

## Series P77

### Single Pressure Controls for Refrigeration, Air-conditioning and Heatpump Applications

#### Introduction

*These pressure controls are designed for use in a variety of applications involving refrigeration high or low pressure. Models supplied have a "whole range" design, enabling them to be used with refrigerants R22, R134A, R404A and all other non-corrosive refrigerants which are within the operating range of the control. They may also be used for other high or low pressure applications such as air, water etc. Models which can be used with ammonia as well as controls tested, conforming to DIN 32733, and approved by TÜV are included in the program. DIN (HP) models are also tested and approved according to PED 97/23EC Cat. IV.*



**P77 Single Pressure Control  
for Refrigeration**

#### Description

The P77 series pressure controls may be used for control functions or limit functions, depending on model number. All models are provided with alarm contacts. All standard models have phosphor bronze bellows and brass pressure connections. Models for use with ammonia are provided with stainless steel bellows and connectors. Devices conforming to DIN 32733 have a double bellows on the high pressure versions. Their IP54 classification means that these pressure controls are suitable for almost all applications.

<b>Feature and Benefits</b>	
<input type="checkbox"/> <b>Generous wiring space</b>	Easy wiring and maintenance
<input type="checkbox"/> <b>Splash-proof enclosure (IP54)</b>	Can be used for indoor/outdoor applications
<input type="checkbox"/> <b>SPDT contacts are provided as standard on single pressure controls.</b>	Can be wired for alarm functions
<input type="checkbox"/> <b>Trip-free manual reset</b>	Override is not possible in the control function

**Note**

The controls are intended to control equipment under normal operating conditions. Where failure or malfunctioning of the 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 malfunctioning of the controls must be incorporated into and maintained as part of the control system.

**Note**

To facilitate order handling special ordering codes have been added to some commonly used models

**Type number matrix**

P77AAA	Automatic reset
P77BCA	Open low - manual reset
P77BEA	Open high - manual reset
P77AAW	HP or LP Limit (Auto. Reset) conforming to DIN 32733
	HP conforming to PED 97/23CE
P77BEB	HP Limit (Man. Reset) conforming to DIN 32733, PED 97/23CE
P77BES	HP Safety Limit (Man. Reset) conforming to DIN 32733, PED 97/23CE
P77BCB	LP Limit (manual reset) conforming to DIN 32733

**Mounting**

Mounting can easily be done with mounting bracket 271-51L (order separately) or directly on a surface. Mounting holes 4,5 mm diam. and M4 holes are provided.

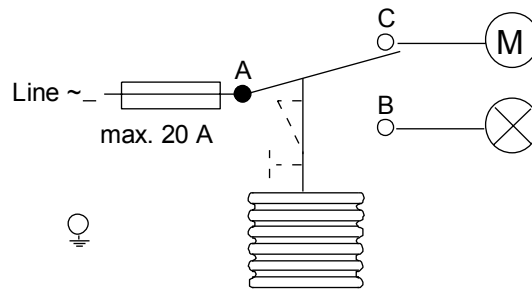
**Adjustment**

Adjustment of range and differential can be done by turning the hexagonal range screw and differential screw. Manual reset models have a range screw only. The adjustment screw can also be locked by a lock plate accessory (KIT023N600). The lock plate is only included with those devices which are conform to DIN 32733.

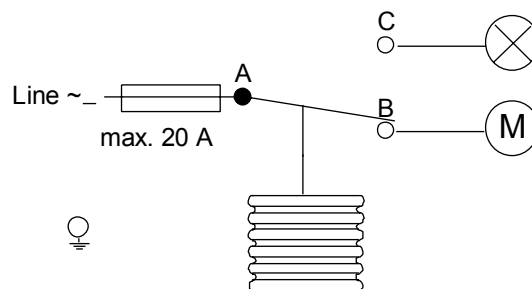
On all models the scale indicates the high switch point (Except type P77BCA, P77BCB, here the scale indicates the low (cut-out) switch point). The low switch point can be derived by deducting the differential value from the high switch point.

**Contact functions**

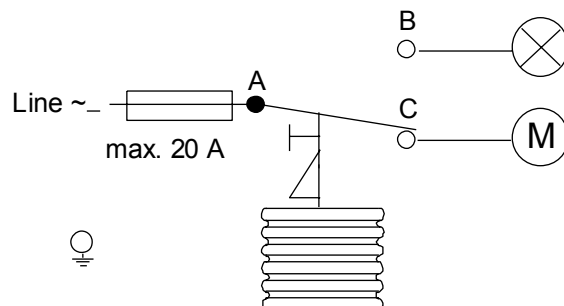
(see also "Type Number Selection" table)



A - C open on pressure decrease  
**Fig. 1**



A - B open on pressure increase  
**Fig. 2**



A - C open on pressure increase  
**Fig. 3**

**Optional construction note**

If your requirements are not in the type number selection table, then please contact your Johnson Controls representative.

**Repair and replacement**

Repair is not possible. In case of an improperly functioning control, please check with your nearest supplier. When contacting the supplier for a replacement you should state the type/model number of the control. This number can be found on the data plate or cover label.

## Type number selection table

### Pressure controls for Non-corrosive refrigerants

Family Code	Style 5			Style 30	Range (bar)	Diff. (bar)	Contact function (Figure)	Max. Bellows pressure
	Ind. Pack.	Code***	Bulkpack	Ind. Pack.				
P77AAA	-9300	P77L	-9320	-9400	-0.5 to 7	0.5 to 3	1	22
	-9301				-0.2 to 10	1 to 4.5	1	15
	-9302		-9322		-0.3 to 2	0.4 to 1.5	1	4
	-9350	P77H	-9370	-9450	3 to 30	3 to 12	2	33
	-9351	P77A	-9371	-9451	3.5 to 21	2.1 to 5.5	2	30
P77BCA	-9300		-9320	-9400	-0.5 to 7	Man. res.**	1	22
P77BEA	-9350	P77HR	-9370	-9450	3 to 30	Man. res.*	3	33

\*\*\* Only individual package

\*\* Resetable at 0.5 bar above cut-out point

\* Resetable at 3 bar below cut-out point

### Pressure controls for Non-corrosive refrigerants, built in accordance with DIN 32733 and approved by TÜV Germany

Family Code	Style 5			Style 28	Range (bar)	Diff. (bar)	Contact function (Figure)	Max. Bellows pressure	Approved according to PED 97/23EC Cat. IV
	Ind. Pack.	Code***	Bulkpack	Ind. Pack.					
P77AAW	-9300		-9320	-9800	-0.5 to 7	0.5 to 3	1	20	
	-9350	P77W	-9370	-9850	3 to 30	3.5 to 12	2	33	Yes
P77BCB	-9300		-9320	-9800	-0.5 to 7	Man. res.**	1	20	
P77BEB	-9350	P77B	-9370	-9850	3 to 30	Man. res.*	3	33	Yes
P77BES	-9350	P77S	-9370	-9850	3 to 30	Man. res.*	3	33	Yes

\*\*\* Only individual package

\*\* Resetable at 0.5 bar above cut-out point

\* Resetable at 3.5 bar below cut-out point

### Pressure controls for Ammonia and Non-corrosive refrigerants, built in accordance with DIN 32733 and approved by TÜV Germany

Family Code	Style 15		Range (bar)	Diff. (bar)	Contact function (Figure)	Max. Bellows pressure	Approved according to PED 97/23EC Cat. IV
	Ind. Pack.	Bulkpack					
P77AAW	-9700		-0.5 to 7	0.5 to 3	1	20	
	-9750		3 to 30	3.5 to 12	2	33	Yes
P77BCB	-9700		-0.5 to 7	Man. res.**	1	20	
P77BEB	-9750		3 to 30	Man. res.*	3	33	Yes
P77BES	-9750		3 to 30	Man. res.*	3	33	Yes

\*\* Resetable at 0.5 bar above cut-out point

\* Resetable at 3.5 bar below cut-out point

### Pressure controls for Ammonia and Non-corrosive refrigerants

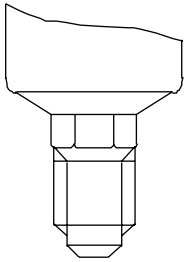
Family Code	Style 15		Range (bar)	Diff. (bar)	Contact function (Figure)	Max. Bellows pressure
	Ind. Pack.	Bulkpack				
P77AAA	-9700		-0.5 to 7	0.5 to 3	1	20
	-9750	-9770	3 to 30	3.5 to 12	2	33
P77BCA	-9700		-0.5 to 7	Man. res.**	1	20
P77BEA	-9750		3 to 30	Man. res.*	3	33

\*\* Resetable at 0.5 bar above cut-out point

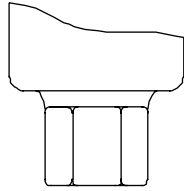
\* Resetable at 3 bar below cut-out point

Note: 100 kPa = 1 bar ≈ 14.5 psi

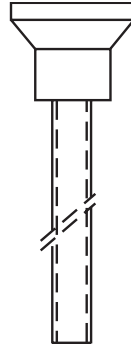
**Pressure connections**



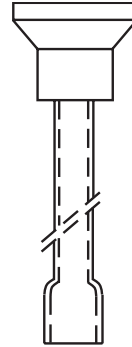
**Fig. 4**  
**Style 5**  
Male connector  
7/16\"-20 UNF for 1/4\"  
6 mm flare nut.



**Fig. 5**  
**Style 15**  
Female connector  
1/4\"-18 NPT

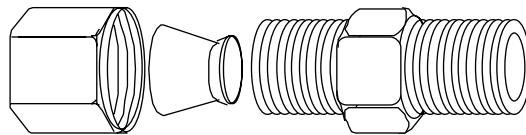


**Fig. 6**  
**Style 28**  
Braze connection  
6 mm ODM



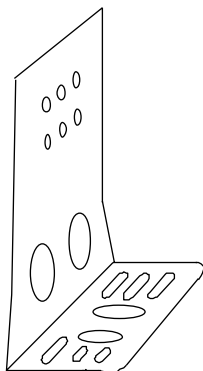
**Fig. 7**  
**Style 30**  
Braze connection  
1/4\" ODF

**Accessories (optional)**

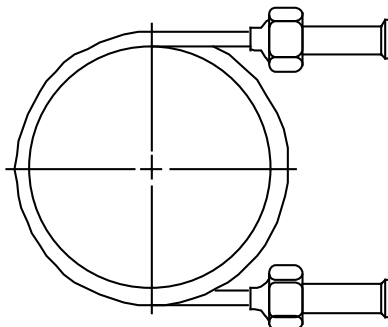


**Fig. 8**

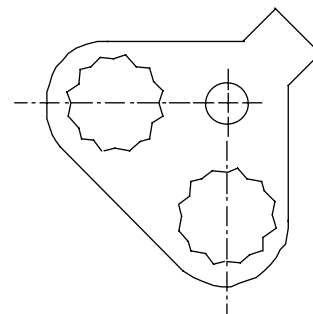
Description	Application	Order number
Fits into style 15 pressure connectors	For 6 mm copper or steel tubing	CNR003N001R
	For 8 mm copper or steel tubing	CNR003N002R



**Fig. 9**  
Mounting bracket  
Order number **271-51L**

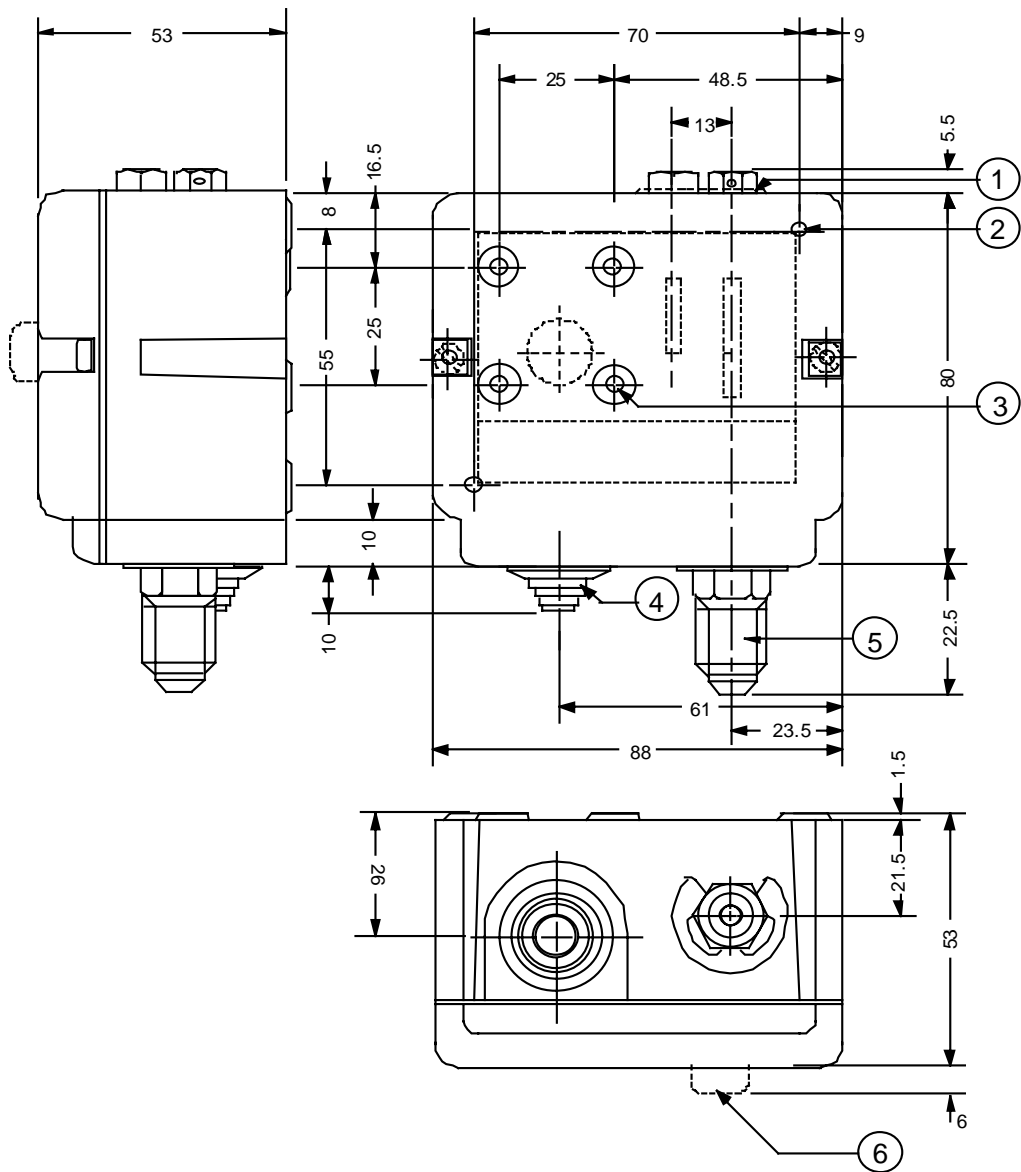


**Fig. 10**  
90 cm Capillary with (2) flare nuts (1/4\" SAE)  
Order number **SEC002N600**



**Fig. 11**  
Locking kit  
Order number **KIT023N600**

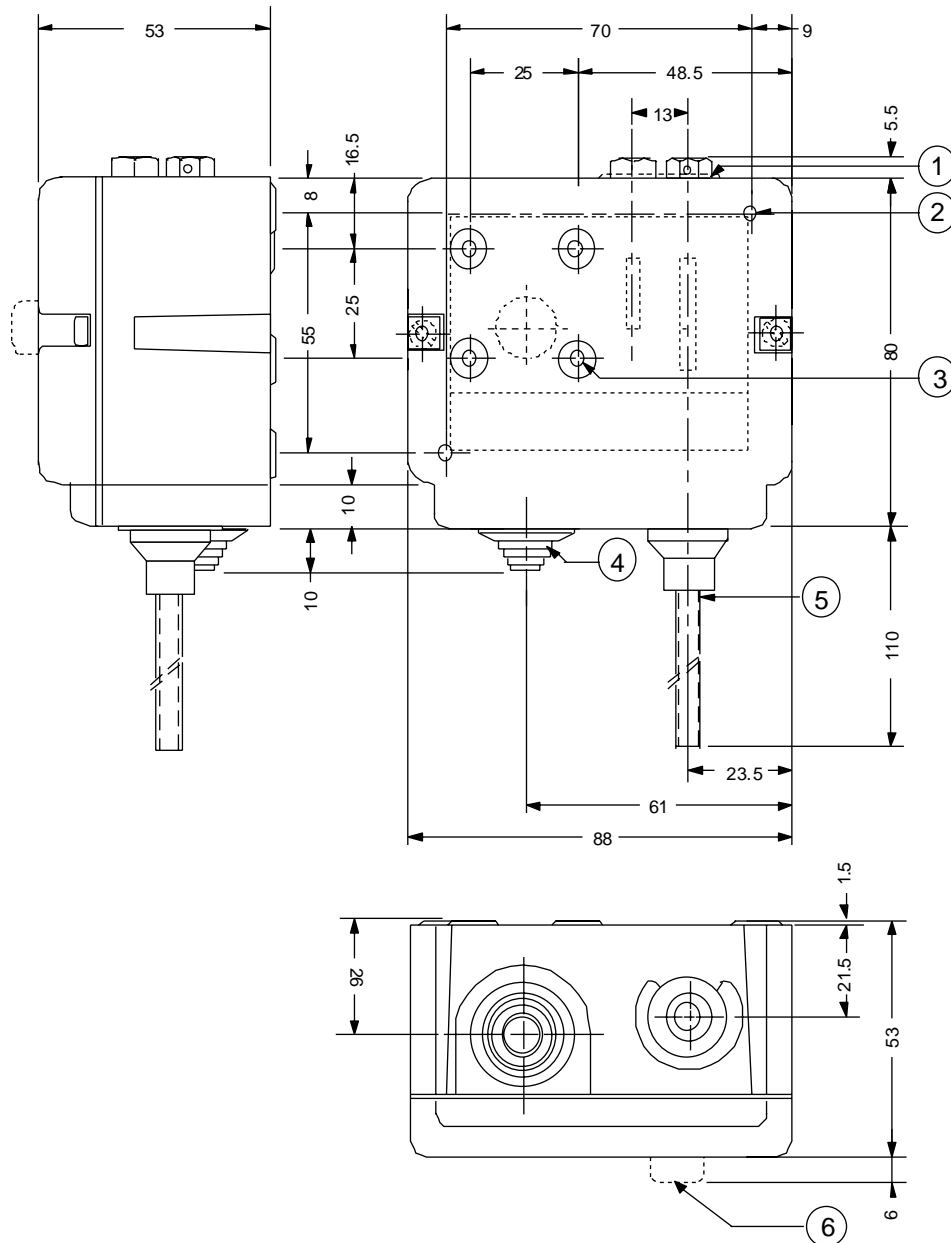
Dimensions (mm)



1. lock plate (if applied)
2. two mounting holes  $\text{\O} 4.5$  mm (knock out)
3. four mounting holes  $\text{\O} M4$  (back side)
4. cable inlet grommet (cable range  $\text{\O} 5$  to  $\text{\O} 13$  mm)
5. power element:  
Style 5:  $\frac{7}{16}$ "-20 UNF male (shown)  
Style 15:  $\frac{1}{4}$ "-18 NPT female
6. reset button

Fig. 12

### Dimensions (mm)



1. lock plate (if applied)
2. two mounting holes  $\text{\O} 4.5$  mm (knock out)
3. four mounting holes  $\text{\O} M4$  (back side)
4. cable inlet grommet (cable range  $\text{\O} 5$  to  $\text{\O} 13$  mm)
5. power element:  
 Style 28: Braze connection 6 mm ODM (shown)  
 Style 30: Braze connection 1/4" ODF
6. reset button

Fig. 13

## Notes

## Specifications

<b>Pressure connections</b>	Style 5, 15, 28, 30 (see drawings)		
<b>Operating ranges and diff.</b>	See type number selection		
<b>Adjustments</b>	See type number selection		
<b>Ambient temp. limit</b>	-50 to +55 °C (+70 °C max. duration two hours) -20 to +55 °C for DIN and PED approved models		
<b>Electrical ratings</b>	400 Vac 16(10) A 220 Vdc 12 W (pilot duty only)		
<b>Pulsation plug</b>	Fitted into all HP bellows on models with range 3.5 to 21 bar and up		
<b>Locking plate and screw</b>	To lock and seal range and/or differential screw. Standard on types P77AAW, BEB, BES and BCB. Optional on all other types (quantity orders only)		
<b>Protection Class</b>	IP54		
<b>Material</b>	<b>Case and cover</b>	Weatherproof aluminium (die-cast)	
	<b>Contact unit</b>	Large copper-backed silver cadmium contacts (AgCdO) on conductor leaves	
<b>Accessories (see pag. 4)</b>	Mounting bracket Compression coupling 90 cm capillary with two flare nuts		
<b>Shipping weight</b>	<b>ind. pack</b>	0.5 kg	
	<b>-93xx</b>	{	Ind. overpack 36 pcs. (19 kg)
	<b>-97xx</b>		Bulk pack 35 pcs. (18 kg)
	<b>-94xx</b>	{	Ind. overpack 16 pcs. (9 kg)
	<b>-98xx</b>		

*The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office or representative. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.*



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