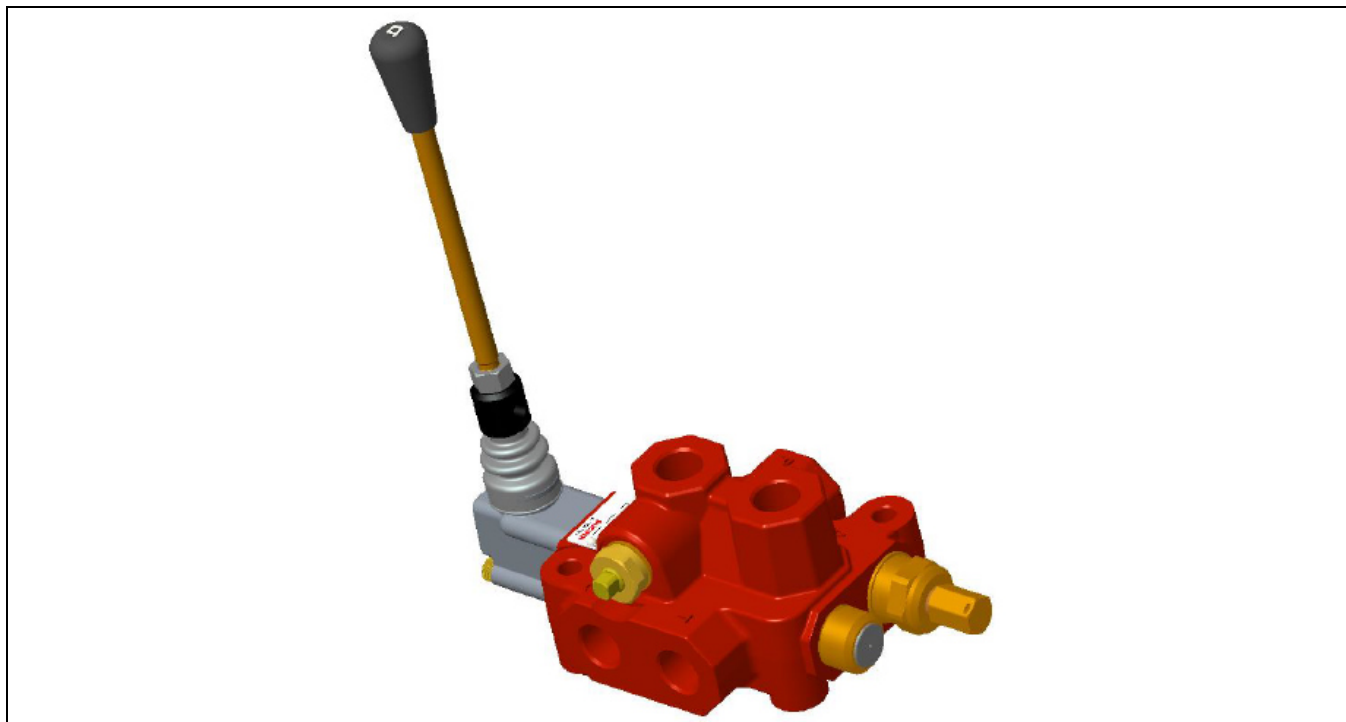


**Monobloc directional control valves HDM141**

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## 2.1 General specifications

Technical specification		
Max flow rate	l/min. U.S.G.P.M.	45 12
Max continuous operating pressure supply port P	bar PSI	250 3600
Max intermittent peak pressure work port A/B	bar PSI	320 4600
Max back pressure tank port T	bar PSI	30 430
Oil temperature	° C ° F	-10 to +80 14 to 180
Oil viscosity	mm <sup>2</sup> /s	16 to 75
Oil filtration	μ	≤30

Spool leakage at 100 bar (1450 PSI), Temp. 50° C (120° F), viscosity 27 mm <sup>2</sup> /s:		
Maximum	cm <sup>3</sup> /min. Cu. In./min.	12 0.732
Average	cm <sup>3</sup> /min. Cu. In./min.	6 0.366
Lower values on demand (to be agreed with our Sales Dept..)		

Number of spools	1
Adjustable direct operated relief valve (tamper-proof seal available on request)	RV
Single load hold check valve	LC
Cartridge Anti-Shock Anti-cavitation and service relief valve	OA-UC-C

### 2.1.1 Weight

Version	kg	lb
HDM141	2.6	5.75

### 2.1.2 Material specification:

Body: High strength cast-iron.  
Spool: Hardened steel.  
Seals: Buna "N".

### 2.1.3 Standard features:

- 1) Parallel circuit
- 2) Balanced interchangeable spools (provides minimum leakage, smooth operation)
- 3) Wide selection inlets, work ports, and outlets threaded ports.
- 4) Negative overlapping of the spool.

### 2.1.4 Optional features available:

- 1) Open or closed centre positions, 3 or 4 way operations, 3 or 4 position (float position), full open centre (motor spool) and other spool options.
- 2) Complete lever assembly.
- 3) Wide range spool positioners.
- 4) Carry over
- 5) Double / single acting conversion valve

### 2.1.5 Symbols:

**P**: inlet port  
**T**: outlet port  
**A/B**: work ports  
**RV**: relief valve  
**C**: carry over port  
 2.1.0.2: spool position  
**P**: pressure line  
**T**: exhaust line  
**E**: center line (by pass)

## 2.2 Installation and maintenance – General information

### 2.2.1 Directional valve installation

For the installation of the directional control valve on the equipment frame it is important to consider the following recommendations:

- the valve can be assembled in any position but, in order to avoid deformations and spool sticking, the surface on which the product is mounted has to be flat;
- before cabling pipelines, make sure that the pipeline hollows as well as fittings and seals are thoroughly clean; check also that the work ports are protected until the connection of the pipelines

– during assembly and servicing operations, it is necessary to adopt clean procedures and work in an environment free of chips, swarf, dust and other possible source of pollution;

– if the spools are connected to the equipment controls through linkages, make sure that they do not affect their operations;

– before painting the valve, check that the work port plastic plugs are tightly in place.

### 2.2.2 Fittings

In the interest of safety, only fittings with STRAIGHT THREAD ENDS should be used (e.g. DIN3852).

Fittings with TAPERED THREAD ENDS (e.g. DIN 3852 form C) should never be used, as they can cause deformation and cracks in the valve body.

Our warranty conditions will be not valid in case tapered fit-tings are used.

The work port adaptors have to be fastened respecting the tightening torque values indicated in the following table (for different port types contact our Sales Dept.):

Recommended tightening torque for work port fittings – Nm/lbft			
Metric – ISO 261	M18X1.5	M22X1.5	M27X2
With O-Ring seal (ISO 6149-1)	40/29.5	60/44.3	90/66.4
With copper washer (ISO 9974-1)	40/29.5	60/44.3	90/66.4
With rubber washer or steel (ISO 9974-1)	35/25.8	60/44.3	70/51.7
BSP – ISO 228-1	3/8" BSP	1/2" BSP	3/4" BSP
With copper washer (ISO 1179-1)	40/29.5	60/44.3	90/66.4
With rubber washer or steel (ISO 1179-1)	35/25.8	60/44.3	70/51.7
UN-UNF – ISO 263	SAE8 – 3/4-16 UNF	SAE10 – 7/8-14UNF	SAE12 – 1-1/16-12UNF
With O-Ring seal (ISO 11926-1)	40/29.5	60/44.3	90/66.4



**IMPORTANT!:** Tightening torques depends on several different factors including lubrication, coating and surfaces finish. The fitting manufacturer shall be consulted.

### 2.2.3 Hydraulic fluid

The main function of the fluid used in hydraulic systems is to transfer energy but it performs also other important functions: protect the components from corrosion, lubricate the directional valve moving parts, remove particles and heat from the system.

In order to ensure proper operation and long life of the system it is important to choose the correct hydraulic fluid with proper additives.

### 2.2.4 Filtration

In order to ensure proper operation and long life of the directional valve components it is extremely important to provide a proper and effective filtration of the hydraulic fluid.

It is advisable to follow filter manufacturers instructions and recommendations.

The fineness of the filter should be selected in order to guarantee that a contamination level of 21/19/16 ISO4406: 1999 (NAS 1638–CLASS10) is not exceeded.

### 2.2.5 Directives and standards

Recommended conditions for obtaining the best performance of the system: we recommend to strictly follow the conditions advised here above, failing which warranty shall be void.

- PED (97/23/EC)

The pressure relief valves assembled into the directional control valve can not be considered and/or confused with the safety valve when the PED Directive is applied to the hydraulic system.

- Atex:



Attention: The equipment and protective systems of these catalogue ARE NOT intended for use in potentially explosive atmospheres

Directive 99/92/EC and directive 2014/34/EU.

Bucher Hydraulics recommends to use a mineral based oil responding to ISO 6743/4 requirements, only.

The system should be operated only with hydraulic oil containing anti-foaming and antioxidant additives.

Before using other types of fluid, please contact our Sales Dept, since they can cause serious damage to the directional valve components and jeopardize the correct function of the system.

For mechanical operated directional valves a <30 µm nominal return filter is adequate.

The size of the return filters must suit the maximum return flow whereas the size of the pressure filters must suit the maximum pump flow.

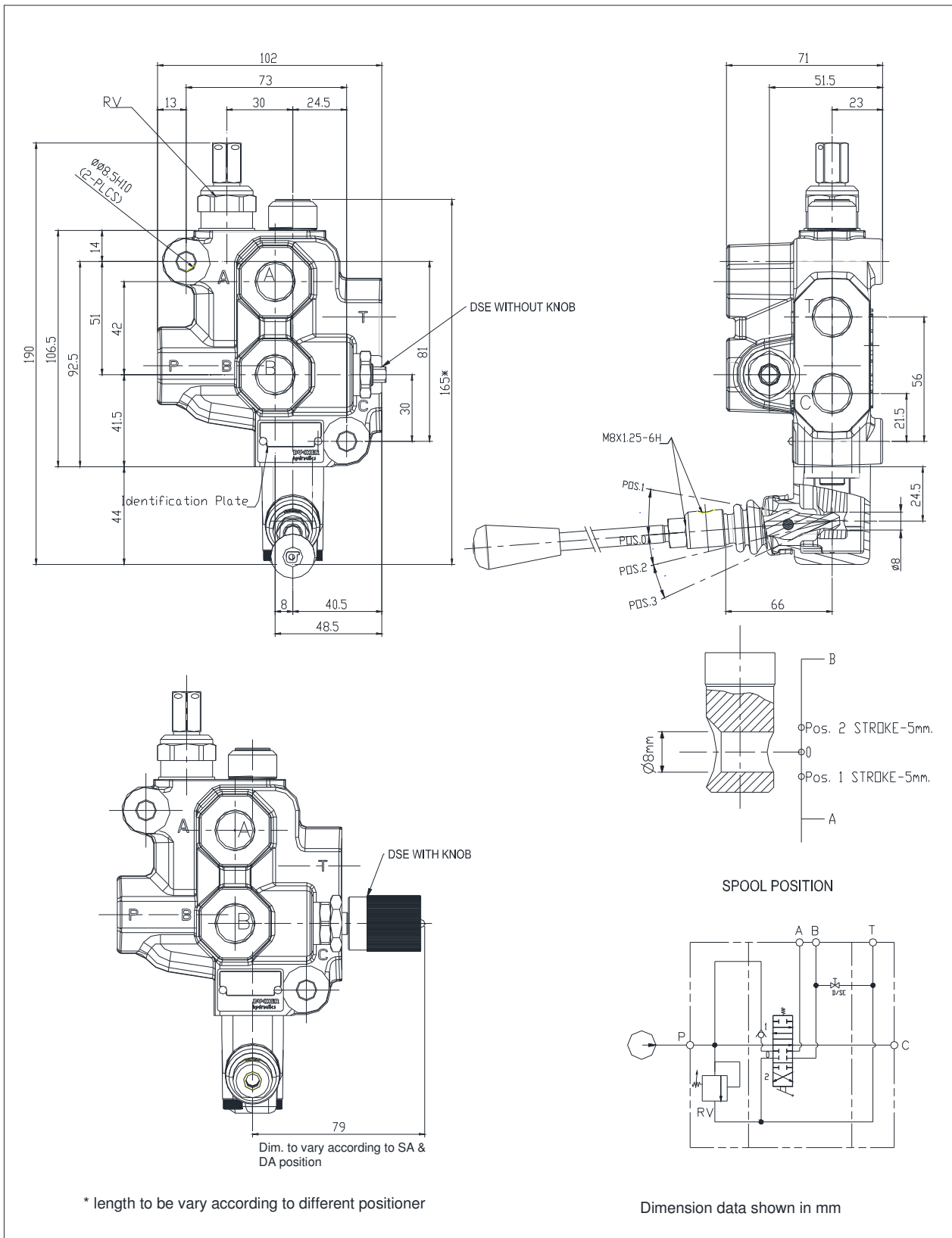
It is advisable to fit filters with pressure gauge or dirt indicator in order to make it possible to verify the filter condition.

Particular attention has to be paid to the cleaning of the machine hydraulic circuit and its components before the first run-in, since the presence of foreign materials could cause damages to the directional valve components even if a proper filtration is provided.

#### ISO 9001: 2008 / ISO 14001:2004

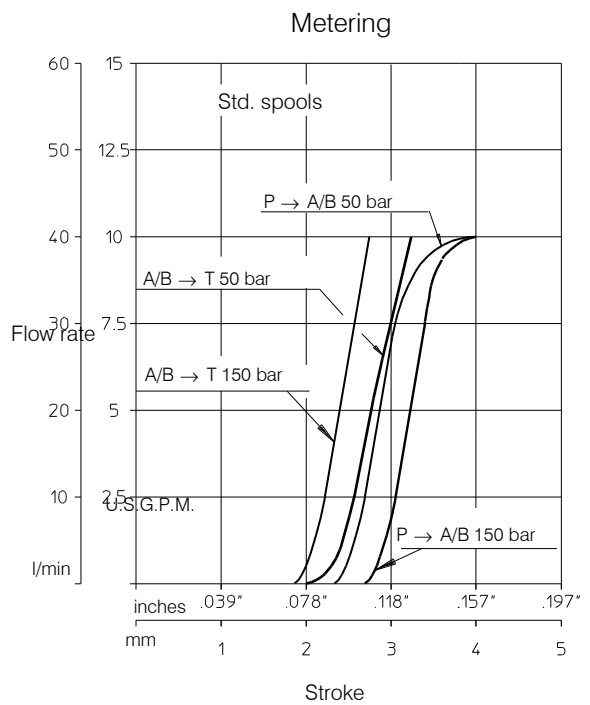
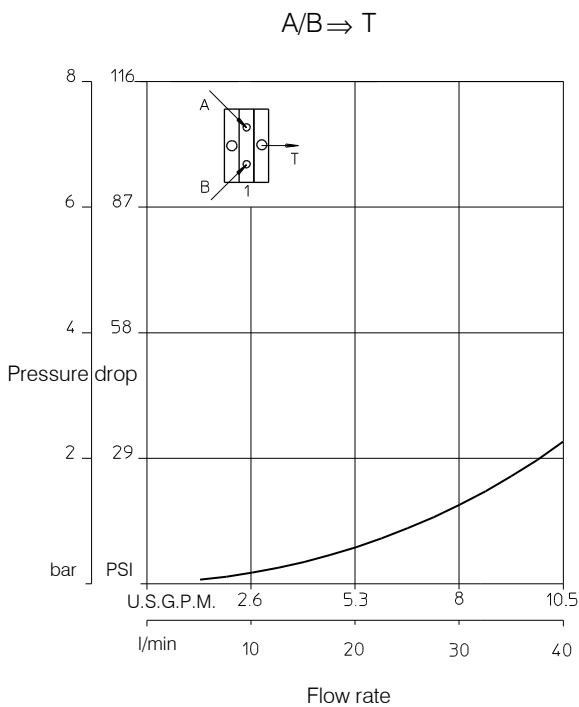
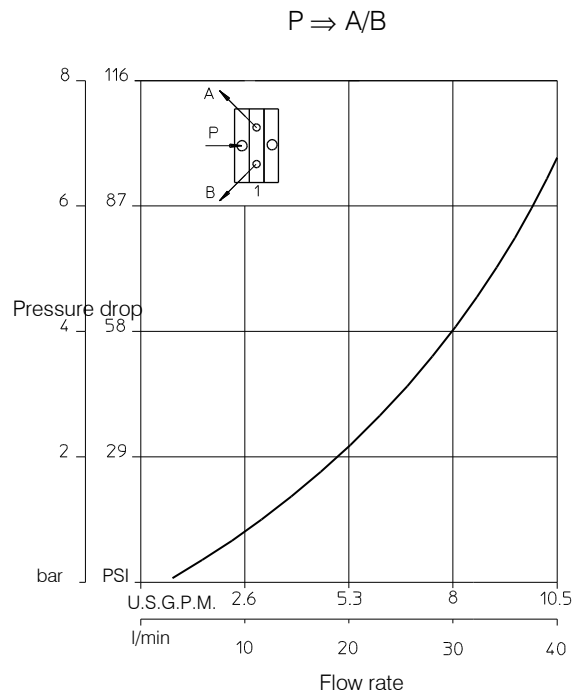
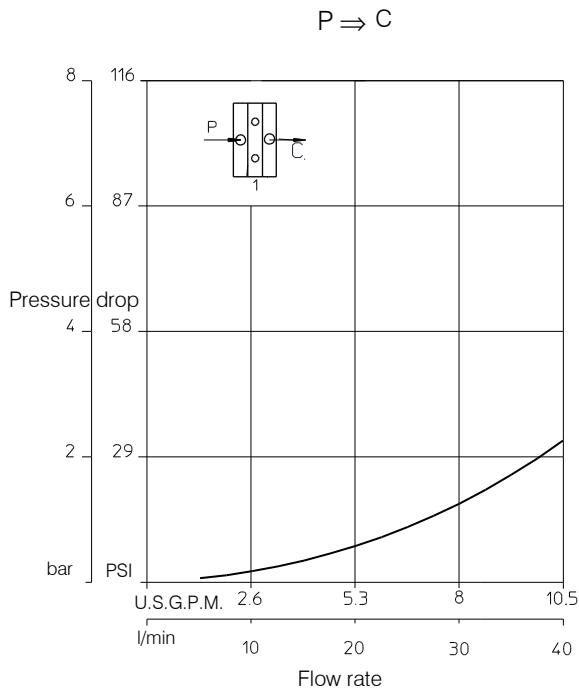
Bucher Hydraulics is certified for research, development and production of directional control valves, power units, gear pumps and motors, electro pumps, cartridge valves and integrated manifolds for hydraulic applications.

## Dimensional

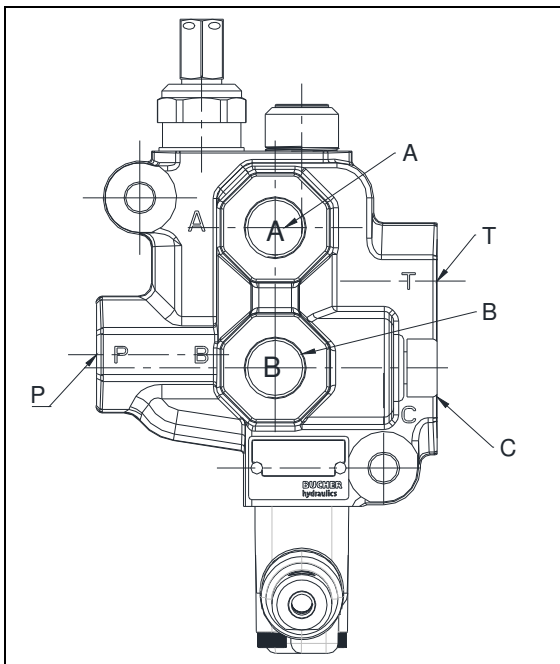


## Performance curves

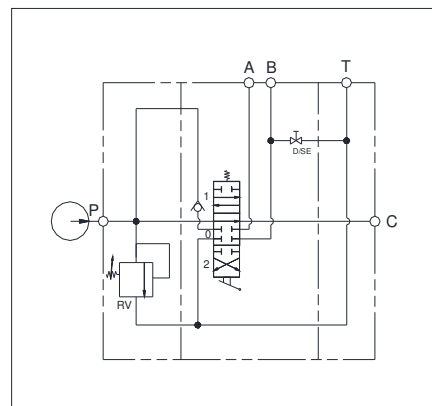
Oil: Shell Tellus T37  
 Temperature: 50 C (120 F)  
 Viscosity: 27 mm<sup>2</sup>/s



## Monobloc bodies

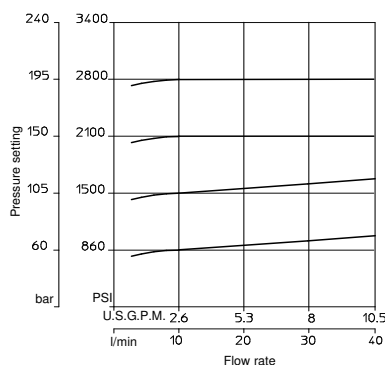
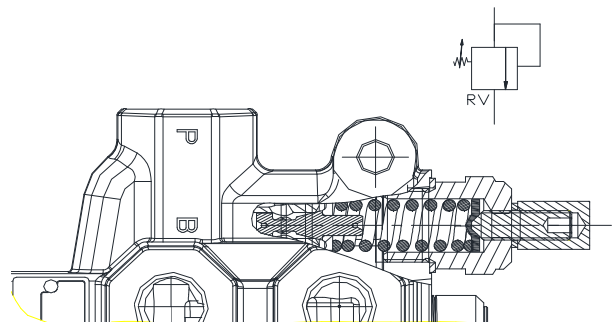
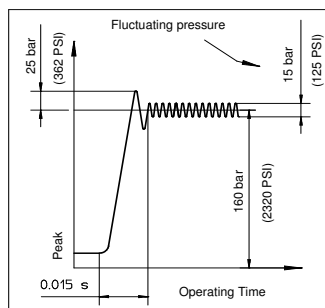


P,A,B,T,C Ports	Type	Code
M18X1.5	<b>K01</b>	600141201185
3/8" BSP	<b>K02</b>	600141201180
SAE8	<b>K05</b>	---



Note: Body codes consist of: machined casting, seals, plugs and check valve only. Not to be used for complete valve order.

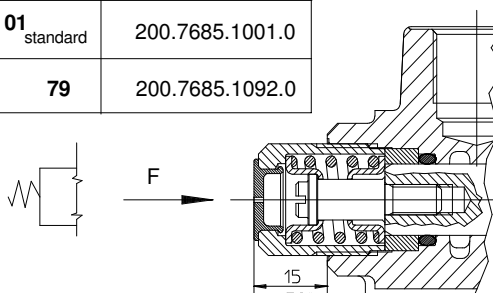
## 3.5 Adjustable direct acting Relief Valve RV



Pressure Set range Bar (PSI)	Type	Code	Spring colour
30-95 (430-1370)	60 (870)	06	Yellow (TE)
60-210 (1370-3040)	150 (2170)	15	Green (GR)
150-250 (2170-3620)	200 (92900)	20	-

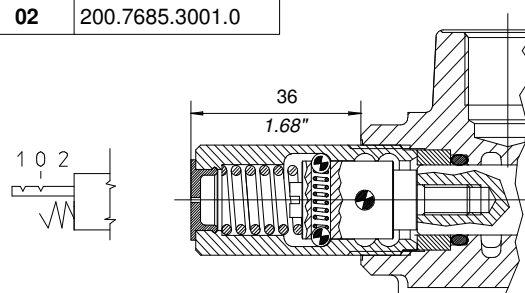
## Spool positioners

F (N)**	Type	Code*
200	<b>01</b> standard	200.7685.1001.0
140	<b>79</b>	200.7685.1092.0



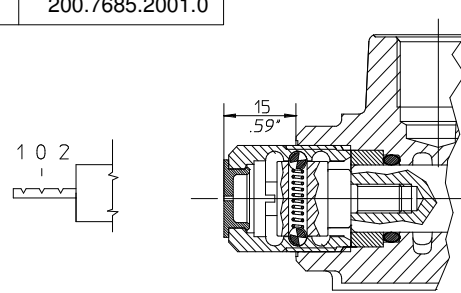
3 position spring return to neutral

Type	Code*
<b>02</b>	200.7685.3001.0



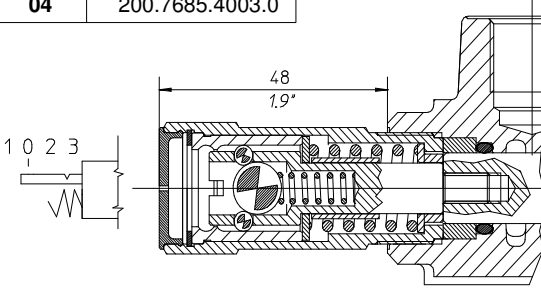
2 position detent - spring centre

Type	Code*
<b>03</b>	200.7685.2001.0



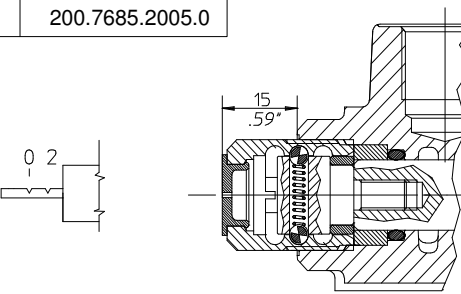
3 position detent

Type	Code
<b>04</b>	200.7685.4003.0



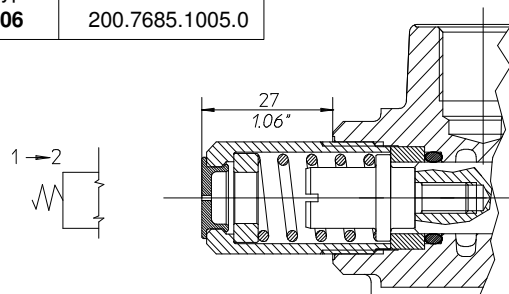
4 position float  
Plastic plug code: 200.6780.0009.0

Type	Code*
<b>05</b>	200.7685.2005.0



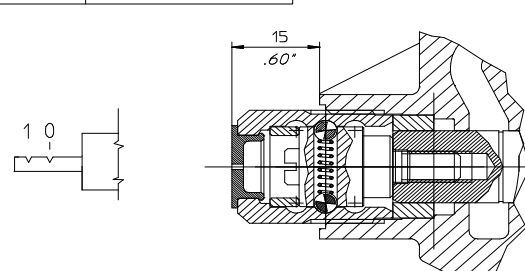
2 position detent

Type	Code*
<b>06</b>	200.7685.1005.0



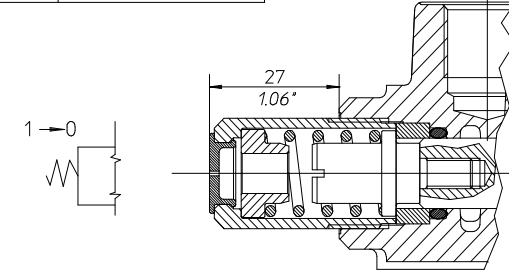
2 position spring return

Type	Code*
<b>07</b>	200.7685.2027.0



2 position detent

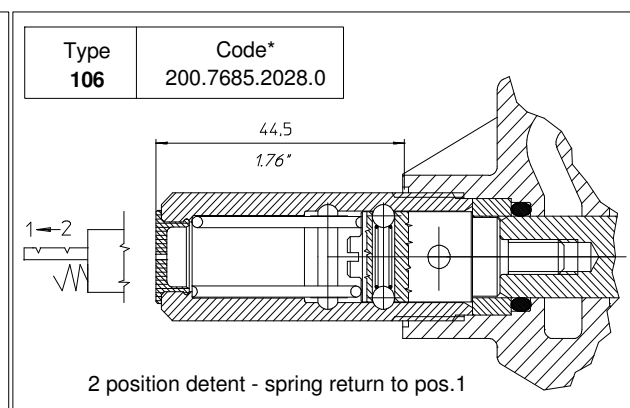
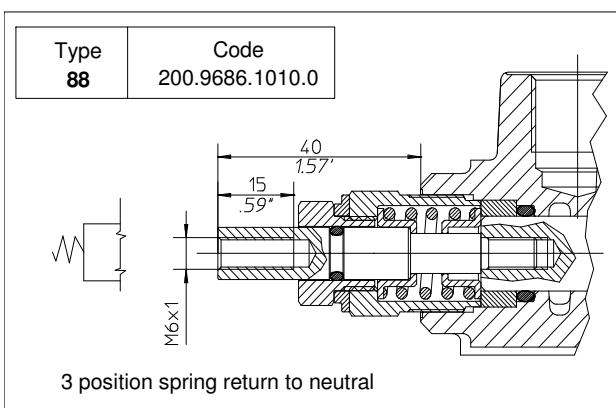
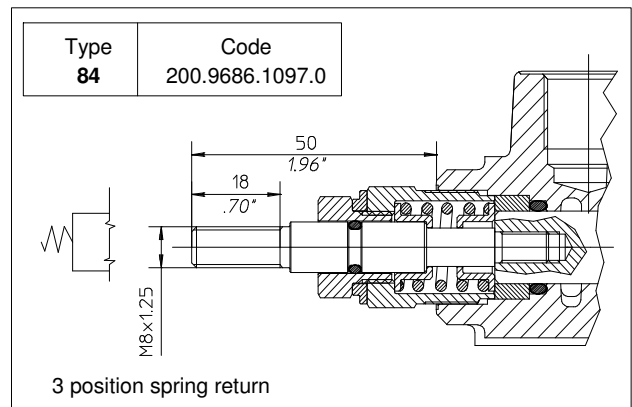
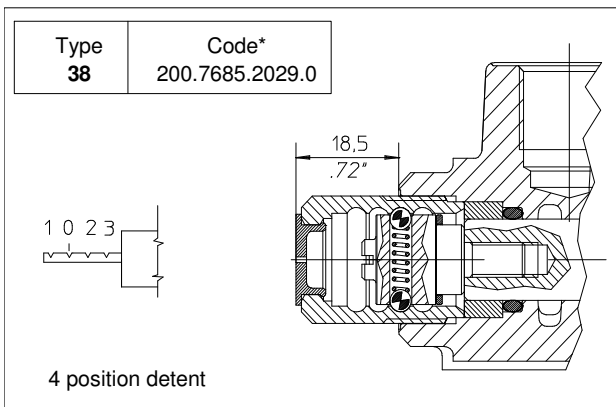
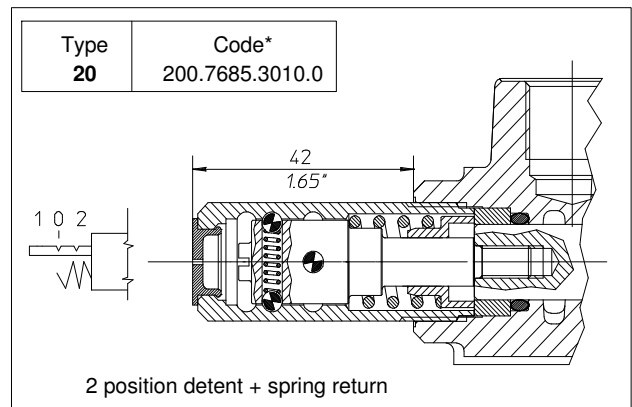
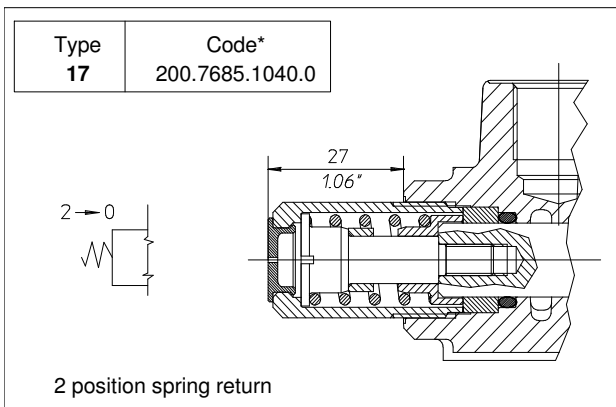
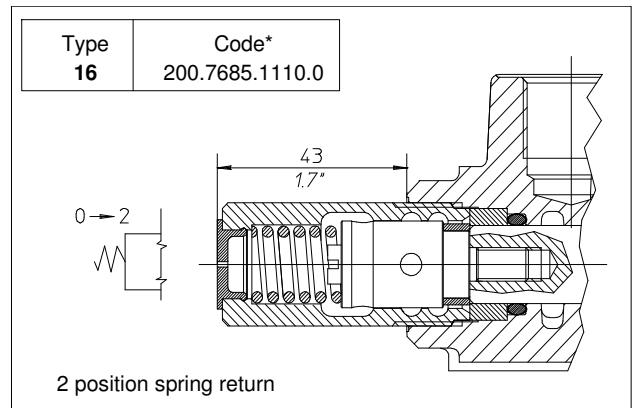
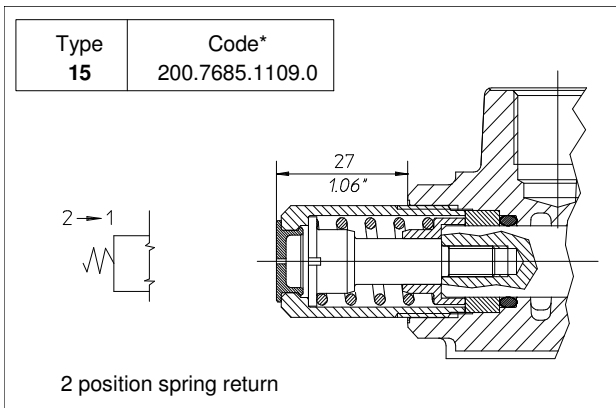
Type	Code*
<b>12</b>	200.7685.1021.0



2 position spring return

\* : code without plastic plug; plastic plug code: 200.6780.0008.0  
F (N)\*\*: Force in Newton (N) needed to operate the spool.





\* : code without plastic plug; plastic plug code: 200.6780.0008.0

## Microswitch control

Type <b>30</b>	Code 200.9686.1050.0	Microswitch is operated when the spool is in pos. 1	
Type <b>32</b>	Code 200.9686.1060.0	Microswitch is operated when the spool is in pos. 2	
Type <b>34</b>	Code 200.9686.1064.0	Microswitch is operated when the spool is in pos. 1 and 2	

\* The microswitch is supplied only on customer's request.

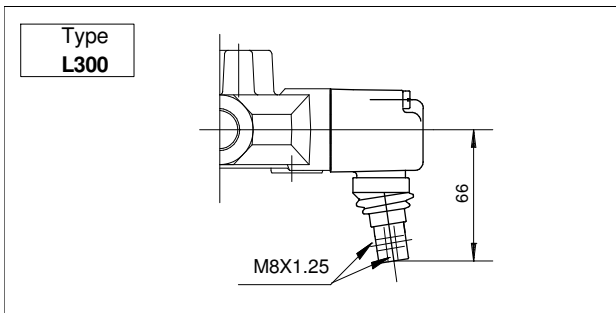
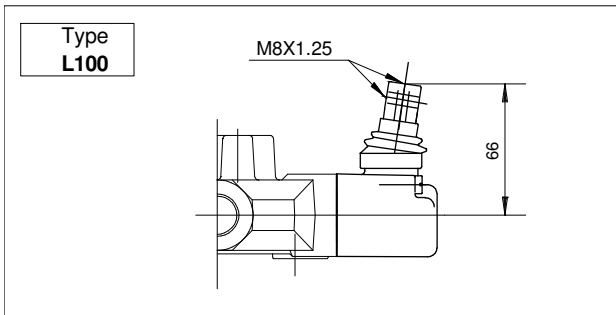
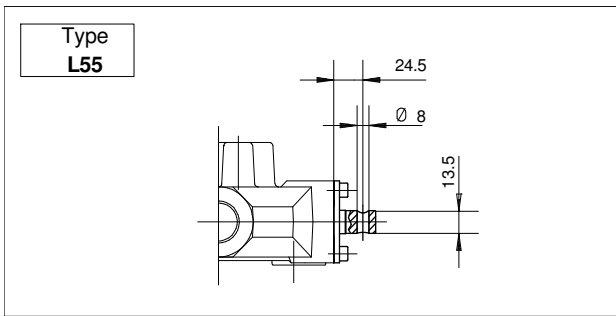
## Spool charts

Spool scheme	Spool features	Type
	4 way - 3 position A/B closed E open by pass	<b>A</b>
	4 way - 3 position A/B-E closed	<b>B</b>
	4 way - 3 position A/B to tank in neutral E open by pass	<b>C</b>
	3 way - 3 position B closed E open by pass	<b>G</b>

	4 way - 3 position with regenerative spool in 1 <sup>st</sup> position	<b>R**</b>
	3 way - 3 position A closed E open by pass	<b>S</b>
	4 way - 4 position 4 <sup>th</sup> floating position	<b>Z</b>

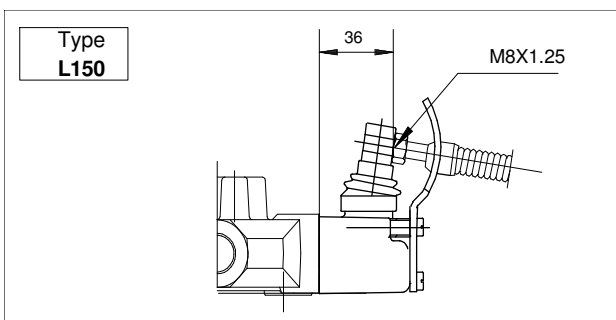
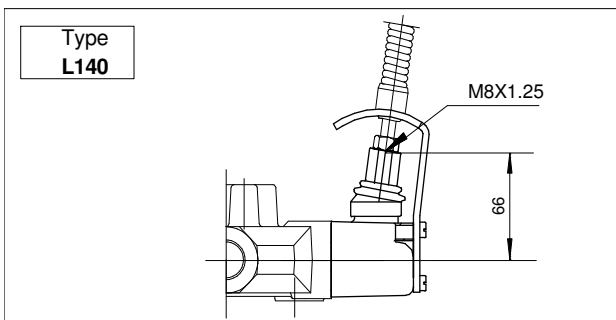
\*\* : special body required

## Lever styles



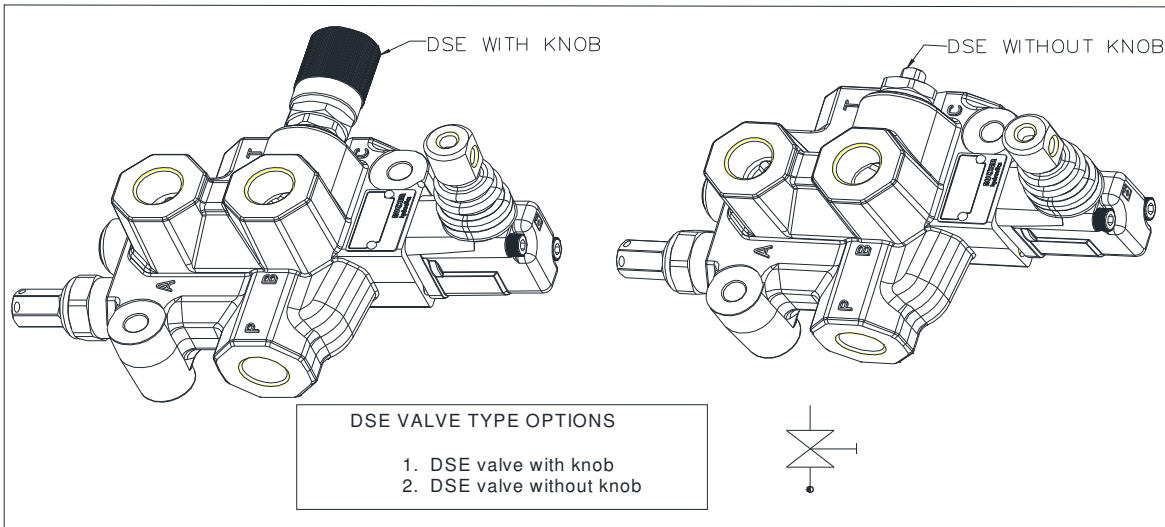
Lo		Type	Code
mm	inches		
150	5.90	<b>AL001</b> standard	200.7022.1019.0
200	7.87	<b>AL002</b>	200.7022.1003.0
250	9.84	<b>AL003</b>	200.7022.1005.0
300	11.81	<b>AL004</b>	200.7022.1006.0

### 3.8.1 Safety levers



Lo		Type	Code
mm	inches		
160	6.30	<b>AL014</b>	200.7022.1009.0
180	7.08	<b>AL018</b>	200.7022.1011.0

## Double acting / Single acting conversion valve

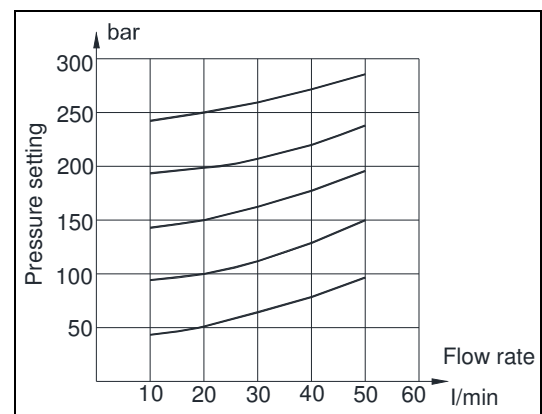
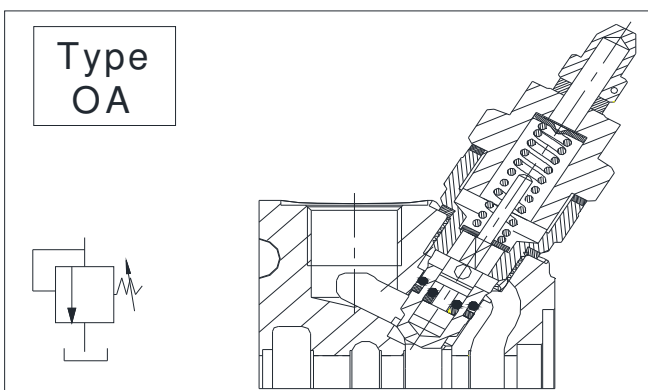


## Anti-shock and anti-cavitation valve

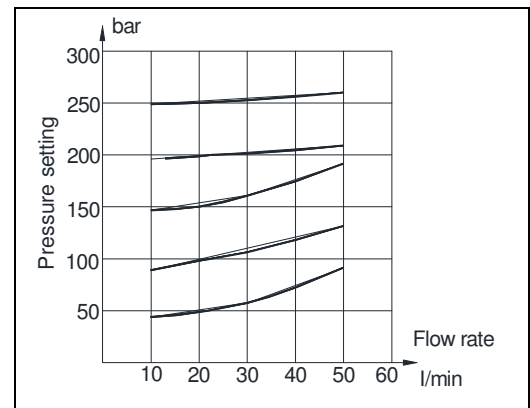
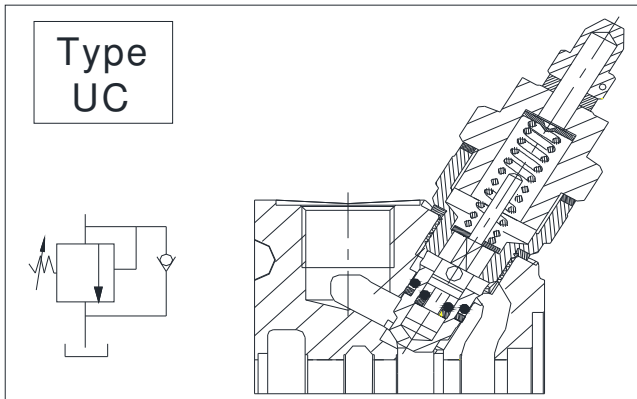
Port relief valve settings

Pressure set range Bar (PSI)	Std. setting Bar (PSI)	Type	Spring color
30—130 (400 - 1850)	60 (860)	<b>06</b>	Yellow (YE)
130 - 320 (1850 - 4600)	150 (2100)	<b>15</b>	Green (GR)

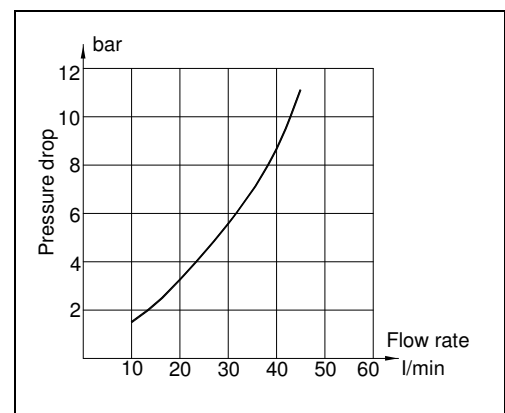
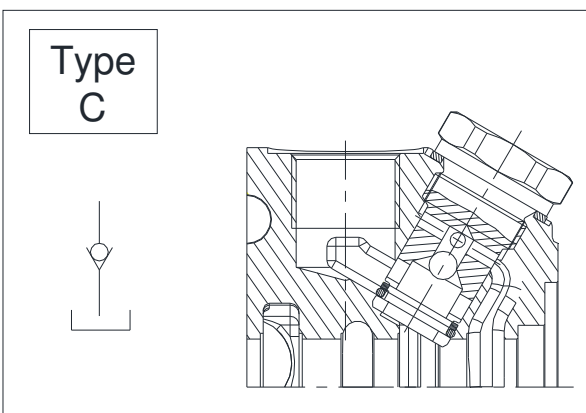
## Port relief valve



## Combined port relief and – cavitation valve



## Anti – cavitation valve



## Remote cable control

