



Diverter valves

Index

MECHANICAL CONTROL MONOBLOCK DIVERTER VALVES

Type	Nr of ways	Type	Max. flow rating	Max. pressure	Page
			l/min (US gpm)	bar (psi)	
DF5	2 - 3 - 6	lever, cam, hydraulic, pneumatic	60 (15.9)	315 (4600)	5
DFC050	2 - 3 - 6	cam	60 (15.9)	315 (4600)	19
DF10	3 - 6	lever, cam, hydraulic, pneumatic	90 (23.5)	315 (4600)	25
DFC100	3 - 6	cam	90 (23.5)	315 (4600)	35
DF20	3 - 6	lever, cam, hydraulic, electrohydraulic, pneumatic	140 (37)	315 (4600)	41
DF25	3	lever, cam, hydraulic, electrohydraulic, pneumatic	280 (74)	315 (4600)	55
DF250	6	hydraulic	250 (66)	350 (5100)	67
DF350	6	hydraulic	350 (92.5)	350 (5100)	71

SOLENOID CONTROL DIVERTER VALVES

Type	Nr of ways	Type	Max. flow rating	Max. pressure		Supply voltage	Nominal power solenoid	Page
				without drain	with drain			
			l/min (US gpm)	bar (psi)		VDC		
DFE052	2 - 3 - 6 - 8	monoblock	60 (15.9)	200 (2900)	315 (4600)	12-14-24-48-98-110	38W	75
DFE10	3 - 6	monoblock	90 (23.5)	200 (2900)	315 (4600)	12-24-48-94-110-192	60W	87
DFE20	3 - 6	monoblock	140 (37)	200 (2900)	315 (4600)	12-20-24-94-192	60W	95
DFE085	4	monoblock for special applications	25 (6.6)	210 (3000)	-	12-14-24-48-98-110	38W	103
DFE110	12	monoblock for special applications	90 (23.5)	210 (3000)	315 (4600)	12-20-24-94-192	60W	109
DFE141	6 - 8	monoblock for special applications	80 (21)	250 (3600)	315 (4600)	12-20-24-94-192	60W	115
DFE080	6 - 8 - 10	sectional	25 (6.6)	210 (3000)	315 (4600)	12-14-24-48-98-110	38W	123
DFE100	6 - 8 - 10	sectional	50 (13)	210 (3000)	315 (4600)	12-14-24-48-98-110	38W	131
DFE140	6 - 8 - 10	sectional	80 (21)	210 (3000)	315 (4600)	12-20-24-94-192	60W	139



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	$\Delta p=100 \text{ bar (1450 psi)}$	5 cm ³ /min (0.31 in ³ /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 mm ² /s (from 15 to 75 cSt)
	min.	12 mm ² /s (12 cSt)
	max.	400 mm ² /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)	-	-

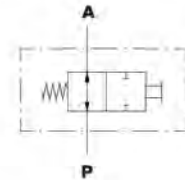
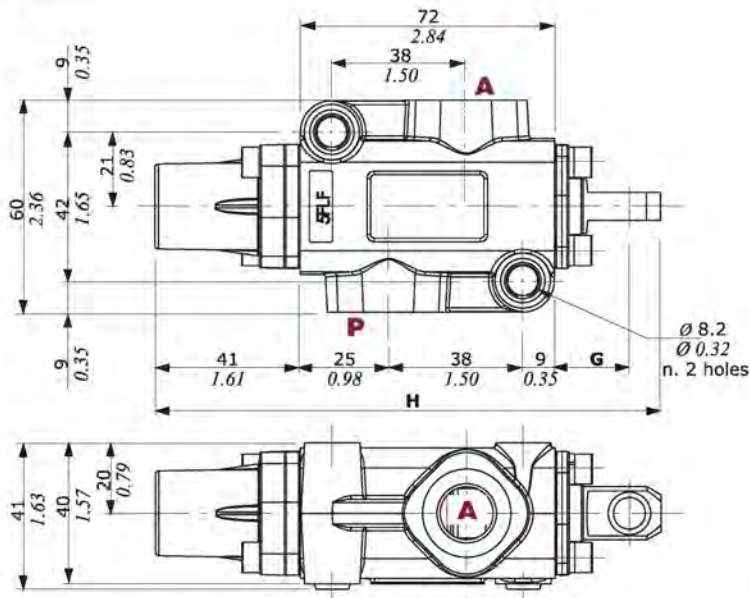
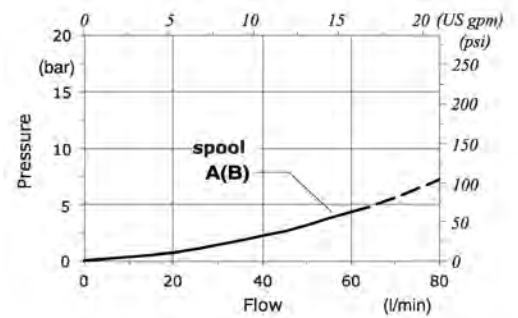
(*) Optional threads
for availability contact Sales
Department

DF5

Mechanical control monoblock diverter valves

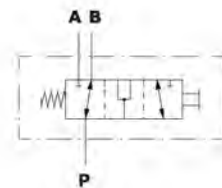
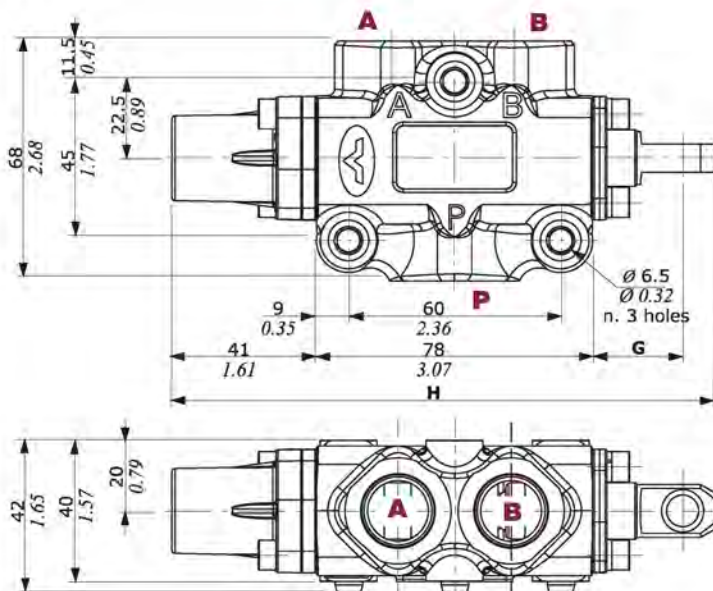
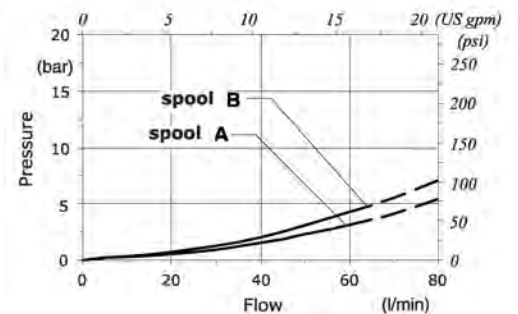
Dimensional data - hydraulic circuit - performance data

2 ways

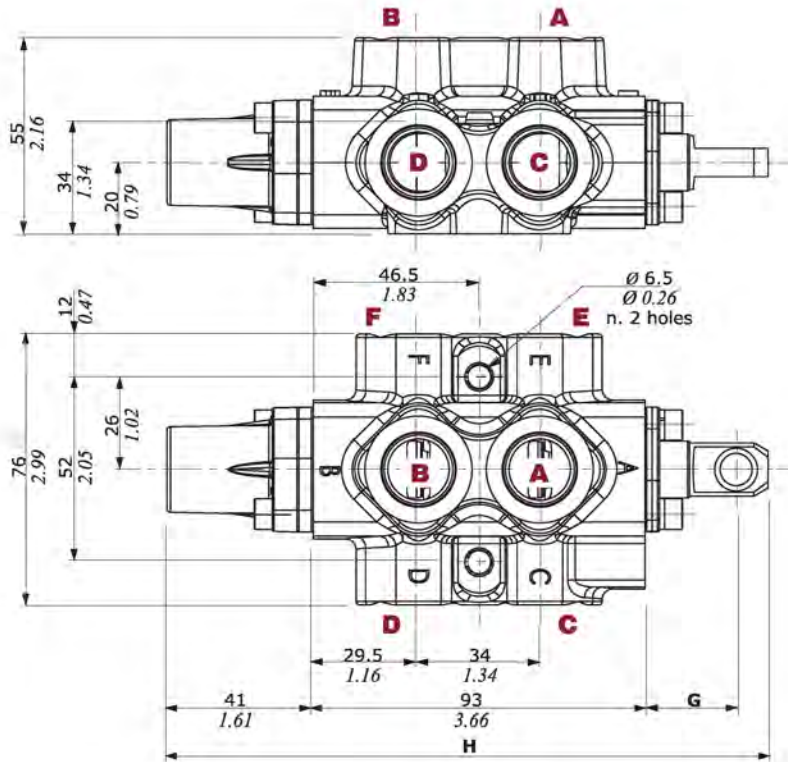

Pressure drop versus flow
P → A


	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

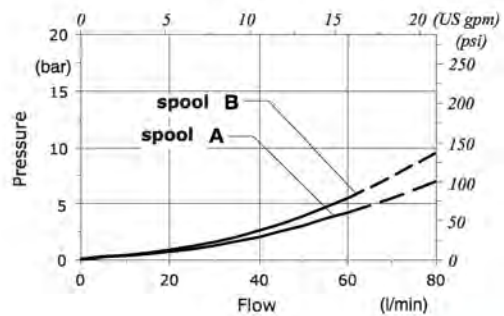
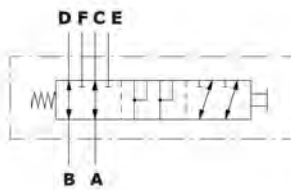
3 ways


Pressure drop versus flow
P → A(B)


	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

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)


DF5

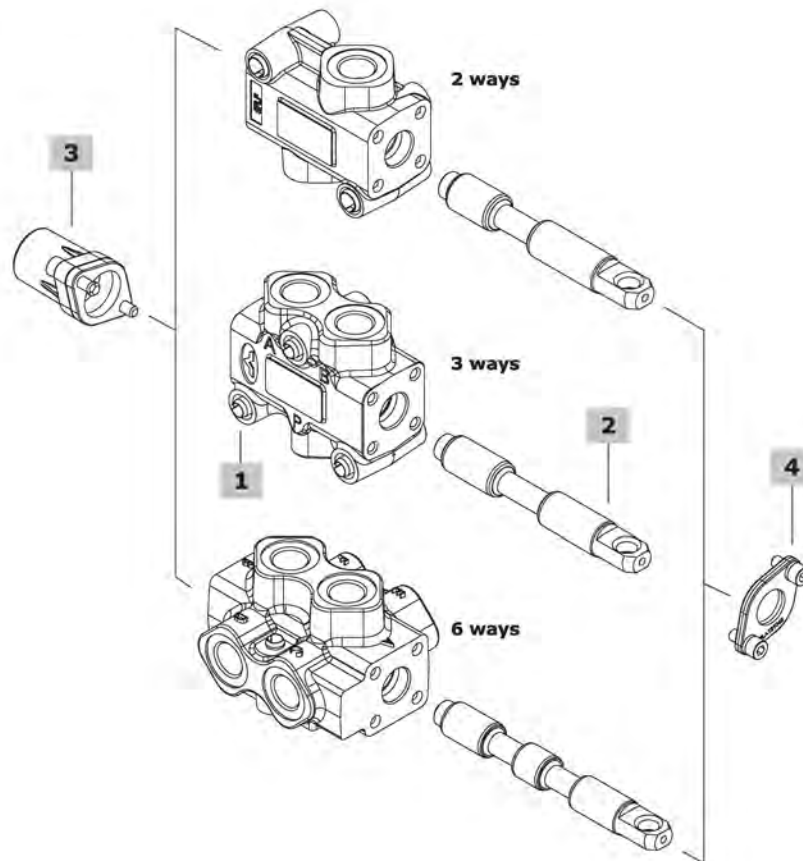
Mechanical control monoblock diverter valves

Part ordering codes

Example:

DF5/3 **A** **17** **SLP** - ... - **(CVN)**

1 **2** **3** **4** **5** Painted with one layer of black Primer antirust



1 Body kit*

TYPE	CODE	DESCRIPTION
DF5/2	5CO2220300	2 ways body kit
DF5/3	5CO2221300	3 ways body kit
DF5/6	5CO2222300	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
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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	5V18105820*	On/off high pressure hydraulic control with spring return in position 2
18IB1N	5V18105811*	On/off low pressure hydraulic control with spring return in position 2

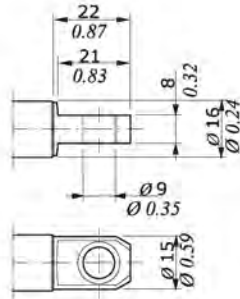
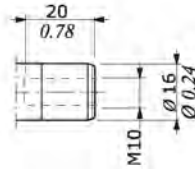
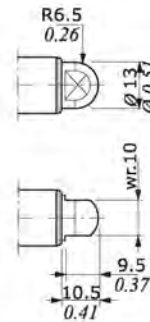
4 "B" side options
page 16

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	5IDR505000*	On/off with high pressure pilot, need 17YME control type
IB2	5IDR705000*	On/off with low pressure pilot, need 17YME control type

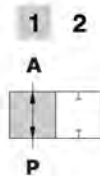
5 Body threading

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

 (*) - Codes are referred to **BSP** 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

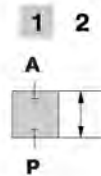
Open port in neutral position


Spool stroke

Position 2: - 11 mm (- 0.43 in)

Type B/BT/BC

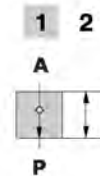
Closed port in neutral position


Spool stroke

Position 2: - 11 mm (- 0.43 in)

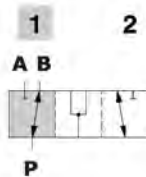
Type V/VT

With load check valve


Spool stroke

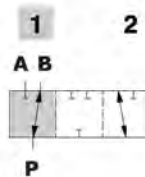
Position 2: - 11 mm (- 0.43 in)

3 ways
Type A/AT/AC

 Ports connected
 in transit position

Spool stroke

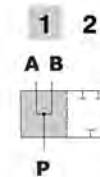
Position 2: - 11 mm (- 0.43 in)

Type B/BC

 Ports closed
 in transit position

Spool stroke

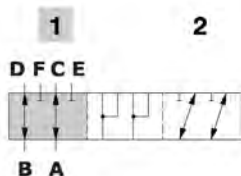
Position 2: - 11 mm (- 0.43 in)

Type D

 Without transit position
 Ports connected in neutral

Spool stroke

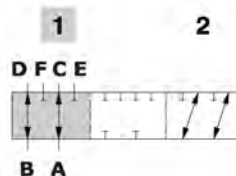
Position 2: - 5.5 mm (- 0.21 in)

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)

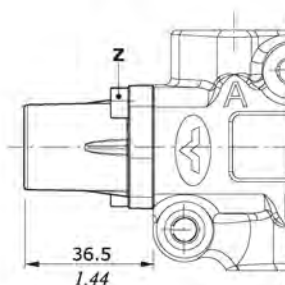
Type B/BC

 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

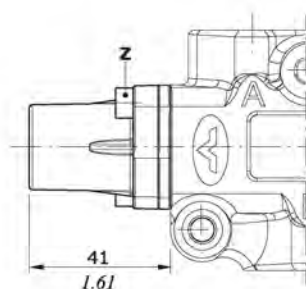
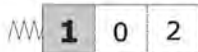
Z = wrench 4 - 6.6 Nm (4.9 lbf)

"A" side spool positioners

With spring return in position 1

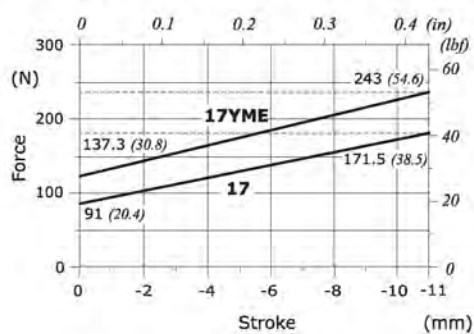
Available with standard or heavier spring type "E"

Type 17-17ME-17YME

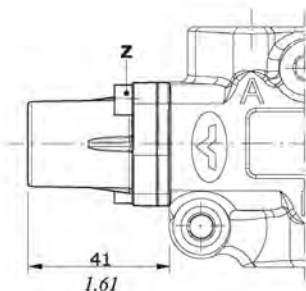
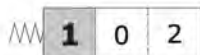


Wrenches and tightening torque
Z = wrench 4 - 6.6 Nm (4.9 lbf)

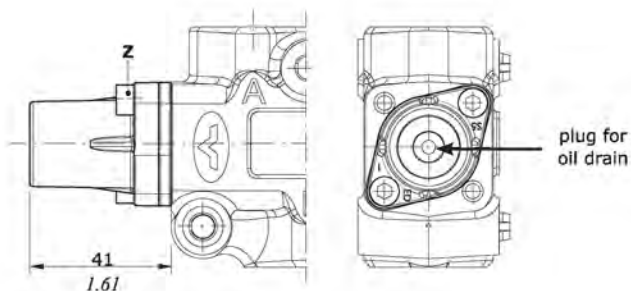
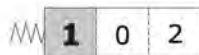
Force-Stroke diagram



Type 17MEWPO
With water proof sealing

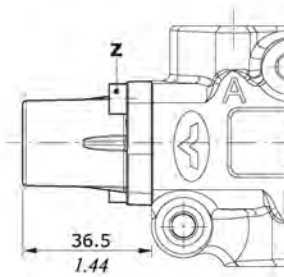


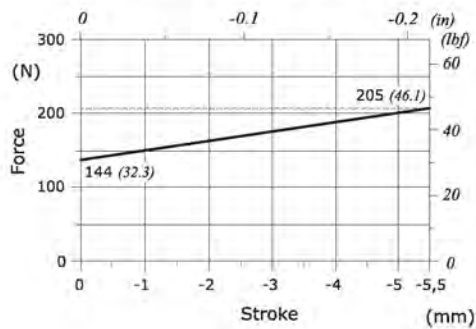
Type 17WPOA
With water proof sealing and plug for oil drain



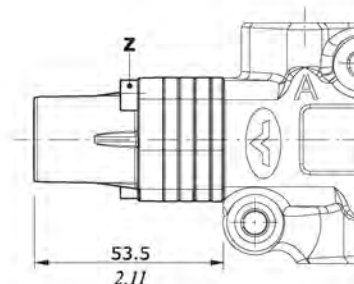
With spring return in position 1
Type 17A

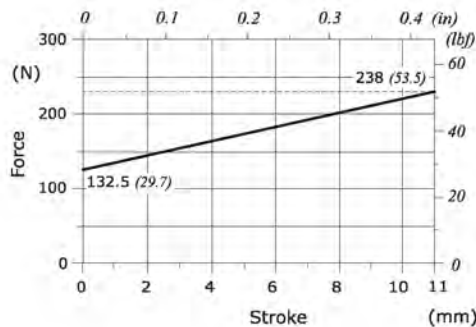
As type 17, for spool type D


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

Force-Stroke diagram

With spring return in position 2

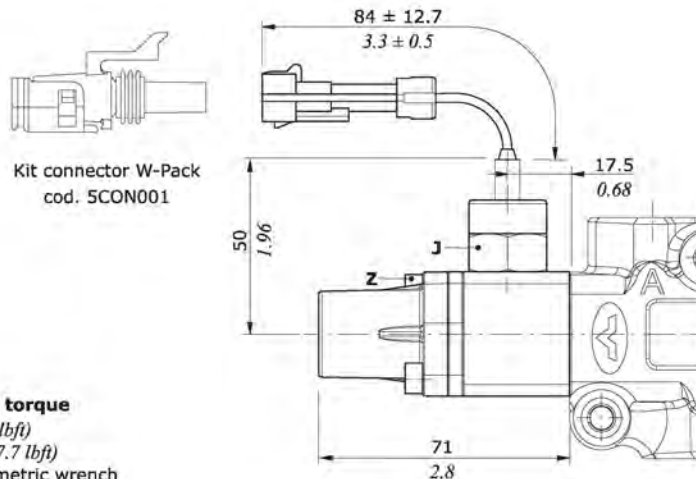
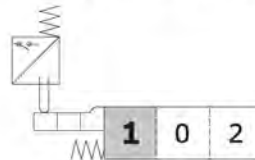
With heavier spring type "E"

Type 18ME

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

Force-Stroke diagram


"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. SCON001

Wrenches and tightening torque
Z = wrench 4 - 6.6 Nm (4.9 lbf·ft)

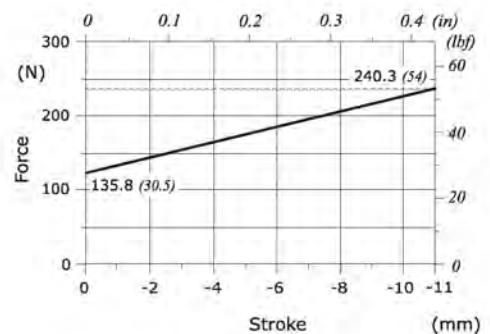
J* = wrench 22 - 24 Nm (17.7 lbf·ft)

(*) Tightening with dynamometric wrench

Complete controls

Microswitch operation

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

Force-Stroke diagram

Features
MICROSWITCH

 Mechanical life : 5x10⁵ operations

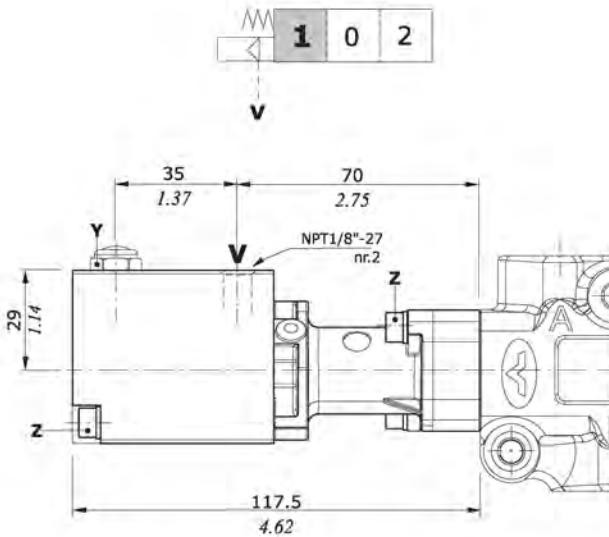
 Electrical life (resistive load).... : 10⁵ oper. - 7A / 13.5VDC
 : 5x10⁴ oper. - 10A / 12VDC
 : 5x10⁴ oper. - 3A / 28VDC

Connector : Packard Weather-pack

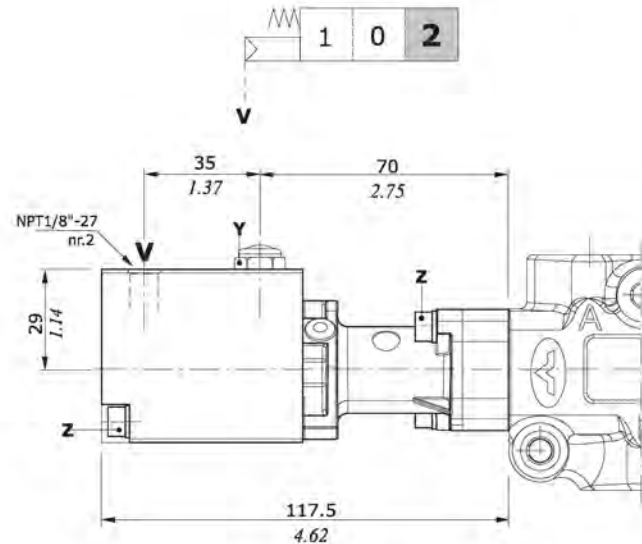
Mating connector cod. SCON001, not included

ON/OFF pneumatic controls
Type 17PNB

Spring return in pos. 1, waterproof type


Type 18PNB

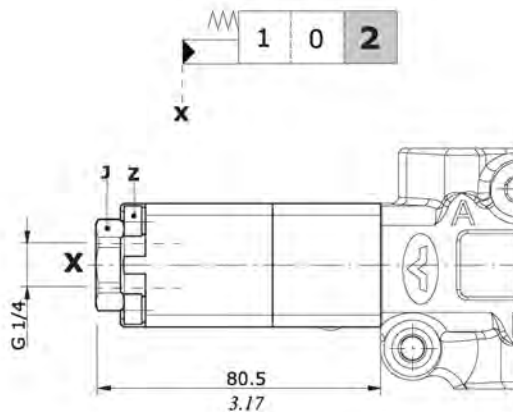
Spring return in pos. 2, waterproof type


Wrenches and tightening torque
Z = wrench 4 - 6.6 Nm (4.9 lbf·ft)

Y = wrench 13 - 9.8 Nm (7.2 lbf·ft)

Hydraulic controls
Type 18IA1

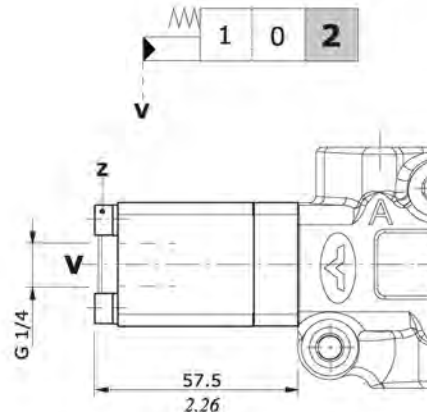
High pressure hydraulic control with spring return in position 2



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 lbf·ft)

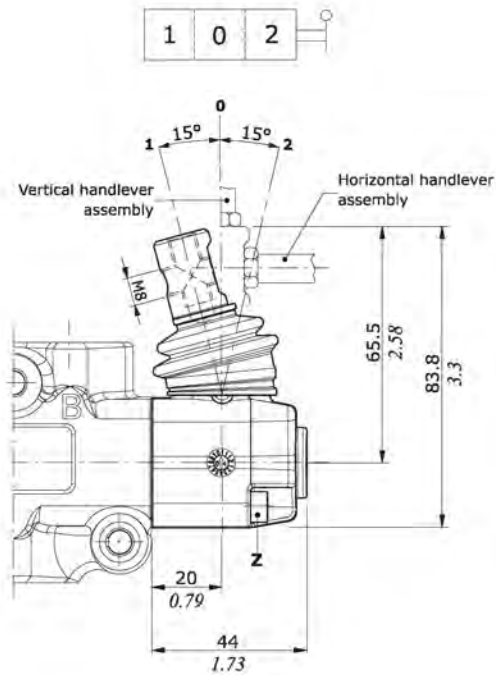
J = wrench 24 - 42 Nm (31 lbf·ft)

DF5

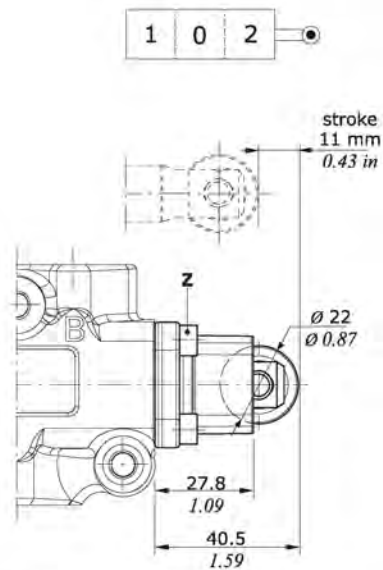
Mechanical control monoblock diverter valves

"B" side options
Lever control kit

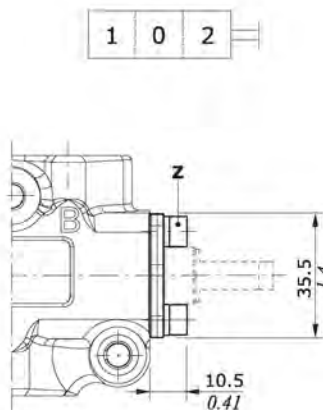
 Aluminium with protection boot lever pivot box; it can be rotated 180° (execution **L180**)

Type L

Cam control kit

Steel ball bearing cam operation (CA), 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 lbf_t)

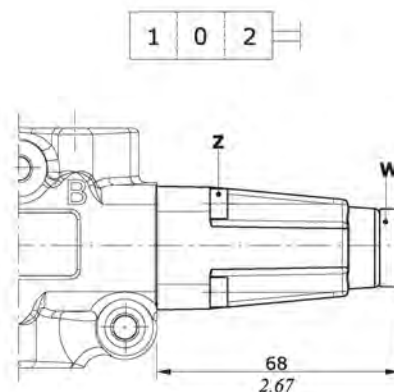
Without lever, with flange
Type SLP

Wrenches and tightening torque

 Z = wrench 4 - 6.6 Nm (4.9 lbf_t)

 W = wrench 8 - 24 Nm (17.7 lbf_t)

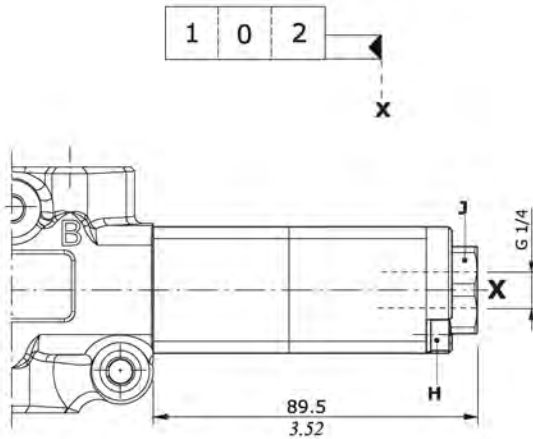
Without lever, with cap

Protection cap to use with pneumatic and hydraulic spool positioner kits

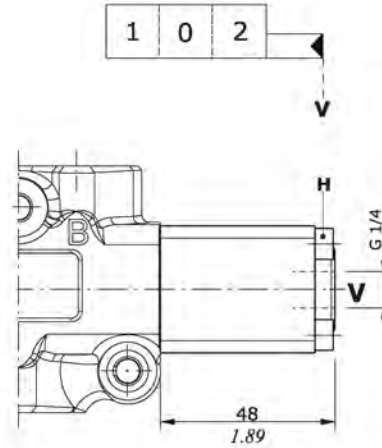
Type SLC


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 lbf^t)

J = wrench 24 - 42 Nm (31 lbf^t)



DFC050

Mechanical control monoblock diverter valves

- 2 - 3 - 6 way configuration
- Cam controls
- Especially suitable for use in external environments

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	$\Delta p = 100 \text{ bar (1450 psi)}$	5 cm ³ /min (0.31 in ³ /min)
Fluid	Mineral based oil	
Fluid temperature	from -20°C to 80°C (from -4°F to 176°F)	
Viscosity	operating range	from 15 to 75 mm ² /s (from 15 to 75 cSt)
	min.	12 mm ² /s (12 cSt)
	max.	400 mm ² /s (400 cSt)
Max. level of contamination	21/19/16 - ISO 4406 - NAS 1638 - class 10	
Ambient temperature for working conditions	from -40°C to 60°C (from -40°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)
DFC050	G 3/8	3/4-16 (SAE 8)	M18x1.5	M18x1.5

(*) Optional threads
for availability contact Sales
Department

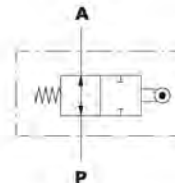
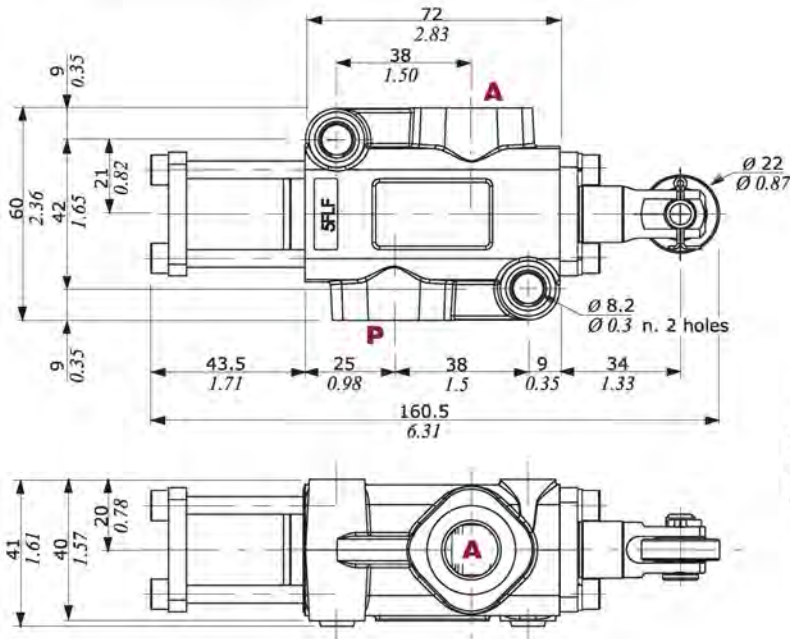
DFC050

Mechanical control monoblock diverter valves

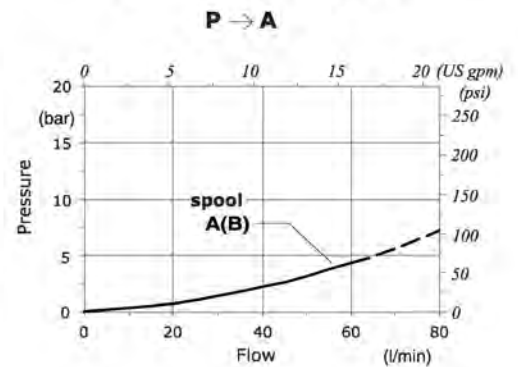
Dimensional data - hydraulic circuit - performance data

Cam spool control suggested for severe applications; it requires a special body, spool and control kit.

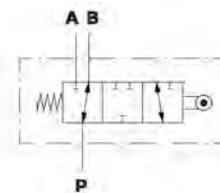
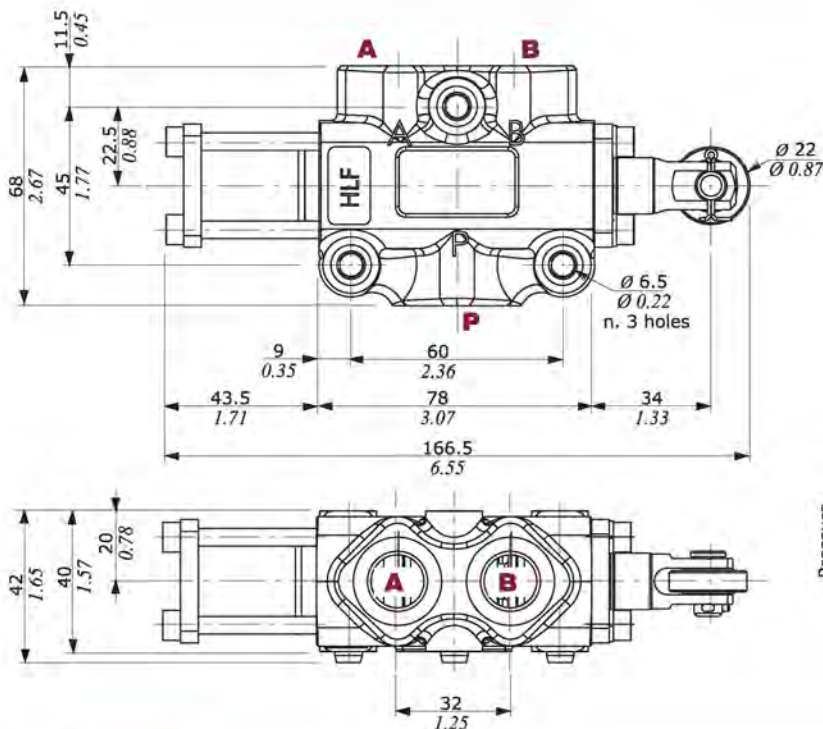
2 ways



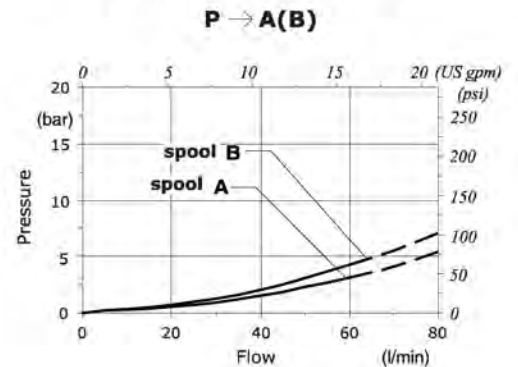
Pressure drop versus flow

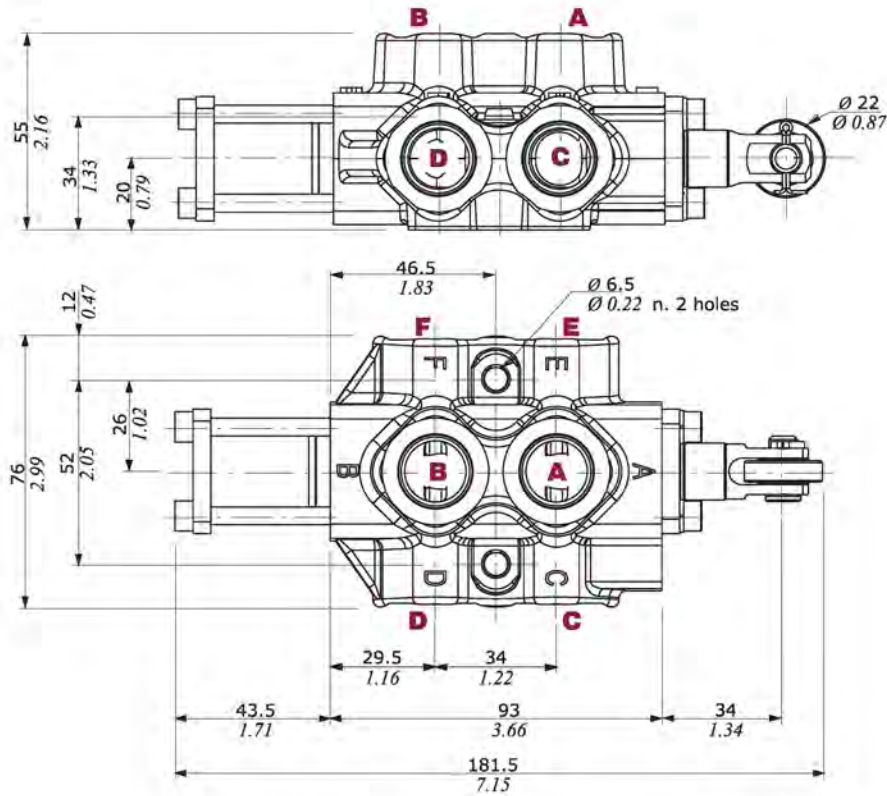
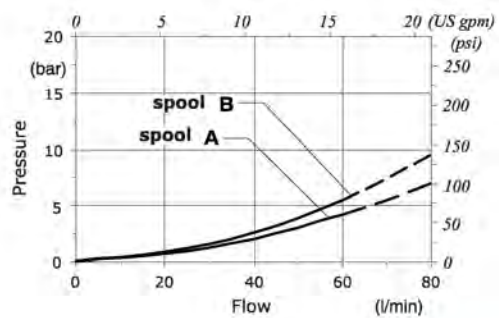
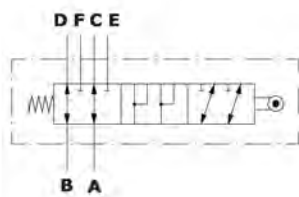


3 ways



Pressure drop versus flow



Dimensional data - hydraulic circuit - performance data
6 ways

Pressure drop versus flow
A → C(E)


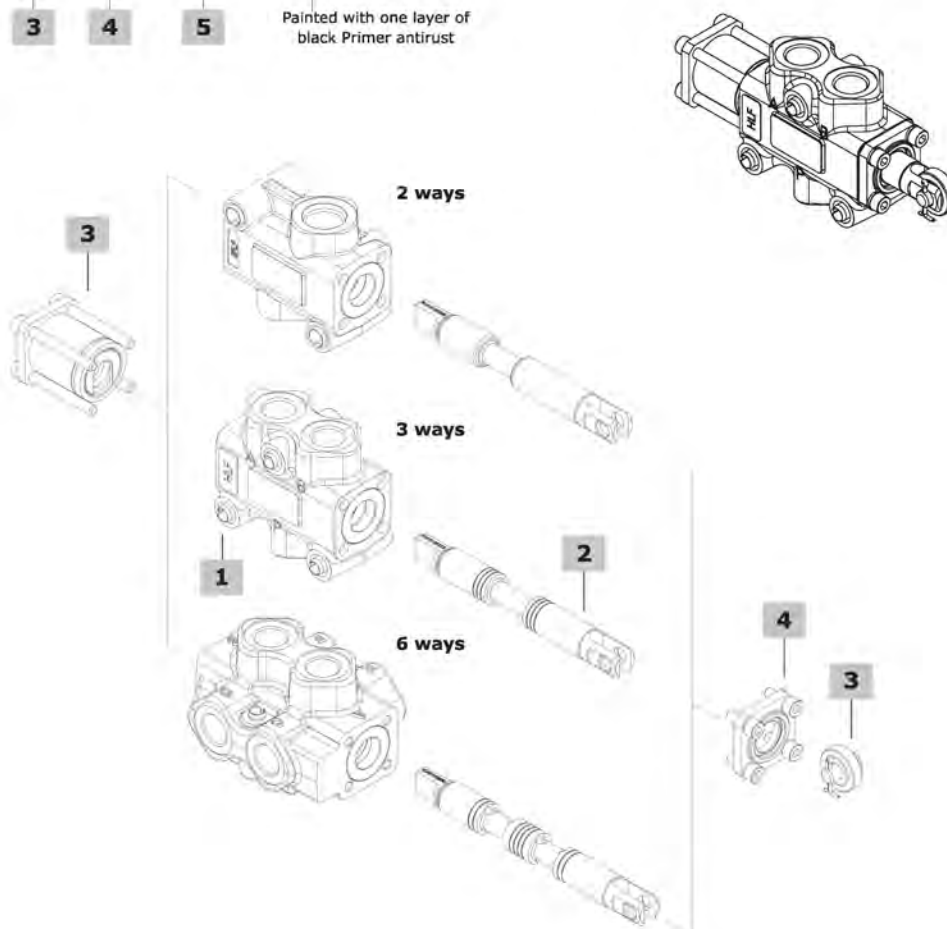
DFC050

Mechanical control monoblock diverter valves

Part ordering codes

Example:

DFC050/3 **A** **17G** **SLP** - ... - **(CVN)**
1 2 3 4 5 Painted with one layer of black Primer antirust



1 Body kit*

TYPE	CODE	DESCRIPTION
DFC050/2	5CO2220380	2 ways body kit
DFC050/3	5CO2221313	3 ways body kit
DFC050/6	5CO2222311	6 ways body kit

2 Spools

page 23

TYPE	CODE	DESCRIPTION
for DFC050/2:		
A	3CAS105200	Open port in neutral position
B	3CAS105100	Closed port in neutral position
for DFC050/3:		
A	3CAS105323	Flow in B in pos. 1. Ports connected in transit position
B	3CAS105422	Flow in B in pos. 1. Ports closed in transit position
for DFC050/6:		
A	3CAS105660	Flow in C and D. E and F closed in pos. 1. Ports connected in transit position
B	3CAS105721	Flow in C and D. E and F closed in pos. 1. Ports closed in transit position

3 Complete controls

page 24

TYPE	CODE	DESCRIPTION
17G	5V17905000	Cam control with spring return in pos. 1
17GCAX	5V17905001	Inox steel cam control with spring return in pos. 1

4 "B" side options

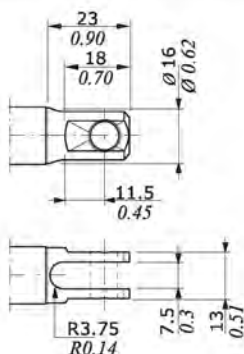
page 24

TYPE	CODE	DESCRIPTION
SLP	5COP107000	with dust-proof plate

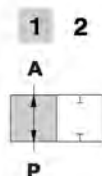
5 Body threading

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

 (*) - Codes are referred to **BSP** thread


 Rotary cam arrangement:
 spool type **A, B**
2 ways
Type A

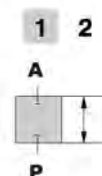
Open port in neutral position


Spool stroke

Position 2: - 11 mm (- 0.43 in)

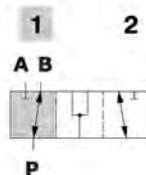
Type B

Closed port in neutral position


Spool stroke

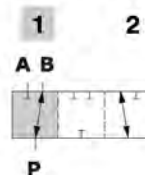
Position 2: - 11 mm (- 0.43 in)

3 ways
Type A

 Ports connected
 in transit position

Spool stroke

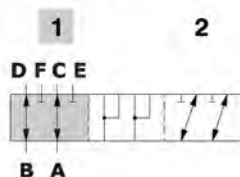
Position 2: - 11 mm (- 0.43 in)

Type B

 Ports closed
 in transit position

Spool stroke

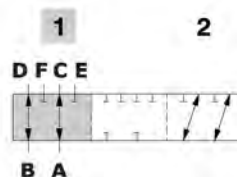
Position 2: - 11 mm (- 0.43 in)

6 ways
Type A

 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

 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)

DFC050

Mechanical control monoblock diverter valves

Complete controls

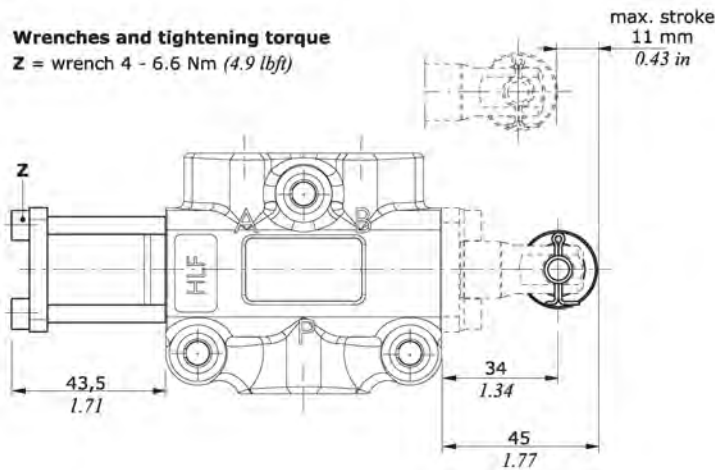
Cam control kit

17G type cam control available with stainless steel bearing (type 17GCAX).
 It must be coupled with type SLP flange on valve B side

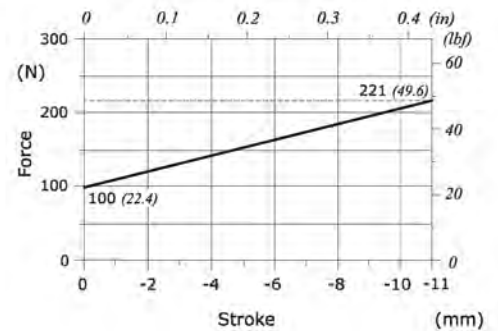
Type 17G - 17GCAX
 Spring return in position 1



Wrenches and tightening torque
 Z = wrench 4 - 6.6 Nm (4.9 lbf^t)



Force-Stroke diagram



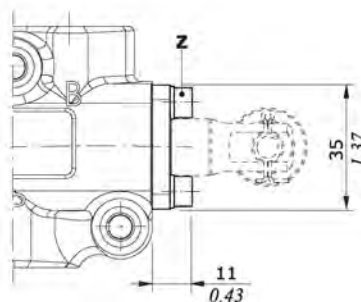
"B" side options

Without lever, with flange

Type SLP



Wrenches and tightening torque
 Z = wrench 4 - 6.6 Nm (4.9 lbf^t)





DF10

Mechanical control monoblock diverter valves

- 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		3 - 6
Max. flow rating		90 l/min (23.7 US gpm)
Max. pressure		315 bar (4600 psi)
Internal leakage A(B)→T	$\Delta p = 100 \text{ bar (1450 psi)}$	5 cm ³ /min (0.31 in ³ /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)
	operating range	from 15 to 75 mm ² /s (from 15 to 75 cSt)
Viscosity	min.	12 mm ² /s (12 cSt)
	max.	400 mm ² /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)
DF10	G 1/2	7/8-14 (SAE 10)	M22x1.5
BOCCHE PILOTAGGI			
Pneumatic	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

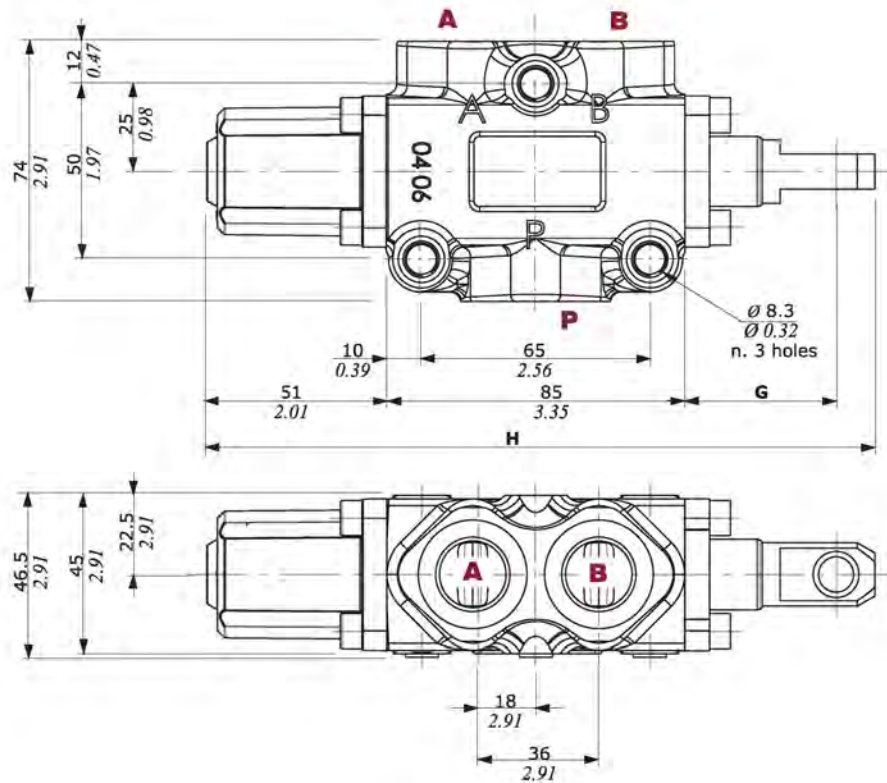
DF10

Mechanical control monoblock diverter valves

Dimensional data - hydraulic circuit - performance data

3 ways

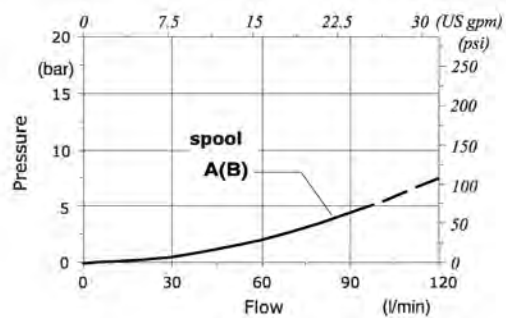
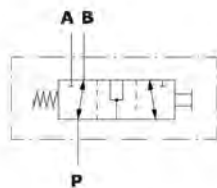
It's possible to obtain 2 ways diverter valve plugging port

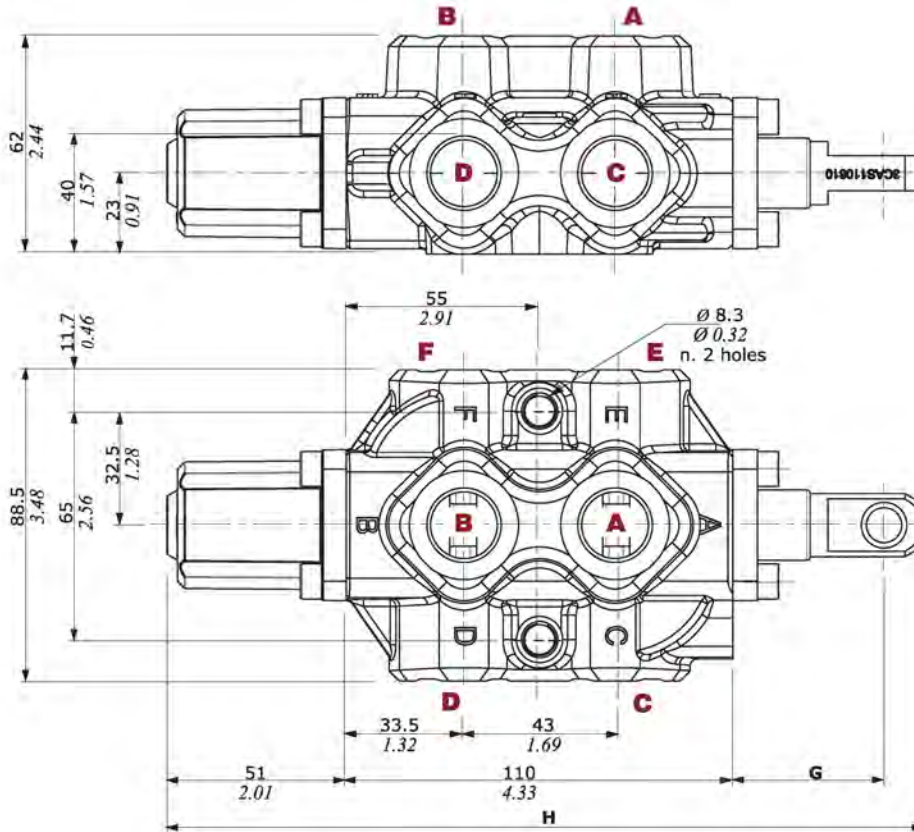


	G	H
With spool out	43 mm 1.69 in	190 mm 7.48 in
With spool in	29 mm 1.14 in	176 mm 6.92 in

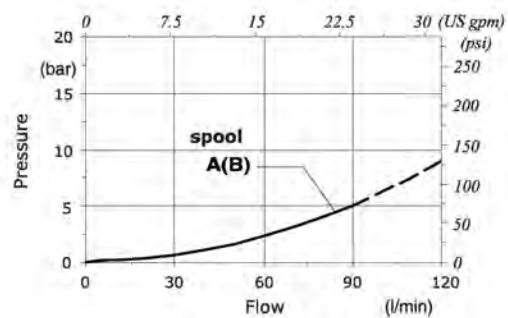
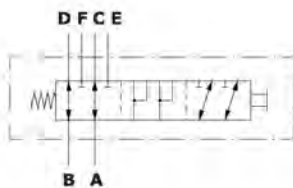
Pressure drop versus flow

P → A(B)



Dimensional data - hydraulic circuit - performance data
6 ways


	G	H
With spool out	43 mm 1.69 in	215 mm 8.46 in
With spool in	29 mm 1.14 in	201 mm 7.91 in

Pressure drop versus flow
A → C(E)


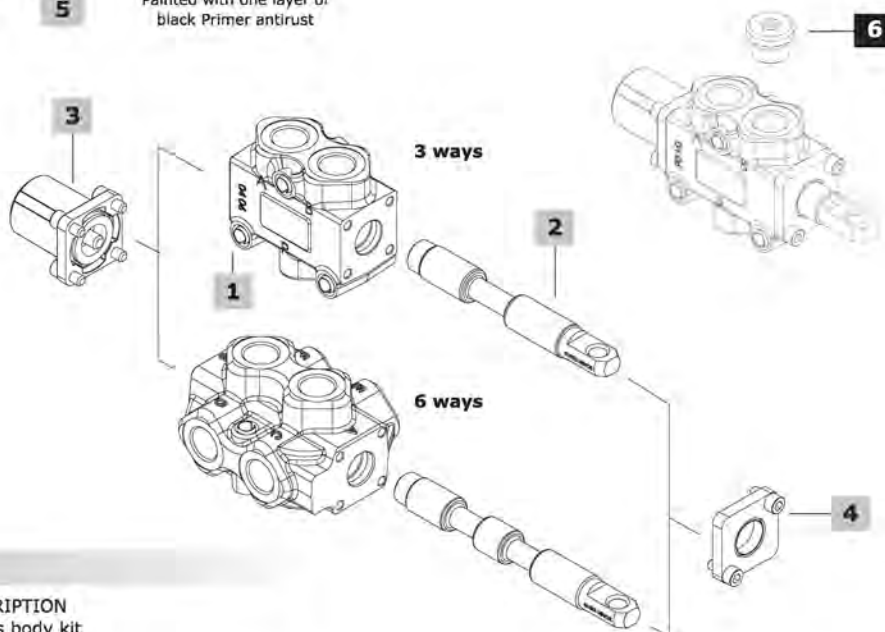
DF10

Mechanical control monoblock diverter valves

Part ordering codes

Example:

DF10/3 **A** **17** **SLP** - ... - **(CVN)**
1 2 3 4 5 Painted with one layer of black Primer antirust



1 Body kit*

TYPE	CODE	DESCRIPTION
DF10/3	5CO2241300	3 ways body kit
DF10/6	5CO2242300	6 ways body kit

2 Spools

page 29

TYPE	CODE	DESCRIPTION
for DF10/3:		
A	3CAS110310	Flow in B in pos. 1. Ports connected in transit position
B	3CAS110410	Flow in B in pos. 1. Ports closed in transit position
AT	3CAS110330	As type A, with spherical end
AC	3CAS110320	As type A, for cam control
BC	3CAS110420	As type B, for cam control
DC	3CAS110520	Flow in A, B in pos. 1. Without transit position, for cam control

for DF10/6:

A	3CAS110610	Flow in C and D. E and F closed in pos. 1. Ports connected in transit position
B	3CAS110710	Flow in C and D. E and F closed in pos. 1. Ports closed in transit position
AC	3CAS110620	As type A, for cam control
BC	3CAS110720	As type B, for cam control

3 "A" side spool positioners

page 30

TYPE	CODE	DESCRIPTION
12	5V12110000	Detent in positions 1 and 2
17	5V17110000	Spring return in position 1
17ME	5V17310000	As kit 17, with heavier spring type E
18	5V18110000	Spring return in position 2
<u>Pneumatic controls: must be coupled to the control kit side B with lever, with plate or cap</u>		
17P	5V17110700	On/off, with spring return in pos. 1
18P	5V18110710	On/off, with spring return in pos. 2
<u>Hydraulic controls: must be coupled to the control kit side B with lever, with plate or cap</u>		
18IA1	5V18110821*	On/off high pressure hydraulic kit with spring return in position 2
18IB1	5V18110810*	On/off low pressure hydraulic kit with spring return in position 2

4 "B" side options

page 33

TYPE	CODE	DESCRIPTION
SLP	5COP110000	Without lever box, with dust-proof plate kit
SLC	5COP210000	Without lever box, with cap
L	5LEV110000	Aluminum lever box
CA	5CAM110000	Steel ball bearing cam operation
CB	5CAM110020	Bronze cam operation
<u>Hydraulic controls</u>		
IA2	5IDR510001*	On/off with high pressure pilot, need 17ME control type
IB2	5IDR710000*	On/off with low pressure pilot, need 17ME control type

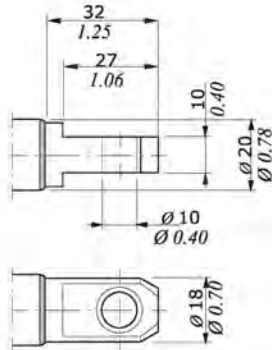
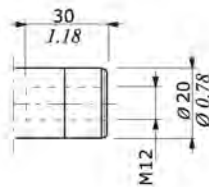
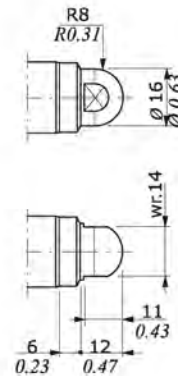
5 Body threading

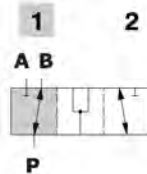
 Specify threading always when it is different from **BSP** standard

6 Port plugs*

CODE	DESCRIPTION
3XTAP727180	G1/2 plug

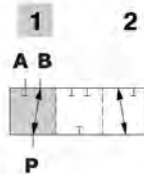
 (*) - Codes are referred to **BSP** thread

Spool end

 Standard:
 spool
 type **A, B**

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

 Spherical end:
 spool type **AT**
Spool circuits
3 ways
Type A/AT/AC

 Ports connected
 in transit position

Spool stroke

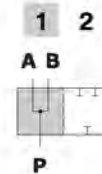
Position 2: - 14 mm (-0.55 in)

Type B/BC

 Ports closed
 in transit position

Spool stroke

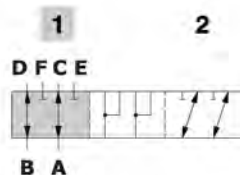
Position 2: - 14 mm (-0.55 in)

Type DC

 Without transit position
 Ports connected in neutral

Spool stroke

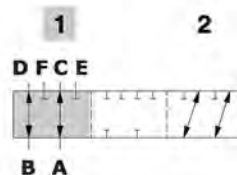
Position 2: - 14 mm (-0.55 in)

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: - 14 mm (-0.55 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: - 14 mm (-0.55 in)

DF10

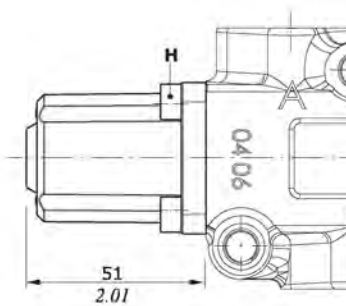
Mechanical control monoblock diverter valves

"A" side spool positioners

With detent

Type 12

Detent in positions 1 and 2

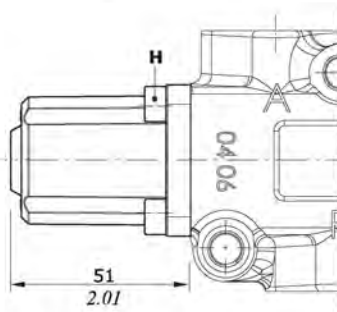
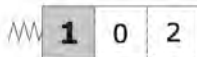


Wrenches and tightening torque
H = wrench 5 - 9.8 Nm (7.2 lbf)

With spring return in position 1

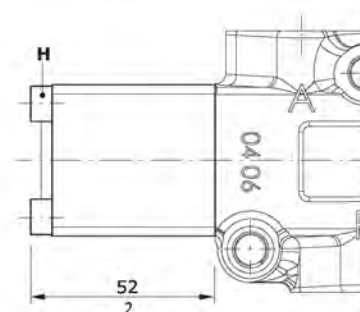
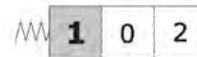
With heavier spring type "E"

Type 17

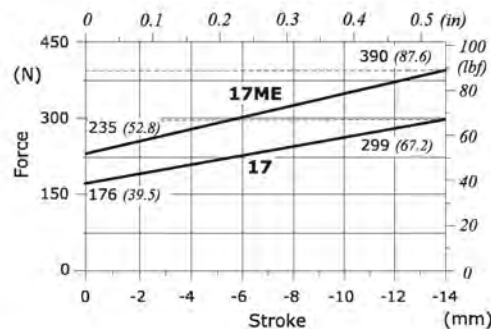


Wrenches and tightening torque
H = wrench 5 - 9.8 Nm (7.2 lbf)

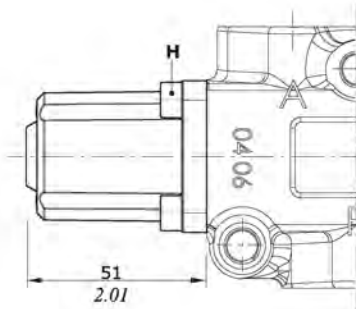
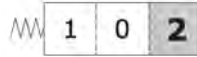
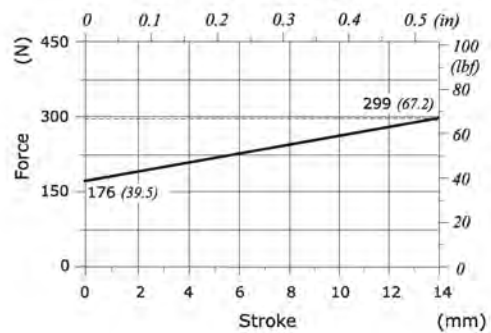
Type 17ME



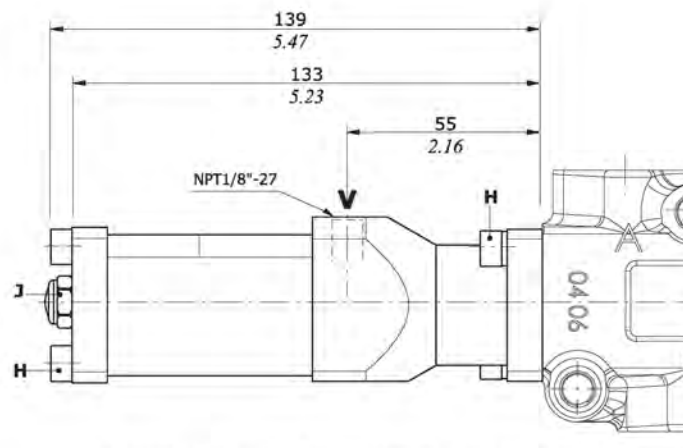
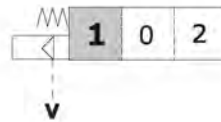
Force-Stroke diagram



With spring return in position 2
Type 18
Wrenches and tightening torque

 H = wrench 5 - 9.8 Nm (7.2 lbf^t)

Force-Stroke diagram

ON/OFF pneumatic controls
Type 17P

Spring return in pos. 1


Wrenches and tightening torque

 H = wrench 5 - 9.8 Nm (7.2 lbf^t)

 J = wrench 13 - 9.8 Nm (7.2 lbf^t)

Pilot pressure... : min. 7 bar (101 psi) - max. 10 bar (145 psi)

DF10

Mechanical control monoblock diverter valves

"A" side spool positioners

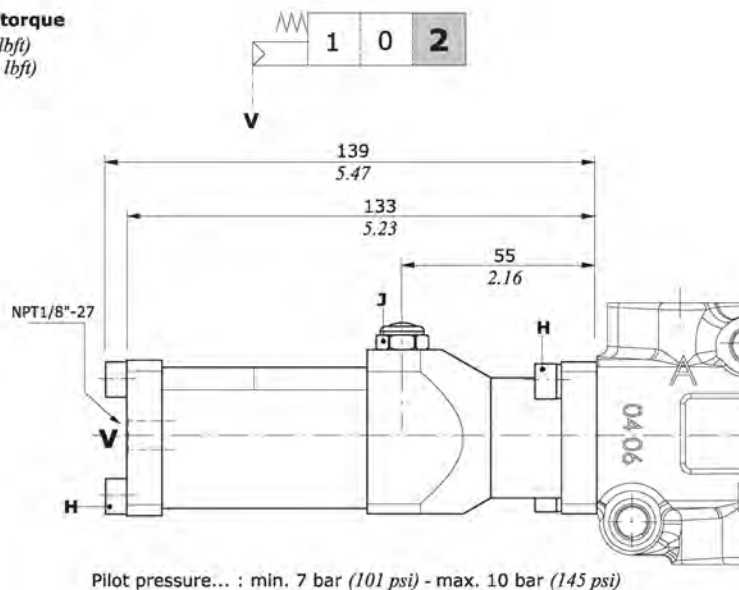
ON/OFF pneumatic controls

Type 18P

Spring return in pos. 2

Wrenches and tightening torque

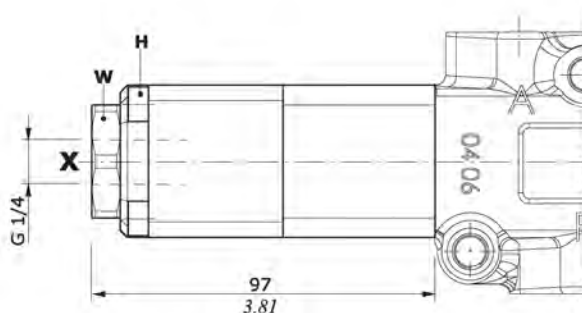
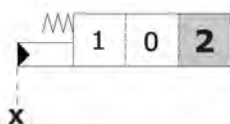
H = wrench 5 - 9.8 Nm (7.2 lbf·ft)

J = wrench 13 - 9.8 Nm (7.2 lbf·ft)


Pilot pressure... : min. 7 bar (101 psi) - max. 10 bar (145 psi)

Hydraulic controls

Type 18IA1

 High pressure hydraulic kit with
 spring return in position 2


Pilot pressure max. = 250 bar (3620 psi)

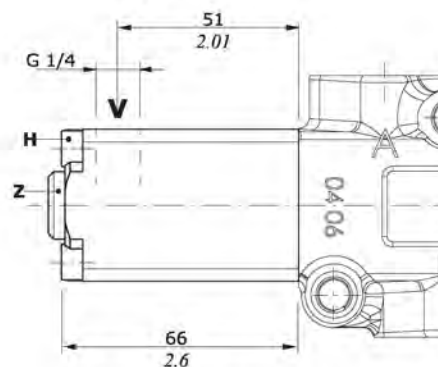
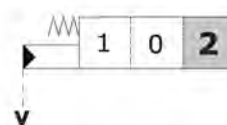
Wrenches and tightening torque

H = wrench 5 - 9.8 Nm (7.2 lbf·ft)

Z = wrench 6 - 24 Nm (17.7 lbf·ft)

W = wrench 32 - 42 Nm (31 lbf·ft)

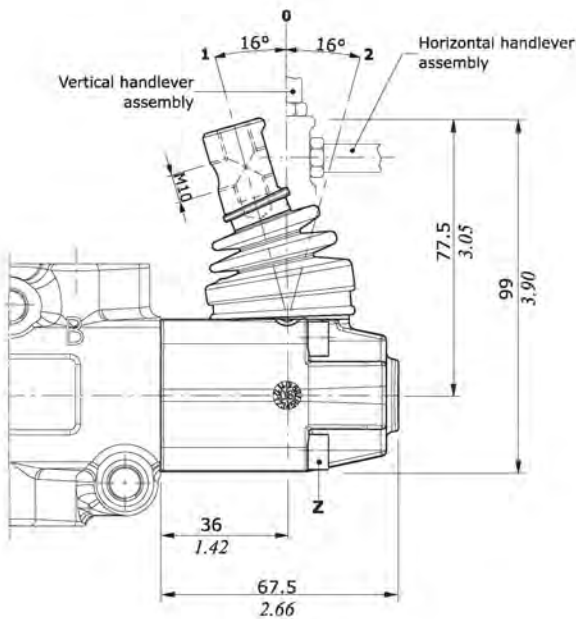
Type 18IB1

 Low pressure hydraulic kit with
 spring return in position 2


Pilot pressure max. = 50 bar (725 psi)

"B" side options
Lever control kit

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

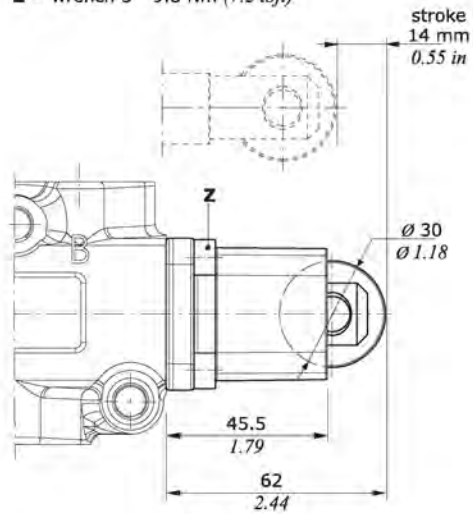
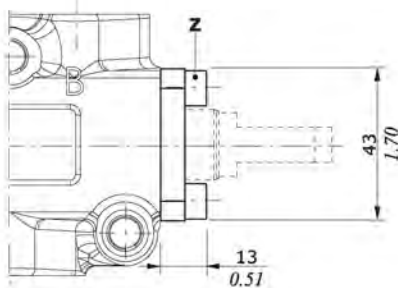
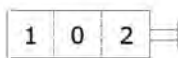
Type L

Cam control kit

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

Type CA-CB

Wrenches and tightening torque

Z = wrench 5 - 9.8 Nm (7.2 lbf)

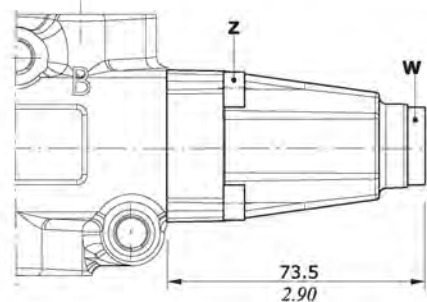
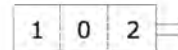

Without lever, with flange
Type SLP

Wrenches and tightening torque

Z = wrench 5 - 9.8 Nm (7.2 lbf)

W = wrench 8 - 24 Nm (17.7 lbf)

Without lever, with cap

Protection cap to use with pneumatic and hydraulic spool positioner kits

Type SLC


DF10

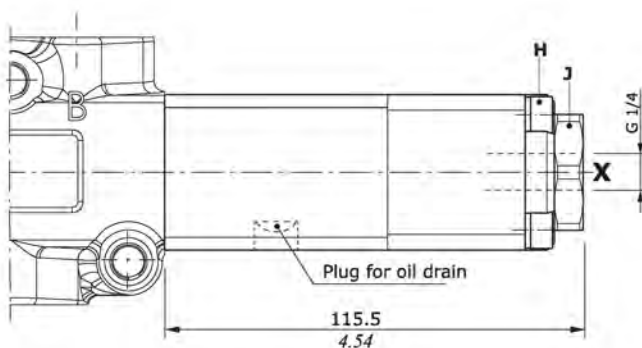
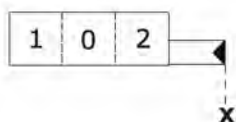
Mechanical control monoblock diverter valves

"B" side options

Hydraulic control kits

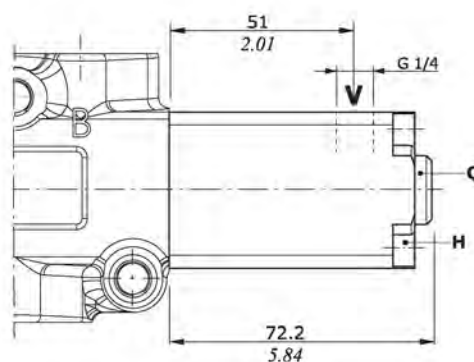
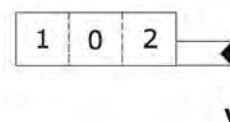
ON/OFF controls with high and low pressure pilot it must be only coupled to 17ME control kit

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 lbf^t)

J = wrench 24 - 42 Nm (31 lbf^t)

Q = wrench 6 - 24 Nm (17.7 lbf^t)



DFC100

Mechanical control monoblock diverter valves

- 3 - 6 ways configuration
- Cam control kit
- Especially suitable for use in external environments

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		3 - 6
Max. flow rating		90 l/min (23.7 US gpm)
Max. pressure		315 bar (4600 psi)
Internal leakage A(B)→T	$\Delta p = 100 \text{ bar (1450 psi)}$	5 cm ³ /min (0.31 in ³ /min)
Fluid		Mineral based oil
Fluid temperature		from -20°C to 80°C (from -4°F to 176°F)
Viscosity	operating range	from 15 to 75 mm ² /s (from 15 to 75 cSt)
	min.	12 mm ² /s (12 cSt)
	max.	400 mm ² /s (400 cSt)
Max. level of contamination		21/19/16 - ISO 4406 - NAS 1638 - class 10
Ambient temperature for working conditions		from -40°C to 60°C (from -40°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)
DFC100	G 1/2	7/8-14 (SAE 10)	M22x1.5
(*) Optional threads for availability contact Sales Department			

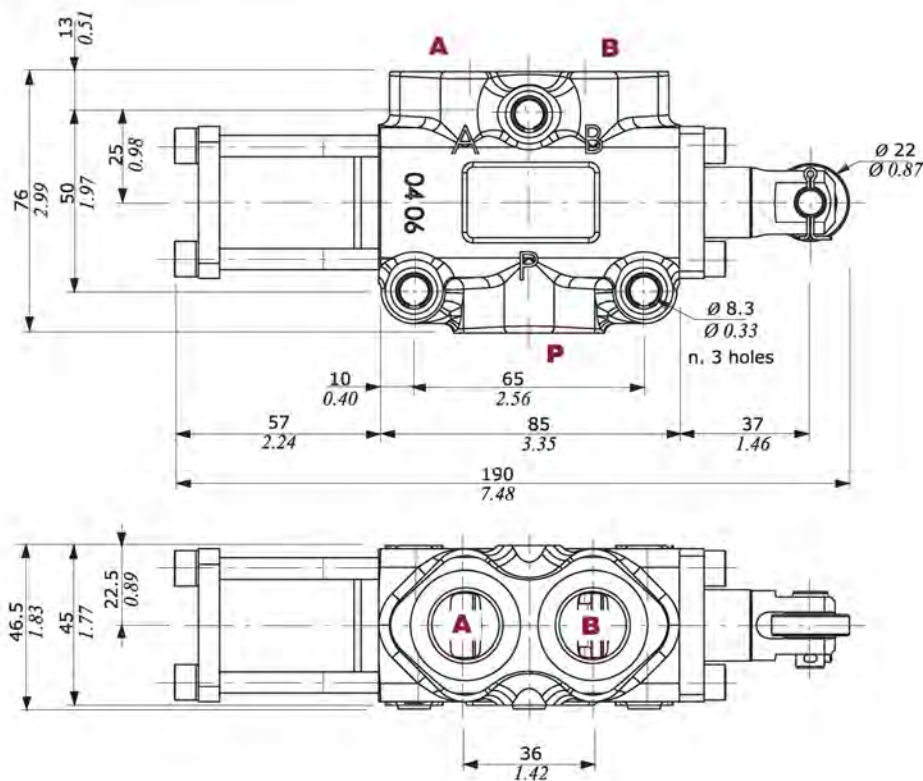
DFC100

Mechanical control monoblock diverter valves

Dimensional data - hydraulic circuit - performance data

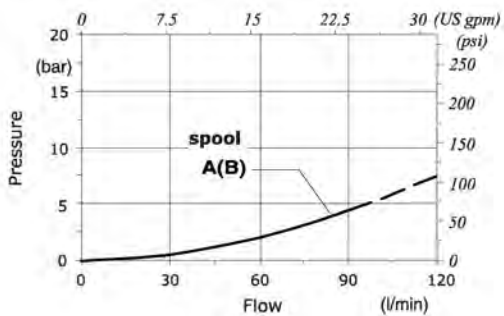
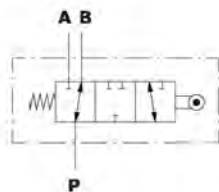
Cam spool control suggested for severe applications; it requires a special body, spool and control kit.

3 way



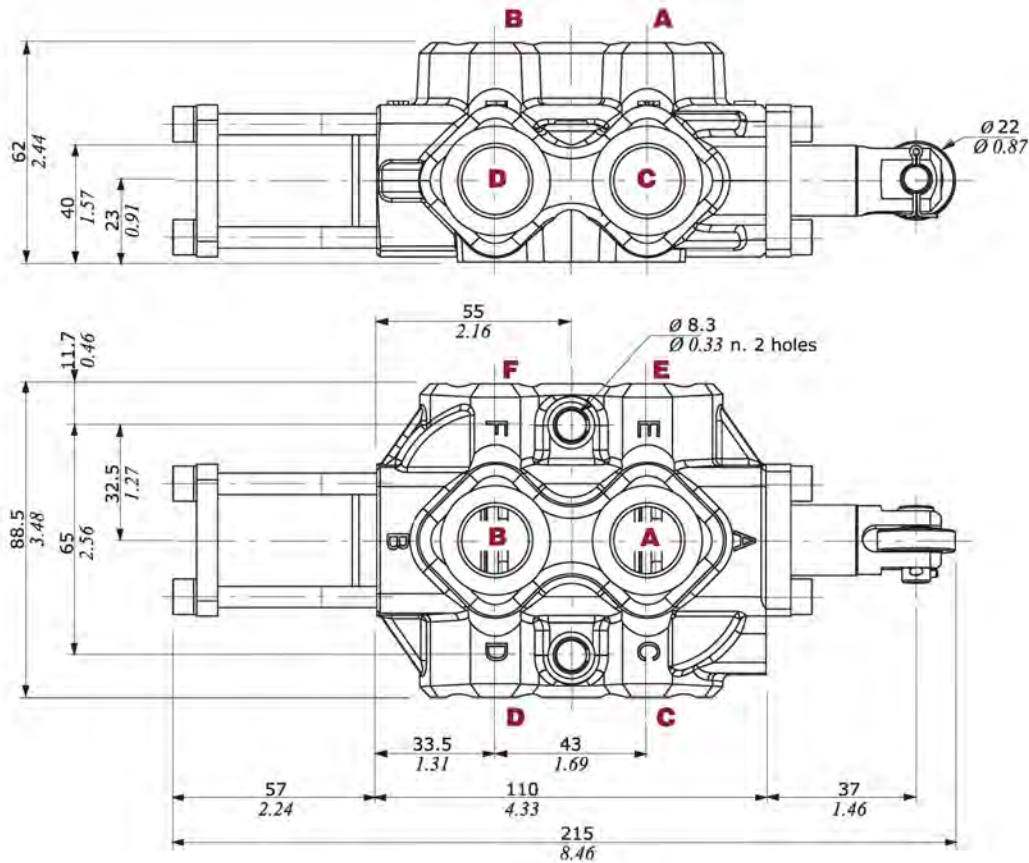
Pressure drop versus flow

P → A(B)



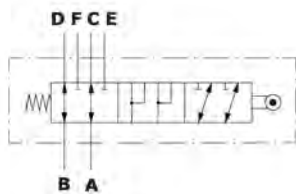
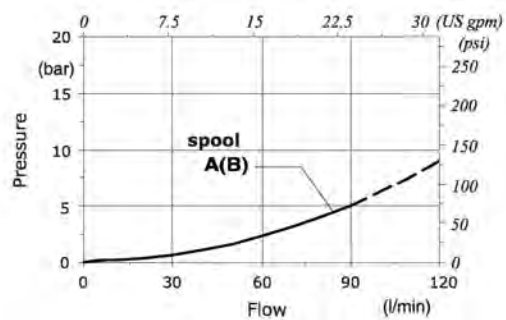
Dimensional data - hydraulic circuit - performance data

6 way



Pressure drop versus flow

A → C(E)



DFC100

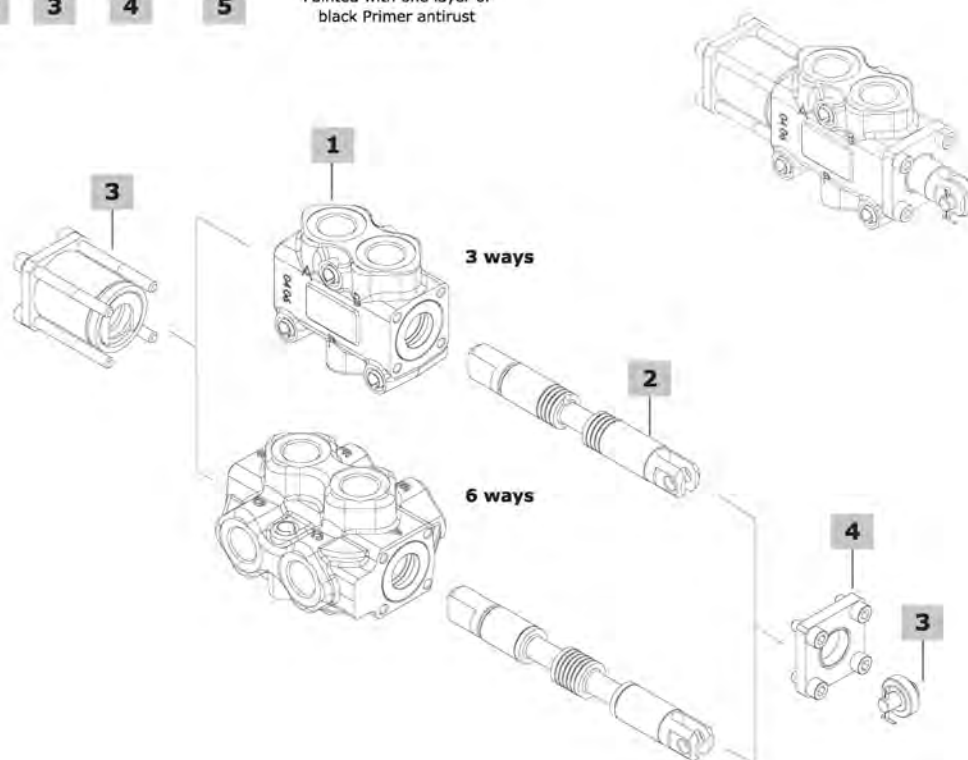
Mechanical control monoblock diverter valves

Part ordering codes

Example:

DFC100/3 B 17G SLP - ... - (CVN)

1
 2
 3
 4
 5
 Painted with one layer of black Primer antirust



1 Body kit*

TYPE	CODE	DESCRIPTION
DFC100/3	5CO2241313	3 ways body kit
DFC100/6	5CO2242311	6 ways body kit

2 Spools

page 39

TYPE	CODE	DESCRIPTION
for DFC100/3:		
A	3CAS110312	Ports connected in transit position
B	3CAS110421	Ports closed in transit position
for DFC100/6:		
A	3CAS110711	Flow in C and D. E and F closed in pos. 1 Ports connected in transit position
B	3CAS110721	Flow in C and D. E and F closed in pos. 1 Ports closed in transit position

3 Complete controls

page 40

TYPE	CODE	DESCRIPTION
17G	5V17910000	Cam control with spring return in pos. 1
17GCAX	5V17910001	Inox steel cam control with spring return in pos. 1

4 "B" side options

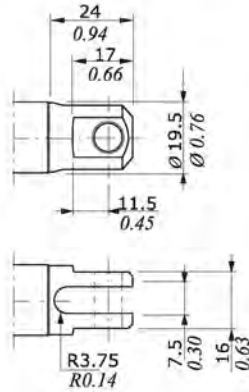
page 40

TYPE	CODE	DESCRIPTION
SLP	5COP110005	with dust-proof plate

5 Body threading

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

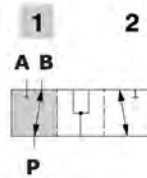
 (*) - Codes are referred to **BSP** thread



Rotary cam arrangement:
spool type **A, B**

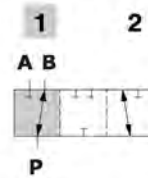
3 ways

Type A
Ports connected
in transit position



Spool stroke
Position 2: - 14 mm (- 0.55 in)

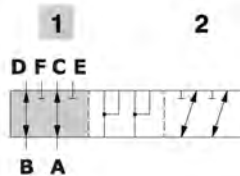
Type B
Ports closed
in transit position



Spool stroke
Position 2: - 14 mm (- 0.55 in)

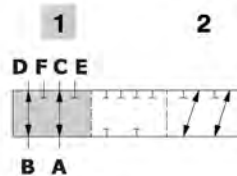
6 ways

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



Spool stroke
Position 2: - 14 mm (- 0.55 in)

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



Spool stroke
Position 2: - 14 mm (- 0.55 in)

DFC100

Mechanical control monoblock diverter valves

Complete controls

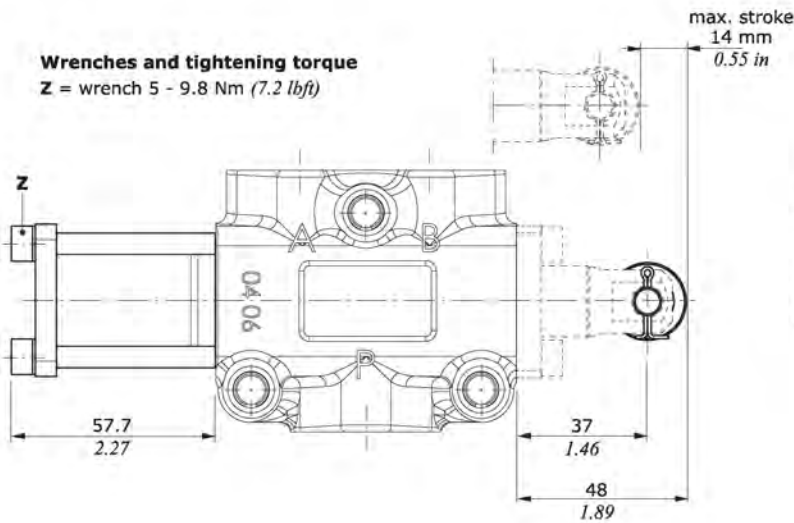
Cam control kit

17G type cam control available with stainless steel bearing (type 17GCAX).
 It must be coupled with type SLP flange on valve B side

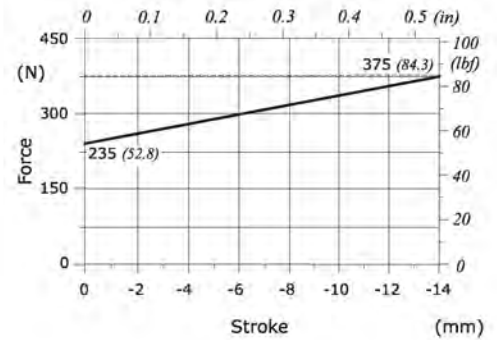
Type 17G - 17GCAX
 Spring return in pos.1



Wrenches and tightening torque
 Z = wrench 5 - 9.8 Nm (7.2 lbf_t)



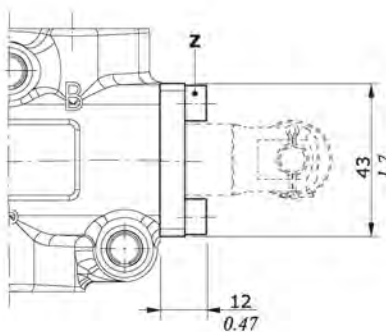
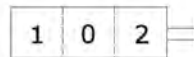
Force-Stroke diagram



"B" side options

Without lever, with flange

Type SLP



Wrenches and tightening torque
 Z = wrench 5 - 9.8 Nm (7.2 lbf_t)



DF20

Mechanical control monoblock diverter valves

- 3 - 6 ways configuration
- Mechanical lever, cam, hydraulic, electrohydraulic, 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		3 - 6
Max. flow rating		140 l/min (37 US gpm)
Max. pressure		315 bar (4600 psi)
Internal leakage A(B)⇒T	$\Delta p = 100 \text{ bar (1450 psi)}$	8 cm ³ /min (0.48 in ³ /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 mm ² /s (from 15 to 75 cSt)
	min.	12 mm ² /s (12 cSt)
	max.	400 mm ² /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)
	with electric controls	from -20°C to 50°C (from -4°F to 122°F)

NOTE - For different working conditions please contact Sales Dept.

Available threads

PORTS THREAD		
ALL PORTS	BSP	UN-UNF
DF20	G 3/4	1" 1/16-12 (SAE 12)
PILOT PORTS		
Pneumatic	NPT 1/8-27	NPT 1/8-27
Hydraulic	G 1/4	9/16-18 (SAE 6)

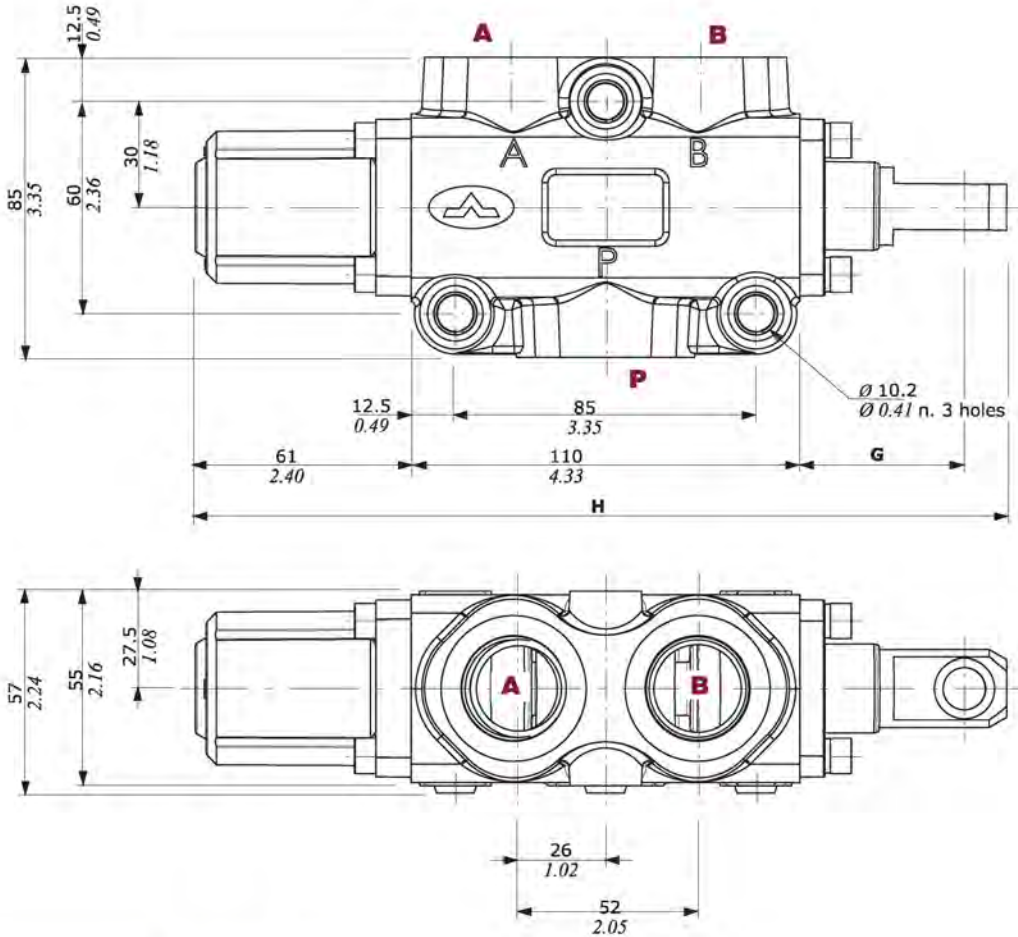
DF20

Mechanical control monoblock diverter valves

Dimensional data - hydraulic circuit - performance data

3 ways

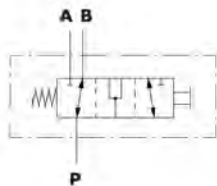
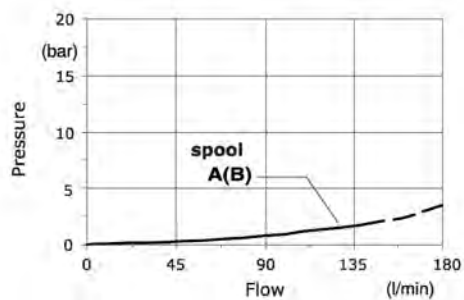
It's possible to obtain 2 ways diverter valve plugging port

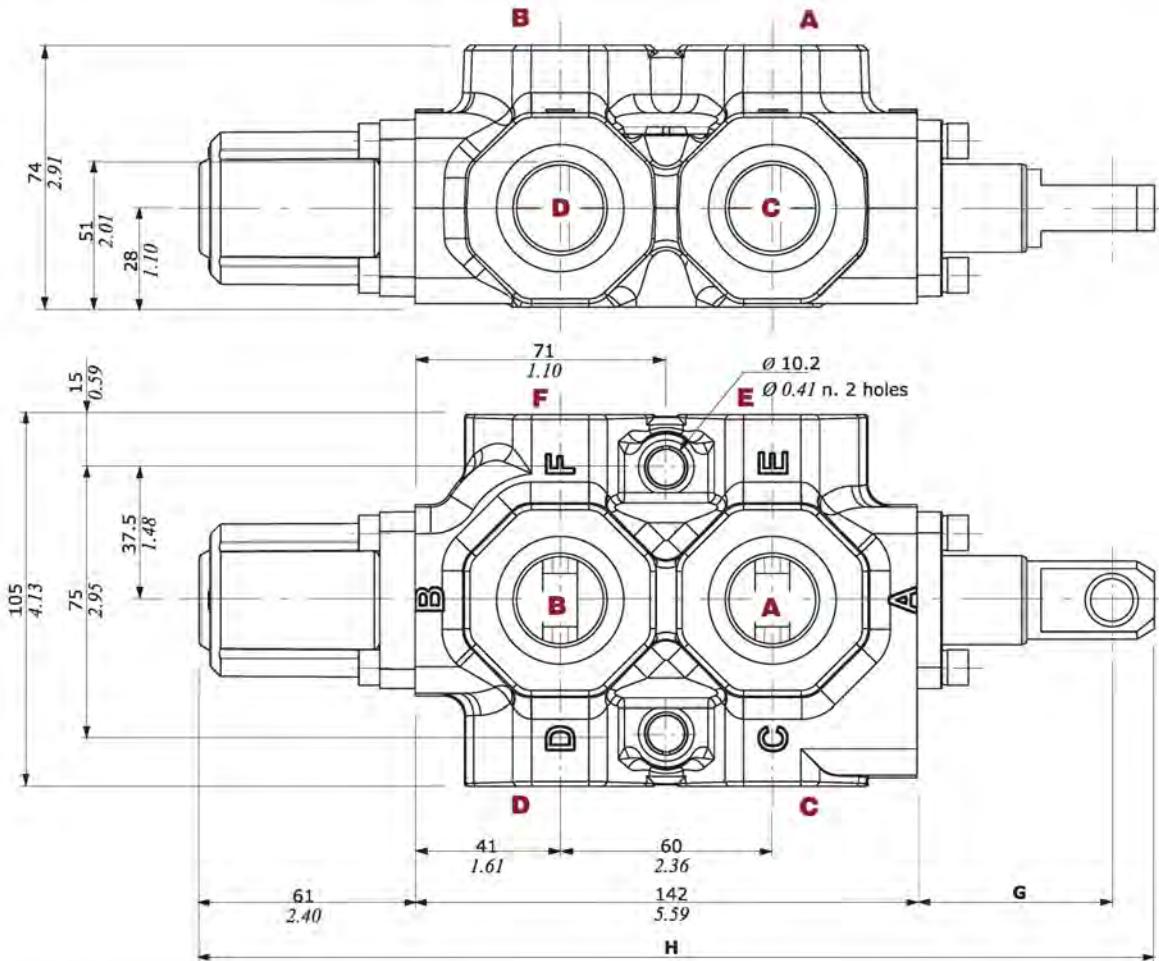


	G	H
With spool out	55 mm 2.16 in	238 mm 9.37 in
With spool in	35 mm 1.37 in	218 mm 8.58 in

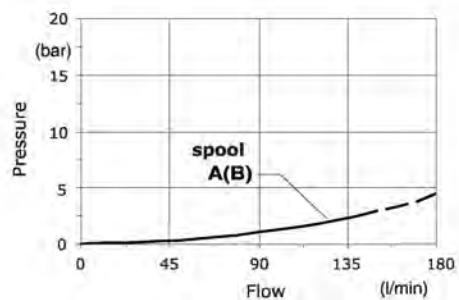
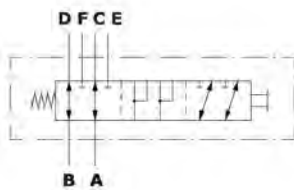
Pressure drop versus flow

P → A(B)



Dimensional data - hydraulic circuit - performance data
6 ways


	G	H
With spool out	55 mm 2.16 in	270 mm 10.6 in
With spool in	35 mm 1.37 in	250 mm 9.84 in

Pressure drop versus flow
A → C(E)


DF20

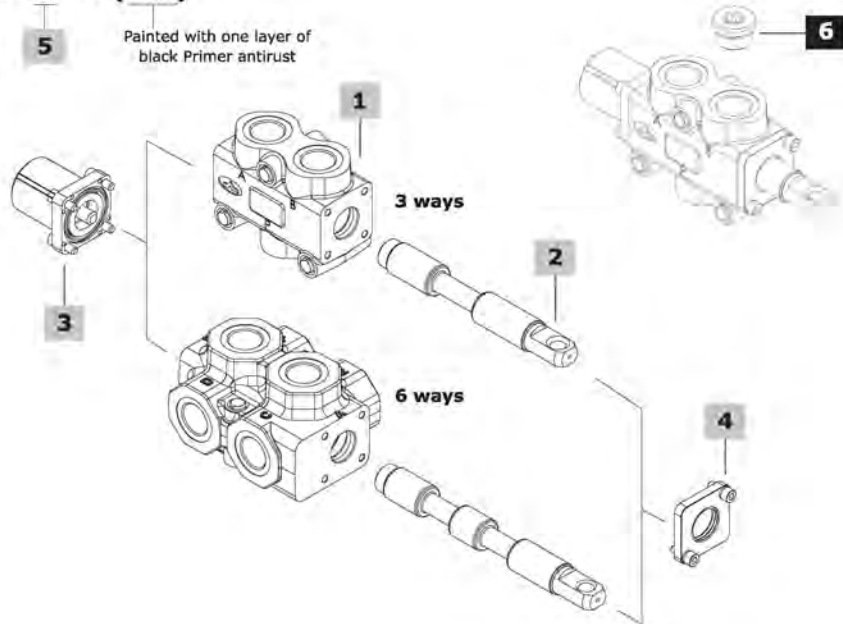
Mechanical control monoblock diverter valves

Part ordering codes

Example:

DF20/3 **A** **17** **SLP** - ... - **(CVN)**
1 2 3 4 5

Painted with one layer of black Primer antirust



1 Body kit*

TYPE	CODE	DESCRIPTION
DF20/3	5CO2261300	3 ways body kit
DF20/6	5CO2262300	6 ways body kit
	5CO2263400	6 ways body kit with G1" ports

2 Spools

page 45

TYPE	CODE	DESCRIPTION
for DF20/3:		
A	3CAS120310	Flow in B in pos. 1. Ports connected in transit position
B	3CAS120410	Flow in B in pos. 1. Ports closed in transit position
AC	3CAS120320	As type A, for cam control
BC	3CAS120420	As type B, for cam control
for DF20/6:		
A	3CAS120610	Flow in C and D. E and F closed in pos. 1 Ports connected in transit position
B	3CAS120710	Flow in C and D. E and F closed in pos. 1 Ports closed in transit position
AC	3CAS120620	As type A, for cam control

3 "A" side spool positioners

page 46

TYPE	CODE	DESCRIPTION
12	5V12120000	Detent in positions 1 and 2
17	5V17120000	Spring return in position 1
17ME	5V17320000	As kit 17, with heavier spring type E
18	5V18120000	Spring return in position 2
<u>Pneumatic controls: must be coupled to the control kit side B with lever, with plate or cap</u>		
17P	5V17110700	On/off, with spring return in pos. 1
18P	5V18120700	On/off, with spring return in pos. 2
18PNCWP	5V18120713	On/off, with spring return in pos. 2, waterproof

3 "A" side spool positioners (cont.) page 46

TYPE	CODE	DESCRIPTION
<u>Hydraulic controls: must be coupled to the control kit side B with lever, with plate or cap</u>		
18IA1	5V18120820*	On/off high pressure hydraulic kit with spring return in position 2
18IB1	5V18120810*	On/off low pressure hydraulic kit with spring return in position 2
<u>Electrohydraulic controls: must be coupled to the control kit side B with lever, with plate or cap</u>		
Control requires collector kit; see page 50		
18E11	5V18120350	Spring return in pos. 2, 12VDC
	5V18120351	Spring return in pos. 2, 24VDC

4 "B" side options

page 51

TYPE	CODE	DESCRIPTION
SLP	5COP120000	Without lever box, with dust-proof plate kit
SLC	5COP220000	Without lever box, with cap
L	5LEV120000	Aluminum lever box
CA	5CAM120000	Steel ball bearing cam operation
CB	5CAM120020	Bronze cam operation
<u>Hydraulic controls</u>		
IA2	5IDR520000*	On/off with high pressure pilot, need 17ME control type
IB2	5IDR720000*	On/off with low pressure pilot, need 17ME control type

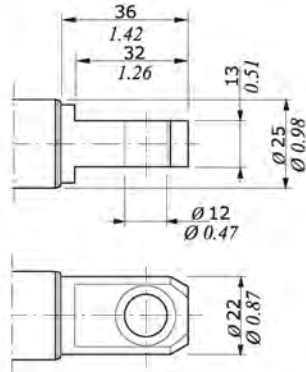
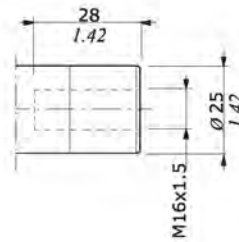
5 Body threading

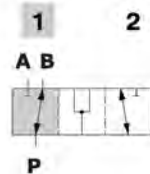
 Specify threading always when it is different from **BSP** standard

6 Port plugs*

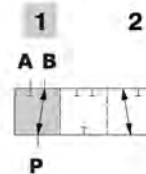
CODE	DESCRIPTION
3XTAP732200	G3/4 plug

 (*) - Codes are referred to **BSP** thread

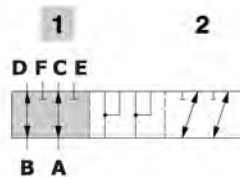
Spool end

 Standard:
 spool type **A, B**

 Rotary cam arrangement:
 spool type **AC, BC**
Spool circuits
3 ways
Type A/AC

 Ports connected
 in transit position

Spool stroke
 Position 2: - 20 mm (- 0.78 in)

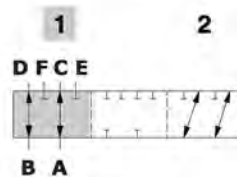
Type B/BC

 Ports closed
 in transit position

Spool stroke
 Position 2: - 20 mm (- 0.78 in)

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: - 20 mm (- 0.78 in)

Type B

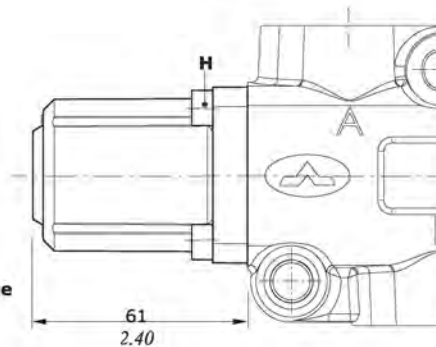
 Flow in C and D. E and F closed in pos. 1
 Ports closed in transit position

Spool stroke
 Position 2: - 20 mm (- 0.78 in)

DF20

Mechanical control monoblock diverter valves

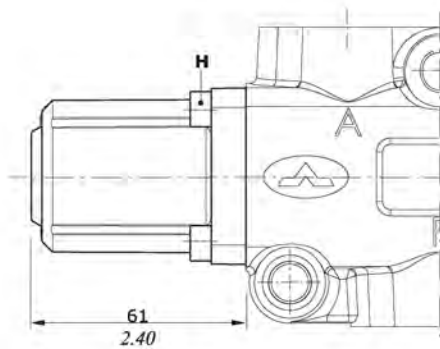
"A" side spool positioners
With detent
Type 12

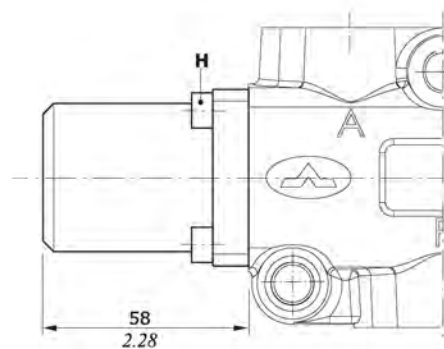
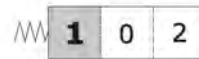
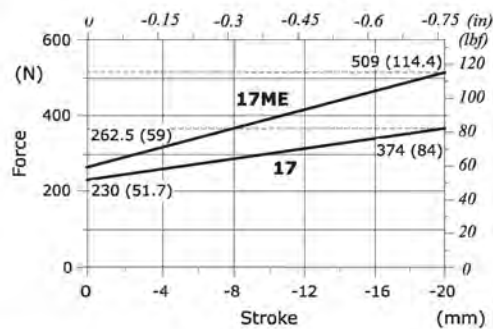
Detent in positions 1 and 2


Wrenches and tightening torque
 H = wrench 5 - 9.8 Nm (7.2 lbf^t)

With spring return in position 1

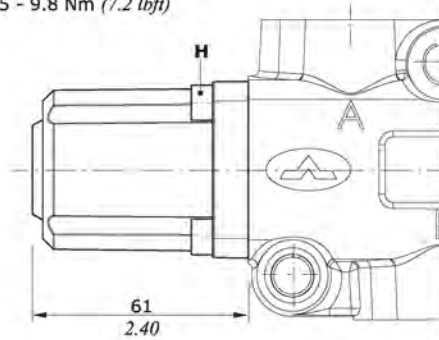
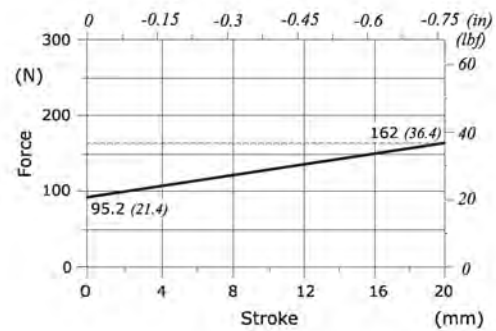
With heavier spring type "E"

Type 17

Wrenches and tightening torque
 H = wrench 5 - 9.8 Nm (7.2 lbf^t)

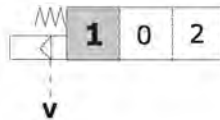
Type 17ME

Force-Stroke diagram


With spring return in position 2
Type 18

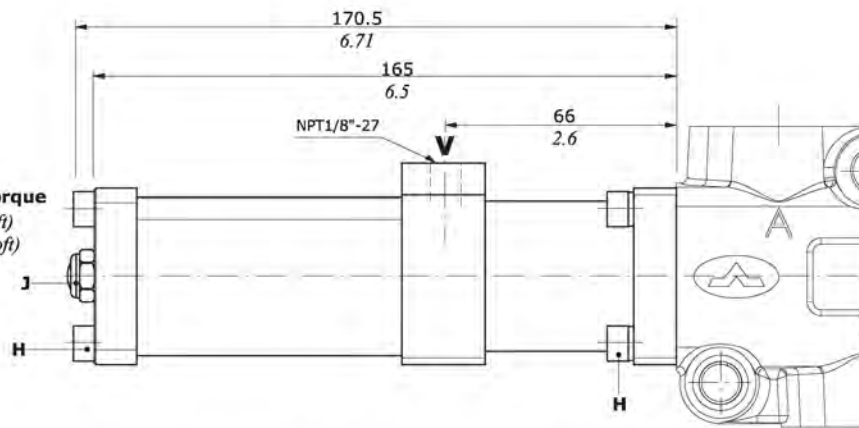
Wrenches and tightening torque

 H = wrench 5 - 9.8 Nm (7.2 lbf_t)

Force-Stroke diagram

ON/OFF pneumatic controls
Type 17P

Spring return in position 1


Wrenches and tightening torque

 H = wrench 5 - 9.8 Nm (7.2 lbf_t)

 J = wrench 13 - 9.8 Nm (7.2 lbf_t)


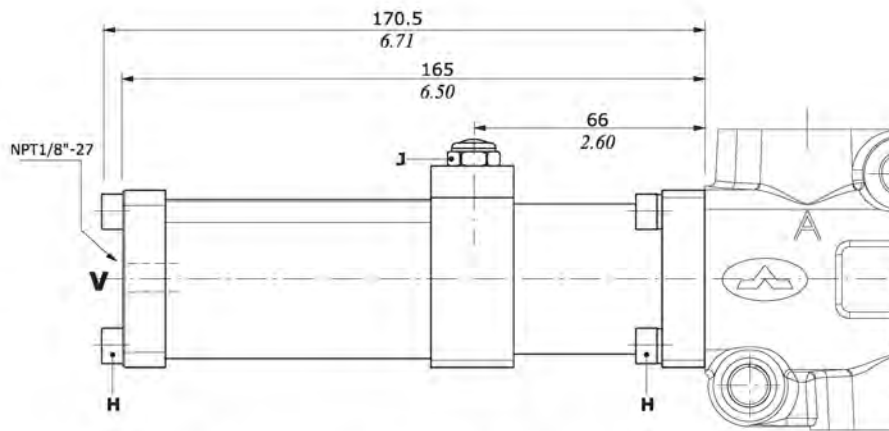
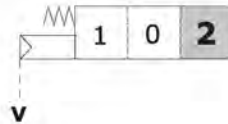
Pilot pressure... : min. 7 bar (101 psi) - max. 10 bar (145 psi)

DF20

Mechanical control monoblock diverter valves

"A" side spool positioners
ON/OFF pneumatic controls
Type 18P

Spring return in position 2



Pilot pressure... : min. 7 bar (101 psi) - max. 10 bar (145 psi)

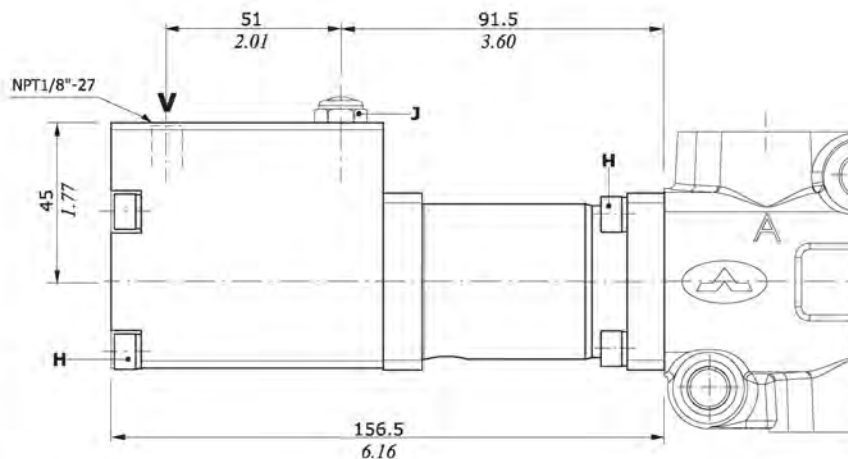
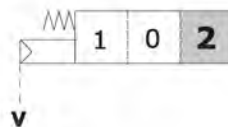
Wrenches and tightening torque

H = wrench 5 - 9.8 Nm (7.2 lbf)

J = wrench 13 - 9.8 Nm (7.2 lbf)

Type 18PNCWP

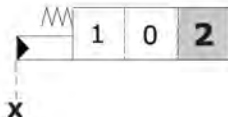
Spring return in position 2, waterproof



Hydraulic controls

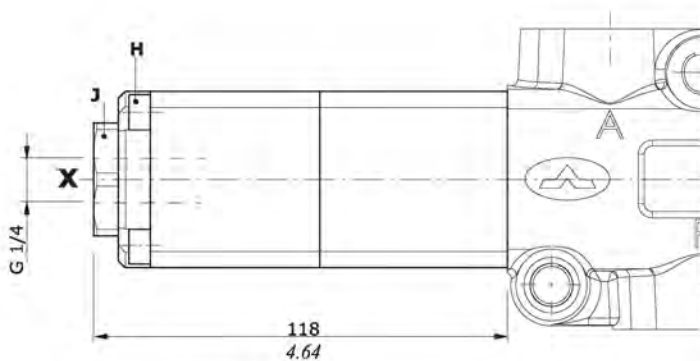
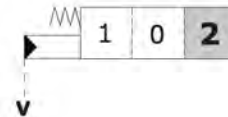
Type 18IA1

High pressure hydraulic kit with
spring return in position 2

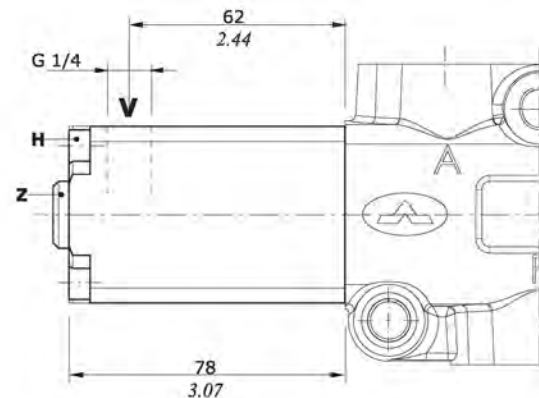


Type 18IB1

Low pressure hydraulic kit with
spring return in position 2



Pilot pressure max. = 250 bar (3620 psi)

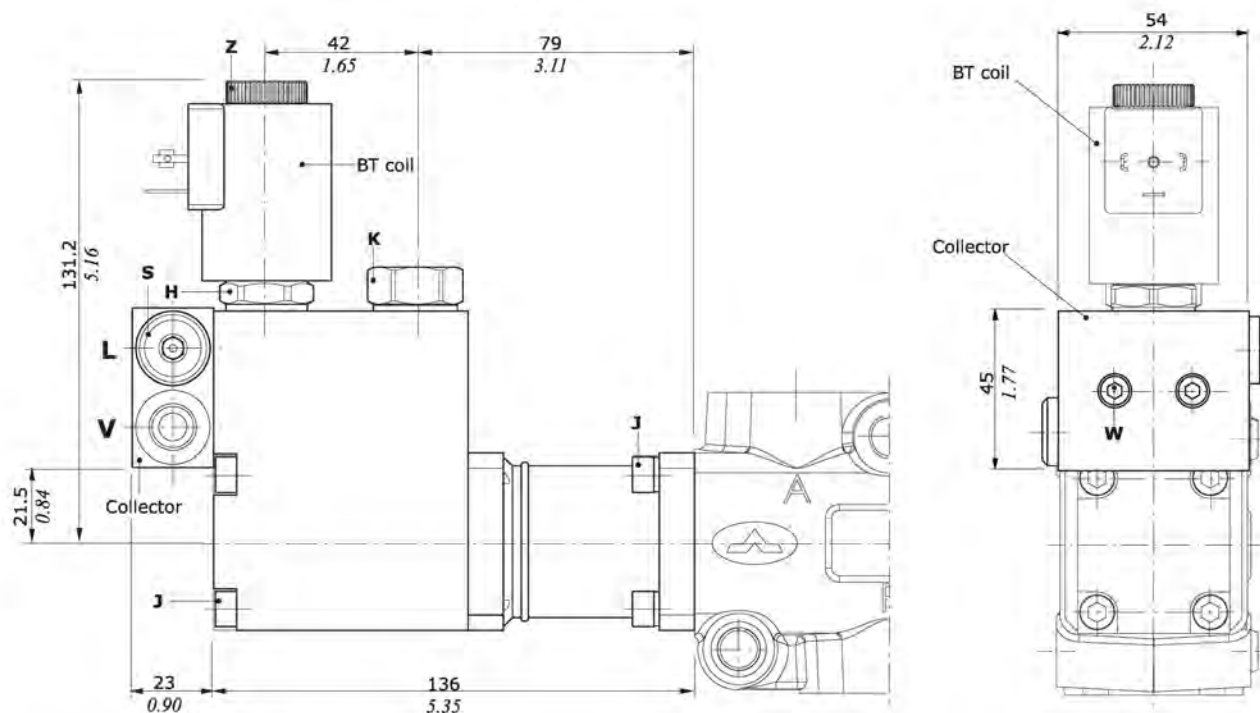
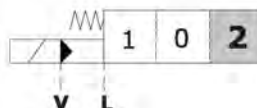


Pilot pressure max. = 50 bar (725 psi)

Wrenches and tightening torque

- H = wrench 5 - 9.8 Nm (7.2 lbft)
- Z = wrench 6 - 24 Nm (17.7 lbft)
- J = wrench 32 - 42 Nm (31 lbft)

"A" side spool positioners
ON/OFF electrohydraulic control
Type 18E11

 Spring return in pos. 2,
 with external pilot and drain

Wrenches and tightening torque
J = wrench 5 - 9.8 Nm (7.2 lbft)

K = wrench 24 - 30 Nm (22.1 lbft)

Z = 5 Nm (3.68 lbft)

S = wrench 6 - 24 Nm (17.7 lbft)

H* = wrench 24 - 9.8 Nm (7.2 lbft)

W = wrench 4 - 6.6 Nm (4.9 lbft)

(*)Tightening with dynamometric wrench or screwer

Collector kit for external pilot and drain
COLLECTOR KIT CODE

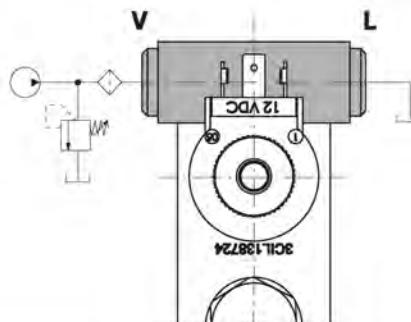
Type	Code	Description
KE1S0	5KE1S00030	kit for 1 section

Codes are referred to BSP thread

Features

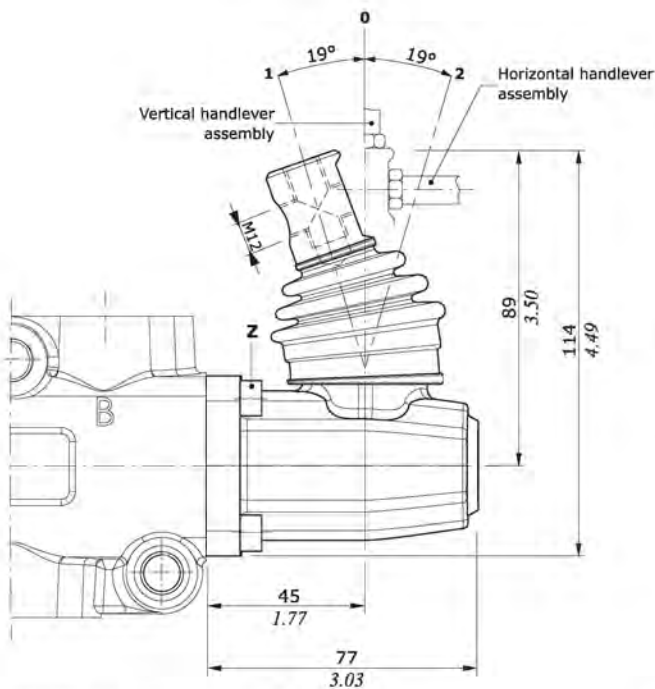
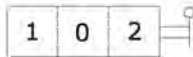
 Pilot pressure: : min. 10 bar (145 psi)
 : max. 50 bar (725 psi)

Max backpressure on drain L.... : 25 bar (362.5 psi)

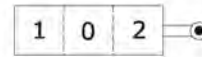
Note: for complete available BT coils list and features see page 53


"B" side options
Lever control kit

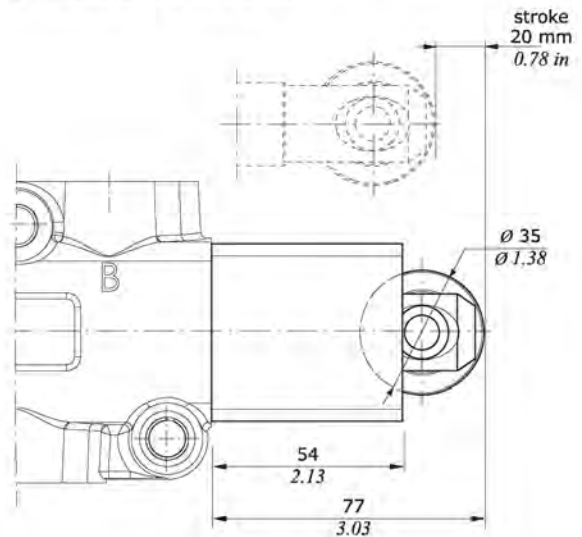
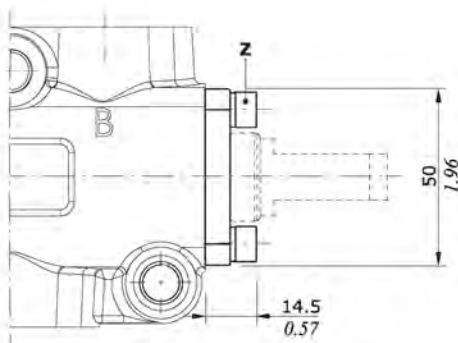
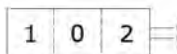
Aluminium with protection boot lever pivot box; it can be rotated 180° (execution **L180**)

Type L

Cam control kit

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

Type CA-CB


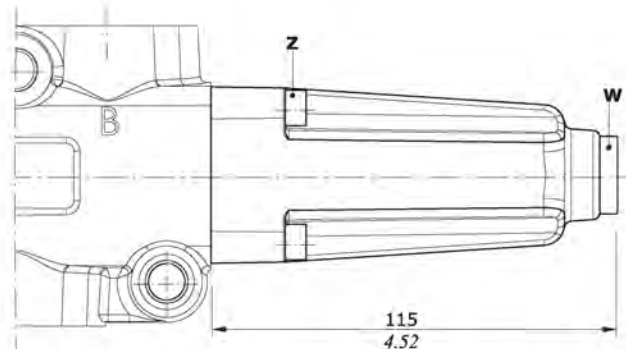
Wrenches and tightening torque
Z = wrench 5 - 9.8 Nm (7.2 lbf)


Without lever, with flange
Type SLP


Wrenches and tightening torque
Z = wrench 5 - 9.8 Nm (7.2 lbf)
W = wrench 8 - 24 Nm (7.2 lbf)

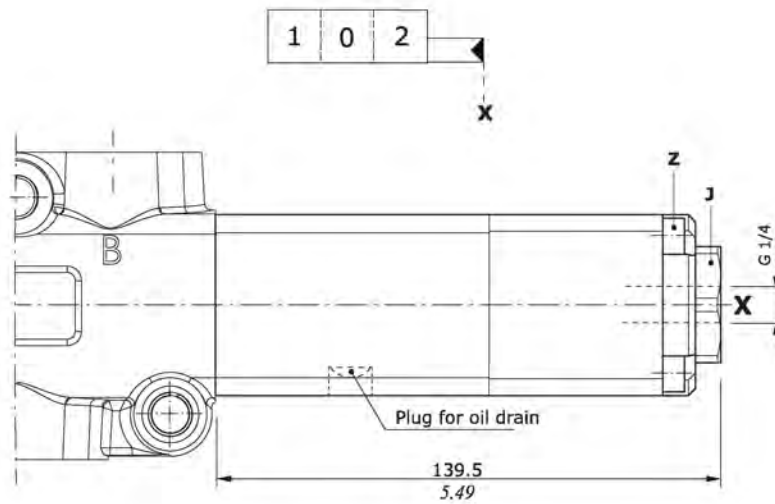
Without lever, with cap

Protection cap to use with pneumatic, hydraulic and electrohydraulic spool positioner kits

Type SLC


"B" side options
Hydraulic controls

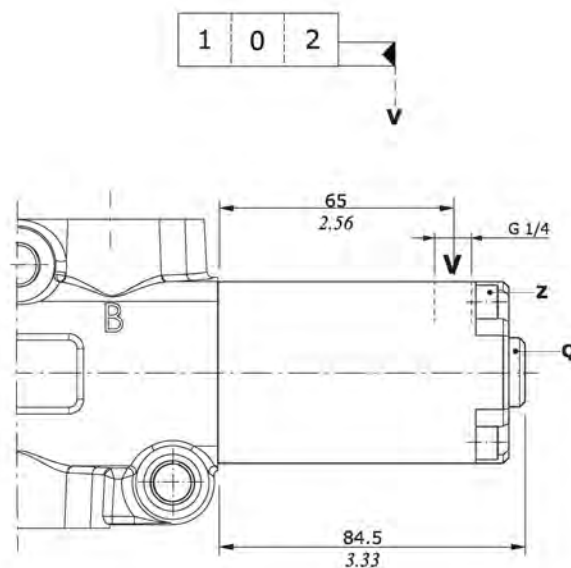
ON/OFF controls with high and low pressure pilot it must be only coupled to 17ME control kit

Type IA2
 High pressure pilot

Wrenches and tightening torque
Z = wrench 5 - 9.8 Nm (7.2 lbf·ft)

J = wrench 24 - 42 Nm (31 lbf·ft)

Q = wrench 6 - 24 Nm (17.7 lbf·ft)

Pilot pressure max. = 250 bar (3620 psi)

Type IB2
 Low pressure pilot


Pilot pressure max. = 50 bar (725 psi)

Coils and accessories for 18E11 control

Type	Voltage	Ordering codes					Flying leads without connector
		ISO4400	Deutsch DT	AMP JPT	Packard Weatherpack	Packard Metri-pack	
BT	10 VDC	4SL3000100	-	-	-	-	-
	12 VDC	4SL3000120	4SL3000130 ⁽⁶⁾	4SL3000122 ⁽⁵⁾	-	-	-
		4SL3000126 ⁽⁴⁾	4SL3000134 ⁽³⁻⁶⁾	4SL3001200 ⁽³⁻⁵⁾	4SL3000124 ⁽²⁾	4SL3000127 ⁽²⁾	4SL300012C
	24 VDC	4SL3000240	4SL3000249 ⁽⁶⁾	4SL3000248 ⁽⁵⁾	-	-	-
		4SL3030240 ⁽¹⁾	4SL300024C ⁽³⁻⁶⁾	-	-	-	4SL3000246
	26 VDC	4SL3000260	-	-	-	-	-
	48 VDC	4SL3000480	-	-	-	-	-
		4SL3030480 ⁽¹⁾	-	-	-	-	-
110 VDC	4SL3001100	-	-	-	-	-	
	4SL3031100 ⁽¹⁾	-	-	-	-	-	
220 VDC	4SLE022000A	-	-	-	-	-	
	4SLE322000A ⁽¹⁾	-	-	-	-	-	
Mating connectors							
With rectifier		4CN1009995	5CON140031	5CON003	5CON001	5CON017	-
	24 VDC	4CN3010240	-	-	-	-	-
	48 VDC	4CN3010480	-	-	-	-	-
	110 VDC	4CN3011100	-	-	-	-	-
220 VDC	4CN3012200	-	-	-	-	-	

Notes: ⁽¹⁾ supply with AC and use only with rectifier connector - ⁽²⁾ with flying leads - ⁽³⁾ with bidirectional diode - ⁽⁴⁾ with unidirectional diode - ⁽⁵⁾ integrated perpendicular type - ⁽⁶⁾ integrated parallel type

Features

Nominal voltage tolerance: ±10%

 Nominal power.....: 19 W - 10 VDC
 : 21 W - 12/24/26 VDC
 : 20.3 W - 48 VDC
 : 17.3 W - 110 VDC
 : 17.7 W - 220 VDC

 Nominal current.....: 1.9 A @ 10 VDC
 : 1.77 A @ 12 VDC
 : 0.89 A @ 24VDC
 : 0.84 A @ 26 VDC
 : 0.43 A @ 48 VDC
 : 0.16 A @ 110 VDC
 : 0.08 A @ 220 VDC

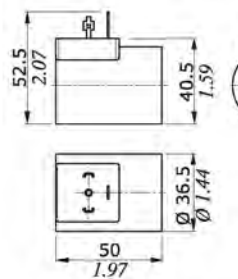
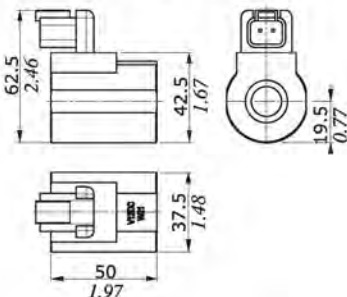
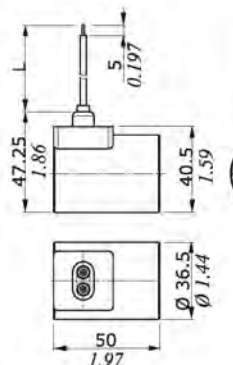
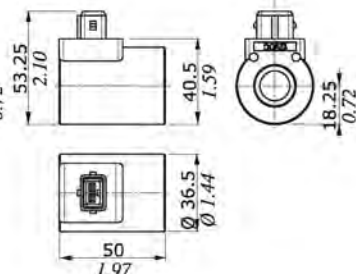
Insulation.....: Class F (155°C - 311°F)

Weather protection...: IP65 - ISO4400 / AMP JPT

: IP69K - Deutsch DT

: IP67 - Weatherpack / Metri-pack

Insertion.....: 100%

ISO4400 connector

DEUTSCH DT04 connector (Parallel type)

Flying leads

AMP JPT connector (Perpendicular type)


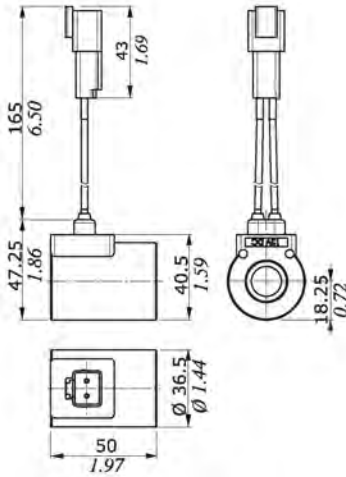
Coil type	L dimension	
	(mm)	(in)
12 VDC	240	9.45
24 VDC	600	23.62



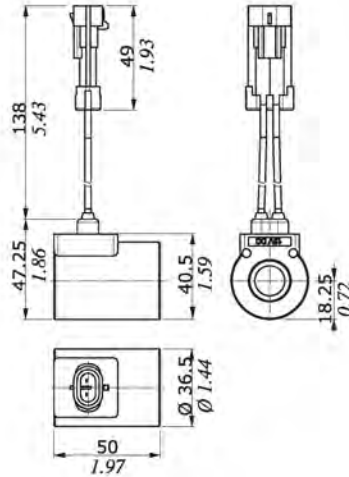
DF20

Coils and accessories for 18EI1 control

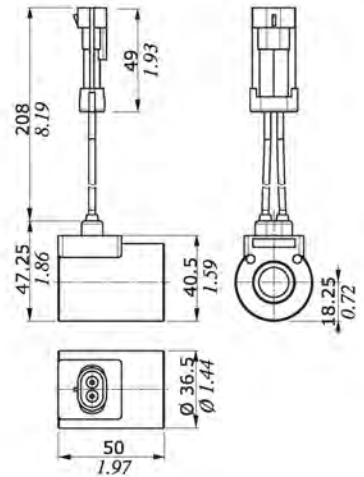
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD METRI-PACK connector



Flying leads with PACKARD WEATHER-PACK connector





DF25

Mechanical control monoblock diverter valve

- 3 ways configuration
- Mechanical lever, cam, electrohydraulic, 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		3
Max. flow rating		280 l/min (74 US gpm)
Max. pressure		315 bar (4600 psi)
Internal leakage A(B)⇒T	$\Delta p = 100 \text{ bar (1450 psi)}$	8 cm ³ /min (0.48 in ³ /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 mm ² /s (from 15 to 75 cSt)
	min.	12 mm ² /s (12 cSt)
	max.	400 mm ² /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)
	with electric controls	from -20°C to 50°C (from -4°F to 122°F)

NOTE - For different working conditions please contact Sales Dept.

Available threads

PORTS THREAD		
ALL PORTS	BSP	UN-UNF
DF25	G 1	1" 5/16-12 (SAE 16)
PILOT PORTS		
Pneumatic	NPT 1/8-27	NPT 1/8-27
Hydraulic	G 1/4	9/16-18 (SAE 6)

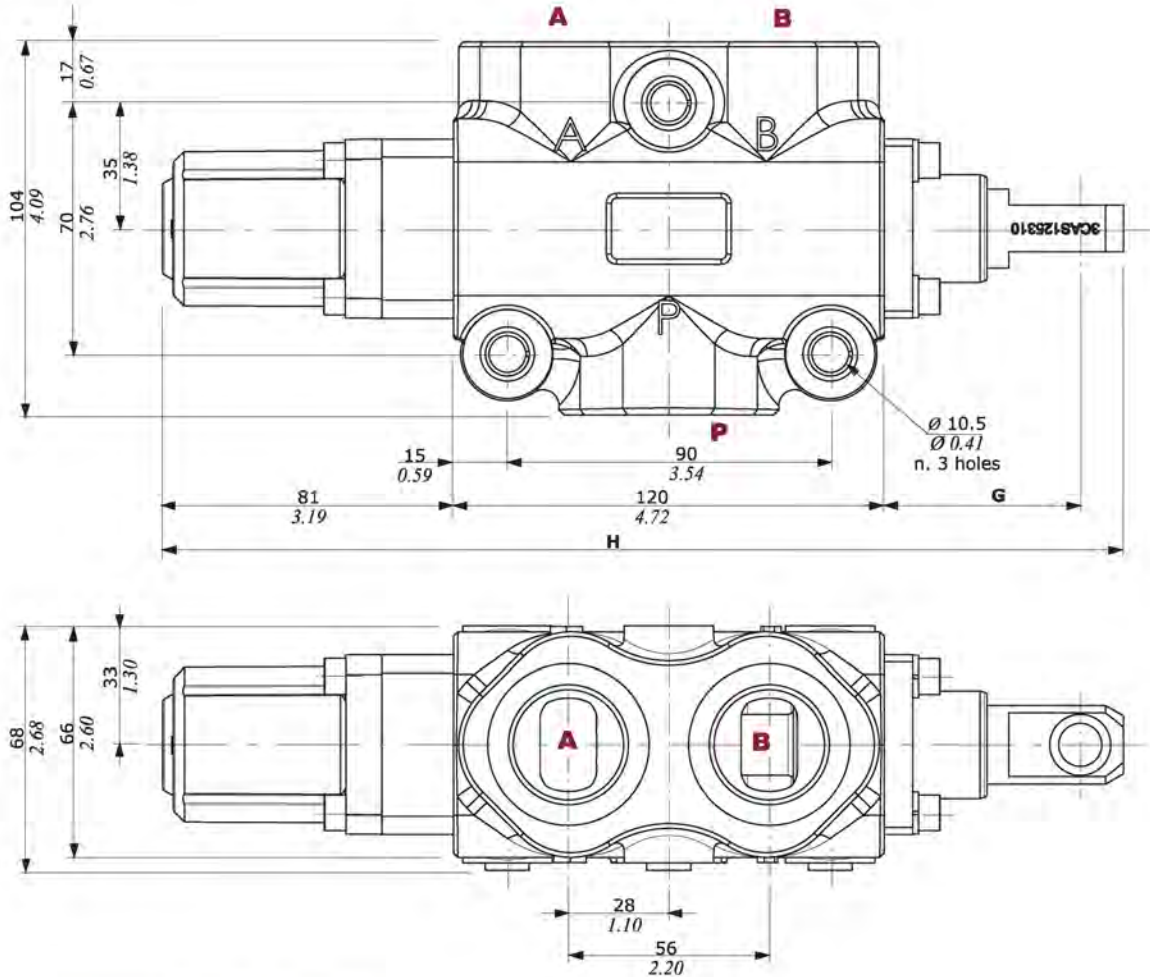
DF25

Mechanical control monoblock diverter valves

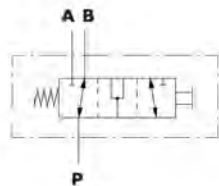
Dimensional data - hydraulic circuit - performance data

3 ways

It's possible to obtain 2 ways diverter valve plugging port

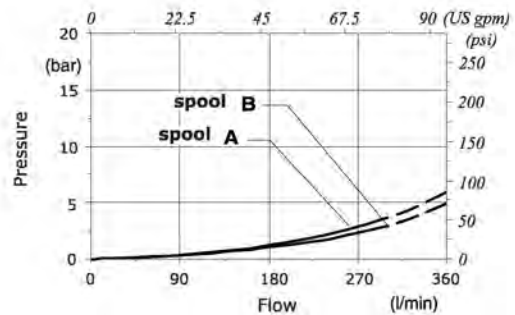


	G	H
With spool out	55 mm 2.16 in	268 mm 10.55 in
With spool in	35 mm 1.37 in	248 mm 9.76 in



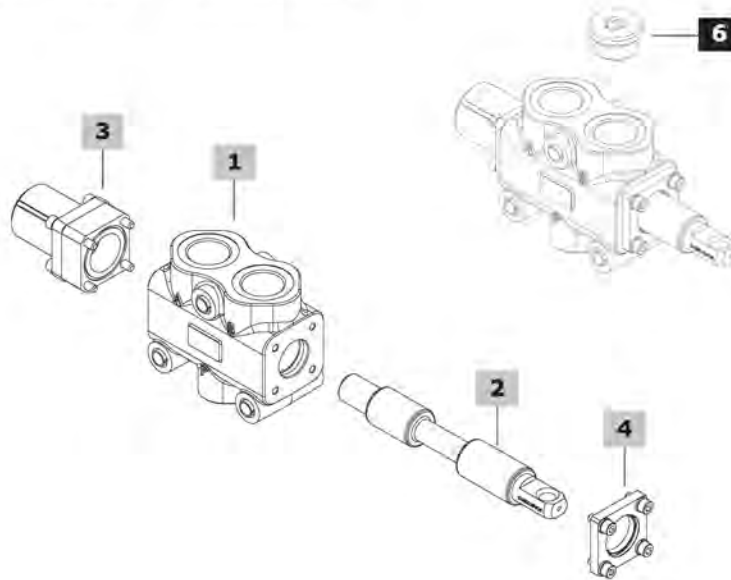
Pressure drop versus flow

P → A(B)



Example:

DF25/3 **A** **17** **SLP** - ... - **(CVN)**
1 2 3 4 5 Painted with one layer of black Primer antirust


1 Body kit*

TYPE	CODE	DESCRIPTION
DF25/3	5CO2271300	Standard body kit 3 ways

2 Spools pag. 58

TYPE	CODE	DESCRIPTION
A	3CAS125310	Flow in B in pos. 1. Ports connected in transit position
B	3CAS125410	Flow in B in pos. 1. Ports closed in transit position
AC	3CAS125320	As type A, for cam control

3 "A" side spool positioners pag. 58

TYPE	CODE	DESCRIPTION
12	5V12125000	Detent in positions 1 and 2
17	5V17125000	Spring return in position 1
17ME	5V17325000	As kit 17, with heavier spring type E

Pneumatic controls: must be coupled to the control kit side B with lever, with plate or cap
17P 5V17125700 On/off, with spring return in position 1
18P 5V18125700 On/off, with spring return in position 2
 Electrohydraulic controls: must be coupled to the control kit side B with lever, with plate or cap
 Control requires collector kit; see page 61
18E11 5V18125350 Spring return in position 2, 12VDC
 5V18125351 Spring return in position 2, 24VDC

4 "B" side options pag. 62

TYPE	CODE	DESCRIPTION
SLP	5COP125000	Without lever box, with dust-proof plate kit
SLC	5COP220000	Without lever box, with cap
L	5LEV120000	Aluminum lever box
CA	5CAM125000	Steel ball bearing cam operation
CB	5CAM125020	Bronze cam operation

Hydraulic controls
IA2 5IDR520000* On/off with high pressure pilot, need 17ME control type
IB2 5IDR720000* On/off with low pressure pilot, need 17ME control type

5 Body threading

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

6 Port plugs*

CODE	DESCRIPTION
3XTAP740210	G1" plug

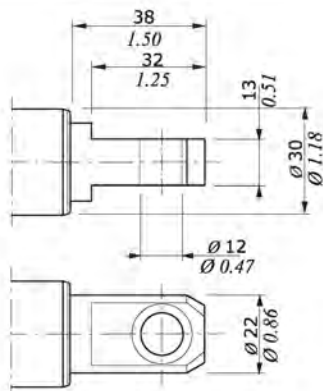
It's possible to obtain 2 ways diverter valve plugging DF25/3 port.

 (*) - Codes are referred to **BSP** thread

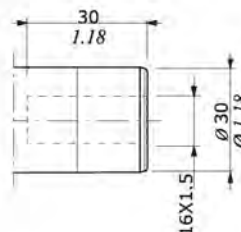
DF25

Mechanical control monoblock diverter valves

Spool end



Standard:
spool type **A, B**

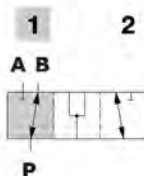


Rotary cam arrangement:
spool type **AC**

Spool circuits

Type A/AC

Ports connected
in transit position

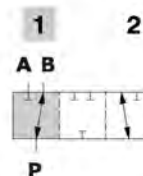


Spool stroke

Position 2: - 20 mm (- 0.78 in)

Type B

Ports closed
in transit position



Spool stroke

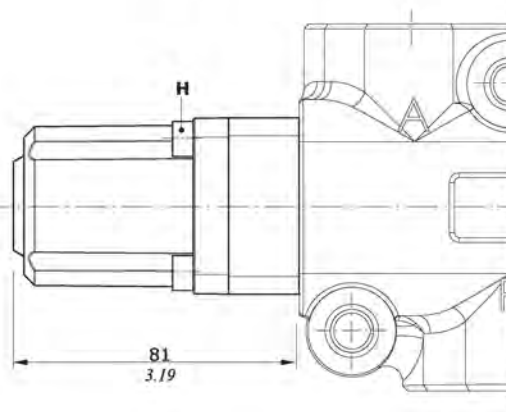
Position 2: - 20 mm (- 0.78 in)

"A" side spool positioners

With detent

Type 12

Detent in positions 1 and 2

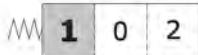
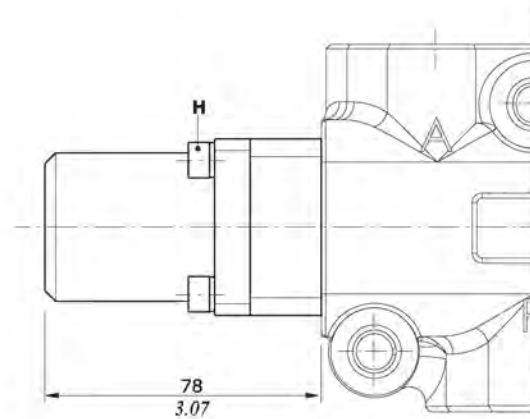
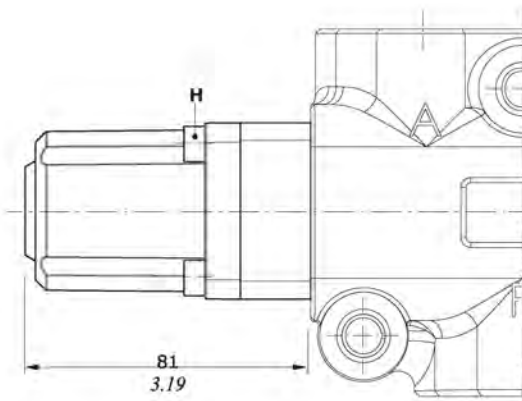
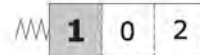


Wrenches and tightening torque

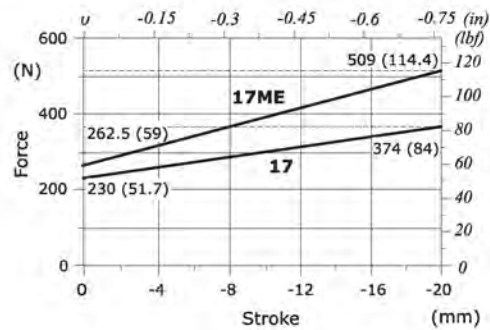
H = wrench 5 - 9.8 Nm (7.2 lbf)

With spring return in position 1

With heavier spring type "E"

Type 17

Type 17ME

Wrenches and tightening torque

H = wrench 5 - 9.8 Nm (7.2 lbf)

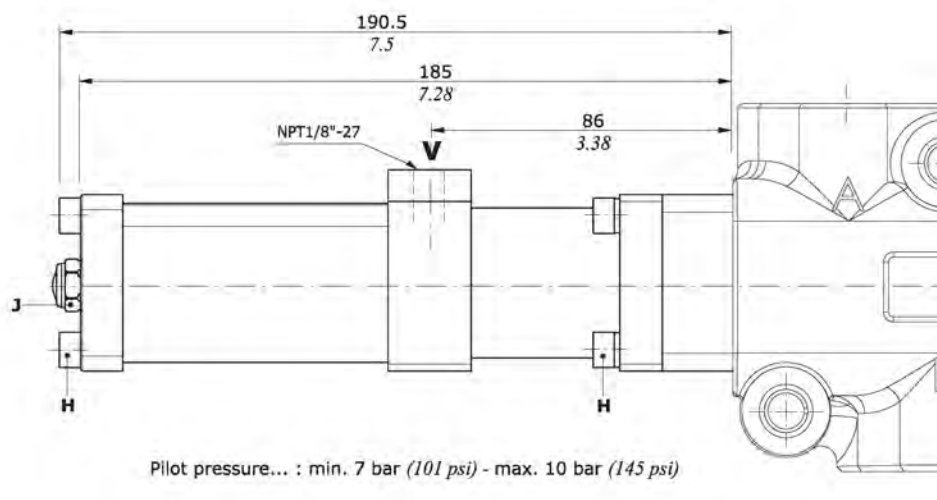
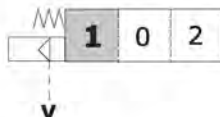
Force-Stroke diagram


DF25

Mechanical control monoblock diverter valves

"A" side spool positioners
ON/OFF pneumatic controls
Type 17P

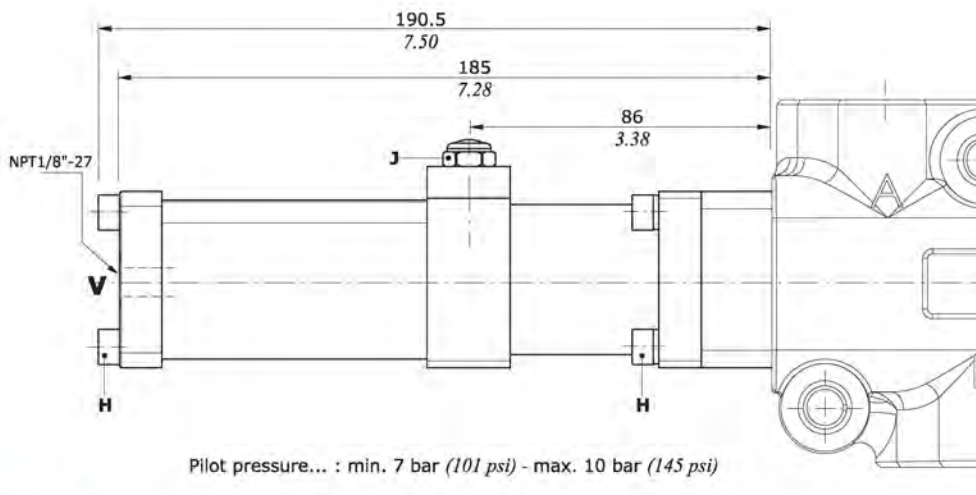
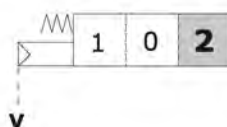
Spring return in position 1


Wrenches and tightening torque
H = wrench 5 - 9.8 Nm (7.2 lbft)

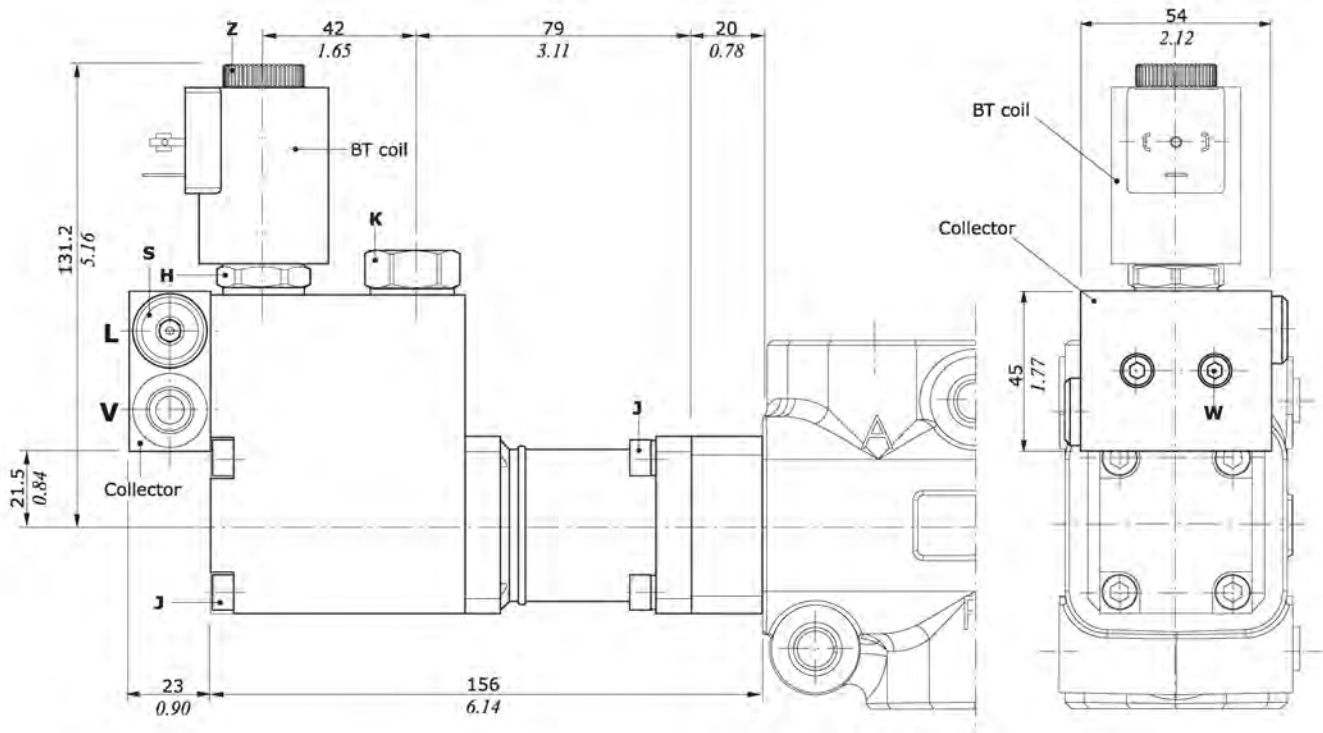
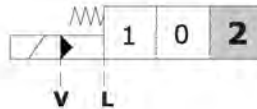
J = wrench 13 - 9.8 Nm (7.2 lbft)

Type 18P

Spring return in position 2



ON/OFF electrohydraulic control
Type 18E11

 Spring return in pos. 2,
 with external pilot and drain

Collector kit for external pilot and drain
Wrenches and tightening torque
J = wrench 5 - 9.8 Nm (7.2 lbf^t)

K = wrench 24 - 30 Nm (22.1 lbf^t)

Z = 5 Nm (3.68 lbf^t)

S = wrench 6 - 24 Nm (17.7 lbf^t)

H* = wrench 24 - 9.8 Nm (7.2 lbf^t)

W = wrench 4 - 6.6 Nm (4.9 lbf^t)

(*)Tightening with dynamometric wrench or screwer

COLLECTOR KIT CODE

Type	Code	Description
KE1S0	5KE1S00030	kit for 1 section

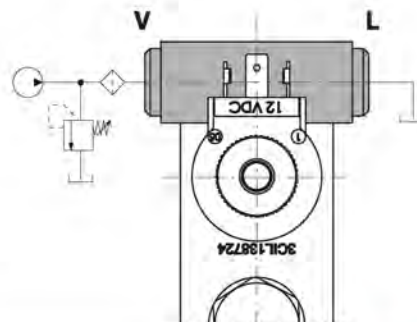
Codes are referred to BSP thread

Features

Pilot pressure: : min. 10 bar (145 psi)

: max. 50 bar (725 psi)

Max backpressure on drain L....: 25 bar (362.5 psi)

Note: for complete available BT coils list and features see page 64


DF25

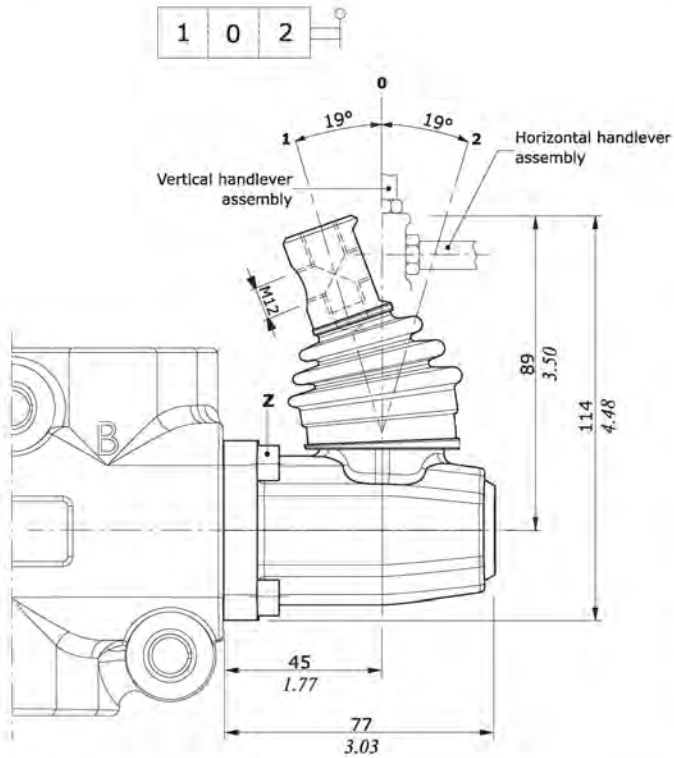
Mechanical control monoblock diverter valves

"B" side options

Lever control kit

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

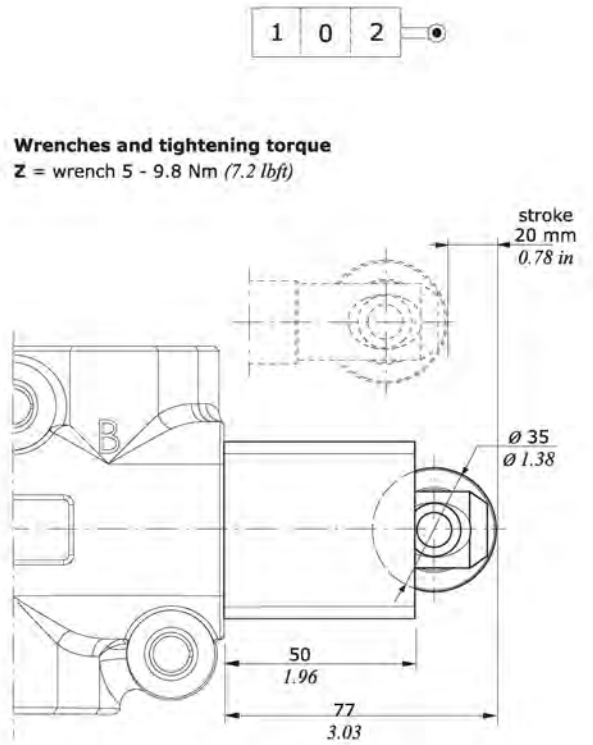
Type L



Cam control kit

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

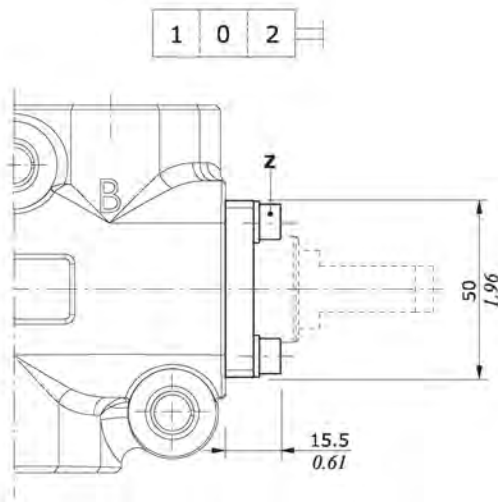
Type CA-CB



Wrenches and tightening torque
Z = wrench 5 - 9.8 Nm (7.2 lbft)

Without lever, with flange

Type SLP

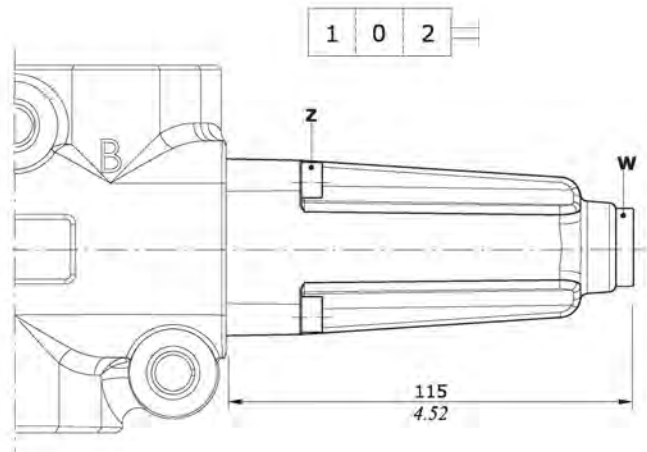


Wrenches and tightening torque
Z = wrench 5 - 9.8 Nm (7.2 lbft)
W = wrench 8 - 24 Nm (17.7 lbft)

Without lever, with cap

Protection cap to use with pneumatic, hydraulic and electrohydraulic spool positioner kits

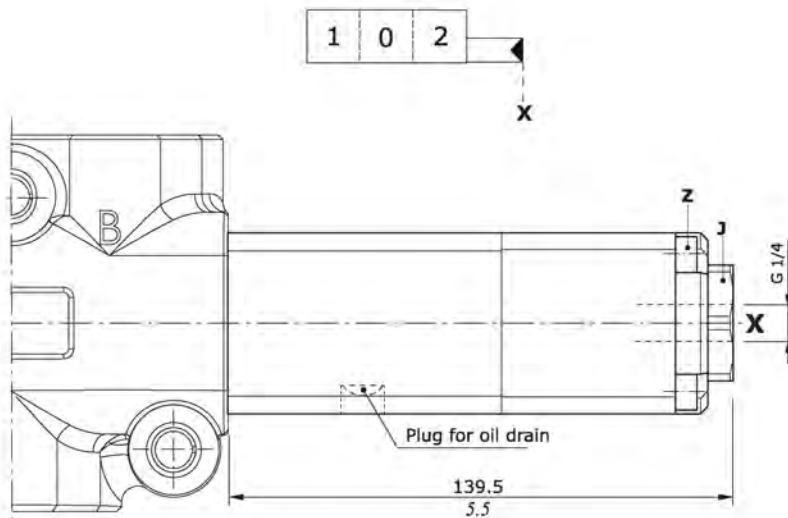
Type SLC



Hydraulic controls

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

Type IA2
High pressure pilot



Pilot pressure max. = 250 bar (3620 psi)

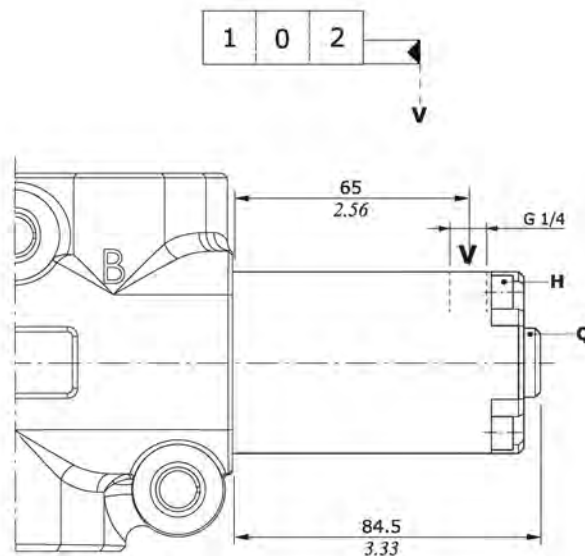
Wrenches and tightening torque

Z = wrench 5 - 9.8 Nm (7.2 lbf)

J = wrench 24 - 42 Nm (31 lbf)

Q = wrench 6 - 24 Nm (17.7 lbf)

Type IB2
Low pressure pilot



Pilot pressure max. = 50 bar (725 psi)

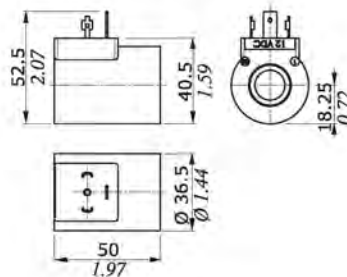
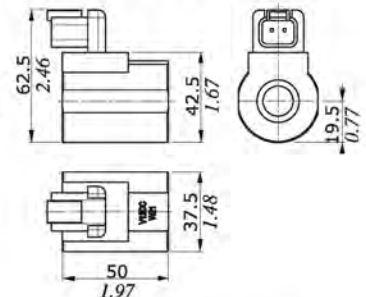
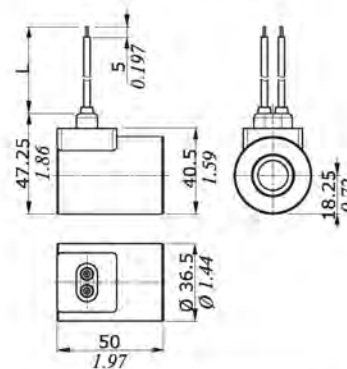
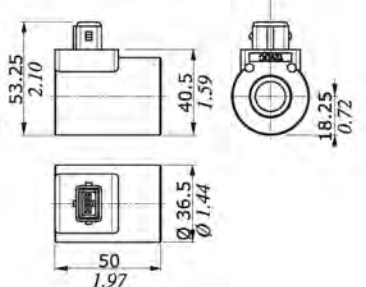
Coils and accessories for 18E11 control

Type	Voltage	Ordering codes					Flying leads without connector
		ISO4400	Deutsch DT	AMP JPT	Packard Weatherpack	Packard Metri-pack	
BT	10 VDC	4SL3000100	-	-	-	-	-
	12 VDC	4SL3000120	4SL3000130 ⁽⁶⁾	4SL3000122 ⁽⁵⁾	-	-	-
		4SL3000126 ⁽⁴⁾	4SL3000134 ⁽³⁻⁶⁾	4SL3001200 ⁽³⁻⁵⁾	4SL3000124 ⁽²⁾	4SL3000127 ⁽²⁾	4SL300012C
	24 VDC	4SL3000240	4SL3000249 ⁽⁶⁾	4SL3000248 ⁽⁵⁾	-	-	-
		4SL3030240 ⁽¹⁾	4SL300024C ⁽³⁻⁶⁾	-	-	-	4SL3000246
	26 VDC	4SL3000260	-	-	-	-	-
	48 VDC	4SL3000480	-	-	-	-	-
		4SL3030480 ⁽¹⁾	-	-	-	-	-
110 VDC	4SL3001100	-	-	-	-	-	
	4SL3031100 ⁽¹⁾	-	-	-	-	-	
220 VDC	4SLE022000A	-	-	-	-	-	
	4SLE322000A ⁽¹⁾	-	-	-	-	-	
Mating connectors							
With rectifier	24 VDC	4CN1009995	5CON140031	5CON003	5CON001	5CON017	-
	48 VDC	4CN3010240	-	-	-	-	-
	110 VDC	4CN3011100	-	-	-	-	-
	220 VDC	4CN3012200	-	-	-	-	-

Notes: ⁽¹⁾ supply with AC and use only with rectifier connector - ⁽²⁾ with flying leads - ⁽³⁾ with bidirectional diode - ⁽⁴⁾ with unidirectional diode ⁽⁵⁾ integrated perpendicular type - ⁽⁶⁾ integrated parallel type

Features

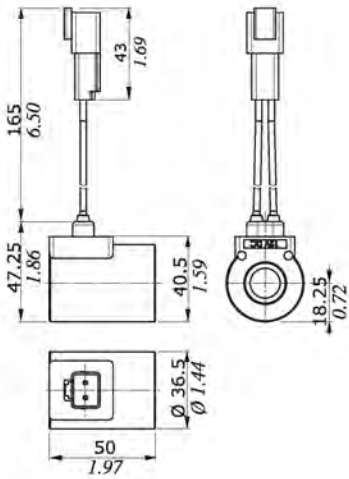
Nominal voltage tolerance: ±10%
 Nominal power.....: 19 W - 10 VDC
 : 21 W - 12/24/26 VDC
 : 20.3 W - 48 VDC
 : 17.3 W - 110 VDC
 : 17.7 W - 220 VDC
 Nominal current.....: 1.9 A @ 10 VDC
 : 1.77 A @ 12 VDC
 : 0.89 A @ 24VDC
 : 0.84 A @ 26 VDC
 : 0.43 A @ 48 VDC
 : 0.16 A @ 110 VDC
 : 0.08 A @ 220 VDC
 Insulation.....: Class F (155°C - 311°F)
 Weather protection...: IP65 - ISO4400 / AMP JPT
 : IP69K - Deutsch DT
 : IP67 - Weatherpack / Metri-pack
 Insertion.....: 100%

ISO4400 connector

DEUTSCH DT04 connector (Parallel type)

Flying leads

AMP JPT connector (Perpendicular type)


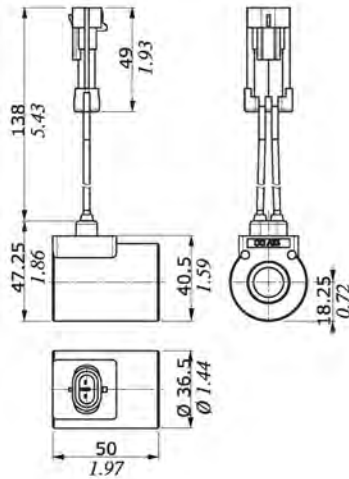
Coil type	L dimension	
	(mm)	(in)
12 VDC	240	9.45
24 VDC	600	23.62

Coils and accessories for 18EI1 control

Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD METRI-PACK connector



Flying leads with PACKARD WEATHER-PACK connector

