

P70, P72, and P170 Series Controls for Dual Pressure Applications Catalog Page

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 to 240 volt, single-phase motors up to three horsepower, and 208 to 220 volt, three-phase motors up to five horsepower.

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 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).
- P72 models have a double-pole, single-throw (DPST) switch with load-carrying contacts that can provide direct control of 208 to 240 VAC, single-phase motors up to 3 hp, and 208 to 220 VAC, three-phase motors up to 5 hp. See the DPST Electrical Ratings (P72L, M, and N Types) that follow.

Some models are available with **Limited Knob Adjustment**, which restricts adjustment



P70MA-1 Dual Pressure Control

of the pressure settings and deters over-adjustment or tampering.

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

Repair Information

If the P70, P72, and P170 Series Controls for Dual Pressure Applications fail to operate within its specifications, replace the unit. For a replacement control, contact the nearest Johnson Controls® representative.

Selection Chart (Part 1 of 2)

Product Code	Switch	Low Pressure Side psi (kPa)		High Pressu	re Side psi (kPa)	Pressure	Limited Knob
Number	Action	Range	Differential	Range	Differential (Non-Adjustable)	Connector	Adjustment
	•	MIC	RO-SET Controls	for Non-Corro	sive Refrigerants		
P70LB-6C ¹	SPST	12 in.Hg	Minimum 5 (34)	100 to 500 (690 to 3,447)	Fixed approx. 65 (448)	36 in.	Low cut-out
P70MA-1C ¹	1	to 80 (-41 to 552)	Maximum 35 (241)		Lockout requires manual reset	capillary with 1/4 in. flare	None
P70SA-1C ¹	Two independent SPDT				Fixed at 65 (448) or Lockout requires manual reset	nut	
P170LB-6C ¹	SPST	1			Fixed approx. 65 (448)	1/4 in.	Low cut-out
P170MA-18C ¹	1				Lockout requires manual reset	external flare connector	None
P170SA-1C ¹	Two independent SPDT	-			Fixed at 65 (448) or Lockout requires manual reset	-	
	•	Al	Range Controls fo	r Non-Corros	sive Refrigerants		•
P70LB-1C ¹	SPST	20 in.Hg	Minimum 6 (41)	100 to 500	Fixed Approx. 65 (448)	36 in.	Low cut-out
P70MA-1C ¹	to 100 (-68 to 6	(-68 to 690)	Maximum 50 (345)	(690 to 3,447)	Lockout Requires Manual Reset	capillary with 1/4 in. flare	None
P70NA-1C	1	,	Fixed (manual reset)	1		nut	
P72LA-1C ¹	DPST		Minimum 7 (48)		Fixed approx. 65 (448)		
P72LB-1C ¹	7		Maximum 50 (345)				Low cut-out
P72MA-1C ¹	1				Lockout requires manual reset		None
P72NA-1C ¹	7		Fixed (manual reset)	1			



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Selection Chart (Part 2 of 2)

Product Code	Action	Low Pressure Side psi (kPa)		Low Pressure Side psi (kPa) High Pressure Side psi (kPa)				Pressure	Limited Knob	
Number		. 3	e Differential Range Differential (Non-Adjustable		Differential (Non-Adjustable)	Connector	Adjustment			
	All Range Controls for Non-Corrosive Refrigerants									
P170LB-1C ¹	SPST		Minimum 7 (48) Maximum 50 (345)	100 to 500 (690 to 3,447)	Fixed approx. 65 (448)	1/4 in. External flare	Low cut-out			
P170MA-1C ¹]	to 100 (-68 to 690)		(090 to 3,447)	Lockout requires manual reset	connector	None			
P170NA-1C			Fixed (manual reset)							
	All Range Ammonia Compatible Controls									
P70LA-2C ¹	SPST		Minimum 7 (48) Maximum 50 (345)	100 to 500 (690 to 3,447)	Fixed approx. 65 (448)	1/4 in. Internal NPT	None			
P70MA-2C ¹		(-68 to 690)	iviaximum 50 (545)	(030 to 3,447)	Lockout requires manual reset	connector				

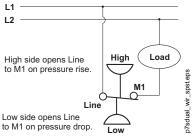
^{1.} Control models with high pressure side (only) that are UL Listed as Refrigeration Pressure Limiting Controls.

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

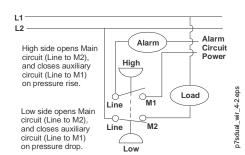
Technical Specifications

Maximum Pressures

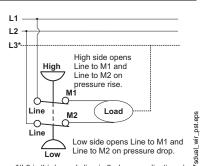
Pressure	e Low Side		High Side
	All Range	MICRO-SET	,
Maximum Working Pressure	100 psi (552 kPa)	80 psi (690 kPa)	500 psi (3,447 kPa)
Maximum Overpressure	325 psi (2,241 kPa)	525 psi (3,620 kPa)	525 psi (3,620 kPa)



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

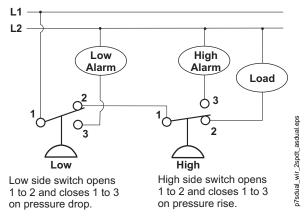


Typical Wiring for Four-Wire, Two-Circuit Switch (P70P, Q and R Models)

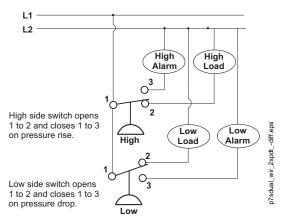


*(L3 is third supply line in 3-phase applications.)

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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Technical Spécifications (Continued)

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

		S	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 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)

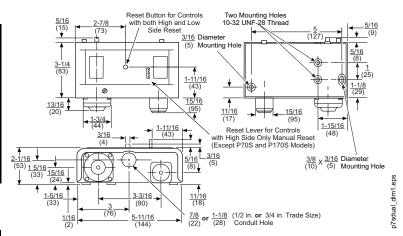
•		Single-Phase Ratings						
	Standard Hermetic Compress							
	120 VAC	208 VAC	240 VAC	208/240 VAC				
Motor Horsepower	2	3	3					
Motor Full-Load A	24	18.7	17	24				
Motor Locked-Rotor A	144	112.2	102	144				
Non-Inductive A	22	22	22					
Pilot Duty	125 VA at 120 to 600 VAC; 57.5 VA at 120 to 300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

SPDT Electrical Ratings (P70S and P170S Types)

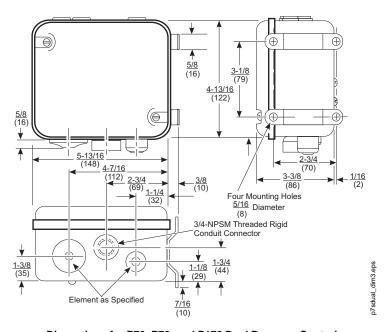
(* 100	Standard Single-Phase Ratings							
	Stand	ard Sir	ngie-Pr	ase Ratings				
	120 VAC	208 VAC	240 VAC	277 VAC				
Motor Full Load A	16.0	9.2	8.0	7.0				
Motor Locked Rotor A	96.0	55.2	48.0	42.0				
Non-Inductive A	16.0	9.2	8.0	-				
Pilot Duty	125 V		,	0 VA at 120 to				
			277 VAC	;				

Four-Wire, Two-Circuit Electrical Ratings (P70P, Q, and R Types)

		Standard Single-Phase Ratings								
	(M	Line ain C	-M2 ontac	ts)	Line-M1 (Auxiliary Contacts)					
	120 VAC	208 VAC		277 VAC	120 VAC	208 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)*

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office.

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