

## 4/3 Cartridge Spool Valve, Size 5

$Q_{\max} = 30 \text{ l/min}$ ,  $p_{\max} = 250 \text{ bar}$   
direct acting, with solenoid operation  
Series WK43D.../ WK43G...



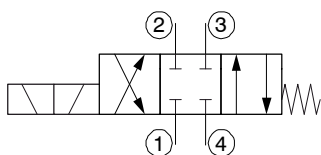
- Compact construction for cavity type AN – 3/4-16 UNF
- Low headloss
- Choice of nominal power rating – 17 W or 27 / 25 W
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body

### 1 Description

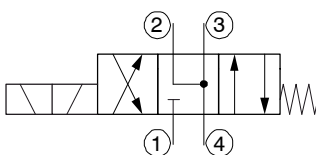
These direct acting 4/3 solenoid operated spool valves, series WK43D.../ WK43G..., are size 5, pressure balanced screw-in cartridges with a 3/4-16 UNF mounting thread. They are designed on the proven sliding-spool principle. These 4/3 spool valves equipped with solenoid operated spools and are available with 17 W or 27/25 W coils. The straightforward design delivers an outstanding price/performance ratio and good  $\Delta p$  values. These 4/3 solenoid operated spool valves are used in mobile and industrial applica-

tions as pilot valves for controlling the travel direction of actuators such as hydraulic motors and cylinders. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

### 2 Symbol



WK43D...



WK43G...

### 3 Technical data

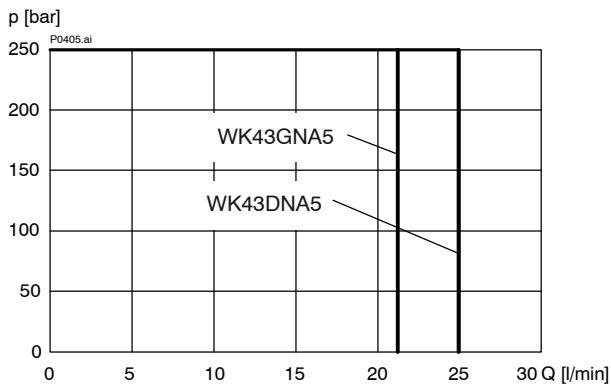
General characteristics	Description, value, unit
Designation	4/3 cartridge spool valve
Design	direct acting, with solenoid operation
Mounting method	screw-in cartridge 3/4-16 UNF
Tightening torque	40 Nm $\pm$ 10 %
Size	nominal size 5, cavity type AN
Weight	0.64 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C
MTTF <sub>D</sub> values	150 years, see data sheet 400-P-010101-en

Hydraulic characteristics		Description, value, unit
Maximum operating pressure	- ports 1,2,3 and 4	250 bar
Maximum flow rate		30 l/min
Flow direction		see symbols
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range		-25 °C ... +80 °C
Viscosity range		10...500 mm <sup>2</sup> /s (cSt), recommended 15...250 mm <sup>2</sup> /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15
Electrical characteristics		Description, value, unit
Supply voltage		12 V DC, 24 V DC / 115 V AC, 230 V AC (50 ... 60 Hz)
Supply voltage tolerance		± 10 %
Nominal power consumption	- version "N" - version "E"	V DC = 27 W / V AC = 25 W V DC = 17 W / V AC = 17 W
Switching time	- version WK43DNA5...  - version WK43DEA5...  - version WK43GNA5...  - version WK43GEA5...	40 ... 100 ms (energising) 30 ... 50 ms (deenergising)  45 ... 100 ms (energising) 15 ... 50 ms (deenergising)  50 ... 180 ms (energising) 30 ... 65 ms (deenergi  50 ... 110 ms (energising) 40 ... 60 ms (deenergising)  Depending on pressure, flow rate and viscosity as well as dwell time under pressure, the switching times may vary from the the stated values.
Relative duty cycle		100 %
Protection class to ISO 20 653 / EN 60 529		IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Electrical connection		DIN EN 175301-803, 3-pin 2 P+E (standard) for other connectors, see "Ordering code"

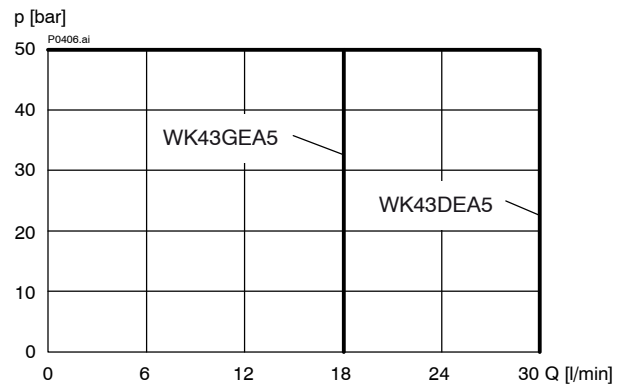
## 4 Performance graphs

measured with oil viscosity 33 mm<sup>2</sup>/s (cSt), coil at steady-state temperature and 10 % undervoltage

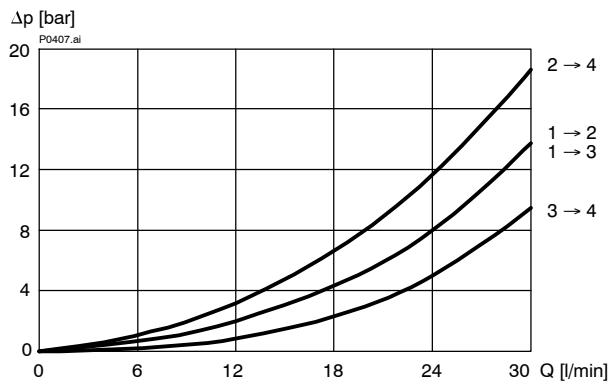
$p = f(Q)$  Performance limits [ Version - 27 / 25 W ]



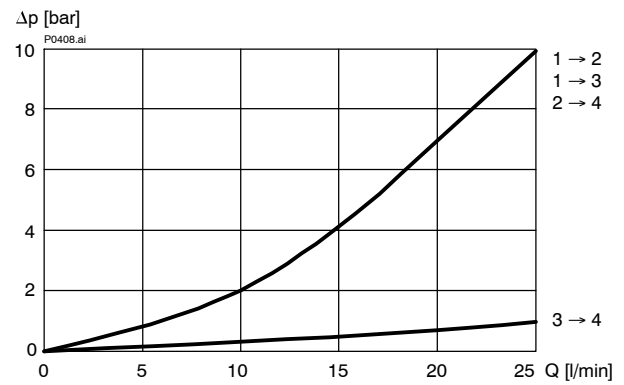
$p = f(Q)$  Performance limits [ Version - 17 W ]



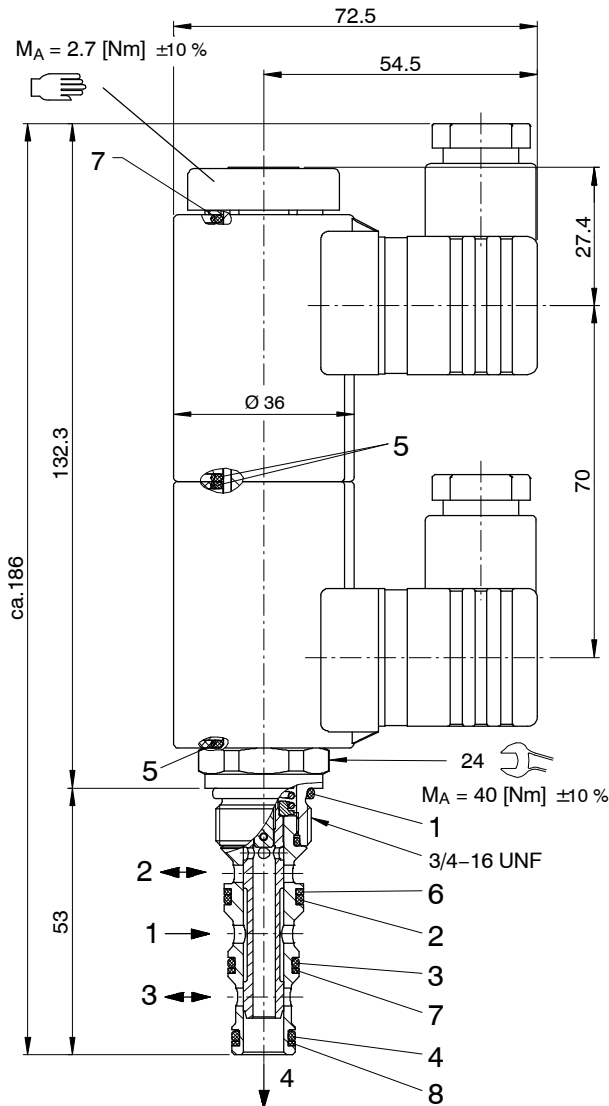
$\Delta p = f(Q)$  Pressure drop - Flow rate characteristic  
[WK43D...]



$\Delta p = f(Q)$  Pressure drop - Flow rate characteristic  
[WK32G...]



## 5 Dimensions & sectional view



## 6 Installation information



### IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



### ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

NBR seal kit no. DS-248-N <sup>2)</sup>

Item	Qty.	Description
1	1	O-ring no. 017 $\varnothing$ 17,17 x 1,78 N90
2	1	O-ring no. 014 $\varnothing$ 12,42 x 1,78 N90
3	1	O-ring no. 013 $\varnothing$ 10,82 x 1,78 N90
4	1	O-ring no. 012 $\varnothing$ 9,25 x 1,78 N90
5	4	O-ring $\varnothing$ 16,00 x 2,00 Viton
6	1	Backup ring $\varnothing$ 10,70 x 1,45 x 1,00 FI0751
7	1	Backup ring $\varnothing$ 9,40 x 1,45 x 1,00 FI0751
8	1	Backup ring $\varnothing$ 7,80 x 1,45 x 1,00 FI0751



### IMPORTANT!

<sup>2)</sup> Seal kit with FKM (Viton) seals, no. DS-248-V

## 7 Ordering code

Ex. 

W	K	43D	N	A	5	_	-	1	24	D	_
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- W = directional valve
- K = spool-type, direct acting
- 43D = 4/3 function, de-energised closed
- 43G = 4/3 function, de-energised open
- N = electrically operated, V DC = 27 W / V AC = 25 W
- E = electrically operated, V DC = 17 W / V AC = 17 W
- A ... Q = standard model - see relevant data sheets
- Z ... R = special features - please consult BUCHER
- 5 = nominal size 5
- (blank) = NBR (Nitrile) seals (standard)
- V = FKM (Viton) seals  
(special seals - please contact BUCHER)
- 1 ... 9 = design stage (omit when ordering new units)
- ... = voltage e.g. 24 (24 V)
- D = current DC
- A = current AC
- (blank) = DIN EN 175301-803 connection with mating plug (standard, IP 65)
- M100 = DIN EN 175301-803 connection without mating plug
- C = Kostal plug connection (IP 65)
- JT = Junior Timer radial plug connection (with protection diode, IP65)
- IT = Junior Timer axial plug connection (with protection diode, IP65)
- D = Deutsch plug connection 45° DT04-2P (IP67/69K)
- DT = Deutsch plug connection 45° DT04-2P (with protection diode, IP67/69K)
- S = AMP Superseal 1.5 (IP67) / Metri-Pack 150 (IP65) plug connection
- F = flying leads (500 mm)

} mating plug not supplied

## 8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-040191	(i-33.12)	Cavity type AN
400-P-120100	(W-2.140)	Overview directional solenoid cartridge valve Size 1...5
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-720121	(G-4.20)	Line-mounting body, type GANA (G 1/8")
400-P-010101		MTTF <sub>D</sub> values for hydraulic valves

info.ch@bucherhydraulics.com

www.bucherhydraulics.com

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Classification: 430.300.300.-.305.310.300