

Extracted from RA 24 751/06.98

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Issue: 01.01

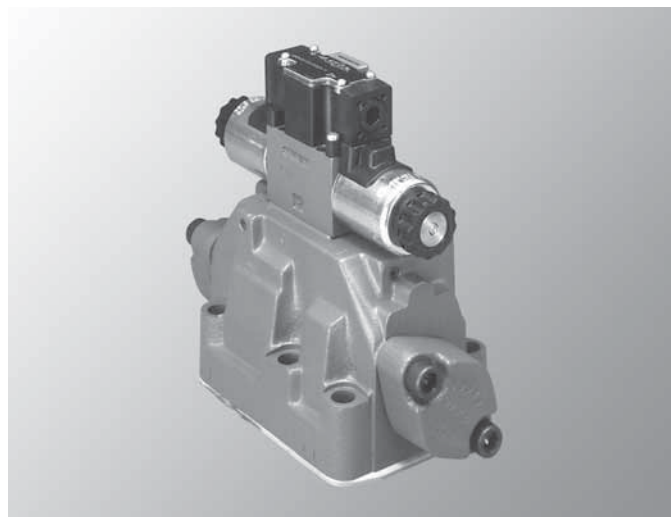
See Section 16 for applicable
Preferred/Spotlight part numbers
and unit price.**4/2- and 4/3-way Directional valves,
Pilot operated, Model 4 WEH...
Externally pilot operated, Model 4 WH ...**

Sizes 10 to 32, Series 4X, 6X, 7X

Maximum pressure up to 350 bar (5100 PSI)

Maximum volume up to 1100 L/min (290 GPM)

- Solenoid pilot operated directional valves (WEH)
- Hydraulic pilot operated directional valves (WH)
- Mounts on standard ISO 4401-5, 7, 8, or 10, NFPA T 3.5.1 M R1 and ANSI B 93.7 D 05, D 07, D 08, or D10 interfaces
- For subplates, see data sheets RA 45 045 ... RA 45 060, may be ordered separately
- 3-position spring centered (sizes 10 to 32)
- 3-position spring or hydraulic centering (sizes 16, 25 and 32)
- 2-position hydraulic or spring offset (sizes 10 to 32)
- Wet pin AC or DC solenoids as required
- Manual overrides standard (WEH)



Model 4WEH 22 E 7X/..6EG..N9..DA.. with plug-in connector

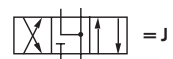
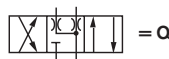
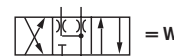
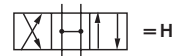
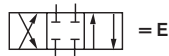
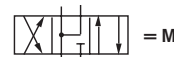
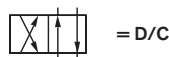
- Individual solenoid plug-in connectors or central wiring box, see datasheet RA 08 006
- Optional meter-in or meter-out pilot choke option
- "P" port pilot pressure insert (sizes 16 to 32), for open center spools

Technical data

Sizes (ordering code)			10	16	22	25	32
Operating pressure, max.							
– Port P, A, B	Model 4WEH	bar (PSI)	280 (4060)	280 (4060)	280 (4060)	–	280 (4060)
	Model H-4WEH	bar (PSI)	350 (5100)	350 (5100)	350 (5100)	350 (5100)	350 (5100)
– Port T	Pilot oil drain Y external	bar (PSI)	315 (4600)	250 (3625)	250 (3625)	250 (3625)	250 (3625)
	Pilot oil drain Y internal	bar (PSI)	3046 DC				
		bar (PSI)	2321 AC				
– Port Y	Pilot oil drain external:	bar (PSI)	3046 DC, 2321 AC				
	with version 4WH	bar (PSI)	250 (3625)	250 (3625)	210 (3050)	250 (3625)	250 (3625)
Pilot pressure, max.		bar (PSI)	250 (3625)	250 (3625)	210 (3050)	250 (3625)	250 (3625)
(With higher pilot pressures, a pressure reducing valve is required.)							
Pilot pressure, min.							
– Pilot oil supply X external, pilot oil supply X internal				H-4W..	4W..		
	(not with spools: C, G, H)				12.5 (180)	10.5 (150)	
	3-position valve, spring-centered	bar (PSI)	10 (145)	14 (205)			13 (190)
	3-position valve, pressure-centered	bar (PSI)	–	14 (205)	–		18 (260)
	2-position valve, with spring offset	bar (PSI)	10 (145)	14 (205)	14 (205)	11 (160)	13 (190)
	2-position valve, with hydraulic offset	bar (PSI)	7 (100)	14 (205)	8 (115)		8 (115)
– Internally piloted (with spools C, F, G, H, P, T, V, Z, S)			bar (PSI)	4.5 (65)	4.5 (65)	4.5 (65)	4.5 (65)
							5 (72)
							8.5 (125)
							10 (145)

Symbols (to ISO 1219)

- 4WEH.. EA.xx/... = 2-position main valve with single solenoid pilot
- 4WEH.. HD.xx/OF... = 2-position main valve with detented pilot,
main stage hydraulically offset
- 4WEH.. D.xx/OF... = 2-position main valve with detented pilot,
main stage spring offset
- 4WEH.. D.xx/... = 2-position main valve with single solenoid pilot,
main stage spring offset



See Section 16 for applicable Preferred/Spotlight part numbers and unit price.

Ordering code

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*

280 bar (4100 PSI) = **no code**

350 bar (5100 PSI) = **H-**

4-way (Four service ports) = **4**

Operation

Solenoid operated pilot valve = **WEH**

Hydraulically operated = **WH**

Size

10 (D 05) = **10**

16 (D 07) = **16**

22 (D 08) = **22**

25 (D 08) = **25**

32 (D 10) = **32**

Spool return (main body)

Spring return (size 10 to 32) = **no code**

Hydraulic return (size 10 to 32)* = **H**

*(Size 10 and 22 with spool types C, D only)

Spool type

(ex. **C, D, E, G, H, J, M, W**)

3-position valve = **no code**

Series

Size 10

Series 40 to 49*

= **4X**

Size 25, 32

Series 60 to 69*

= **6X**

Size 16, 22

Series 70 to 79*

= **7X**

*externally interchangeable

Variation to the pilot valve

For 2-position valves with 2 solenoids:

Only possible with spool types C, D, and hydraulic spool return "H" in the main valve

Without spring return with detent = **OF**

Pilot valve WE 6 (D 03), with removable solenoids = **6E**

Voltages

DC – 12, 24, 96

Example = **G 24**

AC¹⁾ – 110, 230

Example = **110**

With protected manual overrides (standard 6E) = **N9**

Externally piloted, externally drained = **no code**

Internally piloted, externally drained = **E**

Internally piloted, internally drained = **ET**

Externally piloted, internally drained = **T**

(On sizes 16, 25, 32 models "ET" and "T" with hydraulically centered three-position valves, are only possible if: $p_{\text{pilot}} \geq 2 \times p_{\text{tank}} + p_{\text{pilot min}}$)

Further details to be written in clear text

no code = NBR seals, suitable for petroleum oils (HM, HL, HLP)

V = FPM seals, suitable for phosphate ester (HFD-R)

no code = without pilot pressure control valve

no code = Without pilot pressure insert

P4.5 = $p_o = 4.5$ bar (65 PSI)
(For spool types C, G, H)

Electrical connections

to data sheet RA 08006

Central electrical connections

DA = Terminal box with 1/2" NPT conduit connection

DAL = Terminal box with 1/2" NPT conduit connection and light(s)

ANSI B 93.55 M plug-in type connections (without female end)

DK23 = Terminal box w/3-pin connector (single solenoid)

DK25 = Terminal box w/5-pin connector (double solenoid)

DK23L = Terminal box w/3-pin connector & light (single solenoid)

DK25L = Terminal box w/5-pin connector & light (single solenoid)

DK24L2 = Terminal box with 4-pin connector, lights & surge suppression

Individual solenoid plug-in connection

K4 = without angled plug connector(s)

no code = without pilot choke adjustment

S = With meter-in pilot choke adjustment

S2 = With meter-out pilot choke adjustment

p_{pilot} = pilot pressure

$p_{\text{pilot min}}$ = minimum pilot pressure

p_{tank} = Tank pressure

p_o = Cracking pressure

¹⁾ AC Voltage and Frequency

110 = 110V–50Hz, 110V–60Hz, 120V–60Hz

230 = 220V–50Hz, 220V–60Hz, 240V–60Hz

Extracted from RA 23 193/09.99

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See Section 16 for applicable
Preferred/Spotlight part numbers
and unit price.**4/2- and 4/3-way Isolating valves
Model Z4WE 6**

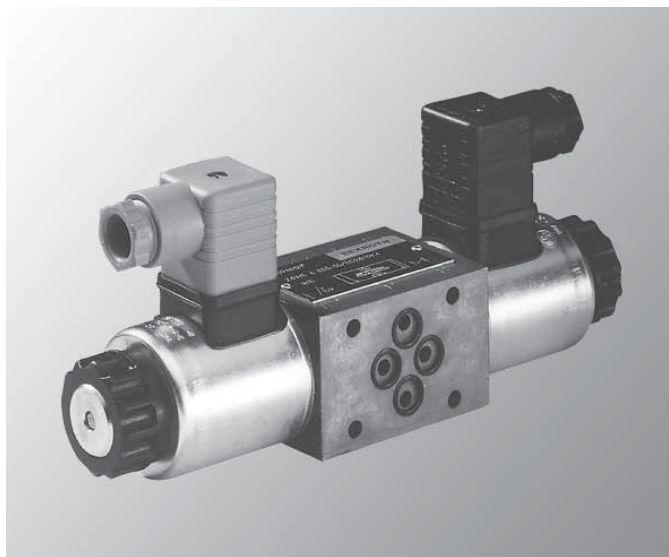
Nominal Size 6

Series 3X

Maximum operating pressure 315 bar (4600 PSI)

Maximum flow 40 L/min (10.6 GPM)

- Direct solenoid actuated directional spool valve
- Sandwich plate valve
- For use as an isolator/free-flow valve or as a
isolator/free-flow/short circuit valve
- Free-flow through ports P and T in all spool positions
- Porting pattern to DIN 24 340 form A,
ISO 4401 and CETOP-RP 121 H,
- Wet pin AC or DC solenoids
- Manual override



Model Z4WE 6 E53-3X/EG24N9K4 with plug-in connector

Ordering code

<div>Z4WE6-3X / E</div>										<div>K4</div>										<div>*</div>																			
Nominal size 6										= 6										Further details in clear text																			
E68, E63, ...																				No code =										NBR seals									
Series 30 to 39 (30 to 39: externally interchangeable)										= 3X										K4 =										Electrical connection									
High performance solenoid (wet pin)										= E										Individual connection; with component plug DIN 43 650-AM2, without plug-in connector																			
Voltages																																							
DC – 12, 24, 96										Example										= G 24																			
AC ¹⁾ – 110, 230										Example										= W110																			
With protected manual override (standard)																				= N9																			

¹⁾ AC Voltage and Frequency

110 = 110V–50Hz, 110V–60Hz, 120V–60Hz

230 = 220V–50Hz, 220V–60Hz, 240V–60Hz

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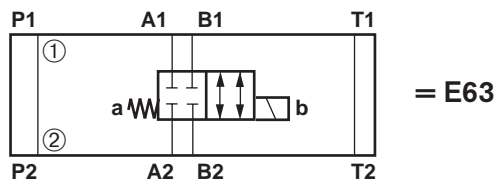
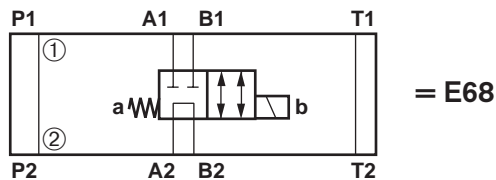
Issue: 01.01

See Section 16 for applicable
Preferred/Spotlight part numbers
and unit price.**Technical data****General**

Weight	Valve with 1 solenoid	kg (lbs.)	1.2 (2.65)
	Valve with 2 solenoids	kg (lbs.)	1.6 (3.53)
Installation			optional
Hydraulic data			
Max. operating pressure	Ports P, A, B	bar (PSI)	315 (4600)
	Port T	bar (PSI)	210 (3050) for DC voltages; 160 (2320) for AC voltages

Electrical data

Power consumption (DC)		W	30
Holding power (AC)		VA	50
Inrush current (AC)		VA	220
Voltage tolerance (nominal voltage)		%	±10
Duty			continuous
Switching time	ON	ms	20 to 45 for DC voltages, 10 to 20 for AC voltages
	OFF	ms	10 to 25 for DC voltages, 15 to 40 for AC voltages
Switching frequency		1/h	up to 15000 for DC voltages; up to 7200 for AC voltages
Protection to DIN 40 050			IP 65

Symbols (Codes: ① = valve side: ② = manifold side)

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 See Section 16 for applicable
 Preferred/Spotlight part numbers
 and unit price.

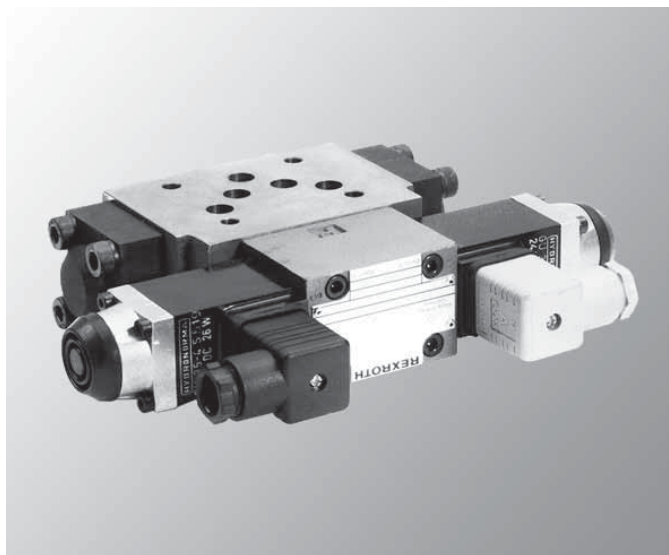
4/2- and 4/3-Way Isolation Valve
Model Z4 WEH 10
Size 10

Series 4X

Maximum operating pressure 315 bar (4600 PSI)

Maximum flow 160 L/min (42.6 GPM)

- Functions as an emergency on-off isolation valve or on-off isolation/bypass valve, primarily applied with servo/proportional systems
- Free flow through ports P and T in all pilot valve positions
- Pilot operated by D 03, spool type directional control valve
- Solenoid operation (WEH) or hydraulic operation (WH)
- Porting pattern to ISO 4401-5, NFPA T3.5.1 M R1 and ANSI B 93.7 D 05
- Wet pin AC or DC solenoids
- Manual overrides
- Individual electrical connections or central terminal box



Model Z4WEH 10 E62-4X/6A...NETZ45

Ordering code

Z4		10		- 4X /											*
Safety/isolation sandwich plate														Further details to be written in clear text	
Operator = WEH														no code = NBR seals, suitable for petroleum oils (HM, HL, HLP)	
Electro-hydraulic														V = FPM seals, suitable for phosphate ester fluids (HFD-R)	
Size 10, D 05 = 10														no code = without pressure reduction to pilot valve	
For symbols E63, E68															
Series 40 to 49 = 4X (40 to 49; externally interchangeable)															
Pilot valve with wet-pin solenoids = 6E															
Voltages															
DC - 12, 24, 96 Example = G 24															
AC ¹⁾ - 110, 230 Example = W110															
With covered manual override = N9															
Internally piloted, internally drained = ET															
Without pilot chokes = no code															
Electrical connection:															
Without angled plug connector(s) = K4															
Terminal box with 5 pin connector and light = DK25L															

1) AC Voltage and Frequency

110 = 110V-50Hz, 110V-60Hz, 120V-60Hz

230 = 220V-50Hz, 220V-60Hz, 240V-60Hz

¹⁾ AC Voltage and Frequency

110 = 110V–50Hz, 110V–60Hz, 120V–60Hz

230 = 220V–50Hz, 220V–60Hz, 240V–60Hz

Extracted from RA 24 753/06.98

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See Section 16 for applicable
 Preferred/Spotlight part numbers
 and unit price.

Technical data

General

Weight (approx.)			
– Electrical operation	Valve with one solenoid	kg (lbs.)	4.2 (9.2)
	Valve with two solenoids	kg (lbs.)	4.6 (10.1)
Mounting position			Optional

Hydraulic

Maximum operating pressure			
– Ports A and B		bar (PSI)	315 (4600)
– Port P	with internal pilot	bar (PSI)	210 (3100)
	(only internal pilot fluid possible)		
– Port T	with DC solenoid	bar (PSI)	160 (2320)
	with AC solenoid	bar (PSI)	100 (1450)

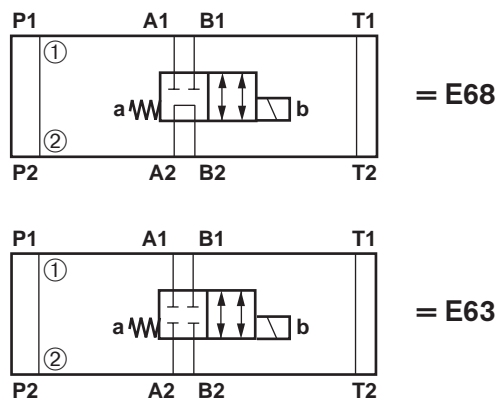
Operating time "ON" (From energizing the pilot valve to the start of the opening of the spool in the main valve)

– at a pilot pressure of	bar (PSI)	~ 70 (1000) =		~ 140 (2000) =		~ 210 (3100) =	
– 2- and 3-position valves	ms	30	65	25	60	20	55

Operating time "OFF" (spring operation)

– 2- and 3-position valves	ms	30
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Symbols (Codes: ① = valve side: ② = manifold side)



Extracted from RA 21 010/05.99

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Issue: 04.03

See Section 16 for applicable
Preferred/Spotlight part numbers
and unit price.**2-way Cartridge valves –
Directional function
Cartridge valves, Model LC...
Control covers, Model LFA...**

Nominal Size 16 to 50

Series 7X

Maximum operating pressure 420 bar (6100 PSI)

Maximum flow 2500 L/min (660 GPM)

- Valve poppet with or without damping nose
- 2 area ratios
- 4 spring rates
- Stroke limiter option
- Control cover for mounting directional spool valves with or without built-in shuttle valve
- Control cover for mounting directional poppet valves with or without built-in shuttle valve



Control cover model LFA 25 WEA7X/... with directional valve 4WE 6 D6X/EG24N9K4 and plug-in connector



Cartridge valve model LC 25 A40E7X/...

Ordering code

LC		7X /			
Nom. size 16	(series 7X)	= 16		No code =	NBR seals
Nom. size 25		= 25		7X =	Series 70 to 79
Nom. size 32		= 32			(70 to 79: unchanged installation and connection dimensions)
Nom. size 40		= 40		E =	Valve poppet without damping nose
Nom. size 50		= 50		D =	Valve poppet with damping nose
Area ratio 2:1 (annulus area = 50%)		= A			
Area ratio 14.3:1 (annulus area = 7%)		= B			
Cracking pressure approx. 0.5 bar (7.25 PSI)		= 05			
Cracking pressure approx. 1.0 bar (14.5 PSI)		= 10			
Cracking pressure approx. 2.0 bar (29.0 PSI)		= 20			
Cracking pressure approx. 4.0 bar (58.0 PSI)		= 40			

Extracted from RA 21 010/05.99

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 See Section 16 for applicable
 Preferred/Spotlight part numbers
 and unit price.

Technical data

Max. operating pressure	– Without directional valve	bar (PSI)	6100
	– Ports A, B, X, Z1, Z2	bar (PSI)	315 (4600); 350 (5100); 420 (6100) (dependent on the pilot valve)
	– Port Y	bar (PSI)	Corresponds to the tank pressure of the pilot valve

**General notes on the ordering code
for control covers**

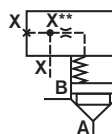
1 2 3 4 9								
LFA								
Nominal size					Model	Series	Remote control port	Seal Material
16	25	32	40	50				
x	x	x	x	x		7X		Ordering details can be found on the pages covering the individual control cover variations
x	x	x	x	x	D		F	
x	x	x	x		H2		F	
x	x	x	x	x	WEA			
	x	x	x	x	WEB			
	x				WEMA			
x	x	x	x		GWA			
x	x	x	x	x	KWA			

x = available

Symbols, cartridge valves
LFA . D-./F...

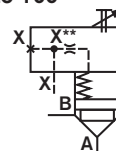
Control cover with remote control port

Size 16 to 160


LFA . H2-./F...

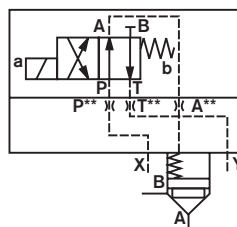
Control cover with stroke limiter, with remote control port

Size 16 to 160


LFA . WEA-./...

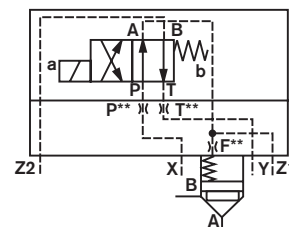
Control cover for mounting a directional spool or poppet valve

Size 16 to 160


LFA . WEMA-7X/...;
LFA . WEA8-6X/...

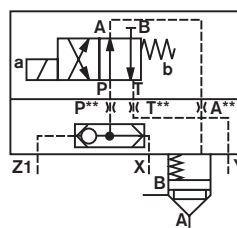
Control cover for mounting a directional spool or poppet valve with control port for switching a 2nd valve

Size 16 to 100


LFA . GWA-./...

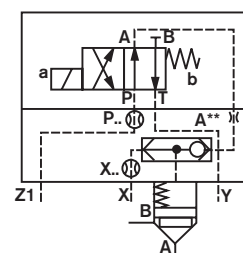
Control cover for mounting a directional spool or poppet valve, with built-in shuttle valve

Size 16 to 100


LFA . KWA-./...

Control cover for mounting a directional spool or poppet valve, with built-in shuttle valve as a check valve circuit

Size 16 to 100



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See Section 16 for applicable
Preferred/Spotlight part numbers
and unit price.**2-way Cartridge valves – Pressure function
Cartridge valves, Model LC...
Control covers, Model LFA...**

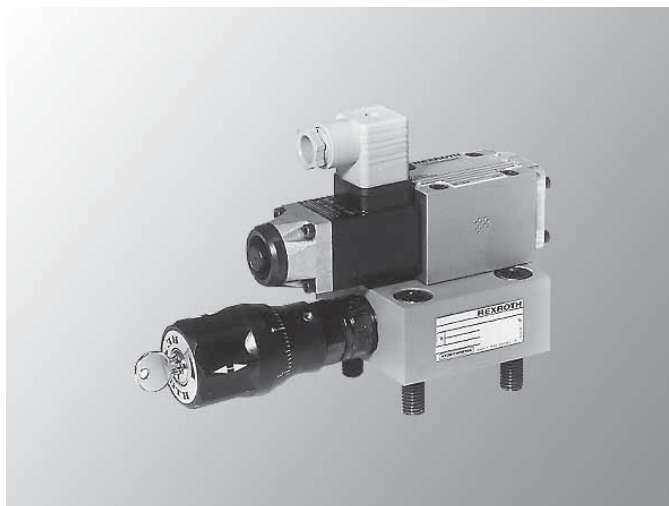
Sizes 16 to 50

Series 7X

Maximum operating pressure 420 bar (6100 PSI)

Maximum flow 2000 L/min (528 GPM)

- Valve poppet with or without dampening function
- 2 spring rates
- Stroke limiter option
- Control cover with integral relief (DB)
- Control cover with integral relief and poppet or spool valve unloading (DBW)

Control cover with manual pressure
adjustment model LFA .. DBW ...

Cartridge valve model LC ..DB...-7X/...

Ordering code

LC		DB		7X /	
Sizes 16 ... 100				No code = NBR seals	
Size 16	(series 7X)	= 16		7X = Sizes 16 to 50 Series 70 to 79	
Size 25		= 25		(70 to 79: unchanged installation and connection dimensions)	
Size 32		= 32			
Size 40		= 40			
Size 50		= 50			
Cracking pressure 2.0 bar (29 PSI)		= 20		E = Poppet valve	
Cracking pressure 4.0 bar (58 PSI)		= 40		D = Poppet spool valve	
				Standard model	