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P70, P72, and P170 Series

Controls for Dual Pressure Applications

Description

The P70, P72, and P170 controls for dual pressure applications are designed primarily for use as combination high and low pressure controls on commercial refrigeration and air conditioning applications.

These controls are available in several pressure ranges and are compatible with most common refrigerants. Ammonia compatible models are also available.

These controls respond directly to system pressure changes on both high and low sides, and can provide single-device control of the compressor.

Controls are available in several different electrical ratings and switch configurations, including independent high and low pressure switches (on P70S and P170S models). The P72 models provide direct control of 208-240 volt, single-phase motors up to 3 horsepower, and 208-220 volt, 3-phase motors up to 5 horsepower.

Features

- all-steel case and cover built to provide long lasting, rugged protection for internal components
- "Sight-Set" calibrated pressure adjustment displays a visible pressure scale, fully adjustable through the range without removing the cover (on NEMA 1 enclosure models)
- MICRO-SET™ differential option allows for precise control on low pressure applications
- independent high and low pressure switches (P70S and P170S Models) satisfies a variety of dual pressure application wiring requirements with a single versatile control
- convertible high pressure reset–auto reset or manual reset lockout (P70S and P170S Models) reduces inventory— one control can be adapted to several dual pressure applications in the field

Applications

- **P70S and P170S models** have independently operated high and low pressure Single-Pole Double-Throw (SPDT) switches that can be wired to satisfy a variety of control requirements. These adaptable controls also come with a high pressure manual reset lockout mechanism that may be converted to automatic reset.
- **P70L, M, N, and P170L, M, N models** have a Single-Pole Single-Throw (SPST) switch. Models are available with automatic or manual reset lockout options. Models with manual reset are available with either high-side-only manual reset, or low-side **and** high-side manual reset. Ammonia-compatible models are also available (P70L and P70M only).

P70SA-1 Dual Pressure Control

P72 models have a Double-Pole Single-Throw (DPST) switch with load-carrying contacts that can provide direct control of 208-240 VAC, single-phase motors up to 3 hp, and 208-220 VAC, 3-phase motors up to 5 hp. Refer to DPST Electrical Ratings (P72L, M, and N Types) on page 3.

Some models are available with **Limited Knob Adjustment,** which restricts adjustment of the pressure settings and deters over-adjustment or tampering.

NEMA 1 enclosures are standard on most models. **NEMA 3R enclosures** are also available.

Selection Chart for Standard Model P70, P72, and P170 Dual Pressure Controls (Part 1 of 2)

Code Number	Switch Action	Low Pressure Side psig (kPa)		High Pressure Side psig (kPa)		Pressure Connector	Limited Knob Adjustment
		Range	Differential	Range	Differential (Non-Adjustable)		
MICRO-SET Controls for Non-Corrosive Refrigerants							
P70LB-6C [1]	SPST	12 in.Hg to 80 (-41 to 552)	Min 5 (34) Max 35 (241)	100 to 500 (690 to 3447)	Fixed Approx. 65 (448)	36 in. Capillary with 1/4 in. Flare Nut	Low CUT OUT
P70MA-18C [1]					Lockout Requires Manual Reset		None
P70SA-1C [1]	Two Independent SPDT				Fixed at 65 (448) **or** Lockout Requires Manual Reset		
P170LB-6C [1]	SPST				Fixed Approx. 65 (448)	1/4 in. Male Flare Connector	Low CUT OUT
P170MA-18C [1]					Lockout Requires Manual Reset		None
P170SA-1C [1]	Two Independent SPDT				Fixed at 65 (448) **or** Lockout Requires Manual Reset		
All Range Controls for Non-Corrosive Refrigerants							
P70LB-1C [1]	SPST	20 in.Hg to 100 (-68 to 690)	Min 6 (41) Max 50 (345)	100 to 500 (690 to 3447)	Fixed Approx. 65 (448)	36 in. Capillary with 1/4 in. Flare Nut	Low CUT OUT
P70MA-1C [1]					Lockout Requires Manual Reset		None
P70NA-1C			Fixed (Manual Reset)				
P72LA-1C [1]	DPST		Min 7 (48) Max 50 (345)		Fixed Approx. 65 (448)		
P72LB-1C [1]							Low CUT OUT
P72MA-1C [1]					Lockout Requires Manual Reset		None
P72NA-1C [1]			Fixed (Manual Reset)				

Controls for Dual Pressure Applications (Continued)

Selection Chart for Standard Model P70, P72, and P170 Dual Pressure Controls (Part 2 of 2)

Code Number	Switch Action	Low Pressure Side psig (kPa)		High Pressure Side psig (kPa)		Pressure Connector	Limited Knob Adjustment
		Range	Differential	Range	Differential (Non-Adjustable)		
All Range Controls for Non-Corrosive Refrigerants (Continued)							
P170LB-1C [1]	SPST	20 in.Hg to 100 (-68 to 690)	Min 7 (48) Max 50 (345)	100 to 500 (690 to 3447)	Fixed Approx. 65 (448)	1/4 in. Male Flare Connector	Low CUT OUT
P170MA-1C [1]					Lockout Requires Manual Reset		None
P170NA-1C			Fixed (Manual Reset)				
All Range Ammonia Compatible Controls							
P70LA-2C [1]	SPST	20 in. Hg to 100 (-68 to 690)	Min 7 (48) Max 50 (345)	100 to 500 (690 to 3447)	Fixed Approx. 65 (448)	1/4 in. Female NPT Connector	None
P70MA-2C [1]					Lockout Requires Manual Reset		

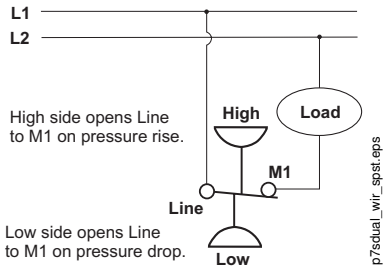
1. Control models with high pressure side (only) that are UL Listed as Refrigeration Pressure Limiting Controls.

Note: For information on models not listed, please contact Johnson Controls/Penn Refrigeration Application Engineering at 1-800-275-5676.

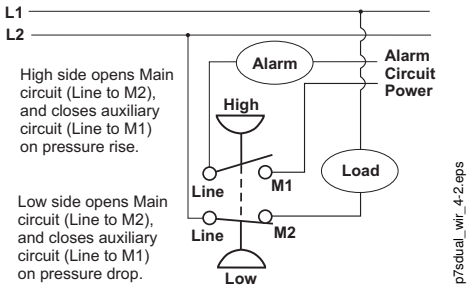
Technical Specifications

Maximum Pressures

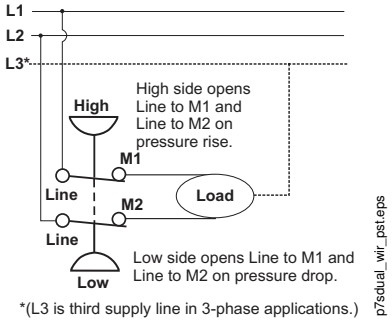
Pressure	Low Side		High Side
	All Range	MICRO-SET	
Maximum Working Pressure	100 psig (552 kPa)	80 psig (690 kPa)	500 psig (3447 kPa)
Maximum Overpressure	325 psig (2241 kPa)	525 psig (3620 kPa)	525 psig (3620 kPa)



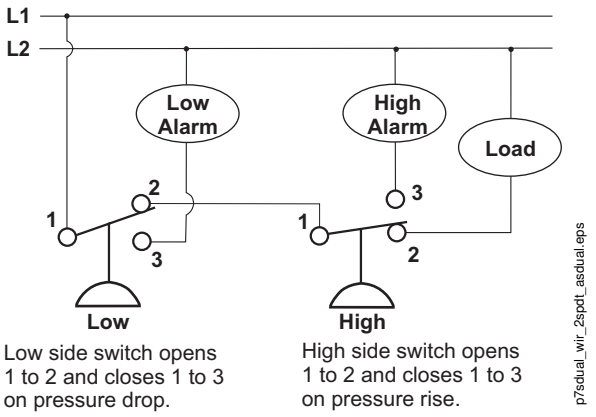
Typical Wiring for SPST Switch (P70L, M, and N, and P170L, M, and N Models)



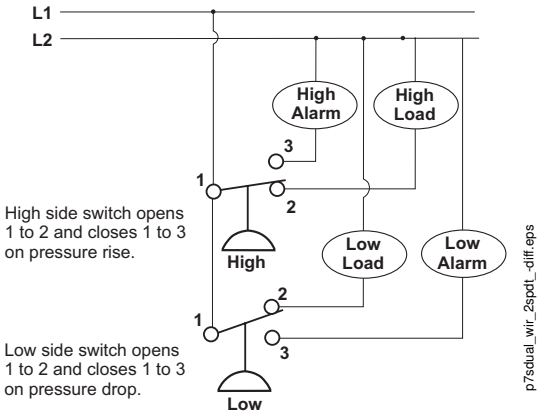
Typical Wiring for 4-wire, 2-circuit Switch (P70P, Q and R Models)



Typical Wiring for DPST Switch (P72L, M, and N Models)



Two SPDT Switches Wired as a Dual Pressure Control (Switching a Single Load with Optional High Side Alarm and Low Side Alarm) (P70S and P170S Models)



Two SPDT Switches Wired to Control Two Different Loads, (Optional High Side Alarm and Low Side Alarm) (P70S and P170S Models)

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Controls for Dual Pressure Applications (Continued)

Technical Specifications (Continued)

DPST Electrical Ratings (P72L, M, and N Types)

	Standard Ratings					Hermetic Compressor Ratings	
	120 VAC, 1Ø	208 VAC, 1Ø	240 VAC, 1Ø	208 VAC, 3Ø	220 VAC, 3Ø	208 VAC, 1Ø	240 VAC, 1Ø
Motor Horsepower	2	3	3	5	5	--	--
Motor Full-Load A	24	18.7	17	15.9	15	24	24
Motor Locked-Rotor A	144	112.2	102	95.4	90	144	144
AC Non-Inductive A	24	24	24	24	24	--	--
DC Non-Inductive A	3	0.5	0.5	0.5	0.5	--	--
Pilot Duty	125 VA at 120 to 600 VAC; 57.5 VA at 120 to 300 VDC						

SPST Electrical Ratings (P70L, M, and N, and P170L, M, and N Types)

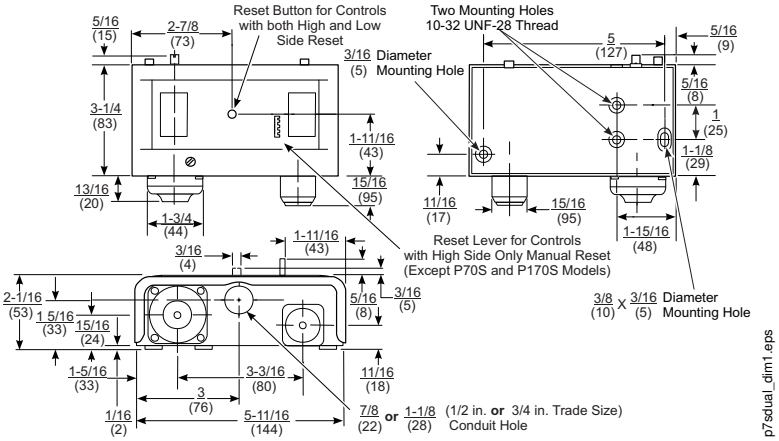
	Single-Phase Ratings			
	Standard			Hermetic Compressor
	120 VAC	208 VAC	240 VAC	208/240 VAC
Motor Horsepower	2	3	3	--
Motor Full-Load A	24	18.7	17	24
Motor Locked-Rotor A	144	112.2	102	144
Non-Inductive A	22	22	22	--
Pilot Duty - 125 VA at 120 to 600 VAC; 57.5 VA at 120 to 300 VDC				

SPDT Electrical Ratings (P70S and P170S Types)

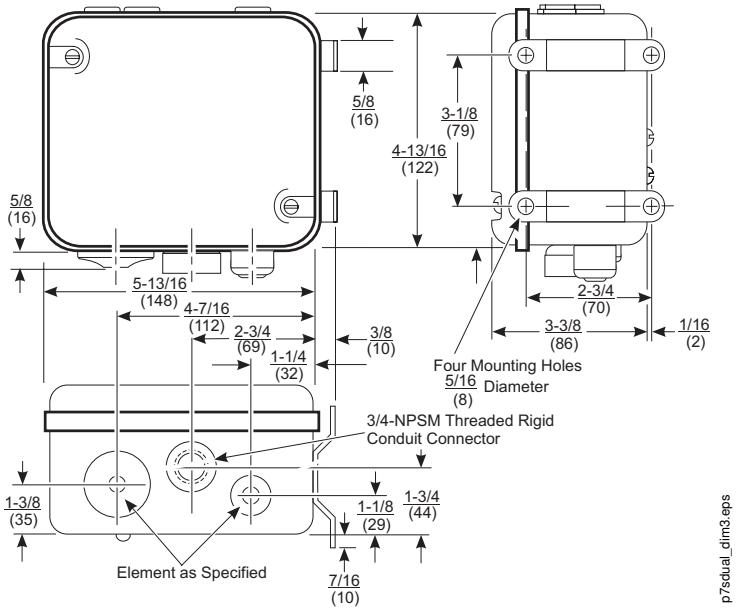
	Standard Single-Phase Ratings			
	120 VAC	208 VAC	240 VAC	277 VAC
Motor Full Load A	16.0	9.2	8.0	7.0
Motor Locked Rotor A	96.0	55.2	48.0	42.0
Non-Inductive A	16.0	9.2	8.0	-
Pilot Duty - 125 VA at 24 VAC; 720 VA at 120 to 277 VAC				

4-wire, 2-circuit Electrical Ratings (P70P, Q, and R Types)

	Standard Single-Phase Ratings							
	Line-M2 (Main Contacts)				Line-M1 (Auxiliary Contacts)			
	120 VAC	208 VAC	240 VAC	277 VAC	120 VAC	208 VAC	240 VAC	277 VAC
Motor Full Load A	16.0	9.2	8.0	--	6.0	3.3	3.0	--
Motor Locked Rotor A	96.0	55.2	48.0	--	36.0	19.8	18.0	--
Non-Inductive A	16.0	9.2	8.0	7.2	6.0	6.0	6.0	6.0
Pilot Duty for both sets of contacts	125 VA at 24 to 600 VAC; 57.5 VA at 120 to 300 VDC							



Dimensions for P70, P72, and P170 Dual Pressure Controls with NEMA 1 Enclosure, in. (mm) *



Dimensions for P70, P72, and P170 Dual Pressure Control with NEMA 3R Enclosure, in. (mm) *

*** These dimensions are nominal and are subject to accepted manufacturing tolerances and application variables.**

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