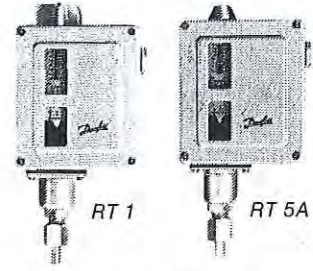




PRESSURE CONTROLS

Type RT



Type RT is a most versatile instrument housed in a moulded dust-proof case. The pressure or temperature scale is clearly visible through a front window. Extreme versatility is obtained because of the range of interchangeable contacts listed below, that either "break" on fall, "make" on fall, control a signalling device or close two circuits simultaneously. S.P.D.T. contacts are also available for changing over from one circuit to another. The controls are made to suit all Refrigerants including Ammonia and are available for "manual reset" where required.

Types of switch

Code No.	Symbol	Description	Rating
17-4030 CAT. NO. 14127		Single-pole change-over switch (SPDT) with leakage-current proof terminal board. Fitted in all standard versions of Type RT. Momentary contact change-over.	Change-over switches 17-4030 are marked: 10 (4) A 380 V~ 12 W 220 V --- and have the following ratings: ac non-inductive 10 A 380 V inductive 4 A 380 V full load 30 A 380 V locked rotor dc 12 W 220 V
17-4034 CAT. NO. 14128		Single-pole switch making two circuits at the same time on a rise in the pressure. Momentary contact change-over. With leakage-current proof terminal board.	Switches 17-4034 and 17-4036 are marked: 10 (3) A 380 V~ 12 W 220 V --- and have the following ratings: ac non-inductive 10 A 380 V inductive 3 A 380 V full load 20 A 380 V locked rotor dc* 12 W 220 V
17-4036 CAT. NO. 14129		Single-pole switch breaking two circuits at the same time on a rise in the pressure. Momentary contact change-over. With leakage-current proof terminal board.	* If the current is conducted through contacts 1 and 3, i.e. it is connected to terminals 1 and 3 but not 2, the max. permissible rating is increased to 90 W 220 V.

The various switches are shown in the position resulting from pressure drops, i.e. after downward movement of the main spindle of the RT control.

DESCRIPTION	CAT. NO.	TYPE	CODE NO. (1)	RANGE kPa (psig)	DIFFERENTIAL kPa (psi)	MANUAL RESET	Max.(2) TEST PRESS. kPa (psig)	PERMISS. AMBIENT TEMP.	PRESSURE CONNECTION	
Refrigerants : R11, R12, R13 B1, R22, R114, R500, R502										
LP CONTROL	14276	RT1	17-5245	-80 to 500	40 to 160(5.8 to 23)	MIN.	2500 (362)	°C -40 to +70	1/4" Flare	
	14277	RT1(MR)*	17-5246	(24" to 70)	fixed approx.40(5.8)				20 to 120(2.9 to 17)	3/8" BSP External
	14280	RT200	17-5237	20 to 600	20 to 130(2.9 to 19)					
	14281	RT200(MR)*	17-5239	(2.9 to 87)						
	14282	RT116	17-5203	100 to 1000						
HP CONTROL	14283	RT116(MR)*	17-5199	(14 to 145)	100 to 400(14.5 to 58)	MAX.	3500 (508)	°F (-40 to +158)	1/4" Flare	
	14278	RT5 (3)	17-5250	400 to 1700					3/8" BSP External	
	14279	RT5(MR) (3)*	17-5251	(58 to 246)						fixed approx.100(14.5)
	14284	RT117	17-5295	1000to3000 (145 to 435)	60 to 400(8.7 to 58)					

DESCRIPTION	CAT. NO.	TYPE	CODE NO. (1)	RANGE kPa (psig)	DIFFERENTIAL kPa (psi)	MANUAL RESET	Max.(2) TEST PRESS. kPa (psig)	PERMISS. AMBIENT TEMP.	PRESSURE CONNECTION
Refrigerants : R717 as well as R11, R12, R13 B1, R22, R114, R500, R502									
LP CONTROL	14285	RT1A	17-5001	-80 to 500	40 to 160(5.8 to 23)	MIN.	2500 (362)	°C -40 to +70	3/8" BSP ext. +6/10 mm dia. weld nipple
		14286	RT1A(MR)*	17-5002	(24" to 70)				
HP CONTROL	14288	RT5A	17-5046	400 to 1700	100 to 400(14.5 to 58)	MAX.	3500 (508)	°F (-40 to +158)	
	14289	RT5A(MR)*	17-5047	(58 to 246)	fixed approx.100(14.5)				

DESCRIPTION	CAT. NO.	TYPE	CODE NO. (1)	LP WORKING RANGE kPa (psig)	DIFF. RANGE kPa (psi)	MECH. DIFF. kPa (psi)	MAX. (2) TEST PRESS.	MAX. Bellows Temp.	PERMISS. AMBIENT TEMP.	PRESSURE CONNECTION
Refrigerants : R11, R12, R13 B1, R22, R114, R500, R502										
Marine Designs	14292	RT5	17-5253	Same as LP & HP Controls listed above	Same as LP & HP Controls listed above		2500 (362)	°C -40 to +70		3/8" BSP External
	14293	RT116	17-5200							
	14294	RT117	17-5296							
	14295	RT200	17-5240							

DESCRIPTION	CAT. NO.	TYPE	CODE (1) NO.	LP WORKING RANGE kPa (psig)	DIFF. RANGE kPa (psi)	MECH. DIFF. kPa (psi)	MAX. (2) TEST PRESS.	MAX. Bellows Temp.	PERMISS. AMBIENT TEMP.	PRESSURE CONNECTION
Refrigerants : R717 as well as R11, R12, R13 B1, R22, R114, R500, R502										
Diff. Press. Controls	14290	RT260A	17D-0021	-100 to 1200 (29.5" to 174)	50 to 400 (7 to 58)	30 (4.3)	2500 (362)	100°C (212°F)	70°C (158°F)	3/8" BSP ext. +6/10 mm dia. weld nipple
		14291	RT262A	-100 to 600 (29.5" to 87)	10 to 150 (1.4 to 22)	10 (1.4)	1200 (174)	100°C (212°F)	70°C (158°F)	

*Manual reset controls supplied at extra cost on application

(1) With SPDT switch, code No. 17-4030. (2) All pressure controls can withstand a full vacuum. (3) With a seal cap, code No. 17-0895, instead of a knob.

If the regulating bellows of the controls should break, it will have the effect of stopping the refrigeration compressor.

If the outer bellows should break, the breaking pressure of the controls will fall by approx. 392 kPa (57psi) below the setting.

Accessories : Available on application.

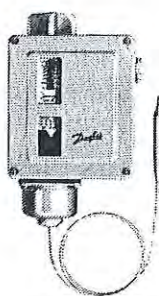
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TEMPERATURE CONTROLS



Thermostats Type RT

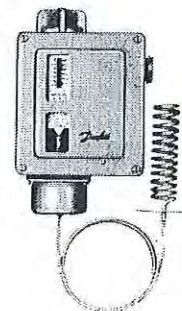
RT THERMOSTATS ARE TEMPERATURE-CONTROLLED ELECTRIC SWITCHES FOR USE IN REFRIGERATION AND AIR CONDITIONING SYSTEMS



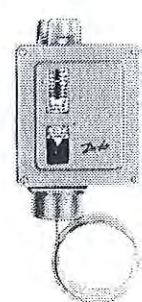
RT 3



RT 11



RT 140



RT102

Function	Charge	Cat. No.	Type	Code No. (1)	Cap. Lgth. (m)	Range		Adjust. Mech. Differential		Max. Bulb Temp. (2)	Bulb Type and Remarks	
						°C	°F	At Min. Temp. Setting °C	At Max. Temp. Setting °C			
										°C		°C
Brine Surface or Room Thermostat	Vapour	14215	RT10	17-5077	2	-60/-30	-76/-22	1.5 - 11	1 - 5	150	Cylindrical Remote Bulb	
		14216	RT10	17-5079	5	"	"	"	"	"		
		14213	RT9	17-5066	2	-45/-15	-49/+5	2 - 10	1 - 4	"		
		14214	RT9	17-5068	5	"	"	"	"	"		
		14221	RT13	17-5097	2	-30/0	-22/+32	1.1 - 7	0.8 - 4	"		
		1422	RT3	17-5014	2	-25/+15	-13/+59	1.5 - 9	"	"		
		1424	RT3	17-5015	3	"	"	"	"	"		
		1425	RT3	17-5016	5	"	"	"	"	"		
	1423	RT3	17-5017	8	"	"	"	"	"			
	Adsorption	1421	RT2	17-5008	2	"	"	5 - 18	6 - 20	"		
		1429	RT7	17-5053	2	"	"	2 - 10	2 - 14	"		
		14210	RT7	17-5054	3	"	"	"	"	"		
		14218	RT12	17-5089	2	-5/+10	+23/+50	1 - 3.5	1 - 3	65		
		14223	RT14	17-5099	2	-5/+30	+23/+86	1.5 - 8	1.5 - 8	150		
		14224	RT14	17-5100	3	"	"	"	"	"		
14225		RT14	17-5101	5	"	"	"	"	"			
Room Thermostats	Vapour	14217	RT11	17-5083	—	-30/0	-22/+32	1 - 8	0.8 - 4	70	Rigid Coiled Capillary Sensor	
		14234	RT34	17-5118	—	-25/+15	-13/+59	1.2 - 12	1.2 - 12	"		
		1427	RT4	17-5036	—	-5/+30	+23/+86	1 - 7	0.6 - 4	"		
	Air Duct T'stat	Adsorp.	14245	RT140	17-5236	2	+15/+45	+59/+113	1.5 - 9	1.5 - 11	240	Coiled Cap. Sensor on Mount. Flange
			14235	RT101	17-5003	2	+25/+90	+77/+194	2 - 11	3 - 24	300	Remote Bulb and Bulb Pocket
	Disch. Line Thermostats	Adsorption	14250	RT101	17-5006	3	"	"	"	"	"	Remote Bulb and Bulb Pocket
			14237	RT101	17-5024	8	"	"	"	"	"	
14238			RT102	17-5147	2	"	"	2 - 10	"	"		
Partial		14242	RT107	17-5135	2	+70/+150	+158/+302	5 - 30	1.5 - 10	215	Remote Bulb and Pocket	
		14243	RT107	17-5140	5	"	"	"	"	"		
Adjust. Dead Zone Thermostats	Adsorption	14252	RT8L(3)	17L-0030	2	-20/+12	1.0°C	5	5	145	Remote Bulb	
		14253	RT14L(3)	17L-0034	2	-5/+30	1.5°C	5	5	150		
	Vapour	14254	RT16L(3)	17L-0024		0/+38	1.0°C	5	2	100	Rigid Coiled Cap. Sensor	
		14255	RT140L(3)	17L-0031	2	+15/+45	1.2°C	6.8	6.8	240	Same as RT140	
Diff. T'stat	Adsorp.	14246	RT270	17D-0031	2 x 5	0/+15	fixed 2	LT Work Range		-30 to +40°C	65	2 Remote Bulbs

(1) With SPDT switch Code No. 17-4030
 (2) Ambient temperature for housing: -40 to +70°C
 (3) With Dead Zone switch Code No. 17-4032

Accessories : Including Manual reset controls supplied at extra cost on application.

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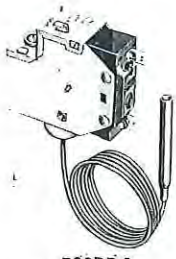
PENN PRESSURE CONTROLS

SERIES P20 — P67 — P70

P20 SERIES AIR CONDITIONING LIMIT

FIELD REPLACEMENT CONTROL

Field replacement Series P20 controls for R-12 and R-22. Dust-tight contact unit with Arkles connectors. 1 m (36") capillary with 1/4" sweat section. Screwdriver adjustment is provided. Mounting bracket supplied on all models.



P20DB-1

Cat. No.	Type	Switch Action	Range of Cut-Out		Differential		Setting				Max. Bellows Pressure	
			kPa	psig	kPa	psi	Opens		Closes		kPa	psig
14355	P20BB-1	Open On Fall	48 to 1034	7 to 150	Manual Reset		276	40	Lockout Man. Reset		1724	250
14356	P20DB-1	Open On Rise	690 to 3103	100 to 450	Manual Reset		2758	400	Lockout Man. Reset		3103	450
14357	P20EB-1	SPDT	48 to 1034	7 to 150	172 Fixed	25 Fixed	276	40	448	65	1724	250
14358	P20EB-2	SPDT	690 to 3103	100 to 450	483 Fixed	70 Fixed	2758	400	2275	330	3103	450

P67 SERIES LOW PRESSURE

LOW AND LINE VOLTAGE - RANGE 20 to 207 kPa (3 TO 30 PSIG)

These two pole controls are designed for applications where air pressure operates an electric device. Typical uses include control of air compressors, fans, pilot lights etc. Double pole, single break models are supplied in both normally open and normally closed constructions. A four wire, two circuit block permits the main contacts to open; simultaneously closing the auxiliary contacts. Pressure element has 1/8" male NPT connector. Non-metallic diaphragm is positioned by air pressure. Range and differential settings are field adjustable.



SERIES P67

Cat. No.	Type	Control Action	Scale Range *		Differential	
			kPa	psig	kPa	psig
14351	P67AA-8	DPST — Opens on pressure drop.	20 to 207	3 to 30	10 — 138 Adjustable	1 1/2 — 20 Adjustable
14352	P67CA-1	DPST — Opens on pressure rise.				
14353	P67EA-9	L - M2 contacts make on pressure rise — simultaneously the L - M1 contacts break				
14354	P67FA-6	L - M2 contacts break on pressure rise — simultaneously the L - M1 contacts make				

* Range is minimum cut-out to maximum cut-in on "Open Low" controls. It is minimum cut-in to maximum cut-out on "Open High" controls.



P70AB-36

P70 SERIES

Cat. No.	Type	Switch Action	Range kPa (psig approx)	Differential		Pressure Connector	Limited Knob Adjust.	Max. Bellows Pressure	
				kPa	psi			kPa	psig

SINGLE POLE LOW PRESSURE

"ALL RANGE" FOR R12, R22, R500, R502

1436	P70AB-31	Close High Open Low	-70 to 700 (20" to 100)	Min. 41 Max. 345	Min. 6 Max. 50	1/4" Male Flare Conn.	Cut-out	2241	325
1437	P70AB-36	Close High Open Low	-70 to 700 (20" to 100)	Min. 41 Max. 345	Min. 6 Max. 50	36" Cap. with 1/4" Fl. Nut	Cut-out	2241	325
1438	P70CA-80	Open High Close Low	-70 to 700 (20" to 100)	Min. 41 Max. 345	Min. 6 Max. 50	36" Cap. with 1/4" Fl. Nut	None	2241	325



P70CA-81

FOR AMMONIA

1434	P70AA-120	Close High Open Low	-70 to 700 (20" to 100)	Min. 41 Max. 345	Min. 6 Max. 50	1/4" Female NPT	None	2241	325
14311	P70CA-87	Open High Close Low	-70 to 700 (20" to 100)	Min. 41 Max. 345	Min. 6 Max. 50	1/4" Female NPT	None	2241	325

Adjusting knob supplied on differential (cut-out setting) to limit adjustments to 35 kPa (5psi) above or below normal setting.

SINGLE POLE HIGH PRESSURE

"ALL RANGE" FOR R12, R22, R500, R502

1439	P70CA-81	Open High Close Low	400 to 3100 (58 to 450)	Min. 414 Max. 1034	Min. 60 Max. 150	1/4" Male Flare Conn.	None	3275	475
14310	P70CA-86	Open High Close Low	400 to 3100 (58 to 450)	Min. 414 Max. 1034	Min. 60 Max. 150	36" Cap. with 1/4" Fl. Nut	None	3275	475
14313	P70DA-41	Open High Close Low	250 to 3000 (36 to 435)	Lockout (Requires Manual Reset)		36" Cap. with 1/4" Fl. Nut	None	3275	475



P70AA-146

FOR AMMONIA

1433	P70AA-146	Close High Open Low	400 to 2000 (58 to 290)	Min. 138 Max. 690	Min. 20 Max. 100	1/4" Female NPT Conn.	None	2758	400
14312	P70CA-89	Open High Close Low	400 to 3100 (58 to 450)	Min. 414 Max. 1034	Min. 60 Max. 150	1/4" Female NPT Conn.	None	3275	475
14314	P70DA-43	Open High Close Low	250 to 3000 (36 to 435)	Lockout (Requires Manual Reset)		1/4" Female NPT Conn.	None	3275	475



P70KA-11

HIGH PRESSURE CUT-OUT WITH ALARM CIRCUIT

"ALL RANGE" FOR R12, R22, R500, R502

14329	P70KA-11	L-M1 Close High L-M2 Open High 4-Wire 2-Circuit	400 to 3100 (58 to 450)	Lockout (Requires Manual Reset after Cut-out)		36" Cap. with 1/4" Fl. Nut		3275	475
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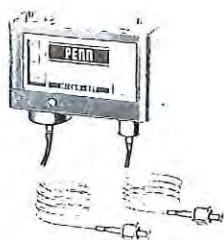
ELECTRICAL RATINGS: Refer Tech. Page 143-g.

Underlined Models have Metric Scales — Refer Tech. Page 143-f for English to Metric Cross Reference Chart.

CONVERSION: 1 bar = 100kPa
Refer Charts Pages 330/358-a/457

PENN PRESSURE CONTROLS SERIES P70

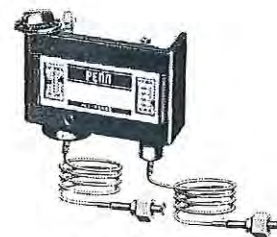
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P70LN-8, P70LN-11



P70LA-90



P70LB-12

P70 SERIES – Continued

Cat. No.	Type	Switch Action	LOW PRESSURE				HIGH PRESSURE				Pressure Connector	Limit Knob Adj.	Max. Bellows Pressure	
			Range		Differential		Range		Differential, Non-Adjust.				kPa	psig
			kPa	psig	kPa	psi	kPa	psig	kPa	psi				

SINGLE POLE DUAL PRESSURE

"ALL RANGE" FOR R12, R22, R500, R502

14316	<u>P70LB-12</u>	SPST	-70 to 700	20" to 100	Min.41 Max.345	Min.6 Max.50	1000 to 3000	145 to 435	Under 2069, 379. Over 2069, 448.	Under 300, 55. Over 300, 65	36" Cap. with 1/4" Flare Nut	** Cut-out	2241L 3103H	325 Low 450 High
14317	<u>P70MA-46</u>	SPST	-70 to 700	20" to 100	Min.41 Max.345	Min.6 Max.50	1000 to 3000	145 to 435	Lockout (Requires Manual Reset)		36" Cap. with 1/4" Flare Nut	None	2241L 3103H	325 Low 450 High
14319	<u>P70NA-10</u>	SPST	-70 to 700	20" to 100	Lockout - Manual Reset		1000 to 3000	145 to 435	Lockout (Requires Manual Reset)		36" Cap. with 1/4" Flare Nut	None	2241L 3103H	325 Low 450 High

** Adjusting knob supplied on differential (low side cutout setting) to limit adjustment 35kPa (5psi) above or below setting.

TRUCK REFRIGERATION – ADJ. DIFF. – WITH LOW LIMIT STOPS

14360	<u>P70LN-8</u>	SPST	Low Limit Stop Set 14kPa(2psig)for R502				Set and sealed at 2724kPa(395psig)for R502				48" Cap. with 1/4" Flare Nut	None	2241L 3103H	325 Low 450 High
14361	<u>P70LN-11</u>	SPST	Low Limit Stop Set -41kPa(12"Hg)for R12				Set and sealed at 2034kPa(295psig)for R12				48" Cap. with 1/4" Flare Nut	None	2241L 3103H	325 Low 450 High

FOR AMMONIA

14315	<u>P70LA-90</u>	SPST	-70 to 700	20" to 100	Min.41 Max.345	Min.6 Max.50	1000 to 3000	145 to 435	Under 2069, 379. Over 2069, 448	Under 300, 55. Over 300, 65	1/4" Female NPT Conn.	None	2241L 3103H	325 Low 450 High
14318	<u>P70MA-47</u>	SPST	-70 to 700	20" to 100	Min.41 Max.345	Min.6 Max.50	1000 to 3000	145 to 435	Lockout (Requires Manual Reset)		1/4" Female NPT Conn.	None	2241L 3103H	325 Low 450 High

P70 SERIES 4 - WIRE 2 CIRCUIT CONTACT BLOCK

These controls have a 4 - wire, two circuit contact block with the main contacts controlling the main electrical load; the auxiliary contacts operate simultaneously to actuate a signal or auxiliary alarm. Main contacts (LINE - M2) open on pressure rise or pressure drop; simultaneously the auxiliary contacts (LINE - M1) operate in reverse action to the main contacts. The electrical contacts operate from pressure elements.

Cat. No.	Type	Switch Action	Range		Differential		Press. Conn.	Max. Bellows Pressure	
			kPa	psig	Min. kPa	Max. psi		kPa	psig

FOR AMMONIA

SINGLE FUNCTION LOW PRESSURE

14337	<u>P70JA-25</u>	Open High	-70 to 700	20" to 100	41	6	345	50	1/4" Female NPT Conn.	2241	325
14338	<u>P70HA-4</u>	Open Low	-70 to 700	20" to 100	Auto-Reset				1/4" Female NPT Conn.	2241	325
14342	<u>P70GA-11</u>	Open Low	-68 to 690	20" to 100	41	6	345	50	1/4" Female NPT Conn.	2241	325

SINGLE FUNCTION HIGH PRESSURE

14339	<u>P70JA-21</u>	Open High	345 to 1655	50 to 240	138	20	690	100	1/4" Female NPT Conn.	1862	270
14340	<u>P70KA-13</u>	Open High	400 - 250 to 3100	58 - 450 36 to 450	Auto-Reset				1/4" Female NPT Conn.	3275	475

DUAL PRESSURE

14341	<u>P70QB-1</u>	Low Side - Open Low High Side - Open High	LP-68 to 690 HP690 to 2930	LP20" to 100 HP100 to 425	41	6	345	50	1/4" Female NPT Conn.	2241	325
14344	<u>P70RB-1</u>	LP : Open Low HP : Open High	LP-68 to 690 HP690 to 2930	LP20" to 100 HP100 to 425	Man. Reset HP only				1/4" Female NPT Conn.	3275	475

ELECTRICAL RATINGS: Refer Tech. Page 143-g.
Underlined Models have Metric Scales — Refer Tech. Page 143-f for English to Metric Cross Reference Chart.

PENN CONTINUED NEXT PAGE

NOTE: CONVERSION FOR CONTROLS CALIBRATED IN BARS.
PRESSURE: 1 bar = 100 kPa. VACUUM: -0.1 bar = -10 kPa.
Refer Page 457 for full details — Also Charts on Pages 330 and 358-a.

OUR COMPLETE INVENTORY ASSURES PROMPT SERVICE

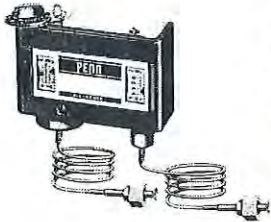
PENN PRESSURE CONTROLS

SERIES P72 — P80

P72 SERIES



P72AA-31
P72CA-26



P72LB-4

Cat. No.	Type	Switch Action	Range		Differential		Press. Conn.	Knob Adjust.	Max. Bellows Pressure	
			kPa	psig	kPa	psi			kPa	psig

TWO POLE LOW PRESSURE
"ALL RANGE" FOR R12, R22, R500, R502

14320	<u>P72AA-31</u>	DPST Close High Open Low	-70 to 700	20" to 100	Min.41 Max.345	Min.6 Max.50	36"Cap.with 1/4"Flare Nut	None	2241	325
14321	<u>P72AB-4</u>	DPST Close High Open Low	-70 to 700	20" to 100	Min.41 Max.345	Min.6 Max.50	36"Cap.with 1/4"Flare Nut	Cutout Adj. limited to 7 psi	2241	325

Adjusting knob supplied on differential (cutout setting) to limit adjustments to 35 kPa (5psi) above or below normal setting.

TWO POLE HIGH PRESSURE
"ALL RANGE" FOR R12, R22, R500, R502

14322	<u>P72CA-26</u>	DPST Open High Close Low	400 to 3100	58 to 450	Min.414 Max.1034	Min.60 Max.150	36"Cap.with 1/4"Flare Nut		3275	475
14323	<u>P72DA-7</u>	DPST Open High Close Low	400 to 3100	58 to 450	Lockout (Requires Manual Reset)		36"Cap with 1/4"Flare Nut		3275	475

Cat. No.	Type	Switch Action	Low Pressure				High Pressure				Press. Conn.	Knob Adjust.	Max. Bellows Pressure	
			Range		Differential		Range		Diff. (Non-Adjust.)				kPa	psig
			kPa	psig	kPa	psi	kPa	psig	kPa	psi				

TWO POLE DUAL PRESSURE
"ALL RANGE" FOR R12, R22, R500, R502

14324	<u>P72LA-12</u>	DPST	-70 to 700	20" to 100	Min.41 Max.345	Min.6 Max.50	1000 to 3000	145 to 435	under 2069 379.Over 2069:448	Under300:55 Over300:65	36"Cap.with 1/4"Flare Nut	None	2241L 3275H	325 Low 475 High
14325	<u>P72LB-4</u>	DPST	-70 to 700	20" to 100	Min.41 Max.345	Min.6 Max.50	1000 to 3000	145 to 435	Under2069 379.Over 2069:448	Under300:55 Over300:65	36"Cap.with 1/4"Flare Nut	LP Cutout Adj.limited to 7 psi	2241L 3275H	325 Low 475 High
14326	<u>P72MA-6</u>	DPST	-70 to 700	20" to 100	Min.41 Max.345	Min.6 Max.50	1000 to 3000	145 to 435	Lockout (Requires Manual Reset)		36"Cap.with 1/4"Flare Nut	None	2241L 3275H	325 Low 475 High
14327	<u>P72NA-4</u>	DPST	-70 to 700	20" to 100	Lockout (Requires Manual Reset)		1000 to 3000	145 to 435	Lockout (Requires Manual Reset)		36"Cap.with 1/4"Flare Nut	None	2241L 3275H	325 Low 475 High

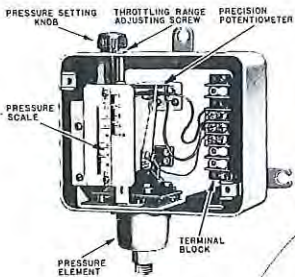
Adjusting knob supplied on differential, Type P72LB-1 (low side cutout setting) to limit adjust. 35kPa (5psi) above or below normal setting.

TRUCK REFRIGERATION — ADJ. DIFF. — WITH LOW LIMIT STOPS

14366	<u>P72LQ-3</u>	DPST	Low Setting Stop Set 40kPa (12"Hg) for R12				Set and sealed at 2034kPa (295psig) for R12				48"Cap.with 1/4"Flare Nut	None	2241L 3103H	325 Low 450 High
14367	<u>P72LQ-4</u>	DPST	Low Setting Stop Set 14kPa (2psig) for R502				Set and sealed at 2724kPa (395psig) for R502				48"Cap.with 1/4"Flare Nut	None	2241L 3103H	325 Low 450 High

P80 SERIES PROPORTIONAL PRESSURE CONTROLS

HEAVY DUTY DUST-TIGHT, SPLASH PROOF ENCLOSURE



TYPE P80ABA

Series P80 proportional pressure control positions a Series M80 motor actuator for control of air dampers, valves and similar devices. Adjustable throttling range on all models permits "on the job" selection of the correct throttling range for stable control. Controllers have a 1/4" male NPTF connector.

Cat. No.	Type	Range		Applic- ation	Potenti- ometer in Ohms	Throttling Range				Max. Element Pressure	
		kPa	psig			Min.		Max.		kPa	psig
						kPa	psi	kPa	psi	kPa	psig

ONE POTENTIOMETER

14349	<u>P80ABA-43</u>	-70 to 500	20" to 80	R717	135	48	7	145	21	2241	325
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FLOATING ACTION — SPDT CONTACTS

14350	<u>P80BAA-4</u>	-70 to 500	20" to 80	R717	—	1.4	0.2	5.5	0.8	2241	325
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Electrical Rating : 24V, AC only.

ELECTRICAL RATINGS: Refer Tech. Page 143-g.

Underlined Models have Metric Scales — Refer Tech. Page 143-f for English to Metric Cross Reference Chart.

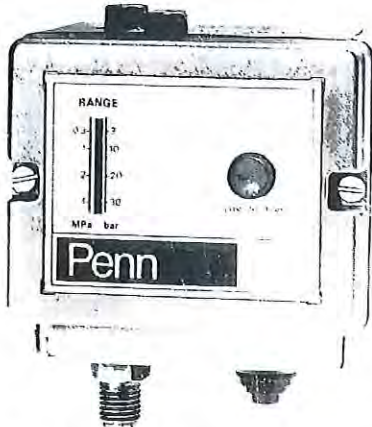
NOTE: CONVERSION FOR CONTROLS CALIBRATED IN BARS.
PRESSURE: 1 bar = 100 kPa. VACUUM: -0.1 bar = -10 kPa.
Refer Page 457 for full details — Also Charts on Pages 330 and 358-a.

THERE'S JUST NOT ENOUGH SPACE TO LIST ALL OF THE EQUIPMENT AND SERVICES WE CAN OFFER YOU
LET US KNOW ABOUT YOUR REQUIREMENTS

PENN P77/P78 Single and Dual Pressure Controls

NEW!

Including Metric Scales



P77 Single Pressure Control

AMBIENT TEMPERATURE LIMITS

-50°C to +55°C
(+70°C Max. duration 2 hours)

ELECTRICAL RATING
10 FLA @ 240V. 50 Hz.

ADJUSTMENT

On most models* the range scale indicates the high switching point. To obtain low switch point deduct differential value from high switching point.

* Exceptions:
P77BCA and LP-side of P78PGA where the range scale indicates the low switching point.

FEATURES

- All models have splash-proof enclosure - Case & Cover: Aluminium diecast
- SPDT contacts standard on all P77 single pressure controls.
- All dual pressure controls have two alarm circuits for separate low pressure and high pressure cut-out indication.
- Ease of wiring and adjustment • Stable switching points • Leakproof bellows

SINGLE PRESSURE CONTROLS

Cat. No.	Type	Contact Function	Range		Differential		Press. Conn.	Max. Bellows Pressure
			kPa	psig	kPa	psi		

LOW PRESSURE CONTROLS FOR NON-CORROSIVE REFRIGERANTS

14380	P77AAA-9302	Diag. 1	-30 to 200	9" to 29	30 to 150	4.4 to 22	Style 5	400kPa 58 psig
14381	P77AAA-9300	Diag. 1	-50 to 700	15" to 102	50 to 300	7.3 to 44	Style 5	1400kPa 203 psig
14382	P77BCA-9300	Diag. 1	-50 to 700	15" to 102	Manual Reset		Style 5	1400kPa 203 psig
14385	P77AAA-9301	Diag. 1	100 to 1000	14.5 to 145	100 to 300	14.5 to 44	Style 5	1500kPa 218 psig

L.P. CONTROLS FOR AMMONIA & NON-CORROSIVE REFRIGERANTS

14383	P77AAA-9700	Diag. 1	-50 to 700	15" to 102	50 to 300	7.3 to 44	Style 15	1400kPa 203 psig
14384	P77BCA-9700	Diag. 1	-50 to 700	15" to 102	Manual Reset		Style 15	1400kPa 203 psig

H.P. CONTROLS FOR NON-CORROSIVE REFRIGERANTS

14387	P77AAA-9350	Diag. 2	300 to 3000	44 to 435	300 to 1200	44 to 174	Style 5	3300kPa 479 psig
14388	P77BEA-9350	Diag. 3	300 to 3000	44 to 435	Manual Reset		Style 5	3300kPa 479 psig
14386	P77AAA-9351	Diag. 2	350 to 2100	51 to 305	180 to 550	26 to 80	Style 5	3000kPa 435 psig

H.P. CONTROLS FOR AMMONIA & NON-CORROSIVE REFRIGERANTS

14389	P77AAA-9750	Diag. 2	300 to 3000	44 to 435	300 to 1200	44 to 174	Style 15	3300kPa 479 psig
14390	P77BEA-9750	Diag. 3	300 to 3000	44 to 435	Manual Reset		Style 15	3300kPa 479 psig

DUAL PRESSURE CONTROLS

Cat. No.	Type	Control Function	LOW PRESSURE				HIGH PRESSURE				Press. Conn.	Max. Bellows Pressure	
			Range		Differential		Range		Differential			kPa	psig
			kPa	psig	kPa	psi	kPa	psig	kPa	psi			

DUAL PRESSURE CONTROLS FOR NON-CORROSIVE REFRIGERANTS

14395	P78LCA-9300	Diag. 4	-50 to 700	15" to 102	50 to 300	7.3 to 44	300 to 3000	44 to 435	300 (fixed)	44 (fixed)	Style 5	1400L 3300H	203 Low 479 High
14397	P78MCA-9300	Diag. 4	-50 to 700	15" to 102	50 to 300	7.3 to 44	300 to 3000	44 to 435	Manual Reset		Style 5	1400L 3300H	203 Low 479 High
14399	P78PGA-9300	Diag. 4	-50 to 700	15" to 102	Man. Reset		300 to 3000	44 to 435	Manual Reset		Style 5	1400L 3300H	203 Low 479 High

DUAL PRESSURE CONTROLS FOR AMMONIA AND NON-CORROSIVE REFRIGERANTS

14396	P78LCA-9700	Diag. 4	-50 to 700	15" to 102	50 to 300	7.3 to 44	300 to 3000	44 to 435	300 (fixed)	44 (fixed)	Style 15	1400L 3300H	203 Low 479 High
14398	P78MCA-9700	Diag. 4	-50 to 700	15" to 102	50 to 300	7.3 to 44	300 to 3000	44 to 435	Manual Reset		Style 15	1400L 3300H	203 Low 479 High

ACCESSORIES

14379	271-51	Mounting Bracket
14380	SPC-999	900mm Capillary with 2 Flare Nuts.

CONTACT FUNCTIONS: SINGLE CONTROLS & DUAL CONTROL

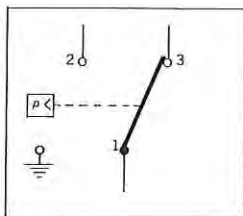


Diagram 1.
1-3 open on pressure decrease

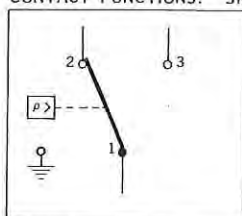


Diagram 2.
1-2 open on pressure increase

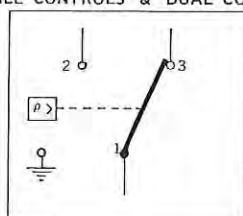


Diagram 3.
1-3 open on pressure increase

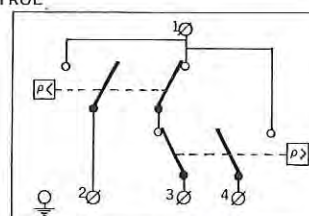


Diagram 4. LP 1-3 open on pressure decrease
1-2 close simultaneously
HP 1-3 open on pressure increase
1-4 close simultaneously.

PRESSURE CONNECTORS

Style 5.
Male Connector
7/16 - 20 UNF for
1/4" / 6 mm flare nut

Style 15.
Female Connector
1/4" - 18 NPT

SAGINOMIYA PRESSURE CONTROLS

TYPES SNS — HNS — DNS



TYPE SNS



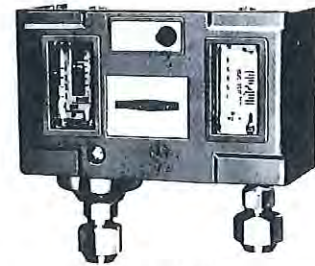
TYPE HNS

TYPE SNS — Single Function Pressure Control for Universal Application.

TYPE HNS — Single Function Pressure Control for High Pressure Protection.

TYPE DNS — Dual Pressure Control for wide range Low and High Side Pressure Protection.

- For use with Fluorinated Refrigerants.
- Single Pole Double Throw mechanisms — double snap-action = reliable switching.
- Direct Flare Connections or Capillary types available.
- Standard 10 Amp Rating. 20 Amp Rated Models (SNS/DNS) available on application.



TYPE DNS

CAT. NO.	TYPE	SWITCH ACTION	RANGE		DIFFERENTIAL		CONNECTIONS
			kPa	psig	kPa	psi	

LOW AND HIGH PRESSURE — AUTO RESET — ADJUSTABLE DIFFERENTIAL

143101	SNS-C101X	SPDT	-60 to 100	18" to 14	15 to 50	2 to 7	1/4"SAE Male Flare
143102	SNS-C101XQ						1m Capillary with 1/4"SAE Flare Nut
143103	SNS-C102X	SPDT	-20 to 200	6" to 29	25 to 150	3.5 to 22	1/4"SAE Male Flare
143104	SNS-C102XQ						1m Capillary with 1/4"SAE Flare Nut
143105	SNS-C103X	SPDT	-60 to 300	18" to 44	35 to 200	5 to 29	1/4"SAE Male Flare
143106	SNS-C103XQ						1m Capillary with 1/4"SAE Flare Nut
143107	SNS-C106X	SPDT	-60 to 600	18" to 87	60 to 400	9 to 58	1/4"SAE Male Flare
143108	SNS-C106XQ						1m Capillary with 1/4"SAE Flare Nut
143113	SNS-C130X	SPDT	500 to 3000	73 to 435	300 to 1000	44 to 145	1/4"SAE Male Flare
143114	SNS-C130XQ						1m Capillary with 1/4"SAE Flare Nut

LOW AND HIGH PRESSURE — MANUAL RESET

143115	SNS-C102XM2	SPDT	-20 to 200	6" to 29	Manual Reset	1/4"SAE Male Flare	1m Capillary with 1/4"SAE Flare Nut
143116	SNS-C102XM2Q						1/4"SAE Male Flare
143117	SNS-C106XM2	SPDT	-60 to 600	18" to 87	Automatic Operation	1/4"SAE Male Flare	1m Capillary with 1/4"SAE Flare Nut
143118	SNS-C106XM2Q						1/4"SAE Male Flare
143119	SNS-C130XM2	SPDT	500 to 3000	73 to 435	on Pressure Decrease	1/4"SAE Male Flare	1m Capillary with 1/4"SAE Flare Nut
143120	SNS-C130XM2Q						1m Capillary with 1/4"SAE Flare Nut

HIGH PRESSURE — AUTO AND MANUAL RESET

143121	HNS-C130X	SPDT	800 to 3000	116 to 435	Fixed Approx. 4000 (58)	1/4"SAE Male Flare	1m Capillary with 1/4"SAE Flare Nut
143122	HNS-C130XQ						1/4"SAE Male Flare
143123	HNS-C130XM1	SPDT	800 to 3000	116 to 435	Manual Reset, Auto. Operation on Press. Increase	1/4"SAE Male Flare	1m Capillary with 1/4"SAE Flare Nut
143124	HNS-C130XM1Q						1m Capillary with 1/4"SAE Flare Nut

CAT. NO.	TYPE	LOW SIDE				HIGH SIDE				CONNECTIONS
		RANGE		DIFFERENTIAL		RANGE		DIFFERENTIAL		
		kPa	psig	kPa	psi	kPa	psig	kPa	psi	

DUAL PRESSURE — AUTO RESET

143128	DNS-D306X	-60 to 600	18" to 87	55 to 400	8 to 58	800 to 3000	116 to 435	400	58	Fixed	Fixed	1/4"SAE Male Flare
143129	DNS-D306XQ									1m Cap. with 1/4"SAE Flare Nut		
143130	DNS-D606X									Approx.	Approx.	1/4"SAE Male Flare
143131	DNS-D606XQ									1m Cap. with 1/4"SAE Flare Nut		
143132	DNS-D706X									Fixed	Fixed	1/4"SAE Male Flare
143133	DNS-D706XQ									500 App.	73 App.	1m Cap. with 1/4"SAE Flare Nut

DUAL PRESSURE — MANUAL RESET — HIGH SIDE

143136	DNS-D306XM	-60 to 600	18" to 87	55 to 400	8 to 58	800 to 3000	116 to 435	Manual Reset	Auto. Operation on Pressure Rise	1/4"SAE Male Flare
143137	DNS-D306XMQ									1m Cap. with 1/4"SAE Flare Nut
143138	DNS-D606XM									1/4"SAE Male Flare
143139	DNS-D606XMQ									1m Cap. with 1/4"SAE Flare Nut

DUAL PRESSURE — MANUAL RESET — HIGH AND LOW SIDE

143140	DNS-D606XMM	-60 to 600	18" to 87	Manual Reset	Auto. Operation on Pressure Decrease	800 to 3000	116 to 435	Manual Reset	Auto. Operation on Pressure Rise	1/4"SAE Male Flare
143141	DNS-D606XMMQ									1m Cap. with 1/4"SAE Flare Nut
143142	DNS-D706XMM									1/4"SAE Male Flare
143143	DNS-D706XMMQ									1m Cap. with 1/4"SAE Flare Nut

DUAL PRESSURE — MANUAL RESET — HIGH SIDE — WITH ALARM LIGHT

143144	DNS-D306XML	-60 to 600	18" to 87	55 to 400	8 to 58	800 to 3000	116 to 435	Man.Reset.Auto. Op.on Press.Rise	1/4"SAE Male Flare
143145	DNS-D306XMLQ								1m Cap. with 1/4"SAE Flare Nut

REFER NEXT PAGE FOR ELECTRICAL DETAILS

SAGINOMIYA PRESSURE CONTROLS

TYPES SNS — HNS — DNS

ELECTRICAL DETAILS

1

SINGLE LOW AND HIGH PRESSURE			
SNS - C1	Low & High Pressure Adjustable Differential		
HNS - C1	High Pressure Auto Reset		
SNS - C1 ~ M2	Low & High Pressure Manual Reset		
HNS - C1 ~ M1	High Pressure Manual Reset		
SNS	<ul style="list-style-type: none"> 1. Common Terminal 2. Close on Pressure Increase 3. Close on Pressure Decrease 		HNS
			<ul style="list-style-type: none"> 1. Common Terminal 2. Open on Pressure Increase 3. Open on Pressure Decrease
<p>NOTE : In the above diagrams, each arrow marking indicates a direction of pressure rise. "M1" signifies automatic operation on pressure increase and manual reset, and "M2" automatic operation on pressure decrease and manual reset.</p>			

DUAL PRESSURE			
DNS - D3	Dual Pressure Auto Reset		
DNS - D6	Differential on High Side Fixed		DNS - D6 MM
DNS - D7			DNS - D7 MM
DNS - D3 M	Dual Pressure Manual Reset on High Side		DNS - D3 ML
DNS - D6 M			
<p>NOTE : In the Dual Pressure Control diagrams, each arrow marking indicates a direction of switch action. "L" signifies Low Pressure Side, "H" High Pressure Side and "M" Manual Reset. (The arrow "↓ M" means that if pressure rises, reset may not be achieved unless it is made manually).</p>			

ELECTRICAL RATINGS (Main Operating Contacts)		
MOTOR RATING	SINGLE LOW & HIGH PRESSURE	DUAL PRESSURE
125/250 VAC, 50/60 Hz	SNS - C1 & HNS - C1	DNS - D3, D6, D7
Running Current	10A	10A
Locked Rotor Amps	60A	60A
Non-Inductive Amps	10A	10A

REFER PREVIOUS PAGE FOR SELECTION AND ORDERING

PENN TEMPERATURE CONTROLS

SERIES A11 — A19



A11B-6

CAT. NO.	TYPE	Switch Action Application	Range		Differential		Bulb and Capillary	Range Adjust.
			°C	°F	°C	°F		

A11 SERIES LOW TEMPERATURE

TEMPERATURE — MAKE UP AIR HEATER COIL

14438	<u>A11A-6</u>	SPST Open Low	2 to 7	35 to 45	Manual Reset		20' of 1/8" O.D. Tubing	Screwdriver Slot
14461	<u>A11B-6</u>	SPST Open Low	2 to 7	35 to 45	4.4 (fixed)	8 (fixed)	20' of 1/8" O.D. Tubing	Screwdriver Slot

Maximum bulb temperature of A11A-6 and A11B-6 is 121°C (250°F)

A19 SERIES

REMOTE BULB

WIDE RANGE — ADJUSTABLE DIFFERENTIAL

1444	<u>A19ABC-60</u>	SPDT	10 to 55	50 to 130	1.9 to 8	3 1/2 to 14	3/8" x 5" 8' Cap.	Knob
14410	<u>A19ABC-41</u>	SPDT	-35 to 40	-31 to 104	1.7 to 6.7	3 to 12	3/8" x 4" 8' Cap.	Convertible
14457	<u>A19ABC-67</u>	SPDT	-35 to 40	-31 to 104	1.7 to 6.7	3 to 12	3/8" x 4" 20' Cap.	Convertible
14456	<u>A19ABC-57</u>	SPDT	-35 to 40	-31 to 104	1.7 to 6.7	3 to 12	3/8" x 4" 10' Cap.	Screwdriver Slot



A19ABC-41

FIXED DIFFERENTIAL

14462	<u>A19AAA-43</u>	SPST Open Low	0 to 43	32 to 110	1.9	3 1/2	12' Averaging 6' Cap.	Screwdriver Slot
14463	<u>A19AAF-12</u>	SPDT	-4 to 107	25 to 225	1.9	3 1/2	3/8" x 3" 10' Cap.	Screwdriver Slot

CASE COMPENSATED — FIXED DIFFERENTIAL

14428	<u>A19AAC-51</u>	SPDT	-15 to 25	5 to 77	2.8	5	3/8" x 4" 6' Cap.	Screwdriver Slot
14427	<u>A19AAD-21</u>	SPST Open Low	-35 to 10	-31 to 50	1.4	2 1/2	3/8" x 4" 7' Cap.	Screwdriver Slot



A19AAB-42

CLOSE DIFFERENTIAL

14450	<u>A19AAD-5 (1)</u>	SPST Open Low	-1 to 10	30 to 50 Milk Cooler	1.1	2	3/8" x 2-5/8" Tin Plated 6' Cap.	Screwdriver Slot
14458	<u>A19AAF-45</u>	SPDT	-35 to 40	-31 to 104	1.4	2 1/2	3/8" x 4" 6' Cap.	Screwdriver Slot
14469	<u>A19AAF-44</u>	SPDT	5 to 30	41 to 86	0.8	1 1/2	3/8" x 5-3/4" 6' Cap.	Screwdriver Slot

MANUAL RESET

14459	<u>A19ACA-28</u>	SPST Open Low	-35 to 40	-31 to 104	Manual Reset		3/8" x 4" 6' Cap.	Screwdriver Slot
14426	<u>A19ACA-31</u>	SPST Open Low	-35 to 40	-31 to 104	Manual Reset		3/8" x 4" 10' Cap.	Screwdriver Slot
14471	<u>A19ADB-26</u>	SPST Open High	40 to 120	104 to 248	Manual Reset		3/8" x 3 1/2" 6' Cap.	Knob



A19AAC-13

Maximum bulb temperature: A19ABC-60, 77°C (170°F); A19AAF-12, 135°C (275°F); A19AAD-5, 88°C (190°F); A19ADB-26, 143°C (290°F); All other A19's, 60°C (140°F).

(1) Case Compensated.

HIGH RANGE TEMPERATURE

14443	<u>A19AAB-32</u>	SPST Open High Remote Bulb Thermostat	0 to 43	32 to 110	1.9	3 1/2	3/8" x 4-3/4" copper 6' Cap.**	Screwdriver Slot Ext. Scale
14445	<u>A19AAB-37</u>	SPST Open High Oven Thermostat	40 to 150	104 to 302	3.9	7	3/16" x 10-1/8" copper 6' Cap.	Knob External Scale
14446	<u>A19AAB-42</u>	SPST Open High Oven Thermostat	100 to 290	212 to 554	5.6	10	3/16" x 5-5/8" copper 6' Cap.	Convertible
14444	<u>A19AAC-44*</u>	SPDT Dual Fuel Changeover + bulb shield	-35 to 10 + bulb shield	-31 to 50 + bulb shield	2.8	5	3/8" x 4" copper 6' Cap.**	Screwdriver Slot Int. Scale
14441	<u>A19AAC-13</u>	SPDT	40 to 120	104 to 248	2.8	5	3/8" x 3-7/8" copper 6' Cap.**	Screwdriver Slot Ext. Scale

* Locking cover and bulb shield assembly are standard on A19AAC-44

** With 3" bulb support.

SPECIAL PURPOSE — RUBBER COATED BULB AND CAPILLARY

14442	<u>A19AAF-38</u>	SPDT	5 to 32	41 to 90	0.8	1 1/2	3/8" x 5-3/4" Rubb. Coated 6' Cap.	Screwdriver Slot
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Maximum bulb temperature is 60°C (140°F)



A19AAF-38

ELECTRICAL RATINGS: Refer Tech. Page 143-g.

Underlined Models have Metric Scales — Refer Tech. Page 144-f for English to Metric Cross Reference Chart.

UNIVERSAL REPLACEMENT with removable knob and tension clip for conversion to knob, screwdriver or concealed adjustment. Remote bulb models complete with 5/8" mounting clip.

PENN CONTINUED NEXT PAGE

PENN TEMPERATURE CONTROLS SERIES A19

A19 SERIES (Continued)

REMOTE BULB

CAT. NO.	Type	Switch Action Application	Range		Differential		Bulb & Capillary	Range Adjuster
			°C	°F	°C	°F		

THERMOSTATS FOR CROP DRYING

14447	<u>A19AAE-16</u>	SPST Open High	25 to 80	77 to 176	0.8 fixed	1½ fixed	1-1/8" x 1-1/4" copper coiled 10' Cap.	Knob Ext. Scale
14464	<u>A19ABB-7</u>	SPST Open High	10 to 94	50 to 201	3 to 13 Adj.	6 to 24 Adj.	.29" x 2-1/2" 10' Cap.	Knob Ext. Scale

Max. Bulb Temperature : A19AAE-16, 93°C (200°F); A19ABB-7, 116°C (240°F)

HOT WATER TEMPERATURE

SPDT — WELL IMMERSION

Universal replacement control for open high, open low or SPDT applications. Liquid filled element provides rapid response to temperature change. Control furnished with well assembly for ½" tappings. Adjustable differential. All controls supplied with well assembly. Not available less well assembly.

14493	<u>A19ABC-26</u>	Open High Open Low (Operating and Circulator) SPDT	38 to 121	100 to 250	3 to 13	6 to 24	Well Conn. 1/2"	Convertible
51152	<u>A19ABC-27</u>	Remote Mtg. (Operating and Circulator) SPDT	38 to 121	100 to 250	3 to 13	6 to 24	1/2" 6' Cap.	Convertible
51153	<u>A19ADB-27</u>	Open High with Lockout - Reset. Open on Rise	40 to 120	104 to 248	Manual Reset (Locks out High)		1/2"	Knob

Maximum Bulb Temperature : 143°C (290°F)

RAINPROOF ENCLOSURE

INDUSTRIAL THERMOSTAT

14436	<u>A19ANC-13</u>	SPDT	-15 to 65	5 to 149	3 (fixed)	6 (fixed)	.29" x 2-1/2" 10' Cap.	Screwdriver Slot
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Maximum Bulb Temperature : 88°C (190°F)

EXPLOSION PROOF

14460	<u>A19AUC-17</u>	SPDT	-35 to 10	-31 to 50	2.8	5	3/8" x 4-1/16" 6' Cap.	Knob
14455	<u>A19AUC-2</u>	SPDT	-7 to 27	20 to 80	1.9	3½	3/8" x 4-31/32" 6' Cap.	Knob
14541	<u>A19BUC-3</u>	SPDT	-35 to 10	-31 to 50	2.8	5	Coiled	Knob
14542	<u>A19BUC-4</u>	SPDT	-7 to 27	20 to 80	1.9	3½	Coiled	Knob

Maximum Bulb Temperature : 60°C (140°F)

COILED BULB THERMOSTATS

VENTILATING — HEATING

14453	<u>A19BAB-7</u>	SPST, Open High 'No Heat' position	0 to 35	32 to 95	1.9 fixed	3½ fixed	1-3/8" x 2-1/4" Coiled	Knob
14454	<u>A19BAC-3</u>	SPDT	0 to 43	32 to 110	1.9 fixed	3½ fixed	1-3/8" x 2-1/4" Coiled	Convertible
14539	<u>A19BAF-3</u>	SPDT	0 to 43	32 to 110	1.1 fixed	2 fixed	1-3/8" x 2-1/4" Coiled	Knob

COOLING

14429	<u>A19BBC-4</u>	SPDT	-35 to 40	-31 to 104	1.7 to 7	3 to 12	1-3/8" x 2-1/4" Coiled	Convertible
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Maximum Bulb Temperature : 60°C (140°F)

FLANGE MOUNTED DUCT THERMOSTATS

These duct thermostats are used on roof top units, make-up heaters, duct heaters and air handling systems of all types. They have SPDT snap-acting contact units and are unaffected by barometric pressure or cross ambient temperatures. Flat flange mounting with special coil element permits positioning the sensing bulb in appropriate position in the air stream.

Number of Stages

14543	<u>A19EAF-7</u>	SPDT	16 to 54	60 to 130	1.1	2	1
14544	<u>A19EAF-6</u>	SPDT	0 to 43	32 to 110	1.1	2	1

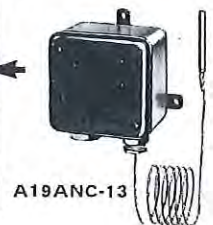
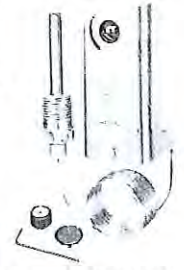
Maximum Bulb Temperature : A19EAF-7, 93°C (200°F); A19EAF-6, 60°C (140°F)

ELECTRICAL RATINGS: Refer Tech. Page 143-g.

PENN CONTINUED NEXT PAGE

Underlined Models have Metric Scales — Refer Tech. Page 144-f for English to Metric Cross Reference Chart.

➔ UNIVERSAL REPLACEMENT with removable knob and tension clip for conversion to knob, screwdriver or concealed adjustment.



1

PENN TEMPERATURE CONTROLS

SERIES A19 — A25 — A28

A19 SERIES (Continued)



A19EBA
A19EBB
A19EBC

CAT. NO.	Type	Application	Switch Action	Range		Differential		Adj. Stop		Bulb Lgth.	Max. Bulb Temp.
				°C	°F	Min.	Max.	Min.	Max.		

FAN OR CUT-OUT CONTROL

LIQUID EXPANSION

50864	<u>A19EBA-7</u>	Furnace Fan Control	Close High	10 to 120	50 to 248	5°C (9°F)	20°C (36°F)	63°C (145°F)	121°C (250°F)	15.2 cm (6")	143°C (290°F)
50863	<u>A19EBB-1</u>	Warm Air	Open High	38 to 177	100 to 350	5°C (9°F)	20°C (36°F)	116°C (240°F)	177°C (350°F)		190°C (375°F)
50865	<u>A19EBC-1</u>	Counter-Flow Warm Air Furn.	SPDT	38 to 177	100 to 350	5°C (9°F)	20°C (36°F)	116°C (240°F)	177°C (350°F)		190°C (375°F)
50866	<u>A19EDB-3</u>	Warm Air Limit which locks out	Open High	40 to 180	104 to 356	Manual Reset		116°C (240°F)	177°C (350°F)		190°C (375°F)



A19ZBA-3

CAT. NO.	Type	Switch Action	Range		Differential		Bulb & Capillary	Range Adjust.	Max. Bulb Temp.	
			°C	°F	°C	°F			°C	°F

WATER CHILLER

WITH LOCKED CUT-OUT — ADJUSTABLE CUT-IN

14549	<u>A19ZBA-3</u>	SPST Close High Open Low	0 to 25	32 to 77	4 to 22 Adjust.	7 to 40 Adjust.	3/8" x 3-7/16" 6' Cap.	Knob	60	140
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Includes Part No. FTG13A-600R packing nut as standard.

DEFROST DURATION AND FAN DELAY

14451	<u>A19ZBC-2</u>	SPDT	7 to 29	45 to 85	—	—	19/64" x 3-1/8" 6' Cap.	Knob	60	140
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Fan delay temperature is factory set at -4°C (25°F)

A25 SERIES WARM AIR LIMIT CONTROL — MANUAL RESET

Normally located in return air duct system and wired to shut down air conditioning or ventilating fans when temperature of air becomes excessive, as from a fire. The reset is a "trip-free" type device and will not permit restart until the reset lever is released. Rod and tube type sensing element assures positive control action. Duct mounting flange is included.



A25AN-9
A25CN-4

CAT. NO.	Type	Switch Action	Range		Range Adjuster	Dial Stop	Max. Element Temp.	
			°C	°F			°C	°F
14448	<u>A25AN-9</u>	SPST Open High	-4 to 101	25 to 214	Knob	High Limit Set at 52°C (125°F)	149	300
14449	<u>A25CN-4</u>	SPDT	-4 to 101	25 to 214	Knob	High Limit Set at 52°C (125°F)	149	300

A28 SERIES 2 - STAGE TEMPERATURE CONTROLS

CAT. NO.	Type	Switch Action	Range		Differential		Bulb & Capillary	Range Adjust.	Max. Bulb Temp.	
			°C	°F	°C	°F			°C	°F

COILED BULB — FIXED DIFFERENTIAL

14440	<u>A28AA-5</u>	2-SPDT	0 to 43	32 to 110	1.9 Ea. Stage 1.7 fixed between stages	3 1/2 Ea. Stage 3 fixed between stages	1-3/8" x 2-1/4" Coiled	Convertible	60	140
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AMBIENT COMPENSATED — FIXED DIFFERENTIAL

14434	<u>A28AA-8</u>	2-SPDT	-34 to 10	-30 to 50	2.8 Ea. Stage 1.7 fixed between stages	5 Ea. Stage 3 fixed between stages	3/8" x 4-1/16" 6' Cap.	Knob	60	140
14435	<u>A28AA-67</u>	2-SPDT	-5 to 28	23 to 82	1.9 Ea. Stage 1.7 fixed between stages	3 1/2 Ea. Stage 3 fixed between stages	3/8" x 4-31/32" 6' Cap.	Knob	60	140

WIDE RANGE — ADJUSTABLE INTERSTAGE DIFFERENTIAL

14466	<u>A28AA-59</u>	2-SPDT	0 to 43	32 to 110	2 Ea. Stage 1 to 4 Adj. between stages	3 1/2 Ea. Stage 2 to 7 Adj. between stages	12' Averag. 6' Cap.	Screwdriver Slot	60	140
14431	<u>A28AA-65</u>	2-SPDT	-35 to 40	-31 to 104	2.8 Ea. Stage 1 to 4 Adj. between stages	5 Ea. Stage 2 to 7 Adj. between stages	3/8" x 4-1/16" 8' Cap.	Convertible	60	140
14467	<u>A28AA-70</u>	2-SPDT	5 to 32	41 to 90	1.7 Ea. Stage 1 to 4 Adj. between stages	3 Ea. Stage 2 to 7 Adj. between stages	3/8" x 6" 6' Cap.	Knob	60	140
14468	<u>A28AA-71</u>	2-SPDT	15 to 60	59 to 140	2.8 Ea. Stage 1 to 4 Adj. between stages	5 Ea. Stage 2 to 7 Adj. between stages	3/8" x 4" 6' Cap.	Knob	110	230
14433	<u>A28AJ-31</u>	2-SPDT	-7 to 27	20 to 80	1 Ea. Stage 1 to 4 Adj. between stages	2 Ea. Stage 2 to 7 Adj. between stages	3/16" x 22" 6' Cap.	Knob	60	140

* Packing nut assembly available for direct immersion applications (Part No. FTG13A-600R).

PENN CONTINUED NEXT PAGE

ELECTRICAL RATINGS: Refer Tech. Page 143-g.

Underlined Models have Metric Scales — Refer Tech. Page 144-f for English to Metric Cross Reference Chart.

➔ UNIVERSAL REPLACEMENT with removable knob and tension clip for conversion to knob, screwdriver or concealed adjustment. Remote bulb models complete with 5/8" mounting clip.

PENN TEMPERATURE CONTROLS SERIES A28 — A36 — A70

A28 SERIES 2 - STAGE TEMPERATURE CONTROLS (Continued)

DUCT THERMOSTATS

CAT. NO.	Type	No. Stages	Switch Action	Range		Differential Fixed				Max. Bulb Temp.
						Each Stage		Between Stage		
				°C	°F	°C	°F	°C	°F	
14473	A28AK-1	2	2 - SPDT Switches	-1 to 43	30 to 110	1.1	2	1.7	3	60°C (140°F)
14474	A28AK-2	2	2 - SPDT Switches	16 to 54	60 to 130	1.1	2	1.7	3	93°C (200°F)



TYPE A28AK

A36 SERIES 4 - STAGE REMOTE BULB THERMOSTATS

This 4-stage thermostat controls a multiple refrigeration compressor or unloading type compressor in an air conditioning or chiller installation. Case compensation provides uniform performance at ambient temps. from -18° to +60°C (0° to 140°F). Screwdriver slot adjuster with calibrated dial enables movement of entire staging band within the range. If enclosure required specify Part No. CSE57A-600.

CAT. NO.	Type	Switch Action	Range		Differential		Bulb & Capillary	Range Adjust.	Max. Bulb Temp.	
			°C	°F	°C	°F			°C	°F
14516	A36AHA-50	4 - SPDT Switches	13 to 35	55 to 95	2 Ea. Stage 1½ between stages (1)	3½ Ea. Stage 2.7 between stages (1)	3/8" x 5¼" 18" Cap. w/12" Nylon Armour	Screwdriver Slot Calibrated Dial	49	120
14517	A36AHA-52	4 - SPDT Switches	13 to 35	55 to 95	2 Ea. Stage 1½ between stages (1)	3½ Ea. Stage 2.7 between stages (1)	3/8" x 5¼" 6' Cap. w/12" Nylon Armour	Screwdriver Slot Calibrated Dial	49	120
14518	A36AHA-58	4 - SPDT Switches	-18 to 21	0 to 70	3 Ea. Stage 2 between stages (3)	5.4 Ea. Stage 3½ between stages (3)	3/8" x 4" 15' Braid Armour Cap.	Screwdriver Slot Calibrated Dial	49	120
14519	A36AHB-33	4 - SPDT Switches	-18 to 21	0 to 70	2 Ea. Stage 1½ between stages (2)	3½ Ea. Stage 2.7 between stages (2)	3/8" x 4" 15' Braid Armour Cap.	Screwdriver Slot Calibrated Dial	49	120

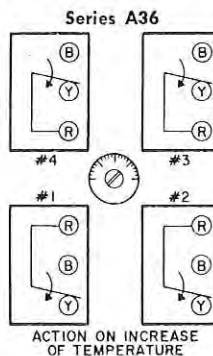


A36AHA-52

- (1) Calibrated at mid-switching point . . . computer room or comfort control.
- (2) Calibrated at low switching point . . . special close control chiller applications.
- (3) Calibrated at low switching point . . . standard chiller applications.



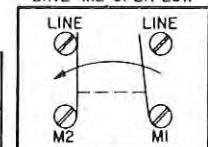
CSE57A-600



A70 SERIES 4 - WIRE 2 CIRCUIT TEMPERATURE

CAT. NO.	Type	Switch Action†	Range		Differential		Bulb & Capillary	Range Adjust.	Max. Bulb Temp.	
			°C	°F	°C	°F			°C	°F
14476	A70GA-12	Open Low	-10 to 15	15 to 55	2.8	5	20' of 1/8" OD Tubing	Screwdriver Slot	204	400
14437	A70GA-2	Open Low	0 to 25	35 to 80	1.7 to 17 Set at 7	3 to 30 Set at 12	3/8" x 3" 6' Cap.	Screwdriver Slot	121	250
14477	A70HA-1*	Open Low	-10 to 15	15 to 55	Manual Reset		20' of 1/8" OD Tubing	Screwdriver Slot	204	400
14478	A70HA-8	Open Low	0 to 25	35 to 80	Manual Reset		3/8" x 3" 6' Cap.	Screwdriver Slot	121	250
14479	A70KA-1	Open High	38 to 77	100 to 170	Manual Reset		3/8" x 10" 6' Cap.	Screwdriver Slot	116	240

Series A70G-A70H LINE-M2 OPEN LOW



A70GA-12

* Low limit stop set and sealed at 1.7°C (35°F). Control responds only to the lowest temperature along any one foot of the entire 20 foot element or bellows cup.

† Main Contacts Line - M2.

ELECTRICAL RATINGS: Refer Tech. Page 143-g.

Underlined Models have Metric Scales — Refer Tech. Page 144-f for English to Metric Cross Reference Chart.

PENN CONTINUED NEXT PAGE

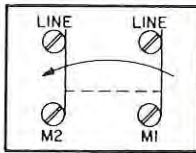
PENN TEMPERATURE CONTROLS

SERIES A70 — A72

A70 & A72 SERIES HEAVY DUTY TEMPERATURE

CAT. NO.	Type	Switch Action	Range		Differential		Bulb & Capillary	Range Adjust.	Max. Bulb Temp.	
			°C	°F	°C	°F			°C	°F

Series A72A



ACTION ON INCREASE OF TEMPERATURE



A72

ADJUSTABLE DIFFERENTIAL

14480	A70AQ-1†	SPST Close High Open Low	-23 to 18	-10 to 65	2 to 22	4 to 40	11/16" x 6-3/4" Cross Ambient 6' Cap.	Knob on Range Screw**	54	130
14411	A72AA-3B	DPST Close High Open Low	-35 to 0	-30 to 32	2 to 25	4 to 45	3/8" x 3" 6' Cap.	Screwdriver Slot	93	200
14412	A72AA-39	DPST Close High Open Low	-10 to 15	15 to 55	1.7 to 17	3 to 30	3/8" x 3" 6' Cap.	Screwdriver Slot	93	200
14413	A72AA-3	DPST Close High Open Low	10 to 32	50 to 90	1.7 to 17	3 to 30	11/16" x 6-3/4" Cross Ambient 6' Cap.	Screwdriver Slot	57	135
14416	A72AA-43	DPST Close High Open Low	-9 to 13	15 to 55	1.7 to 17	3 to 30	7/8" x 4" Finned 6' Cap.	Screwdriver Slot	93	200
14417	A72AA-7	DPST Close High Open Low	10 to 32	50 to 90	1.7 to 17	3 to 30	1-1/2" x 5" Finned Cross Ambient 6' Cap.	Screwdriver Slot	57	135
14418	A72AA-40	DPST Close High Open Low	-25 to 20	-10 to 65	2 to 22	4 to 40	11/16" x 6-3/4" Cross Ambient 6' Cap.	Screwdriver Slot	54	130
14484	A72AP-1†	DPST Close High Open Low	-23 to 18	-10 to 65	2 to 22	4 to 40	11/16" x 6-3/4" Cross Ambient 6' Cap.	Screwdriver Slot	54	130

* Packing nut assembly for direct immersion applications available on request.

† Equipped with manual "PUSH TO START" button. Manual start feature is especially desirable on milk cooler jobs ... permits manual start of compressor when bulb temp. is between closing and opening setting of switch.

** Adjusting knob supplied on range screw to limit adjustment to 5°C(9°F) [raises or lowers both cut-in and cut-out points ... differential remains constant.]

COILED BULB THERMOSTATS

COOLING

14414	A72AA-4	DPST Close High Open Low	-9 to 13	15 to 55	1.7 to 17	3 to 30	Coiled - Copper (No Cap.)	Screwdriver Slot	93	200
14415	A72AA-41	DPST Close High Open Low	-35 to 0	-30 to 32	2 to 25	4 to 45	Coiled - Copper (No Cap.)	Screwdriver Slot	93	200

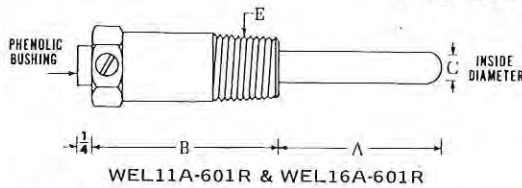


A72AA

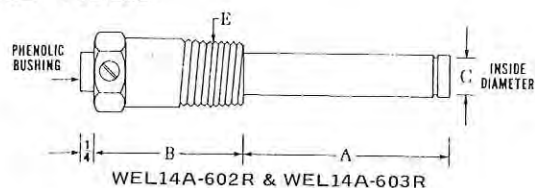
ELECTRICAL RATINGS: Refer Tech. Page 143-g.

Underlined Models have Metric Scales — Refer Tech. Page 144-f for English to Metric Cross Reference Chart.

WEL SERIES BULB WELLS



WEL11A-601R & WEL16A-601R



WEL14A-602R & WEL14A-603R

CAT. NO.	BULB WELL P/N	SUITS CONTROL				
14528	WEL16A-601R	A19AAD-5				
14532	WEL11A-601R	A19ANC-13				
14530	WEL14A-602R	A19AAB-32	A19AAC-13	A19AAC-51	A19AAD-21	A19AAF-12
		A19AAF-45	A19ABC-41	A19ABC-57	A19ABC-67	A19ACA-28
		A19ACA-31	A19ADB-26	A19AUC-17	A19ZBA-3	A28AA-8
		A28AA-65	A28AA-71	A36AHA-58	A36AHB-33	
14531	WEL14A-603R	A19AAF-44	A19AUC-2	A19ABC-60	A28AA-67	A36AHA-50
		A36AHA-52				

SPECIFICATIONS

Part No.	Dimensions			Pipe Thread Outside E	Material		Max. Temp.	Max. Press.	Type Solder Joint	Plating	See Note
	A	B	C		Connector	Tube					
WEL11A-601R	2-3/8"	2-5/16"	.299"	1/2"	Brass	Copper	121°C (250°F)	2069 kPa (300 psig)	Soft	—	1
WEL14A-602R	4-15/16"	1-13/16"	.430"	1/2"	Brass	Copper	121°C (250°F)	2069 kPa (300 psig)	Silver	Brite-Dip	2
WEL14A-603R	5-13/16"	1-13/16"	.430"	1/2"	Brass	Copper	121°C (250°F)	2069 kPa (300 psig)	Silver	Brite-Dip	2
WEL16A-601R	2-13/16"	1-13/16"	.375"	1/2"	Brass	Copper	121°C (250°F)	2069 kPa (300 psig)	Soft	—	2

NOTE: 1. With phenolic bushing; .093" slot.
2. With phenolic bushing; .125" slot.

SAGINOMIYA TEMPERATURE CONTROLS

TYPES TNS & CNS



Type TNS

GENERAL DESCRIPTION

- Type TNS provided with a differential adjustable mechanism.
- Type CNS provided with a fixed differential. Also manual reset models available.
- Double snap-action contact mechanism ensures reliable switching.
- Mounting bracket supplied as standard.
- With SPDT contact mechanism.

CAT. NO.	Type	Range		Differential		Switch Action	Capillary Length	Bulb Dimensions
		°C	°F	°C	°F			

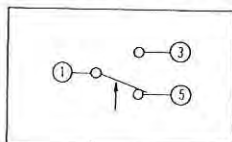
AUTO RESET – ADJUSTABLE DIFFERENTIAL

143151	TNSC100X	-25 to 0	-13 to 32	3 to 15	5.4 to 27	SPDT	1.5 m (5 ft.)	9.5 Dia. x 80 mm (3/8" Dia. x 3-5/32")
143152	TNSC114X	-15 to 15	5 to 59	3 to 15	5.4 to 27			
143153	TNSC134X	0 to 35	32 to 95	3 to 15	5.4 to 27			
143154	TNSC1010XC	-45 to 10	-49 to 50	4 to 20	7.2 to 36			12.7 Dia. x 100 mm (1/2" Dia. x 3-15/16")
143155	TNSC1034XC	-20 to 35	-4 to 95	4 to 20	7.2 to 36			
143156	TNSC1050X	25 to 55	77 to 131	4 to 20	7.2 to 36			
143157	TNSC1070X	45 to 75	113 to 167	4 to 20	7.2 to 36			
143158	TNSC1100X	65 to 105	149 to 221	5 to 20	9 to 36			
143159	TNSC1150X	95 to 150	203 to 302	5 to 20	9 to 36			

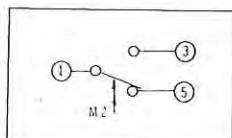
CLOSE DIFFERENTIAL – MANUAL RESET (Manual Reset operates on excessive low temperature)

143160	CNSC115XM2	-35 to -15	-31 to 5	Manual Reset	SPDT	1.5 m (5 ft.)	9.5 Dia. x 80mm (3/8" Dia. x 3-5/32")
143161	CNSC100XM2	-25 to 0	-13 to 32				
143162	CNSC114XM2	-15 to 15	5 to 59				
143163	CNSC134XM2	0 to 35	32 to 95				

CONTACT FUNCTIONS



TNS & CNS Automatic Reset Type



CNS Manual Reset Type

1	Common Terminal
3	Close on Temperature Increase
5	Close on Temperature Decrease

ELECTRICAL RATINGS

Motor Rating	125/250V, AC
Running Current	10A
Locked Rotor Ampere	60A
Non-Inductive Ampere	10A

AVAILABLE ON APPLICATION

TNS SERIES with 20 Amp Contacts.
 CNS SERIES (Close Diff.) Auto - Reset, Fixed Diff.
 ALS SERIES (Close Diff.) Auto - Reset, Fixed Diff.

SAGINOMIYA TEMPERATURE CONTROLS

ELECTRONIC THERMOSTAT WITH BUILT-IN TEMPERATURE INDICATOR

THERMO-EYE Type ILE

REMOTE CONTROLLING AND VIVID READOUT OF TEMPERATURE



MAIN FEATURES

- BEST for Commercial Cold Storage Refrigerators, Freezers, Display Case or Prefab. Refrigerators.
- LED (Light Emitting Diode) Strip Readout of Sensed Temperature.
- LOCK BUTTON to prevent unauthorised tampering.
- LARGE CONTACT CAPACITY: 10A/240V.AC.
- WIRING CONNECTIONS can be made both from the bottom and back of the body.
- LARGE ROTATING DIAL for smooth and easy temperature setting.
- SENSOR LEAD can be extended to MAX. 100 metres.
- EASY and QUICK INSTALLATION with mounting bracket supplied.
- TEK THERMISTOR SENSOR with 2 m lead is supplied as standard.

SPECIFICATIONS

CAT. NO.	Part No.	Range	Voltage	Differential	Temperature Indication	Sensor		Ambient Temperature
						Cat. No.	Part No.	
143180	ILE-A920-ANA-1	-20 to +20°C	240V. AC	1.8 ± 0.7°C	-21 to +20°C	143185	TEK-32Q001 With 2 m Lead	-10 to +40°C on Use
143181	ILE-A900-ANA-1	-40 to 0°C	240V. AC	1.8 ± 0.7°C	-41 to 0°C	143186	TEK-85H001 With 2 m Lead	-20 to +70°C on Storage
143182	TEK-OOL902	10 m Extension Lead for Temperature Sensor						
143183	TEK-OOL903	50 m " " " " " "						
143184	TEK-OOL904	100 m " " " " " "						

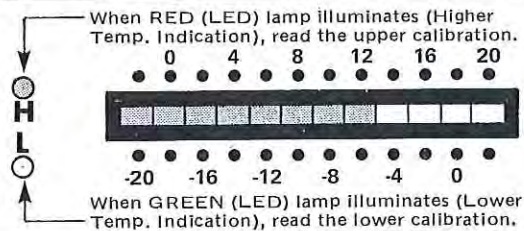
TEMPERATURE READOUT

Example: Range -20°C to 20°C

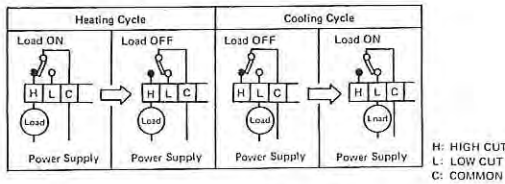
Temperature indicating LED flashes at interval of 2 deg.

When a sensed temperature is lower than -21°C, only the GREEN lamp will illuminate.

When a sensed temperature is higher than +20°C, all LED but the GREEN lamp will illuminate fully.

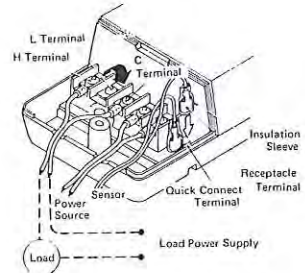


CONTACT FUNCTION



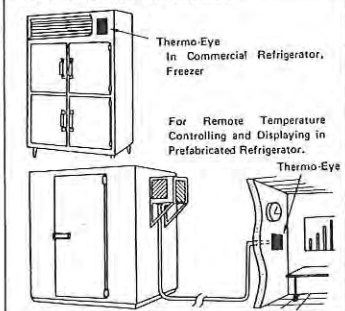
When sensed temperature rises higher than that of set temperature plus diff., shift of contact will be required as above.

WIRING

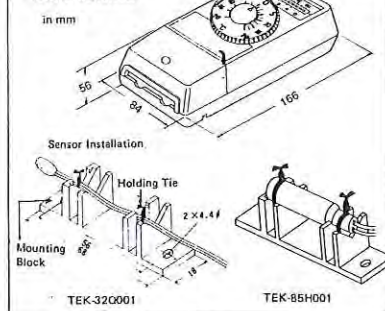


The drawing above shows the external wiring of application on opening of circuit at temperature increase (H & C terminals connection). Wiring to "H" terminal should be shifted to "L" terminal on low cut-out application as shown by black arrow mark. The setting temperature is at ON (Cut-in) position with the C & H connection and OFF (Cut-out) position with the C & L connection.

APPLICATION EXAMPLES



DIMENSIONS



PENN PRESSURE & TEMPERATURE CONTROLS

ELECTRICAL RATINGS

SELECTION COLUMN		
ALPHA/NUMERICAL ORDER		
TEMP/PRESS CONTROL	TABLE NO.	
A11	T	1
A19AAA	T	2
A19AAB	T	2
A19AAC	T	2
A19AAD	T	3
A19AAE	T	3
A19AAF	T	3
A19ABB	T	4
A19ABC-60	T	2
A19ABC-26	T	4
A19ABC-27	T	4
A19ABC-41	T	2
A19ABC-67	T	2
A19ABC-57	T	2
A19ACA	T	1
A19ADB	T	4
A19ANC	T	2
A19AUC	T	6
A19BAB	T	2
A19BAC	T	2
A19BAF	T	3
A19BBC	T	2
A19BUC	T	6
A19EAF	T	5
A19EBA	T	7
A19EBB	T	7
A19EBC	T	7
A19EDB	T	7
A19ZBA	T	1
A19ZBC	T	1
A25AN	T	8
A25CN	T	8
A28AA	T	1
A28AJ	T	9
A28AK	T	9
A28MA	T	1
A36AHA	T	10
A36AHB	T	11
A70AQ	T	12
A70GA	T	18
A70HA	T	18
A70KA	T	18
A72	T	13
A72AE	T	13
A72CE	T	13
P20	P	14
P67AA	P	15
P67CA	P	15
P67EA	P	18
P67FA	P	18
P70	P	16
P70AA	P	16
P70KA	P	18
P72	P	17
P74	P	16

T denotes Temp. Control
P " Press. Control

MOTOR RATINGS	AC FULL LOAD AMPS	AC LOCKED ROTOR AMPS	NON INDUCT. AMPS
---------------	-------------------	----------------------	------------------

TABLE 1

240V	8.0	48.0	8.0 *
*or Resistance Load Amps (Not Lamp Amps)			
A11, A19, A28 Pilot Duty – 125VA. 24 to 277 V.AC.			
A19ACA Pilot Duty – 125VA. 24 to 600 V.AC.			
Note: When used as a 2 circuit control the total connected load must not exceed 2000 VA.			

TABLE 2

240V	8.0	48.0	*
* Non-Inductive or Resistance Load Amps ** (Not Lamp Amps) 22A. 120 to 277V.AC.			
Pilot Duty – 125 VA. 24 to 600 V.AC.			
** SPST and only one side of SPDT control.			

TABLE 3

240V	3.0	18.0	*
* Non-Inductive or Resistance Load Amps (Not Lamp Amps) 10A. 24 to 277V.AC.			
Pilot Duty – 125 VA. 24 to 277 V.AC.			

TABLE 4

240V	6.0	36.0	
Pilot Duty – 125VA. 24 to 600 V.AC.			

TABLE 5

240V	3.0	18.0	10 *
* 120 to 277 V.AC.			
Pilot Duty – 125VA. 24 to 277V.AC.			

TABLE 6

240V	8.0	48.0	22.0
Pilot Duty – 125VA. 24 to 600V. AC.			

TABLE 7

240V	8.0	48.0	*
* At AC	A19EAB, EBB, EDB		22.0
Non-ind.	A19EBC		16.0
Pilot Duty – 125VA. 24 to 600V.AC.			

TABLE 8

240V	8.0	48.0	16 *
* at 120 to 277V.AC.			
Pilot Duty – 125VA. 24 to 600V.AC.			

TABLE 9

240V	3.0	18.0	8.0 *
*or Resistance Load Amps (Not Lamp Amps)			
Pilot Duty – 125VA. 24 to 277V.AC.			
Note: When used as a 2 circuit control the total connected load must not exceed 2000VA.			

TABLE 10

240V	5.0	30.0	8.0
Pilot Duty – 125VA. 120 to 277V. AC.			

TABLE 11

240V	3.0	18.0	5.0
Pilot Duty – 125VA. 120 to 277V.AC.			

MOTOR RATINGS	AC FULL LOAD AMPS	AC LOCKED ROTOR AMPS	NON INDUCT. AMPS
---------------	-------------------	----------------------	------------------

TABLE 12

208/240V*	17.0	102.0	22.0
Pilot Duty – 125VA. 120 to 600V.AC. 57.5VA. 120 to 300V.DC.			
*Hermetic Units – 240V.AC. 20.0A FLA, 102A LRA			

TABLE 13

240V* 1 Phase HP = 3	24	144.0	24.0
DC Non-Ind. Amps. 0.5			
Pilot Duty – 125VA. 120 to 600 V.AC. 57.5VA. 120 to 300V.DC.			
*These full load and locked rotor amps (not horsepower) ratings apply to hermetic compressors only.			

TABLE 14

240V 1 Phase	8.0	48.0	
Max. Volts 300AC Suitable for 20-24 V.AC.			

TABLE 15

240V 1 Phase	12.0	72.0	12.0
DC Non-Inductive 0.5			
Pilot Duty – 125 VA. 120 to 600V. AC. 57.5VA. 120 to 300V. DC.			

TABLE 16

208/240V*	17.0	102.0	22.0
Pilot Duty – 125VA. 120 to 600V. AC. 57.5VA. 120 to 300V. DC.			
*Hermetic Units – 240V. AC. 20.0A FLA, 120A LRA.			

TABLE 17

240V* 1 Phase HP = 3	24.0	144.0	24.0
DC Non-Inductive Amps 0.5			
Pilot Duty – 125VA. 120 to 600V. AC. 57.5VA. 120 to 300V. DC.			
* These full load and locked rotor amps (not horsepower) ratings apply to hermetic compressors only.			

TABLE 18

POLE NUMBER	LINE M2 (MAIN)	LINE M1 (AUXIL.)
Motor Rating	240V	240V
AC Full Load Amps	8.0	3.0
AC Locked Rot.Amps	48.0	18.0
AC Non-Induct.Amps	8.0	6.0
Pilot Duty-both Poles	125VA. 24 to 600V.AC 57.5VA.120 to 300V.DC	

APPLICABLE TO :

- Penn Pressure Controls
- Penn Temperature Controls
- Penn Head Pressure Controls
- Penn Oil Protection Controls (Type P74)
- Pages 143, 143-a, b, c.
- Pages 144, 144-a, b, c, d.
- Page 145.
- Page 150.

REFER TECH. PAGE 144-f FOR ENGLISH TO METRIC MODEL CROSS REFERENCE CHART

PENN CONTROLS * ENGLISH TO METRIC

CATALOG MODEL CROSS REFERENCE

Many of the Penn range of Controls are now available with Metric Scales. Applicable Controls included in this Catalogue have the Model No. underlined e.g. A11A-6 (Was A11A-1)
Listed below is the "Old" Imperial/English Models, Cross Referenced to the new Metric Models.

Imperial/English Model	Range °F	Metric Model	Range °C
TEMPERATURE			
A11A-1	35 to 45	A11A-6	2 to 7
A11B-1	35 to 45	A11B-6	2 to 7
A19AAA-18	30 to 110	A19AAA-43	0 to 43
A19AAB-4	30 to 110	A19AAB-32	0 to 43
A19AAB-7	100 to 300	A19AAB-37	40 to 150
A19AAB-10	200 to 550	A19AAB-42	100 to 290
A19AAC-1	-30 to 50	A19AAC-44	-35 to 10
A19AAC-4	0 to 80	A19AAC-51	-15 to 25
A19AAC-9	100 to 240	A19AAC-13	40 to 120
A19AAD-12	-30 to 50	A19AAD-21	-35 to 10
A19AAE-3	80 to 180	A19AAE-16	25 to 80
A19AAF-4	40 to 90	A19AAF-38	5 to 32
A19AAF-20	-30 to 100	A19AAF-45	-35 to 40
A19AAF-21	40 to 90	A19AAF-44	5 to 30
A19ABB-2	50 to 200	A19AAB-7	10 to 94
A19ABC-4	50 to 130	A19ABC-60	10 to 55
A19ABC-11	100 to 240	A19ABC-26	38 to 121
A19ABC-12	100 to 240	A19ABC-27	38 to 121
A19ABC-24	-30 to 100	A19ABC-41	-35 to 40
A19ABC-36	-30 to 100	A19ABC-67	-35 to 40
A19ABC-37	-30 to 100	A19ABC-57	-35 to 40
A19ACA-14	-30 to 100	A19ACA-28	-35 to 40
A19ACA-15	-30 to 100	A19ACA-31	-35 to 40
A19ADB-1	100 to 240	A19ADB-26	40 to 120
A19ADB-2	100 to 240	A19ADB-27	40 to 120
A19ADN-1	100 to 240	A19ADN-5	40 to 120
A19ADP-1	100 to 240	A19ADP-3	40 to 120
A19ANC-1	0 to 150	A19ANC-13	-15 to 65
A19AUC-1	-30 to 50	A19AUC-17	-35 to 10
A19BAB-3	35 to 95	A19BAB-7	0 to 35
A19BAC-1	30 to 110	A19BAC-3	0 to 43
A19BAF-1	30 to 110	A19BAF-3	0 to 43
A19BBC-2	-30 to 100	A19BBC-4	-35 to 40
A19BUC-1	-30 to 50	A19BUC-3	-35 to 10
A19BUC-2	20 to 80	A19BUC-4	-5 to 28
A19EAF-1	60 to 130	A19EAF-7	15 to 55
A19EAF-2	30 to 110	A19EAF-6	0 to 43
A19EBA-1	50 to 250	A19EBA-7	10 to 120
A19EDB-1	100 to 350	A19EDB-3	40 to 180
A19ZBA-1	38 to 80	A19ZBA-3	0 to 25
A25AN-1	25 to 215	A25AN-9	-4 to 102
A25CN-1	25 to 215	A25CN-4	-4 to 102
A28AA-4	30 to 110	A28AA-5	0 to 43
A28AA-9	20 to 80	A28AA-67	-5 to 28
A28AA-28	30 to 110	A28AA-59	0 to 43
A28AA-29	-30 to 100	A28AA-65	-35 to 40
A28AA-36	40 to 90	A28AA-70	5 to 32
A28AA-37	60 to 140	A28AA-71	15 to 60
A28AJ-4	20 to 80	A28AJ-31	-5 to 28
A28MA-1	40 to 120	A28MA-4	5 to 50
A28MA-2	40 to 120	A28MA-3	5 to 50
A36AHA-3	10 to 90	Replaced by 4 New Models ▼	
A36AHB-3	10 to 90		
A36AHB-4	10 to 90		
			A36AHA-50
		A36AHA-52	13 to 35
		A36AHA-58	-18 to 21
		A36AHB-33	-18 to 21
A70GA-1	15 to 55	A70GA-12	-10 to 15
A70HA-2	35 to 80	A70HA-8	0 to 25
A72AA-1	-30 to 30	A72AA-38	-35 to 0
A72AA-2	15 to 55	A72AA-39	-10 to 15
A72AA-5	-30 to 30	A72AA-41	-35 to 0
A72AA-6	15 to 55	A72AA-43	-10 to 15
A72AA-20	-10 to 65	A72AA-40	-25 to 20
A72AE-1	20 to 90	A72AE-10	-5 to 30
A72CA-1	140 to 220	A72CA-25	60 to 100
A72CE-1	25 to 90	A72CE-6	-5 to 30
T22ABC-1	40 to 90	T22ABC-5	10 to 30
T22ABC-3	40 to 90	T22ABC-7	10 to 30
T22CBC-1	40 to 90	T22CBC-4	5 to 30
T22CBC-3	40 to 90	T22CBC-5	5 to 30
T22JAA-1	40 to 90	T22JAA-2	5 to 30
T22JCC-1	40 to 90	T22JCC-2	5 to 30
T22SDA-1	40 to 90	T22SDA-4	5 to 30
T22SEB-1	40 to 90	T22SEB-5	5 to 30
T22SFB-1	40 to 90	T22SFB-5	5 to 30
T23A-1	50 to 90	T23A-3	10 to 32
T23B-1	50 to 90	T23B-4	10 to 32
T23C-1	50 to 90	T23C-3	10 to 32
T25A-1	40 to 90	T25A-6	5 to 32

Imperial/English Model	Range °F	Metric Model	Range °C
TEMPERATURE (Continued)			
T25A-16	40 to 90	T25A-26	5 to 30
T26S-18	40 to 90	T26S-22	5 to 30
T26T-3	40 to 90	T26T-4	5 to 30
T36ABB	32 to 110	T36ABB-9250	0 to 43
T52AEA-1	50 to 90	T52AEA-2	10 to 30
T52CEA-1	50 to 90	T52CEA-2	8 to 32
T52DAA-1	50 to 90	T52DAA-2	8 to 32
T52DEA-1	50 to 90	T52DEA-2	8 to 32
Imperial/English Model	Range psig	Metric Model	Range kPa
PRESSURE			
P28AA-1	8 to 70	P28AA-41	50 to 500
P28AA-2	8 to 70	P28AA-42	50 to 500
P28AA-17	8 to 70	P28AA-43	50 to 500
P28AA-18	8 to 70	P28AA-44	50 to 500
P28AN-1	8 to 70	P28AN-22	25 to 5kg.
P28DA-1	8 to 70	P28DA-7	50 to 500
P28GA-2	8 to 70	P28GA-6	50 to 500
P28NA-5	8 to 70	P28NA-15	50 to 500
P29NC-2	20" to 100	P29NC-43	-70 to 700
P29NC-3	20" to 100	P29NC-44	-70 to 700
P47AA-1	0 to 15	P47AA-21	0 to 100
P47AA-13	0 to 150	P47AA-15	0 to 1000
P47BA-2	20" to 50	P47BA-10	-1 to 4kg/cm ²
P47BA-6	0 to 150	P47BA-9	0 to 10kg/cm ²
P47GA-9	0 to 150	P47GA-25	0 to 1000
P47GA-10	0 to 15	P47GA-26	0 to 100
P67AA-1	3 to 30	P67AA-8	20 to 200
P67EA-5	3 to 30	P67EA-9	20 to 200
P67FA-5	3 to 30	P67FA-6	20 to 200
P70AA-5	20" to 100	P70AA-120	-70 to 700
P70AA-118	100 to 400	P70AA-129	700 to 2800
P70AA-119	50 to 300	P70AA-146	400 to 2000
P70AB-1	20" to 100	P70AB-31	-70 to 700
P70AB-2	20" to 100	P70AB-36	-70 to 700
P70CA-1	20" to 100	P70CA-80	-70 to 700
P70CA-2	50 to 450	P70CA-81	400 to 3100
P70CA-3	50 to 450	P70CA-86	400 to 3100
P70CA-4	20" to 100	P70CA-87	-70 to 700
P70CA-5	50 to 450	P70CA-89	400 to 3100
P70DA-1	50 to 450	P70DA-41	250 to 3000
P70DA-2	50 to 450	P70DA-43	250 to 3000
P70HA-3	20" to 100	P70HA-4	-70 to 700
P70JA-11	20" to 100	P70JA-25	-70 to 700
P70KA-1	50 to 450	P70KA-11	400 to 3100
P70KA-7	50 to 450	P70KA-13	250 to 3100
P70LA-2	20" to 100/ 100 to 425	P70LA-90	-70 to 700/ 1000 to 3000
P70LB-1	20" to 100/ 100 to 425	P70LB-12	-70 to 700/ 1000 to 3000
P70LN-9	20" to 50/ 100 to 425	P70LN-11	-70 to 350/ 1000 to 3000
P70MA-1	20" to 100/ 100 to 425	P70MA-46	-70 to 700/ 1000 to 3000
P70MA-2	20" to 100/ 100 to 425	P70MA-47	-70 to 700/ 1000 to 3000
P70NA-1	20" to 100/ 100 to 425	P70NA-10	-70 to 700/ 1000 to 3000
P72AA-1	20" to 100	P72AA-31	-70 to 700
P72AA-27	100 to 400	P72AA-32	700 to 2800
P72AB-1	20" to 100	P72AB-4	-70 to 700
P72CA-2	50 to 450	P72CA-26	400 to 3100
P72DA-1	50 to 450	P72DA-7	400 to 3100
P72LA-1	20" to 100/ 100 to 425	P72LA-12	-70 to 700/ 1000 to 3000
P72LB-1	20" to 100/ 100 to 425	P72LB-4	-70 to 700/ 1000 to 3000
P72MA-1	20" to 100/ 100 to 425	P72MA-6	-70 to 700/ 1000 to 3000
P72NA-1	20" to 100/ 100 to 425	P72NA-4	-70 to 700/ 1000 to 3000
P74AA-1	8 to 70	P74AA-2	50 to 450
P74BA-1	8 to 70	P74BA-14	50 to 450
P80ABA-21	20" to 80 Ammonia	P80ABA-43	-70 to 500
P80BAA-1	20" to 80	P80BAA-4	-70 to 500

This Cross Reference has been compiled to the best of our ability from available information. Further changes may have occurred between time of compilation/printing/distribution. We assume no liability for its use or misuse.

PRESSURE AND TEMPERATURE CONTROLS

COMMERCIAL

PENN HEAD PRESSURE CONTROLS

1

These controls are designed to maintain optimum head pressure on refrigeration and air conditioning installations. Single stage temperature models are for control of single speed fan motors or motor controller. Two-stage temperature models are for controlling the operation of two-speed fan motors or dual fans.

neoprene coated to resist mechanical abrasion and chemical damage.

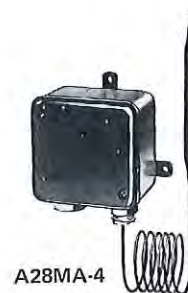
Pressure controls that start the fan as head pressure reaches the desired maximum and stop the fan when the head pressure drops to the allowed minimum are also available.

Temperature controls are enclosed in weather-proof cases and covers. The sensing element of the tower control is

For controlling by water see Penn Series V46, V47 and V48 water valves.

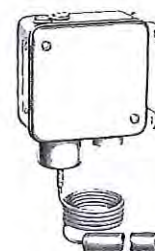
COOLING TOWERS OR EVAPORATIVE CONDENSERS

CAT. NO.	Type	Switch Action	Range		Differential		Bulb & Capillary	Range Adjuster
			°C	°F	°C	°F		
TWO STAGE TEMPERATURE								
1451	<u>A28MA-4</u>	2-Stage 2-SPDT Switches	5 to 50	41 to 122	Factory Set 2.8°C (5°F) each stage 4.4°C (8°F) between stage.		3/8" x 4" Neoprene Coated 6' Cap.	Screwdriver Slot
Maximum Bulb temperature : 99°C (210°F)								



A28MA-4

SINGLE STAGE TEMPERATURE								
CAT. NO.	Type	Switch Action	Range		Differential		Bulb & Capillary	Range Adjuster
			°C	°F	°C	°F		
1452	<u>A72AE-10</u>	DPST Close High	-5 to 30	23 to 86	2.2 to 14	4 to 25	3/4" x 6-3/4" Neoprene Coated 6' Cap.	Internal Screwdriver Slot
1453	<u>A72CE-6</u>	DPST Open High	-5 to 30	23 to 86	2.2 to 14	4 to 25	3/4" x 6-3/4" Neoprene Coated 6' Cap.	Internal Screwdriver Slot
Maximum Bulb temperature : 77°C (170°F) Ambient temperature limits : -54 to 66°C (-65 to 150°F)								



A72AE-10
A72CE-6

AIR COOLED CONDENSERS

PRESSURE

CAT. NO.	Type	Switch Action	Range		Differential		Pressure Connector	Limited Knob Adjust.	Max. Bellows Pressure	
			kPa	psig	kPa	psi			kPa	psig
SINGLE POLE HIGH PRESSURE – HEAD PRESSURE FAN CYCLING										
14510	<u>P70AA-129</u>	Close High Open Low	700 to 2800	101 to 406	Min. 241 Max. 1379	Min. 35 Max. 200	36" Cap. with 1/4" Flare Nut	None	3448	500
TWO POLE HIGH PRESSURE – HEAD PRESSURE FAN CYCLING										
1459	<u>P72AA-32</u>	DPST Close High Open Low	700 to 2800	101 to 406	Min. 241 Max. 1379	Min. 35 Max. 200	36" Cap. with 1/4" Flare Nut		3448	500



P70AA-129

TEMPERATURE

CAT. NO.	Type	Switch Action	Range		Differential °C (°F)	Bulb and Capillary	Range Adjuster
			°C	°F			
TWO-STAGE TEMPERATURE							
14513	<u>A28MA-3</u>	2-Stage 2-SPDT Switches	5 to 50	41 to 122	Factory Set 2.8°C (5°F) each Stage 4.4°C (8°F) between stage.	3/8" x 4-1/16" 6' Cap.	Screwdriver Slot
Maximum Bulb temperature : 99°C (210°F)							

ELECTRICAL RATINGS: Refer Tech. Page 143-g.

Underlined Models have Metric Scales — Refer Tech. Page 144-f for English to Metric Cross Reference Chart.

145-a



Ranco-trol Type C30 Wide Range Temperature Controls

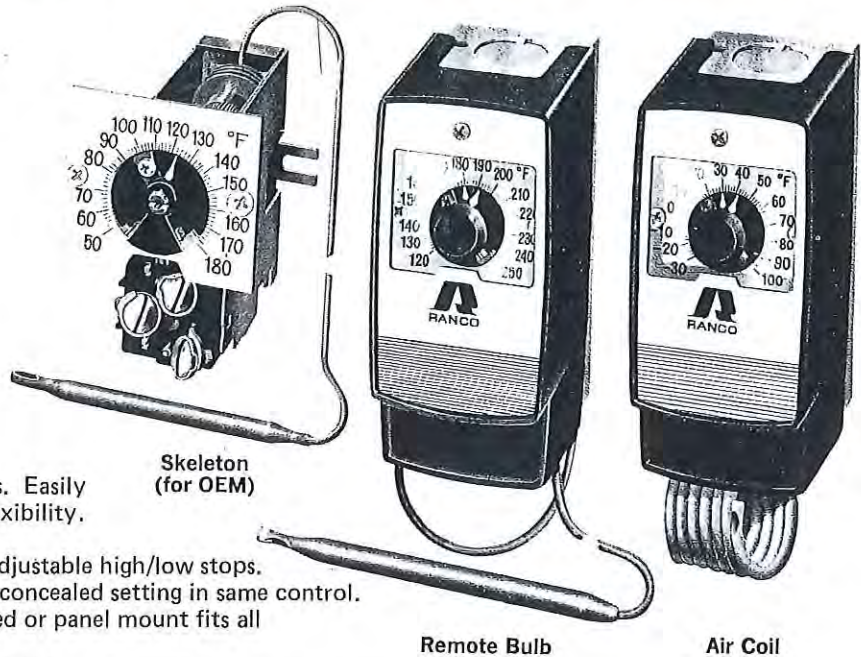
for Commercial Refrigeration, Air Conditioning or Heating

TYPICAL APPLICATIONS

Frozen Food Cases, Display Cases,
Beverage Coolers, Milk Coolers,
Walk-in Boxes, Water Chillers,
Process Equipment,
Hot Water Heating Systems,
Solar Heating Systems.

FEATURES

- Temperature Ranges -34 to 121°C (-30 to 250°F). Three controls cover total range.
- Differential 2 to 28°C (3½ to 50°F). Infinitely adjustable.
- SPDT Switch. Heating/Cooling applications. Easily wired . . . three knockouts for maximum flexibility.
- Cut-in - Cut-out Pointers. Direct reading.
- Temperature Range Dial Stops. Infinitely adjustable high/low stops.
- Setpoint Adjustment. Knob, screwdriver or concealed setting in same control.
- Versatile Mounting. Convertible . . . enclosed or panel mount fits all competitive mountings.
- Entire Scale - Fully visible and window covered.
- A Universal Replacement. Styled and Sized for Readability and Adjustability.

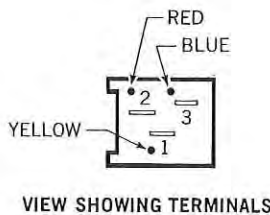
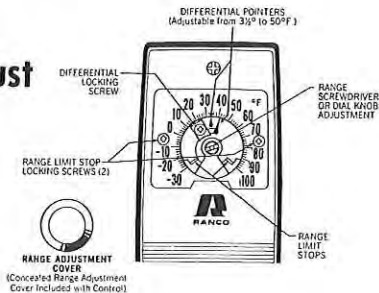


DESCRIPTION

The RANCO-TROL universal replacement controls cover a broad range of general purpose temperature control functions. They are designed for operating control applications with a high electrical rated SPDT switch for both heating and cooling. These compact controls are available with adjustable temperature ranges from -34 to 121°C (-30 to 250°F), adjustable differential of 2 to 28°C (3½ to 50°F) with dual differential pointers indicating the high and low cut-in and cut-out functions, and infinitely adjustable high and low range limit stops to restrict user

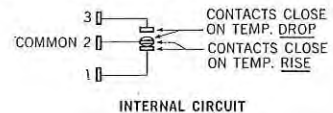
adjustment. Added features are a window covered, fully visible scale plate and range adjustment using a dial knob, screwdriver slot, or concealed setpoint options on each control. These controls are equipped with a self-retention NEMA Class 1, snap-on cover to prevent cover knock-off if retaining screw is not secured. Universal mounting holes which fit all competitive mountings are provided for enclosed mounting or optional skeleton frame construction for panel mounting. Three knockouts at top, bottom and back panels allow maximum flexibility in wiring.

Easy To Adjust



VIEW SHOWING TERMINALS

ELECTRICAL RATINGS	
Volts AC	240V
Full Load Amps	8A
Locked Rotor Amps	48A
Non-Inductive or Resistive Load Amps	20A
Pilot Duty 125VA 24 to 240 VAC	
Note: All ratings apply to either pair of terminals (2-1 & 2-3)	



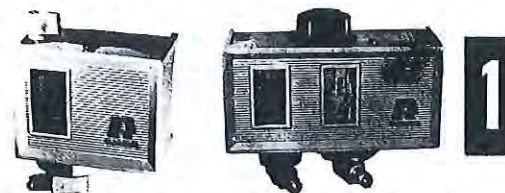
INTERNAL CIRCUIT

CAT. NO.	Current Model	Replaces Model	Adjustable Range °C (°F)	Factory Settings °C (°F) (Terminals 2 and 1)		Adjustable Differential °C (°F)	Switch Action	Power Element		
				Cut-In	Cut-Out (Min. Diff. Setting 2°C [3½°F])			Capillary Length	Bulb	
								Type	Size	
14520	C30 - 1102	C30 - C1100	-34 to 38 (-30 to 100)	12.2 (54)	10.3 (50.5)	2 to 28 (3.5 to 50)	SPDT	Air Coil	1.56" O.D.	18.3 m (6 ft.)
14521	C30 - 1103	C30 - C1101	-34 to 38 (-30 to 100)	12.2 (54)	10.3 (50.5)					
14522	C30 - 1181	C30 - C1180	10 to 82 (50 to 180)	49 (120)	47 (116.5)			Remote Bulb	3/8" x 5-3/8"	
14523	C30 - 1251	C30 - C1250	49 to 121 (120 to 250)	88 (190)	86 (186.5)					

RANCO TYPE 'O' PRESSURE CONTROLS



RANCO 'O' SERIES COMMERCIAL REFRIGERATION & AIR CONDITIONING CONTROLS are available for Low Pressure, High Pressure and Dual Pressure Applications. Variations include Fixed and Adjustable Differential, operation on Rise and Fall of Pressure, Automatic Cycling or Manual Reset. Accessories include Mounting Brackets and Capillary Adaptors.



CAT. NO.	CODE NO.	FORMER CODE NOS.	ADJUSTABLE RANGE kPa (psig)	DIFFERENTIAL (High & Low Scale Limits Adj. or Fixed) kPa (psi)	POWER ELEMENTS
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SINGLE LOW PRESSURE

1471	016-8706 S.P.D.T.	Formerly : 016-1401 Replaces : 010-1401, 1831, 6003 011-1754, 1799 016-107, 120	-30.5 to 690 (9" to 100)	62 to 293 (9 to 57)	1/4" SAE Male 7/16" 20 UNF
1472	016-8713 S.P.D.T.	Formerly : 016-1402 Replaces : 010-1402, 1483, 1842, 6006	-30.5 to 690 (9" to 100)	62 to 293 (9 to 57)	.91 m Cap. 1/4" Fl. Nut

WITH MANUAL RESET LEVER

1473	016-8705 S.P.D.T.	Formerly : 016-6807 Replaces : 010-1867, 1925	-30 to 690 (9" to 100)	62 Fixed (9 Fixed)	1/4" SAE Male 7/16 - 20 UNF
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SINGLE HIGH PRESSURE

1476	016-166 S.P.D.T.	Formerly : — Replaces : No Replacement	345 to 1034 (50 to 150)	-34 to 276 (10" to 40)	.91 m Cap. 1/4" Fl. Nut
1474	016-8750 S.P.D.T.	Formerly : 016-6809 Replaces : 010-1894 011-1711, 1713 016-108*	700 to 3000 (100 to 430)	241 to 793 (35 to 115)	1/4" SAE Male 7/16" 20 UNF

WITH MANUAL RESET LEVER

1475	016-8751 S.P.D.T.	Formerly : 016-6806 Replaces : 010-1895 011-1712*, 1714 016-200*	700 to 3000 (100 to 430)	310 Fixed (45 Fixed)	1/4" SAE Male 7/16" 20 UNF
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CAT. NO.	CODE NO.	FORMER CODE NOS.	LOW PRESSURE		HIGH PRESSURE		POWER ELEMENTS
			Adjustable Range kPa (psig)	Adjustable Differential kPa (psi)	HP Cut-out Range kPa (psig)	Fixed Differential kPa (psi)	

DUAL PRESSURE

AUTOMATIC CYCLING

14727	017-8711 S.P.D.T.	Formerly: 017-6711 Replaces: 012-1506, 1549, 4105, 012-4106, 4107, 4109, 012-1554, 1609, 1637	-30.5 to 700 (9" to 100)	62 to 293 (9 to 57)	700 to 3000 (100 to 430)	345 (50)	.91 m Cap. 1/4" SAE Fl. Nut 7/16" - 20 UNF
14728	017-8701 S.P.D.T.	Formerly : 017-1550 Replaces : 012-4108, 1505, 4066, 012-1550	-30 to 700 (9" to 100)	62 to 293 (9 to 57)	700 to 3000 (100 to 430)	345 (50)	1/4" SAE Male 7/16" - 20 UNF

MANUAL RESET ON HIGH PRESSURE SIDE

14730	017-8705 S.P.D.T.	Formerly : 017-320 Replaces : 012-1551, 1552, 1605, 012-1546	-30.5 to 700 (9" to 100)	62 to 293 (9 to 57)	700 to 3000 (100 to 430)	345 (50)	1/4" SAE Male 7/16" - 20 UNF
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MANUAL RESET ON HIGH AND LOW PRESSURE SIDES

14732	017-8703 S.P.D.T.	Formerly : 017-321 Replaces : 012-1530*, 1594*, 1617*, 012-1595* 017-322	-30.5 to 700 (9" to 100)	62 to 293 (9 to 57)	700 to 3000 (100 to 430)	345 (50)	1/4" SAE Male 7/16" - 20 UNF
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NOTE: 1. * If Pressure Controls shown on chart fitted with Male 7/16" - 20 UNF Power Element Fittings are used as replacements for controls with (*) then Capillary Adaptors Part No. 2301742-1 (Was P/N 300982-5) should be used.

2. Where old series code numbers are listed showing the new replacement code numbers exact replacement of old control may not be possible in every case. Specifications should be carefully checked for suitability.

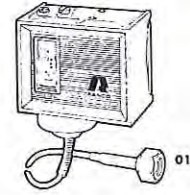
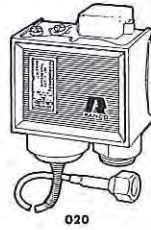
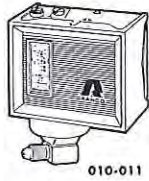
CAT. NO. 14870

RANCO SERIES 'O' CONTROL REFERENCES

Specifications of Old Types with Current Replacements — PRESSURE: Tech. Pages 147-a & 147-b. TEMPERATURE: Tech. Page 148-a.
Controls Cross Reference (by Brand) — PRESSURE: Tech. Page 147-c. TEMPERATURE: Tech. Page 148-b.
Temperature Controls — Current — Selection — Ordering : Page 148.
ACCESSORIES — Mounting Brackets and Capillary Adaptors: Refer Page 148.
ELECTRICAL RATINGS: Refer Page 148.

RANCO TYPE "O" PRESSURE CONTROLS

SPECIFICATIONS OF OLDER TYPES WITH CURRENT REPLACEMENTS



Old Code No.	Replaced by Code No.	Type	Switch Action	Range " Vac/ psi	Lowest Operat. Point	Differential psi	Factory Setting psi		Power Elements
							Cut-Out	Cut-In	

SINGLE LOW PRESSURE AUTOMATIC RESET

010-1401	016-8706	SPST	Close on Rise	12" to 50	20"	5 to 35	15	25	1/4" SAE Male Elbow
010-1402	016-8713	SPST	Close on Rise	12" to 50	20"	5 to 35	15	25	36" Cap. 1/4" SAE FI.Nut
010-1483	016-8713	SPST	Close on Rise	0 to 100	20"	10 to 40	50	60	36" Cap. 1/4" SAE FI.Nut
010-1831	016-8706	SPST	Close on Rise	0 to 100	20"	10 to 40	50	60	1/4" SAE Male Elbow
010-1842	016-8713	SPST	Close on Rise	12" to 50	20"	5 to 35	15	25	48" Cap. 1/4" SAE FI.Nut
010-6003	016-8706	SPST							
010-6006	016-8713	SPST							
011-1754	016-8706	SPST	Open on Rise	12" to 50	20"	5 to 35	25	15	1/4" SAE Male Elbow
011-1799	016-8706	SPST	Open on Rise	0 to 100	20"	10 to 40	30	20	1/4" SAE Male Elbow
016-107	016-8706	SPDT	Open or Close on Rise	0 to 100	20"	10 to 40	50	60	1/4" SAE Male Elbow
016-120	016-8706	SPDT	Open or Close on Rise	12" to 50		4 to 35	10	15	1/4" SAE Male Elbow
020-6002	*	DPST	Close on Rise	20" to 50		5 to 35			36" Cap. 1/4" SAE FI.Nut
020-6004	*	DPST	Close on Rise	10" to 95		10 to 40			36" Cap. 1/4" SAE FI.Nut
020-7002	*	DPST	Close on Rise	12" to 50		5 to 35	15	25	36" Cap. 1/4" SAE FI.Nut
020-7004	*	DPST	Close on Rise	0 to 100		10 to 40	50	60	36" Cap. 1/4" SAE FI.Nut

MANUAL RESET LEVER

010-1867	016-8705	SPST	Close on Rise	12" to 40		8 Fixed	15	M.R.	1/4" SAE Male Elbow
010-1925	016-8705	SPST	Close on Rise	0 to 90		10 Fixed	50	M.R.	1/4" SAE Male Elbow

SINGLE HIGH PRESSURE AUTOMATIC RESET

010-1894	016-8750	SPST	Close on Rise	100 to 400	0	35 to 150	250	290	1/4" SAE Male Elbow
010-2054	*	SPST	Close on Rise	100 to 400	0	35 to 150	250	290	36" Cap. 1/4" SAE FI.Nut
011-1711	016-8750	SPST	Open on Rise	150 to 450	0	35 to 150	290	250	36" Cap. 1/4" SAE FI.Nut
011-1713	016-8750	SPST	Open on Rise	150 to 450	0	35 to 150	290	250	1/4" SAE Male Elbow
016-108	016-8750	SPDT	Open or Close on Rise	100 to 400	0	35 to 150	290	250	36" Cap. 1/4" SAE FI.Nut
021-7406	*	DPST	Open on Rise	100 to 350		30 to 100			36" Cap. 1/4" SAE FI.Nut

MANUAL RESET LEVER

010-1895	016-8751	SPST	Close on Rise	100 to 350		45 Fixed	250		1/4" SAE Male Elbow
011-1712	016-8751	SPST	Open on Rise	150 to 450		45 Fixed	290		36" Cap. 1/4" SAE FI.Nut
011-1714	016-8751	SPST	Open on Rise	150 to 450		45 Fixed	290		1/4" SAE Male Elbow
016-200	016-8751	SPDT	Open or Close on Rise	150 to 450		40 Fixed	290		36" Cap. 1/4" SAE FI.Nut
021-7480	*	DPST	Open on Rise	100 to 350		45 Fixed			36" Cap. 1/4" SAE FI.Nut

DUAL TEMPERATURE & HIGH PRESSURE CUT-OUT

Old Code No.	Replaced by Code No.	Type	°F psi	Range °F/ psi	Lowest Operat. Point	Differential °F/ psi	Factory Settings °F/psi		Power Elements
							Cut-Out	Cut-In	

AUTOMATIC CYCLING

012-1534	*	SPST	°F psi	-15 to 40 100 to 250	-20°F	3 to 25 Adj. 40 Fixed	-5 190	0	76" Cap. 3/8" φ Bulb 1/4" SAE Male Elbow
012-1535	*	SPST	°F psi	0 to 55 100 to 250	-10°F		10 190	15	76" Cap. 3/8" φ Bulb 1/4" SAE Male Elbow
012-1536	*	SPST	°F psi	25 to 75 100 to 250	15°F	3 to 25 Adj. 40 Fixed	40 190	44	76" Cap. 3/8" φ Bulb 1/4" SAE Male Elbow

MILK COOLER APPLICATION

012-1514	*	SPST	°F psi	30 to 50 100 to 250	20°F		40 190	44	84" Cap. 3/8" φ x 9/16" Bulb 1/4" SAE Male Elbow
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SPECIAL APPLICATIONS

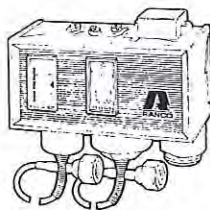
022-7707	*	DPST	°F psi	-40 to 15 100 to 250		3.5 to 25 Adj. 40 Fixed			76" Cap. 3/8" φ Bulb 33" Cap. 1/4" SAE FI. Nut
022-7709	*	DPST	°F psi	-10 to 55 100 to 250		3.5 to 25 Adj. 40 Fixed			76" Cap. 3/8" φ Bulb 33" Cap. 1/4" SAE FI. Nut
022-6713	*	DPST	°F psi	40 to 105 100 to 250		3.5 to 25 Adj. 40 Fixed			84" Cap. 3/8" φ x 9/16" C.A. Bulb 33" Cap. 1/4" SAE FI. Nut

* These Controls, or a replacement, are available from overseas on application. Refer also to Cross Reference Chart on Tech. Page 147-c. Where old series code numbers are listed showing the new replacement code numbers, exact replacement of old control may not be possible in every case. Specifications should be carefully checked for suitability.

NOTE: Refer to Page 147 for Current Controls - Selection - Ordering.

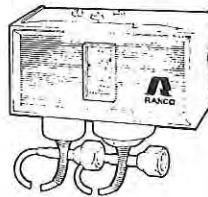
DUAL PRESSURE SPECIFICATIONS CONTINUED ON NEXT PAGE.

RANCO TYPE "O" PRESSURE CONTROLS
SPECIFICATIONS OF OLDER TYPES WITH CURRENT REPLACEMENTS
 (Continued)

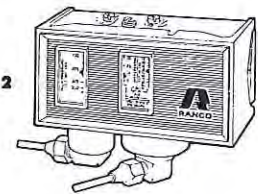


022

012



012



DUAL PRESSURE – LP Closes, HP Opens on Rise

Old Code No.	Replaced by Code No.	Type	LP HP	Range "Vac/psi	Lowest Operat. Point	Differential psi	Factory Settings psi		Power Elements
							Cut-Out	Cut-In	
AUTOMATIC CYCLING									
012-1505	017-8701	SPST	LP	12" to 50	20"	5 to 35	15	25	2 x 1/4" SAE Male Elbow
			HP	100 to 250		40 Fixed	190	150	
012-1506	017-8711	SPST	LP	12" to 50	20"	5 to 35	15	25	2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	100 to 250		40 Fixed	190	150	
012-1549	017-8711	SPST	LP	0 to 100	20"	10 to 40	50	60	2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	150 to 450		65 Fixed	290	225	
012-1550	017-8701	SPST	LP	0 to 100	20"	10 to 40	50	60	2 x 1/4" SAE Male Elbow
			HP	150 to 450		65 Fixed	290	225	
012-1554	017-8711	SPST	LP	12" to 50	20"	5 to 35	15	25	2 x 48" Cap. 1/4"SAE Fl. Nut
			HP	100 to 247		50 Fixed	247	197	
012-1609	017-8711	SPST	LP	5 to 95	10"	10 to 40	40	50	2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	100 to 360		50 Fixed	360	360	
012-1637	017-8711	SPST	LP	5 to 95	10"	10 to 40	50	60	2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	250 to 450		60 Fixed			
012-4108	017-8701	SPDT							
012-4066	017-8701	SPDT							
022-6702	*	DPST	LP	20" to 50		5 to 35			2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	100 to 250		40 Fixed			
022-7702	*	DPST	LP	12" to 50	20"	5 to 35			2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	100 to 250		40 Fixed			
022-7704	*	DPST	LP	10 to 95		10 to 40			2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	100 to 360		50 Fixed			
022-7706	*	DPST	LP	0 to 100	20"	10 to 40			2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	150 to 450		60 Fixed			

MANUAL RESET ON HIGH PRESSURE SIDE

012-1546	*	SPST	LP	12" to 50	20"	5 to 35	15	25	2 x 1/4" SAE Male Elbow
			HP	100 to 250		40 Fixed	190	150	
012-1551	017-8705	SPST	LP	0 to 100	20"	10 to 40	50	60	2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	150 to 450		65 Fixed	290	225	
012-1552	017-8705	SPST	LP	5 to 95	10"		50	60	2 x 1/4" SAE Male Elbow
			HP	100 to 350					
012-1605	017-8705	SPST	LP	5 to 95	10"		40	50	2 x 33" Cap. 3" x 1/4" Sweat
			HP	100 to 360					
022-7802	*	DPST	LP	12" to 50	20"	5 to 35			2 x 33" Cap. 3" x 1/4" Sweat
			HP	100 to 250		40 Fixed			
022-7806	*	DPST	LP	0 to 100	20"	10 to 40			2 x 33" Cap. 3" x 1/4" Sweat
			HP	150 to 450		60 Fixed			

MANUAL RESET ON HIGH AND LOW PRESSURE SIDES

012-1530	017-8703	SPST	LP	0 to 100	20"		40	50	2 x 33" Cap. 3" x 1/4" Sweat
			HP	150 to 450					
012-1594	017-8703	SPST	LP	5 to 95	10"	10 Fixed	40	50	2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	100 to 360		65 Fixed	350	285	
012-1595	017-8703	SPST	LP	12" to 50	20"	8 Fixed	15	23	2 x 36" Cap. 1/4"SAE Fl. Nut
			HP	100 to 220		50 Fixed	190	150	
012-1617	017-8703	SPST	LP	5 to 95	10"		40	48	2 x 33" Cap. 3" x 1/4" Sweat
			HP	250 to 425					
017-322	017-8703	SPDT							

ADDITIONAL/CURRENT PRESSURE CONTROLS – CODE NUMBER CHANGE ONLY

OLD CODE No.	NEW CODE No.	TYPE	OLD CODE No.	NEW CODE No.	TYPE
016-1401	016-8706	SPDT Single Low Pressure - Auto Reset	017-6711	017-8711	SPDT Dual Pressure - Auto Cycling
016-1402	016-8713		017-1550	017-8701	
016-6807	016-8705	SPDT Single Low Pressure - Manual Reset	017-320	017-8705	SPDT Dual Pressure - Manual Reset HP Side
016-6809	016-8750	SPDT Single High Pressure - Auto Reset	017-321	017-8703	SPDT Dual Press. - Manual Reset HP/LP Sides
016-6806	016-8751	SPDT Single High Pressure - Manual Reset			

* These Controls, or a replacement, are available from overseas on application. Refer also to Cross Reference Chart on Tech. Page 147-c. Where old series code numbers are listed showing the new replacement code numbers, exact replacement of old control may not be possible in every case. Specifications should be carefully checked for suitability.
 NOTE: Refer to Page 147 for Current Controls – Selection – Ordering.

PRESSURE CONTROLS CROSS REFERENCE

This Cross Reference has been compiled as a Comparative Control Reference and we assume no liability for its use or misuse. Complete Specifications should be carefully checked against original before replacement. Refer also Notes at bottom of this page.

FUNCTION	RANCO		PENN**	DANFOSS	SAGINOMIYA
	OLD/ REPLACED	CURRENT (Formerly)*			
SINGLE LOW PRESSURE	010-1401 010-1831 010-6003 011-1754 011-1799 016-107 016-120	016-8706 (016-1401)*	P70AB-1/31 P70CA-1/80 P70AB-2/36 P77AAA-9300 P77AAA-9302	KP1 (60-1101) RT1 (17-5245)	SNS-C106X
SINGLE LOW PRESSURE	010-1402 010-1483 010-1842 010-6006	016-8713 (016-1402)*	P70AB-2/36	KP1 (60-1100)	SNS-C103XQ
SINGLE LOW PRESSURE WITH MANUAL RESET	010-1867 010-1925	016-8705 (016-6807)*		KP1 (60-1103) RT1 (17-5246)	SNS-C106XM2
SINGLE HIGH PRESSURE	010-1894 011-1711 011-1713 016-108	016-8750 (016-6809)*	P70CA-2/81 P70CA-3/86 P70AA-118/129 P77AAA-9350	KP5 (60-1171) KP5 (60-1170)	SNS-C130X
SINGLE HIGH PRESSURE		016-166	P77AAA-9301 P77AAA-9351	KP5 (60-1171) RT5 (17-5250)	
SINGLE HIGH PRESSURE WITH MANUAL RESET	010-1895 011-1712 011-1714 016-200	016-8751 (016-6806)*	P70KA-1/11 P70DA-1/41 P77BEA-9350	KP5 (60-1172) KP5 (60-1173) RT5 (17-5251)	HNS-C130XM1
AUTOMATIC CYCLING DUAL PRESSURE	012-1506 012-1549 012-1554 012-1609 012-1637 012-4105 012-4106 012-4107 012-4109	017-8711 (017-6711)	P70LB-1/12		DNS-D606XQ
AUTOMATIC CYCLING DUAL PRESSURE	012-1505 012-1550 012-4066 012-4108	017-8701 (017-1550)*	P72LB-1/4	KP15 (60-1240)	DNS-D606X
DUAL PRESSURE MANUAL RESET ON HP	012-1551 012-1552 012-1546 012-1605	017-8705 (017-320)*	P70MA-1/46	KP15 (60-1242) KP15 (60-1243)	DNS-D606XM
DUAL PRESSURE MANUAL RESET ON LP & HP	012-1530 012-1594 012-1595 012-1617 017-322	017-8703 (017-321)*	P70NA-1/10	KP15 (60-1245) KP15 (60-1244)	DNS-D606XMM
SINGLE HIGH PRESSURE DUAL PRESSURE	010-2054		P70AA-118/129		
SINGLE PRESSURE	012-1506		P70LB-1/12	KP15 (60-1240)	
	020-6002		P72AB-1/4		
	020-6004		P72AB-1/4		
	020-7002		P72AA-1/31 P72AA-1/31 P72AB-1/4		
	020-7004		P72CA-2/26		
	021-7406		P72DA-1/7		
DUAL PRESSURE	021-7480		P72LB-1/4		
	022-6702		P72LA-1/12 P72LB-1/4		
	022-7702		P72LA-1/12		
	022-7704		P72LA-1/12		
	022-7706		P72LA-1/12 P72LB-1/4		
	022-7802		P72MA-1/6		
	022-7806		P72MA-1/6		

012-4834 converted to man res
or auto hi
DUAL PRESSURE use either
cot 14730 man res. 017-8705
14728 auto. 017-8701

* Current Ranco Controls are shown in BOLD type. The Controls shown in brackets () * are identical with the current Control - Code Number change only has been made.
 ** Penn Controls - where applicable - show in suffix number both old P/N and current Metric P/N. e.g. P70AB-1 (old) / 31 (New Metric)
 Where more than one Replacement Comparative Control Make/Brand is shown - check specifications carefully for nearest match.

PRESSURE CONTROLS ARE DETAILED ON PAGES :
 DANFOSS Type KP — Page 139 Type RT — Page 142 PENN — Pages 143/a/b/c
 RANCO — Pages 147/a/b SAGINOMIYA — Pages 143-d/e

RANCO TYPE 'O' TEMPERATURE CONTROLS



RANCO 'O' SERIES COMMERCIAL REFRIGERATION & AIR CONDITIONING CONTROLS are available for most Temperature Applications. Variations include Fixed and Adjustable Differential, operation on Rise and Fall of Temperature, Two Temperature Controls and Controls for special applications. Accessories include Mounting Brackets and Capillary Adaptors.

CAT. NO.	CODE NO.	FORMER CODE NOS.	ADJUSTABLE RANGE °C (°F)	DIFFERENTIAL (High & Low Scale Limits Adj. or Fixed) °C (°F)	POWER ELEMENTS
1481	016-6950 S.P.D.T.	Formerly : 016-1408 Replaces : 010-1408, 1417, 1419, 1433 016-103, 6801	-35 to -7 (-31 to 19.4)	1.7 to 12 (3 to 21)	2 m with 9.5 mm dia. Coiled Bulb
1482	016-6951 S.P.D.T.	Formerly : 016-1409 Replaces : 010-1409, 1415, 1416, 1418 016-104, 111 011-3019	-18 to 13 (0 to 55)	1.7 to 12 (3 to 21)	2 m with 9.5 mm dia. Coiled Bulb
1483	016-6954 S.P.D.T.	Formerly : 016-1410 Replaces : 010-1410, 1491, 1802, 1840 010-1903 011-1756	-5 to 25 (23 to 77)	1.7 to 12 (3 to 21)	2 m with 9.5 mm dia. Coiled Bulb
1485	016-6980 S.P.D.T.	Formerly : 016-6803 Supercedes: 010-1414, 1477, 2020, 6004 011-3071	-18 to 13 (0 to 55)	1.7 to 12 (3 to 21)	2 m with 14.5 mm φ Cross Ambient Bulb
1486	016-6981 S.P.D.T.	Formerly : 016-6804 Replaces : 010-2021, 6005	-5 to 25 (23 to 77)	1.7 to 12 (3 to 21)	2 m with 14.5 mm φ Cross Ambient Bulb
1487	016-6950-1 S.P.D.T.	Formerly : 016-6805 Supercedes: 010-6001	-35 to -7 (-31 to 19.4)	1.7 to 12 (3 to 21)	3.7 m with 9.5 mm dia. Coiled Bulb
1488	016-6985 S.P.D.T.	Formerly : 016-102✓ Replaces : 016-105, 112 011-1758	10 to 40 (50 to 105)	1.7 to 12 (3 to 21)	2 m with 14.5 mm φ Cross Ambient Bulb
1484	016-6951-1 S.P.D.T.	Formerly : 016-6601 Replaces : 010-6002	-18 to 13 (0 to 55)	1.7 to 12 (3 to 21)	4 m with 9.5 mm dia. Coiled Bulb
14811	108-100 S.P.S.T.	Ice Bank Control	No Adjustment	Phase Change at 0°C (32°F)	1.83 m with Special Bulb
14814	016-110 S.P.D.T.	Formerly : — Replaces : —	-5.3 to 8.6 (22.5 to 47.5)	0.85 Fixed (1.5 Fixed)	1.93 m with 9.5 mm φ Bulb
14816	016-8900 S.P.D.T.	Formerly : — Replaces : 010-1473	-17.8 to 12.8 (0 to 55)	4 to 31 (7 to 55)	2 m with 4.5 mm φ Bulb

TWO TEMPERATURE CONTROL

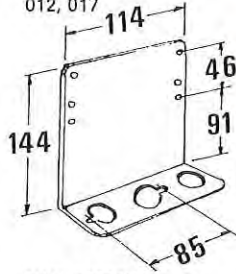
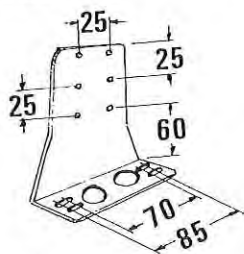
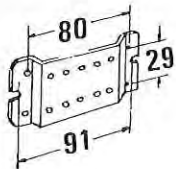
CAT. NO.	CODE NO.	AIR TEMP. SIDE		FACTORY SETTING		COIL TEMP. SIDE	
		Cut-Out Range °C (°F)	Power Element	Cut-Out Air Temp. °C (°F)	Cut-In Coil Temp. °C (°F)	Cut-In Range °C (°F)	Power Element
14813	019-1559	-12 to 15 (10 to 60)	1.93 m Cap. No Bulb	3.3 (38)	2.2 (36)	-6.7 to 15 (20 to 60)	2.44 m Cap. No Bulb

ACCESSORIES

MOUNTING BRACKETS

Single Unit controls: 010, 011, 015, 016, 018, 019, 020, 021, 022, and 025.

Dual Unit controls 012, 017



TEMPERATURE

PRESSURE

DUAL PRESSURE and DUAL TEMPERATURE

P/N 48129-1

P/N 31696-1

P/N 31740-1

CAT. NO.	PART NO.	DESCRIPTION
14871	48129-1	Mounting Brackets (Refer Drawings at left for Type Selection)
14872	31696-1	
14873	31740-1	
14870	2301742-1 (Replaces 30982-3)	CAPILLARY ADAPTOR c/w 2 Flare Nuts

APPROVED ELECTRICAL RATINGS

Volts	Full Load Motor	Locked Rotor
010, 011, 012, 018, 019, S.P.S.T.		
240 AC	17A	102A
016, 017, S.P.D.T.		
240 AC	12A	72A

Where old series code numbers are listed showing the new replacement code numbers, exact replacement of old control may not be possible in every case. Specifications should be carefully checked for suitability.

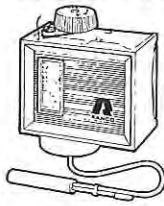
RANCO SERIES 'O' CONTROL REFERENCES

Specifications of Old Types with Current Replacements — TEMPERATURE: Tech. Page 148-a. PRESSURE: Tech. Pages 147-a & 147-b.

Controls Cross Reference (by Brand) — TEMPERATURE: Tech. Page 148-b. PRESSURE: Tech. Page 147-c

Pressure Controls — Current — Selection — Ordering : Page 147.

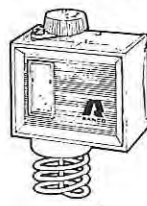
RANCO TYPE "O" TEMPERATURE CONTROLS
SPECIFICATIONS OF OLDER TYPES WITH CURRENT REPLACEMENTS



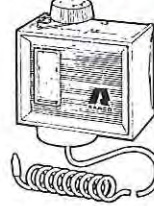
Remote Bulb



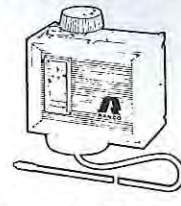
Cross-Ambient Bulb



Air Coil



Remote Air Coil



Straight Capillary

Old Code No.	Replaced By Code No.	Type	Switch Action	Range OF	Lowest Operat. Point	Differential OF	Factory Setting OF		Power Element
							Cut-Out	Cut-In	

SINGLE TEMPERATURE — Auto Reset.

REMOTE 3/8" BULB, 3/32" CAPILLARY TUBE

010-1408	016-6950	SPST	Close on Rise	-15 to 40	-20	3 to 25	-5	0	76" Cap.
010-1409	016-6951	SPST	Close on Rise	0 to 55	-10	3 to 25	10	15	76" Cap.
010-1410	016-6954	SPST	Close on Rise	25 to 75	15	3 to 25	40	44	76" Cap.
010-1417	016-6950	SPST	Close on Rise	-35 to 15	-40	3 to 25	-4	0	42" Cap.
010-1433	016-6950	SPST	Close on Rise	-35 to 15	-40	3 to 25	-4	0	76" Cap.
010-1840	016-6954	SPST	Close on Rise	30 to 90	19	5 to 27.5	50	60	76" Cap.
016-103	016-6950	SPDT	Open or Close on Rise	-30 to 20	-39	3 to 20	-13	-10	76" Cap.
016-104	016-6951	SPDT	Open or Close on Rise	0 to 55	-5	3 to 25	27	30	76" Cap.
016-105	016-6985	SPDT	Open or Close on Rise	50 to 105	37	3 to 25	66	70	76" Cap.
016-6801	016-6950	SPDT							

NO BULB, 3/32" CAPILLARY TUBE

010-1416	016-6951	SPST	Close on Rise	0 to 55	-10	3 to 25	30	34	76" Cap.
010-1419	016-6950	SPST	Close on Rise	-35 to 15	-40	3 to 25	-4	0	76" Cap.
011-1756	016-6954	SPST	Open on Rise	25 to 75	18	3 to 25	65	60	76" Cap.
011-1758	016-6985	SPST	Open on Rise	50 to 105	36	3 to 25	90	85	48" Cap.
011-3019	016-6951	SPST	Open on Rise	0 to 55	-10	3 to 25	20	15	76" Cap.
016-111	016-6951	SPDT	Open or Close on Rise	0 to 55	-5	3 to 25	15	20	76" Cap.
016-112	016-6985	SPDT	Open or Close on Rise	50 to 105	37	3 to 25	85	90	48" Cap.

CAPILLARY AND/OR COILED BULB

010-1415	016-6951	SPST	Close on Rise	0 to 55	-10	3 to 25	36	40	84" Cap. - Remote Coil
010-1418	016-6951	SPST	Close on Rise	0 to 55	-10	3 to 25	36	40	1 1/2" φ x 1 1/4" C.B.
010-1802	016-6954	SPST	Close on Rise	25 to 75	15	3 to 25	52	56	1 1/2" φ x 1 1/4" C.B.
010-1903	016-6954	SPST	Close on Rise	40 to 85	20	3 to 25	65	70	84" Cap. - Remote Coil
010-6001	016-6950-1								
010-6002	016-6951-1								
016-102	016-6985	SPDT	Open or Close on Rise	50 to 105	37	3 to 25	60.5	65	84" Cap. 3/8" x 9/16" Bulb Cross Ambient

FIXED DIFFERENTIAL

010-1490	*	SPST	Close on Rise	0 to 55	-6	3 Fixed	35	38	76" Cap. 3/8" x 1 1/2" Bulb
010-1491	016-6954	SPST	Close on Rise	25 to 75	22	3 Fixed	40	43	76" Cap. 3/8" x 1 1/2" Bulb
016-110	*	SPDT	Open or Close on Rise	22.5 to 47.5	20	1.5 Fixed	35.5	37	76" Cap. 3/8" x 1 1/2" Bulb

SPECIAL APPLICATIONS

010-1414	016-6980	SPST	Close on Rise	30 to 50	20	4 to 10	40	44	84" Cap. 3/8" x 9/16" Bulb Cross Ambient
010-1469	*	SPST	Close on Rise	-15 to 40	-20	3 to 25	-5	0	76" Cap. 3/8" x 1 1/2" Bulb Signal Circuit
010-1470	*	SPST	Close on Rise	-35 to 15	-40	3 to 25	-4	0	76" Cap. No Bulb
010-1473	016-8900	SPST	Close on Rise	0 to 50	-15	7 to 55	15	40	76" Cap. 3/8" φ x 1 1/2" Bulb Wide Cycle Defrost
010-1477	016-6980	SPST	Close on Rise	25 to 45	20	4 to 10	26	31	84" Cap. 3/8" φ x 9/16" Bulb Cross Ambient (Milk Cooler)
010-1829	*	SPST	Close on Rise	30 to 50	20	4 to 10	40	44	84" Cap. 3/8" φ x 9/16" Bulb Manual Start. (Milk Cooler)
010-2020	016-6980								
010-2021	016-6981								
010-6004	016-6980								
010-6005	016-6981								
011-3071	016-6980								
018-100	*	SPST	Close on Rise			Phase Change	Under 32	Over 32	72" Cap. Special Bulb Ice Bank for Milk Cooler
020-6007	*	DPST	Close on Rise	-40 to 15		3 to 25			76" Cap. 3/8" φ Bulb
020-6009	*	DPST	Close on Rise	-10 to 55		3 to 25			76" Cap. 3/8" φ Bulb
020-7007	*	DPST	Close on Rise	-40 to 15		3 to 25			76" Cap. 3/8" φ Bulb
020-7009	*	DPST	Close on Rise	-10 to 55		3 to 25			76" Cap. 3/8" φ Bulb
020-7012	*	DPST	Close on Rise	-10 to 55		3 to 25			84" Cap. 3/8" x 9/16" Bulb Cross Ambient
020-7013	*	DPST	Close on Rise	50 to 105		3.5 to 25	65	70	84" Cap. 3/8" x 9/16" Bulb Cross Ambient
020-7016	*	DPST	Close on Rise	-40 to 15		3.5 to 25			1 1/2" φ x 1 1/2" long Coiled Bulb
021-100	*	SPST	Open on Rise			Phase Change	Over 32	Und. 32	72" Cap. Spec. Bulb
025-100	*	SPDT	Open or Close on Rise	-35 to 40		1.5 Fixed	23.5	25	48" Cap. No Bulb

ADDITIONAL TEMPERATURE CONTROLS — CODE NUMBER CHANGE ONLY

Old Code No.	New Code No.	Old Code No.	New Code No.	Old Code No.	New Code No.	Old Code No.	New Code No.
016-102	016-6985	016-1409	016-6951	016-6601	016-6951-1	016-6804	016-6981
016-1408	016-6950	016-1410	016-6954	016-6803	016-6980	016-6805	016-6950-1

* These Controls, or a replacement, are available from overseas on application. Refer also to Cross Reference Chart on Tech. Page 148-b. Where old series code numbers are listed showing the new replacement code numbers, exact replacement of old control may not be possible in every case. Specifications should be carefully checked for suitability.

NOTE: Refer to Page 148 for Current Controls — Selection — Ordering.

TEMPERATURE CONTROLS CROSS REFERENCE

This Cross Reference has been compiled as a Comparative Control Reference and we assume no liability for its use or misuse. Complete Specifications should be carefully checked against original before replacement. Refer also Notes at bottom of this page.

1

FUNCTION	RANCO		PENN**	DANFOSS	SAGINOMIYA
	OLD / REPLACED	CURRENT (Formerly)*			
SINGLE TEMPERATURE	010-1407 010-1408 010-1419 010-1433 016-103 016-6801	016-6950 (016-1408)*	A19ABC-24/41	KP63 (60L-1108)	TNS-C1010XC
SINGLE TEMPERATURE	010-1409 010-1415 010-1416 010-1418 011-3019 016-104 016-111	016-6951 (016-1409)*	A19ABC-24/41 A72AA-6/43 A19BBC-2/4	KP61 (60L-1102) KP63 (60L-1108)	TNS-C114X
SINGLE TEMPERATURE	010-1410 010-1491 010-1802 010-1840 010-1903 011-1756	016-6954 (016-1410)*	A19ABC-24/41 A19BBC-2/4 A19BAB-3/7 A72AA-7	KP69 (60L-1112)	TNS-C134X
SINGLE TEMPERATURE	010-1414 010-1477 010-2020 010-6004 011-3071	016-6980 (016-6803)*	A19ABC-24/41		
SINGLE TEMPERATURE	010-2021 010-6005	016-6981 (016-6804)*	A72AA-7		
SINGLE TEMPERATURE	010-6001	016-6950-1 (016-6805)*	A19ABC-36/67	KP61 (60L-1102)	
SINGLE TEMPERATURE	011-1758 016-105 016-112	016-6985 (016-102)*			
SINGLE TEMPERATURE	010-6002	016-6951-1 (016-6601)*	A19ABC-36/67		
SINGLE TEMPERATURE ICE BANK CONTROL		108-100			
FIXED DIFFERENTIAL CONTROL		016-110			
SINGLE TEMPERATURE WIDE CYCLE DEFROST CONTROL	010-1473	016-8900			
TWO TEMPERATURE CONTROL		019-1559			
WIDE RANGE TEMPERATURE CONTROLS		C30-1102 (C30-C1100)*	A19ABC-24/41 A19AAB-4/32 A19ABC-40 A19ZBC-2 A19ZBC-7		
		C30-1103 (C30-C1101)*	A19BAC-1/3 A19BBC-2/4		
		C30-1181 (C30-C1180)*	A19ABC-4/60		
		C30-1251 (C30-C1250)*	A19AAC-9/13		
HEAVY DUTY TEMPERATURE	020-6007		A72AA-1/38		
	020-6009		A72AA-2/39		
	020-7007		A72AA-1/38		
	020-7009		A72AA-2/39		
	020-7012		A72AA-20/40		
	020-7013		A72AA-3		
COOLING - COILED BULB	020-7016		A72AA-5/41		

* Current Ranco Controls are shown in **BOLD** type. The Controls shown in brackets () * are identical with the current Control - Code Number change only has been made.

** Penn Controls - where applicable - show in suffix number both old P/N and current Metric P/N. e.g. A19ABC-24 (old) / 41 (New Metric) Where more than one Replacement Comparative Control Make/Brand is shown - check specifications carefully for nearest match.

TEMPERATURE CONTROLS ARE DETAILED ON PAGES :

DANFOSS Type KP61-77 — Page 140

PENN — Pages 144/a/b/c/d/145

RANCO — Pages 145-a/148/148-a

SAGINOMIYA — Pages 144-e/f