

JOHNSON
CONTROLSPenn
Products

Series P78

Dual pressure controls

For refrigeration, airconditioning and heatpump applications

APPLICATIONS

These dual pressure controls are designed for a variety of refrigeration pressure applications. Models are supplied in „all-range“ construction for use on R-12, R-22, R-500 and R-502 refrigerants and may also be used for other pressure applications such as air, water, etc. Models for ammonia service are available. Controls tested and approved by TÜV are included in the program.

FEATURES

- Generous wiring space provided.
- All models have weather-splash-proof enclosure (IP 54).
- All dual pressure controls (except P78ALA) have two alarm contacts for separate low pressure and high pressure cut-out indication (U.S. Patent no. 4.266.104).
- Built according to CEE24.

SPECIFICATIONS

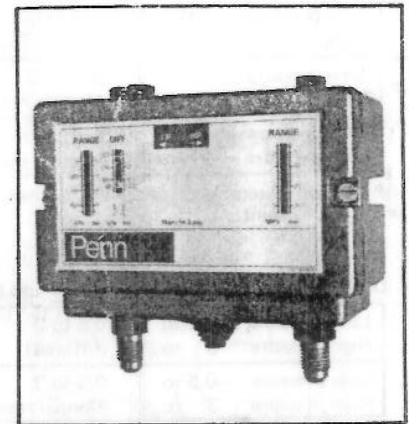
APPLICATION	Industrial and commercial refrigeration, air-conditioning and heatpump applications.
PRESSURE CONNECTORS	Style 5, 15 (see drawings)
OPERATING RANGES AND DIFFERENTIALS	See type number selection
ADJUSTMENTS	See type number selection
MATERIAL	CASE AND COVER: Weatherproof aluminium diecast
	CONTACT UNIT: Large copper-backed silver cadmium contacts (AgCdO) on berillium copper conductor leaves
AMBIENT TEMP. LIMIT	–50 to +50 °C (+70 °C max. duration two hours)
ENCLOSURE	IP 54 (DIN 40050 and IEC 144)
ELECTRICAL RATINGS	See corresponding table
PULSATION PLUG	Fitted into all HP bellows (range 3.5 – 21 bar and up)
OPTIONAL CONSTRUCTIONS	Contact factory or local representative
ACCESSOIRES	Mounting bracket Compression coupling 90 cm capillary with two flare nuts
LOCKING PLATE AND SCREW	To lock and seal range and/or differential screw Standard on types P78LCW, MCB, MCS and PLM Optional on all other types (quantity order only)
PACKING	Choice of bulk pack (25 pcs) or at additional cost, individual package
SHIPPING WEIGHTS	IND. PACK 0.8 kg BULK PACK 20 kg

NOTE

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

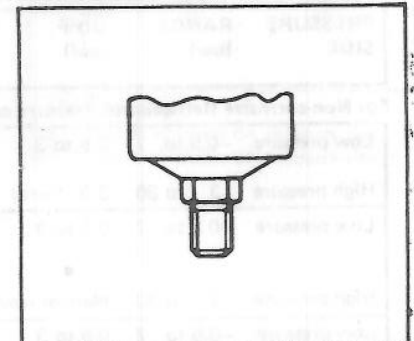
TYPE NUMBER MATRIX

P78LCA	automatic reset both sides.
P78MCA	automatic reset low side. manual reset high side.
P78PGA	manual reset both sides.
P78LCW	automatic reset both sides (HP-TÜV-„Limit“).
P78MCB	automatic reset low side. manual reset high side (TÜV-„Limit“).
P78MCS	automatic reset low side. manual reset high side (TÜV-„Safety Limit“).
P78PLM	2 x manual reset HP (TÜV-„Limit“ plus „Safety Limit“).
P78ALA	Dual fan cycling control (2 x SPST close high).

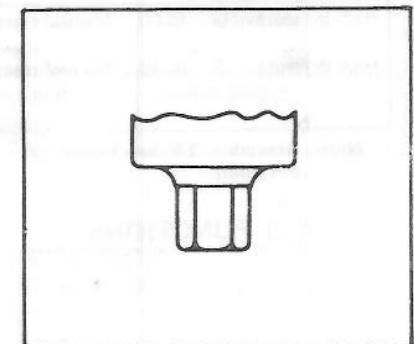


P78 DUAL PRESSURE CONTROL

PRESSURE CONNECTORS



STYLE 5: Male connector $\frac{7}{16}$ –20 UNF for $\frac{1}{4}$ ”/6 mm flare nut.



STYLE 15: Female connector $\frac{1}{4}$ –18NPT.

ADJUSTMENT

On most models* the range scale indicates the high switching point, to obtain low switch point deduct differential value from high switching point.

*Exception: LP-side of P78PGA, here the range scale indicates the low switching point.

TYPE NUMBER SELECTION

PRESSURE SIDE	RANGE (bar)	DIFF. (bar)	CONTACT FUNCTION	PRESS. CONNecTOR	MAX. BELLOWS PRESS.	ORDER NUMBER		
						IND. PACK	BULK PACK	CODE

Dual Pressure Controls for Non-corrosive Refrigerants

Low pressure	-0.5 to 7	0.5 to 3	Diagram 1	Style 5	22 bar	P78LCA-9300	P78LCA-9320	P78L ¹
High pressure	3 to 30	3 (fixed)		Style 5	33 bar			
Low pressure	-0.5 to 7	0.5 to 3	Diagram 1	Style 5	22 bar	P78MCA-9300	P78MCA-9320	P78M ¹
High pressure	3 to 30	Manual reset*		Style 5	33 bar			
Low pressure	-0.5 to 7	Manual reset**	Diagram 1	Style 5	22 bar	P78PGA-9300	P78PGA-9320	P78P ¹
High pressure	3 to 30	Manual reset*		Style 5	33 bar			

* Note: Resettable 3 bar below cut-out point.

** Note: Resettable 0.5 bar above cut-out point.

¹ Ind. pack only.

Dual Pressure Controls for Ammonia and Non-corrosive Refrigerants

Low pressure	-0.5 to 7	0.5 to 3	Diagram 1	Style 15	14 bar	P78LCA-9700	P78LCA-9720	
High pressure	3 to 30	3 (fixed)		Style 15	33 bar			
Low pressure	-0.5 to 7	0.5 to 3	Diagram 1	Style 15	14 bar	P78MCA-9700	P78MCA-9720	
High pressure	3 to 30	Manual reset*		Style 15	33 bar			

* Note: Resettable 3 bar below cut-out point.

Dual Pressure Controls built in accordance with German specifications Druck 100

These Controls have double bellows on the high pressure side and are approved by TÜV in West-Germany

PRESSURE SIDE	RANGE (bar)	DIFF. (bar)	CONTACT FUNCTION	FUNC-TION	MAX. BELLOWS PRESS.	ORDER NUMBER		
						IND. PACK	BULK PACK	CODE

For Non-corrosive Refrigerants, Pressure connector style 5

Low pressure	-0.5 to 7	0.5 to 3	Diagram 1	"LP + Wächter" ^①	22 bar	P78LCW-9300	P78LCW-9320	P78W ¹
High pressure	3 to 30	3.5 (fixed)						
Low pressure	-0.5 to 7	0.5 to 3	Diagram 1	"LP + Begrenzer" ^②	22 bar	P78MCB-9300	P78MCB-9320	P78B ¹
High pressure	3 to 30	Manual reset*						
Low pressure	-0.5 to 7	0.5 to 3	Diagram 1	"LP + Sicherheitsdruckbegrenzer" ^③	22 bar	P78MCS-9300	P78MCS-9320	P78S ¹
High pressure	3 to 30	Manual reset*						
High pressure	3 to 30	Manual reset*	Diagram 2	Begrenzer ^②	33 bar	P78PLM-9350	Ind. pack only	P78BS ¹
High pressure	3 to 30	Manual reset*		Sicherheitsdruckbegrenzer ^③	33 bar			

* Note: Resettable 3.5 bar below cut-out point.

① HP Limit Aut. Reset (TÜV).

② HP Limit Man. Reset (TÜV).

③ HP Safety Limit (TÜV).

¹ Ind. pack only.

CONTACT FUNCTIONS

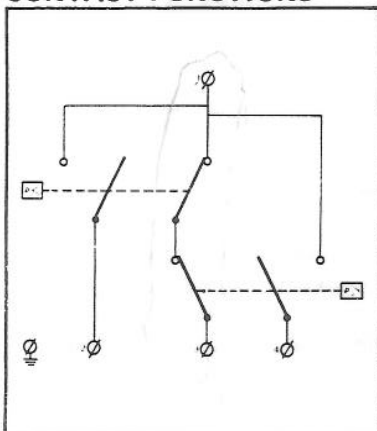


DIAGRAM 1

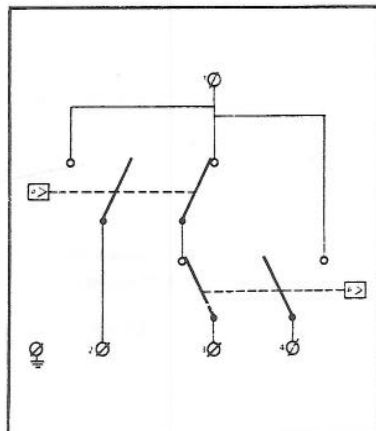


DIAGRAM 2

DIAGRAM 1 (LEFT):

LP. 1-3 opens on pressure decrease.

1-2 closes simultaneously.

HP. 1-3 opens on pressure increase.

1-4 closes simultaneously.

DIAGRAM 2 (RIGHT):

"Begrenzer"

HP. 1-3 opens on pressure increase.

1-2 closes simultaneously.

"Sicherheitsdruckbegrenzer"

HP. 1-3 opens on pressure increase.

1-4 closes simultaneously.

ELECTRICAL RATING (380V ~)

Contact 1 - 3: 16(10)A.

Contact 1 - 2: 8(5)A

Contact 1 - 4: 8(5)A

Direct current: 220V ~ 12W (pilot duty only).

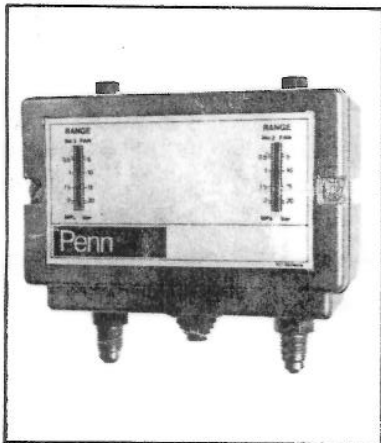
TYPE NUMBER SELECTION (continued)

Dual Fan cycling control for air-cooled condensers (non-corrosive refrigerants)

PRESSURE SIDE	RANGE (bar)	DIFF. (bar)	CONTACT FUNCTION	PRESSURE CONNECTOR	MAX. BELLOWS PRESSURE	ORDER NUMBER
High pressure	3.5 to 21	1.8 fixed*	Diagram 3	style 5	30 bar	P78ALA-9351
High pressure	3.5 to 21	1.8 fixed*		style 5	30 bar	

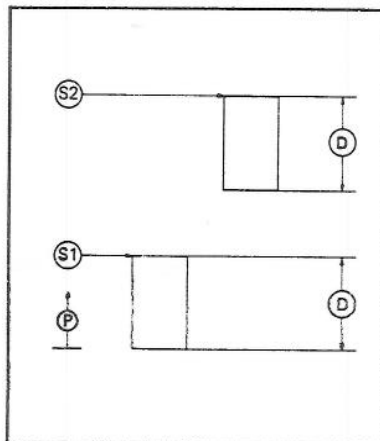
Both cut-in points can be set individually
*Optional 3 bar fixed, quantity orders only

DUAL FAN CYCLING CONTROL



P78ALA

SWITCHING ACTION P78ALA



S₁ Cut-in point no. 1 fan.
S₂ Cut-in point no. 2 fan.
D Differential per stage.
P Pressure increase.

CONTACT FUNCTION P78ALA

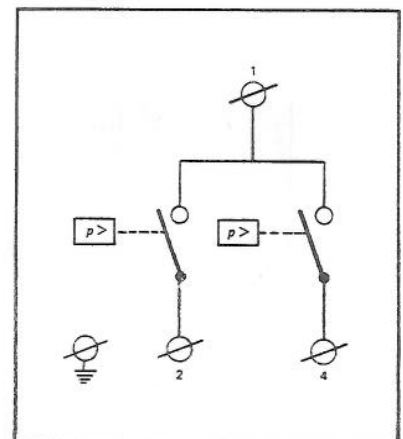


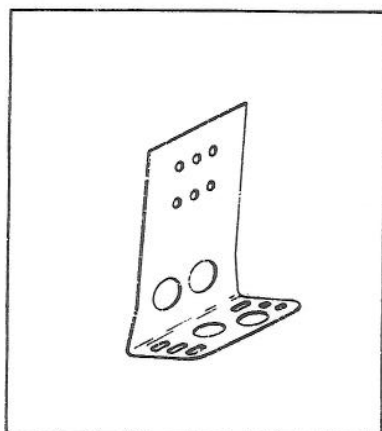
DIAGRAM 3:
No. 1 fan: 1-2 closes on pressure rise.
No. 2 fan: 1-4 closes on pressure rise.

ACCESSORIES

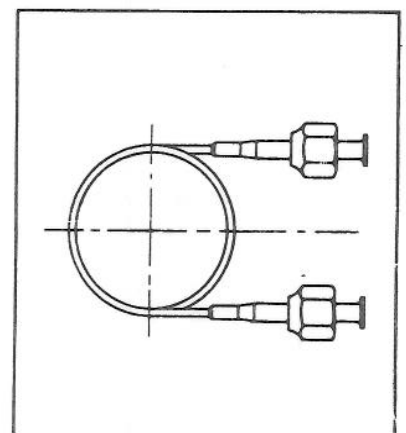
COMPRESSION COUPLING

PART	DESCRIPTION	APPLICATION	CODE NUMBER
	Fits into style 15 pressure connectors	For 6 mm copper or steel tubing	CNR003N001
		For 8 mm copper or steel tubing	CNR003N002

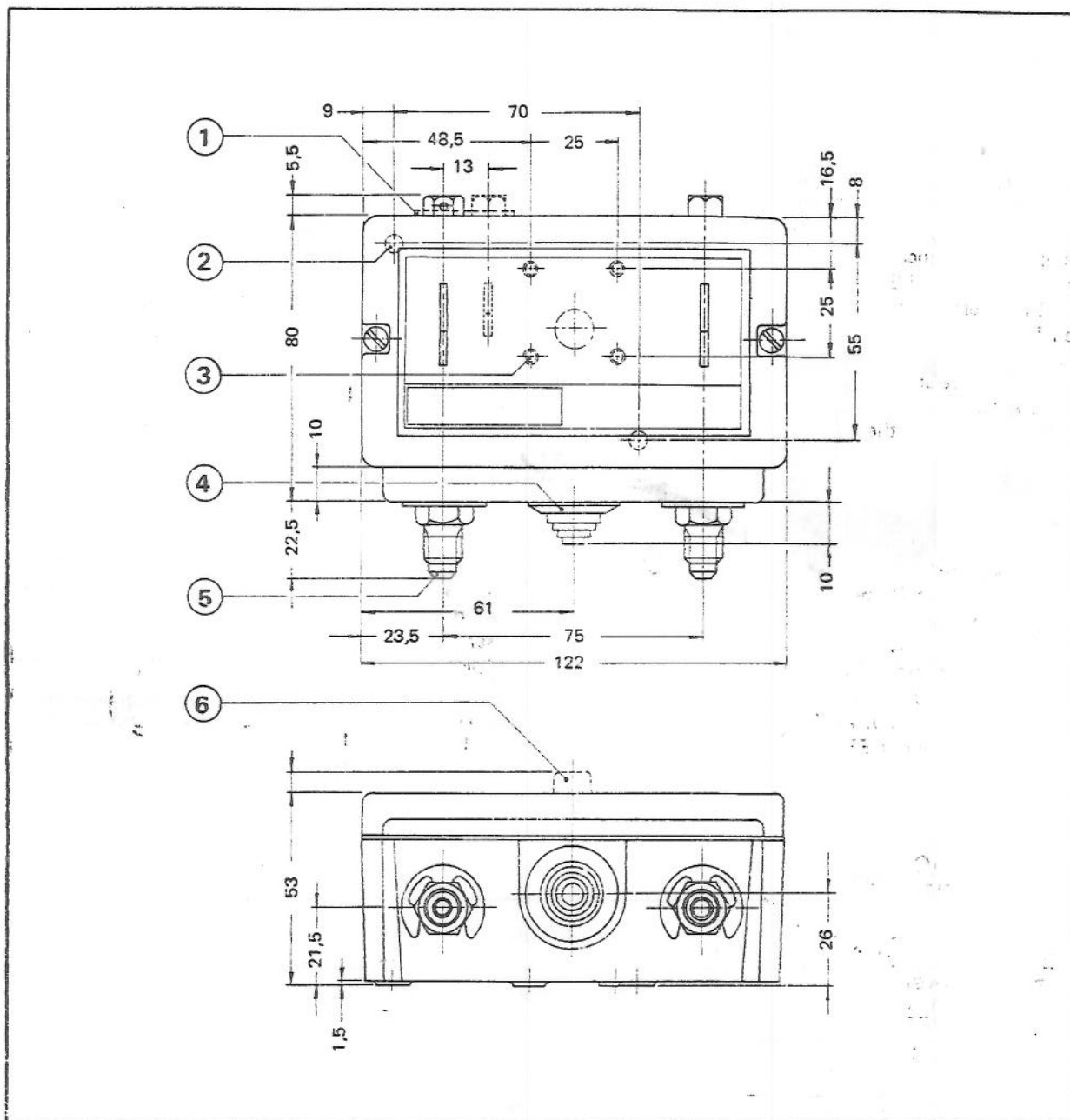
MOUNTING BRACKET 271-51



**SEC002N600
90 cm Capillary with (2) Flare Nuts**



DIMENSIONS (mm)



- ① Lock plate (if applied).
- ② Two mounting holes $\phi 4.5$.
- ③ Four mounting holes M4.
- ④ Cable inlet grommet (cable range $\phi 5 - \phi 13$), dimensions of hole permit the use of PG13.5 or PG16 conduit connectors.
- ⑤ Power element:
 Style 5: $7/16 - 20$ UNF male (shown).
 Style 15: $1/4 - 18$ NPT female.
- ⑥ Reset button.

NOTE

The performance specifications for this equipment are nominal and conform to generally acceptable industry standards. Johnson Controls Nederland B.V. shall not be liable for damages resulting from misapplications or misuse of its products.

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