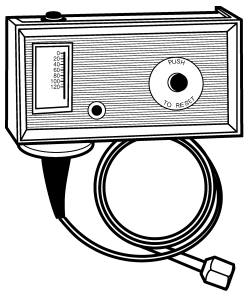
RANCO TYPE P32 LOW PRESSURE LIMIT CONTROL

The Ranco P32 low pressure control provides freeze protection or low refrigerant protection on chillers and other refrigeration systems by sensing suction pressure. It is suitable for R-12, R-22, and R-502 refrigerants. A time delay is provided to allow for start-up in low ambient and momentary low pressure conditions during the run period. The timer is of the heated bimetal (warp) switch design with an ambient temperature compensator. Once the time delay period (standard is 120 seconds) has elapsed, the manual reset button must be depressed to restart the compressor. A five minute cool-down is required before resetting.



P1124

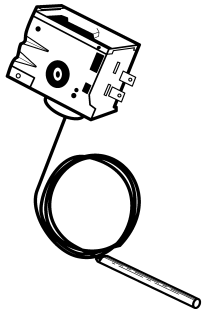
MODEL SELECTION CHART

P32				
P/N	**CUTOUT RANGE (psig)**	**VOLTAGE, AC**	**TIME DELAY**	**CAPILLARY with FLARE NUT (in.)**
RAN-P32-1201	0 to 100	120 or 240	120 seconds	72

RANCO HIGH-LOW PRESSURE CONTROLS

These controls provide extra protection to refrigeration compressors. Type RANG20 protects against loss of charge or evaporator freeze-up. Type RANG23 provides high head pressure protection.

- SPDT switch
- 60″ pressure connection
- Automatic or manual reset
- Field-adjustable settings
- Variety of differentials
- Operates in any position
- Pressure-operated snap action switch

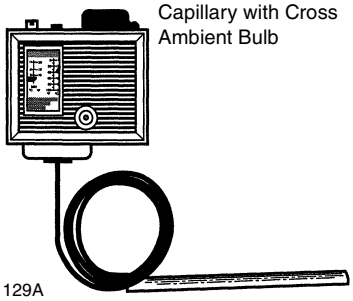

P1128

MODEL SELECTION CHART

G20/G23						
P/N	**CUTOUT RANGE (psig)**	**DIFFERENTIAL (psi)**	**SETTING (psig)**		**HIGH LIMIT**	**RESET**
			OPEN	**CLOSE**		
RAN-G20-4050	7 to 27	12 Fixed	7	19	34	Automatic
RAN-G20-4051	7 to 77	19 to 70		26	100	Automatic
RAN-G20-4412	7 to 70	17 Fixed		24	70	Manual
RAN-G23-5052	150 to 450	50 to 125	375	290	450	Automatic
RAN-G23-5053		105 Fixed	425	320		Manual

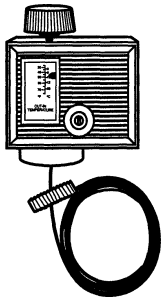
RANCO GENERAL RANGE TEMPERATURE CONTROLS

Recognizing the need for flexibility in design of refrigeration equipment, these controls offer a wide selection for such products as self-contained refrigerators, freezers, coolers, walk-in units, and refrigeration display cases.



Capillary with Cross Ambient Bulb

P1129A



Capillary with Remote Bulb

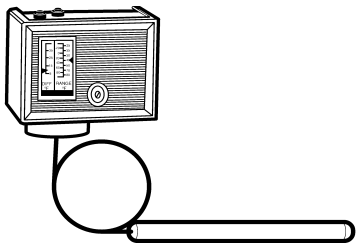
P1130A

APPLICATIONS	RANGE (°F)	DIFFERENTIAL (°F)	P/N						
			O10			O16			O20
			SPST - Opens Low			SPDT - Opens High or Low			DPST Opens Low
			72″ Capillary	Air Coil	72″ Capillary Remote Bulb	72″ Capillary	Air Coil	72″ Capillary Remote Bulb	96″ Capillary 3/8 x 6″ Cross Ambient Bulb
Extra Low (Ice Cream)	-55 to 0	*†3 to 20	RAN-O10-1000	--	--	--	--	--	--
	-35 to 15		RAN-O10-1419	--	RAN-O10-1433	--	--	--	--
Low (Freezer)	-15 to 40		--	RAN-O10-1072	RAN-O10-1408	--	--	--	--
		1.5 Fixed	--	--	--	RAN-O16-588	--	--	--
Medium	22.5 to 47.5		--	--	--	--	--	RAN-O16-601@	--
	0 to 55	*†3 to 20	RAN-O10-1416	RAN-O10-1418	RAN-O10-1409	RAN-O16-111	--	RAN-O16-104	--
		7 to 55	RAN-O10-1010 48″ Cap.	--	RAN-O10-1473	--	--	--	--
		2 Fixed	--	--	RAN-O10-1490	--	--	--	--
		**Manual Reset (Freeze Protection)	--	--	--	RAN-O16-264 96″ Cap.	--	RAN-O16-263	--
Medium/ High	0 to 100	6 to 20	--	--	--	--	--	--	RAN-O20-7041
High	25 to 75	*†3 to 20	--	RAN-O10-1802	RAN-O10-1410	--	--	--	--
		2 Fixed	--	--	RAN-O10-1491	--	--	--	--
	30 to 90	2.5 Fixed	--	--	--	--	6SE 052-6910	--	--
	50 to 105	*†3 to 20	--	--	--	--	RAN-O16-595	--	--

*Locks on temperature decrease.
†Differential at the low end of range is 6 to 25.
@36″ Cap. 3/8″ x 6″ Bulb.

RANCO WIDE RANGE TEMPERATURE CONTROLS

The O60 uses the industry's most advanced sensing element technology.



P1132

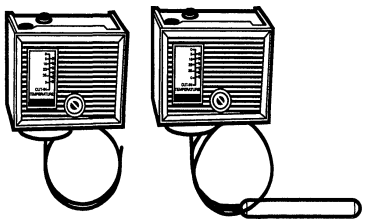
Cross Ambient Bulb

MODEL SELECTION CHART

O60				
RANGE (°F)	DIFFERENTIAL (°F)	P/N		
		SPDT Opens High or Low		
		96″ Capillary 3/8″ x 6″ Cross Ambient Bulb	240″ Capillary 3/8″ x 6″ Cross Ambient Bulb	Air Coil
-35 to 95	4 to 50	RAN-O60-100	RAN-O60-120	RAN-O60-101
95 to 240	6 to 50	RAN-O60-200	--	--

SOFT ICE CREAM and BULK MILK CONTROLS

These controls provide a narrow adjustment range and a fixed 1.5° differential for close, accurate control.



P1133A

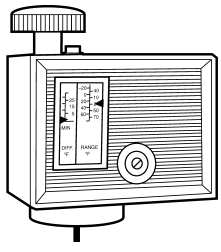
MODEL SELECTION CHART

O60				
TYPICAL APPLICATIONS	RANGE (°F)	DIFFERENTIAL (°F)	P/N	
			SPDT Opens High or Low	
			36″ Capillary 3/8″ x 6″ Cross Ambient Bulb	72″ Capillary
Bulk Milk Cooler	22.5 to 47.5	1.5 Fixed	RAN-O16-601	--
Soft Ice Cream Machine	-15 to 40		--	RAN-O16-588

RANCO O60-109 COMMERICAL REFRIGERATION TEMPERATURE CONTROLS

MODEL SELECTION CHART

P/N	APPLICATION	RANGE (°F)	DIFFERENTIAL (°F)	SWITCH	CAPILLARY
RAN-O60-109	Commercial Refrigeration	-20 to 70	3.5 to 35	SPST; opens low	Cross Ambient Bulb; 96″ Capillary, Bulb 3/8″ x 6″



P1134

RANCO A22/30 CONTROL CHART

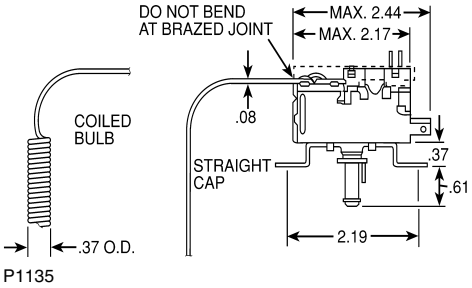
A22/A30											
PART NUMBER	**SWITCH FUNCTION**	**OFF POSITION**	**KNOB ASSEMBLY/ SCREWDRIVER SLOT ADAPTABLE**	**DIFFERENTIAL**	**NORMAL OFF**	**NORMAL ON**	**WARM ON**	**COLD OFF**	**COLD ON**	**CAPILLARY (in.)**	**BULB TYPE**
RAN-A22-391	SPDT	NO	ADAPTABLE	8	27	35	51	11	19	66	
RAN-A22-392	SPDT	NO	ADAPTABLE	23.5	31	54.5	62.5	14	37.5	48	
RAN-A22-1112	SPST	NO	ADAPTABLE	5	--	--	44	25	30	72	
RAN-A22-2237	SPDT	YES	Fixed Setting	4.5	40.5	36				Special Fittings	
RAN-A30-180	SPST	YES	ADAPTABLE	13	9	22	38	-4	9	42	
RAN-A30-181	SPST	YES	ADAPTABLE	13	9	22	41	-4	9	84	
RAN-A30-182	SPST	YES	ADAPTABLE	17	3	20	44	-6		42	
RAN-A30-183	SPST	YES	ADAPTABLE	17	3	20	44	-6		84	
RAN-A30-184	SPST	YES	ADAPTABLE	19	6	25	40	-7		42	
RAN-A30-185	SPST	YES	ADAPTABLE	15.5	5.5	21	36	-15		42	
RAN-A30-260	SPST	YES	ADAPTABLE	6	16	22	30	.5	5.5	72	
RAN-A30-261	SPST	YES	ADAPTABLE	6	--	--	61	32	38	84	
RAN-A30-262	SPST	YES	ADAPTABLE	12	20	32	43	3	15	84	
RAN-A30-263	SPST	YES	ADAPTABLE	22.5	11	33.5	47	.5	23	84	
RAN-A30-301	SPST	NO	ADAPTABLE	8.5	-3	5.5	20.5	-24		84	
RAN-A30-304	SPST	NO	ADAPTABLE	15.5	-6	9.5	19.5	-21.5		84	
RAN-A30-305	SPST	NO	ADAPTABLE	15.5	-6	9.5	19.5	-21.5		108	
RAN-A30-307	SPST	NO	ADAPTABLE	23	0	23	43	-23		78	
RAN-A30-308	SPST	NO	ADAPTABLE	11	-12	-1	12.5	-30.5		84	
RAN-A30-310	SPST	YES	ADAPTABLE	20	-14	6	23	-24		36	
RAN-A30-311	SPST	YES	ADAPTABLE	14	-14	0	23	-22		42	
RAN-A30-312	SPST	YES	ADAPTABLE	8	-10	-2	20.5	-20		24	
RAN-A30-313	SPST	YES	ADAPTABLE	8	-10	-2	21	-20		42	
RAN-A30-314	SPST	YES	ADAPTABLE	8	-10	-2	23	-23.0		54	
RAN-A30-323	SPST	YES	DIAL	10	-5	5	10.5	-11		48	
RAN-A30-542	SPST	YES	DIAL	15	10	25	41.5	1		27	
RAN-A30-543	SPST	YES	DIAL	12	15	27	45	7		27	
RAN-A30-544	SPST	YES	DIAL	15	10	25	43	1		72	
RAN-A30-1769	SPST	YES	DIAL	7	-7	0	10	-19		36	
RAN-A30-1819	SPST	YES	DIAL	7	18	25	37	12		24	
RAN-A30-1977	SPST	YES	SCREWDRIVER	10	14	24	30	5		24	
RAN-A30-2209	SPST	YES	DIAL	8	--	--	46	35	43	48	
RAN-A30-2210	SPST	YES	DIAL	8	32	40	42	30		48	
RAN-A30-2211	SPST	YES	DIAL	10	0	10	17.5	-10.5		48	
RAN-A30-2212	SPST	NO	SCREWDRIVER	6	47	53	57	42.5		48	
RAN-A30-2282	SPST	YES	DIAL	5	43	48	58	32		48	
RAN-A30-3527	SPST	YES	SCREWDRIVER	9	12	21	36	-8		36	
RAN-A30-3618	SPST	YES	DIAL	17	23	40	45	17		30	
RAN-A30-3620	SPST	YES	DIAL	24	16	40	43	12		30	
RAN-A30-3697	SPST	NO	SCREWDRIVER	6			45	33	35	66	
RAN-A30-3701	SPST	YES	SCREWDRIVER	15	25	40	47	16		36	
RAN-A30-3710	SPST	YES	SCREWDRIVER	7	34	41	43	31		18	3/8″ Coil
RAN-A30-3715	SPST	YES	SCREWDRIVER	18	37	55	61	30		72	
RAN-A30-3718	SPST	YES	SCREWDRIVER	18	37	55	61	30		62	3/8″ Coil
RAN-A30-3725	SPST	YES	SCREWDRIVER	19	24	43	50	16		60	
RAN-A30-3734	SPST	YES	DIAL	11	-18	-7	17	-32		72	
RAN-A30-3755	SPST	YES	SCREWDRIVER	13	28	41	47	20		24	
RAN-A30-3769	SPST	YES	SCREWDRIVER	16	32	48	55.5	22	38	18	
RAN-A30-3711	SPST	NO	SCREWDRIVER	6			45	33	39	120	
RAN-A30-3723	SPST	YES	SCREWDRIVER	14	26	40	44	21	35	18	
RAN-A30-3771	SPST	NO	SCREWDRIVER	6			53	32	38	120	

RANCO A12 SERIES CONSTANT CUT-IN CONTROL

The Ranco A12 Controls provide a constant Cut-In feature. The constant Cut-In design is generally used to provide an Off-Cycle defrost function. Each time the control cycles off, the control contacts will remain “open” until the evaporator is cleared of any frost that may have accumulated from the previous “On” Cycle. The A12 constant Cut-In setting will be between 35° and 41° F. (See Control Chart.)

Generally, medium refrigeration units without hot gas or electric defrost systems will use a Constant Cut-In Control (A12 Series).

Rotating the Knob/Dial changes only the Cutout setting. The Cut-In setting remains the same regardless of the Knob/Dial position.

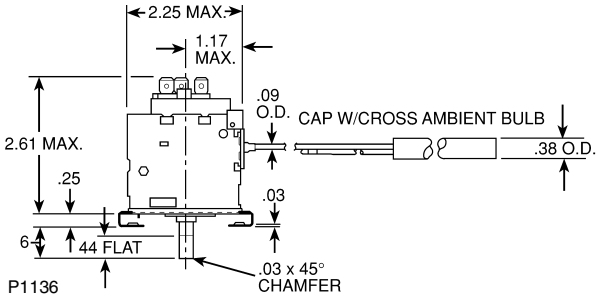


MODEL SELECTION CHART

A12					
P/N	**NORMAL OFF (°F)**	**WARM OFF (°F)**	**COLD OFF (°F)**	**CUT-IN CONSTANT (°F)**	**CAPILLARY LENGTH (in.)**
RAN-A12-1506	15	22	9	38	39 x 3/8 x 1-3/8
RAN-A12-700	18	26	11.5	37	84
RAN-A12-710	23	27	19	36.5	21 x 3/8 x 1-3/8
RAN-A112-701	23.5	31	15	41	84
RAN-A12-1560	24	29	19	38	72
RAN-A12-711	18.5	23	14	37	31 x 3/8 x 1-3/8
RAN-A12-712	15.5	23	8	35	79

RANCO DEFROST TERMINATION/FAN DELAY CONTROLS

The F25 control terminates defrost and delays the evaporator fan operation on electric heat, hot gas, and reverse cycle commercial refrigeration systems.

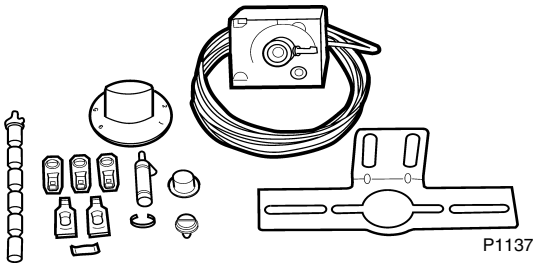


MODEL SELECTION CHART

F25				
P/N	**SWITCH ACTION**	**FAN “ON” TEMPERATURE (°F)**	**DEFROST TERMINATION (°F)**	**SENSING ELEMENT STYLE**
RAN-F25-107	SPDT	20 Fixed	40 to 75 Adjustable	60″ Capillary with 3/8″ x 4″ Cross Ambient Bulb
RAN-F25-114		24 Fixed	44 to 79 Adjustable	

RANCO ADAPTABLE REPLACEMENT CYCLING CONTROLS FOR ROOM AIR CONDITIONERS

Adaptable control to replace OEM controls which govern the ON/OFF compressor function. Includes break-off shaft, dial knob, and mounting bracket.


P1137

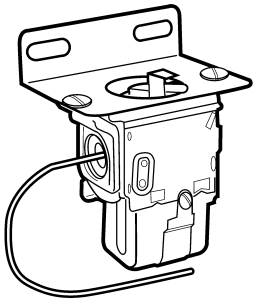
MODEL SELECTION CHART

A22/30						
P/N	SWITCH	DIAL RANGE (°F)	DIFFERENTIAL (°F)	SENSING ELEMENT		POPULAR APPLICATIONS
				Capillary		
				Length (in.)	Type & Bulb Size	
RAN-A30 x 450	SPST	58 to 89	5	--	Air Coil	--
RAN-A30 x 451	SPST	58 to 86	5	36	Straight	GE WJ28 x 500 GE WJ28 x 512
RAN-A30 x 452	SPST	58 to 89	5	39	3/8″ x 4″ Cross Ambient	GE WJ28 x 502
RAN-A30 x 453	SPST	58 to 85	5	18	Straight	Whirlpool 485760 Frigidare 8006445
RAN-A22-2451	SPDT	45 to 81	5	27	Straight	GE WJ28 x 504
RAN-A22-2453	SPDT	59 to 90	6	39	3/8″ x 4″ Cross Ambient	GE WJ28 x 505
RAN-A30-2311	SPST	Fixed Setting Closes @ 60° F Opens @ 30° F	30	30	Straight	Evaporator De-Ice Control

"X" Version rated at 30 FLA at 120/240V.

RANCO AIR CONDITIONER LOW AMBIENT THERMOSTAT

The A30-X204 Low Ambient Temperature Cutout Control has an adjustable range from 50° to 60° F. It is designed for field installation on central and unitary air conditioning systems that are not factory equipped to operate at low ambient temperatures. The A30 Control opens the compressor contactor circuit to prevent possible flood-back damage during cold weather operation when temperatures fall to or below the control set-point. When the outdoor ambient temperature rises 5° F above the control set point, the low ambient control switch closes, completing the circuit to allow normal compressor operation.

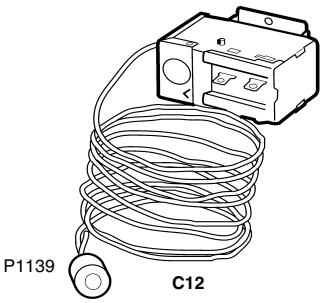

P1138

MODEL SELECTION CHART

A30				
P/N	SWITCH	CUTOUT RANGE (°F)	DIFFERENTIAL (°F)	SENSING ELEMENT
RAN-A30-X204	SPST	50 to 65	6	24″ Capillary

RANCO ICE BANK CONTROLS

Suitable for soft drink dispensers, drink vending machines, and ice builders for thermal storage. Uses a special water-filled bulb and transmission fluid to control ice thickness in applications utilizing a refrigerated water bath with ice bank reserve capacity.



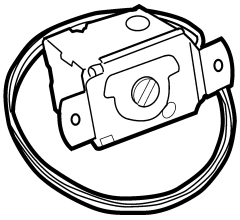
P1139 **C12**

MODEL SELECTION CHART

018/C12				
P/N	**SWITCH**	**RANGE**	**DIFFERENTIAL**	**SENSING ELEMENT**
RAN-O18-100	SPST	Fixed	Approximately 1/8″ Ice Thickness	76″ Capillary with Bulb

RANCO ICE BIN LEVEL CONTROL

Direct replacement control for ice machine applications. Provides narrow differential for accurate control of bin level.



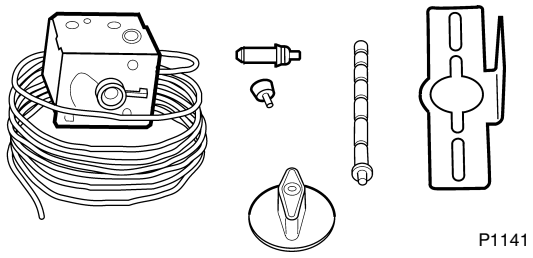
P1140

MODEL SELECTION CHART

A22				
P/N	**SWITCH**	**RANGE (°F)**	**DIFFERENTIAL (°F)**	**SENSING ELEMENT**
RAN-A22-1129	SPDT	35 to 51	6	48″ Capillary
RAN-A30-3815	SPST	27 to 49	5.5	60″ with Bulb
RAN-A30-3842	SPST	27 to 49	5.5	122″ with Bulb

RANCO ICE HARVEST CONTROL

Adaptable replacement for ice machine applications. Parts and instructions included for easy installation.



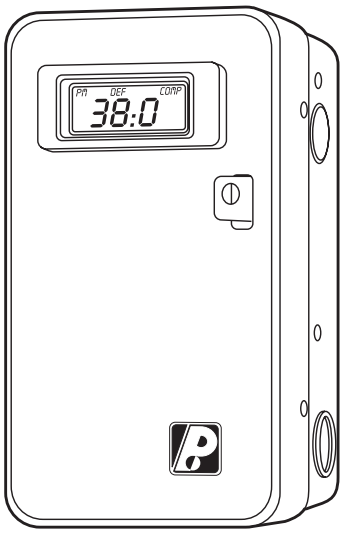
P1141

MODEL SELECTION CHART

A22				
P/N	**SWITCH**	**RANGE (°F)**	**DIFFERENTIAL (°F)**	**SENSING ELEMENT**
RAN-A22-4506	SPDT	-19 to 22	8	72″ Capillary

PARAGON ERC-2 ELECTRONIC REFRIGERATION CONTROL

- Real “time” clock for defrost control
- Integrated Control
  - Temperature Control Function
  - Defrost Control Function
- Output Relays [4]
  - Compressor
  - Defrost
  - Evaporator fan
  - Alarm
- Digital temperature display
- Keypad programming
- Two Temperature sensors [supplied]
  - Terminate defrost cycle
  - Refrigeration cycle
- Safe Mode Operation
  - Continues operation based on performance average in the event sensor fails
- Power Failure Recovery
  - All settings retained in memory
  - “Time-of-day” carried over for 100 hours
- NSF certified
- C-UR-us recognized component
  Rating equivalent to UL and CSA
- Voltage input – 120/208/240VAC, 50 or 60 cycles



P4396

P/N	DESCRIPTION
ERC-2-212111-170	ERC-2 With NEMA 1 Case and Integrated Display
ERC-2-222111-170	ERC-2 With NEMA 1 Case and Remote Display

RANCO/PARAGON COMMERCIAL DEFROST CONTROLS

Special Features Time Initiated, Temperature or Pressure Terminated

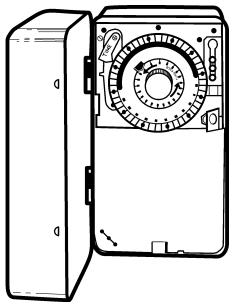
- High amp switch contacts, 40 amps, 2 hp
- Positive slider bar switch designed, assures positive electrical contact and wipes the contact surface of contaminates
- Designed for defrost termination using an external temperature or pressure device
- Safety back-up – mechanical time driven defrost termination
- Heavy duty synchronous design drive motor
- Choice of three contact arrangements
- Frequency of defrost initiation is adjustable from 1 to 6 cycles per day with a minimum of 4 hours between successive operations
- Adjustable back-up defrost termination from 4 to 110 minutes in 2 minute increments
- Enclosed is constructed of heavy-duty steel with knockouts on the bottom, back and sides. Hasp and staple for padlock is part of the enclosure

Time Initiated, Time Terminated

- High amp switch contacts, 40 amps, 2 hp
- Positive slider bar switch designed, assures positive electrical contact and wipes the contact surface of contaminates
- Choice of three contact arrangements
- Heavy duty synchronous design drive motor
- Frequency of defrost initiation is adjustable from 1 to 6 cycles per day with a minimum of 4 hours between successive operations
- Duration of the defrost cycle is adjustable from 4 to 110 minutes in 2 minute increments
- Accuracy of defrost duration is +/ - 2 minutes
- Enclosed is constructed of heavy-duty steel with knockouts on the bottom, back and sides. Hasp and staple for padlock is part of the enclosure

Applications

- Defrost controls for commercial freezers and refrigerators



P1170

Models

P/N		Time Initiated, Time Terminated	Time Initiated, Temperature or Pressure Terminated
120 VAC	208/240 VAC		
8041-00	8041-20	•	
8045-00	8045-20	•	
8047-00	8047-20	•	
8141-00	8141-20		•
8143-00	8143-20		•
8145-00	8145-20		•

RANCO/PARAGON LOW PRESSURE CONTROLS

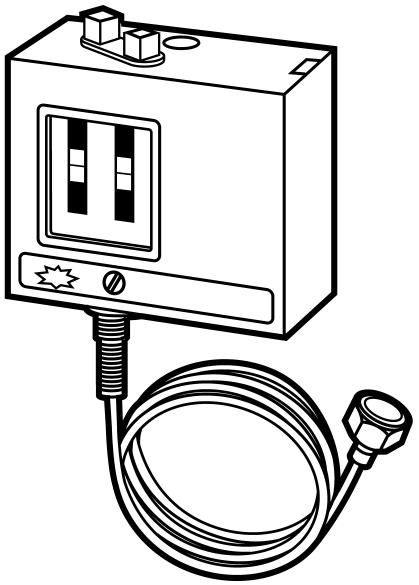
- Controls available for all refrigerant types
- High-amp rated switch (SPST) design (O10-1402/O10-1483)
- Super Cap® capillary protection system — provides 10 times more vibration protection than control with traditional capillary designs
- Non-conductive front cover with captive screw

Applications

Suction Pressure Sensing for:

- Pumpdown — Prevents refrigerant migration
- Temperature Control (cooling space)
- Low Pressure Limit — Compressor protection

NOTE: The **O16-624** has the range and differential required to cover all the Refrigerants shown in the below matrix provided the full load amps do not exceed **17 amps.**



P1019

Suction Pressure Sensing for Temperature Control Matrix

P/N	R-12	R-22	R-134a	R-401a MP39	R-401B MP66	R-402A HP80	R-402B HP81	R4-04A HP62 FX-70	R-407A KLEA60	R-408A FX-10	R-409A FX-56	R-502	R-507 AZ50
RAN-O10-1402	•	• LOW TEMP (-0 ^{o} F)	• LOW TEMP (-0 ^{o} F)	•	•						•		
RAN-O10-1483	•	• MED TEMP	• MED TEMP			•	•	•	•	•		•	•
RAN-O16-624	•	•	•	•	•	•	•	•	•	•	•	•	•

Specifications

	P/N		
Part Number/Specs	**RAN-O10-1402**	**RAN-O10-1483**	**RAN-O16-624**
Range	(12″) to 50 PSIG	(10″) to 100 PSIG	(12″) to 80 PSIG
Differential	5 to 35 PSI	10 to 40 PSI	5 to 38 PSI
Switch	S.P.S.T.	S.P.S.T.	S.P.S.T.
Switch Action	Opens Low	Opens Low	Opens Low
Capillary	36″ with Flare Nut	36″ with Flare Nut	36″ with Flare Nut
Lowest Events	20″ VAC	20″ VAC	20″ VAC

Switch Rating Chart

	P/N	
Part Number/Specs	**RAN-O10-1402/O10-1483**	**RAN-O16-624**
Full loaded Amps @ 120/240 VAC	24 Amps	17 Amps
Locked rotor Amps @ 120/240 VAC	144 Amps	102 Amps
Pilot Duty Rating @ 120/240 VAC	720 Volt/Amps	720 Volt/Amps

Replacement for Penn (Johnson Controls)

Part Number/Specs for Penn	Part Number/Specs for Ranco/Paragon
RAN-P70 AB-12C	**RAN-O10-1402**
RAN-P70 AB-2C	**RAN-O10-1483**
RAN-P70 AB-12C/P70 AB-2C	**RAN-O16-624**

RANCO/PARAGON DUAL FUNCTION PRESSURE CONTROLS

- "Convertible" feature allows selection of manual or reset function when operating at high pressure (O12-4833/4834)
- A wide range of high pressure manual or automatic reset controls can be replaced with either the O12-4833 or O12-4834 models
- A high-pressure limit is combined with suction pressure sensing to provide temperature control and/ or pumpdown
- Pressure ranges are ideally suited for conventional fluorocarbon as well as R-12, R-22 and R-502 newer replacements

High amp contacts:

- FULL LOAD AMPS RATED AT **24** AMPS @ 120/240 VAC
- LOCKED-ROTOR AMPS RATED AT **144** AMPS @120/240 VAC
- PILOT DUTY VOLT AMPS RATED AT 720 VA

Applications
Suction Pressure Sensing for:

- Temperature Control + High Pressure Limit
- Pump-down Control + High Pressure Limit
- Limit Control + High Pressure Limit
- Model O12-4833 requires the same **refrigerant matrix** as 010-1402 (see previous page)
- Model O12-4834 requires the same **refrigerant matrix** as 010-1483 (see previous page)
- Model O12-1594 offers both low and high manual reset

Specifications

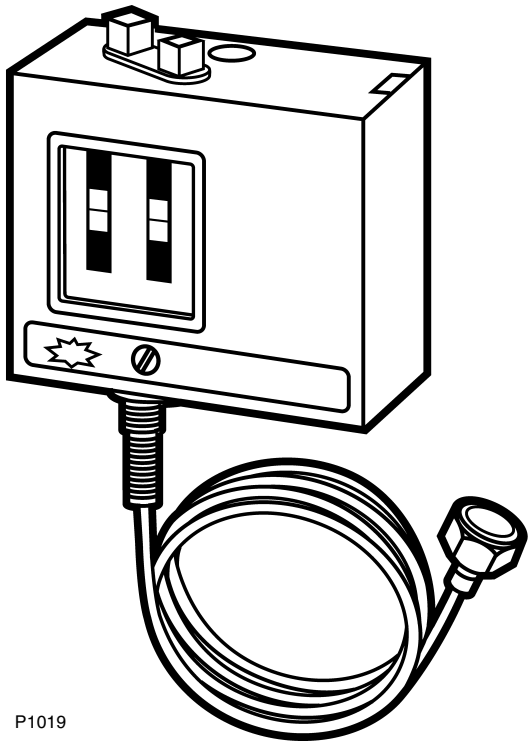
	P/N		
Part Number/Specs	**RAN-O12-4833**	**RAN-O12-4834**	**RAN-O12-1594**
Low Pressure Range	(12″) to 50 PSIG	(10″) to 100 PSIG	(10″) to 100 PSIG
Differential	5 to 35 PSI	10 to 40 PSI	Fixed to 10 PSI
High Pressure Range	150 to 450 PSIG	150 to 450 PSIG	150 to 450 PSIG
Differential	Fixed @ 70 PSI drop	Fixed @ 70 PSI drop	Fixed @ 70 PSI drop
Reset; Low	—	—	Manual
Reset; High	Automatic or Manual	Automatic or Manual	Manual
Capillary Connections	48″ with Flare Nut	48″ with Flare Nut	36″ with Flare Nut

RANCO/PARAGON FAN CYCLE HEAD PRESSURE

- Offers an affordable solution for controlling head pressure
- Model O10-2054 offers high amp contacts, handling most load requirements
- Model O16-108 has a SPDT design which makes it ideal for:
  - Fan cycling control
  - High limit control with alarm (unused terminal can be wired to an alarm to signal a high-pressure cutout)

Applications

- High pressure sensing for condenser fan control



P1019

Specifications

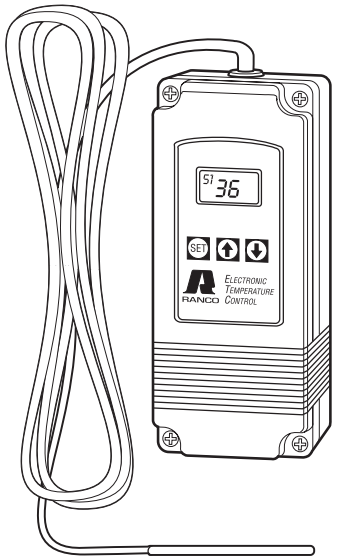
	P/N	
Part Number/Specs	**RAN-O10-2054**	**RAN-O16-108**
Range	100 to 400 PSIG	100 to 400 PSIG
Differential	40 to 150 PSI	40 to 150 PSI
Capillary	36″ with flare nut	36″ with flare nut
	Switch Contact Rating (SPST)	Switch Contact Rating (SPDT)
Full load amps	120/240 VAC, 24 amps	120/240 VAC, 17 amps
Locked rotor amps	120/240 VAC, 144 amps	120/240 VAC, 102 amps
Pilot duty volt amps	120/240 VAC, 720 VA	120/240 VAC, 720 VA
High Amp Switch	Direct Load	

Replacement for Penn (Johnson Controls)

Part Number/Specs for Penn	Part Number Ranco
RAN-P70 AA-118	**RAN-O10-2054**

RANCO/PARAGON ELECTRONIC TEMPERATURE CONTROL (ETC)

- Wide temperature range (-30° F TO 220° F)
- Wide differential adjustment (1° F TO 30° F)
- LCD read-out for sensor temperature, control settings, and relay status
- High amp output relay (FLA 16 Amps @ 120v and 8 Amps @ 208/240 VAC) single stage
- EEPROM memory retains control settings during power outages
- Key-pad lockout prevents the end-user from altering the settings
- Sensor can be extended up to 400 ft. using 18- or 22-gauge thermostat wire
- NEMA 4X models available



P4397

Applications

- Walk-in and reach-in refrigerators
- Milk coolers
- Refrigerated display cases
- Any refrigeration system requiring temperature control
- Staging heating/ cooling

Relay Electrical Ratings

Single Stage Models			Two Stage Models	
120V	**208/240V**	**NO Contact**	**120V**	**208/240V**
16A	8A	Full-load amps	9.8A	4.9A
96A	48A	Locked rotor amps	58.8A	29.4A
15A	8A	Resistive amps	9.8A	4.9A
1 hp	1 hp	Horsepower	1/2 hp	1/2 hp
120V	**208/240V**	**NC Contact**	**120V**	**208/240V**
5.8A	2.9A	Full-load amps	5.8A	2.9A
34.8A	17.4A	Locked rotor amps	34.8A	17.4A
5.8A	2.9A	Resistive amps	5.8A	2.9A
1/4 hp	1/4 hp	Horsepower	1/4 hp	1/4 hp

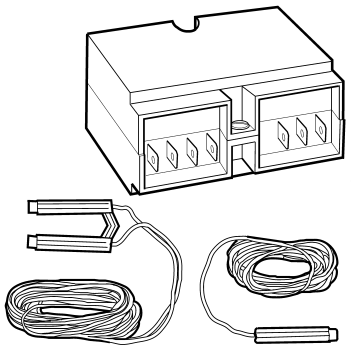
Models

P/N	Voltage	Stage
RAN-ETC-111000-000	120/208/240 VAC	one
RAN-ETC-112000-000	24 VAC	one
RAN-ETC-211000-000	120/208/240 VAC	two
RAN-ETC-212000-000	24 VAC	two

ICE BANK/LIQUID LEVEL CONTROLS

The E37 uses solid state circuitry to control ice banks, ice thickness, or water level.

- Easy installation
- Remote sensing, up to 300 feet
- Includes three probe sensor with 118″ leads. Allows field adjustment of liquid or ice thickness
- Accurate control
- Low voltage, AC sensing, eliminates electrolysis
- SPDT switching relay. Activates at 45K ohms sensor resistance, deactivates at 85K ohms



Electronic E37 with three probe sensor

P1142

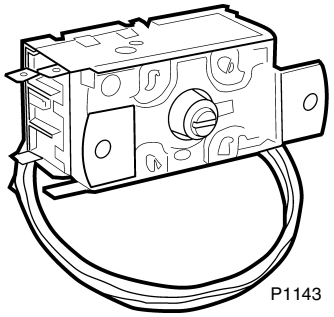
MODEL SELECTION CHART

E37			
P/N	**RELAY**	**DELAY**	**OPERATING VOLTAGES**
RAN-E37-1201	SPDT	3 Probe	240
RAN-E37-1204	SPDT	3 Probe	120

RANCO DIRECT REPLACEMENT WATER COOLER CONTROLS

Ranco's Water Cooler Controls will replace about 80% of your control needs for equipment from such manufacturers as Ebco, Elkay, Sunroc, Halsey-Taylor, Kelvinator, and General Electric.

- Small contact design
- Computer calibrated
- Laser-welded bellows for reliability
- Patented switch for high performance



P1143

MODEL SELECTION CHART

WATER COOLER						
P/N	**NORMAL ON (°F)**	**NORMAL OFF (°F)**	**DIFFERENTIAL (°F)**	**COLD OFF (°F)**	**WARM OFF (°F)**	**CAPILLARY LENGTH (in.)**
RAN-K-3001	53	46	7	37	61	48
RAN-K-3002	50	23	27	7	66	36
RAN-A30-2212	53	47	6	42.5	57	48

DANFOSS OIL DIFFERENTIAL PRESSURE CONTROLS

INTRODUCTION

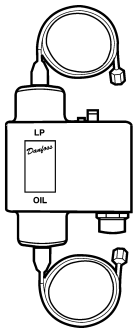
MP 54 and MP 55 oil differential pressure controls are used as safety switches to protect refrigeration compressors against low lubricating oil pressure.

If the oil pressure fails, the control will stop the compressor after a predetermined time period has elapsed.

MP 54 and 55 are used in refrigerating systems using CFC, HCFC, HFC

MP 54 has a fixed differential pressure setting. It also incorporates a thermal time relay with a fixed release time setting.

MP 55 have adjustable differential pressure and are available with thermal time relay.



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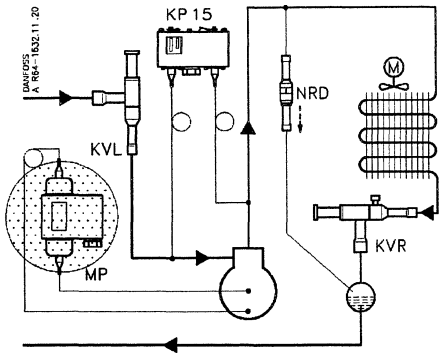
FEATURES

- Fixed and adjustable differentials available.
- 240 or 120 V a.c. or d.c. control voltage.
- Simple manual trip, electrical test function eliminates need of tools and test "jumper" wires.
- Extremely narrow switch differential accuracy.
- Reliable, long life stainless steel bellows.
- Sturdy metal cover and universal mounting hole patterns.
- Integral 1/2 NPSM swivel cable connector allows direct attachment of 1/2 in. male pipe thread connector.
- Standard four-wire hook-up.
- **Refrigerants: CFC, HCFC, HFC**.



P639B

APPROVALS

- UL listed, file E31024.
- CSA certified, LRA 56093.

MATERIALS IN CONTACT WITH THE MEDIUM

UNIT TYPE	MATERIAL
MP 54 MP 55	Stainless steel 19/11, no. 1.4306 to DIN 17440 Deep-drawn steel plate, no. 1.0338 to DIN 1624 Free cutting steel, no. 1.0718 to DIN 1651
MP with capillary tube	Copper SF-Cu, no. 2.0090 to DIN 1787

TECHNICAL DATA

Maximum bellows temperature: 212° F.

Temperature compensation: The time relay is temperature-compensated in the range - 40 to 140° F.

Switch differential: Maximum 2.8 psi.

Maximum working pressure: MWP = 245 psig.

Maximum test pressure: p′ = 320 psig.

Control voltage: 240 V or 120 V a.c. or d.c.

Permissible voltage variation: +10 to −15%.

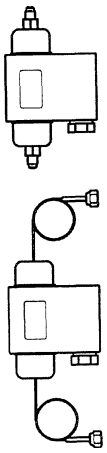
Contact load of time relay output contacts M-S: 240 V a.c.: 2 FLA
240 V a.c.*: 0.2 FLA
*Not approved for DC application.

Cable entry: Integral 1/2 in. female NPSM swivel cable connector allows direct attachment of 1/2 in. male pipe thread connector.

Enclosure: NEMA 1; IP 20 to IEC 529.

DANFOSS OIL DIFFERENTIAL PRESSURE CONTROLS

ORDERING



P639C

TYPE	CONTROL DIFFERENTIAL Δ P PSI	REGULATION RANGE LP SIDE (IN. HG TO PSIG)	TIME RELAY DELAY TIME S	PRESSURE CONNECTION			P/N
				1/4 in. Flare	36 in. Capillary Tube	88 in. Capillary Tube	
MP 54	fixed 6.0	29 in. to 170	45	+			**60B2008**
MP 54	fixed 6.0	29 in. to 170	45		+		**60B2050**
MP 54	fixed 6.0	29 in. to 170	45			+	**60B2058**
MP 54	fixed 13.0	29 in. to 170	45		+		**60B2061†**
MP 54	fixed 6.0	29 in. to 170	60		+		**60B2059**
MP 54	fixed 9.0	29 in. to 170	60	+			**60B2001**
MP 54	fixed 9.0	29 in. to 170	60		+		**60B2051**
MP 54	fixed 9.0	29 in. to 170	90	+			**60B2002**
MP 54	fixed 9.0	29 in. to 170	90		+		**60B2052**
MP 54	fixed 9.0	29 in. to 170	120	+			**60B2003****
MP 54	fixed 9.0	29 in. to 170	120		+		**60B2053****
MP 55	4.3 to 64	29 in. to 170	45		+		**60B2054**
MP 55	4.3 to 64	29 in. to 170	60	+			**60B2012††**
MP 55	4.3 to 64	29 in. to 170	60		+		**60B2055**
MP 55	4.3 to 64	29 in. to 170	90	+			**60B2006**
MP 55	4.3 to 64	29 in. to 170	90		+		**60B2056**
MP 55	4.3 to 64	29 in. to 170	120	+			**60B2007**
MP 55	4.3 to 64	29 in. to 170	120		+		**60B2057**
MP 54	fixed 6.0	29 in. to 170	120	+			**60B2008***

*Corresponds to CARRIER/CARLYLE specifications.

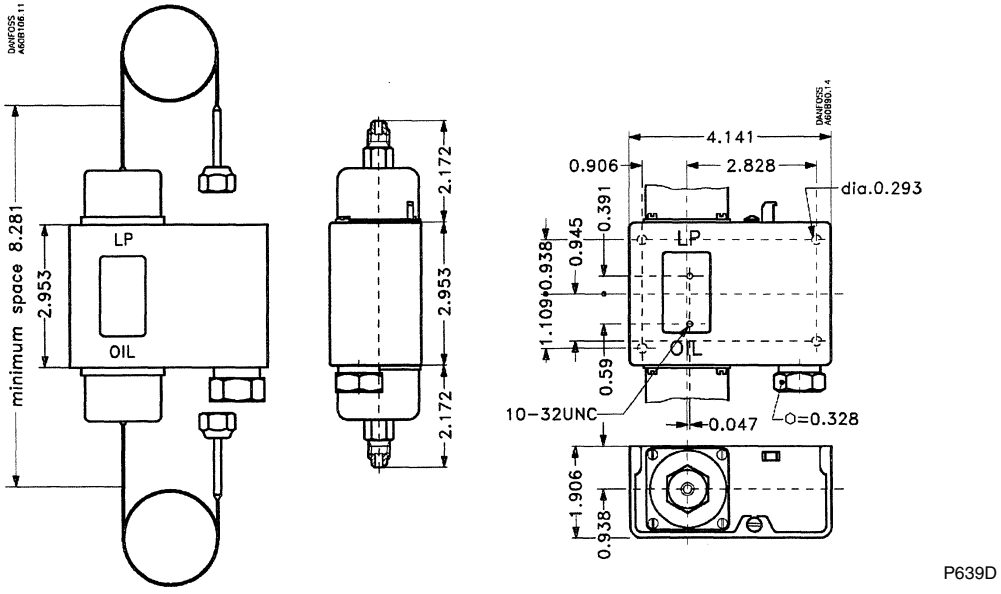
†With **60B1203 bracket.**

**Correspond to COPELAND specifications. Three-wire hook-up.

††With operational light that remains on during normal operation of compressor.

NOTE: When time delay is energized which also means that min. permissible oil pressure (differential Δp) is reached, light goes out.

DIMENSIONS AND WEIGHTS

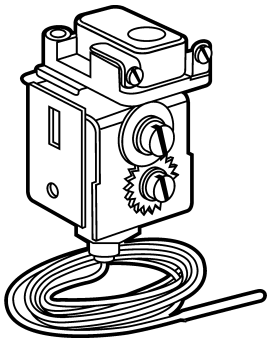


P639D

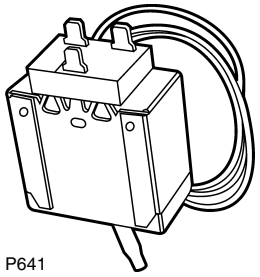
MP 54, 55 — Weight: Approx 1.8 lbs

HIGH PRESSURE SWITCHES

w/POWER DUTY CONTACTS



P640



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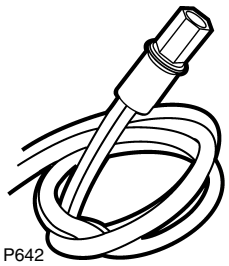
- SPST
- DIFF ADJ.: 35-85 PSIG
- RANGE: 140 TO 450 PSIG
- SWEAT CONNECTION
- FOR CONTROL BOX MOUNTING
- EASILY WIRED
- CAPILLARY LENGTH: 48 INCHES

P/N: HK02HA012

SWITCH TYPE	DIFF. ADJ (PSIG)	PSIG		CONNECTION		P/N
		Open	Close	Type	Cap. Length (in.)	
SPST	50-150	375*	275	1/4 FLARE	84	**HK01UA275**
SPDT	NONE	335*	233	SWEAT	24	**HK02EC340**
SPST	170-235	450*	240	1/4 FLARE	36	**HK02UA300**
SPDT	NONE	400	300	SWEAT	24	**HK02UC300**
SPDT	NONE	375	295	SWEAT	24	**HK02UC375**
SPDT	50-150	320*	220	1/4 FLARE	48	**HK01UA267**
SPDT	NONE	265*	180	1/4 FLARE	80	**HK01UA268**

*Pressure setting adjustable.

w/PILOT DUTY CONTACTS



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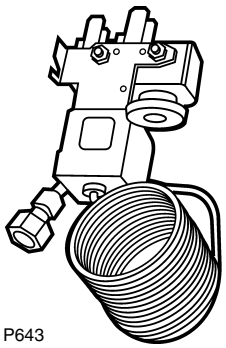


P643

- REQUIRES MINIMUM SPACE
- EASILY REPLACED
- SPST SWITCH
- 1/4″ SAE FLARE CONNECTION
- USE EC39DM061 COUPLING TO MOUNT PRESSURE SWITCH

OPERATING PRESSURE		CONN. ELEC.	DEPRESSOR	P/N
Close	Open			
180	**280**	42″ LEADS	NO	**HK02ZA436**
235	**335**	42″ LEADS	NO	**HK02ZA438**
295	**395**	QUICK CONN.	NO	**HK02ZA395**
320	**426**	48″ LEADS	NO	**HK02ZA439**

SWITCH TYPE	DIFF. ADJ (PSIG)	PSIG		CONNECTION		P/N
		Open	Close	Type	Cap. Length (in.)	
SPST	NONE	364	264	SWEAT	24	**HK02AA359**
SPST	NONE	390	290	1/4 FLARE	60	**HK02AA390**
SPST	NONE	400	300	SWEAT	24	**HK02AA400**

LOW PRESSURE SWITCHES

w/POWER DUTY CONTACTS

- SPST
- DIFF.: 5-50 PSIG ADJUSTABLE
- OPEN RANGE: 20″ VACUUM TO 110 PSIG ADJUSTABLE

CONNECTION		P/N
Type	Cap. Length (in.)	
1/4 FLARE	NONE	**HK02HB010**
SWEAT	36	**HK02HB012**

SWITCH TYPE	DIFF. ADJ (PSIG)	PSIG		CONNECTION		P/N
		Open	Close	Type	Length (in.)	
SPST*	NONE	160	260	SWEAT	42	**HK02AB161**
SPST	NONE	24*	46	SWEAT	24	**HK02EB024**
SPST	7-50	30*	55	1/4 FLARE	48	**HK02UB042**
SPST	13-50	36*	67	1/4 FLARE	36	**HK02UB041**
SPDT	13-50	29*	44	SWEAT	24	**HK02UC029**
SPDT	20-45	29*	63	1/4 FLARE	84	**HK02UB029**

*Pressure setting adjustable.
**Pilot duty.

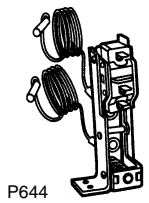
w/PILOT DUTY CONTACTS

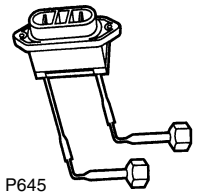
OPERATING PRESSURE		CONN. ELEC.	DEPRESSOR	P/N
Close	Open			
22	**7**	50″ LEADS	YES	**HK02ZB038**
27	**12**	QUICK CONN.	NO	**HK02ZB542**
67	**27**	48″ LEADS	NO	**HK02ZB028**
67	**27**	30″ LEADS	YES	**HK02ZB027**
257	**126**	30″ LEADS	NO	**HK02ZB126**
395	**295**	QUICK CONN.	NO	**HK02ZA265**

SWITCH TYPE	DIFF. ADJ. (PSIG)	PSIG		CONNECTION		P/N
		Open	Close	Type	Cap. Length (in.)	
SPST**	NONE	5	15	SWEAT	36	**HK02AB026**
SPST**	15-45	30	60	1/4 FLARE	84	**HK02AB046**
SPST**	NONE	54	74	SWEAT	24	**HK02AB054**
SPST**	NONE	53	80	SWEAT	24	**HK02AB055**
SPST**	NONE	60	80	SWEAT	24	**HK02AB060**
SPST**	NONE	63	83	SWEAT	24	**HK02AB077**
SPST	NONE	150	260	SWEAT	25	**HK02AB150**
SPST	NONE	175	275	SWEAT	25	**HK02AB175**
SPDT**	NONE	29	54	1/4 FLARE	36	**HK02AC030**

**Pilot duty.

OIL SAFETY, AUTO RESET SWITCHES


P644
FIG. A


P645
FIG. B

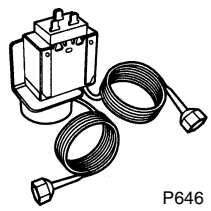


FIG. C P646

FIG.	CONTACT ARRG'T.	CONTACT RATING@ 120/240V	DIFFERENTIAL PRESSURE (PSIG)		PRESSURE CONNECTIONS	P/N
			Cut-In	Cutout		
A	SPDT	125VA	9-13	4-8	36″ CAPIL. w/SWEAT CON.	**HK06CC004**
B	SPST	*	8-14	4-8	30″ CAPIL. w/FLARE NUT	**HK06UB006**
C	SPDT	750VA	9-12	4-6	84″ CAPIL w/FLARE NUT	**HK06UC006**
	SPDT	750VA	9-12	4-6	24″ CAPIL. w/SWEAT CON.	**HK06UC007**

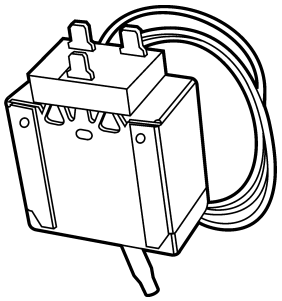
*3.5VA @ 24V

DANFOSS PRESSURE CONTROLS

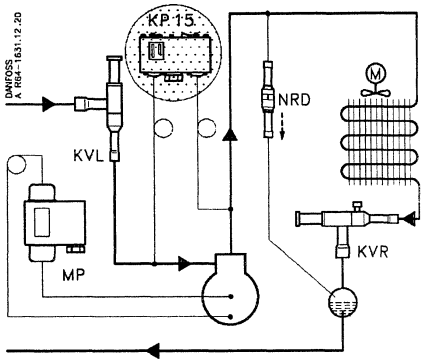
INTRODUCTION

KP pressure controls can be used as safety switches against too low a suction pressure and/or too high a discharge pressure in refrigeration and air conditioning systems. They can also be used to start/stop compressors and fans for air-cooled condensers.

They are available in both single and dual versions and include a single pole double throw (SPDT) switch.



P641



P641A

FEATURES

- "Snap Action" electrical contact. Minimizes chatter, bounce and wear, insuring long-term reliability.
- Available with gold-plated contacts.
- SPDT switch design. Offers open or close switching action on pressure rise or fall.
- Computer-designed integrated bellows/spring assembly. For maximum accuracy and control repeatability.
- Fail safe double bellows. Prevent refrigerant loss and system contamination — standard on KP 7 and KP 17 pressure controls.
- Convenient manual trip feature — To test electrical contact function — no tools needed.
- Vibration and shock resistant.
- Repeatability less than 0.1 psi drift. Even after 400,000 cycles.
- Pressure wire connectors for easy electrical wiring.
- No spade or lug terminals required.
- Integral 1/2 NPSM swivel cable connector allows direct attachment of 1/2 in. male pipe thread connector.
- Lockplate prevents tampering with range and differential settings.
- Universal mounting hole patterns.

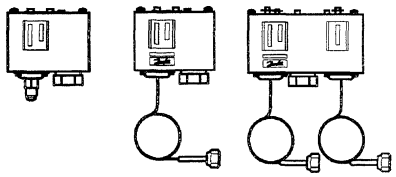
APPROVALS

- UL listed, file E31024.
- CSA certified, LR 27339.

Metric Conversions

1 psi = 0.07 bar
5/9 (t_1° F – 32) = t_2° C
1 ton = 3.5 kW
1 in. = 25.4 mm
1 ft = 0.3 m
1 lb = 0.454 kg
1 oz = 28.35 g
US gal/min = 0.86 m^3/h

DANFOSS PRESSURE CONTROLS



P641B

Refrigerants: CFC, HCFC, HFC

PRESSURE	TYPE	LOW PRESSURE (LP)		HIGH PRESSURE (HP)		RESET		CONTACT SYSTEM	PART NO.	
									Pressure Connection	
		Regulating Range (in. Hg to psig)	Differential Δp psi	Regulating Range psig	Differential Δp psi	Low Pressure LP	High Pressure HP		1/4 in. Flare	Cap. Tube w/1/4 in. Flare Nut 36 in.
Low	KP 1	6 to 108	10 to 58			auto.		SPDT	**60-2001**	
Low	KP 1	6 to 108	10 to 58			auto.				**60-2051**
Low	KP 1	27 to 100	fixed 10			manual				**60-2052***
Low	KP 1	6 to 108	10 to 58			auto.				**60-2076**
Low	KP 2	6 to 50	6 to 32			auto.			**60-2013**	
Low	KP 2	6 to 72	6 to 32			auto.				**60-2063**
High	KP 5			115 to 465	25 to 85		auto.	SPDT	**60-2014**	
High	KP 5			115 to 465	25 to 85		auto.			**60-2064**
High	KP 7W†			115 to 465	58 to 140		auto.		**60-2003**	
High	KP 7W†			115 to 465	58 to 140		auto.			**60-2053**
High	KP7B†			115 to 465	fixed 58		manual		**60-2004**	
High	KP7B†			115 to 465	fixed 58		manual			**60-2054**
Dual	KP 15	6 to 108	10 to 58	115 to 465	fixed 58	auto.	auto.	SPDT/w. LP signal	**60-2008**	
Dual	KP 15	6 to 108	10 to 58	115 to 465	fixed 58	auto.	auto.			**60-2058**
Dual	KP 15	6 to 108	10 to 58	115 to 465	fixed 58	auto.	manual			**60-2059**
Dual	KP 15	6 to 108	10 to 58	115 to 465	fixed 58	manual	manual			**60-2060**
Dual	KP 15	6 to 108	10 to 58	115 to 465	fixed 58	auto.	auto.	SPDT/w. LP + HP signal		**60-2031**
Dual	KP 15	6 to 108	10 to 58	115 to 465	fixed 58	auto.	manual		**60-2026**	
Dual	KP 17W†	6 to 108	10 to 58	115 to 465	fixed 58	auto.	auto.			**60-2029**
Dual	KP 17W†	6 to 108	10 to 58	115 to 465	fixed 58	auto.	auto.	SPDT/w. LP signal		**60-2055**

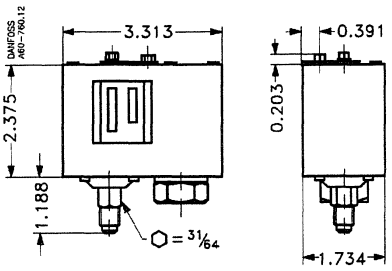
*With dial knob.
†With fail safe double bellows.

Metric Conversions
1 psi = 0.07 bar
5/9 (t_1° F – 32) = t_2° C

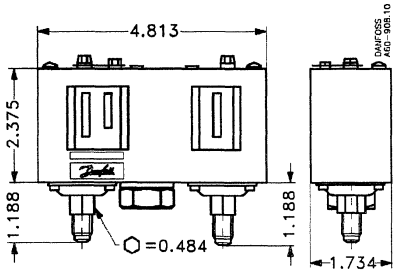
DANFOSS PRESSURE CONTROLS

DIMENSIONS AND WEIGHTS

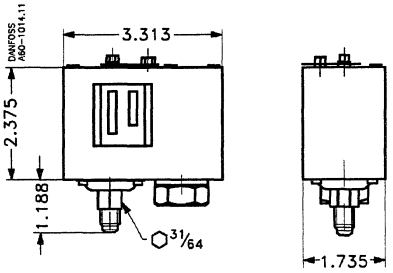
Flare Connection



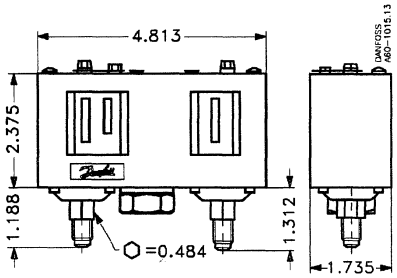
KP 1, 2 and 5



KP 15 and 25



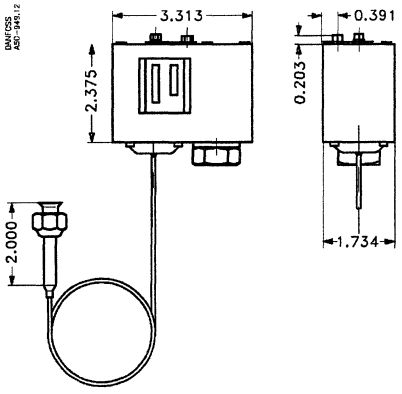
KP 7W and 7B



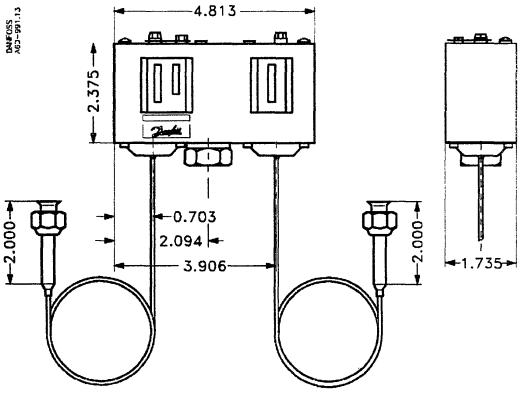
KP 17W and 17B

P641C

Capillary Tube Connection



KP 1, 2, 5, 7W and 7B



KP 15, 17W ,17B and 25

Weights
KP 1, 2, 5 and 7: approx. 0.7 lbs.
KP 15, 17 and 25: approx. 1.1lbs.

P641D

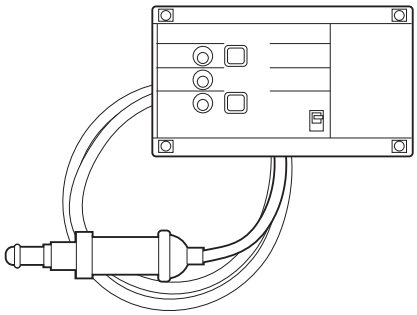
Metric Conversions:1 in. = 25.5 mm
1 lb = 0.454 kg

JOHNSON CONTROLS P445 SERIES ELECTRONIC LUBE OIL CONTROL

DESCRIPTION

The P445 Series Electronic Lube Oil Control is designed for use on refrigeration compressors equipped with an oil pump that accepts a single-point differential pressure transducer. The P445 control senses net tube oil pressure and de-energizes the compressor if lube oil pressure falls below the manufacturer's recommendation for longer than the time delay. Front-mount LEDs indicate the status of the lubrication system and a user-selectable time delay can be set to minimize compressor short cycling.

The R310A Current Sensing Switch is separately available for applications where the P445 control and the compressor are powered separately.



P4413

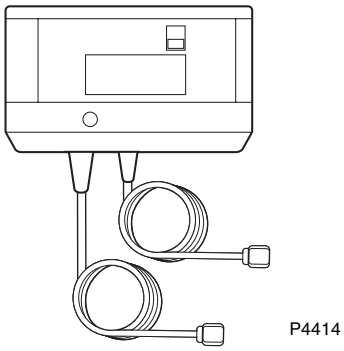
SELECTION CHART

P/N	DESCRIPTION
P445NCB-21C	Electronic Lube Oil Control, 120 Second Delay Before Lockout, Fixed Setpoint Pressure: 9 psi (62 kPa), 48 in. Cable, Includes Sensor (Copeland)
P445NCB-22C	Electronic Lube Oil Control, 120 Second Delay Before Lockout, Fixed Setpoint Pressure: 9 psi (62 kPa), 36 in. Cable, Includes Sensor (Copeland)
P445NCB-25C	Electronic Lube Oil Control, 90 Second Delay Before Lockout, Fixed Setpoint Pressure: 10 psi (62 kPa), 48 in. Cable, Includes Sensor (Tecumseh)
P445NCB-82C	Electronic Lube Oil Control, 120 Second Delay Before Lockout, Fixed Setpoint Pressure: 6.5 psi (44.8 kPa), 36 in. Cable, Includes Sensor (Carlyle)

JOHNSON CONTROLS P45 SERIES LUBE OIL PRESSURE CUTOUT CONTROL (With Time Delay)

DESCRIPTION

The P45 control provides dependable low lube oil cut-out for pressure for lubricated refrigeration compressors. The factory set pressure setting provides operation to the compressor manufacturer's specification. A built-in time delay relay, compensated for ambient temperature, allows for pressure pick-up on start and avoids nuisance shutdowns on short duration pressure losses during the running cycle.



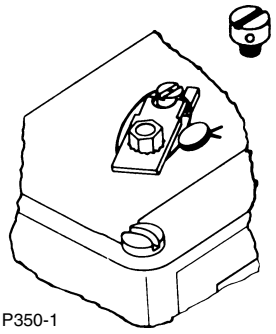
P4414

SELECTION CHART

P/N	TIME DELAY	HEATER CIRCUIT VAC	TYPE OF RESET	MAXIMUM BELLOWS PRESSURE psig (kPa)	FACTORY SETTING psig (kPa)	PRESSURE CONNECTION
Copeland Compressors						
▲P45NCA-12C	120 sec.	120/240	Manual	425 (2390)	9 (62)	36 in. Cap. with 1/4 in. Flare Nut
P145NCA-12C						1/4 SAE Male Brass Connector
P145NCB-12C	—					
Carlyle Compressors						
▲P45NCA-82C	45 sec.	120/240	Manual	425 (2390)	6.5 (45)	36 in. Cap. with 1/4 in. Flare Nut
P145NCA-82C						1/4 SAE Male Brass Connector
P145NCB-82C	—					

▲ Universal Replacement.

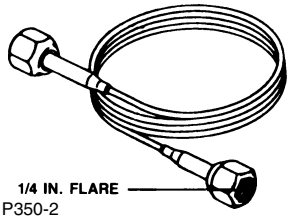
ACCESSORIES


P350-1

SEAL SCREW

For use when sealing the setting. (pkg of 100)

P/N: 691-1057



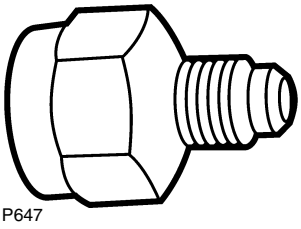
P350-2

TOTALINE@ COPPER DAMPING COILS

For Type KP pressure controls and MP lube oil protection controls.

- 1/4″ SAE FEMALE FLARE NUTS BOTH ENDS
- REFLAREABLE FLARE CONNECTIONS

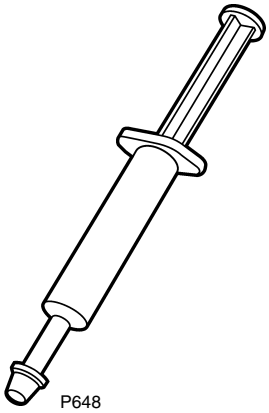
CAPILLARY TUBE LENGTH (in.)	P/N
18	**P538-0070**
36	**P538-0071**
54	**P538-0072**
88	**P538-0073**


P647

REDUCER

3/8″ female flare to 1/4″ male flare.

P/N: DD18DA102

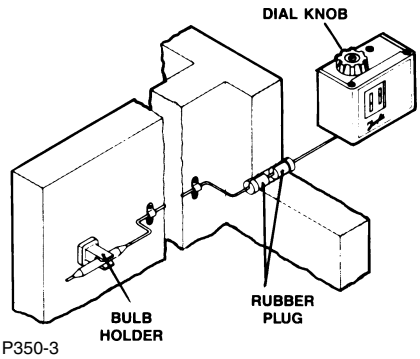

P648

TOTALINE® HEAT CONDUCTIVE PASTE

For Type RT thermostats with bulb mounted in a pocket.

- TUBE CONTAINS: 3.5 CM#3 PASTE
- IMPROVES HEAT TRANSFER FROM POCKET TO BULB
- TEMPERATURE RANGE: -20 TO +150° C (+220° C FOR SHORT PERIODS)

P/N: P538-0110



P350-3

BULB HOLDER
For thermostats with 3/8″ bulb.

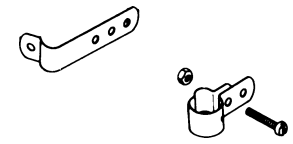
P/N: 691-4157

RUBBER PLUG
0.5″ x 0.8″

P/N: 691-5392

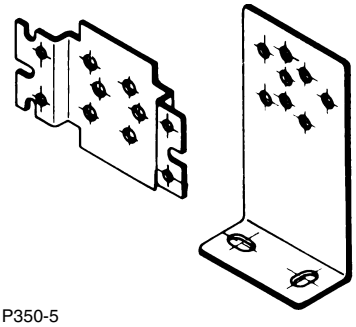
DIAL KNOB
(pkg. of 10)

P/N: 691-1063


P350-4

BULB CLAMP
3″ long

P/N: 691-3500


P350-5

BRACKETS WITH MOUNTING HOLES AND WASHERS

P/N: 691-1055

ANGLE BRACKET

P/N: 691-1056

FOUR SCREWS, PLUS FOUR WASHERS

P/N: 691-1054

A-1 CAPILLARY TUBING

A-1 Components Soft Copper Capillary Tubing is precision plug drawn with the I.D. hold to a tolerance of ±.002. Replaces original capillary tube or expansion valve.

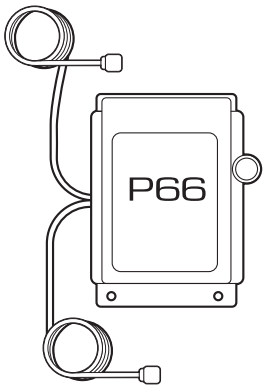
CAPILLARY TUBING

Short Coil Prod. No.	Short Coil Lg.	100 ft Coil Prod. No.	Lg.	Diameter		Weight Per 100 ft.	Short Coil Prod. No.	100 ft Coil Order No.	Short Coil Prod. No.	Short Coil Lg.	100 ft. Coil Prod. No.	Lg	Diameter		Weight Per 100 ft.	Short Coil Prod. No.	100 ft. Coil Order No.
				I.D.	O.D.								I.D.	O.D.			
122-12	12′	122	100′	0.026	0.072	1.61 lbs	7852	7812	115-10	10′	115	100′	0.055	0.125	4.25 lbs	7819	7805
110-10	10′	110	100′	0.031	0.083	2.06 lbs	7816	7800	125-10	10′	125	100′	0.059	0.112	3.14 lbs	7837	7815
111-10	10′	111	100′	0.036	0.087	2.26 lbs	7841	7801	116-10	10′	116	100′	0.064	0.125	3.82 lbs	7820	7806
112-10	10′	112	100′	0.042	0.093	2.38 lbs	7842	7802	117-10	10′	117	100′	0.070	0.125	3.69 lbs	7821	7807
113-10	10′	113	100′	0.044	0.109	3.30 lbs	7832	7803	118-10	10′	118	100′	0.075	0.125	3.39 lbs	7822	7808
123-10	10′	123	100′	0.049	0.099	2.59 lbs	7835	7813	119-10	10′	119	100′	0.080	0.145	4.81 lbs	7823	7809
114-10	10′	114	100′	0.050	0.114	3.12 lbs	7818	7804	120-10	10′	120	100′	0.085	0.145	4.49 lbs	7824	7810
124-10	10′	124	100′	0.054	0.106	2.86 lbs	7836	7814	121-10	10′	121	100′	0.090	0.145	4.25 lbs	7834	7811

JOHNSON CONTROLS P66 SERIES ELECTRONIC FAN SPEED CONTROL

DESCRIPTION

The P66 is a pressure-actuated electronic motor speed controller. By directly sensing pressure, this device electronically varies the speed of a fan motor. This control can be used with a single-phase permanent split capacitor and shaded pole motors that are approved by the motor and equipment manufacturer for speed control applications. To prevent overheating, use a ball bearing motor with a service factor of at least 1.25.



P4407

SELECTION CHART

P/N	OPERATING RANGE psig (kPa) (Factory Setting)	EFFECTIVE THROTTLING RANGE psig (kPa) (Fixed)	PRESSURE RANGE (Adjustable)	MAXIMUM OVERPRESSURE psig (kPa)	CONTROL VOLTAGE	START VOLTAGE % OF LINE	CAPILLARY LENGTH (in.)
P66AAB High-Pressure Models							
P66AAB-1C	190-250 (1310-1724)	60 (414)	140-350 (965-2413)	450 (3103)	24 VAC, 1 VA, Class 2	10	60
P66AAB-3C	180-240 (1241-1655)					16	60
P66AAB-6C	170-230 (1172-1586)					16	60
P66AAB-9C	170-230 (1172-1586)					40	60
P66AAB-10C	190-250 (1310-1724)					16	120
P66AAB-11C	140-200 (965-1379)					16	60
P66AAB-12C	220-280 (1517-1931)					16	120
P66AAB-14C	220-280 (1517-1931)					40	120
P66AAB-15C	190-250 (1310-1724)					40	60
P66AAB-25C	180-240 (1241-1655)					10	120
P66AAB-26C	220-280 (1517-1931)					40	60
P66AAB Low Pressure Models							
P66AAB-4C	135-165 (931-1138)	30 (207)	80-200	450 (3103)	24 VAC, 1 VA, Class 2	10	60
P66AAB-7C	85-115 (586-793)		80-200			16	
P66AAB-13C	60-90 (414-621)		60-180			16	
P66AAB-19C	115-145 (9793-998)		80-200			40	
P66ABB All General Application Models							
P66ABB-21C	220-280 (1517-1931)	60 (414)	140-350 (965-2413)	450 (3103)	24 VAC, 1 VA Class 2	16	120
P66ABB-24C	190-250 (1172-1724)						60