10474	13013	15912	19200

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Product Code	Model Number	Water Inlet/ Water Outlet Temperature	Capacity Watts				
			Evaporating Temperature °C				
			R448A				
			-30	-25	-20	-15	-10
3507136	FH2480ZBR-HE-XC	29.5 °C/34.5 °C	1396	1936	2570	3307	4157
3508060	TFH2480ZBR-HE-EVO	29.5 °C/34.5 °C	1324	1813	2382	3042	3805
3507135	FH2511ZBR-HE-XC	29.5 °C/34.5 °C	1723	2352	3102	4000	5082
3508061	TFH2511ZBR-HE-EVO	29.5 °C/34.5 °C	1695	2316	3058	3946	5017
3508045	TAG2513ZBR-HE-EVO	29.5 °C/34.5 °C	1884	2742	3792	5046	6513
3508047	TAG2516ZBR-HE-EVO	29.5 °C/34.5 °C	2424	3478	4762	6289	8074
3508046	TAG2522ZBR-HE-EVO	29.5 °C/34.5 °C	3103	4365	5905	7751	9926
3508044	TAG2525ZBR-HE-EVO	29.5 °C/34.5 °C	3409	4748	6348	8230	10418

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Water Cooled Units



Tecumseh

EVO Aqua

R452A – Capacities



Product Code	Model Number	Water Inlet/ Water Outlet Temperature	Capacity Watts				
			Evaporating Temperature °C				
			R452A				
			-10	-5	0	5	10
3508058	CAJ4517ZHR-HE-EVO	29.5 °C/34.5 °C	1845	2267	2758	3330	3996
3508056	TAJ4517ZHR-HE-EVO	29.5 °C/34.5 °C	1843	2279	2781	3362	4038
3508059	CAJ4519ZHR-HE-EVO	29.5 °C/34.5 °C	2376	2933	3571	4306	5154
3508057	TAJ4519ZHR-HE-EVO	29.5 °C/34.5 °C	2360	2888	3492	4187	4989
3507134	FH4524ZHR-HE-XC	29.5 °C/34.5 °C	2552	3192	3933	4798	5816
3508050	TFH4524ZHR-HE-EVO	29.5 °C/34.5 °C	2560	3201	3933	4770	5732
3507133	FH4532ZHR-HE-XC	29.5 °C/34.5 °C	3689	4662	5757	7010	8464
3508049	TFH4531ZHR-HE-EVO	29.5 °C/34.5 °C	3602	4506	5565	6810	8280
3507131	FH4538ZHR-HE-XC	29.5 °C/34.5 °C	4536	5668	6951	8400	10030
3508048	TFH4540ZHR-HE-EVO	29.5 °C/34.5 °C	4666	5786	7074	8559	10275
3508043	TAG4546ZHR-HE-EVO	29.5 °C/34.5 °C	5270	6736	8452	10452	12773
3508042	TAG4553ZHR-HE-EVO	29.5 °C/34.5 °C	5708	7227	8996	11054	13448
3508041	TAG4561ZHR-HE-EVO	29.5 °C/34.5 °C	6534	8230	10202	12493	15152
3508040	TAG4568ZHR-HE-EVO	29.5 °C/34.5 °C	7792	9770	12091	14814	18007
3508039	TAG4573ZHR-HE-EVO	29.5 °C/34.5 °C	8202	10189	12514	15240	18441

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Product Code	Model Number	Water Inlet/ Water Outlet Temperature	Capacity Watts				
			Evaporating Temperature °C				
			R452A				
			-30	-25	-20	-15	-10
3507136	FH2480ZBR-HE-XC	29.5 °C/34.5 °C	1403	1919	2537	3273	4147
3508060	TFH2480ZBR-HE-EVO	29.5 °C/34.5 °C	1414	1904	2488	3180	3997
3507135	FH2511ZBR-HE-XC	29.5 °C/34.5 °C	1967	2664	3484	4442	5550
3508061	TFH2511ZBR-HE-EVO	29.5 °C/34.5 °C	1908	2580	3379	4319	5419
3508045	TAG2513ZBR-HE-EVO	29.5 °C/34.5 °C	2310	3323	4553	6009	7692
3508047	TAG2516ZBR-HE-EVO	29.5 °C/34.5 °C	2927	4041	5349	6868	8636
3508046	TAG2522ZBR-HE-EVO	29.5 °C/34.5 °C	3534	4782	6275	8035	10083
3508044	TAG2525ZBR-HE-EVO	29.5 °C/34.5 °C	4001	5384	6993	8830	10893

Capacities based on EN13215 Midpoint ratings: Return Vapour 20°C, Subcooling 3K.

Condensing Units

Cool Room Kits



DC-3

The DC-3 is a revolutionary system redefining our industry with a plug and play solution for walk in/reach in cool rooms.

Its birth began with Actrol drawing on the expertise of four world renowned organisations to work together to produce what we now know as the DC-3 Smart Refrigeration System. Siam Compressor Industries supply the brushless DC scroll compressor, Carel provide the electronic controls, Tecumseh manufacture the condensing unit, and Cabero supply the uniquely specified evaporator fitted with EVD ice.

Kit Product Code	Description	Product Codes included in the Kit	Quantity	Model	Total System MOC Amps
3508062	DC3 Cold Room Kit 8.5kw	3508013	1	APDC8.5M2-1	12.76
3508062	DC3 Cold Room Kit 8.5kw	3511040	1	CH4C2/35DC3-1	12.76
3508063	DC3 Cold Room Kit 21.4kw	3508015	1	APDC21.4M3-1	23.99
3508063	DC3 Cold Room Kit 21.4kw	3511041	1	CH4E3/35DC3-1	23.99
3511060	DC3 Cold Room Kit 8.5kw High Humidity	3508013	1	APDC8.5M2-1	13.34
3511060	DC3 Cold Room Kit 8.5kw High Humidity	3511042	1	CH4D3/35DC3-1	13.34
3511061	DC3 Cold Room Kit 21.4kw High Humidity	3508015	1	APDC21.4M3-1	24.57
3511061	DC3 Cold Room Kit 21.4kw High Humidity	3511043	1	CH4E4/35DC3-1	24.57
3413052	DC3 8.5 High Humidity High Air Volume	3508013	1	APDC8.5M2-1	12.95
3413052	DC3 8.5 High Humidity High Air Volume	3511017	1	CH4D1/50-1EVD	12.95
3413054	DC3 21.4 High Humidity High Air Volume	3508015	1	APDC21.4M3-1	24.94
3413054	DC3 21.4 High Humidity High Air Volume	3511020	1	CH4E2/50-1EVD	24.94
3516006	DC3 Cold Room Kit 8.5kW Dual Evap	3508013	1	APDC8.5M2-1	12.76
3516006	DC3 Cold Room Kit 8.5kW Dual Evap	3511005	2	CH4D1/35DC3-1	12.76
3516005	DC3 Cold Room Kit 21.4kw Dual Evap	3508015	1	APDC21.4M3-1	24.57
3516005	DC3 Cold Room Kit 21.4kw Dual Evap	3511007	2	CH4B2/35DC3-1	24.57
3516007	DC3 Cold Room Kit 8.5kw High Hum Dual	3508013	1	APDC8.5M2-1	13.92
3516007	DC3 Cold Room Kit 8.5kw High Hum Dual	3511007	2	CH4B2/35DC3-1	13.92
3516008	DC3 Cold Room Kit 21.4kw High Hum Dual	3508015	1	APDC21.4M3-1	24.57
3516008	DC3 Cold Room Kit 21.4kw High Hum Dual	3511010	2	CH4E2/35.1EVD	24.57



Cool Room Kits



DC-3

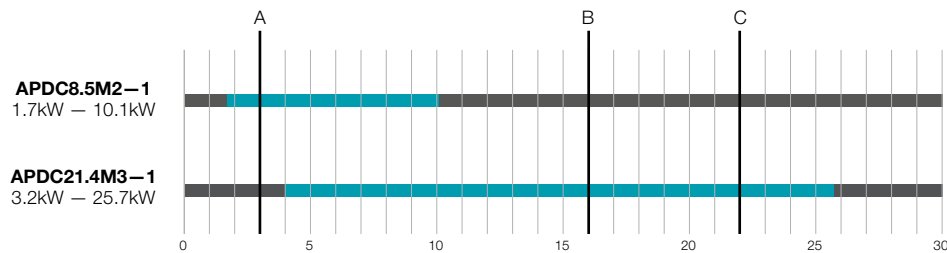
Easy to Select

Model selection is easy as there are only two steps:

1. Select the model that covers the required refrigeration capacity.
2. Select a general purpose or high humidity single or dual evaporator kit depending on the storage requirements of the products being cooled.

The 'General Purpose' kits are designed for packaged products that are vapour sealed such as bottled beverages and plastic wrapped foods. The 'High Humidity' kits are designed for fruit and vegetables, meat, fish and food processing where products have a high moisture content. These kits include a larger evaporator or dual evaporators.

DC-3 Refrigeration Capacity Range



Example A

A cool room has a requirement for 4 kW of refrigeration:

- DC-3 model APDC8.5M2-1 will satisfy this requirement
- Select either the 'General Purpose' or 'High Humidity' kit to suit the products being stored

Example B

A cool room has a requirement for 16 kW of refrigeration:

- The DC-3 model APDC21.4M3-1 will satisfy this requirement
- Select either the 'General Purpose' or 'High Humidity' kit to suit the products being stored.

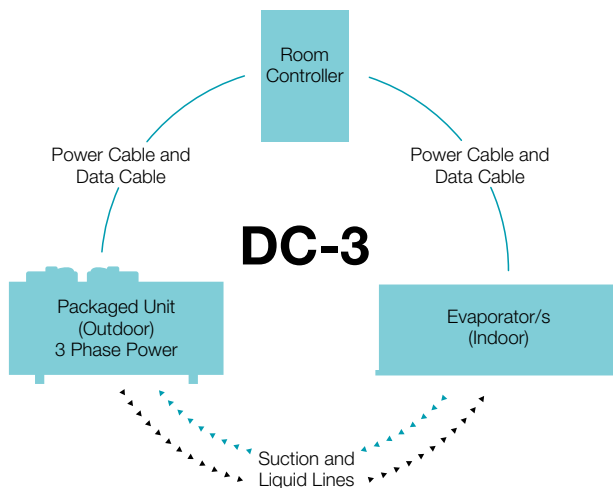
Example C

A cool room has a requirement for 22 kW of refrigeration:

- The DC-3 model APDC21.4M3-1 will satisfy this requirement.
- Select either the 'General Purpose' or 'High Humidity' kit to suit the products being stored.

Easy to Install

With this revolutionary plug and play technology, installation is incredibly simple.



Easy to Commission

A start up wizard is used to enter the site-specific parameters so the system will operate correctly. The start up wizard is accessed from the DC-3 room control.

Engineered to succeed.



German engineered and performance driven. CABERO are renowned for their commitment to precision and reliability, offering refrigeration technology since 1980, to ensure the best solution for every job.



The complete package saving you time on every install.

With all the features that come standard on a CABERO evaporator, the Pro series takes your installation to the next level. Reduce installation time and improve operating efficiencies with the revolutionary Carel EVD Ice Superheat controller factory fitted and optional Ultracap.



Induced Draft Evaporators



Cabero

CH Series – Air, Electric or Water Defrost

Cabero CH series evaporators are typically used in walk-in cool and freezer rooms with ceiling heights of 2 metres or more and 500mm fan models with ceiling heights of 3 metres or more. CH evaporators are commonly used in fast food outlets, butchers shops, fruit and vegetable shops and general purpose coolrooms and freezers.



Features

- Walk-In profile suits cool and freezer rooms
- Low energy fan/s
- Separate fan compartments
- Stainless steel fixings
- Flush mount ceiling brackets
- Air bypass sheet with special drainage system
- Fold down drip tray with central drain connection
- Powder coated smooth aluminium case
- Venturi distributor for multiple refrigerants
- 12mm smooth bore copper tubing
- Fins protected with epoxy blue-fin coating
- Fan/s pre-wired to IP54 junction box
- Professional in-line tube configuration



Cabero PRO CH series evaporators have all the features of the CH models plus a fully fitted and wired electronic expansion controller and valve. The controller is IP65 rated which allows it to be fitted inside the evaporator. The Carel EVD Ice control and expansion valve provide improved refrigeration performance and energy savings at the same time.

- Fully fitted and wired electronic expansion valve controller
- Expansion valve controller pre-configured for many refrigerants
- Digital display of superheat and fault codes

CH Series – Air Defrost Evaporators

300-350mm Fans

Standard Product Code	Cabero Pro Product Code	Model	Air Flow l/s	Air Throw m	No. & Dia. of Fans	Fan Motors				Connections		Weight kg	Drain BSP"	Sound Power Level dBA	Dimensions		
						Total Watts	Volts/Phase	Total Amps	Heat/24 Hrs Total Watts	Suction	Liquid				L mm	D mm	H mm
2710355	3511000	CH4B1/30-1	417	6	1 x 300	62	240/1	0.28	1488	1/2"	1/2"	19	1	61	780	470	470
2710356	3511001	CH4C1/30-1	397	6	1 x 300	62	240/1	0.28	1488	1/2"	1/2"	22	1	61	780	470	470
2710357	3511002	CH4B1/35-1	747	7	1 x 350	130	240/1	0.58	3120	1/2"	1/2"	26	1	62	980	530	470
2710358	3511003	CH4C1/35-1	714	7	1 x 350	130	240/1	0.58	3120	5/8"	1/2"	28	1	62	980	530	470
2710359	3511004	CH4B2/30-1	831	7	2 x 300	124	240/1	0.56	2976	3/4"	1/2"	34	1	64	1230	470	470
2710360	3511005	CH4D1/35-1	683	6	1 x 350	130	240/1	0.58	3120	3/4"	1/2"	30	1	62	980	530	470
2710361	3511006	CH4C2/30-1	792	7	2 x 300	124	240/1	0.56	2976	3/4"	1/2"	38	1	64	1230	470	470
		CH4E1/35-1	658	6	1 x 350	130	240/1	0.58	3120	3/4"	1/2"	32	1	62	980	530	470
2710362	3511007	CH4B2/35-1	1497	9	2 x 350	260	240/1	1.16	6240	3/4"	1/2"	43	1	65	1630	530	470
2710363	3511008	CH4C2/35-1	1428	9	2 x 350	260	240/1	1.16	6240	7/8"	1/2"	47	1	65	1630	530	470
2710364	3511009	CH4D2/35-1	1367	8	2 x 350	260	240/1	1.16	6240	7/8"	5/8"	53	1	65	1630	530	470
2710365	3511010	CH4E2/35-1	1314	8	2 x 350	260	240/1	1.16	6240	1 1/8"	5/8"	58	1	65	1630	530	470
2710366	3511011	CH4C3/35-1	2142	10	3 x 350	390	240/1	1.74	9360	1 1/8"	5/8"	69	1	67	2360	530	470
2710367	3511012	CH4D3/35-1	2053	9	3 x 350	390	240/1	1.74	9360	1 1/8"	5/8"	75	1	67	2360	530	470
2710368	3511013	CH4E3/35-1	1972	9	3 x 350	390	240/1	1.74	9360	1 1/8"	5/8"	82	1	67	2360	530	470
2710369	3511014	CH4D4/35-1	2736	9	4 x 350	520	240/1	2.32	12480	1 3/8"	7/8"	98	1	68	3010	530	470
2710370	3511015	CH4E4/35-1	2631	9	4 x 350	520	240/1	2.32	12480	1 3/8"	7/8"	107	1	68	3010	530	470

Induced Draft Evaporators



Cabero

CH Series – Air Defrost Evaporators

500mm Fans

Standard Product Code	Cabero Pro Product Code	Model	Air Flow l/s	Air Throw m	No. & Dia. of Fans	Fan Motors				Connections		Weight kg	Drain BSP"	Sound Power Level dBA	Dimensions		
						Total Watts	Volts/Phase	Total Amps	Heat/24 Hrs Total Watts	Suction	Liquid				L mm	D mm	H mm
		CH4C1/50-1	2133	26	1 x 500	730	415/3	1.35	17520	1 1/8"	5/8"	105	1 1/4	81	1550	720	750
2710371	3511017	CH4D1/50-1	2075	25	1 x 500	730	415/3	1.35	17520	1 1/8"	5/8"	111	1 1/4	81	1550	720	750
		CH4E1/50-1	2025	24	1 x 500	730	415/3	1.35	17520	1 1/8"	5/8"	117	1 1/4	81	1550	720	750
2710372	3511018	CH4G1/50-1	1925	22	1 x 500	730	415/3	1.35	17520	1 3/8"	7/8"	136	1 1/4	81	1550	790	750
2710373	3511019	CH4C2/50-1	4264	27	2 x 500	1460	415/3	2.7	35040	1 3/8"	7/8"	183	1 1/4	84	2630	720	750
2710374	3511016	CH4D2/50-1	4153	26	2 x 500	1460	415/3	2.7	35040	1 5/8"	7/8"	195	1 1/4	84	2630	720	750
2710375	3511020	CH4E2/50-1	4050	25	2 x 500	1460	415/3	2.7	35040	1 5/8"	7/8"	208	1 1/4	84	2630	720	750
2710376	3509076	CH4G2/50-1	3853	23	2 x 500	1460	415/3	2.7	35040	1 5/8"	7/8"	241	1 1/4	84	2630	790	750
2710377	3509077	CH4D3/50-1	6228	26	3 x 500	2190	415/3	4.05	52560	2 1/8"	7/8"	280	1 1/4	86	3710	720	750
2710378	3509078	CH4E3/50-1	6075	25	3 x 500	2190	415/3	4.05	52560	2 1/8"	1 1/8"	298	1 1/4	86	3710	720	750
2710379	3509079	CH4G3/50-1	5778	23	3 x 500	2190	415/3	4.05	52560	2 1/8"	1 1/8"	348	1 1/4	86	3710	790	750
3509085		CH4D4/50-1	8304	26	4 x 500	2920	415/3	5.4	70080	2 1/8"	1 1/8"	354	2	87	4070	720	890
3509086		CH4E4/50-1	8100	25	4 x 500	2920	415/3	5.4	70080	2 1/8"	1 3/8"	379	2	87	4070	720	890
3509087		CH4G4/50-1	7704	23	4 x 500	2920	415/3	5.4	70080	2 5/8"	1 3/8"	450	2	87	4070	790	890

Evaporators

Induced Draft Evaporators



Cabero

CH – Air Defrost Evaporators 300-350mm Fans

Standard Product Code	Cabero Pro Product Code	Model	Capacity @ -4°C SST & 6 KTD Watts – MID POINT						
			R404A	R452A	R448A	R449A	R134a	R450A	R513A
2710355	3511000	CH4B1/30-1	1497	1407	1437	1422	1362	1332	1377
2710356	3511001	CH4C1/30-1	1855	1678	1714	1696	1624	1589	1642
2710357	3511002	CH4B1/35-1	2385	2187	2233	2210	2117	2071	2140
2710358	3511003	CH4C1/35-1	2985	2810	2870	2840	2720	2660	2750
2710359	3511004	CH4B2/30-1	2993	2857	2918	2888	2766	2705	2797
2710360	3511005	CH4D1/35-1	3512	3203	3271	3237	3101	3032	3135
2710361	3511006	CH4C2/30-1	3709	3479	3553	3516	3368	3294	3405
		CH4E1/35-1	3920	3625	3702	3663	3509	3432	3548
2710362	3511007	CH4B2/35-1	4769	4584	4682	4633	4438	4340	4486
2710363	3511008	CH4C2/35-1	5969	5683	5804	5743	5501	5380	5562
2710364	3511009	CH4D2/35-1	7025	6580	6720	6650	6370	6230	6440
2710365	3511010	CH4E2/35-1	7839	7352	7509	7430	7117	6961	7196
2710366	3511011	CH4C3/35-1	8954	8558	8740	8649	8285	8103	8376
2710367	3511012	CH4D3/35-1	10537	9933	10145	10039	9616	9405	9722
2710368	3511013	CH4E3/35-1	11759	11054	11289	11172	10701	10466	10819
2710369	3511014	CH4D4/35-1	13840	13236	13518	13377	12814	12532	12954
2710370	3511015	CH4E4/35-1	15688	14689	15002	14846	14221	13908	14377

Capacities based on EN328 Midpoint ratings SC2: Air inlet temp 2°C, Evaporating temp -4°C, 6K TD.

CH Series – Air Defrost Evaporators 500mm Fans

Standard Product Code	Cabero Pro Product Code	Model	Capacity @ -4°C SST & 6 KTD Watts – MID POINT						
			R404A	R452A	R448A	R449A	R134a	R450A	R513A
		CH4C1/50-1	8626	8232	8407	8320	7969	7794	8057
2710371	3511017	CH4D1/50-1	10160	9680	9886	9783	9371	9165	9474
		CH4E1/50-1	11454	10838	11069	10953	10492	10262	10608
2710372	3511018	CH4G1/50-1	13424	12515	12782	12648	12116	11850	12249
2710373	3511019	CH4C2/50-1	17252	16464	16815	16639	15939	15588	16114
2710374	3511016	CH4D2/50-1	20319	19360	19772	19566	18743	18331	18949
2710375	3511020	CH4E2/50-1	22908	21676	22137	21907	20984	20523	21215
2710376	3509076	CH4G2/50-1	26848	25031	25563	25297	24232	23699	24498
2710377	3509077	CH4D3/50-1	30479	29041	29659	29350	28114	27496	28423
2710378	3509078	CH4E3/50-1	34362	32514	33206	32860	31477	30785	31823
2710379	3509079	CH4G3/50-1	40272	37546	38345	37945	36348	35549	36747
3509085		CH4D4/50-1	40638	38721	39545	39133	37485	36661	37897
3509086		CH4E4/50-1	45816	43352	44275	43814	41969	41046	42430
3509087		CH4G4/50-1	53696	50061	51126	50594	48463	47398	48996

Capacities based on EN328 Midpoint ratings SC2: Air inlet temp 2°C, Evaporating temp -4°C, 6K TD.

Evaporators

Induced Draft Evaporators



Cabero

CH Series – Electric Defrost Evaporators 300-350mm Fans

Standard Product Code	Cabero Pro Product Code	Model	Air Flow l/s	Air Throw m	No. & Dia. of Fans	Fan Motors				Defrost Heaters 240 Volt			Connections		Weight kg	Drain BSP"	Sound Power Level dBA	Dimensions		
						Total Watts	Volts/Phase	Total Amps	Heat/24 Hrs Total Watts	Coil No. & Watts	Drip Tray No. & Watts	Total Watts	Suction	Liquid				L mm	D mm	H mm
2710381	3511021	CH4B1/30E-1	417	6	1 x 300	62	240/1	0.28	1488	2 x 450	1 x 450	1350	1/2"	1/2"	19	1	61	780	470	470
2710382	3511022	CH4C1/30E-1	397	6	1 x 300	62	240/1	0.28	1488	2 x 450	1 x 450	1350	1/2"	1/2"	22	1	61	780	470	470
2710383	3511023	CH4B1/35E-1	747	7	1 x 350	130	240/1	0.58	3120	2 x 650	1 x 650	1950	1/2"	1/2"	26	1	62	980	530	470
2710384	3511024	CH4C1/35E-1	714	7	1 x 350	130	240/1	0.58	3120	2 x 650	1 x 650	1950	5/8"	1/2"	28	1	62	980	530	470
2710385	3511025	CH4B2/30E-1	831	7	2 x 300	124	240/1	0.56	2976	2 x 850	1 x 850	2550	3/4"	1/2"	34	1	64	1230	470	470
		CH4D1/35E-1	683	6	1 x 350	130	240/1	0.58	3120	4 x 650	1 x 650	3250	3/4"	1/2"	30	1	62	980	530	470
2710387	3511027	CH4C2/30E-1	792	7	2 x 300	124	240/1	0.56	2976	2 x 850	1 x 850	2550	3/4"	1/2"	38	1	64	1230	470	470
2710386	3511026	CH4E1/35E-1	658	6	1 x 350	130	240/1	0.58	3120	4 x 650	1 x 650	3250	3/4"	1/2"	32	1	62	980	530	470
2710388	3511028	CH4B2/35E-1	1497	9	2 x 350	260	240/1	1.16	6240	2 x 1200	1 x 1200	3600	3/4"	1/2"	43	1	65	1630	530	470
2710389	3511029	CH4C2/35E-1	1428	9	2 x 350	260	240/1	1.16	6240	2 x 1200	1 x 1200	3600	7/8"	1/2"	47	1	65	1630	530	470
2710390	3511030	CH4D2/35E-1	1367	8	2 x 350	260	240/1	1.16	6240	4 x 1200	1 x 1200	6000	7/8"	5/8"	53	1	65	1630	530	470
2710391	3511031	CH4E2/35E-1	1314	8	2 x 350	260	240/1	1.16	6240	4 x 1200	1 x 1200	6000	1 1/8"	5/8"	58	1	65	1630	530	470
2710392	3511032	CH4C3/35E-1	2142	10	3 x 350	390	240/1	1.74	9360	2 x 1750	1 x 1750	5250	1 1/8"	5/8"	69	1	67	2360	530	470
		CH4D3/35E-1	2053	9	3 x 350	390	240/1	1.74	9360	2 x 1750	1 x 1750	8750	1 1/8"	5/8"	75	1	67	2360	530	470
2710393	3511033	CH4E3/35E-1	1972	9	3 x 350	390	240/1	1.74	9360	2 x 1750	1 x 1750	8750	1 1/8"	5/8"	82	1	67	2360	530	470
2710394	3511034	CH4D4/35E-1	2736	9	4 x 350	520	240/1	2.32	12480	4 x 2300	1 x 2300	11500	1 3/8"	7/8"	98	1	68	3010	530	470
2710395	3511035	CH4E4/35E-1	2631	9	4 x 350	520	240/1	2.32	12480	4 x 2300	1 x 2300	11500	1 3/8"	7/8"	107	1	68	3010	530	470

CH Series – Electric Defrost Evaporators 500mm Fans

Standard Product Code	Cabero Pro Product Code	Model	Air Flow l/s	Air Throw m	No. & Dia. of Fans	Fan Motors				Defrost Heaters 240 Volt			Connections		Weight kg	Drain BSP"	Sound Power Level dBA	Dimensions		
						Total Watts	Volts/Phase	Total Amps	Heat/24 Hrs Total Watts	Coil No. & Watts	Drip Tray No. & Watts	Total Watts	Suction	Liquid				L mm	D mm	H mm
2710396	3511036	CH4C1/50E-1	2133	26	1 x 500	730	415/3	1.35	17520	3 x 850	2 x 850	4250	1 1/8"	5/8"	105	1 1/4	81	1550	720	750
		CH4D1/50E-1	2075	25	1 x 500	730	415/3	1.35	17520	5 x 850	2 x 850	5950	1 1/8"	5/8"	111	1 1/4	81	1550	720	750
		CH4E1/50E-1	2025	24	1 x 500	730	415/3	1.35	17520	6 x 850	2 x 850	6800	1 1/8"	5/8"	117	1 1/4	81	1550	720	750
2710397	3511037	CH4G1/50E-1	1925	22	1 x 500	730	415/3	1.35	17520	6 x 850	2 x 850	6800	1 1/8"	5/8"	136	1 1/4	81	1550	790	750
		CH4C2/50E-1	4264	27	2 x 500	1460	415/3	2.7	35040	3 x 1650	2 x 1650	8250	1 3/8"	7/8"	183	1 1/4	84	2630	720	750
2710398	3511038	CH4D2/50E-1	4153	26	2 x 500	1460	415/3	2.7	35040	5 x 1650	2 x 1650	11550	1 3/8"	7/8"	195	1 1/4	84	2630	720	750
		CH4E2/50E-1	4050	25	2 x 500	1460	415/3	2.7	35040	6 x 1650	2 x 1650	13200	1 5/8"	7/8"	208	1 1/4	84	2630	720	750
2710399	3511039	CH4G2/50E-1	3853	23	2 x 500	1460	415/3	2.7	35040	6 x 1650	2 x 1650	13200	1 5/8"	7/8"	241	1 1/4	84	2630	790	750
2710400	3509080	CH4D3/50E-1	6228	26	3 x 500	2190	415/3	4.05	52560	5 x 2450	2 x 2450	17150	1 5/8"	7/8"	280	1 1/4	86	3710	720	750
2710401	3509081	CH4E3/50E-1	6075	25	3 x 500	2190	415/3	4.05	52560	6 x 2450	2 x 2450	19600	2 1/8"	7/8"	298	1 1/4	86	3710	720	750
		CH4G3/50E-1	5778	23	3 x 500	2190	415/3	4.05	52560	6 x 2450	2 x 2450	19600	2 1/8"	1 1/8"	348	1 1/4	86	3710	790	750
2710403	3509082	CH4D4/50E-1	8304	26	4 x 500	2920	415/3	5.4	70080	6 x 2600	2 x 2600	20800	2 1/8"	1 1/8"	354	2	87	4070	720	890
3509088		CH4E4/50E-1	8100	25	4 x 500	2920	415/3	5.4	70080	7 x 2600	2 x 2600	23400	2 1/8"	1 1/8"	379	2	87	4070	720	890
3509089		CH4G4/50E-1	7704	23	4 x 500	2920	415/3	5.4	70080	7 x 2600	2 x 2600	23400	2 1/8"	1 3/8"	450	2	87	4070	790	890
3509090		CH4G4/50E-1	7704	23	4 x 500	2920	415/3	5.4	70080	7 x 2600	2 x 2600	23400	2 5/8"	1 3/8"	450	2	87	4070	790	890

Induced Draft Evaporators



Cabero

CH Series – Air, Electric or Water Defrost

CH – Electric Defrost Evaporators
300-350mm Fans



Product Code	Cabero Pro Product Code	Model	Capacity @ -24°C SST & 6 KTD Watts – MID POINT						
			R404A	R452A	R448A	R449A	R134a	R450A	R513A
2710381	3511021	CH4B1/30E-1	1346	1225	1239	1225	1108	1082	1121
2710382	3511022	CH4C1/30E-1	1638	1472	1487	1472	1331	1299	1346
2710383	3511023	CH4B1/35E-1	2173	1996	2017	1996	1805	1762	1826
2710384	3511024	CH4C1/35E-1	2692	2434	2460	2434	2201	2149	2227
2710385	3511025	CH4B2/30E-1	2692	2451	2477	2451	2216	2164	2242
		CH4D1/35E-1	3092	2809	2839	2809	2540	2480	2570
2710387	3511027	CH4C2/30E-1	3275	2943	2975	2943	2661	2599	2693
2710386	3511026	CH4E1/35E-1	3266	2966	2998	2966	2682	2619	2714
2710388	3511028	CH4B2/35E-1	4346	3992	4034	3992	3609	3524	3652
2710389	3511029	CH4C2/35E-1	5383	4867	4919	4867	4401	4298	4453
2710390	3511030	CH4D2/35E-1	6184	5618	5678	5618	5080	4961	5140
2710391	3511031	CH4E2/35E-1	6532	5932	5996	5932	5364	5238	5428
2710392	3511032	CH4C3/35E-1	8075	7301	7379	7301	6602	6447	6680
		CH4D3/35E-1	9276	8427	8517	8427	7620	7441	7710
2710393	3511033	CH4E3/35E-1	9798	8899	8993	8899	8047	7857	8141
2710394	3511034	CH4D4/35E-1	12368	11236	11356	11236	10161	9922	10280
2710395	3511035	CH4E4/35E-1	13064	11865	11991	11865	10729	10476	10855

Capacities based on EN328 Midpoint ratings SC3: Air inlet temp -18°C, Evaporating temp -24°C, 6K TD.

CH – Electric Defrost Evaporators
500mm Fans

Product Code	Cabero Pro Product Code	Model	Capacity @ -24°C SST & 6 KTD Watts – MID POINT						
			R404A	R452A	R448A	R449A	R134a	R450A	R513A
2710396	3511036	CH4C1/50E-1	7665	7166	7242	7166	6480	6327	6556
		CH4D1/50E-1	8836	8249	8337	8249	7459	7284	7547
2710397	3511037	CH4E1/50E-1	10049	9287	9385	9287	8398	8200	8496
		CH4G1/50E-1	11552	10478	10589	10478	9474	9251	9586
2710398	3511038	CH4C2/50E-1	15330	14332	14485	14332	12960	12655	13112
		CH4D2/50E-1	17671	16498	16673	16498	14918	14567	15094
2710399	3511039	CH4E2/50E-1	20098	18573	18771	18573	16795	16400	16993
2710400	3509080	CH4G2/50E-1	23103	20956	21179	20956	18949	18504	19172
2710401	3509081	CH4D3/50E-1	26507	24747	25010	24747	22377	21851	22641
		CH4E3/50E-1	30147	27860	28156	27860	25193	24600	25489
2710403	3509082	CH4G3/50E-1	34655	31434	31768	31434	28424	27755	28759
3509088		CH4D4/50E-1	35342	32996	33347	32996	29836	29134	30187
3509089		CH4E4/50E-1	40196	37147	37542	37147	33590	32800	33985
3509090		CH4G4/50E-1	46206	41912	42358	41912	37899	37007	38345

Capacities based on EN328 Midpoint ratings SC3: Air inlet temp -18°C, Evaporating temp -24°C, 6K TD.

Induced Draft Evaporators



Cabero

CH – Water Defrost Evaporators 500mm Fans

Product Code	Model	Air Flow l/s	Air Throw m	No. & Dia. of Fans	Fan Motors				Connections		Weight kg	Water Defrost		Drain BSP"	Sound Power Level dBA	Dimensions		
					Total Watts	Volts / Phase	Total Amps	Heat/24 Hrs Total Watts	Suction	Liquid		Inlet BSP"	Flow l/s			L mm	D mm	H mm
	CH4C1/50W-1	2133	26	1 x 500	730	415/3	1.35	17520	1 1/8"	5/8"	105	1 1/4	0.9	3	81	1490	793	840
	CH4D1/50W-1	2075	25	1 x 500	730	415/3	1.35	17520	1 1/8"	5/8"	111	1 1/4	1.1	3	81	1490	793	840
	CH4E1/50W-1	2025	24	1 x 500	730	415/3	1.35	17520	1 1/8"	5/8"	117	1 1/4	1.3	3	81	1490	793	840
	CH4G1/50W-1	1925	22	1 x 500	730	415/3	1.35	17520	1 3/8"	7/8"	136	1 1/2	1.6	3	81	1490	863	840
3509010	CH4C2/50W-1	4264	27	2 x 500	1460	415/3	2.7	35040	1 3/8"	7/8"	183	1 1/2	1.8	3	84	2570	793	840
3509011	CH4D2/50W-1	4153	26	2 x 500	1460	415/3	2.7	35040	1 3/8"	7/8"	195	1 1/2	2	3	84	2570	793	840
3509012	CH4E2/50W-1	4050	25	2 x 500	1460	415/3	2.7	35040	1 3/8"	7/8"	208	1 1/2	2.3	3	84	2570	793	840
3509013	CH4G2/50W-1	3853	23	2 x 500	1460	415/3	2.7	35040	1 5/8"	7/8"	241	2	2.9	3	84	2570	863	840
3509014	CH4D3/50W-1	6228	26	3 x 500	2190	415/3	4.05	52560	2 1/8"	7/8"	280	2	3	4	86	3650	793	840
3509015	CH4E3/50W-1	6075	25	3 x 500	2190	415/3	4.05	52560	2 1/8"	1 1/8"	298	2	3.4	4	86	3650	793	840
3509016	CH4G3/50W-1	5778	23	3 x 500	2190	415/3	4.05	52560	2 1/8"	1 1/8"	348	2	4.3	4	86	3650	863	840
3509017	CH4D4/50W-1	8304	26	4 x 500	2920	415/3	5.4	70080	2 1/8"	1 1/8"	354	2	3.3	4	87	4040	793	980
3509018	CH4E4/50W-1	8100	25	4 x 500	2920	415/3	5.4	70080	2 1/8"	1 3/8"	379	2	3.8	4	87	4040	793	980
3509019	CH4G4/50W-1	7704	23	4 x 500	2920	415/3	5.4	70080	2 5/8"	1 3/8"	450	2	4.7	4	87	4040	863	980

CH – Water Defrost Evaporators 500mm Fans

Product Code	Model	Capacity @ -4°C SST & 6 KTD Watts – MID POINT						
		R404A	R452A	R448A	R449A	R134a	R450A	R513A
	CH4C1/50W-1	8626	8232	8407	8320	7969	7794	8057
	CH4D1/50W-1	10160	9680	9886	9783	9371	9165	9474
	CH4E1/50W-1	11454	10838	11069	10953	10492	10262	10608
	CH4G1/50W-1	13424	12515	12782	12648	12116	11850	12249
3509010	CH4C2/50W-1	17252	16464	16815	16639	15939	15588	16114
3509011	CH4D2/50W-1	20319	19360	19772	19566	18743	18331	18949
3509012	CH4E2/50W-1	22908	21676	22137	21907	20984	20523	21215
3509013	CH4G2/50W-1	26848	25031	25563	25297	24232	23699	24498
3509014	CH4D3/50W-1	30479	29041	29659	29350	28114	27496	28423
3509015	CH4E3/50W-1	34362	32514	33206	32860	31477	30785	31823
3509016	CH4G3/50W-1	40272	37546	38345	37945	36348	35549	36747
3509017	CH4D4/50W-1	40638	38721	39545	39133	37485	36661	37897
3509018	CH4E4/50W-1	45816	43352	44275	43814	41969	41046	42430
3509019	CH4G4/50W-1	53696	50061	51126	50594	48463	47398	48996

Capacities based on EN328 Midpoint ratings SC2: Air inlet temp 2°C, Evaporating temp -4°C, 6K TD.

Forced Draft Evaporators



Cabero

DH Series

DH series dual air discharge evaporators are designed for process and packaging rooms and for sensitive products where reduced air flow is optimal.

Features

- Low profile dual air discharge design
- Forced draft provides even air distribution
- Powder coated smooth aluminium case
- Stainless steel fixings
- Fans pre-wired to IP54 junction box
- Blue Fin protection
- Professional in-line tube configuration
- Low energy fans
- Venturi distributor for multiple refrigerants
- Flush mount ceiling brackets
- Fold down drip trays with threaded central drain connections
- Air by-pass sheets with special drainage system



DH – Air Defrost Evaporators

300-350mm Fans

Product Code	Model	Air Flow l/s	Air Throw m	No. & Dia. of Fans	Fan Motors				Connections		Weight kg	Drain BSP"	Sound Power Level dBA	Overall Dimensions		
					Total Watts	Volts/Phase	Total Amps	Heat/24 Hrs Total Watts	Suction	Liquid				L mm	D mm	H mm
3509049	DH4B1/30-1	413	6	1 x 300	72	240/1	0.32	1728	1/2"	1/2"	26	1	59	750	1028	308
3509050	DH4C1/30-1	394	6	1 x 300	72	240/1	0.32	1728	1/2"	1/2"	28	1	59	750	1028	308
	DH4B1/35-1	653	6	1 x 350	140	240/1	0.6	3360	5/8"	1/2"	32	1	63	950	1028	308
	DH4C1/35-1	606	6	1 x 350	140	240/1	0.6	3360	5/8"	1/2"	34	1	63	950	1028	308
3509051	DH4D1/35-1	569	5	1 x 350	140	240/1	0.6	3360	5/8"	1/2"	36	1	63	950	1028	308
3509052	DH4E1/35-1	544	5	1 x 350	140	240/1	0.6	3360	3/4"	1/2"	38	1	63	950	1028	308
	DH4B2/30-1	826	7	1 x 300	144	240/1	0.64	3456	3/4"	1/2"	45	1	62	1200	1028	308
	DH4C2/30-1	788	7	2 x 300	145	240/1	0.64	3456	3/4"	1/2"	51	1	62	1200	1028	308
3509053	DH4B2/35-1	1306	8	2 x 350	280	240/1	1.2	6720	3/4"	5/8"	51	1	65	1600	1028	308
3509054	DH4C2/35-1	1211	8	2 x 350	280	240/1	1.2	6720	7/8"	5/8"	55	1	65	1600	1028	308
3509055	DH4D2/35-1	1139	7	2 x 350	280	240/1	1.2	6720	7/8"	5/8"	61	1	65	1600	1028	308
3509056	DH4E2/35-1	1089	7	2 x 350	280	240/1	1.2	6720	1 1/8"	5/8"	65	1	65	1600	1028	308
3509057	DH4C3/35-1	1817	9	3 x 350	420	240/1	1.8	10080	1 1/8"	5/8"	77	1	67	2250	1028	308
3509058	DH4D3/35-1	1708	8	3 x 350	420	240/1	1.8	10080	1 1/8"	5/8"	84	1	67	2250	1028	308
3509059	DH4E3/35-1	1633	8	3 x 350	420	240/1	1.8	10080	1 1/8"	5/8"	91	1	67	2250	1028	308
3509060	DH4D4/35-1	2278	8	4 x 350	560	240/1	2.4	13440	1 3/8"	7/8"	107	1	68	2900	1028	308
3509061	DH4E4/35-1	2178	8	4 x 350	560	240/1	2.4	13440	1 3/8"	7/8"	116	1	68	2900	1028	308

Forced Draft Evaporators



Cabero

DH Series – Air Defrost Evaporators

500mm Fans

Product Code	Model	Air Flow l/s	Air Throw m	No. & Dia. of Fans	Fan Motors				Connections		Weight kg	Drain BSP"	Sound Power Level dBA	Overall Dimensions		
					Total Watts	Volts/Phase	Total Amps	Heat/24 Hrs Total Watts	Suction	Liquid				L mm	D mm	H mm
3509062	DH4D1/50-1	2033	22	1 x 500	77	415/3	1.7	1848	5/8"	1 1/8"	110	1 1/4	68	1420	1110	475
3509063	DH4D1/50-1	1975	21	1 x 500	77	415/3	1.7	1848	5/8"	1 1/8"	116	1 1/4	68	1420	1110	475
3509064	DH4E1/50-1	1922	20	1 x 500	77	415/3	1.7	1848	5/8"	1 1/8"	123	1 1/4	68	1420	1110	475
3509065	DH4G1/50-1	1808	18	1 x 500	77	415/3	1.7	1848	7/8"	1 3/8"	144	1 1/4	68	1420	1110	475
3509066	DH4C2/50-1	4067	22	2 x 500	154	415/3	3.4	3696	7/8"	1 3/8"	193	1 1/4	71	2500	1110	475
3509067	DH4D2/50-1	3950	21	2 x 500	154	415/3	3.4	3696	7/8"	1 5/8"	205	1 1/4	71	2500	1110	475
3509068	DH4E2/50-1	3844	20	2 x 500	154	415/3	3.4	3696	7/8"	1 5/8"	218	1 1/4	71	2500	1110	475
3509069	DH4G2/50-1	3617	18	2 x 500	154	415/3	3.4	3696	7/8"	1 5/8"	256	1 1/4	71	2500	1250	475
3509070	DH4D3/50-1	5925	21	3 x 500	231	415/3	5.1	5544	7/8"	2 1/8"	294	1 1/4	73	3580	1110	475
3509071	DH4E3/50-1	5767	20	3 x 500	231	415/3	5.1	5544	1 1/8"	2 1/8"	312	1 1/4	73	3580	1110	475
3509072	DH4G3/50-1	5425	18	3 x 500	231	415/3	5.1	5544	1 1/8"	2 1/8"	372	1 1/4	73	3580	1250	475

Forced Draft Evaporators



Cabero

DH Series – Air Defrost Evaporators 300-350mm Fans



Product Code	Model	Capacity @ 0°C SST & 10 KTD Watts – MID POINT						
		R404A	R452A	R448A	R449A	R134a	R450A	R513A
3509049	DH4B1/30-1	2870	2755	2784	2755	2669	2669	2640
3509050	DH4C1/30-1	3732	3583	3620	3583	3471	3471	3433
	DH4B1/35-1	4662	4476	4522	4476	4336	4336	4289
	DH4C1/35-1	5749	5519	5577	5519	5347	5347	5289
3509051	DH4D1/35-1	6415	6158	6223	6158	5966	5966	5902
3509052	DH4E1/35-1	6791	6519	6587	6519	6316	6316	6248
	DH4B2/30-1	6145	5899	5961	5899	5715	5715	5653
	DH4C2/30-1	7464	7165	7240	7165	6942	6942	6867
3509053	DH4B2/35-1	9382	9007	9101	9007	8725	8725	8631
3509054	DH4C2/35-1	11631	11166	11282	11166	10817	10817	10701
3509055	DH4D2/35-1	12959	12441	12570	12441	12052	12052	11922
3509056	DH4E2/35-1	14332	13759	13902	13759	13329	13329	13185
3509057	DH4C3/35-1	17515	16814	16990	16814	16289	16289	16114
3509058	DH4D3/35-1	19690	18902	19099	18902	18312	18312	18115
3509059	DH4E3/35-1	21019	20178	20388	20178	19548	19548	19337
3509060	DH4D4/35-1	25918	24881	25140	24881	24104	24104	23845
3509061	DH4E4/35-1	28664	27517	27804	27517	26658	26658	26371

Capacities based on EN328 Midpoint ratings SC1: Air inlet temp 10°C, Evaporating temp 0°C, 10K TD.

DH – Air Defrost Evaporators 500mm Fans

Product Code	Model	Capacity @ 0°C SST & 10 KTD Watts – MID POINT						
		R404A	R452A	R448A	R449A	R134a	R450A	R513A
3509062	DH4C1/50-1	17087	16404	16574	16404	15891	15891	15720
3509063	DH4D1/50-1	20315	19502	19706	19502	18893	18893	18690
3509064	DH4E1/50-1	22490	21590	21815	21590	20916	20916	20691
3509065	DH4G1/50-1	26090	25046	25307	25046	24264	24264	24003
3509066	DH4C2/50-1	35660	34234	34590	34234	33164	33164	32807
3509067	DH4D2/50-1	41045	39403	39814	39403	38172	38172	37761
3509068	DH4E2/50-1	45468	43649	44104	43649	42285	42285	41831
3509069	DH4G2/50-1	52529	50428	50953	50428	48852	48852	48327
3509070	DH4D3/50-1	61134	58689	59300	58689	56855	56855	56243
3509071	DH4E3/50-1	68936	66179	66868	66179	64110	64110	63421
3509072	DH4G3/50-1	78292	75160	75943	75160	72812	72812	72029

Capacities based on EN328 Midpoint ratings SC1: Air inlet temp 10°C, Evaporating temp 0°C, 10K TD.

Forced Draft Evaporators



Cabero LPC Series

LPC series evaporators are suited for use in smaller coolrooms and freezers, rooms with low ceiling heights or refrigerated cabinets. The forced draft air flow and reduced cabinet height of the LPC series allows the room loading space to be maximised. LPC evaporators are commonly used in multi door reach in cool and freezer rooms in convenience stores where the air flow is often directed towards the rear of the room.

Features



- Low profile suits small rooms and reach in cabinets
- Forced draft provides even air distribution
- Powder coated smooth aluminium case
- Venturi distributor for multiple refrigerants
- 12mm smooth bore copper tubing
- Fan/s pre-wired to IP54 junction box
- Fins protected with epoxy blue-fin coating
- Professional in-line tube configuration
- Low energy fan/s
- Separate fan compartments
- Stainless steel fixings
- Flush mount ceiling brackets
- Fold down drip tray with central drain conn.
- Air bypass sheet with special drainage system

LPC Series – Air Defrost Evaporators 300mm Fans

Product Code	Model	Air Flow l/s	Air Throw m	No. & Dia. of Fans	Fan Motors				Connections	
					Total Watts	Volts/Phase	Total Amps	Heat/24 Hrs Total Watts	Suction	Liquid
2712919	* LPC4A1/30-1	419	7	1 x 300	72	240/1	0.32	1728	1/2"	1/2"
2710337	* LPC4B1/30-1	392	7	1 x 300	72	240/1	0.32	1728	1/2"	1/2"
2710338	* LPC4C1/30-1	368	6	1 x 300	72	240/1	0.32	1728	5/8"	1/2"
	LPC4D1/30-1	347	6	1 x 300	72	240/1	0.32	1728	5/8"	5/8"
2710339	LPC4E1/30-1	331	5	1 x 300	72	240/1	0.32	1728	5/8"	5/8"
2710340	LPC4B2/30-1	783	7	2 x 300	144	240/1	0.64	3456	7/8"	5/8"
2710341	LPC4C2/30-1	736	6	2 x 300	144	240/1	0.64	3456	7/8"	5/8"
	LPC4D2/30-1	694	6	2 x 300	144	240/1	0.64	3456	7/8"	5/8"
2710342	LPC4E2/30-1	661	5	2 x 300	144	240/1	0.64	3456	7/8"	5/8"
	2710343	LPC4C3/30-1	1104	6	3 x 300	216	240/1	0.96	5184	7/8"
	LPC4D3/30-1	1042	6	3 x 300	216	240/1	0.96	5184	7/8"	5/8"
	LPC4E3/30-1	992	5	3 x 300	216	240/1	0.96	5184	7/8"	5/8"
	LPC4C4/30-1	1472	6	4 x 300	288	240/1	1.28	6912	7/8"	5/8"
	2710344	LPC4D4/30-1	1389	6	4 x 300	288	240/1	1.28	6912	1 1/8"
	LPC4E4/30-1	1322	5	4 x 300	288	240/1	1.28	6912	1 1/8"	5/8"

Product Code	Model	Weight kg	Drain BSP"	Sound Power Level dBA	Dimensions		
					L mm	D mm	H mm
2712919	LPC4A1/30-1	18	1	60	820	670	351
2710337	LPC4B1/30-1	19	1	60	820	670	351
2710338	LPC4C1/30-1	21	1	60	820	670	351
	LPC4D1/30-1	22	1	60	820	670	351
2710339	LPC4E1/30-1	23	1	60	820	670	351
2710340	LPC4B2/30-1	32	1	63	1370	670	351
2710341	LPC4C2/30-1	35	1	63	1370	670	351
	LPC4D2/30-1	38	1	63	1370	670	351
2710342	LPC4E2/30-1	40	1	63	1370	670	351
2710343	LPC4C3/30-1	48	1	65	1920	670	351
	LPC4D3/30-1	52	1	65	1920	670	351
	LPC4E3/30-1	56	1	65	1920	670	351
	LPC4C4/30-1	62	1	66	2470	670	351
2710344	LPC4D4/30-1	67	1	66	2470	670	351
	LPC4E4/30-1	72	1	66	2470	670	351

Forced Draft Evaporators



Cabero

LPC – Air Defrost Evaporators 300mm Fans

Product Code	Model	Capacity @ -4°C SST & 6 KTD Watts						
		R404A	R452A	R448A	R449A	R134a	R450A	R513A
2712919	* LPC4A1/30-1	830	801	818	810	776	759	784
2710337	* LPC4B1/30-1	1258	1213	1239	1226	1175	1149	1188
2710338	* LPC4C1/30-1	1628	1509	1541	1525	1461	1428	1477
	LPC4D1/30-1	1868	1662	1698	1680	1609	1574	1627
2710339	LPC4E1/30-1	2055	1882	1923	1902	1822	1782	1842
2710340	LPC4B2/30-1	2516	2427	2479	2453	2349	2298	2375
2710341	LPC4C2/30-1	3255	3070	3136	3103	2972	2907	3005
	LPC4D2/30-1	3736	3339	3410	3375	3233	3162	3268
2710342	LPC4E2/30-1	4110	3788	3868	3828	3667	3586	3707
2710343	LPC4C3/30-1	4883	4519	4615	4567	4375	4279	4423
	LPC4D3/30-1	5604	5295	5407	5351	5126	5013	5182
	LPC4E3/30-1	6165	5827	5951	5889	5641	5517	5703
	LPC4C4/30-1	6510	6195	6327	6261	5998	5866	6064
2710344	LPC4D4/30-1	7472	7092	7243	7168	6866	6715	6941
	LPC4E4/30-1	8220	7799	7965	7882	7550	7384	7633

*Internally equalised expansion valve required.

Capacities based on EN328 Midpoint ratings SC2: Air inlet temp 2°C, Evaporating temp -4°C, 6K TD.

Forced Draft Evaporators



Cabero

LPC Series – Electric Defrost Evaporators

300mm Fans

Product Code	Model	Air Flow l/s	Air Throw m	No. & Dia. of Fans	Fan Motors				Defrost Heaters 240 Volt			Connections	
					Total Watts	Volts/Phase	Total Amps	Heat/24 Hrs Total Watts	Coil No. & Watts	Drip Tray No. & Watts	Total Amps	Suction	Liquid
	* LPC4A1/30E-1	419	7	1 x 300	72	240/1	0.32	1728	2 x 600	1 x 600	7.5	1/2"	1/2"
2710345	* LPC4B1/30E-1	392	7	1 x 300	72	240/1	0.32	1728	2 x 600	1 x 600	7.5	1/2"	1/2"
2710346	* LPC4C1/30E-1	368	6	1 x 300	72	240/1	0.32	1728	2 x 600	1 x 600	7.5	5/8"	1/2"
	LPC4D1/30E-1	347	6	1 x 300	72	240/1	0.32	1728	2 x 600	1 x 600	7.5	5/8"	5/8"
2710347	LPC4E1/30E-1	331	5	1 x 300	72	240/1	0.32	1728	2 x 600	1 x 600	7.5	5/8"	5/8"
2710348	LPC4B2/30E-1	783	7	2 x 300	144	240/1	0.64	3456	2 x 1100	1 x 1100	13.75	7/8"	5/8"
2710349	LPC4C2/30E-1	736	6	2 x 300	144	240/1	0.64	3456	2 x 1100	1 x 1100	13.75	7/8"	5/8"
	LPC4D2/30E-1	694	6	2 x 300	144	240/1	0.64	3456	2 x 1100	1 x 1100	13.75	7/8"	5/8"
2710350	LPC4E2/30E-1	661	5	2 x 300	144	240/1	0.64	3456	2 x 1100	1 x 1100	13.75	7/8"	5/8"
2710351	LPC4C3/30E-1	1104	6	3 x 300	216	240/1	0.96	5184	2 x 1600	1 x 1600	20	7/8"	5/8"
	LPC4D3/30E-1	1042	6	3 x 300	216	240/1	0.96	5184	2 x 1600	1 x 1600	20	7/8"	5/8"
2710352	LPC4E3/30E-1	992	5	3 x 300	216	240/1	0.96	5184	2 x 1600	1 x 1600	20	7/8"	5/8"
	LPC4C4/30E-1	1472	6	4 x 300	288	240/1	1.28	6912	2 x 2100	1 x 2100	26.25	7/8"	5/8"
	LPC4D4/30E-1	1389	6	4 x 300	288	240/1	1.28	6912	2 x 2100	1 x 2100	26.25	1 1/8"	5/8"
2710353	LPC4E4/30E-1	1322	5	4 x 300	288	240/1	1.28	6912	2 x 2100	1 x 2100	26.25	1 1/8"	5/8"

Product Code	Model	Weight kg	Drain BSP"	Sound Power Level dBA	Overall Dimensions		
					L mm	D mm	H mm
	LPC4A1/30E-1	18	1	60	820	670	351
2710345	LPC4B1/30E-1	19	1	60	820	670	351
2710346	LPC4C1/30E-1	21	1	60	820	670	351
	LPC4D1/30E-1	22	1	60	820	670	351
2710347	LPC4E1/30E-1	23	1	60	820	670	351
2710348	LPC4B2/30E-1	32	1	63	1370	670	351
2710349	LPC4C2/30E-1	35	1	63	1370	670	351
	LPC4D2/30E-1	38	1	63	1370	670	351
2710350	LPC4E2/30E-1	40	1	63	1370	670	351
2710351	LPC4C3/30E-1	48	1	65	1920	670	351
	LPC4D3/30E-1	52	1	65	1920	670	351
2710352	LPC4E3/30E-1	56	1	65	1920	670	351
	LPC4C4/30E-1	62	1	66	2470	670	351
	LPC4D4/30E-1	67	1	66	2470	670	351
2710353	LPC4E4/30E-1	72	1	66	2470	670	351

Evaporators

Forced Draft Evaporators



Cabero

LPC Series – Electric Defrost Evaporators 300mm Fans

Product Code	Model	Capacity @ -24°C SST & 6 KTD Watts – MID POINT						
		R404A	R452A	R448A	R449A	R134a	R450A	R513A
	* LPC4A1/30E-1	873	838	829	838	742	740	766
2710345	* LPC4B1/30E-1	1193	1145	1133	1145	1014	1011	1047
2710346	* LPC4C1/30E-1	1369	1298	1285	1298	1150	1146	1187
	LPC4D1/30E-1	1588	1601	1585	1601	1419	1414	1465
2710347	LPC4E1/30E-1	1772	1739	1721	1739	1540	1535	1591
2710348	LPC4B2/30E-1	2386	2289	2267	2289	2028	2021	2094
2710349	LPC4C2/30E-1	2854	2061	2041	2061	1826	1820	1886
	LPC4D2/30E-1	3255	2349	2326	2349	2081	2074	2149
2710350	LPC4E2/30E-1	3577	2567	2541	2567	2274	2266	2348
2710351	LPC4C3/30E-1	4281	4122	4081	4122	3651	3640	3771
	LPC4D3/30E-1	4882	4698	4652	4698	4162	4149	4299
2710352	LPC4E3/30E-1	5365	5133	5082	5133	4547	4533	4696
	LPC4C4/30E-1	5708	5496	5441	5496	4869	4853	5028
	LPC4D4/30E-1	6509	6265	6202	6265	5550	5532	5731
2710353	LPC4E4/30E-1	7153	6844	6776	6844	6063	6043	6262

*Internally equalised expansion valve required.

Capacities based on EN328 Midpoint ratings SC3: Air inlet temp -18°C, Evaporating temp -24°C, 6K TD.

Cabinet Coolers

Punchbowl

P Series



Features

- Suitable for all the common HFC and HCFC refrigerants including R22, R134a & R404A/R507
- Easily cleaned and hygienic white 4.5mm 'Refrigeration Grade' ABS cover with rounded corners
- Reinforced white colourbond base and white powder-coated inlet grille
- Efficient inner grooved copper tubing with corrosion protected lacquer coating on return bends
- Balanced acrylic fans with ball bearing race motors
- Cover removed by two captive stainless steel screws
- Internal components secured by captive nuts
- Suitable for capillary or TX valve operation
- Epoxy coated fins

PC Series – Medium Temperature

Cat. No.	Model No.	Cap. Watts @ 6 KTD			No. of Fans	Motor Input Watts	Connections mm		Overall Dimensions mm		
		R404A	R134a	R22			Suct.	Liq.	Length	Width	Height
2710404	PC30	313	295	310	1	30	9.5	9.5	440	395	135
2710405	PC41	414	390	410	1	30	9.5	9.5	440	395	135
2710406	PC53	535	504	530	1	30	9.5	9.5	440	395	135
2710407	PC64	646	608	640	1	30	9.5	9.5	440	395	135
2710409	PC76	768	722	760	2	60	9.5	9.5	705	395	135
2710410	PC100	1030	969	1020	2	60	9.5	9.5	705	395	135
2710411	PC135	1364	1283	1350	3	90	9.5	9.5	840	395	135
2710412	PC160*	1616	1520	1600	3	90	12.7	12.7	840	395	135
2710413	PC200*	2020	1900	2000	3	90	12.7	12.7	840	395	190
2710414	PC230*	2323	2185	2300	3	90	12.7	12.7	840	395	190

*Fitted with 6.35mm External Equaliser

PCL Series – Low Temperature

Cat. No.	Model No.	Cap. Watts @ 6 KTD		No. of Fans	Motor Input Watts	Connections mm		Overall Dimensions mm			Defrost Heat Watts
		R404A	R22			Suct.	Liq.	Length	Width	Height	
2710408	PCL40	400	396	1	30	9.5	9.5	440	395	135	400
2710423	PCL50	500	495	1	30	9.5	9.5	440	395	135	400
2710424	PCL60	600	594	2	60	9.5	9.5	705	395	135	600
2710425	PCL80	800	792	2	60	9.5	9.5	705	395	135	600
2710426	PCL100	1000	990	3	90	9.5	9.5	840	395	135	800
2710402	PCL120*	1200	1188	3	90	12.7	12.7	840	395	135	800
2710433	PCL150*	1500	1485	3	90	12.7	12.7	840	395	190	1500
2710434	PCL170*	1700	1683	3	90	12.7	12.7	840	395	190	1500

*Fitted with 6.35mm External Equaliser

Cabinet Coolers

Punchbowl

PDC Series – Dual Coil – Medium Temperature



Cat. No.	Model No.	Cap. Watts @ 6 KTD			No. of Fans	Motor Input Watts	Connections mm		Overall Dimensions mm		
		R404A	R134a	R22			Suction	Liquid	Length	Width	Height
2710416	PDC45	455	428	450	1	35	9.5	9.5	565	335	160
2710417	PDC60	606	570	600	1	35	9.5	9.5	565	335	160
2710418	PDC80	808	760	800	1	35	9.5	9.5	565	335	160
2710419	PDC100	1010	950	1000	1	35	9.5	9.5	610	430	160
2710415	PDC120*	1212	1140	1200	1	35	12.7	12.7	610	430	160
2710435	PDC160*	1616	1520	1600	1	35	12.7	12.7	610	430	200
2710436	PDC185*	1869	1757	1850	1	35	12.7	12.7	610	430	200

*Fitted with 6.35mm External Equaliser

Ratings based on -4°C SST for medium temperature models and -24°C SST on low temperature models.

Condensers



Cabero ACH Series

ACH is a compact table top style air cooled condenser series from Cabero. The ACH can easily be mounted in a vertical or horizontal configuration by relocating the mounting feet as required, allowing the flexibility of mounting the condenser on a roof top, in a loading dock or on the side of a building. Models range from 12kW to 82kW total heat of rejection at 10KTD. They are suitable for all common HFC refrigerants and retrofit HFO blends.



Features

- Powder coated zinc plated steel construction offers corrosion resistance
- The aluminium fins are protected with Blue-Fin coating
- The fins are straight to reduce fouling and improve long term efficiency
- Ziehl Abegg 500mm fan

AC Fan Models

Product Code	Model	Air Flow (High Speed) m³/h	Air Flow (Low Speed) m³/h	No. & Dia. of Fans	Fan Motor(s)					
					Total Watts	Volts/Phase	RPM (High Speed)	RPM (Low Speed)	Total Amps (High Speed)	Total Amps (Low Speed)
3512036	ACH053A1-0.8-18NZ-D	7980	6400	1 x 500	800	415/3	1290	1020	1.6	0.8
3512037	ACH055A1-0.8-18NZ-D	7590	6060	1 x 500	800	415/3	1290	1020	1.6	0.8
3512038	ACH057A1-0.8-18NZ-D	7260	5760	1 x 500	800	415/3	1290	1020	1.6	0.8
3512039	ACH053A2-1.6-18NZ-D	15910	12810	2 x 500	1600	415/3	1290	1020	3.2	1.6
3512040	ACH055A2-1.6-18NZ-D	15180	12120	2 x 500	1600	415/3	1290	1020	3.2	1.6
3512041	ACH057A2-1.6-18NZ-D	14520	11530	2 x 500	1600	415/3	1290	1020	3.2	1.6
3512042	ACH053A3-2.4-18NZ-D	23870	19210	3 x 500	2400	415/3	1290	1020	4.8	2.4
3512043	ACH055A3-2.4-18NZ-D	22770	18170	3 x 500	2400	415/3	1290	1020	4.8	2.4
3512044	ACH057A3-2.4-18NZ-D	21780	17290	3 x 500	2400	415/3	1290	1020	4.8	2.4
3512045	ACH053A4-3.2-18NZ-D	31820	25620	4 x 500	3200	415/3	1290	1020	6.4	3.2
3512046	ACH055A4-3.2-18NZ-D	30360	24230	4 x 500	3200	415/3	1290	1020	6.4	3.2
3512059	ACH057A4-3.2-18NZ-D	29030	23060	4 x 500	3200	415/3	1290	1020	6.4	3.2

EC Fan Models

Product Code	Model	Air Flow (High Speed) m³/h	Air Flow (Low Speed) m³/h	No. & Dia. of Fans	Fan Motor(s)					
					Total Watts	Volts/Phase	RPM (High Speed)	RPM (Low Speed)	Total Amps (High Speed)	Total Amps (Low Speed)
3512060	ACH053A1-0.8-18NZ-D-EC	8540	N/A	1 x 500	900	415/3	1550	N/A	1.7	N/A
3512061	ACH055A1-0.8-18NZ-D-EC	8200	N/A	1 x 500	900	415/3	1550	N/A	1.7	N/A
3512062	ACH057A1-0.8-18NZ-D-EC	7900	N/A	1 x 500	900	415/3	1550	N/A	1.7	N/A
3512063	ACH053A2-1.6-18NZ-D-EC	17070	N/A	2 x 500	1800	415/3	1550	N/A	3.4	N/A
3512064	ACH055A2-1.6-18NZ-D-EC	16410	N/A	2 x 500	1800	415/3	1550	N/A	3.4	N/A
3512065	ACH057A2-1.6-18NZ-D-EC	15810	N/A	2 x 500	1800	415/3	1550	N/A	3.4	N/A
3512066	ACH053A3-2.4-18NZ-D-EC	25610	N/A	3 x 500	2700	415/3	1550	N/A	5.1	N/A
3512067	ACH055A3-2.4-18NZ-D-EC	24610	N/A	3 x 500	2700	415/3	1550	N/A	5.1	N/A
3512068	ACH057A3-2.4-18NZ-D-EC	23710	N/A	3 x 500	2700	415/3	1550	N/A	5.1	N/A
3512069	ACH053A4-3.2-18NZ-D-EC	34150	N/A	4 x 500	3600	415/3	1550	N/A	6.8	N/A
3512070	ACH055A4-3.2-18NZ-D-EC	32810	N/A	4 x 500	3600	415/3	1550	N/A	6.8	N/A
3512071	ACH057A4-3.2-18NZ-D-EC	31610	N/A	4 x 500	3600	415/3	1550	N/A	6.8	N/A

Condensers



Cabero

ACH Series

AC Fan Models



Product Code	Model	Connections mm		Weight kg	Sound Power Level dBA	Overall Dimensions		
		Inlet	Outlet			L mm	D mm	H mm
3512036	ACH053A1-0.8-18NZ-D	22.2	22.2	80	78	1180	815	950
3512037	ACH055A1-0.8-18NZ-D	22.2	22.2	85	78	1180	815	950
3512038	ACH057A1-0.8-18NZ-D	22.2	22.2	90	78	1180	815	950
3512039	ACH053A2-1.6-18NZ-D	28.6	28.6	130	81	1980	815	950
3512040	ACH055A2-1.6-18NZ-D	28.6	28.6	140	81	1980	815	950
3512041	ACH057A2-1.6-18NZ-D	34.9	34.9	150	81	1980	815	950
3512042	ACH053A3-2.4-18NZ-D	34.9	34.9	180	83	2780	815	950
3512043	ACH055A3-2.4-18NZ-D	34.9	34.9	195	83	2780	815	950
3512044	ACH057A3-2.4-18NZ-D	34.9	34.9	210	83	2780	815	950
3512045	ACH053A4-3.2-18NZ-D	34.9	34.9	235	84	3580	815	950
3512046	ACH055A4-3.2-18NZ-D	41.3	41.3	255	84	3580	815	950
3512059	ACH057A4-3.2-18NZ-D	41.3	41.3	275	84	3580	815	950

EC Fan Models

Product Code	Model	Connections mm		Weight kg	Sound Power Level dBA	Overall Dimensions		
		Inlet	Outlet			L mm	D mm	H mm
3512060	ACH053A1-0.8-18NZ-D-EC	22.2	22.2	80	85.5	1180	815	950
3512061	ACH055A1-0.8-18NZ-D-EC	22.2	22.2	85	85.5	1180	815	950
3512062	ACH057A1-0.8-18NZ-D-EC	22.2	22.2	90	85.5	1180	815	950
3512063	ACH053A2-1.6-18NZ-D-EC	28.6	28.6	130	88.5	1980	815	950
3512064	ACH055A2-1.6-18NZ-D-EC	28.6	28.6	140	88.5	1980	815	950
3512065	ACH057A2-1.6-18NZ-D-EC	34.9	34.9	150	88.5	1980	815	950
3512066	ACH053A3-2.4-18NZ-D-EC	34.9	34.9	180	90.5	2780	815	950
3512067	ACH055A3-2.4-18NZ-D-EC	34.9	34.9	195	90.5	2780	815	950
3512068	ACH057A3-2.4-18NZ-D-EC	34.9	34.9	210	90.5	2780	815	950
3512069	ACH053A4-3.2-18NZ-D-EC	34.9	34.9	235	91.5	3580	815	950
3512070	ACH055A4-3.2-18NZ-D-EC	41.3	41.3	255	91.5	3580	815	950
3512071	ACH057A4-3.2-18NZ-D-EC	41.3	41.3	275	91.5	3580	815	950

Condensers



Cabero
ACH Series

AC Fan Models

Product Code	Model	Capacity kW @ 10 KTD – MID POINT													
		R404A		R452A		R448A		R449A		R134a		R450A		R513A	
		High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed
3512036	ACH053A1-0.8-18NZ-D	13.9kW	12.1kW	14.5kW	12.6kW	15.0kW	13.1kW	14.9kW	12.9kW	13.3kW	11.6kW	12.8kW	11.1kW	12.9kW	11.3kW
3512037	ACH055A1-0.8-18NZ-D	18.2kW	15.4kW	18.9kW	16.0kW	19.7kW	16.6kW	19.5kW	16.5kW	17.5kW	14.8kW	16.7kW	14.2kW	16.9kW	14.3kW
3512038	ACH057A1-0.8-18NZ-D	19.1kW	16.0kW	19.9kW	16.6kW	20.6kW	17.3kW	20.4kW	17.1kW	18.3kW	15.4kW	17.6kW	14.7kW	17.8kW	14.9kW
3512039	ACH053A2-1.6-18NZ-D	28.2kW	25.6kW	29.3kW	26.6kW	30.5kW	27.6kW	30.2kW	27.4kW	27.1kW	24.6kW	25.9kW	23.6kW	26.2kW	23.8kW
3512040	ACH055A2-1.6-18NZ-D	35.9kW	30.9kW	37.3kW	32.1kW	38.8kW	33.4kW	38.4kW	33.1kW	34.5kW	29.7kW	33.0kW	28.4kW	33.4kW	28.7kW
3512041	ACH057A2-1.6-18NZ-D	40.5kW	34.6kW	42.1kW	36.0kW	43.7kW	37.4kW	43.3kW	37.0kW	38.9kW	33.2kW	37.3kW	31.8kW	37.7kW	32.2kW
3512042	ACH053A3-2.4-18NZ-D	41.8kW	38.1kW	43.5kW	39.6kW	45.1kW	41.1kW	44.7kW	40.8kW	40.1kW	36.6kW	38.5kW	35.1kW	38.9kW	35.4kW
3512043	ACH055A3-2.4-18NZ-D	53.8kW	47.0kW	56.0kW	48.9kW	58.1kW	50.8kW	57.6kW	50.3kW	51.6kW	45.1kW	49.5kW	43.2kW	50.0kW	43.7kW
3512044	ACH057A3-2.4-18NZ-D	61.2kW	51.8kW	63.6kW	53.9kW	66.1kW	55.9kW	65.5kW	55.4kW	58.8kW	49.7kW	56.3kW	47.7kW	56.9kW	48.2kW
3512045	ACH053A4-3.2-18NZ-D	54.3kW	51.2kW	56.5kW	53.2kW	58.6kW	55.3kW	58.1kW	54.8kW	52.1kW	49.2kW	50.0kW	47.1kW	50.5kW	47.6kW
3512046	ACH055A4-3.2-18NZ-D	72.1kW	61.1kW	75.0kW	63.5kW	77.9kW	66.0kW	77.1kW	65.4kW	69.2kW	58.7kW	66.3kW	56.2kW	67.1kW	56.8kW
3512059	ACH057A4-3.2-18NZ-D	82.3kW	68.4kW	85.6kW	71.1kW	88.9kW	73.9kW	88.1kW	73.2kW	79.0kW	65.7kW	75.7kW	62.9kW	76.5kW	63.6kW

EC Fan Models

Product Code	Model	Capacity kW @ 10 KTD – MID POINT													
		R404A		R452A		R448A		R449A		R134a		R450A		R513A	
		High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed
3512060	ACH053A1-0.8-18NZ-D-EC	14.6kW	N/A	13.0kW	N/A	11.7kW	N/A	11.8kW	N/A	14.3kW	N/A	12.5kW	N/A	13.3kW	N/A
3512061	ACH055A1-0.8-18NZ-D-EC	19.2kW	N/A	17.1kW	N/A	15.4kW	N/A	15.5kW	N/A	19.0kW	N/A	16.4kW	N/A	17.5kW	N/A
3512062	ACH057A1-0.8-18NZ-D-EC	20.4kW	N/A	18.2kW	N/A	16.4kW	N/A	16.5kW	N/A	20.0kW	N/A	17.4kW	N/A	18.6kW	N/A
3512063	ACH053A2-1.6-18NZ-D-EC	28.0kW	N/A	25.0kW	N/A	22.5kW	N/A	22.7kW	N/A	27.4kW	N/A	23.9kW	N/A	25.5kW	N/A
3512064	ACH055A2-1.6-18NZ-D-EC	37.9kW	N/A	33.8kW	N/A	30.4kW	N/A	30.7kW	N/A	37.3kW	N/A	32.4kW	N/A	34.6kW	N/A
3512065	ACH057A2-1.6-18NZ-D-EC	43.2kW	N/A	38.5kW	N/A	34.6kW	N/A	35.0kW	N/A	42.7kW	N/A	36.9kW	N/A	39.4kW	N/A
3512066	ACH053A3-2.4-18NZ-D-EC	43.7kW	N/A	39.0kW	N/A	35.1kW	N/A	35.4kW	N/A	42.9kW	N/A	37.4kW	N/A	39.9kW	N/A
3512067	ACH055A3-2.4-18NZ-D-EC	56.8kW	N/A	50.6kW	N/A	45.6kW	N/A	46.0kW	N/A	56.0kW	N/A	48.6kW	N/A	51.8kW	N/A
3512068	ACH057A3-2.4-18NZ-D-EC	65.4kW	N/A	58.3kW	N/A	52.5kW	N/A	53.0kW	N/A	62.8kW	N/A	55.9kW	N/A	59.6kW	N/A
3512069	ACH053A4-3.2-18NZ-D-EC	56.6kW	N/A	50.5kW	N/A	45.4kW	N/A	45.8kW	N/A	55.3kW	N/A	48.4kW	N/A	51.6kW	N/A
3512070	ACH055A4-3.2-18NZ-D-EC	76.2kW	N/A	67.9kW	N/A	61.1kW	N/A	61.7kW	N/A	75.1kW	N/A	65.2kW	N/A	69.5kW	N/A
3512071	ACH057A4-3.2-18NZ-D-EC	87.9kW	N/A	78.4kW	N/A	70.5kW	N/A	71.2kW	N/A	83.7kW	N/A	75.2kW	N/A	80.2kW	N/A

Capacities based on EN327 Midpoint ratings DT1: Calculated at 10K TD.

Condensers



Cabero ACW Series

ACW is a compact V form air cooled condenser series from Cabero. The ACW has an extremely small footprint with a narrow width which allows application in tight spaces. Models range from 83kW to 443kW total heat of rejection at 10KTD. For larger capacities, ACW condensers can be mounted in a W configuration resulting in a further reduction to total foot print usage. They are suitable for all common HFC refrigerants and retrofit HFO blends.

83kW to 443kW

Features

- Powder coated zinc plated steel construction offers corrosion resistance
- The aluminium fins are protected with Blue-Fin coating
- The fins are straight to reduce fouling and improve long term efficiency
- Ziehl Abegg 910mm fans
- Fans pre-wired to IP54 isolator switches



AC Fan Models

Product Code	Model	Air Flow (High Speed) m³/h	Air Flow (Low Speed) m³/h	No. & Dia. of Fans	Fan Motors					
					Total kW	Volts/Phase	RPM (High Speed)	RPM (Low Speed)	Total Amps (High Speed)	Total Amps (Low Speed)
2710485	ACW095A2.2/2L-D	60990	47460	2 x 910	5	415/3	890	690	10.4	5.8
3512073	ACW097A2.2/2L-D	59370	45970	2 x 910	5	415/3	890	690	10.4	5.8
2710487	ACW099A2.2/2L-D	57840	44620	2 x 910	5	415/3	890	690	10.4	5.8
2710488	ACW095A3.3/3L-D	91485	71190	3 x 910	7.5	415/3	890	690	15.6	8.7
3512074	ACW097A3.3/3L-D	89055	68955	3 x 910	7.5	415/3	890	690	15.6	8.7
2710490	ACW099A3.3/3L-D	86760	66930	3 x 910	7.5	415/3	890	690	15.6	8.7
3512075	ACW095A4.4/4L-D	121980	94920	4 x 910	10	415/3	890	690	20.8	11.6
2710492	ACW097A4.4/4L-D	118740	91940	4 x 910	10	415/3	890	690	20.8	11.6
2710493	ACW099A4.4/4L-D	115680	89240	4 x 910	10	415/3	890	690	20.8	11.6
3512076	ACW095A5.5/5L-D	152475	118650	5 x 910	12.5	415/3	890	690	26	14.5
2710495	ACW097A5.5/5L-D	148425	114925	5 x 910	12.5	415/3	890	690	26	14.5
2710496	ACW099A5.5/5L-D	144600	111550	5 x 910	12.5	415/3	890	690	26	14.5
3512077	ACW095A6.6/6L-D	182970	142380	6 x 910	15	415/3	890	690	31.2	17.4
3512078	ACW097A6.6/6L-D	178110	137910	6 x 910	15	415/3	890	690	31.2	17.4
2710499	ACW099A6.6/6L-D	173520	133860	6 x 910	15	415/3	890	690	31.2	17.4

EC Fan Models

Product Code	Model	Air Flow (High Speed) m³/h	Air Flow (Low Speed) m³/h	No. & Dia. of Fans	Fan Motors					
					Total kW	Volts/Phase	RPM (High Speed)	RPM (Low Speed)	Total Amps (High Speed)	Total Amps (Low Speed)
2750456	ACW095A2.2/2N-EC	60900	N/A	2 x 910	6.4	415/3	1100	N/A	10	N/A
2750457	ACW097A2.2/2N-EC	60010	N/A	2 x 910	6.4	415/3	1100	N/A	10	N/A
2750458	ACW099A2.2/2N-EC	59090	N/A	2 x 910	6.4	415/3	1100	N/A	10	N/A
2750459	ACW095A3.3/3N-EC	91350	N/A	3 x 910	9.6	415/3	1100	N/A	15	N/A
2750460	ACW097A3.3/3N-EC	90020	N/A	3 x 910	9.6	415/3	1100	N/A	15	N/A
2750461	ACW099A3.3/3N-EC	88630	N/A	3 x 910	9.6	415/3	1100	N/A	15	N/A
3512079	ACW095A4.4/4N-EC	121800	N/A	4 x 910	12.8	415/3	1100	N/A	20	N/A
2750462	ACW097A4.4/4N-EC	120020	N/A	4 x 910	12.8	415/3	1100	N/A	20	N/A
2750463	ACW099A4.4/4N-EC	118170	N/A	4 x 910	12.8	415/3	1100	N/A	20	N/A
3512080	ACW095A5.5/5N-EC	152240	N/A	5 x 910	16	415/3	1100	N/A	25	N/A
2750464	ACW097A5.5/5N-EC	150030	N/A	5 x 910	16	415/3	1100	N/A	25	N/A
2750465	ACW099A5.5/5N-EC	147720	N/A	5 x 910	16	415/3	1100	N/A	25	N/A
3512081	ACW095A6.6/6N-EC	182690	N/A	6 x 910	19.2	415/3	1100	N/A	30	N/A
2750466	ACW097A6.6/6N-EC	180030	N/A	6 x 910	19.2	415/3	1100	N/A	30	N/A
2750467	ACW099A6.6/6N-EC	177260	N/A	6 x 910	19.2	415/3	1100	N/A	30	N/A

Condensers



Cabero
ACW Series

AC Fan Models

Product Code	Model	Capacity kW @ 10 KTD – MID POINT													
		R404A		R452A		R448A		R449A		R134a		R450A		R513A	
		High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed
2710485	ACW095A2.2/2L-D	114.1kW	99.3kW	118.7kW	103.3kW	123.2kW	107.2kW	122.1kW	106.3kW	109.5kW	95.3kW	105.0kW	91.4kW	106.1kW	92.3kW
3512073	ACW097A2.2/2L-D	138.6kW	115.5kW	144.1kW	120.1kW	149.7kW	124.7kW	148.3kW	123.6kW	133.1kW	110.9kW	127.5kW	106.3kW	128.9kW	107.4kW
2710487	ACW099A2.2/2L-D	150.9kW	125.5kW	156.9kW	130.5kW	163.0kW	135.5kW	161.5kW	134.3kW	144.9kW	120.5kW	138.8kW	115.5kW	140.3kW	116.7kW
2710488	ACW095A3.3/3L-D	171.1kW	150.5kW	177.9kW	156.5kW	184.8kW	162.5kW	183.1kW	161.0kW	164.3kW	144.5kW	157.4kW	138.5kW	159.1kW	140.0kW
3512074	ACW097A3.3/3L-D	205.3kW	175.5kW	213.5kW	182.5kW	221.7kW	189.5kW	219.7kW	187.8kW	197.1kW	168.5kW	188.9kW	161.5kW	190.9kW	163.2kW
2710490	ACW099A3.3/3L-D	225.7kW	189.0kW	234.7kW	196.6kW	243.8kW	204.1kW	241.5kW	202.2kW	216.7kW	181.4kW	207.6kW	173.9kW	209.9kW	175.8kW
3512075	ACW095A4.4/4L-D	228.2kW	193.9kW	237.3kW	201.7kW	246.5kW	209.4kW	244.2kW	207.5kW	219.1kW	186.1kW	209.9kW	178.4kW	212.2kW	180.3kW
2710492	ACW097A4.4/4L-D	277.2kW	230.7kW	288.3kW	239.9kW	299.4kW	249.2kW	296.6kW	246.8kW	266.1kW	221.5kW	255.0kW	212.2kW	257.8kW	214.6kW
2710493	ACW099A4.4/4L-D	302.7kW	254.6kW	314.8kW	264.8kW	326.9kW	275.0kW	323.9kW	272.4kW	290.6kW	244.4kW	278.5kW	234.2kW	281.5kW	236.8kW
3512076	ACW095A5.5/5L-D	274.9kW	251.2kW	285.9kW	261.2kW	296.9kW	271.3kW	294.1kW	268.8kW	263.9kW	241.2kW	252.9kW	231.1kW	255.7kW	233.6kW
2710495	ACW097A5.5/5L-D	343.4kW	286.0kW	357.1kW	297.4kW	370.9kW	308.9kW	367.4kW	306.0kW	329.7kW	274.6kW	315.9kW	263.1kW	319.4kW	266.0kW
2710496	ACW099A5.5/5L-D	375.3kW	318.3kW	390.3kW	331.0kW	405.3kW	343.8kW	401.6kW	340.6kW	360.3kW	305.6kW	345.3kW	292.8kW	349.0kW	296.0kW
3512077	ACW095A6.6/6L-D	342.3kW	290.8kW	356.0kW	302.4kW	369.7kW	314.1kW	366.3kW	311.2kW	328.6kW	279.2kW	314.9kW	267.5kW	318.3kW	270.4kW
3512078	ACW097A6.6/6L-D	398.2kW	351.0kW	414.1kW	365.0kW	430.1kW	379.1kW	426.1kW	375.6kW	382.3kW	337.0kW	366.3kW	322.9kW	370.3kW	326.4kW
2710499	ACW099A6.6/6L-D	461.0kW	378.0kW	479.4kW	393.1kW	497.9kW	408.2kW	493.3kW	404.5kW	442.6kW	362.9kW	424.1kW	347.8kW	428.7kW	351.5kW

Capacities based on EN327 Midpoint ratings DT1: Calculated at 10K TD.

Condensers



Cabero
ACW Series

EC Fan Models

Product Code	Model	Capacity kW @ 10 KTD – MID POINT													
		R404A		R452A		R448A		R449A		R134a		R450A		R513A	
		High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed
2750456	ACW095A2.2/2N-EC	116.8kW	N/A	121.5kW	N/A	126.1kW	N/A	125.0kW	N/A	112.1kW	N/A	107.5kW	N/A	108.6kW	N/A
2750457	ACW097A2.2/2N-EC	136.0kW	N/A	141.4kW	N/A	146.9kW	N/A	145.5kW	N/A	130.6kW	N/A	125.1kW	N/A	126.5kW	N/A
2750458	ACW099A2.2/2N-EC	153.3kW	N/A	159.4kW	N/A	165.6kW	N/A	164.0kW	N/A	147.2kW	N/A	141.0kW	N/A	142.6kW	N/A
2750459	ACW095A3.3/3N-EC	171.0kW	N/A	177.8kW	N/A	184.7kW	N/A	183.0kW	N/A	164.2kW	N/A	157.3kW	N/A	159.0kW	N/A
2750460	ACW097A3.3/3N-EC	206.9kW	N/A	215.2kW	N/A	223.5kW	N/A	221.4kW	N/A	198.6kW	N/A	190.3kW	N/A	192.4kW	N/A
2750461	ACW099A3.3/3N-EC	229.1kW	N/A	238.3kW	N/A	247.4kW	N/A	245.1kW	N/A	219.9kW	N/A	210.8kW	N/A	213.1kW	N/A
3512079	ACW095A4.4/4N-EC	228.0kW	N/A	237.1kW	N/A	246.2kW	N/A	244.0kW	N/A	218.9kW	N/A	209.8kW	N/A	212.0kW	N/A
2750462	ACW097A4.4/4N-EC	279.3kW	N/A	290.5kW	N/A	301.6kW	N/A	298.9kW	N/A	268.1kW	N/A	257.0kW	N/A	259.7kW	N/A
2750463	ACW099A4.4/4N-EC	307.6kW	N/A	319.9kW	N/A	332.2kW	N/A	329.1kW	N/A	295.3kW	N/A	283.0kW	N/A	286.1kW	N/A
3512080	ACW095A5.5/5N-EC	274.7kW	N/A	285.7kW	N/A	296.7kW	N/A	293.9kW	N/A	263.7kW	N/A	252.7kW	N/A	255.5kW	N/A
2750464	ACW097A5.5/5N-EC	346.0kW	N/A	359.8kW	N/A	373.7kW	N/A	370.2kW	N/A	332.2kW	N/A	318.3kW	N/A	321.8kW	N/A
2750465	ACW099A5.5/5N-EC	381.3kW	N/A	396.6kW	N/A	411.8kW	N/A	408.0kW	N/A	366.0kW	N/A	350.8kW	N/A	354.6kW	N/A
3512081	ACW095A6.6/6N-EC	342.0kW	N/A	355.7kW	N/A	369.4kW	N/A	365.9kW	N/A	328.3kW	N/A	314.6kW	N/A	318.1kW	N/A
2750466	ACW097A6.6/6N-EC	401.1kW	N/A	417.1kW	N/A	433.2kW	N/A	429.2kW	N/A	385.1kW	N/A	369.0kW	N/A	373.0kW	N/A
2750467	ACW099A6.6/6N-EC	443.5kW	N/A	461.2kW	N/A	479.0kW	N/A	474.5kW	N/A	425.8kW	N/A	408.0kW	N/A	412.5kW	N/A

Capacities based on EN327 Midpoint ratings DT1: Calculated at 10K TD.

Componentry

The refrigeration parts you need

Actrol's large range of componentry is second to none, home to some of the biggest renowned global brands. Together we are committed to providing the highest quality, most reliable products. Through our rigorous testing procedures, our products are made strong and built to last.

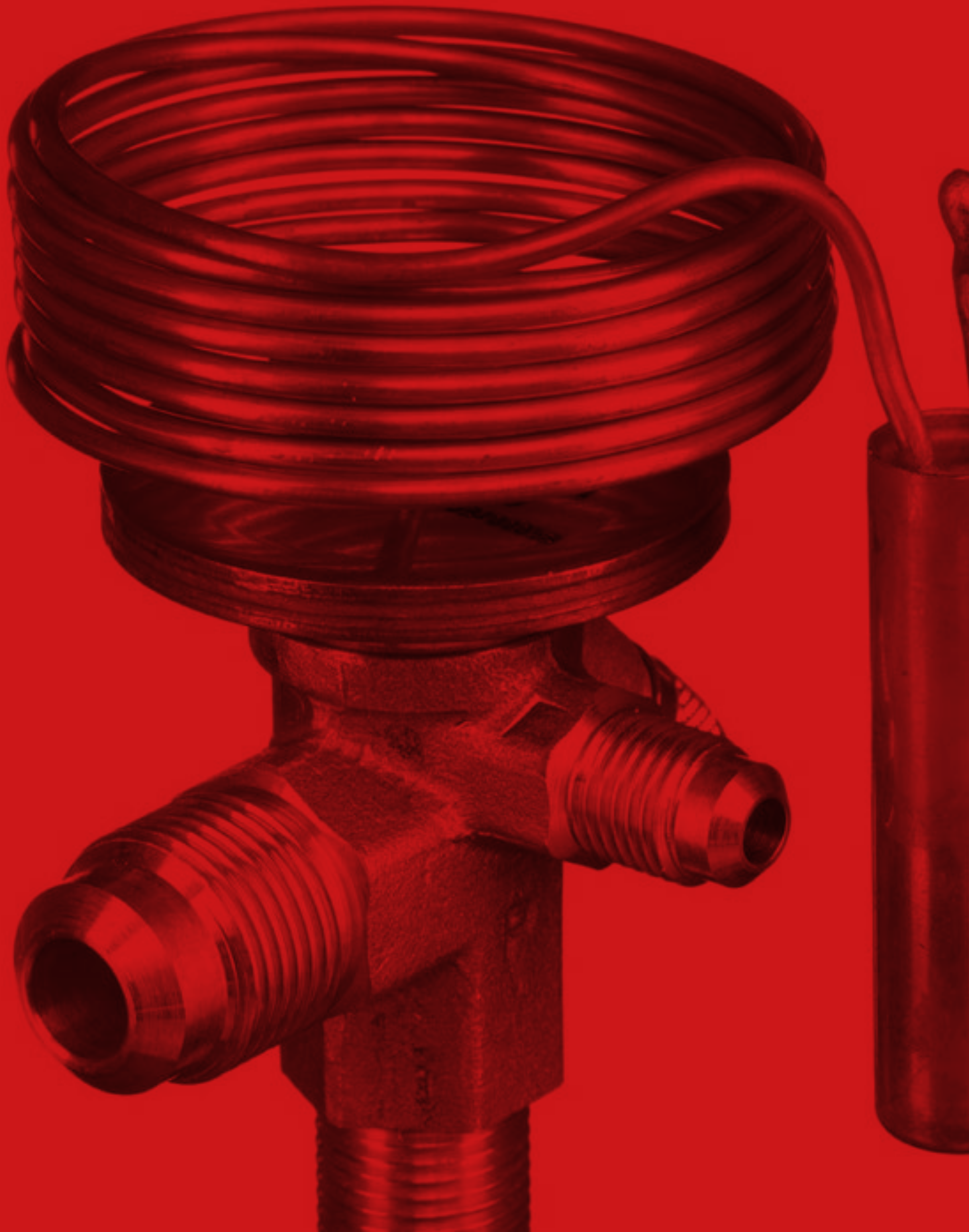
Backed by our expansive network of stores and experts, Actrol is one of the largest wholesalers of refrigeration componentry across Aus and NZ, and has been assisting the refrigeration industry with expert advice and products for over 60 years.

Our component range includes;

- Valves
- Filters and Vessels
- Controls



ACTROL™



Products and solutions that help ensure health and human comfort



Air Conditioning & Heating

Providing the best-in-class solutions to solve the toughest heating and air conditioning challenges.



Refrigeration

Safeguarding food by providing reliable and efficient refrigeration systems with our Copeland™ compressors, valves, controls and system protectors.



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Thermostatic Expansion Valves



Emerson

TI Series with Interchangeable Orifice Assembly

TI Series Valves with interchangeable orifices provide the capability of changing capacity with only the change of an orifice.

Features

- Stainless steel metering pin in orifice
- External superheat adjustment
- Replaceable inlet strainer assembly
- Stainless steel power element
- Safe Working Pressure: 4500 kPa
- Refrigerants: R22, R134a, R404A, R507, R448A, R449A

Valve Body (Less Orifice)

Flare Inlet and Outlet



Cat. No.	Model No.	Part No.	Refrigerant	Evaporating Temperature Range °C	MOP (Valve Closed)	Connections			Capillary Length mm
						Inlet	Outlet	Equaliser	
2707180	TI-HW	802420	R22, R407C	-45 to +20	N/A	3/8" MF	1/2" MF	Internal	1500
2707194	TI-MW	802445	R134a	-45 to +20	N/A	3/8" MF	1/2" MF	Internal	1500
2707196	TI-SW	802459	R404A, R507	-45 to +20	N/A	3/8" MF	1/2" MF	Internal	1500
2707200	TI-SW75	802469	R404A, R507	-45 to -3	0°C	3/8" MF	1/2" MF	Internal	1500
2707181	TIE-HW	802421	R22, R407C	-45 to +20	N/A	3/8" MF	1/2" MF	External 1/4" MF	1500
2707195	TIE-MW	802446	R134a	-45 to +20	N/A	3/8" MF	1/2" MF	External 1/4" MF	1500
2707197	TIE-SW	802460	R404A, R507	-45 to +20	N/A	3/8" MF	1/2" MF	External 1/4" MF	1500
2707201	TIE-SW75	802470	R404A, R507	-45 to -3	0°C	3/8" MF	1/2" MF	External 1/4" MF	1500
3401048	TI-BW	802412	R448A, R449A, R22	-45 to +20	N/A	3/8" MF	1/2" MF	Internal	1500
3401049	TIE-BW	802413	R448A, R449A, R22	-45 to +20	N/A	3/8" MF	1/2" MF	External 1/4" MF	1500

Flare Inlet and Solder Outlet

Cat. No.	Model No.	Part No.	Refrigerant	Evaporating Temperature Range °C	MOP (Valve Closed)	Connections			Capillary Length mm
						Inlet	Outlet	Equaliser	
2707190	TIS-HW	802424	R22, R407C	-45 to +20	N/A	3/8" MF	1/2" OD	Internal	1500
2707192	TIS-MW	802449	R134a	-45 to +20	N/A	3/8" MF	1/2" OD	Internal	1500
2707198	TIS-SW	802463	R404A, R507	-45 to +20	N/A	3/8" MF	1/2" OD	Internal	1500
2707191	TISE-HW	802425	R22, R407C	-45 to +20	N/A	3/8" MF	1/2" OD	External 1/4" MF	1500
2707193	TISE-MW	802450	R134a	-45 to +20	N/A	3/8" MF	1/2" OD	External 1/4" MF	1500
2707199	TISE-SW	802464	R404A, R507	-45 to +20	N/A	3/8" MF	1/2" OD	External 1/4" MF	1500
2707202	TISE-SW75	802472	R404A, R507	-45 to -3	0°C	3/8" MF	1/2" OD	External 1/4" MF	1500
3401050	TIS-BW (1/2")	802415	R448A, R449A, R22	-45 to +20	N/A	3/8" MF	1/2" OD	Internal	1500
3401051	TISE-BW (1/2")	802417	R448A, R449A, R22	-45 to +20	N/A	3/8" MF	1/2" OD	External 1/4" MF	1500

Connection Adaptor

Cat. No.	Model No.	Part No.	Description
2707203	TIA-038	802503	3/8" FF to 3/8" ODF Adaptor

Orifice Assembly (including Strainer)



Cat. No.	Model No.	Part No.	Nominal Capacity kW*									
			R22, R407C		R134a		R404A, R507		R448A		R449A	
			M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T
2707189	0X	800532	0.6	0.4	0.3	0.2	0.4	0.3	0.5	0.4	0.5	0.4
2707182	0	800533	1.4	1	0.9	0.6	1	0.7	1.4	0.9	1.4	0.9
2707183	1	800534	3.6	2.5	2.1	1.4	2.3	1.6	3.4	2.3	3.2	2.2
2707184	2	800535	5.9	4.1	3.4	2.3	4	2.8	5.6	3.8	5.4	3.7
2707185	3	800536	9.5	6.6	5.4	3.7	6.3	4.4	8.9	6.1	8.7	5.9
2707186	4	800537	15.5	10.8	9	6.1	10.3	7.2	14.6	10	14.1	9.7
2707187	5	800538	18.8	13.1	10.9	7.4	12.5	8.8	17.7	12.1	17.2	11.8
2707188	6	800539	21.7	15.2	12.7	8.6	14.4	10.2	20.3	13.9	19.9	13.6

Nominal Capacities based on:

MT: -4°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

LT: -23.3°C evaporating temperature, 42°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

Thermostatic Expansion Valves



Emerson

BA Series

BA Series Thermostatic Expansion Valves feature a balanced port construction which provides stable and accurate superheat control over a wide range of operating conditions. Compared to conventional TX valves, under varying system conditions with wide pressure drops, the balanced port BA valve improves superheat control, system operation and valve stability.

Features

- Balanced port design improving operating and stability under low load conditions
- Bi-Flow capability
- BAE have straight through connection
- Stainless steel power assembly
- Interchangeable with conventional TX valves
- External superheat adjustment
- Maximum working pressure 3100 kPa
- Hermetic leak free construction

R22/R407C Balanced Port TX Valve



Cat. No.	Model No.	Part No.	Refrigerant	BiFlow	Connections			Capillary Length mm
					Inlet	Outlet	Equaliser	
2707214	BAE 1 HCA	063200	R22, R407C	Y	3/8" ODF	1/2" ODF	External 1/4" ODF	760
2707215	BAE 1 1/2 HCA	061954	R22, R407C	Y	3/8" ODF	1/2" ODF	External 1/4" ODF	760
2707217	BAE 2 HCA	061955	R22, R407C	Y	3/8" ODF	1/2" ODF	External 1/4" ODF	760
2707216	BAE 2 1/2 HCA	061956	R22, R407C	Y	3/8" ODF	1/2" ODF	External 1/4" ODF	760
2707218	BAE 3 HCA	065892	R22, R407C	Y	3/8" ODF	1/2" ODF	External 1/4" ODF	760
2707219	BAE 4 HCA	061957	R22, R407C	Y	3/8" ODF	1/2" ODF	External 1/4" ODF	760
2707220	BAE 5 HCA	061964	R22, R407C	Y	1/2" ODF	5/8" ODF	External 1/4" ODF	1500
2707221	BAE 6 HCA	062736	R22, R407C	Y	1/2" ODF	5/8" ODF	External 1/4" ODF	1500

Model No.	Nominal Capacity: kW		
	AC	MT	LT
BAE 1 HCA	4.4	4.3	3.4
BAE 1 1/2 HCA	6.8	6.7	5.1
BAE 2 HCA	9.1	8.9	7.1
BAE 2 1/2 HCA	11.5	11.3	8.7
BAE 3 HCA	13.9	13.6	10.5
BAE 4 HCA	18.0	17.7	13.6
BAE 5 HCA	22.8	22.4	17.2
BAE 6 HCA	28.3	27.8	21.4

Nominal Capacities based on:

AC: 7°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

MT: -4°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

LT: -23.3°C evaporating temperature, 42°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

NXT Series – Emerson R410a Balanced Port TX Valve

The Emerson NXT Series is a balanced ported valve designed for high efficiency R-410A air conditioning and heat pump applications. NXT Series valves operate over a wide range of conditions and applications, while offering excellent performance, superior reliability, and unparalleled valve life.

Features

- Balanced port design improving operating and stability under low load conditions
- Maximum working pressure 4826 kPa
- Bi-Flow capability allows one valve to control the superheat in both cooling and heating modes for close-coupled or packaged heat pump applications



Cat. No.	Model No.	Part No.	Refrigerant	BiFlow	Nominal Capacity kW	Connections			Capillary Length mm
					AC	Inlet	Outlet	Equaliser	
	NB36CE	091022	R410A	Y	10.5	3/8"	1/2"	1/4"	1500
3400151	NB48CE	091028	R410A	Y	14	3/8"	1/2"	1/4"	1500
	NB60CE	091034	R410A	Y	17.5	3/8"	1/2"	1/4"	1500
3401006	NB72EF	091040	R410A	Y	21	3/8"	1/2"	1/4"	1500

Thermostatic Expansion Valves



Emerson

HF Series

HF Series Thermostatic Expansion Valves feature a balanced port construction which provides stable and accurate superheat control over a wide range of operating conditions. Compared to conventional TX valves, under varying system conditions with wide pressure drops, the balanced port HF valve improves superheat control, system operation and valve stability.

Features

- Balanced port design improving operating and stability under low load conditions
- External superheat adjustment
- The HFESC series has a removable 100 mesh strainer that can be cleaned and/or replaced without removing the valve from the line
- Interchangeable with conventional TX valves
- Maximum working pressure 3100kPa



Cat. No.	Model No.	Part No.	Refrigerant	BiFlow	Connections			Capillary Length mm
					Inlet	Outlet	Equaliser	
2707204	HFES 8 HCA	056819	R22, R407C	Y	5/8"	7/8"	External 1/4" ODF	1500
2707205	HFES 10 HCA	056820	R22, R407C	Y	5/8"	7/8"	External 1/4" ODF	1500
2707206	HFES 12 HCA	065762	R22, R407C	Y	5/8"	7/8"	External 1/4" ODF	1500
2707207	HFES 15 HCA	056825	R22, R407C	Y	7/8"	1 1/8"	External 1/4" ODF	1500
2707208	HFES 20 HCA	058490	R22, R407C	Y	7/8"	1 1/8"	External 1/4" ODF	1500
2707209	HFES 4 MC	057897	R134a	N	3/8"	1/2"	External 1/4" ODF	1500
2707210	HFES 6 MC	057903	R134a	N	5/8"	7/8"	External 1/4" ODF	1500
2707211	HFES 11 MC	058681	R134a	N	7/8"	1 1/8"	External 1/4" ODF	1500
2707212	HFES 14 MC	064000	R134a	N	7/8"	1 3/8"	External 1/4" ODF	1500
2707222	HFESC 5 SC	058220	R404A, R507	N	3/8"	1/2"	External 1/4" ODF	1500
2707223	HFESC 10 SC	064219	R404A, R507	N	5/8"	7/8"	External 1/4" ODF	1500
2707224	HFESC 13 SC	065356	R404A, R507	N	7/8"	1 1/8"	External 1/4" ODF	1500

Model No.	Nominal Capacity R22, R407C kW	
	AC	MT
HFES 8 HCA	33.4	34.7
HFES 10 HCA	41.9	44.0
HFES 12 HCA	48.6	51.3
HFES 15 HCA	62.0	65.2
HFES 20 HCA	81.7	85.9

Nominal Capacities based on:

AC: 7°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.
 MT: -4°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

Thermostatic Expansion Valves



Emerson

TRAE Series

TRAE+ Series Thermostatic Expansion Valves are designed for large capacity refrigeration, air conditioning applications.



Features

- Solid copper solder straight through connections
- External superheat adjustment
- Stainless steel power element
- Maximum working pressure 3100kPa
- Balanced port design improving operating and stability under low load conditions

Cat. No.	Model No.	Part No.	Refrigerant	BiFlow	Connections			Capillary Length mm
					Inlet ODF	Outlet ODF	Equaliser	
2707165	TRAE+ 10 HC	062718	R22, R407C	N	5/8"	7/8"	External 1/4" MF	1500
2707167	TRAE+ 20 HC	062724	R22, R407C	N	7/8"	1 1/8"	External 1/4" MF	3000
2707168	TRAE+ 30 HC	062727	R22, R407C	N	7/8"	1 1/8"	External 1/4" MF	3000
2707169	TRAE+ 40 HC	062733	R22, R407C	N	1 1/8"	1 3/8"	External 1/4" MF	3000
2707170	TRAE+ 13 MC	063549	R134a	N	5/8"	7/8"	External 1/4" MF	3000
2707172	TRAE+ 14 SC	064407	R404A, R507	N	1 1/8"	1 1/8"	External 1/4" ODF	3000
2707173	TRAE+ 20 SC	063927	R404A, R507	N	1 1/8"	1 3/8"	External 1/4" ODF	3000
2707174	TRAE+ 30 SC	064435	R404A, R507	N	1 1/8"	1 3/8"	External 1/4" ODF	3000
2707175	TRAE 35 SC	064217	R404A, R507	N	1 1/8"	1 3/8"	External 1/4" ODF	3000

Model No.	Nominal Capacity R22, R407C kW	
	AC	MT
TRAE+ 10 HC	52.7	56.8
TRAE+ 20 HC	85.5	92.3
TRAE+ 30 HC	129.6	139.9
TRAE+ 40 HC	178.2	192.4

Model No.	Nominal Capacity R134a kW	
	AC	MT
TRAE + 13 MC	60.69	56.8

Model No.	Nominal Capacity R404A kW	
	AC	MT
TRAE + 14 MC	64.4	50.8
TRAE + 20 MC	97.8	79
TRAE + 30 MC	134.4	110
TRAE 35 MC	181.5	150

Nominal Capacities based on:

AC: 7°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.
 MT: -4°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

Thermostatic Expansion Valves



Emerson

TX7 Series

TX7 series of Thermo™ Expansion Valves are designed predominantly for AC, heat pumps, close control and industrial process cooling applications.

Features

- Monoblock, hermetic valve with brazing connections
- Bi-Flow application, Balanced port in normal and reverse flow directions eliminates disturbance forces resulting from condensing pressure
- Optimum static superheat in normal and reverse flow
- Power Element with 65 mm diameter enables low partial load (20-25%) performance at stable superheat
- Applicable in systems with digital scroll, step less screw compressors and variable speed compressors
- Single diaphragm with negligible hysteresis withstands against higher pressure
- Maximum working pressure 4600kPa



Cat. No.	Model No.	Part No.	Refrigerant	BiFlow	MOP	Nominal Capacity kW at 4°C	Connections			Capillary Length mm
							Inlet ODF	Outlet ODF	Equaliser	
3401014	TX7-M03	806824	R134a, R450A, R513A	Y	N	18.0	1/2"	5/8"	External 1/4" MF	1500
3401015	TX7-M04	806826	R134a, R450A, R513A	Y	N	22.5	5/8"	7/8"	External 1/4" MF	1500
3401016	TX7-M05	806828	R134a, R450A, R513A	Y	N	27.5	5/8"	7/8"	External 1/4" MF	1500
3401017	TX7-M06	806830	R134a, R450A, R513A	Y	N	45.4	7/8"	1 1/8"	External 1/4" MF	1500
3401018	TX7-M07	806832	R134a, R450A, R513A	Y	N	56.0	7/8"	1 1/8"	External 1/4" MF	1500
3401019	TX7-M08	806834	R134a, R450A, R513A	Y	N	73.7	7/8"	1 1/8"	External 1/4" MF	1500
3401020	TX7-M09	806836	R134a, R450A, R513A	Y	N	103.3	7/8"	1 1/8"	External 1/4" MF	1500
3401022	TX7-M13	806840	R134a, R450A, R513A	Y	Y	18.0	5/8"	7/8"	External 1/4" MF	1500
3401023	TX7-M14	806842	R134a, R450A, R513A	Y	Y	22.5	5/8"	7/8"	External 1/4" MF	1500
3401024	TX7-M15	806844	R134a, R450A, R513A	Y	Y	27.5	7/8"	1 1/8"	External 1/4" MF	1500
3401025	TX7-M16	806846	R134a, R450A, R513A	Y	Y	45.4	7/8"	1 1/8"	External 1/4" MF	1500
3401026	TX7-M17	806848	R134a, R450A, R513A	Y	Y	56.0	7/8"	1 1/8"	External 1/4" MF	1500
3401027	TX7-M18	806850	R134a, R450A, R513A	Y	Y	73.7	7/8"	1 1/8"	External 1/4" MF	1500



Cat. No.	Model No.	Part No.	Refrigerant	BiFlow	MOP	Nominal Capacity kW at 4°C	Connections			Capillary Length mm
							Inlet ODF	Outlet ODF	Equaliser	
3401028	TX7-M19	806852	R407C, R22	Y	N	103.3	1/2"	5/8"	External 1/4" MF	1500
3401029	TX7-N04	806854	R407C, R22	Y	N	36.0	5/8"	7/8"	External 1/4" MF	1500
3401030	TX7-N05	806856	R407C, R22	Y	N	44.1	5/8"	7/8"	External 1/4" MF	1500
3401031	TX7-N06	806858	R407C, R22	Y	N	72.7	7/8"	1 1/8"	External 1/4" MF	1500
3401032	TX7-N07	806860	R407C, R22	Y	N	89.7	7/8"	1 1/8"	External 1/4" MF	1500
3401033	TX7-N08	806862	R407C, R22	Y	N	118.1	7/8"	1 1/8"	External 1/4" MF	1500
3401034	TX7-N09	806864	R407C, R22	Y	N	165.4	7/8"	1 1/8"	External 1/4" MF	1500
3401035	TX7-N13	806867	R407C, R22	Y	Y	28.9	1/2"	5/8"	External 1/4" MF	1500
3401036	TX7-N14	806869	R407C, R22	Y	Y	36.0	5/8"	7/8"	External 1/4" MF	1500
3401037	TX7-N15	806871	R407C, R22	Y	Y	44.1	5/8"	7/8"	External 1/4" MF	1500
3401038	TX7-N16	806873	R407C, R22	Y	Y	72.7	7/8"	1 1/8"	External 1/4" MF	1500
3401039	TX7-N17	806875	R407C, R22	Y	Y	89.7	7/8"	1 1/8"	External 1/4" MF	1500
3401040	TX7-N18	806877	R407C, R22	Y	Y	118.1	7/8"	1 1/8"	External 1/4" MF	1500
3401041	TX7-N19	806879	R407C, R22	Y	Y	165.4	7/8"	1 1/8"	External 1/4" MF	1500

Thermostatic Expansion Valves



Emerson

TX7 Series



Cat. No.	Model No.	Part No.	Refrigerant	BiFlow	MOP	Nominal Capacity kW at 4°C	Connections			Capillary Length: mm
							Inlet: ODF	Outlet: ODF	Equaliser	
3401007	TX7-Z13	806810	R410A, R32	Y	Y	32.1	1/2"	5/8"	External 1/4" MF	1500
3401008	TX7-Z14	806812	R410A, R32	Y	Y	39.9	5/8"	7/8"	External 1/4" MF	1500
3401009	TX7-Z15	806814	R410A, R32	Y	Y	48.9	5/8"	7/8"	External 1/4" MF	1500
3401010	TX7-Z16	806816	R410A, R32	Y	Y	80.7	7/8"	1 1/8"	External 1/4" MF	1500
3401011	TX7-Z17	806818	R410A, R32	Y	Y	99.4	7/8"	1 1/8"	External 1/4" MF	1500
3401012	TX7-Z18	806820	R410A, R32	Y	Y	130.9	7/8"	1 1/8"	External 1/4" MF	1500
3401013	TX7-Z19	806822	R410A, R32	Y	Y	183.4	7/8"	1 1/8"	External 1/4" MF	1500

A Series

The A-Series is used for heat pump, air conditioning, food service and commercial refrigeration applications.

Features

- Hermetic, leak-free construction
- Internal check available for heat pump applications
- External or internal equalizer
- Maximum working pressure 4800kPa



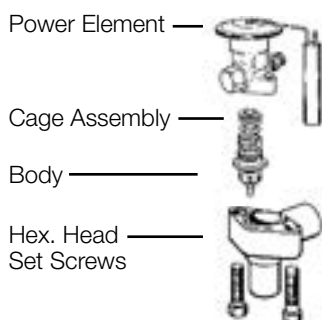
Cat. No.	Model No.	Part No.	Refrigerant	Valve Type	Nominal Capacity kW at -4.4°C	Connections			Capillary Length mm
						Inlet ODF	Outlet ODF	Equaliser	
3401042	AACE 3 HCA	11497	R22, R407C	AACE	10.5	3/8"	1/2"	1/4"	750
3401044	AACE 4 HCA	11498	R22, R407C	AACE	14.0	3/8"	1/2"	1/4"	750
3401045	AACE 5 HCA	11499	R22, R407C	AACE	17.5	3/8"	1/2"	1/4"	750

Thermostatic Expansion Valves



Emerson

T Series – Component Schedule – Model TCLE and TJLE



Features

- Angle Type
- Externally Equalised
- Single Ported for Normal Load Conditions
- Solder Connections

Refrig.	Valve Series	Power Element		Cage Assembly		Body – Angle Type		Set Screws (2)	
		Cat. No.	Model No.	Cat. No.	Model No.	Cat. No.	Model No.	Cat. No.	Model No.
R134a	TCLE1/4MC	2707136	XB1019-MW1B	2707110	X22440-B1B	2707147	C501-5 3/8" x 5/8" ODF	2707159	PS286-5
	TCLE3/4MC			2707111	X22440-B2B				
	TCLE11/2MC			2707112	X22440-B3B				
	TCLE21/2MC			2707113	X22440-B4B				
	TCLE31/2MC			2707114	X22440-B5B	2707148	C501-7 1/2" x 5/8" ODF		
	TCLE51/2MC			2707115	X22440-B6B				
	TCLE71/2MC			2707116	X22440-B7B	2707149	A576 5/8" x 7/8" ODF (7/8" x 1 1/8" ODM)		
	TCLE9MC			2707117	X22440-B8B				
R22, R407C	TCLE1/2HC	2707129	XB1019-HC1B	2707110	X22440-B1B	2707147	C501-5 3/8" x 5/8" ODF	2707159	PS286-5
	TCLE1HC			2707111	X22440-B2B				
	TCLE2HC			2707112	X22440-B3B				
	TCLE3HC			2707113	X22440-B4B				
	TCLE5HC			2707114	X22440-B5B	2707148	A576 5/8" x 7/8" ODF (7/8" x 1 1/8" ODM)		
	TCLE71/2HC			2707115	X22440-B6B				
	TCLE10HC			2707116	X22440-B7B	2707149	A576 5/8" x 7/8" ODF (7/8" x 1 1/8" ODM)		
	TCLE12HC			2707117	X22440-B8B				
R404A, R507	TCLE1/4SC	2707142	XB1019-SC1B	2707110	X22440-B1B	2707147	C501-5 3/8" x 5/8" ODF	2707159	PS286-5
	TCLE1/2SC			2707111	X22440-B2B				
	TCLE1SC			2707112	X22440-B3B				
	TCLE2SC			2707113	X22440-B4B				
	TCLE3SC			2707114	X22440-B5B	2707148	A576 5/8" x 7/8" ODF (7/8" x 1 1/8" ODM)		
	TCLE5SC			2707115	X22440-B6B				
	TCLE61/2SC			2707116	X22440-B7B	2707149	A576 5/8" x 7/8" ODF (7/8" x 1 1/8" ODM)		
	TCLE8SC			2707117	X22440-B8B				
R134a	TJLE9MC	2707136	XB1019-MC1B	2707118	XC724-B4B	2707152	B504 5/8" x 7/8" ODF (7/8" x 1 1/8" ODM)	2707160	PS514-5
	TJLE11MC			2707119	XC724-B5B				
R22, R407C	TJLE11HC	2707129	XB1019-HC1B	2707118	XC724-B4B				
	TJLE14HC			2707119	XC724-B5B				
R404A, R507	TJLE7SC	2707142	XB1019-SC1B	2707118	XC724-B4B				
	TJLE9SC			2707119	XC724-B5B				

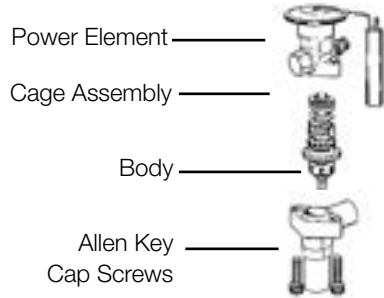
Power elements listed are 'C' charge: Range -30 to 10°C, with 1.5m long capillary. Power elements with 'Z' charge: Range -45 to -10°C and 'W' charge: MOP are also available.

Thermostatic Expansion Valves



Emerson

T Series – Component Schedule – Model TJRE, TER, TIR, THR



Features

- Angle Type
- Externally Equalised
- Balanced Double Port for Low Load conditions if needed
- Solder Connections

Refrig.	Valve Series	Power Element		Cage Assembly		Body – Angle Type		Cap Screws (2)	
		Cat. No.	Model No.	Cat. No.	Model No.	Cat. No.	Model No.	Cat. No.	Model No.
R134a	TJRE 11MC	2707136	XB1019-MW1B	2700216	X11873-B4B	2707146	10331 7/8" x 7/8" ODF (1 1/8" x 1 1/8" ODM)	2707161	PS259
	TJRE 13MC			2707106	X11873-B5B				
R22, R407C	TJRE 14HC	2707129	XB1019-HC1B	2700216	X11873-B4B				
	TJRE 18HC			2707106	X11873-B5B				
R404A, R507	TJRE 9SC	2707142	XB1019-SC1B	2700216	X11873-B4B				
	TJRE 11SC			2707106	X11873-B5B				

R134a	TER 16MC	2707139	XC726-MC2B	2707120	X9117-B6B	2707153	9153 7/8" x 7/8" ODF (1 1/8" x 1 1/8" ODM)	2707161	PS259
	TER 19MC			2707109	X9117-B7B				
	TER 25MC			2707121	X9117-B8B				
	TER 31MC			2707122	X9117-B9B				
R22, R407C	TER 22HC	2707140	XC726-HC2B	2707120	X9117-B6B				
	TER 26HC			2707109	X9117-B7B				
	TER 35HC			2707121	X9117-B8B				
	TER 45HC			2707122	X9117-B9B				
R404A, R507	TER 14SC	2707107	XC726-SC2B	2707120	X9117-B6B				
	TER 16SC			2707109	X9117-B7B				
	TER 22SC			2707121	X9117-B8B				
	TER 28SC			2707122	X9117-B9B				

R134a	TIR 45MC	2707139	XC726-MC2B	2707123	X9166-B10B	2707155	9151 7/8" x 7/8" ODF (1 1/8" x 1 1/8" ODM)	102225	PS370
R22, R407C	TIR 55HC	2707140	XC726-HC2B	2707123	X9166-B10B				
R404A, R507	TIR 39SC	2707107	XC726-SC2B	2707123	X9166-B10B				

R134a	THR 55MC	2707139	XC726-MC2B	2707124	X9144-B11B	2707156	9149 1 1/8" x 1 1/8" ODM	102225	PS370
	THR 68MC			2707125	X9144-B13B				
R22, R407C	THR 75HC	2707140	XC726-HC2B	2707124	X9144-B11B				
	THR 100HC			2707125	X9144-B13B				
R404A, R507	THR 50SC	2707107	XC726-SC2B	2707124	X9144-B11B				
	THR 60SC			2707125	X9144-B13B				

Thermostatic Expansion Valves



Emerson

Power Elements

Power Elements include gaskets and bulb clamps

TCLE, TJLE, TJRE Series



Cat. No.	Model No.	Part No.	Refrigerant	Equalizer Type	Capillary Length m	Temp Range °C	MOP psi
2707129	XB1019HC1B	053416	R22, R407C	¼" MF	1.5	-30 to +10	None
2707132	XB1019HCA1B*	056039	R22, R407C	¼" MF	1.5	-30 to +10	None
2707137	XB1019HW651B	089445	R22, R407C	¼" MF	1.5	-45 to -1	65
2707128	XB1019HC2B	054390	R22, R407C	¼" MF	3	-30 to +10	None
2707136	XB1019MW1B	057878	R134a	¼" MF	1.5	-30 to +20	None
2707141	XB1019MZ1B	061946	R134a	¼" MF	1.5	-45 to -12	None
2707108	XB1019MC2B	059548	R134a	¼" MF	3	-30 to +10	None
2707133	XB1019NW1002B	803483	R407C, R22	¼" MF	3	-45 to + 14	None
2707142	XB1019SC1B	059189	R404A, R507	¼" MF	1.5	-30 to +10	None
2707144	XB1019SZ1B	062140	R404A, R507	¼" MF	1.5	-45 to -12	None
2707134	XB1019SW401B	059130	R404A, R507	¼" MF	1.5	-45 to -18	40
2707143	XB1019SC2B	059547	R404A, R507	¼" MF	3	-30 to +10	None

*Suitable for heat pump and air conditioning applications.

TER, TIR, THR Series

Cat. No.	Model No.	Part No.	Refrigerant	Equalizer Type	Capillary Length m	Temp Range °C	MOP psi
2707140	XC726HC2B	802933	R22, R407C	¼" MF	3	-30 to +10	None
2707139	XC726MC2B	803384	R134a	¼" MF	3	-30 to +10	None
2707138	XC726NW1002B	803485	R407C, R22	¼" MF	3	-45 to + 14	None
2707107	XC726SC2B	803451	R404A, R507	¼" MF	3	-30 to +10	None
2707127	XC726SZ2B	063974	R404A, R507	¼" MF	3	-45 to -12	None

TLE Series

Cat. No.	Model No.	Part No.	Refrigerant	Equalizer Type	Capillary Length m	Temp Range °C	MOP psi
2707135	XB1033HCA-1B	049760	R22, R407C	Internal	1.5	-30 to +10	None

Notes:

R-12 and R-134a are interchangeable refrigerant charges.
 R-507, R-502 and R-404A are interchangeable refrigerant charges.
 R-22 and R-407C are interchangeable refrigerant charges.

Thermostatic Expansion Valves



Emerson

T Series – Bodies and Screws



Valve Style	Body					Screws: 2 required		
	Cat. No.	Model No.	Part No.	Connections		Cat. No.	Model No.	Part No.
				Inlet	Outlet			
TCLE	2707147	C501-5	803232	3/8" ODF	5/8" ODF	2707159	PS286-5	021057
TCLE	2707148	C501-7	803234	1/2" ODF	5/8" ODF	2707159	PS286-5	021057
TCLE	2707149	A576	027764	5/8" ODF or 7/8" ODM	7/8" ODF or 1 1/8" ODM	2707158	PS168-5	026629
TCLE	2707150	9761-4	803350	1/2" ODF	5/8" ODF	2707159	PS286-5	021057
TCLE	2707151	X6346-17	803330	5/8" ODF	7/8" ODF	2707159	PS286-5	021057
TJLE	2707152	B504	044984	5/8" ODF or 7/8" ODM	7/8" ODF or 1 1/8" ODM	2707160	PS514-5	026639
TJRE	2707146	10331	803338	5/8" ODF or 1 1/8" ODM	7/8" ODF or 1 1/8" ODM	2707161	PS259	020829
TJRE	2707145	10332	803324	7/8" ODF or 1 1/8" ODM	7/8" ODF or 1 1/8" ODM	2707161	PS259	020829
TER	2707153	9153	803244	7/8" ODF or 1 1/8" ODM	7/8" ODF or 1 1/8" ODM	2707161	PS259	020829
TER	2707154	9152	803244	7/8" ODF or 1 1/8" ODM	7/8" ODF or 1 1/8" ODM	2707161	PS259	020829
TIR	2707155	9151	803286	7/8" ODF or 1 1/8" ODM	7/8" ODF or 1 1/8" ODM	102225	PS370	021064
THR	2707156	9149	803284	1 1/8" ODM	1 1/8" ODM	102225	PS370	021064

Nominal Capacities

Valve Style	Cat. No.	Model No.	Part No.	Nominal Capacity kW							
				R22, R407C			R134a			R404A/R507	
				A/C	M/T	L/T	A/C	M/T	L/T	M/T	L/T
TCLE	2707110	X22440-B1B	037035	1.8	2.0	1.3	1.4	1.4	1.0	1.2	0.9
TCLE	2707111	X22440-B2B	037037	3.6	3.8	2.6	2.6	2.8	1.9	2.4	1.7
TCLE	2707112	X22440-B3B	037039	7.6	8.1	5.5	5.5	5.8	3.9	5.3	3.7
TCLE	2707113	X22440-B4B	037041	16.7	17.8	12.1	12.3	12.8	8.7	11.5	8.1
TCLE	2707114	X22440 B5B	037043	21.5	22.8	15.5	15.7	16.4	11.1	14.8	10.5
TCLE	2707115	X22440 B6B	037045	29.4	31.2	21.2	21.4	22.4	15.2	20.2	14.3
TCLE	2707116	X22440-B7B	037047	39.7	42.2	28.7	29.1	30.4	20.6	27.3	19.3
TCLE	2707117	X22440-B8B	037049	46.2	49.1	33.3	33.8	35.3	24.0	31.8	22.5
TJLE	2707118	XC724-B4B	093343	38.6	41.7	33.8	27.7	29.1	20.9	26.9	21.7
TJLE	2707119	XC724-B5B	038699	49.2	53.2	43.1	36.7	38.1	26.6	34.3	27.7
TJRE	2700216	X11873-B4B	088837	56.0	59.6	40.5	40.9	42.7	29.0	37.6	26.7
TJRE	2707106	X11873-B5B	089058	71.5	76.0	51.6	51.8	54.1	36.7	48.0	34.0
TER	2707120	X9117-B6B	077896	87.9	93.5	63.5	64.5	67.4	45.7	59.2	42.0
TER	2707109	X9117-B7B	078117	100.5	106.9	72.5	73.6	76.9	52.2	67.7	48.0
TER	2707121	X9117-B8B	071155	138.2	146.9	99.8	101.7	106.3	72.2	93.1	66.0
TER	2707122	X9117-B9B	029429	168.1	178.8	121.4	122.6	128.1	87.0	112.8	80.0
TIR	2707123	X9166-B10B	070738	215.5	229.1	155.6	158.0	165.2	112.1	144.8	102.6
THR	2707124	X9144-B11B	020846	244.5	260.0	176.5	179.0	187.0	126.9	163.6	113.9
THR	2707125	X9144-B13B	021067	291.8	310.3	210.7	214.4	224.0	152.0	196.5	139.3

Nominal Capacities based on:

AC: 7°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

MT: -4°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

LT: -23.3°C evaporating temperature, 42°C condensing temperature, 1K liquid sub-cooling, 200kPa pressure drop across distributor and line components.

Thermostatic Expansion Valves



Danfoss

Type T2, TE2 – Valve Body (Less Orifice)

Flare Inlet and Outlet



Cat. No.	Model No.	Part No.	Refrig.	Evap. Temp. Range °C	Range Code	MOP	Connections			Capillary Length mm
							Inlet	Outlet	Equaliser	
2701119	T2	068Z3206	R22	-40 to +10	N	N	3/8" MF	1/2" MF	Internal	1500
2701118	T2	068Z3346	R134a	-40 to +10	N	N	3/8" MF	1/2" MF	Internal	1500
2701120	T2	068Z3400	R404A R507	-40 to +10	N	N	3/8" MF	1/2" MF	Internal	1500
8603542	T2	068Z3727	R448A/R449A	-40 to +10	N	N	3/8" MF	1/2" MF	Internal	1500
8603543	TE2	068Z3728	R448A/R449A	-40 to +10	N	N	3/8" MF	1/2" MF	External 1/4"	1500
2701122	TE2	068Z3209	R22	-40 to +10	N	N	3/8" MF	1/2" MF	External 1/4"	1500
2701121	TE2	068Z3348	R134a	-40 to +10	N	N	3/8" MF	1/2" MF	External 1/4"	1500
2701123	TE2	068Z3403	R404A R507	-40 to +10	N	N	3/8" MF	1/2" MF	External 1/4"	1500
2706627	TE2	068Z3404	R404A R507	-60 to -25	B	N	3/8" MF	1/2" MF	External 1/4"	1500
2706623	T2	068Z3408	R404A R507	40 to -15	NL	Y	3/8" MF	1/2" MF	Internal	1500
2706624	TE2	068Z3409	R404A R507	-40 to -15	NL	Y	3/8" MF	1/2" MF	External 1/4"	1500

Flare Inlet and Solder Outlet

Cat. No.	Model No.	Part No.	Refrig.	Evap. Temp. Range °C	Range Code	MOP	Connections			Capillary Length mm
							Inlet	Outlet	Equaliser	
2701132	T2	068Z3281	R22	-40 to +10	N	N	3/8" MF	1/2" OD	Internal	1500
2701133	T2	068Z3383	R134a	-40 to +10	N	N	3/8" MF	1/2" OD	Internal	1500
2701134	T2	068Z3414	R404A, R507	-40 to +10	N	N	3/8" MF	1/2" OD	Internal	1500
8603544	T2	068Z3729	R448A/R449A	-40 to +10	N	N	3/8" MF	1/2" OD	Internal	1500
8603545	TE2	068Z3730	R448A/R449A	-40 to +10	N	N	3/8" MF	1/2" OD	External 1/4"	1500
2701135	TE2	068Z3284	R22	-40 to +10	N	N	3/8" MF	1/2" OD	External 1/4"	1500
2701136	TE2	068Z3385	R134a	-40 to +10	N	N	3/8" MF	1/2" OD	External 1/4"	1500
2701137	TE2	068Z3415	R404A, R507	-40 to +10	N	N	3/8" MF	1/2" OD	External 1/4"	1500
2706625	T2	068Z3420	R404A, R507	-60 to -25	B	Y	3/8" MF	1/2" OD	Internal	1500
2706626	TE2	068Z3430	R404A, R507	-40 to -15	NL	Y	3/8" MF	1/2" OD	External 1/4"	1500

Orifice Assembly (Including Strainer)



Cat. No.	Part No.	Orifice No.	Danfoss TX Valve Nominal Capacities*											
			R22		R134a		R404A		R448A		R449A		R452A	
			M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T
2701124	068-2002	0X	0.62	0.56	0.44	0.38	0.39	0.35	0.89	0.83	0.88	0.81	0.66	0.60
2701125	068-2003	00	1.29	1.13	0.81	0.66	0.83	0.70	1.69	1.33	1.65	1.31	1.25	0.99
2701126	068-2010	01	2.90	2.09	1.57	1.03	1.88	1.30	3.13	2.11	3.05	2.08	2.39	1.62
2701127	068-2015	02	4.31	2.94	2.23	1.43	2.80	1.85	4.00	2.47	3.92	2.45	3.13	1.93
2701128	068-2006	03	7.67	5.27	3.99	2.55	4.90	3.30	6.88	4.18	6.68	4.13	5.36	3.26
2701129	068-2007	04	11.40	7.76	5.87	3.73	7.30	4.90	10.32	6.14	10.03	6.09	8.14	4.81
2701130	068-2008	05	14.50	9.84	7.45	4.75	9.30	6.20	13.50	8.03	13.12	7.98	10.43	6.14
2701131	068-2009	06	17.60	11.96	9.09	5.80	11.30	7.60	16.37	9.55	15.90	9.49	13.03	7.55

Nominal Capacities based on:

MT: -4°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling.

LT: -23.3°C evaporating temperature, 42°C condensing temperature, 1K liquid sub-cooling.

Thermostatic Expansion Valves



Danfoss

Type TUA, TUAE – Valve Body Solder Inlet and Outlet



Cat. No.	Model No.	Part No.	Refrig.	Evap. Temp. Range °C	Nominal Capacity kW at 4.4°C	MOP	Connections ODF			Capillary Length mm
							Inlet	Outlet	Equaliser	
2706619	TUA	068U2235	R22	-40 to +10	N	N	3/8" OD	1/2" OD	Internal	1500
2706178	TUA	068U2205	R134a	-40 to +10	N	N	3/8" OD	1/2" OD	Internal	1500
2706176	TUA	068U2285	R404A, R507	-40 to +10	N	N	3/8" OD	1/2" OD	Internal	1500
2706620	TUAE	068U2237	R22	-40 to +10	N	N	3/8" OD	1/2" OD	External 1/4"	1500
2706177	TUAE	068U2207	R134a	-40 to +10	N	N	3/8" OD	1/2" OD	External 1/4"	1500
3401067	TUAE	068U3773	R448A	-40 to +10	N	N	3/8" OD	1/2" OD	External 1/4"	1500
3401068	TUAE	068U3858	R449A	-40 to +10	N	N	3/8" OD	1/2" OD	External 1/4"	1500
2706175	TUAE	068U2287	R404A, R507	-40 to +10	N	N	3/8" OD	1/2" OD	External 1/4"	1500
2706621	TUAE	068U2303	R404A, R507	-40 to -5	NM	Y	3/8" OD	1/2" OD	External 1/4"	1500

Orifice Assembly (Including Strainer)

Cat. No.	Orifice No.	Part No.	Danfoss TX Valve Nominal Capacities*											
			R22		R134a		R404A		R448A		R449A		R452A	
			M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T
2706179	0	068U1030	0.58	0.37	0.37	0.17	0.40	0.25	0.54	0.35	0.53	0.35	0.38	0.24
2706180	1	068U1031	0.85	0.54	0.54	0.21	0.6	0.37	0.80	0.52	0.77	0.51	0.57	0.37
2706181	2	068U1032	1.0	0.61	0.61	0.32	0.7	0.41	0.94	0.59	0.91	0.58	0.67	0.42
2706182	3	068U1033	1.3	0.82	0.82	0.48	0.93	0.56	1.23	0.79	1.20	0.78	0.89	0.57
2706183	4	068U1034	2.2	1.3	1.4	0.77	1.6	0.9	2.09	1.28	2.02	1.26	1.49	0.92
2706184	5	068U1035	3.0	1.8	1.8	1.0	2.1	1.2	2.79	1.72	2.70	1.69	2.00	1.24
2706185	6	068U1036	4.6	2.8	2.8	1.6	3.3	1.9	4.34	2.67	4.19	2.63	3.11	1.92
2706186	7	068U1037	6.1	3.7	3.7	2.1	4.4	2.5	5.73	3.53	5.53	3.47	4.11	2.54
2706187	8	068U1038	8.9	5.4	5.5	3.1	6.4	3.7	8.39	5.19	8.11	5.11	6.04	3.74
2706188	9	068U1039	12.1	7.3	7.5	4.4	8.7	4.9	11.36	6.97	10.06	6.76	8.12	4.99

Nominal Capacities based on:

MT: -4°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling.

LT: -23.3°C evaporating temperature, 42°C condensing temperature, 1K liquid sub-cooling.

Thermostatic Expansion Valves



Danfoss

Type TGE – Fixed Orifice TX Valve

R22



Cat. No.	Model No.	Part No.	Refrig.	Evap. Temp. Range °C	Nominal Capacity kW at 4.4°C	MOP	Connections ODF			Capillary Length mm
							Inlet	Outlet	Equaliser	
2706610	TGE10-4	067N2152	R22	-40 to +10	14	N	1/2"	7/8"	External 1/4"	1500
2706611	TGE10-6	067N2153	R22	-40 to +10	20	N	1/2"	5/8"	External 1/4"	1500
2706612	TGE10-6	067N2154	R22	-40 to +10	20	N	1/2"	7/8"	External 1/4"	1500
2707235	TGE10-6	067N2155	R22	-40 to +10	20	N	5/8"	7/8"	External 1/4"	1500
2706613	TGE10-8	067N2156	R22	-40 to +10	27	N	5/8"	7/8"	External 1/4"	1500
2706614	TGE10-11	067N2157	R22	-40 to +10	38	N	5/8"	7/8"	External 1/4"	1500
2706615	TGE20-12.5	067N2159	R22	-40 to +10	43	N	5/8"	7/8"	External 1/4"	1500

Nominal Capacities based on:

4.4°C evaporating temperature, 37°C liquid entering temperature, 38°C condensing temperature and 4K opening superheat.

R407C

Cat. No.	Model No.	Part No.	Refrig.	Evap. Temp. Range °C	Nominal Capacity kW at 4.4°C	MOP	Connections ODF			Capillary Length mm
							Inlet	Outlet	Equaliser	
2706616	TGE10-8	067N4156	R407C	-40 to +10	25	N	5/8"	7/8"	External 1/4"	1500
2706617	TGE10-11	067N4157	R407C	-40 to +10	36	N	5/8"	7/8"	External 1/4"	1500
2706618	TGE20-12.5	067N4159	R407C	-40 to +10	42	N	5/8"	7/8"	External 1/4"	1500

Nominal Capacities based on:

4.4°C evaporating temperature, 37°C liquid entering temperature, 38°C condensing temperature and 4K opening superheat.

R134a

Cat. No.	Model No.	Part No.	Refrig.	Evap. Temp. Range °C	Nominal Capacity kW at 4.4°C	MOP	Connections ODF			Capillary Length mm
							Inlet	Outlet	Equaliser	
3401069	TGE10-4	067N5152	R134a	-40 to +10	8.36	N	5/8"	7/8"	External 1/4"	1500
3401070	TGE10-6	067N5153	R134a	-40 to +10	12.45	N	5/8"	7/8"	External 1/4"	1500
3401071	TGE10-8	067N5156	R134a	-40 to +10	16.86	N	5/8"	7/8"	External 1/4"	1500
3401072	TGE10-11	067N5157	R134a	-40 to +10	24.49	N	5/8"	7/8"	External 1/4"	1500

Nominal Capacities based on:

4.4°C evaporating temperature, 37°C liquid entering temperature, 38°C condensing temperature and 4K opening superheat.

R404A/R507

Cat. No.	Model No.	Part No.	Refrig.	Evap. Temp. Range °C	Nominal Capacity kW at 4.4°C	MOP	Connections ODF			Capillary Length mm
							Inlet	Outlet	Equaliser	
3401073	TGE10-6	067N6151	R404A/R507	-40 to +10	13.96	N	1/2"	7/8"	External 1/4"	1500
3401074	TGE10-8	067N6150	R404A/R507	-40 to +10	18.58	N	5/8"	7/8"	External 1/4"	1500
3401075	TGE10-11	067N6154	R404A/R507	-40 to +10	26.58	N	5/8"	7/8"	External 1/4"	1500
3401076	TGE20-12.5	067N6158	R404A/R507	-40 to +10	29.06	N	5/8"	7/8"	External 1/4"	1500
3401077	TGE20-16	067N6155	R404A/R507	-40 to +10	33.82	N	7/8"	1 1/8"	External 1/4"	1500

Nominal Capacities based on:

4.4°C evaporating temperature, 37°C liquid entering temperature, 38°C condensing temperature and 4K opening superheat.

Thermostatic Expansion Valves



Danfoss

Type TE5 – TE55 With Interchangeable Orifice Assembly



Cat. No.	Model No.	Part No.	Refrigerant	Evaporating Temp. Range °C	Range Code	MOP	Equaliser	Cap. Length m
2706609	TEX5	067B3250	R22	-40 to +10	N	N	External 1/4"	3
2706602	TEN5	067B3297	R134a	-40 to +10	N	N	External 1/4"	3
2706605	TES5	067B3342	R404A, R507	-40 to +10	N	N	External 1/4"	3
	TE5	067B3252	R448A/R449A	-40 to +10	N	N	External 1/4"	3
2706606	TEX12	067B3210	R22	-40 to +10	N	N	External 1/4"	3
2706600	TEN12	067B3232	R134a	-40 to +10	N	N	External 1/4"	3
2706603	TES12	067B3347	R404A, R507	-40 to +10	N	N	External 1/4"	3
	TE12	067B2512	R448A/R449A	-40 to +10	N	N	External 1/4"	3
2706607	TEX20	067B3274	R22	-40 to +10	N	N	External 1/4"	3
2706601	TEN20	067B3292	R134a	-40 to +10	N	N	External 1/4"	3
2706604	TES20	067B3352	R404A, R507	-40 to +10	N	N	External 1/4"	3
	TE20	067B3294	R448A/R449A	-40 to +10	N	N	External 1/4"	3
2706608	TEX55	067G3205	R22	-40 to +10	N	N	External 1/4"	3
	TE55	067G3302	R404A, R507	-40 to +10	N	N	External 1/4"	3
	TE55	067G3219	R448A/R449A	-40 to +10	N	N	External 1/4"	3

Orifice Assembly



Cat. No.	Model No.	Part No.	Valve Type	R22		R134a		R404A		R448A		R449A		R452A	
				M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T	M/T	L/T
2706581	1	067B2789	TE5	17.9	12.4	11	7.1	12.9	8.8	16.6	11.16	16.62	11.18	13.47	9.02
2706582	2	067B2790	TE5	25	17.4	15.4	10	17.9	12.3	23.32	15.71	23.34	15.73	18.88	12.73
2706583	3	067B2791	TE5	31.5	21.8	19.5	12.7	22.6	15.4	29.11	19.56	29.17	19.6	23.59	15.77
2706584	4	067B2792	TE5	43.1	29.4	26.5	17.1	30.9	20.8	39.89	26.23	39.97	26.29	32.43	21.27
2706585	5	067B2708	TE12	50.3	34.5	32.6	21.5	40.3	26.2	44.38	29.74	44.59	29.86	37.54	24.32
2706586	6	067B2709	TE12	66.5	44.5	42.8	27.8	50.5	31.9	58.28	37.98	58.57	38.16	49.68	31.13
2706587	7	067B2710	TE12	81.5	55.5	54.6	36.2	60.1	38.2	70.33	46.88	70.85	47.18	58.92	37.24
2706588	8	067B2771	TE20	115	78.1	67.3	43.6	70.9	46.1	102.2	66.99	102.6	67.29	64.27	43.61
2706589	9	067B2773	TE20	128	84	76.8	49.0	78.6	49.6	110.4	70.21	111.1	70.66	75.03	46.65
2707236	10	067G2701	TE55	145	92.9	91.6	56.5	98.2	60.3	122.2	76.06	122.9	76.54	90.16	55.96
2707237	11	067G2704	TE55	157	101	100	62.2	106	65.3	132.2	82.67	133.1	83.23	97.91	61.04
2707239	13	067G2710	TE55	204	130	133	82.0	136	82.6	169.4	104.3	170.7	105.2	126.7	78.05

Nominal Capacities based on:

MT: -4°C evaporating temperature, 46°C condensing temperature, 1K liquid sub-cooling.

LT: -23.3°C evaporating temperature, 42°C condensing temperature, 1K liquid sub-cooling.

Valve Body

Flare Angleway		Solder Angle		Solder Straight		Solder Flanges		Connections		Valve Type
Cat. No.	Part No.	Cat. No.	Part No.	Cat. No.	Part No.	Cat. No.	Part No.	Inlet	Outlet	
2706595	067B4013	2706592	067B4009	2706590	067B4007			1/2"	5/8"	TE5
		2706593	067B4010	2706591	067B4008			1/2"	7/8"	TE5
		2706594	067B4011		067B4032			5/8"	7/8"	TE5
			067B4034		067B4033			7/8"	1 1/8"	TE5
							067B4025	5/8"	7/8"	TE12
							067B4026	7/8"	1"	TE12
		2706598	067B4023	2706596	067B4021			7/8"	1 1/8"	TE12/20
		2704495	067G4004		067G4003			1 1/8"	1 3/8"	TE5

Thermostatic Expansion Valves



Sporlan

SBF Series – Balanced Port with Replaceable Strainer

Sporlan type SBF TX valves are small brass bar body valves with extended ODF solder connections and balanced port construction. SBF have replaceable thermostatic elements. The SBF TX valve has a 100 mesh removable strainer that can be cleaned and/or replaced while the valve is still soldered to the system tubing. The balanced port construction makes these valves ideal for small capacity refrigeration applications which operate over widely varying conditions.

Applications

- Supermarket Cases
- Self-contained Cases
- Walk-in Coolers/Freezers
- Ice Machines
- Salad Bars
- Transport Refrigeration

Features and Benefits

- Balanced port design
- Removable power element
- Removable inlet strainer 100 mesh
- Field adjustable superheat
- 1/4" ODF external equalizer
- Multiple charges available
- Weight: 0.45 kg



Code	Model No	Part No	Refrigerant	Nominal Capacity kW	Element Size No.	Connections Inches		
						Inlet	Outlet	Equalizer Type
2704564	SBFJE-AAA-C	108817P	R134a	0.44 thru 0.70	43	3/8" ODF	1/2" ODF	1/4"
2704565	SBFJE-AA-C	108958P	R134a	0.88 thru 1.17	43	3/8" ODF	1/2" ODF	1/4"
2704561	SBFJE-A-C	108549P	R134a	1.76 thru 3.52	43	3/8" ODF	1/2" ODF	1/4"
2704562	SBFJE-B-C	108551P	R134a	4.40 thru 6.15	43	3/8" ODF	1/2" ODF	1/4"
2704563	SBFJE-C-C	108552P	R134a	7.03 thru 10.6	43	3/8" ODF	1/2" ODF	1/4"
2704572	SBFSE-AAA-Z	108822P	R404A	0.44 thru 0.70	43	3/8" ODF	1/2" ODF	1/4"
2704581	SBFSE-AA-Z	108979P	R404A	0.88 thru 1.17	43	3/8" ODF	1/2" ODF	1/4"
2704582	SBFSE-AA-Z	109002P	R404A	0.88 thru 1.17	43	3/8" ODF	1/2" ODF	1/4"
2704568	SBFSE-AA-C	108621P	R404A	0.88 thru 1.17	43	3/8" ODF	1/2" ODF	1/4"
2704567	SBFSE-A-Z	108618P	R404A	1.76 thru 3.52	43	3/8" ODF	1/2" ODF	1/4"
2704566	SBFSE-A-C	108617P	R404A	1.76 thru 3.52	43	3/8" ODF	1/2" ODF	1/4"
2704569	SBFSE-B-C	108624P	R404A	4.40 thru 7.03	43	3/8" ODF	1/2" ODF	1/4"
2704570	SBFSE-B-Z	108625P	R404A	4.40 thru 7.03	43	3/8" ODF	1/2" ODF	1/4"
2704580	SBFSE-C-Z	108928P	R404A	7.91 thru 10.6	43	3/8" ODF	1/2" ODF	1/4"
2704571	SBFSE-C-C	108628P	R404A	7.91 thru 10.6	43	3/8" ODF	1/2" ODF	1/4"

Charge Code:

C = Commercial Refrigeration +10°C to -25°C
 Z = Low Temp Refrigeration -25°C to -40°C

Thermostatic Expansion Valves



Sporlan

O Series – Balanced Port with Replaceable Strainer

Sporlan type O TX valves have a brass bar body, externally adjustable superheat and ODF solder connections. The thermostatic element is replaceable, and the inlet connection has a permanent 12 mesh strainer. This valve type features a balanced port construction, and it is designed for both air conditioning and refrigeration applications. A synthetic seating surface provides tight shut-off during system off periods.

Applications

- Air Conditioning
- Process Chillers
- Commercial Refrigeration

Features and Benefits

- Balanced port design
- Removable power element
- Field adjustable superheat
- 1/4" sweat external equalizer



Code	Model No	Part No	Refrigerant	Nominal Capacity kW	Element Size No.	Connections Inches		
						Inlet	Outlet	Equalizer Type
2704594	OJE-12-C	125519P	R134a	42.2	83	7/8"	1 1/8"	1/4"
2704592	OJE-16-C	124209P	R134a	56.3	83	1 1/8"	1 1/8"	1/4"
2704595	OJE-16-CP60	125527P	R134a	56.3	83	1 1/8"	1 1/8"	1/4"
2704593	OJE-23-CP60	124647P	R134a	80.9	33	1 1/8"	1 1/8"	1/4"
2704604	OSE-6-Z	125394P	R404A	21.1	83	7/8"	1 1/8"	1/4"
2704599	OSE-9-Z	124216P	R404A	31.6	83	7/8"	1 1/8"	1/4"
2704596	OSE-9-C	124213P	R404A	31.6	83	7/8"	1 1/8"	1/4"
2704600	OSE-12-Z	124217P	R404A	42.2	83	7/8"	1 3/8"	1/4"
2704597	OSE-12-C	124214P	R404A	42.2	83	7/8"	1 3/8"	1/4"
2704601	OSE-21-Z	124218P	R404A	73.8	83	1 1/8"	1 3/8"	1/4"
2704598	OSE-21-C	124215P	R404A	73.8	83	1 1/8"	1 3/8"	1/4"
2704603	OSE-30-C	124819P	R404A	105.5	33	1 1/8"	1 3/8"	1/4"
2704602	OSE-35-Z	124351P	R404A	123.0	33	1 1/8"	1 3/8"	1/4"

Charge Code:

C = Commercial Refrigeration +10°C to -25°C
 Z = Low Temp Refrigeration -25°C to -40°C
 CP60 = Airconditioning

S Series – with Permanent Strainer

Sporlan type S TX valves feature a brass bar body, externally adjustable superheat and ODF solder connections. The thermostatic element is replaceable, and the inlet connection has a permanent 12 mesh strainer. This valve is designed for both air conditioning and refrigeration applications.



Code	Model No	Part No	Refrigerant	Nominal Capacity kW	Element Size No.	Connections Inches		
						Inlet	Outlet	Equalizer Type
2704583	SJE-3-C	128917P	R134a	10.5	83	1/2"	7/8"	1/4"
2704584	SJE-5-C	128918P	R134a	17.6	83	5/8"	7/8"	1/4"
2704676	SJE-5-CP60	128927P	R134a	17.6	83	5/8"	7/8"	1/4"
2704585	SJE-6-C	128919P	R134a	21.1	83	5/8"	7/8"	1/4"
2704586	SSE-3-C	128934P	R404A	10.5	83	1/2"	7/8"	1/4"
2704589	SSE-3-ZP	128953P	R404A	10.5	83	1/2"	7/8"	1/4"
2704587	SSE-4-C	128936P	R404A	14.1	83	1/2"	7/8"	1/4"
2704590	SSE-4-ZP	128954P	R404A	14.1	83	1/2"	7/8"	1/4"
2704588	SSE-6-C	128937P	R404A	21.1	83	5/8"	7/8"	1/4"
2704591	SSE-6-ZP	128955P	R404A	21.1	83	5/8"	7/8"	1/4"

Charge Code:

C = Commercial Refrigeration +10°C to -25°C
 Z = Low Temp Refrigeration -25°C to -40°C

Thermostatic Expansion Valves



Sporlan

EBS Series – Balanced Port with Replaceable Strainer

Sporlan type EBS TX valves have a brass bar body having the same physical size as the type S valve except the type EBS features a balanced port construction and extended ODF connections. The thermostatic element is replaceable, and the inlet connection has a permanent 12 mesh strainer. The balanced port construction makes this valve ideally suited for refrigeration and air conditioning applications which operate over widely varying conditions.

Applications

- Air Conditioning
- Commercial Refrigeration

Features and Benefits

- Balanced port design
- Removable power element
- Removable inlet strainer 100 mesh
- Field adjustable superheat
- 1/4" ODF external equalizer
- Multiple charges available
- Weight: 0.45 kg



Code	Model No	Part No	Refrigerant	Nominal Capacity kW	Element Size No.	Connections Inches		
						Inlet	Outlet	Equalizer Type
2704608	EBSSE-6-C	163708P	R404A	21.1	83	5/8"	7/8"	1/4"
2704615	EBSSE-6-ZP	163575P	R404A	21.1	83	5/8"	7/8"	1/4"
2704605	EBSSE-7.5-C	163507P	R404A	26.4	83	5/8"	7/8"	1/4"
2704616	EBSSE-7.5-ZP	163509P	R404A	26.4	83	5/8"	7/8"	1/4"
2704606	EBSSE-10-C	163877P	R404A	35.2	83	7/8"	1 1/8"	1/4"
2704613	EBSSE-10-ZP	163752P	R404A	35.2	83	7/8"	1 1/8"	1/4"
2704607	EBSSE-13-C	163783P	R404A	45.7	83	7/8"	1 1/8"	1/4"
2704614	EBSSE-13-ZP	163749P	R404A	45.7	83	7/8"	1 1/8"	1/4"

Charge Code:

C = Commercial Refrigeration +10°C to -25°C
 ZP = Low Temp Refrigeration -25°C to -40°C

Electronic Expansion Valves



Emerson

EX Series

The EX range of electronic control valves from Emerson are optimised for control of liquid or gaseous mass flow in refrigeration systems. The stepper motor drive, which produces exact valve opening, is energised directly from the electrical power and therefore operates independent from differential pressure.

Application

The EX Series valves can be used in different control tasks, expansion valve for superheat control, suction pressure control for capacity control, liquid injection for desuperheating of compressor, condensing pressure control and hot gas bypass control to compensate excess compressor capacity and to ensure evaporating pressure does not go below a set point. The valve must be installed with the motor downward.

Features

- Fully hermetic design
- High linear flow capacity
- Positive shut-off function to eliminate use of additional solenoid valve
- Ceramic slide and port for highly accurate flow and minimal wear
- Compatible with all CFCs, HCFCs, HFCs, mineral and POE lubricants
- Stepper motor driven
- Wide capacity range
- Extremely wide controlling range of 10 to 100%
- Maximum working pressure 3500kPa

Valves



Cat. No.	Model No.	Part No.	Inlet Connection	Outlet Connection	Maximum Nominal Capacity kW													
					R134a		R22		R404A		R410A		R448A		R449A		R452A	
					M/T	A/C	M/T	M/T	L/T	A/C	M/T	A/C	M/T	A/C	M/T	A/C	M/T	
2707232	EX4-U31*	800617	5/8" ODF	5/8" ODF	12	16	17	11	11	18	20	16	16	16	16	12	12	
2707233	EX5-U31*	800619	5/8" ODF	7/8" ODF	37	48	51	33	33	56	59	49	49	48	48	35	36	
2707274	EX6-I31*	800622	7/8" ODF	1 1/8" ODF	89	115	122	80	80	134	143	117	118	115	115	85	86	
2707275	EX7-U31*	800626	1 3/8" ODF	1 3/8" ODF	245	316	338	219	220	369	395	323	324	316	315	234	237	
2707272	EX8-U21	800630	1 3/8" ODF	1 3/8" ODF	653	842	903	585	585	985	1053	860	865	841	841	624	634	

*Suitable for Bi-flow applications

Superheat Controller Kits



Cat. No.	Model No.	Part No.	Description
3402001	EXD-U01	808052	Emerson Superheat Control Kit

Accessories



Cat. No.	Model No.	Part No.	Description
2707273	EXV-M15	804663	Valve Lead 1.5 Metre
2707287	ECC-N10	807860	RJ45 Connection Cable

Nominal Capacities based on:

M/T: 46°C condensing temperature, -4°C evaporating temperature and 1 K liquid subcooling at the inlet of the expansion valve.
 L/T: 42°C condensing temperature, -23.3°C evaporating temperature and 1K liquid subcooling at the inlet of the expansion valve.
 A/C: 46°C condensing temperature, 7°C evaporating temperature and 1K liquid subcooling at the inlet of the expansion valve.

Typical ordering package for expansion valve application (1 of each):

- Electronic Valve
- Valve Lead
- Superheat Controller Kit

Accessories (required for setting at start-up only):

- LED Display Unit
- RJ45 Connection Cable

As the EX Series of valves have stainless steel connections, Emerson require the use of 45% silver solder and flux during soldering and the valve must be "wet ragged".

Electronic Expansion Valves



Carel

Electronic Expansion Valves stand out for their ability to provide accurate control and for their capacity to quickly reach and maintain the operating stability of refrigeration and air conditioning systems.

Features

- External driver motor
- Positive valve shut-off
- Precision flow control (lowers energy costs)
- Demountable construction
- Bi-directional flow (for reverse-cycle applications)
- Motor, valve and body all supplied in the same box



Cat. No.	Part No.	Conn. Size	Conn. Size	Maximum Nominal Capacity kW															
				R134a		R22		R404A		R410A		R448A		R449A			R452A		
				M/T	A/C	M/T	M/T	L/T	A/C	M/T	L/T	M/T	A/C	L/T	M/T	A/C	L/T	M/T	
2712880	E2V03ZWF13	1/2"	1/2"	0.48	0.60	0.64	0.44	0.44	0.73	0.77	0.63	0.63	0.57	0.62	0.62	0.43	0.47	0.47	
2712881	E2V05ZWF13	1/2"	1/2"	1.2	1.3	1.4	0.9	1	1.5	1.7	1	1	0.87	0.97	0.97	0.67	0.73	0.74	
3402002	E2V09ZWF13	1/2"	1/2"	2	1.9	2.4	1.5	1.7	2.6	2.9	2.4	2.4	2.1	2.3	2.4	1.6	1.8	1.8	
2712882	E2V11ZWF13	1/2"	1/2"	3.5	3.7	4.2	2.7	3	4.6	5.2	3.7	3.7	3.3	3.7	3.7	2.5	2.8	2.8	
2712883	E2V14ZWF13	1/2"	1/2"	5	6	6.5	4.3	4.7	7.3	8.2	5.9	6	5.2	5.8	5.9	4	4.3	4.5	
2712884	E2V18ZWF13	1/2"	1/2"	7	8	9	6	6.4	10	11	7.6	7.6	6.8	7.4	7.5	5.2	5.6	5.7	
2712885	E2V24ZWF13	1/2"	1/2"	14	16	18	12	12.8	19.6	22	15.9	16	14.3	15.6	15.6	10.8	11.7	11.9	
2712886	E2V30ZSM13	5/8"	5/8"	20	24	27	18	18.9	29.5	33	25	25	23	25	25	17	19	19	
2712887	E2V35ZSM13	5/8"	5/8"	28	35	37	23	26	40	45	31.3	31.5	28	31	31	21	23	23	
2707301	E3V45SWR10	3/4"	7/8"	47	60	65	42	45.5	71	80	46.5	46.7	42	46	46	32	34	35	
2707302	E3V55SWR10	3/4"	7/8"	70	80	95	62	67	105	117	65.5	65.8	59	64	64	45	48	49	
2707303	E3V65SWS10	7/8"	1 1/8"	95	115	130	85	90	140	157	88	88.4	79	86	86	60	65	66	
2707304	E4V85BWT00	1 1/8"	1 3/8"	135	165	180	120	125	200	225	124	125	112	122	122	85	92	93	
2707305	E4V95BWT00	1 1/8"	1 3/8"	180	230	250	165	170	270	300	179	180	161	176	161	122	132	134	
2707306	E5VA5AST00	1 3/8"	1 3/8"	450	545	600	400	410	655	740	328	329	295	321	322	224	241	245	
2707307	E6VB2ASV00	1 5/8"	1 5/8"	900	1080	1200	750	800	1300	1450	627	630	564	613	616	428	461	469	

Nominal Capacities based on:

M/T: 46°C condensing temperature, -4°C evaporating temperature and 5k subcooling at the inlet of the expansion valve. 70% nominal capacity.
 L/T: 42°C condensing temperature, -23.3°C evaporating temperature and 5k subcooling at the inlet of the expansion valve. 70% nominal capacity.
 A/C: 46°C condensing temperature, 7°C evaporating temperature and 1k subcooling at the inlet of the expansion valve. 70% nominal capacity.

Accessories



Cat. No.	Part No.	Description
2712889	E2VSTAS230	Carel E2V-Z Stator with Superseal Connector
2712890	E2BR00SM10	Carel E2V-Z 5/8" Brass Body
3430150	E2BR00WF10	Carel E2V-Z 1/2" Brass Body
2712892	E2VATT03Z0	Carel E2V-Z Size 03 Cartridge
2712893	E2VATT05Z0	Carel E2V-Z Size 05 Cartridge
3430151	E2VATT09Z0	Carel E2V-Z Size 09 Cartridge
2712895	E2VATT11Z0	Carel E2V-Z Size 11 Cartridge
2712896	E2VATT14Z0	Carel E2V-Z Size 14 Cartridge
2712897	E2VATT18Z0	Carel E2V-Z Size 18 Cartridge
2712898	E2VATT24Z0	Carel E2V-Z Size 24 Cartridge
2712889	E2VATT30Z0	Carel E2V-Z Size 30 Cartridge
2712900	E2VATT35Z0	Carel E2V-Z Size 35 Cartridge
2712901	E2VOR10100	Carel Filter/strainer for E2V Z 10 x pk
2712901	E2VFIL0400	Carel Teflon Seal/O-rings for E2V-Z 10 x pk

Electronic Expansion Valves



Carel

The EVD Evolution Series of controllers for electronic valves is the latest step in the development of the famous Carel drivers for superheat control. This instrument adds advanced functions and a new user interface that makes it even easier to use and configure. The TWIN version can independently control two electronic expansion valves, and represents the ideal solution for two circuit units or different control functions (i.e. superheat and hot gas bypass).

The powersolution panels are prewired for a plug and play and fast installation in the field.

Powersolution Panels



Cat. No.	Part No.	Description
2707315	EDVFN01007	EEV Driver Panel Kit Without Ultracap (Kit contains all sensors and cables as well)
2707316	EDVFN01008	EEV Driver Panel Kit With Ultracap (Kit contains all sensors and cables as well)
2707317	EDVFN02008	EEV Twin Driver Panel Kit With Ultracap (Kit contains all sensors and cables as well)

Driver Kits



Cat. No.	Part No.	Description	Kit Contents
2707313	EVD00N3E5K	Driver Kit Carel Valve	E2VCABS600 EVD0000E50 SPKT0013R0 SPKC005310 NTC060HF01
2707314	EVD00N3E2K	Driver Kit Universal Valve	E2VCABS60 EVD0000E20 SPKT0013R0 SPKC005310 NTC060HF01

Note:

The 0-5Vdc ratio-metric pressure transmitter included in the kit can be extended to a maximum distance of 10 meters. For distances up to 30 meters, a 4-20mA transmitter should be used instead.

Drivers



Cat. No.	Part No.	Description	
2707308	EVD0000E50	Expansion Valve Driver EVO	Carel Valves
2707310	EVD0000E20	Expansion Valve Driver EVO	Universal Valve Types
2707309	EVD0000T50	Twin Expansion Valve Driver EVO	Carel Valves
2707311	EVDIS00EN0	Removable Plug In Display for EVO	

Accessories



Cat. No.	Part No.	Description
2707297	E2VCABS600	Connector Cable 6m Shielded
2707298	EEVMAG000	EEV Manual Driving Tool Set of 3
2707853	NTC030HF03	Temperature Sensor – Clamp On
2707832	SPKT0013R3	Pressure Transducer – 100kPa to 930kPa
2707748	SPKC002313	Pressure Transducer Cable IP65
2707734	TX60	Transformer 240V-24V AC 60VA
2707312	EVD0000UC0	Ultracap module: power fail backup device for EVD Evolution
3413033	E2VMAG0000	EEV Manual Driving Tool E2V only
3402026	E2VCABS300	EEV Connector 3m shld cable
3430151	E2VATT09Z0	E2V-Z Cartridge Size 09 E2VATT09Z0
3402006	E3VSTA0201	Spare Coil for E3V Type BCSH
2712888	E2VCABS610	Electric Expansion Valve Connector Cable 6M E2VCABS610

Typical ordering package for expansion valve operation (1 of each):

- Electronic Valve • Valve Driver • Transformer • Connector Cable • Pressure Transducer • Transducer Cable
- Temperature Sensor

EVDIS00EN0 removable display is used for commissioning and programming.

Electronic Expansion Valves



Danfoss

AKV 10P and AKV 10PS Series

AKV10P (direct-operated) and AKV10PS (servo-operated) are electronically operated expansion valves designed for refrigeration applications. Normally closed design provides solenoid tight closing function. AKV valves are usually controlled by Danfoss range of ADAP- KOOL controllers which ensure precise liquid injection into evaporators. Valves are supplied less coil, which must be ordered separately.

Features

- Supports variety of refrigerants: CO2, HC, HFC, HFO
- Evaporating temperature range from -60 to +60 C
- Superior valve technology that provides soft pulse operation
- Interchangeable/replaceable orifice design
- Fully serviceable valve with spare parts program



Cat. No.	Part No.	Valve Type	Connection Size Solder ODF/ODF	Minimum Pressure Drop bar	Max Working Pressure bar	MOPD*:bar	kVs Value
3402015	068F4044	AKV 10PS4	3/8" x 1/2"	0.1	90	35	0.046
3402016	068F4045	AKV 10PS5	3/8" x 1/2"	0.1	90	35	0.064
3402017	068F4046	AKV 10PS6	3/8" x 1/2"	0.1	90	35	0.114
3402018	068F4047	AKV 10PS7	1/2" x 5/8"	0.1	90	35	0.185
3402007	068F5210	AKV 10P0	3/8" x 1/2"	0	90	35	0.003
3402008	068F5211	AKV 10P1	3/8" x 1/2"	0	90	35	0.009
3402009	068F5212	AKV 10P2	3/8" x 1/2"	0	90	35	0.016
3402010	068F5213	AKV 10P3	3/8" x 1/2"	0	90	35	0.024
3402011	068F5214	AKV 10P4	3/8" x 1/2"	0	90	35	0.046
3402012	068F5215	AKV 10P5	3/8" x 1/2"	0	90	35	0.064
3402013	068F5216	AKV 10P6	3/8" x 1/2"	0	90	35	0.114
3402014	068F5217	AKV 10P7	1/2" x 5/8"	0	90	18	0.185

- *Check the datasheet for Maximum operating Pressure Difference (MOPD) values specific for the chosen coil.
- The most used 230 VAC coil used with AKV 10P(S) valves is BE230CS with ordering number 018F6732.
- For coils with other supply voltages refer to the datasheet.

Evaporator Pressure Regulators



Sporlan

ORIT and SORIT Series – Evaporator Pressure Regulating Valves

Sporlan type EPR valves are designed to provide an accurate and economical means of balancing system capacity and load requirements during low loads and/or while maintaining different evaporator conditions on multi temperature evaporator systems. These valves control evaporator temperature by maintaining evaporator pressure.

Applications

- Commercial Refrigeration



Cat. No.	Part No	Description	Port Size	Connections	MRP (Max Rated Pressure)	Adjustment Range	Coil Required
2704617	901096P	EPR ORIT-6-0/50- $\frac{5}{8}$ ODF	$\frac{3}{4}$ "	$\frac{5}{8}$ Solder	450 psi	0 to 50 psig	N/A
2704618	901101P	EPR ORIT-6-30/100- $\frac{1}{2}$ ODF	$\frac{3}{4}$ "	$\frac{1}{2}$ Solder	450 psi	30 to 100 psig	N/A
2704619	901103P	Sporlan EPR ORIT-6 0/50 $\frac{7}{8}$ ODF WS	$\frac{3}{4}$ "	$\frac{7}{8}$ Solder	450 psi	0 to 50 psig	N/A
2704620	901117P	EPR ORIT-6-0/50- $\frac{1}{2}$ SAE	$\frac{3}{4}$ "	$\frac{1}{2}$ Flare	450 psi	0 to 50 psig	N/A
2704624	901194P	EPR ORIT-6-30/100- $\frac{1}{2}$ SAE	$\frac{3}{4}$ "	$\frac{1}{2}$ Flare	450 psi	30 to 100 psig	N/A
2704621	901131P	EPR ORIT-10-0/50- $\frac{7}{8}$ ODF WS	$1\frac{1}{4}$ "	$\frac{7}{8}$ Solder	450 psi	0 to 50 psig	N/A
2704622	901138P	EPR ORIT-10 0/50 9 ($1\frac{1}{8}$) ODF WS	$1\frac{1}{4}$ "	$1\frac{1}{8}$ Solder	450 psi	0 to 50 psig	N/A
2704623	901166P	EPR ORIT-10 0/50 11 ODF WS	$1\frac{1}{4}$ "	$1\frac{3}{8}$ Solder	450 psi	0 to 50 psig	N/A
2704625	901208P	EPR ORIT-10-30/100 $\frac{7}{8}$ ODF	$1\frac{1}{4}$ "	$\frac{7}{8}$ Solder	450 psi	30 to 100 psig	N/A
2704626	901590P	EPR ORIT-12-0/100 $1\frac{1}{8}$ ODF	$2\frac{5}{32}$ "	$1\frac{1}{8}$ Solder	450 psi	0 to 100 psig	N/A
2704627	901611P	EPR SORIT-12-0/100 $1\frac{1}{8}$ ODF	$2\frac{5}{32}$ "	$1\frac{1}{8}$ Solder	450 psi	0 to 100 psig	MKC1E
2704628	901618P	EPR ORIT-15-0/100 $1\frac{3}{8}$ ODF LESS	1"	$1\frac{3}{8}$ Solder	450 psi	0 to 100 psig	MKC1E
2704629	901625P	EPR SORIT-20-0/100 $1\frac{5}{8}$ ODF	$1\frac{5}{16}$ "	$1\frac{5}{8}$ Solder	450 psi	0 to 100 psig	MKC1E

CDS Series – Electronic Stepper Motor Control Valve for the Suction Line

Whilst traditionally developed as Electronic Evaporator Pressure Regulating Valves, the CDS series of valves can be applied as Heat Reclaim, Head Pressure Control or Liquid Line Differential Valves. The CDS valves are designed to contribute minimal pressure drop to a system via electronically controlled step motors. Precise control, balanced port construction and low power consumption are just some of the many features of this versatile valve.



Cat. No.	Part No	Description	Connections	Cable Length	MRP (Max Rated Pressure)	Supply Voltage	Max Power
2704630	940033P	CDS-9 $\frac{7}{8}$ ODF 10'-S	$\frac{7}{8}$ Solder	10 ft	700 psi	12VDC	3W
2704631	940034P	CDS-9 $1\frac{1}{8}$ ODF 10'-S	$1\frac{1}{8}$ Solder	10 ft	700 psi	12VDC	3W
2704632	940039P	CDS-17 $1\frac{3}{8}$ ODF 10'-S	$1\frac{3}{8}$ Solder	10 ft	700 psi	12VDC	3W

Evaporator Pressure Regulators



Sporlan

3-Way Heat Reclaim Valves

Sporlan type 3-Way Heat Reclaim valves are designed to divert heat normally rejected at the condenser to an air handler in an area that requires heat. Today more and more applications are utilizing “heat reclaim” as a means of providing a supplementary or even a primary heat source. Heat reclaim can significantly lower energy costs. The energy efficiency of recovered heat will almost always be more efficient than any other purchased heat source.

Applications

- Air Conditioning
- Commercial Refrigeration



Cat. No.	Part No	Description	Port Size	Connections	MRP (Max Rated Pressure)	Coil Required
2704636	377100P	3-Way Heat Reclaim Valve 8D7B	3/4"	7/8 Solder	450 psi	MKC1E
2704637	377300P	3-Way Heat Reclaim Valve 8D9B	3/4"	1 1/8 Solder	450 psi	MKC1E
2704638	378000P	3-Way Heat Reclaim Valve 12D11B	1 1/4"	1 3/8 Solder	450 psi	MKC1E
2704639	378100P	Split Condenser Valve 12D11B-SC	1 1/4"	1 3/8 Solder	450 psi	MKC1E
2704640	378300P	3-Way Heat Reclaim Valve 12D13B	1 1/4"	1 5/8 Solder	450 psi	MKC1E
2704641	378400P	Split Condenser Valve 12D13B-SC	1 1/4"	1 5/8 Solder	450 psi	MKC1E
2704642	379000P	Split Condenser Valve 16D17B-SC	2"	2 1/8 Solder	450 psi	MKC1E
2704643	379200P	3-Way Heat Reclaim Valve 16D17B	2"	2 1/8 Solder	450 psi	MKC1E



Cat. No.	Part No	Description	Voltage
2704634	310675P	Solenoid Coil MKC-2E 24V/50-60C	24V
2704635	310679P	Solenoid Coil MKC-1E 220-240/50	220-240V
2711334	310681P	Solenoid Coil MKC-2E 220-240V/50C	220-240V

Evaporator Pressure Regulators



Emerson

PRE Series



Cat. No.	Model No.	Part No.	Connection ODF	Press. Range kPa	Factory Setting kPa	Press. Change Per Turn kPa	Nominal Capacity kW			
							R134a	R22	R404A R507	R407C
2711105	PRE-11A	ERJY5QALG1	5/8"	50 to 690	200	60	3.0	4.8	4.5	4.5
2711106	PRE-11B	ERJY7QALG1	7/8"	50 to 690	200	60	3.0	4.8	4.5	4.5
2711107	PRE-21D	ERJY9QALG1	1 1/8"	50 to 690	200	40	7.4	11.9	11.1	11.1

Nominal Capacities based on:

-10°C suction temperature, 25°C condensing temperature, 20kPa Pressure drop in regulator.



Danfoss

KVP Series



Cat. No.	Model No.	Part No.	Connection		Nominal Capacity kW					
			Flare	ODF	R22	R134a	R404A R507	R407C	R448A	R449A
2704814	KVP12	034L0021	1/2"		4.0	2.8	3.6	3.7	4.5	4.4
2704815	KVP15	034L0022	5/8"		4.0	2.8	3.6	3.7	4.5	4.4
2704816	KVP12	034L0023		1/2"	4.0	2.8	3.6	3.7	4.5	4.4
2704817	KVP15	034L0029		5/8"	4.0	2.8	3.6	3.7	4.5	4.4
2704818	KVP22	034L0025		7/8"	4.0	2.8	3.6	3.7	4.5	4.4
2704819	KVP28	034L0026		1 1/8"	8.6	6.1	7.7	7.9	9.0	8.8
2704820	KVP35	034L0032		1 3/8"	8.6	6.1	7.7	7.9	9.0	8.8

Nominal Capacities based on:

-10°C suction temperature, 25°C condensing temperature, 20kPa Pressure drop in regulator.

Crankcase Pressure Regulators



Emerson

PRC Series

PRC Crankcase Pressure Regulators accurately maintain a predetermined maximum outlet pressure.



Cat. No.	Model No.	Part No.	Connection ODF	Press. Range kPa	Factory Setting kPa	Press. Change Per Turn kPa	Nominal Capacity kW			
							R134a	R22	R404A R507	R407C
2711096	PRC-11A	SRJY5QALG1	5/8"	50 to 690	200	60	3.0	4.8	4.5	4.5
2711102	PRC-11B	SRJY7QALG1	7/8"	50 to 690	200	60	3.0	4.8	4.5	4.5
2711103	PRC-21D	SRJY9QALG1	1 1/8"	50 to 690	200	40	7.4	11.9	11.1	11.1
2711104	PRC-21E	SRJY11QALG1	1 3/8"	50 to 690	200	40	7.4	11.9	11.1	11.1



Danfoss

KVL Series

Specifications

- Refrigerants CFC, HCFC, HFC
- Regulating range 20 to 600 kPa
- Factory setting 200 kPa
- Maximum working pressure 1800 kPa
- Temperature of medium -60°C to 130°C



Cat. No.	Model No.	Part No.	Connection		Nominal Capacity kW					
			Flare	ODF	R22	R134a	R404A R507	R407C	R448A	R449A
2706457	KVL12	034L0041	1/2"		7.1	5.3	6.3	6.5	7.3	7.2
2704822	KVL15	034L0042	5/8"		7.1	5.3	6.3	6.5	7.3	7.2
2704823	KVL12	034L0043		1/2"	7.1	5.3	6.3	6.5	7.3	7.2
2704824	KVL15	034L0049		5/8"	7.1	5.3	6.3	6.5	7.3	7.2
2704825	KVL22	034L0045		7/8"	7.1	5.3	6.3	6.5	7.3	7.2
2704826	KVL28	034L0046		1 1/8"	17.8	13.2	15.9	16.4	19.5	19.3
2704827	KVL35	034L0052		1 3/8"	17.8	13.2	15.9	16.4	19.5	19.3

Nominal Capacities based on:

-10°C suction temperature, 25°C condensing temperature, 20kPa Pressure drop in regulator.



Castel



Cat. No.	Part No.	Pressure Range	Maximum Working Pressure	Factory Setting	Connection Size (ODF Solder)
8002852	3320/11S	0.2 to 6bar	2800kPa	2 bar	1 3/8"
8002848	3320/4S	0.2 to 6bar	2800kPa	2 bar	1/2"
8002849	3320/5S	0.2 to 6bar	2800kPa	2 bar	5/8"
8002850	3320/7S	0.2 to 6bar	2800kPa	2 bar	7/8"
8002851	3320/9S	0.2 to 6bar	2800kPa	2 bar	1 1/8"

Solenoid Valves



Emerson

M36 Series

The M36 Series are 3 way solenoid valves, typically used for heat reclaim applications.

Features

- Compact size
- Maximum working pressure 3500kPa
- Pilot connection to suction line required, no minimum pressure drop
- No disassembly necessary for brazing
- Uses standard ASC solenoid coils



Cat. No.	Model No.	Part No.	Connection ODF	Nominal Capacity kW					
				R134a	R22	R404A R507	R448A	R449A	R452A
2711309	M36-118	801421	1 1/8"	28.9	35.1	31.3	31.3	31.3	31.3

Note: Valves are supplied less coil (240V coil to suit: Cat. No. 2711311 & J/Box Cat. No. 2711275).

Nominal Capacities based on: 4°C evaporating temperature, 38°C condensing temperature, 15kPa pressure drop between valve inlet and outlet.

200RB Series (Less Coil)

Normally Closed Pilot-Operated – For Liquid and Discharge or Suction Gas Service.

Features

- Extended Copper Tails for easy installation
- One coil fits all valve sizes
- Maximum working pressure 3450 kPa
- Low pressure differential required for full opening
- Maximum fluid temperature 121°C



Cat. No.	Part No.	Connection ODF	Port Size mm	Nominal Liquid Capacity kW										Opening Diff. Pressure kPa Min.
				Pressure Drop Across Valve kPa										
				R134a		R22		R404A R507		R448A		R449A		
				13.8	27.6	13.8	27.6	13.8	27.6	13.8	27.6	13.8	27.6	
2711327	200RB4T3T	3/8"	6	21.1	29.86	22.82	27.96	14.7	20.82	22.92	32.41	22.92	32.41	Min 14 Max. 2070
2711328	200RB4T4T	1/2"	6	21.1	30.88	22.82	27.96	14.7	20.82	22.92	32.41	22.92	32.41	Min 14 Max. 2070
2711330	200RB7T5T	5/8"	11	44.59	64.68	47.48	65.94	31.86	45.05	49.01	69.31	49.01	69.31	Min 14 Max. 2070

240RA Series (Less Coil and Manual Stem)

Normally Closed Diaphragm Type – For Liquid and Discharge or Suction Gas Service.

Features

- Extended Copper Tails for easy installation
- Stainless enclosing tube
- Maximum fluid temperature 121°C
- Reinforced teflon diaphragm with woven fiberglass
- Low pressure differential required for full opening
- Maximum working pressure 3450 kPa



Cat. No.	Part No.	Connection ODF	Port Size mm	Nominal Liquid Capacity kW				
				R22	R134a	R404A R507	R448A	R449A
2711302	240RA-16T9-T	1 1/8"	25	172	162.7	113.2	162.7	162.7

Solenoid Coils



Cat. No.	Part No.	Model No.	Connection	Power Supply	Hertz
3408002	801033	ESC-24VAC COIL	DIN	24 VAC	50/60
3408003	801030	ESC-24VDC COIL	DIN	24 VDC	50/60
3408004	801031	ESC-230VAC COIL	DIN	230 VAC	50/60

Solenoid Valves



Emerson

200RE Series (Less Coil)

Normally Closed Pilot-Operated – For Liquid and Discharge or Suction Gas Service.



Features

- Extended Copper Tails for easy installation
- Maximum working pressure 4690 kPa
- Maximum fluid temperature +121°C
- IP67 rating coil compatible (200RE coils)
- Maximum opening pressure differential 3690 kPa

Cat. No.	Part No.	Model No.	Connection ODF	Port Size mm	Nominal Liquid Capacity kW									
					Pressure Drop Across Valve kPa									
					R134a		R22		R404A, R507		R410A		R448A, R449A	
					13.8	27.6	13.8	27.6	13.8	27.6	13.8	27.6	13.8	27.6
3408051	067135	200RE2T2	1/4" ODF	3	9.57	13.54	10.34	14.63	6.68	9.43	9.71	13.72	10.38	14.68
3408052	067136	200RE2T3	3/8" ODF	3	9.57	13.54	10.34	14.63	6.68	9.43	9.71	13.72	10.38	14.68
3408053	067137	200RE3T3	3/8" ODF	5	12.73	18.01	13.79	19.48	8.86	12.56	12.91	18.25	13.84	19.57
3408054	067139	200RE3T4	1/2" ODF	5	12.73	18.01	13.79	19.48	8.86	12.56	12.91	18.25	13.84	19.57
3408055	067138	200RE4T3	3/8" ODF	6	21.1	29.86	22.82	32.29	14.7	20.82	21.42	30.28	22.92	32.41
3408056	067140	200RE4T4	1/2" ODF	6	21.1	29.86	22.82	32.29	14.7	20.82	21.42	30.28	22.92	32.41
3408057	067141	200RE4T5	5/8" ODF	6	21.1	29.86	22.82	32.29	14.7	20.82	21.42	30.28	22.92	32.41
3408058	067142	200RE5T4	1/2" ODF	8	21.84	30.88	23.6	33.38	15.23	21.52	22.12	31.3	23.7	33.51
3408059	067144	200RE5T5	5/8" ODF	8	21.84	30.88	23.6	33.38	15.23	21.52	22.12	31.3	23.7	33.51
3408060	067143	200RE6T4	1/2" ODF	9.5	25.18	35.63	27.22	38.51	17.55	24.83	25.53	36.12	27.33	38.65
3408061	067145	200RE6T5	5/8" ODF	9.5	25.18	35.63	27.22	38.51	17.55	24.83	25.53	36.12	27.33	38.65

Nominal capacities based at 37.8°C condensing temperature, 4.4°C evaporating temperature per ARI standard 760. All ratings are based on largest connection size.

IP67 Coil Kits (for 200RE Solenoid Valves)

Cat. No.	Part No.	Description
3408062	098036	200RE-C230 Coil Kit, 220-230 VAC-50/60Hz IP67 Kit
3408063	098038	200RE-C024 Coil Kit, 24 VAC-50/60Hz IP67 Kit

Solenoid Valves



Castel

102, 103, 104, 105, 107 and 109 Series

For Fluorinated Refrigerants



Cat. No.	Part No.	Connection	240V Coil Included	Port Diam. mm	Opening Differential Pressure kPa		Fluid Temp. °C	Max Work Press kPa	Kv** Factor m³/hr
					Min.	Max. MOPD			
Normally Closed – Direct Operated – for Liquid and Hot Gas									
2711226	1020/2A7	¼" Flare	Y	2.5	0	2100	-35 to 110	4500	0.175
2711228	1028/2A7	¼" ODS	Y	2.2	0	2100	-35 to 110	4500	0.15
Normally Closed – Servo Operated – for Liquid, Suction and Hot Gas									
2711230	1064/3A7	⅜" Flare	Y	6.5	5	2100	-35 to 110	4500	0.8
2711235	1068/3A7	⅜" ODS	Y	6.5	5	2100	-35 to 110	4500	0.8
2711231	1070/4A7	½" Flare	Y	12.5	5	2100	-35 to 110	4500	2.2
2711262	1078/4A7	½" ODS	Y	12.5	5	2100	-35 to 110	4500	2.2
2711233	1070/5A7	⅝" Flare	Y	12.5	5	2100	-35 to 110	4500	2.61
2711263	1078/5A7	⅝" ODS	Y	12.5	5	2100	-35 to 110	4500	2.61
2711265	1090/6A7	¾" Flare	Y	16.5	5	2100	-35 to 110	4500	4.8
2711268	1098/6A7	¾" ODS	Y	16.5	5	2100	-35 to 110	4500	4.8
2711267	1098/7A7	7⁄8" ODS	Y	16.5	5	2100	-35 to 110	4500	5.7
2711277	1099/9A7	1½" ODS	Y	16.5	5	2100	-35 to 110	4500	5.7
2711278	1078/11A7	1⅝" ODS	Y	27	10	2100	-35 to 110	4500	16
2711279	1079/13A7	1⅝" ODS	Y	27	10	2100	-35 to 110	4500	16
2711280	1079/17A7	2⅛" ODS	Y	34	15	2100	-35 to 110	4500	25

A coil junction box is required – Cat. No.2711275 All Castel solenoid valves are supplied with a mounting bracket.

1132 Series

For Water, Air, Light Oils and Brine (glycol-water solution)



Cat. No.	Part No.	Connection FPT	240V Coil Included	Port Diam mm	Opening Differential Pressure kPa		Fluid Temp. °C	Max. Work Press kPa	Kv** Factor m³/hr
					Min.	Max. (MOPD)			
Normally Closed – Servo Operated									
2711216	1132/03	⅜"	Y	12	15	2500	-15 to 130	3000	2.6
2711218	1132/04	½"	Y	12	15	2500	-15 to 130	3000	2.7
2711220	1132/06	¾"	Y	20	15	1200	-15 to 130	1500	5.5
2711224	1132/08	1"	Y	20	15	1200	-15 to 130	1500	6

A coil junction box is required – Cat. No.2711275. All Castel solenoid valves are supplied with a mounting bracket. When the valve is used with oils, the viscosity of the oil must be checked to ensure that the valve will 'Open'. **Kv Factor: Capacity of valve in m³/hr of water at 100 kPa pressure drop across valve.

Solenoid Coils



Cat. No.	Part No.	Power Supply	Suits Model
2711271	9120/RD1	12V DC	1020, 1028, 1068, 1068, 1070, 1078, 1132, 1099, 1079
2712808	9300/RA7	240V	1020, 1028, 1068, 1070, 1078, 1132, 1099, 1079
2711272	9300/RA2	24V	1020, 1028, 1068, 1068, 1070, 1078, 1132, 1099, 1079
2711273	9120/RD2	24V DC	1020, 1028, 1068, 1068, 1070, 1078, 1132, 1099, 1079
2711275	9150/R02	Junction Box	1020, 1028, 1068, 1068, 1070, 1078, 1132, 1099, 1079

Solenoid Valves



Danfoss

EVR Series V2

EVR are direct and servo operated solenoid valves for liquid, suction, and hot gas lines with fluorinated refrigerants. Valves are supplied less coil, which must be ordered separately.

Features

- Wide choice of coils for AC and DC
- Suitable for most of refrigerants including HCs
- Designed for media temp. from -40 °C to 105°C
- Maximum working pressure 45.2 bar



Cat. No.	Model No.	Part No.	Connections		Coil Type	Manual Op.	Opening Differential Pressure With Standard Coil bar			kV Value m ³ /hr
			Size	Type			Min.	Max. (= MOPD) liquid		
								10W AC	20W DC	
	EVR2	032F8056	1/4"	MF	AC	N	0.0	38	33	0.15
	EVR2	032F1201	1/4"	ODF	AC	N	0.0	38	33	0.15
2704789	EVR3	032F8107	1/4"	MF	AC/DC	N	0.0	38	18	0.26
2704796	EVR3	032F1206	1/4"	ODF	AC/DC	N	0.0	38	18	0.26
	EVR3	032F8116	3/8"	MF	AC/DC	N	0.0	38	18	0.26
2706566	EVR3	032F1204	3/8"	ODF	AC/DC	N	0.0	38	18	0.26
2704791	EVR6	032L8072	3/8"	MF	AC/DC	N	0.03	38	28	1.0
2704798	EVR6	032L1212	3/8"	ODF	AC/DC	N	0.03	38	28	1.0
	EVR6	032L8079	1/2"	MF	AC/DC	N	0.03	38	28	1.0
2706567	EVR6	032L1209	1/2"	ODF	AC/DC	N	0.03	38	28	1.0
2704793	EVR10	032L8095	1/2"	MF	AC/DC	N	0.03	38	20	2.2
2704800	EVR10	032L1217	1/2"	ODF	AC/DC	N	0.03	38	20	2.2
	EVR10	032L8098	5/8"	MF	AC/DC	N	0.03	38	20	2.2
2704801	EVR10	032L1214	5/8"	ODF	AC/DC	N	0.03	38	20	2.2
2704795	EVR15	032L8101	5/8"	MF	AC/DC	N	0.03	38	20	3.3
2704802	EVR15	032L1228	5/8"	ODF	AC/DC	N	0.03	38	20	3.3
	EVR15	032L8100	5/8"	MF	AC/DC	Y	0.03	38	20	3.3
	EVR15	032L1227	5/8"	ODF	AC/DC	Y	0.03	38	20	3.3
2704803	EVR15	032L1225	7/8"	ODF	AC/DC	N	0.03	38	20	3.3
2706568	EVR20	032L1240	7/8"	ODF	AC	N	0.03	38	NA	6.0
	EVR20	032L1254	7/8"	ODF	AC	Y	0.03	38	NA	6.0
	EVR20	032L1264	7/8"	ODF	DC	N	0.03	NA	20	6.0
	EVR20	032L1274	7/8"	ODF	DC	Y	0.03	NA	20	6.0
	EVR20	032L1244	1 1/8"	ODF	AC	N	0.03	38	NA	6.0
	EVR22	032L3267	1 3/8"	ODF	AC	N	0.03	38	NA	6.2
2706569	EVR25	032L2201	1 1/8"	ODF	AC/DC	N	0.2	38	17	9.8
	EVR25	032L2200	1 1/8"	ODF	AC/DC	Y	0.2	38	17	9.8
	EVR25	032L2208	1 3/8"	ODF	AC/DC	N	0.2	38	17	9.8
	EVR25	032L2207	1 3/8"	ODF	AC/DC	Y	0.2	38	17	9.8
	EVR32	032L1106	1 3/8"	ODF	AC/DC	N	0.2	38	17	16.7
	EVR32	032L1105	1 3/8"	ODF	AC/DC	Y	0.2	38	17	16.7
	EVR32	032L1104	1 5/8"	ODF	AC/DC	N	0.2	38	17	16.7
	EVR32	032L1103	1 5/8"	ODF	AC/DC	Y	0.2	38	17	16.7
	EVR40	032L1110	1 5/8"	ODF	AC/DC	N	0.2	38	17	24.2
	EVR40	032L1109	1 5/8"	ODF	AC/DC	Y	0.2	38	17	24.2
	EVR40	032L1112	2 1/8"	ODF	AC/DC	N	0.2	38	17	24.2
	EVR40	032L1111	2 1/8"	ODF	AC/DC	Y	0.2	38	17	24.2

1) The kV is the water flow in m³/h at a pressure drop across valve of 100kPa.
 2) MOPD for media in gas form is approx. 100kPa greater.
 3) Min. diff. pressure 7kPa is needed to stay open.

Solenoid Valves



Danfoss

Solenoid Coils

Alternating Current – AC



Cat. No.	Part No.	Coil Type	Voltage V	Frequency Hz	Watts	Connection	Applications
2704806	018F6707	BE024AS	24	50	10	Terminal Box IP67	EVR2 to 40 (NC) EVR6 to 22 (NO) EVRH4 to 40 EVRC EVRA EVRAT EVRS/EVRST EVM (NC)
2706564	018F6711	BE115AS	115	50	10	Terminal Box IP67	EVR2 to 40 (NC) EVR6 to 22 (NO) EVRH4 to 40 EVRC EVRA EVRAT EVRS/EVRST EVM (NC)
2704804	018F6702	BE240AS	240	50	10	Terminal Box IP67	EVR2 to 40 (NC) EVR6 to 22 (NO) EVRH4 to 40 EVRC EVRA EVRAT EVRS/EVRST EVM (NC)
2706563	018F6704	BE440AS	420	50	10	Terminal Box IP67	EVR2 to 40 (NC) EVR6 to 22 (NO) EVRH4 to 40 EVRC EVRA EVRAT EVRS/EVRST EVM (NC)
2706565	018F6730	BE110CS	110	50/60	10	Terminal Box IP67	EVR2 to 40 (NC) EVR6 to 22 (NO) EVRH4 to 40 EVRC EVRA EVRAT EVRS/EVRST EVM (NC)
2704805	018F6252	BF240AS	240	50	10	1M 3 Core Cable IP67	EVR2 to 40 (NC) EVR6 to 22 (NO) EVRH4 to 40 EVRC EVRA EVRAT EVRS/EVRST EVM (NC)
3408047	018F6807	BG024AS	24	50	12	Terminal Box IP67	EVR3 to 40 EVRC, EVRA, EVRAT EVRS/EVRST EVM (NC/NO)
3408048	018F6802	BG240AS	240	50	12	Terminal Box IP67	EVR3 to 40 EVRC, EVRA, EVRAT EVRS/EVRST EVM (NC/NO)

*For power consumption values please refer to the data sheet

Direct Current – DC

Cat. No.	Part No.	Coil Type	Voltage V	Watts	Connection	Applications
2704808	018F6856	BG012DS	12	20	Terminal Box IP67	EVR 2 to 15 (NC) EVR25 to 40 (NC/NO), EVR6 to 15 (NO) EVRC10 to 15, EVRA3 to 15 (NC) EVRA25 to 40 (NC) EVRAT10 to 15 (NC), EVRS/EVRST3 to 15 PKVD EVM (NO/NC)
2704807	018F6857	BG024DS	24	20	Terminal Box IP67	EVR 2 to 15 (NC) EVR25 to 40 (NC/NO), EVR6 to 15 (NO) EVRC10 to 15, EVRA3 to 15 (NC) EVRA25 to 40 (NC) EVRAT10 to 15 (NC), EVRS/EVRST3 to 15 PKVD EVM (NO/NC)
2711151	018F6959	BN072DS	72	28	Terminal Box IP67	Compressor Unloading

Accessories



Cat. No.	Part No.	Description
3432017	042N0156	DIN PG11 plug

Solenoid Valves



Danfoss

EVRAT Series

EVRAT is a direct or servo operated solenoid valve for liquid, suction and hot gas lines with ammonia or fluorinated refrigerants.

Features

- Refrigerants: Applicable to HCFC, HFC and R717 (Ammonia)
- Temperature of medium -40 °C – +105 °C and Max. 130°C during defrosting
- EVRAT 10, 15 and 20 all have spindle for manual operation
- EVRAT is available as components, i.e. valve body, flanges and coil must be ordered separately.
- EVRAT is specially designed to open – and stay open – at a pressure drop of 0 bar



Cat. No.	Part No.	Valve Type	Conn. Size	kV Value	Max Work. Press bar	Opening Differential Pressure bar			
						Min.	Max. (10W AC Coil)	Max. (12W AC Coil)	Max. (20W AC Coil)
2712741	032F6214	EVRAT 10	Flange	1.5	42	0	14	21	16
2712742	032F6216	EVRAT 15	Flange	2.7	42	0	14	21	13
8601772	032F6219	EVRAT 20	Flange	4.5	42	0	14	21	13

EVUL Series

EVUL solenoid valves are designed to fit into compact refrigeration systems. Available in servo operated versions they can be applied in liquid, suction, and hot gas lines.

Features

- Compact and light weight
- Fully hermetic construction in stainless steel
- Laser welded bi-metal connections
- High MOPD capacity from 0.02 to 36 bar (522 psi)
- Suitable for most of refrigerants including R744 (CO2)
- Maximum working pressure 90 bar
- Universal application for – liquid, suction, and hot gas applications



Cat. No.	Part No.	Valve Type	Connection ODF	Coil Type	kV Value	Temp. Range °C	Max Work. Press bar	Minimum Opening Differential Pressure bar	Test Pressure bar
3432010	032F9510	EVUL 2	1/4"	AC/DC	0.3	-40 to 105	90	.002	90
3432011	032F9513	EVUL 5	3/8"	AC/DC	0.65	-40 to 105	90	.002	90
3432012	032F9514	EVUL 6	1/2"	AC/DC	0.75	-40 to 105	90	.002	90

Solenoid Valves



Danfoss

EVU Series

EVU solenoid valves are designed to fit into compact refrigeration systems. Available in direct and pilot operated versions, they can be applied in liquid, suction, and hot gas lines with fluorinated refrigerants.

Features

- Compact construction small dimensions, low weight for both valve and coil
- Maximum working pressure 70 bar
- Direct and servo operated mini piston compact solenoid valve
- Simple and fast mounting of coil clip-on/of
- High strength of joints and high vibration resistance
- Suitable for most of refrigerants including R744 (CO₂)



Cat. No.	Part No.	Valve Type	Conn. Solder ODF	Coil Type	kVs Value	Temp. Range °C	Max Work. Pressure bar	Minimum Opening Differential Pressure bar
3432007	032F9525	EVU 3	1/4"	AC/DC	0.3	-40 to 105	70	0.02
3432008	032F9526	EVU 5	3/8"	AC/DC	0.65	-40 to 105	70	0.02
3432009	032F9528	EVU 6	1/2"	AC/DC	0.8	-40 to 105	70	0.02

Coils to suit EVU and EVUL valves



Cat. No.	Part No.	Coil Type	Frequency Hz	Voltage VAC	Wattage W	EI Connection	Applications
3408049	042N7608	AS024CS	50	24	9.5	DIN Spades	EVU and EVUL valves
3408050	042N7601	AS230CS	50	230	8	DIN Spades	EVU and EVUL valves

Ball Valves



Emerson

BVSS – Ball Valves with Access Port

Features

- Hermetic design
- Copper connections
- Full flow design
- Bi-directional flow characteristics
- Brass valve stem cap
- Maximum working pressure: 4500 kPa



Cat. No.	Model No.	Part No.	Connection Size (Solder)	Overall Length mm
3426152	BVSS-014	081013	1/4"	112
3426153	BVSS-038	081014	3/8"	126
3426154	BVSS-012	081015	1/2"	127.5
3426155	BVSS-058	081016	5/8"	150
3426156	BVSS-034	081017	3/4"	164
3426157	BVSS-078	081018	7/8"	189.5
3426158	BVSS-118	081019	1 1/8"	209
3426159	BVSS-138	081020	1 3/8"	246
3426160	BVSS-158	081021	1 5/8"	279
3426161	BVSS-218	081022	2 1/8"	320
3426162	BVSS-258	081023	2 5/8"	377
3426163	BVSS-318	081024	3 1/8"	410

BVES Series – Ball Valves without Access Port

Features

- Hermetic design
- Copper connections
- Full flow design
- Bi-directional flow characteristics
- Brass valve stem cap
- Maximum working pressure: 4500 kPa



Cat. No.	Model No.	Part No.	Connection Size (Solder)	Overall Length mm
3426164	BVES-014	081001	1/4"	112
3426165	BVES-038	081002	3/8"	126
3426166	BVES-012	081003	1/2"	127.5
3426167	BVES-058	081004	5/8"	150
3426168	BVES-034	081005	3/4"	164
3426169	BVES-078	081006	7/8"	189.5
3426170	BVES-118	081007	1 1/8"	209
3426171	BVES-138	081008	1 3/8"	246
3426172	BVES-158	081009	1 5/8"	279
3426173	BVES-218	081010	2 1/8"	320
3426174	BVES-258	081011	2 5/8"	377
3426175	BVES-318	081012	3 1/8"	410



Castel

6590A Series – Ball Valves with Access Port



Cat. No.	Model No.	Connection Size (Solder)	Port Size mm	Overall Length mm
2712157	6570/3A	3/8"	10	121
2712158	6570/4A	1/2"	10	121
2712159	6570/5A	5/8"	15	138
2712160	6570/6A	3/4"	15	141
2712161	6570/7A	7/8"	19	175
2712162	6570/9A	1 1/8"	25	206
2712163	6570/11A	1 3/8"	32	262
2712164	6570/13A	1 5/8"	40	262
2712165	6570/17A	2 1/8"	50	303



Ball Valves



Danfoss

GBC Access Series – Ball Valves with Access Port



Cat. No.	Part No.	Model No.	Connection ODF
2706414	009L7050	GBC6S	1/4"
2706415	009L7051	GBC10S	3/8"
2706416	009L7052	GBC12S	1/2"
2706417	009L7053	GBC16S	5/8"
2706418	009L7054	GBC18S	3/4"
2706419	009L7055	GBC22S	7/8"
2706420	009L7056	GBC28S	1 1/8"
2706421	009L7057	GBC35S	1 3/8"
2706422	009L7058	GBC42S	1 5/8"
2706423	009L7059	GBC54S	2 1/8"
2706424	009L7066	GBC67S RP	2 5/8"

GBC Series – Ball Valves without Access Port



Cat. No.	Part No.	Model No.	Connection ODF
2706413	009L7020	GBC6S	1/4"
2706403	009L7021	GBC10S	3/8"
2706404	009L7022	GBC12S	1/2"
2706405	009L7023	GBC16S	5/8"
2706406	009L7024	GBC18S	3/4"
2706407	009L7025	GBC22S	7/8"
2706408	009L7026	GBC28S	1 1/8"
2706409	009L7027	GBC35S	1 3/8"
2706410	009L7028	GBC42S	1 5/8"
2706411	009L7029	GBC54S	2 1/8"
2706412	009L7036	GBC67S RP	2 5/8"

Hand Valves



Castel

6210 Series – 2 Way Line – Male Flare



Cat. No.	Model No.	Description	Connection	Max. Working Press kPa
2712113	6210/2	Flare Hand Shut Off Valve	1/4"	2800
2712114	6210/3	Flare Hand Shut Off Valve	3/8"	2800
2712115	6210/4	Flare Hand Shut Off Valve	1/2"	2800
2712116	6210/5	Flare Hand Shut Off Valve	5/8"	2800
2712117	6210/6	Flare Hand Shut Off Valve	3/4"	2800

6220 Series – 2 Way Line – Female Solder



Cat. No.	Model No.	Description	Connection	Max. Working Press kPa
2712118	6220/2	Solder Hand Shut Off Valve	1/4"	2800
2712119	6220/3	Solder Hand Shut Off Valve	3/8"	2800
2712120	6220/4	Solder Hand Shut Off Valve	1/2"	2800
2712121	6220/5	Solder Hand Shut Off Valve	5/8"	2800
2712122	6220/6	Solder Hand Shut Off Valve	3/4"	2800

Packed Cap Valves



Castel

6410 Series – 2 Way Line – Male Flare



Cat. No.	Model No.	Size:Flare	Max. Working Press kPa
2712128	6410/2	1/4"	4500
2712134	6410/3	3/8"	4500
2712135	6410/4	1/2"	4500
2712136	6410/5	5/8"	4500
2712137	6410/6	3/4"	4500

6420 Series – 2 Way Line – Female Solder



Cat. No.	Model No.	Size ODF Solder	Max. Working Press kPa
2712138	6420/2	1/4"	4500
2712139	6420/3	3/8"	4500
2712140	6420/4	1/2"	4500
2712141	6420/5	5/8"	4500
2712142	6420/6	3/4"	4500
2712143	6420/7	7/8"	4500

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Packed Cap Valves



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6512 Series – 2 Way Line – Backseating

Female Solder with 'T' Handle



Cat. No.	Model No.	Size ODF Solder	Max. Working Press kPa
2712167	6512/7	7/8"	4500
2712168	6512/9	1 1/8"	4500
2712169	6512/11	1 3/8"	4500
2712170	6512/13	1 5/8"	4500
2712171	6512/17	2 1/8"	4500

6532 Series – 2 Way Angle – Backseating

Female Solder with 'T' Handle



Cat. No.	Model No.	Size ODF Solder	Max. Working Press kPa
2712172	6532/9	1 1/8"	4500
2712174	6532/13	1 5/8"	4500

6110 Series – 2 Way Angle

Male Flare Side to Male Pipe Thread Bottom



Cat. No.	Part No.	Size		Max. Working Press kPa
		Flare	NPT*	
2712175	6110/22	1/4"	1/4"	4500
2712176	6110/23	1/4"	3/8"	4500
2712182	6110/32	3/8"	1/4"	4500
2712177	6110/33	3/8"	3/8"	4500
2712178	6110/43	1/2"	3/8"	4500
2712179	6110/44	1/2"	1/2"	4500
2712180	6110/54	5/8"	1/2"	4500
2712181	6110/66	3/4"	3/4"	4500
3426003	6110/X15	1/4"	1/4"	4500



Henry

2201 Series – 2 Way Angle

Male Flare Side to Male Pipe Thread Bottom



Cat. No.	Part No.	Size		Max. Working Press kPa
		Flare	NPT*	
2701345	2201-0404	1/4"	1/4"	4500
2701346	2201-0406	1/4"	3/8"	4500
2712154	2201-0408	1/4"	1/2"	4500
2701347	2201-0604	3/8"	1/4"	4500
2701348	2201-0606	3/8"	3/8"	4500
2705184	2201-0608	3/8"	1/2"	4500
2712155	2201-0806	1/2"	3/8"	4500
2705185	2201-0808	1/2"	1/2"	4500

Check Valves



Castel 3112 Series – Male Flare

Vertical Mounting preferred, with Arrow Upward



Cat. No.	Part No.	Size M. Flare	Kv Factor m ³ /hr	Pressure Diff kPa (2)	Fluid Temp. °C	Max Press. kPa
2708146	3112W/2	1/4"	0.5	4	-40 to 150	5000
2708147	3112W/3	3/8"	1.5	4	-40 to 150	5000
2708148	3112W/4	1/2"	1.8	4	-40 to 150	5000
2708150	3112W/6	3/4"	5	4	-40 to 150	5000

3132 Series – Female Solder – Extended Ends

Vertical Mounting preferred, with Arrow Upward



Cat. No.	Part No.	Size Solder	Kv Factor m ³ /hr	Pressure Diff kPa (2)	Fluid Temp. °C	Max Press. kPa
2708167	3132W/2	1/4"	0.5	4	-40 to 150	5000
2708168	3132W/3	3/8"	1.5	4	-40 to 150	5000
2708169	3132W/4	1/2"	1.8	4	-40 to 150	5000
2708170	3132W/5	5/8"	5	4	-40 to 150	5000

3120 Series – Female Solder

For Horizontal Mounting Only



Cat. No.	Part No.	Size Solder	Kv Factor m ³ /hr	Pressure Diff kPa (2)	Fluid Temp. °C	Max Pressure kPa
2708152	3124N/7	7/8"	8.1	4	-40 to 150	5000
2708153	3124N/9	1 1/8"	10.4	4	-40 to 150	5000
2708154	3124N/11	1 3/8"	15.6	4	-40 to 150	5000
2708165	3124N/13	1 5/8"	27	4	-40 to 150	5000
2708166	3124N/17	2 1/8"	39	4	-40 to 150	5000

(1) kv factor is the water flow in m³/hr at a pressure drop across the valve of 100 kPa.
 (2) PD = the minimum pressure difference at which the valve is completely open.



Danfoss NRV Series

Male Flare



Cat. No.	Model No.	Part No.	Size Male Flare	Version	Kv Factor m ³ /hr (1)	Pressure Diff. kPa (2)	Fluid Temp. °C	Max Press. kPa
2704770	NRV6	020-1040	1/4"	Straight	0.56	7	-50 to 140	4600
2704771	NRV10	020-1041	3/8"	Straight	1.43	7	-50 to 140	4600
2704772	NRV12	020-1042	1/2"	Straight	2.05	5	-50 to 140	4600
2704773	NRV16	020-1043	5/8"	Straight	3.6	5	-50 to 140	4600

Female Solder



Cat. No.	Model No.	Part No.	Size Solder	Version	Kv Factor m ³ /hr (1)	Pressure Diff. kPa (2)	Fluid Temp. °C	Max Press. kPa
2704775	NRV6S	020B1010	1/4"	Straight	0.56	7	-50 to 140	4600
2704776	NRV10S	020B1011	3/8"	Straight	1.43	7	-50 to 140	4600
2704777	NRV12S	020B1012	1/2"	Straight	2.05	5	-50 to 140	4600
2704778	NRV16S	020B1018	5/8"	Straight	3.6	5	-50 to 140	4600
2704780	NRV22S	020B1020	7/8"	Angle	8.5	4	-50 to 140	4600
2706527	NRV28S	020-1021	1 1/8"	Angle	19	4	-50 to 140	4600
2706529	NRV35S	020-1026	1 3/8"	Angle	29	4	-50 to 140	4600

(1) kv factor is the water flow in m³/hr at a pressure drop across the valve of 100 kPa.
 (2) PD = the minimum pressure difference at which the valve is completely open.

Liquid and Moisture Indicators



Castel

Male Flare



Cat. No.	Part No.	Description	Connections
2708096	3910-22	Male Flare Sight Glass	1/4"
2708097	3910-33	Male Flare Sight Glass	3/8"
2708098	3910-44	Male Flare Sight Glass	1/2"
2708099	3910-55	Male Flare Sight Glass	5/8"
2708100	3910-66	Male Flare Sight Glass	3/4"

Male x Female Flare



Cat. No.	Part No.	Description	Connections
2708101	3950-22	Male x Female Flare Sight Glass	1/4"
2708102	3950-33	Male x Female Flare Sight Glass	3/8"
2708103	3950-44	Male x Female Flare Sight Glass	1/2"
2708104	3950-55	Male x Female Flare Sight Glass	5/8"

Solder



Cat. No.	Part No.	Description	Connections ODF
2708106	3940-2	Solder Sight Glass	1/4"
2708107	3940-3	Solder Sight Glass	3/8"
2708108	3940-4	Solder Sight Glass	1/2"
2708109	3940-5	Solder Sight Glass	5/8"
2708110	3940-6	Solder Sight Glass	3/4"
2708111	3940-7	Solder Sight Glass	7/8"
2708112	3940-9	Solder Sight Glass	1 1/8"



Danfoss

Male Flare



Cat. No.	Part No.	Model No.	Description	Connections
2704754	014L0161	SGP6N	Male Flare Sight Glass	1/4"
2704755	014L0162	SGP10N	Male Flare Sight Glass	3/8"
2704756	014L0163	SGP12N	Male Flare Sight Glass	1/2"
2704757	014L0165	SGP16N	Male Flare Sight Glass	5/8"
2704758	014L0166	SGP19N	Male Flare Sight Glass	3/4"

Male x Female Flare



Cat. No.	Part No.	Model No.	Description	Connections
2704765	014L0171	SGP6N	Male x Female Flare Sight Glass	1/4"
2704766	014L0172	SGP10N	Male x Female Flare Sight Glass	3/8"
2704767	014L0173	SGP12N	Male x Female Flare Sight Glass	1/2"
2704768	014L0174	SGP16N	Male x Female Flare Sight Glass	5/8"
2704769	014L0175	SGP19N	Male x Female Flare Sight Glass	3/4"

Solder



Cat. No.	Part No.	Model No.	Description	Connections ODF
2704759	014L0181	SGP6SN	Solder Sight Glass	1/4"
2704760	014L0182	SGP10SN	Solder Sight Glass	3/8"
2704761	014L0183	SGP12SN	Solder Sight Glass	1/2"
2704762	014L0184	SGP16SN	Solder Sight Glass	5/8"
2704763	014L0185	SGP19SN	Solder Sight Glass	3/4"
2704764	014L0186	SGP22SN	Solder Sight Glass	7/8"



Liquid and Moisture Indicators



Emerson

Male Flare



Cat. No.	Part No.	Model No.	Description	Connections
2708117	65391	HMI-1-MM2	Male Flare Sight Glass	1/4"
2708118	65392	HMI-1-MM3	Male Flare Sight Glass	3/8"
2708119	65393	HMI-1-MM4	Male Flare Sight Glass	1/2"
2708120	65394	HMI-1-MM5	Male Flare Sight Glass	5/8"
2708121	65395	HMI-1-MM6	Male Flare Sight Glass	3/4"

Male x Female Flare

Cat. No.	Part No.	Model No.	Description	Connections
2708129	65396	HMI-1-FM2	Male x Female Flare Sight Glass	1/4"
2708130	65397	HMI-1-FM3	Male x Female Flare Sight Glass	3/8"
2708131	65398	HMI-1-FM4	Male x Female Flare Sight Glass	1/2"

Solder

Cat. No.	Part No.	Model No.	Description	Connections ODF
2708122	65405	HMI-1-TT2	Solder Sight Glass	1/4"
2708123	65406	HMI-1-TT3	Solder Sight Glass	3/8"
2708124	65407	HMI-1-TT4	Solder Sight Glass	1/2"
2708125	65408	HMI-1-TT5	Solder Sight Glass	5/8"
2708126	65409	HMI-1-TT6	Solder Sight Glass	3/4"
2708127	65410	HMI-1-TT7	Solder Sight Glass	7/8"
2708128	65411	HMI-1-TT9	Solder Sight Glass	1 1/8"

Rotalock Valves



Acpar

Rotalock Valves – including seal ring



Cat. No.	Part No.	Connections		Pack Qty
		Rotalock Ring	Tube Size Solder	
2712249	401-061220	3/4"	3/8"	1
2712250	401-081220	3/4"	1/2"	1
2712251	401-061620	1"	3/8"	1
2712252	401-081620	1"	1/2"	1
2712253	401-101620	1"	5/8"	1
2712254	401-102030	1 1/4"	5/8"	1
2712255	401-122030	1 1/4"	3/4"	1
2712256	401-142030	1 1/4"	7/8"	1
2712257	401-182030	1 1/4"	7/8"	1
2712258	401-142830	1 3/4"	1 1/8"	1

Cat. No.	Part No.	Connections			Pack Qty
		Rotalock Ring	Tube Size Flare	Tube Size Solder	
2712259	401-182835	1 3/4"		1 1/8"	1
2712260	401-222835	1 3/4"		1 3/8"	1
2712261	401-262835	1 3/4"		1 5/8"	1
2712262	401-263650	2 1/4"		1 5/8"	1
2712290	404-081620S	1"	1/2"		1
2712285	408-0812	3/4"		1/2"	1
2712286	408-1216	1"		3/4"	1
2712287	408-1420	1 1/4"		7/8"	1
2712288	408-1828	1 3/4"		1 1/8"	1
2712289	408-2236	2 1/4"		1 3/8"	1

*The Rotalock Ring size is determined by the thread size within the Rotalock nut.

Teflon Seal Rings

For Rotalock Valves



Cat. No.	Part No.	Description	Suits	Pack Qty
2712263	400-12	Rotalock Seal	3/4" RL	1
2712264	400-16	Rotalock Seal	1" RL	1
2712265	400-20	Rotalock Seal	1 1/4" RL	1
2712266	400-28	Rotalock Seal	1 3/4" RL	1
2712267	400-36	Rotalock Seal	2 1/4" RL	1
2712268	400-Multi Pack	Assorted Rotalock Seals	3/4"-2 1/4" RL	5

Rotalock Valve Caps



Cat. No.	Part No.	Description	Suits	Pack Qty
2712269	411-203035	Rotalock Valve Caps	20mm, 30mm & 35mm Rotalock Valve Bodies	3

Rotalock Valves



Acpar

Rotalock Straight Connector



Cat. No.	Part No.	Connections		Pack Qty
		Rotalock Ring	Tube Size Solder	
2712270	402-0612	3/4"	3/8"	1
2712271	402-0416	1"	1/4"	1
2712272	402-0816	1"	1/2"	1
2712273	402-1016	1"	5/8"	1
2712274	402-1420	1 1/4"	7/8"	1
2712275	402-1820	1 1/4"	1 1/8"	1
2712276	402-1828	1 3/4"	1 1/8"	1

Rotalock Elbow Connector



Cat. No.	Part No.	Connections		Pack Qty
		Rotalock Ring	Tube Size Solder	
2712277	403-0612	3/4"	3/8"	1
2712278	403-0816	1"	1/2"	1
2712279	403-1016	1"	5/8"	1
2712280	403-1216	1"	3/4"	1
2712281	403-1416	1"	7/8"	1
2712282	403-1420	1 1/4"	7/8"	1
2712283	403-1820	1 1/4"	1 1/8"	1
2712284	403-1828	1 3/4"	1 1/8"	1



Henry

Rotalock O-Ring



Cat. No.	Part No.	O-Ring Size
2703395	800-26XX-12	3/4"
2703396	800-26XX-16	1"
2703397	800-26XX-20	1 1/4"
2703398	800-26XX-28	1 3/4"
2703399	800-26XX-36	2 1/4"

Replaceable Filters-Drier Cores/Blocks



Emerson

Filter-Drier Blocks and Filter Cores

Emerson suction filter cores (F-48) and desiccant blocks (D-48, UK-48, W-48, H-100) fit most competitive shell type filter-driers. These filter-drier blocks protect the compressor from soluble and solid contaminants. To ensure efficient clean-up results, they feature exceptional acid and wax removal capacities, plus superior moisture pickup.

Features

- Highest water capacity rating on the market today, thus keeping flow rates up together with filtration and system capacity to its optimum
- Exceptional acid capacities for normal system protection or to effectively clean-up following a compressor burnout
- Wax removal capabilities, if desired, for low temperature applications, or for complete clean-up following a compressor burnout (W Series)
- UK-48 Special Features:
 - A balance of high water/acid capacity (75% molecular sieve/25% activated alumina) to keep HFC/POE systems at optimum conditions
 - Perfect for new refrigerants, POE oils and retrofit guidelines
 - Desiccant blend protects POE additives
 - 20 micron filtration reduces sludge caused by POE oils
 - Complies with Copeland's recommendations for filter-driers on POE/HFC systems



Cat. No.	Part No.	Description	Filter Area cm ²	Suits Nominal Shell Diam. mm
2708392	D-48	High Acid Removal	445	115
2708394	UK-48	High Acid & Water Removal Premium Universal Replacement	445	115
2708389	H-100	High Acid & Water Removal	710	150
2708390	W-48	Burnout Cleanup with Charcoal	445	115
2708393	F-48	Solid Contaminant Filter (Suction Only)	677	115

Part No.	Water Capacity Drops							
	Liquid Temperature °C							
	R134a		R22		R404A, R507		R448A, R449A	
	24	52	24	52	24	52	24	52
D48	415	340	363	254	457	343	388	225
UK-48	1272	1168	1181	1072	1319	1241	942	857
H-100	1112	834	962	673	1199	839	238	219
W-48	387	294	335	226	417	289	119	109

Refrigerant Recycling Filter-Drier Blocks

Refrigerant Recycling Filter-Drier Blocks offer the ultimate in contaminant control for refrigerant recovery recycling machines that utilise demountable type drier shells fitted with the conventional 95mm diameter, 48 cubic inch desiccant assembly.

These blocks provide 25% more desiccant volume than the conventional Model No. by having additional desiccant in the inside of the unit, while maintaining the same outside diameter and overall length. This affords a significant increase in water capacity, while maintaining the same high acid capacity.



Cat. No.	Part No.	Description	Water Capacity Drops								Acid Capacity mg
			Liquid Temperature °C								
			R134a		R22		R404A, R507		R448A, R449A		
2708391	RH-48*	Recycling Block	1399	1001	877	653	962	753	147	135	35,450

*Caution: The recycling refrigerant filter-drier blocks should not be used in conventional air conditioning or refrigeration systems that require high refrigerant flow rates. Use in these systems will result in excessively high pressure drop through the filter-drier and possible system damage.

**Water capacities are based on an Equilibrium Point Dryness (EDP) of: 50 parts per million for R134a/R507 and R407C and 60 parts per million for R22.

Replaceable Filters-Drier Cores/Blocks



Castel

Filter Drier Cores/Blocks

The filter drier cores/blocks must be ordered separately from the filter drier shells. The 4490/A filter drier cores are moulded from a blend of dehydrating charge, totally made of 3 Å molecular sieves, and a special binding agent in appropriate proportions. The 4490/A cores are designed for maximum moisture adsorption. The 4490/AA filter drier cores are moulded from a blend of dehydrating charge, 80% of 3 Å molecular sieves and 20 % of activated alumina, and a special binding agent in appropriate proportions. The 4490/AA cores are designed for moisture and acid adsorption.



Cat. No.	Part No.	Description	Filter Area cm ²
8002815	4490/A	Filter Drier Core 100% Molecular Sieve w Gasket Kit	420
8002816	4490/AA	Filter Drier Core 80 MS /20 AA w Gasket Kit	420
8002817	4495/C	Castel Suction Line Filter Core	820

Part No.	Water Capacity Grams							
	Liquid Temperature °C							
	R134a		R22		R404A, R507		R410A	
	24	52	24	52	24	52	24	52
4490/A	82	71	75	60	84	78	73	59
4490/AA	70	60	64	51	71	66	62	50

Filter Driers



Emerson

EK Series – Liquid Line Filter-Driers

The EK Filter-Drier is designed to handle the toughest system protection requirements. It incorporates a specially formulated and blended desiccant package to meet the needs of POE oils hygroscopic properties.

Male Flare



Cat. No.	Part No.	Model No.	Flare Connection	Liquid Flow Capacity kW				
				R134a	R22, R410A	R404A, R507	R448A, R449A	R452A
2708401	60009	EK032	1/4"	7.0	7.7	5.3	4.9	4.9
2708404	60013	EK033	3/8"	10.6	11.3	7.4	7.7	7.7
2708406	47601	EK052	1/4"	7.4	8.1	5.3	8.8	8.8
2708408	47603	EK053	3/8"	12.3	13.4	8.8	8.8	8.8
2708411	47605	EK082	1/4"	8.1	8.8	6.0	6.0	6.0
2708413	47607	EK083	3/8"	14.0	15.1	10.2	10.2	10.2
2708415	47609	EK084	1/2"	23.5	25.7	17.2	17.2	17.2
2708417	47611	EK162	1/4"	8.1	8.4	5.6	6.0	6.0
2708418	47613	EK163	3/8"	13.7	15.1	10.2	9.8	9.8
2708420	47615	EK164	1/2"	25.3	27.4	18.3	14.7	14.7
2708422	47617	EK165	5/8"	34.1	36.9	24.6	24.5	24.5
2708425	48210	EK303	3/8"	15.1	16.5	10.9	10.9	10.9
2708426	48212	EK304	1/2"	28.5	30.9	20.7	20.7	20.7
2708428	48214	EK305	5/8"	37.3	40.4	27.0	27.0	27.0
2708432	48668	EK306	3/4"	51.8	56.0	37.5	29.5	29.5
2708439	48219	EK413	3/8"	15.1	16.5	10.9	10.9	10.9
2708434	48220	EK414	1/2"	36.5	39.7	26.4	26.3	26.3
2708436	48222	EK415	5/8"	42.2	45.7	30.6	30.5	30.5

Solder

Cat. No.	Part No.	Model No.	Solder Connection	Liquid Flow Capacity kW				
				R134a	R22, R410A	R404A, R507	R448A, R449A	R452A
2708402	60012	EK032S	1/4"	9.5	10.2	6.7	7.0	7.0
2708405	60014	EK033S	3/8"	10.6	11.6	7.7	7.7	7.7
2708407	47602	EK052S	1/4"	11.6	12.7	8.4	13.0	13.0
2708409	47604	EK053S	3/8"	15.5	16.9	11.3	11.2	11.2
2708412	47606	EK082S	1/4"	10.9	12.0	8.1	8.4	8.4
2708414	47608	EK083S	3/8"	15.8	17.2	11.6	11.6	11.6
2708410	47610	EK084S	1/2"	25.0	27.0	18.3	17.9	17.9
2708416	47612	EK162S	1/4"	10.9	12.0	8.1	7.7	7.7
2708419	47614	EK163S	3/8"	15.5	16.9	11.2	11.2	11.2
2708421	47616	EK164S	1/2"	30.0	32.3	21.8	21.7	21.7
2708423	47618	EK165S	5/8"	35.5	38.3	25.7	25.6	25.6
2708424	48211	EK303S	3/8"	22.1	23.9	15.8	16.1	16.1
2708427	48213	EK304S	1/2"	35.2	38	25.3	25.2	25.2
2708429	48215	EK305S	5/8"	44.0	47.5	31.6	30.8	30.8
2708430	48216	EK306S	3/4"	52.0	56.3	37.6	37.5	37.5
2708431	48217	EK307S	7/8"	59.0	64.0	42.9	42.7	42.7
2708435	48221	EK414S	1/2"	38.0	41.1	27.4	27.3	27.3
2708437	48223	EK415S	5/8"	59.8	64.7	43.2	37.9	37.9
2708438	48224	EK417S	7/8"	71.0	77.0	51.5	51.5	51.5
2708440	48228	EK757S	7/8"	77.7	84.4	56.4	56.4	56.4
2708441	48229	EK759S	1 1/8"	114.5	123.9	83.0	83.0	83.0
2708433	65355	EK416	3/4"	58.5	63.3	42.4	33.3	33.3

Filter Driers



Castel

DF3 Series – Liquid Line Filter Driers

The DF3 liquid line filter driers are a solid core 100% molecular sieve design and are suitable for HCFC, HFC, HFO AND HC refrigerants. The DF3 series provide superlative water capacity while providing good de-acidifying characteristics. The shape of the block maximises the surface area to the incoming fluid. The design pressure is 50 bar.

Features

- Solid core 100% molecular sieve design
- Extremely high water capacity
- Filter's to 40 microns
- Block design minimises pressure drop



Cat. No.	Part No.	Model No.	Flare Connection	Water Capacity @ +24°C grams			Liquid Flow Capacity @ 7 kPa Pressure Drop kW		
				R134a	R404A, R507	R410A	R134a	R404A	R410A
2708660	DF303/2	032	1/4"	5.2	5.3	4.6	7.1	5.1	7.6
2708662	DF303/3	033	3/8"	5.2	5.3	4.6	16.7	12.1	17.7
2708665	DF305/2	052	1/4"	13.4	13.6	11.9	7.5	5.4	7.9
2708667	DF305/3	053	3/8"	13.4	13.6	11.9	17.5	12.6	18.5
2708670	DF308/2	082	1/4"	22.8	23.3	20.3	7.3	5.3	7.8
2708672	DF308/3	083	3/8"	22.8	23.3	20.3	19.4	14.0	20.5
2708674	DF308/4	084	1/2"	22.8	23.3	20.3	23.5	16.9	24.9
2708676	DF316/2	162	1/4"	30.4	31.0	27.1	8.2	5.9	8.7
2708677	DF316/3	163	3/8"	30.4	31.0	27.1	19.5	14.0	20.6
2708679	DF316/4	164	1/2"	30.4	31.0	27.1	25.2	18.1	26.6
2708681	DF316/5	165	5/8"	30.4	31.0	27.1	33.6	24.2	35.6
2708686	DF330/3	303	3/8"	71.3	72.9	63.6	20.4	14.7	21.6
2708689	DF330/4	304	1/2"	71.3	72.9	63.6	28.6	20.6	30.3
2708691	DF330/5	305	5/8"	71.3	72.9	63.6	37.1	26.7	39.2
2708696	DF341/4	414	1/2"	98.7	100.0	87.9	36.4	26.2	38.6
2708698	DF341/5	415	5/8"	98.7	100.0	87.9	42.1	30.3	44.6
2708700	DF341/6	416	3/4"	98.7	100.0	87.9	66.4	47.8	70.3

Cat. No.	Part No.	Model No.	Solder Connection	Water Capacity @ +24°C grams			Liquid Flow Capacity @ 7 kPa Pressure Drop kW		
				R134a	R404A, R507	R410A	R134a	R404A	R410A
2708661	DF303/2S	032S	1/4"	5.2	5.3	4.6	9.2	6.7	9.8
2708663	DF303/3S	033S	3/8"	5.2	5.3	4.6	17.1	12.3	18.1
2708666	DF305/2S	052S	1/4"	13.4	13.6	11.9	11.6	8.4	12.3
2708668	DF305/3S	053S	3/8"	13.4	13.6	11.9	18.1	13.0	19.2
2708671	DF308/2S	082S	1/4"	22.8	23.3	20.3	11.2	8.0	11.8
2708673	DF308/3S	083S	3/8"	22.8	23.3	20.3	19.9	14.3	21.0
2708675	DF308/4S	084S	1/2"	22.8	23.3	20.3	24.9	17.9	26.4
2708678	DF316/3S	163S	3/8"	30.4	31.0	27.1	21.4	15.4	22.7
2708680	DF316/4S	164S	1/2"	30.4	31.0	27.1	29.6	21.4	31.4
2708682	DF316/5S	165S	5/8"	30.4	31.0	27.1	35.2	25.4	37.3
2708683	DF316/7S	167S	7/8"	30.4	31.0	27.1	45.3	32.6	48.0
2708687	DF330/3S	303S	3/8"	71.3	72.9	63.6	22.1	15.9	23.4
2708690	DF330/4S	304S	1/2"	71.3	72.9	63.6	37.1	26.7	39.2
2708692	DF330/5S	305S	5/8"	71.3	72.9	63.6	43.5	31.3	46.0
2708694	DF330/7S	307S	7/8"	71.3	72.9	63.6	50.0	36.0	52.9
2708695	DF330/9S	309S	1 1/8"	71.3	72.9	63.6	50.0	36.0	52.9
2708697	DF341/4S	414S	1/2"	98.7	100.0	87.9	37.8	27.2	40.0
2708699	DF341/5S	415S	5/8"	98.7	100.0	87.9	59.0	42.5	62.5
2708701	DF341/6S	416S	3/4"	98.7	100.0	87.9	66.4	47.8	70.3
2708606	DF341/7S	417S	7/8"	98.7	100.0	87.9	70.9	51.1	75.1

Water capacity: ARI Standard 710-2004 and DIN 8949:2000

Filter Driers



Danfoss

DML Series

The DML liquid line filter driers protect refrigeration and air conditioning systems from moisture, acids and solid particles. The 100% solid molecular sieve core assures a high drying capacity and prevents acid formation in the system.

Features

- High drying capacity avoiding the risk of acid formation in the refrigeration system
- All Danfoss filter driers have end caps designed for greater protection and easy removal
- Wide range with sizes from 3 to 75 cubic inches
- Powder paint surface for 500 hrs in salt spray (shell body)

Flare



Cat. No.	Part No.	Model No.	Flare Connection	Liquid Capacity kW						
				R134a	R404A	R507	R22	R407C	R410A	R32
2704700	023Z503591	DML032	1/4"	6.70	5.01	4.86	7.45	7.09	7.43	10.86
2706390	023Z503791	DML052	1/4"	7.67	5.62	5.45	8.45	8.02	8.32	12.18
2704703	023Z503891	DML053	3/8"	12.87	9.81	9.52	14.44	13.80	14.58	21.28
2704704	023Z503991	DML082	1/4"	7.68	5.44	5.27	8.32	7.85	8.02	11.77
2704705	023Z504091	DML083	3/8"	14.19	10.98	10.66	16.03	15.37	16.35	23.85
2704706	023Z504191	DML084	1/2"	28.61	21.33	20.68	31.76	30.24	31.63	46.24
2706392	023Z504291	DML162	1/4"	7.68	5.43	5.26	8.31	7.85	8.01	11.75
2704707	023Z504391	DML163	3/8"	16.33	11.18	10.82	17.41	16.33	16.43	24.16
2704708	023Z504491	DML164	1/2"	32.19	23.54	22.81	35.40	33.60	34.83	50.99
2704709	023Z504591	DML165	5/8"	44.64	36.59	35.59	51.82	50.16	54.83	79.63
2704710	023Z0049	DML303	3/8"	15.70	10.56	10.20	16.59	15.52	15.48	22.79
2704711	023Z0050	DML304	1/2"	32.51	25.00	24.26	36.63	35.06	37.19	54.26
2704712	023Z0051	DML305	5/8"	45.71	36.96	35.93	52.72	50.91	55.29	80.38
2706395	023Z0193	DML306	3/4"	43.73	39.89	38.95	53.22	52.49	60.57	87.22
2704714	023Z0109	DML414	1/2"	33.39	26.45	25.70	38.15	36.70	39.48	57.48
2704715	023Z0110	DML415	5/8"	55.48	41.84	40.58	61.92	59.08	62.11	90.74

Solder

Cat. No.	Part No.	Model No.	Flare Connection	Liquid Capacity kW						
				R134a	R404A	R507	R22	R407C	R410A	R32
2704716	023Z504891	DML032S	1/4"	6.70	5.01	4.86	7.45	7.09	7.43	10.86
2704717	023Z505091	DML033S	3/8"	12.85	9.86	9.57	14.46	13.84	14.67	21.40
2704718	023Z505391	DML052S	1/4"	7.67	5.62	5.45	8.45	8.02	8.32	12.18
2704719	023Z505491	DML053S	3/8"	12.87	9.81	9.52	14.44	13.80	14.58	21.28
2706391	023Z505791	DML082S	1/4"	7.68	5.44	5.27	8.32	7.85	8.02	11.77
2704721	023Z505891	DML083S	3/8"	14.19	10.98	10.66	16.03	15.37	16.35	23.85
2704722	023Z506191	DML084S	1/2"	28.61	21.33	20.68	31.76	30.24	31.63	46.24
2706393	023Z506391	DML162S	1/4"	7.68	5.43	5.26	8.31	7.85	8.01	11.75
3404007	023Z506491	DML163S	3/8"	16.33	11.18	10.82	17.41	16.33	16.43	24.16
2704724	023Z506791	DML164S	1/2"	32.19	23.54	22.81	35.4	33.60	34.83	50.99
2704725	023Z506891	DML165S	5/8"	44.64	36.59	35.59	51.82	50.16	54.83	79.63
3404008	023Z0067	DML303S	3/8"	15.70	10.56	10.20	16.59	15.52	15.48	22.79
2704727	023Z0068	DML304S	1/2"	32.51	25.00	24.26	36.63	35.06	37.19	54.26
2704728	023Z0069	DML305S	5/8"	45.71	36.96	35.93	52.72	50.91	55.29	80.38
2704729	023Z0070	DML306S	3/4"	43.73	39.89	38.95	53.22	52.49	60.57	87.22
2704730	023Z0071	DML307S	7/8"	33.39	26.45	25.70	38.15	36.70	39.48	57.48
2704732	023Z0112	DML415S	5/8"	55.48	41.84	40.58	61.92	59.08	62.11	90.74
2704733	023Z0113	DML417S	7/8"	84.69	57.37	55.92	89.91	84.03	82.30	123.17

Liquid Capacity Conditions: ARI 710-86. -15C evaporating temperature, 30C condensing temperature and 7kPa pressure drop.

Filter Driers



Emerson

BOK Series – Burnout Filter-Driers

The BOK Series liquid line filter-drier was designed for maximum effectiveness in the clean-up of systems following a severe burnout where maximum capacity for water and acids is essential.



Cat. No.	Part No.	Connections		Liquid Flow Capacity kW			Nominal System Capacity kW					
		M. Flare	Solder	R134a	R22	R404A R507	Refrig. Low Temp. & Commercial Installations			A/C Field Replace. & Field Install.		
							R134a	R22	R404A R507	R134a	R22	R404A R507
2708458	BOK 082	1/4"		4.9	5.6	3.5	1.8	1.8	1.8	2.6	3.5	2.6
2708459	BOK 83	3/8"		13.7	14.8	9.8	4.0	3.5	3.5	7.0	7.0	7.0
2708460	BOK 162	1/4"		4.9	5.6	3.5	4.0	5.3	2.6	3.5	5.3	3.5
2708461	BOK 163	3/8"		15.1	16.5	10.9	7.0	7.0	7.0	10.6	10.6	7.0
2708465	BOK 163S		3/8"	20.4	22.2	14.8	7.0	7.0	7.0	10.6	10.6	7.0
2708462	BOK 164	1/2"		29.9	32.7	21.8	7.0	10.6	7.0	10.6	17.6	10.6
2708466	BOK 164S		1/2"	35.9	39.0	26.0	7.0	10.6	7.0	10.6	17.6	10.6
2708463	BOK 165	5/8"		45.4	48.9	32.7	7.0	10.6	7.0	17.6	17.6	14.0
2708467	BOK 165S		5/8"	45.4	48.9	32.7	7.0	10.6	7.0	17.6	17.6	14.0
2708464	BOK 305	5/8"		47.5	51.3	34.5	14.0	17.6	17.6	26.4	26.4	17.6
2708468	BOK 417S		7/8"	69.6	75.6	50.6	35.0	35.0	26.4	35.0	35.0	26.4

BFK Series Bi-Directional Liquid Line Heat Pump Filter-Drier

Emerson BFK Series Bi-Directional Heat Pump Filter-Driers are designed to protect the system refrigerant from contamination in both heating and cooling cycles. The BFK design prevents contaminants collected in one direction from being flushed back out when the flow reverses.



Cat. No.	Part No.	Connections		Liquid Flow Capacity kW			Liquid Temperature					
		M. Flare	Solder	R22	R410A	R407C	Water Capacity Drops R22		Water Capacity Drops R410A		Water Capacity Drops R407C	
							24°C	52°C	24°C	52°C	24°C	52°C
2708442	BFK 052	1/4"		5.6	5.6	5.6	73	66	39	35	58	42
2708443	BFK 053	3/8"		10.5	10.5	10.2	73	66	39	35	58	42
2708447	BFK 083	3/8"		15.8	15.8	15.5	159	144	85	75	106	79
2708448	BFK 083S		3/8"	17.9	17.9	17.6	159	144	85	75	106	79
2708449	BFK 084	1/2"		22.5	22.5	22.2	159	144	85	75	106	79
2708445	BFK 084S		1/2"	23.6	23.6	23.2	159	144	85	75	106	79
2708450	BFK 085	5/8"		27.4	27.4	27.1	159	144	85	75	106	79
2708446	BFK 085S		5/8"	28.5	28.5	27.8	159	144	85	75	106	79
2708451	BFK 163	3/8"		16.2	16.2	15.8	323	294	179	160	237	179
2708455	BFK 163S		3/8"	18.3	18.3	17.9	323	294	179	160	237	179
2708452	BFK 164	1/2"		27.1	27.1	26.7	323	294	179	160	237	179
2708456	BFK 164S		1/2"	28.5	28.5	27.8	323	294	179	160	237	179
2708453	BFK 165	5/8"		29.2	29.2	28.5	323	294	179	160	237	179
2708454	BFK 165S		5/8"	30.6	30.6	29.9	323	294	179	160	237	179
2708457	BFK 167S		7/8"	37.1	37.6	36.4	323	294	179	160	237	179
2708469	BFK 303	3/8"		20.1	20.1	19.9	585	532	415	293	452	345
2708470	BFK 304	1/2"		26.6	26.6	26.3	585	532	415	293	452	345
2708471	BFK 305	5/8"		36.0	36.0	35.4	585	532	415	293	452	345
2708444	BFK 307S		7/8"	58.7	58.7	57.7	585	532	415	293	452	345

Filter Driers



Castel

Solid Core Bi-Flow Liquid Line Filter Drier

The DB3 series Bi-Flow liquid line filter driers are designed for installation in liquid lines of heat pumps and reverse cycle systems. The solid core 100% molecular sieve design offers maximum moisture removal and is suitable for HCFC, HFC, HFO and HC refrigerants. Two built-in check valves ensure the refrigerant liquid always flows through the drier from the outer side of the solid core regardless of the flow direction.



Cat. No.	Part No.	Model No.	Solder Connection	Design Pressure Bar	Refrigerant Capacity @ +24° C grams			Liquid Flow Capacity @ 7kPa Pressure Drop kW		
					R22	R134a	R410A	R22	R134a	R410A
2708600	DB308/3S	083S	3/8"	50	12.8	14	12.4	12.5	1.4	12.1
2708601	DB308/4S	084S	1/2"	50	12.8	14	12.4	17.3	15.8	16.8
2708602	DB316/3S	163S	3/8"	50	20.8	22.8	20.3	18.2	16.7	17.6
2708603	DB316/4S	164S	1/2"	50	20.8	22.8	20.3	30.4	27.8	29.5
2708604	DB316/5S	165S	5/8"	50	20.8	22.8	20.3	39.6	36.2	38.4



Danfoss

DMB Bi-Flow Series

Bi-flow filter driers have built-in check valves which ensure that refrigerant liquid always flows through the filter driers from the outer side of the filter core towards the center. Thus all dirt particles are retained irrespective of flow direction. DMB filter driers ensure fast and effective adsorption of moisture as well as organic and inorganic acids.

Features

- No dirt released by reversing the flow direction
- The check valves are not sensitive to dirt and give minimum restriction, irrespective of flow direction
- When building heat pump systems, the use of bi-flow filters can save up to ten solder connections reducing the number of potential leak points

Solder



Cat. No.	Part No.	Model No.	Connections	Liquid Capacity kW		
				R134a	R404A, R507	R22, R407C, R410A
2704749	023Z1442	DMB083S	3/8"	7.4	5.3	8.2
2704750	023Z1441	DMB084S	1/2"	8.3	6	9.2
2704751	023Z1446	DMB163S	3/8"	18	13	20
2704752	023Z1445	DMB164S	1/2"	28	20	32
2704753	023Z1444	DMB165S	5/8"	37	29	40
2708400	023Z1449	DMB304S	1/2"	28	20	31
2706394	023Z1448	DMB305S	5/8"	38	28	42

Liquid Capacity Conditions: ARI 710-86. -15C evaporating temperature, 30C condensing temperature and 7kPa pressure drop.

Filter Driers



Danfoss

DA Series

BHermetic burn-out filter driers type DAS are used in the suction line to clean up refrigeration and air conditioning systems after a compressor motor burn-out.

Features

- High drying capacity avoiding the risk of acid formation in the refrigeration system
- All Danfoss filter driers have end caps designed for greater protection and easy removal
- Wide range with sizes from 3 to 75 cubic inches
- Powder paint surface for 500 hrs in salt spray (shell body)

The solid core, which is composed of 70% activated alumina and 30% Molecular Sieve, adsorbs harmful acids as well as moisture.



Cat. No.	Part No.	Model No.	Connections	Maximum Working Pressure	Temperature Range
2704735	023Z1009	DAS164S	1/2"	508 psig	-40 to + 70 deg C
2704736	023Z1010	DAS165S	5/2"	508 psig	-40 to + 70 deg C
2704738	023Z1013	DAS305S	5/8"	508 psig	-40 to + 70 deg C
2704739	023Z1014	DAS306S	3/4"	508 psig	-40 to + 70 deg C
2704740	023Z1015	DAS307S	7/8"	508 psig	-40 to + 70 deg C
2704741	023Z1016	DAS309S	1 1/8"	508 psig	-40 to + 70 deg C

DCL Series

The DCL driers are designed for applications requiring high moisture capacity and acid adsorption capacity.

Features

- High drying capacity avoiding the risk of acid formation in the refrigeration system
- All Danfoss filter driers have end caps designed for greater protection and easy removal
- Wide range with sizes from 3 to 75 cubic inches
- Powder paint surface for 500 hrs in salt spray (shell body)



Cat. No.	Part No.	Model No.	Maximum Working Pressure
3404001	023Z133091	DCL165FS	667 psig
2750300	023Z0218	DCL305FS	667 psig

Drier Core

30% molecular sieve and 70% A13 O2.



Cat. No.	Part No.	Model No.	Temperature Range
2706396	023U5381	48-DA	-40 to + 70 deg C

Filter Driers



Emerson

CSFD Compact Suction Line Burnout Filter-Drier

The CSFD compact suction line filter-drier is used in applications where other driers won't fit. It is primarily used to remove contamination after a burnout and is designed for short lay-ins. It removes moisture, acid and contaminants and is suitable for CFC, HCFC and HFC refrigerants.

Features

- Competitive pricing with higher results
- Dual Access Valves
- High performance special desiccant blend, the CSFD range will filter contaminants down to 40 microns
- All solder connections are solid copper to ensure easy soldering and quick installation
- Maximum Operating Pressure: 1/2" 3447 kPa, 1 1/8" 2757 kPa



Cat. No.	Part No.	Solder Connection	Suction Line Flow Capacity kW														
			Evaporating Temperature °C														
			R134a				R22					R404A, R507					
			4	-7	-18	-29	4	-7	-18	-29	-40	4	-7	-18	-29	-40	
2708513	CSFD14S4V V	1/2"	4.6	3.2	1.7	1.0	7.0	4.6	3.2	2.1	1.0	4.6	2.8	1.7	1.05	0.7	
2708514	CSFD14S5V V	5/8"	8.1	5.3	3.1	1.7	12.7	8.4	5.6	3.5	1.7	9.1	5.9	3.9	2.46	1.0	
2708515	CSFD14S6V V	3/4"	10.9	7.7	4.9	2.5	17.2	11.2	7.7	4.9	2.5	12.7	8.1	5.3	3.16	1.8	
2708516	CSFD14S7V V	7/8"	11.6	7.7	4.9	2.5	18.3	11.9	8.1	5.3	2.8	12.7	8.1	5.3	3.16	1.8	
2708517	CSFD14S9V V	1 1/8"	15.8	10.5	6.3	3.5	24.6	16.2	10.9	7.0	3.5	17.2	10.9	7.0	4.57	32.5	

SFD Series – Suction Line Burnout Filter-Driers

SFD suction line filter-driers incorporate a protective filter, plus a desiccant specially blended for maximum moisture and acid removal. SFD Model are specially suited for system clean-up after a burnout, or when major work has been performed on the system.

Features

- Rugged steel shells for shock resistance
- Corrosion resistant epoxy powder paint finish
- Low pressure drop – full flow fittings
- Filtration recommendation: 40 microns
- Dual access valves
- Solid copper fittings – easy to solder in
- Maximum Operating Pressure: 2760 kPa



Cat. No.	Part No.	Connections		Suction Line Flow Capacity kW														
				Evaporating Temperature °C														
		M.Flare	Solder	R134a				R22					R404A, R507					
				4	-7	-18	-23	4	-7	-18	-29	-40	4	-7	-18	-29	-40	
Pressure Drop kPa																		
				14	10	7	3	21	14	10	7	3	21	14	10	7	3	
2708501	SFD 13F3-V V	3/8"		2.5	1.4	0.7	0.4	4.9	2.8	1.4	0.7	0.4	4.6	2.5	1.4	0.7	0.4	
2708502	SFD 13S3-V V		3/8"	4.6	2.8	1.8	0.7	7.7	4.6	2.8	1.8	0.7	6.7	3.9	2.5	1.4	0.7	
2708503	SFD 13F4-V V	1/2"		5.3	3.5	2.1	1.0	8.4	5.6	3.9	2.5	1.4	7.4	4.6	3.2	1.8	1.0	
2708504	SFD 13S4-V V		1/2"	8.1	5.3	3.5	1.8	12.3	8.1	5.6	3.5	2.1	10.6	6.7	4.6	2.8	1.4	
2708505	SFD 13F5-V V	5/8"		8.8	6.0	3.9	2.1	13.0	8.4	5.6	3.5	2.1	11.3	7.0	4.9	3.2	1.8	
2708506	SFD 13S5-V V		5/8"	10.9	7.4	4.6	2.5	17.2	11.3	7.7	4.9	2.8	14.8	9.5	6.3	3.9	2.1	
2708507	SFD 13S6-V V		3/4"	14.4	9.5	6.0	3.2	22.5	14.8	9.8	6.3	3.5	19.7	12.3	8.1	4.9	2.5	
2708508	SFD 13S7-V V		7/8"	15.5	10.6	6.7	3.5	25.3	16.2	10.6	6.7	3.5	22.2	13.7	9.1	5.3	2.8	
2708509	SFD 27S7-V V		7/8"	16.5	10.9	6.7	3.5	26.4	16.9	11.3	7.0	3.9	22.9	14.4	9.5	5.6	2.8	
2708510	SFD 27S9-V V		1 1/8"	18.3	12.0	7.0	3.5	29.9	19	12.3	7.4	3.9	26.4	16.2	10.6	6	3.2	
2708511	SFD 54S11-V V		1 3/8"	15.8	10.2	6.0	3.2	25.7	16.2	10.6	6.3	3.5	22.5	13.7	8.8	5.3	2.5	
2708512	SFD 54S13-V V		1 5/8"	16.2	10.6	6.3	3.2	26.0	16.5	11.3	7.0	3.5	22.9	14.1	9.1	5.6	2.8	

All ratings in accordance with ARI Standard 730-86.

Filter Driers



Emerson

AOFD Oil Filter-Drier



Cat. No.	Part No.
2708519	AOFD 553

ASF Oil Filter/Suction Line Filter



Cat. No.	Part No.
2708518	ASF 45F 3-VV

AOFD High Efficiency Take-Apart Oil Filter



Cat. No.	Part No.	Description
2708520	AOF023S	3/8" Solder – Oil Filter Demountable
2708395	FO23	AOF Oil Filter Cartridge

STDS Series – Drier Shells



Shell Only			Filter-Drier Blocks	
Cat. No.	Part No.	Solder Connection	No. and Size of Blocks Required	Desiccant Volume Cubic Inches
2708521	STAS487TSS	7/8"	1 x 48	48
2708522	STAS489TSS	1 1/8"	1 x 48	48
2708523	STAS4811TSS	1 3/8"	1 x 48	48
2708524	STAS4813TSS	1 5/8"	1 x 48	48
2708525	STAS4817TSS	2 1/8"	1 x 48	48
2708526	STAS967TSS	7/8"	2 x 48	96
2708527	STAS969TSS	1 1/8"	2 x 48	96
2708528	STAS9611TSS	1 3/8"	2 x 48	96
2708529	STAS9613TSS	1 5/8"	2 x 48	96
2708530	STAS9617TSS	2 1/8"	2 x 48	96
2708531	STAS1449TSS	1 1/8"	3 x 48	144
2708532	STAS14411TSS	1 3/8"	3 x 48	144
2708533	STAS14413TSS	1 5/8"	3 x 48	144
2708534	STAS14417TSS	2 1/8"	3 x 48	144
2708535	STAS19211TSS	1 3/8"	4 x 48	192
2708536	STAS19213TSS	1 5/8"	4 x 48	192
2708537	STAS19217TSS	2 1/8"	4 x 48	192

Note: Filter-drier blocks or filter cores are not included with above demountable drier shells. These must be ordered separately.

Cat. No.	Part No.	Description
2708538	061715	Demountable Drier Bracket

Internal Assemblies



Cat. No.	Model No.	Part No.	Description
2708539	X-27548-1	060274	Replacement Internal Assembly Suits STAS Shells 1 Core
2708540	X-27548-2	060275	Replacement Internal Assembly Suits STAS Shells 2 Core
2708541	X-27548-3	060276	Replacement Internal Assembly Suits STAS Shells 3 Core
2708542	X-27548-4	060277	Replacement Internal Assembly Suits STAS Shells 4 Core

Filter Driers



Emerson

ADK Series



Cat. No.	Part No.	Model No	Solder Connection	Flow Capacity @ 30°C			
				R134a, R450A	R22, R448A, R449A	R410A	R404A, R507
2708473	52451	ADK032S	1/4" ODF	8.05	8.75	8.75	5.95
2708474	60125	ADK052	1/4" FL	7	7.7	7.7	4.9
2708484	59839	ADK163	3/8" ODF	15.4	16.8	16.8	11.2
2708487	59842	ADK165	5/8" FL	41.3	44.8	44.8	30.1
2708489	60173	ADK304	1/2" FL	30.1	32.55	32.55	21.7
2708491	60174	ADK305	5/8" FL	48.3	52.5	52.5	35

Filter Driers



Castel

Drier Shells

Castel type 4410 Drier Shells are manufactured with a steel body and copper tube solder connections. The filter drier shells are complete with an internal mesh sieve, spring and top and bottom covers. The filter drier cores/blocks are ordered separately.



Shell Only				Cover Type	Filter Drier Cores	
Cat. No.	Part No.	Solder Connection	Design Pressure		No. x Size if Blocks Required	Desiccant Volume Cubic Inches
8002818	4411/7B	7/8"	45 Bar	Blank	1 x 48	48
8002819	4411/9B	1 1/8"	45 Bar	Blank	1 x 48	48
8002820	4411/11B	1 3/8"	45 Bar	Blank	1 x 48	48
8002821	4411/13B	1 5/8"	45 Bar	Blank	1 x 48	48
8002822	4411/17B	2 1/8"	45 Bar	Blank	1 x 48	48
8002823	4412/9B	1 1/8"	45 Bar	Blank	2 x 48	96
8002824	4412/11B	1 3/8"	45 Bar	Blank	2 x 48	96
8002837	4412/13B	1 5/8"	45 Bar	Blank	2 x 48	96
8002838	4412/17B	2 1/8"	45 Bar	Blank	2 x 48	96
8002839	4413/9B	1 1/8"	45 Bar	Blank	3 x 48	144
8002829	4413/13B	1 3/8"	45 Bar	Blank	3 x 48	144
8002830	4413/17B	1 5/8"	45 Bar	Blank	3 x 48	144
8002840	4413/17B	2 1/8"	45 Bar	Blank	3 x 48	144
8002834	4414/11B	1 3/8"	35 Bar	Blank	4 x 48	192
8002835	4414/13B	1 5/8"	35 Bar	Blank	4 x 48	192
8002836	4414/17B	2 1/8"	35 Bar	Blank	4 x 48	192
8002825	4411E/7AF	7/8"	62 Bar	1/4" NPT Thread for Schrader Valve	1 x 48	48
8002826	4411E/9AF	1 1/8"	62 Bar	1/4" NPT Thread for Schrader Valve	1 x 48	48
8002827	4411E/11AF	1 3/8"	62 Bar	1/4" NPT Thread for Schrader Valve	1 x 48	48
8002828	4411E/M42AF	42mm	62 Bar	1/4" NPT Thread for Schrader Valve	1 x 48	48
8002831	4412E/9AF	1 1/8"	62 Bar	1/4" NPT Thread for Schrader Valve	2 x 48	96
8002832	4412E/11AF	1 3/8"	62 Bar	1/4" NPT Thread for Schrader Valve	2 x 48	96
8002833	4412E/M42AF	42mm	62 Bar	1/4" NPT Thread for Schrader Valve	2 x 48	96

Drier Shell Accessories

Cat. No.	Part No.
8002810	Castel Spring For Drier Shell
8002811	Castel Core Bottom For Drier Core/Block
8002812	Castel Core Top For Drier Core/Block
8002813	Castel Top + Bottom For Drier Core/Block
8002814	Castel Filtering Tube For One Drier Core/Block

Oil Filter

The 45 series filter is completely manufactured from steel with a nickel-plated flare connection. Inside the filter there is a screen basket, with a wide filtering surface made of austenitic 304 stainless steel.

These filters may not be cleaned.



Cat. No.	Part No.	Flare Connection	Design Pressure	Filtering Service mm
8002858	4510/3	3/8"	45	58

Oil Separators



Emerson



Cat. No.	Part No.	Conn. Solder ODF	Capacity Ratings kW								Dimensions mm	
			Evaporating Temperature °C								Overall Height	Diameter
			R134a		R22		R404A, R507		R448A, R449A			
			-40	5	-40	5	-40	5	-40	5		
2710753	A-XW55823	3/8"	1.72	2.03	2.67	2.96	2.37	3	1.72	2.03	183	102
2710754	A-W55824 3/8	1/2"	3.5	6.2	5.3	7.1	5.3	7	3.5	6.2	260	102
2710755	A-W55855 3/8	5/8"	11.5	15.9	15.9	19.5	14.2	19	11.5	15.9	362	102
2710756	A-W55877 3/8	7/8"	16.8	23	24.8	28.3	23	30	16.8	23	450	102
2710757	A-W55889 3/8	1 1/8"	23	30.1	31.9	37.2	30.1	38	23	30.1	533	102
2710758	A-W559011 3/8	1 3/8"	28.3	40.7	40.7	47.8	37.2	49	28.3	40.7	540	102
2710759	A-W569213 3/8	1 5/8"	33.6	46.9	49.6	62	49.6	60	33.6	46.9	473	152



Castel



Cat. No.	Part No.	Connection Size (Solder)	Oil Return	Minimum Oil Charge ml	Max Working Pressure bar	Dimensions mm	
						Diameter	Height
8002841	OS540/4	1/2"	1/4"	400	45	123	280
8002842	OS540/5	5/8"	1/4"	400	45	123	367
8002843	OS540/7	7/8"	1/4"	400	45	123	367
8002844	OS540/9	1 1/8"	1/4"	400	45	123	428
8002845	OS540/11	1 3/8"	1/4"	400	45	123	428
8002846	5540/13	1 5/8"	3/8"	600	32	163.5	471
8002847	5540/17	2 1/8"	3/8"	600	32	163.5	481

Liquid Receivers



Tecumseh

L'Unite Hermetique



Cat. No.	Part No.	Volume Lts	Inlet Connection	Rotalock Size	Height mm	Diameter mm
2710779	8380142	0.75	1/4" Tube	N/A	205	77
2710780	8661567	1.5	Rotalock Valve	1"	248	101
2710781	8661566	2.35	Rotalock Valve	1"	280	124
2710784	8380159	3.9	Rotalock Valve	1"	383	125
2710782	8380160	6	Rotalock Valve	1"	311	169
2710783	8380157	9.5	Rotalock Valve	1 1/4"	504	169
2710785	8380156	12	Rotalock Valve	1 1/4"	604	169

Suction Accumulators



Emerson

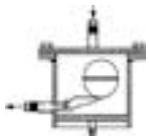


Cat. No.	Part No.	Conn. ODF Solder	Capacity kW – Evaporating Temperature °C									Holding Capacity (kg) 50% of System Charge 4.4°C Liquid			Liquid Holding Capacity* kg	Weight kg
			R134a			R22			R404A, R507			R134a, R22	R404A, R507	R448A, R449A		
			-18	-7	5	-18	-7	5	-18	-7	5					
2710800	A-AS-384	1/2"	2.1	2.8	4.2	3.2	4.9	7	2.8	3.5	4.6	0.7	0.7	0.6	0.9	0.8
2710801	A-AS-3125	5/8"	2.8	4.2	6	4.9	7.4	10.5	4.2	5.6	7.0	1.4	1.1	1.3	1.4	1.0
2710802	A-AS-3126	3/4"	3.5	5.6	8.1	6.3	9.8	14.0	5.3	7.0	9.0	1.4	1.1	1.3	1.4	1.0
2710803	A-AS-596	3/4"	2.4	5.6	8.1	6.3	9.8	14.0	5.3	7.0	9.0	2.7	2.4	2.5	2.7	2.4
2710804	A-AS-597	7/8"	6.3	9.8	14	11.6	18.0	25.7	9.5	12.7	16.2	2.7	2.4	2.5	2.7	2.4
2710805	A-AS-5126	3/4"	3.5	5.6	8.1	6.3	9.8	14.0	5.3	7.0	9.0	3.6	3.4	3.3	4.0	3.6
2710806	A-AS-5127	7/8"	6.3	9.8	14	11.6	18.0	25.7	9.5	12.7	16.2	3.6	3.4	3.3	4.0	3.6
2710807	A-AS-5137	7/8"	3.7	9.8	14	11.6	18.0	25.7	9.5	12.7	16.2	3.8	3.6	3.6	4.3	3.7
2710808	A-AS-5139	1 1/8"	10.9	17.6	25.3	18.6	29.2	41.5	15.5	20.7	26.7	3.8	3.6	3.6	4.3	3.7
2710809	A-AS-5179	1 1/8"	3.8	17.6	25.3	18.6	29.2	41.5	15.5	20.7	26.7	5.4	4.5	5.0	5.4	3.8
2710810	A-AS-51711	1 3/8"	16.2	25.7	37.6	29.9	46.4	66	25.3	33.8	43.0	5.4	4.5	5.0	5.4	3.8
2710811	A-AS-61411	1 3/8"	5.6	25.7	37.6	29.9	46.4	66	25.3	33.8	43.0	6.3	5.7	5.9	5.9	5.6
2710812	A-AS-62013	1 5/8"	25.7	41.0	60.0	45.0	70.0	100.0	37.6	50.0	64.0	9.3	8.3	8.6	9.0	7.4

Oil Control Accessories



Antal



Cat. No.	Part No.	Oil Return Connection
2710741	AA-HS	3/8" Male Flare

Oil Control Accessories



Traxoil

Oil Level Control System



Cat. No.	Part No.	Description	Adapter Connection*	Includes
2710745	805301	OM3-CUA	Flange Adapter 3-4 hole	1. Base unit with 20 seconds Alarm 2. Adapter 3. Solenoid Coil 24 VAC (Power cable and Alarm Cable need to be ordered separately)
2710744	805303	OM3-CBB	Screw Adapter 1 1/8"-18 UNEF	1. Base unit with 20 seconds Alarm 2. Adapter 3. Solenoid Coil 24 VAC (Power cable and Alarm Cable need to be ordered separately)
2710745	805304	OM3-CCA	Screw Adapter 3/4"-14 UNEF	1. Base unit with 20 seconds Alarm 2. Adapter 3. Solenoid Coil 24 VAC (Power cable and Alarm Cable need to be ordered separately)

Adapter Connection: Refer to Emerson Navigator selection tool to select the appropriate adapter to each compressor brand/type.

Oil Watch

Cat. No.	Part No.	Description
2703982	805116	Trax Oil Watch Base Unit OW4-020 Time Delay. 20 seconds
3420030	805118	Oil Watch Base Unit OW4-120 Time Delay. 120 seconds

Accessories

Cat. No.	Part No.	Description
2710749	805151	OM3-P30 Power Supply Cable, 24 VAC, 3m long
2710750	805141	OM3-N30 Alarm Cable, 3m long
2707288	804424	Emerson 20va T/Former 240v-24v ECT-323

			Compressor Series with OM3 for applications up to 46 bar	Compressor Series with OM4 OM4 can be incorporated in compressors designed for CO2 trans-critical in conjunction with oil receivers/reservoirs up to 60 bar
Flange Adapter	OM0-CUA 3-4-hole Part No. 805037	Bitzer	4VC, 4TC, 4PC, 4NC, 4J, 4H, 4G, 6J,6H, 6G, 6F, 8GC, 8FC	4- VHC-10K, THC-12K, PHC-15K, NHC-20K, VSL-15K, TSL-20K, PSL-25K, NSL-30K
	OM0-CUA 3-4-hole Part No. 805037	Bock	HA, HG (except HG/HA-34/22, see - CBB), HGX4/5/6/7-4 R134a, O-Series	HGX4 CO2
	OM0-CUA 3-4-hole Part No. 805037	Copeland	4M & 6M (except transcritical 4MTL models), D2, D3, D4, D6, D9, 4CC, 6CC, ZBH	
	OM0-CUA 3-4-hole Part No. 805037	Dorin	all KP, K sizes (except types mentioned under - CBB) H2000-9000CC/CS, HI1201CC, HI1501CC, 41VS-90VS, SCC 250/300/350/380/500/750/SCC-1500/1900/2000/2500/ -B, SCS 340/351/362/373/385/3K8/-D	CDS35, 501B, 701B, 751B, 901B, 1201B CDS41, 1501B, 2001B, 2401B, 2501B
	OM0-CUA 3-4-hole Part No. 805037	Frascold	Series A, B, D, F, S, V, W, Z	A-SK, D-SK, Q-SK, S-SK
Thread Adapter	OM0-CBB 1 1/8"-18 UNEF Part No. 805038	Bitzer	2KC, 2JC, 2HC, 2GC, 2FC, 2EC, 2DC, 2CC, 4FC, 4EC, 4DC, 4CC, 2- KHC-05K/ JHC-07K/ HHC-2K/ GHC-2K/ FHC-3K/ EHC-3K/ DHC-3K/ CHC-4K, MHC-05K, 4- CHC-9K/ DHC-7K/ EHC-6K/ FHC-5K	2- NSL, MSL, KSL, JSL, HSL, GSL, FSL, ESL, DSL, CSL, 2- MHC, KHC, JHC, HHC, GHC, FHC, EHC, DHC, CHC, 4- FSL, ESL, DSL, CSL, VSL, TSL, PS, NSL, 4- FHC, EHC, DHC, CHC
	OM0-CBB 1 1/8"-18 UNEF Part No. 805038	Bock	HA12/22/34, HG12/22/34, HGX12P, HGX22P, HGX34P for R134a/R410A, HG12P- 34P, HG22/34E	HGX12 / 22 / 34e..CO2
	OM0-CBB 1 1/8"-18 UNEF Part No. 805038	Dorin	All H400-650EP, H1-1003CC/CS, H1- HI751CC, K100CC/CS, K150CC/CS, K180CC/CS, K200CC, K230CS, K235CC, K240SB, K40CC, K50CS, K75CC/CS-	CDS11, 101B, 151B, 181B, 301B, 351B, 381B
	OM0-CBB 1 1/8"-18 UNEF Part No. 805038	L'Unite Herm.	TAH, TAG	
	OM0-CBB 1 1/8"-18 UNEF Part No. 805038	Maneurop	LT, MT, SM, SZ	
	OM0-CBB 1 1/8"-18 UNEF Part No. 805038	Bitzer	ZL, ZM	
	OM0-CCA 3/4"-14 NPTF Part No. 805039	Copeland	ZB15 to ZB48 - until 06/2014, ZBD21 to ZBD45 - until 06/2014, ZB56, 75, 92, 11 - until 05/2012, ZF06 to ZF25 - until 06/2014, ZF24 to ZF48 * - until 05/2012, ZS21 to ZS45 - until 06/2014, ZS56 to ZS11 - until 05/2012	ZO34 to ZO104 - until 06/2014, ZOD34 to ZOD104 - until 06/2014*

Filters & Vessels

Local Monitoring Systems

The power of boss in a micro

CAREL

The same user experience
of the whole boss family
with embedded
4G connectivity

boss micro up to 15 devices

boss mini up to 50 devices

boss up to 300 devices



SCAN ME



Fully responsive **web** design

Anti Sweat Controls



Carel

ACC Anti Sweat Heater Controller

The Carel ACC is an innovative anti-sweat controller designed to control the anti-sweat heaters that prevent the formation of condensation on cold surfaces, such as the glass doors of vertical refrigerated display cabinets.



ACC Series – Din Rail Mount

Cat. No.	Part No.	Description
2707850	ACC0082100	Anti Sweat Control 230 V 8A

ACC Series – Accessories

Cat. No.	Part No.	Description
2707851	DPWC115000	Wall Mount Temperature and Humidity Probe
2707852	NTC060WG00	Glass Temperature Probe, 6m

Typical Ordering Package

- Anti-sweat control
- Wall mount temperature and humidity probe
- Glass temperature probe

Flood Sensors



Cat. No.	Part No.	Description
2705560	FLOS000000	Flood Sensor
2705845	FLOR000000	Flood Sensor Tape (Roll of 25m)
2705561	FLOE000010	Flood Controller (Din Rail Mount)

Motor Protection



Cat. No.	Part No.	Description	Current Type	Phase	Power Supply
2707854	THP00C0000	Motor Protection Relay	AC	1	240 V

Fan Speed Controls



Emerson

FSM Series – Electronic Fan Speed Controllers

FSM electronic speed controllers are designed to control the speed of fan motors in commercial refrigeration system depending on condensing pressure changes. It is suitable for single phase and 3-phase motors with manufacturers approval for variable speed control by means of varying the supply voltage. FSM can be implemented in air-cooled condensers, air-cooled condensing units and air-conditioning units.



Cat. No.	Part No.	Model No.	Description
3409005	715480	FSX42S	Emerson FXS42S Fan Speed Controller
3409004	715521	FSM42S	Emerson FSM42S Fan Speed Controller



Carel

Single Phase Fan Speed Control



Cat. No.	Part No.	Description
2707382	FCPM00A01K	Fan Speed Control Kit 1 PH 8 AMP

Kit includes (1 of each):

- FCP Control
- Pressure Sensor 0-3400kpa
- Connector Cable

Accessories



Cat. No.	Part No.	Description
2707834	TRADR4W024	Transformer Din Rail 240V-24VAC 4VA
2707744	SPKT0031C3	Pressure Transmitter 0-3000 kPa
2707748	SPKC002313	Pressure Transmitter Cable IP65

Typical ordering package for three phase fan speed control (1 of each):

- IR33E9 controller
- Fan Speed Board
- Transformer
- Pressure Transmitter
- Transmitter Cable



Penn

P215PR Series

The P215PR series are direct mount featuring easy set point adjustment using the top screw.



Cat. No.	Model No.	Range kPa	Proportional Band kPa	Max. Overrun Press kPa	Electrical Rating	Pressure Connection	Operating Ambient Temp. °C
2702969	P215PR-9200	1000 to 2500	450	4000	3A	1/4" FF	-20 to 55

Pressure Controls



Emerson

PS1/PS2 Series

The Emerson PS1/PS2 series of adjustable single and dual pressure controls for high and low pressure applications all feature SPDT electrical contacts. The PS1 has 1 x SPDT and the PS2 has 2 x SPDT. The PS2-M7A is a unique model that features a convertible reset from auto to manual on the high side which enables reduced stock holdings.

PS1 Series Single Pressure

Adjustable Single and Dual Pressure Controls for high and low pressure applications.



Cat. No.	Model No.	Part No.	Connection	Compatible Refrigerant Type	Range bar	Differential bar	Reset Type LP	Reset Type HP
3409008	PS1-A3A	99035	7/16"-20 UNF male	HFC, HFO, HCFC	-0.3 to 7	1 to 5	Automatic	
3409011	PS1-A5A	99036	7/16"-20 UNF male	HFC, HFO, HCFC	6 to 31	3 to 15		Automatic
3409012	PS1-R5A	99037	7/16"-20 UNF male	HFC, HFO, HCFC	6 to 31	3 to 15		External Manual
3409009	PS1-A3K	99041	1m cap tube, 7/16"-20 UNF flare nut	HFC, HFO, HCFC	-0.3 to 7	1 to 5	Automatic	
3409010	PS1-R3A	4350100	7/16"-20 UNF male	HFC, HFO, HCFC	-0.3 to 7	1 to 5	External Manual	
2701967	PS1-X4A	4715704	1/16"-20 UNF male	HFC, HFO, HCFC, Water	1 to 20	2 to 15r	Automatic with Extended Adjustable Spindles	

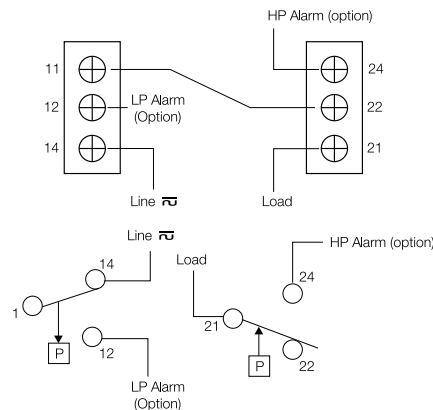


PS2 Series Dual Pressure

Adjustable Single and Dual Pressure Controls for high and low pressure applications.



Cat. No.	Model No.	Part No.	Connection	Range bar	Differential bar	Reset Type LP	Reset Type HP
2707960	PS2-B7A	4360200	7/16"-20 UNF male	-0.3 to 7 (Left Side), 6 to 31 (Right Side)	Left Side: Ext. reset apx. 1 bar above setpoint Right side: Ext. reset apx. 4 bar below setpoint	External Manual	External Manual
2707961	PS2-M7A	4361300	7/16"-20 UNF male	-0.5 to 7 (Left Side), 6 to 31 (Right Side)	0.5 to 5	Automatic	Convertible
3409013	PS2-A7K	99001	7/16"-20 UNF male	-0.3 to 7 (Left Side), 6 to 31 (Right Side)	1 to 5 (Left), Fixed Right side	Automatic	Automatic
3409014	PS2-A7A	99038	1m cap tube, 7/16"-20 UNF flare nut	-0.3 to 7 (Left Side), 6 to 31 (Right Side)	1 to 5 (Left), Fixed Right side	External Manual	External Manual
3409015	PS2-L7A	99040	7/16"-20 UNF male	-0.3 to 7 (Left Side), 6 to 31 (Right Side)	1 to 5 (Left), Fixed Right side	Automatic	Automatic
3409016	PS2-R7A	99007	7/16"-20 UNF male	-0.3 to 7 (Left Side), 6 to 31 (Right Side)	1 to 5 (Left), Fixed Right side	Automatic	External Manual



TECHNICAL DATA

Electrical rating

Resistive load (AC1): 12A / 230V AC
 Inductive load (AC15): 10A / 230V AC
 Motor rating (FLA): 16A / 120/240V AC
 Locked rotor (LRA): 96A / 120/240V AC

Pressure Controls



Danfoss

KP Series Pressure Controls

Single Pressure



Cat. No.	Part No.	Model No.	Description	Reset	Connection
2706496	060-110191	KP1	Low Pressure Control	Auto	1/4"
2706498	060-110566	KP1	Low Pressure Control	Auto	1/4" Capillary and Bracket
2706497	060-110391	KP1	Low Pressure Control	Manual	1/4"
2706500	060-117191	KP5	High Pressure Control	Auto	1/4"
2706501	060-117391	KP5	High Pressure Control	Manual	1/4"
2706502	060-117466	KPR5	Fan Cycling High Pressure Control	Auto	1/4"

Dual Pressure



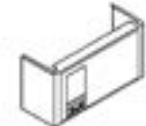
Cat. No.	Part No.	Model No.	Description	Reset		Connection
				LP	HP	
2706504	060-124191	KP15	Dual Pressure Control	Auto	Auto	1/4"
2706505	060-124391	KP15	Dual Pressure Control	Auto	Manual	1/4"
2706503	060-119966	KP15	Dual Pressure Control	Auto	Auto	1/4" Capillary
2706506	060-124591	KP15	Dual Pressure Control	Manual	Manual	1/4"
2706499	060-123091	KP15	Dual Pressure Control	Convertible	Convertible	1/4"
2712743	060-126491	KP15	Dual Pressure Control	Auto	Manual	1/4"

Accessories



Cat. No.	Part No.	Description
2706637	060-105566	Wall bracket for KP series controls
2706402	060-105666	Angle bracket for KP series controls

Replacement Covers



Cat. No.	Part No.	Description
2706481	060-008666	Front Cover for KP Single Pressure Controls
2706482	060-011366	Front Cover for KP Dual Pressure Controls
2706634	060-109766	Top Cover for KP Single Pressure Controls
2706633	060-109866	Top Cover for KP Dual Pressure Controls

KPS Series Pressure Controls



Cat. No.	Model No.	Part No.	Range kPa	Differential kPa	Connection
2707320	KPS33	060-310366	0-350	20	G 3/8" A
2707321	KPS35	060-310566	0-800	40-150	G 1/4"
2707322	KPS35	060-310066	0-800	40-150	G 3/8" A
2707324	KPS37	060-310166	600-1800	85-250	G 3/8" A
2707325	KPS39	060-310766	1000-3500	200-600	G 1/4"
2707326	KPS43	060-312066	100-1000	70-280	G 1/4"
2707327	KPS45	060-312166	400-4000	220-1100	G 1/4"

MBC 5100 Series Pressure Controls



Cat. No.	Part No.	Description
2705425	061B000366	Pressure Switch M/32 5-30 bar
2705426	061B000466	Pressure Switch M/32 0.2-4 bar
2705427	061B100266	Pressure Switch 5-20 bar
3409007	061B100566	Pressure Switch 5-40 bar
3409018	061B101766	Pressure Switch 0.5-3 bar

Pressure Controls



Penn

Features

- Ease of wiring and adjustment
- S.P.D.T. contacts standard on all P77 pressure controls
- Stable switching points
- All Model have IP-54 enclosure Case and Cover: Aluminium diecast
- Leak proof bellows
- Ambient Temperature Limits: -50°C to 55°C (70°C Max. 2 hours)
- All dual pressure controls have two alarm circuits for separate low pressure and high pressure cut-out indication (except P78ALA-9351)

P77 Series Single Pressure



Cat. No.	Part No.	Range kPa	Differential kPa	Press. Conn.	Max. Bellows Press.
Low Pressure Controls for Non-Corrosive Refrigerants					
2701147	P77AAA-9300	-50 to 700	50 to 300	1/4" M. Flare	2200 kPa
2707390	P77BCA-9300	-50 to 700	Manual Reset	1/4" M. Flare	2200 kPa
Low Pressure Controls for Ammonia and Non-Corrosive Refrigerants					
2707391	P77AAA-9700	-50 to 700	50 to 300	1/4" FNPT	1400 kPa
2707392	P77BCA-9700	-50 to 700	Manual Reset	1/4" FNPT	1400 kPa
High Pressure Controls for Non-Corrosive Refrigerants					
2701148	P77AAA-9350	300 to 3000	300 to 1200	1/4" M. Flare	3300 kPa
2701150	P77BEA-9350	300 to 3000	Manual Reset	1/4" M. Flare	3300 kPa
Fan Cycling Control for Air Cooled Condensers for Non-Corrosive Refrigerants					
2701149	P77AAA-9351	350 to 2100	210 to 550	1/4" M. Flare	3000 kPa
High Pressure Controls for Ammonia and Non-Corrosive Refrigerants					
2707393	P77AAA-9750	300 to 3000	300 to 1200	1/4" FNPT	3300 kPa
2707394	P77BEA-9750	300 to 3000	Manual Reset	1/4" FNPT	3300 kPa

P78 Series Dual Pressure



Cat. No.	Part No.	Low Pressure		High Pressure		Press. Conn.	Max. Bellows Press kPa
		Range kPa	Differential kPa	Range kPa	Differential kPa		
Dual Pressure Controls for Non-Corrosive Refrigerants							
2701152	P78LCA-9300	-50 to 700	50 to 300	300 to 3000	300 fixed	1/4" M. Flare	2200 L 3300 H
2701154	P78MCA-9300	-50 to 700	50 to 300	300 to 3000	Manual Reset	1/4" M. Flare	2200 L 3300 H
2701155	P78PGA-9300	-50 to 700	Manual Reset	300 to 3000	Manual Reset	1/4" M. Flare	2200 L 3300 H
Dual Pressure Controls for Ammonia and Non-Corrosive Refrigerants							
2707396	P78LCA-9700	-50 to 700	50 to 300	300 to 3000	300 fixed	1/4" FNPT	1400 L 3300 H
2707397	P78MCA-9700	-50 to 700	50 to 300	300 to 3000	Manual Reset	1/4" FNPT	1400 L 3300 H
Dual Fan Cycling Control for Air Cooled Condensers for Non-Corrosive Refrigerants							
2701151	P78ALA-9351	350 to 2100	180 fixed	350 to 2100	180 fixed	1/4" M. Flare	3000 L 3000 H



Accessories



Cat. No.	Part No.	Description
2707955	290-0404	Capillary Adaptor
2707954	290-0404D	Capillary Adaptor with Depressor
2700122	31696-1	Mounting Bracket

Pressure Controls



Penn

P32 Series



Cat. No.	Part No.	Scale Plate	Description	Sensitivity at Minimum Set Point	Pressure UOM	Set Point	Switch Action	Differential Pressure Range
2701145	P32AC-2	Y	Penn Air Differential Switch P32AC-2C	10	Pa	Adjustable	SPDT	12Pa to 1240Pa
2705645	P32AF-2	Y	Penn Diff Pressure Control P32AF-2C	6	Pa	Adjustable	SPDT	12Pa to 1240Pa

P48 Series



Cat. No.	Part No.	Description	Differential	Range	Pressure Setting - Maximum Ambient Temperature Pressure Setting - Maximum Bellows Pressure
2707437	P48AAA-9110	Penn Pressure Switch P48AAA-9110	16kPa to 55kPa	0kPa to 100kPa	-55 deg C to 55 deg C (70 Max. 2 hours) 350 kPa
2707439	P48AAA-9120	Penn Pressure Switch P48AAA-9120	25kPa to 80kPa	20kPa to 400kPa	-55 deg C to 55 deg C (70 Max. 2 hours) 800 kPa
2707440	P48AAA-9130	Penn Pressure Switch P48AAA-9130	100kPa to 300kPa	100kPa to 1000kPa	-55 deg C to 55 deg C (70 Max. 2 hours) 1500 kPa

P74 Series



Cat. No.	Part No.	Description	Connection	Differential Range	Switch Action	Maximum Bellows Pressure (Momentary)
2705659	P74EA-8	Penn Pressure Diff Switch P74EA-8C	900mm Cap. with 1/4" Fl. Nut	15kPa to 210kPa	SPDT	1240 kPa

P78 Series



Cat. No.	Part No.	Description
2701153	P78LCA-9500	Penn D/P Control Solder P78LCA-9500

P100 Series Encapsulated Pressure Switches



Cat. No.	Part No.	Switch Action	Application	Pressure Settings kPa	
				Opens	Closes
2707417	P100LP-3560-L	Open on Fall	Low Cutout	241	414
2707419	P100HP-4232-S	Open on Rise	High Cutout	2854	2240
2701140	P100AP-201D	Open on Fall	Low Cutout	(69)	220
2707424	P100AA-3D	Open on Fall	Low Cutout	1034	1551
2707425	P100CP-1D	Open on Rise	High Cutout	2758	2068
2705660	P100HP-4100-L	Open on Rise	High Cutout	2827	Manual Reset
2750394	P100AP-310D	Open on Fall	Low Cutout	10	32
2750393	P100CP-106D	Open on Rise	High Cutout	406	333
2706198	P100CP-85C	Open on Rise	High Cutout	665	565
2706199	P100DA-81C	Open on Rise	High Cutout	630	Lockout Manual Reset

Temperature Controls



Penn

A421 Series

- Line-Voltage Type 1 Electronic Temperature Control: Type 1 (NEMA)
- IP20 standard enclosure for DIN rail and surface-mount applications
- Rated for 120/240 VAC
- Includes an A99BB-200C temperature sensor with 6.6 ft (2.0m) cable



Cat. No.	Part No.	Description	Colour	Material
3412001	A421ABC-02C	Penn Thermostat A421ABC-02C	Black – Grey	Type 1: IP20 High-Impact Thermoplastic

T26 Series

Cat. No.	Part No.	Description	Differential Approximate K	Type of Adjustment	Material	Application
2701159	T26S-22	Penn 1 Stage Room Thermostat T26S-22C	Heating: 1 Cooling: 1.3	Knob	Base: 0.050 in. (1.27 mm) Cold Rolled Steel Cover: Beige Thermoplastic	SPDT
2701157	T25B-9101	Penn 2 Stage Room Thermostat T25b-9101	Heating: 1 per Stage 1 to 3 adjust between stages Cooling: 2 per Stage 1 to 3 adjust between stages	Knob	Cold Rolled Steel with "Tawny Silver" Finish	2 x SPDT 2 Stage Heat/Cool, Heat/Cool with dead band and auto changeover

Series A19

Cat. No.	Part No.	Switch Action	Range °C	Differential K	Bulb and Capillary	Range Adjuster	Max. Bulb Temp. °C
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Adjustable Differential

2705669	A19ABC-66	SPDT	0 to 43	2 to 8	9.5mm x 127mm 1.8m Cap.	Knob	60
2705665	A19ABB-7	SPST Open High	10 to 94	3 to 13	7.5mm x 64mm 3m Cap.	Knob	116
2705668	A19ABC-5	SPDT	10 to 55	2 to 8	9.5mm x 127mm 2.4m Cap.	Knob	77
2701141	A19ABC-41	SPDT	-35 to 40	1.7 to 6.7	9.5mm x 102mm 2.4m Cap.	Convertible	60
2705667	A19ABC-27	Remote Mtd. (Operating and Circulator) SPDT	38 to 121	3 to 13	½" NPT 2.4m Cap.	Convertible	143

Fixed Differential

2705642	A19AAF-49	SPDT	-4 to 107	1.9	9.5mm x 76mm 3m Cap.	Screwdriver Slot	135
2705641	A19AAC-13	SPDT	40 to 120	3	9.5mm x 102mm 1.8m Cap.	Screwdriver Slot	143

Manual Reset

2705672	A19ACA-28	SPST Open Low	-35 to 40	Manual Reset	9.5mm x 102mm 1.8m Cap.	Screwdriver Slot	60
2705673	A19ACA-31	SPST Open Low	-35 to 40	Manual Reset	9.5mm x 102mm 3m Cap.	Screwdriver Slot	60
2705675	A19ADB-26	SPST Open High	40 to 120	Manual Reset	9.5mm x 89mm 1.8m Cap.	Knob	143
2705674	A19ADB-11	SPST Open High	100 to 290	Manual Reset	7.5mm x 38mm 1.8m Cap.	Knob	327

For Cooling Towers

2707467	A19ARC-9105	SPDT	5 to 50	2.5 to 11	10.5mm x 110mm 2m Cap. Neoprene Coated	Concealed	100
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Coiled Bulb

2705677	A19BAC-3	SPDT	0 to 43	1.9 Fixed	35mm x 57mm Coiled	Convertible	60
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Temperature Controls



Penn

A25 Series – Manual Reset Limit Control

Cat. No.	Part No.	Switch Action	Range °C	Range Adj.	Dial Stop °C	Max. Element Temp. °C
2704940	A25CN-4	SPDT	-4 to 101	Knob	Set at 52	150

A28 Series – 2 Stage

Cat. No.	Part No.	Switch Action	Range °C	Differential K	Bulb and Capillary	Range Adjuster	Max. Bulb Temp. °C
Adjustable Interstage Differential							
2705680	A28AA-28	2 x SPDT	0 to 43	1.9 Ea. Stage 1 to 4 Int. Stage	3.6 Averg. Bulb 1.8m Cap.	Screwdriver Slot	60
2705681	A28AA-65	2 x SPDT	-35 to 40	2.8 Ea. Stage 1 to 4 Int. Stage	9.5mm x 102mm 2.4m Cap.*	Convertible	60
2707469	A28AA-70	2 x SPDT	5 to 32	1.7 Ea. Stage 1 to 4 Int. Stage	9.5mm x 152mm 1.8m Cap.*	Knob	110

*Packing nut assembly available for direct immersion applications (P/N FTG13A-60 OR)



Danfoss

Service Thermostats



Cat. No.	Part No.	Kit. No.	Application	Cold		Warm		Defrost Term. °C	Signal Pos. Warm °C	Cap. Length: mm
				Cut-Out °C	Cut-In °C	Cut-Out °C	Cut-In °C			
2706519	077B7001	1	Refrigerators	-25	-13.5	-5.5	2			1300
2706520	077B7002	2	Refrigerators Push Button Defrost	-21	-11	-7.5	0	6		1300
2706521	077B7003	3	Refrigerators Automatic Defrost	-27.5	3.5	-11	3.5			1600
2706523	077B7005	5	Ice Cream Cabinets and Freezers without Signal	-32.5	-21	-15	-7.5			2300
2706524	077B7006	6	Freezers with Active Signal	-34.5	-24	-17	-10		-6	2300
2706525	077B7007	7	Freezers with Passive Signal	-34.5	-24	-17	-10		-6	2300
2706526	077B7008	8	Bottle and Liquid Coolers	-8.5	-1	6	11.5			2000

Type 77B Thermostats

These thermostats have a constant cut-in temperature for automatic defrost with an SPST switch closing on rising temperature.



Cat. No.	Part No.	Cut-out °C		Constant Cut-in °C
		Cold	Warm	
2706473	077B6138	-12	-5.2	5
2708016	077B6043	29.7	-16.4	3.5
2708017	077B6075	-28.5	-19	4

Oil Pressure Protection Controls



Emerson

Differential Pressure Control



Cat. No.	Part No.	Differential Pressure kPa			Max. Operating Press. kPa	Max. Test Pressure kPa	Pressure Connection
		Adjustable Cut-out	Factory Setting	Fixed Cut-in Above Cut-out			
2707885	FD113-ZU	30 - 450	70	20 Over Off	80-1200	-10 & 2300	1/4" Flare M



Danfoss

Type MP55 Differential Pressure Controls



Cat. No.	Type	Part No.	Time Delay Sec	Range LP Side kPa	Differential kPa	Switch Diff. kPa	Pressure Connection
2706515	MP55	060B017191	60	-100-1200	30-450	20	1/4" Flare M
2706516	MP55	060B017291	90	-100-1200	30-450	20	1/4" Flare M

For Fluorinated Refrigerants.



Johnson

P28 Series



Cat. No.	Part No.	Time Delay Sec	Heater Circuit Volts	Type of Reset	Range* kPa	Refrig.	Pressure Connection
2705661	P28AA-42	60	120/240AC	Manual	55 - 483	Non-Corrosive	900mm Cap. with 1/4" Fl. Nut



DWM Copeland

The monitoring of the force feed lubrication system with an oil pressure control is compulsory for Discus and S-Series compressors.



Cat. No.	Part No.	Description	Suits Model
2707883	3164918	OPS2 Oil Pressure Switch	All Copeland Semi-Hermetic Compressors with Oil Pumps
2707884	3168329	OPS2 Oil Pressure Switch and Sensor Kit	All Copeland Semi-Hermetic Compressors with Oil Pumps

Gas Leak Sensors



Carel

Gas Leak Sensors



Cat. No.	Part No.	Description
3422014	GDWB120A00	Carel Gas Sensor R744 built in infrared
3422003	GDWBS01A00	Carel Gas Sensor R32 built in semi cond
3422004	GDWBS02A00	Carel Gas Sensor R134a built in semi cond
3422005	GDWBS03A00	Carel Gas Sensor R290 built in semi cond
3422006	GDWBS04A00	Carel Gas Sensor R404a built in semi cond
3422015	GDWBS06A00	Carel Gas Sensor R407F built in
3422007	GDWBS07A00	Carel Gas Sensor R410 built in sensor IP66
3422008	GDWBS08A00	Carel Gas Sensor R448A built in semi cond
3422009	GDWBS09A00	Carel Gas Sensor R449A built in semi cond
3422000	GDWR120A00	Carel CO2 Gas Sensor, 5M remote, infrared
3422010	GDWRS02A00	Carel Gas Sensor R134a 5m remote
3422011	GDWRS04A00	Carel Gas Sensor R404a 5m remote
3422012	GDWRS07A00	Carel Gas Sensor R410a 5m remote

- 24V power supply for Carel leak sensors (24Vac 3VA or 24Vdc 3W)

Electronic Controls



Carel

ir33+ Refrigeration Controllers

The ir33+ controllers are now replacing the IR33 controllers for refrigeration.

ir33+ Series – Panel Mount



Cat. No.	Part No.	Type	Temp. Range °C	Power Supply	Relay				RTC HACCP*
					Amps: Res (Ind)				
					Comp.	Fan	Defrost	Aux.	
8001473	IREVM0LN0U	Thermometer	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	12 Vac/dc					
8001474	IREVM0EN0U	Thermometer	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac					
2707935	IREVS0LN0U	Thermostat Med Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	12-24 Vac/dc	12 (2)				
2707936	IREVS0EA0U	Thermostat Med Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	8 (4)			8 (4)	
2707937	IREVC0LN0U	Thermostat Low Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	12-24 Vac/dc	12 (2)	8 (4)	8 (4)	8 (4)	
2707938	IREVC0LC0U	Thermostat Low Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	12-24 Vac/dc	12 (2)	8 (4)	8 (4)	8 (4)	Y
2707939	IREVC0HN0U	Thermostat Low Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	12 (2)	8 (4)	8 (4)	8 (4)	
2707940	IREVC0HC0U	Thermostat Low Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	12 (2)	8 (4)	8 (4)	8 (4)	Y
3413046	PBEVC0SNGG	IR33+ Wide Low Temp Controller	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	30	8	5	5	
2707814	IRORC0HH22	Orford Cabinet Controller	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	10 (10)	8 (4)	8 (4)	8 (4)	

*RTC = Real Time Clock HACCP = Hazard Analysis and Critical Control Point

smartCella Refrigeration Controllers

smartCella is the new CAREL compact refrigeration controller for use in small cool room applications.

smartCella Series – Wall Mount



Cat. No.	Part No.	Type	Temp. Range °C	Power Supply	Relay				RTC HACCP*
					Amps Res (Ind)				
					Comp.	Fan	Defrost	Aux.	
2707950	WE00S1EN00	Thermostat Medium Temp	-50 to +90 (standard probe) or 0 to +150 (high range NTC probe)	230Vac	10 (4)				
2707951	WE00C2HN00	Thermostat Low Temp	-50 to +90 (standard probe) or 0 to +150 (high range NTC probe)	230Vac	10 (10)	8 (4)	10 (4)	8 (4)	
3413044	WE00C2HN0H	Low temp Horizontal	-50 to +90 (standard probe) or 0 to +150 (high range NTC probe)	230Vac	10 (10)	8 (4)	10 (4)	8 (4)	

*RTC = Real Time Clock HACCP = Hazard Analysis and Critical Control Point

CM Retrofit Kit

Replacement of IR32P0LBRO and S90RDPW controller



Cat. No.	Part No.	Power Supply	Outputs Type
2707941	CM00000398	240V	Retrofit Kit consisting of Controller, Remote Display, Card and Cable

Powercompact Series

Cat. No.	Part No.	Product Summary
2707763	PB00C0SN50	Power Compact Small – Low Temp. Comp, Defrost, Fan, AUX
3413034	PB00F0HA10	Power Compact – Low Temp. Comp, Defrost, Fan, AUX
2707762	PB00S0SA50	Power Compact Small – Medium Temp. Comp, AUX

Electronic Controls



Carel

IR33 Platform Refrigeration Controllers

The IR33 Platform for refrigeration is a complete range of products designed especially for the control of stand-alone refrigeration units.

DN33 Series – Din Rail Mount



Cat. No.	Part No.	Type	Temp. Range °C	Power Supply	Relay				RTC HACCP*
					Amps: Res (Ind)				
					Comp.	Fan	Defrost	Aux.	
2707815	DN33S0EN00	Thermostat Med Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	10 (4)				
2707816	DN33S0HA00	Thermostat Med Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	115-230 Vac	10 (4)			8 (4)	
2707817	DN33C0LR00	Thermostat Low Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	12-24 Vac/dc	10 (4)	10 (4)	8 (4)	8 (4)	
2707818	DN33C0HR00	Thermostat Low Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	10 (4)	10 (4)	8 (4)	8 (4)	
2707819	DN33H0HB00	Thermostat Low Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	10 (4)	10 (4)	8 (4)	4 (2 x 8)	Y

- *RTC = Real Time Clock
- HACCP = Hazard Analysis and Critical Control Point

MasterCella2 Series – Wall Mount



Cat. No.	Part No.	Type	Temp. Range °C	Power Supply	Relay				RTC HACCP*
					Amps: Res (Ind)				
					Comp.	Fan	Defrost	Aux.	
2704937	MD33A5ER00	Thermostat Med Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	12 (10)			8 (4) 10 (10)	
2704938	MD33D5EB00	Thermostat Low Temp	-50 to +90 (standard NTC probe) or 0 to +150 (high range NTC probe)	240 Vac	12 (10)	8 (4)	10 (4)	8 (4) 10 (10)	Y

- *RTC = Real Time Clock
- HACCP = Hazard Analysis and Critical Control Point
- MD33D5FB00 includes isolator switch

Electronic Controls



Carel

UltraCella Refrigeration Controllers

UltraCella can be easily upgraded for extra functions when required such as EEV. It features 6 relays and a 0-10V output, it can control temperature and humidity and display 2 main variables on the front screen. The USB port provided allows you to copy the controller's configuration and to download the temperature logs from the room (log 1 temperature every 5 minutes for 4 years). A commissioning tool can also be used for quick and easy configuration of the controller. It uses standard NTC (-50 to +90°C), high temp NTC (0 to +150°C) and Pt1000 (-50 to +90°C) for temperature control management.

The EEV module kits contain the box with EEV all prewired, and all sensors and cables required for the superheat control of the circuit.

UltraCella Series – Wall Mount



Cat. No.	Part No.	Description	Power Supply	Relay						RTC HACCP*
				Amps: Res (Ind)						
				Comp.	Fan	Defrost	Light	Aux1	Aux2	
2707944	WB000DG0F0	Double Display Controller	240Vac	12 (10)	10 (5)	12 (10)	10 (5)	8 (4)	8 (4)	Y

- *RTC = Real Time Clock
- HACCP = Hazard Analysis and Critical Control Point

Accessories – UltraCella



Cat. No.	Part No.	Description
2707945	WM00ENNI0K	EEV Module without Ultracap
2707946	WM00EUN00K	EEV Module with Ultracap
2707947	WM00P0003N	Power Module Main Switch and 3HP Relay
2707948	WM00P000NN	Power Module Main Switch
3413043	Pgdewb0fzk	Carel Commissioning Tool

Accessories – ir33+ and IR33 Platform Refrigeration Controllers

NTC Sensors – Temperature



Cat. No.	Part No.	Type	Temp. Range °C	Specifications	Length m	Pkt Qty.
2707804	NTC015HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	1
2707805	NTC015HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	10
3413051	NTC030HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	1
2707807	NTC030HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	10
2707808	NTC060HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	6	1
2707732	NTC015WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	1.5	1
2707722	NTC030WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	3	1
2707723	NTC060WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	6	1
2707831	NTC015HT00	High Temp Plastic Probe IP55	0 to +150	50 kΩ @ 25 °C	1.5	1
2707810	NTC030HT00	High Temp Plastic Probe IP55	0 to +150	50 kΩ @ 25 °C	3	1
2707811	NTC060PS00	Product Simulation Probe	-50 to +105	10 kΩ @ 25 °C	6	1
2704518	NTC015HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	1
2704517	NTC030HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	1
3413039	NTC030HT41	Stainless Steel Sensor	0 to +105	50 kΩ @ 25 °C	3	1
3413036	NTC030WS01	3m cable. Strap on.	-40 to +105	-40 kΩ to +105 °C	3	1
2707724	NTC060HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	6	1
3413037	NTC060WS01	6m cable. Strap on	-40 to +105	10 kΩ @ 25 °C	6	1
2707830	NTC015WF00	Fast Acting Sensor IP67	-50 to +90	10 kΩ @ 25 °C	1.5	1

Electronic Controls



Carel

Accessories – ir33+ and IR33 Platform Refrigeration Controllers

Sensor Pockets



Cat. No.	Part No.	Type	Size	Thread
2707803	NTCOSS003	Stainless Steel	8 x 60mm	1/4" BSP

Serial Cards

The RS485 serial option is used to connect Carel compatible controllers to a supervisory system such as PlantWatchPRO and PlantVisorPRO via a standard RS485 serial line.



Cat. No.	Part No.	Description	Suits
2707835	IROPZ48500	RS485 Serial Card	IR33, ir33+
2707828	IROPZSER30	RS485 Serial Card	DN33, SmartCella
2707839	IROPZSEM30	RS485 Serial Card	MD33

Remote Display and Interfaces



Cat. No.	Part No.	Description	Suits
2707829	IR00XGD000	Remote Display	IR33, DN33, MD33
2707828	IROPZSER30	Remote Display Interface	DN33
2707839	IROPZSEM30	Remote Display Interface	MD33
2707756	PSTCON0300	Connector for Remote Display 3.0m	MD33

Other Accessories



Cat. No.	Part No.	Description	Suits
2707824	IROPZKEY00	Programming Key	IR33, DN33, MD33
2707953	IROPZKEYA0	240V Programming Key	IR33, DN33, MD33
2707827	IRTRRES000	IR Remote Control	IR33, DN33, MD33
2707720	RLY2402HP	Relay 240V Coil 2HP 240V Switching	IR33, DN33, MD33
2707726	TRA12VDE00	Transformer 240-12Vac 3VA	IR33, DN33, MD33
2707844	STRSIR0012	Strobe siren 12 Vac 100Db	IR33, DN33, MD33
2707716	IRBOX20000	Large Mounting Box (with Precut Hole)	IR33, ir33+
2707952	IRTRUES000	IR Remote Control	IR33 Universal Controllers
2707802	PSTCON03B0	Connector for Remote Display 3m	IR33, DN33, MD33
2707731	S90CONN001	Connector Cable 3m	IR32POLBRO Controller

“Easy” Series Refrigeration Controllers



Cat. No.	Part No.	Type	Temp. Range °C	Power Supply	Relay				Digital Inputs*	RTC HACCP*
					Amps Res (Ind)					
					Comp.	Fan	Defrost	Aux.		
8001478	PJEZMNN0E0	Thermometer	-50° to +90	240 Vac						
2707874	PJEZS0H000	Thermostat Med Temp	-50° to +90	240 Vac	10 (10)				1	
2707875	PJEZS0G000	Thermostat Med Temp	-50° to +90	240 Vac	10 (10)			8 (4)	1	
2707876	PJS1Y0V000	Thermostat Milk Vat	-50° to +90	240 Vac	12 (2)	8 (4)*		8 (4)		
2707892	PJEZSNH0E0	Thermostat Med Temp Compact	-50° to +90	240 Vac	10 (10)					
2707888	PJEZC00000	Thermostat Low Temp	-50° to +90	240 Vac	8 (4)	8 (4)	8 (4)		1	
2707889	PJS2X0H00	Thermostat Med Temp	-50° to +90	240 Vac	10 (10)			8 (4)	1	
2707890	PJEZC8I050	PJeasy split - Low temp. Comp, DEF, fan, AUX. CW enclosure	-50° to +90	240 Vac	12 (10)	12 (2)	12 (10)	12 (10)	1	

*Stirrer Relay

Electronic Controls



Carel

Easy Controls for OEM Users



Cat. No.	Part No.	Type	Control Model No.	Sensor Model No.
2707860	PJEZSOH0AP	Thermostat Med Temp	10 x PJEZSOH000	10 x NTC015HP00
2707864	PJEZS002E0AP	Thermostat Med Temp	10 x PJEZS002E00	10 x NTC015HP00
2707863	PJEZSNH0E0AP	Thermostat Med Temp Compact	10 x PJEZSNH0E0	10 x NTC015HP00
2707862	PJEZC000AP	Thermostat Low Temp	10 x PJEZC00000	20 x NTC015HP00

Accessories – Easy Series

NTC Sensors – Temperature



Cat. No.	Part No.	Type	Temp. Range °C	Specifications	Length m	Pkt Qty.
2707804	NTC015HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	1
2707805	NTC015HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	10
3413051	NTC030HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	1
2707807	NTC030HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	10
2707808	NTC060HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	6	1
2707732	NTC015WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	1.5	1
2707722	NTC030WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	3	1
2707723	NTC060WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	6	1
2707831	NTC015HT00	High Temp Plastic Probe IP55	0 to +150	50 kΩ @ 25 °C	1.5	1
2707810	NTC030HT00	High Temp Plastic Probe IP55	0 to +150	50 kΩ @ 25 °C	3	1
2707811	NTC060PS00	Product Simulation Probe	-50 to +105	10 kΩ @ 25 °C	6	1
2704518	NTC015HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	1
2704517	NTC030HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	1
3413039	NTC030HT41	Stainless Steel Sensor	0 to +105	50 kΩ @ 25 °C	3	1
3413036	NTC030WS01	3m Cable. Strap on.	-40 to +105	-40 kΩ to +105 °C	3	1
2707724	NTC060HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	6	1
3413037	NTC060WS01	6m Cable. Strap on	-40 to +105	10 kΩ @ 25 °C	6	1
2707830	NTC015WF00	Fast Acting Sensor IP67	-50 to +90	10 kΩ @ 25 °C	1.5	1

Other Accessories

Cat. No.	Part No.	Description
2707824	IROPZKEY00	Programming Key (Batteries)
2707953	IROPZKEYA0	Programming Key (240V)
2707835	IROPZ48500	RS485 Serial Card

Electronic Controls



Carel

MPXPRO Modular Supermarket Case Controllers



Cat. No.	Part No.	Description
2707857	MX30M25H00	Master Control 5 Relays (EEV)
2707858	MX30M21H00	Master Control 5 Relays (No EEV)
2702179	MX30M24H00	Master 5 Relay, PWM Driver for Pulse EEV

Accessories – MPXPRO Series

NTC Sensors – Temperature



Cat. No.	Part No.	Type	Temp. Range °C	Specifications	Length m	Pkt Qty.
2707804	NTC015HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	1
2707805	NTC015HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	10
3413051	NTC030HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	1
2707807	NTC030HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	10
2707808	NTC060HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	6	1
2707732	NTC015WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	1.5	1
2707722	NTC030WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	3	1
2707723	NTC060WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	6	1
2707811	NTC060PS00	Product Simulation Probe	-50 to +105	10 kΩ @ 25 °C	6	1

Electronic Controls



Carel

Accessories – MPXPRO Series

PTC Sensors – Temperature



Cat. No.	Part No.	Type	Temp. Range °C	Specifications	Length: m
2707765	PTC0150000	Bulb sensor IP65	0 to +150	1kΩ @ 25°C	1.5

Sensors – Pressure Transmitters



Cat. No.	Part No.	Type	Pressure Range
2707840	SPKT0011C3	4-20 mA	0 to 10 bar
2707745	SPKT0021C3	4-20 mA	-0.5 to 7 bar
2707744	SPKT0031C3	4-20 mA	0 to 30 bar
2707841	SPKT00B1C3	4-20 mA	0 to 45 bar
2707832	SPKT0013P3	0-5v	-1 bar to 9.3 bar
2707833	SPKT0033P3	0-5v	0 bar to 34.5 bar
2707843	SPKT00B6P0	0-5v	0 bar to 45 bar
3413038	SPKT0143P0	0-5v	0 to 17.3 bar
3413058	SPKT00G1C0	4-20 mA	0 to 60 bar
3413065	SPKT00D8C0	4-20 mA	0 to 150 bar
3413066	SPKT01B6P0	0-5vdc	0 to 45 bar

Connection Cables



Cat. No.	Part No.	Description	Length: m
2707748	SPKC002313	Connector for SPKT transmitter, IP65	2
2707749	SPKC005313	Connector for SPKT transmitter, IP65	5
2707752	MCHSMLCAB0	Kit of 24 cables	1

Other Accessories

Cat. No.	Part No.	Description
2707859	IR00UGC300	Remote terminal (green LED, keypad, buzzer, IR)
2707855	TRA00BE240	Transformer 240/24Vac 20VA Panel mount with fuse holder
2704508	MX30P48500	MPXPRO Serial Card

IR33*7 Universal Series

The IR33 Universal Series of controllers is very flexible and can be used in many applications. The controller is selected depending on the number and type of outputs required. 9 preconfigured modes are available to select from or the user can completely reconfigure the use of the outputs. The IR33*7 series is for temperature applications. It is possible to connect NTC, NTC high temp, PTC and Pt1000 sensors to its inputs. The IR33*9 is for any application and can accept any inputs from the following list: NTC, NTC high temp, PTC, Pt1000, Pt100, J/K thermocouple, 0-1V, -0.5-1.3V, 0-10V, 0-5V ratiometric, 0-20mA and 4-20mA.

IR33*7 Universal Series – Panel Mount



Cat. No.	Part No.	Power Supply	Outputs Type
2707893	IR33V7HR20	230 Vac	1 x SPDT Relay
2707894	IR33V7LR20	12-24 Vac/12-30 Vdc	1 x SPDT Relay
2707895	IR33W7HR20	230 Vac	2 x SPDT Relays
2707896	IR33W7LR20	12-24 Vac/12-30 Vdc	2 x SPDT Relays
2707897	IR33Z7HR20	230 Vac	3 x SPDT + 1 x SPST Relays
2707898	IR33Z7HB20*	230 Vac	3 x SPDT + 1 x SPST Relays
2707899	IR33Z7LR20	12-24 Vac/12-30 Vdc	3 x SPDT + 1 x SPST Relays
2707901	IR33A7LR20	12-24 Vac/12-30 Vdc	4 x 10Vdc SSR Outputs
2707902	IR33E7HB20*	230 Vac	1 x SPDT + 1 x SPST Relays + 2 x 10Vdc Outputs

*Controller has a built-in Real Time Clock

Electronic Controls



Carel

DN33*7 Universal Series – Din Rail Mount



Cat. No.	Part No.	Power Supply	Outputs Type
2707904	DN33V7HR20	230 Vac	1 x SPDT Relay
2707905	DN33V7LR20	12-24 Vac/12-30 Vdc	1 x SPDT Relay
2707906	DN33W7HR20	230 Vac	2 x SPDT Relays
2707907	DN33W7LR20	12-24 Vac/12-30 Vdc	2 x SPDT Relays
2707908	DN33Z7HR20	230 Vac	4 x SPDT Relays
2707909	DN33Z7HB20*	230 Vac	4 x SPDT Relays
2707910	DN33Z7LR20	12-24 Vac/12-30 Vdc	4 x SPDT Relays
2707911	DN33A7LR20	12-24 Vac/12-30 Vdc	4 x 10Vdc SSR Outputs
2707912	DN33E7HR20	230 Vac	2 x SPDT Relays + 2 x 10Vdc Outputs
2707913	DN33E7HB20*	230 Vac	2 x SPDT Relays + 2 x 10Vdc Outputs

*Controller has a built-in Real Time Clock

IR33*9 Universal Series – Panel Mount



Cat. No.	Part No.	Power Supply	Outputs Type
2707915	IR33V9HR20	230 Vac	1 x SPDT Relay
2707916	IR33V9MR20	24 Vac/dc	1 x SPDT Relay
2707917	IR33W9HR20	230 Vac	2 x SPDT Relays
2707918	IR33W9MR20	24 Vac/dc	2 x SPDT Relays
2707919	IR33Z9HR20	230 Vac	3 x SPDT + 1 x SPST Relays
2707920	IR33Z9MR20	24 Vac/dc	3 x SPDT + 1 x SPST Relays
2707921	IR33E9HR20	230 Vac	1 x SPDT + 1 x SPST Relays + 2 x 10Vdc Outputs
2707922	IR33E9MR20	24 Vac/dc	1 x SPDT + 1 x SPST Relays + 2 x 10Vdc Outputs

*Controller has a built-in Real Time Clock

DN33*9 Universal Series – Din Rail Mount



Cat. No.	Part No.	Power Supply	Outputs Type
2707923	DN33V9HR20	230 Vac	1 x SPDT Relay
2707924	DN33V9MR20	24 Vac/dc	1 x SPDT Relay
2707925	DN33W9HR20	230 Vac	2 x SPDT Relays
2707926	DN33W9MR20	24 Vac/dc	2 x SPDT Relays
2707927	DN33Z9HR20	230 Vac	4 x SPDT Relays
2707928	DN33Z9MR20	24 Vac/dc	4 x SPDT Relays
2707929	DN33E9HR20	230 Vac	2 x SPDT Relays + 2 x 10Vdc Outputs
2707930	DN33E9MR20	24 Vac/dc	2 x SPDT Relays + 2 x 10Vdc Outputs

*Controller has a built-in Real Time Clock

Electronic Controls



Carel

Accessories – IR33 Universal Series Controllers

NTC Sensors – Temperature



Cat. No.	Part No.	Type	Temp. Range °C	Specifications	Length m	Pkt Qty.
2707804	NTC015HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	1
2707805	NTC015HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	10
3413051	NTC030HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	1
2707807	NTC030HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	10
2707808	NTC060HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	6	1
2707732	NTC015WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	1.5	1
2707722	NTC030WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	3	1
2707723	NTC060WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	6	1
2707831	NTC015HT00	High Temp Plastic Probe IP55	0 to +150	50 kΩ @ 25 °C	1.5	1
2707810	NTC030HT00	High Temp Plastic Probe IP55	0 to +150	50 kΩ @ 25 °C	3	1
2707811	NTC060PS00	Product Simulation Probe	-50 to +105	10 kΩ @ 25 °C	6	1
2704518	NTC015HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	1
2704517	NTC030HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	1
3413039	NTC030HT41	Stainless Steel Sensor	0 to +105	50 kΩ @ 25 °C	3	1
3413036	NTC030WS01	3m cable. Strap on.	-40 to +105	-40 kΩ to +105 °C	3	1
2707724	NTC060HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	6	1
3413037	NTC060WS01	6m cable. Strap on	-40 to +105	10 kΩ @ 25 °C	6	1
2707830	NTC015WF00	Fast Acting Sensor IP67	-50 to +90	10 kΩ @ 25 °C	1.5	1

PTC Sensors – Temperature

Cat. No.	Part No.	Type	Temp. Range °C	Specifications	Length m
2707765	PTC0150000	Bulb sensor IP65	-50 to +150	1kΩ @ 25°C	1.5

PT100 Sensors – Temperature

Cat. No.	Part No.	Type	Temp. Range °C	Specifications	Length m
2707740	PT100000A1	Inox Steel Sensor	-70 to +250	1kΩ @ 25°C	1.5

Active DP Sensors – Temperature and Humidity



Cat. No.	Part No.	Type	Temp. Range °C	Humidity range %RH	Output type
2707730	DPWC111000	Wall mount humidity and temperature sensor	-10 to +60	10 to 90	4-20mA + NTC
2707851	DPWC115000	Wall mount humidity and temperature sensor	-10 to +60	10 to 90	0-10V + NTC
2707733	DPPC110000	Industrial wall mount humidity/temperature sensor	-20 to +70	10 to 90	2 x 4-20mA
2707736	DPPC210000	Industrial wall mount humidity/temperature sensor	-20 to +70	0 to 100	2 x 4-20mA
2707721	DPWT011000	NTC Room Sensor IP30	-20 to +70	10 to 90	2 x 4-20mA

Electronic Controls



Carel

Sensors – Pressure



Cat. No.	Part No.	Type	Pressure Range
2707840	SPKT0011C3	4-20 mA	0 to 10 bar
2707745	SPKT0021C3	4-20 mA	-0.5 to 7 bar
2707744	SPKT0031C3	4-20 mA	0 to 30 bar
2707841	SPKT00B1C3	4-20 mA	0 to 45 bar
2707832	SPKT0013P3	0-5v	-1 bar to 9.3 bar
2707833	SPKT0033P3	0-5v	0 bar to 34.5 bar
2707843	SPKT00B6P0	0-5v	0 bar to 45 bar
3413038	SPKT0143P0	0-5v	0 to 17.3 bar
3413058	SPKT00G1C0	4-20 mA	0 to 60 bar
3413065	SPKT00D8C0	4-20 mA	0 to 150 bar
3413066	SPKT01B6P0	0-5vdc	0 to 45 bar

Connection Cables



Cat. No.	Part No.	Description	Length m
2707748	SPKC002313	Connector for SPKT transmitter, IP65	2
2707749	SPKC005313	Connector for SPKT transmitter, IP65	5
2707752	MCHSMLCAB0	Kit of 24 cables	1

Serial Cards

The RS485 serial option is used to connect Carel compatible controllers to a supervisory network via a standard RS485 serial line. The serial cards are used to connect these controllers to a PlantWatchPRO or a PlantVisorPRO.



Cat. No.	Part No.	Description	Suits
2707835	IROPZ48500	RS485 Serial Card	IR33 Universal
2707828	IROPZSER30	RS485 Serial Card	DN33 Universal

Other Accessories

Cat. No.	Part No.	Description	Suits
2707952	IRTRUES000	IR Remote control	IR33/DN33 Universal
2707824	IROPZKEY00	Programming key (batteries)	IR33 Platform
2707953	IROPZKEYA0	Programming key (240V)	IR33 Platform
2707716	IRBOX20000	Large mounting box	IR33 with precut hole
2707720	RLY2402HP	Relay 240V coil 2HP 240V switching	IR33, DN33, MD33

Electronic Controls



Carel

pRack Advanced Solution for Compressor Racks

The Carel pRack Controller is a family of controllers designed for the more complex and advanced systems.



pRack Controller Series – Controller kits

Cat. No.	Part No.	Description
3413041	PRK100X3G0	Carel PRACK300 Compact 2 x SSR INT PGD PRK100X3G0
2701929	PRK300L3F0	Carel Large Rack Control PRK300L3F0
2750439	PRK300L3FK	Carel Large Rack Control PRK300L3Fk
2750441	PRK300S3FK	Carel Small Rack Control PRK300S3Fk
2750442	00PCNFPRK	Carel Preconfigure of Rack Control
3413067	PRK30TL3FK	pRACK large, CO2 trans-critical, external pGD1 display

*Can also be used as digital input

Kit includes 1 x controller with rack software, 1 x connector kit and 1 x pGD1 display (if not built-in display).

Accessories – pRack Controller Series

NTC Sensors – Temperature



Cat. No.	Part No.	Type	Temp. Range °C	Specifications	Length m	Pkt Qty.
2707804	NTC015HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	1
2707805	NTC015HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	10
3413051	NTC030HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	1
2707807	NTC030HPAP	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	10
2707808	NTC060HP03	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	6	1
2707732	NTC015WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	1.5	1
2707722	NTC030WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	3	1
2707723	NTC060WH03	Stainless Steel Probe IP68	-50 to +90	10 kΩ @ 25 °C	6	1
2707831	NTC015HT00	High Temp Plastic Probe IP55	0 to +150	50 kΩ @ 25 °C	1.5	1
2707810	NTC030HT00	High Temp Plastic Probe IP55	0 to +150	50 kΩ @ 25 °C	3	1
2707811	NTC060PS00	Product Simulation Probe	-50 to +105	10 kΩ @ 25 °C	6	1
2704518	NTC015HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	1.5	1
2704517	NTC030HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	3	1
3413039	NTC030HT41	Stainless Steel Sensor	0 to +105	50 kΩ @ 25 °C	3	1
3413036	NTC030WS01	3m Cable. Strap on.	-40 to +105	-40 kΩ to +105 °C	3	1
2707724	NTC060HP00	Plastic Probe IP67	-50 to +50	10 kΩ @ 25 °C	6	1
3413037	NTC060WS01	6m Cable. Strap on	-40 to +105	10 kΩ @ 25 °C	6	1
2707830	NTC015WF00	Fast Acting Sensor IP67	-50 to +90	10 kΩ @ 25 °C	1.5	1

Sensors – Pressure Transmitters



Cat. No.	Part No.	Type	Pressure Range
2707840	SPKT0011C3	4-20 mA	0 to 10 bar
2707745	SPKT0021C3	4-20 mA	-0.5 to 7 bar
2707744	SPKT0031C3	4-20 mA	0 to 30 bar
2707841	SPKT00B1C3	4-20 mA	0 bar to 45 bar
2707832	SPKT0013P3	0-5v	-1 bar to 9.3 bar
2707833	SPKT0033P3	0-5v	0 bar to 34.5 bar
2707843	SPKT00B6P0	0-5v	0 bar to 45 bar
3413038	SPKT0143P0	0-5v	0 to 17.3 bar
3413058	SPKT00G1C0	4-20 mA	0 to 60 bar
3413065	SPKT00D8C0	4-20 mA	0 to 150 bar
3413066	SPKT01B6P0	0-5vdc	0 to 45 bar

Connection Cables



Cat. No.	Part No.	Description	Length m
2707748	SPKC002313	Connector for SPKT transmitter, IP65	2
2707749	SPKC005313	Connector for SPKT transmitter, IP65	5

Electronic Controls



Carel

Supervisory and Monitoring Systems

Cold Watch Person Trapped Alarm

The trapped personnel alarm kit is a safety system for cool rooms and freezer rooms. It allows personnel trapped inside the cold room to call for help by pressing an emergency button and thus activating the audible signal-warning light on the control panel outside.

The system consists of:

Control unit: to be installed outside of the cold room; fitted with an audible siren and flashing light to signal alarms.

Backup battery: housed inside the control unit, provides power in the event of blackouts.

Emergency button: to be installed inside the cold room, made up of a mushroom-head pushbutton with light.

The LED on the mushroom-head pushbutton is on at all times, so the button can be identified even in the dark.



Cat. No.	Part No.	Description
2707846	CM00006236	Cold Watch Person Trapped Alarm
2707847	KTCWPSENGL	Replacement Push Button Kit

Boss Platform

BOSS is a monitoring and alarms management solution. It can manage controllers connected to the serial line and will record variables such as temperature, pressure and status. Alarms sent to the BOSS from the individual controllers can be managed according to the needs of the user by sending SMS (with optional GSM modem) telegram notification or emails and activating relays. Information can be extracted directly from the USB ports or remotely on a computer network or even over the internet. It also features a report function, a scheduling function (for defrosts, lights and automatic reports), the possibility to display graphs and to configure different levels of users.



Cat. No.	Part No.	Description
3413048	BMEST00LE0	Carel Boss Mini Advanced 50 x Wifi 24VDC BMEST00LE0
3413047	BMEST00RS0	Carel Boss Mini Basic 30 x 24VDC BMEST00RS0
3413068	BMBST00FP0	Carel Boss Micro – 15 x devices with WiFi
3413069	BMBST00DP0	Carel Boss Micro – 15 x devices with WiFi + 4G
3413029	BMHST03XS0	Carel Boss 100X Device BMHST03XS0
3413028	00PCNFBMH	Carel Preconfiguration of Carel Boss – Retail

Accessories – Boss Platform



Cat. No.	Part No.	Description
3413040	BMHTCHSRN0	Carel Boss Touch Screen with Wall Bracket Kit BMHTCHSRN0
3413063	BMHSTMDA00	Carel Boss and Boss Mini SMS Modem BMHSTMDA00
3413049	BMEPS000AU	Carel Boss Mini Power Supply 24VDC 1.5a BMEPS000AU
3413062	BMETCH00MK	Carel Boss Mini USB and Mini HDMI Adapter BMETCH00MK
2707773	PCACCESSPK	Carel BOSS PC Pack PCACCESSPK
3413050	BMESTRLA00	Carel Boss Mini Relay Expansion Module X3 BMESTRLA00
2707760	IOM0023000	Carel I/O Module RS485 Line IOM0023000
3413035	FLOORPLAN	Carel Custom Floor Plan
3413020	PVUPS00000	Carel UPS Uninterruptible Power Supply PVPRO PVUPS00000
3413021	CVSTDUMOR0	Carel USB-RS485 Serial Converter CVSTDUMOR0

Power Meters and Accessories

Cat. No.	Part No.	Description
2707931	MT300W1100	3 Phase pPower Meter (Require Terminal Display)
2707932	MTOPZD0000	User Terminal for 3 Phase Power Meter
2707933	MTOPZT1000	100A Current Transformer
2707934	MTOPZT2000	200A Current Transformer

Contactors and Overloads



LS

Contactors



With 240 VAC 50 Hz Coil		Ratings: AC3 415V		Auxiliary Contacts
Cat. No.	Part No.	kW	Amps	
2711553	MC-9B 240VAC	4	9	1 NO & 1 NC
2711554	MC-12B 240VAC	5.5	12	1 NO & 1 NC
2711555	MC-18B 240VAC	7.5	18	1 NO & 1 NC
2711556	MC-22B 240VAC	11	22	1 NO & 1 NC
2711557	MC-32A 240VAC	15	32	1 NO & 1 NC
2711558	MC-40A 240VAC	18.5	40	2 NO & 2 NC
2711559	MC-50A 240VAC	22	50	2 NO & 2 NC
2711560	MC-65A 240VAC	30	65	2 NO & 2 NC

Thermal Overload Relays



Cat. No.	Part No.	Rating: Amps	Suits Contactors
2711561	MT-32-0.16	0.1 - 0.16	MC-9B to MC-40A
2711562	MT-32-0.25	0.16 - 0.25	MC-9B to MC-40A
2711563	MT-32-0.4	0.25 - 0.4	MC-9B to MC-40A
2711564	MT-32-0.63	0.4 - 0.63	MC-9B to MC-40A
2711565	MT-32-1	0.63 - 1	MC-9B to MC-40A
2711566	MT-32-1.6	1 - 1.6	MC-9B to MC-40A
2711567	MT-32-2.5	1.6 - 2.5	MC-9B to MC-40A
2711568	MT-32-4	2.5 - 4	MC-9B to MC-40A
2711569	MT-32-6	4 - 6	MC-9B to MC-40A
2711570	MT-32-8	5 - 8	MC-9B to MC-40A
2711571	MT-32-9	6 - 9	MC-9B to MC-40A
2711572	MT-32-10	7 - 10	MC-9B to MC-40A
2711573	MT-32-13	9 - 13	MC-9B to MC-40A
2711574	MT-32-18	12 - 18	MC-9B to MC-40A
2711575	MT-32-22	16 - 22	MC-9B to MC-40A
2711576	MT-32-25	18 - 25	MC-9B to MC-40A
2711577	MT-32-32	22 - 32	MC-9B to MC-40A
2711578	MT-32-40	28 - 40	MC-9B to MC-40A
2711579	MT-63-40	28 - 40	MC-50A to MC-65A
2711580	MT-63-50	34 - 50	MC-50A to MC-65A
2711581	MT-63-65	45 - 60	MC-50A to MC-65A

Electronic Overloads



Cat. No.	Part No.	Rating: Amps	Suits Contactors
2711582	GMP22-2P 1.5A	0 - 1.5	MC-9B to MC-22B
2711583	GMP22-2P 5A	1 - 5	MC-9B to MC-22B
2711584	GMP22-2P 22A	4.4 - 22	MC-9B to MC-22B

Accessories



Cat. No.	Part No.	Description		
2704968	AU-220	Auxiliary Contacts	Front Mount	2 NO
324756	AU-202	Auxiliary Contacts	Front Mount	2 NC
2711585	UA-111	Auxiliary Contacts	Side Mount	1 NO & 1 NC

Coils



Cat. No.	Part No.	Description		Suits Contactors
2711586	MC22-CO-24VAC	Replacement Coil	24 VAC	MC-9B to MC-22B
2711587	MC22-CO-415VAC	Replacement Coil	415 VAC	MC-9B to MC-22B
2711588	MC40-CO-24VAC	Replacement Coil	24 VAC	MC-32A to MC-40A
2711589	MC40-CO-415VAC	Replacement Coil	415 VAC	MC-32A to MC-40A
2711590	MC65-CO-24VAC	Replacement Coil	24 VAC	MC-50A to MC-65A
2711591	MC65-CO-415VAC	Replacement Coil	415 VAC	MC-50A to MC-65A

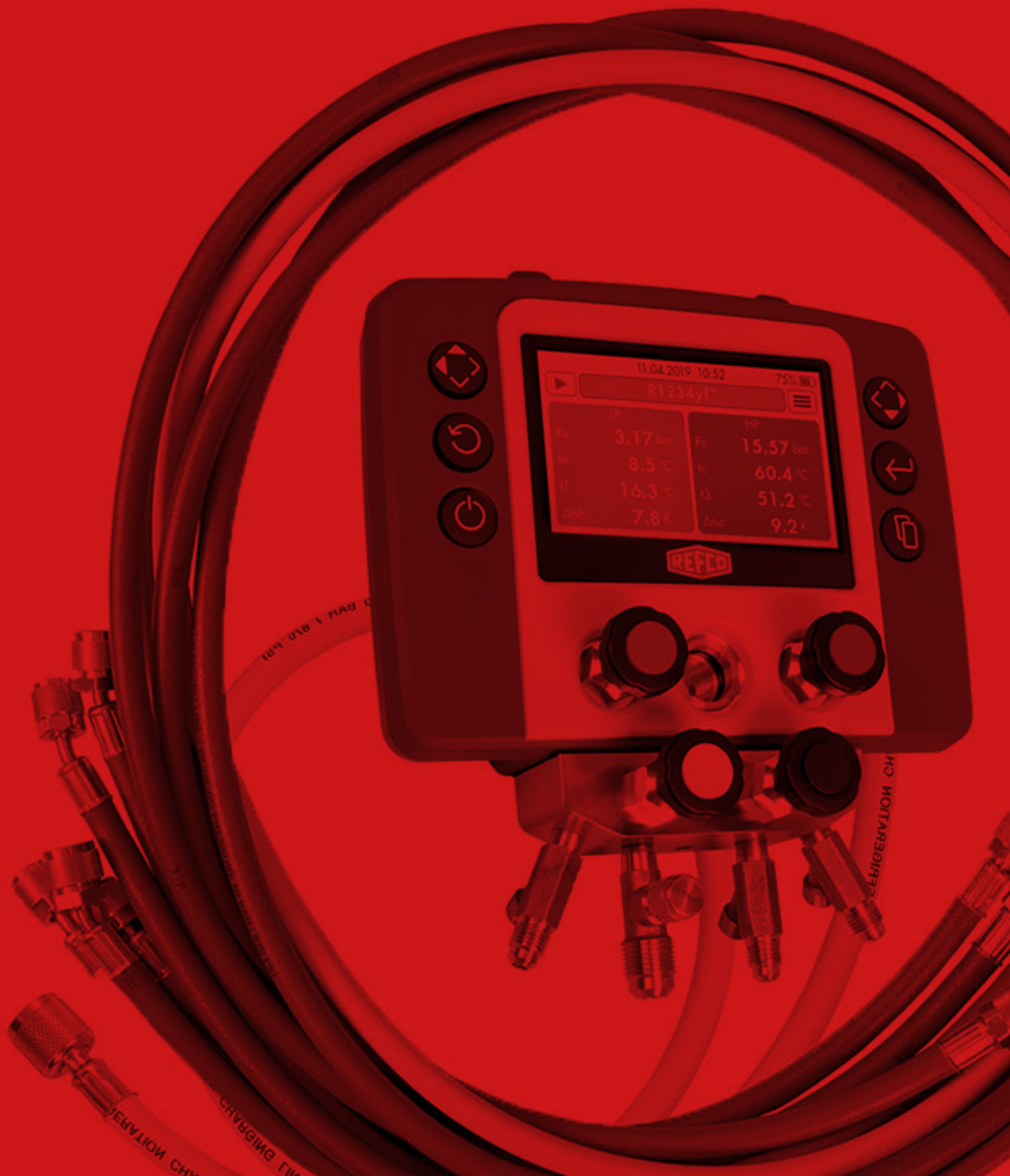
Engineering & Technical Data

**The data to help you get
your job over the line**

**Our engineering team is committed to helping ease
the refrigeration process with up to date data and
information on everything you'll need.**

- **Information and data on everything you'll need including:**
 - Conversions
 - Refrigerants
 - Copper And Capillary Tubing
 - Cool Rooms
 - Thermostatic Expansion Valves
 - Refrigeration System
 - Noise & Vibration
 - Air Filter Selection
 - Electrical
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ACTROL™



Conversion Data

Summary of Common Conversion Factors

Multiply Left Hand Unit by Factor to obtain Right Hand Unit. Divide Right Hand Unit by Factor to obtain Left Hand Unit

Measurement	Units	Factor
Length	inches ■ mm	25.4
	feet ■ metres	0.3048
Area	inch ² ■ mm ²	645.16
	ft ² ■ m ²	0.0929
Volume	inch ³ ■ mm ³	16387
	ft ³ ■ m ³	0.0283
Volume (Liquid)	gall (Imp) ■ gall US	1.20095
	gall (Imp) ■ l	4.5456
	gall (US) ■ l	3.785
Volume (Flow Rate) Liquid	gall/min (Imp) ■ l/sec	0.07575
	gall/min (Imp) ■ l/min	4.5456
	gall/min (Imp) ■ l/hour	272.736
	gall/min (US) ■ l/sec	0.06308
	gall/min (US) ■ l/min	3.785
	gall/min (US) ■ l/hour	227.1
Volume (Flow Rate) Air	cfm ■ l/sec	0.472
	cfm ■ l/min	28.32
	cfm ■ m ³ /min	42.372
	cfm ■ m ³ /hour	1.6992
	m ³ /hour ■ l/sec	0.2778
Power	HP ■ Watts	746
	HP ■ kW	0.746

Measurement	Units	Factor
Heat Flow	BTU/hr ■ Watts	0.29307
	Tons (Refrig) ■ BTU/hr	12000
	Tons (Refrig) ■ kW	3.517
	kcal/hr ■ Watts	1.163
	kcal/hr ■ Tons (Refrig)	0.000331
Pressure	psi ■ kPa	6.895
	psi ■ mPa	0.006895
	psi ■ bar	0.06895
	psi ■ Atmos.	0.06895
	In. Wg ■ Pa	248.6
	In. Wg ■ kPa	0.249
	Atmos. ■ kPa	101.325
	in. Hg ■ Pa	3386
	in. Hg ■ kPa	3.386
	In. Hg ■ bar	0.034
	kg/cm ² ■ psi	14.22
kg/cm ² ■ kPa	98.07	
Velocity	ft/sec ■ km/hr	1.609
	ft/sec ■ m/sec	0.3048
	ft/min ■ m/sec	0.00508
Weight (Mass)	lbs ■ kg	0.4536

Conversion Factors

Multiply	By	To Obtain
Atmospheres	29.92	Inches of Mercury
Atmospheres	33.9	Feet of Water
Atmospheres	1.0333	kg/cm ²
Atmospheres	14.696	lbs/in ² (psi)
Atmospheres	762.48	mmHg (torr)
Atmospheres	101.325	kPa
Bars	100	kPa
Bars	14.5	psi
British Thermal Units	0.252	Kilogram-calories
British Thermal Units	777.5	Foot-lbs
British Thermal Units	3.927 x 10 ⁻⁴	Horsepower-hrs
British Thermal Units	107.5	Kilogram-metre
British Thermal Units	2.928 x 10 ⁻⁴	Kilowatt-hrs
B.T.U./min	12.96	Foot-lbs/sec
B.T.U./min	0.02356	Horsepower
B.T.U./min	0.01757	Kilowatts
B.T.U./min	17.57	Watts
B.T.U./hr	0.293	Watts
Centimetres	0.3937	Inches
Centimetres	0.01	Metres
Centimetres	10	Millimetres
Centimetres of Mercury	0.4461	Feet of Water
Centimetres of Mercury	136	kgs/sq. metre
Centimetres of Mercury	0.1934	lbs/sq. inch

Conversion Factors

Multiply	By	To Obtain
Centimetres/second	1.969	Feet/min.
Centimetres/second	0.03281	Feet/sec.
Centimetres/second	0.6	Metres/min.
Cubic Centimetres	3.531 x 10 ⁻⁵	Cubic Feet
Cubic Centimetres	0.06102	Cubic Inches
Cubic Centimetres	10 ⁻⁶	Cubic Metres
Cubic Centimetres	0.001	Litres
Cubic Centimetres	0.001759	Pints (liq.)
Cubic Centimetres	0.002113	Imperial Pints (liq.)
Cubic Feet	1728	US Cubic Inches
Cubic Feet	0.02832	Cubic Metres
Cubic Feet	0.03704	Cubic Yards
Cubic Feet	6.22889	Gallons Imperial
Cubic Feet	7.48052	Gallons US
Cubic Feet	28.32	Litres
Cubic Feet	49.827	Pints (liq.) Imperial
Cubic Feet	59.84	Pints (liq.) US
Cubic Feet/minute	472	Cubic cms/sec.
Cubic Feet/minute	0.1038	Gallons/sec. Imperial
Cubic Feet/minute	0.1247	Gallons/sec. US
Cubic Feet/minute	0.472	Litres/sec.
Cubic Feet/minute	62.43	lbs. of water/min.
Cubic Feet/second	0.5382	Mill. Galls/day Imperial
Cubic Feet/second	0.646317	Mill. Galls/day US
Cubic Feet/second	373.733	Galls/min. Imperial
Cubic Feet/second	448.831	Galls/min. US

Conversion Data

Conversion Factors

Multiply	By	To Obtain
Cubic Inches	16.39	Cubic Centimetres
Cubic Inches	5.787 x 10 ⁻⁴	Cubic Feet
Cubic Inches	1.639 x 10 ⁻⁵	Cubic Metres
Cubic Inches	2.143 x 10 ⁻⁵	Cubic Yards
Cubic Inches	0.004	Gallons Imperial
Cubic Inches	0.004	Gallons US
Cubic Inches	0.016	Litres
Cubic Metres	106	Cubic Centimetres
Cubic Metres	35.31	Cubic Feet
Cubic Metres	61026	Cubic Inches
Cubic Metres	1.308	Cubic Yards
Cubic Metres	220	Gallons Imperial
Cubic Metres	264.2	Gallons US
Cubic Metres	1000	Litres
Cubic Yards	27	Cubic Feet
Cubic Yards	46,656	Cubic Inches
Cubic Yards	0.765	Cubic Metres
Cubic Yards	764.6	Litres
Cubic Yards	1345.6	Pints (liq.) Imperial
Cubic Yards	1616	Pints (liq.) US
Cubic Yards/min.	0.45	Cubic
Cubic Yards/min.	2.804	Galls/sec.
Decilitres	0.1	Litres
Decimetres	0.1	Metres
Degrees (angle)	60	Minutes
Degrees (angle)	0.017	Radians
Degrees (angle)	3600	Seconds
Degrees/sec.	0.017	Radians/sec.
Degrees/sec.	0.167	Revolutions/min.
Degrees/sec.	0.003	Revolutions/sec.
Dekalitre	10	Litres
Dekametre	10	Metres
Feet	30.48	Centimetres
Feet	12	Inches
Feet	0.305	Metres
Feet	0.333	Yards
Feet of Water	0.030	Atmospheres
Feet of Water	0.883	Inches of Mercury
Feet of Water	0.030	kgs/sq. cm
Feet of Water	62.43	lbs/sq. ft
Feet of Water	0.434	lbs/sq. inch
Feet/minute	0.508	Centimetres/sec.
Feet/minute	0.017	Feet/sec.
Feet/minute	0.005	Metres/sec.
Feet/sec.	0.305	Metres/sec.
Feet/sec./sec.	30.48	cms/sec./sec.
Feet/sec./sec.	0.305	Metres/sec./sec.
Foot-pounds	1.286 x 10 ⁻³	British Thermal Units
Foot-pounds	5.050 x 10 ⁻⁷	Horsepower-hrs
Foot-pounds	3.241 x 10 ⁻⁴	Kilogram-calories
Foot-pounds	0.138	Kilogram-metres
Foot-pounds	3.766 x 10 ⁻⁷	Kilowatt-hrs
Foot-pounds/sec.	7.717 x 10 ⁻²	B.T. Units/min.
Foot-pounds/sec.	1.818 x 10 ⁻³	Horsepower
Foot-pounds/sec.	1.945 x 10 ⁻²	kg-calories/min.
Foot-pounds/sec.	1.356 x 10 ⁻³	Kilowatts
Gallons Imperial	0.161	Cubic Feet
Gallons Imperial	277.4	Cubic Inches
Gallons Imperial	4.546	Litres
Gallons Imperial	8	Pints Imperial
Gallons Imperial	4	Quarts Imperial

Conversion Factors

Multiply	By	To Obtain
Gallons Imperial	1.201	Gallons U.S.
Gallons U.S.	0.134	Cubic Feet
Gallons U.S.	231	Cubic Inches
Gallons U.S.	3.785	Litres
Gallons U.S.	8	Pints U.S.
Gallons U.S.	4	Quarts U.S.
Gallons U.S.	0.833	Gallons Imperial
Gallons Water Imperial	10.02	Pounds of Water
Gallons Water U.S.	8.345	Pounds of Water
Gallons/min. Imperial	0.027	Cubic Feet/sec.
Gallons/min. Imperial	0.076	Litres/sec.
Gallons/min. Imperial	10.713	Cubic feet/hr
Gallons/min. U.S.	0.022	Cubic Feet/sec.
Gallons/min. U.S.	0.063	Litres/sec.
Gallons/min. U.S.	8.921	Cubic Feet/hr.
Grams	0.001	Kilograms
Grams	1000	Milligrams
Grams	0.035	Ounces
Grams/litre	58.417	Grains/gal. U.S.
Grams/litre	8.345	Pounds/100 gals. U.S.
Grams/litre	0.062	Pounds/cubic foot
Grams/litre	1000	Parts/million
Hectolitres	100	Litres
Hectometres	100	Metres
Hectowatts	100	Watts
Horsepower	42.44	B.T. Units/min.
Horsepower	33,000	Foot-lbs/min
Horsepower	550	Foot-lbs/sec.
Horsepower	1.014	Horsepower (metric)
Horsepower	10.7	kg-calories/min.
Horsepower	0.746	Kilowatts
Horsepower-hours	2547	British Thermal Units
Horsepower-hours	1.98 x 10 ⁶	Foot-lbs
Horsepower-hours	641.7	Kilogram-calories
Horsepower-hours	2.737 x 10 ⁵	Kilogram-metres
Horsepower-hours	0.746	Kilowatt-hours
Inches	2.54	Centimetres
Inches of Mercury	0.033	Atmospheres
Inches of Mercury	1.133	Feet of Water
Inches of Mercury	0.035	kgs/sq. cm
Inches of Mercury	3.39	kPa
Inches of Mercury	0.491	lbs/sq. inch
Inches of Water	0.002	Atmospheres
Inches of Water	0.074	Inches of Mercury
Inches of Water	0.003	kgs/sq. cm
Inches of Water	0.249	kPa
Inches of Water	5.202	lbs/sq. foot
Inches of Water	0.036	lbs/sq inch
Kilograms	2.205	Pounds
Kilograms	1000	Grams
Kilograms/metre	0.672	lbs/foot
Kilograms/sq. cm	0.968	Atmospheres
Kilograms/sq. cm	32.81	Feet of Water
Kilograms/sq. cm	28.96	Inches of Mercury
Kilograms/sq. cm	2048	lbs/sq. foot
Kilograms/sq. cm	14.22	lbs/sq. inch
Kilolitre	1000	Litres
Kilometres	3281	Feet
Kilometres	1000	Metres
Kilometres	0.621	Miles
Kilometres	1094	Yards

Conversion Data

Conversion Factors

Multiply	By	To Obtain
Kilometres/hour	54.68	Feet/minute
Kilometres/hour	0.540	Knots
Kilometres/hour	16.67	Metres/minute
Kilometres/hour	0.621	Miles/hour
Kilometres/hour/sec.	27.78	cm/sec./sec.
Kilometres/hour/sec.	0.911	ft./sec./sec.
Kilometres/hour/sec.	0.278	Metres/sec./sec.
Kilowatts	56.92	BTU/minute
Kilowatts	4.425 x 10 ⁴	Foot-lbs/minute
Kilowatts	737.6	Foot/lbs/second
Kilowatts	1.341	Horsepower
Kilowatts	14.34	kg-calories/minute
Kilowatts	1000	Watts
Kilowatt-hours	3415	British Thermal Units
Kilowatt-hours	2.655 x 10 ⁶	Foot-lbs
Kilowatt-hours	1.341	Horsepower-hours
Kilowatt-hours	860.5	Kilogram-calories
Kilowatt-hours	3.671 x 10 ⁶	Kilogram-metres
Litres	1000	Cubic Centimetres
Litres	0.035	Cubic Feet
Litres	61.02	Cubic Inches
Litres	0.001	Cubic Metres
Litres	0.220	Gallons Imperial
Litres	0.264	Gallons US
Litres	1.760	Pints (liq.) Imperial
Litres	2.113	Pints (liq.) US
Litre/minute	5.886	Cubic ft/sec.
Litre/minute	0.004	Gallons/sec. Imperial
Litre/minute	0.004	Gallons/sec. US
Metres	100	Centimetres
Metres	3.281	Feet
Metres	39.37	Inches
Metres	0.001	Kilometres
Metres	1000	Millimetres
Metres	1.094	Yards
Metres/minute	1.667	Centimetres/second
Metres/minute	3.281	Feet/minute
Metres/minute	0.055	Feet/second
Metres/minute	0.06	Kilometres/hour
Metres/minute	0.037	Miles/hour
Metres/second	196.8	Feet/minute
Metres/second	3.281	Feet/second
Metres/second	3.6	Kilometres/hour
Metres/second	0.06	Kilometres/minute
Metres/second	2.237	Miles/hour
Microns	10 ⁻⁶	Metres
Miles	1.609	Kilometres
Miles	1760	Yards
Miles/hour	88	Feet/minute
Miles/hour	1.609	Kilometres/hour
Miles/hour	0.868	Knots
Miles/hour	26.82	Metres/minute
Miles/minute	60	Miles/hour
Millilitres	0.001	Litres
Millimetres	0.1	Centimetres
Millimetres	0.039	Inches
Minutes (angle)	2.909 x 10 ⁻⁴	Radians

Conversion Factors

Multiply	By	To Obtain
Ounces	0.063	Pounds
Ounces (fluid)	1.805	Cubic Inches
Ounces (fluid)	0.030	Litres
Pounds	16	Ounces
Pounds	0.454	Kilograms
Pounds	0.001	Tons (short)
Pounds of Water	0.016	Cubic Feet
Pounds of Water	27.68	Cubic Inches
Pounds of Water	0.100	Gallons Imperial
Pounds of Water	0.120	Gallons U.S.
Pounds of Water/min.	2.670 x 10 ⁻⁴	Cubic ft/sec.
Pounds/cubic foot	16.02	kg/cubic metre
Pounds/cubic foot	5.787 x 10 ⁻⁴	lbs/cubic inch
Pounds/cubic inch	27.68	grams/cubic cm
Pounds/cubic inch	2.768 x 10 ⁻⁴	kgs/cubic metre
Pounds/cubic inch	1728	lbs/cubic foot
Pounds/foot	1.488	kg/metre
Pounds/foot	178.6	Grams/cm
Pounds/sq. foot	0.016	Feet of Water
Pounds/sq. foot	4.883 x 10 ⁻⁴	kgs/sq. cm
Pounds/sq. foot	6.945 x 10 ⁻³	Pounds/sq. inch
Pounds/sq. inch	0.068	Atmospheres
Pounds/sq. inch	2.307	Feet of Water
Pounds/sq. inch	2.036	Inches of Mercury
Pounds/sq. inch	0.070	kg/sq. cm
Pounds/sq. inch	6.895	Kilopascals
Temperature (°C)	°C + 273.15	Abs. Temp. (°C)
Temperature (°C)	°C x 9/5 + 32	Temperature (°F)
Temperature (°F)	°F - 32 x 5 / 9	Abs. Temp. (°F)
Temperature (°F)	+ 459.67	Temp. (°C)
Tons (long)	1016	Kilograms
Tons (long)	2240	Pounds
Tons (long)	1.12	Tons (short)
Tonnes	1000	Kilograms
Tonnes	2205	Pounds
Tons Refrig.	3.517	kW
Tons (short)	2000	Pounds
Tons (short)	907.185	Kilograms
Tons (short)	0.893	Tons (long)
Tons (short)	0.907	Tonnes
Watts	3.412	B.T.U./hour
Watts	0.057	B.T.U./minute
Watts	44.26	Foot-pounds/minute
Watts	0.738	Foot-pounds/second
Watts	1.34 x 10 ⁻³	Horsepower
Watts	0.014	kg-calories/minute
Watts	1000	Kilowatts
Watt-hours	3.415	British Thermal Units
Watt-hours	2655	Foot-pounds
Watt-hours	1.341 x 10 ⁻³	Horsepower-hours
Watt-hours	0.861	Kilogram-calories
Watt-hours	367.1	Kilogram-metres
Watt-hours	1000	Kilowatt-hours

Conversion Data

Length

	Millimetres	Centimetres	Inches	Feet	Yards	Metres	Kilometres	Miles
Millimetres	1	0.1	0.03937	0.003281	0.0010936	0.001	0.000001	0.0000006214
Centimetres	10	1	0.3937	0.032808	0.010936	0.01	0.00001	0.000006214
Inches	25.4	2.54	1	0.08333	0.02777	0.0254	0.0000254	0.00001578
Feet	304.8	30.48	12	1	0.3333	0.3048	0.0003048	0.0001893
Yards	914.4	91.44	36	3	1	0.9144	0.0009144	0.0005682
Metres	1000	100	39.37	3.2808	1.0936	1	0.001	0.0006214
Kilometres	1,000,000	100,000	39,370	3280.8	1093.6	1000	1	0.6214
Miles	1,609,350	160,935	63,360	5280	1760	1609.35	1.60935	1

Mass

	Grams	Ounces	Pounds	Kilograms	U.S. Ton (Short)	Imp. Ton (Long)	Metric Tonne
Grams	1	0.03527392	0.00220462	0.001	0.05110231	0.0698426	0.051
Ounces	28.3496	1	0.0625	0.0283496	0.043125	0.04279	0.04283496
Pounds	453.593	16	1	0.453593	0.0005	0.0344642	0.03453593
Kilograms	1000	35.27392	2.20462	1	0.00110231	0.03984206	0.001
U.S. Ton (Short)	907,186	32,000	2000	907.186	1	0.89285	0.907186
Imp. Ton (Long)	1,016,050	35,840	2240	1016.05	1.12	1	1.01605
Metric Tonne	1,000,000	35,273.92	2204.62	1000	1.10231	0.984206	1

Energy or Work

	Joules (1 Joule = 107 Ergs)	Foot Pounds	Kilogram Metres	Litre Atmospheres	Horsepower Hours	Kilowatts Hours	Kilogram Calories	British Thermal Units	lbs Carbon Oxidised with Perfect Efficiency	lbs Water Evaporated from and at 100°C
Joules (1 Joule=107 Ergs)	1	0.7373	0.101937	0.0098705	0.063727	0.06278	0.0323795	0.039486	0.07642	0.069662
Foot – Pounds	1.3562	1	0.138255	0.013826	0.06505	0.063766	0.0332396	0.0012861	0.078808	0.0513256
Kilogram Metres	9.81	7.233	1	0.09677	0.053653	0.052724	0.002343	0.009302	0.0663718	0.0595895
Litre – Atmospheres	1,013,667	747,386	10,333	1	0.043774	0.042794	0.0242	0.0961	0.056583	0.049907
Horsepower Hours	2,685,443	1,980,000	273,746	26,490.40	1	0.7457	641.477	2546.5	0.174	2.62
Kilowatts Hours	3,600,000	2,655,220	367,100	35,526.95	1.341	1	860.238	3415	0.234	3.52
Kilogram Calories	4185.8291	3087.35	426.843	41.309	0.001558	0.0011623	1	3.9683	0.0329909	0.004501
British Thermal Units	1054.198	778	107.5	10.40277	0.033927	0.032928	0.2519	1	0.04685	0.00103
lbs Carbon Oxidised with Perfect Efficiency	15,387,041.6	11,352,000	1,569,527.5	151,894.66	5.733	4.275	3,677.74	14,600	1	15.05
lbs Water Evaporated from and at 100°C	1,023,000	754,525	104.32	10,096.77	0.3811	0.2841	244.44	970.4	0.066466	1

Volume and Capacity

	Cubic Inches	Cubic Feet	Cubic Yards	Litres	US Quarts		US Gallons		Imperial Gallons	US Bushels	Water at Max. Density 4°C	
					Liquid	Dry	Liquid	Dry			Pounds of Water	Kilograms of Water
Cubic Inches	1	0.035787	0.042143	0.016384	0.01731	0.01488	0.004329	0.003721	0.0036065	0.034651	0.0361275	0.0163872
Cubic Feet	1728	1	0.037037	28.317	29.92208	25.713	7.48052	6.4282	6.2321	0.803564	62.4283	28.317
Cubic Yards	46,656	27	1	764.56	807.895	694.278	201.974	173.569	168.266	21.6962	1685.56	764.559
Litres	61,023.40	35.3145	1.307941	1000	1056.68	908.1	264.17	227.02	220.083	28.38	2204.62	1000
US Quarts – Liquid	61.0234	0.0353145	0.001308	1	1.05668	0.9081	0.26417	0.22702	0.220083	0.02838	2.20462	1
US Quarts – Dry	57.75	0.03342	0.001238	0.94636	1	0.8595	0.25	0.2149	0.20828	0.02686	2.08636	0.94635
US Gallons – Liquid	67.18	0.03888	0.00144	1.1009	1.1635	1	0.2909	0.25	0.24235	0.03125	8.34545	3.78543
US Gallons – Dry	231	0.133681	0.004951	3.78543	4	3.4378	1	0.8595	0.833111	0.10743	10.0172	4.54373
Imperial Gallons	268.75	0.15552	0.00576	4.404	4.654	4	1.1635	1	0.96932	0.125		
US Bushels	277.274	0.160459	0.0059429	4.54374	4.80128	4.1267	1.20032	1.0317	1	0.12896		
Pounds of Water	2150	1.24446	0.04609	35.238	37.2353	32	9.3088	8	7.81457	1		
Kilograms of Water	27.6798	0.0160184	0.035929	0.453592	0.4793	0.119825	0.0998281	1	0.453593			

Pressure

	psi.	atms.	ft. Hd. H ₂ O at 20°C	Inches H ₂ O	kg/cm ²	Metres H ₂ O	Inches Hg. at 20°C	mm Hg.	cm Hg.	Bar	Millibar (mb)	kPa
psi.	1	0.068	2.31	27.72	0.07	0.704	2.043	51.884	5.188	0.069	68.947	6.895
atms.	14.696	1	33.659	407.513	1.033	10.351	30.019	762.48	76.284	1.013	1013	101.325
ft. Hd. H ₂ O at 20°C	0.433	0.029	1	12	0.03	0.305	0.884	22.452	2.245	0.03	29.837	2.984
Inches H ₂ O	0.036	0.0025	0.833	1	0.0025	0.025	0.074	1.871	0.187	0.0025	2.486	0.249
kg/cm ²	14.233	0.968	32.867	394.408	1	10.018	29.054	737.959	73.796	0.981	980.662	98.066
Metres H ₂ O	1.422	0.097	3.287	39.37	0.099	1	2.905	73.796	7.379	0.098	98.066	9.807
Inches Hg. at 20°C	0.489	0.033	1.131	13.575	0.034	0.345	1	25.4	2.54	0.034	33.753	3.375
mm Hg.	0.019	0.0013	0.045	0.534	0.0014	0.0136	0.039	1	0.1	0.001	1.329	0.133
cm Hg.	0.193	0.0131	0.455	5.34	0.014	0.136	0.393	10	1	0.0133	13.29	1.328
Bar	14.503	0.987	33.514	402.164	1.02	10.211	29.625	752.47	75.247	1	1000	100
Millibar (mb)	0.014	0.0009	0.033	0.402	0.001	0.0102	0.029	0.752	0.075	0.001	1	0.1
kPa	0.145	0.0098	0.335	4.021	0.01	0.102	0.296	7.525	0.0752	0.01	10	1

Conversion Data

Inch to Millimetre Equivalents

Decimals to Millimetres			
Inches	mm	Inches	mm
0.001	0.0254	0.500	12.7000
0.002	0.0508	0.510	12.9540
0.003	0.0762	0.520	13.2080
0.004	0.1016	0.530	13.4620
0.005	0.1270	0.540	13.7160
0.006	0.1524	0.550	13.9700
0.007	0.1778	0.560	14.2240
0.008	0.2032	0.570	14.4780
0.009	0.2286	0.580	14.7320
0.010	0.2540	0.590	14.9860
0.020	0.5080	0.600	15.2400
0.030	0.7620	0.610	15.4940
0.040	1.0160	0.620	15.7480
0.050	1.2700	0.630	16.0020
0.060	1.5240	0.640	16.2560
0.070	1.7780	0.650	16.5100
0.080	2.0320	0.660	16.7640
0.090	2.2860	0.670	17.0180
0.100	2.5400	0.680	17.2720
0.110	2.7940	0.690	17.5260
0.140	3.5560	0.700	17.7800
0.150	3.8100	0.710	18.0340
0.160	4.0640	0.720	18.2880
0.170	4.3180	0.730	18.5420
0.180	4.5720	0.740	18.7960
0.190	4.8260	0.750	19.0500
0.200	5.0800	0.770	19.5580
0.210	5.3340	0.780	19.8120
0.220	5.5880	0.790	20.0660
0.250	6.3500	0.800	20.3200
0.260	6.6040	0.810	20.5740
0.270	6.8580	0.820	21.8280
0.280	7.1120	0.830	21.0820
0.290	7.3660	0.840	21.3360
0.300	7.6200	0.850	21.5900
0.310	7.8740	0.860	21.8440
0.320	8.1280	0.870	22.0980
0.330	8.3820	0.880	22.3520
0.360	9.1440	0.890	22.6060
0.370	9.3980	0.900	22.8600
0.380	9.6520	0.910	23.1140
0.390	9.9060	0.920	23.3680
0.400	10.1600	0.930	23.6220
0.410	10.4140	0.940	23.8760
0.420	10.6680	0.950	24.1300
0.430	10.9220	0.960	24.3840
0.440	11.1760	0.970	24.6380
0.450	11.4300	0.980	24.8920
0.460	11.6840	0.990	25.1460
0.470	11.9380	1.000	25.4000
0.480	12.1920		
0.490	12.4460		

Fractions to Decimals to Millimetres					
Inches	mm	Inches	mm	Inches	mm
$\frac{1}{64}$	0.0156	0.3969	$\frac{33}{64}$	0.5156	13.0969
$\frac{1}{32}$	0.0312	0.7938	$\frac{17}{32}$	0.5312	13.4938
$\frac{3}{64}$	0.0469	1.1906	$\frac{35}{64}$	0.5469	13.8906
$\frac{1}{16}$	0.0625	1.5875	$\frac{9}{16}$	0.5625	14.2875
$\frac{5}{64}$	0.0781	1.9844	$\frac{37}{64}$	0.5781	14.6844
$\frac{3}{32}$	0.0938	2.3812	$\frac{19}{32}$	0.5938	15.0812
$\frac{7}{64}$	0.1094	2.7781	$\frac{39}{64}$	0.6094	15.4781
$\frac{1}{8}$	0.1250	3.1750	$\frac{5}{8}$	0.6250	15.8750
$\frac{9}{64}$	0.1406	3.5719	$\frac{41}{64}$	0.6406	16.2719
$\frac{5}{32}$	0.1562	3.9688	$\frac{21}{32}$	0.6562	16.6688
$\frac{11}{64}$	0.1719	4.3656	$\frac{43}{64}$	0.6719	17.0656
$\frac{3}{16}$	0.1875	4.7625	$\frac{11}{16}$	0.6875	17.4625
$\frac{13}{64}$	0.2031	5.1594	$\frac{45}{64}$	0.7031	17.8594
$\frac{7}{32}$	0.2188	5.5562	$\frac{23}{32}$	0.7188	18.2562
$\frac{15}{64}$	0.2344	5.9531	$\frac{47}{64}$	0.7344	18.6531
$\frac{1}{4}$	0.2500	6.3500	$\frac{3}{4}$	0.7500	19.0500
$\frac{17}{64}$	0.2656	6.7469	$\frac{49}{64}$	0.7656	19.4469
$\frac{9}{32}$	0.2812	7.1438	$\frac{25}{32}$	0.7812	19.8438
$\frac{19}{64}$	0.2969	7.5406	$\frac{51}{64}$	0.7969	20.2406
$\frac{5}{16}$	0.3125	7.9375	$\frac{13}{16}$	0.8125	20.6375
$\frac{21}{64}$	0.3281	8.3344	$\frac{53}{64}$	0.8281	21.0344
$\frac{11}{32}$	0.3438	8.7312	$\frac{27}{32}$	0.8438	21.4312
$\frac{23}{64}$	0.3594	9.1281	$\frac{55}{64}$	0.8594	21.8281
$\frac{3}{8}$	0.3750	9.5250	$\frac{7}{8}$	0.8750	22.2250
$\frac{25}{64}$	0.3906	9.9219	$\frac{57}{64}$	0.8906	22.6219
$\frac{13}{32}$	0.4062	10.3188	$\frac{29}{32}$	0.9062	23.0188
$\frac{27}{64}$	0.4219	10.7156	$\frac{59}{64}$	0.9219	23.4156
$\frac{7}{16}$	0.4375	11.1125	$\frac{15}{16}$	0.9375	23.8125
$\frac{27}{64}$	0.4531	11.5094	$\frac{61}{64}$	0.9531	24.2094
$\frac{13}{32}$	0.4688	11.9062	$\frac{31}{32}$	0.9688	24.6062
$\frac{31}{64}$	0.4844	12.3031	$\frac{63}{64}$	0.9844	25.0031
$\frac{1}{2}$	0.5000	12.7000	1	1.000	25.4000

Pressure – Vacuum Conversion

Pressure Pascal [Pa] absolute	Pressure KiloPascal [kPa] absolute	Pressure bar [bar] absolute	Millibar [millibar] absolute	Micron [millitorr]	Torr [mm Hg]	Inches Hg [Inches Mercury]	PSI [Pounds Per Square Inch]
101325 1 atmosphere	101.325 1 atmosphere	1.01325 1 atmosphere	1013 1 atmosphere	760000 1 atmosphere	760 1 atmosphere	0.00 1 atmosphere	14.70 1 atmosphere
100000	100	1	1000	750062	750	0.42	14.50
80000	80	0.8	800	600049	600	6.32	11.60
53300	53.3	0.533	533	399783	400	14.22	7.73
26700	26.7	0.267	267	200266	200	22.07	3.87
13300	13.3	0.133	133	99758	100	25.98	1.93
6000	6	0.06	60	45004	45	28.15	0.87
2700	2.7	0.027	27	20252	20	29.14	0.39
133	0.133	0.00133	1.33	998	1.0	29.88	0.02
93	0.093	0.00093	0.93	698	0.7	29.89	0.013
78	0.078	0.00078	0.78	585	0.6	29.90	0.011
66	0.066	0.00066	0.66	495	0.5	29.900	0.0096
53	0.053	0.00053	0.53	398	0.4	29.910	0.0077
40	0.04	0.0004	0.40	300	0.3	29.910	0.0058
26	0.026	0.00026	0.26	195	0.2	29.920	0.0038
13	0.013	0.00013	0.13	98	0.10		0.0019
9	0.009	0.00009	0.09	68	0.07		0.0013
8	0.008	0.00008	0.08	60	0.06		0.0012
7	0.007	0.00007	0.07	53	0.05		0.0010
5	0.005	0.00005	0.05	38	0.04		0.0007
4	0.004	0.00004	0.04	30	0.03		0.0006
3	0.003	0.00003	0.03	23	0.02		0.0004
1.3	0.0013	0.000013	0.013	10	0.01		0.0002

To obtain gauge pressure subtract 1 atmosphere.

Design Temperature/Pressure

The Australian/New Zealand Standards include minimum recommended design pressures (PS) for all pipe work, fittings and components use in fixed refrigeration and air conditioning systems. This covers all fixed systems other than automotive air conditioning. The design pressures are based on the saturated pressure of the refrigerant at the temperature listed in the table below at the design ambient temperature for the location in which the system is to operate. When evaporators can be subject to high pressure, e.g. during hot gas defrosting or reverse cycle operation, the high pressure side specified temperature shall be used.

Ambient Conditions	≤ 32 °C	≤ 38 °C	≤ 43 °C	≤ 55 °C
High pressure side with air cooled condenser	55 °C	59 °C	63 °C	67 °C
High pressure side with water cooled condenser and water heat pump	Maximum leaving temperature +8K			
High pressure side with evaporative condenser	43 °C	43 °C	43 °C	55 °C
Low pressure side with heat exchanger exposed to the outdoor ambient temperature	32 °C	38 °C	43 °C	55 °C
Low pressure side with heat exchanger exposed to the indoor ambient temperature	27 °C	33 °C	38 °C	38 °C

Specified design temperatures (Method 2) as per AS/NZS 1677.2:2016

Minimum design temperature as per AS/NZS 5149.2:2016

It is advisable to reference AS/NZS 5149.2:2016 for more complete information.

The pressure listed in the chart below represent the saturated pressure of each refrigerant and therefore the required minimum design pressure for the pipe work and components in that part of a refrigeration or air conditioning system.

Design High Side Pressure	55°C	59°C	63°C	67°C
R134a	1391	1542	1704	1880
R404A	2485	2723	2977	3252
R427A	2279	2498	2732	2981
R410A	3339	2659	4002	4370

When selecting components for use in a refrigeration or air conditioning systems care should be taken to ensure the maximum design pressure of the component selected is suitable for the intended use. This is especially important in R410A systems as the required pressure ratings are significantly higher than that required on systems using most other refrigerants.

Flare Nut Torque Data

Dimensional and Torque Data Standard for Flare Nuts

Flare Nut Size	Thread Size UNF	Across Flats (AF) Dimension				
		Heldon Standard Flare Nuts	Heldon R410A Flare Nut	*ARI Heldon Std. Flare Nut	Heldon R410A Flare Nut	R410A Torque Wrench Setting
1/4	7/16 – 20	15.9	n/a	11 – 14	n/a	n/a
5/16	1/2 – 20	19.0	19.1		14 – 18	16
3/8	5/8 – 18	20.6	22.3	20 – 30	33 – 42	42
1/2	3/4 – 16	23.8	25.4	34 – 47	50 – 62	50
5/8	7/8 – 14	27.0	28.7	54 – 75	63 – 77	65
3/4	1 1/8 – 14	33.3	36.0	68 – 81	n/a	n/a
7/8	1 1/4 – 12	41.0	41.0	n/a	n/a	n/a

Courtesy of Heldon Products

Temperature Pressure Data for Common Refrigerants

°C	R409A				R410A				R413A (MO49)				R427A				R437A (49 Plus)				R438A (MO99)				°C
	BUBBLE		DEW		BUBBLE		DEW		BUBBLE		DEW		BUBBLE		DEW		BUBBLE		DEW		BUBBLE		DEW		
	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	
-40	-23	7	-50	15	74	11	74	11	-26	8	-45	13	15	2	-17	5	-31	-9	-45	13	12	2	-18	3	-40
-38	-15	4	-45	13	91	13	90	13	-19	6	-39	11	26	4	-9	3	-24	-7	-39	12	23	3	-9	1	-38
-36	-7	2	-38	11	108	16	108	16	-11	3	-32	10	38	6	1	0	-16	-5	-32	10	34	5	1	0	-36
-34	2	0	-32	9	127	18	126	18	-3	1	-25	7	51	7	11	2	-8	-2	-25	7	47	7	11	2	-34
-32	12	2	-25	7	147	21	147	21	6	1	-17	5	65	9	22	3	1	0	-17	5	60	9	22	3	-32
-30	22	3	-17	5	169	25	168	24	16	2	-9	3	79	12	34	5	11	2	-9	3	75	11	34	5	-30
-28	33	5	-9	3	192	28	191	28	26	4	0	0	95	14	47	7	22	3	0	0	90	13	47	7	-28
-26	44	6	0	0	216	31	215	31	37	5	10	1	112	16	61	9	33	5	10	1	106	15	60	9	-26
-24	57	8	9	1	242	35	241	35	49	7	21	3	130	19	76	11	45	6	21	3	124	18	75	11	-24
-22	70	10	19	3	270	39	269	39	62	9	32	5	149	22	92	13	57	8	32	5	142	21	91	13	-22
-20	84	12	30	4	299	43	298	43	75	11	44	6	169	24	109	16	71	10	44	6	162	23	107	16	-20
-18	99	14	42	6	330	48	329	48	90	13	57	8	190	28	127	18	85	12	57	8	183	26	125	18	-18
-16	115	17	54	8	363	53	362	52	105	15	71	10	213	31	146	21	101	15	71	10	205	30	144	21	-16
-14	131	19	68	10	398	58	396	57	121	18	85	12	237	34	166	24	117	17	86	12	228	33	164	24	-14
-12	149	22	82	12	435	63	433	63	138	20	101	15	262	38	188	27	135	20	101	15	253	37	186	27	-12
-10	168	24	97	14	473	69	471	68	156	23	118	17	289	42	211	31	153	22	118	17	279	40	209	30	-10
-8	188	27	113	16	514	75	512	74	175	25	135	20	317	46	235	34	173	25	136	20	307	44	233	34	-8
-6	209	30	130	19	557	81	555	80	195	28	154	22	346	50	261	38	193	28	155	22	336	49	258	37	-6
-4	231	33	148	21	602	87	600	87	217	31	174	25	378	55	289	42	215	31	175	25	366	53	285	41	-4
-2	254	37	167	24	650	94	647	94	239	35	195	28	411	60	317	46	238	35	196	28	398	58	314	46	-2
0	278	40	187	27	699	101	697	101	263	38	217	32	445	65	348	50	263	38	218	32	432	63	344	50	0
2	304	44	208	30	752	109	749	109	288	42	241	35	481	70	380	55	288	42	242	35	468	68	376	55	2
4	331	48	231	33	806	117	804	117	314	46	266	39	520	75	414	60	315	46	267	39	505	73	409	59	4
6	359	52	254	37	864	125	861	125	342	50	292	42	559	81	450	65	344	50	294	43	544	79	445	64	6
8	389	56	279	40	924	134	921	134	371	54	320	46	601	87	487	71	374	54	322	47	585	85	482	70	8
10	420	61	305	44	987	143	983	143	401	58	349	51	645	94	527	76	405	59	351	51	628	91	521	76	10
12	452	66	333	48	1053	153	1049	152	433	63	380	55	691	100	568	82	438	63	382	55	673	98	562	81	12
14	486	70	362	52	1122	163	1118	162	467	68	412	60	739	107	612	89	472	68	414	60	719	104	604	88	14
16	521	76	392	57	1193	173	1189	172	502	73	446	65	789	114	657	95	508	74	448	65	768	111	649	94	16
18	558	81	424	62	1268	184	1264	183	539	78	481	70	841	122	705	102	546	79	484	70	819	119	696	101	18
20	597	87	458	66	1346	195	1342	195	577	84	518	75	895	130	755	110	586	85	522	76	873	127	746	108	20
22	637	92	493	71	1428	207	1423	206	617	89	557	81	952	138	807	117	627	91	561	81	928	135	797	116	22
24	679	99	529	77	1512	219	1507	219	659	96	598	87	1011	147	862	125	670	97	602	87	986	143	851	123	24
26	723	105	567	82	1601	232	1595	231	703	102	640	93	1073	156	919	133	715	104	645	94	1046	152	907	132	26
28	768	111	607	88	1692	245	1687	245	748	109	685	99	1137	165	979	142	763	111	690	100	1109	161	966	140	28
30	816	118	649	94	1788	259	1782	258	796	115	731	106	1203	175	1041	151	812	118	737	107	1174	170	1027	149	30
32	865	125	693	101	1887	274	1881	273	845	123	780	113	1273	185	1106	160	863	125	786	114	1242	180	1091	158	32
34	916	133	738	107	1990	289	1984	288	897	130	830	120	1344	195	1174	170	916	133	837	121	1312	190	1158	168	34
36	969	140	786	114	2098	304	2091	303	950	138	883	128	1419	206	1244	180	971	141	891	129	1385	201	1227	178	36
38	1024	148	835	121	2209	320	2202	319	1006	146	938	136	1496	217	1318	191	1029	149	947	137	1461	212	1299	188	38
40	1081	157	887	129	2324	337	2317	336	1064	154	995	144	1577	229	1394	202	1089	158	1005	146	1539	223	1374	199	40
42	1140	165	940	136	2444	354	2437	353	1125	163	1055	153	1660	241	1474	214	1151	167	1065	154	1621	235	1453	211	42
44	1201	174	996	144	2569	373	2561	371	1187	172	1117	162	1746	253	1557	226	1216	176	1128	164	1705	247	1534	222	44
46	1264	183	1054	153	2698	391	2690	390	1252	182	1181	171	1836	266	1643	238	1283	186	1193	173	1792	260	1619	235	46
48	1330	193	1114	162	2831	411	2823	409	1320	191	1248	181	1928	280	1732	251	1353	196	1261	183	1883	273	1706	247	48
50	1397	203	1177	171	2970	431	2962	430	1390	202	1318	191	2024	294	1825	265	1425	207	1332	193	1976	287	1798	261	50
52	1468	213	1241	180	3113	451	3105	450	1462	212	1390	202	2123	308	1922	279	1500	217	1405	204	2073	301	1893	274	52
54	1540	223	1309	190	3262	473	3254	472	1538	223	1465	212	2226	323	2022	293	1577	229	1481	215	2174	315	1991	289	54
56	1615	234	1379	200	3416	495	3408	494	1616	234	1542	224	2332	338	2126	308	1658	240	1560	226	2277	330	2093	304	56
58	1692	245	1451	210	3576	519	3568	517	1696	246	1623	235	2441	354	2234	324	1741	252	1642	238	2384	346	2199	319	58
60	1772	257	1526	221	3741	543	3734	541	1780	258	1706	247	2554	370	2346	340	1827	265	1727	251	2495	362	2309	335	60
62	1854	269	1604	233	3913	567	3905	566	1866	271	1793	260	2671	387	2463	357	1916	278	1816	263	2609	378	2424	352	62
64	1939	281	1684	244	4090	593	4083	592	1956	284	1883	273	2792	405	2584	375	2008	291	1907	277	2727	396	2543	369	64
66	2027	294	1768	256	4274	620	4268	619	2049	297	1976	287	2916	423	2709	393	2104	305	2002	290	2849	413	2666	387	66
68	2117	307	1854	269	4465	648	4461	647	2144	311	2072	300	3045	442	2840	412	2202	319	2100	305	2975	431	2794	405	68
70	2210	321	1943	282	4663	676	4660	676	2243	325	2171	315	3177	461	2975	431	2304	334	2202	319	3104	450	2927	425	70

DEW
Use Dew pressure for superheat calculations and Bubble pressure for sub-cooling calculations.

RED
Red figures under kPa are negative kilopascals and red figures under psi are inches of mercury.

Temperature Pressure Data for Common Refrigerants

°C	R448A (N40)				R449A (XP40)				R450A (N13)				R452A (XP44)				R507		R717		R744		°C
	BUBBLE		DEW		BUBBLE		DEW		BUBBLE		DEW		BUBBLE		DEW		kPa	psi	kPa	psi	kPa	psi	
	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	
-40	26	4	-6	2	21	3	-9	3	-52	-15	-54	16	32	5	10	1	37	5	-30	9	903	131	-40
-38	38	6	4	1	33	5	0	0	-47	-14	-49	15	44	6	21	3	50	7	-22	6	979	142	-38
-36	51	7	14	2	46	7	10	2	-41	-12	-44	13	58	8	32	5	64	9	-13	4	1059	154	-36
-34	65	9	26	4	59	9	21	3	-35	-10	-38	11	72	10	45	7	79	11	-3	1	1144	166	-34
-32	80	12	38	5	73	11	33	5	-28	-8	-31	9	87	13	58	8	95	14	7	1	1233	179	-32
-30	96	14	51	7	89	13	46	7	-21	-6	-24	7	104	15	73	11	112	16	18	3	1326	192	-30
-28	113	16	65	9	105	15	59	9	-13	-4	-16	-5	121	18	88	13	130	19	30	4	1425	207	-28
-26	131	19	80	12	123	18	74	11	-5	-1	-8	-2	140	20	105	15	149	22	43	6	1528	222	-26
-24	150	22	96	14	141	21	89	13	4	1	1	0	160	23	122	18	169	24	57	8	1636	237	-24
-22	171	25	113	16	161	23	106	15	14	2	10	1	181	26	141	20	190	28	72	11	1750	254	-22
-20	192	28	131	19	182	26	124	18	24	4	20	3	203	29	161	23	213	31	89	13	1868	271	-20
-18	215	31	150	22	205	30	142	21	36	5	31	5	227	33	182	26	237	34	106	15	1993	289	-18
-16	240	35	171	25	228	33	162	24	48	7	43	6	252	37	204	30	263	38	125	18	2122	308	-16
-14	266	39	193	28	253	37	184	27	60	9	55	8	278	40	228	33	290	42	145	21	2258	328	-14
-12	293	42	216	31	280	41	206	30	74	11	68	10	306	44	253	37	318	46	166	24	2400	348	-12
-10	322	47	241	35	308	45	230	33	88	13	82	12	336	49	279	40	348	51	189	27	2547	369	-10
-8	352	51	267	39	337	49	256	37	103	15	97	14	367	53	307	45	380	55	214	31	2701	392	-8
-6	384	56	294	43	368	53	282	41	120	17	113	16	399	58	336	49	413	60	240	35	2862	415	-6
-4	418	61	324	47	401	58	311	45	137	20	130	19	434	63	368	53	448	65	267	39	3029	439	-4
-2	453	66	354	51	435	63	341	49	155	23	148	21	470	68	400	58	485	70	297	43	3203	465	-2
0	490	71	387	56	471	68	372	54	174	25	167	24	508	74	435	63	523	76	328	48	3384	491	0
2	529	77	421	61	509	74	405	59	195	28	187	27	547	79	471	68	563	82	361	52	3572	518	2
4	570	83	457	66	549	80	440	64	216	31	208	30	589	85	509	74	606	88	396	57	3768	546	4
6	613	89	495	72	590	86	477	69	239	35	230	33	633	92	549	80	650	94	433	63	3971	576	6
8	658	95	534	77	634	92	516	75	263	38	253	37	678	98	591	86	696	101	472	69	4182	607	8
10	704	102	576	84	679	99	556	81	288	42	278	40	726	105	635	92	745	108	514	75	4401	638	10
12	754	109	620	90	727	105	599	87	315	46	304	44	776	113	681	99	795	115	557	81	4628	671	12
14	805	117	666	97	777	113	643	93	342	50	331	48	828	120	729	106	848	123	603	88	4864	706	14
16	858	124	714	104	829	120	690	100	372	54	360	52	882	128	779	113	903	131	652	95	5110	741	16
18	914	133	764	111	883	128	739	107	402	58	390	57	938	136	832	121	961	139	703	102	5364	778	18
20	972	141	817	118	940	136	790	115	434	63	422	61	997	145	887	129	1021	148	756	110	5628	816	20
22	1033	150	872	126	998	145	844	122	468	68	455	66	1059	154	944	137	1083	157	812	118	5902	856	22
24	1096	159	929	135	1060	154	900	131	503	73	489	71	1122	163	1004	146	1148	166	871	126	6186	897	24
26	1161	168	989	144	1124	163	958	139	540	78	525	76	1189	172	1067	155	1215	176	933	135	6482	940	26
28	1230	178	1052	153	1190	173	1019	148	579	84	563	82	1258	182	1132	164	1286	186	998	145	6791	985	28
30	1301	189	1118	162	1259	183	1083	157	619	90	603	87	1329	193	1200	174	1359	197	1066	155	7112	1032	30
32	1374	199	1186	172	1331	193	1149	167	661	96	644	93	1404	204	1271	184	1435	208	1137	165			32
34	1451	210	1257	182	1405	204	1218	177	704	102	687	100	1481	215	1344	195	1513	220	1211	176			34
36	1530	222	1331	193	1482	215	1290	187	750	109	732	106	1561	226	1421	206	1595	231	1289	187			36
38	1612	234	1408	204	1563	227	1366	198	798	116	779	113	1644	238	1500	218	1680	244	1370	199			38
40	1698	246	1488	216	1646	239	1444	209	847	123	828	120	1730	251	1583	230	1768	256	1454	211			40
42	1786	259	1572	228	1732	251	1525	221	899	130	879	127	1819	264	1669	242	1860	270	1542	224			42
44	1878	272	1659	241	1821	264	1609	233	952	138	932	135	1911	277	1759	255	1954	283	1634	237			44
46	1973	286	1749	254	1913	277	1697	246	1008	146	987	143	2007	291	1851	269	2053	298	1730	251			46
48	2071	300	1843	267	2009	291	1788	259	1066	155	1044	151	2106	305	1948	283	2154	312	1829	265			48
50	2172	315	1941	281	2107	306	1883	273	1126	163	1104	160	2208	320	2048	297	2260	328	1933	280			50
52	2277	330	2042	296	2209	320	1982	287	1188	172	1165	169	2313	335	2152	312	2369	344	2040	296			52
54	2385	346	2147	311	2315	336	2084	302	1253	182	1230	178	2422	351	2260	328	2483	360	2152	312			54
56	2497	362	2256	327	2424	352	2190	318	1320	191	1296	188	2535	368	2372	344	2600	377	2269	329			56
58	2613	379	2370	344	2537	368	2301	334	1390	202	1365	198	2651	385	2489	361	2722	395	2389	347			58
60	2732	396	2488	361	2653	385	2415	350	1462	212	1437	208	2771	402	2610	379	2848	413	2514	365			60
62	2855	414	2610	379	2773	402	2534	368	1536	223	1511	219	2895	420	2736	397	2978	432	2644	383			62
64	2982	433	2738	397	2897	420	2658	385	1614	234	1588	230	3023	438	2867	416	3114	452	2779	403			64
66	3113	452	2870	416	3024	439	2786	404	1694	246	1667	242	3155	458	3003	436	3255	472	2918	423			66
68	3248	471	3007	436	3156	458	2919	423	1777	258	1750	254	3291	477	3145	456	3402	493	3063	444			68
70	3387	491	3151	457	3292	477	3058	443	1863	270	1835	266	3430	498	3294	478	3555	516	3212	466			70

DEW
Use Dew pressure for superheat calculations and Bubble pressure for sub-cooling calculations.

RED
Red figures under kPa are negative kilopascals and red figures under psi are inches of mercury.

Temperature Pressure Data for Common Refrigerants

°C	R123		R1233zd		R134a		R1234yf		R1234ze		R22		R32		R404A				R407C				R407C				°C		
	kPa		psi		kPa		psi		kPa		psi		kPa		psi		BUBBLE		DEW		BUBBLE		DEW		BUBBLE			DEW	
	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi		kPa	psi
-40	-98	29	-96	28	-50	15	-39	6	-65	22	4	1	76	11	34	5	30	4	19	3	-16	5	34	5	34	5	-2	0	-40
-38	-97	29	-95	28	-45	13	-33	5	-60	20	14	2	93	13	47	7	42	6	31	4	-7	7	47	7	47	7	9	1	-38
-36	-97	29	-94	28	-38	11	-26	4	-56	19	25	4	111	16	60	9	55	8	43	6	3	9	60	9	60	9	20	3	-36
-34	-96	28	-93	27	-32	9	-19	3	-51	17	37	5	130	19	75	11	70	10	56	8	14	11	75	11	75	11	32	5	-34
-32	-95	28	-92	27	-25	7	-11	2	-46	16	49	7	150	22	90	13	85	12	71	10	25	13	91	13	91	13	45	7	-32
-30	-95	28	-91	27	-17	5	-2	0	-40	14	63	9	172	25	106	15	101	15	86	12	37	16	108	16	108	16	59	9	-30
-28	-94	28	-90	26	-9	3	7	1	-34	12	77	11	195	28	124	18	118	17	102	15	51	18	126	18	126	18	74	11	-28
-26	-93	27	-88	26	0	0	16	2	-27	9	92	13	220	32	143	21	137	20	119	17	65	21	145	21	145	21	90	13	-26
-24	-92	27	-87	26	10	1	27	4	-20	7	108	16	247	36	162	24	156	23	138	20	80	24	166	24	166	24	107	16	-24
-22	-91	27	-85	25	20	3	38	5	-13	4	126	18	275	40	183	27	177	26	158	23	96	27	188	27	188	27	125	18	-22
-20	-89	26	-83	25	31	5	50	7	-4	2	144	21	304	44	206	30	199	29	179	26	113	31	211	31	211	31	145	21	-20
-18	-88	26	-81	24	43	6	62	9	4	1	163	24	336	49	229	33	222	32	201	29	132	34	235	34	235	34	166	24	-18
-16	-86	26	-79	23	56	8	75	11	14	2	184	27	369	54	254	37	247	36	224	33	152	38	261	38	261	38	188	27	-16
-14	-85	25	-76	23	69	10	90	13	24	3	206	30	405	59	281	41	273	40	249	36	173	42	289	42	289	42	211	31	-14
-12	-83	25	-74	22	84	12	105	15	35	5	229	33	442	64	308	45	300	44	276	40	195	46	318	46	318	46	237	34	-12
-10	-81	24	-71	21	99	14	120	17	46	7	253	37	481	70	338	49	329	48	303	44	218	51	348	51	348	51	263	38	-10
-8	-79	23	-68	20	116	17	137	20	58	8	279	40	523	76	369	53	360	52	333	48	244	55	381	55	381	55	291	42	-8
-6	-77	23	-65	19	133	19	155	22	71	10	306	44	567	82	401	58	392	57	364	53	270	60	415	60	415	60	321	47	-6
-4	-74	22	-61	18	151	22	174	25	85	12	335	49	613	89	435	63	426	62	396	57	298	65	450	65	450	65	353	51	-4
-2	-72	21	-57	17	171	25	194	28	100	14	365	53	661	96	471	68	462	67	431	62	328	71	488	71	488	71	386	56	-2
0	-69	20	-53	16	191	28	215	31	115	17	397	58	712	103	509	74	499	72	467	68	359	77	528	77	528	77	421	61	0
2	-66	19	-49	14	213	31	236	34	132	19	430	62	765	111	548	80	538	78	504	73	393	83	569	83	569	83	458	66	2
4	-62	18	-44	13	236	34	260	38	149	22	465	67	821	119	590	86	579	84	544	79	427	89	613	89	613	89	497	72	4
6	-59	17	-39	12	261	38	284	41	167	24	501	73	880	128	633	92	622	90	586	85	464	96	659	96	659	96	538	78	6
8	-55	16	-34	10	286	42	309	45	187	27	540	78	941	137	678	98	667	97	629	91	503	102	706	102	706	102	581	84	8
10	-51	15	-28	8	313	45	336	49	207	30	580	84	1006	146	726	105	714	104	675	98	544	110	757	110	757	110	626	91	10
12	-46	14	-22	6	342	50	364	53	229	33	622	90	1073	156	775	112	764	111	723	105	586	117	809	117	809	117	674	98	12
14	-42	12	-15	5	372	54	394	57	251	36	665	97	1143	166	827	120	815	118	773	112	631	125	864	125	864	125	723	105	14
16	-37	11	-8	2	403	58	425	62	275	40	711	103	1217	176	881	128	869	126	825	120	678	134	921	134	921	134	776	113	16
18	-31	9	-1	0	436	63	457	66	300	43	759	110	1293	188	937	136	925	134	879	128	727	142	980	142	980	142	830	120	18
20	-26	8	7	1	470	68	490	71	326	47	809	117	1373	199	996	144	983	143	936	136	779	151	1043	151	1043	151	888	129	20
22	-20	6	15	2	507	73	526	76	354	51	861	125	1457	211	1057	153	1044	151	996	144	833	161	1107	161	1107	161	947	137	22
24	-13	4	24	3	544	79	562	82	382	55	915	133	1544	224	1121	163	1107	161	1057	153	890	170	1175	170	1175	170	1010	146	24
26	-7	2	33	5	584	85	601	87	412	60	971	141	1634	237	1187	172	1173	170	1121	163	949	181	1245	181	1245	181	1075	156	26
28	1	0	43	6	626	91	641	93	444	64	1030	149	1728	251	1256	182	1242	180	1188	172	1010	191	1318	191	1318	191	1143	166	28
30	8	1	53	8	669	97	682	99	477	69	1091	158	1826	265	1327	192	1313	190	1258	182	1075	202	1394	202	1394	202	1215	176	30
32	16	2	64	9	714	104	726	105	511	74	1154	167	1928	280	1401	203	1387	201	1330	193	1142	214	1473	214	1473	214	1289	187	32
34	25	4	76	11	761	110	771	112	547	79	1220	177	2034	295	1479	214	1464	212	1405	204	1212	226	1555	226	1555	226	1366	198	34
36	34	5	88	13	811	118	818	119	585	85	1288	187	2144	311	1559	226	1544	224	1483	215	1285	238	1640	238	1640	238	1447	210	36
38	43	6	101	15	862	125	866	126	624	91	1359	197	2258	328	1642	238	1627	236	1564	227	1361	251	1729	251	1729	251	1531	222	38
40	53	8	114	17	915	133	917	133	665	96	1432	208	2377	345	1728	251	1713	249	1648	239	1440	264	1820	264	1820	264	1618	235	40
42	64	9	128	19	971	141	970	141	708	103	1508	219	2500	363	1818	264	1803	261	1735	252	1522	278	1915	278	1915	278	1709	248	42
44	75	11	143	21	1029	149	1024	149	752	109	1587	230	2628	381	1910	277	1895	275	1825	265	1608	292	2013	292	2013	292	1803	262	44
46	86	13	159	23	1089	158	1081	157	798	116	1669	242	2760	400	2007	291	1992	289	1918	278	1697	307	2115	307	2115	307	1902	276	46
48	98	14	175	25	1152	167	1140	165	846	123	1754	254	2898	420	2106	305	2091	303	2015	292	1790	322	2221	322	2221	322	2004	291	48
50	111	16	192	28	1217	176	1201	174	896	130	1841	267	3040	441	2209	320	2194	318	2115	307	1886	338	2330	338	2330	338	2110	306	50
52	125	18	210	30	1284	186	1264	183	948	137	1932	280	3187	462	2316	336	2301	334	2218	322	1987	354	2443	354	2443	354	2220	322	52
54	139	20	229	33	1354	196	1330	193	1002	145	2026	294	3340	484	2427	352	2412	350	2325	337	2091	371	2559	371	2559	371	2335	339	54
56	153	22	248	36	1427	207	1398	203	1057	153	2123	308	3498	507	2542	369	2527	367	2436	353	2199	389	2680	389	2680	389	2454	356	56
58	169	24	268	39	1502	218	1468	213	1115	162	2223	322	3662	531	2661	386	2646	384	2550	370	2311	407	2805	407	2805	407	2577	374	58
60	185	27	290	42	1581	229	1541	223	1175	170	2326	337	3832	556	2784	404	2770												

Properties of Refrigerants

Refrigerant	R11	R12	R13	R13B1	R14	R22	R23	R113	R114	R115	R123	R134a
Boiling Point at 101 kPa °C	23.8	-29.8	-81.4	-57.7	-127.9	-40.8	-80.1	47.6	3.6	-39.1	27.9	-26.1
Temp. Glide at 101 kPa K	0	0	0	0	0	0	0	0	0	0	0	0
Critical Temperature °C	198	111.8	28.8	67.1	-45.7	96.2	26.3	214.1	145.7	79.9	183.7	101.1
Critical Pressure kPa	4467	4120	3870	3960	3750	4990	4833	3437	3250	3150	3670	4060
Latent Heat of Vapourisation at 101 kPa kJ/kg	180.3	165.4	149.7	119.1	136	233.8	238.8	146.8	136.3	126.3	171.6	216.1
Vapour Pressure at 25°C kPa	1.056	651.3	3550	1619.6	3280	1043.7	4732	44	213.4	911.1	91.4	664
Liquid Density at 25°C kg/m ³	1476	1310	1290	1537.82	1320	1193.8	870	1580	1456.3	1284	1462.3	1206.3
Vapour Density at 101 kPa kg/m ³	5.794	6.248	6.857	8.611	7.72	4.645	4.62	7.38	7.737	8.271	6.336	5.213
Ozone Depletion Potential (ODP)	1	1	1	12	0	0.04	0	0.09	0	0.4	0.014	0
Global Warming Potential (GWP) (CO ₂ =1)	4000	8500	11700	5600	6500	1700	11700	5000	9200	9320	93	1300
Flammability Limit at 25°C	None	None	None	None	None	None	None	None	None	None	None	None

Refrigerant	R141B	R142b	R152a	R290 Propane	R401A	R401B	R402A	R402B	R403B	R404A	R406A	R407B
Boiling Point at 101 kPa °C	32.2	-9.1	-24	-42.1	-33.1	-34.7	-49.2	-47.4	-49.5	-46.5	-32.4	-43.7
Temp. Glide at 101 kPa K	0	0	0	0	6.4	6	1.6 - 2	1.6 - 2	2.6	0.5	9.4	4.4
Critical Temperature °C	204.4	137.2	113.3	125.2	108	106.1	75.5	82.6	90	72.1	114.5	75.8
Critical Pressure kPa	4250	4120	4520	4250	4600	4680	4130	4450	5090	3730	4584	4160
Latent Heat of Vapourisation at 101 kPa kJ/kg	224.3	223	337.7	428.1	228.3	229.8	190.8	207.9	185.5	200.3	244.9	201.3
Vapour Pressure at 25°C kPa	78.5	337.7	614.3	924.1	697.8	749.1	1394.1	1277	1274	1236.6	542	1168.6
Liquid Density at 25°C kg/m ³	1234.9	1108.5	899.2	439.7	1195.2	1193.91	1156.28	1160.4	1150.6	1043.9	1085.6	1171.07
Vapour Density at 101 kPa kg/m ³	4.765	4.785	3.315	2.368	4.777	4.734	5.639	5.182	5.682	5.342	4.425	5.512
Ozone Depletion Potential (ODP)	0.1	0	0	0.03	0.032	0.018	0.026	0.027	0	0.041	0	
Global Warming Potential (GWP) (CO ₂ =1)	630	2000	140	3	1120	1230	2380	2080	2640	3850	1700	2300
Flammability Limit at 25°C	Liquid None Vapour in Air by Vol. 5.6/17.7	9.6%	4.8%	2.4%	None	None	None	None	None	None	Worst case of Fractionation flammable	None

Properties of Refrigerants

Refrigerant	R407C KLEA 66	R408A FX10	R409A FX56	R409B FX57	R410A AZ20	R413A ISCEON 49	R500	R502	R503	R507 AZ50	R600a Butane	R717 Ammonia
Boiling Point at 101 kPa °C	-43.6	-43.5	-34.2	-36.6	-51.4	-35	-33.5	-45.4	-88.7	-46.7	-11.8	-33.3
Temp. Glide at 101 kPa K	7.2	0.7	7.1	7.7	0	7.1	0	0	0	0	0	0
Critical Temperature °C	87.3	83.5	107	116	84.9	101.3	105.5	82.2	19.5	70.9	135	133
Critical Pressure kPa	4820	4340	4500	4700	4950	4110	4420	4075	4340	3793	3631	11417
Latent Heat of Vapourisation at 101 kPa kJ/kg	250.1	227.2	220.2	220.3	271.6	214.6	201	172	179.4	196.1	355.2	
Vapour Pressure at 25°C kPa	1002.8	1147.9	644	692	1646.9	717.1	770	1160	4290	1286	351.8	
Liquid Density at 25°C kg/m ³	1139.22	1062.1	1215.9	1228.4	1083.8	1169.6	1160	1220	1230	1041.6	552.3	
Vapour Density at 101 kPa kg/m ³	4.507	4.712	4.91	4.881	4.064	5.272	5.3	4.79	6.03	5.449	4.392	
Ozone Depletion Potential (ODP)	0	0.019	0.04	0.039	0	0	0.605	0.224	0.599	0	0	0
Global Warming Potential (GWP) (CO ₂ =1)	1370	3060	1530	1510	1300	1510	5210	5590	11700	3900	3	1
Flammability Limit at 25°C	None	None	None	None	None	Worst case of Fractionation flammable	None	None	None	None	1.7%	15%

Variation in Composition of Blended Refrigerants in Case of Leakage

In the following, we make the distinction between:

- Non azeotropic mixtures (having a high temperature glide* typically higher than 3K)
- Near azeotropic mixtures (having a low temperature glide typically lower than 3K)
- Azeotropic mixtures (having a temperature glide equal to zero K)

R404A and R408A are near azeotropic mixtures with a glide lower than 1 K.

The composition of the mixtures does not change when a leak occurs in a homogeneous phase. That is the case at the evaporator outlet (superheated vapour) or at the condenser outlet (subcooled liquid).

By contrast, marked differences of behaviour appear between the different types of mixtures during a leak in the two phase region equilibrium.

For non-azeotropic mixtures, the 'more volatile' components escape in preceding order, altering to a great extent the composition of the mixture remaining in the installation, resulting in change of performance.

For near azeotropic or real azeotropic mixtures, leak rates of all components of the mixture are very close; thus during a leakage, composition of refrigerant remaining in the installation is not affected significantly.

For all blended refrigerants it is stated by some manufacturers that after a leakage of 50% of the initial charge, changes in composition are less than 3% by weight.

Blended refrigerants must always be introduced in the liquid phase in the installation. Introduction in the gas phase, at the compressor suction, may increase the charging time of the installation and may alter performance of the mixture charged.

*For a non-azeotropic mixture the change process liquid vapour occurs over a range of temperatures (glide).

Properties of Refrigerants

General Rules for Handling Fluorocarbon Refrigerants and Nitrogen

Legislation

All purchasers and users of refrigerants should be aware of, and conversant with, the requirements of the Ozone Protection and Synthetic Greenhouse Gas Management Regulations and/or any other state or federal legislation.

Safety Equipment

Goggles or face shields, gloves and safety footwear must be worn when filling cylinders, coupling up storage vessels and/or handling bulk fills so as to prevent eye damage or burns should a coupling give way or a line burst.

Store Cylinders Upright

Store cylinders in a cool, dry place, away from direct sources of heat. A well ventilated area will ensure that no build up of gas can occur should a cylinder leak or relief valve unseat.

Do Not Force Connections

Cylinder connections should fit easily and snugly. Never force them. Use correct tools. Stripped threads can cause leaks and possible loss of refrigerant.

Handle Cylinders Carefully

Cylinders should not be used for 'rollers' or supports. Cuts and abrasions may result. Care in handling cylinders will prolong their life.

Read Labels

Because colour of cylinders cannot be relied upon for positive identification, labels should always be read carefully. Colour blindness might interfere with proper identification. If still in doubt, other methods of identification are available from the manufacturer/supplier.

Visual Examination

Each time a cylinder is returned or delivered for re-charging, it should be carefully examined for evidence of corrosion, cuts, dents, bulges, condition of threads, valves, etc, to ensure suitability for further service. State Codes also provide for examination and testing of cylinders to ensure their continued use.

Never Transfer

Refrigerant cylinders are labelled and identified for a particular refrigerant. Never put a different refrigerant into a cylinder labelled for another refrigerant.

Keep Away from Fire

No part of any cylinder should ever be subjected to direct flame, steam or temperatures exceeding 50°C. If necessary to warm cylinder to promote more rapid discharge, extreme caution should be taken – an easy and safe way is to place bottom part of cylinder in a container of warm or hot water not over 50°C.

Ventilation

Since many materials such as soldering flux, oil, dirt and all refrigerants decompose at the flame temperatures used in soldering, the area in which repair is carried out should be properly ventilated to remove the products of decomposition and combustion of all materials. An adequately ventilated work area is good practice at any time, but especially when an open flame of a leak detector or welding torch is to be used in the presence of 'fluorocarbon' refrigerants.

Check Pressure

The pressure within the cylinder must be greater than in the system to cause the refrigerant to flow into the system. Pressure should be checked before charging.

Main Hazards

Nitrogen is non toxic, inert and inflammable. It comprises 78.09%vol of the air we breathe however; high concentrations in confined spaces may result in unconsciousness without symptoms. Nitrogen is stored at high pressure – 20,000kPa at 15°C.

Storage and Handling

- Protect the cylinders and valves from physical damage, whether empty or full.
- Secure cylinders in an upright position.
- Store below 50°C in clean, well ventilated areas, away from from combustible materials and heat sources.
- Ensure all devices, including fittings and regulators, are free from dust, oil and grease.
- Always open the valve fully to activate the back seat valve which helps to prevent leakage.
- Close valves fully when not in use.
- Check regularly for leaks.
- Do not attempt to transfer contents from one cylinder to another.
- Only regulators, manifolds and ancillary equipment, rated for the appropriate pressure and compatible with the relevant gas, shall be connected to or downstream of these cylinders.

Refrigerant Line Sizing

Pipe Sizing Criteria

Pipe sizing choices for refrigeration typically represent a compromise between conflicting objectives. Minimisation of pressure drops in suction and discharge vapour piping is important since these translate directly to losses in system cooling capacity. Such pressure losses also necessitate higher thermodynamic lifts at the compressor with consequent C.O.P. penalties. Pressure losses in liquid lines can result in loss of subcooling, formation of vapour bubbles and potentially erratic and damaging impacts on the smooth functioning of the system. Piping must thus be sized generously enough to limit frictional flow losses, however, sizes must simultaneously be sufficiently small to maintain adequate flow velocities to physically entrain oil droplets in the refrigerant stream.

This reduces the risk of oil trapping and slugging and assures a positive supply of lubricant in the compressor crankcase. Other incentives for pipe size limitation include a minimum refrigerant charge and reduction of first cost. Courtesy of Allied Signal.

R22 – Suction Line

Refrigeration Capacity: kW	Evaporating Temperature: °C																			
	4				-7				-18				-29				-40			
	Equivalent Length: Metres																			
	7.5	15	30	45	7.5	15	30	45	7.5	15	30	45	7.5	15	30	45	7.5	15	30	45
0.88	3/8	3/8	3/8	1/2	3/8	3/8	1/2	1/2	1/2	1/2	5/8	5/8	1/2	5/8	5/8	3/4	5/8	3/4	7/8	7/8
1.76	3/8	1/2	1/2	5/8	1/2	1/2	5/8	5/8	5/8	5/8	3/4	7/8	5/8	3/4	7/8	7/8	3/4	7/8	1 1/8	1 1/8
2.64	1/2	1/2	5/8	5/8	1/2	5/8	5/8	3/4	3/4	3/4	7/8	7/8	3/4	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 3/8
3.52	1/2	5/8	5/8	3/4	5/8	5/8	3/4	3/4	3/4	7/8	7/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8
5.28	5/8	3/4	3/4	7/8	3/4	3/4	7/8	7/8	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 3/8	1 1/8	1 3/8	1 5/8	1 5/8
7.03	5/8	3/4	7/8	7/8	3/4	7/8	1/2	1 1/8	7/8	1/2	1 1/8	3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8
8.79	3/4	7/8	7/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 1/8	1 3/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8
10.55	3/4	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 5/8	1 1/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8
12.3	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 5/8	1 3/8	1 3/8	1 5/8	2 1/8	1 5/8	1 5/8	2 1/8	2 1/8
14.07	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8
15.83	7/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	5/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8
17.59	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8
21.1	1 1/8	1 1/8	1 3/8	1 5/8	1 1/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	3 1/8
26.38	1 1/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	3 1/8	3 1/8
35.17	1 3/8	1 3/8	1 5/8	2 1/8	1 3/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3 1/8	3 1/8
43.96	1 3/8	1 3/8	1 5/8	2 1/8	1 3/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3 1/8	3 1/8
52.76	1 3/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	2 5/8	3 1/8	3 5/8	3 5/8
61.55	1 3/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 5/8	3 5/8
70.34	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 1/8	3 1/8	3 5/8	4 1/8
87.93	1 5/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 1/8	3 5/8	4 1/8	5 1/8

Data based on 1.1K maximum pressure drop equivalent.

R22

Refrigeration Capacity: kW	Discharge Line				Liquid Line				Hot Gas Line **			
	Equivalent Length: Metres											
	7.5	15	30	45	7.5	15	30*	45	7.5	15	30	45
0.88	3/8	3/8	3/8	3/8	1/4	1/4	1/4	1/4	3/8	3/8	1/2	1/2
1.32	3/8	3/8	1/2	1/2	1/4	1/4	3/8	3/8	1/2	1/2	1/2	5/8
1.91	3/8	1/2	1/2	1/2	1/4	1/4	3/8	3/8	1/2	1/2	5/8	5/8
2.49	3/8	1/2	1/2	5/8	1/4	3/8	3/8	3/8	1/2	5/8	3/4	3/4
3.52	1/2	1/2	5/8	5/8	3/8	3/8	3/8	1/2	5/8	5/8	3/4	7/8
5.28	1/2	5/8	3/4	3/4	3/8	3/8	1/2	1/2	5/8	3/4	7/8	1 1/8
7.03	5/8	5/8	3/4	7/8	3/8	1/2	1/2	1/2	3/4	7/8	1 1/8	1 1/8
8.79	5/8	3/4	7/8	7/8	3/8	1/2	1/2	5/8	3/4	7/8	1 1/8	1 1/8
10.55	5/8	3/4	7/8	7/8	1/2	1/2	5/8	5/8	7/8	1 1/8	1 1/8	1 1/8
12.3	3/4	3/4	7/8	1 1/8	1/2	1/2	5/8	5/8	7/8	1 1/8	1 1/8	1 3/8
14.07	3/4	7/8	1 1/8	1 1/8	1/2	5/8	5/8	3/4	1 1/8	1 1/8	1 3/8	1 3/8
15.83	3/4	7/8	1 1/8	1 1/8	1/2	5/8	5/8	3/4	1 1/8	1 1/8	1 3/8	1 3/8
17.59	3/4	7/8	1 1/8	1 1/8	1/2	5/8	3/4	3/4	1 1/8	1 1/8	1 3/8	1 3/8
21.1	7/8	1 1/8	1 1/8	1 1/8	5/8	5/8	3/4	3/4	1 1/8	1 3/8	1 3/8	1 5/8
26.38	7/8	1 1/8	1 1/8	1 3/8	5/8	3/4	7/8	7/8	1 1/8	1 3/8	1 5/8	1 5/8
35.17	1 1/8	1 1/8	1 3/8	1 3/8	3/4	3/4	7/8	1 1/8	1 3/8	1 5/8	1 5/8	2 1/8
43.96	1 1/8	1 3/8	1 3/8	1 1/8	3/4	7/8	1 1/8	1 1/8	1 3/8	1 5/8	2 1/8	2 1/8
52.76	1 1/8	1 3/8	1 5/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 5/8	1 5/8	2 1/8	2 1/8
61.55	1 3/8	1 3/8	1 5/8	1 1/8	7/8	7/8	1 1/8	1 1/8				
70.34	1 3/8	1 5/8	1 1/8	2 1/8	7/8	1 1/8	1 3/8	1 3/8				
87.93	1 3/8	1 5/8	2 5/8	2 1/8	1 1/8	1 1/8	1 3/8	1 3/8				

Copper tube sizes are: OD in inches.

Refrigerant Line Sizing

R410A – Suction Line

Refrigeration Capacity: kW	Evaporating Temperature: deg.C																			
	4				-7				-18				-29				-40			
	Equivalent Length: Meters																			
	7.5	15	30	45	7.5	15	30	45	7.5	15	30	45	7.5	15	30	45	7.5	15	30	45
0.88	3/8	3/8	3/8	1/2	3/8	3/8	1/2	1/2	3/8	1/2	1/2	5/8	1/2	1/2	5/8	5/8	1/2	5/8	5/8	3/4
1.76	3/8	1/2	1/2	1/2	1/2	1/2	5/8	5/8	1/2	1/2	5/8	3/4	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4
2.64	1/2	1/2	5/8	5/8	1/2	5/8	5/8	3/4	5/8	5/8	3/4	3/4	3/4	3/4	7/8	7/8	7/8	7/8	1 1/8	1 1/8
3.52	1/2	1/2	5/8	5/8	5/8	5/8	3/4	3/4	5/8	3/4	3/4	7/8	3/4	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
5.28	5/8	5/8	3/4	3/4	5/8	3/4	3/4	7/8	3/4	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8
7.03	5/8	5/8	3/4	7/8	3/4	3/4	7/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8
8.79	3/4	3/4	7/8	7/8	7/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8
10.55	3/4	3/4	7/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8
12.3	7/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8
14.07	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8
15.83	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8
17.59	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8
21.1	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8
26.38	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3
35.17	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3	3	3	4
43.96	1 5/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	3	4	4	4	4
52.76	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3	3	3	4	4	4	4	4
61.55	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3	3	4	4	4	4	4	4	
70.34	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	3	3	4	4	4	4	4	4		
87.93	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	3	3	4	4	4	4	4					

Data based on 1.1K maximum pressure drop equivalent.

R410A

Refrigeration Capacity: kW	Discharge Line				Liquid line				Hot Gas Line**			
	Equivalent Length: Meters											
	7.5	15	30	45	7.5	15	30	45	7.5	15	30	45
0.88	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	3/8	3/8
1.32	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	3/8	3/8	3/8	1/2
1.91	3/8	3/8	3/8	3/8	1/4	1/4	1/4	3/8	3/8	3/8	1/2	1/2
2.49	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	5/8	5/8
3.53	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2	5/8	3/4
5.28	1/2	1/2	1/2	1/2	3/8	3/8	3/8	1/2	5/8	5/8	5/8	3/4
7.03	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	5/8	5/8	3/4	7/8
8.79	1/2	1/2	1/2	5/8	1/2	1/2	1/2	1/2	5/8	3/4	3/4	7/8
10.55	5/8	5/8	5/8	5/8	1/2	1/2	1/2	5/8	3/4	3/4	7/8	1 1/8
12.3	5/8	5/8	5/8	5/8	1/2	5/8	5/8	5/8	3/4	3/4	7/8	1 1/8
14.07	5/8	5/8	5/8	3/4	5/8	5/8	5/8	5/8	3/4	3/4	7/8	1 1/8
15.83	5/8	3/4	3/4	3/4	5/8	5/8	5/8	3/4	3/4	7/8	7/8	1 1/8
17.59	3/4	3/4	3/4	3/4	5/8	5/8	5/8	3/4	7/8	7/8	7/8	1 1/8
21.1	3/4	3/4	3/4	7/8	5/8	3/4	3/4	3/4	7/8	1 1/8	1 1/8	1 3/8
26.38	7/8	7/8	7/8	7/8	3/4	3/4	3/4	7/8	1 1/8	1 3/8	1 3/8	1 3/8
35.17	1 1/8	1 1/8	1 1/8	1 1/8	7/8	7/8	7/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8
43.96	1 1/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 5/8	1 5/8	1 5/8
52.76	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 1/8	1 1/8	1 1/8	1 5/8	1 5/8	1 5/8	2 1/8
61.55	1 3/8	1 3/8	1 3/8	1 3/8	1 1/8	1 1/8	1 1/8	1 3/8				
70.34	1 3/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8				
87.93	1 5/8	1 5/8	1 5/8	1 5/8	1 3/8	1 3/8	1 3/8	1 5/8				

* Line sizes are suitable for Condenser to Receiver application.

**For suction temperatures less than -29°C, the next larger line size must be used.

Copper tube sizes are: OD in inches.

Refrigerant Line Sizing

R134a

Refrigeration Capacity: kW	SUCTION LINE Sizes to Limit Pressure Drop to 1.1K Equivalent									DISCHARGE LINE Sizes for 0.56K Equivalent			LIQUID LINE Sizes for 0.56K Equivalent		
	4°C Evap.			-18°C Evap.			-40°C Evap.			7.5	15	30	7.5	15	30
	Equivalent Length: Metres														
	7.5	15	30	7.5	15	30	7.5	15	30	7.5	15	30	7.5	15	30
0.88	3/8	1/2	1/2	1/2	5/8	3/4	3/4	7/8	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
1.76	1/2	5/8	5/8	5/8	3/4	7/8	1 1/8	1 1/8	1 3/8	3/8	1/2	1/2	3/8	3/8	3/8
2.64	5/8	5/8	3/4	3/4	7/8	1 1/8	1 1/8	1 3/8	1 5/8	1/2	1/2	5/8	3/8	3/8	3/8
3.52	5/8	3/4	3/4	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	1/2	5/8	5/8	3/8	3/8	3/8
5.28	3/4	7/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	2 1/8	5/8	5/8	3/4	3/8	3/8	1/2
7.03	3/4	7/8	1 1/8	1 1/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	5/8	3/4	7/8	3/8	3/8	1/2
10.55	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	2 1/8	2 1/8	2 5/8	3/4	7/8	7/8	1/2	1/2	5/8
17.59	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	2 5/8	3 1/8	7/8	1 1/8	1 1/8	1/2	5/8	3/4
26.38	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 5/8	1 1/8	1 1/8	1 3/8	5/8	3/4	3/4
35.17	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	3 1/8	3 1/8	3 5/8	1 1/8	1 3/8	1 3/8	5/8	3/4	7/8
52.76	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	3 1/8	3 5/8	3 5/8	5 1/8	1 3/8	1 3/8	1 5/8	3/4	7/8	1 1/8
70.34	2 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	4 1/8	5 1/8	1 3/8	1 5/8	2 1/8	7/8	1 1/8	1 1/8
87.93	2 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 5/8	4 1/8	5 1/8	5 1/8	1 5/8	2 1/8	2 1/8	7/8	1 1/8	1 1/8
105.5	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	4 1/8	5 1/8	6 1/8	1 5/8	2 1/8	2 1/8	1 1/8	1 1/8	1 3/8
140.7	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	4 1/8	5 1/8	6 1/8	6 1/8	2 1/8	2 5/8	2 5/8	1 1/8	1 3/8	1 3/8

Data based on 49°C condensing.
Copper tubing sizes are: OD in inches.

Courtesy of Allied Signal

R404A and R507

Refrigeration Capacity: kW	SUCTION LINE Sizes to Limit Pressure Drop to 1.1K Equivalent									DISCHARGE LINE Sizes for 0.56K Equivalent			LIQUID LINE Sizes for 0.56K Equivalent		
	4°C Evap.			-18°C Evap.			-40°C Evap.			7.5	15	30	7.5	15	30
	Equivalent Length: Metres														
	7.5	15	30	7.5	15	30	7.5	15	30	7.5	15	30	7.5	15	30
0.88	3/8	1/2	1/2	1/2	5/8	3/4	3/4	7/8	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8
1.76	1/2	5/8	5/8	5/8	3/4	7/8	1 1/8	1 1/8	1 3/8	3/8	1/2	1/2	3/8	3/8	3/8
2.64	5/8	5/8	3/4	3/4	7/8	1 1/8	1 1/8	1 3/8	1 5/8	1/2	1/2	5/8	3/8	3/8	3/8
3.52	5/8	3/4	3/4	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	1/2	5/8	5/8	3/8	3/8	3/8
5.28	3/4	7/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	2 1/8	5/8	5/8	3/4	3/8	3/8	1/2
7.03	3/4	7/8	1 1/8	1 1/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	5/8	3/4	7/8	3/8	3/8	1/2
10.55	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	2 1/8	2 1/8	2 5/8	3/4	7/8	7/8	1/2	1/2	5/8
17.59	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	2 5/8	3 1/8	7/8	1 1/8	1 1/8	1/2	5/8	3/4
26.38	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 5/8	1 1/8	1 1/8	1 3/8	5/8	3/4	3/4
35.17	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	3 1/8	3 1/8	3 5/8	1 1/8	1 3/8	1 3/8	5/8	3/4	7/8
52.76	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	3 1/8	3 5/8	3 5/8	5 1/8	1 3/8	1 3/8	1 5/8	3/4	7/8	1 1/8
70.34	2 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	4 1/8	5 1/8	1 3/8	1 5/8	2 1/8	7/8	1 1/8	1 1/8
87.93	2 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 5/8	4 1/8	5 1/8	5 1/8	1 5/8	2 1/8	2 1/8	7/8	1 1/8	1 1/8
105.5	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	4 1/8	5 1/8	6 1/8	1 5/8	2 1/8	2 1/8	1 1/8	1 1/8	1 3/8
140.7	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	4 1/8	5 1/8	6 1/8	6 1/8	2 1/8	2 5/8	2 5/8	1 1/8	1 3/8	1 3/8

Data based on 49°C condensing.
Copper tubing sizes are: OD in inches.

Courtesy of Allied Signal

Equivalent Length of Pipe: Metres – For Valves and Fittings

Line Size Outside Dia. Inches	1/2	5/8	7/8	1 1/8	1 3/8	1 5/8	1 1/2	2 5/8	3 1/8	3 5/8	4 1/8	5 1/8	6 1/8	8 1/8	10 1/8	12 1/8
Globe Valve (Open)	4.3	4.9	6.7	8.5	11	12.8	17.4	21	25.3	30.2	36	42.1	51.2	68.6	85.3	102
Angle Valve (Open)	2.1	2.7	3.7	4.6	5.5	6.4	8.5	10.4	12.8	14.9	17.4	21.3	25.3	35.7	42.7	50.3
Standard Elbow 90°	0.3	0.6	0.6	0.9	1.2	1.2	1.5	2.1	2.4	3	3.7	4.3	4.9	6.1	7.9	9.4
Standard Elbow 45°	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.9	1.2	1.5	1.8	2.1	2.4	3	4	4.9
Standard Tee (Through Side Out.)	0.9	1.2	1.5	1.8	2.4	2.7	3.7	4.3	5.2	6.1	6.7	8.5	10.4	13.4	17.1	19.8

Values shown are average

Refrigerant Line Design

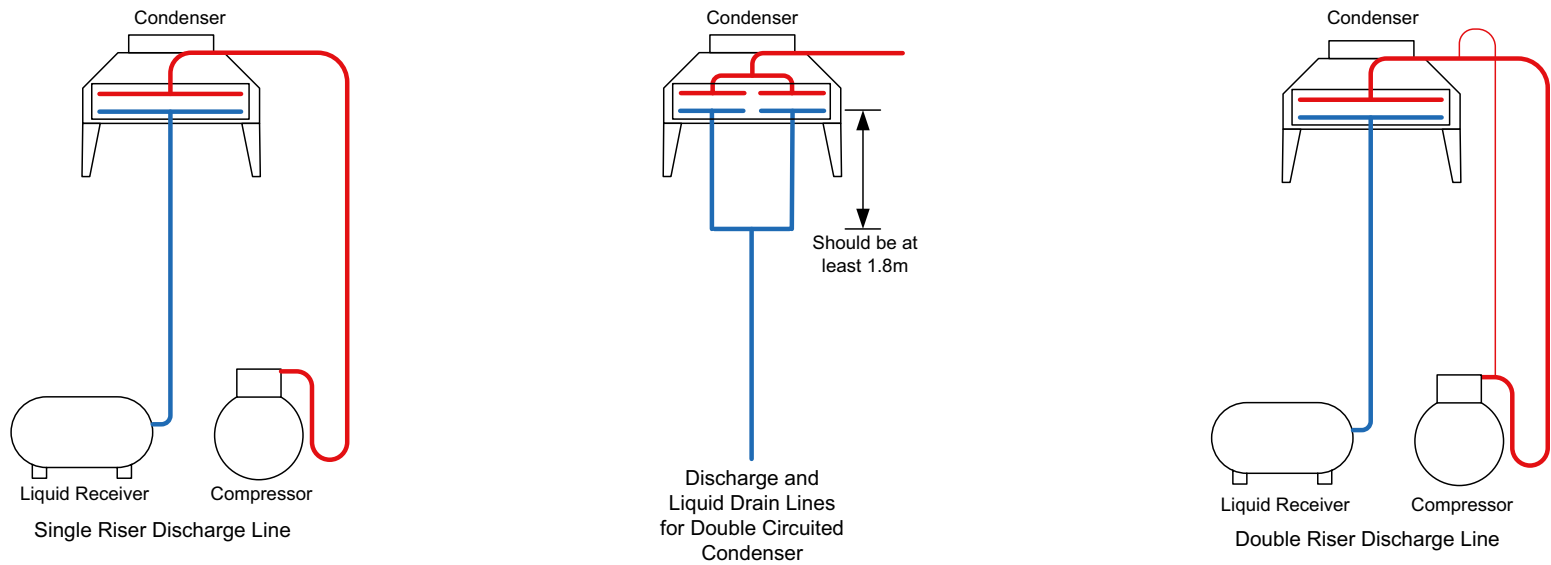
Good refrigeration line design and line sizing is essential to ensure refrigeration systems operate reliably and efficiently. The designer must satisfy the following:

Discharge Line

- Minimise pressure losses in the line
- Horizontal lines should be pitched in the direction of flow at 12mm every 3m
- Avoid oil being trapped during times of low load
- Prevent back flow of liquid refrigerant or oil to the compressor at times of low load or shut down.
- Minimise transmission of compressor vibration and dampen vapour pulsations and noise in the line.

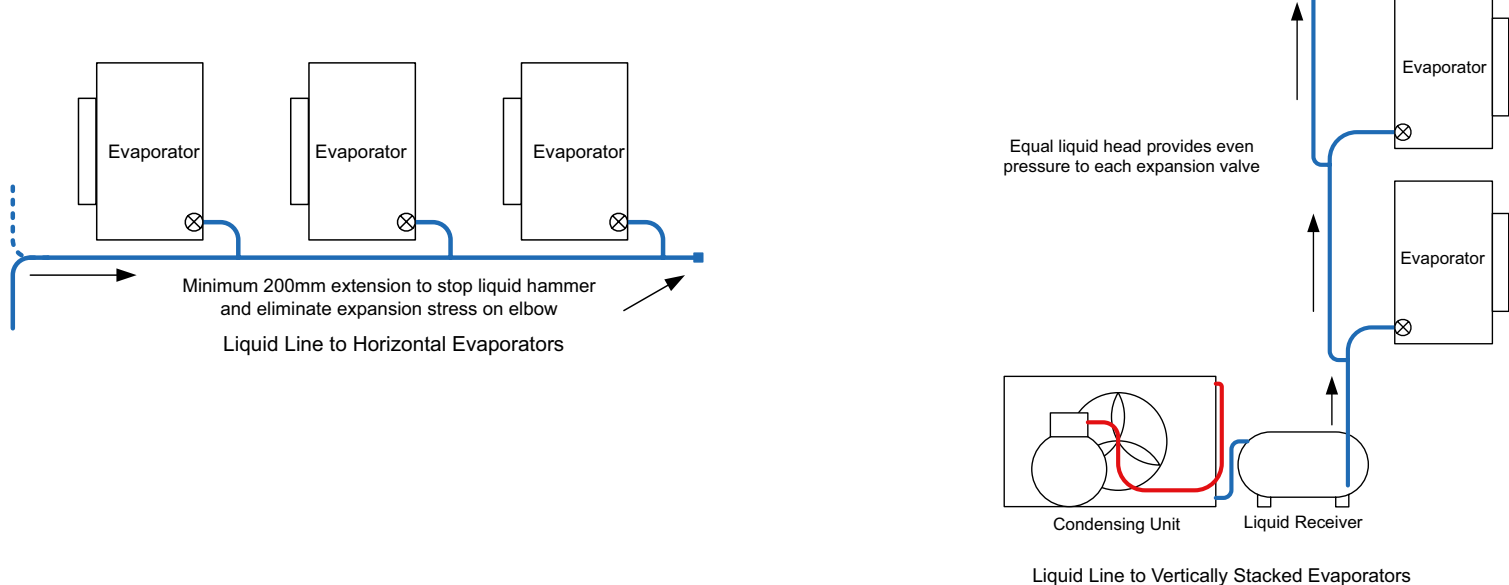
Condenser to Receiver Liquid Drain Line

- Allow liquid to freely drain to liquid receiver while providing vapour pressure to equalize in the other direction



Liquid Line

- Minimise pressure losses in the line to prevent flash gas entering the expansion device
- Minimise heat gain to the liquid refrigerant
- Prevent liquid hammer where multiple evaporators are used

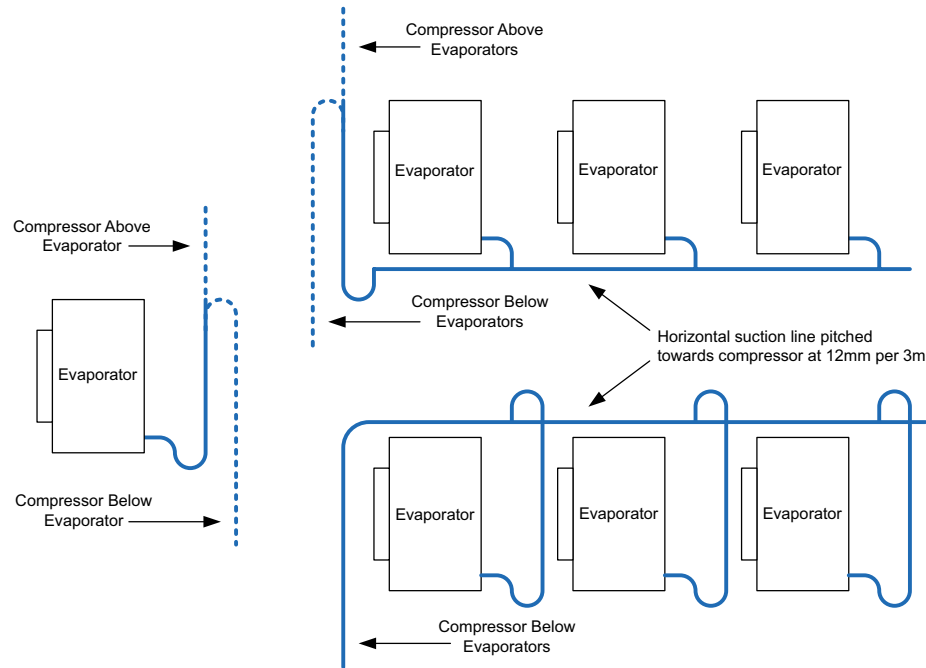


Refrigerant Line Design

Good refrigeration line design and line sizing is essential to ensure refrigeration systems operate reliably and efficiently. The designer must satisfy the following:

Suction Line

- Minimise pressure losses in the line
- Horizontal lines should be pitched in the direction of flow at 12mm every 3m
- Return the oil to the compressor under all load conditions
- Prevent oil draining from active to inactive evaporators when multiple evaporators are used
- Minimise transmission of compressor vibration and dampen vapour pulsations and noise in the line
- Minimise heat gain into the refrigerant vapour and eliminate condensation on the outer surface of the line



Trapped Riser

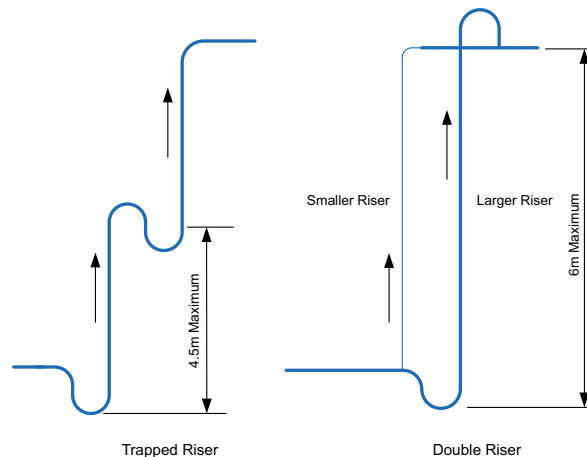
The trapped riser is used in systems with minimal capacity control. The trapped riser is used in vapour lines, both suction and discharge to ensure the oil is carried with the refrigerant vapour up the riser.

Note: the maximum distance between traps is 4.5 metres.

Double Riser

The double rise is used in systems with a wide range of capacity control. The double riser is also used in vapour lines, both suction and discharge to ensure the oil is carried with the refrigerant vapour.

Note: the maximum distance between traps is 6 meters. The smaller riser is sized at the minimum compressor capacity and the larger riser is sized at the maximum compressor capacity minus the minimum compressor capacity so the combination of the two lines is equal to the maximum compressor capacity.



Copper Tube – Safeworking Pressures

Australian Standard AS/NZS 1571 Copper Seamless Tubes for Air-conditioning and Refrigeration

Standard sizes and data for straight copper tubes

Outside Diameter (mm)	Wall Thickness (mm)	Imperial Equivalent O.D. and swg	Nominal Weight (kg/m)	Form	Temper	Safe Working Pressure (kPa) at service temperature				
						50°C	55°C	60°C	65°C	70°C
6.35	0.91	¼" x 20	0.139	6m straight	H	12142	11431	10907	10528	10256
9.53	0.91	⅜" x 20	0.220	6m straight	H	7710	7258	6925	6685	6512
12.70	0.91	½" x 20	0.301	6m straight	1/2H	5653	5322	5078	4901	4774
12.70	1.02	½" x 19	0.335	6m straight	1/2H	6389	6015	5739	5540	5396
15.88	0.91	⅝" x 20	0.383	6m straight	1/2H	4459	4198	4006	3766	3766
15.88	1.02	⅝" x 19	0.426	6m straight	1/2H	5031	4737	4519	4362	4249
19.05	0.91	¾" x 20	0.464	6m straight	1/2H	3684	3468	3309	3194	3111
19.05	1.02	¾" x 19	0.517	6m straight	1/2H	4152	3909	3729	3600	3507
19.05	1.14	¾" x 18.5	0.573	6m straight	1/2H	4670	4510	4350	4190	4030
22.23	0.91	⅞" x 20	0.545	6m straight	1/2H	3137	2953	2818	2720	2649
22.23	1.22	⅞" x 18	0.720	6m straight	1/2H	4261	4011	3827	3694	3599
22.23	1.63	⅞" x 16	0.943	6m straight	H	5794	5455	5204	5024	4894
25.40	0.91	1" x 20	0.626	6m straight	H	2732	2572	2454	2369	2308
25.40	1.22	1" x 18	0.829	6m straight	H	3705	3488	3328	3212	3129
25.40	1.63	1" x 16	1.088	6m straight	H	5026	4732	4515	4358	4245
28.57	0.91	1⅛" x 20	0.707	6m straight	H	2420	2278	2174	2098	2044
28.57	1.22	1⅛" x 18	0.937	6m straight	H	3277	3086	2944	2842	2768
28.57	1.83	1⅛" x 15	1.374	6m straight	H	5016	4723	4506	4350	4237
31.75	0.91	1¼" x 20	0.788	6m straight	H	2171	2044	1950	1883	1834
31.75	1.22	1¼" x 18	1.046	6m straight	H	2937	2765	2639	2547	2481
31.75	2.03	1¼" x 14	1.694	6m straight	H	5007	4714	4497	4341	4229
34.92	0.91	1⅝" x 20	0.869	6m straight	H	1969	1854	1769	1708	1663
34.92	1.22	1⅝" x 18	1.155	6m straight	H	2662	2506	2391	2308	2248
34.92	2.03	1⅝" x 14	1.875	6m straight	H	4527	4262	4067	3925	3824
38.10	0.91	1½" x 20	0.951	6m straight	H	1801	1696	1618	1562	1522
38.10	1.22	1½" x 18	1.264	6m straight	H	2433	2291	2186	2110	2055
41.27	0.91	1⅞" x 20	1.032	6m straight	H	1660	1563	1491	1440	1402
41.27	1.22	1⅞" x 18	1.372	6m straight	H	2241	2110	2013	1943	1893
41.27	2.41	1⅞" x 12.5	2.630	6m straight	H	4549	4282	4086	3944	3842
44.45	0.91	1¾" x 20	1.113	6m straight	H	1539	1449	1383	1335	1300
44.45	1.22	1¾" x 18	1.481	6m straight	H	2077	1955	1866	1801	1754
50.80	0.91	2" x 20	1.275	6m straight	H	1344	1265	1207	1165	1135
50.80	1.22	2" x 18	1.699	6m straight	H	1812	1705	1627	1571	1530
50.80	1.63	2" x 16	2.251	6m straight	H	2438	2296	2190	2114	2060
53.97	0.91	2⅛" x 20	1.356	6m straight	H	1264	1190	1135	1096	1067
53.97	1.22	2⅛" x 18	1.807	6m straight	H	1703	1603	1530	1477	1438
53.97	1.63	2⅛" x 16	2.396	6m straight	H	2291	2157	2058	1987	1935
66.68	1.22	2⅝" x 18	2.243	6m straight	H	1373	1293	1233	1190	1160
66.68	1.63	2⅝" x 16	2.978	6m straight	H	1845	1737	1657	1599	1558
76.20	1.63	3" x 16	3.414	6m straight	H	1610	1515	1446	1396	1360
101.60	1.63	4" x 16	4.577	6m straight	H	1201	1131	1079	1042	1015

Denotes R410A rated tube. Courtesy of Crane Enfield Metals Pty Ltd

Copper Tube – Safeworking Pressures

Australian Standard AS/NZS 1571 Copper Seamless Tubes for Air-conditioning and Refrigeration

Standard sizes and data for straight copper tubes

Outside Diameter (mm)	Wall Thickness (mm)	Imperial Equivalent O.D. and swg	Nominal Weight (kg/m)	Form	Temper	Safe Working Pressure (kPa) at service temperature				
						50°C	55°C	60°C	65°C	70°C
4.76	0.56	3/16" x 24	0.066	30m Coil	0	9711	9142	8723	8420	8202
4.76	0.71	3/16" x 22	0.081	30m Coil	0	12715	11971	11422	11025	10739
4.76	0.91	3/16" x 20	0.098	30m Coil	0	17041	16043	15308	14776	14393
6.35	0.56	1/4" x 24	0.091	30m Coil	0	7069	6656	6350	6130	5971
6.35	0.71	1/4" x 22	0.112	30m Coil	0	9175	8638	8242	7955	7749
6.35	0.91	1/4" x 20	0.139	30m Coil	0	12142	11431	10907	10528	10256
6.35	1.22	1/4" x 18	0.176	30m Coil	0	17143	16140	15400	14864	14480
7.94	0.56	5/16" x 24	0.116	30m Coil	0	5558	5232	4993	4819	4694
7.94	0.71	5/16" x 22	0.144	30m Coil	0	7177	6757	6447	6223	6062
7.94	0.91	5/16" x 20	0.180	30m Coil	0	9431	8879	8472	8177	7966
9.53	0.56	3/8" x 24	0.141	18m Coil	0	4579	4311	4113	3970	3867
9.53	0.71	3/8" x 22	0.176	18m Coil	0	5893	5548	5294	5110	4978
9.53	0.91	3/8" x 20	0.220	18m Coil	0	7710	7258	6925	6685	6512
12.70	0.56	1/2" x 24	0.191	18m Coil	0	3389	3190	3044	2938	2862
12.70	0.71	1/2" x 22	0.239	18m Coil	0	4344	4090	3903	3767	3669
12.70	0.81	1/2" x 21	0.270	18m Coil	0	4994	4701	4486	4330	4218
12.70	0.91	1/2" x 20	0.301	18m Coil	0	5653	5322	5078	4901	4774
15.88	0.56	5/8" x 24	0.241	18m Coil	0	2688	2530	2414	2331	2270
15.88	0.71	5/8" x 22	0.303	18m Coil	0	3438	3237	3088	2981	2904
15.88	0.81	5/8" x 21	0.343	18m Coil	0	3945	3715	3544	3421	3332
15.88	0.91	5/8" x 20	0.383	18m Coil	0	4459	4198	4006	3866	3766
15.88	1.02	5/8" x 19	0.426	18m Coil	0	5031	4737	4519	4362	4249
19.05	0.71	3/4" x 22	0.366	18m Coil	0	2846	2679	2557	2468	2404
19.05	0.91	3/4" x 20	0.464	18m Coil	0	3684	3468	3309	3194	3111
19.05	1.14	3/4" x 18.5	0.573	18m Coil	0	4670	4510	4350	4190	4030
22.23	0.91	7/8" x 20	0.545	18m Coil	0	3137	2953	2818	2720	2649

Pair Coil Specifications

Outside Diameter (mm)	Wall Thickness (mm)	Imperial Equivalent O.D. and swg	Nominal Weight (kg/m)	Form	Temper	Safe Working Pressure (kPa) at service temperature				
						50°C	55°C	60°C	65°C	70°C
6.35	0.81	1/4" x 21	0.126	20m Coil	0	10635	10012	9553	9221	8982
9.52	0.81	3/8" x 21	0.198			6800	6402	6108	5896	5743
6.35	0.81	1/4" x 21	0.126			10635	10012	9553	9221	8982
12.70	0.81	1/2" x 21	0.270			4994	4701	4486	4330	4218
6.35	0.81	1/4" x 21	0.126			10635	10012	9553	9221	8982
15.88	1.02	5/8" x 19	0.426			5031	4737	4519	4362	4249
9.52	0.81	3/8" x 21	0.198			6800	6402	6108	5896	5743
15.88	1.02	5/8" x 19	0.426			5031	4737	4519	4362	4249
9.52	0.81	3/8" x 21	0.198			6800	6402	6108	5896	5743
19.05	1.22	3/4" x 18	0.611			5015	4722	4505	4349	4236
12.70	0.81	1/2" x 21	0.270			4994	4701	4486	4330	4218
19.05	1.22	3/4" x 18	0.611			5015	4722	4505	4349	4236

Interpolation of allowable design stress as defined by table D7 of AS4041 for below temps.

Temperature (°C)	50.0	55.0	60.0	65.0	70.0	75.0
SD (MPa)	41.0	38.6	36.83	35.55	4.63	34.0

■ Denotes R410A rated tube

Working Pressures

Safe working pressures for copper tube are calculated on the basis of annealed temper tube with the maximum allowable outside diameter and minimum wall thickness, thus allowing for softening of the tube due to brazing or heating. All safe working pressures are based on the following formula: $P_{sw} = \frac{2000 \times S_D \times t_m}{D - t_m}$

Where:

- P_{sw} = safe working pressure (MPa)
- S_D = maximum allowable design stress for annealed copper (MPa)
- t_m = minimum wall thickness of tube (mm)
- D = outside diameter or tube (mm)

Courtesy of Crane Enfield Metals Pty Ltd

Capillary Tube – Conversion Chart

This Conversion Chart is designed to enable users of capillary tubing to use the standard sizes which are readily available through refrigeration wholesalers. While many original equipment manufacturers and condensing unit manufacturers recommend specific lengths and diameters of capillary tubing for their units, these tube sizes are not always readily available, except on special order.

This chart enables the user to translate the recommended length into that of a tube diameter that can be readily obtained. In using the chart, it is recommended that conversions be made using factors falling in the shaded area. In addition, it is highly recommended that the minimum length of capillary used be 1 metre.

To Use Chart:

1. Located 'Recommended Cap. Tube ID' in left hand column.
2. Read across and find conversion factor under 'Possible Capillary Tube ID' sizes.
3. Multiply the given length of the recommended tube by the conversion factor of the possible tube.
4. The resultant length of tube will give the same flow characteristics as the original recommended tube.

Example: Recommended capillary tube 2 metres of 1.02mm. Locate 1.02mm in left hand column and reading across gives the following conversion factors: For 0.91mm ID Tubing - Factor 0.62. For 1.1mm ID tubing - Factor 1.55. Multiply the recommended capillary tube length of 2 metres by the conversion factors, which give the following results: 1.24m of 0.91mm ID and 3.1m of 1.1mm ID. Either of these capillary tubes will give the same results as the original.

Recommended Tube ID		Possible Tube ID – mm (inches)											
mm	Inches	0.66 (0.026)	0.8 (0.031)	0.91 (0.036)	1.1 (0.044)	1.27 (0.05)	1.4 (0.055)	1.5 (0.059)	1.62 (0.064)	1.78 (0.07)	1.9 (0.075)	2.04 (0.08)	2.3 (0.09)
0.61	0.024	1.44											
0.64	0.025	1.2											
0.66	0.026	1	2.24										
0.71	0.028	0.72	1.59										
0.76	0.03	0.52	1.16										
0.8	0.031	0.45	1	2									
0.81	0.032		0.86	1.75									
0.84	0.033		0.75	1.54									
0.86	0.034		0.65	1.35									
0.89	0.035		0.58	1.16									
0.91	0.036		0.5	1									
0.94	0.037		0.45	0.9	2.22								
0.97	0.038		0.39	0.8	1.92								
0.99	0.039		0.35	0.71	1.75								
1.02	0.04		0.31	0.62	1.55								
1.04	0.041		0.28	0.56	1.38	2.5							
1.07	0.042		0.25	0.5	1.24	2.23							
1.09	0.043		0.23	0.45	1.11	1.98							
1.1	0.044		0.2	0.39	1	1.79							
1.14	0.045			0.35	0.9	1.6							
1.17	0.046			0.32	0.82	1.47	2.27						
1.19	0.047				0.74	1.31	2.06						
1.22	0.048				0.67	1.2	1.87						
1.24	0.049				0.61	1.09	1.69						
1.27	0.05				0.56	1	1.56	2.14					
1.3	0.051				0.51	0.93	1.44	1.96					
1.32	0.052				0.47	0.85	1.32	1.78					
1.35	0.053				0.43	0.78	1.2	1.64					
1.37	0.054				0.39	0.7	1.09	1.52	2.18				
1.4	0.055				0.36	0.64	1	1.38	2				
1.42	0.056					0.6	0.94	1.27	1.85				
1.45	0.057					0.55	0.87	1.17	1.72				
1.47	0.058					0.51	0.8	1.07	1.56				
1.5	0.059					0.47	0.73	1	1.44	2.18			
1.52	0.06					0.43	0.67	0.93	1.33	2.04			
1.62	0.064					0.32	0.5	0.69	1	1.5	2.07		
1.78	0.07						0.33	0.46	0.67	1	1.37	1.84	
1.9	0.075								0.48	0.73	1	1.37	
2.04	0.08									0.54	0.74	1	1.71
2.16	0.085										0.57	0.76	1.29
2.3	0.09										0.43	0.62	1
2.41	0.095											0.46	0.79
2.54	0.1												0.62
2.67	0.105												0.49

Pressure Regulating Valve Selection Guide

General Definition

A device for regulating the flow of refrigerant, whether liquid or vapour in refrigeration and air conditioning systems. This Selection Guide briefly describes the main types, their common names and application. It should be remembered that due to the wide variety of control systems in use, one type of regulator/valve may perform several functions, and when coupled with other types of control valves (Solenoid Valves, Check Valves etc.) their application may be extended. Therefore only the more common applications are detailed below.

Capacity Regulator

Also known as: Hot Gas By-Pass Regulator/Valve, Discharge By-Pass Regulator/Valve, Discharge Pressure Regulator/Valve. Often abbreviated to HGBP Regulator/Valve. Description: Used to control the compressor capacity and prevent suction pressure from falling to objectionably low levels. May be used in systems with one or more evaporators where compressor itself has no capacity regulation or can extend compressor capacity reduction below the last step of cylinder unloading.

Application: By-Pass to Suction Line – piped so that discharge gas is admitted to the suction line to flow against the direction of the suction gas. To prevent overheating of the compressor, a liquid injection valve is sometimes required for de-superheating.

By-Pass to Evaporator Inlet – usually fitted between the TX valve and the refrigerant distributor. The advantage of this method is that the artificial load imposed on the evaporator causes the TX valve to respond to the increase in superheat, thus eliminating the need for the liquid injection valve. This type of system must be equipped with a Venturi-Flo Refrigerant Distributor (i.e. no restrictor orifice). It is recommended that a solenoid valve be installed ahead of the by-pass regulator permitting the system to operate on an automatic pump-down cycle and also guarding against leakage during the 'off-cycle'.

Also used for: By-Pass Control Valve for air-cooled condensers.

Crankcase Pressure Regulating Valve

Also known as: Hold Back Valve, Suction Pressure Regulator, Starting Regulator, Outlet Regulator, Downstream Regulator. Often abbreviated to CPRV.

Description: A valve which regulates the suction pressure to a pre-determined maximum in order to prevent the compressor motor overloading, which may be due to any or all of the following: High load on start up, high suction pressure at termination of defrosting cycle, surges in suction pressure, prolonged operation at excessive suction pressures, low voltage and high suction pressure conditions.

Application: Installed in the suction line ahead of the compressor, the valve establishes the maximum pressure at the compressor inlet, thus providing overload protection for the compressor motor. May be used with one or more evaporators, either direct expansion or flooded evaporator designs. Also used for: High to low side by-pass, by-pass control for air cooled condensers.

Evaporator Pressure Regulating Valve

Also known as: Back Pressure Regulator / Valve, Constant Pressure Valve*, Upstream Regulator, Inlet Pressure Regulator, Suction Line Regulator. Often Abbreviated to: EPR or EPRV.

*Sometimes referred to as a Constant Pressure Regulator, but should not be confused with the same 'general' term applied to an automatic expansion valve.

Description: Used to maintain a constant evaporating pressure and hence a constant evaporator temperature plus protection against too low an evaporating pressure since the regulator closes when the pressure in the evaporator falls below the setting.

Application: Installed in the suction line near the evaporator outlet. Available in two main types: Direct operated and pilot operated.

Pilot operated regulators may be integral types, or remote pilot actuated either by pressure or temperature.

Also used for: Freeze-up or frost protection, maintaining evaporator pressure during a defrost, providing a safety or pressure relief function.

Condenser Pressure Regulator For Water Cooled Condensers

Also known as: Pressure Controlled Water Valve, Temperature Controlled Water Valve.

Description: The water valve is used for regulating the quantity of water in refrigeration systems with water cooled condensers. Use of the water valve results in modulating regulation of the condensing pressure so that it is kept almost constant during operation.

Condenser Pressure Regulator For Air Cooled Condensers

Also known as: Head Pressure Control Valve.

Description: To maintain a constant and sufficiently high condensing pressure in air cooled condensers at low ambient temperatures. The valve must maintain liquid subcooling and prevent liquid line flash-gas and also provide adequate pressure at the inlet side of the TX valve to obtain sufficient pressure drop across the valve port.

Application: Dependent on the type of control circuit employed or recommended by the air cooled condenser manufacturer, the control may be either a single three-way modulating type valve or two separate valves to achieve the same function.

Thermostatic Injection Valve

Also known as: Liquid Injection Valve.

Description: Used to prevent compressor overheating and high discharge temperatures when: An R717 compressor operates either at low suction pressures or at high condensing temperatures. A compressor operates both at low suction pressures and at high condensing temperatures, especially with R22. A compressor operates with By-pass to suction line hot gas by-pass.

Application: Liquid injected into a gas to be de-superheated should be injected in a manner which provides homogeneous mixing of the liquid and superheated gas. Preferred method is to pipe the hot gas and liquid injection into a Tee to permit good mixing before it enters the suction line. A good mix with the suction gas may be gained by injecting the liquid/hot gas mixture into the suction line at approximately a 45° angle against the flow of suction gas to the compressor.

Air Cooled Condenser Selection

The selection of an air cooled condenser is based on the heat rejection capacity at the condenser rather than net refrigeration effect at the evaporator because the refrigerant gas absorbs additional energy in the compressor. This additional energy, the heat of compression, varies appreciably with the operating conditions of the system and with compressor design, whether open or suction cooled hermetic type.

Some compressor manufacturers publish heat rejection figures as part of their compressor ratings. Since heat rejection varies with compressor designs, it is recommended that the compressor manufacturer's data be used whenever available in selecting an air cooled condenser. If the compressor manufacturer does not publish heat rejection ratings, factors from Table A and B may be used to estimate total heat rejection (THR).

Heat Rejection Factors

Open Compressors

TABLE A

Evap. Temp. °C	Condensing Temperature °C						
	30	35	40	45	50	55	60
-35	1.37	1.4	1.44	1.5	*	*	*
-30	1.32	1.36	1.4	1.44	1.5	*	*
-25	1.28	1.31	1.35	1.39	1.44	1.49	*
-20	1.24	1.27	1.31	1.35	1.39	1.44	1.49
-15	1.21	1.24	1.28	1.31	1.35	1.39	1.44
-10	1.18	1.21	1.24	1.27	1.31	1.35	1.39
-5	1.15	1.18	1.21	1.24	1.28	1.31	1.35
0	1.12	1.15	1.18	1.2	1.24	1.27	1.31
5	1.1	1.13	1.15	1.17	1.2	1.24	1.27
10	1.08	1.11	1.13	1.15	1.18	1.2	1.24

Suction Cooled Hermetic Compressors

TABLE B

Evap. Temp. °C	Condensing Temperature °C						
	30	35	40	45	50	55	60
-35	1.56	1.6	1.65	1.71	*	*	*
-30	1.49	1.52	1.56	1.62	1.68	*	*
-25	1.43	1.46	1.49	1.54	1.6	1.68	*
-20	1.37	1.4	1.45	1.48	1.54	1.6	1.65
-15	1.32	1.35	1.39	1.43	1.47	1.53	1.58
-10	1.28	1.31	1.33	1.37	1.42	1.47	1.52
-5	1.24	1.26	1.29	1.33	1.37	1.41	1.46
0	1.2	1.22	1.25	1.28	1.32	1.36	1.41
5	1.16	1.19	1.22	1.24	1.27	1.31	1.35
10	1.13	1.15	1.18	1.21	1.24	1.26	1.29

*Outside of normal limits for single stage compression application.

$$\text{Condenser Capacity (THR)} = \text{Compressor Capacity} \times \text{Heat Rejection Factor}$$

Selection Example:

Given:

- Compressor Capacity 38600 Watts
- Evaporating Temperature 5°C
- Refrigerant R22
- Ambient Air 35°C
- Maximum Condensing Temperature 50°C
- Suction Cooled Hermetic Compressor

Procedure

- Assuming the compressor manufacturers heat rejection data is not available, determine the heat rejection factor for the specified conditions using Table B (Suction Cooled Hermetic Compressors) = 1.27
- Multiply the compressor capacity by the heat rejection factor to estimate the required condenser capacity (Total Heat Rejection, THR)

$$38600 \times 1.27 = 49022 \text{ Watts THR}$$
- Divide required THR by the specified temperature difference (KTD) between condensing temperature and the ambient air,

$$50^\circ - 35^\circ\text{C} = 15 \text{ K TD.}$$

$$\frac{49022 \text{ Watts THR}}{15 \text{ K TD}} = 3268 \text{ Watts/K TD}$$
- Select condenser from manufacturers capacity tables, based on R22 and 1K temperature difference. Select a model that has this capacity, if the model selected is oversized the condenser will balance the compressor heat rejection at less than the maximum condensing temperature of 50°C.

Motor Types

L-Unite Hermetique



SINGLE PHASE MOTORS WITH START WINDING

P.T.C.S.I.R During start-up, the start winding is fed through the P.T.C. which changes the resistance of the P.T.C. with the change in temperature.

ELECTRICAL COMPONENTS:

- 1 P.T.C.
- 1 External overload protector fitted on the compressor.
- 1 Earth connection

R.S.I.R. During start-up, the start winding is energised through an electromagnetic relay.

ELECTRICAL COMPONENTS:

- 1 Electromagnetic relay
- 1 External overload protector fitted on the compressor
- 1 Earth connection

C.S.I.R. During start-up, the start winding is energised through an electromagnetic relay and a start capacitor.

ELECTRICAL COMPONENTS:

- 1 Electromagnetic relay
- 1 External overload protector fitted on the compressor
- 1 Start capacitor
- 1 Earth connection

SINGLE PHASE MOTORS WITH PERMANENT SPLIT CAPACITOR

P.T.C.S.R During start-up, the start winding is fed through the P.T.C. which changes the resistance of the P.T.C. with the change in temperature.

ELECTRICAL COMPONENTS:

- 1 P.T.C.
- 1 External overload protector fitted on the compressor
- 1 Run capacitor
- 1 Earth connection

P.S.C. The start winding of such a motor remains in circuit through a permanent split capacitor.

ELECTRICAL COMPONENTS:

- 1 External overload protector fitted on the compressor
- 1 Run capacitor
- 1 Earth connection

C.S.R. During start-up, the start winding is energised through an electromagnetic potential relay and a start capacitor. This winding remains in circuit and is supplied through a permanent split capacitor.

ELECTRICAL COMPONENTS:

- 1 External overload protector fitted on the compressor
- 1 Electrical box containing:
 - 1 Electromagnetic potential relay
 - 1 Start capacitor fitted with a discharge pressure
 - 1 Terminal block
- 1 Earth connection
- 1 External run capacitor with fixing bracket

Coolroom Design Data

Product Load

Product placed in a refrigerated room at a temperature higher than the storage temperature will lose heat until it reaches the storage temperature. The product load will be affected by one or more of the following factors:

- Specific Heat
- Latent Heat of Fusion
- Heat of Respiration

Specific Heat is the amount of heat required to change the temperature of 1kg of product 1K. It has two values, one above freezing, the other below freezing due to the change in state which occurs. Latent Heat of Fusion is the amount of heat removal required to freeze 1kg of product. It should be noted that the latent heat has a definite relationship to the water content of a product. Most food products have a freezing temperature in the range of -3°C to -0.5°C . If the exact freezing temperature is unknown, it may be assumed to be -2°C .

Heat of Respiration is the amount of heat given off by products such as fresh fruits and vegetables during storage. Since the products are alive, they continually undergo a change in which energy is released in the form of heat. The amount of heat liberated varies with the type and temperature of the product.

Miscellaneous: All electrical energy dissipated by lights, motors, heaters etc. located in the refrigerated area must be included in the heat load. An item often overlooked is the fan motor on a unit cooler. Heat equivalents of electric motors vary as to size of motor.

Balancing the System

For the general purpose coolroom, holding meats, vegetables and dairy products, it is common procedure to balance the low side to the condensing unit at a 6K to 7K temperature difference; that is, they are balanced to maintain a temperature difference between the refrigerant in the coil and the air of 6K to 7K. It has been learned by experience that, if this is done, one may expect to maintain in a cooler 80% to 85% relative humidity, which is a good range for general storage.

A coil which is selected for a wide temperature difference will maintain a lower relative humidity in service, whereas one which is selected for too close temperature difference will produce relative humidities which are higher than required for practical operation and surface sliming may result on stored meat products during winter periods when loads are reduced and compressor running time falls off. Heat may have to be added to the room for about 6 hours/day compressor operation. On straight vegetable coolers where higher humidities are desired, the coil should be selected to balance the compressor at a 4K to 6K temperature difference, as such will produce an average relative humidity of 90% within the refrigerated space. The same recommendation applies to florists' display rooms and in both cases, the maintenance of a high relative humidity in long term storage is beneficial whereas some exception with reference to meat products is noted above.

On low temperature units, if one stops to consider that the amount of dehumidification is in proportion to the temperature difference, it is obvious that the closer the temperature difference, the less frost accumulation. It is strongly recommended that coils for low temperature work be selected to balance the condensing unit at a 6K temperature difference or less.

Selection of T.X. Valves

The selection and installation of thermostatic expansion (T.X.) valves is of utmost importance for best coil performance. Valve capacity must be at least equal to the coil load rating and never more than twice that value. Any valve which is substantially oversized will tend to be erratic in operation and this will penalise both coil performance and rated capacity output. Liquid line strainers should always be installed ahead of all T.X. valves.

T.X. valves are nominally rated with R22 refrigerant at 4°C evaporator temperature, 5.6K superheat and 690 kPa (100 psi) differential (pressure at valve inlet minus pressure at valve outlet). For capacities at other differentials or when used with other refrigerants, the valve manufacturer's ratings must be consulted and closely followed in reference to Capacity Correction Factors.

Although it is frequently assumed that when thermostatic expansion valves are used in low temperature applications, some increased capacity results due to a higher pressure differential, this is not always true because of variations in valve design. It is always advisable under wide range conditions to secure the valve manufacturer's recommendations.

As a further precautionary note, the power element charges of all T.X. valves must be properly selected for operating temperature ranges and the type of refrigerant used in the system.

T.X. valves should be located as close as possible to evaporator inlet and bulbs attached or inserted at a point where refrigerant will not trap in the suction line. Keep bulbs away from tees in common suction lines so that one valve will not affect any other valve.

Externally equalised valves should be used on all multicircuited evaporators. In general, internally equalised valves are applied with single circuited coils.

Coolroom Design Data

Storage Requirements of Perishable Products

Product	Storage Temp. °C	Relative Humidity %	Specific Heat kj/kg • K		Latent Heat kj/kg	Approx. Freezing Point °C	Approx. Storage Life	Water Content %
			Above Freezing	Below Freezing				
Fruits and Melons								
Apples	-1 to 4	90 to 95	3.65	1.89	280	-1.1	3 to 8 months	84
Apricots	0	90 to 95	3.68	1.9	284	-1.1	1 to 2 weeks	85
Avocados – Green	7 to 10	85 to 90	3.01	1.65	217	-0.3	2 to 4 weeks	65
Bananas	13	85 to 95	3.35	1.78	250	-0.8	2 to 3 weeks	75
Blackberries	0	90 to 100	3.68	1.9	284	-0.8	2 to 3 days	85
Blueberries	0	90 to 100	3.58	1.86	274	-1.6	2 weeks	82
Cantaloupe (Rock Melon)	2 to 4	90	3.92	1.99	307	-1.2	5 to 15 days	92
Casaba Melons	7 to 10	85 to 95	3.95	2	310	-1.1	4 to 6 weeks	93
Cherries	-1 to 0	95	3.51	1.84	267	-1.8	2 to 3 weeks	80
Coconuts	0 to 2	80 to 85	2.41	1.43	157	-0.9	1 to 2 months	47
Cranberries	2 to 4	90 to 95	3.75	1.93	290	-0.9	2 to 4 months	87
Currents	-0.5 to 0	90 to 95	3.68	1.9	284	-1	10 to 14 days	85
Dates – Cured	-18 or 0	75 or less	1.5	1.09	67	-16	6 to 12 monthly	20
Dew Berries	0	90 to 95	3.68	1.9	284	-1.3	3 days	85
Figs – Dried	0 to 4	50 to 60	1.61	1.12	95		9 to 12 months	23
Figs– Fresh	-1 to 0	85 to 90	3.45	1.81	260	-2.4	7 to 10 days	78
Frozen Fruits	-23 to –18	90 to 95					6 to 12 months	
Gooseberries	0	90 to 95	3.82	1.95	297	-1.1	1 to 2 weeks	89
Grapefruit	14 to 16	85 to 90	3.82	1.95	297	-1.1	4 to 6 weeks	89
Grapes	-1 to 0	95 to 100	3.58	1.86	274	-2	3 to 6 months	82
Honeydew Melons	7 to 10	90	3.95	2	310	-0.9	3 to 4 weeks	93
Lemons	15 to 18	85 to 90	3.82	1.95	297	-1.4	1 to 6 months	89
Limes	9 to 10	85 to 90	3.72	1.92	287	-1.6	6 to 8 weeks	86
Mangoes	13	85 to 90	3.55	1.85	270	-0.9	2 weeks	81
Nectarines	0	90	3.58	1.86	274	-0.9	1 to 2 weeks	82
Olives – Fresh	7 to 10	85 to 90	3.35	1.78	250	-1.4	4 to 6 weeks	75
Oranges	5	85 to 90	3.75	1.93	290	-0.8	3 to 12 weeks	87
Orange Juice	-1 to 2		3.82	1.95	297		3 to 6 weeks	89
Papaw	13	90	3.88	1.98	304	-0.8	1 to 3 weeks	91
Peaches	0	90 to 95	3.82	1.95	297	-0.9	2 to 3 weeks	89
Pears	-1.6 to 0	90 to 95	3.61	1.88	277	-1.6	2 to 6 months	83
Persian Melons	7 to 10	90 to 95	3.95	2	310	-0.8	2 weeks	93
Persimmons	-1	90	3.45	1.81	260	-2.2	3 to 4 months	78
Pineapples	20	85 to 90	3.68	1.9	284	-1	1 to 4 weeks	85
Plums	-0.5 to 0	90 to 95	3.72	1.92	287	-0.8	1 to 4 weeks	86
Pomegranates	0	90	3.58	1.86	274	-3	2 to 4 months	82
Prunes – Fresh	-1 to 0	90 to 95	3.72	1.92	287	-0.8	2 to 4 weeks	86
Prunes – Dried	0 to 4	55 to 60	2.56	1.19	108		5 to 8 months	28
Quinces	-1 to 0	90	3.68	1.9	284	-2	2 to 3 months	85
Raspberries	0	90 to 100	3.55	1.85	270	-1.1	2 to 3 days	81
Strawberries	0	90 to 100	3.85	1.97	300	-0.8	5 to 7 days	90
Tangerines	0	90 to 95	3.75	1.93	290	-1.1	2 to 4 weeks	87
Watermelons	5 to 10	85 to 90	3.95	2	310	-0.4	2 to 3 weeks	93

Coolroom Design Data

Storage Requirements of Perishable Products

Product	Storage Temp. °C	Relative Humidity %	Specific Heat kj/kg • K		Latent Heat kj/kg	Approx. Freezing Point °C	Approx. Storage Life	Water Content %
			Above Freezing	Below Freezing				
Vegetables								
Artichokes – Globe	0	95 to 100	3.65	1.89	280	-1.2	2 weeks	84
Artichokes – Jerusalem	0	90 to 95	3.47	1.84	267	-2.5	5 months	80
Asparagus	0 to 2	95 to 100	3.95	2	310	-0.6	2 to 3 weeks	93
Beans – Green	7 to 10	95 to 100	3.82	1.95	297	-0.7	7 to 10 days	89
Beetroot – Bunch	0	95 to 100				-0.4	1 to 2 weeks	
Beetroot – Topped	0	95 to 100	3.78	1.94	294	-0.9	2 to 5 months	88
Broccoli	0	95 to 100	3.85	1.97	300	-0.6	10 to 14 days	90
Brussels Sprouts	0	95 to 100	3.68	1.9	284	-0.8	3 to 5 weeks	85
Cabbage	0	98 to 100	3.92	1.99	307	-0.9	1 to 4 months	92
Carrots – Topped, Immature	0	98 to 100	3.78	1.94	294	-1.4	4 to 6 weeks	88
Carrots – Topped, Mature	0	98 to 100	3.78	1.94	294	-1.4	4 to 5 months	88
Cauliflower	0	95 to 100	3.92	1.99	307	-0.8	2 to 4 weeks	92
Celery	0	95 to 100	3.98	2.02	314	-0.5	1 to 2 months	94
Corn – Sweet	0	95 to 98	3.31	1.76	247	-0.6	4 to 8 days	74
Cucumbers	10	95 to 100	4.05	2.04	320	-0.5	10 to 14 days	96
Eggplant	7 to 10	90 to 95	3.95	2	310	-0.8	7 days	93
Endive (Escarole)	0	90 to 100	3.95	2	310	-0.1	2 to 3 weeks	93
Frozen Vegetables	-23 to -18						6 to 12 months	
Garlic – Dry	0	65 to 70	2.88	1.6	203	-0.8	6 to 7 months	61
Horseradish	0	95 to 100	3.35	1.78	250	-1.8	10 to 12 months	75
Kale	0	95	3.75	1.93	290	-0.5	3 to 4 weeks	87
Kohlrabi	0	90 to 100	3.85	1.97	300	-1	2 to 4 weeks	90
Leeks – Green	0	95	3.68	1.9	284	-0.7	1 to 3 months	85
Lettuce – Head	0	95 to 100	4.02	2.03	317	-0.2	2 to 3 weeks	95
Mushrooms	0	95	3.88	1.98	304	-0.9	3 to 4 days	91
Onions – Dry	0	65 to 70	3.78	1.94	294	-0.8	1 to 8 months	88
Parsley	0	95 to 100	3.68	1.9	284	-1.1	1 to 2 months	85
Parsnips	0	98 to 100	3.48	1.83	264	-0.9	2 to 6 months	79
Peas – Green	0	95 to 98	3.31	1.76	247	-0.6	1 to 2 weeks	74
Peas – Dried	10	70	1.24	0.99			6 to 8 months	12
Peppers – Sweet	7 to 13	90 to 95	3.92	1.99	307	-0.7	2 to 3 weeks	92
Peppers – Dry, Chilli	0 to 10	60 to 70	1.24	0.99			6 months	12
Potatoes – Culinary	7	90 to 95	3.45	1.81	260	-0.7		78
Potatoes – Sweet	13 to 16	85 to 90	3.15	1.7	230	-1.3	4 to 6 months	69
Pumpkins	13	85 to 90	3.88	1.98	304	-0.8	2 to 3 months	91
Radishes – Topped	0	90 to 95	4.02	2.03	317	-0.7	3 to 4 weeks	95
Rhubarb	0	95	4.02	2.03	317	-0.9	2 to 4 weeks	95
Rutabaga	0	90 to 95	3.82	1.95	297	-1.1	2 to 4 months	89
Silverbeet (Spinach)	0	95 to 98	3.95	2	310	-0.3	1 to 2 weeks	93
Squash – Button	7	95 to 100	3.98	2.02	314	-0.5	1 to 3 weeks	94
Squash – Hard Shell	13	85 to 90	3.68	1.9	284	-0.8	1 to 3 months	85
Tomatoes – Firm, Ripe	5 to 7	90 to 95	3.98	2.02	313	-0.5	4 to 7 days	94
Tomatoes – Mature, Green	13	90 to 95	3.95	2	310	-0.6	1 to 2 weeks	93
Turnips	0	95	3.92	1.99	307	-1.1	4 to 5 months	92
Yams	16	85 to 90	3.31	1.76	247		3 to 6 months	74

Coolroom Design Data

Storage Requirements of Perishable Products

Product	Storage Temp. °C	Relative Humidity %	Specific Heat kj/kg • K		Latent Heat kj/kg	Approx. Freezing Point °C	Approx. Storage Life	Water Content %
			Above Freezing	Below Freezing				
Meat – Fish – Shellfish								
Bacon – Medium Fat	3 to 5	80 to 85	1.47	1.07	63		2 to 3 weeks	19
– Frozen	-23 to -18	90 to 95					2 to 4 months	
Beef – Fresh, Average	0 to 1	88 to 92	2.9 to 3.4	1.6 to 1.8	206 to 257	-2.2 to -2.7	1 to 6 weeks	62 to 77
– Liver	0	90	3.18	1.71	233	-1.7	5 days	70
– Veal	0 to 1	90	3.05	1.66	220		1 to 7 days	66
– Frozen	-23 to -18	90 to 95					6 to 12 months	
Ham – 74% Lean	0 to 1	80 to 85	2.71	1.54	187	-1.7	3 to 5 days	56
– Light Cure	3 to 5	80 to 85	2.74	1.55	190		1 to 2 weeks	57
– Country Cure	10 to 15	65 to 70	2.24	1.36	140		3 to 5 months	42
– Frozen	-23 to -18	90 to 95					6 to 8 months	
Lamb – Fresh, Average	0 to 1	85 to 90	2.8 to 3.2	1.6 to 1.7	200 to 233	-2.2 to -1.7	5 to 12 days	60 to 70
– Frozen	-23 to -18	90 to 95					8 to 12 months	
Pork – Fresh, Average	0 to 1	85 to 90	1.9 to 2.3	1.2 to 1.4	107 to 147	-2.2 to -2.7	3 to 7 days	32 to 44
– Frozen	-23 to -18	90 to 95					4 to 8 months	
– Sausage	0 to 1	85	2.11	1.31	127		1 to 7 days	38
Poultry – Fresh, Average	-2 to 0	85 to 90	3.31	1.76	247	-2.8	1 week	74
– Frozen	-23 to -18	90 to 95					8 to 12 months	
Rabbits – Fresh	0 to 1	90 to 95	3.11	1.69	227		1 to 5 days	68
Fish – Fresh, Average	-1 to 1	95 to 100	2.91 to 3.55	1.61 to 1.85	207 to 270	-2.2	5 to 14 days	62 to 81
– Frozen	-29 to -18	90 to 95					6 to 12 months	
Scallops – Meat	0 to 1	95 to 100	3.51	1.84	267	-2.2	12 days	80
Shrimp	-1 to 1	95 to 100	3.38	1.79	254	-2.2	12 to 14 days	76
Oysters, Clams – Meat & Liquid	0 to 2	100	3.75	1.93	290	-2.2	5 to 8 days	87
Oysters – In Shell	5 to 10	95 to 100	3.51	1.84	267	-2.8	5 days	80
Shellfish – Frozen	-29 to -18	90 to 95					3 to 8 months	
Miscellaneous								
Beer – Bottles & Cans	2 to 4	65 or less	3.85	1.97	300	-2.2	3 to 6 months	90
Bread – Frozen	-18		1.99	1.27	106 to 123	-9 to -7	3 to 13 weeks	32 to 37
Butter	0 to 4	75 to 85	1.37	1.04	53	-20 to -0.6	1 month	16
Butter – Frozen	-23	70 to 85					12 Months	
Cheese – Cheddar	0 to 1	65	2.07	1.3	123	-13	12 months	37
– Cheddar	4.4	65	2.07	1.3	123	-13	6 months	37
Chocolate – Milk	-18 to 1	40	0.87	0.85	3.3		6 to 12 months	1
Coffee – Green	2 to 3	80 to 85	1.17 to 1.34	0.96 to 1.03	33 to 50		2 to 4 months	10 to 15
Eggs – Whole	-2 to 0	80 to 85	3.05	1.66	220	-2.2	5 to 6 months	66
– Whole	10 to 13	70 to 75	3.05	1.66	220	-2.2	2 to 3 weeks	66
– Frozen, Whole	-18 or less		3.31	1.76	247		1 year plus	74
Furs and Fabrics	1 to 4	45 to 55					Several years	
Honey	Below 10		1.4	1.05	57		1 year plus	17
Hops	-2 to 0	50 to 60					Several months	
Milk – Whole, Pasteurised	0 to 1		3.75	1.93	290	-0.6		87
Nuts	0 to 10	65 to 75	0.94 to 1.04	0.88 to 0.91	10 to 20		8 to 12 months	3 to 6
Oleomargarine	2	60 to 70	1.37	1.04	53		1 year plus	16
Popcorn – Unpopped	0 to 4	85	1.17	0.96	33		4 to 6 weeks	10

Coolroom Design Data

Heat of Respiration: Watts/Tonne

Product	Storage Temperature: °C				
	0	5	10	15	20
Fruits and Melons					
Apples	6 – 10	13 – 20		35 – 80	45 – 95
Apricots	16 – 17	19 – 27	33 – 56	63 – 102	87 – 155
Avocados – Green		53 – 80		160 – 415	195 – 915
Blackberries	47 – 68	85 – 136	155 – 281	209 – 432	388 – 582
Blueberries	7 – 31	27 – 36		101 – 183	154 – 259
Cantaloupe (Rock Melon)		26 – 30	46	100 – 114	132 – 192
Cherries – Sweet	12 – 16	28 – 42		74 – 133	83 – 95
Cranberries		12 – 14			33 – 54
Figs – Fresh		33 – 39	66 – 68	146 – 188	169 – 282
Gooseberries	20 – 26	36 – 40		65 – 96	
Grapefruit				38	52
Grapes	4 – 6	8 – 16		26 – 31	
Honeydew Melons			24	35 – 47	59 – 71
Lemons				47	67
Limes			8 – 17	17 – 31	20 – 55
Mangoes				133	223 – 449
Olives – Fresh				65 – 116	114 – 145
Oranges	5 – 13	10 – 19		35 – 60	60 – 90
Papaw		11 – 16		40 – 60	
Peaches	12 – 19	19 – 27		98 – 126	176 – 304
Pears	8 – 15	18 – 39	23 – 59	76 – 155	101 – 231
Persimmons		18		35 – 42	59 – 71
Pineapples		4 – 6		35 – 50	65 – 105
Plums	6 – 9	12 – 27	27 – 34	35 – 37	53 – 77
Raspberries	52 – 74	92 – 114	82 – 165	244 – 301	340 – 727
Strawberries	36 – 52	49 – 98	146 – 281	211 – 274	303 – 581
Watermelons			22		51 – 74

Coolroom Design Data

Heat of Respiration: Watts/Tonne

Product	Storage Temperature: °C				
	0	5	10	15	20
Vegetables					
Artichokes – Globe	67 – 133	95 – 178	162 – 292	229 – 430	404 – 692
Asparagus	81 – 238	162 – 404	318 – 904	472 – 971	809 – 1484
Beans – Green		101 – 104	162 – 173	252 – 276	351 – 386
Beetroot – Topped	16 – 21	27 – 28	35 – 40	50 – 69	
Broccoli	55 – 64	102 – 475		515 – 1008	825 – 1011
Brussels Sprouts	46 – 71	96 – 144	187 – 251	283 – 317	267 – 564
Cabbage - White	15 – 40	22 – 64	36 – 98	58 – 170	
Carrots – Topped	46	58	93	117	209
Cauliflower	53	61	100	137	238
Celery	20	30		100	170
Corn – Sweet	126	230	332	483	855
Cucumbers			68 – 86	71 – 98	92 – 143
Garlic – Dry	9 – 32	18 – 29	27 – 29	33 – 81	30 – 54
Horseradish	24	32	78	97	132
Kohlrabi	30	49	93	146	
Leeks – Green	28 – 49	58 – 86	159 – 202	245 – 347	
Lettuce – Head	27 – 50	40 – 59	81 – 119	114 – 121	178
Mushrooms	83 – 130	210			782 – 939
Onions – Dry	9	10	21	33	50
Parsley	98 – 137	196 – 252	389 – 487	427 – 662	582 – 757
Parsnips	34 – 46	26 – 52	61 – 78	96 – 127	
Peas – Green	90 – 139	163 – 227		530 – 600	728 – 1072
Peppers – Sweet			43	68	130
Potatoes – Immature		35	42 – 62	42 – 92	54 – 134
– Mature		18 – 20	20 – 30	20 – 35	20 – 47
Radishes – Topped	16 – 18	23 – 24	45	82 – 97	142 – 146
Rhubarb – Topped	24 – 39	33 – 54		92 – 135	119 – 169
Rutabaga	6 – 8	14 – 15		32 – 47	
Silverbeet (Spinach)		136	328	531	682
Tomatoes – Coloured & Ripe		16		65 – 75	65 – 115
– Mature, Green		13 – 22		43 – 75	75 – 110
Turnips – Roots	26	28 – 30		64 – 71	71 – 74

Coolroom Design Data

Heat Load Tables

2°C Coolrooms

Based on:

- 35°C Ambient Temperature
- 75mm Polystyrene Insulation
- Product Specific Heat: 3.4 kJ/kg K
- Product Pull Down Time: 24 hours
- 16 hours/day Compressor Operation
- Heavy Usage = Average Air Changes x 2

External Dimensions: m		Volume m ³	Heat Load – Watts					
Height = 2.4			Product Load Per Day (Product Entering at 12°C)					
Length	Width		150 kg		350 kg		700 kg	
		Average Usage	Heavy Usage	Average Usage	Heavy Usage	Average Usage	Heavy Usage	
1.8	1.2	3.9	930	1280	1070	1420		
1.8	1.8	6.13	1120	1560	1260	1690		
1.8	2.4	8.35	1300	1800	1440	2010		
1.8	3	10.58	1470	2100	1610	2240		
2.4	2.4	11.39	1510	2150	1650	2290	1890	2530
2.4	3	14.43	1710	2420	1840	2550	2080	2800
2.4	3.6	17.47	1900	2660	2030	2800	2270	3040
2.4	4.2	20.5			2220	3040	2460	3280
3	3	18.28			2060	2850	2310	3090
3	3.6	22.12			2280	3130	2520	3370
3	4.2	25.97			2490	3390	2730	3630
3.6	3.6	26.78			2520	3440	2760	3680
3.6	4.2	31.44			2750	3730	3060	4040
4.2	4.2	36.91			3070	4120	3310	4370

-18°C Freezers

Based on:

- 35°C Ambient Temperature
- 150mm Polystyrene Insulation
- Heavy Usage = Average Air Changes x 2
- Product Specific Heat above freezing: 3.3 kJ/kg K
- Product Specific Heat below freezing: 1.5 kJ/kg K
- Product Latent Heat: 247 kJ/kg
- Product pull down time: 24 hours
- 18 hours/day compressor operation

External Dimensions: m		Volume m ³	Storage Only – No Product Freezing	Heat Load – Watts		
Height = 2.4				Product Freezing Load Per Day (Product Entering at 5°C)		
Length	Width			150 kg	350 kg	700 kg
		1.8	1.2	2.84	740	1480
1.8	1.8	4.72	930	1660	2730	
1.8	2.4	6.61	1100	1820	2900	
1.8	3	8.51	1250	2040	3050	
2.4	2.4	9.26	1300	2080	3090	4910
2.4	3	11.91	1490	2260	3260	5090
2.4	3.6	14.55	1670	2430	3430	5260
2.4	4.2	17.2	1840	2590	3600	5420
3	3	15.31	1710	2460	3470	5290
3	3.6	18.71	1910	2650	3660	5480
3	4.2	22.11	2170	2840	3840	5670
3.6	3.6	22.87	2200	2870	3870	5700
3.6	4.2	27.03	2420	3080	4150	5910
4.2	4.2	31.94	2650	3310	4380	6140

We recommend that the above information be used as a guide only and that each particular application be referred to Actrol for selection advice.

Thermostatic Expansion Valve

Superheat

A vapour is superheated whenever its temperature is higher than the saturation temperature corresponding to its pressure. The amount of the superheat equals the amount of temperature increase above the saturation temperature at the existing pressure.

For example, a refrigeration evaporator is operating with Refrigerant 134a at 236 kPa suction pressure (See Figure 1). The Refrigerant 134a saturation temperature at 236 kPa is 4°C. As long as any liquid exists at this pressure, the refrigerant temperature will remain 4°C as it evaporates or boils off in the evaporator.

As the refrigerant moves along in the coil, the liquid boils off into a vapour, causing the amount of liquid present to decrease. All of the liquid is finally evaporated at point B because it has absorbed sufficient heat from the surrounding atmosphere to change the refrigerant liquid to a vapour. The refrigerant gas continues along the coil and remains at the same pressure (236 kPa) however, its temperature increases due to continued absorption of heat from the surrounding atmosphere. When the refrigerant gas reaches the end of the evaporator (Point C), its temperature is 10°C. This refrigerant gas is now superheated and the amount of superheat is 6°C or 6K (10°-4°). The degree to which the refrigerant gas is superheated depends on the amount of refrigerant being fed to the evaporator by the T.X. valve and the heat load to which the evaporator is exposed.

Adjustment of Superheat

The function of a T.X. valve is to control the superheat of the suction gas leaving the evaporator in accordance with the valve setting. A T.X. valve which is performing this function within reasonable limits can be said to be operating in a satisfactory manner.

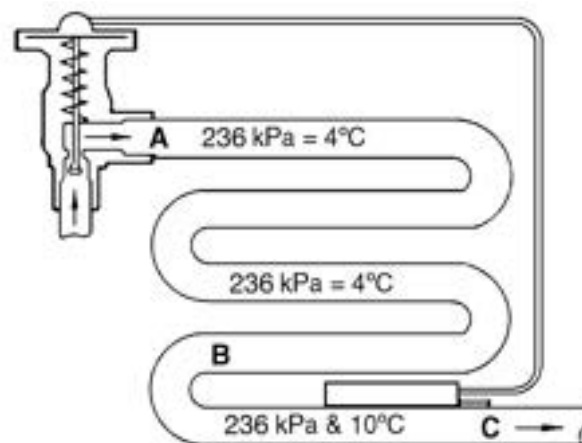
Good superheat control is the criterion of T.X. valve performance. It is important that this function be measured as accurately as possible, or in the absence of accuracy, to be aware of the magnitude and direction of whatever error is present.

Superheat has been previously defined as the temperature increase of the refrigerant gas above the saturation temperature at the existing pressure. Based on this definition, the pressure and temperature of the refrigerant suction gas passing the T.X. valve remote bulb are required for an accurate determination of superheat.

Thus, when measuring superheat, the recommended practice is to install a calibrated pressure gauge in a gauge connection at the evaporator outlet. In the absence of a gauge connection, a tee installed in the T.X. valve external equaliser line can be used just as effectively.

A refrigeration type pocket thermometer with appropriate bulb clamp may be used, or more effective is the use of a service type potentiometer (electric thermometer) with thermocouples (leads and probes).

The temperature element from your temperature meter should be clamped to the suction line at the point of remote bulb location and must be insulated against the ambient. Temperature elements of this type, as well as thermometers, will give an average reading of suction line and ambient if not insulated. Assuming an accurate gauge and temperature meter, this method will provide sufficiently accurate superheat readings for all practical purposes.



Thermostatic Expansion Valve with internal equaliser on evaporator with no pressure drop

On installations where a gauge connection is not available and the valve is internally equalised there are two alternate methods possible. Both of these methods are approximations only and their use is definitely not recommended. The first of these is the two temperature method which utilises the difference in temperature between the evaporator inlet and outlet as the superheat. This method is in error by the temperature equivalent of the pressure drop between the two points of temperature.

Where the pressure drop between the evaporator inlet and outlet is 7 kPa or less, the two temperature method will yield fairly accurate results. However, evaporator pressure drop is usually an unknown and will vary with the load. For this reason, the two temperature method cannot be relied on for absolute superheat readings. It should be noted that the error in the two temperature method is negative and always indicates a superheat lower than the actual figure.

The other method commonly used to check superheat involves taking the temperature at the evaporator outlet and utilising the compressor suction pressure as the evaporator saturation pressure. The error here is obviously due to the pressure drop in the suction line between the evaporator outlet and the compressor suction gauge.

On self-contained equipment, the pressure drop and resulting error are usually small. However, on large built-up systems or systems with long runs of suction line, considerable discrepancies will usually result.

Since estimates of suction line pressure drop are usually not accurate enough to give a true picture of the superheat, this method cannot be relied on for absolute values. It should be noted that the error in this instance will always be positive and the superheat resulting will be higher than the actual value.

Restating, the only method of checking superheat that will yield an absolute value involves a pressure and temperature reading at the evaporator outlet.

Other methods employed will yield a fictitious superheat that can prove misleading when used to analyse T.X. valve performance. By realising the limitations of these approximate methods and the direction of the error, it is often possible to determine that the cause of a trouble call is due to the use of improper methods of instrumentation rather than any malfunction of the valve.

Technical Tips

Trouble Shooting Tips – A list of Do’s and Don’ts for Commercial Refrigeration

Do	Don't
<ul style="list-style-type: none">• Check suction gas superheat at the compressor. High superheats cause high discharge temperatures and shorten compressor life.• Check expansion valve superheat using the temperature pressure method .• Set to equipment manufacturer’s specification.• Replace filter-driers or drier cores when opening the system for service.• Maintain test instruments in workable calibrated condition.• Use an accurate liquid line moisture indicator to ensure system dryness.• Read and observe installation and safety instructions included with a product.• Familiarise yourself with the operation of a control before attempting to make adjustments or repairs.• Remember that a thermostatic expansion valve is not a temperature or pressure control.	<ul style="list-style-type: none">• Select solenoid valves by line size or port size.• Select based on valve capacity.• Rely on sight or touch for temperature measurements. Use an accurate thermometer.• Be a ‘parts changer’. Analyse the problem and determine the cause of failure before making adjustments or repairs.• Attempt to re-use driers or drier blocks once they have been removed from the system.• Energise a solenoid coil with it removed from a valve. It will burn out in a matter of minutes.

Silver Brazing and High Purity Nitrogen

High purity nitrogen must be injected through pipe-work when silver soldering to stop the formation of copper oxide inside the pipe-work. In order for brazing alloys to melt and flow properly, 620°C to 790°C is required. Copper will react with the oxygen in air at these temperatures to form a scale of copper oxide on the inner walls of tubing, pipe and fittings. The scale is broken off into flakes by the turbulence of flowing liquid refrigerant. The flakes quickly break up into a fine powder which blocks filter driers, strainers and capillary tubes. If the air in the line being brazed is replaced with an inert gas such as high purity nitrogen, the formation of copper oxide can be eliminated.

The line should be purged thoroughly and a slow steady flow of nitrogen maintained by means of a pressure reducing valve.

Always use the correct pressure reducing valves for the protection of the user as high purity nitrogen is stored at very high pressures.

Evaporator and System Superheat

Superheat varies within the system depending on where it is measured. The superheat that the thermal expansion valve is controlling is the evaporator superheat. This is measured at the outlet of the evaporator. The refrigerant gains superheat as it travels through the evaporator, basically starting at 0K as it enters the evaporator and reaching its maximum at the outlet as the refrigerant travels through the evaporator absorbing heat.

System superheat refers to the superheat entering the suction of the compressor. Compressor manufacturers usually like to see a minimum 20°C of superheat at the compressor inlet to ensure that no liquid refrigerant enters the compressor.

Liquid Flooding

Liquid flooding also known as flood back is the term used to describe the condition when liquid refrigerant reaches the compressor. This occurs when the amount of liquid refrigerant fed into the evaporator is more than can be evaporated. There are a number of causes of liquid flooding including:

- TXV oversized for the application
- TXV misadjusted (superheat too low)
- TXV bulb not properly attached
- System overcharged with refrigerant
- Insufficient air flow through the evaporator

- Dirty evaporator or air filters
- Evaporator fan or fans not operating

Migration

Migration is the term used to describe when refrigerant moves some place in the system where it is not supposed to be, such as when liquid migrates to the compressor sump. This phenomenon occurs because refrigerant will always migrate to the coldest part of a system.

As an example, in a split air conditioning system with the compressor/condenser outside, the liquid refrigerant from the evaporator will migrate to the compressor during the winter months due to the compressor being colder than the indoor (evaporator) temperature. If migration is not prevented the liquid refrigerant in the sump will cause liquid slugging when the compressor starts up.

Migration can be eliminated by the use of either a crank case heater or a pump down cycle.

A crank case heater elevates the crank case temperature above that of the evaporator.

A pump down cycle will store the refrigerant in the liquid receiver and or condenser so it cannot migrate to the compressor.

Sub-cooling

Sub-cooling is the condition where the liquid refrigerant is colder than the minimum temperature (saturation temperature) required to keep it from boiling and, hence, change from a liquid to a gas/vapour phase.

The amount of sub-cooling, at a given condition, is the difference between saturation temperature and the actual liquid refrigerant temperature. Sub-cooling is desirable for several reasons. Sub-cooling increases the efficiency of the system since the amount of heat removed per kg of refrigerant circulated is greater. In other words, you pump less refrigerant through the system to maintain the refrigerated temperature you want, This reduces the amount of time the compressor must run to maintain the temperature.

Sub-cooling is also beneficial because it prevents the liquid refrigerant from changing to a gas/vapour before it gets to the evaporator. Pressure drops in the liquid line piping and vertical risers can reduce the refrigerant pressure to the point where it will boil or “flash” in the liquid line. This change of phase is caused by the refrigerant absorbing heat before it reaches the evaporator. Inadequate sub-cooling prevents the expansion valve from properly metering liquid refrigerant into the evaporator resulting in poor system performance.

Refrigeration Terminology

Temperature

Indicates level of heat energy

Centigrade Scale °C (Celsius)

Absolute Temperature °K (Kelvin) = °C + 273°

Measurement

The quantity of heat energy is measured in kilojoules (kJ). The heat required to raise or lower the temperature of 1kg of water 1K is 4.19 kilojoules. (kJ/sec = kw)

States of Matter

Solid, liquid and gas

Change of State

The change from one state of matter to another by the addition or the removal of heat at constant temperature. Change of state can also be referred to as change of phase.

Sensible Heat

Heat added to or subtracted from a substance without a change of state (only a change in temperature).

Specific Heat

The amount of sensible heat required to raise the temperature of 1kg of a substance 1K or the ratio of the heat capacity of the substance to that of water. (kJ/kg K)

Latent Heat

Quantity of heat added or removed from a unit weight of a substance during change of state or phase at constant temperature.(kJ/kg.K)

1. Latent Heat of Fusion: Melting of a solid or freezing of a liquid.
2. Latent Heat of Evaporation: Change from a liquid to a gas.
3. Latent Heat of Condensation: Change from a gas to a liquid.

Total Heat (Enthalpy) Heat Capacity

The sum total of sensible and latent heat quantities. kJ/kg.K, usually referenced to -40° at which point the Total Heat (Enthalpy) is taken as 0 kJ/kg.K with negative values below -40°. When all heat has been extracted from a substance, it is said to be at Absolute Zero 0°K (Kelvin).

Note: Enthalpy referenced to 0°C for air.

Pressure

Expressed in Pascals (Pa) or Kilopascals (kPa) Gauge or absolute.

1. Atmospheric Pressure: At sea level is 101.325 kPa absolute (deduct approx. 3.447 kPa or 25.4mm of mercury for every 304.8 metres increase in elevation above sea level).
2. Gauge Pressure: = Calibrated Gauge to read zero at atmospheric pressure.
3. Absolute Pressure: = true or total pressure. Therefore if the pressure is greater than the atmospheric pressure the atmospheric pressure must be added to the gauge pressure. But if the pressure is less than atmospheric pressure the atmospheric pressure must be subtracted from the gauge pressure.
4. Vacuum: Pressures below atmospheric pressure are measured in millimetres of mercury (vacuum) (50.8 millimetres of mercury can be equal to 6.89 kPa). A perfect vacuum (0 kPa) being equal to 25.4 millimetres of mercury (mmHg) or 760mm, at sea level. Measurements are sometimes expressed in microns (1,000,000 microns in a metre).
5. Vapour Pressure: Equilibrium Pressure between a liquid and its saturated vapour. As long as vapour and liquid are both present there will be only one vapour pressure for each level of temperature.
6. Gas Pressure: In the absence of liquid the pressure of a gas is proportional to Absolute gas temperature and to gas density (perfect gas laws).

Saturated Vapour and Liquid

When gas and liquid exist in equilibrium there will be only one vapour pressure for each level of temperature.

1. Subcooled Liquid: If additional heat is removed from saturated liquid in the absence of vapour, its temperature is reduced at constant pressure and it becomes subcooled.
2. Superheated Gas: If additional heat is added to saturated vapour in the absence of liquid, it becomes superheated vapour or gas.

Refrigeration Terminology

Bubble Point (Saturated Liquid Temperature)

The temperature (for a given pressure) at which the liquid of a refrigerant blend (any 400 or 500 series refrigerant) begins to evaporate or boil. This is similar to the saturated liquid temperature of a single component refrigerant.

Dew Point (Saturated Vapor Temperature)

The temperature (for a given pressure) at which the vapour of a given refrigerant blend (any 400 or 500 series refrigerant) begins to condense or liquefy. This is similar to the saturated vapour temperature of a single component refrigerant.

Fractionation

Fractionation is the change in composition of a refrigerant blend (any 400 or 500 series refrigerant) when it changes phase from liquid to vapour (evaporating) or from vapour to liquid (condensing). This behaviour in blends explains the permanent changes to refrigerant composition due to vapour charging or leaks in a refrigerant system causing the blend to deviate outside the tolerances of the designed composition.

Glide

The difference in temperature between the evaporator inlet and outlet due to fractionation of the blend.

Theoretically, this can be calculated by finding the difference between the dew and bubble temperatures at constant pressure. Actual measurements may differ slightly depending on the state of the liquid refrigerant at either end of the evaporator (or condenser). Pressure losses through the evaporator may also affect glide.

Normal Boiling Point (NBP)

The temperature at which a given refrigerant begins to boil while at atmospheric pressure (101.325kPa absolute).

Abbreviations

AB – alkyl benzene

GWP – global warming potential

MO – mineral oil

ODP – ozone depletion potential

OEM – original equipment manufacturer

POE – Polyolester

PAG – polyalkylene glycol

Fundamentals of Dehydrating a Refrigeration System

Moisture in a Refrigeration System

A single drop of moisture may look harmless, but to a refrigeration system it is extremely damaging. Moisture enters a system easily but can be difficult to remove. Moisture causes two main problems within a refrigeration system, freeze up and acid production. Moisture will be picked up by the refrigerant and transported through the refrigerant line in a fine mist from which ice crystals form at the point of expansion (expansion valve). Ice crystals stop or retard the flow of refrigerant causing a reduction or complete loss of cooling. As the expansion valve warms due to the lack of refrigerant flow, the ice melts and passes through the expansion valve and once more builds a formation of ice crystals. The result is intermittent cooling. Moisture when mixed with refrigeration oils will produce acid which will damage components including the electric windings of compressors. The Polyolester oils used with HFC refrigerants are manufactured from water and acid using a reversible process. If moisture enters the refrigeration system it will mix with the Polyolester oil to produce acid.

Effects of Pressure and Temperature on the Boiling Point of Water

The pressure exerted on the earth at sea level is 101.325kPa absolute pressure. This is called atmospheric pressure. Any pressure measured above atmospheric pressure is referred to as gauge pressure and pressure below is referred to as vacuum. Water will boil when the vapour pressure is equal to the atmospheric pressure surrounding the water. At atmospheric pressure of 101.325kPa absolute pressure a gauge will read 0kPa gauge pressure; at this pressure water will boil at 100°C. The boiling point of water rises as pressure increases and falls as pressure decreases. Australia's highest mountain is Mt. Kosciusko with its summit at 2228 metres above sea level where water will boil at 92.6°C.

Boiling Temperature of Water at Altitude

Temperature [°C]	Altitude [m]
82.82	5000
93.38	2000
96.73	1000
98.38	500
100	0

Boiling Temperature of Water in a Vacuum

Temperature [°C]	KiloPascal [kPa]	Micron [millitorr]
100 1 atmosphere	101.325 1 atmosphere	760000 1 atmosphere
96.1	84.66	535000
90	70.064	525526
80	47.339	355092
70	31.157	233680
60	19.91	149352
50	12.327	92456
40	7.349	55118
30	4.233	31750
26.7	3.385	25400
24.4	3.047	22860
22.2	2.709	20320
20.6	2.371	17780
17.8	2.033	15240
15	1.696	12700
11.7	1.351	10160
7.2	1.013	7620
0	0.606	4572
-6.1	0.337	2540
-14.4	0.168	1270
-31.1	0.033	254
-37.2	0.016	127
-51.1	0.003	25
-56.7	0.001	13
-67.8	0.0003	2.54

Fundamentals of Dehydrating a Refrigeration System

Removing Moisture from a Refrigeration System

There are two ways to remove moisture from a refrigeration system,

1. Employ a high vacuum pump to reduce the pressure and therefore the boiling point of water.
2. Install a high quality liquid line filter drier to entrap the moisture as it enters the filter drier.

It is recommended that both these methods be employed together to remove moisture from a refrigeration system as a vacuum pump alone will not remove the moisture entrapped within the oil. The only way to remove the moisture entrapped within Polyolester oil is to circulate the refrigerant oil mixture through a good quality filter drier.

Vacuum Pumps

Two stage vacuum pumps are recommended for refrigeration and air conditioning technicians as the second chamber allows the pump to achieve a higher vacuum. In a two stage vacuum pump the exhaust from the first pumping stage is discharged into the intake of the second pumping stage, rather than to atmospheric pressure. The second stage begins pumping at a lower pressure and therefore pulls a higher vacuum on the system than the first stage is capable of on its own. Two stage vacuum pumps are capable of achieving vacuums as low as 20 microns for a prolonged period of time in field conditions. A gas ballast or vented exhaust feature is a valving arrangement which permits relatively dry air from the atmosphere to enter the second stage of the pump. This air reduces compression in the final stage, which helps to prevent the moisture from condensing into a liquid and mixing with the vacuum pump oil.

Moisture in the vacuum pump oil will increase the time taken to achieve a vacuum and reduce the ultimate vacuum achieved. It is therefore essential to change the vacuum pump oil on a regular basis, please refer to the pump manufacturers recommendations.

Factors affecting the speed at which a vacuum pump can dehydrate a refrigeration or Air Conditioning system

Several factors influence the pumping speed of a high vacuum pump and thus the time required to remove the moisture from a refrigeration system. Some of the most important are the cubic capacity of the refrigeration system itself; the amount of moisture contained within the system; the ambient temperature; internal and external restrictions and the size of the vacuum pump. The refrigeration or air conditioning system manufacturer determines the internal system cubic capacity and Mother Nature the ambient temperature so the only factors under the control of the service technician are the external restrictions between the system and the vacuum pump. Laboratory tests show the pumping time can be significantly reduced by the use of large diameter hoses. For optimum pumping speed keep the access lines as short in length and large in diameter as possible.

This chart provides a reasonable idea of the minimum vacuum pump capacity required for various sized refrigeration or air conditioning systems. Larger pumps can easily be used on smaller systems.

System Size	Suggested High Vacuum Pump Size
Up to 30kW	35 l/min
Up to 75kW	85 l/min
Up to 123kW	140 l/min
Up to 246kW	280 l/min
Up to 370kW	425 l/min

How vacuum can be measured

A compound gauge is not accurate enough to measure a high vacuum. An electronic vacuum meter or dedicated vacuum gauge is recommended to determine the actual vacuum in the refrigeration or Air Conditioning system. When reading the vacuum created in a refrigeration or Air Conditioning system, the vacuum pump should be isolated with a good vacuum valve or gauge manifold and time allowed for the vacuum pressure to equalize before taking a final reading. If the pressure does not equalize, it is an indication of a leak. If the vacuum equalizes at a pressure which is too high, it is an indication of moisture within the system and more pumping time is required.

Removing moisture using a liquid line filter drier

High quality filter driers are essential in all refrigeration and air conditioning systems especially systems containing Polyolester oil. A vacuum alone will not remove all the moisture from Polyolester oils. A high quality liquid line filter drier will entrap moisture as it is carried through the system by the refrigerant. When selecting a liquid line filter drier be sure to follow the appropriate "field replacement" size recommendations which are based on the refrigeration capacity of the system to ensure the cubic capacity of the filter drier is sufficient to entrap all the moisture. Whenever a system has been opened or moisture is suspected to be present the liquid line filter drier should be replaced.

Noise and Vibration

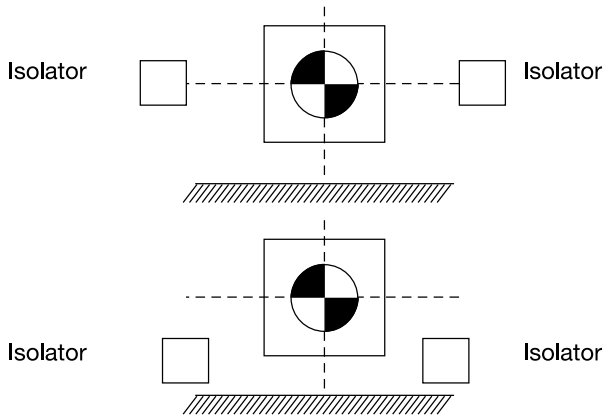
Selection Principles:

Temperature

Extremes of temperature can affect the service life of rubber isolators. Generally, operating temperature should not exceed 60°C but occasional temperatures of up to 80°C can be accommodated.

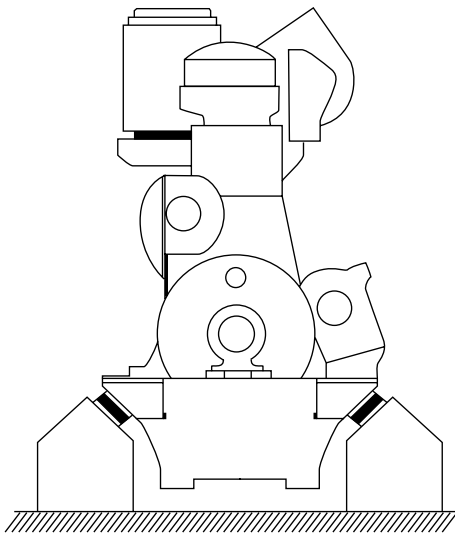
Protection

While most rubber compounds deteriorate if in constant contact with oil or grease, experience has shown that small amounts of oil will not cause a reduction in the mechanical properties of elastomers. It is advisable where oil or grease is prevalent to install isolators so that contact is avoided.



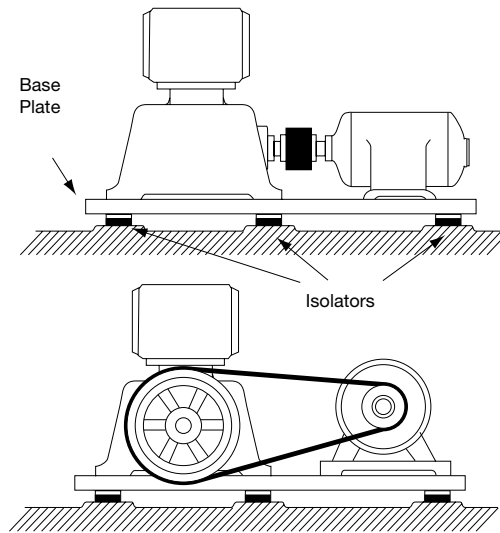
Mount Positioning

The stability of a resiliently supported mechanism is greatest when the isolators are in a horizontal plane passing through the centre of gravity of the mechanism or where the isolators are placed far away from the centre of gravity. Most machines, because of their design, require mounting below the centre of gravity which tends towards instability. For this reason, a small percentage of the isolators efficiency must be sacrificed for the sake of mechanical stability.



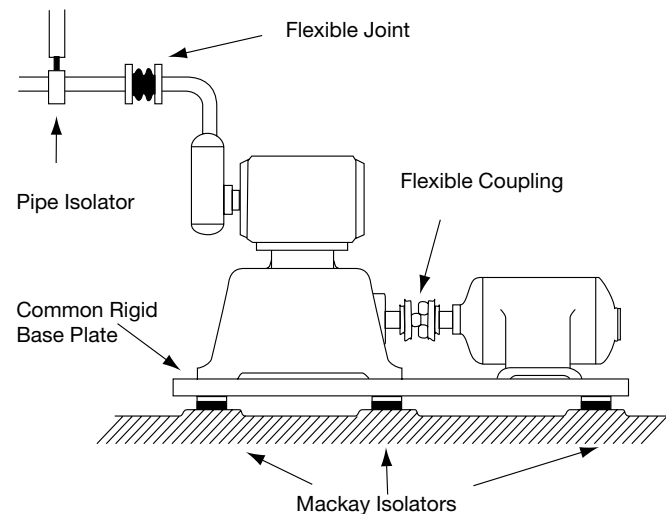
Stability

To maintain stability and relative positions between the drive and belt driven units, install both on a common rigid baseplate and then resiliently support the baseplate.



Flexible Couplings

The efficiency of a resilient isolator under a mechanism can be seriously impaired by the rigidity of the connecting members, such as water and steam pipes, conduit etc. For best performance, it is essential all connecting members be joined as flexibly as possible using Mackay flexible couplings and flexible joints.



Selection

The main consideration is to select the isolator to carry the load as shown in the load rating charts, giving preference to the top end of the ratings, and then choosing the one to suit your specific fitting requirements. Mackay isolators have each been engineered to specific requirements of deflections under working conditions and providing the disturbing or forced frequencies above 15Hz, selection is simple.

Courtesy of Mackay Consolidated Industries Pty Ltd

Noise and Vibration

Low Frequency Selection

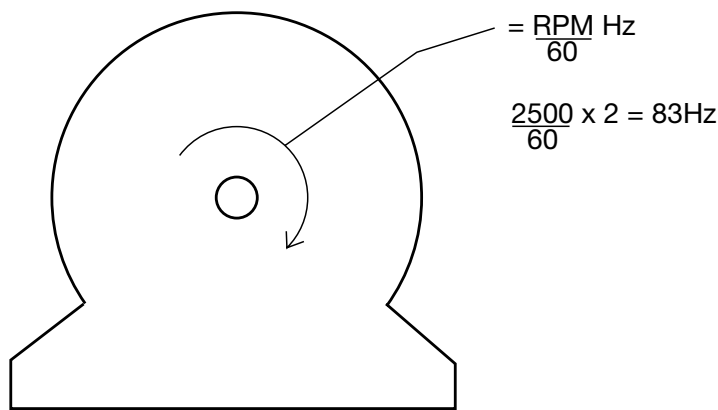
When frequencies under 15Hz are encountered or when there are HEAVY impact loads imposed on the isolator, consult with Mackay's technical division for advice. For normal purposes, the disturbing frequency can be considered as the revolutions per second of the offending item:

$$\text{i.e. } \frac{\text{R.P.M}}{60}$$

Multi-cylinder Engines

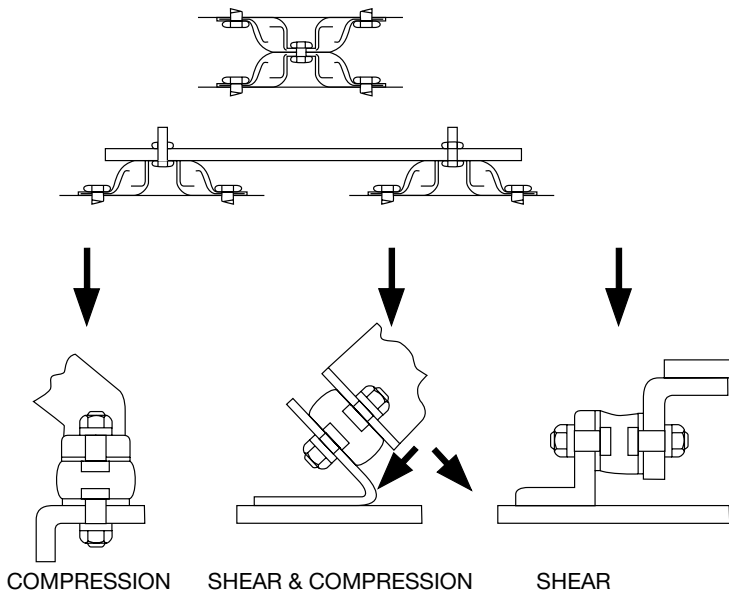
In multi-cylinder engines it is usually the number of working impulses per revolution which constitutes the disturbing frequency.

e.g. Two cylinder engine direct drive operating at 2500 r.p.m. =
Disturbing Frequency of 83 Hz.



Series and Parallel Assemblies

The isolation efficiency of low disturbing frequencies can be increased by using two isolators in series. This effectively doubles the deflection obtained with one isolator of the same load carrying capacity – by placing them in parallel, you double the load rating at the same deflection.



Calculating Deflections

If the isolator selected has a higher load carrying rating than required, the deflection of your actual loading can be calculated approximately by using this formula:

$$\frac{\text{Rated Deflection} \times \text{Actual Load}}{\text{Rated Load}}$$

and then referring to the graph illustrated on the next page, the isolation efficiency can be ascertained (should always exceed 70% under normal operating conditions).

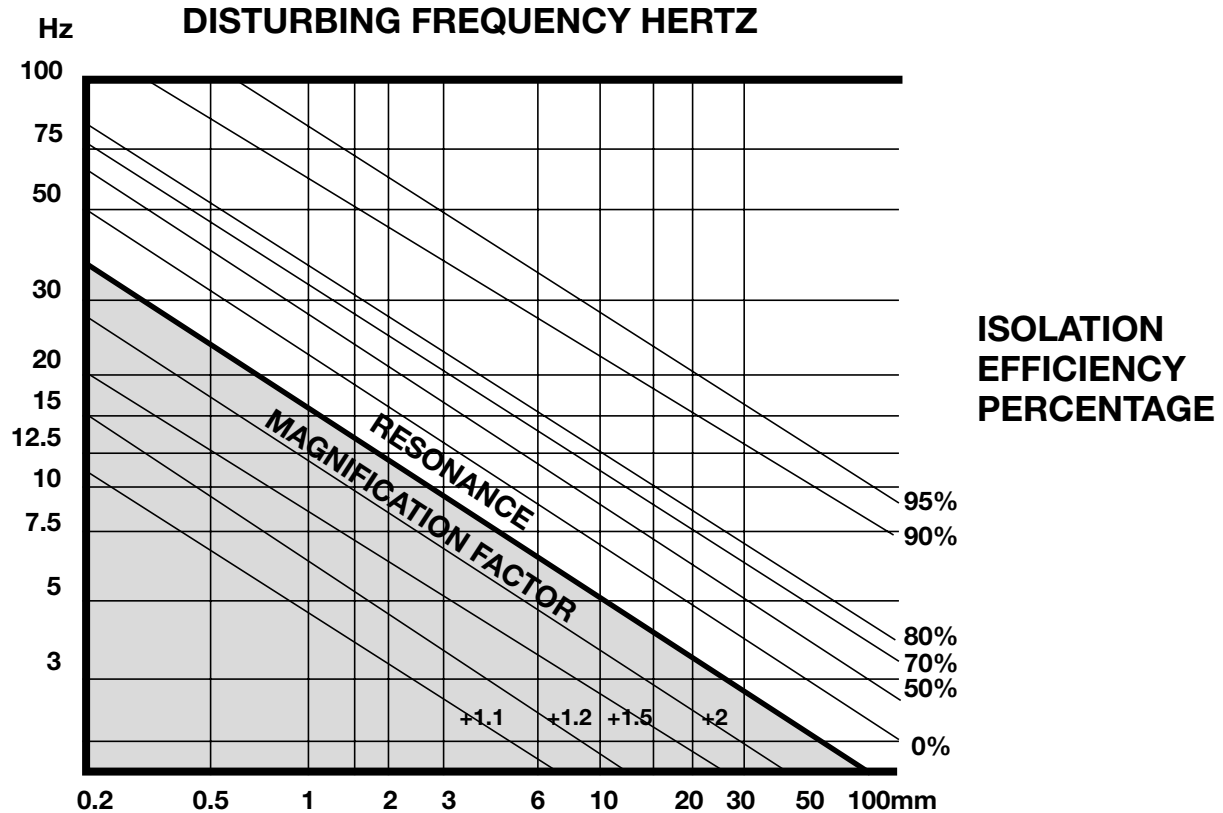
Disturbing Frequencies and Deflections

The graph illustrates the percentage of vibration isolation that is possible to obtain for simple linear vibration in a resiliently mounted assembly with various combinations of static deflection and disturbing frequencies.

The area (shaded) below the resonance line indicates the region of magnification of the vibration that occurs when the ratio of the disturbing frequency to the natural frequency of the mounted assembly is less than the square root of 2. The area above the resonance line shows the percentage of the vibratory forces that are prevented from reaching the supporting structure when correct isolators are selected. For example; with a disturbing frequency of 5Hz and a deflection of 30mm you will obtain an isolating efficiency of 50%, while with a deflection of 3mm your vibration will magnify by a factor of 1.5.

Courtesy of Mackay Consolidated Industries Pty Ltd

Noise and Vibration



To assist you in selecting the correct isolator from the Mackay range we have listed the isolation efficiency that should be used under normal conditions of operation. The isolation efficiency at any given deflection and disturbing frequencies can be obtained by using the simple graph above.

Suggested Isolation Efficiency Guide			
	Factories, Schools, Dept. Stores Isolation Efficiency		Hospitals, Theatres, Libraries Isolation Efficiency
Air Handling Units		80%	94%
Axial Flow Fans	Up to 8kW 8kW to 38kW More than 38kW	70% 75% 80%	90% 94% 96%
Centrifugal Compressors		94%	99.5%
Centrifugal Fans	Up to 4kW 4kW to 18kW More than 18kW	70% 80% 90%	94% 96% 98%
Fan Coil Units	Hung Supported	80% 90%	90% 96%
Pipes	Hung	70%	90%
Pumps	Up to 2 kW 2kW to 4kW More than 4kW	70% 80% 90%	94% 96% 98%
Reciprocating Compressors	Up to 8kW 8kW to 38kW More than 38kW	70% 80% 90%	94% 96% 98%
Unit Air Conditioners	Hung Supported	80% 90%	90% 96%

Courtesy of Mackay Consolidated Industries Pty Ltd

Noise and Vibration

Sound, Noise and Refrigeration Equipment

Sound is vital in everyday life for communication, safety and enjoyment. Noise is usually defined as unwanted sound, and this includes noise from mechanical plant such as refrigeration equipment, air conditioners, pumps and various other items of equipment.

The type and location of equipment can influence the noise impact and annoyance to owners, adjacent properties and neighbours.

This brochure is a guide to some of the DO's and DON'T's and helps explain the noise impact of refrigeration equipment installations. This brochure is a guide only and advice should be sought from a qualified acoustic consultant for more detailed advice and assessments.

Noise Limits and Regulations

The acceptable or allowable noise limits from refrigeration and other equipment from one property to a neighbouring property is generally enforced by local councils or police based on State or Territory legislation. The Reference List at the end of this brochure is a starting point for identifying the appropriate noise legislation for each State and Territory.

The guideline limits may depend on the zoning of the surrounding area, whether the noise is intermittent or tonal, time of day etc. A typical requirement is that the equipment noise should not exceed the background noise by more than 5 dBA. In most cases nuisance and annoyance may be avoided if a noise goal of 35 to 40 dBA at the boundary is achieved.

Item	Typical Sound Pressure Level (dBA)	Subjective Evaluation
Threshold of Pain	130	Intolerable
Heavy Rock Concert/Grinding on Steel/ Ambulance Sirens/Chainsaw	110-120	Extremely Noisy
Loud Car Horn/Jackhammer/ Construction Site with Pneumatic Hammering	90-100	Very Noisy
Curbside of a Busy Street/Loud Radio or TV/Lawn Mower/Electric Drill	70-80	Loud
Normal Conversation/Department Store/ General Office	50-60	Moderate to Quiet
Inside a Private Office/ Inside a Quiet House	30-40	Quiet to Very Quiet
Unoccupied Recording Studio/ Quiet Day in the Country	20	Almost Silent
Threshold of Hearing	0	Completely Silent

Measurement of Sound – the dBA

The human ear responds to changes in sound pressure over a very wide range. The loudest sound pressure which the ear responds to is ten million times greater than the softest. In order to simplify and reduce such a large range, a logarithmic scale, called the decibel, or dBA is used.

The human ear also responds differently to the frequency of sound. For example, the human ear is more sensitive at mid frequencies (500 to 1000 Hz), and less sensitive at very high and very low frequencies, hence, sound level meters incorporate a filter which approximately corresponds to that of human hearing. This filter is the 'A-Weighted' filter.

So the 'dBA' or 'dB(A)' is the A-Weighted sound level in decibels. This is the most commonly used measurement parameter for sound.

Sound Pressure Level (SPL) and Sound Power Level (SWL)

Refrigeration equipment and items of plant sometimes have a label displaying the total Sound Power Level (referred to as SWL or Lw), or the Sound Pressure Level (referred to as SPL or Lp), in dBA. If the equipment does not have a label indicating the noise level then the supplier should be able to provide this data.

The SPL or SWL indicate how noisy the equipment is, the lower the number, the quieter the equipment.

The SWL is a measure of how much acoustic power is produced by the equipment. The SPL is the resulting noise level from the operation of the equipment. The SPL depends on the location of the sound source, how many reflecting surfaces are nearby (how reverberant the space is) and the distance between the equipment and the receiver.

The SWL is an intrinsic property of the equipment where as the SPL depends on the SWL and the environment. For example, the SWL maybe thought of as the Watts of a light bulb, while the SPL is similar to the overall brightness – it depends on the environment (e.g. size of room, colour of walls) as well as the power of the light bulb.

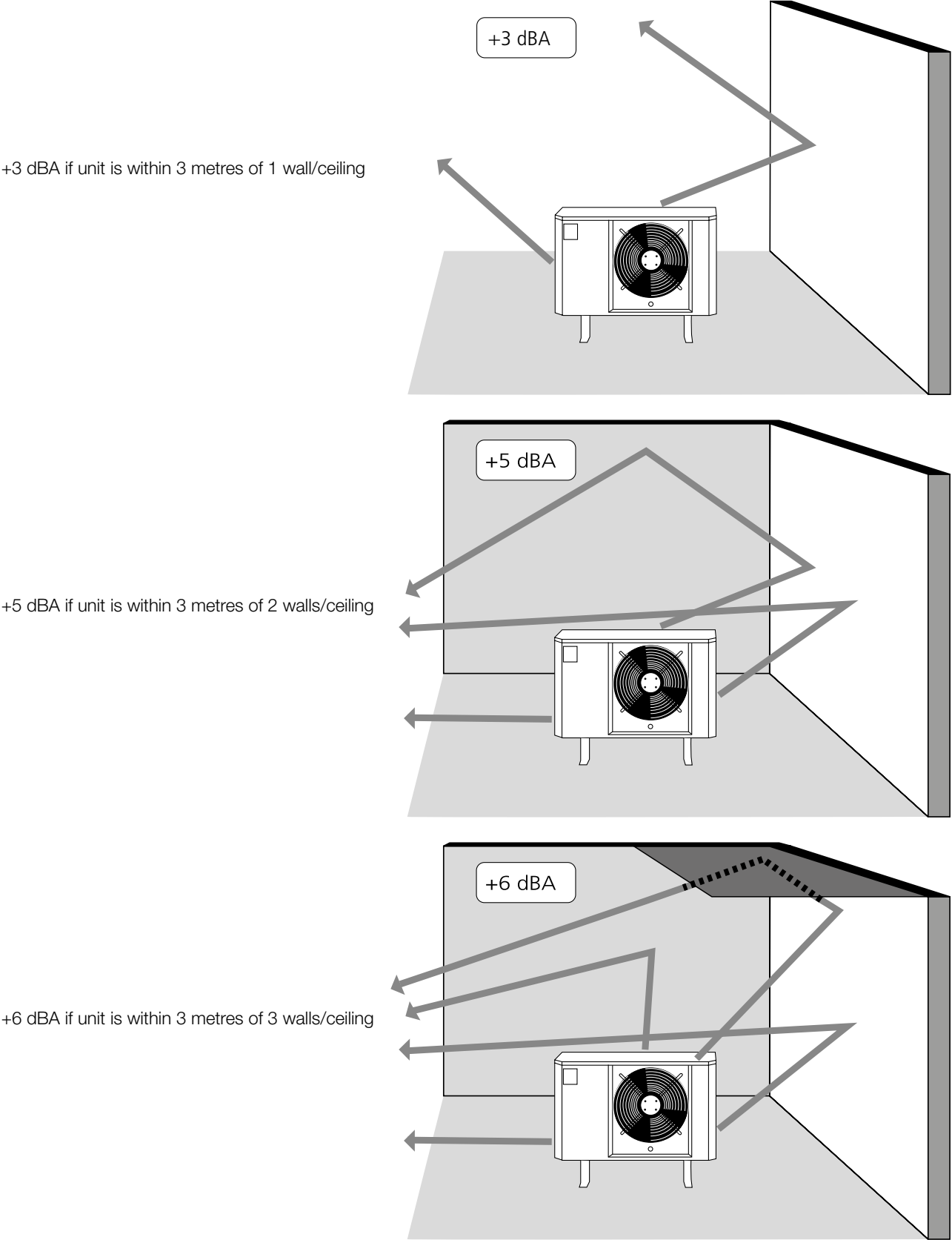
Generally, the SPL is lower than the SWL. In a 'Free Field' with no reflecting surfaces such as walls nearby, the SPL is approximately 8 dBA lower than the SWL at one metre from the equipment (assuming source is on a hard surface).

Reduction of Sound Pressure Level (SPL)									
Distance (m)	1	2	3	4	5	6	7	8	10
Reduction (dBA)	8	14	17	20	22	23	25	26	28

Noise and Vibration

Sound Pressure Level and Reflective Surfaces

Reflective surfaces such as walls or a ceiling near the noise source can increase the resulting Sound Pressure Level (SPL). The following diagrams illustrate the effect of reflective surfaces.



Noise and Vibration

Addition of dB Levels

The decibel scale is a logarithmic scale so $2 + 2$ does not equal 4. A doubling of the sound pressure levels results in an increase of 3 dBA. The following table shows the result of adding two SPL's or SWL's together. The first column shows the difference between the two SPL's and the second column shows resulting dBA increase – the level that should be added to the higher of the two SPL's to obtain your result.

Example: Two units both at 50 dBA. The difference is zero, so 3 dBA is added to the noisier unit (either one in this case) to give an overall noise level of 53 dBA.

Example: One unit is 50 dBA, the other is 46 dBA. The difference is 4 dBA – the table says you should add 1.5 dBA to the noisier unit – so the overall level is 51.5 dBA.

As you can see, because the addition of dBA levels is logarithmic, the level may not increase very much but it is always controlled by the noisier item of equipment – the best approach is to use the quietest equipment possible to begin with!

Difference between SPL's (dB)	Result - amount to add to the higher SPL
0	3
1	2.5
2	2.1
3	1.8
4	1.5
5	1.2
6	1
7	0.8
8	0.6
9	0.5
10	0.4

Vibration

Vibration from plant and equipment may result in regenerated noise and you could end up with more noise than you expected. In addition, the vibration may adversely affect the owner/user of the equipment.

The vibration from the equipment may be transmitted through various support structures and end up in a lightweight structure which could radiate noise.

The following provides some guidance with regard to vibration control:

- Use at least 1 layer of waffle pad, not less than 8mm thick, under equipment in all areas
- Ensure that the waffle pad is not bypassed by a rigid connection. The units should be sitting on the waffle pad under their own weight, not bolted to the structure through the pad. If the unit must be bolted then ensure that a rubber isolating washer and sleeve is used.
- Install equipment on a concrete slab at ground level if possible
- Install equipment on a platform above lightweight structures if possible
- Do not locate equipment above particularly sensitive spaces (e.g. bedrooms or private offices in commercial situations), also try to keep the equipment as far away as possible from all adjacent receivers.
- When units are installed on a lightweight structure or over (or near) a sensitive area, the use of waffle rubber may not be sufficient – consider a double thickness of rubber pads or the use of springs. It is best to obtain professional advice in this situation as the extent of vibration isolation required depends on a number of factors such as the rpm of the equipment, the weight of the equipment, the structure construction etc.

Noise and Vibration

Barriers

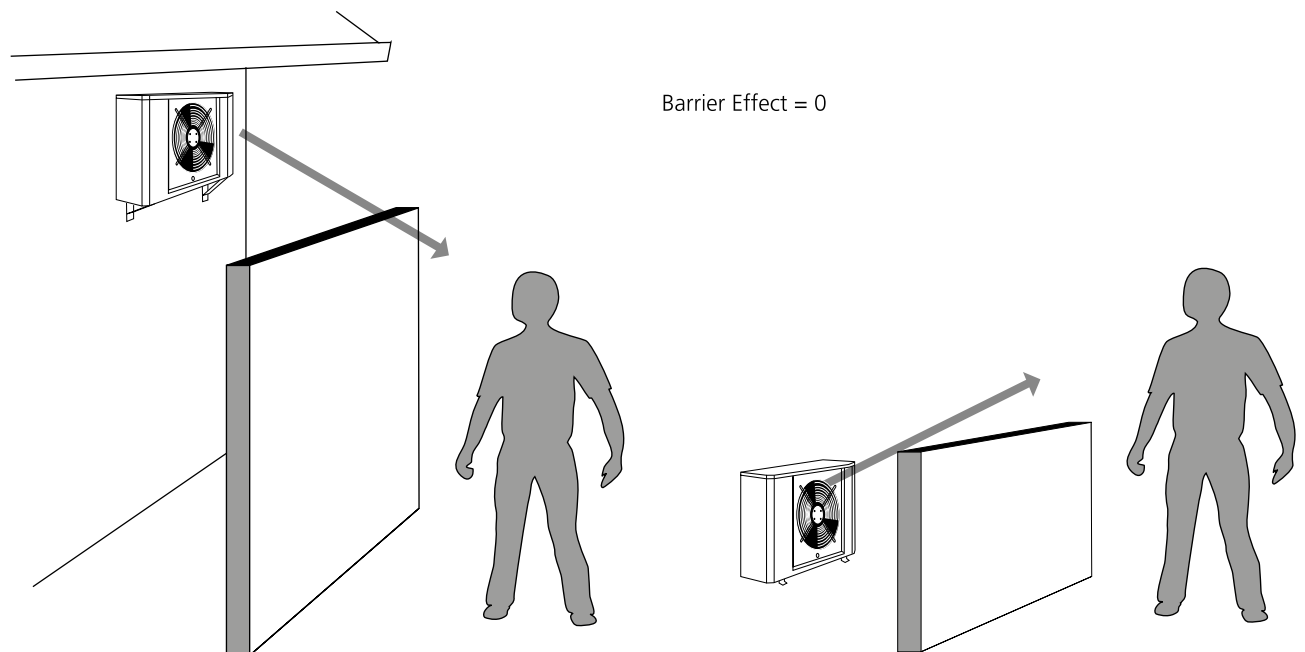
Barriers can be an effective method for reducing noise, however, the barrier must be a solid material with no gaps or penetrations. The material should have a surface density of not less than 5 kg/m.

Effective Barriers

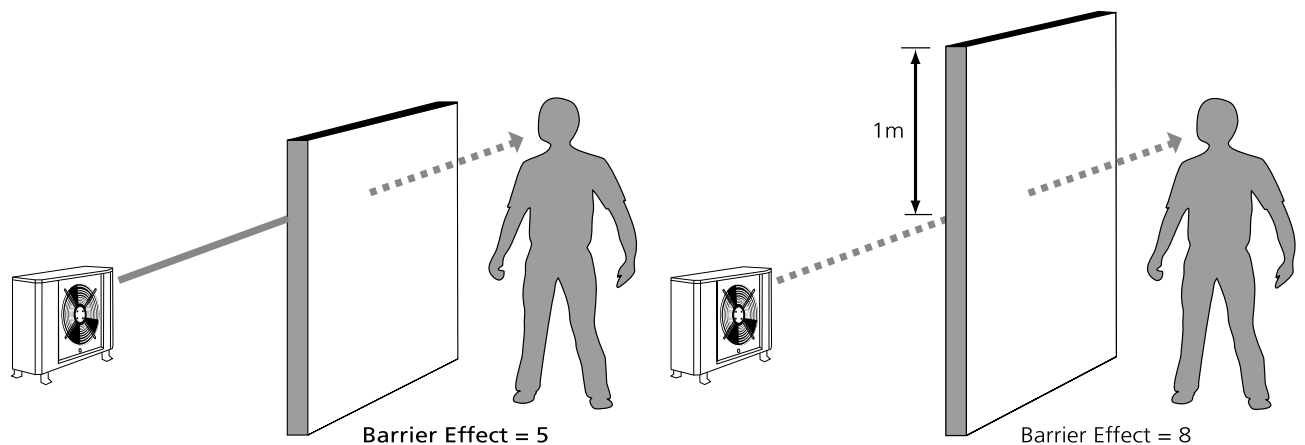
- Solid timber fence (e.g. double lapped fence)
- Solid masonry fence (brick, concrete block, aerated concrete)
- Solid colourbond, sheetmetal, or corrugated iron fence
- Other solid material (e.g. plywood, cement sheet, particleboard)

Ineffective Barriers

- Trees, bushes or shrubs
- Fences with holes in them (e.g. missing planks, decorative openings, picket fences, lattices etc.)



A barrier, even an effective barrier, can only work if it screens the noise source from the receiver. If the barrier is too short and the receiver can see the noise source, then the Barrier Effect is insignificant. If the barrier screens the line of sight so the receiver cannot see the noise source then the Barrier Effect is approximately 5 dBA. If the barrier is very high (e.g. higher than 1m above the line of sight) then the Barrier Effect is 8 dBA.



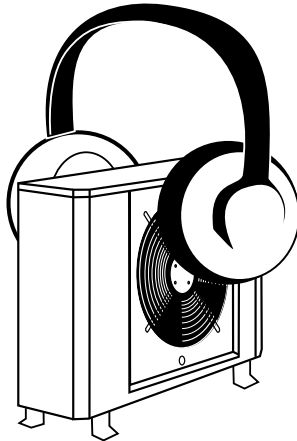
Noise and Vibration

Do's and Don'ts

As you can see from the Guide to Calculating Noise Levels, one of the most important factors is the Sound Power Level (SWL) of the proposed unit.

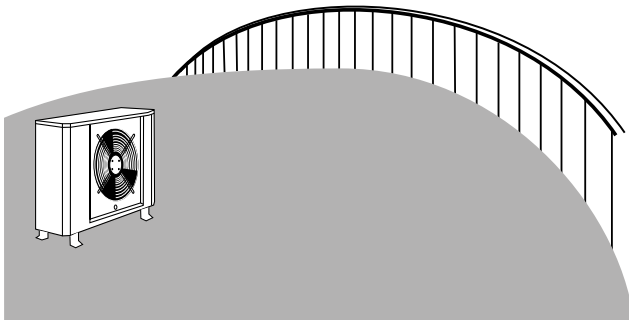
DO

Use the quietest unit to begin with – it may be the difference between an acceptable or unacceptable noise level for a given location.



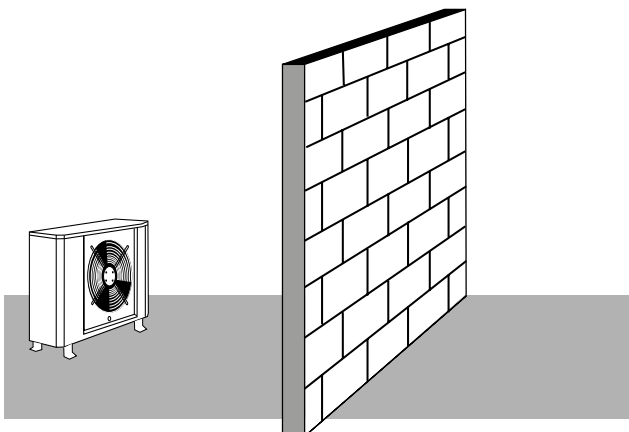
DO

Install the unit as far from the boundary as possible – the further it is from neighbours, the lower the noise level. Place the unit facing the back fence or the furthest fence if possible.



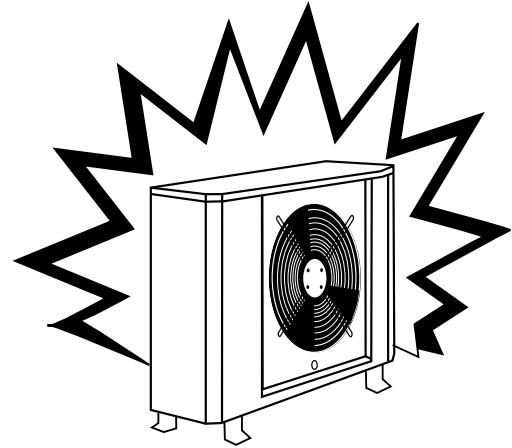
DO

Make sure that any fences or barriers are Effective Barriers, with no holes, gaps or missing planks.



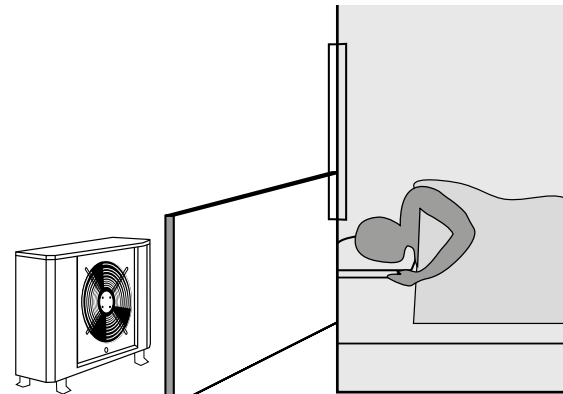
DON'T

Don't necessarily use the cheapest unit – it may be the noisiest – check the SWL.



DON'T

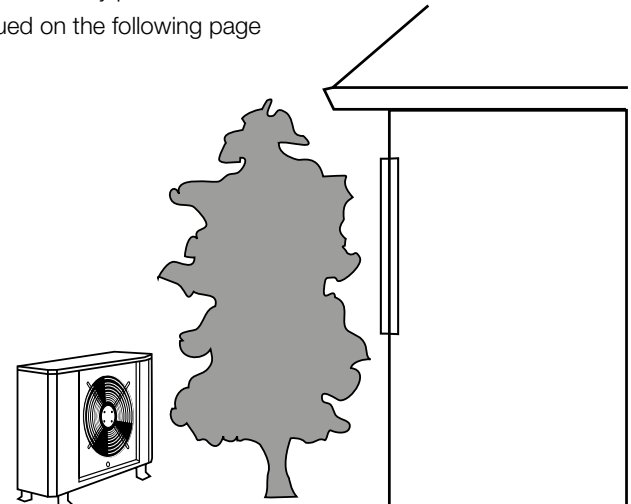
Don't install the unit near a boundary, especially if it is near a window or worst of all – near a bedroom window!



DON'T

Don't assume any tree or bush is an Effective Barrier – it is not and it won't provide any protection from the noise.

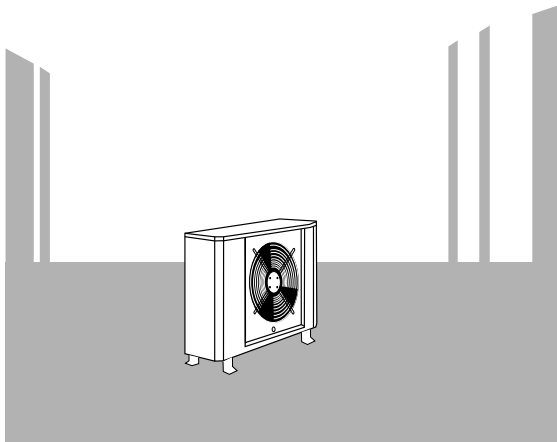
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Noise and Vibration

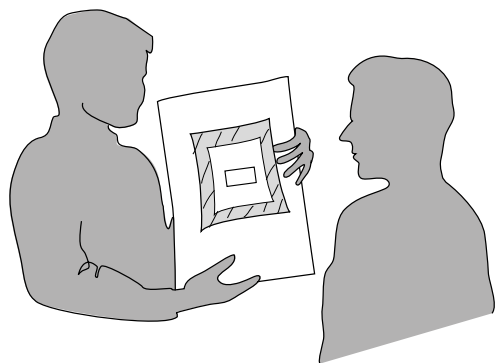
DO

Try and locate the unit away from any reflecting surfaces.



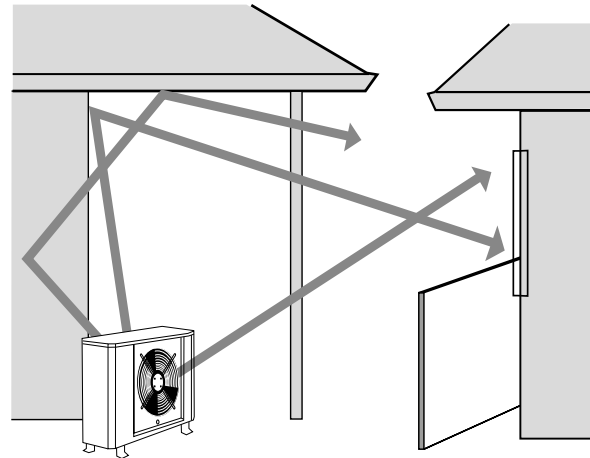
DO

Ask for acoustic advice from a professional qualified acoustic consultant. Even if the expected noise level is too high a consultant will be able to design an enclosure or advise on how to reduce the noise level.



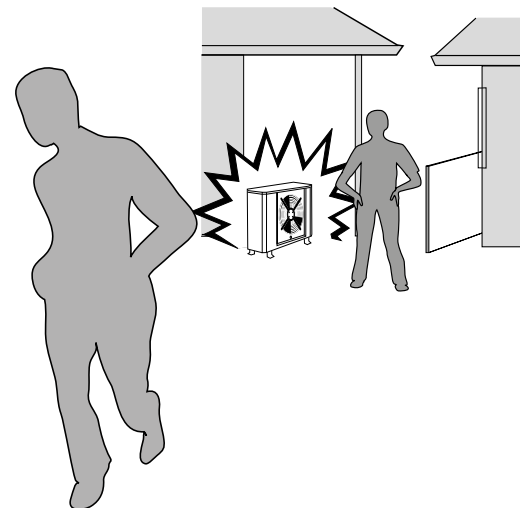
DON'T

Don't place the unit near corners or in very reverberant spaces such as carports or alcoves.



DON'T

Don't assume the problem will go away – it won't. Act now before it is a problem and you will have a happy client, not an ongoing and possibly expensive complaint.



State Acts, Regulations and Guidelines

The following Acts, Regulations and Guidelines are applicable for the respective States and Territories, but may not be limited to these.

If a detailed assessment is required or the expected noise level is excessive, you should consult a qualified Acoustic Consultant.

New South Wales:

Protection of the Environment Operations (Noise Control) Regulations 2000 (Section 52)

Noise Control (Miscellaneous Articles) Regulation 1995

Victoria:

Environment Protection (Residential Noise) Regulations 1997

Queensland:

Environment Protection (Noise) Policy 1997

Environment Protection Act 1994

Environment Protection Regulation 1998

South Australia:

Environment Protection (Machine Noise) Policy 1994

Environment Protection Act 1995

Western Australia:

Environment Protection (Noise) Regulations 1997

Environment Protection Act 1986

Noise Abatement (Noise Labeling of Equipment) Regulations (No. 2) 1985

Tasmania:

Environment Protection (Noise) Amendment Regulations 2000, Statutory Rules 2000, No. 186

Australian Capital Territory:

Environment Protection Policy 1998 (Noise)

Environment Protection Act 2000

Field Service Instructions for Reversing Valves

These Field Service Instructions will aid recognition of a malfunctioning Heat Pump System equipped with a reversing valve

Field Problems Simplified

Heat pump equipment usually includes a reversing valve (added to a refrigerating system to create an “all season” heat pump) which is easily identified and blamed for many failures of the system. Valves have been needlessly replaced without correcting the original trouble in the system, principally due to inadequate testing and erroneous quick decisions.

A tabulated chart follows these instructions on Valve troubles which are so listed to be quickly analysed by “Touch” testing for “possible causes” with suggested “corrections”, to simplify testing procedures and cut testing time.

Operation of the Valve

The Solenoid Coil on the 3-WAY PILOT VALVE forces the needles of the pilot valve to OPEN and CLOSE two port openings at the INSTANT of reversing operations for the 4-WAY MAIN VALVE.

Operating Sequence

1. An ENERGISED COIL (in the heating phase) forces two opposing pilot valve needles, “back needle” and “plunger needle”, separated with stainless steel pins, to simultaneously CLOSE the “back” port and to KEEP OPEN the “front” port.

Notes:

(a) The “outlet” port is the centre bleeder tube (called “common capillary”) which is brazed into the suction line tube and is a common bleed path for each outside port (“front” and “back” capillaries).

(b) The “inlet” tubes, called “back” and “front capillary” and each from its pilot port, are operating paths to the opposite end chambers of the main valve cylinder. These paths conduct the gas which bleeds through a monel screen from “bleeder holes” located in each piston as gas pressure changes occur within the end chambers.

2. Gas flows out of the RIGHT end chamber, decreasing in pressure there. High pressure gas from the system immediately builds up within the LEFT end chamber since no path is open for escape which was first closed by the needle valve at the pilot “back port”.

Note:

At the end of each stroke, one of the operating gas paths is closed to the pilot valve.

3. Difference in pressures between the two end chambers aids the “slide bracket” assembly to move instantly to the RIGHT by the pistons from the pressure differential of the system.

Note:

In reversing operation, the “slide” port straddles one or the other of two openings (in section views “E” and “C” tubing schematically piped through the illustrated circled figures 3 and 4 respectively) as directed.

The “suction tube” between “E” and “C” is always OPEN to the low pressure side of the system.

4. While in and during the operating phase of heating, both end chambers EQUALISE in pressure until the “solenoid coil” is DE-ENERGISED (into cooling or deicing phase) when the opposite operation in reversing takes place within the PILOT and MAIN VALVES.

Notes:

- (a) During the transfer period, there is sufficient by-pass to prevent overloading the compressor due to an excessive head pressure.
- (b) The valve reverses against running pressures with no mechanical or impact noises from the “slide”, “slide bracket” or pistons; however, there is an instant of hissing gas as pressures equalise in both end chambers.

System troubles that affect the reversing valve

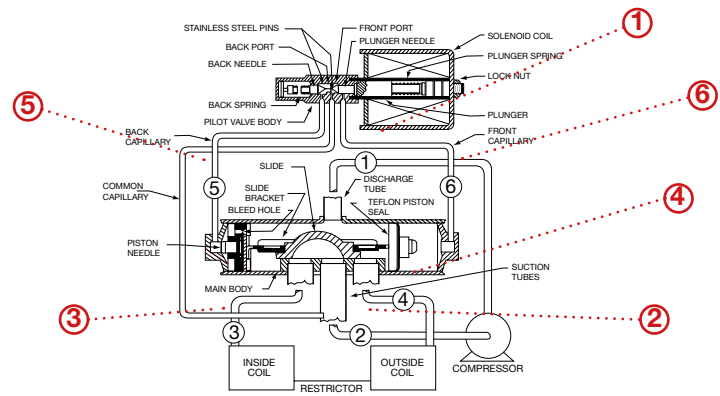
Any trouble in a heat pump, which will materially affect the normal operating pressures, may prevent the valve from shifting properly.

For example, (1) a leak in the system resulting in a loss of charge, (2) a compressor which is not pumping properly, (3) a leaking check valve, (4) defective electrical system or (5) mechanical damage to the valve itself, each will indicate an apparent malfunction of the valve.

Make the following checks on the system and its components before attempting to diagnose any valve trouble by making the “Touch Test” method of analysis.

1. Make a physical inspection of the valve and solenoid coil for dents, deep scratches and cracks.
2. Check the electrical system. This is readily done by having the electrical system in operation so that the solenoid coil is energised. In this condition, remove the lock nut to free the solenoid coil. Slide it partly off the stem and notice a magnetic force attempting to hold the coil in its normal position. By moving the coil farther off the stem, a clicking noise will indicate the return of the “plunger” to its non-energised position. When returning the coil to its normal position on the stem, another clicking noise indicates that the “plunger” responded to the energised coil. If these conditions have not been satisfied, other components of the electrical system are to be checked for possible trouble.
3. Check the heat pump refrigeration system for proper operation as recommended by the manufacturer of the equipment. After all of the previous inspections and checks have been made and determined correct, then perform the “Touch Test” on the reversing valve according to chart on the following page. This test is simply performed by feeling the temperature relationships of the six (6) tubes on the valve and compare the temperature differences. Refer to the chart after the comparative temperatures have been determined for the “possible cause” and suggested “corrective action” to be taken.

Touch Test Chart



Valve Operating Condition	Disch. Tube Compr.	Suction Tube to Compr.	Tube to Inside Coil	Tube to Outside Coil	LEFT Pilot Back Capill. Tube	Right Pilot Back Capill. Tube	Possible Causes	Corrections	
	1	2	3	4	5	6			
Normal Operation of Valve									
Normal Cooling			Cool as (2)	Hot at (1)	*TVB	*TVB			
Normal Heating	Hot	Cool	Hot as (1)	Cool at (2)					
Malfunction of Valve									
Valve will not shift from Cool to Heat	Check electrical circuit and coil						No voltage to coil	Repair electrical circuit	
	Check refrigeration charge						Defective coil	Replace coil	
							Low charge	Repair leak, recharge system	
							Pressure differential too high	Recheck system.	
	Hot	Cool	Cool as (2)	Hot as (1)	*TVB	Hot	Pilot valve OK. Dirt in one bleeder hole	De-energise solenoid, raise head pressure, re-energise solenoid to break dirt loose. If unsuccessful, remove valve, wash out. Check on air before installing. If no movement, replace valve, add strainer to discharge tube, mount valve horizontally	
							Piston cup leak	Stop unit. After pressures equalise, restart with solenoid energized. If valve shifts, re-attempt with compressor running. If still no shift, replace valve	
	Warm			Warm as (1)	*TVB	Warm	Clogged pilot tubes	Raise head pressure, operate solenoid to free. If still no shift, replace valve	
							Both ports of pilot open. (Back seat port did not close)	Raise head pressure, operate solenoid to free partially clogged port. If still no shift, replace valve	
	Start to shift but does not complete reversal	Hot	Warm	Warm	Hot	*TVB	Hot	Not enough pressure differential at start of stroke or not enough flow to maintain pressure differential	Check unit for correct operating pressures and charge. Raise head pressure. If no shift, use valve with smaller ports
								Body damage	Replace valve
Hot		Hot	Hot	Hot	*TVB	Hot	Both ports of Pilot open	Raise head pressure, operate solenoid. If no shift, replace valve	
							Body damage	Replace valve	
Hot		Cool	Hot as (1)	Cool as (2)	*TVB	*WVB	Piston needle on end of slide leaking	Operate valve several times then recheck. If excessive leak, replace valve.	
							Pilot needle and piston needle leaking	Operate valve several times then recheck. If excessive leak, replace valve.	
Will not shift from heat to cool	Hot	Cool	Hot as (1)	Cool as (2)	Hot	*TVB	Pressure differential too high	Stop unit. Will reverse during equalization period. Recheck system.	
							Clogged Pilot tube	Raise head pressure, operate solenoid to free dirt. If still no shift, replace valve.	
							Dirt in bleeder hole	Raise head pressure, operate solenoid. Remove valve and wash out. Check on air before reinstalling if no movement, replace valve. Add strainer to discharge tube. Mount valve horizontally.	
	Warm		Warm as (1)	Warm	*TVB	Warm	*TVB	Piston cup leak	Stop unit, after pressures equalise, restart with solenoid de-energised. If valve shifts, re-attempt with compressor running. If it still will not reverse while running, replace valve.
								Defective Pilot	Replace Valve
							Defective Compressor		

NOTES: *Temperature of Valve Body. **Warmer than Valve Body.

VALVE OPERATED SATISFACTORILY PRIOR TO COMPRESSOR MOTOR BURN OUT – caused by dirt and small greasy particles inside the valve.

To CORRECT: Remove valve, thoroughly wash it out. Check on air before reinstalling, or replace valve. Add strainer and filter-dryer to discharge tube between valve and compressor.

Air Filter Selection & Service Guide

Introduction

This guide provides practical information to building owners, managers and consultants with the selection and application of air filters in commercial, retail, institutional and industrial buildings. In addition, it will assist OH&S administrators meet work place safety laws by ensuring air cleaning standards are maintained within their facilities.

The level of air cleaning required in a building will vary depending on the occupants and/or process needs. Schools, office buildings and shopping centres protect occupants, retail goods and architectural features. Of most concern to building owners today is OH&S risk minimisation. Atmospheric contaminants are identified in OHS Regulation 2001 as a health hazard so ensuring appropriate filtration standards are applied is critical. Finally, maintaining clean air handling plant and heat exchangers will ensure ongoing energy costs are kept to a minimum.

Effects of airborne particles

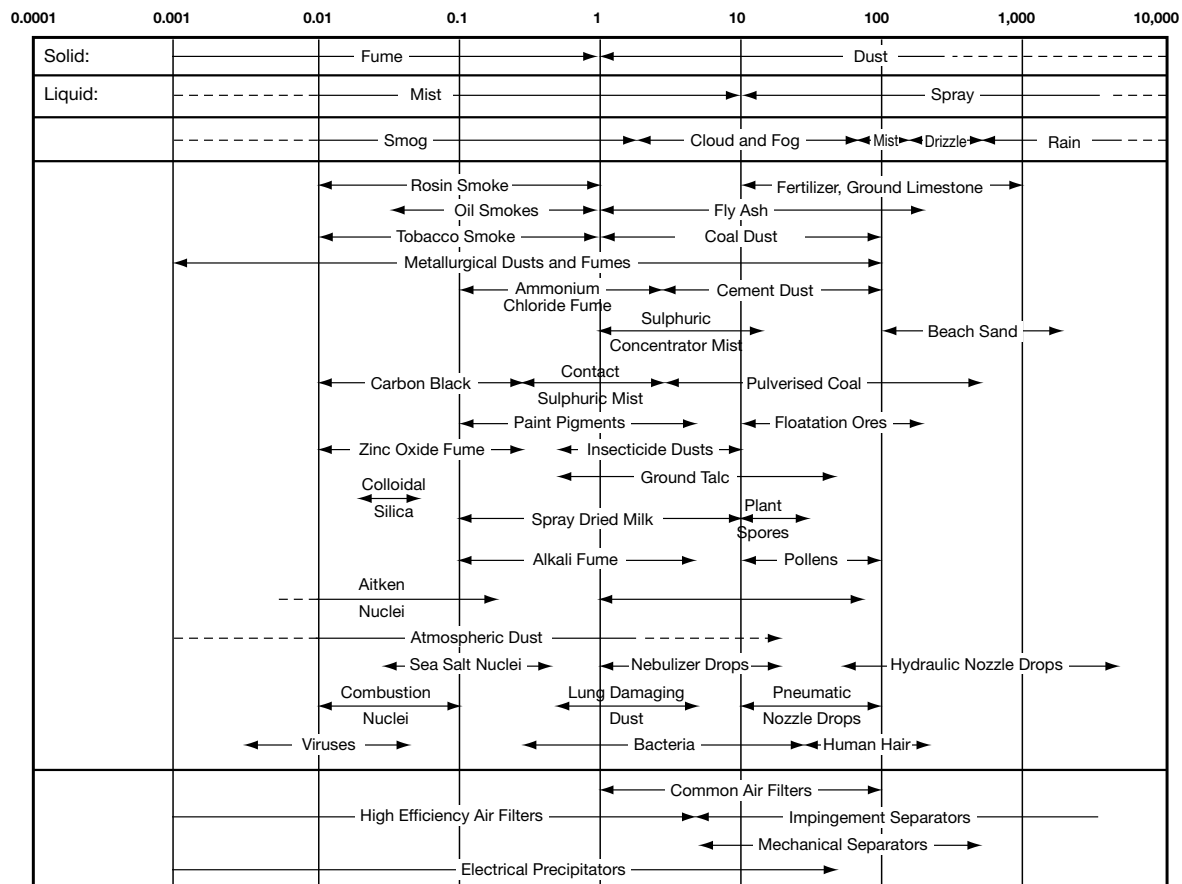
Health effects resulting from poor indoor air quality vary with individual cases, however minimising the levels of airborne particulates will minimise the risk to health. Some well known ailments exacerbated by poor air quality include itchy and watery eyes, sneezing, itchy throat, wheezing, asthma, as well as the spread of infections such as influenza, colds, measles and mumps. Reducing the number of airborne particles through the use of high efficiency air filtration will minimise this risk.

Poor air filtration will also affect the ventilation system itself. High levels of dust contamination will lead to increased duct cleaning costs, increase the risk of corrosion and accelerate refurbishment costs to architectural features. Poor air filtration also reduces heat exchanger efficiency resulting in higher energy inputs and therefore greater operating costs.

What's in the Air?

Solid particles of soot, carbon matter, ashes, earth, sand and silica materials, fibres, road dirt and other animal, vegetable and mineral substances. Mould spores, bacteria, viruses, pollens and Volatile Organic Compounds may also be present. Some of these substances are known carcinogens and asthma triggers.²

LOGARITHMIC SCALE OF PARTICLE DIAMETRES IN MICRONS



1 This guide does not deal with the removal of odours and gaseous substances or high volume product dust from industrial processes, which require specialised equipment.

2 The Australian Institute of Refrigeration Air-Conditioning & Heating – Air Filters Application Manual.

Information courtesy of AREMA

Air Filter Selection & Service Guide

Air Filter Standards

As a general guide, Australian Standards are useful information tools that provide minimum performance standards. Care should be taken when applying minimum standards that may not adequately service the air quality needs of the building.

Relevant Australian standards and specifications commonly referred to are:

- AS1324 (Air Filters for use in general ventilation and air-conditioning)
- AS1668 (The use of mechanical ventilation and air-conditioning in buildings), and
- AS3666 (Air Handling and Water Systems of Buildings)

Filter Classification – Performance Ratings

The following performance table is commonly used internationally. It classifies the filter by efficiency from test results carried out in an appropriate air filter-testing laboratory. The following table is found in AS1324 Part 1.2001

For most air-handling and air conditioning applications, testing with Test Dusts No.1 and No.4 is to be used to define the performance of an air filter. These test requirements are consistent with tests carried out to US and European standards ASHRAE 52.1 and EN779.

The benefit of using No.1 dust is to determine the efficiency of the air filter to catch particles of submicrometre nature. The benefit of No.4 dust is to evaluate the arrestance and likely service life of an air filter. ASHRAE 52.2 Removal Efficiency by Particle Size standard provides a useful method of evaluating filtering applications given the particle size of the contaminant.

Air Filter Selection Chart

Filter Class	Average Arrestance AS1324.2 Dust No.4 ASHRAE 52.1 Eurovent 4/5 EN779 Gravimetric	Average Efficiency AS1324.2 Dust No.1 ASHRAE 52.1 Eurovent 4/5 EN779 Atmospheric	Maximum Final Resistance Pa
G1	A < 65		250
G2	65 ≤ A < 80		
G3	80 ≤ A < 90		
G4	90 ≤ A		
F5		40 ≤ E < 60	450
F6		60 ≤ E < 80	
F7		80 ≤ E < 90	
F8		90 ≤ E < 95	
F9		90 ≤ E	

*Note: Filters which are tested with a minimum efficiency of less than 20% shall only be rated as G type arrestance filters.

Air-handling systems with airflow rates equal to or greater than 1500l/s require air filtration with the following efficiencies:

- Test dust No. 1: 20% (minimum) @ 250Pa.
- Test dust No. 1: 20% to 40% (average) @ 250Pa.

AS1324 Filter Types

- Type 1 – Dry, eg. Woven or non-woven fabrics, which when unused feel dry.
- Type 2 – Viscous impingement, eg. Woven or non-woven oil or gel coated fabrics, including metalviscous filters.
- Type 3 – Electrostatic precipitators AS1324 Filter Classes
- Class A – Fully disposable (entire cell replaced, including frame)
- Class B – Reusable media (reusable frame)
- Class C – Reusable media and frame (after cleaning)
- Class D – Self-renewable (in respect of media advancement and cleaning)

Example: Supply Type 1, Class B multi pocket bag filter.

Labelling

It is a requirement of AS1324 that all air filters are labelled with a filter performance rating together with the manufacturers/distributors details.

Testing

In order to ensure compliance to the filter performance rating of any product AS1324 recommended that all products are tested at least every five years and that the air filter media used be tested at least every year. No laboratory test older than five years should be accepted as proof of filter performance rating.

Filter Selection

The following table is the AREMA recommended filter classification for building grades to match Property Council of Australia 1999 Benchmarks Handbook. The table sets the benchmark air cleaning standard.

BOMA Grade*	A.R.E.M.A. Min. recommended filter classification
Premium	F7
A	
B	F6
C	F5
D	G4

*Property Council of Australia Benchmarks Handbook

Air Filter Selection & Service Guide

Information courtesy of AREMA

Filter Selection Steps

When selecting air filters using the above classification table, you should also consider:

- Air flow capacity of system
- Clean and final resistance of your filter system
- Arrestance dust holding capacity
- Filter life
- Comparison of filters should be made at the same final pressure drop ie. 250, 375 or 450 pascals.

Other important considerations when selecting your air filter system include:

- Use of prefilters to extend final filter life
- Optimising the surface area of the filter system
- Access for filter replacement and routine service
- Suitability of filter materials and construction for conditions encountered

Installation

Filter banks should be sealed between filters and frames to prevent leakage and should be suitably stiffened to prevent flexing.

When filters are installed in a slide access, filter and service doors need to be sealed to prevent air leakage and fitted with sash clamp type catches.

General: Provide a permanent notice fixed to the wall identifying the filter type and performance rating.

Plinth: Where possible, provide a 100mm high plinth below the filter bank.

Manometers

Provide a measure of differential pressure across each filter bank.

Differential pressure gauge unit – 100mm dial type diaphragm gauge including pipework, termination and fittings necessary for correct operation and maintenance.

Gauge scale – Mark in suitable divisions with full-scale deflection no more than twice the maximum dirty filter condition. Locate gauge outside unit casing in a readily readable location.

Maintenance

Servicing

- Ensure suitable and safe access is provided for air filter inspection and replacement
- All food preparation areas should be located away from filter service points
- Air conditioning plant located at height require Work Cover approved ladders, platforms and harness points.
- Only licensed companies with a registered waste water treatment facility are to service washable filters. A copy of the Trade Waste Agreement should be kept on file to mitigate off site liability under the Environment Operations Act 1997.

Cleaning

Before start-up, ensure that the installation is clean, and inspect filter banks and plenums to ensure integrity of the installation.

Temporary pre-filters

Remove temporary media at completion of commissioning.

Operation and maintenance manual

Each different filter bank should have an operation and maintenance manual which includes information on performance ratings, replacement filter part numbers and sizes.

Washing of Filters on Site

The Clean Waters Act (Part 4) prohibits anyone from washing a filter in a manner that could pollute a waterway. Filters can only be washed by someone who holds a licence to operate an approved washing facility. Many filter service companies are licenced and will remove the filters from site and wash them in their premises.

Electrical IP Ratings

The IP rating system is used to indicate the ingress protection level of electrical equipment against the intrusion of foreign bodies such as fingers, tools, dust and moisture.

The IP rating consists of two numbers, the first indicates protection from solid objects and the second protection from water.

Description of first number	1st Number
No special protection	0
Protection from objects > 50mm	1
Protection from objects < 80mm in length and 12mm diameter	2
Protection from objects > 2.5mm	3
Protection from objects > 1mm	4
Protection from an amount of dust that would interfere with the operation of the equipment	5
Protection from all dust	6
Description of second number	2nd Number
No special protection	0
Protection from vertically dripping water	1
Protection from dripping water when tilted up to 15°	2
Protection from sprayed water	3
Protection from splashed water	4
Protection from water projected from a nozzle	5
Protection against heavy seas or powerful jets of water	6
Protection against temporary immersion	7
Protection against complete continuous submersion in water of 1 metre depth for 15 minutes	8


E.g. An electrical component with an IP rating of IP56 has protection from an amount of dust that would interfere with the operation of the equipment and protection against heavy seas or powerful jets of water.

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