



Description

Figure 1: P70MA-1 Dual Pressure Control



P70, P72, and P170 Series dual pressure controls 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. P72 models provide direct control of 208 V to 240 V, single-phase motors of up to 3 hp, and 208 V to 220 V, three-phase motors up to 5 hp.

Refer to the *P70, P72, and P170 Series Controls for Dual Pressure Applications Product Bulletin (LIT-125455)* for important product application information.

Features

All-steel case and cover

Long lasting, rugged protection for internal components

Sight-set calibrated pressure adjustment

Visible pressure scale on NEMA 1 enclosure models, fully adjustable through the range without removing the cover

MICRO-SET™ differential option

Precise control on low pressure applications

Additional P70S and P170S features

The following P70S and P170S features make the control more versatile and reduce inventory:

Independent high and low pressure switches

Meets a variety of dual pressure application wiring requirements

Convertible automatic or manual reset lockout for high pressure

Adaptable to several dual pressure applications in the field

Applications

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

P70S and P170S models

P70S and P170S controls feature independently operated high and low pressure single-pole, double-throw (SPDT) switches that you can wire to satisfy a variety of control requirements. These adaptable controls also come with a high pressure manual reset lockout mechanism that you can convert to automatic reset.

P70L, P70M, P70N, and P170L, P170M, P170N models

These controls feature 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. P70L and P70M ammonia-compatible models are also available.

P72 models

P72 controls feature a double-pole, single-throw (DPST) switch with load-carrying contacts that can provide direct control of 208 VAC to 240 VAC, single-phase motors up to 3 hp, and 208 to 220 VAC, three-phase motors up to 5 hp. See [Electrical ratings](#).

Some models are available with limited knob adjustment, which restricts adjustment of the

pressure settings and deters over-adjustment or tampering.

Repair information

If a P70, P72, or P170 series control fails to operate within its specifications, replace the unit. For a replacement control, contact the nearest Johnson Controls® representative.

Selection charts

Note:

- In each of the following tables, if the high pressure side is UL listed, the high pressure side only is UL Listed as a Refrigeration Pressure Limiting Control.
- The high side differential is not adjustable.

Table 1: Selection chart for MICRO-SET controls for non-corrosive refrigerants

Product code number	Switch action	Low pressure side, psi (kPa)		High pressure side, psi (kPa)		Pressure connector	Limited knob adjustment	High pressure side UL listed
		Range	Differential	Range	Differential			
P70LB-6C	SPST	12 in. Hg to 80 psi (-41 to 552)	Minimum 5 (34) Maximum 35 (241)	100 to 500 (690 to 3,447)	Fixed, approximately 65 (448)	36 in. capillary with 1/4 in. flare nut	Low cutout	Yes
P70SA-1C	Two independent SPDT				Lockout fixed at 65 (448), you can set the reset to automatic or manual		None	
P170LB-6C	SPST				Fixed, approximately 65 (448)	1/4 in. external flare connector	Low cutout	
P170MA-18C					Lockout requires manual reset		None	
P170SA-1C	Two independent SPDT				Fixed at 65 (448) or lockout requires manual reset			

Table 2: Selection chart for all-range controls for non-corrosive refrigerants

Product code number	Switch action	Low pressure side, psi (kPa)		High pressure side, psi (kPa)		Pressure connector	Limited knob adjustment	High pressure side UL listed
		Range	Differential	Range	Differential			
P70LB-1C	SPST	20 in. Hg to 100 psi (-68 to 690)	Minimum 7 (48)	100 to 500 (690 to 3,447)	Fixed, approximately 65 (448)	36 in. capillary with 1/4 in. flare nut	Low cutout	Yes
P70MA-1C			Maximum 50 (345)		Lockout requires manual reset		None	
P70NA-1C			Fixed (manual reset)				No	
P72LA-1C	DPST		Minimum 7 (48)		Fixed, approximately 65 (448)		Low cutout	Yes
P72LB-1C			Maximum 50 (345)		Lockout requires manual reset		None	
P72MA-1C			Fixed (manual reset)					
P72NA-1C								
P170LB-1C	SPST		Minimum 7 (48)		Fixed, approximately 65 (448)	1/4 in. external flare connector	Low cutout	
P170MA-1C			Maximum 50 (345)		Lockout requires manual reset		None	
P170NA-1C			Fixed (manual reset)				No	

Table 3: Selection chart for all-range ammonia compatible controls

Product code number	Switch action	Low pressure side, psi (kPa)		High pressure side, psi (kPa)		Pressure connector	Limited knob adjustment	High pressure side UL listed
		Range	Differential	Range	Differential			
P70LA-2C	SPST	20 in. Hg to 100 psi (-68 to 690)	Minimum 7 (48)	100 to 500 (690 to 3,447)	Fixed, approximately 65 (448)	1/4 in. internal NPT connector	None	Yes
P70MA-2C			Maximum 50 (345)		Lockout requires manual reset			

ⓘ **Note:** For information about models not listed, contact Johnson Controls/PENN® Refrigeration Application Engineering at 1-800-275-5676.

Technical specifications

Table 4: Maximum pressures

Pressure	Low side		High side
	All range	MICRO-SET	
Maximum working pressure	100 psi (552 kPa)	80 psi (690 kPa)	500 psi (3,447 kPa)
Maximum overpressure	325 psi (2,241 kPa)	525 psi (3,620 kPa)	525 psi (3,620 kPa)

Figure 2: Standard wiring for an SPST switch

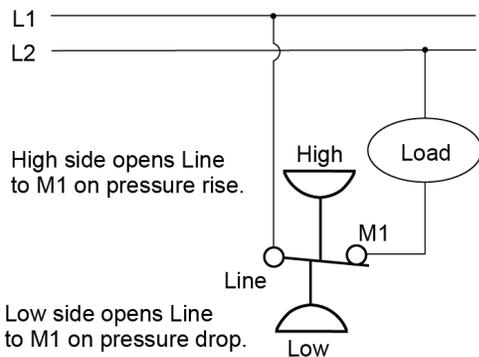


Figure 3: Standard wiring for a P70P four-wire, two-circuit switch model

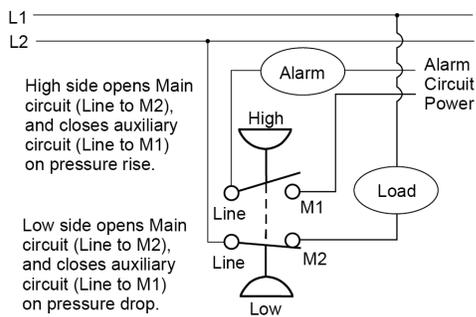
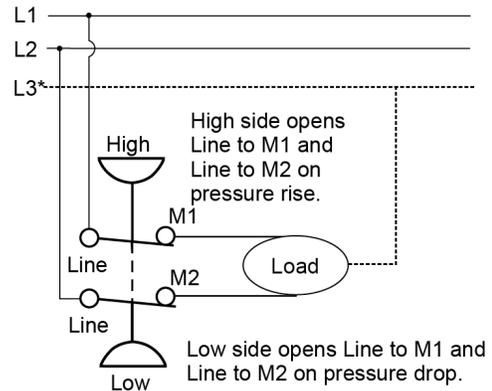


Figure 4: Standard wiring for a DPST switch



*(L3 is third supply line in 3-phase applications.)

Figure 5 and Figure 6 illustrate two P70S or P170S SPDT switches wired in various control configurations that switch loads with an optional high side alarm and low side alarm.

Figure 5: Two SPDT switches wired as a dual pressure control

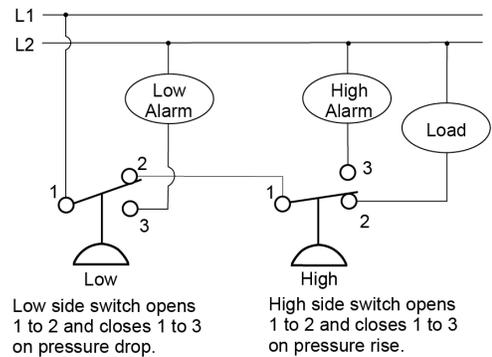


Figure 6: Two SPDT switches wired to control two different loads

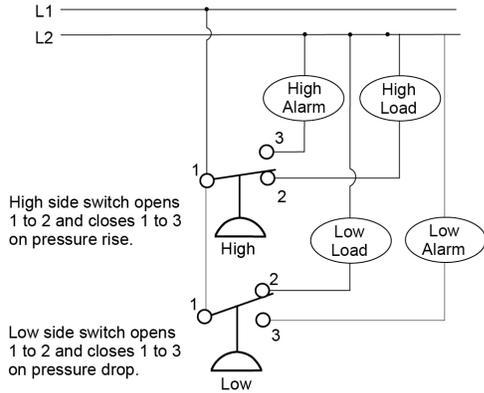


Figure 7: Dimensions for P70, P72, and P170 dual pressure controls with NEMA 1 enclosure, in. (mm)

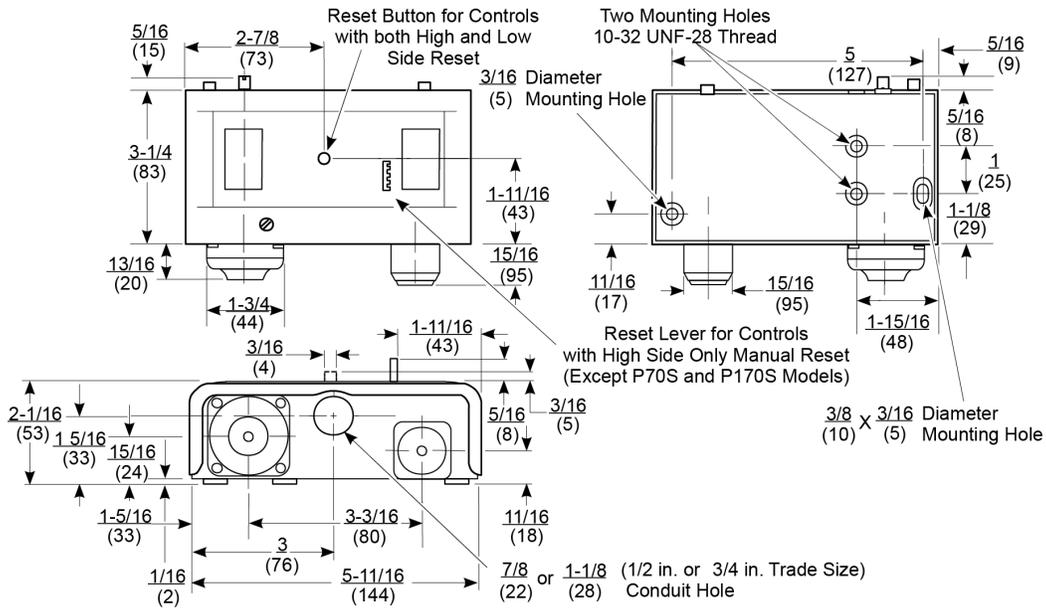
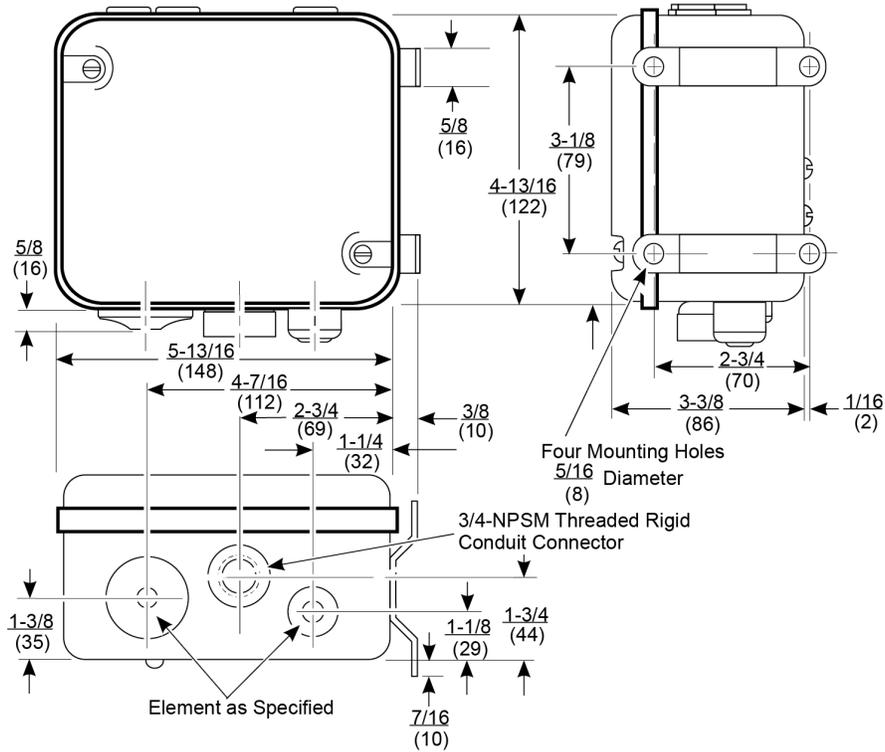


Figure 8: Dimensions for P70, P72, and P170 dual pressure control with NEMA 3R enclosure, in. (mm)



① **Note:** These dimensions are nominal and are subject to accepted manufacturing tolerances and application variables.

Electrical ratings

Table 5: DPST electrical ratings for P72L, P72M, and P72N

Description	Standard single-phase ratings					Hermetic compressor ratings	
	120 VAC, single-phase	208 VAC, single-phase	240 VAC, single-phase	208 VAC, three-phase	220 VAC, three-phase	208 VAC, single-phase	240 VAC, single-phase
Motor horsepower	2	3	3	5	5	—	—
Motor full-load amps	24	18.7	17	15.9	15	24	24
Motor locked-rotor amps	144	112.2	102	95.4	90	144	144
AC non-inductive amps	24	24	24	24	24	—	—
DC non-inductive amps	3	0.5	0.5	0.5	0.5	—	—
Pilot duty	125 VA at 120 VAC to 600 VAC 57.5 VA at 120 VDC to 300 VDC						

Table 6: SPST electrical ratings for P70L, P70M, P70N, and P170L, P170M, P170N

Description	Single-phase ratings			
	Standard single-phase ratings			Hermetic compressor ratings
	120 VAC	208 VAC	240 VAC	208/240 VAC
Motor horsepower	2	3	3	—
Motor full-load amps	24	18.7	17	24
Motor locked-rotor amps	144	112.2	102	144
Non-inductive amps	22	22	22	—
Pilot duty	125 VA at 120 VAC to 600 VAC 57.5 VA at 120 VDC to 300 VDC			

Table 7: SPDT electrical ratings for P70S and P170S

Description	Standard single-phase ratings			
	120 VAC	208 VAC	240 VAC	277 VAC
Motor full-load amps	16.0	9.2	8.0	7.0
Motor locked-rotor amps	96.0	55.2	48.0	42.0
Non-inductive amps	16.0	9.2	8.0	—
Pilot duty	125 VA at 24 VAC, 720 VA at 120 VAC to 277 VAC			

Table 8: Four-wire, two-circuit electrical ratings for P70P

Description	Standard single-phase ratings							
	Line-M2 for main contacts				Line-M1 for auxiliary contacts			
	120 VAC	208 VAC	240 VAC	277 VAC	120 VAC	208 VAC	240 VAC	277 VAC
Motor full-load amps	16.0	9.2	8.0	—	6.0	3.3	3.0	—
Motor locked-rotor amps	96	55.2	48	—	36	19.8	18.0	—
Non-inductive amps	16.0	9.2	8.0	7.2	6.0	6.0	6.0	6.0
Pilot duty	125 VA at 120 VAC to 600 VAC 57.5 VA at 120 VDC to 300 VDC							

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Single point of contact

APAC	EU	UK	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS VOLTAWEG 20 6101 XK ECHT THE NETHERLANDS	JOHNSON CONTROLS TYCO PARK GRIMSHAW LANE MANCHESTER M40 2WL UNITED KINGDOM	JOHNSON CONTROLS 5757 N GREEN BAY AVE. GLENDALE, WI 53209 USA

Contact information

Contact your local Johnson Controls representative:
www.johnsoncontrols.com/locations

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