

DF5

Mechanical control monoblock diverter valves

- 2 - 3 - 6 ways configuration
- Mechanical lever, cam, hydraulic, pneumatic controls

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm²/s *(46 cSt)* viscosity at 40°C - *(104°F)* temperature.

WORKING CONDITIONS		
N. of available ways		2 - 3 - 6
Max. flow rating		60 l/min *(15.8 US gpm)*
Max. pressure		315 bar *(4600 psi)*
Internal leakage A(B)⇒T	Δp=100 bar *(1450 psi)*	10 cm³/min *(0.61 in³/min)*
Fluid		Mineral based oil
Fluid temperature	with NBR (BUNA-N) seals	from -20°C to 80°C *(from -4°F to 176°F)*
	with FPM (VITON) seals	from -20°C to 100°C *(from -4°F to 212°F)*
Viscosity	operating range	from 15 to 75 mm²/s *(from 15 to 75 cSt)*
	min.	12 mm²/s *(12 cSt)*
	max.	400 mm²/s *(400 cSt)*
Max. level of contamination		21/19/16 - ISO 4406 - *NAS 1638 - class 10*
Ambient temperature for working conditions	with mechanical controls	from -40°C to 60°C *(from -40°F to 140°F)*
	with hydraulic and pneumatic controls	from -30°C to 60°C *(from -22°F to 140°F)*

NOTE - For different working conditions please contact Sales Dept.

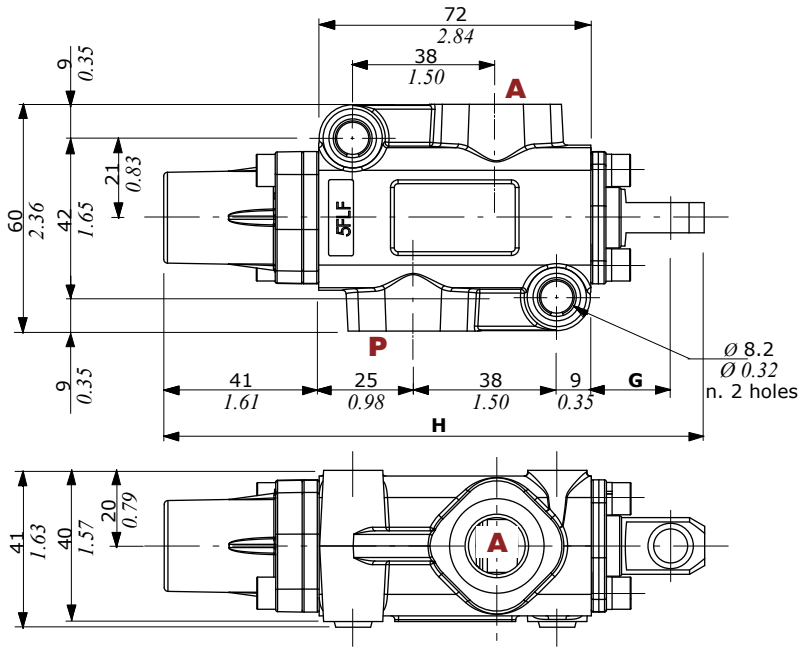
Available threads

PORTS THREAD				
ALL PORTS	**BSP**	**UN-UNF**	**METRIC*** (ISO 9974-1)	**METRIC*** (ISO 6149)
DF5	G 3/8	3/4-16 (SAE 8)	M18x1.5	M18x1.5
PILOT PORTS				
Pneumatic	NPT 1/8-27	NPT 1/8-27	NPT 1/8-27	NPT 1/8-27
Hydraulic	G 1/4	9/16-18 (SAE 6)	-	-

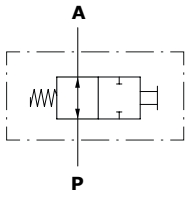
(*) Optional threads
for availability contact Sales Department

Dimensional data - hydraulic circuit - performance data

2 ways

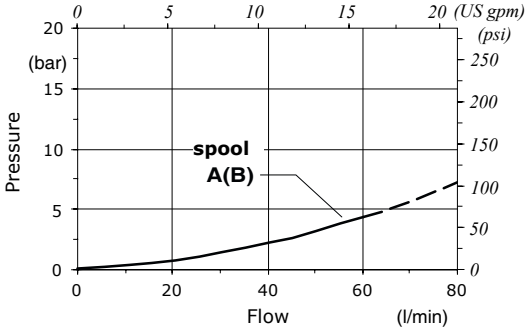


	G	H
With spool out	25.5 mm *1.00 in*	147.5 mm *5.81 in*
With spool in	14.5 mm *0.57 in*	136.5 mm *5.37 in*

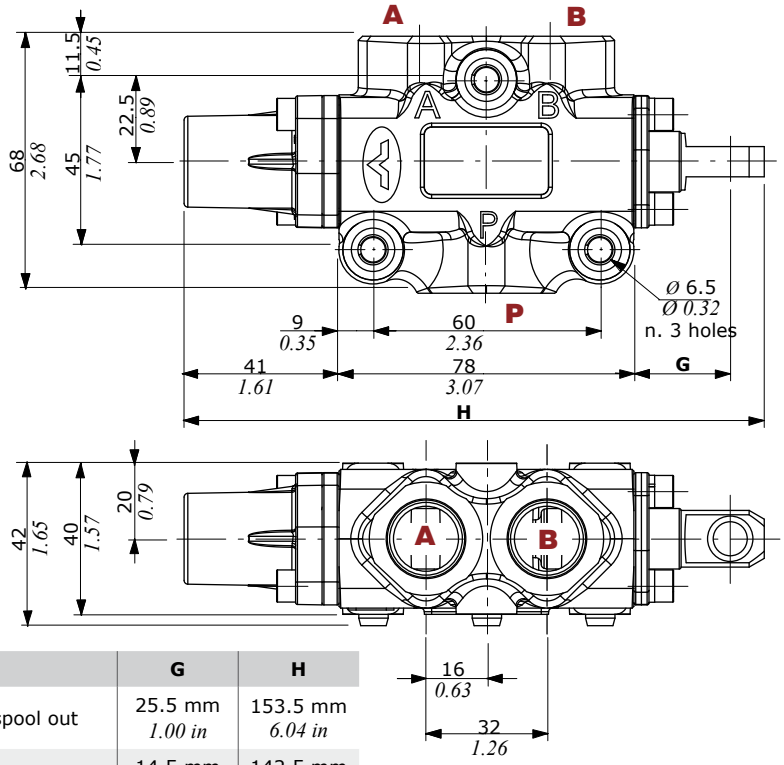


Pressure drop versus flow

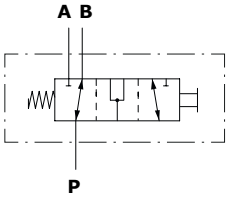
P → A



3 ways

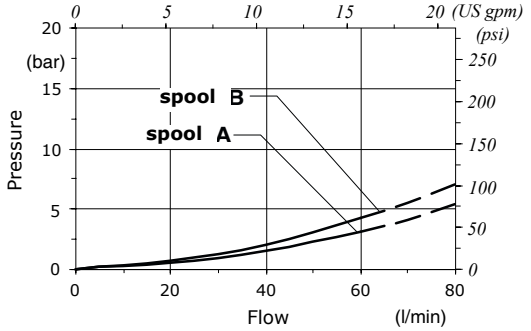


	G	H
With spool out	25.5 mm *1.00 in*	153.5 mm *6.04 in*
With spool in	14.5 mm *0.57 in*	142.5 mm *5.60 in*



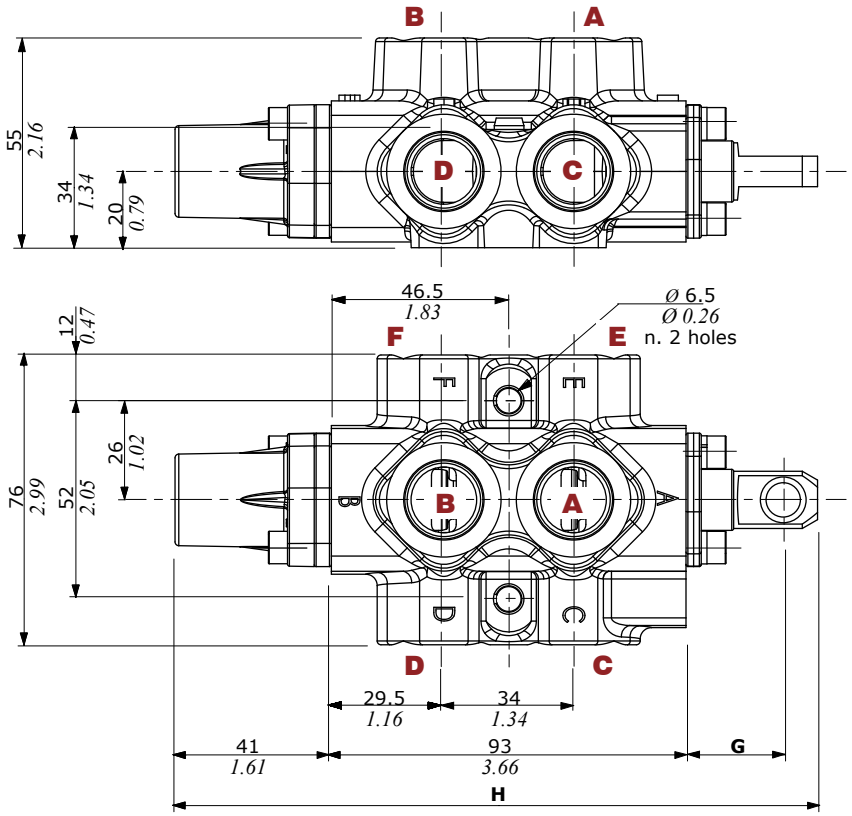
Pressure drop versus flow

P → A(B)

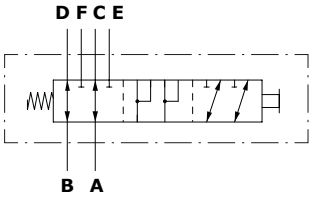


Dimensional data - hydraulic circuit - performance data

6 ways

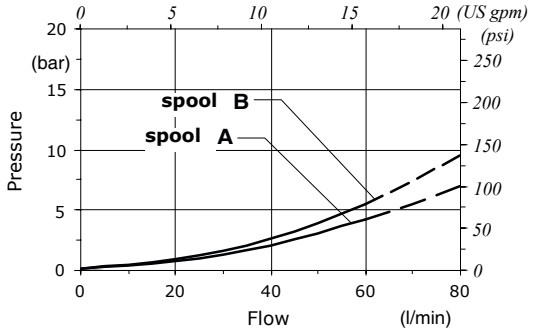


	G	H
With spool out	25.5 mm *1.00 in*	168.5 mm *6.63 in*
With spool in	14.5 mm *0.57 in*	157.5 mm *6.20 in*



Pressure drop versus flow

A → C(E)



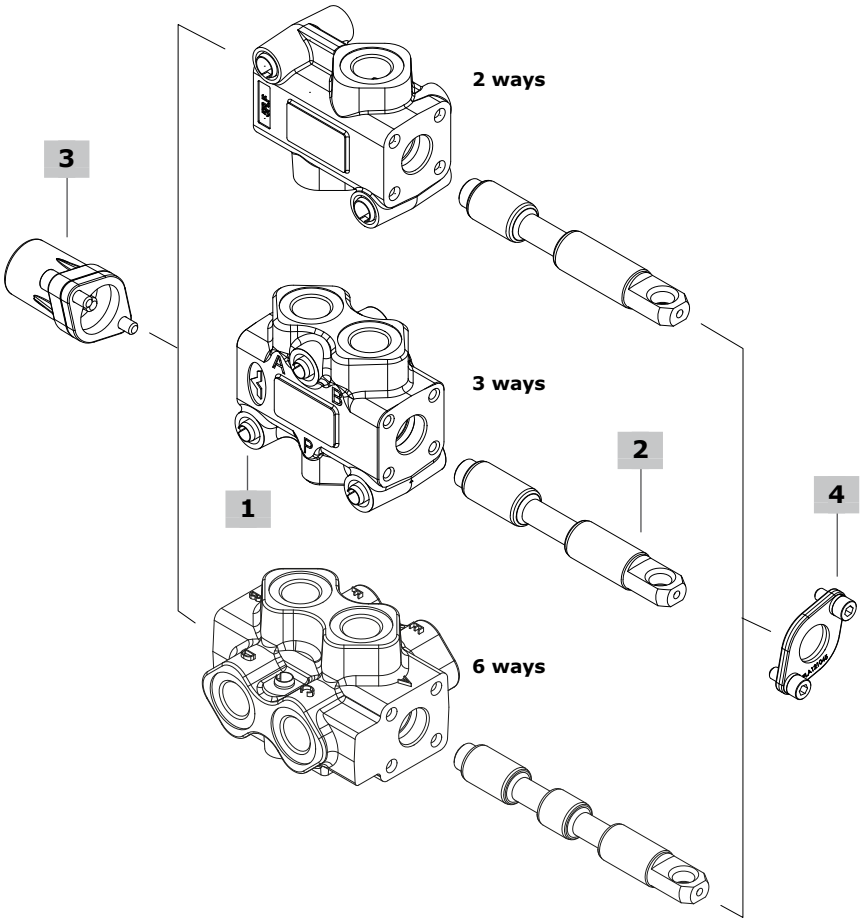
Part ordering codes

Example:

DF5/3 A 17 SLP - SAE - (CVN)

1 2 3 4 5

(CVN): Painted with one layer of black Primer antirust



Part ordering codes

1 Body kit*

TYPE	CODE	DESCRIPTION
DF5/2	5CO2220700	2 ways body kit
DF5/3	5CO2221700	3 ways body kit
DF5/6	5CO2222700	6 ways body kit

2 Spools page 10

TYPE	CODE	DESCRIPTION
for DF5/2:		
A	3CAS105210	Open port in neutral position
B	3CAS105110	Closed port in neutral position
AT	3CAS105230	As type A, with spherical end
BT	3CAS105130	As type B, with spherical end
AC	3CAS105220	As type A, for cam control
BC	3CAS105120	As type B, for cam control
V	3CAS105115	With load check valve
VT	3CAS105135	As type V, with spherical end
for DF5/3:		
A	3CAS105310	Flow in B in pos. 1. Ports connected in transit position
B	3CAS105410	Flow in B in pos. 1. Ports closed in transit position
AT	3CAS105330	As type A, with spherical end
AC	3CAS105320	As type A, for cam control
BC	3CAS105420	As type B, for cam control
D	3CAS105511	Flow in A and B in pos. 1. Without transit position: need 17A control type for reduced spool stroke
for DF5/6:		
A	3CAS105610	Flow in C and D. E and F closed in pos. 1 Ports connected in transit position
B	3CAS105710	Flow in C and D. E and F closed in pos. 1 Ports closed in transit position
AC	3CAS105620	As type A, for cam control
BC	3CAS105720	As type B, for cam control

3 "A" side spool positioners page 11

TYPE	CODE	DESCRIPTION
12	5V12105000	Detent in positions 1 and 2
17	5V17105000	Spring return in position 1
17WPOA	5V17105002	As kit 17, waterproof type with plug for oil drain
17A	5V17105050	Spring return in pos. 1, it must be coupled to spool **D** (DF5/3)
17ME	5V17305000	As kit 17, with heavier spring type E
17MEWPO	5V17305002	As kit 17, with heavier spring type E waterproof type
17YME	5V17305003	As kit 17, with heavier spring type E
18ME	5V18405110	Spring return in pos. 2, with heavier spring type E
With microswitch		
17MEMG2(NO)	5V17305680	Spring return in pos. 1, microswitch in pos. 2, with heavier spring type E
Pneumatic controls: must be coupled to the control kit side B with lever, with plate or cap		
17PNB	5V17105718	On/off with spring return in position 1, waterproof type
18PNB	5V18105718	On/off with spring return in position 2, waterproof type
Hydraulic controls: must be coupled to the control kit side B with lever, with plate or cap		
18IA1	5V18105850*	On/off high pressure hydraulic control with spring return in position 2
18IB1N	5V18105870*	On/off low pressure hydraulic control with spring return in position 2

4 "B" side options page 16

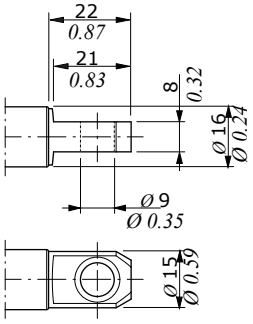
TYPE	CODE	DESCRIPTION
SLP	5COP105000	Without lever box, with dust-proof plate kit
SLC	5COP205000	Without lever box, with cap
L	5LEV105000	Aluminum lever box
CA	5CAM105000	Steel ball bearing cam operation
CB	5CAM105020	Bronze cam operation
CAX/S5	5CAM105030	Inox steel cam operation
Hydraulic controls		
IA2	5IDR505700*	On/off with high pressure pilot, need 17YME control type
IB2	5IDR705700*	On/off with low pressure pilot, need 17YME control type

5 Body threading

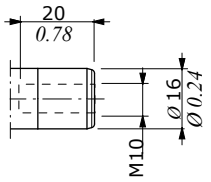
Specify threading always when it is different from **BSP** standard

(*) - Codes are referred to **UN-UNF** thread

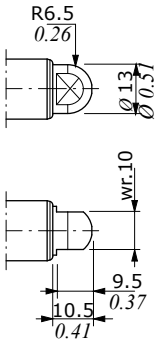
Spool end



Standard:
spool type **A**, **B**, **D**, **V**



Rotary cam arrangement:
spool type **AC**, **BC**

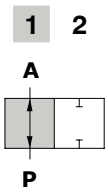


Spherical end:
spool type **AT**, **BT**, **VT**

Spool circuits

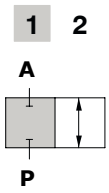
2 ways

Type A/AT/AC
Open port in neutral position



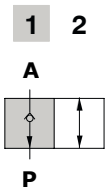
Spool stroke
Position 2: - 11 mm *(- 0.43 in)*

Type B/BT/BC
Closed port in neutral position



Spool stroke
Position 2: - 11 mm *(- 0.43 in)*

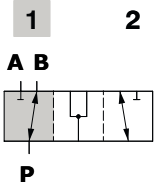
Type V/VT
With load check valve



Spool stroke
Position 2: - 11 mm *(- 0.43 in)*

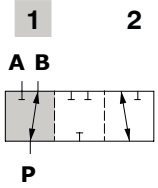
3 ways

Type A/AT/AC
Ports connected
in transit position



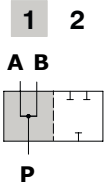
Spool stroke
Position 2: - 11 mm *(- 0.43 in)*

Type B/BC
Ports closed
in transit position



Spool stroke
Position 2: - 11 mm *(- 0.43 in)*

Type D
Without transit position
Ports connected in neutral

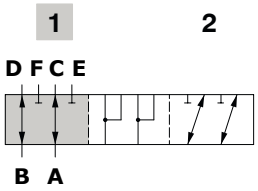


Spool stroke
Position 2: - 5.5 mm *(- 0.21 in)*

Spool circuits

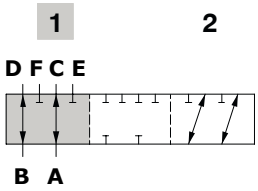
6 ways

Type A/AC
Flow in C and D. E and F closed in pos. 1
Ports connected in transit position



Spool stroke
Position 2: - 11 mm *(- 0.43 in)*

Type B/BC
Flow in C and D. E and F closed in pos. 1
Ports closed in transit position

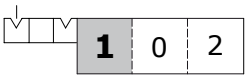


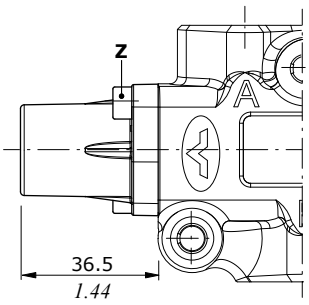
Spool stroke
Position 2: - 11 mm *(- 0.43 in)*

"A" side spool positioners

With detent

Type 12
Detent in positions 1 and 2





Wrenches and tightening torque
Z = wrench 4 - 6.6 Nm *(4.9 lbft)*

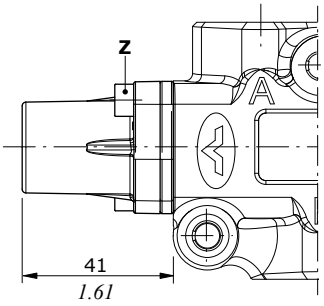
"A" side spool positioners

With spring return in position 1

Available with standard or heavier spring type "E"

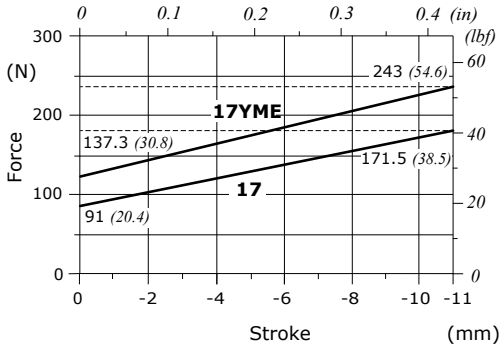
Type 17-17ME-17YME

1	0	2



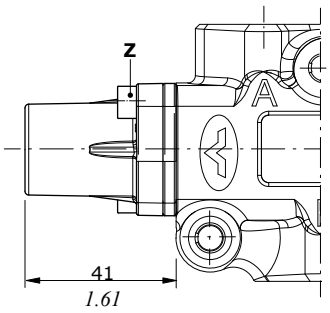
Wrenches and tightening torque
Z = wrench 4 - 6.6 Nm *(4.9 lbfi)*

Force-Stroke diagram



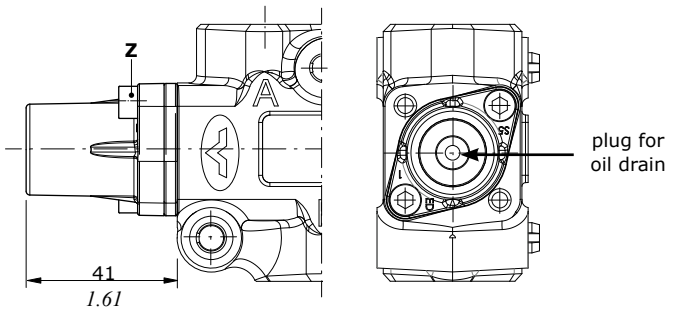
Type 17MEWPO
With water proof sealing

1	0	2



Type 17WPOA
With water proof sealing
and plug for oil drain

1	0	2



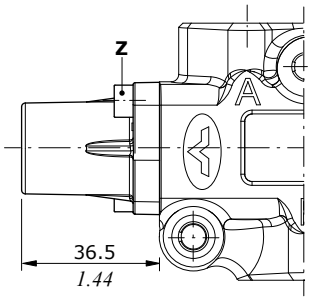
"A" side spool positioners

With spring return in position 1

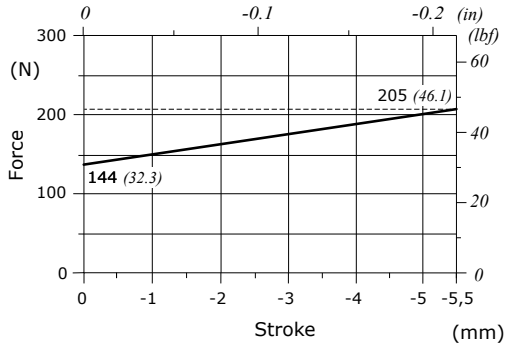
Type 17A

As type 17, for spool type D

	1	2



Force-Stroke diagram



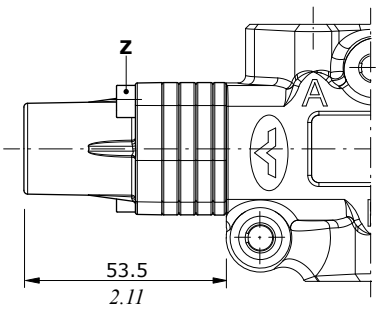
Wrenches and tightening torque
Z = wrench 4 - 6.6 Nm *(4.9 lbft)*

With spring return in position 2

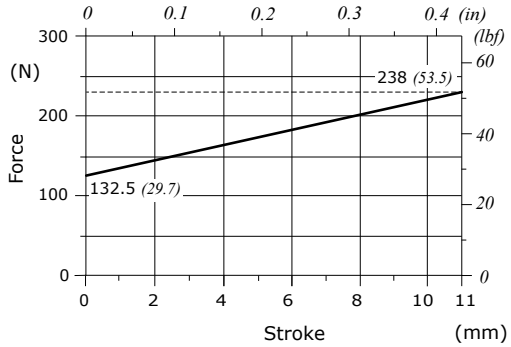
With heavier spring type "E"

Type 18ME

	1	0	2



Force-Stroke diagram



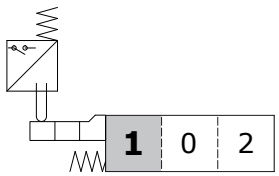
Wrenches and tightening torque
Z = wrench 4 - 6.6 Nm *(4.9 lbft)*

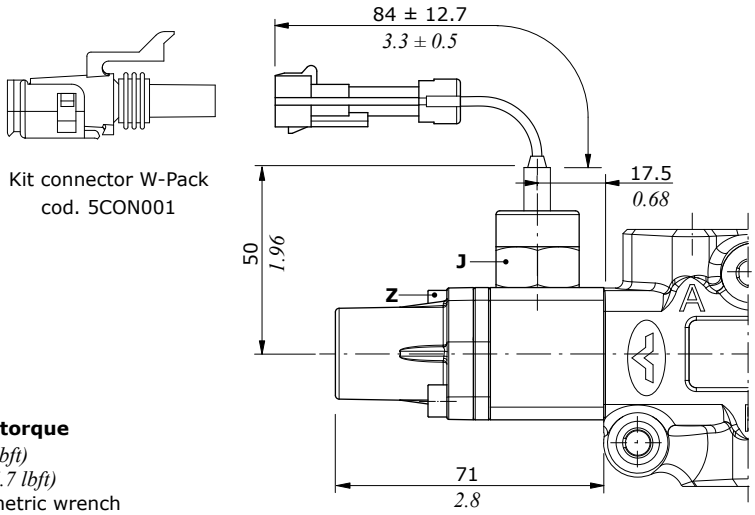
"A" side spool positioners

With spool position sensor

Type 17MEMG2(NO)

As type 17ME, with microswitch operated in pos. 1



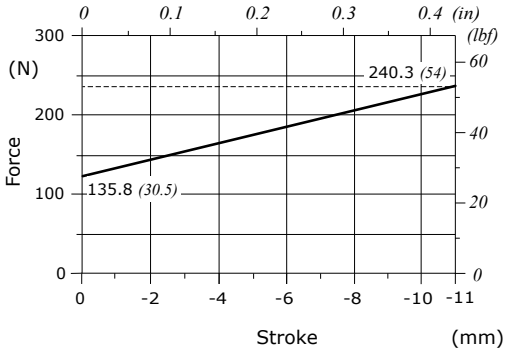


Kit connector W-Pack
cod. 5CON001

Wrenches and tightening torque
Z = wrench 4 - 6.6 Nm *(4.9 lbft)*
J* = wrench 22 - 24 Nm *(17.7 lbft)*
(*****)Tightening with dynametric wrench

Complete controls Microswitch operation			
Circuit	pos. 1 **17MG1**	pos. 2 **17MEMG2**	pos. 2 **17MG2**
(NO)	5V17105673	5V17305680	-
(NC)	-	-	5V17105672

Force-Stroke diagram



Features

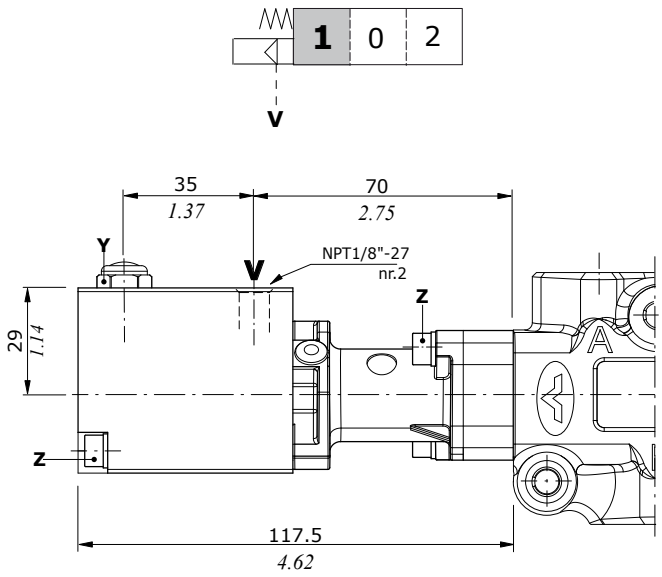
MICROSWITCH
Mechanical life ..... : 5x10^5 operations
Electrical life (resistive load)...: 10^5 oper. – 7A / 13.5VDC
: 5x10^4 oper. – 10A / 12VDC
: 5x10^4 oper. – 3A / 28VDC
Connector ..... : Packard Weather-pack
Mating connector cod. 5CON001, not included

"A" side spool positioners

ON/OFF pneumatic controls

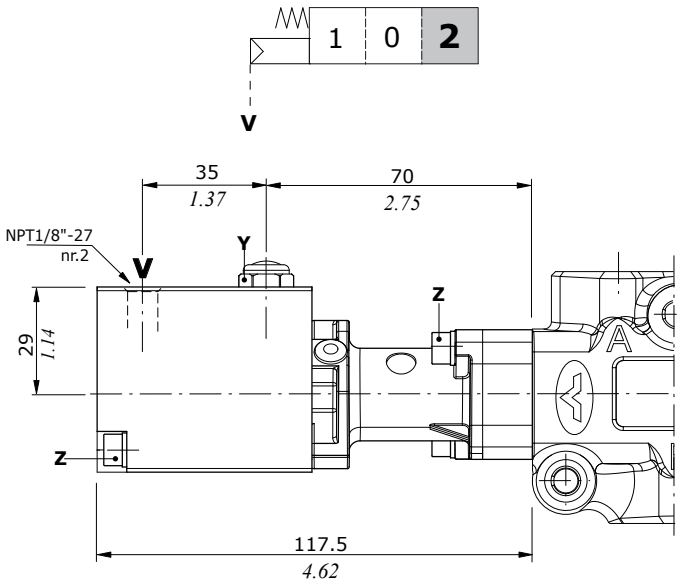
Type 17PNB

Spring return in pos. 1, waterproof type



Type 18PNB

Spring return in pos. 2, waterproof type



Wrenches and tightening torque

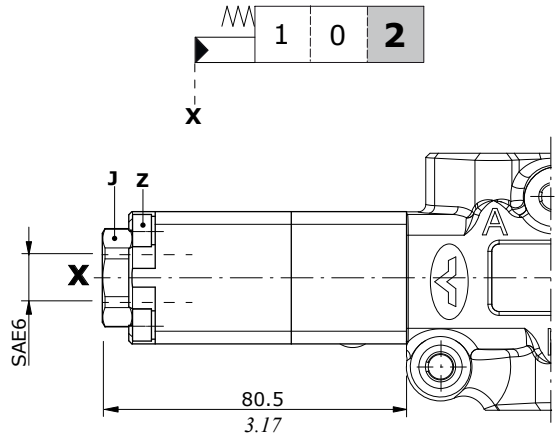
Z = wrench 4 - 6.6 Nm *(4.9 lbft)*

Y = wrench 13 - 9.8 Nm *(7.2 lbft)*

Hydraulic controls

Type 18IA1

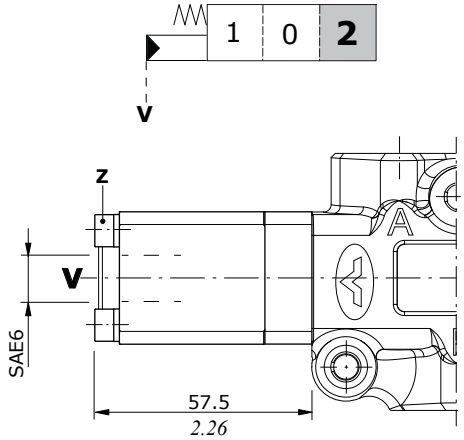
High pressure hydraulic control with spring return in position 2



Pilot pressure max. = 250 bar *(3620 psi)*

Type 18IB1N

Low pressure hydraulic control with spring return in position 2



Pilot pressure max. = 50 bar *(725 psi)*

Wrenches and tightening torque

Z = wrench 4 - 6.6 Nm *(4.9 lbft)*

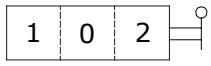
J = wrench 24 - 42 Nm *(31 lbft)*

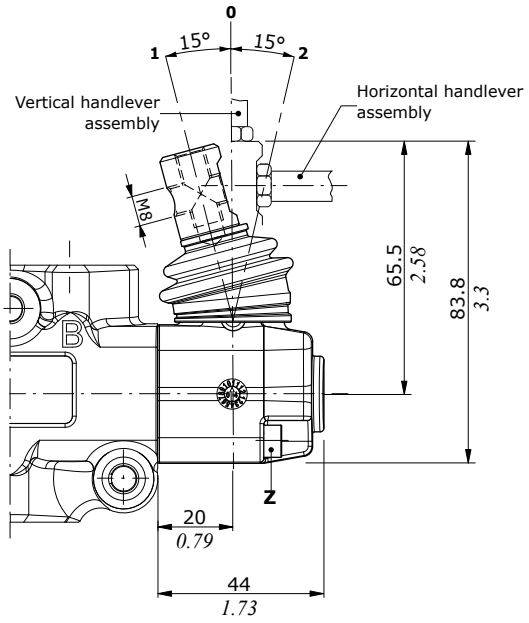
"B" side options

Lever control kit

Aluminium with protection boot lever pivot box; it can be rotated 180° (execution **L180**)

Type L

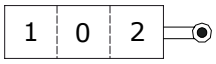


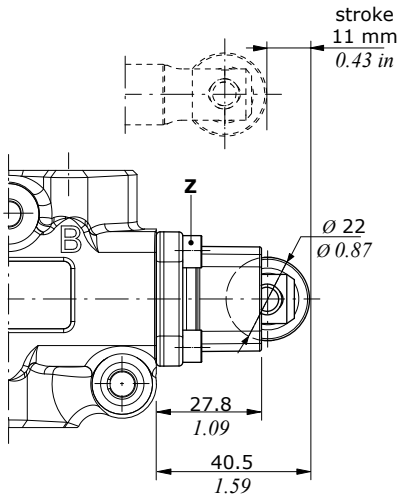


Cam control kit

Steel ball bearing cam operation (CA), and bronze cam operation (CB) or inox steel cam operation (CAX); it must be coupled to 17 control kit

Type CA-CB-CAX

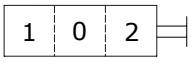


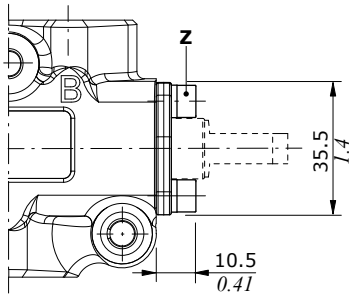


Wrenches and tightening torque
Z = wrench 4 - 6,6 Nm *(4.9 lbft)*

Without lever, with flange

Type SLP



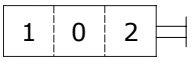


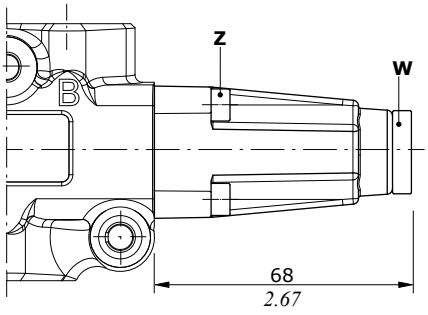
Wrenches and tightening torque
Z = wrench 4 - 6.6 Nm *(4.9 lbft)*
W = wrench 8 - 24 Nm *(17.7 lbft)*

Without lever, with cap

Protection cap to use with pneumatic and hydraulic spool positioner kits

Type SLC





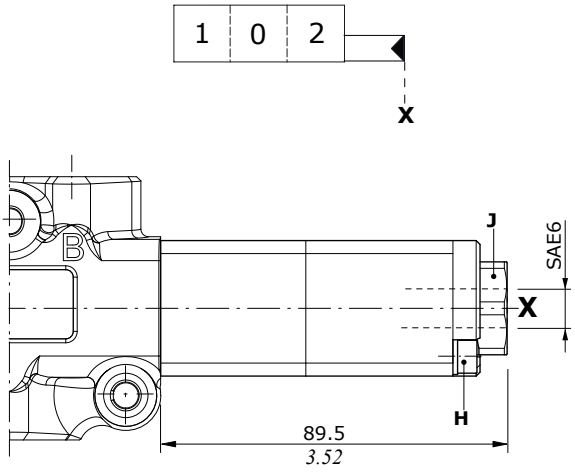
"B" side options

Hydraulic controls

ON/OFF controls with high and low pressure pilot it must be only coupled to 17YME control kit

Type IA2

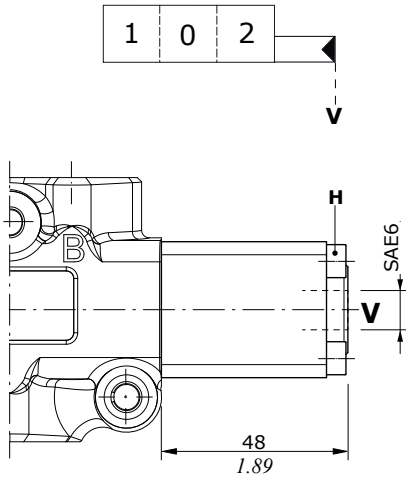
High pressure pilot



Pilot pressure max. = 250 bar *(3620 psi)*

Type IB2

Low pressure pilot



Pilot pressure max. = 50 bar *(725 psi)*

Wrenches and tightening torque

H = wrench 5 - 9.8 Nm *(7.2 lbft)*
J = wrench 24 - 42 Nm *(31 lbft)*