P70, P72, and P170 Controls for Dual Pressure Applications

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.



Figure 1: P70SA-1 Dual Pressure Control

Features and Benefits

❑ **All Steel Case and Cover**	Provides long lasting, rugged protection for internal components
❑ **"Sight-Set" Calibrated Pressure Adjustments**	Provides visible pressure scales, fully adjustable through all ranges without removing the cover
❑ **MICRO-SET™ Differential Adjustment Option**	Allows for precise pressure control of 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

© 2000 Johnson Controls, Inc.

Application

The P70, P72, and P170 controls for dual pressure applications are designed to provide combined high and low pressure control of compressors on commercial refrigeration and air conditioning applications.

IMPORTANT: Except for those models listed as *Refrigeration Pressure Limiting Controls*, the P70, P72, and P170 Series controls for dual pressure applications are intended to control equipment under normal operating conditions. Where failure or malfunction of the P70, P72, and P170 pressure controls could lead to an abnormal operating condition that could cause personal injury or damage to the equipment or other property, other devices (limit or safety controls) or systems (alarm or supervisory systems) intended to warn of, or protect against, failure or malfunction of the P70, P72, and P170 pressure controls must be incorporated into and maintained as part of the control system.

- **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. (See Table 1.) 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 208-240 VAC, single-phase motors up to 3 hp, and 208-220 VAC, 3-phase motors up to 5 hp. (See Table 6.)

These dual pressure controls are available in several pressure ranges and are compatible with most common refrigerants. Ammonia compatible models are also available (P70L and P70M only).

CAUTION: **Equipment Damage Hazard.** Ammonia is very corrosive to copper and brass components. On ammonia applications, **only** ammonia compatible control models and pressure connections must be used. The pressure control must be mounted separately from the electrical cabinet and all electrical piping sealed to prevent ammonia from migrating to electrical components.

The **MICRO-SET** option provides fine adjustment of the differential setting for precision pressure control of low pressure applications.

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

A **Manual Reset Lockout** option does not allow the pressure control to reset automatically after CUT OUT is reached, and provides shutdown capability for unmonitored equipment. See *Manual Reset Operation.*

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

Table 1 lists the standard models and features of P70, P72, and P170 controls for dual pressure applications, which are available through most authorized Johnson Controls/PENN distributors.

Operation

The high pressure and low pressure actuated bellows are connected to the controlled equipment by capillaries or field-installed flexible hoses (except on ammonia compatible models).

On most dual pressure control models, the two bellows are mechanically interconnected to operate a single switch. The switch is typically wired to provide control of the refrigeration or air conditioning compressor. On some models, the switch may also be wired to control alarms or other auxiliary devices.

On the P70S and P170S models, the high and low pressure bellows are not mechanically interconnected, and each bellows operates one of two SPDT switches independently.

Dimensions

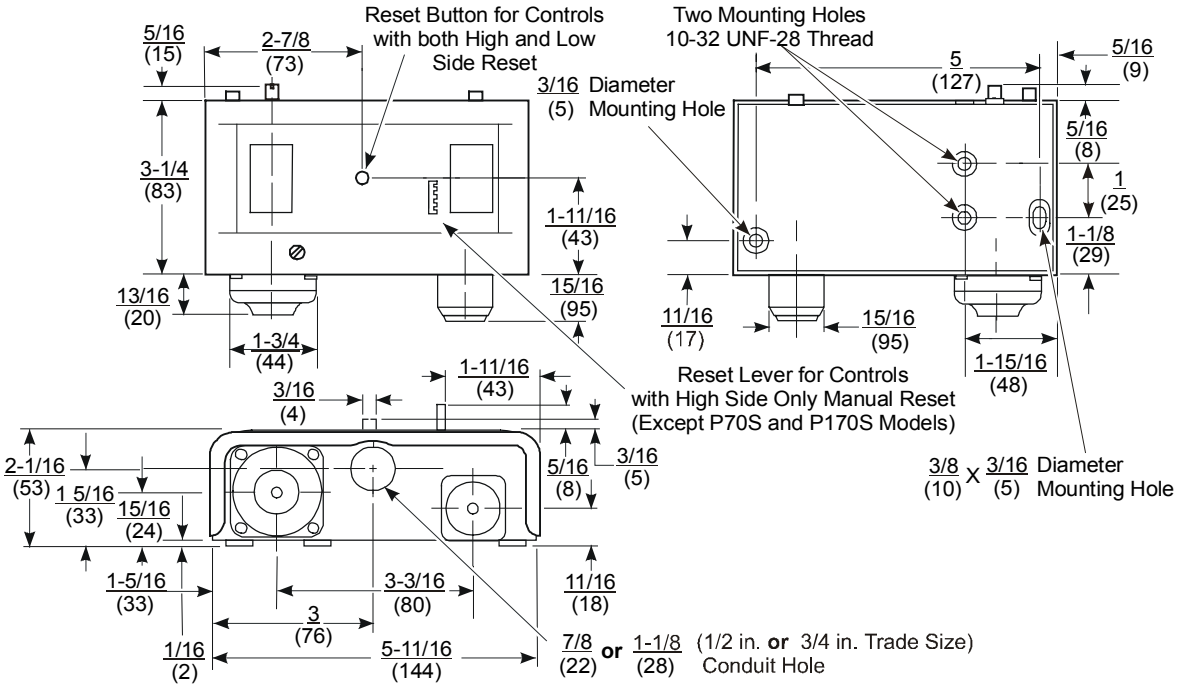


Figure 2: Dimensions for P70, P72, and P170 Dual Pressure Controls with NEMA 1 Enclosure, in. (mm)

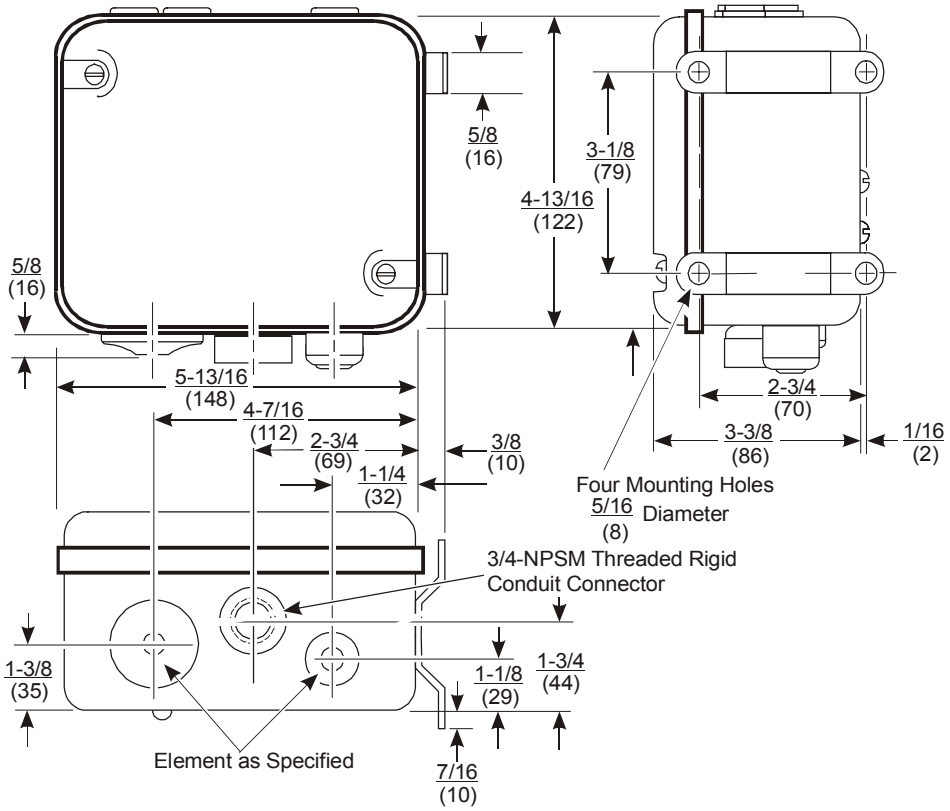


Figure 3: Dimensions for P70, P72, and P170 Dual Pressure Control with NEMA 3R Enclosure, in. (mm)

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

Mounting

Mount the control in an accessible position, where the control and pressure connection lines will not be subject to damage.

> CAUTION: **Equipment Damage Hazard.** Mount the pressure control upright and level. Position the pressure connection lines to allow drainage away from control bellows. Pressure tap points must be located on the top side of the refrigerant lines. This reduces the possibility of oil, liquids, or sediment accumulating in the bellows, which could cause control malfunction.

Controls with NEMA 1 enclosures may be mounted on flat, horizontal, or vertical surfaces. (See Figure 4.)

Use two screws or bolts through the two outer holes on the back of the control case when mounting control directly to a flat vertical surface.

Use the two inner holes with the Universal Mounting Bracket (and screws supplied) when mounting the control to a flat horizontal surface.

> IMPORTANT: Use **only** the mounting screws provided with the Universal Mounting Bracket to avoid damaging internal components. Do not warp control case when mounting control to uneven surface.

Controls with NEMA 3R enclosures are designed to be mounted in a level, upright position with the bellows and conduit connection facing down. All gaskets must be in place. Mounting NEMA 3R enclosures in any position other than upright and level may trap water in the enclosure and submerge internal control components.

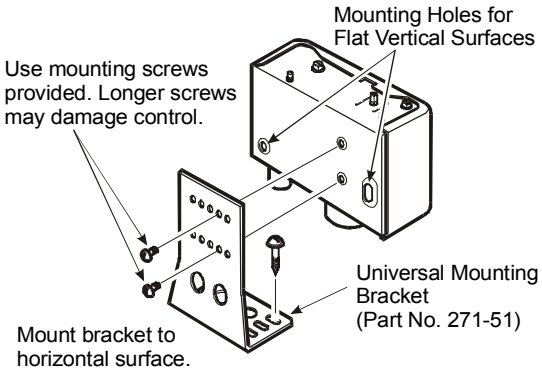


Figure 4: Mounting Dual Pressure Controls with NEMA 1 Enclosures

Pressure Connections

P70, P72, and P170 dual pressure controls are connected to the controlled equipment by a capillary or flexible hose (except ammonia compatible models). These controls are available with a variety of pressure connection styles. See Figure 13 for pressure connection styles.

Follow these guidelines when installing pressure connection lines.

> IMPORTANT: If these controls are installed on equipment that contain hazardous or regulated materials, such as refrigerants or lubricants, the installer and user should observe all regulations governing the handling and containment of those materials.

Avoid Sharp Bends in the Capillary Tube

Sharp bends can weaken or kink capillary tubes, which may result in leaks or restrictions.

Allow for Slack in the Capillary Tube

Leaving a little slack in the capillary tube helps dampen mechanical vibration that can weaken or damage capillary tubes.

Coil and Secure Excess Capillary Tube

Carefully loop any excess capillary tube into smooth, circular coils (approximately 3 in. diameter). Securely fasten the coiled tubing.

Avoid Contact Between the Capillary Tube and Sharp or Abrasive Objects

Vibration of sharp or abrasive objects in contact with capillary tubes can result in leaks.

Do Not Overtighten Flare Nuts on Pressure Connection Line Fittings

Overtightening flare connections may damage the threads on the flare nuts or flare connectors, and may result in leaks. Do not exceed 9 ft-lb (12 N-m) of torque when tightening brass flare connections.

Avoid Severe Pressure Pulsation at High Side Pressure Connections

Install pressure connection lines to pressure tap points away from the compressor, to minimize the affects of pressure pulsation from reciprocating compressors.

IMPORTANT:	After installing control, evacuate control and pressure connection lines in accordance with applicable EPA and other regulations, to remove air, moisture, and other contaminants.

Wiring

P70, P72, and P170 controls for dual pressure applications are available with several switch options and electrical ratings. Check the label inside the control cover for model number, switch action, and electrical rating. (See Table 1 for switch action and models.) Check the wiring terminal designations on the control switch block and refer to the following guidelines and applicable wiring diagrams, when wiring the control.

⚠ WARNING:	**Risk of Electrical Shock.** Disconnect power supply before making electrical connections to avoid possible electrical shock or equipment damage. On multiple circuit units, more than one disconnect may be required to completely de-energize equipment.

IMPORTANT:	Use terminal screws furnished in the switch block. Using other terminal screws will void the warranty and may damage the switch.

IMPORTANT:	Make all wiring connections in accordance with the National Electrical Code and all local regulations. Use copper conductors only. Do not exceed the control's electrical rating.

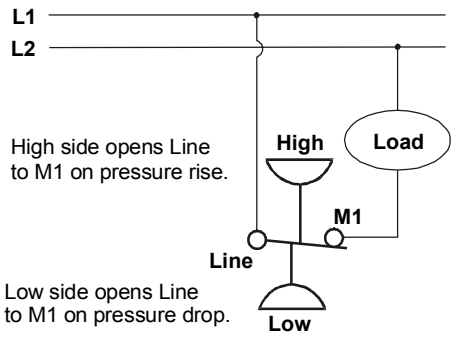


Figure 5: Typical Wiring for SPST Switch (P70L, M, and N, and P170L, M, and N Models)

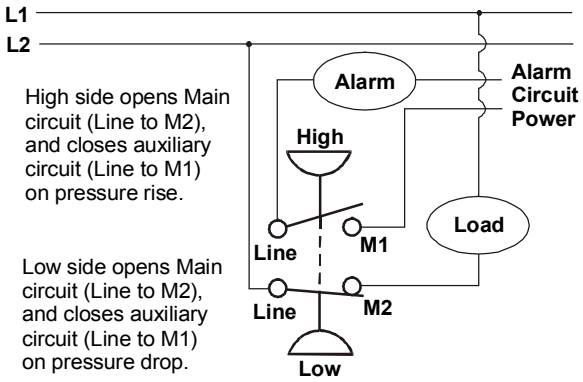
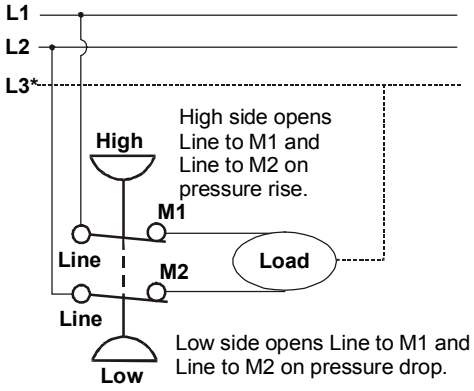


Figure 6: Typical Wiring for 4-wire, 2-circuit Switch (P70P, Q and R Models)



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

Figure 7: Typical Wiring for DPST Switch (P72L, M, and N Models)

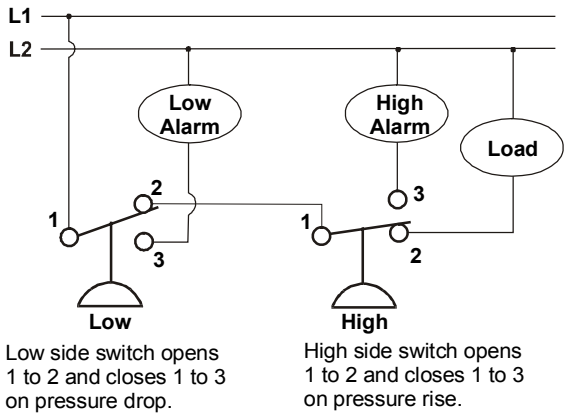


Figure 8: Two SPDT Switches Wired as a Dual Pressure Control (Switching a Single Load with Optional High Side Alarm and Low Side Alarm) (P70S and P170S Models)

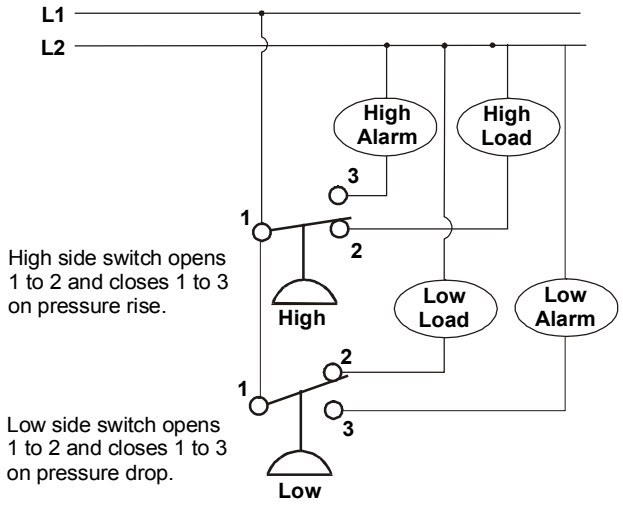


Figure 9: Two SPDT Switches Wired to Control Two Different Loads, (Optional High Side Alarm and Low Side Alarm) (P70S and P170S Models)

Adjustments

Adjustment of the P70, P72, and P170 dual pressure controls varies, depending on the model. The following guidelines and diagrams illustrate the procedures for adjusting these controls. Refer to the product label inside the control cover for model number and switch action, and check the front of the control cover to determine if the control is All-Range or MICRO-SET.

All-Range Controls (Low Side Only)

The low side of All-Range pressure controls has a scaleplate that displays the CUT IN and CUT OUT setpoints. (See visible scale on left side of control.) Turning the range screw adjusts the CUT IN and CUT OUT setpoints up or down simultaneously, while maintaining a constant pressure differential. Turning the differential screw adjusts the CUT OUT setpoint only on the left side of the scale, and changes the pressure differential.

MICRO-SET Controls (Low Side Only)

The low side of MICRO-SET pressure controls has a scaleplate that displays the CUT IN setpoint and DIFFERENTIAL setting. (See visible scale on left side of control.) Turning the range screw adjusts the CUT IN setpoint on the right side of the scale. Turning the differential screw adjusts the DIFFERENTIAL setting on the left side, which changes the resulting CUT OUT pressure.

High Side—Dual Pressure Controls

The high side of the P70, P72, and P170 dual pressure controls has a scaleplate that displays only the CUT OUT setpoint. (See the visible scale on right side of control.) Turning the range screw adjusts the CUT OUT setpoint. The differential is fixed at approximately 65 psi.

For controls with the high side (or combination low side and high side) Manual Reset Lockout option, see *Manual Reset Operation*.

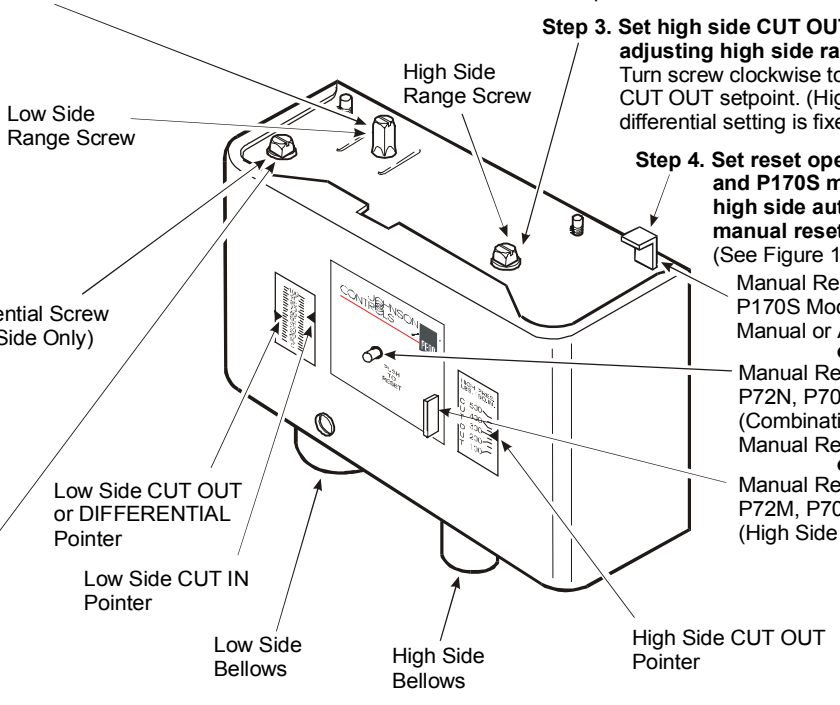
For P70S and P170S controls, see *Convertible High Pressure Reset Mechanism on P70S and P170S Controls.*

IMPORTANT:	Do not adjust pointers beyond the highest or lowest indicator marks on the control's pressure scale. Adjusting pointers beyond indicator marks may damage screw threads and cause inaccurate control operation.

IMPORTANT:	Use the pressure control settings recommended by the manufacturer of the controlled equipment. Do not exceed the pressure ratings of the controlled equipment or any of its components when checking pressure control operation or operating the controlled equipment.

IMPORTANT:	After installing and adjusting pressure control, and before leaving installation, cycle the controlled equipment several times (at least three) at normal operating conditions. Use reliable pressure gauges to verify proper control settings and equipment operation.

Step 1. Set low side CUT IN by adjusting low side range screw.
All-Range Controls: Turn screw clockwise to raise the CUT IN setpoint.
MICRO-SET Controls: Turn screw clockwise to lower the CUT IN setpoint.



Step 2. Adjust the differential screw.
All-Range Controls: Turning the differential screw changes the CUT OUT setpoint. Turn screw clockwise to raise CUT OUT setpoint.
MICRO-SET Controls: Turning the differential screw changes the differential setting. Turn screw clockwise to increase differential setting.

Figure 10: Adjusting the Dual Pressure Controls

Manual Reset Operation

Pressure controls with the Manual Reset option lock out when they reach the CUT OUT pressure setpoint and must be manually reset by the user to restart the controlled equipment. The manual reset mechanism is “trip-free” and cannot be overridden by blocking or tying the reset button down.

On equipment with locked out controls, first determine and remedy the cause of the lockout before proceeding.

When lockout is caused by the control’s low side CUT OUT, allow the sensed pressure to raise to the CUT IN setpoint.

When lockout is caused by the control’s high side CUT OUT, allow the sensed pressure to drop at least 70 psig below the CUT OUT setpoint.

After the sensed pressure has reached the desired pressure (as described above), press and release the Reset button on the front of the control to restore operation of the controlled equipment.

Convertible High Pressure Reset Mechanism on P70S and P170S Controls

The P70S and P170S type dual pressure controls are equipped with a convertible high side pressure reset. The control may be configured to automatically reset after CUT OUT (when the pressure drops to CUT OUT minus differential), or to manually reset after CUT OUT (by pressing down the reset lever).

To change the Convertible High Pressure Reset operation:

1. Disconnect all power sources to the pressure control and remove the control cover.
2. **For Manual Reset Operation:** Loosen the lock nut, unscrew the stop screw (counterclockwise) being careful to not remove the screw completely from the bracket. (See Figure 11.)

   For Automatic Reset Operation: Loosen the lock nut, push the reset lever down, and screw in the stop screw (clockwise) fully. (See Figure 11.)
3. Tighten the lock nut to hold the stop screw in place, and replace the control cover.
4. Restore all power sources and cycle the equipment to check control operation.

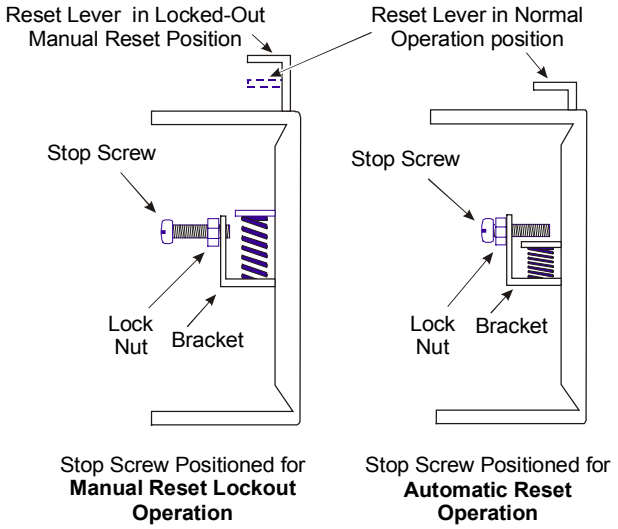


Figure 11: Setting the Convertible High Pressure Reset Mechanism (P70S or P170S Controls)

Low Pressure Limited Knob Adjustment

Some dual pressure controls are supplied with a Limited Knob Adjustment kit for the low pressure side of the control, which restricts the adjustment of the low side range and differential screws, and helps deter overadjustment or tampering. A stop on the bottom of the knob limits adjustment to less than one turn.

The Limited Knob Adjustment may be installed at the factory or included as a separate kit, depending on the model ordered. To install the Limited Knob Adjustment kit refer to the following guidelines and steps.

To lock the differential screw and allow limited adjustment of the range screw, install the knob on the range screw. This configuration allows limited adjustment of the low event and high event setpoints, without changing the differential.

To lock the range screw and allow limited adjustment of the differential screw, install the knob on the differential screw. This configuration allows limited adjustment of the low event setpoint (on All-Range controls) or differential setting (on MICRO-SET controls), without changing the high event setpoint.

Note: The Limited Knob Adjustment kit for the All-Range controls can not be used with the MICRO-SET controls (and vice-versa).

To install the Limited Knob Adjustment kit:

1. Adjust control pointers to desired high event and low event setpoints (on All-Range controls), or differential setting (on MICRO-SET controls).
2. Place the spacer on the desired adjustment screw.
   - All-Range controls (with Limited Knob Adjustment kits) have round and knurled adjustment screws—the spacer must always be placed on the range screw.
   - MICRO-SET controls have square adjustment screws, always place the spacer on the same adjustment screw as the knob.
3. Align the large end of the indicator plate over the adjustment screw with spacer, and align the small end of the indicator plate over the adjustment screw to be locked, and attach the indicator plate.
4. Align the knob over the large end of the indicator plate, attach the knob to the adjustment screw, and tighten the setscrew.

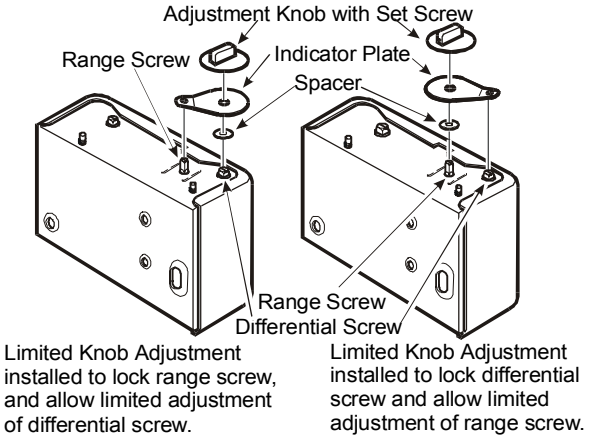


Figure 12: Limited Knob Adjustment Installation

Ordering Information

P70, P72, and P170 controls for dual pressure applications are available in a variety of standard and non-standard models. Table 1 is a model selection chart that lists the features on standard dual pressure control models available through most Johnson Controls/PENN Authorized Distributors.

Table 2 is a type identification matrix that itemizes all the potential P70, P72, and P170 dual pressure control types. Not all combinations in Table 2 are manufactured and available. Figure 13 illustrates the pressure connection styles available on P70, P72, and P170 control models.

Contact your Johnson Controls/PENN Authorized Representative for availability and price.

Table 1: Standard Model Selection Chart for P70, P72, and P170 Dual Pressure Controls

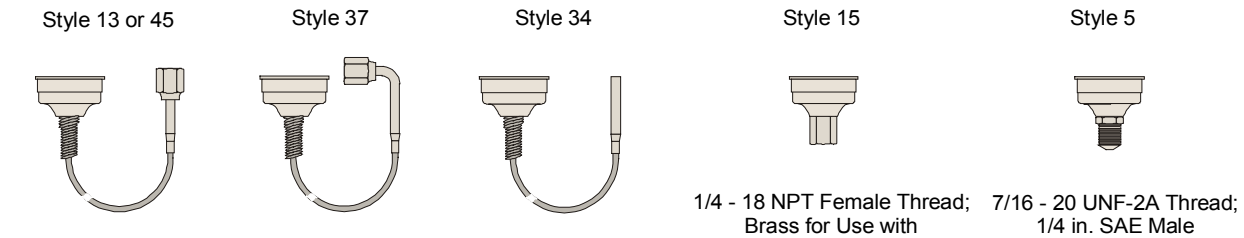
Model Code Number	Switch Action	Low Pressure Side psig (kPa)		High Pressure Side psig (kPa)		Pressure Connector	Limited Knob Adjustment
		Range	Differential	Range	Differential (Non-Adjustable)		
MICRO-SET Controls for Non-Corrosive Refrigerants							
P70LB-6*	SPST	12 in. to 80 (-41 to 552)	Min 5 (34) 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-18*					Lockout Requires Manual Reset		None
P70SA-1*	Two Independent SPDT				Fixed at 65 (448) **or** Lockout Requires Manual Reset		
P170LB-6*	SPST				Fixed Approx. 65 (448)	1/4 in. Male Flare Connector	Low CUT OUT
P170MA-18*					Lockout Requires Manual Reset		None
P170SA-1*	Two Independent SPDT				Fixed at 65 (448) **or** Lockout Requires Manual Reset		
All Range Controls for Non-Corrosive Refrigerants							
P70LB-1*	SPST	20 in. 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-1*					Lockout Requires Manual Reset		None
P70NA-1			Fixed (Manual Reset)				
P72LA-1*	DPST		Min 7 (48) Max 50 (345)		Fixed Approx. 65 (448)		
P72LB-1*							Low CUT OUT
P72MA-1*					Lockout Requires Manual Reset		None
P72NA-1*			Fixed (Manual Reset)				
P170LB-1*	SPST		Min 7 (48) Max 50 (345)		Fixed Approx. 65 (448)	1/4 in. Male Flare Connector	Low CUT OUT
P170MA-1*					Lockout Requires Manual Reset		None
P170NA-1			Fixed (Manual Reset)				
All Range Ammonia Compatible Controls							
P70LA-2*	SPST	20 in. 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-2*					Lockout Requires Manual Reset		

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

Table 2: Identification Matrix for P70, P72, and P170 Controls Dual Pressure Applications

P70			Various pressure connection styles available on many models (See Figure 13.)
P170			1/4 in. male flare pressure connection only (Style 5, see Figure 13.)
P72			DPST switch only, 3/4 in. conduit opening on most models, (P,Q, R, S, types not available)
	L		SPST switch (except P72), automatic reset
	M		SPST switch (except P72), high side manual reset lockout switch
	N		SPST switch (except P72), high and low side manual reset lockout switch
	P		4-wire, 2-circuit switch, automatic reset
	Q		4-wire, 2-circuit switch, high side manual reset lockout switch
	R		4-wire, 2-circuit switch, high and low side manual reset lockout switch
	S		Two SPDT switches, convertible high side reset--auto/manual lockout
		A	NEMA 1 enclosure, no adjustment knob
		B	NEMA 1 enclosure, with adjustment knob
		C	No enclosure, no adjustment knob
		D	No enclosure, with adjustment knob
		E	NEMA 3R enclosure, no adjustment knob
		G	NEMA 3R enclosure, no adjustment knob, 1/2 in. conduit
		H	NEMA 1 enclosure, no adjustment knob, 1/4 in. quick connects
		J	NEMA 1 enclosure with adjustment knob, 1/4 in. quick connects
		N	NEMA 1 enclosure no adjustment knob, transportation application
		P	NEMA 1 enclosure with adjustment knob, transportation application
		S	NEMA 3R enclosure, no adjustment knob, transportation application

Note: Not all combinations shown on this chart are available. To verify product availability and for quantity orders of non-standard items, please contact Refrigeration Application Engineering at (414) 524-5535.



*Note: Style 5, 1/4 in. SAE Male Flare Connector may require a copper flare saver gasket, which must be purchased separately.

Figure 13: Pressure Connection Styles Available on P70, P72, and P170 Controls

Electrical Ratings

Table 3: SPST Electrical Ratings (P70L, M, and N, and P170L, M, and N Types)

	Standard Single-Phase Ratings			Hermetic Compressor Single-Phase Ratings
	120 VAC	208 VAC	240 VAC	208/240 VAC
Motor Horsepower	1.5	3	3	--
Motor Full Load Amperes	20	18.7	17	20
Motor Locked Rotor Amperes	120	112.2	102	120
Non-Inductive Amperes	22	22	22	--
Pilot Duty	125 VA at 120 to 600VAC; 57.5 VA at 120 to 300 VDC			

Table 4: 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 Amperes	16.0	9.2	8.0	--	6.0	3.3	3.0	--
Motor Locked Rotor Amperes	96.0	55.2	48.0	--	36.0	19.8	18.0	--
Non-Inductive Amperes	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							

Table 5: SPDT Electrical Ratings (P70S and P170S Types)

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

Table 6: 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 Amperes	24	18.7	17	15.9	15	24	24
Motor Locked Rotor Amperes	144	112.2	102	95.4	90	144	144
AC Non-Inductive Amperes	24	24	24	24	24	--	--
DC Non-Inductive Amperes	3	0.5	0.5	0.5	0.5	--	--
Pilot Duty	125 VA at 120 to 600VAC; 57.5 VA at 120 to 300 VDC						

Specifications

Product	P70, P72, and P170 Dual Pressure Controls		
Switch Action	**P70, P170:** SPST or 4-wire, 2-circuit	**P70S, P170S:** Two SPDT PENN switches	**P72:** DPST
Pressure Connection Call Application Engineering at (414) **524**-5535 for pressure connection styles available	**P70, P72 Standard Models** various connections available (Styles 5, 13, 15, 34, 37) See Figure 13.	**P170 Standard Models** 1/4 in. male flare hose connection (Style 5) See Figure 13.	**P70LA-2, P70MA-2 Ammonia Compatible Models** 1/4 in. female NPT connection (Style 15) See Figure 13.
Maximum Overpressure	Low Side All-Range: 325 psig (2241 kPa) Low Side MICRO-SET: 525 psig (3620 kPa) High Side (All-Range and MICRO-SET): 525 psig (3620 kPa)		
Maximum Working Pressure	Low Side All-Range: 100 psig (552 kPa) Low Side MICRO-SET: 80 psig (690 kPa) High Side (All-Range and MICRO-SET): 500 psig (3447 kPa)		
Ambient Conditions	-40 to 104°F (-40 to 40°C)		
Case and Cover	NEMA 1 Enclosures: Galvanized steel case, plated and painted steel cover NEMA 3R Enclosures: Plated and painted steel case and cover		
Dimensions (H x W x D)	NEMA 1 Enclosure: 3-1/4 x 5-11/16 x 2-1/16 in. (83 x 144 x 53 mm) NEMA 3R Enclosure: 4-13/16 x 5-13/16 x 3-3/8 in. (122 x 148 x 86 mm)		
Approximate Shipping Weight	NEMA 1 Individual: 3.5 lb (1.6 kg); Bulk pack (multiples of 25 controls): 75.5 lb (34.2 kg) NEMA 3R Individual: 4.7 lb (2.1 kg); Bulk pack (multiples of 25 controls): 116.5 lb (52.9 kg)		
Agency Listings	For information on specific items, contact the Refrigeration Application Engineering Group at (414) 524-5535.		
Accessories	271-51 Universal Mounting Bracket (supplied with standard controls)		

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, contact Refrigeration Application Engineering at (414) 524-5535. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

JOHNSON CONTROLS

Controls Group
507 E. Michigan Street
P.O. Box 423
Milwaukee, WI 53201

www.johnsoncontrols.com
FAN 125
Master Catalog
Printed in U.S.A.