DIRECTIONAL CONTROL VALVES 5ST(B) – 4-WAY

GENERAL DESCRIPTION

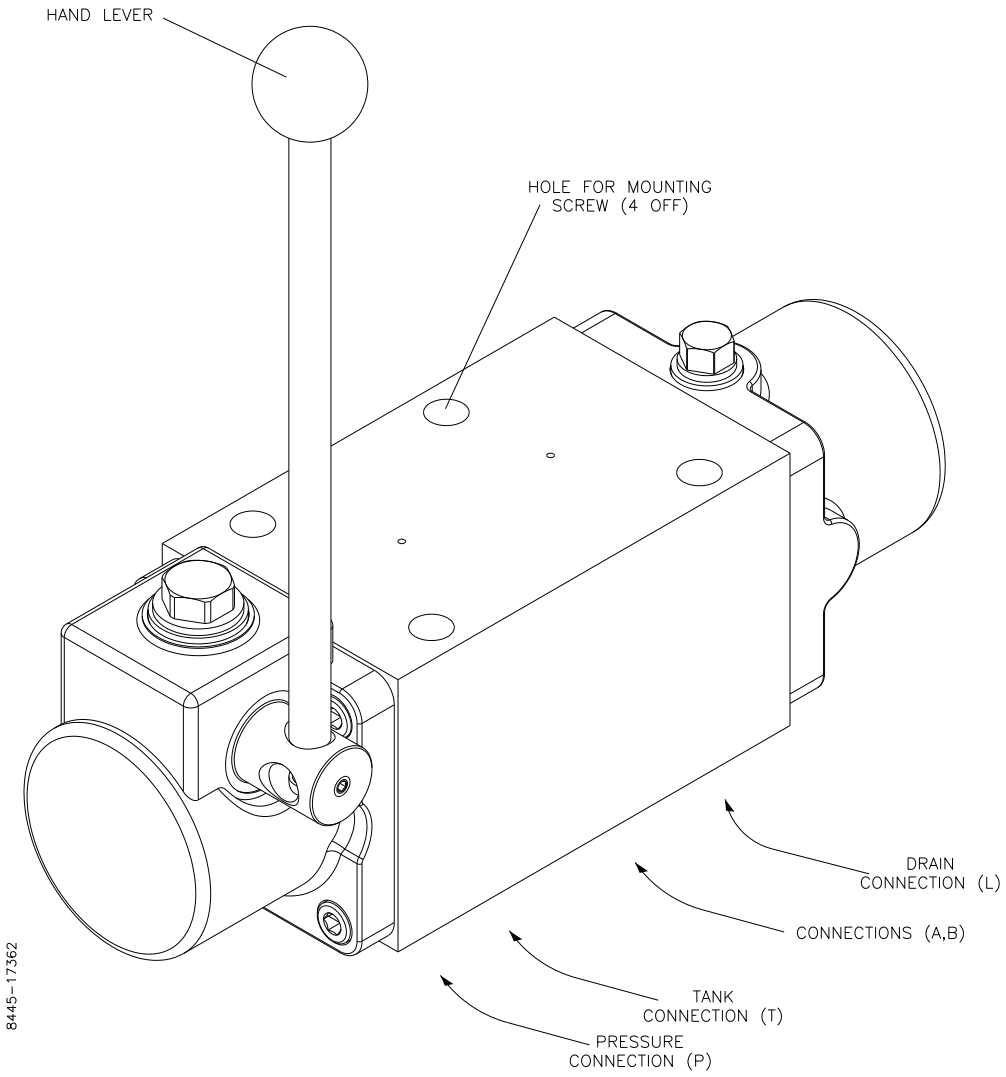


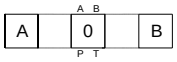
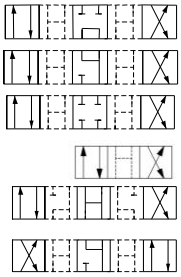
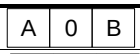
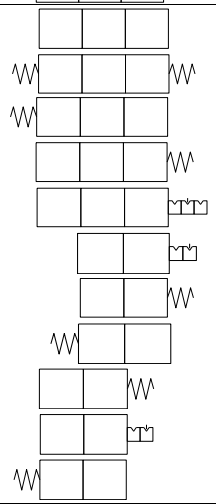
Figure 1 5STB General Arrangement

The Directional Control Valves 5ST(B) 4-ways are seawater resistant valves for smooth distribution and stopping of flow in hydraulic systems. The valves have the following characteristics:

- Delivered with threaded connections, or for gasket mounting to a sub plate or valve unit.
- Proportional controlled manually with the hand lever, or remote controlled (on/off) by hydraulic pilot pressure.
- Delivered with flow capacity up to 450 l/min.
- Six standard spools with throttling grooves for smooth start and stop are available.
- A number of possibilities for spool positioning, spring or detents.
- Most of the hand lever operated directional control valves can be equipped with the Brake Release Valve BA3/BA4. For description of the Brake Release Valves, please refer to separate manual.

For more details about types and options, please refer to section 'Modular Code'.

MODULAR CODE

Options	Remarks	Design Code	Fill in
Mounting			**5ST**
Threads			
SUB Plate		**B**	
Type			
4-ways	No options	**4**	**4**
Pressure			
350 bar	No options	**4**	**4**
Operation			
Manual		**1**	
Remote		**2**	
Manual/Remote		**5**	
Size			
10 mm	50 l/min	**2**	
15 mm	100 l/min	**3**	
20 mm	200 l/min	**4**	
25 mm	300 l/min	**5**	
30 mm	450 l/min	**6**	
Spool Type 			
		**01**	
	[L conn. to be used]	**02**	
		03	
		06	
		07	
	[L conn. to be used]	**2C**	
Spring / Detents Positions 			
No spring		**0**	
Spring centred		**1**	
Spring offset to A		**2**	
Spring offset to B		**3**	
Detents in all positions		**4**	
Detents in position B and 0, A blocked		**7**	
Spring offset to B, A blocked		**8**	
Spring centred, A blocked		**9**	
Spring centred, B blocked		**A**	
Detents in positions A and 0, B blocked		**B**	
Spring offset to A, B blocked		**C**	
Modification			
		A	**A**

In example a 5ST valve with sub plate, remotely controlled, 100 l/min flow, spool type 07 and spring centred will have modular code: **5STB4423071A**.

DIMENSIONS

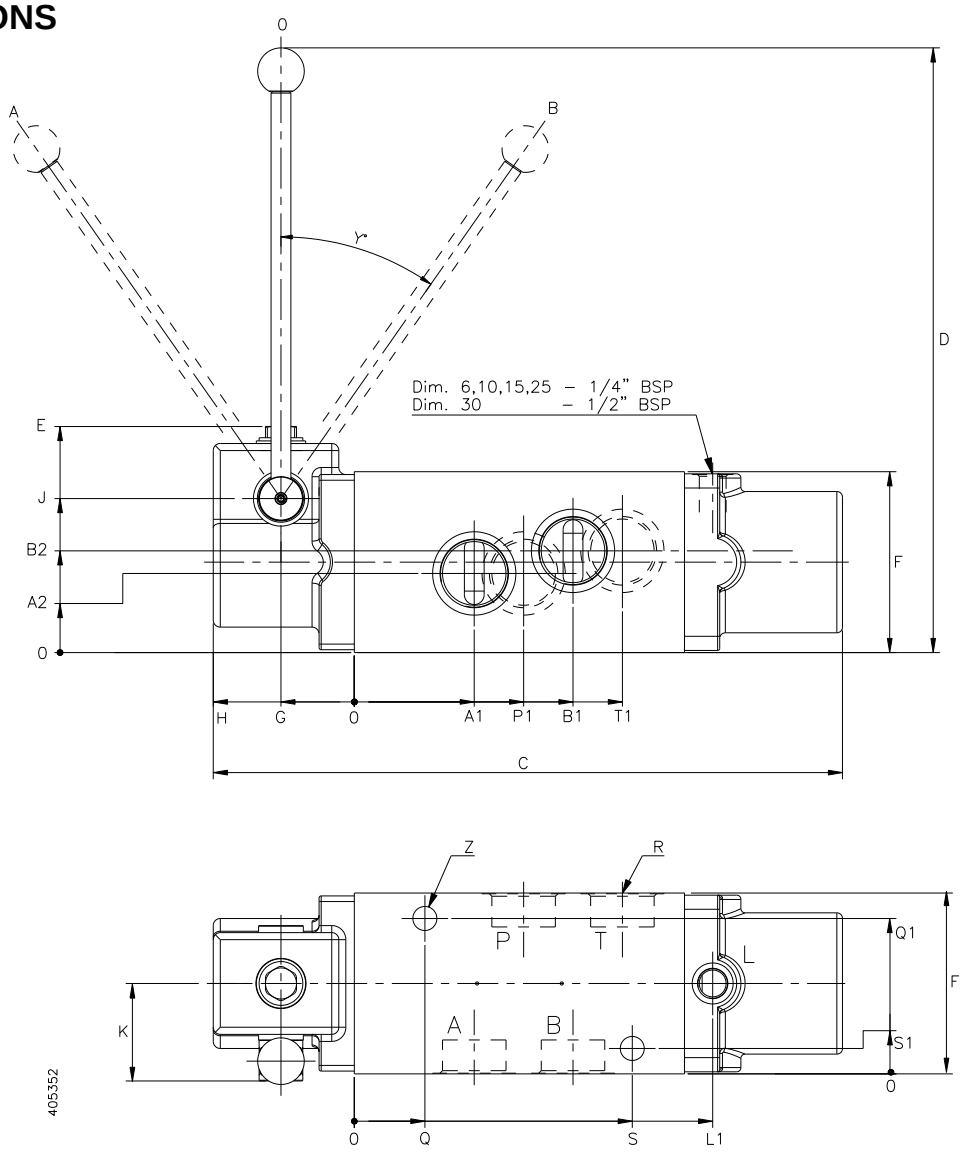


Figure 2 5ST Dimensions

Common dimensions for 5ST and 5STB:

Size [mm]	C	D	F	G	H	J	L1	Z	Y°
10	209	230	75	26	54	53	115	11	29°
15	263	328	85	31	65	61.5	146	11	30°
20	302	336	95	33	70	67	172	13	35°
25	320	350	118	33	70	67	190	13	35°
30	448	425	128	52	102	96	254	17	37°

5ST:

Size [mm]	A1	A2	B1	B2	P1	T1	Q	Q1	S	S1	R
10	35.5	26.5	67.5	48.5	51.5	83.5	16	65.5	87	9.5	½"
15	48	30.5	88	54.5	68	108	22	74.5	108	10.5	¾"
20	55	32.5	103	62.5	79	127	25	83.5	132	11.5	1"
25	55	40	107	78	81	133	25	104	157	14	1 ¼"
30	85	56	155	72	120	190	50	110	197	18	1 ½"

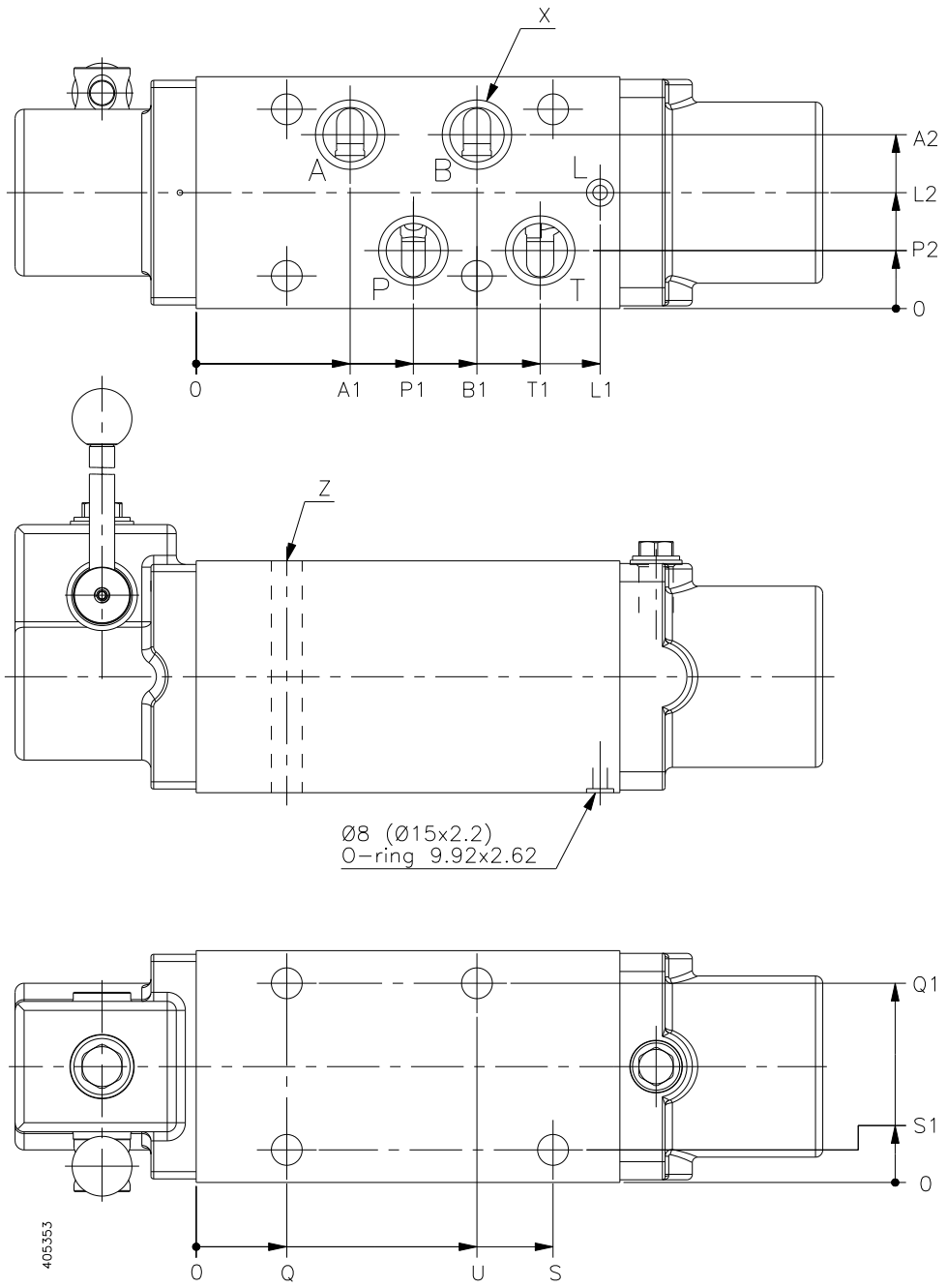
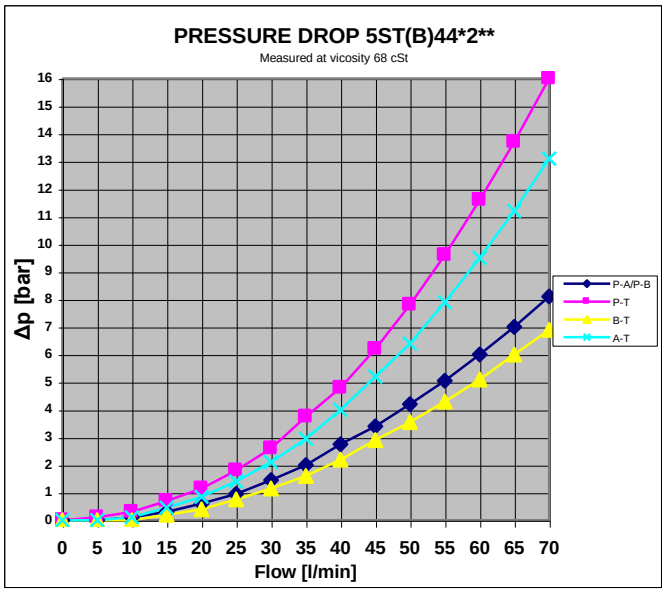


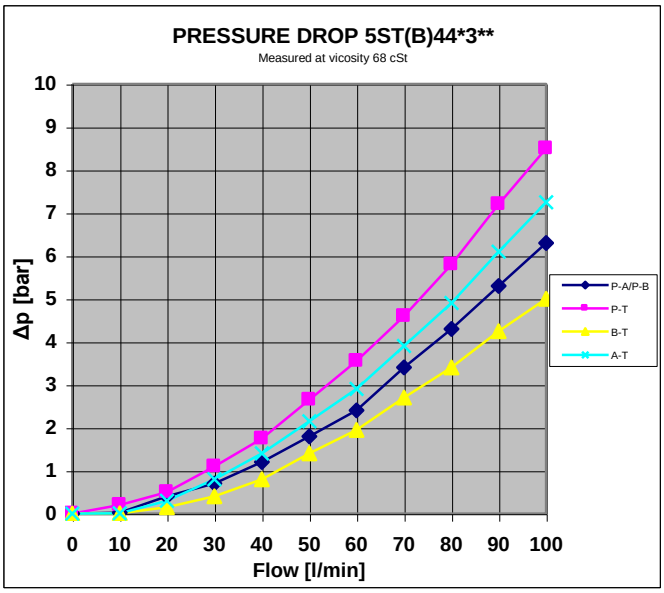
Figure 3 5STB Dimensions

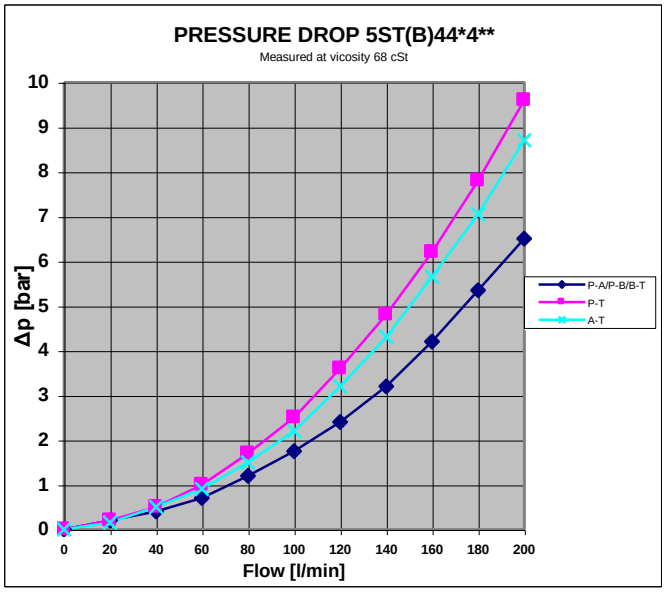
5STB:

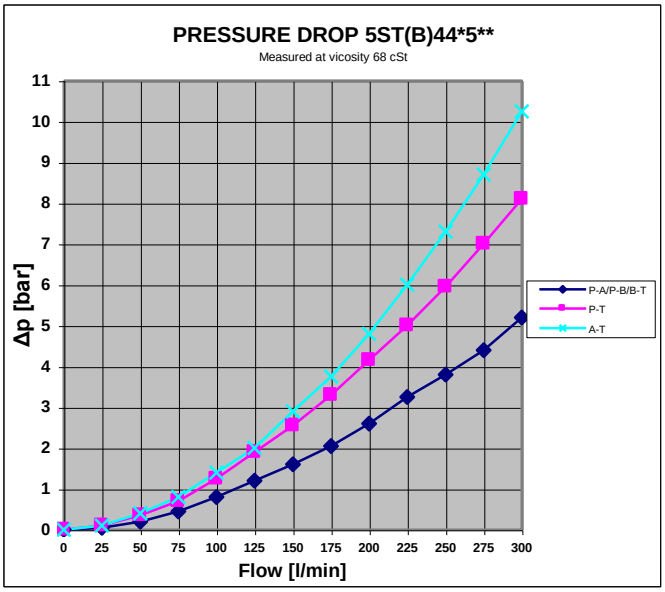
Size [mm]	A1	A2	B1	T1	P1	P2	L1	L2	Q	Q1	U	S	S1
10	35.5	54.5	67.5	83.5	51.5	20.5	93	37.5	16	65.5	67.5	87	9.5
15	48	64.5	88	108	68	20.5	102	42.5	22	74.5	88	108	10.5
20	55	73.5	103	127	79	21.5	144.5	47.5	25	83.5	103	132	11.5
25	55	85	107	133	81	33	150.5	59	25	104	196	157	14
30	85	96	155	190	120	32	223	64	50	110	252	182	18

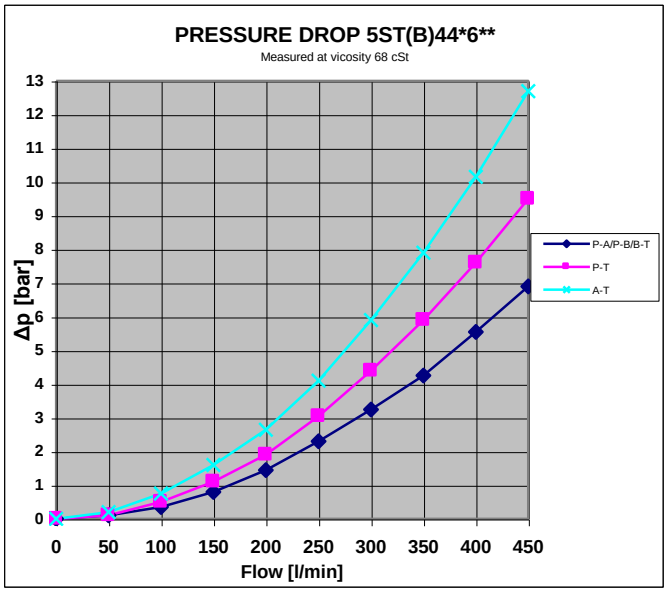
PRESSURE DROP











TECHNICAL DATA

Description	Symbol	Data
Max. operating pressure in port P, A and B	P_{max}	350 bar (see note)
Test Pressure	P	420 bar
Max. operating pressure in port T	T_{max}	350 bar (see note)
Max. pressure in port L (see note)	L_{max}	30 bar
Hydraulic fluid		Mineral oils for hydraulic system
Viscosity range:	v	10 to 350 mm^2/s (cST)
Viscosity index:	VI	> 120
Filtration, recommended filter with β 20 ≥ 100		Class 9 according to NAS 1638, 18/15 according to ISO 4406
Fluid temperature range:	T	-20°C to + 70°C
Ambient temperature range	T	-20°C to + 50°C
Standard Body Material		EN-GJS-400-15 (GGG 40)
Standard O-rings		Nitrile shore 70

NOTE: When pressure on connection T exceeds 30 bar, drain connection (L) must be used.
For spool type 02 and 2C drain connection must always be used.

Flow and Weights:

Size	Max. Flow	Weight
10 mm	50 l/min	5.0 kg
15 mm	100 l/min	7.8 kg
20 mm	200 l/min	11.5 kg
25 mm	300 l/min	18.0 kg
30 mm	450 l/min	32.5 kg

Interfaces:

Size	**Description**		**Data**
5ST:			
	Threaded Connections	***Screws***	***Tightening Torque [Nm]***
10 mm	½" BSPP	2 off M 10 – DIN931	34.4
15 mm	¾" BSPP	2 off M 10 – DIN931	34.4
20 mm	1" BSPP	2 off M 12 – DIN931	54
25 mm	1 ¼" BSPP	2 off M 16 – DIN931	78.5
30 mm	1 ½" BSPP	2 off M 16 – DIN931	78.5
5STB:			
	Screws		***Tightening Torque [Nm]***
10 mm	4 off M 10 x 90– DIN 931/DIN 912 (Remote)		34.4
15 mm	4 off M 10 x 100 – DIN 931/DIN 912 (Remote)		34.4
20 mm	4 off M 12 x 110 – DIN 931/DIN 912 (Remote)		54
25 mm	4 off M 16 x 135 – DIN 931/DIN 912 (Remote)		78.5
30 mm	4 off M 16 x 140 – DIN 931/DIN 912 (Remote)		78.5
	O-rings		***Size [mm]***
10 mm	4 off 1 off (manually operated valves only)		11.91 x 2.62 9.92 x 2.62
15 mm	4 off 1 off (manually operated valves only)		17.13 x 2.62 9.92 x 2.62
20 mm	4 off 1 off (manually operated valves only)		22,20 x 3.0 9.92 x 2.62
25 mm	4 off 1 off (manually operated valves only)		26.2 x 3.0 9.92 x 2.62
30 mm	4 off 1 off (manually operated valves only)		31.34 x 3.53 9.92 x 2.62

INSTALLATION

The Directional Control Valves 5 ST are installed to the pipeline with threaded connections and mounted to a bracket or similar with 2 off screws. The 5STB valves are installed with 4 off screws to a SUB plate or valve unit. Please refer to section 'Interfaces' for details about connections and screws.

OPERATION

Manual

Proportional manual control is performed by means of the hand lever. If the valve is delivered with centring spring the spool will return to the neutral position after operating the hand lever. If the valve has detents the spool will remain in the position set by hand lever.

Remote

In the remotely controlled valves, an external pilot pressure moves the spool to the requested position – on/off.

Manual/Remote

Operation as for remotely controlled valves, but in addition the valves are equipped with a hand lever for override of the pilot pressure. The hand lever is mechanically connected to the spool.

MAINTENANCE

Check the valve for proper function. Visually check the valve and if required, paint unpainted (damaged) areas.

CAUTION: **Do not paint the hand lever shaft seal**.

STORAGE

If storage longer than 6 months is expected, the valve must be kept in a dry room, free from dust and protected against sudden large temperature variations. For storage longer than 12 months, the valve must be filled with inhibition oil. Before use check all visible seals and flush with clean oil.

MARKING

Inlets and outlets are marked, refer to figure in section 'General Description'.