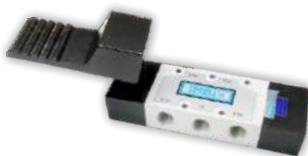




Hand Lever



Foot



Foot + Guard



Palm



External Pilot Air



Roller Plunger



Roller Lever



Roller Lever (Mini)
* (available only in 3 port)

- Available in spool type design only
- Available in 3 port & 5 port



*Single coil spool Valve
(Round coil)*



*Single coil spool Valve
(Square coil)*



Coil Type



*Double coil spool valve
(Round coil)*



*Double coil spool Valve
(Square coil)*



*Double Coil for
Manifold mounting*



*Poppet valve
(Round coil) (4 port)*



*Poppet Valve
(Square coil) (4 port)*



*Poppet valve
(Square coil) (3 port)*



*Direct Acting valve
(Round coil)*



*Direct Acting Valve
(Square coil)*



*Spool-Pace valve
single coil*



*Spool-Pace valve for
manifold mounting*



*Pace valve
Double coil*

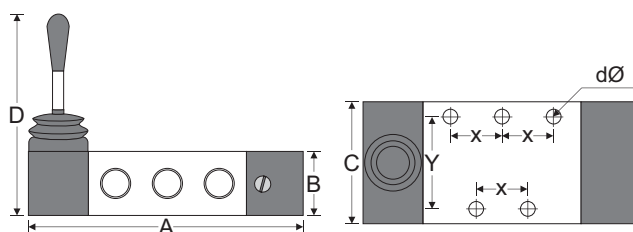
MANUALLY OPERATED TYPEES

- a) **Detent Type** : In this Hand Lever is pushed OR pulled to move the cylinder forward and backward.
- b) **Spring Return Type** : When the lever is pulled back the cylinder move in forward direction.
The moment the Lever is released a spring pushes it back to the original position and the cylinder retracts.
- c) **Spring Centered Type** : In this Type hand lever is pushed or pulled to operate cylinder. However when the lever is released, the spring gets the valve back in center position.

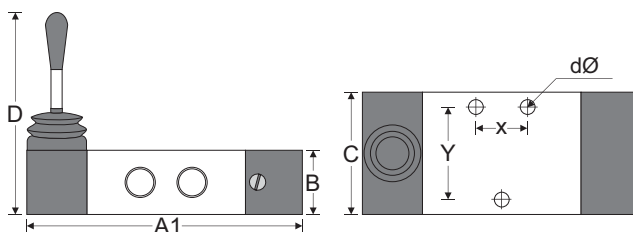
Handlever Operated



5 Port-2 Position- To Operate Double Acting Cylinder



3 Port-2 Position- To Operate Single Acting Cylinder

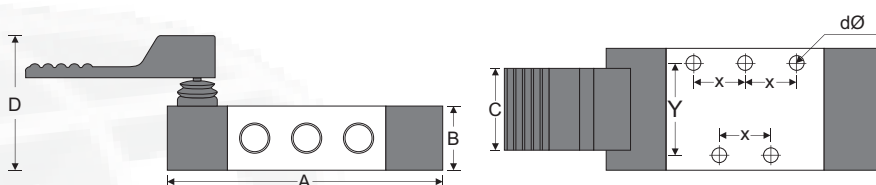


SIZE BSP	A	A1	B	C	D	X	Y	dØ
1/4"	134	110	25	50	120	24	40	4.5
3/8"	216	176	34	68	150	40	52	6.5
1/2"	216	176	34	68	150	40	52	6.5

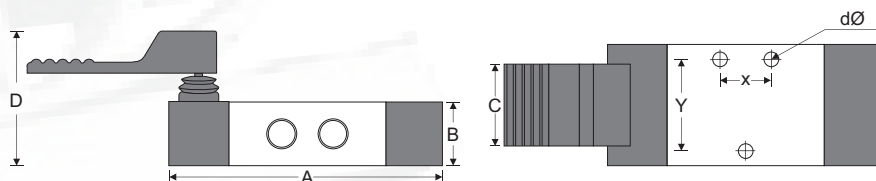
Foot Pedal valve

Available only in spring return type. Not detent type. available in 1/4, 3/8 & 1/2 BSP.

5 Port Foot Pedal



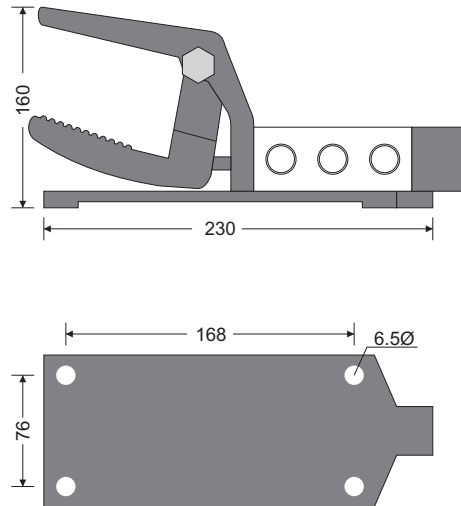
3 Port Foot Pedal



SIZE BSP	A	A1	B	C	D	X	Y	dØ
1/4"	134	110	25	50	90	24	40	4.5
3/8"	216	176	38	68	108	40	52	6.5
1/2"	216	176	38	68	108	40	52	6.5

Foot Pedal With Guard

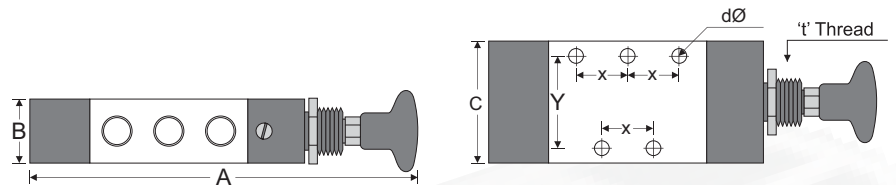
Available in 1/4 BSP & Spring Return Type only.(3 port \ 5 port)



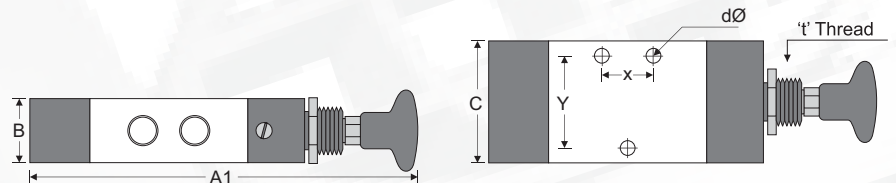
Bottom Mounting Details

Palm Operated Valve

5 Port-2 Position Spring Return Type OR Detent Type



3 Port-2 Position Type Spring Return / Detent



SIZE BSP	A	A1	B	C	X	Y	dØ	't' threads
1/4"	175	150	25	50	24	40	4.5	1/2" BSP
1/4"	255	215	38	68	40	52	6.5	1/2" BSP

Note: For Working Principles of Spring Return or Detent Type Valve 'Refer Page No. 5

External Pilot Air Valves

Single Pilot

3 Port

5 Port 2 Position

Double Pilot

5 Port 2 Position

5 Port 3 Position

a) Single Pilot :

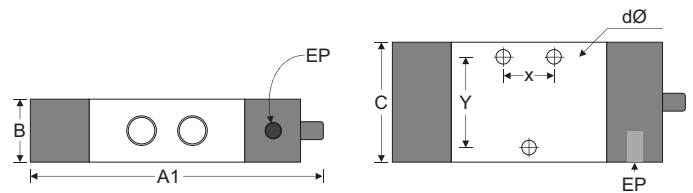
These Valves as the names suggest are operated by external air signal to the Piston Provided inside the valve. This in turn shifts the spool and the cylinder shaft is operated in one direction.

The moment this signal is cut off, the spool comes back by a spring and the cylinder shaft retracts to the original position. The External pilot signals are generally provided by means of 3 port Roller valves.

EP port provided for External Air Signal

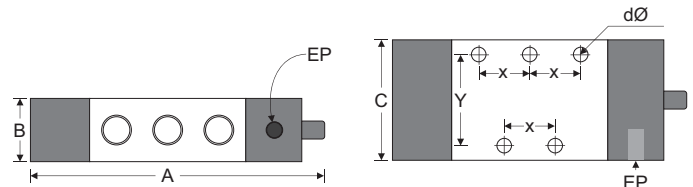


(3 Port)



Manual Pin also provided for manual operation

(5 Port)



BASIC LINE DIAGRAM CIRCUIT FOR OPERATING A DOUBLE ACTING PNEUMATIC CYLINDER WITH EXTERNAL SINGLE PILOT VALVE USED WITH A 3 WAY ROLLER VALVE

1st Position : Cylinder in Retracted position

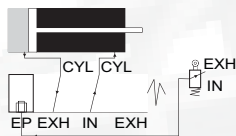


Fig 'A'

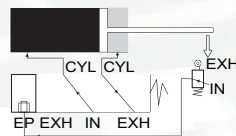


Fig 'b'

2nd Position : The movement of the roller is pressed by any external source like a cam, the inlet pressure is directed to the EP port of the pilot valve, which shifts the spool inside the valve and changes the air position to the cylinder, making it move forward. Like wise when the roller is released the cylinder retracts again to the 1st position shown in figure 'a'

SIZE BSP	A	A1	B	C	X	Y	dØ	EP
1/4"	148	123	50	24	4.5	40	4.5	1/8"
3/8"	236	196	68	52	6.5	52	6.5	1/4"
1/2"	236	196	68	52	6.5	52	6.5	1/4"

a) Double Pilot :

In this type the external air signal can be given alternatively to both ends (i.e. EP port is provided on both ends). One side air signal will cause the cylinder shaft to move forward and when air signal is given to other side cylinder shaft will retract.

5 Port 2 Position



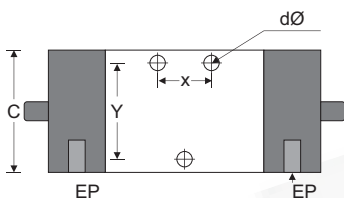
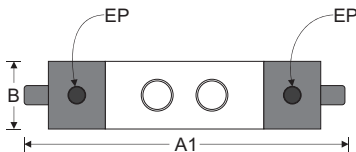
5 Port 3 Position



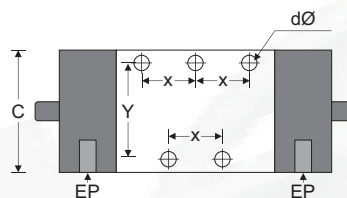
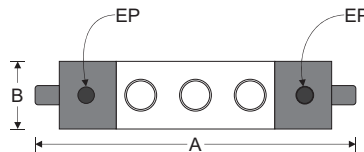
Double Pilot 2 Position

These valves are operated by external air signal given to the valve alternately from both ends to shift the spool. As compared to signal pilot valves explain, there is no spring, so the spool does not come back on cutting the pilot signal to port 'EP'. on providing a Momentary signal to the valve, the cylinder shaft moves forward and complete its full stroke. A second signal given to the other pilot port of the valve makes the cylinder shaft retract to its original position

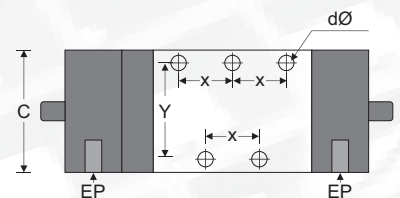
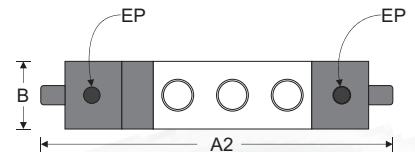
(3 Port 2 Position)



(5 Port 2 Position)



(5 Port 3 Position)

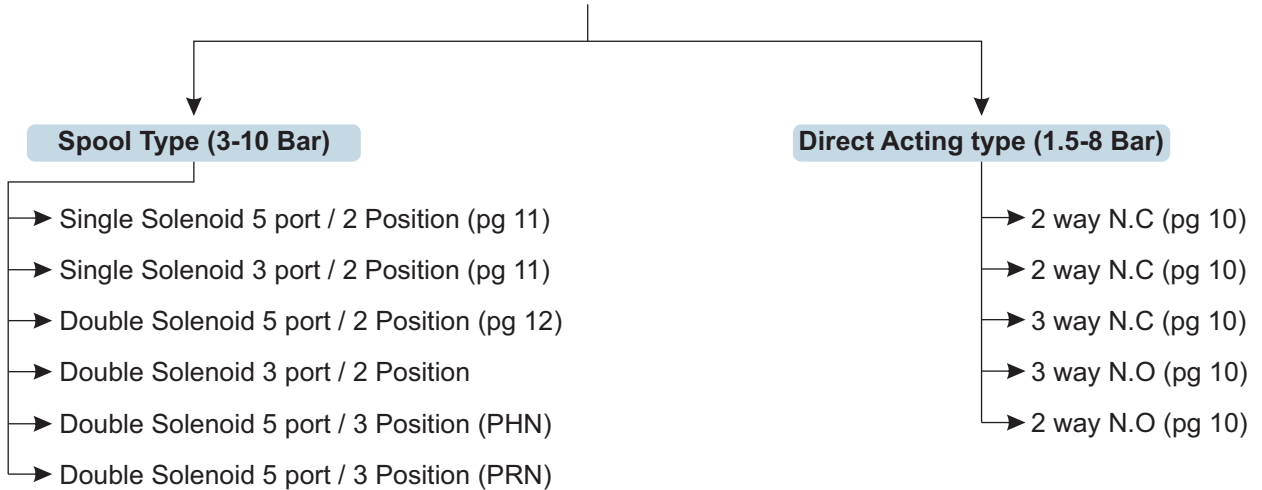


Double Pilot 3 Position

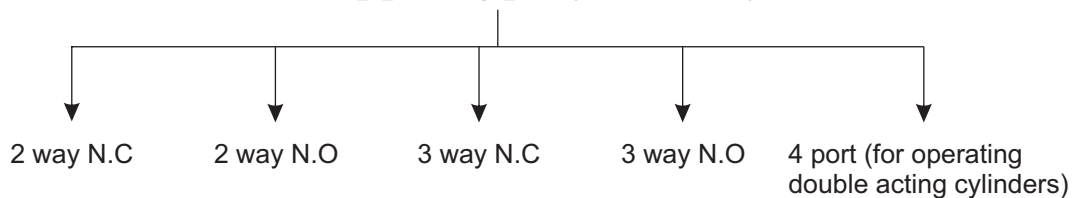
Double pilot valves are also available in 3 position type the basic working principle of using 3 position valves is Explained in pg no. 2

SIZE BSP	A	A1	A2	B	C	Y	dØ	EP
1/4"	152	128	182	25	50	24	4.5	1/8"
3/8"	246	206	290	38	68	52	6.5	1/4"
1/2"	246	206	290	38	68	52	6.5	1/4"

SOLENOID COIL OPERATED VALVES



Poppet Type (3-10 Bar)

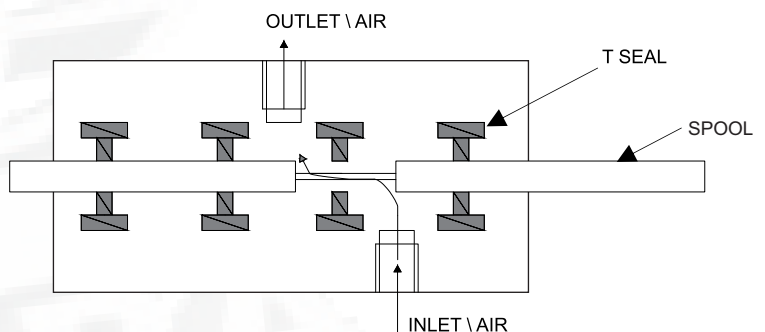


(A) Spool Type (3-10) T Seal design

- 1) More rugged in construction and provides efficient sealing.
- 2) Used when frequency of operation is not more than 30 cycles. per minute.

Drawbacks :-

- 1) Require proper lubrication system in the line for smooth and continuous operation because of the 'T' seal grip over the spool.
- 2) Flow rate is marginally less as compared to poppet valve so number of cycles per minute are lesser.
- 3) Minimum operation pressure required is 3 bar

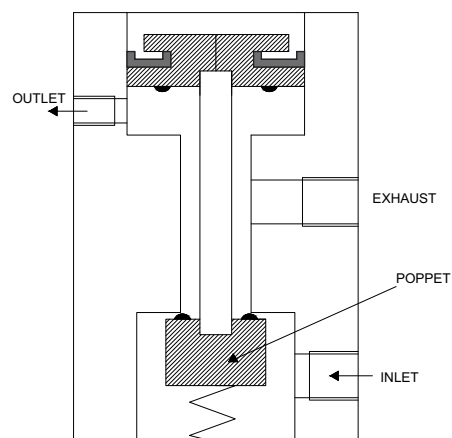


(B) Poppet Type (3-10)

- 1) More compact as compared to spool valves.
- 2) Used when frequency is upto 50 cycles per minute.
- 3) Delivers more flow rate as compared to spool types valves
- 4) Preferred where environment is dusty.
- 5) Requires less lubrication.

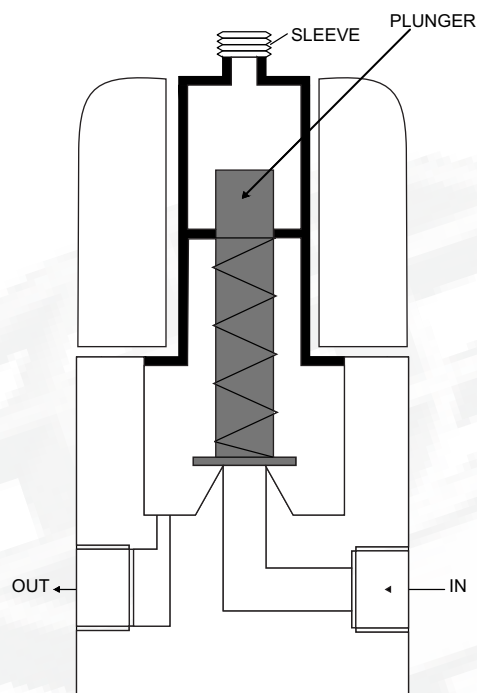
Drawbacks :-

- 1) Requires frequent replacement of poppet as poppet O Ring tend to get chipped due to wear and tear.



(C) Direct Acting type (1.5 - 8 Bar)

- 1) Generally used for ON OFF operation. Also used for giving external pilot signal to operate main valves in the system.
- 2) Quick Response Time.
- 3) Compact in construction
- 4) No Lubrication Required.
- 5) Operate at minimum pressure 1.5 bar

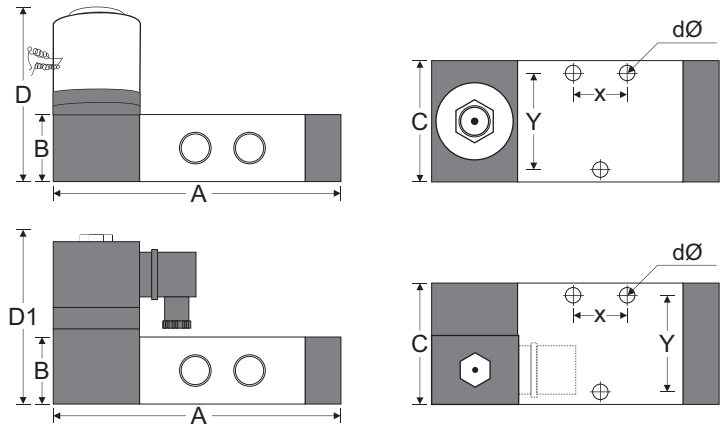


- Available in 2 way N.C., 2 Way N.O., 3 Way N.C., 3 Way N.O.

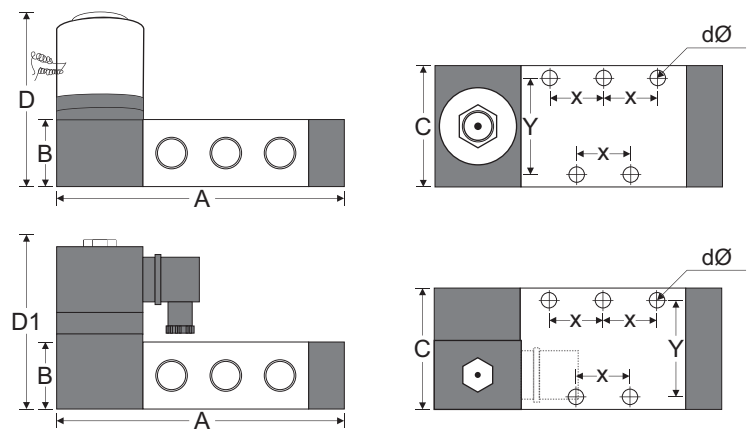
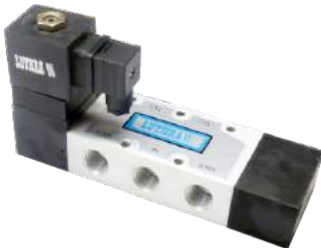
Dimensional Details, (Spool Type Valve)

1) Single Coil valve - SERIES 11

(3 port valve)



(5 port valve)



Note :-

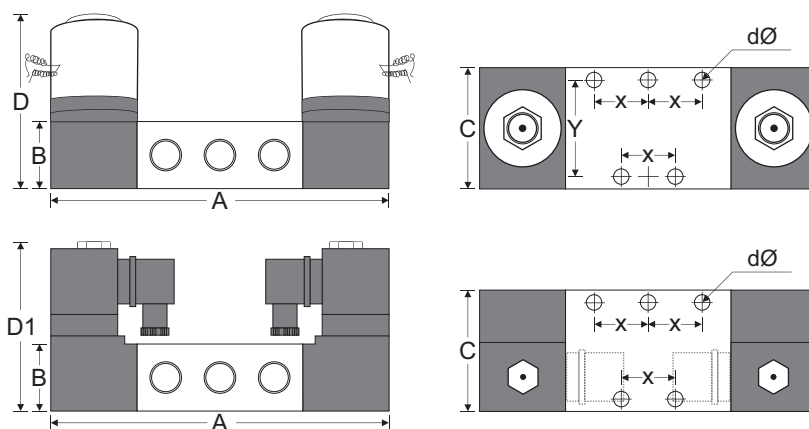
- 1) For port, position and working principle **Refer Page No. 1 & 2**
- 2) Valves available with manual override screw type system only (not push type)
- 3) In Single Solenoid valve, coil has to be kept continuously energized to move the cylinder forward.
The moment the coil current is cut off the cylinder will retract.
- 4) When coil is kept continuously energized the temperature of the same will go to around 80°C as per design parameters. However it is advisable, not to keep the coil 'ON' for more than 30 mins continuously as it may lead to coil burn out.

Type	SIZE BSP	A	B	C	D	D1	X	Y	dØ
5 Port 2 position Spring Return	1/4"	133	30	50	105	90	24	40	4.5
	3/8"	216	38	68	110	110	40	52	6.5
	1/2"	216	38	68	110	110	40	52	6.5
	3/4"	250	42	85	117	117	50	69	6.5
3 Port 2 position Spring Return	1/4"	113	30	50	105	90	24	40	4.5
	3/8"	176	68	68	110	110	40	52	6.5
	1/2"	176	68	68	110	110	40	52	6.5

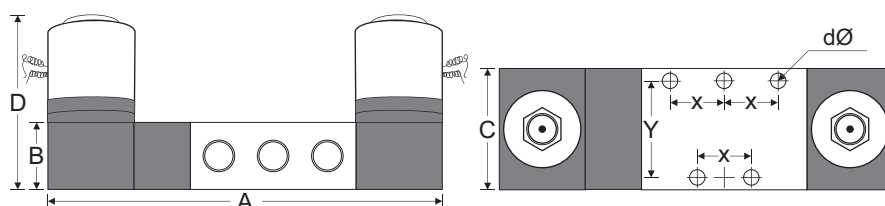
Dimensional Details, (Spool Type Valve)

1) Double Coil Valve - SERIES 11

5 \ Port - 2 position



5 \ Port \ - \ Position \ (PHN & PRN) type



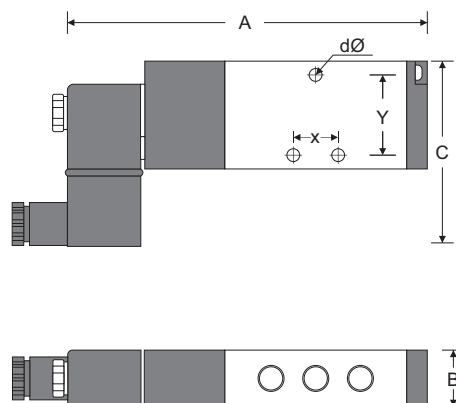
Note :-

- 1) For port, position and working principle **Refer Page No. 1 & 2**
- 2) Valves available with manual override screw types system only (not push type)
- 3) For "2 position" Double Coil valve, Coil does not have to be kept continuously Energized as in the case of single Solenoid valve. When a Momentary signal is given to one coil the cylinder will move forward and complete its full stroke. Similarity When signal is given to the other coil, cylinder will retract to its original position
- 4) For "3 position" type valve coil has to be kept continuously Energized alternatively for forward and reverse motion of cylinder. **See Page No. 2 to study the principle of PHN and PRN type valves.**

Type	SIZE BSP	A	B	C	D	D1	X	Y	dØ
5 Port 2 position	1/4"	164	30	50	105	90	24	40	4.5
	3/8"	216	38	68	110	110	40	52	6.5
	1/2"	216	38	68	110	110	40	52	6.5
	3/4"	246	42	85	117	117	50	69	6.5
5 Port 3 position	1/4"	194	30	50	105	90	24	40	4.5
	3/8"	260	68	68	110	110	40	52	6.5
	1/2"	260	68	68	110	110	40	52	6.5

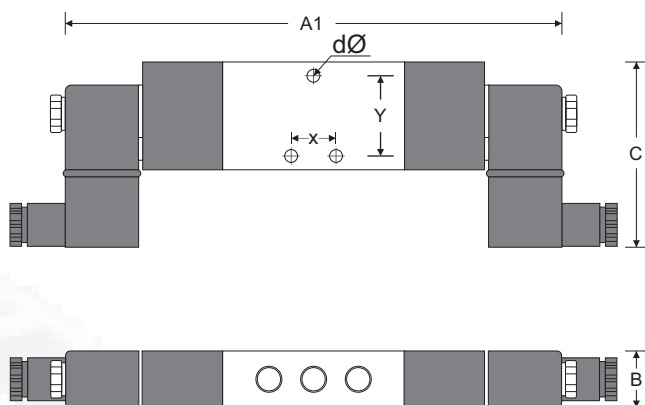
1) As compared to SR11 Spool Valves the sealing system incorporates 'U' seal design principle rather than 'T' seal design. Also these valves are more compact and have better aesthetics than SR11 Spool Valves

1) Spool Valve 5 port Single Coil



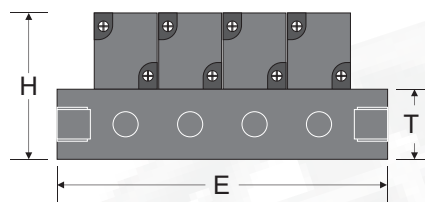
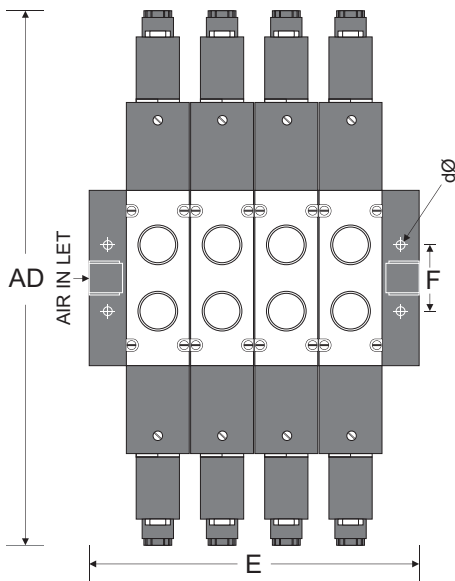
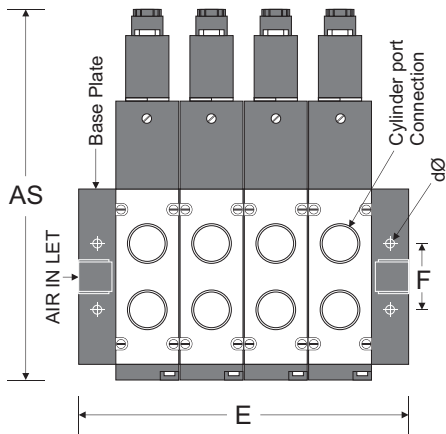
- Above also available in 3 port 2 position type

2) Spool Valve 5 port Double Coil



Type	SIZE BSP	A	A1	B	C	dØ	X	Y
5 Port	1/8"	133	185	23	38	4.5	19	26.5
	1/4"	157	217	25	45	4.5	23	32
3 Port	1/8"	115	-	23	38	4.5	19	26.5
	1/4"	136	-	23	45	4.5	23	32

Gang Mounted Type



For 1/4" BSP port valve dimensions are as follows :-

Type	AS	AD	E	F	dØ	H	T
2 gang	157	217	72	28	4.5	105	32
3 gang	157	217	100	28	4.5	105	32
4 gang	157	217	128	28	4.5	105	32
5 gang	157	217	156	28	4.5	105	32
6 gang	157	217	184	28	4.5	105	32

Note: 1/8" port valve dimensions are on Request



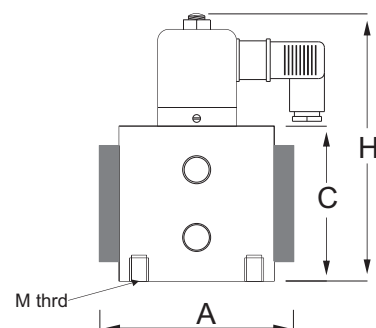
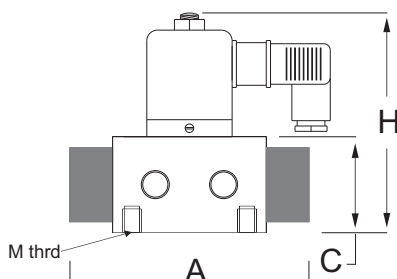
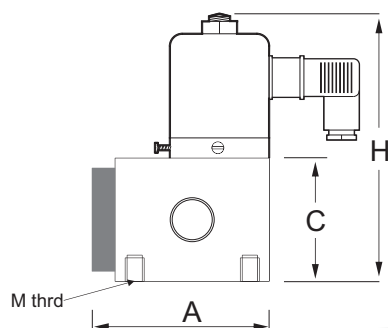
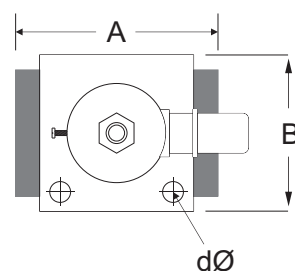
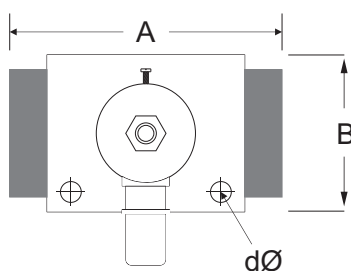
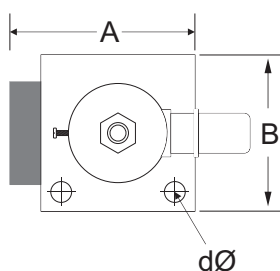
2 Way 2 port



3 Way 3 port



4 Way 4 port



Type	SIZE BSP	A	H Round Coil	H Square Coil	C	B	dØ	Note
2 Port	1/4"	56	112	95	50	50	-	1) For types of valves available Refer Page No. 10 2) 2 port Valves → used for on & off Operating 3) 3 port valves → used to Operating Single Acting Cylinder / Actuators 4) 4 port valves → used to Operating double Acting pneumatic Cylinders
	1/2"	60	112	112	50	63	-	
	3/4"	11	143	143	78	86	8.5	
3 Port	1/4"	76	103	86	38	50	-	
	1/2"	102	110	110	45	75	6.5	
4 Port	1/4"	77	128	112	65	50	-	
	1/2"	105	143	143	80	75	6.5	

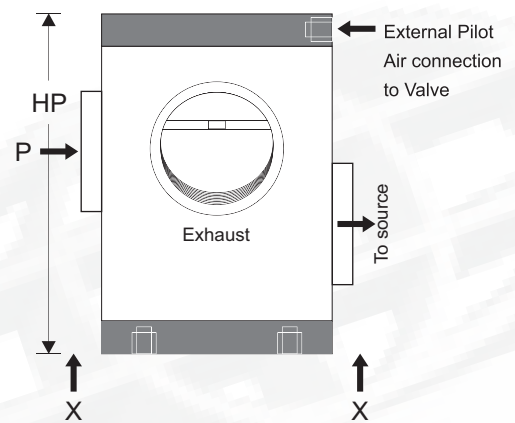
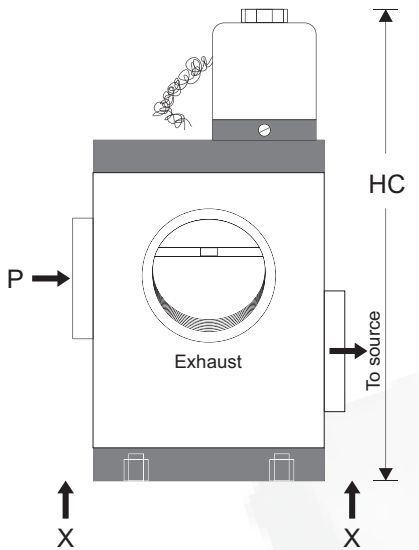
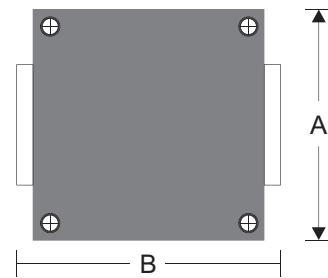
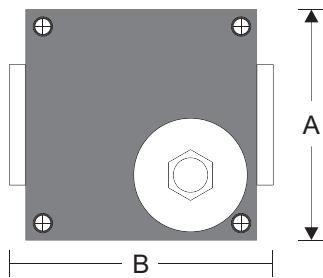
(3 PORT Normally Close type)



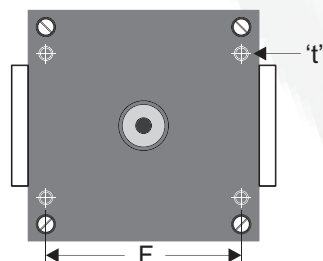
Coil Operated



External Pilot Air operated



Bottom Mounting detail, (XX)



Type	Size (BSP)	A	B	HC	HP	E	F	t
3 Way	3/4	80	86	167	122	40	40	M5
3 Port N.C	1"	88	102	175	130	40	66	M6



DIRECTING ACTING SOLENOID VALVES

SERIES 12 :

As the Name Suggests these valve are directly plunger operated as Illustrated an page No. 10



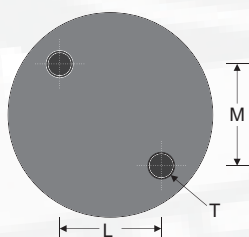
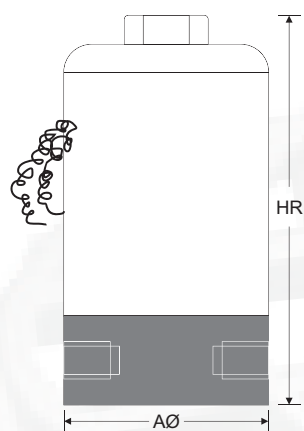
Available in 2 Way N.C, 2 Way N.O, 3 Way N.C,
3 Way N.O & gang type

Material : Brass, Aluminum, SS304

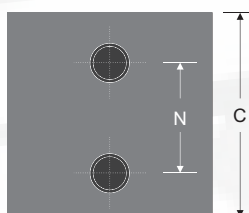
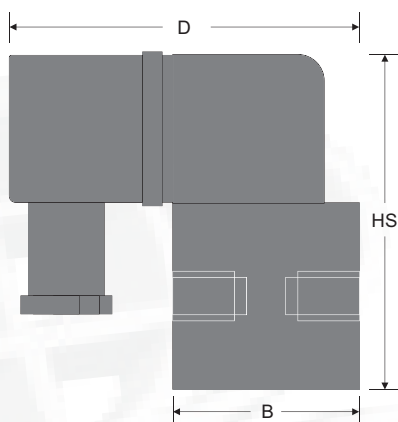
Type	Size (BSP)	Orifice	Pressure range (Bar)	Port Size
2 Port N.C / N.O	Air/gas/fluid	1.0-5mm	1.5-2.5	1/8 or 1/4
3 Port N.C / NO	Air	1.0-3mm	1.5-8	B.S.P.

Port Size	Round Coil	Square Coil	
	1/8 & 1/4 B.S.P.	1/8 B.S.P.	1/4 B.S.P.
AØ	45	-	-
HR	80	-	-
M	24	-	-
L	24	-	-
T	M6	M4	M6
HS	-	62	70
B	-	-	32
C	-	-	32
N	-	-	20
M1	-	14	-
C1	-	25	-
L1	-	24	-

Round Coil Valve



Square Coil Valve
(1/4" B.S.P.)



Square Coil Valve
(1/8 B.S.P.)

