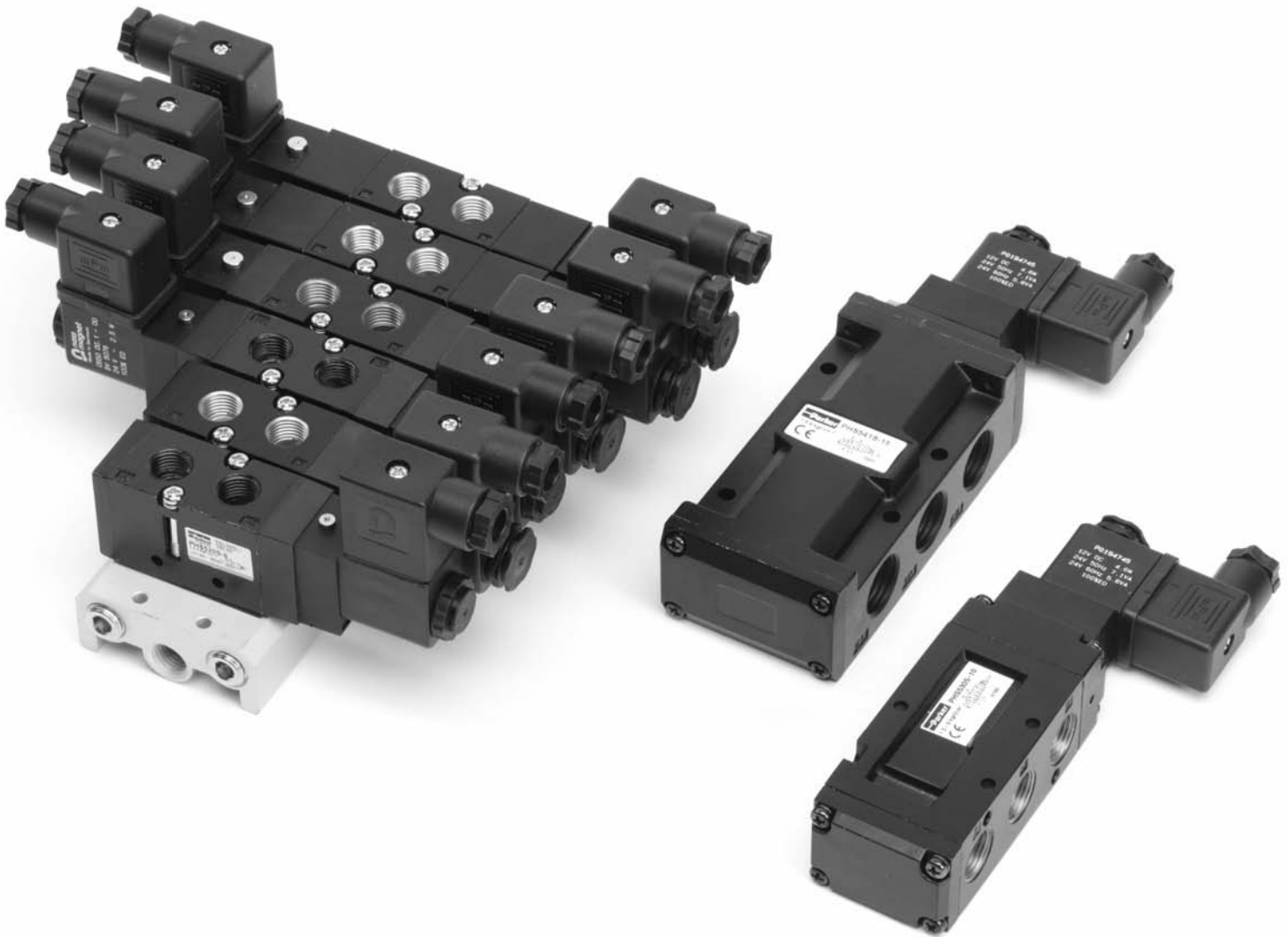


PHS/PHP Series Air Valves

Rc1/4, Rc3/8 and Rc1/2 Ports



Quality
Endorsed
Company
ISO 9001
Lic 0689
Standards
Australia

*Vital Technologies for
Motion and Control*



PHS/PHP Series Valves

PHS/PHP SERIES Rc1/4, Rc3/8 AND Rc1/2 PORTED PNEUMATIC VALVES FEATURES

The PHS/PHP Series solenoid and pilot operated valves offer a wide range of benefits, at low cost, to the user.

High flow rates: Cv ratings of 1.0, 1.6 and 3.0, higher than usual for Rc1/4, Rc3/8 and Rc1/2 ported valves, make for less space requirements and lower costs.

Wear Compensation System (WCS): Low friction, less wear, fast response and bubble tight sealing are ensured in PHS520/530 and PHP520/530 valves by the use of Parker's unique WCS seals.

Long service life: PHS/PHP Series valves had been tested to 20 million operations (one operation = one spool shift) prior to being released to the market.

Non-lube service: With no lubricant added to the airflow, oil contamination of the surrounds is avoided.

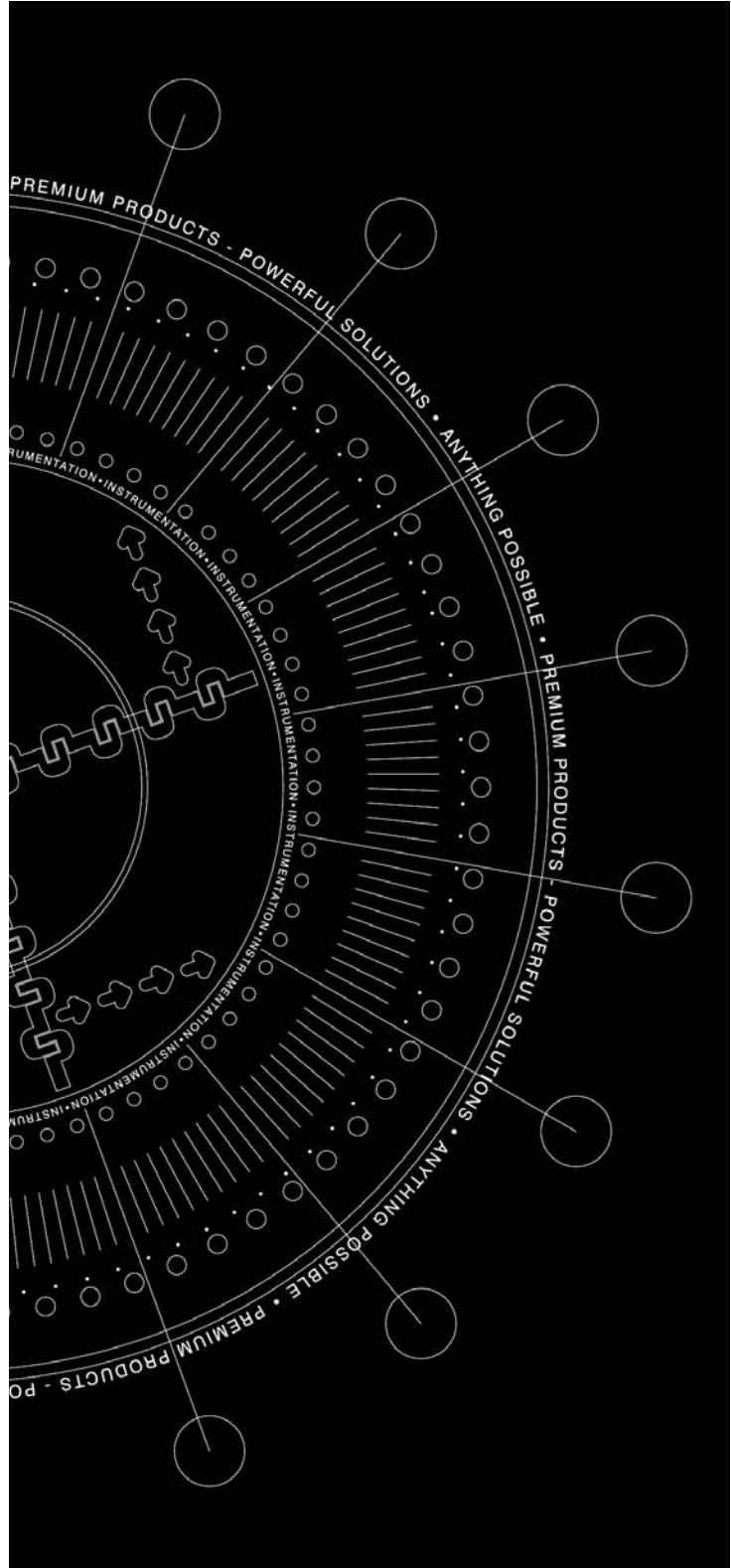
Manual overrides: A choice of locking or non-locking manual overrides facilitate setting-up, testing as well as operation during power failure.

Modular construction: Valves, coils and connectors may be stocked separately to minimise inventory.

Manifold mounting: Standard valves can be installed in-line or on bar manifolds for maximum flexibility in application.

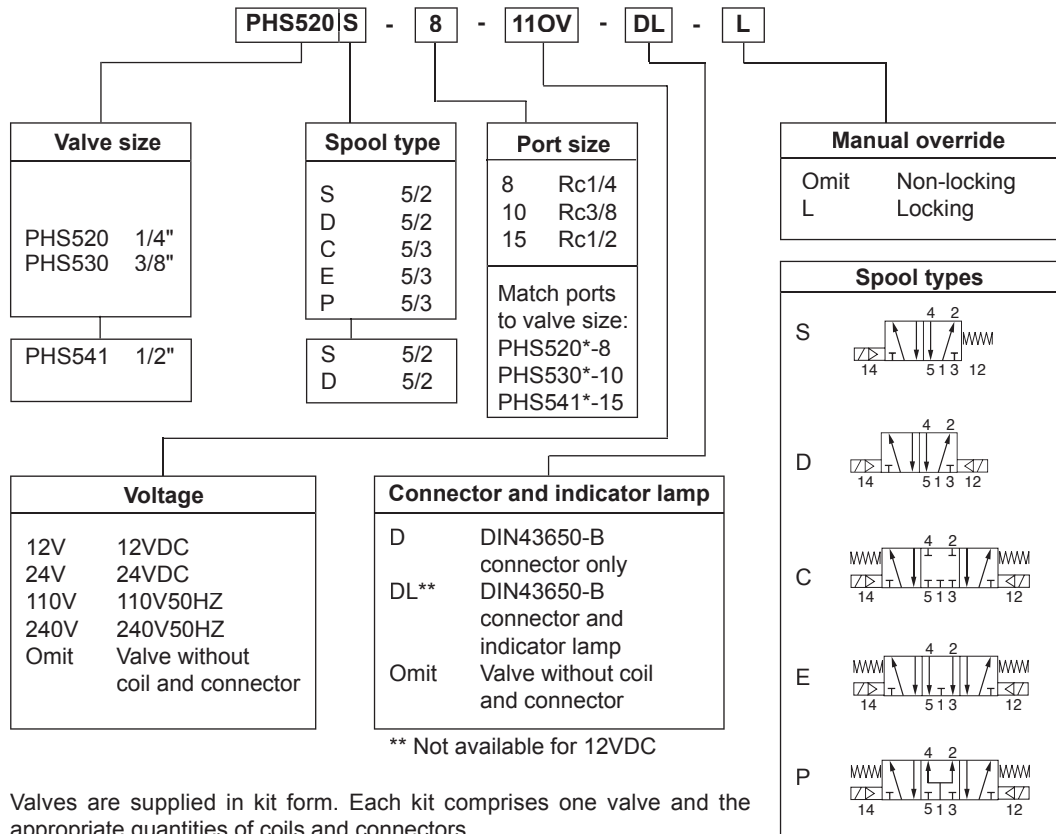
DIN standard connectors: DIN43650 Form-B electrical connectors ensure IP65 protection and interchangeability.

Fast response: Response time for solenoid valves ranges from 20 ms to 50 ms depending on valve type.



PHS/PHP Series Valves

HOW TO ORDER SOLENOID OPERATED VALVE KITS

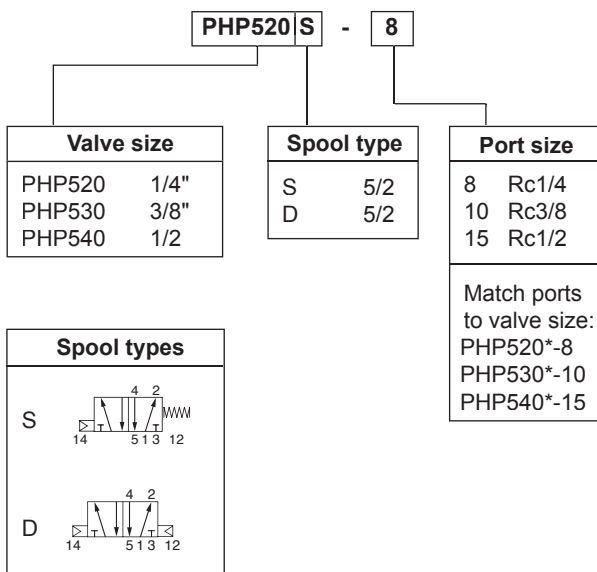


Valves are supplied in kit form. Each kit comprises one valve and the appropriate quantities of coils and connectors

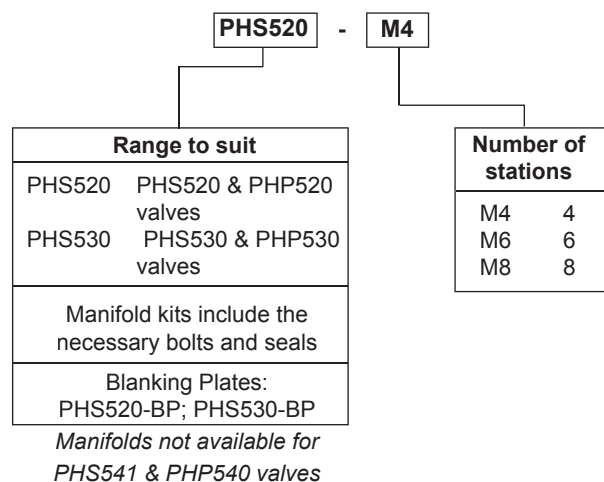
PHS541S-*** and PHP540S-*** valves are of the air-spring return type.

On PHP540*** pilot valves and all solenoid valves, air supply must be connected to Port 1.

HOW TO ORDER PILOT OPERATED VALVES



HOW TO ORDER MANIFOLD KITS



PHS/PHP Series Valves

TECHNICAL INFORMATION

General information

Medium	Compressed air or inert gas
Working temperature	+5°C to +60°C
Filtration	5 micron
Lubrication	Not required but to be continued once commenced

Working gauge pressure in kPa (bar; PSI)

Valve type	Maximum valve & pilot	Minimum valve	Minimum pilot
PHS520S, PHS530S	900 (9; 130)	150 (1.5; 22)	N.A.
PHS520D, PHS530D	900 (9; 130)	100 (1; 15)	N.A.
PHS520C/E/P, PHS530C/E/P	900 (9; 130)	200 (2; 30)	N.A.
PHP520S, PHP530S, PHP540S	900 (9; 130)	0	150 (1.5; 22)
PHP520D, PHP530D, PHP540D	900 (9; 130)	0	150 (1.5; 22)
PHS541S	900 (9; 130)	150 (1.5; 22)	N.A.
PHS541D	900 (9; 130)	150 (1.5; 22)	N.A.

Materials

Valve body	Aluminium, powder coated
Valves spool	Aluminium, anodised
Seals	Nitrile (NBR)
Spool spring	Stainless steel
Manifold	Aluminium, anodised

Flow rating (Cv) and response time (ms)

Valve type	Cv	ms
PHS520S/D	1.0	20 max.
PHS520C/E/P	0.8	35 max.
PHP520S/D	1.0	N.A.
PHS530S/D	1.6	25 max.
PHS530C/E/P	1.6	35 max.
PHP530S/D	1.6	N.A.
PHS541S/D	3.0	50 max.
PHP540S/D	3.0	N.A.

Electrical information

Voltage	Holding current	In-rush current
12VDC	4.6W	N.A.
24VDC	2.6W	N.A.
110V50HZ	4.0VA	6.0VA
240V50HZ	6.0VA	8.5VA
Voltage range: +/-10%		
Connector: DIN43650 Form B		
Protection: IP65		

SPARE PARTS

Coils

Voltage	Part#
12VDC	PS2828B45P
24VDC	PEC5-24V-D
110V50HZ	PEC5-110V-D
240V50HZ	PEC5-AC240V-D

Connectors (DIN43650-B)

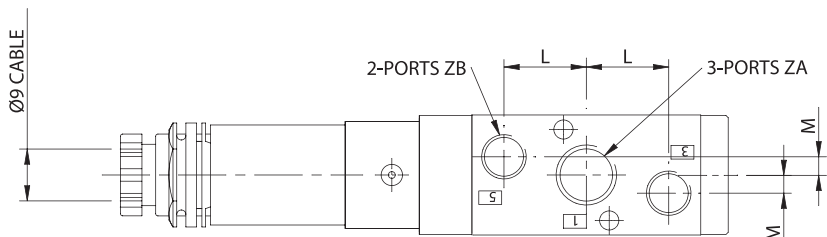
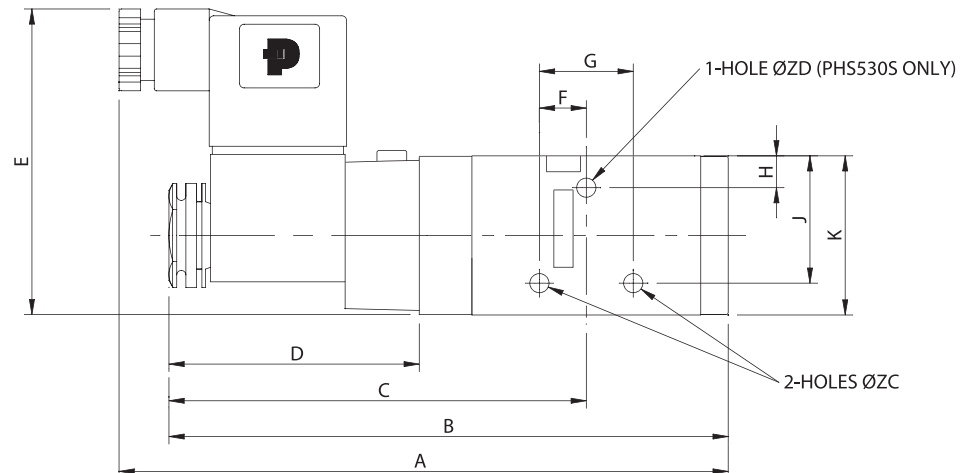
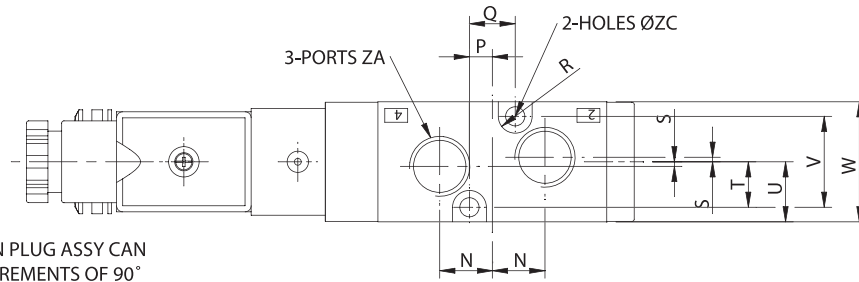
Voltage	Indicator lamp	Part #
0 - 240VAC/DC	No	PS2429P
24VDC	Yes	PES5L-24V
110V50HZ	Yes	PES5L-110V
240V50HZ	Yes	PES5L-240V

Repair kits

Valve type	Kit part #	Comprising
PHS520 & PHP520 PHS530 & PHP530 PHS541 & PHP540	PHS520SRK PHS530SRK PHS540SRK	All valve seals, spool & spool spring
Locking o/ride PHS520/530/541	OP-SET-LEV-PHS	Sleeve/plunger/spring assembly for solenoid operator
Non-lock o/ride PHS520/530/541	OP-SET-BU-PHS	

PHS/PHP Series Valves

PHS520/530 SOLENOID OPERATED SPRING RETURN VALVES DIMENSIONS

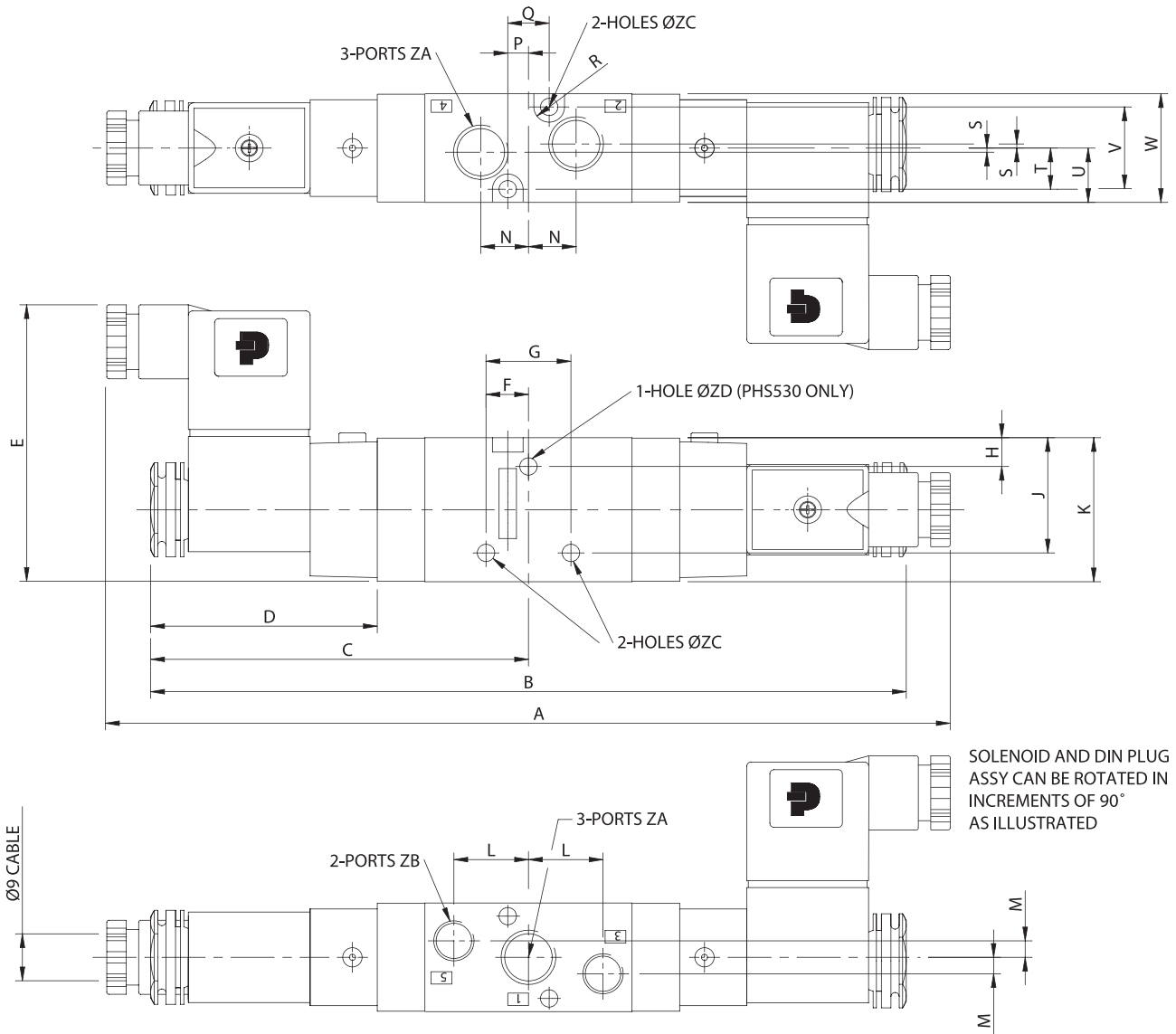


Valve	Size	A	B	C	D	E	F	G	H	J	K	L	M	N
PHS520S	1/4"	133	122.5	91.5	55	67	10.2	20.5	0	28	35	18	4	11.5
PHS530S	3/8"	166.5	156	109	55	72	13.5	27	4.5	40.5	45	26	0	14

Valve	Size	P	Q	R	S	T	U	V	W	ZA	ZB	ZC	ZD
PHS520S	1/4"	5	10	3.7	0	10	13.5	20	26.5	RC ¹ / ₄	RC ¹ / ₈	4.5	0
PHS530S	3/8"	22	44	4	1.5	12	16	24	32	Rc ³ / ₈	Rc ³ / ₈	4.5	4.5

PHS/PHP Series Valves

PHS520/530 DOUBLE SOLENOID OPERATED VALVES DIMENSIONS

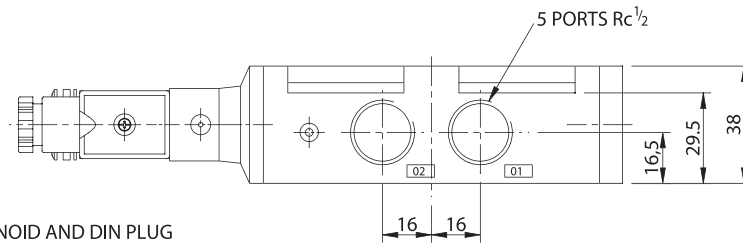


Valve	Size	A	B	C	D	E	F	G	H	J	K	L	M	N
PHS520D	1/4"	204	182.5	91.5	55	67	10.2	20.5	0	28	35	18	4	11.5
PHS520C/E/P	1/4"	225	203	101.5	76.5									
PHS530D	3/8"	238.5	218	109	55	72	13.5	27	4.5	40.5	45	26	0	14
PHS530C/E/P	3/8"	271	249	125	88									

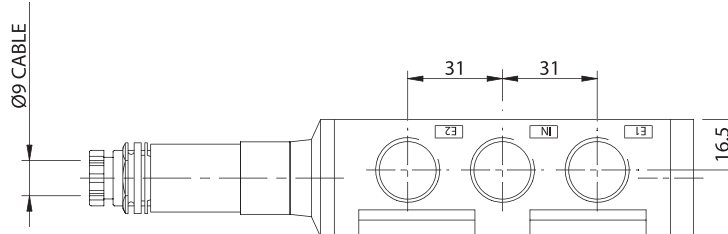
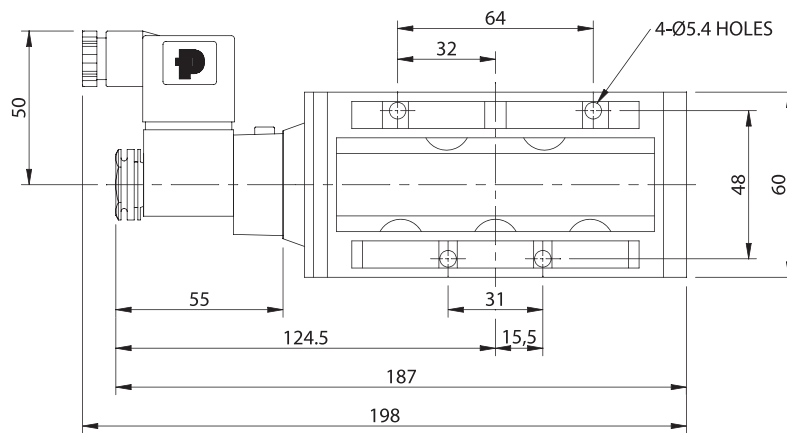
Valve	Size	P	Q	R	S	T	U	V	W	ZA	ZB	ZC	ZD
PHS520D	1/4"	5	10	3.7	0	10	13.5	20	26.5	RC ¹ / ₄	Rc ¹ / ₈	4.2	0
PHS520C/E/P	1/4"												
PHS530D	3/8"	22	44	4	1.5	12	16	24	32	RC ³ / ₈	RC ³ / ₈	4.5	4.5
PHS530C/E/P	3/8"												

PHS/PHP Series Valves

PHS541 SOLENOID OPERATED SPRING RETURN VALVES DIMENSIONS

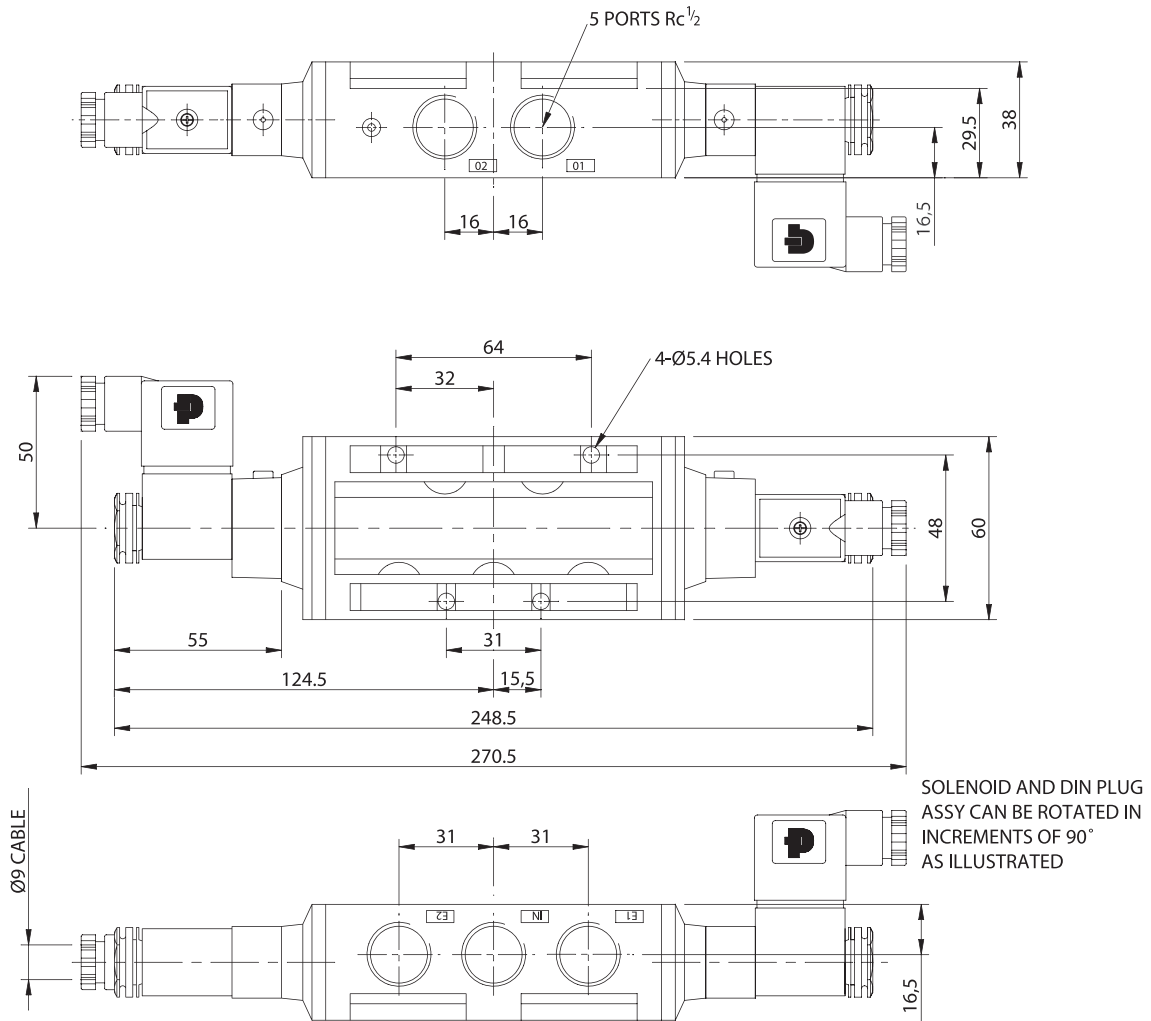


SOLENOID AND DIN PLUG
ASSY CAN BE ROTATED IN
INCREMENTS OF 90°



PHS/PHP Series Valves

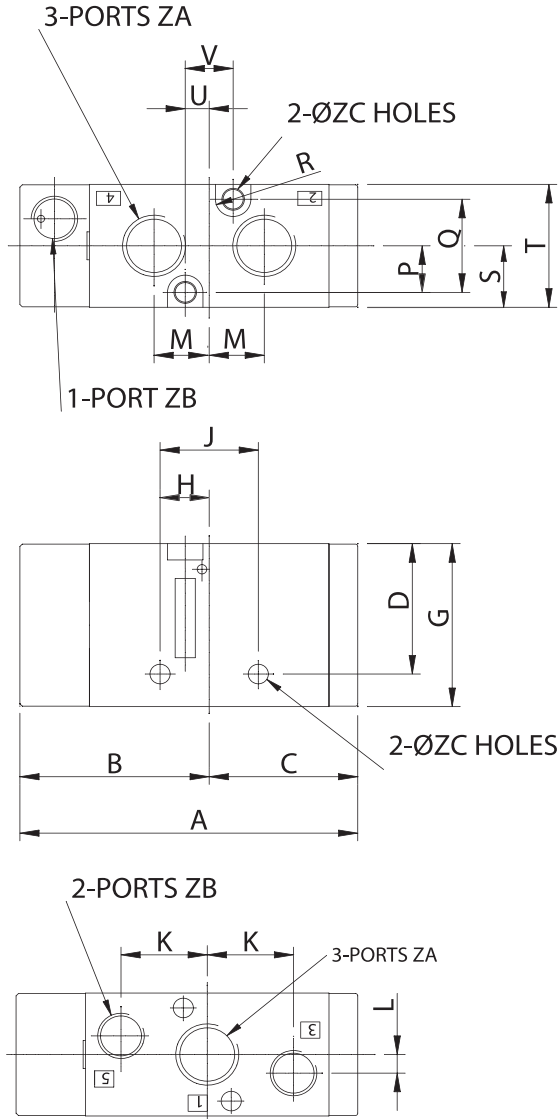
PHS541 DOUBLE SOLENOID OPERATED VALVES DIMENSIONS



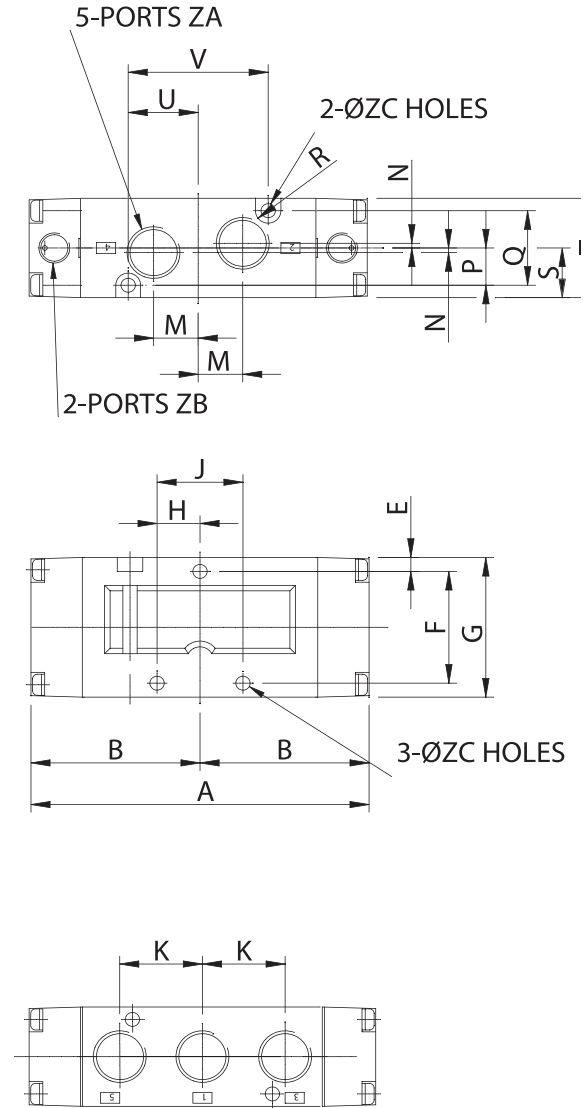
PHS/PHP Series Valves

PHS520/530 PILOT OPERATED VALVES DIMENSIONS

PHP520S (Illustrated)
PHP530S



PHP520D
PHP530D (Illustrated)



Valve	Size	A	B	C	D	E	F	G	H	J	K	L	M
PHP520S-8	1/4"	70.5	39.5	31	28	NA	NA	35	10.2	20.5	18	4	11.5
PHP520D-8		79		NA									
PHP530S-10	3/8"	101	54	47	NA	4.5	36	45	13.5	27	26	NA	14
PHP530D-10		108		NA									

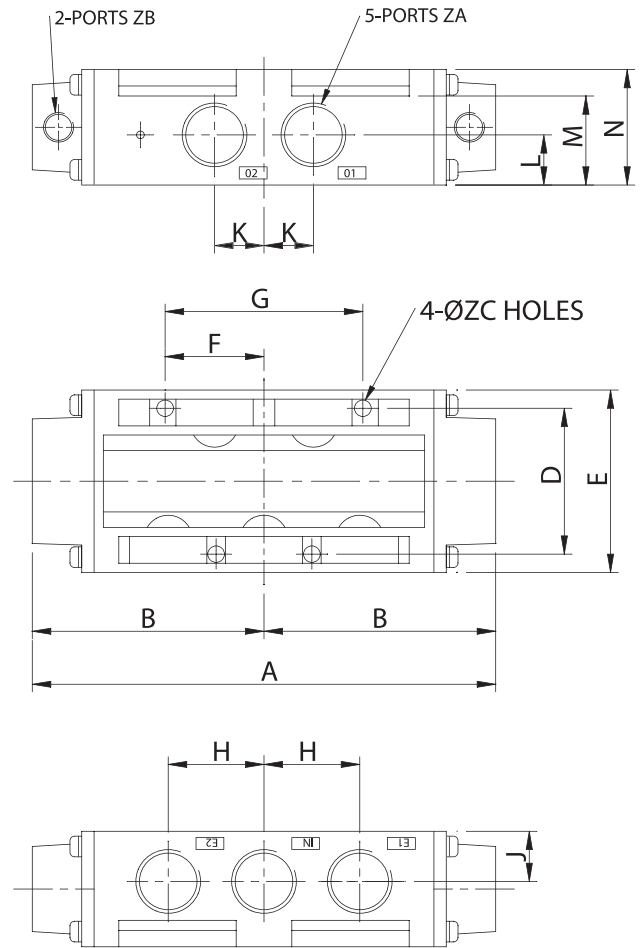
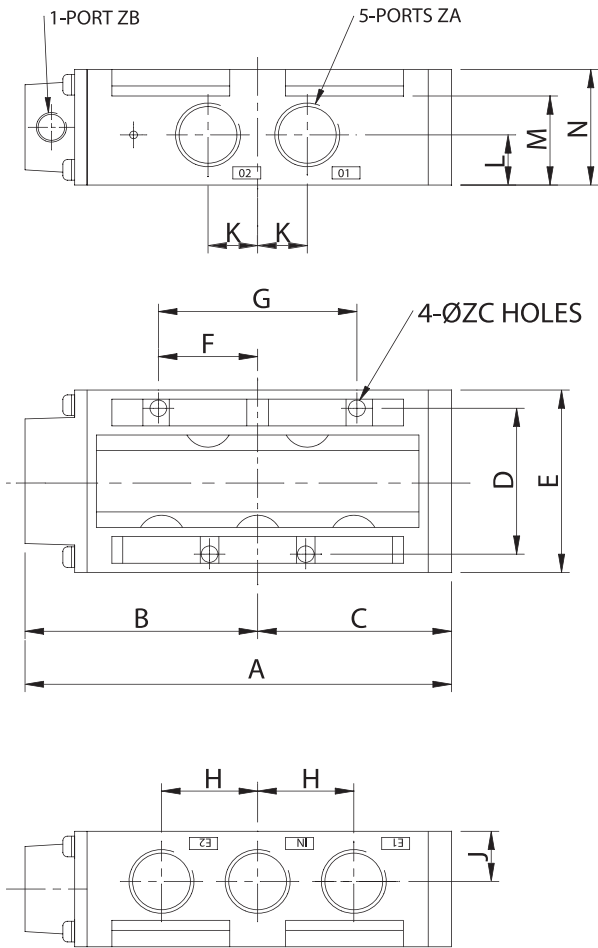
Valve	Size	N	P	Q	R	S	T	U	V	ZA	ZB	ZC
PHP520S-8	1/4"	NA	10	20	13.5	3.7	26.5	5	10	Rc ¹ / ₄	Rc ¹ / ₈	4.2
PHP520D-8										Rc ¹ / ₄		
PHP530S-10	3/8"	1.5	12	24	16	4	32	22	44	Rc ³ / ₈	Rc ¹ / ₈	4.5
PHP530D-10										Rc ³ / ₈		

PHS/PHP Series Valves

PHS540 PILOT OPERATED VALVES DIMENSIONS

PHP540S

PHP540D

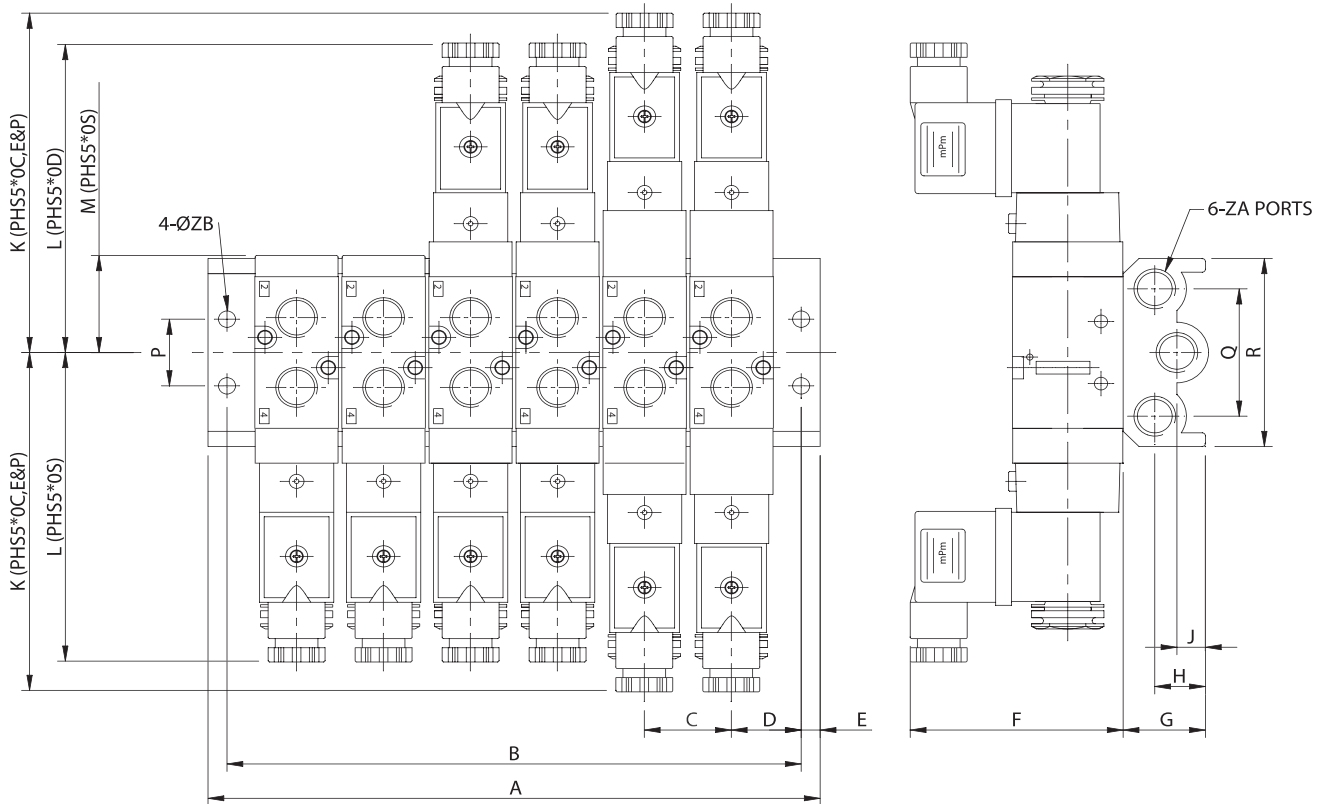


Valve	Size	A	B	C	D	E	F	G	H
PHP540S-15	1/2"	137.5	75	62.5	48	60	32	64	31
PHP540D-15	1/2"	150		NA					

Valve	Size	J	K	L	M	N	ZA	ZB	ZC
PHP540S-15	1/2"	16.5	16	16.5	29.5	38	Rc ¹ / ₂	Rc ¹ / ₈	5.4
PHP540D-15	1/2"								

PHS/PHP Series Valves

PHS520/530 MANIFOLDS DIMENSIONS



Valve	Size	A	B	C	D	E	F
PHS520S&D	1/4"	(28 x N) + 28	(28 x N) + 16	28	22	6	67
PHS520C,E&P	1/4"						
PHS530S&D	3/8"	(33 x N) + 27	(33 x N) + 14	33	23.5	6.5	72
PHS530C,E&P	3/8"						

Valve	Size	G	H	J	K	L	M	P	Q	R	ZA	ZB
PHS520S&D	1/4"	27	16	10	NA	102	31	24	46	64	Rc ¹ / ₄	5.4
PHS520C,E&P	1/4"				112.5	NA	NA					
PHS530S&D	3/8"	30	18	13	NA	119	47	30	60	82.5	Rc ³ / ₈	6.5
PHS530C,E&P	3/8"				135.5	NA	NA					

Sizing Valves

Use tables and formula below to calculate C_v factor.
Select valve with C_v factor equal to or greater than the one calculated.

Valve Sizing - Metric

C_v Measure of calculating flow capacity of a valve (or other pneumatic device) that takes into effect the temperature, pressure, pressure drop, and flow. As a rule of thumb, a C_v of 1.0 is 12 L/s (ANR) with a 34.5 kPa pressure drop.

$$C_v = \frac{\text{Cylinder Area (mm}^2\text{)} \times \text{Cylinder Stroke (mm)} \times \text{Compression Factor (Table 1M)} \times \text{"A" (Table 1M)}}{\text{Stroke Time (sec.)} \times 471950}$$

$$C_v = \frac{\text{Air Flow (L/s ANR)} \times \text{"A" (Table 1M)} \times 2.118}{\text{Stroke Time (sec.)}}$$

Valve Sizing - Imperial

C_v Measure of calculating flow capacity of a valve (or other pneumatic device) that takes into effect the temperature, pressure, pressure drop, and flow. As a rule of thumb, a C_v of 1.0 is 25 SCFM with a 5 PSIG pressure drop.

$$C_v = \frac{\text{Cylinder Area (Sq. In.)} \times \text{Cylinder Stroke (In.)} \times \text{Compression Factor (Table 1I)} \times \text{"A" (Table 1I)}}{\text{Stroke Time (sec.)} \times 28.8}$$

$$C_v = \frac{\text{Air Flow (SCFM)} \times \text{"A" (Table 1I)}}{\text{Stroke Time (sec.)}}$$

Table 1 M

Compression Factors and "A" Constants

Inlet Pressure		Compression Factor	"A" Constants for Various Pressure Drops		
			0.138 Bar ΔP	0.345 Bar ΔP	0.690 Bar ΔP
Bar	kPa				
0.7	70	1.68	.155	.102	.066
1.4	140	2.36	.129	.083	.055
2.1	210	3.04	.113	.072	.048
2.8	280	3.72	.097	.064	.043
3.5	350	4.40	.091	.059	.040
4.2	420	5.08	.084	.054	.037
4.9	490	5.76	.079	.050	.035
5.6	560	6.44	.075	.048	.033
6.3	630	7.12	.071	.045	.031
6.9	690	7.80	.068	.043	.030
7.6	760	8.44	.065	.041	.029
8.3	830	9.16	.062	.039	.028
9.0	900	9.84	.060	.038	.027
9.7	970	10.52	.058	.037	.027
10.0	1000	10.86	.057	.037	.027

Note: Use "A" constant at 0.345 Bar D P for most applications. On very critical applications, use "A" at 0.138 Bar D P. In many cases, a 0.690 Bar D P is not detrimental, and can save money and mounting space.

Table 1 I

Compression Factors and "A" Constants

Inlet Pressure		Compression Factor	"A" Constants for Various Pressure Drops		
			2 PSI Δ P	5 PSI Δ P	10 PSI Δ P
PSIG					
10		1.68	.155	.102	.066
20		2.36	.129	.083	.055
30		3.04	.113	.072	.048
40		3.72	.097	.064	.043
50		4.40	.091	.059	.040
60		5.08	.084	.054	.037
70		5.76	.079	.050	.035
80		6.44	.075	.048	.033
90		7.12	.071	.045	.031
100		7.80	.068	.043	.030
110		8.48	.065	.041	.029
120		9.16	.062	.039	.028
130		9.84	.060	.038	.027
140		10.52	.058	.037	.027
145		10.86	.057	.037	.027

Note: Use "A" constant at 5 PSI D P for most applications. On very critical applications, use "A" at 2 PSI D P. In many cases, a 10 PSI D P is not detrimental, and can save money and mounting space.

Table 2 M

Effective Areas in mm² of

Standard Bore Size Cylinders

Bore Size(mm)	Cylinder Area (mm ²)	Bore Size(mm)	Cylinder Area (mm ²)
10	78	63	3117
12	113	80	5027
16	201	100	7854
20	314	125	12272
25	491	160	20106
32	804	200	31416
40	1256		
50	1964		

Table 2 I

Effective Areas in square inches of

Standard Bore Size Cylinders

Bore Size	Cylinder Area (Sq. In.)	Bore Size	Cylinder Area (Sq. In.)
3/4"	.44	4"	12.57
1"	.79	4 1/2"	15.90
1 1/8"	.99	5"	19.64
1 1/4"	1.23	6"	28.27
1 1/2"	1.77	7"	38.48
1 3/4"	2.41	8"	50.27
2"	3.14	10"	78.54
2 1/2"	4.91	12"	113.10
3 1/4"	8.30	14"	153.94
3 5/8"	10.32		