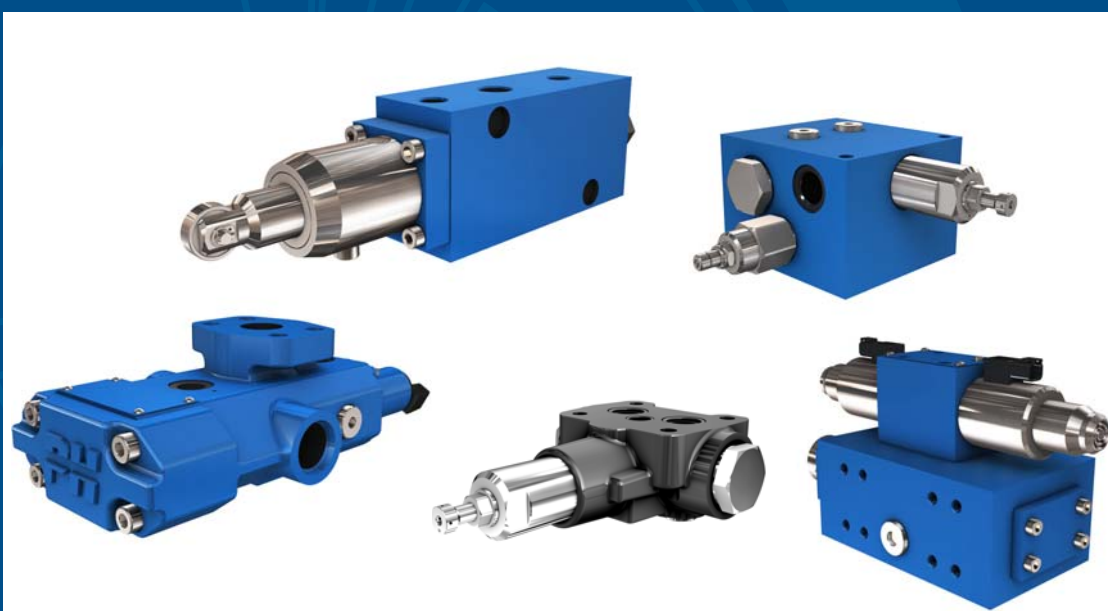


# POWER TRANSMISSION VALVES



T E C H N I C A L   C A T A L O G

**Methodology :**

This document is intended for manufacturers of machines that incorporate Poclain Hydraulics products. It describes the technical characteristics of Poclain Hydraulics products and specifies installation conditions that will ensure optimum operation. This document includes important comments concerning safety. They are indicated in the following way :This document also includes essential



**Safety comment.**

operating instructions for the product and general information. These are indicated in the following way:



**Essential instructions.**



**General information.**



**Information on the model number.**



**Weight of component without oil.**



**Volume of oil.**



**Units.**



**Tightening torque.**



**Screws.**

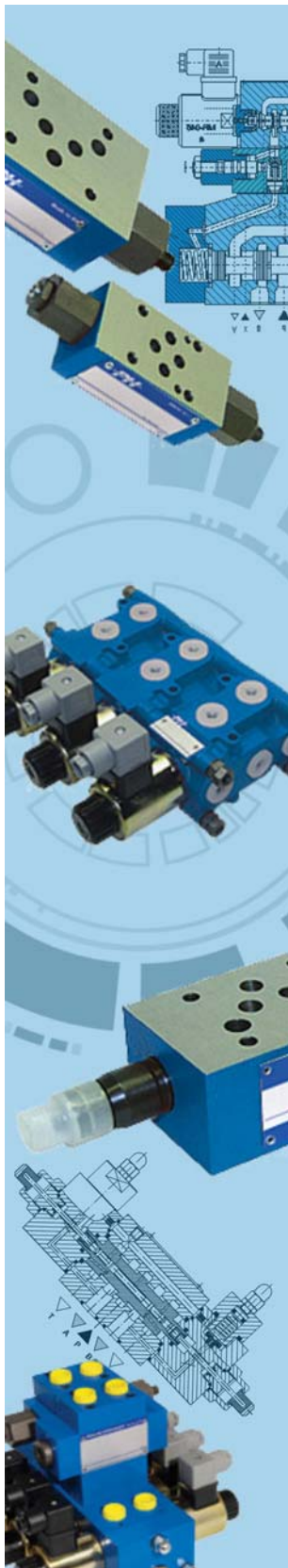


**Information intended for Poclain-Hydraulics personnel.**

The views in this document are created using metric standards.  
The dimensional data is given in mm and in inches (inches are given in brackets in italics).



# CONTENT



**ANTI-SLIPPING VALVES**

**5**

Anti-slipping valves

**EXCHANGE VALVES**

**15**

Exchange valves

**SERIAL PROTECTION VALVES**

**33**

Serial protection valves

**FREEWHEELING VALVES**

**39**

Freewheeling valves

**FLOW DIVIDERS**

**49**

Flow dividers

**PRESSURE REDUCING VALVE**

**71**

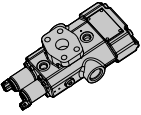
Pressure reducing valves

**DIRECTIONAL CONTROL VALVES**

**77**

Directional control valves





# ANTI-SLIPPING VALVES



Anti-slipping/SmartDrive™ valve VMA H15

7

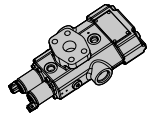
Anti-slipping/SmartDrive™ valve VMA H15

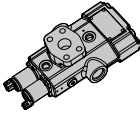


Anti-slipping/TwinLock™ valve VDP H10

11

Anti-slipping/TwinLock™ valve VDP H10





# ANTI-SLIPPING/SMARTDRIVE™ VALVE VMA H15

- Anti-slipping
- Electronically managed
- Programmable

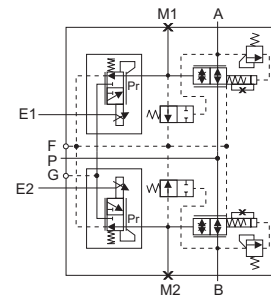


## Operation

The anti-slipping valve is an electronically managed traction control, which operates to restrict flow only when slippage is detected, by using normally wheel speed sensors and open proportional valves.

Entirely programmable, the system easily accommodates varying motor displacements and vehicle steering geometry to offer optimal performance.

## Hydraulic symbol



## Features

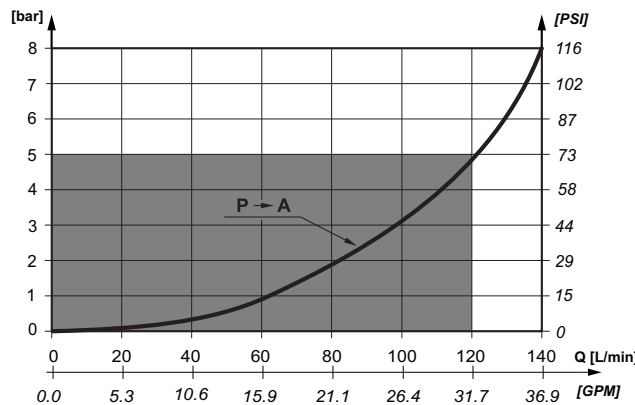
### Hydraulic

<b>Max. pressure</b>	bar [PSI]	450 [6 526]
<b>Nominal flow range</b>	L/min [GPM]	up to 240 [63.4]
<b>Max restricted flow</b>	L/min [GPM]	50 [13.2]
<b>Type of hydraulic connections</b>	ISO 6162 (Bride SAE) / ISO 9974-1 (Metric) / ISO 11926-1 (UNF)	
<b>Mass</b>	kg [lb]	
• piped version		7,2 [15.9]
• flanged version		11,9 [26.2]
<b>Fluid temperature</b>	°C [°F]	-20 to +70 [- 4 to +158]
<b>Fluid viscosity</b>	mm <sup>2</sup> /s [ssu]	15 to 380 [69.5 to 1 760]
<b>Fluid contamination</b>	ISO 4406	18/16/13

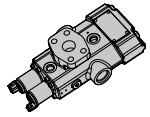
### Electrical

<b>Solenoid supply voltage</b>	V direct	12	24
<b>Solenoid current</b>	MA	1500	750
<b>Type of control</b>	mA	PWM 100 Hz recommended	

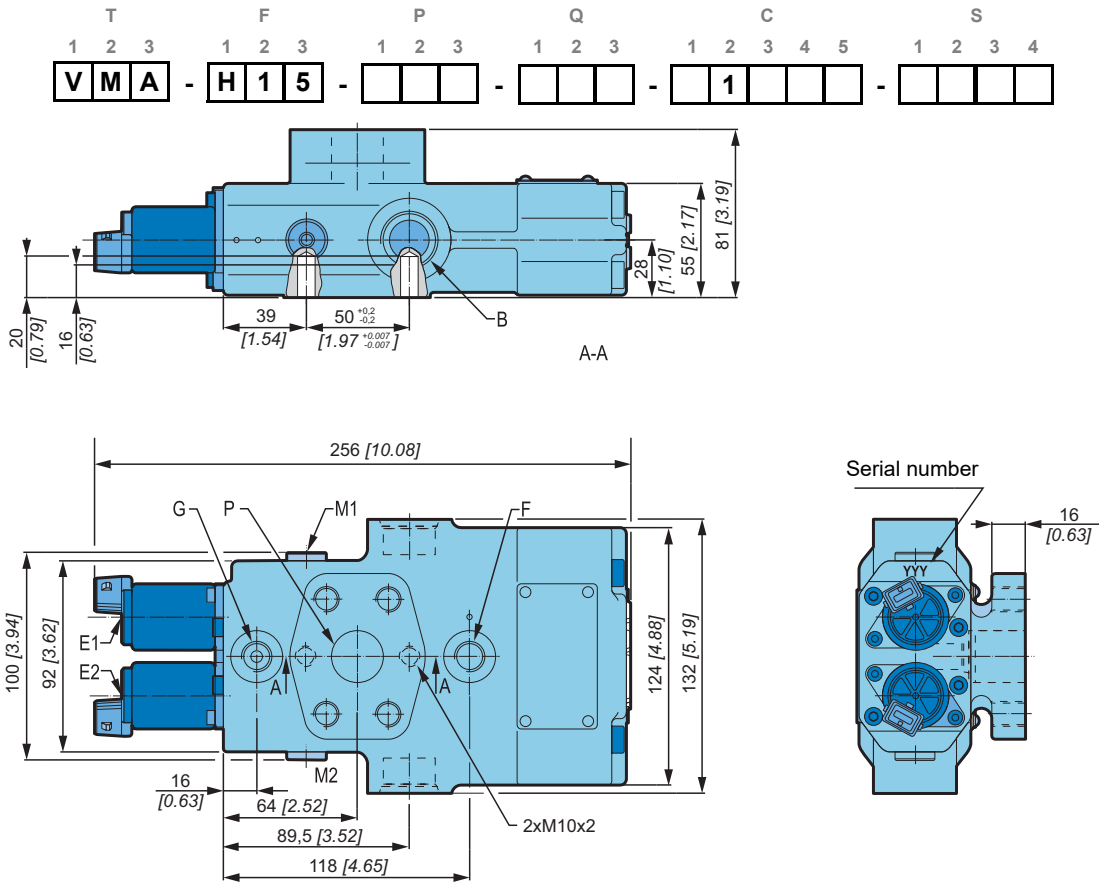
## Pressure drop



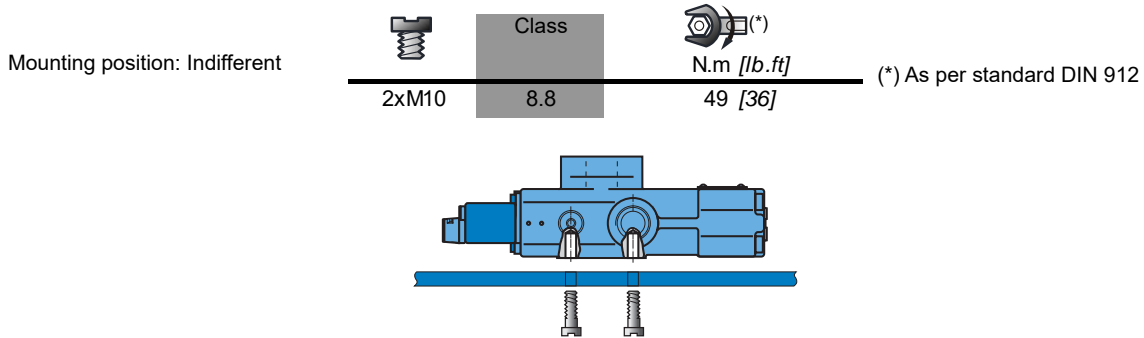
The valves must be supplied in G with a pressure between 15-30 bar [217-435 PSI]. Maximum flow, from P to A or B, for a fully open valve, is 120 L/min [31.7 GPM] per wheel with a pressure difference (P) of 5 bar [72 PSI]. (96 cSt mineral oil at 25 °C [77 °F]).



Dimension for piped version



Installation

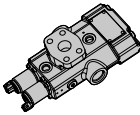


Motor and valve drain piping must be connected directly to the tank.

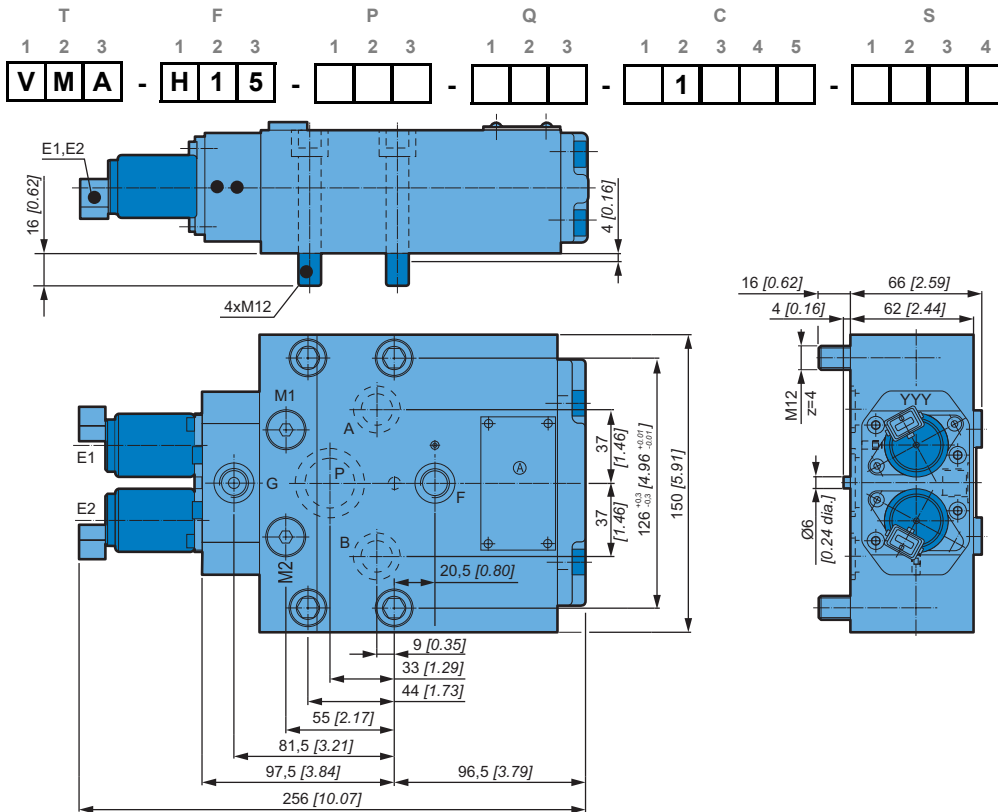
Hydraulic connections

Port	Function	Option 1		Option A		Max. pressure bar [PSI]	N.M.
		Connections	Standards	Connections	Standards		
P	HP function	DN 25 PN400	ISO 6162	DN 25 PN400	ISO 6162	450 [6 526]	90
A-B	HP function	M27x2	ISO 9974-1	1 1/16-11 UNF-2B	ISO 11926-1	450 [6 526]	200
F	Drain	M14x1.5	ISO 9974-1	9/16-18 UNF-2B	ISO 11926-1	1 [14.5]	45
G	LP supply	M14x1.5	ISO 9974-1	9/16-18 UNF-2B	ISO 11926-1	15<P<30	45
M1-M2	Pressure measurement	M14x1.5	ISO 9974-1	M14x1.5	ISO 9974-1	0<P<20	45





Dimension for flanged version



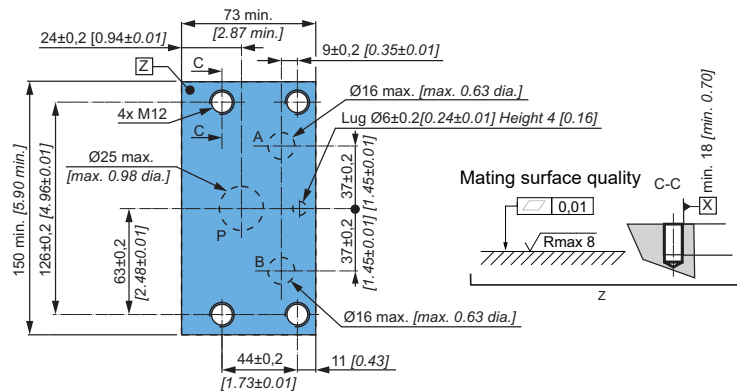
Anti-slipping/SmartDrive™ valve VMA H15

Installation



Remove the protection plate.

Make sure that Q-rings are correctly positioned.

Install the valve on the mounting face with the help from the lug.



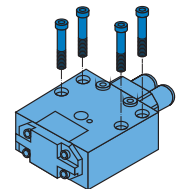
Mounting position: Indifferent

	Class	
4xM12	8.8	N.m [l.b.ft]
		86 [63.5]

(\* As per standard DIN 912



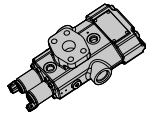
Motor and valve drain piping must be connected directly to the tank.



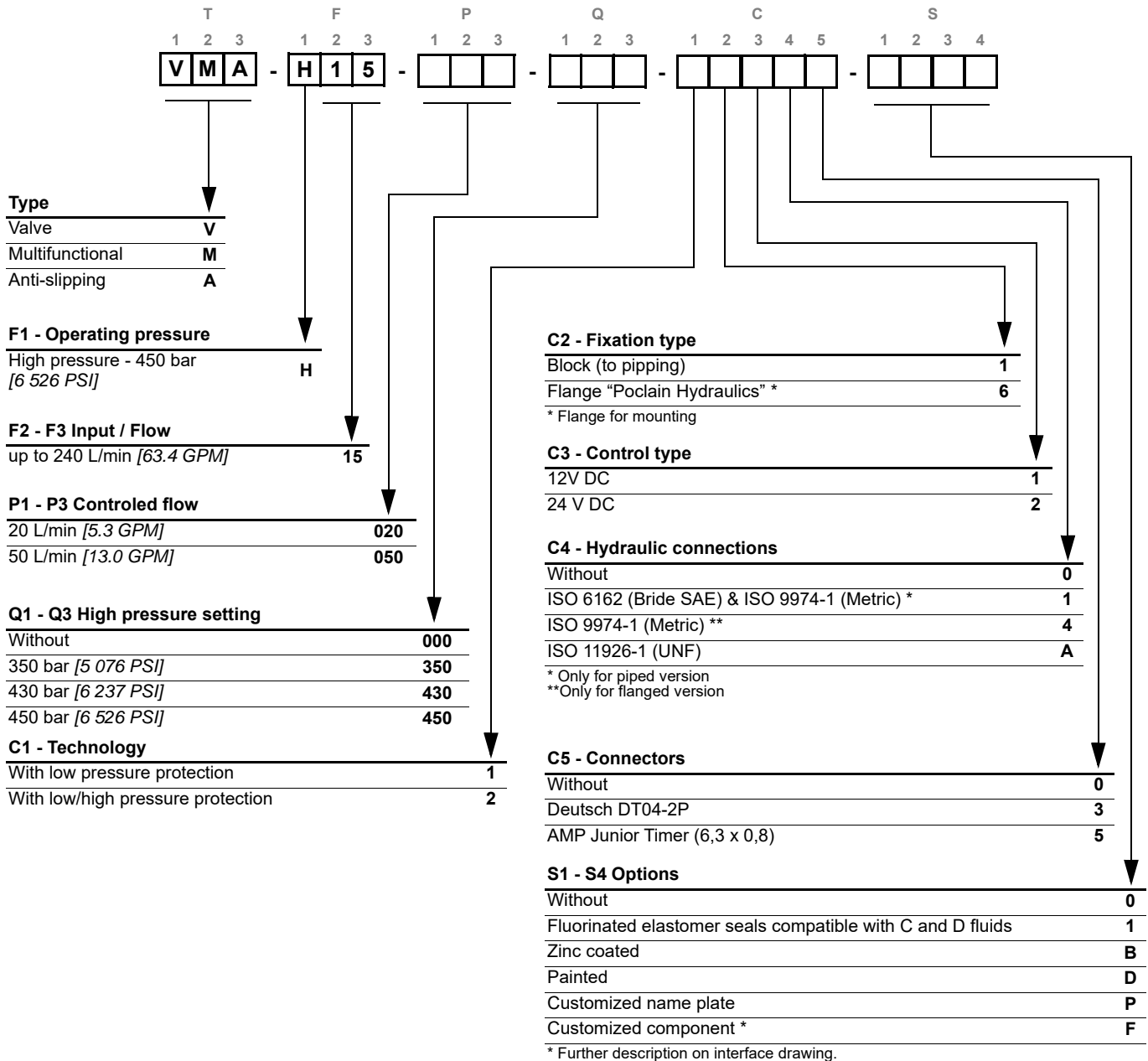
Anti-slipping/TwinLock™ valve VDP H10

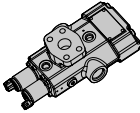
Hydraulic connections

Port	Function	Option 4		Option A		Max. pressure bar [PSI]	N.M.
		Connections	Standards	Connections	Standards		
P	HP function	flanged Ø25 [dia. 0.98]				450 [6 526]	
A-B	HP function	flanged Ø16 [dia. 0.63]				450 [6 526]	
F	Drain	M14x1.5	ISO 9974-1	9/16-18 UNF-2B	ISO 11926-1	1 [14.5]	45
G	LP supply	M14x1.5	ISO 9974-1	9/16-18 UNF-2B	ISO 11926-1	15<P<30	45
M1-M2	Pressure measurement	M14x1.5	ISO 9974-1	M14x1.5	ISO 9974-1	0<P<20	45



Model code





# ANTI-SLIPPING/TWINLOCK™ VALVE VDP H10

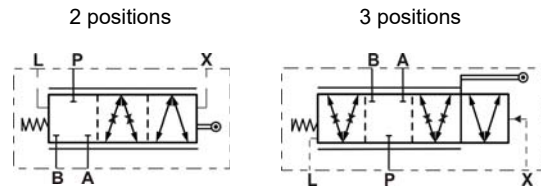
- Anti-slipping
- Automatic transfer of torque to the wheels
- Maximize wheel ground adhesion



## Operation

VDP anti-slipping valve provides flow division while automatically transferring torque to the wheels with the greatest ground adhesion.

## Hydraulic symbol

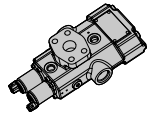


## Features

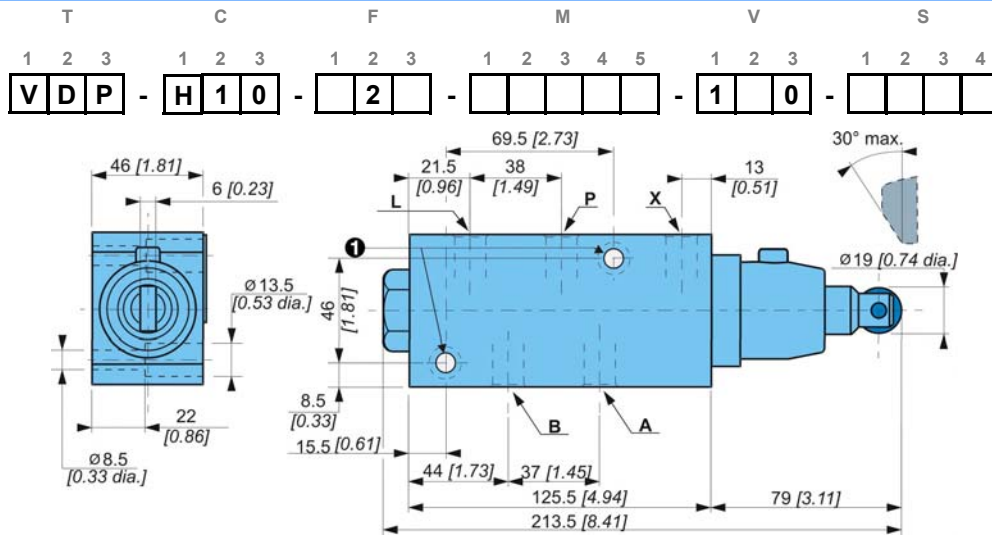
		2 positions	3 positions
Max. pressure	bar [PSI]		450 [6 526]
Nominal flow range	L/min [GPM]		26 to 50 [6.8 to 13.2]
Max. restricted flow	L/min [GPM]		50 [13.2]
Type of hydraulic connection		ISO 1179-1 (BSPP)	
Mass	kg [lbs]	2,65 [5.84]	3,33 [7.34]
Fluid temperature	°C [°F]	-20 to +70 [-4 to +158]	
Fluid viscosity	mm <sup>2</sup> /s [SSU]	15 to 380 [69.5 to 1 760]	
Type of hydraulic connections		ISO 1179-1 (BSPP)	

Anti-slipping/SmartDrive™ valve VMA H15

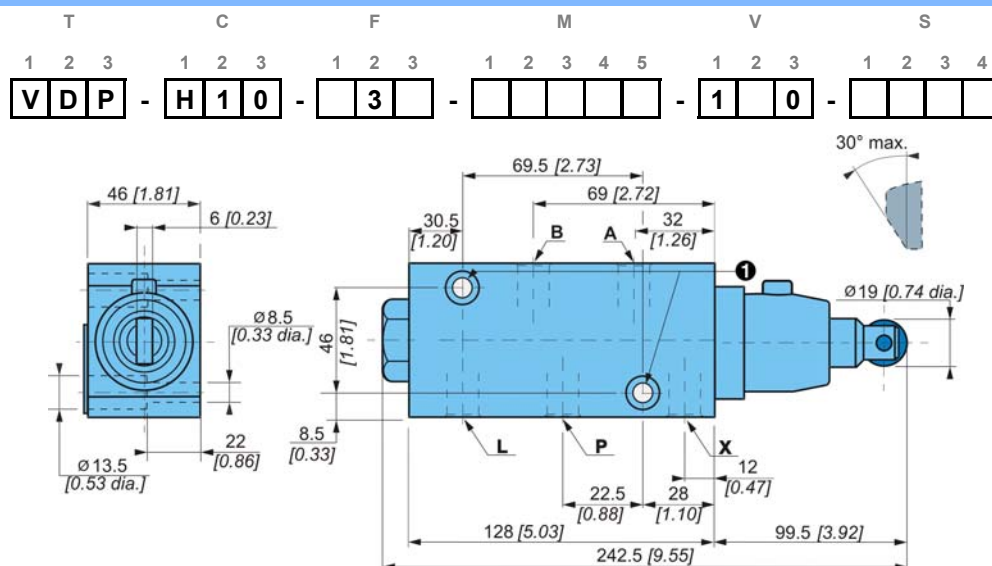
Anti-slipping/Twinlock™ valve VDP H10



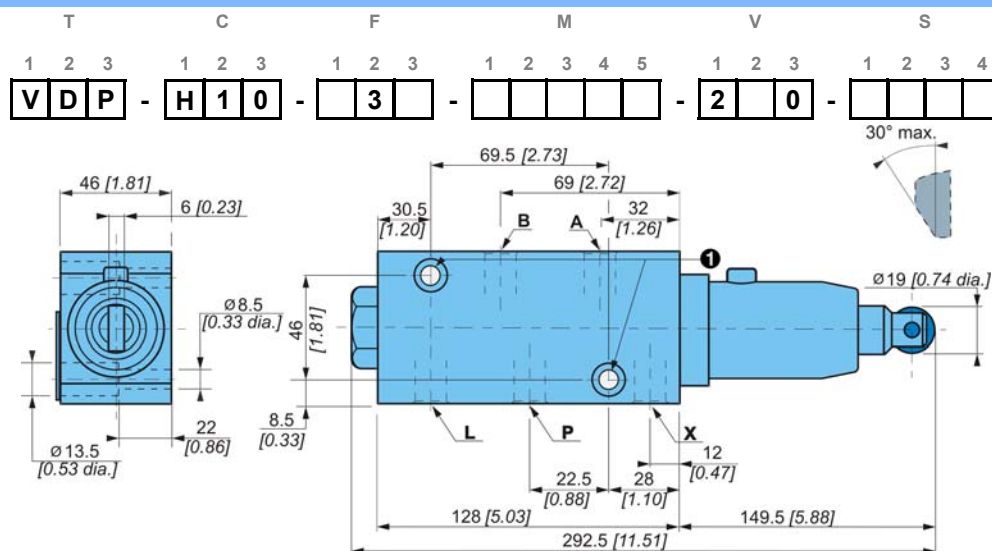
Dimensions for 2 positions

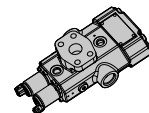


Dimensions for 3 positions command type short



Dimensions for 3 positions command type long (according to model code)





**Installation**

Mounting position: Indifferent

1



2xM8

Class

8.8



N.m [lb.ft]

25 [18]

(\* As per standard DIN 912

**Hydraulic connections**

Port	Function	Connections	Max. pressure bar [PSI]	Nm [lb.ft] ±10 % (as per standard DIN 912)
P-A-B	HP function	M18x1.5	450 [6 526]	70 [52]
X	Pilot	M14x1.5	50 [752]	45 [33]
L	Drain		3 [45]	



The operation of the cam on the roller must be limited ±30° to limit the parasite forces.

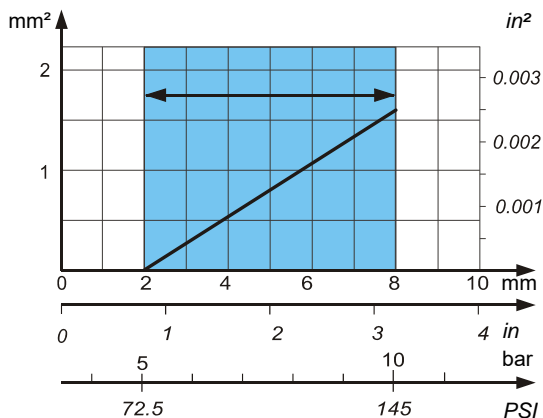
**Mechanical control**

	Beginning of opening N [lbf]	End of opening N [lbf]	Max. stroke mm [in]
2 positions	25 [5.62]	55 [12.36]	10 [0.39]
3 positions	49 [11.02]	170 [38.22]	16 [0.6]

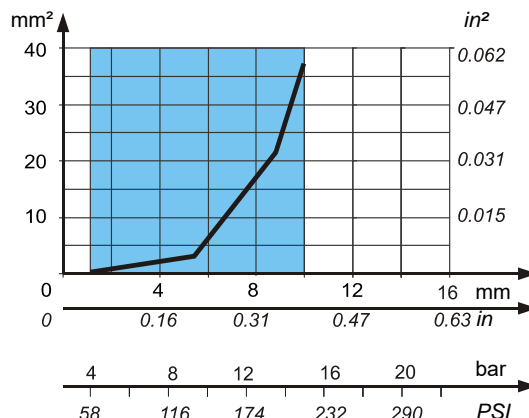
**Hydraulic control**

	Beginning of opening bar [PSI]	End of opening bar [PSI]	Max. pressure bar [PSI]
2 positions	5 [72.5]	11 [160]	50 [725]
3 positions	4 [58]	15 [218]	

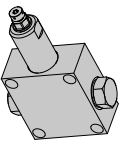
2 positions



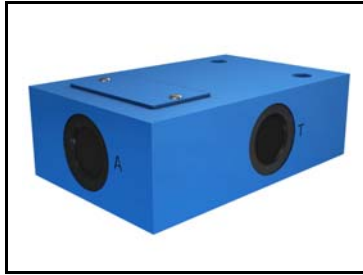
3 positions







# EXCHANGE VALVES



Exchange valve VE10

16

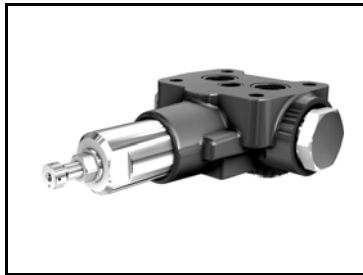
Exchange valve VE10



Exchange valve VE30

19

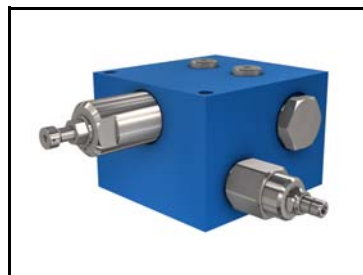
Exchange valve VE30



High performance Exchange valve VE60

23

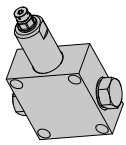
High performance  
exchange valve VE60



Exchange and High pressure relief valve VES60

28

Exchange and high pressure  
relief valve VES60



## EXCHANGE VALVE VE10

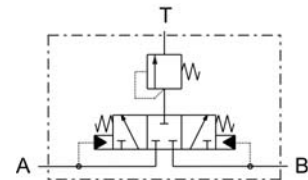
- Compact
- Heavy duty



### Operation

Exchange valves are for use in bleeding hot oil from the low pressure side of a hydrostatic transmission circuit. The hot oil can be cooled, filtered or used as a source of oil for flushing other pump and motor case.

### Hydraulic symbol

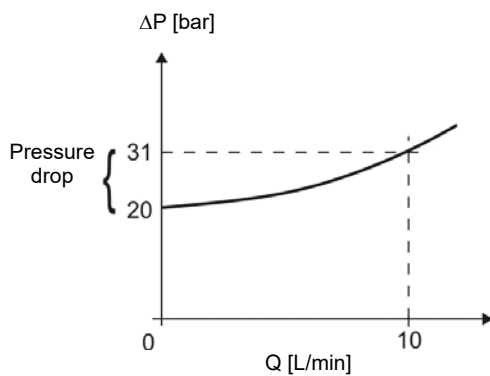


### Features

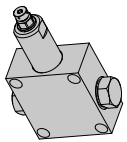
Max. pressure	bar [PSI]	450 [6 526]
Exchange relief valve setting	bar [PSI]	12; 14; 16; 18; 20 [174; 203; 232; 261; 290]
Selector spool switching pressure	bar [PSI]	8,5 [123]
Exchange flow (11 bar [160 PSI] ΔP)	L/min [GPM]	max.15 [3.96] (ΔP A→T or B→T)
Exchange direction		Forward and/or reverse
Type of hydraulic connections		ISO 9974-1 (BSPP) / ISO 1179-1 (Metric) / ISO 11926-1 (UNF)
Mass	kg [lbs]	1,1 [2.43]

### Operation

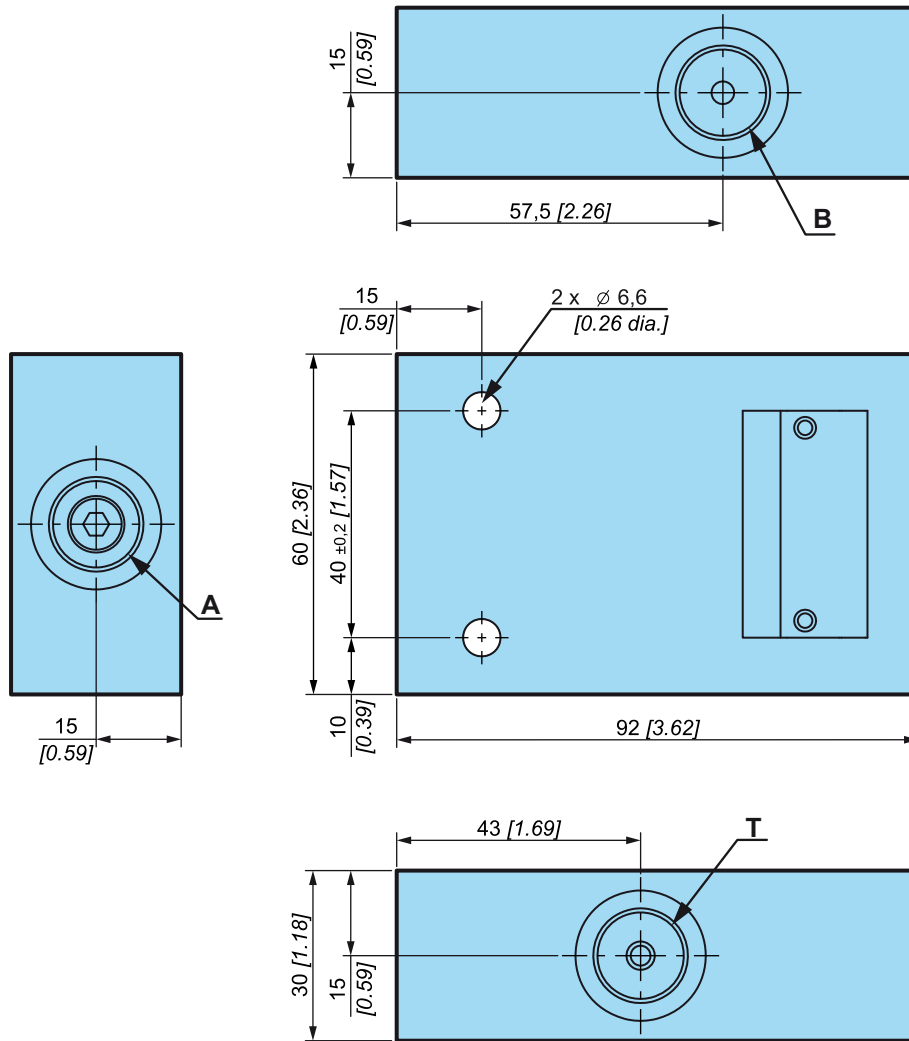
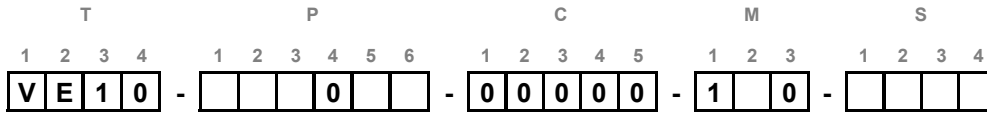
Example: relief valve set at 20 bar [290 PSI]







Dimensions



Exchange valve VE10

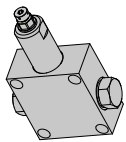
Exchange valve VE30

High performance exchange valve VE60

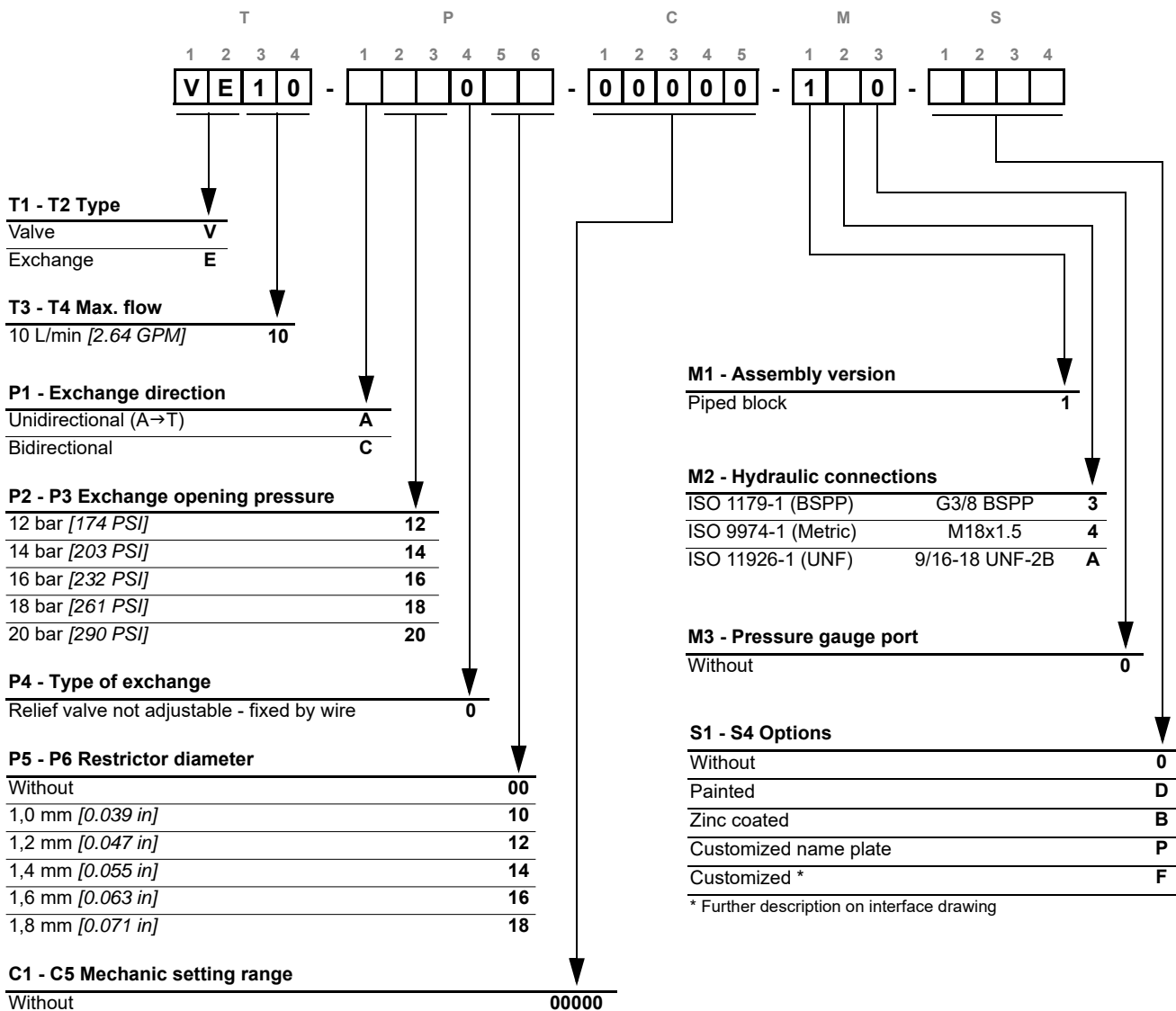
Exchange and high pressure relief valve VES60

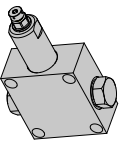
Hydraulic connections

Port	Function	Connections			Max. pressure bar [PSI]
		ISO 9974-1 (Metric) Type N	ISO 1179-1 (BSPP) Type N	ISO 11926-1 (UNF)	
A	HP/LP connection	M18 x 1.5	G3/8	9/16-18 UNF-2B	450 [6 526]
B	HP/LP connection				
T	Tank connection				5 [72.5]



Model code





## EXCHANGE VALVE VE30

- Compact
- Adjustable
- Heavy duty



Piped valve

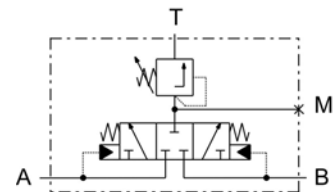


Flanged valve

### Features

Exchange valves are for use in bleeding hot oil from the low pressure side of a hydrostatic transmission circuit. The hot oil can be cooled, filtered or used as a source of oil for flushing other pump and motor case.

### Hydraulic symbol

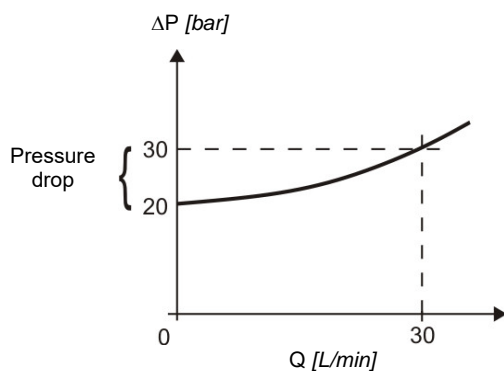


### Features

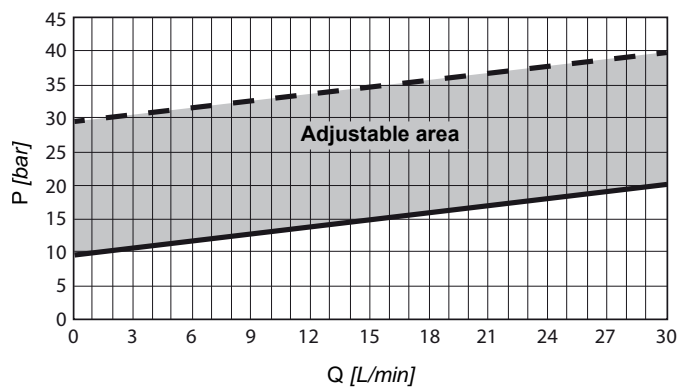
Max. pressure	bar [PSI]	500 [7 252]
Exchange relief valve setting	bar [PSI]	10 to 30 [145 to 435]
Selector spool switching pressure	bar [PSI]	8 [116]
Exchange flow (10 bar [145 PSI] ΔP)	L/min [GPM]	30 [7.93] (ΔP A→T or B→T)
Exchange direction		Forward and/or reverse
Type of hydraulic connections		ISO 1179-1 (BSP) / ISO 9974-1 (Metric) / ISO 11926-1 (UNF)
Mass	kg [lbs]	1,5 [3.31]

### Pressure drop

Example: relief valve set at 20 bar [290 PSI]



### ΔP-Q Performance curves



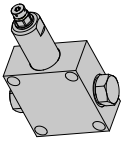
--- A, B to T - 30 bar [435 PSI]  
 ——— A, B to T - 10 bar [145 PSI]

Exchange valve VE10

Exchange valve VE30

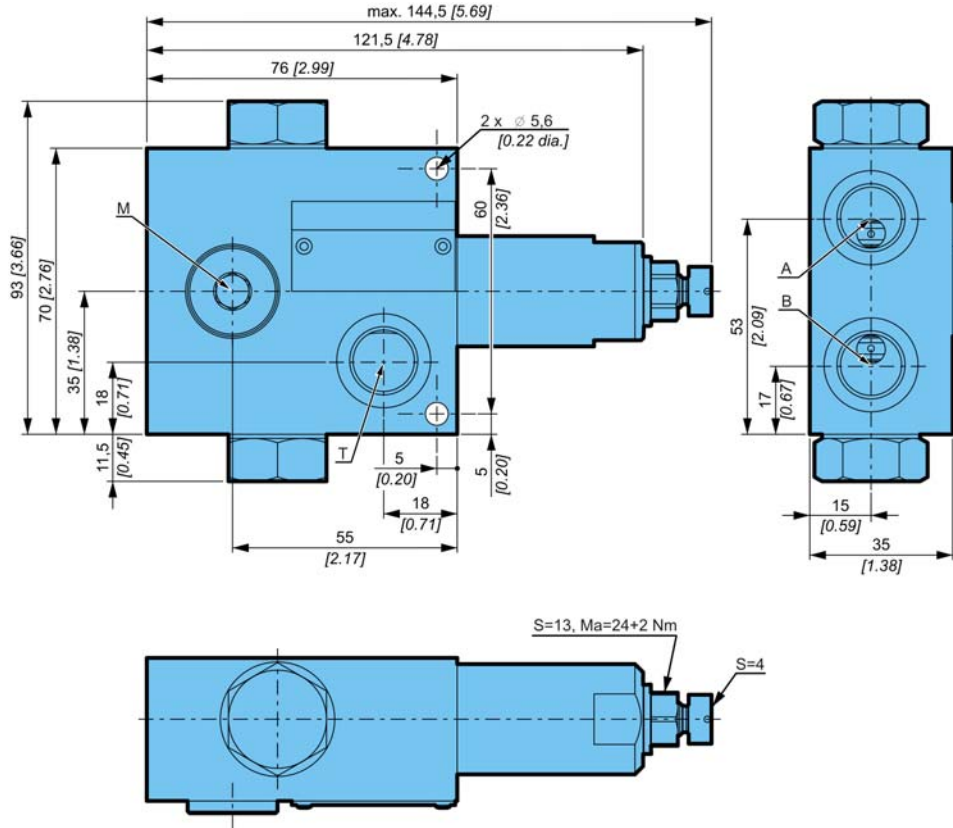
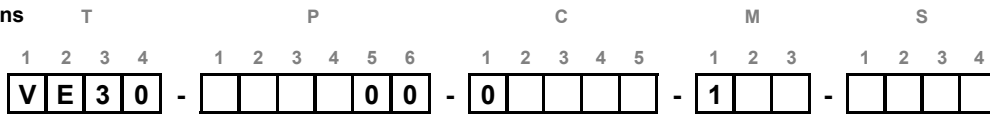
High performance exchange valve VE60

Exchange and high pressure relief valve VES60

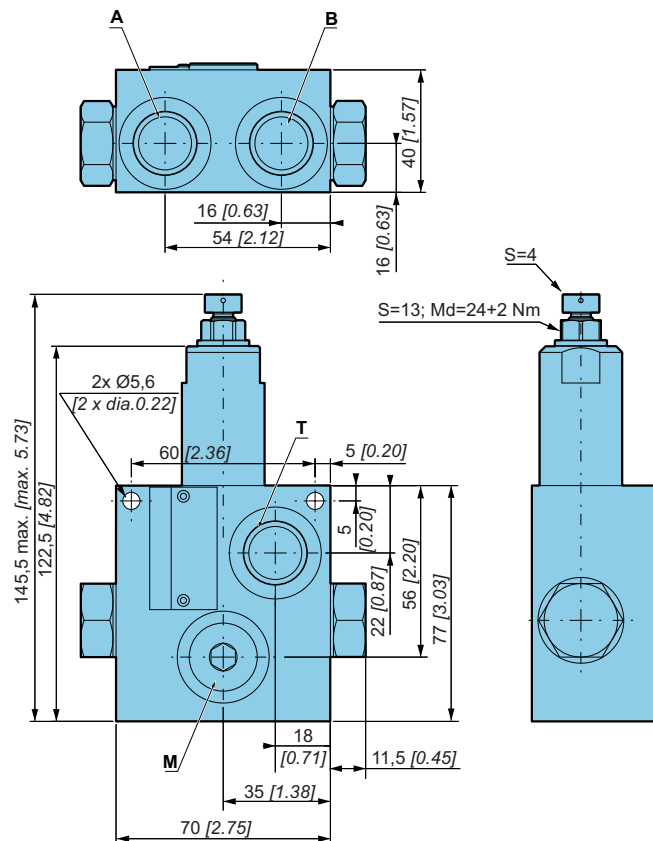


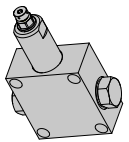
Dimensions for piped valve

Metric connections



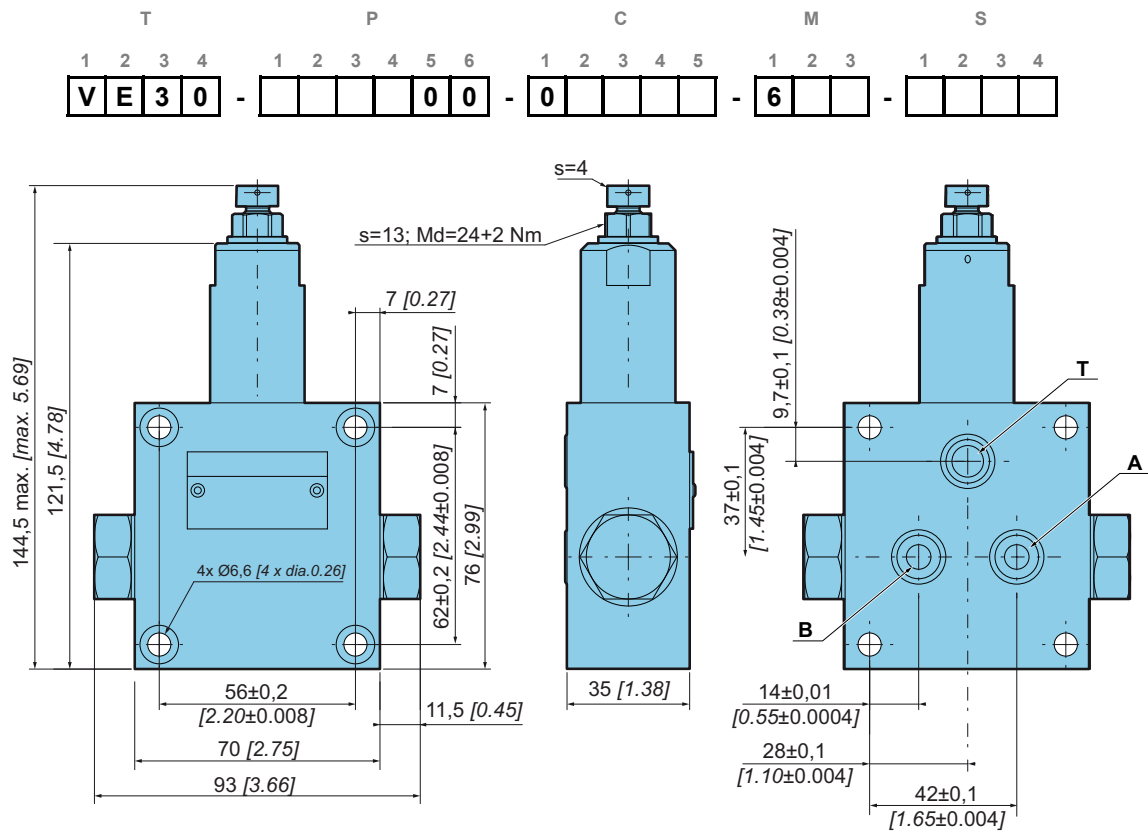
UNF connections





Hydraulic connections					
Port	Function	Connection			Max. pressure bar [PSI]
		ISO 9974-1 (Metric) Type N	ISO 1179-1 (BSPP) Type N	ISO 11926-1 (UNF)	
A	HP/LP connection	M18 x 1.5	G3/8	3/4-16 UNF-2B	500 [7 252]
B	HP/LP connection				
M	pressure measurement or service connection				
T	Tank connection				

Dimensions for flanged valve



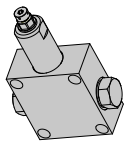
Hydraulic connections			
Port	Function	Connection	Max. pressure bar [PSI]
A	HP/LP connection	Ø 7 mm [dia. 0.27 in]	500 [7 252]
B	HP/LP connection		
T	Tank connection	Ø 9 mm [dia. 0.35 in]	5 [72.5]

Exchange valve VE10

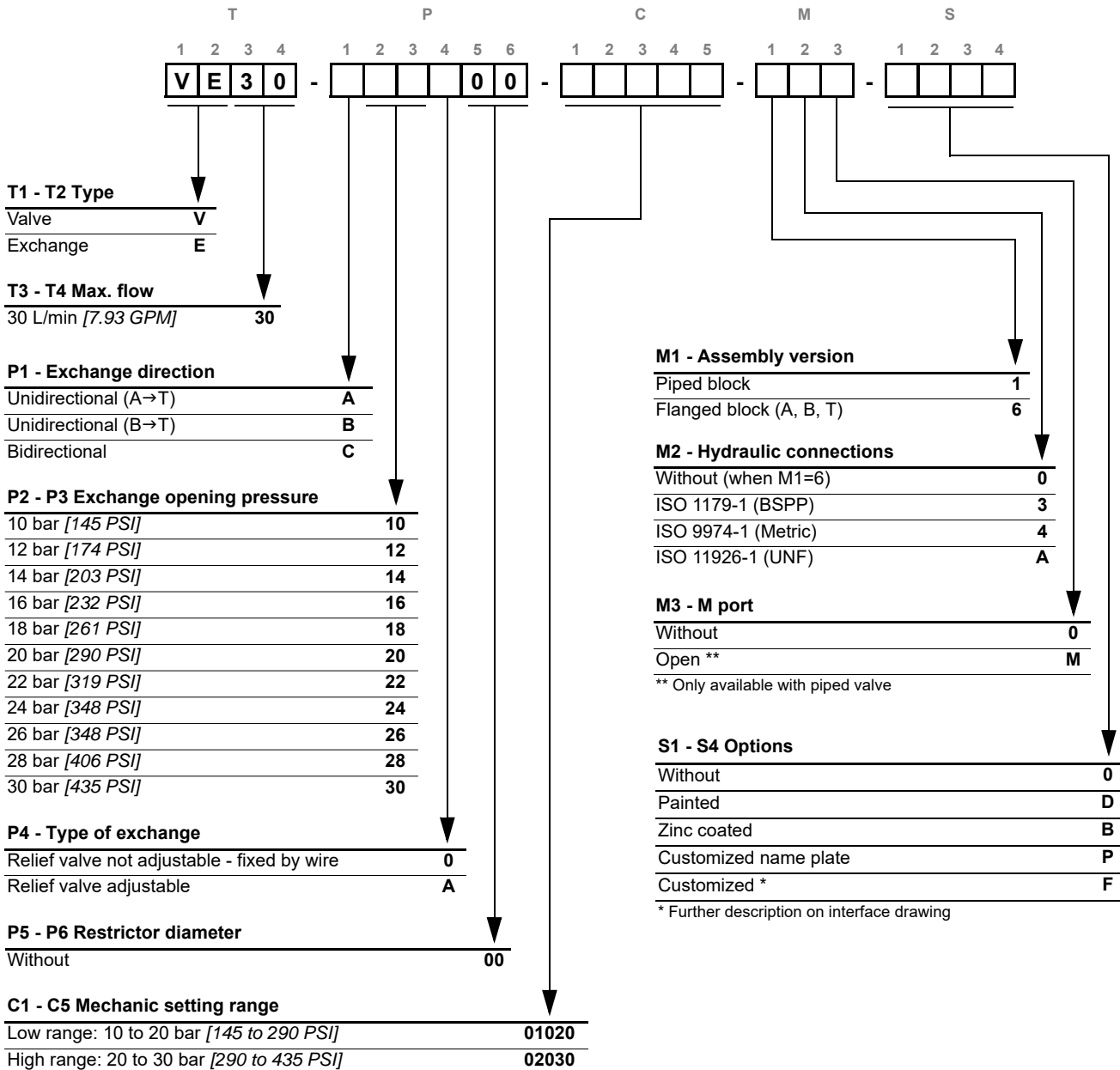
Exchange valve VE30

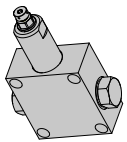
High performance  
exchange valve VE60

Exchange and high pressure  
relief valve VES60



Model code





# HIGH PERFORMANCE EXCHANGE VALVE VE60

- Compact
- Adjustable
- Heavy duty



*HIGH PERFORMANCE*

Flanged version

Piped version

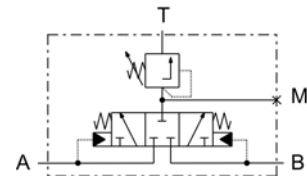
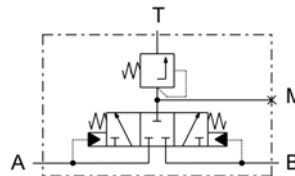
## Operation

Exchange valves are for use in bleeding hot oil from the low pressure side of a hydrostatic transmission circuit. The hot oil can be cooled, filtered or used as a source of oil for flushing other pump and motor case.

## Hydraulic symbols

Type of exchange: F

Type of exchange: 0 and A

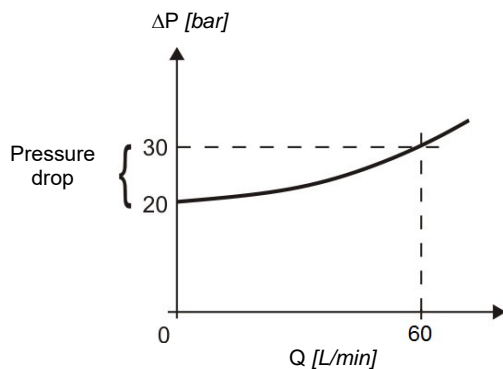


## Features

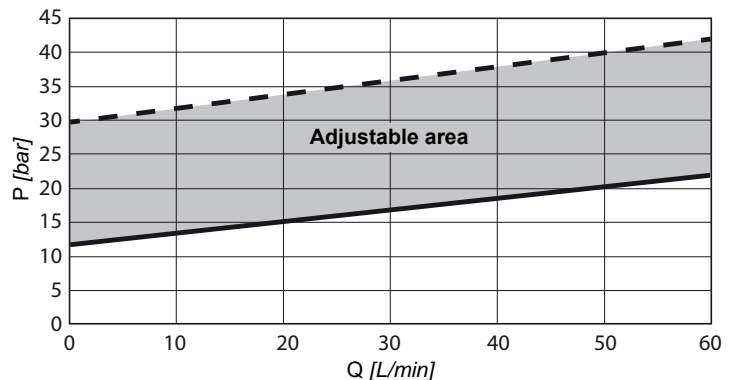
	Flanged version	Piped version
Max. pressure	bar [PSI]	500 [7 252]
Exchange relief valve setting	bar [PSI]	12 to 30 [174 to 435]
Selector spool switching pressure	bar [PSI]	8 [116]
Exchange flow (10 bar [145 PSI] ΔP)	L/min [GPM]	60 [15.9]
Exchange direction	Forward and/or reverse	
Type of hydraulic connections	ISO 1179-1 (BSPP) / ISO 9974-1 (Metric) / ISO 11926-1 (UNF)	
Mass	kg [lbs]	2,4 [5.29]      3,2 [7.05]

## Pressure drop

Example: Relief valve set at 20 bar [290 PSI].



## ΔP-Q Performance curves



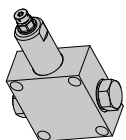
- - - A, B to T - 30 bar [435 PSI]
- A, B to T - 12 bar [173 PSI]

Exchange valve VE10

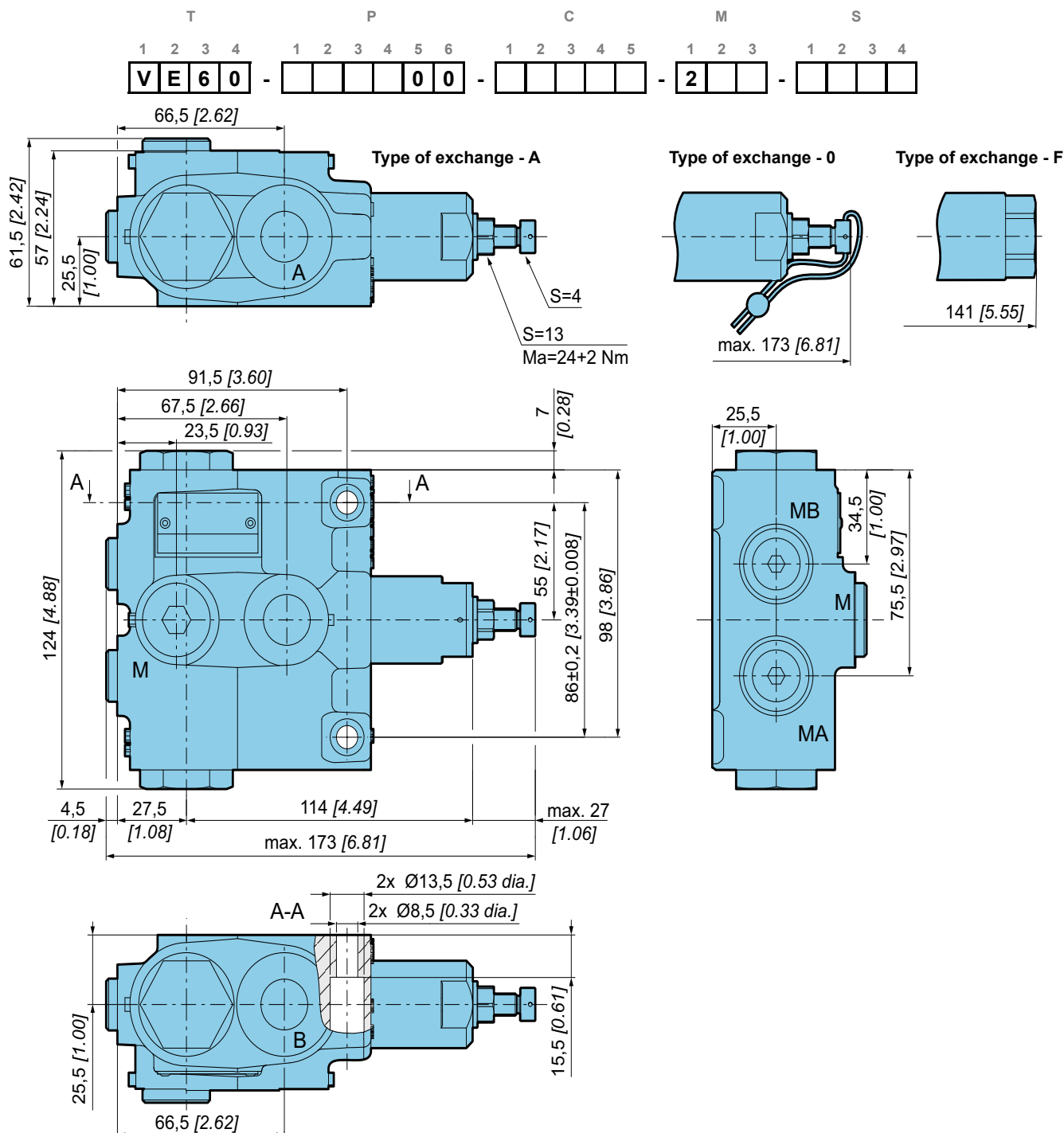
Exchange valve VE30

High performance exchange valve VE60

Exchange and high pressure relief valve VES60



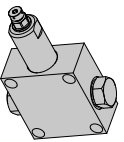
Dimensions for piped version



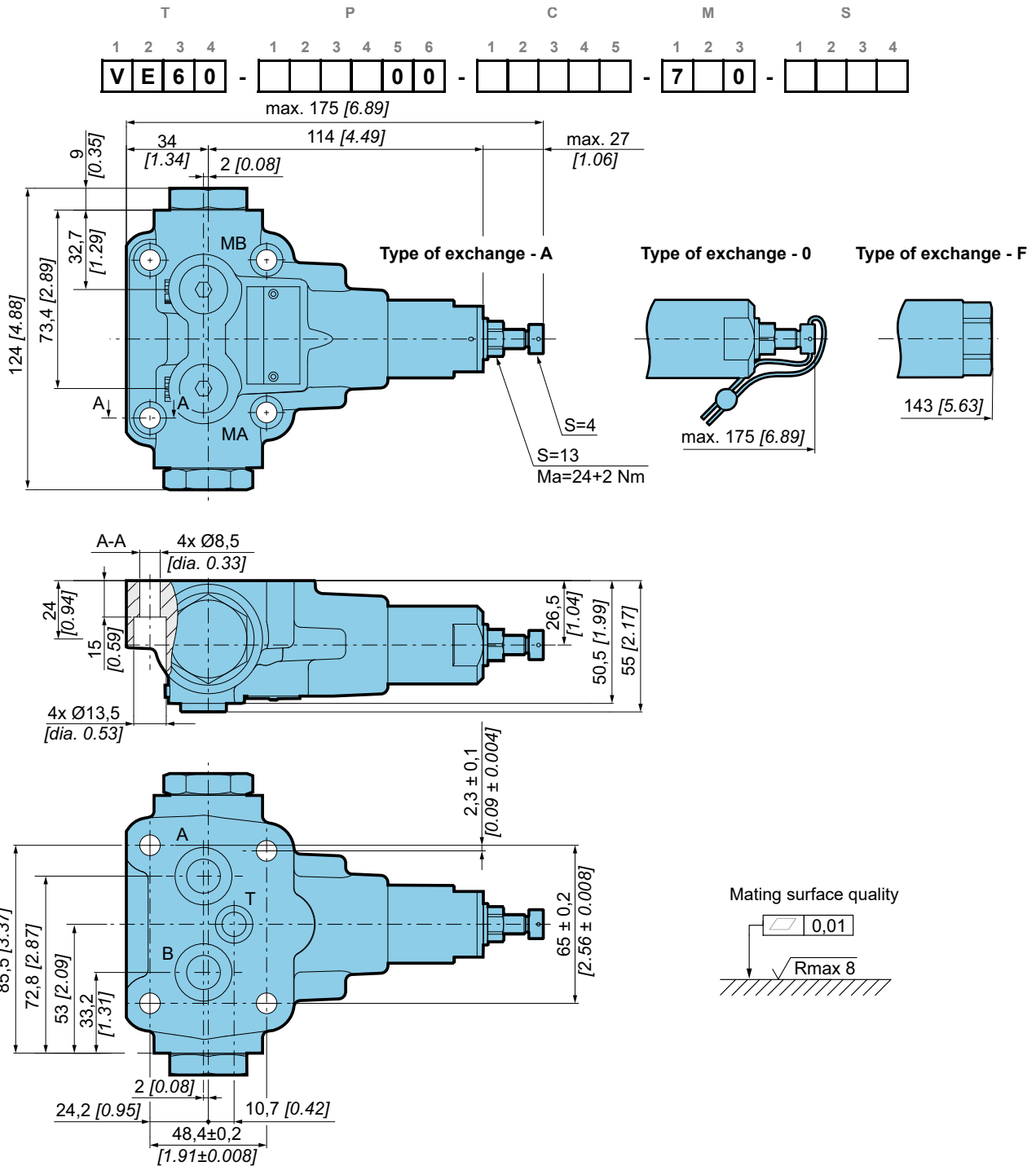
Hydraulic connections

Port	Function	Connection			Max. pressure bar [PSI]
		ISO 9974-1 (Metric) Type N	ISO 1179-1 (BSPP) Type N	ISO 11926-1 (UNF)	
A	HP/LP connection	M22x1.5	G1/2	7/8-14 UNF-2B	500 [7 251]
B	HP/LP connection				
T	Tank connection				
MA	Pressure measurement (A)	M14x1.5	G1/4	9/16-18 UNF-2B	500 [7 251]
MB	Pressure measurement (B)				
M	Pressure measurement or service connection	M22x1.5	G1/2	7/8-14 UNF-2B	500 [7 251]





Dimensions for flanged version



Exchange valve VE10

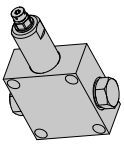
Exchange valve VE30

High performance exchange valve VE60

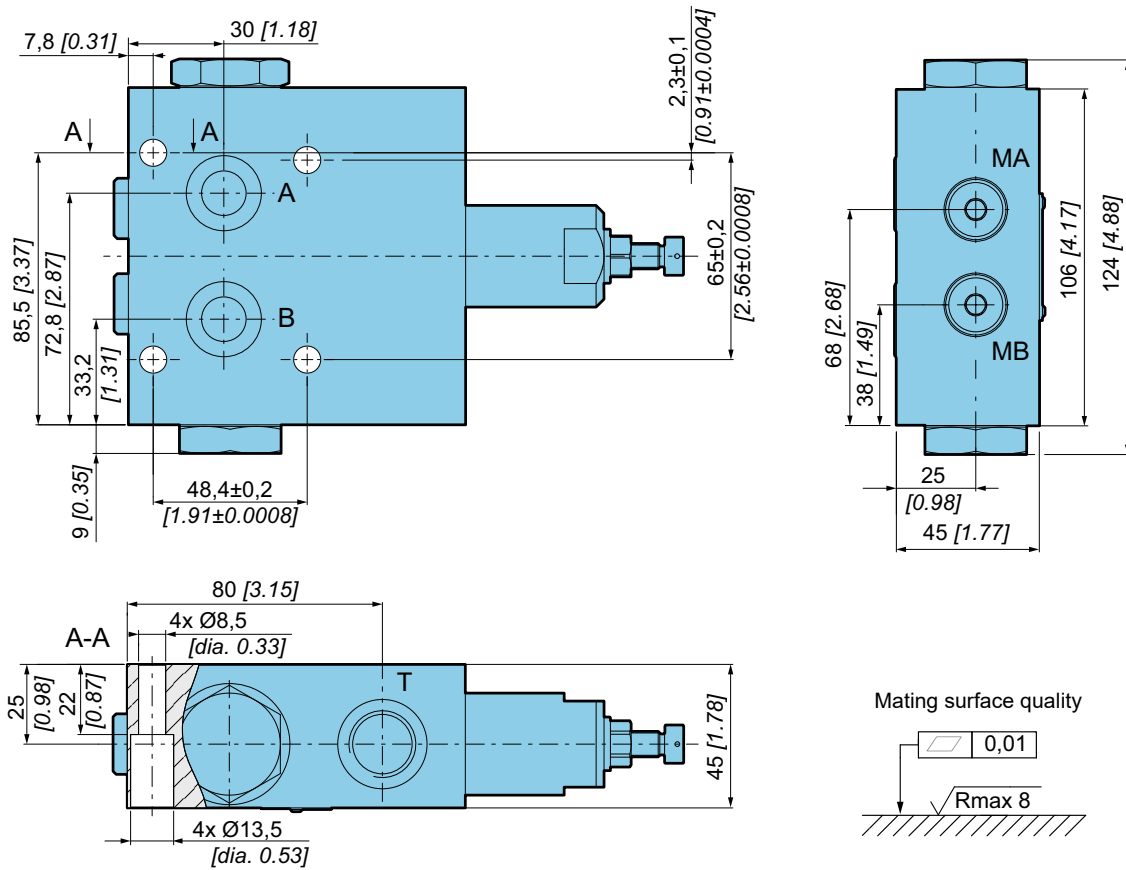
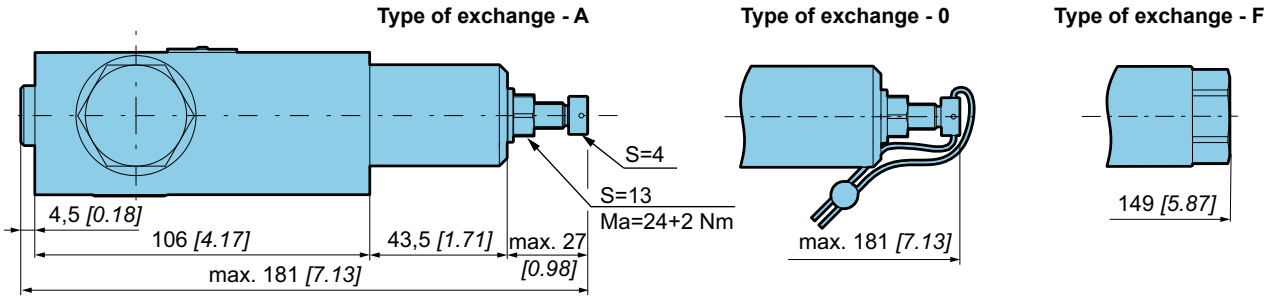
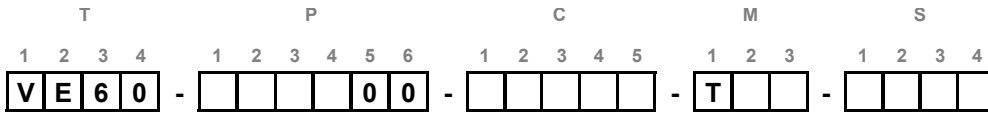
Exchange and high pressure relief valve VES60

Hydraulic connections

Port	Function	Connection			Max. pressure bar [PSI]
		ISO 9974-1 (Metric) Type N	ISO 1179-1 Type N	ISO 11926-1	
A	HP/LP connection	Ø14 mm [dia. 0.55 in]	Ø14 mm [dia. 0.55 in]	Ø14 mm [dia. 0.55 in]	500 [7 251]
B	HP/LP connection	Ø14 mm [dia. 0.55 in]	Ø14 mm [dia. 0.55 in]	Ø14 mm [dia. 0.55 in]	500 [7 251]
T	Tank connection	Ø10 mm [dia. 0.39 in]	Ø10 mm [dia. 0.39 in]	Ø10 mm [dia. 0.39 in]	5 [72.5]
MA	Pressure measurement (A)	M14x1.5	G1/4 BSPP	9/16-18 UNF-2B	500 [7 251]
MB	Pressure measurement (B)				

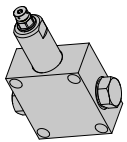


Dimensions with T port piped - optional

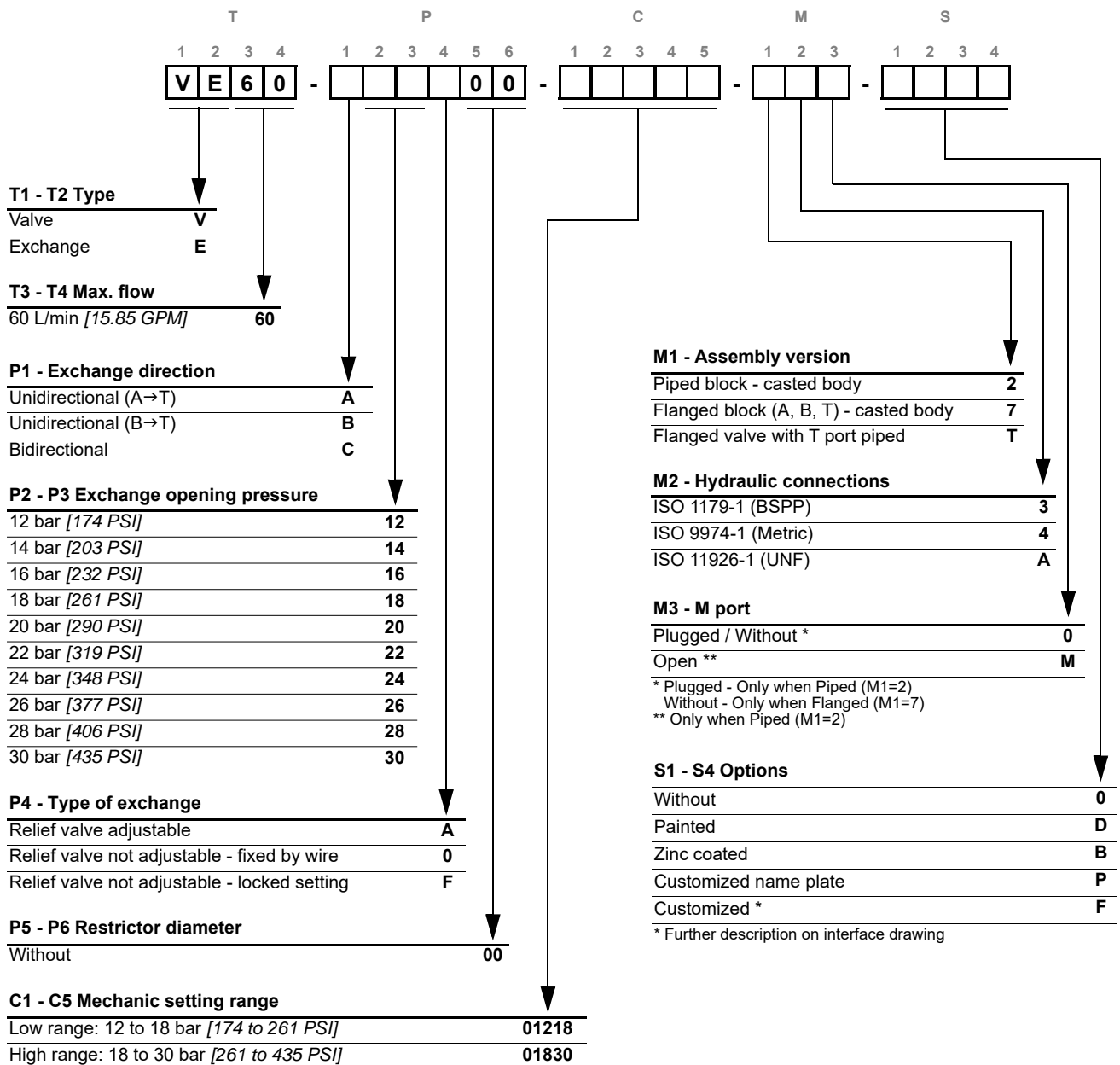


**Hydraulic connections**

Port	Function	Connection			Max. pressure bar [PSI]
		ISO 9974-1 (Metric) Type N	ISO 1179-1 (BSPP) Type N	ISO 11926-1 (UNF)	
A	HP/LP connection	Ø14 mm [dia. 0.55 in]	Ø14 mm [dia. 0.55 in]	Ø14 mm [dia. 0.55 in]	500 [7 251]
B	HP/LP connection				
T	Tank connection	M22x1.5	G1/2 BSPP	7/8-14 UNF-2B	5 [72.5]
MA	Pressure measurement (A)	M14x1.5	G1/4 BSPP	9/16-18 UNF-2B	500 [7 251]
MB	Pressure measurement (B)				



Model code

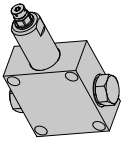


Exchange valve VE10

Exchange valve VE30

High performance exchange valve VE60

Exchange and high pressure relief valve VES60



# EXCHANGE AND HIGH PRESSURE RELIEF VALVE VES60

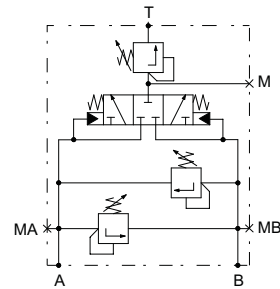
- Compact
- Adjustable
- Heavy duty
- Integrated High pressure relief valve



## Operation

Exchange valves are for use in bleeding hot oil from the low pressure side of a hydrostatic transmission circuit. The hot oil can be cooled, filtered or used as a source of oil for flushing other pump and motor case.

## Hydraulic symbol

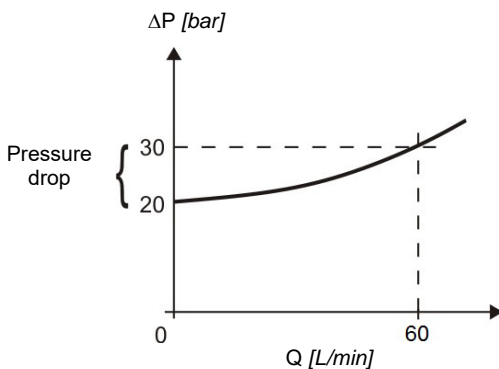


## Features

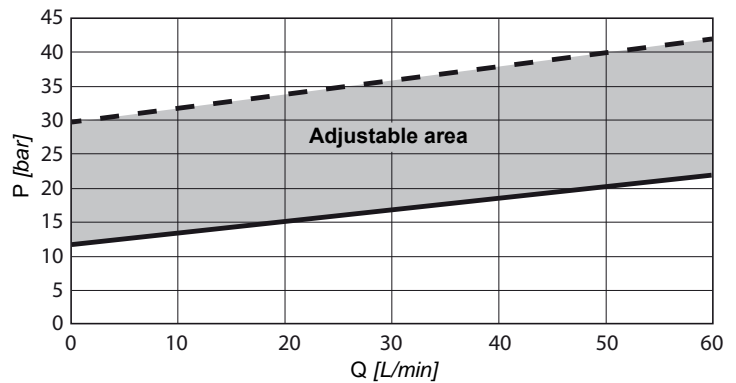
Max. pressure	bar [PSI]	450 [6 526]
Exchange relief valve setting	bar [PSI]	12 to 30 [174 to 435]
Selector spool switching pressure	bar [PSI]	8 [116]
Exchange flow (10 bar [145 PSI] ΔP)	L/min [GPM]	60 [15.9]
Exchange direction		Forward and/or reverse
Type of hydraulic connections		ISO 1179-1 (BSPP) / ISO 9974-1 (Metric) / ISO 11926-1 (UNF)
Mass	kg [lbs]	7,3 [16.09]

## Pressure drop

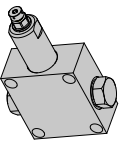
Example: relief valve set at 20 bar [290 PSI]



## ΔP-Q Performance curves

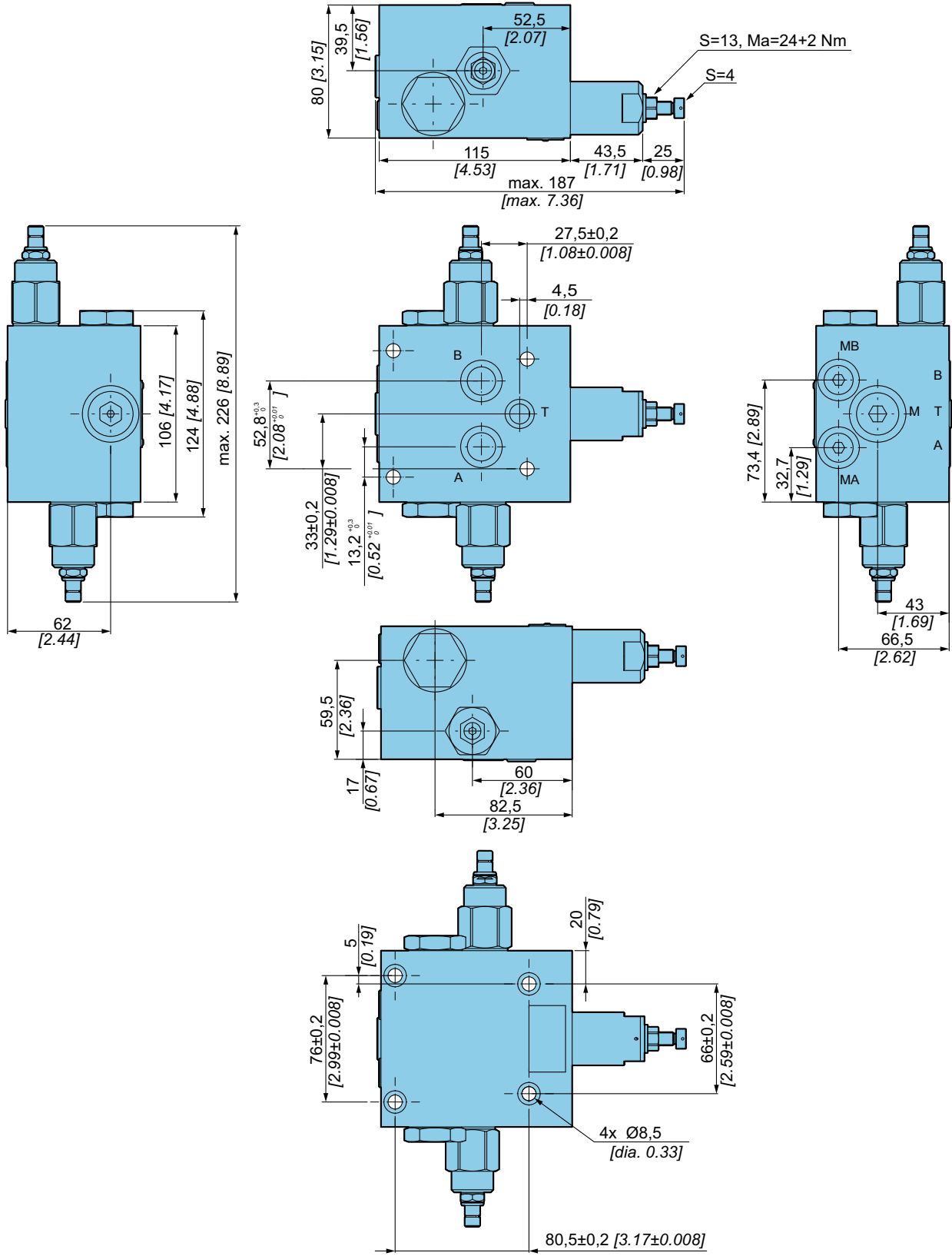


--- A, B to T - 30 bar [435 PSI]  
 ——— A, B to T - 12 bar [173 PSI]



Dimensions for VES60 flanged version

T					P				C	A			B			M			S			
1	2	3	4	5	1	2	3	4	1	1	2	3	1	2	3	1	2	3	1	2	3	4
V	E	S	6	0												6						

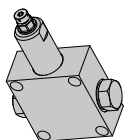


Exchange valve VE10

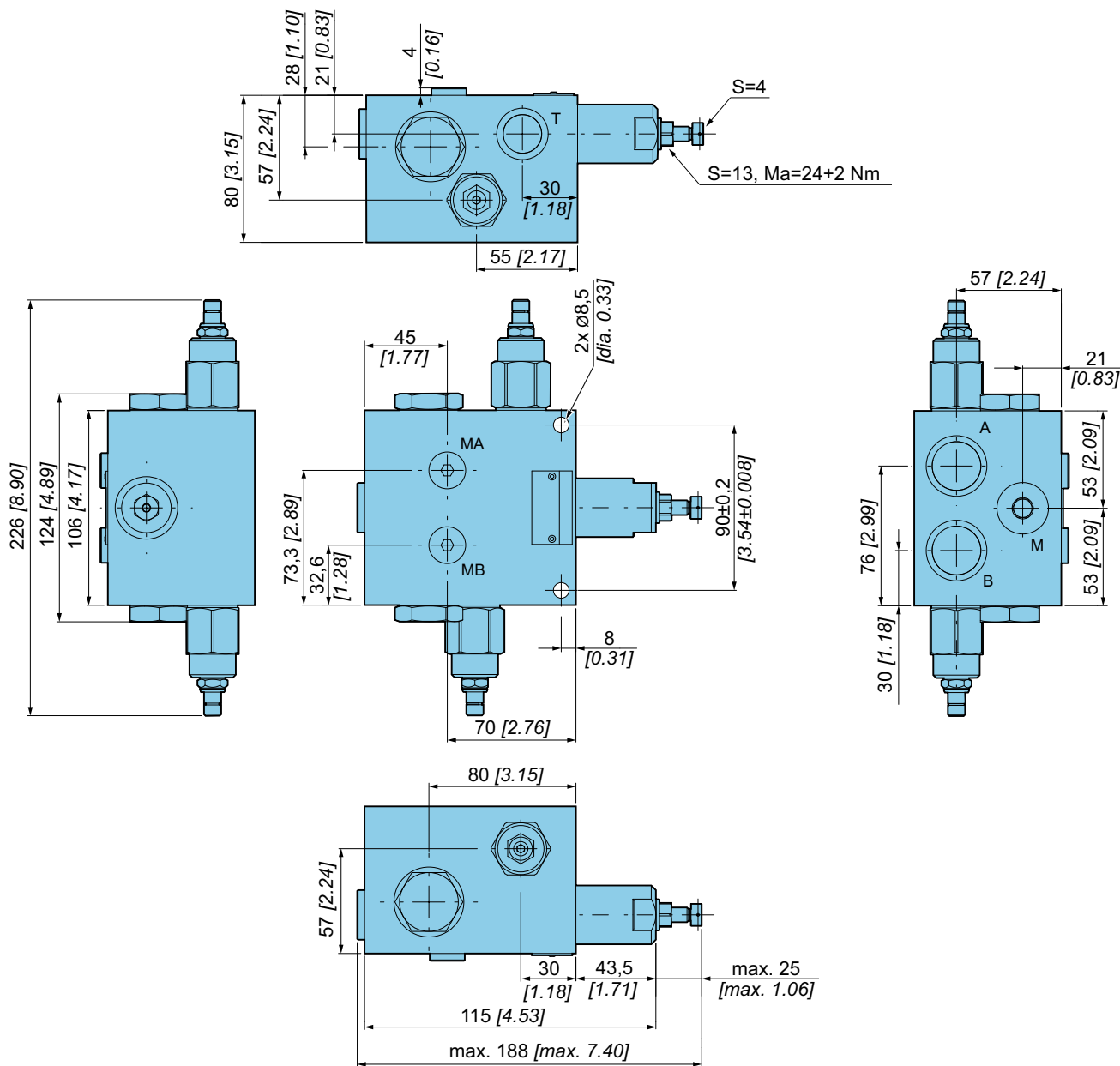
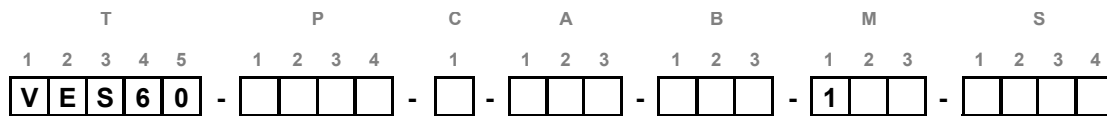
Exchange valve VE30

High performance exchange valve VE60

Exchange and high pressure relief valve VES60

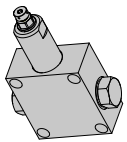


Dimensions for VES60 piped version

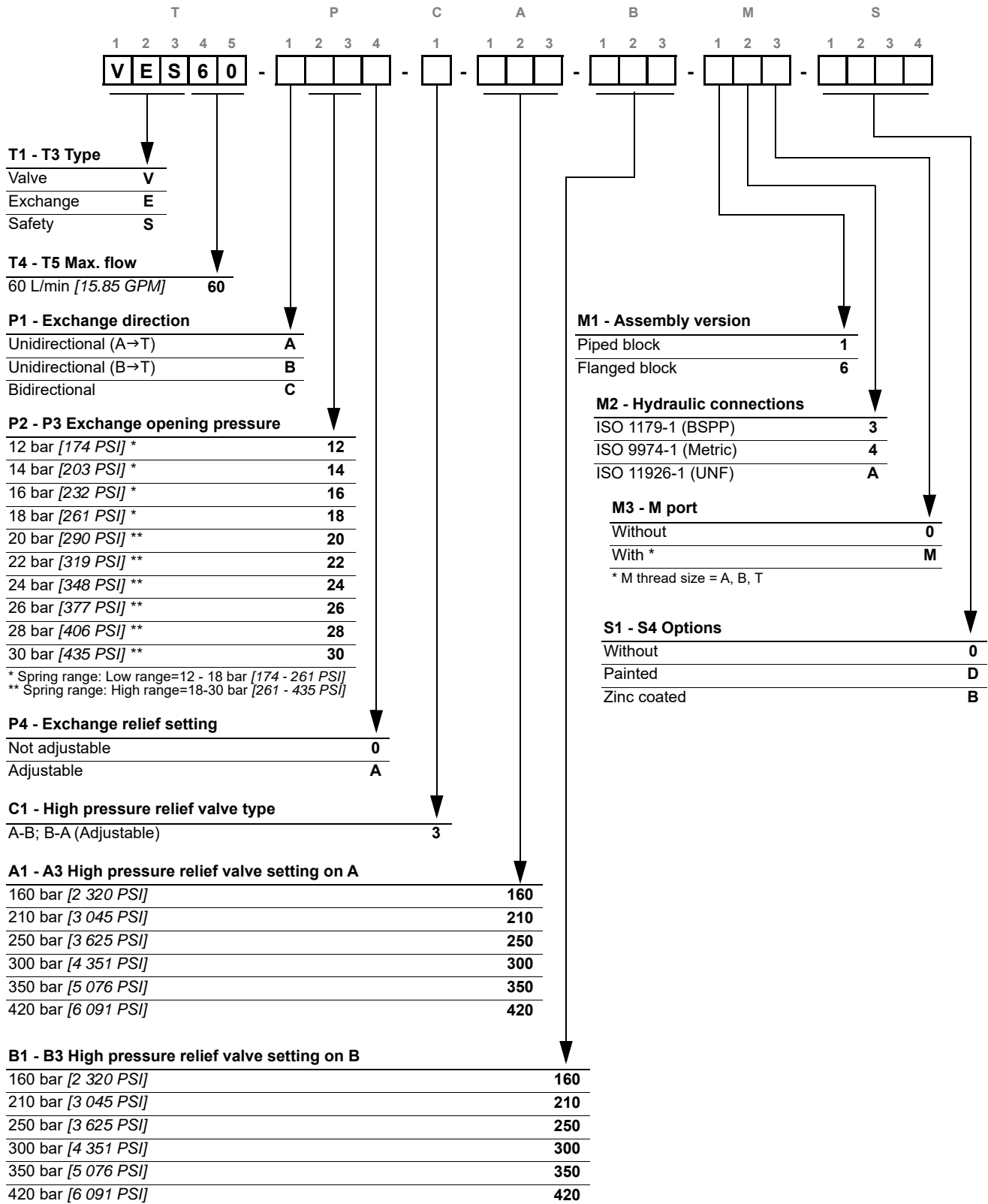


Hydraulic connections

Port	Function	Connection			Max. pressure bar [PSI]
		ISO 1179-1 (BSPP) Type N	ISO 9974-1 (Metric) Type N	ISO 11926-1 (UNF)	
A	HP/LP connection	G3/4	M27x2	1 1/16-12 UNF-2B	450 [6 526]
B	HP/LP connection				
T	Tank connection	G1/2	M22x1.5	7/8-14 UNF-2B	5 [72.5]
MA	Pressure measurement (A)	G1/4	M14x1.5	9/16-18 UNF-2B	450 [6 526]
MB	Pressure measurement (B)				
M	Pressure measurement of service connection	G1/2	M22x1.5	7/8-14 UNF-2B	450 [6 526]



Model code



**T1 - T3 Type**

Valve	V
Exchange	E
Safety	S

**T4 - T5 Max. flow**

60 L/min [15.85 GPM]	60
----------------------	----

**P1 - Exchange direction**

Unidirectional (A→T)	A
Unidirectional (B→T)	B
Bidirectional	C

**P2 - P3 Exchange opening pressure**

12 bar [174 PSI] *	12
14 bar [203 PSI] *	14
16 bar [232 PSI] *	16
18 bar [261 PSI] *	18
20 bar [290 PSI] **	20
22 bar [319 PSI] **	22
24 bar [348 PSI] **	24
26 bar [377 PSI] **	26
28 bar [406 PSI] **	28
30 bar [435 PSI] **	30

\* Spring range: Low range=12 - 18 bar [174 - 261 PSI]  
 \*\* Spring range: High range=18-30 bar [261 - 435 PSI]

**P4 - Exchange relief setting**

Not adjustable	0
Adjustable	A

**C1 - High pressure relief valve type**

A-B; B-A (Adjustable)	3
-----------------------	---

**A1 - A3 High pressure relief valve setting on A**

160 bar [2 320 PSI]	160
210 bar [3 045 PSI]	210
250 bar [3 625 PSI]	250
300 bar [4 351 PSI]	300
350 bar [5 076 PSI]	350
420 bar [6 091 PSI]	420

**B1 - B3 High pressure relief valve setting on B**

160 bar [2 320 PSI]	160
210 bar [3 045 PSI]	210
250 bar [3 625 PSI]	250
300 bar [4 351 PSI]	300
350 bar [5 076 PSI]	350
420 bar [6 091 PSI]	420

**M1 - Assembly version**

Piped block	1
Flanged block	6

**M2 - Hydraulic connections**

ISO 1179-1 (BSPP)	3
ISO 9974-1 (Metric)	4
ISO 11926-1 (UNF)	A

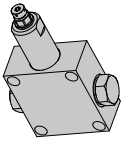
**M3 - M port**

Without	0
With *	M

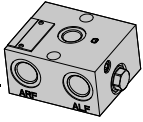
\* M thread size = A, B, T

**S1 - S4 Options**

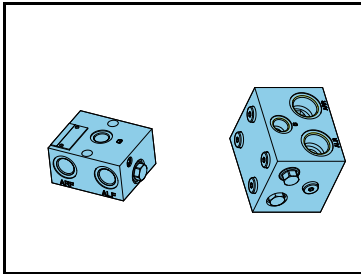
Without	0
Painted	D
Zinc coated	B







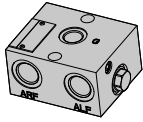
# SERIAL PROTECTION VALVES



Serial protection valve SP-110/160

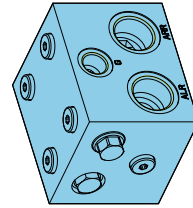
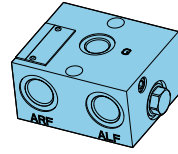
34

Serial protection valve SP-110/160



## SERIAL PROTECTION VALVE SP-110/SP-160

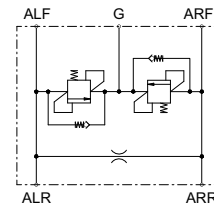
- Compact
- Adjustable
- Heavy duty
- Integrated High pressure relief valve



### Operation

Serial protection valves connect motors in serial line and provides protection of the motors against cavitation and overpressure.

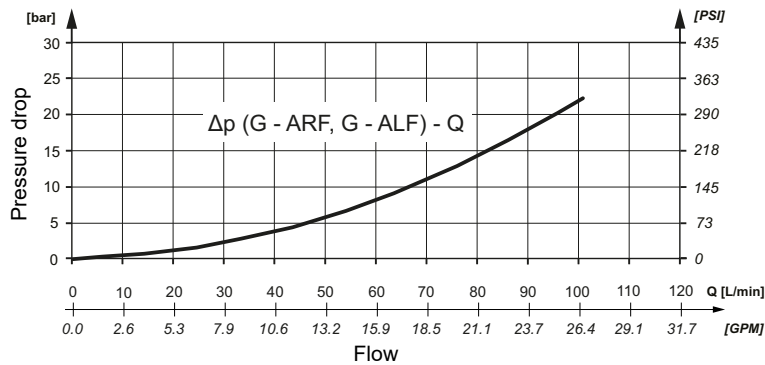
### Hydraulic symbol



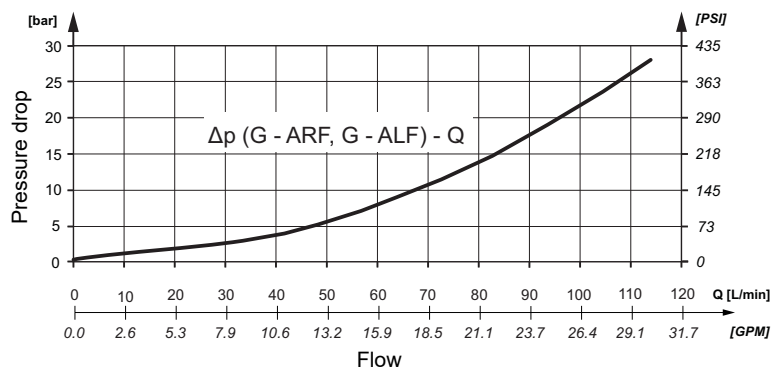
### Features

		SP-110	SP-160
Max. pressure	bar [PSI]		420 [6 092]
Max. flow - serial line	L/min [GPM]	110 [29.1]	160 [42.3]
Max. flow - cross line		63 [16.6]	75 [19.8]
Pressure relief setting		fix (up to 420 bar)	
Type of hydraulic connections		ISO 11926-1 (UNF) / ISO 1179-1 (BSPP)	
Mass	kg [lbs]	1,8 [3.97]	7,0 [15.43]

### ΔP-Q Performance curve SP-110 valve

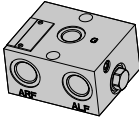


### ΔP-Q Performance curve SP-160 valve

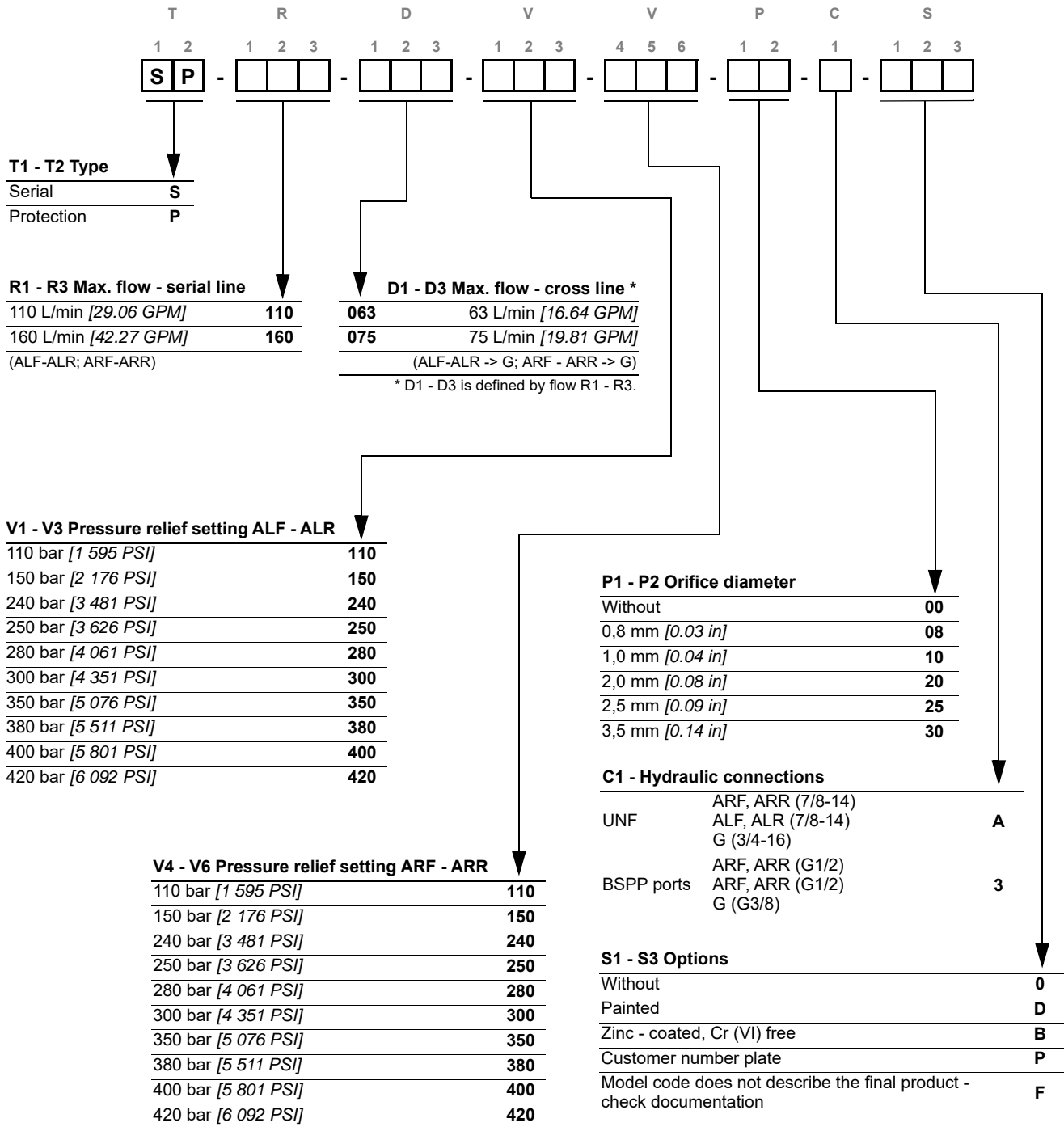




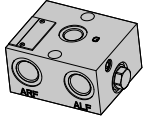


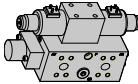


Model code



Serial protection valve SP-110/160





# FREEWHEELING VALVES



Freewheeling valve VDF H15

41

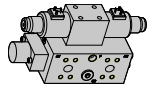
Freewheeling valve VDF H15



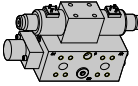
Freewheeling valve VDF H25

45

Freewheeling valve VDF H25







## FREEWHEELING VALVE VDF H15

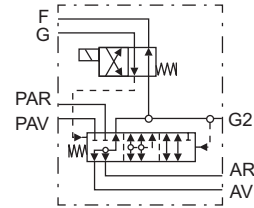
- Free-wheeling
- Heavy duty
- Reliable



### Operation

The free-wheeling valve allows to disengage the hydraulic motor by allowing the pistons to return in cylinder-blocks and the motor to turn in freewheeling mode. It prevents contacts of camring and pistons at high speed.

### Hydraulic symbol



### Features

#### Hydraulic

<b>Max. pressure</b>	bar [PSI]	450 [6 526]
<b>Nominal flow range</b>	L/min [GPM]	50 to 95 [13.20 to 25]
<b>Min. control pressure</b>	bar [PSI]	10 [145]
<b>Type of hydraulic connections</b>	ISO 1179-1 (BSPP) / ISO 9974-1 (Metric) / ISO 11926-1 (UNF)	

#### Mass

• without pilot valve		11,8 [26.01]
• with pilot valve: 2 positions	kg [lb]	18,3 [40.34]
• with pilot valve: 3 positions		19,1 [42.10]

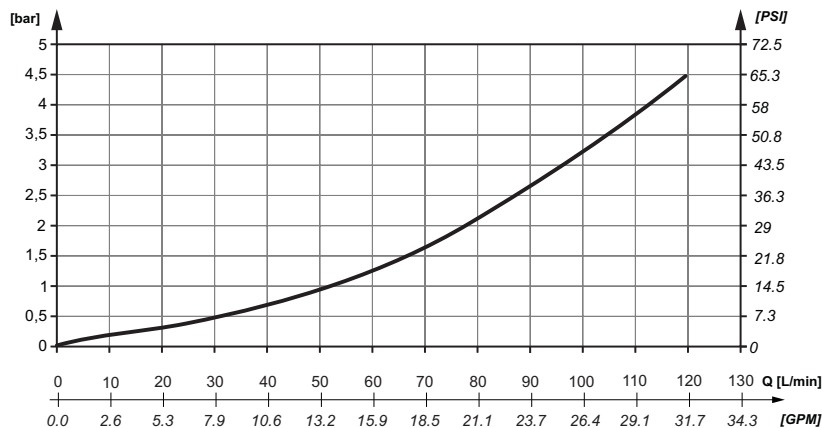
<b>Fluid temperature</b>	°C [°F]	-20 to +90 [-4 to -200]
<b>Fluid viscosity</b>	mm <sup>2</sup> /s [ssu]	15 to 380 [69.5 to 1 760]
<b>Fluid contamination</b>	ISO 4406	18/16/13

#### Electrical

<b>Solenoid supply voltage</b>	V direct	12/24V
	V alternative	110V
<b>Solenoid duty cycle</b>	Continuous	
<b>Max. ambient temperature</b>	°C [°F]	50 [122]

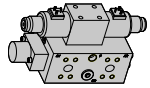
### Pressure drop

Measured at 50 °C [122 °F] and viscosity of 32 mm<sup>2</sup>/s [148 SSU].

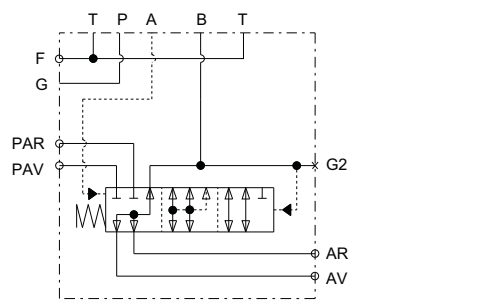
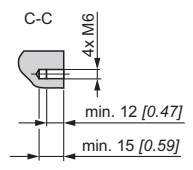
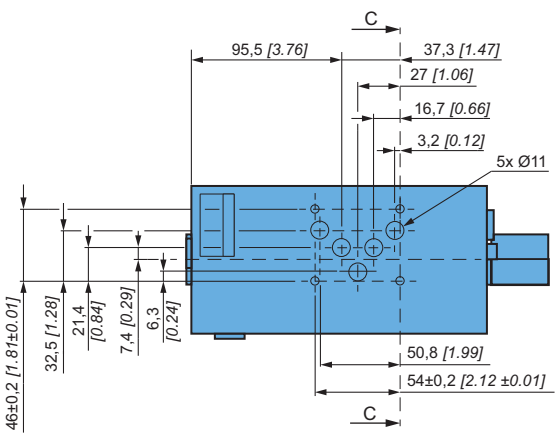
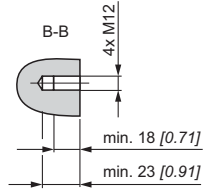
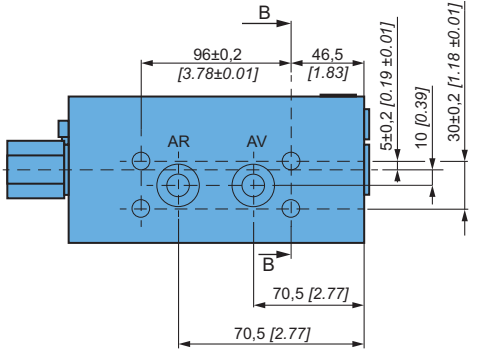
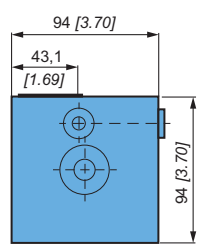
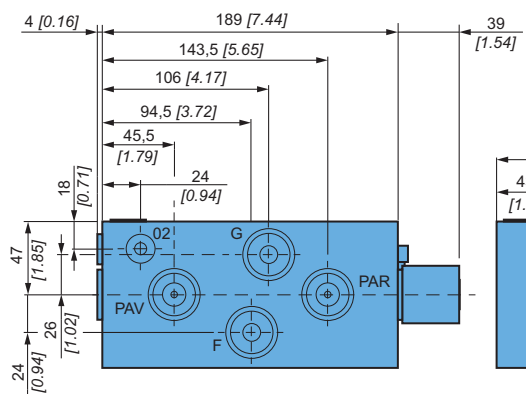
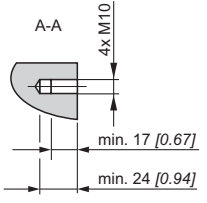
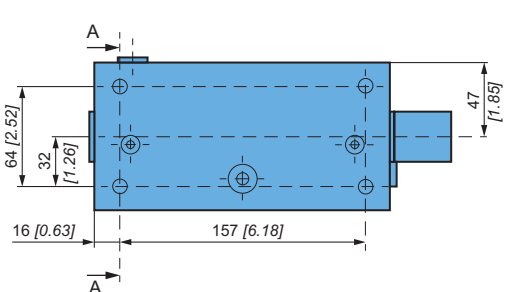
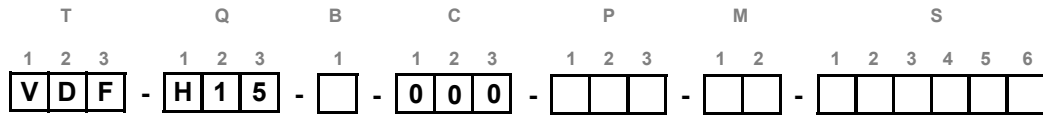


Freewheeling valve VDF H15

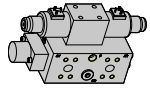
Freewheeling valve VDF H25



Dimensions without pilot valve







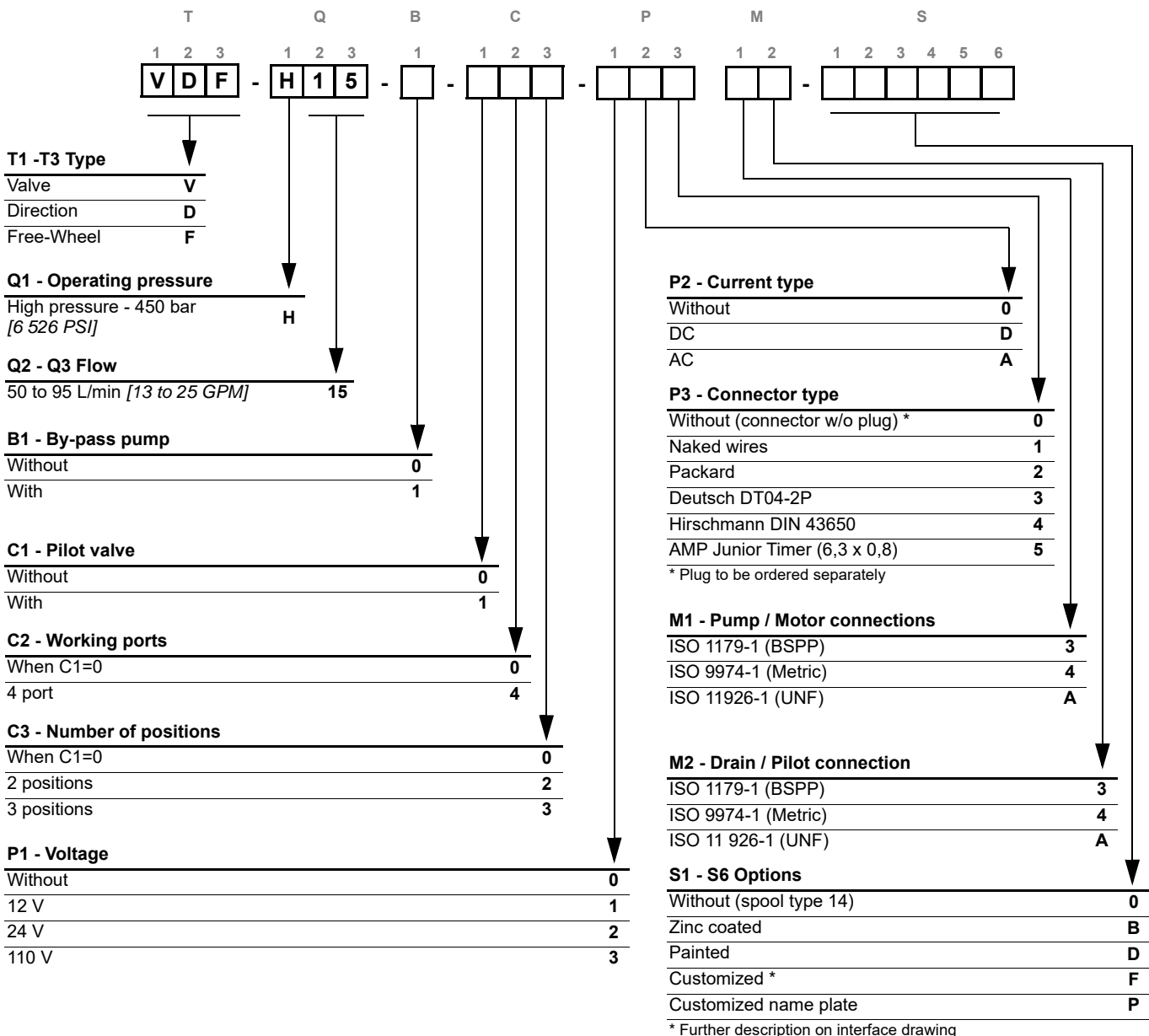
Hydraulic connections						
Port	Function	Connections			Max. pressure bar [PSI]	Min. pressure bar [PSI]
		ISO 1179-1 (BSPP)	ISO 9974-1 (Metric)	ISO 11926-1 (UNF)		
PAV-PAR	Input forward - Input reverse forward	G27 (G3/4)	M27x2	1 1/16-12 UNF-2B	450 [6 526]	
AV-AR	Output forward - Output reverse forward	G27 (G3/4)	M27x2	1 1/16-12 UNF-2B	450 [6 526]	
F	Drain	G27 (G3/4)	M27x2	1 1/16-12 UNF-2B	50 [725]	
G	Pilot	G27 (G3/4)	M27x2	1 1/16-12 UNF-2B	50 [725]	10 [145]
G2	Pilot	G13 (G1/4)	M14x1.5	9/16-18 UNF-2B	50 [725]	

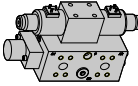
**Installation**

Mounting position: Indifferent



**Model code**





## FREEWHEELING VALVE VDF H25

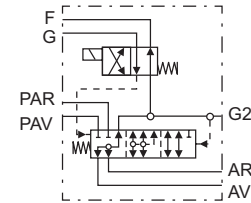
- Free-wheeling
- Heavy duty
- Reliable



### Operation

The free-wheeling valve allows to disengage the hydraulic motor by allowing the pistons to return in cylinder-blocks and the motor to turn in freewheeling mode. It prevents contacts of camring and pistons at high speed.

### Hydraulic symbol



### Features

#### Hydraulic

<b>Max. pressure</b>	bar [PSI]	450 [6 526]
<b>Nominal flow range</b>	L/min [GPM]	170 to 300 [44.90 to 79.25]
<b>Min. control pressure</b>	bar [PSI]	10 [145]
<b>Type of hydraulic connections</b>	ISO 1179-1 (BSPP); ISO 9974-1 (Metric) / ISO 11926-1 (UNF) / ISO 6162 (Bride SAE)	

#### Mass

• without pilot valve		32 [70.5]
• with pilot valve: 2 positions	kg [lb]	38,5 [84.9]
• with pilot valve: 3 positions		39,3 [86.6]

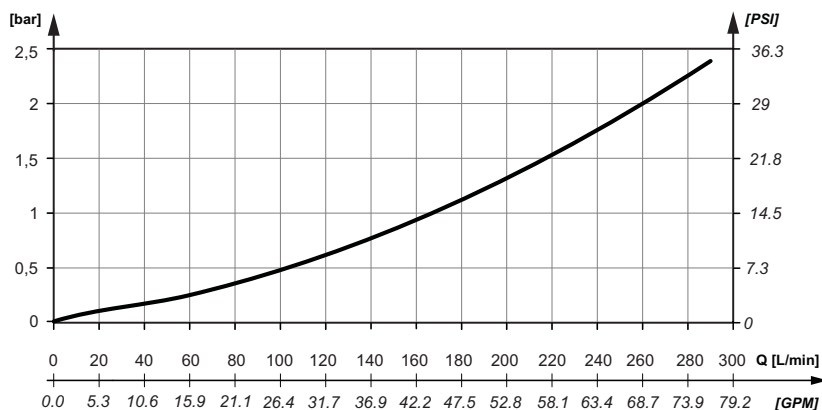
<b>Fluid temperature</b>	°C [°F]	-20 to +90 [-4 to -200]
<b>Fluid viscosity</b>	mm <sup>2</sup> /s [ssu]	15 to 380 [69.5 to 1 760]
<b>Fluid contamination</b>	ISO 4406	18/16/13

#### Electrical

<b>Solenoid supply voltage</b>	V direct	12/24V
	V alternative	110V
<b>Solenoid duty cycle</b>		Continuous
<b>Max. ambient temperature</b>	°C [°F]	50 [122]

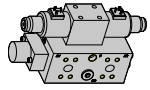
### Pressure drop

Measured at 50 °C [122 °F] and viscosity of 32 mm<sup>2</sup>/s [148 SSU].

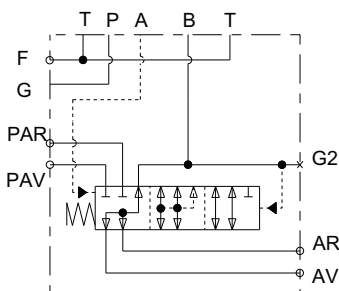
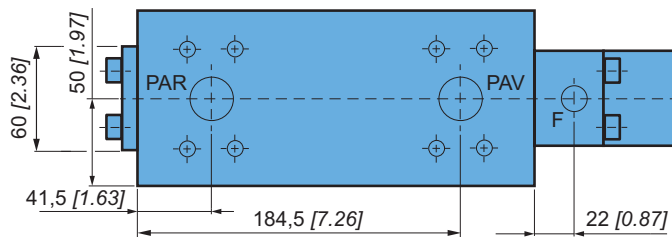
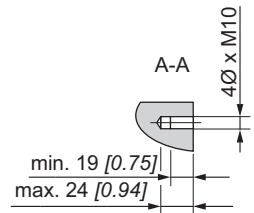
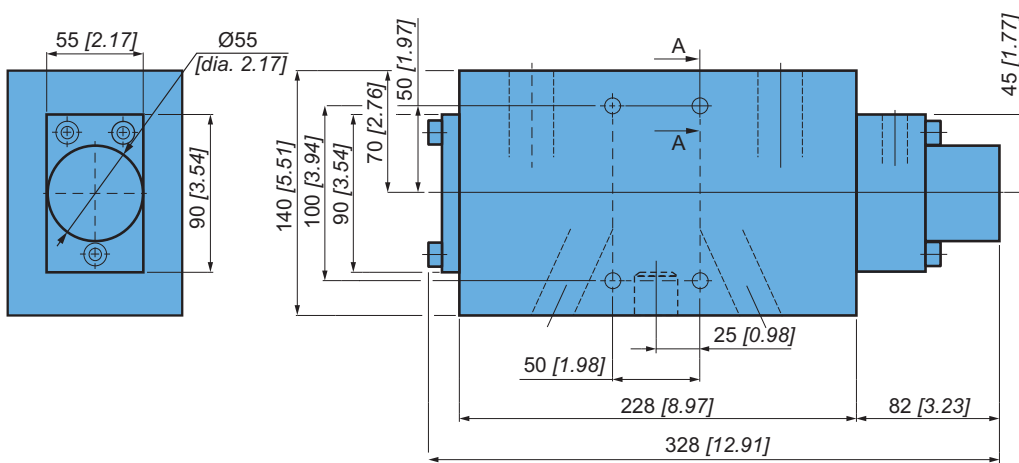
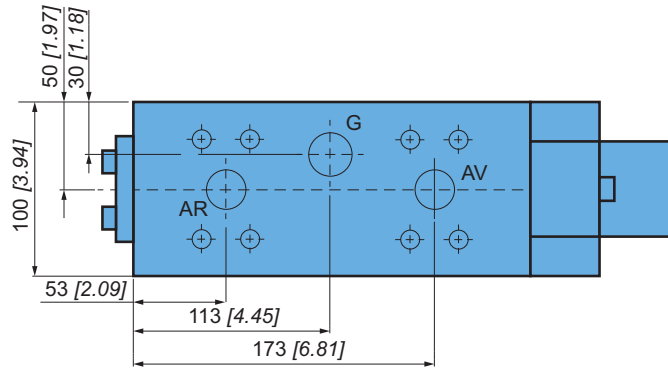
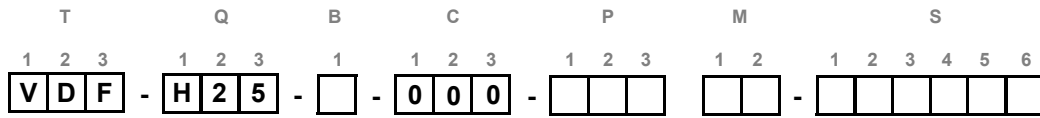


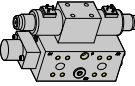
Freewheeling valve VDF H15

Freewheeling valve VDF H25

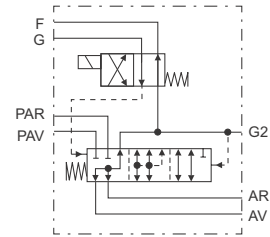
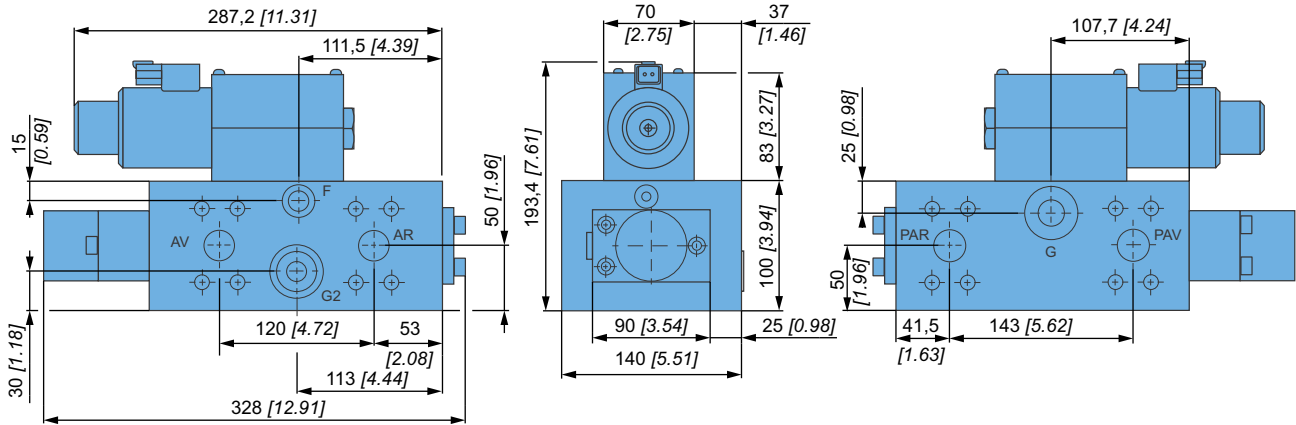
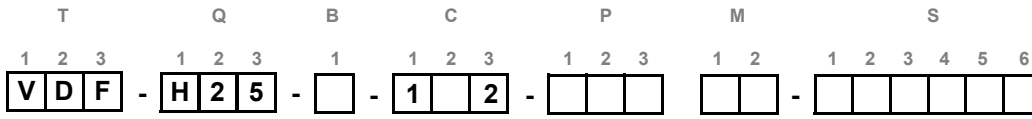


Dimensions without pilot valve



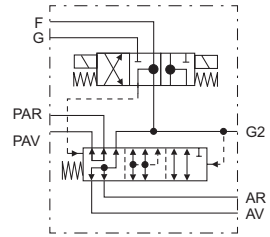
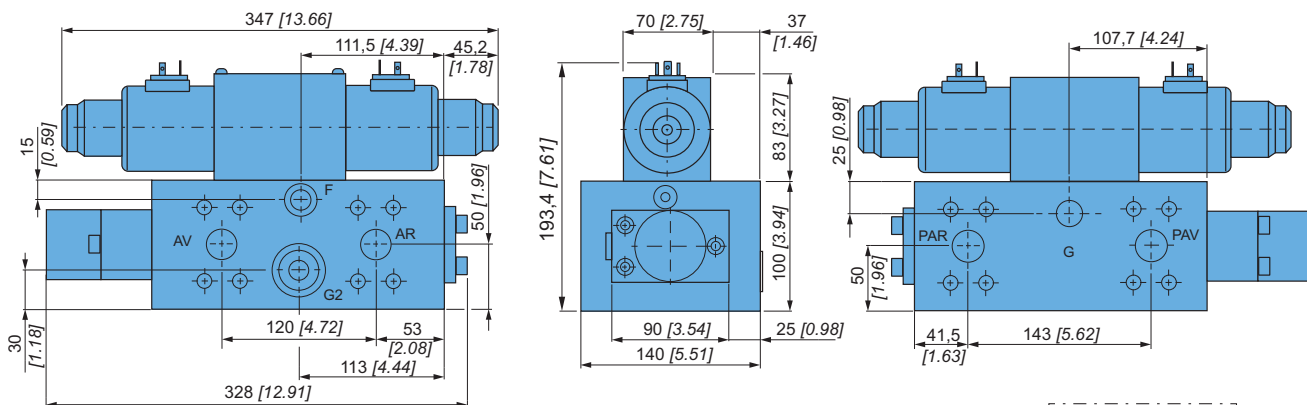
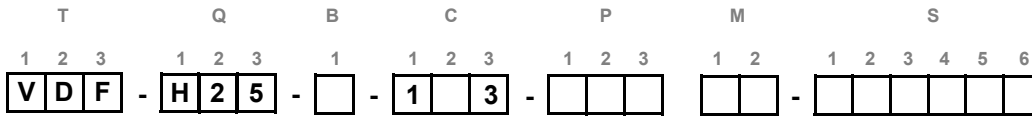


**Dimensions with pilot valve (two positions)**

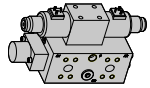


Freewheeling valve VDF H15

**Dimensions with pilot valve (three positions)**



Freewheeling valve VDF H25



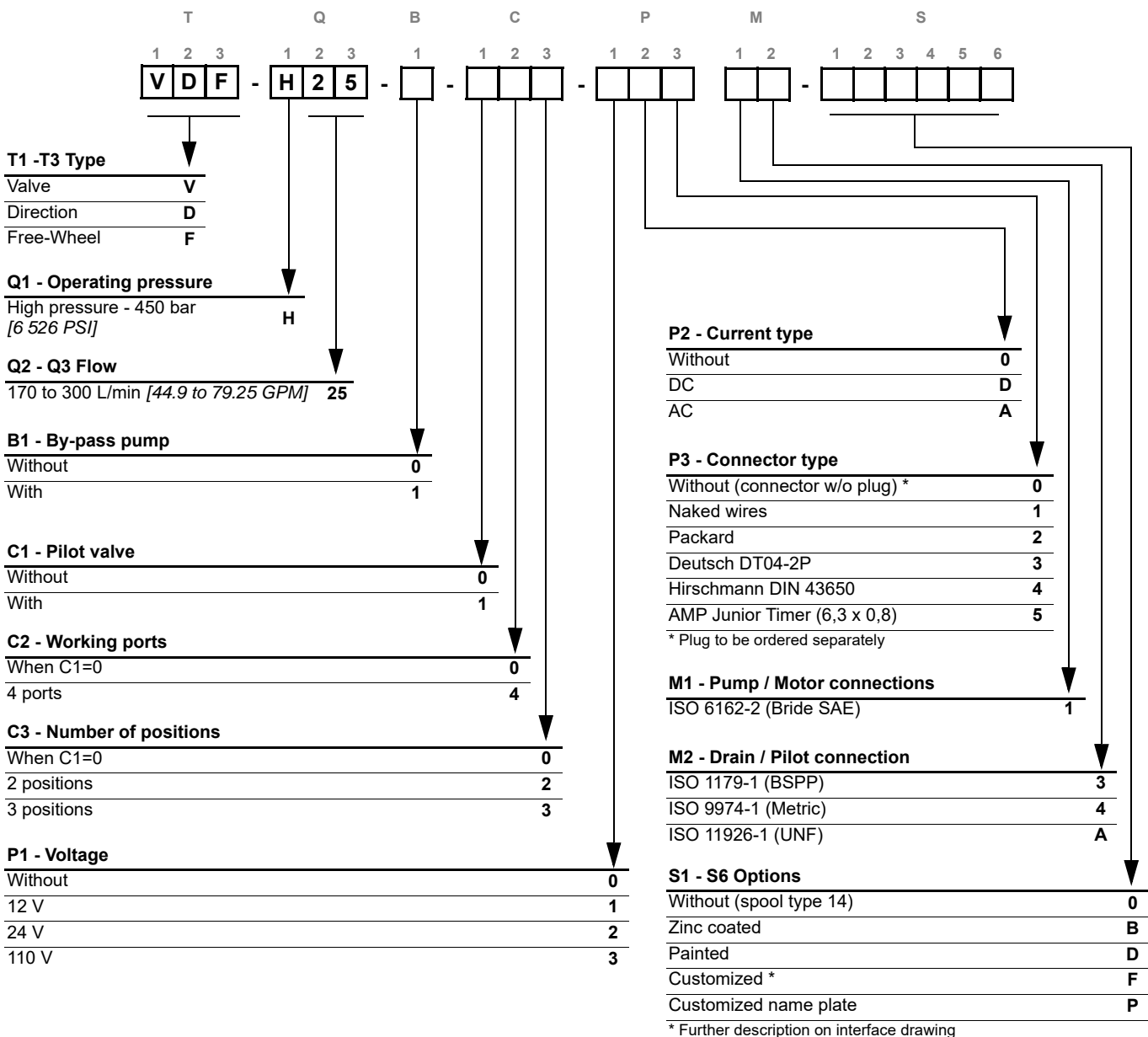
Hydraulic connections							
Port	Function	Connections				Max. pressure bar [PSI]	Min. pressure bar [PSI]
		ISO 1179-1 (BSPP)	ISO 6162 (Bride SAE)	ISO 9974-1 (Metric)	ISO 11926-1 (UNF)		
PAV-PAR	Input forward - Input reverse forward	DN 25 PN400	DN 25 PN400	DN 25 PN400	DN 25 PN400	450 [6 526]	
AV-AR	Output forward- Output reverse forward	DN 25 PN400	DN 25 PN400	DN 25 PN400	DN 25 PN400	450 [6 526]	
F	Drain	G13 (G3/4)		M22x1.5	9/16-18 UNF-2B	50 [725]	
G	Pilot	G27 (G3/4)		M22x1.5	1 1/16-12 UNF-2B	50 [725]	10 [145]
G2	Pilot	G27 (G1/4)		M22x1.5	1 1/16-12 UNF-2B	50 [725]	

**Installation**

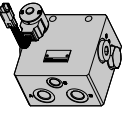
Mounting position: Indifferent

	Class		N.m [lb.ft]	(*) As per standard DIN 912
4xM10	8.8		49 [36]	

**Model code**







# FLOW DIVIDERS



2 way Flow divider FD-M2

51

2 way Flow divider FD-M2



3/4 way Flow dividers FD-M3/FD-M4

56

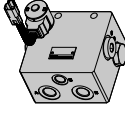
3/4 way Flow dividers FD-M3/ FD-M4

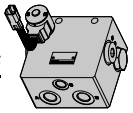


2 way Heavy duty Flow Divider FD-H2

63

2 way Heavy duty Flow divider FD-H2





## 2 WAY FLOW DIVIDER FD-M2

- Modular
- Compact
- Energy efficient



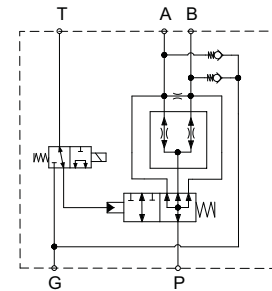
### Operation

FD-M2 is a two-way medium-duty flow divider that assures parallel operation of wheels of the same axle or between different axles by dividing or combining the flow. It can operate in open or closed loop circuits. FD-M2 is equipped with normally opened by-pass that can be controlled electric or hydraulic.



If you have to add a flushing valve in a closed loop circuit equipped with a flow divider, you have to install the flushing valve between the pump and the flow divider.

### Hydraulic symbol



### Features

#### Hydraulic

Max. pressure	bar [PSI]	420 [6 092]
Max. flow	L/min [GPM]	150 [39.6]
Dividing/combining accuracy		from +/- 5% to +/- 10% according to flow range
Type of hydraulic connections		ISO 1179-1 (BSPP) / ISO 11926-1 (UNF)
Weight	kg [lbs]	7,9 [17.4]
Fluid temperature	°C [°F]	-20 to +90 [-4 to +200]
Fluid viscosity	mm <sup>2</sup> /s [SSU]	15 to 380 [69.5 to 1 760]
Fluid contamination	ISO 4401:1999	max 20/18/14

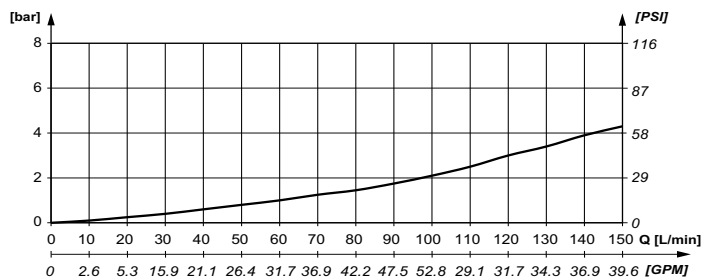
#### Electrical

Solenoid supply voltage	V DC	12, 24; ±10%
Solenoid power consumption	W	17,2 (12V DC), 16,6 (24V DC)
Solenoid duty cycle		100% ED
Max. ambient temperature	°C [°F]	70 [158]

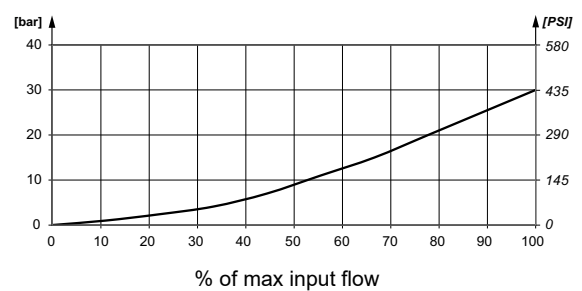
### Pressure drop

Measured at 50 °C [122 °F] and viscosity of 32 mm<sup>2</sup>/s [148 SSU].

#### By-pass mode



#### Divider mode



### Installation

Mounting position: Indifferent



2xM10

Class

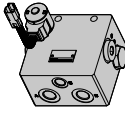
8.8



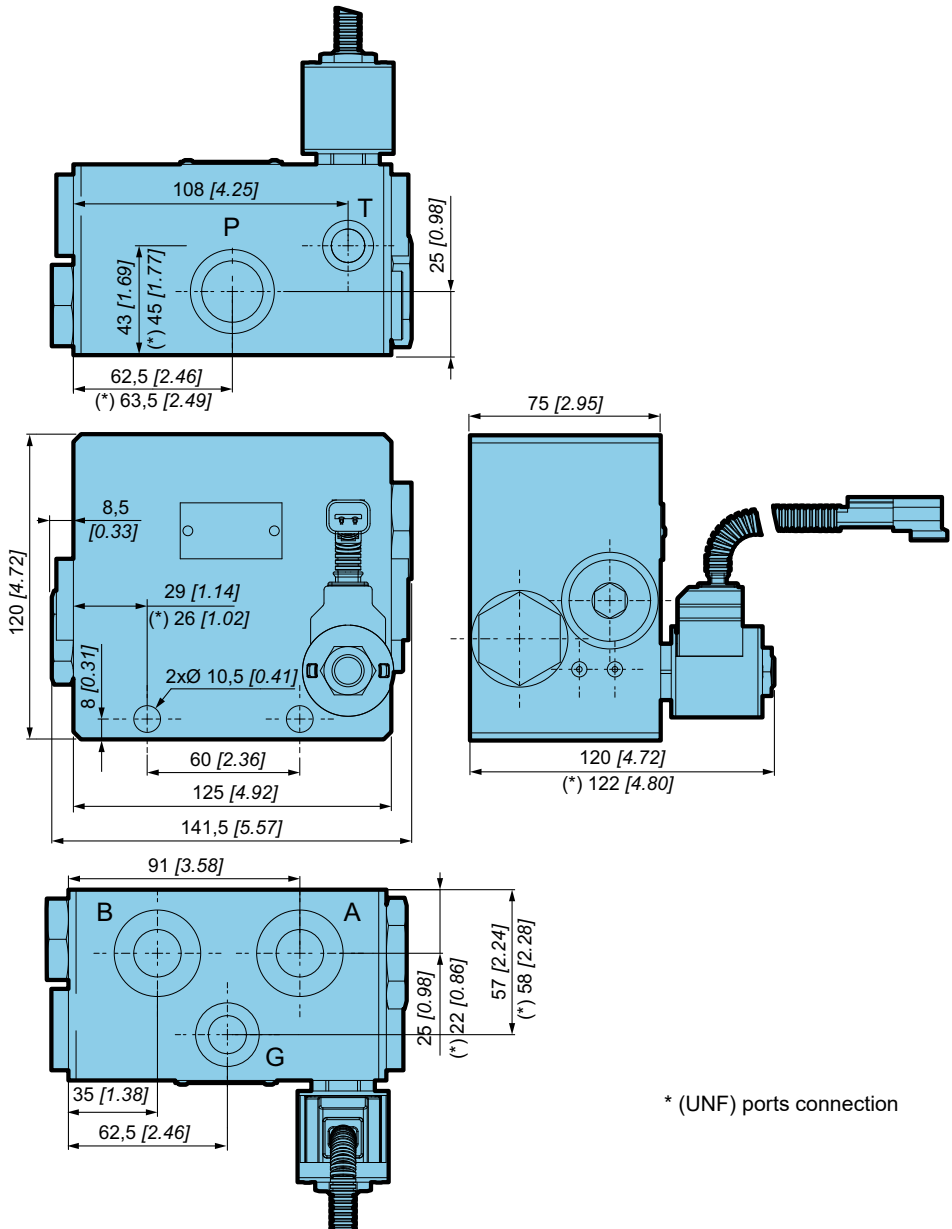
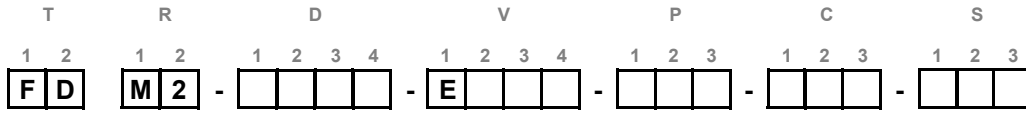
N.m [lb.ft]

49 [36]

(\* As per standard DIN 912



**Dimensions with electric by-pass control**

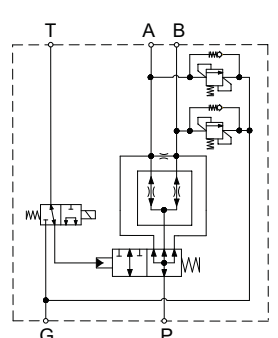
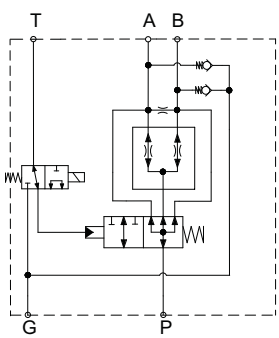


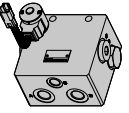
\* (UNF) ports connection

**Hydraulic schemes**

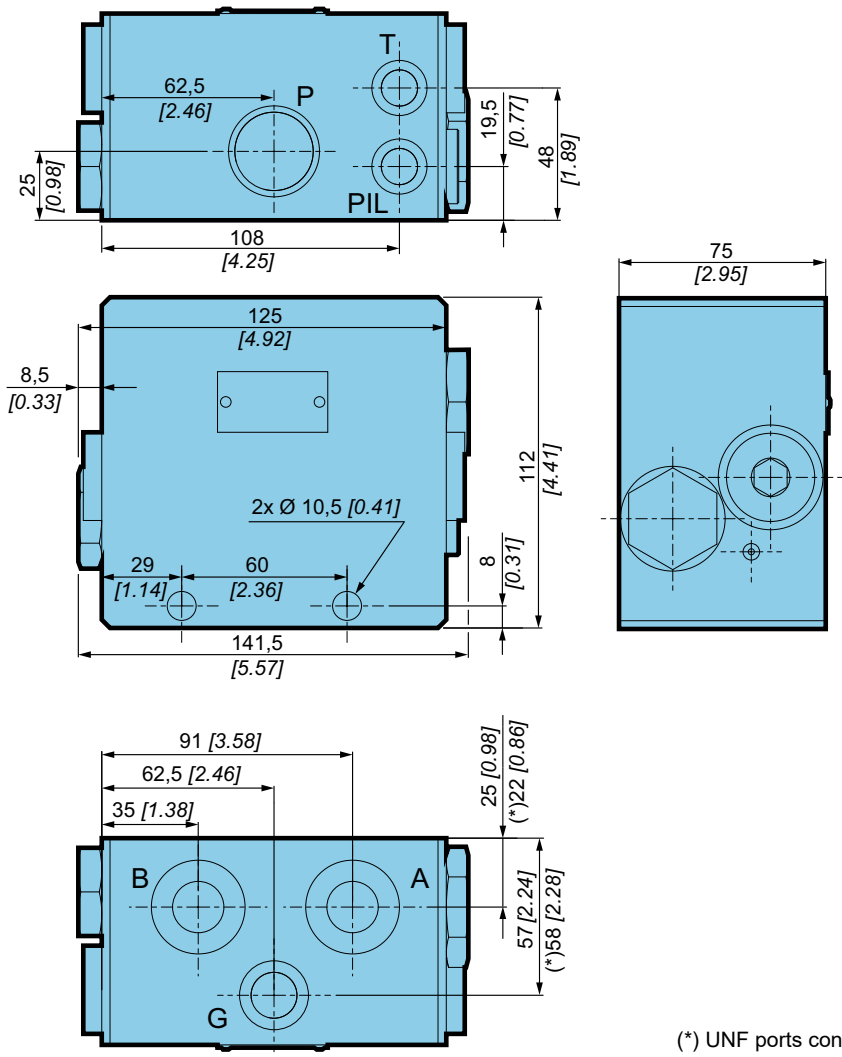
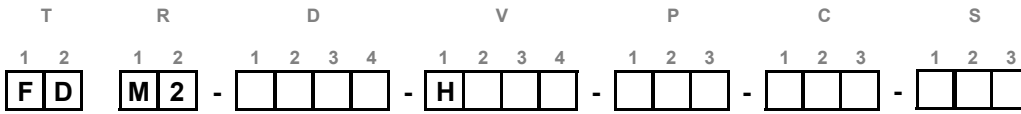
Electric by-pass with charge check valves

Electric by-pass control with charge and relief valves





Dimensions with hydraulic by-pass control



(\*) UNF ports connection

2 way Flow divider FD-M2

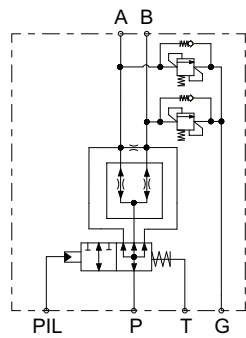
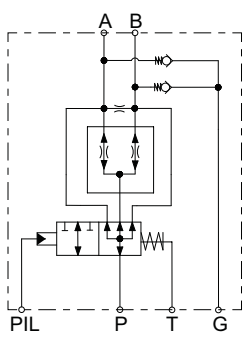
3/4 way Flow dividers FD-M3/ FD-M4

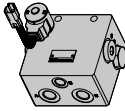
2 way Heavy duty Flow divider FD-H2

Hydraulic schemes

Hydraulic by-pass with charge check valves

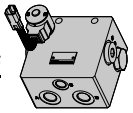
Hydraulic by-pass control with charge and relief valves



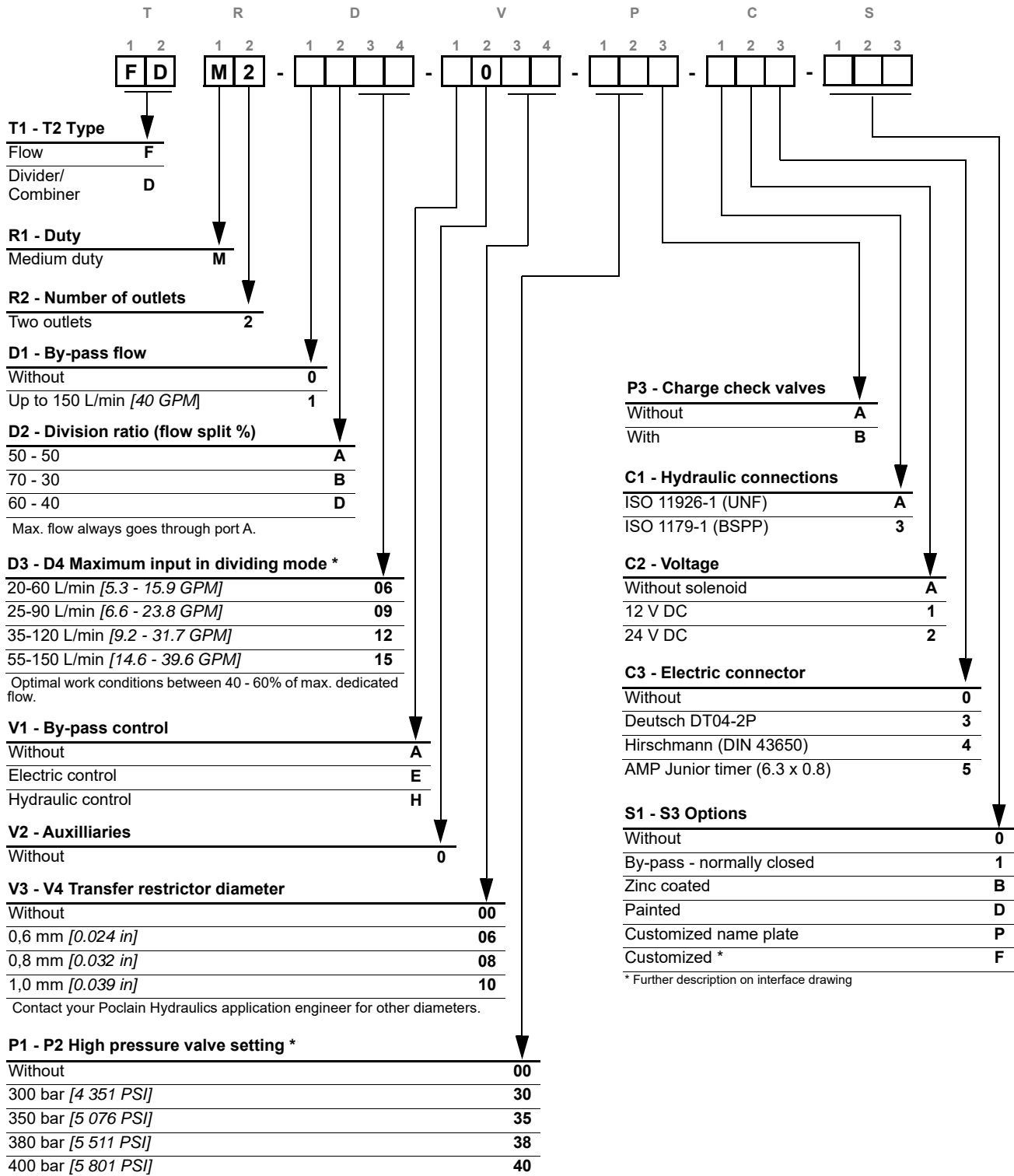


**Hydraulic connections**

Port	Function	Connection		Max. pressure bar [PSI]	Min. pressure bar [PSI]
		ISO 1179-1 (BSPP)	ISO 11 926-1 (UNF)		
P	Main flow inlet-outlet	G3/4	1 1/16-12 UNF-2B	420 [6 092]	
A B	Divided flow outlet - combined flow inlet	G1/2	7/8-14 UNF-2B	420 [6 092]	
G	Charge flow inlet	G3/8	3/4-16 UNF-2B	50 [725]	8 [116]
PIL	Pilot flow inlet (hydraulic by-pass only)	G1/4	9/16-18 UNF-2B	50 [725]	8 [116]
T	Drain	G1/4	9/16-18 UNF-2B	5 [73]	



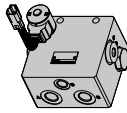
**Model code**



2 way Flow divider FD-M2

3/4 way Flow dividers FD-M3/ FD-M4

2 way Heavy duty Flow divider FD-H2



## 3/4 WAY FLOW DIVIDERS FD-M3/FD-M4

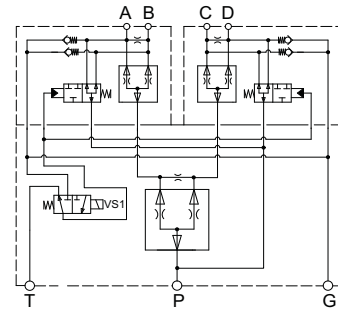
- Modular
- Compact
- Energy efficient



### Operation

FD-M4 (FD-M3) is a four (three) way medium-duty flow divider that assures parallel operation of wheels of the same axle or between different axles by dividing or combining the flow. It can operate in open or closed loop circuits. FD-M4 (FD-M3) is equipped with normally opened by-pass that can be electrically controlled.

### Hydraulic symbol



### Features

Hydraulic	FD-M3	FD-M4
Max. pressure	bar [PSI]	420 [6 092]
Max. pressure (with high pressure relief valve)	bar [PSI]	350 [5 076]
Max. flow	L/min [GPM]	150 [39.6]
Dividing/combining accuracy	from +/- 5% to +/- 10% according to flow range	
Type of hydraulic connections	ISO 1179-1 (BSPP)	ISO 1179-1 (BSPP) ISO 11926-1 (UNF)
Weight	kg [lbs]	from 13 [28.7] to 15 [33.1]
Fluid temperature	°C [°F]	-20 to +90 [-4 to +200]
Fluid viscosity	mm <sup>2</sup> /s [SSU]	15 to 380 [69.5 to 1 760]
Fluid contamination	ISO 4401:1999	max 20/18/14

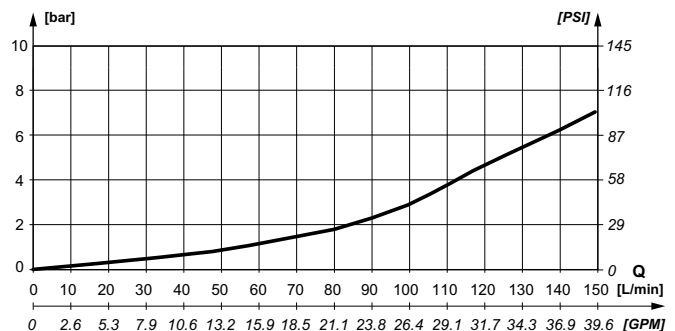
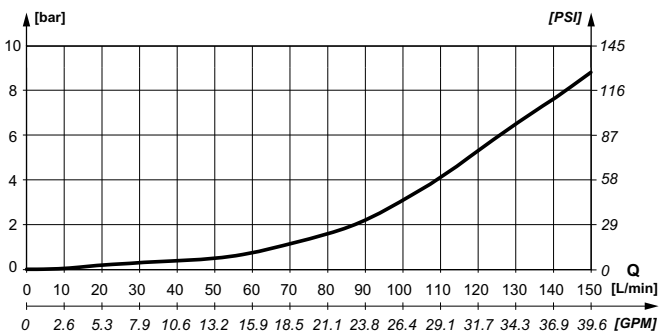
Electrical	FD-M3	FD-M4
Solenoid supply voltage	V DC	12, 24; ±10%
Solenoid power consumption	W	17,2 (12V DC), 16,6 (24V DC)
Solenoid duty cycle		100% ED
Max. ambient temperature	°C [°F]	70 [158]

### Pressure drop

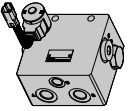
Measured at 50 °C [122 °F] and viscosity of 32 mm<sup>2</sup>/s [148 SSU].

#### By-pass mode FD-M3

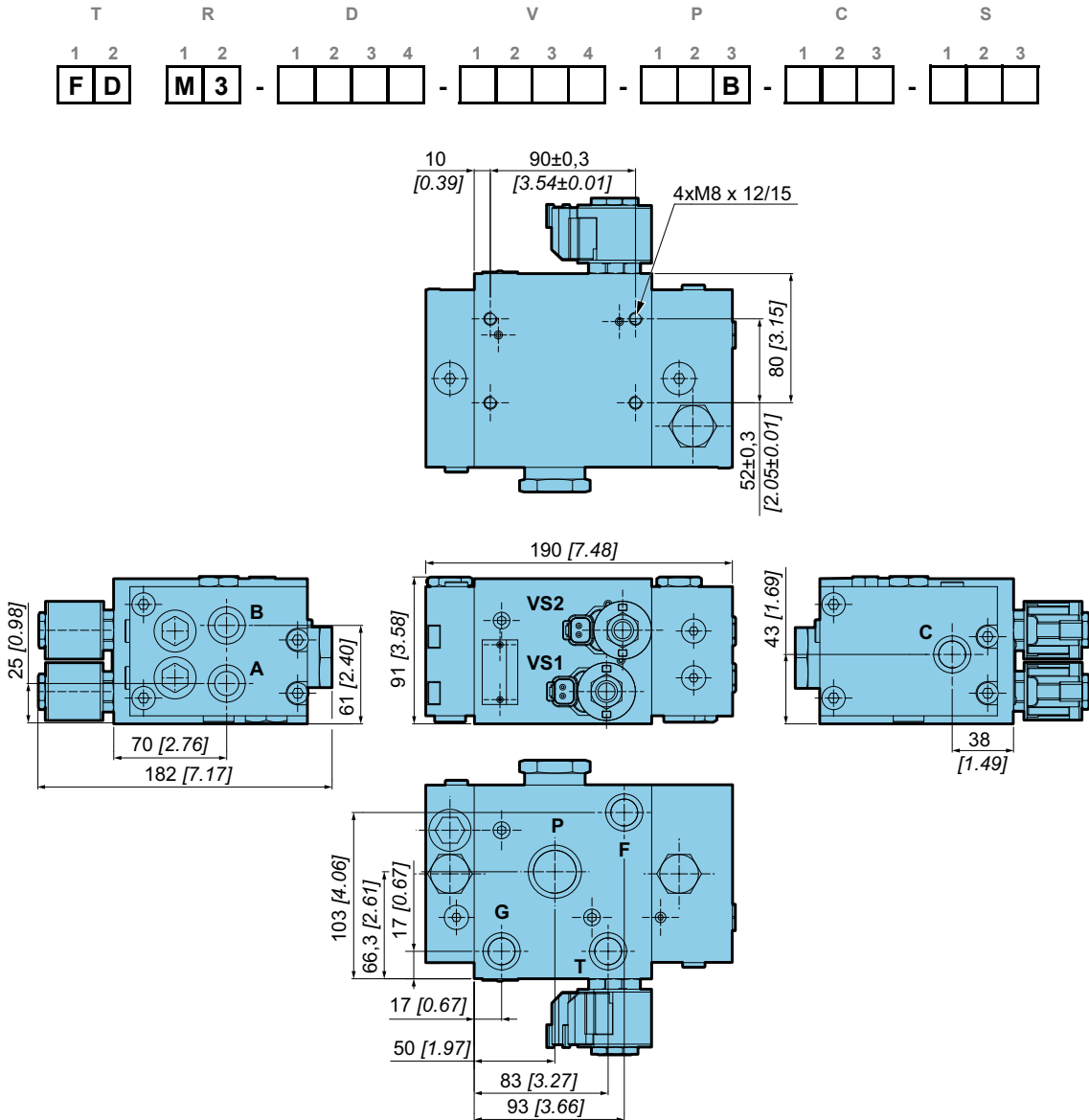
#### By-pass mode FD-M4







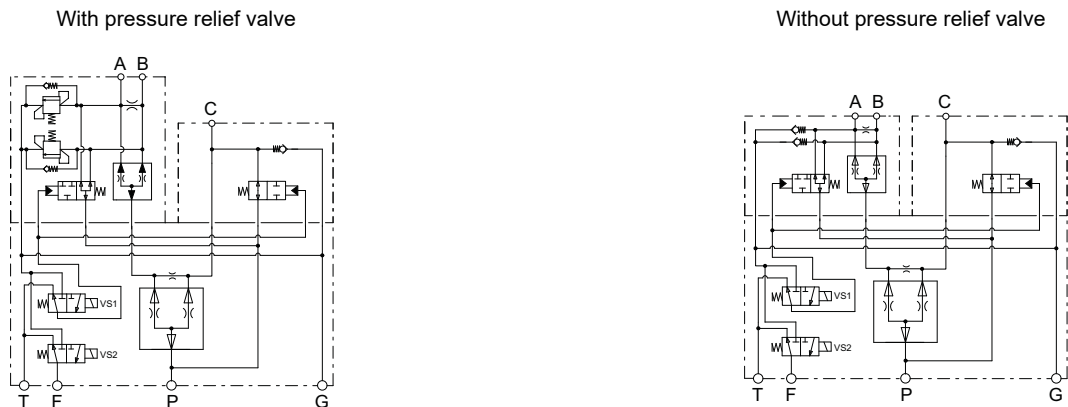
Dimensions with charge check and with or without pressure relief valve



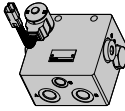
2 way Flow divider FD-M2

3/4 way Flow dividers FD-M3/ FD-M4

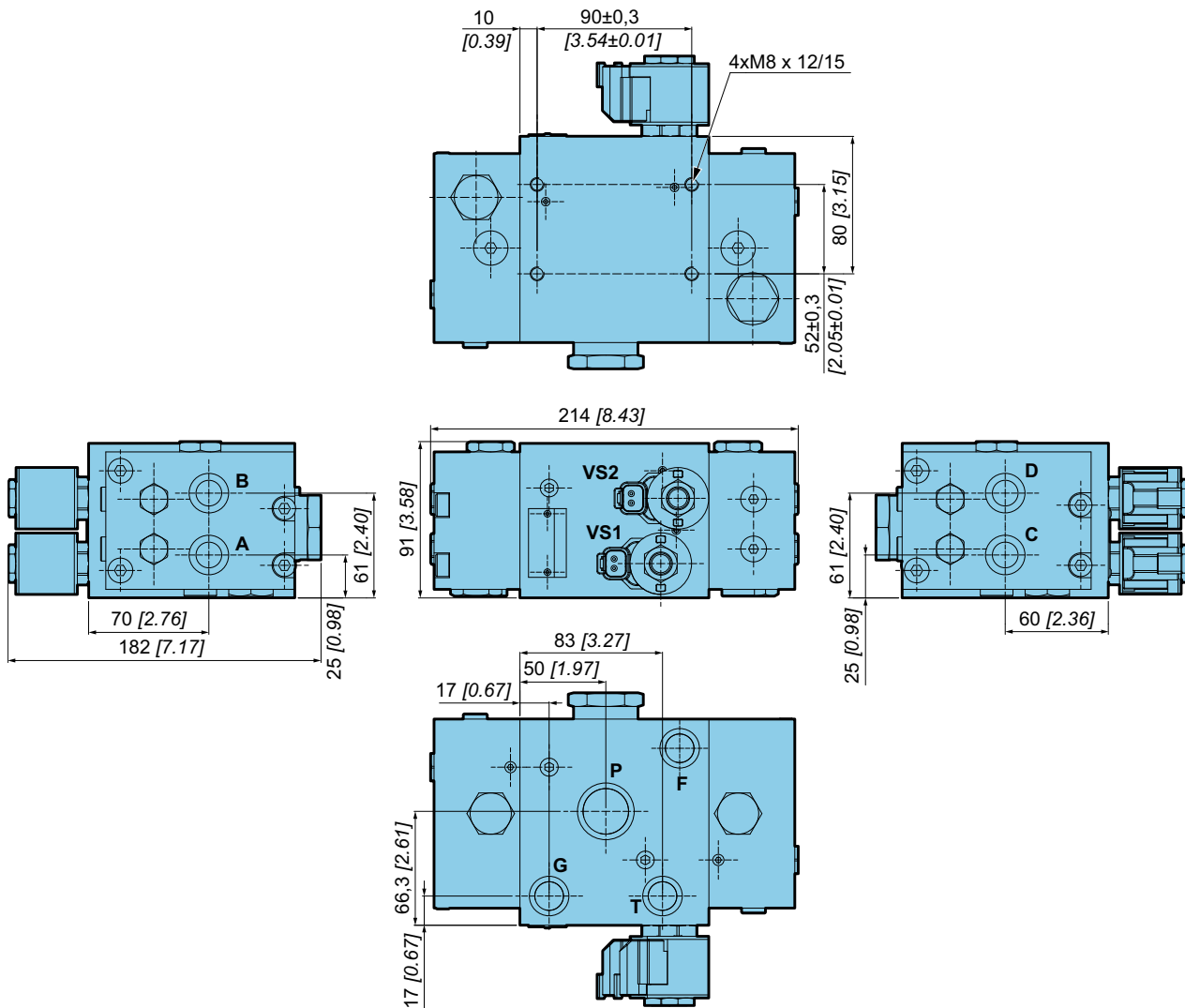
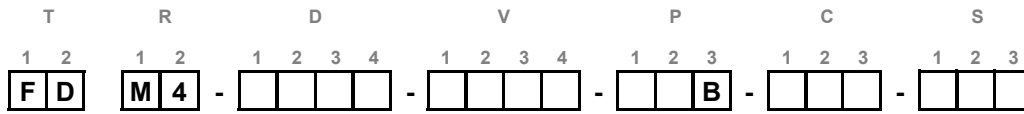
Hydraulic scheme - Electric by-pass control with charge check valve



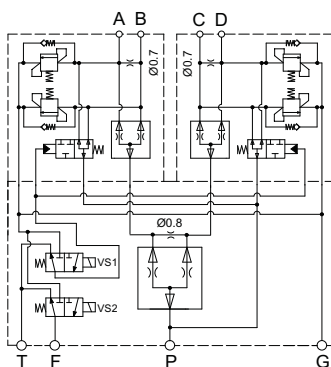
2 way Heavy duty Flow divider FD-H2



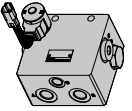
Dimensions with charge check and pressure relief valve



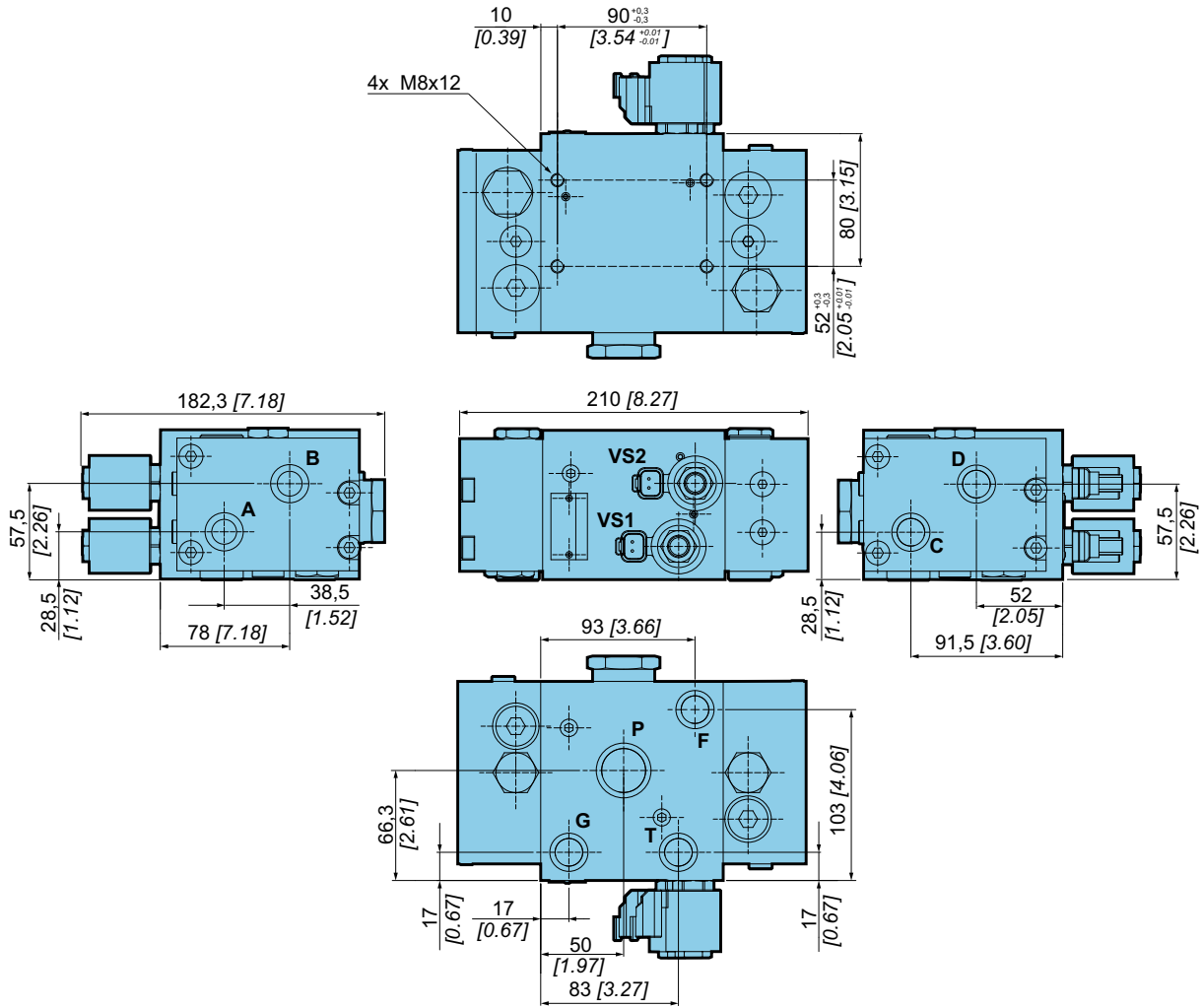
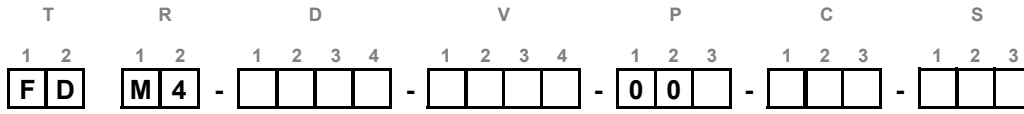
Hydraulic scheme - Hydraulic by-pass control with charge check and relief valves



Designed for max. pressure 420 bar [6 092 PSI].



Dimensions without pressure relief valve

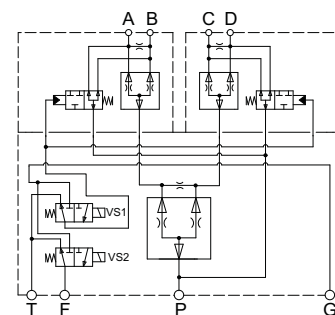


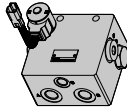
2 way Flow divider FD-M2

3/4 way Flow dividers FD-M3/ FD-M4

2 way Heavy duty Flow divider FD-H2

Hydraulic scheme - Electric by-pass control without charge check valve and without pressure relief valve





Hydraulic connections

FD-M3 / FD-M4

Port	Function	Connection		Max. pressure bar [PSI]	Min. pressure bar [PSI]
		ISO 1179-1 (BSPP)	ISO 11926-1 (UNF)		
P	Main flow Inlet-Outlet	G3/4	1 1/16-12 UNF-2B	420 [6 092]	
A B	Divided flow outlet - combined flow inlet	G3/8	3/4-16 UNF-2B	420 [6 092]	
C D	Divided flow outlet - combined flow inlet	G3/8	3/4-16 UNF-2B	420 [6 092]	
F	Auxiliary	G3/8	3/4-16 UNF-2B	50 [725]	
G	Charge flow inlet	G3/8	3/4-16 UNF-2B	50 [725]	8 [116]
T	Drain	G3/8	3/4-16 UNF-2B	5 [73]	

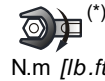
Installation

Type
FD-M3 / FD-M4



4xM8

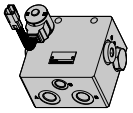
Class
10.9



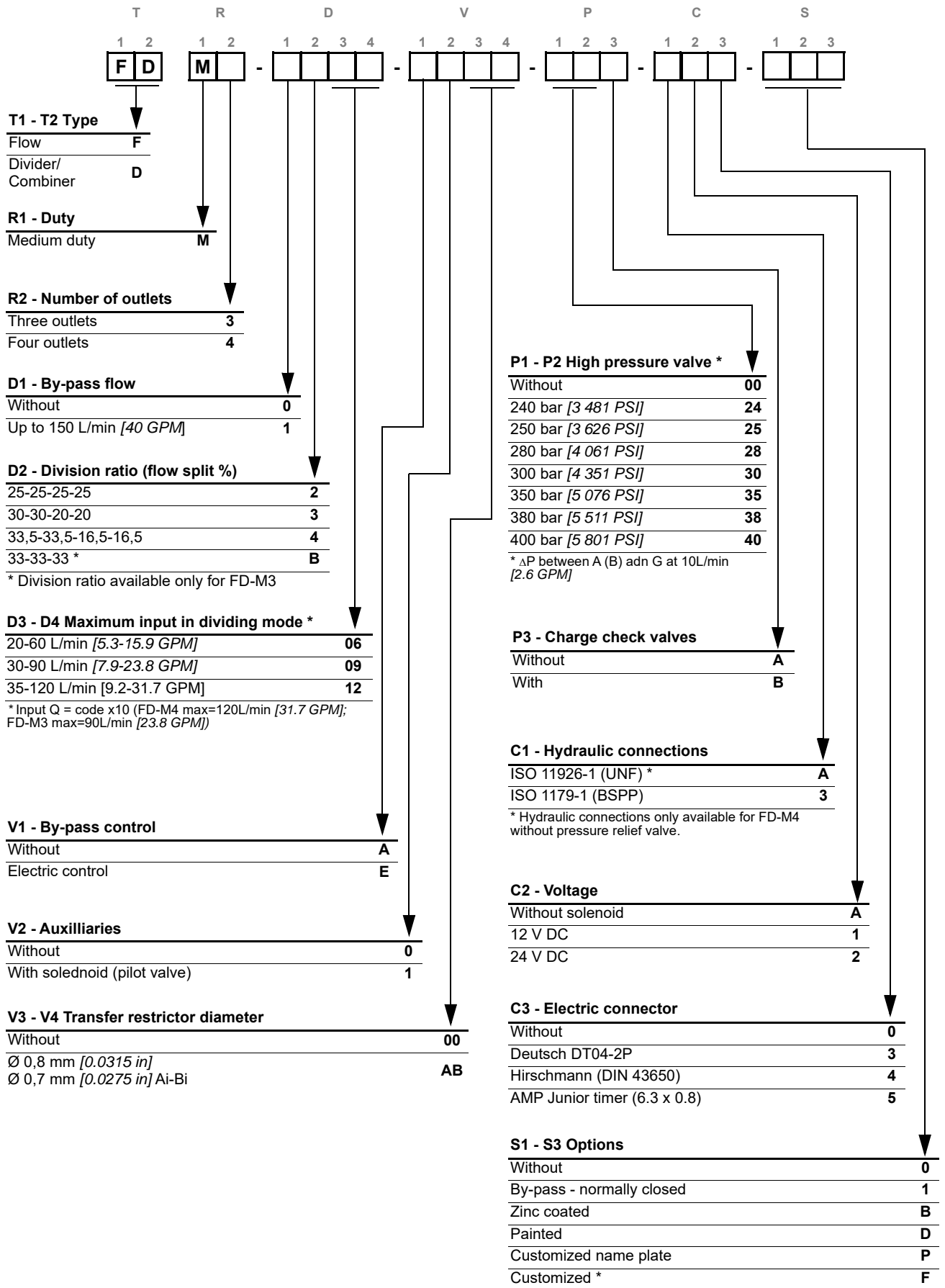
N.m [lb.ft]

36 [27]

(\*) As per standard DIN 912



**Model code**



**T1 - T2 Type**  
 Flow F  
 Divider/Combiner D

**R1 - Duty**  
 Medium duty M

**R2 - Number of outlets**  
 Three outlets 3  
 Four outlets 4

**D1 - By-pass flow**  
 Without 0  
 Up to 150 L/min [40 GPM] 1

**D2 - Division ratio (flow split %)**  
 25-25-25-25 2  
 30-30-20-20 3  
 33,5-33,5-16,5-16,5 4  
 33-33-33\* B

\* Division ratio available only for FD-M3

**D3 - D4 Maximum input in dividing mode \***  
 20-60 L/min [5.3-15.9 GPM] 06  
 30-90 L/min [7.9-23.8 GPM] 09  
 35-120 L/min [9.2-31.7 GPM] 12

\* Input Q = code x10 (FD-M4 max=120L/min [31.7 GPM]; FD-M3 max=90L/min [23.8 GPM])

**V1 - By-pass control**  
 Without A  
 Electric control E

**V2 - Auxilliaries**  
 Without 0  
 With solednoid (pilot valve) 1

**V3 - V4 Transfer restrictor diameter**  
 Without 00  
 Ø 0,8 mm [0.0315 in] AB  
 Ø 0,7 mm [0.0275 in] Ai-Bi

**P1 - P2 High pressure valve \***  
 Without 00  
 240 bar [3 481 PSI] 24  
 250 bar [3 626 PSI] 25  
 280 bar [4 061 PSI] 28  
 300 bar [4 351 PSI] 30  
 350 bar [5 076 PSI] 35  
 380 bar [5 511 PSI] 38  
 400 bar [5 801 PSI] 40

\* ΔP between A (B) adn G at 10L/min [2.6 GPM]

**P3 - Charge check valves**  
 Without A  
 With B

**C1 - Hydraulic connections**  
 ISO 11926-1 (UNF) \* A  
 ISO 1179-1 (BSPP) 3

\* Hydraulic connections only available for FD-M4 without pressure relief valve.

**C2 - Voltage**  
 Without solenoid A  
 12 V DC 1  
 24 V DC 2

**C3 - Electric connector**  
 Without 0  
 Deutsch DT04-2P 3  
 Hirschmann (DIN 43650) 4  
 AMP Junior timer (6.3 x 0.8) 5

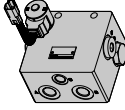
**S1 - S3 Options**  
 Without 0  
 By-pass - normally closed 1  
 Zinc coated B  
 Painted D  
 Customized name plate P  
 Customized \* F

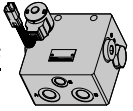
\* Further description on interface drawing

2 way Flow divider FD-M2

3/4 way Flow dividers FD-M3/ FD-M4

2 way Heavy duty Flow divider FD-H2





## 2 WAY HEAVY DUTY FLOW DIVIDER FD-H2

- Modular
- Compact
- Energy efficient



FD-H2 with auxiliaries



FD-H2 without auxiliaries

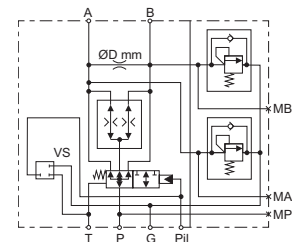
### Operation

FD-H2 is a two way heavy-duty flow divider that assures parallel operation of wheels of the same axle and/or between different axles by dividing or combining flow. It can be operated in open or closed loop circuits. FD-H2 is equipped with normally opened by-pass that can be controlled electrically or hydraulically.



If you have to add a flushing valve in a closed loop circuit equipped with a flow divider, you have to install the flushing valve between the pump and the flow divider.

### Hydraulic symbol



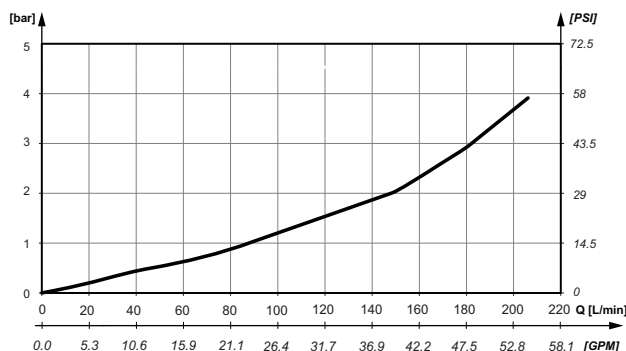
### Features

Hydraulic		FD-H2-1	FD-H2-2
Max. pressure	bar [PSI]		500 [7 251]
Max. flow in bypass mode	L/min [GPM]	200 [52.8]	300 [79.3]
Max. flow in dividing/combining mode	L/min [GPM]	100 [26.4]	200 [52.8]
Dividing/combining accuracy		+/- 5% at 100% nominal flow +/- 7% at 50% nominal flow +/- 12% at 20% nominal flow	
Type of hydraulic connections		ISO 11926-1 (UNF) / ISO 1179-1 (BSPP)	
Weight (based on codification)	kg [lbs]	from 14,5 [31.9] to 19,2 [42.3]	
Fluid temperature	°C [°F]	-20 to +90 [-4 to +200]	
Fluid viscosity	mm <sup>2</sup> /s [SSU]	9 to 500 [41.7 to 2 316]	
Fluid contamination	ISO 4401:1999	max 20/18/14	
Electrical		FD-H2-1	FD-H2-2
Solenoid supply voltage	V DC		12, 24; ±10%
Solenoid power consumption	W		17,2 (12V DC); 16,6 (24V DC)
Solenoid duty cycle			100% ED
Max. ambient temperature	°C [°F]		70 [158]

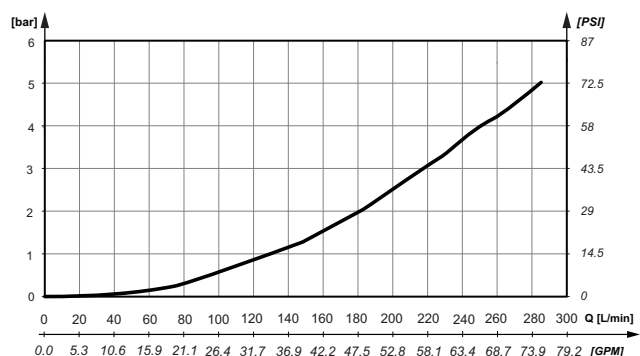
### Pressure drop

Measured at 50 °C [122 °F] and viscosity of 32 mm<sup>2</sup>/s [148 SSU].

#### By-pass mode FD-H2 (up to 200L/min [52.8 GPM])



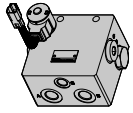
#### By-pass mode FD-H2 (up to 300L/min [79.3 GPM])



2 way Flow divider FD-M2

3/4 way Flow dividers FD-M3/ FD-M4

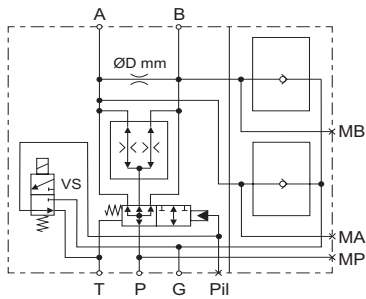
2 way Heavy duty Flow divider FD-H2



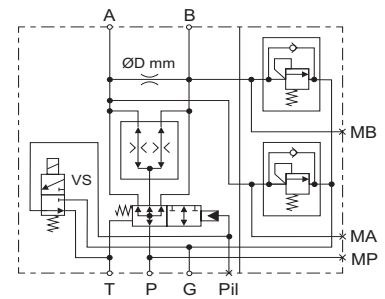
Hydraulic schematic

Electric by-pass

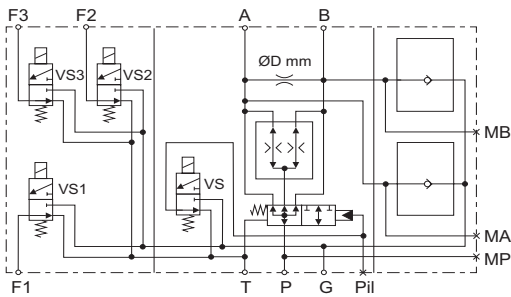
Without auxiliaries and with charge check valves



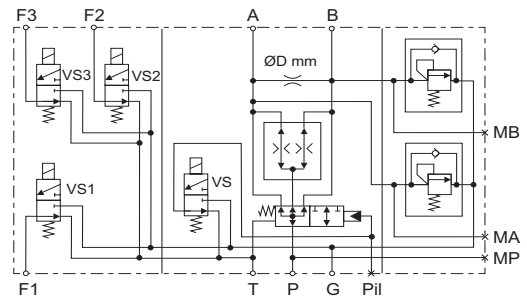
Without auxiliaries and with charge check valves and pressure relief valves



With auxiliaries and charge check valves

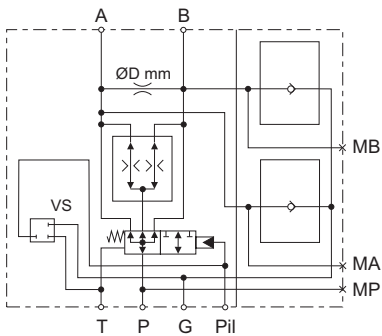


With auxiliaries and with charge check valves and pressure relief valves

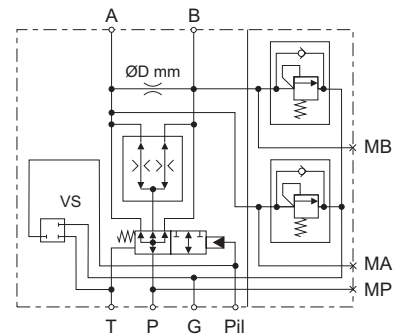


Hydraulic by-pass

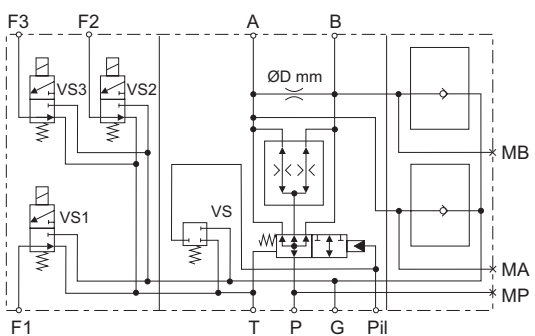
Without auxiliaries and with charge check valves



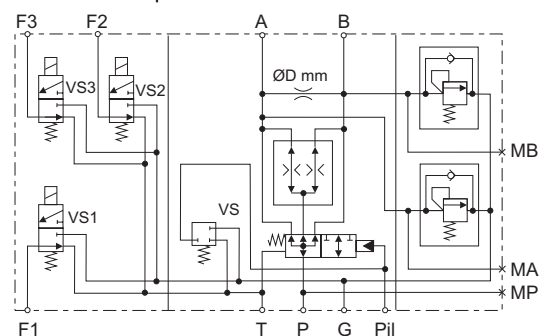
Without auxiliaries and with charge check valves and pressure relief valves



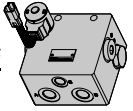
With auxiliaries and charge check valves



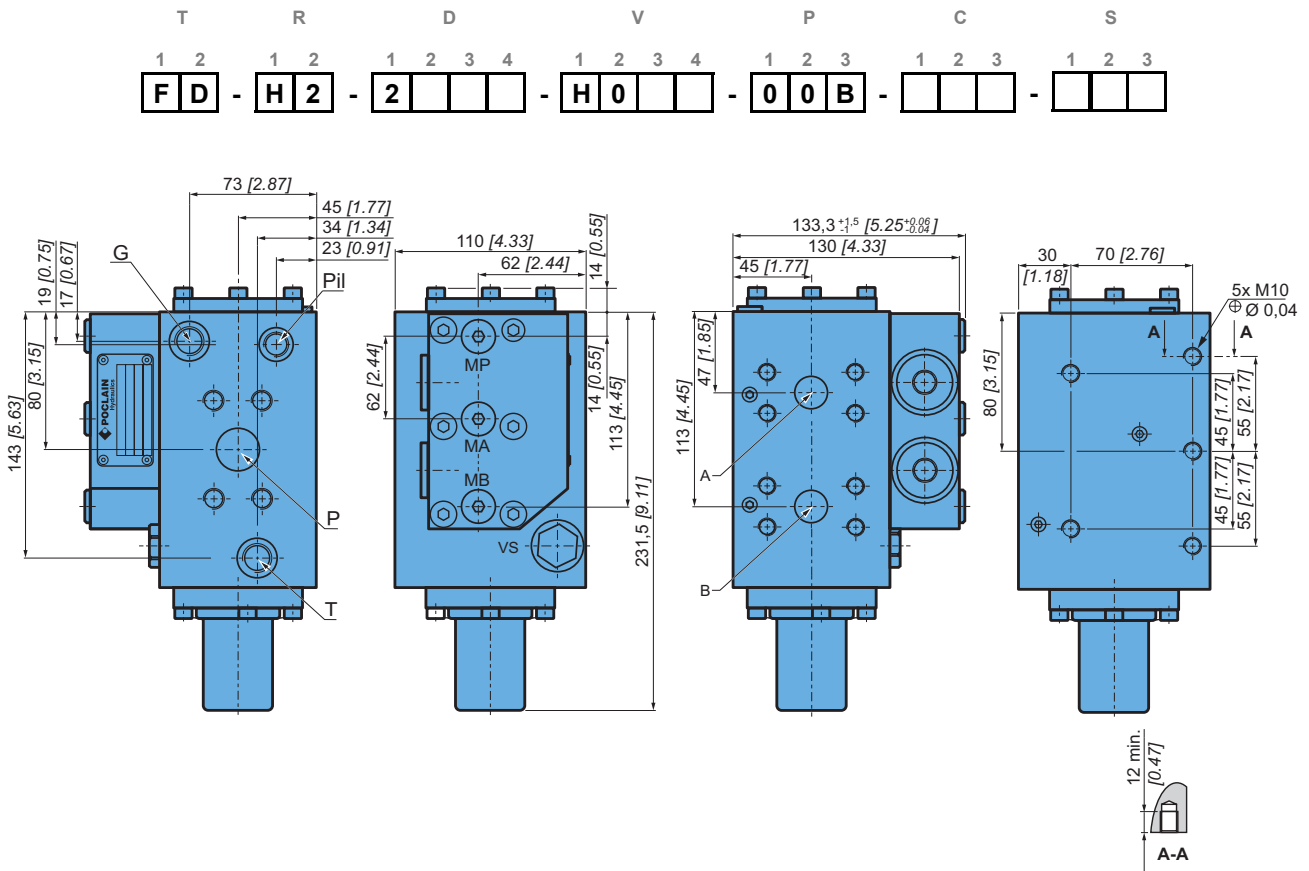
With auxiliaries and with charge check valves and pressure relief valves







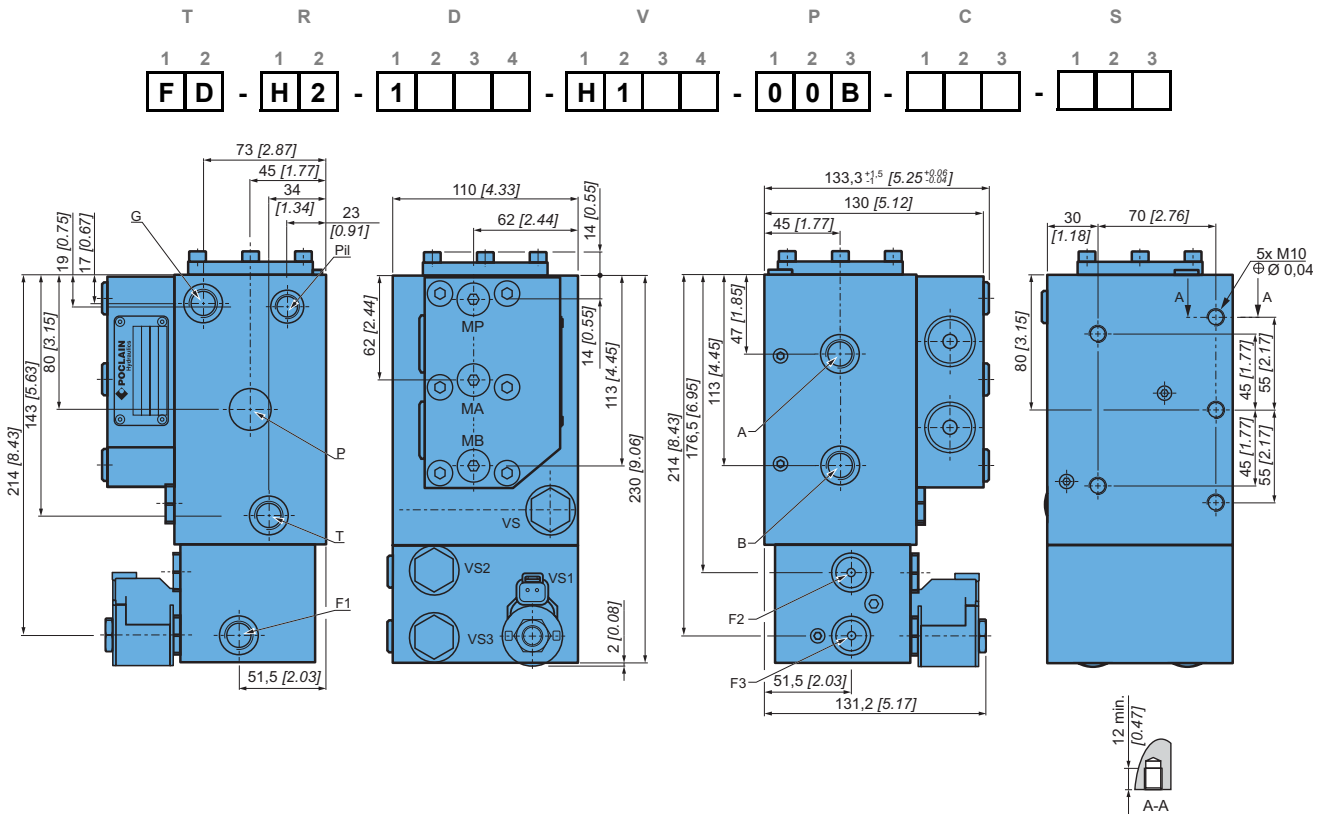
**FD-H2 Hydraulic Bypass overall dimension without auxiliaries and with charge check valve**



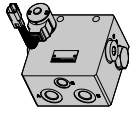
2 way Flow divider FD-M2

3/4 way Flow dividers FD-M3/ FD-M4

**FD-H2 Hydraulic Bypass overall dimension with auxiliaries and charge check valve**

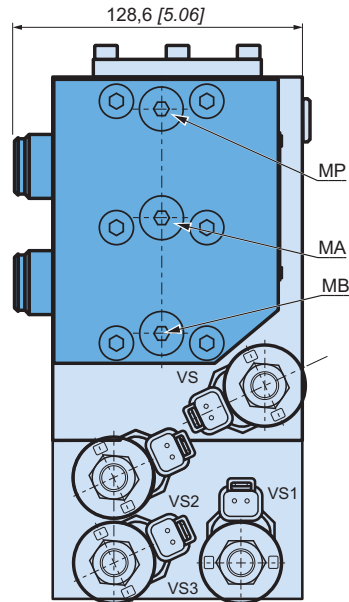
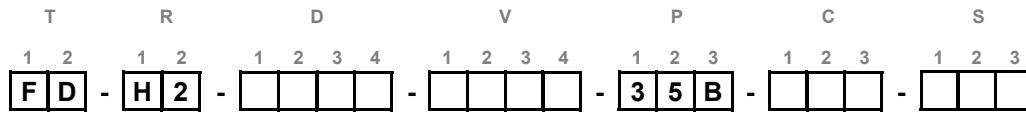


2 way Heavy duty Flow divider FD-H2

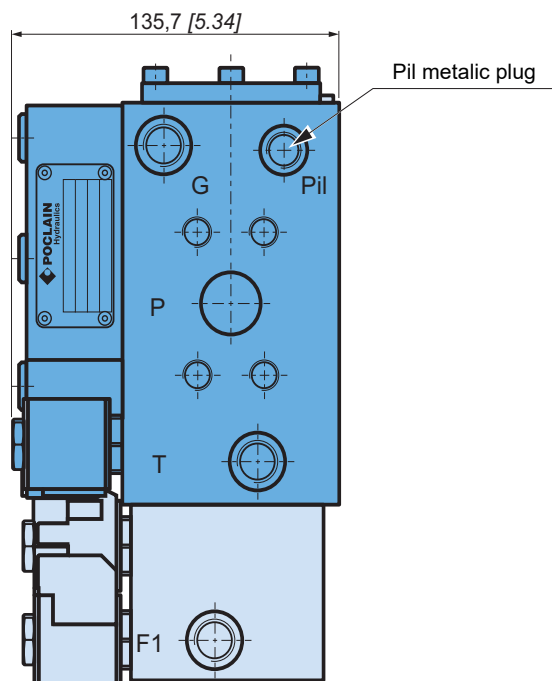
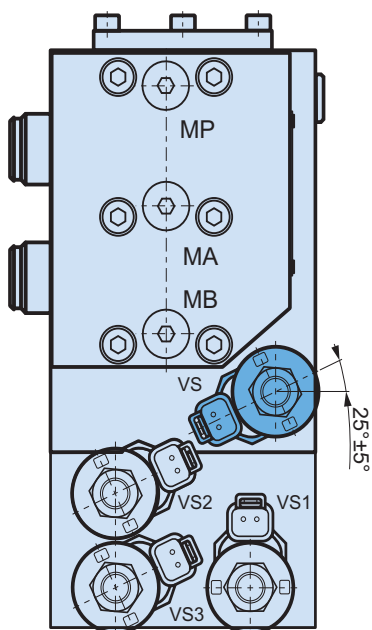
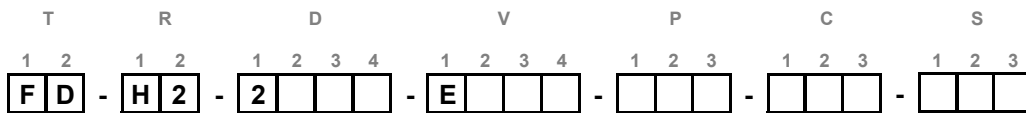


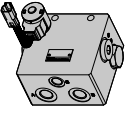
Change on dimensions based on option

With charge check and pressure relief valve



Electric by-pass

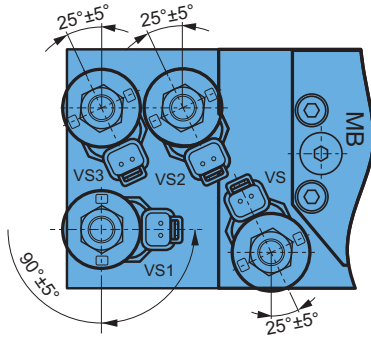




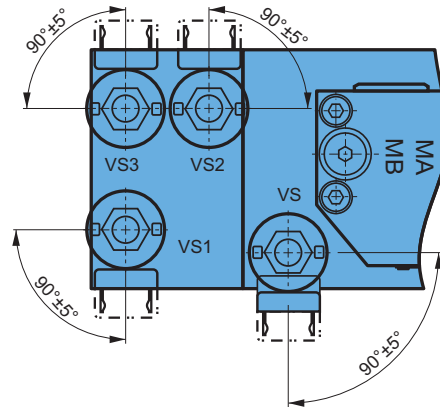
Change on dimensions based on option

Connector angular orientation

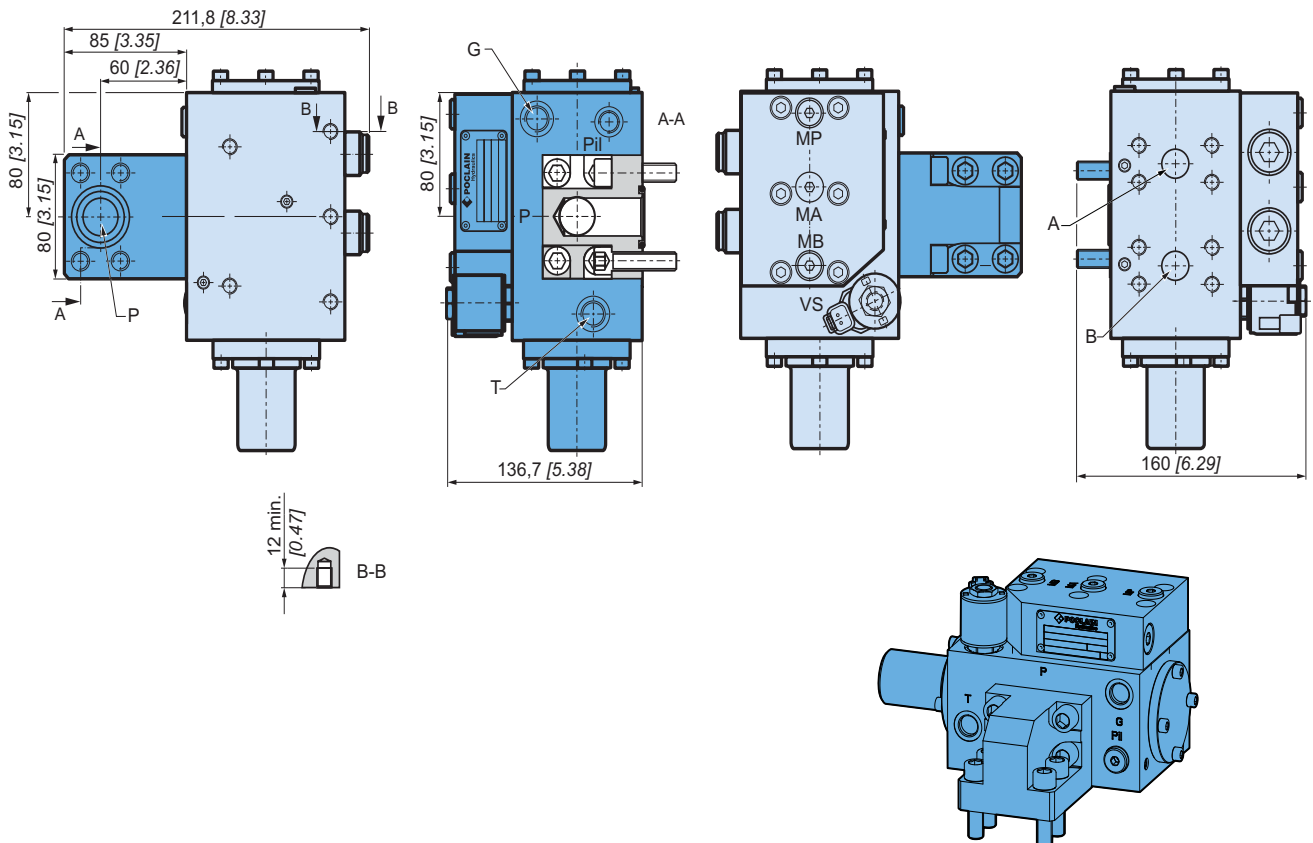
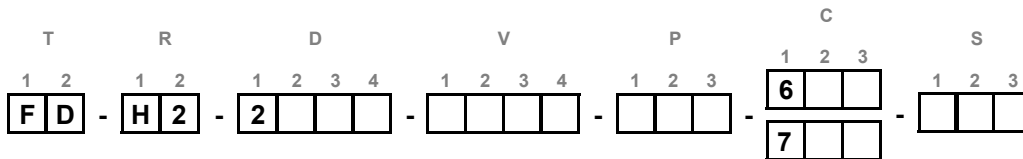
Deutsch DT04-2P



Hirschmann (DIN 43650)



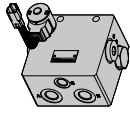
Pump flanged version



2 way Flow divider FD-M2

3/4 way Flow dividers FD-M3/ FD-M4

2 way Heavy duty Flow divider FD-H2



Hydraulic connections

FD-H2-1: up to 200 L/min [52.8 GPM] in By-pass

Port	Function	Connections		Max. pressure bar [PSI]	Min. pressure bar [PSI]
		ISO 1179-1 (BSPP) Type N	ISO 11926-1 (UNF)		
P	Main flow inlet-outlet	G3/4	1 1/16-12 UNF-2B	500 [7 252]	
A B	Divided flow outlet - combined flow inlet	G1/2	7/8-14 UNF-2B	500 [7 252]	
G	Charge flow inlet	G3/8	3/4-16 UNF-2B	50 [725]	12 [174]
T	Drain	G3/8	3/4-16 UNF-2B	5 [72]	
PIL	Pilot flow inlet (Hydraulic by-pass only)	G1/4	9/16-18 UNF-2B	50 [725]	12 [174]
MA	Pressure measurement (A)	G1/4	9/16-18 UNF-2B	500 [7 252]	
MB	Pressure measurement (B)	G1/4	9/16-18 UNF-2B	500 [7 252]	
MP	Pressure measurement (P)	G1/4	9/16-18 UNF-2B	500 [7 252]	

FD-H2-2: up to 300 L/min [79.3 GPM] in By-pass

Port	Function	Connections		Max. pressure bar [PSI]	Min. pressure bar [PSI]
		ISO 1179-1 (BSPP) Type N	ISO 11926-1 (UNF)		
P	Main flow inlet-outlet	DN25 ISO 6162-2	DN25 ISO 6162-2	500 [7 252]	
A B	Divided flow outlet - combined flow inlet	DN19 ISO 6162-2	DN19 ISO 6162-2	500 [7 252]	
G	Charge flow inlet	G3/8	3/4-16 UNF-2B	50 [725]	12 [174]
T	Drain	G3/8	3/4-16 UNF-2B	5 [72]	
PIL	Pilot flow inlet (Hydraulic by-pass only)	G1/4	9/16-18 UNF-2B	50 [725]	12 [174]
MA	Pressure measurement (A)	G1/4	9/16-18 UNF-2B	500 [7 252]	
MB	Pressure measurement (B)	G1/4	9/16-18 UNF-2B	500 [7 252]	
MP	Pressure measurement (P)	G1/4	9/16-18 UNF-2B	500 [7 252]	

Installation

Mounting position: Indifferent



5xM10

Class

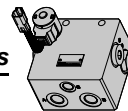
8.8



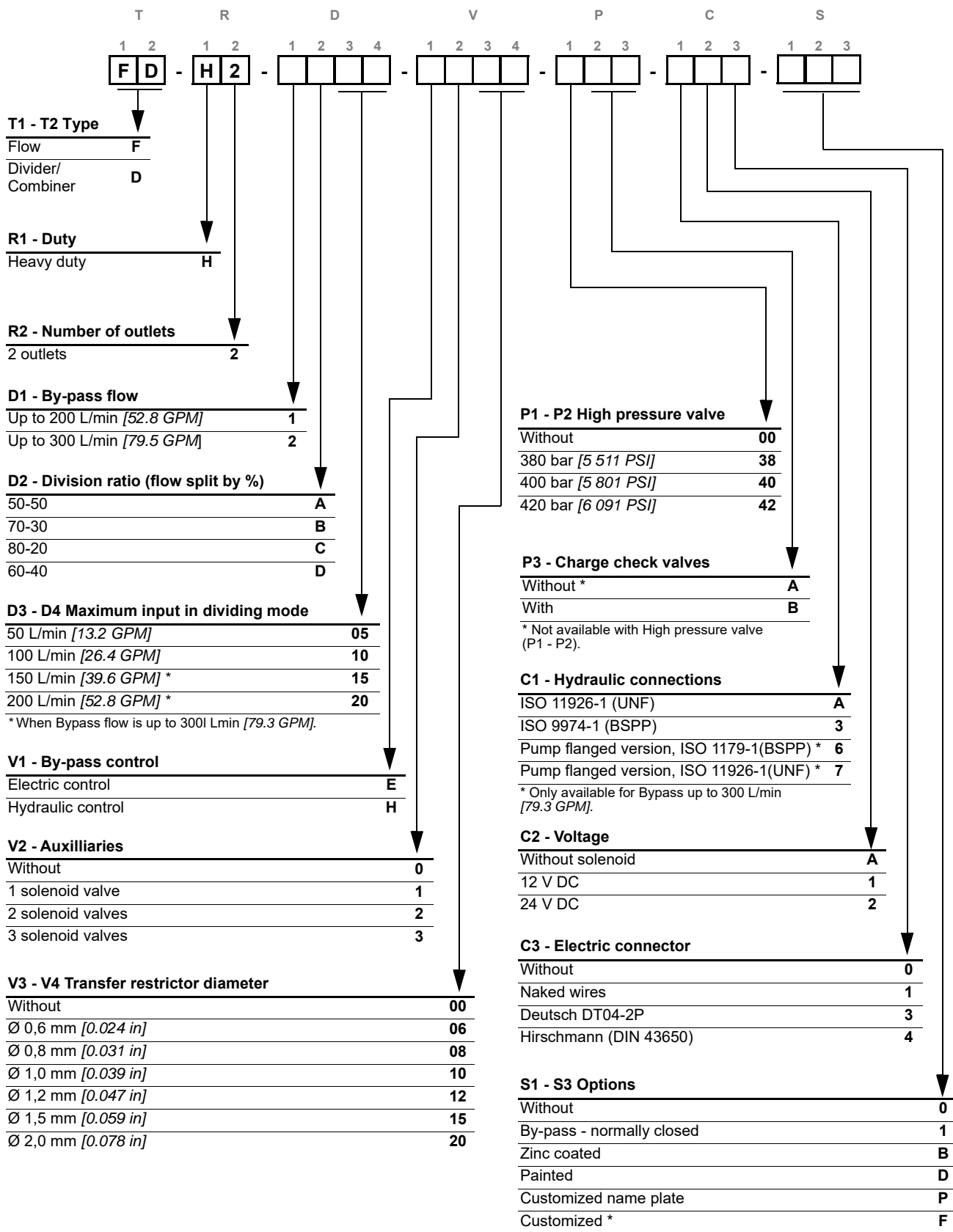
N.m [lb.ft]

49 [36]

(\*) As per standard DIN 912



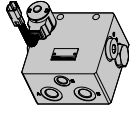
**Model code**

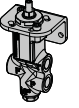


2 way Flow divider FD-M2

3/4 way Flow dividers FD-M3/ FD-M4

2 way Heavy duty Flow divider FD-H2





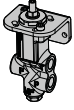
# PRESSURE REDUCING VALVE



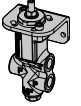
Pressure reducing valve PR3

73

Pressure reducing valve PR3







## PRESSURE REDUCING VALVE PR3

- Compact
- Adjust pressure inside the system
- Fix or variable pressure setting



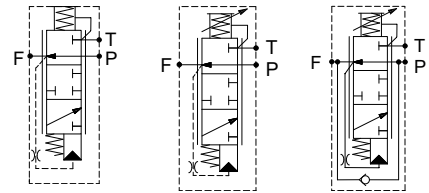
Fix settings

Variable settings

### Operation

The PR3 is used to reduce the pressure in the motor line or in auxiliary functions.

### Hydraulic symbol



Fix settings

Variable settings

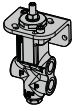
With check valve

### Features

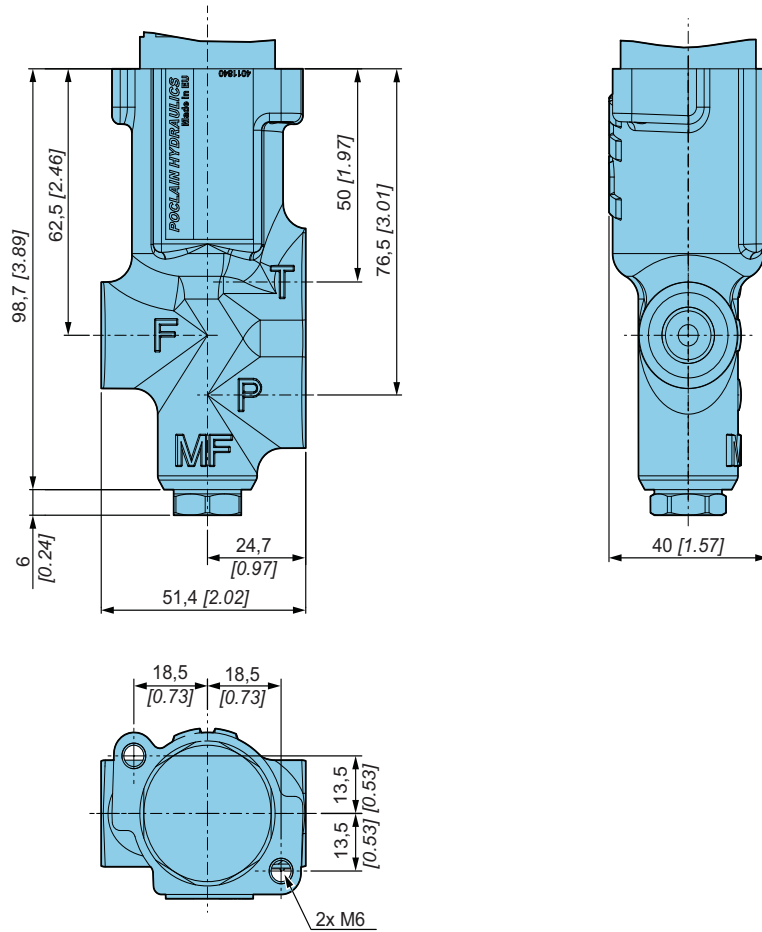
Hydraulic	PR3-...-S	PR3-...-V
Max. operation pressure	bar [PSI]	250 [3 625]
Max. flow	L/min [GPM]	30 [7.93]
Type of setting	Fix	Variable
Setting pressure range	bar [PSI]	10 to 120 [145 to 1 740]
Type of hydraulic connections	ISO 1179-1 (BSPP) / ISO 9974-1 (Metric) / ISO 6149 (Metric) / ISO 11926-1 (UNF)	
Mass	kg [lbs]	0,7 [1.54]

### Hydraulic connections

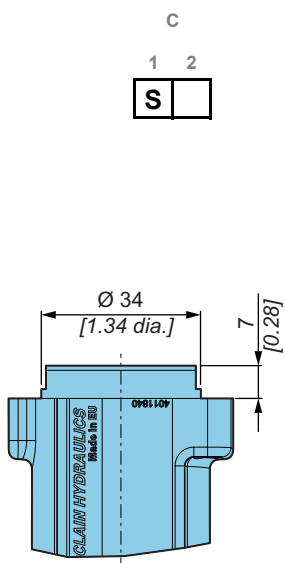
Port	Function	Connections			Max. pressure bar [PSI]	Min. pressure bar [PSI]
		ISO 1179-1 (BSPP)	ISO 11 926-1 (UNF)	ISO 9974-1 (Metric)		
P	Input	G 1/4	9/16-18 UNF-2B	M14x1.5	250 [3 625]	
F	Output	G 1/4	9/16-18 UNF-2B	M14x1.5		
T	Tank	G1/4	9/16-18 UNF-2B	M14x1.5	1 [14.50]	



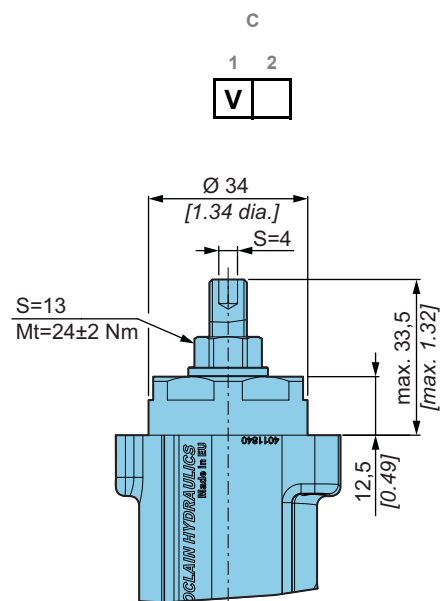
Dimensions

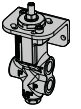


Fix pressure setting

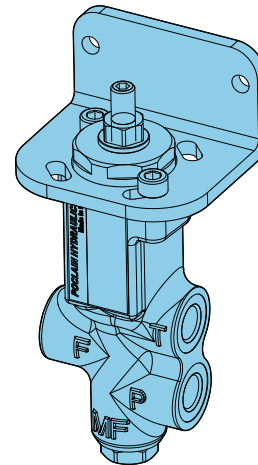
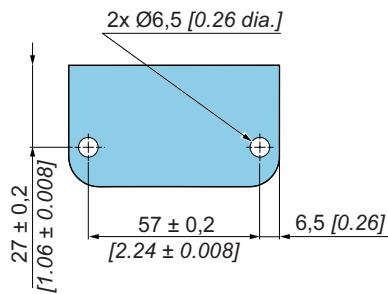
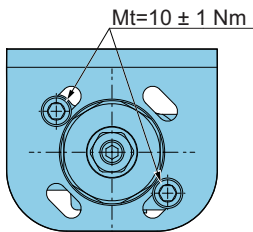
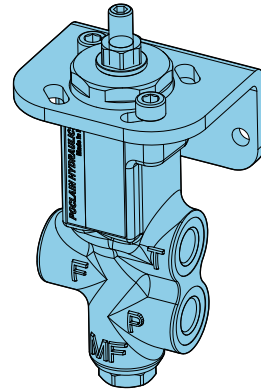
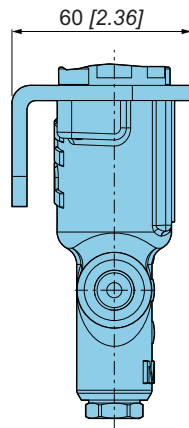
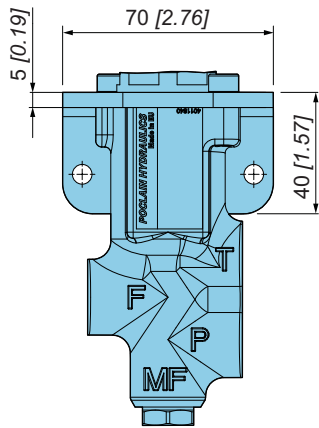
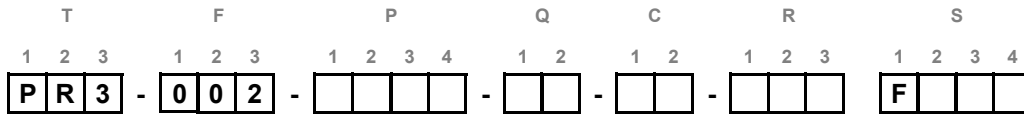


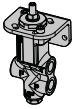
Variable pressure setting



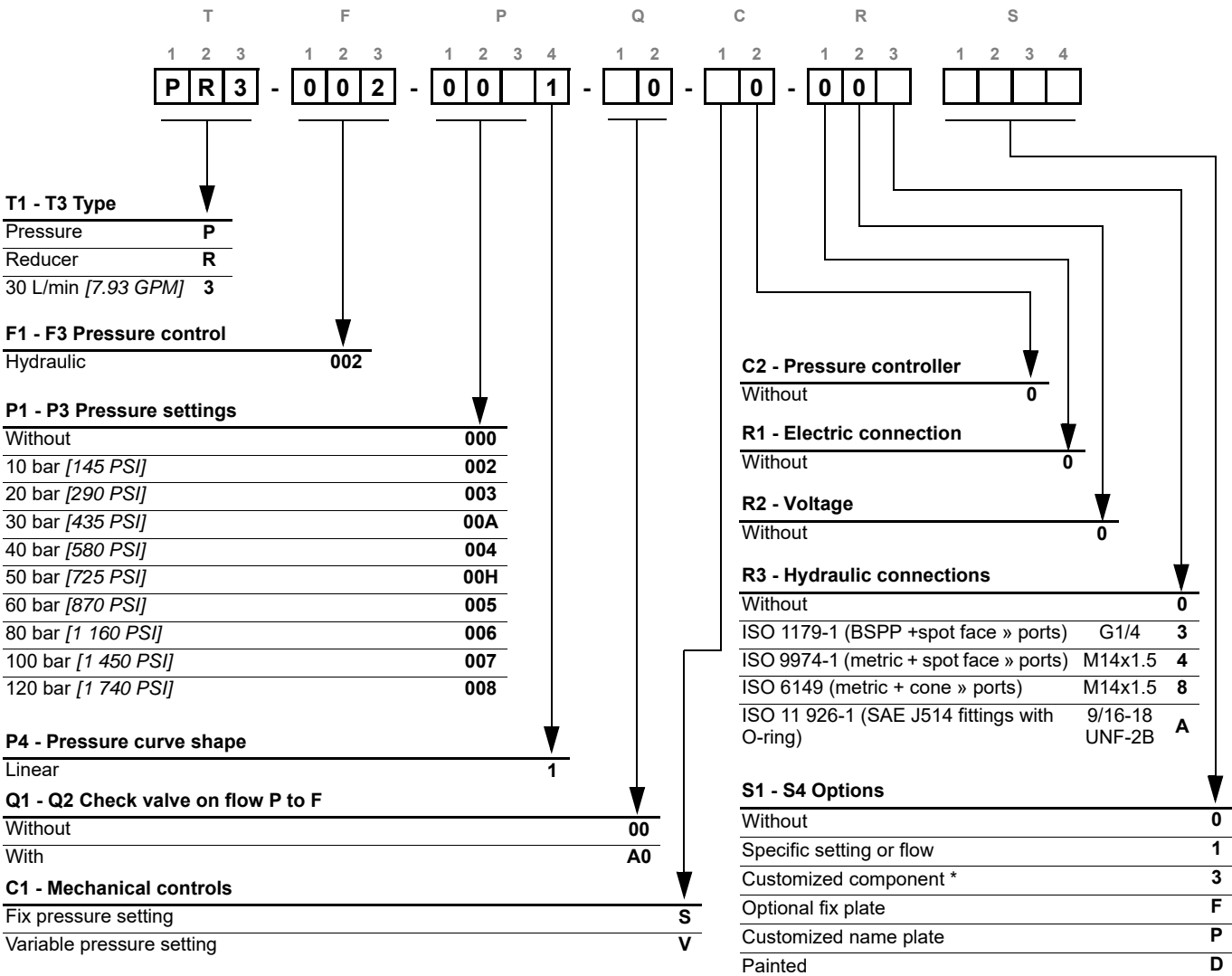


Optional fix plate

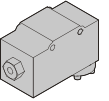




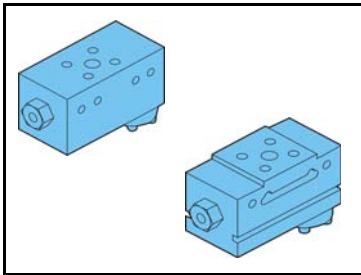
**Model code**



\* Consult your Poclain Hydraulics application engineer.



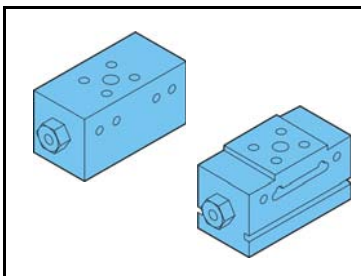
# DIRECTIONAL CONTROL VALVES



Directional control valve VD 2V 2H20/H25

79

Directional control valve VD 2V 2H20/H25



Directional control valve VD 3V 2H20/H25

81

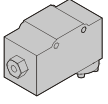
Directional control valve VD 3V 2H20/H25

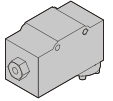


6/2 way diverter valves KV - High pressure (NG 16)

83

6/2 way diverter valves KV - High pressure

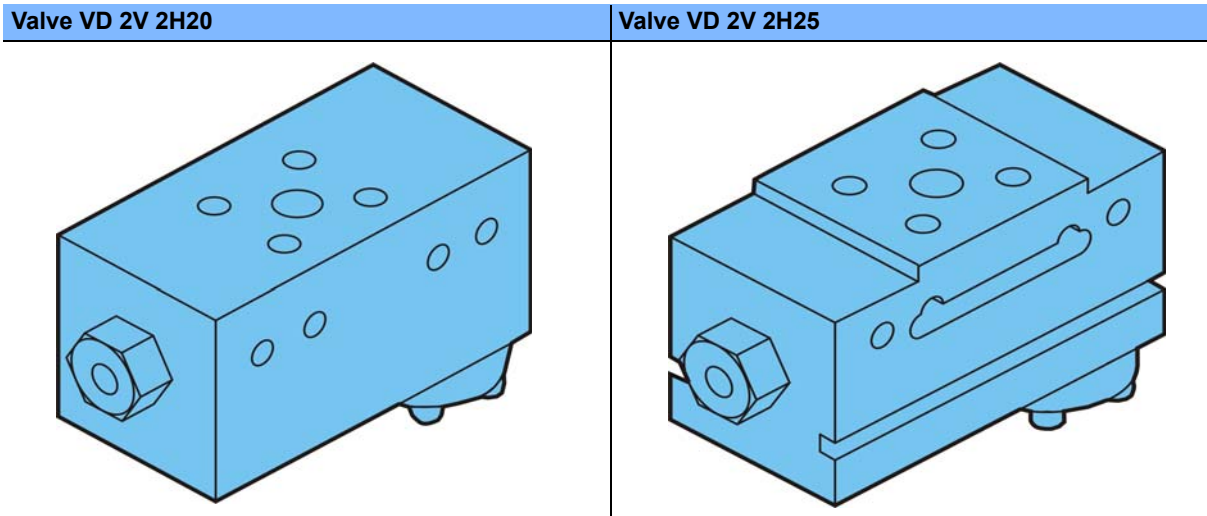




## DIRECTIONAL CONTROL VALVE VD 2V 2H20/H25

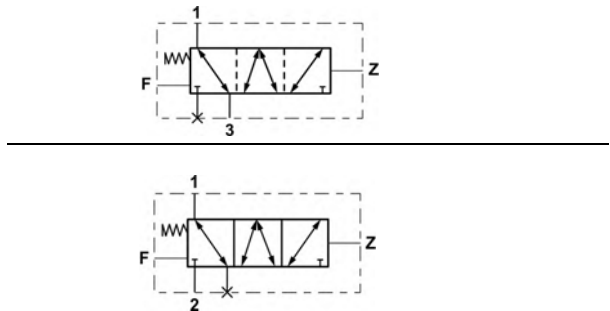
Directional control valve VD 2V 2H20/H25

**Function:** Two position flow directional control valve, opens or closes a circuit.



Commercial Description	VD 2V 2H20 VD 2V 2H25
Part number	003943368U (VD 2V 2H20) 003943367T (VD 2V 2H25)
Compatibility	All types of circuit

Hydraulic symbol

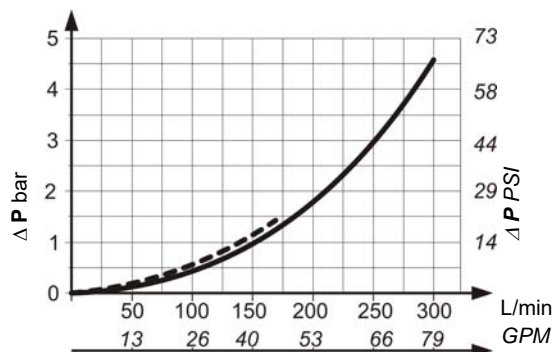


Characteristics	Mass
	8 kg [17.6 lb]

Commercial description	Pressure bar [PSI]	Flow L/min [GPM]
VD 2V 2H20	450 [6 526]	92 to 170 [25 to 45]
VD 2V 2H25		170 to 300 [45 to 80]

### Pressure drop (1 ⇨ 2 or 1 ⇨ 3)

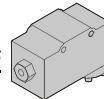
VD 2V 2H20   
 VD 2V 2H25



6/2 way diverter valves KV - High pressure

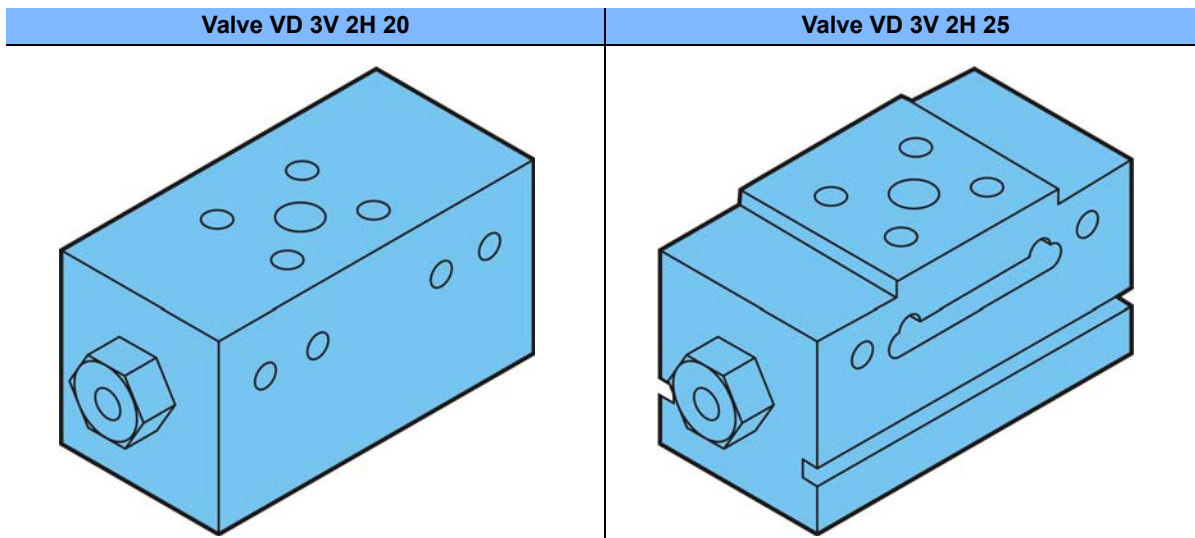




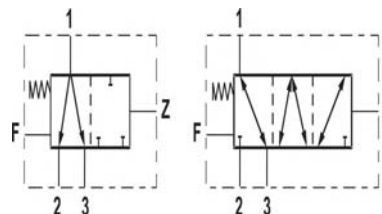


## DIRECTIONAL CONTROL VALVE VD 3V 2H20/25

**Function:** Two position flow directional control valve, allowing to direct a circuit.



Commercial Description	VD 3V 2H20 VD 3V 2H25
Part number	003943319R (VD 3V 2H20) 003943320S (VD 3V 2H25)
Compatibility	All types of circuit
Hydraulic symbol	

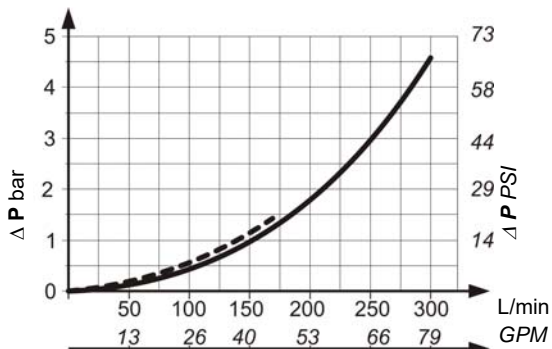


### Characteristics

Mass	8 kg [17.6 lb]	
Commercial Description	Pressure bar [PSI]	Flow L/min [GPM]
VD 3V 2H20	450 [6 526]	92 to 170 [25 to 45]
VD 3V 2H25		170 to 300 [45 to 80]

### Pressure drop

VD 3V 2H20 - - - -  
VD 3V 2H25 ————

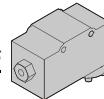


Directional control valve VD 2V 2H20/H25

Directional control valve VD 3V 2H20/H25

6/2 way diverter valves KV - High pressure





## 6/2 WAY DIVERTER VALVES KV - HIGH PRESSURE

- NG 16
- Up to 450 bar [6 527 PSI]
- Up to 300 L/min [79.25 GPM]
- Hydraulically operated



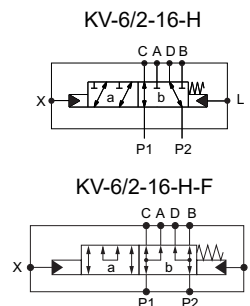
**KV-6/2-16-H**

### Operation

6/2 directional valves are normally used for selection between two consumers or two hydraulic circuits which are not operated simultaneously. Control spool is operated by pilot pressure acting on port X. Return of the spool to the initial position is assured by the return spring.

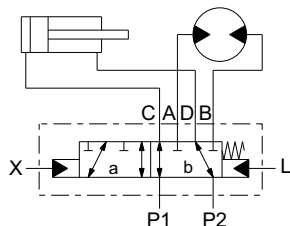
KV-6/2 is also available with spool that allows function to switch between series and parallel motor connection in close loop hydraulic circuits.

### Hydraulic symbol

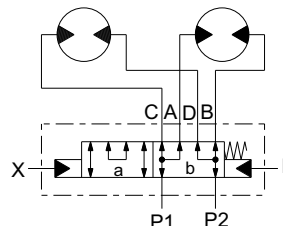


### Function

#### Function 1: Switch between two consumers



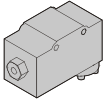
#### Function 2: Switch between serial and parallel connection



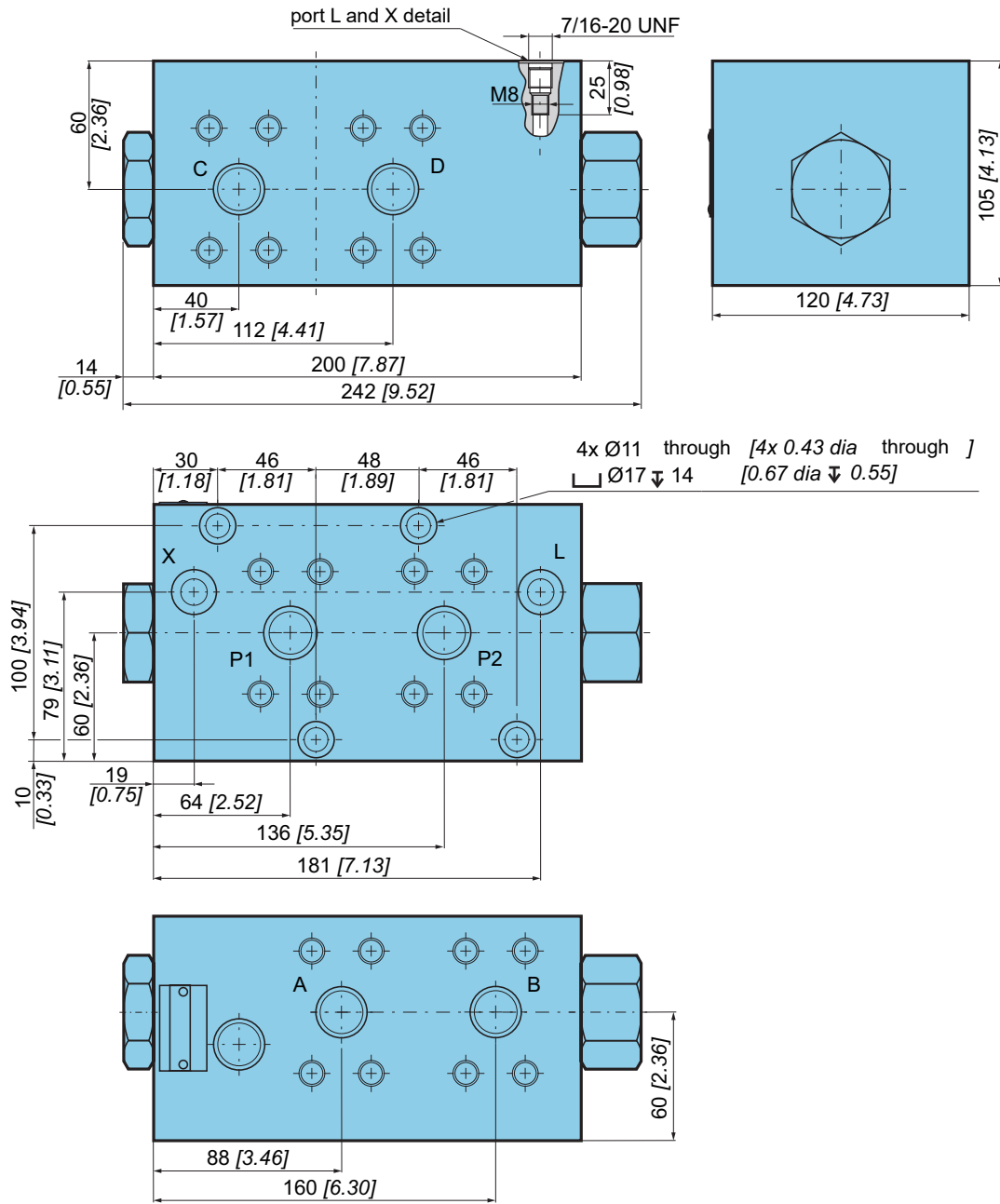
### Features

<b>Max pressure</b>	bar [PSI]	450 [6 527]
<b>Minimal pilot pressure X for spool shift</b>	bar [PSI]	36 [522] *
<b>Max pressure on port X and L</b>	bar [PSI]	210 [3 045]
<b>Max flow range</b>	L/min [GPM]	300 [79.25]
<b>Oil temperature range</b>	°C [°F]	-20 to +70 [-4 to 158]
<b>Viscosity range</b>	mm <sup>2</sup> /s [SUS]	15 to 380 [69.5 to 1760]
<b>Fluid contamination</b>	ISO 4406: 1999	19/17/14
<b>Mass</b>	kg [lb]	16,8 [37.04]

\* Valid for reliable operation at max. flow 300 L/min [79.25 GPM] and max. pressure 450 bar [6 527 PSI]. At lower p-Q load the pilot pressure can be also lower.



Dimensions

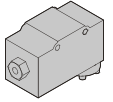


Installation

Mounting position: Indifferent

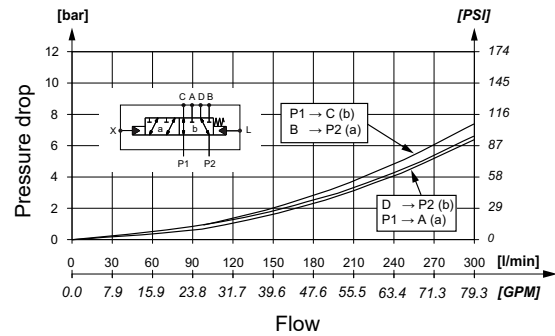
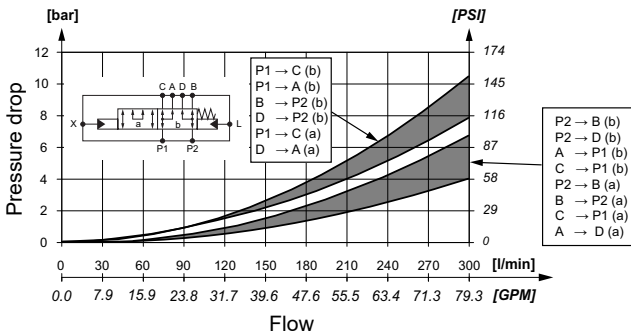
4xM10	Class	N.m [lb.ft]
	8.8	49 [36]

(\*) As per standard DIN 912

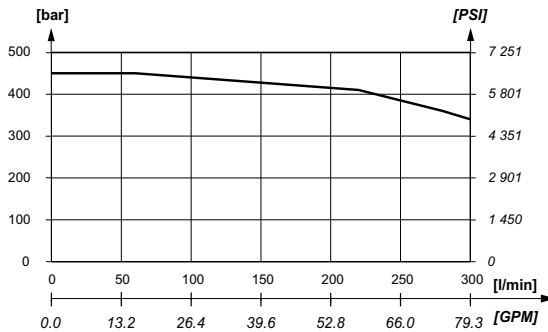


**Δ P- Q Performance curve**

Measured at 50°C [122°F] and viscosity of 32 mm<sup>2</sup>/s [148 SUS].



**P- Q Operating limits**



Given operated limits are valid for pilot pressure 18 bar [261 PSI] and worst case flow direction.

Recommended pilot pressure for reliable operation in the whole range 450 bar - 300 L/min is 36 bar [522 PSI].

**Model code**

**K V - 6 / 2 - 16 - H - [ ] - S A E 1 - [ ] [ ] [ ] - [ ] [ ] [ ]**

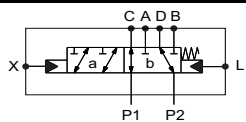
**Operation**

Hydraulically operated

H

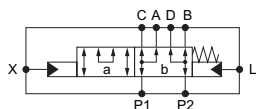
**Spool type**

Spool type 1: switch between consumers



No designation

Spool type 2: switch between serial / parallel connection



F

**Ports**

P1, P2, A, B, C, D - SAE, 6000 PSI  
X, L - 7/16-20 UNF

SAE1

**Max working pressure bar [PSI]**

450 [6 527]	450
350 [5 076]	No designation

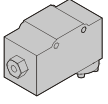
**Options**

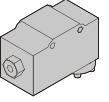
Zinc coated	ZN
Painted RAL 9005	RAL
FPM seals for HETG, HEES, HEPG to VDMA 24568 and ISO 15380	E

Directional control valve VD 2V 2H20/H25

Directional control valve VD 3V 2H20/H25

6/2 way diverter valves KV - High pressure





Directional control valve VD 2V 2H20/H25

Directional control valve VD 3V 2H20/H25


6/2 way diverter valves KV - High pressure



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*Illustrations are not binding.*

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 05/10/2021



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