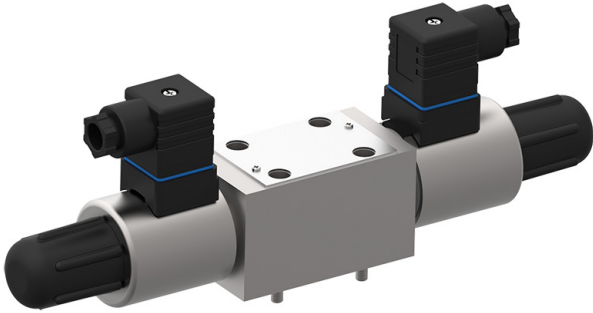


4/3- and 4/2-Proportional Directional Valve, ISO Size 03

$Q_{\max} = 40 \text{ l/min}$, $Q_{N \max} = 20 \text{ l/min}$, $p_{\max} = 210 \text{ bar}$,
Direct acting, electrically operated
Series WRB-43-... / WRB-42-...



- Controls the direction and magnitude of a flow
- Manifold-mounting design, interface to ISO 4401-03-02
- Operated by a proportional solenoid
- With spring-centred control spool
- Excellent repeatability, and low hysteresis
- Very reliable functions and extremely stable
- Manifold-mounting body is hard-emetalsed aluminium; all other 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

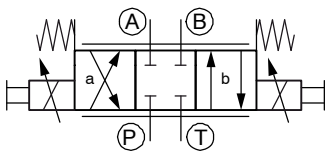
1 Description

The WRB... series of 4/3- and 4/2-proportional directional valves are direct acting, pressure balanced, manifold-mounting valves with a size 03 interface to ISO 4401-03-02. The main components of the valves are an aluminium body with integral steel sleeve, one or two proportional solenoids, a control spool, and return springs. In the initial position (de-energised), the control spool is held in mid-position by the return springs, and ports P, A, B and T are closed with a spool-type shut-off. In control mode, the flow is varied in proportion to the control current. The control spool slides in a hardened sleeve that has erosion-machined windows. The optimised geometry of these openings guarantees respon-

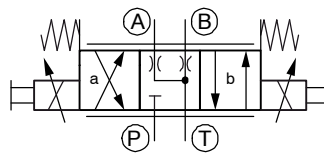
sive control behaviour over the whole flow range. These proportional directional valves are used in plant and machines to provide continuously variable control of the direction and magnitude of a flow. The valves are characterised by their high repeatability and low hysteresis. In addition, they are particularly suitable for use in series applications thanks to their high reproducibility. With their hard-emetalsed aluminium bodies and zinc-nickel plated, external parts, these valves can be used in harsh and aggressive operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°.

2 Symbol

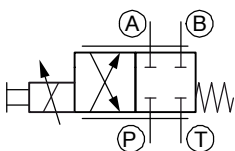
WRB-43-D...



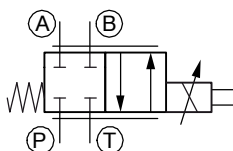
WRB-43-G...



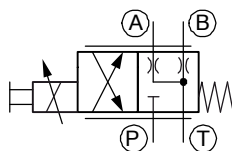
WRB-42-AD...



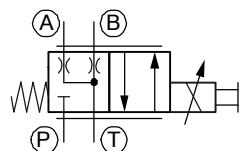
WRB-42-BD...



WRB-42-AG...



WRB-42-BG...



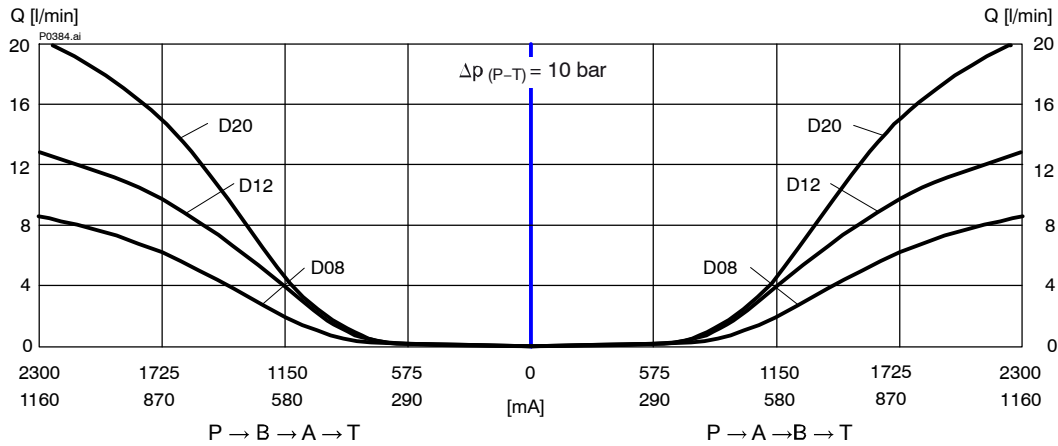
3 Technical data

General characteristics		Description, value, unit
Designation		4/3- and 4/2-proportional directional valve
Design		manifold mounting, direct acting, electrically operated
Mounting method		4 mounting holes for M5x30 mounting bolts
Tightening torque		5.2 Nm ± 10 %
Size		size 03 interface to ISO 4401-03-02 / DIN 24 340 A6
Weight		- WRB-43... 1.70 kg - WRB-42... 1.30 kg
Mounting attitude		unrestricted
Ambient temperature range		-25 °C ... +50 °C
Hydraulic characteristics		Description, value, unit
Maximum operating pressure		- ports P, A, B 210 bar - port T 100 bar
Maximum flow rate		40 l/min
Nominal flow rate Q_N		20, 8 l/min 12 l/min and more Q_N on request
Flow direction		see symbol
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; HEES biodegradable fluids; for other fluids, please consult BUCHER
Hydraulic fluid temperature range		-25 °C ... +70 °C
Viscosity range		15...380 mm ² /s (cSt), recommended 20...130 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 18/16/13
Electrical characteristics		Description, value, unit
Supply voltage		12 V DC / 24 V DC
Supply voltage tolerance		± 10 %
Control current		12 V: 0...2300 mA, 24 V: 0...1160 mA
Power consumption at max. control current		max. 21 W
Coil resistance R		- cold value at 20 °C 12 V = 2.64 Ω / 24 V = 10.10 Ω - cold value at -25 °C 12 V = 2.23 Ω / 24 V = 8.50 Ω - max. warm value 12 V = 3.75 Ω / 24 V = 14.05 Ω
Recommended PWM frequency (dither)		200 Hz
Hysteresis with PWM		2...4 % I_N
Reversal error with PWM		2...4 % I_N
Sensitivity with PWM		< 1 % I_N
Reproducibility with PWM		< 2 % p_N
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 pole 2 P+E for other connectors, see "Ordering code"

4 Performance graphs

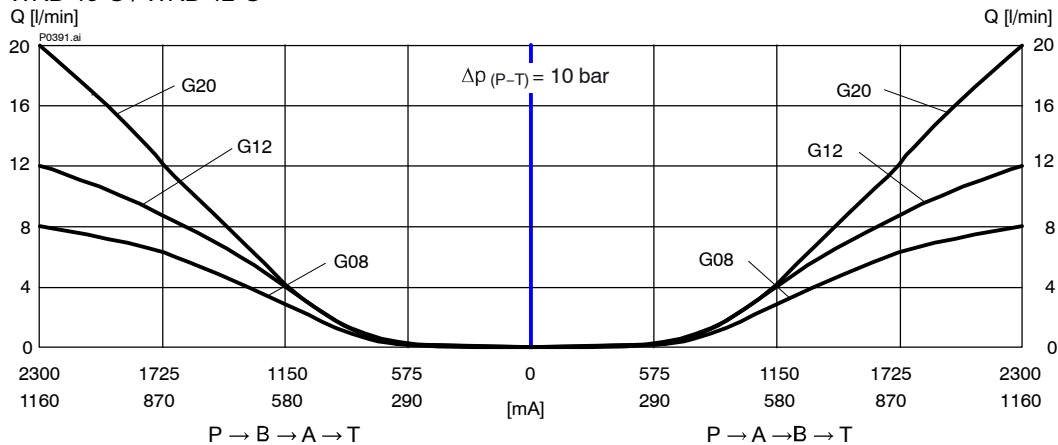
$Q = f(I; \Delta p)$ Flow rate adjustment characteristic *

WRB-43-D / WRB-42-D



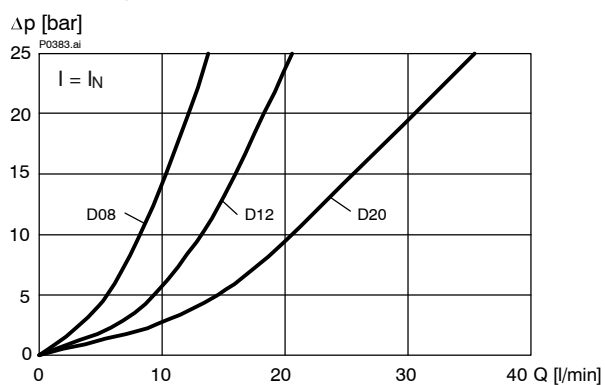
$Q = f(I; \Delta p)$ Flow rate adjustment characteristic *

WRB-43-G / WRB-42-G



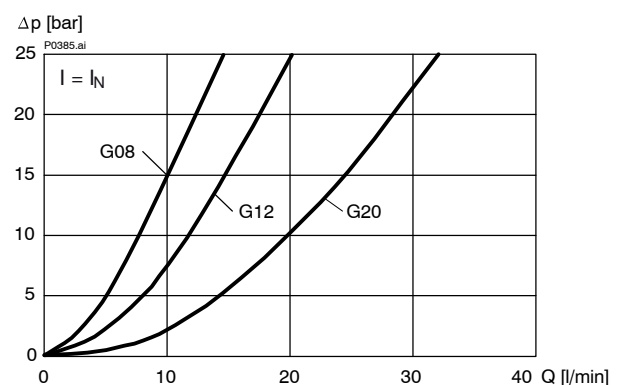
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic *

WRB-43-D, WRB-42-D

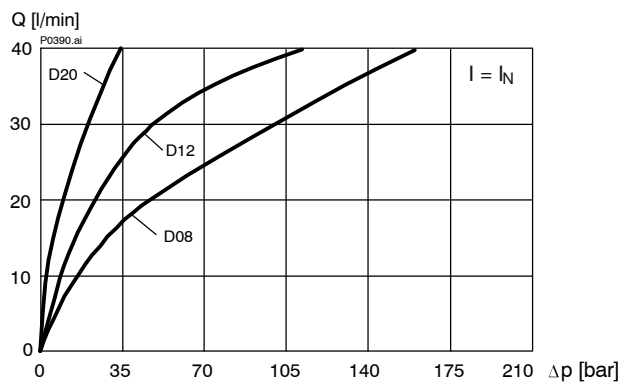


$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic *

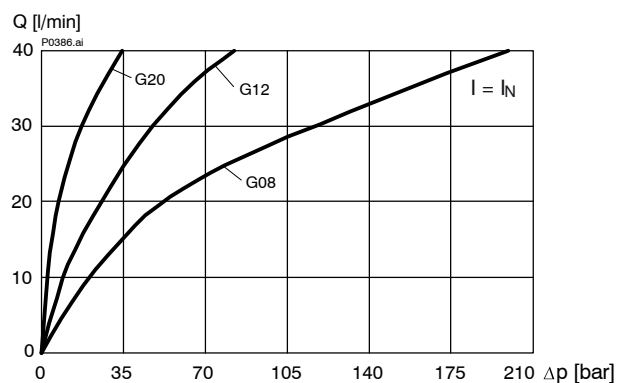
WRB-43-G / WRB-42-G



$Q = f(I; \Delta p)$ Flow rate adjustment characteristic *
WRB-43-D / WRB-42-D



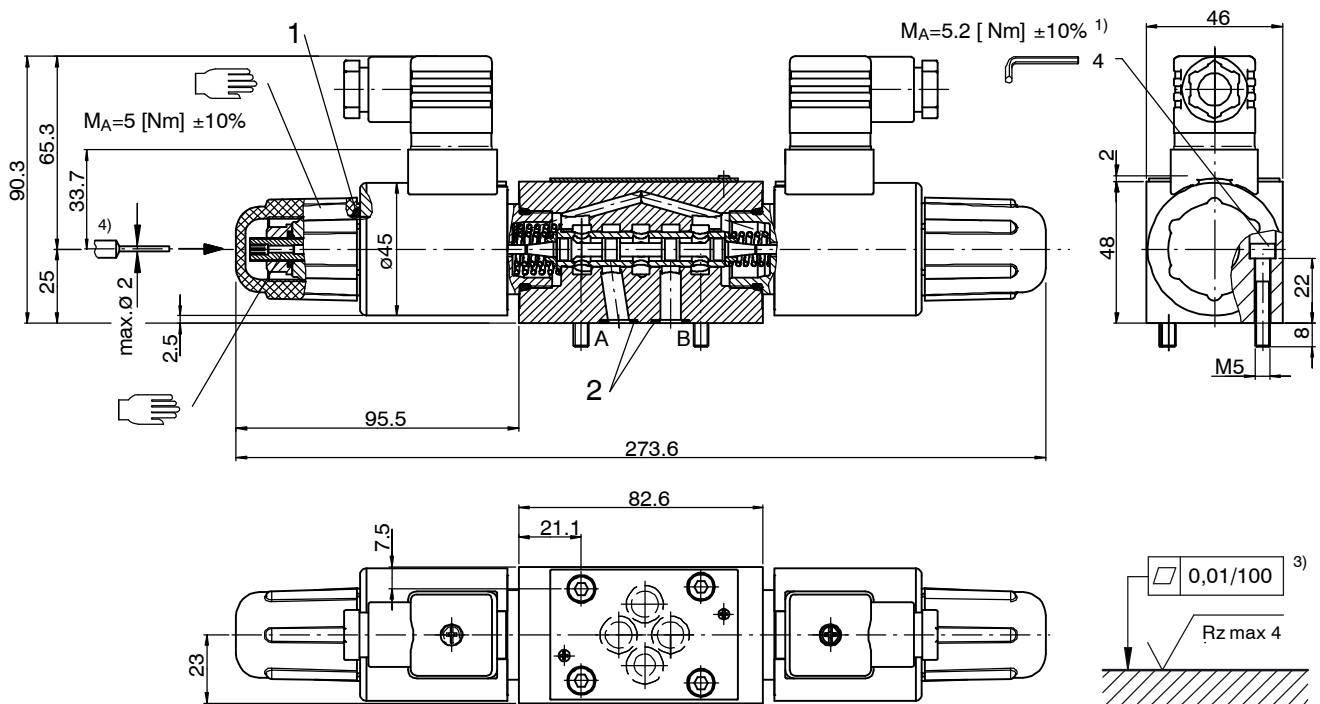
$Q = f(I; \Delta p)$ Flow rate adjustment characteristic *
WRB-43-G / WRB-42-G



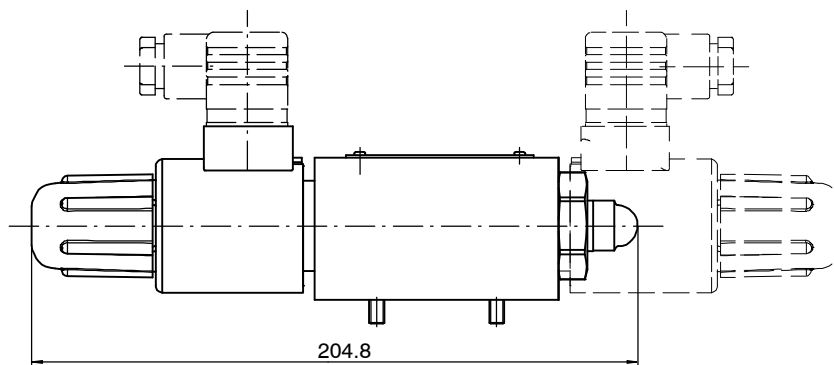
* The performance graphs show the flow rate over 2 metering edges (A and B ports linked)

5 Dimensions & sectional view

4/3 proportional directional valve (double-solenoid model)



4/2-proportional directional valve (single-solenoid model - solenoid A- or B-sided)



Seal kit NBR no. DS-405-N ²⁾

Item	Qty.	Description
1	2	O-ring no. 118 \varnothing 21,89 x 2,62 FKM
2	4	O-ring no. 012 \varnothing 9,25 x 1,78 N90



IMPORTANT!

- 1) Valve mounting bolts M5x30
- 2) Seal kit with FKM (Viton) seals no. DS-405-V
- 3) Required surface finish on the mounting face (valve pad)
- 4) Manual overriede:
By pressing the pin you operate the valve ON/OFF

6 Installation information



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.



IMPORTANT!

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

7 Ordering code

Ex.

W	R	B	-	43	-	_	D	-	08	_	-	6	_	-	1	_	12	_	D	_
---	---	---	---	----	---	---	---	---	----	---	---	---	---	---	---	---	----	---	---	---

<p>W = directional valve</p> <p>R = proportional-solenoid operated</p> <p>B ... Q = standard model - see relevant data sheets</p> <p>Z ... R = special features - please consult BUCHER</p> <p>43 = 4/3 directional function</p> <p>42 = 4/2 directional function</p> <p>A = 4/2 directional, solenoid A-side</p> <p>B = 4/2 directional, solenoid B-side</p> <p>D = spool type D (P, A, B and T closed in mid-position)</p> <p>G = spool type G (A-B-T connected in mid-position / on request)</p> <p>08 = nominal volume flow Q_N: 8 l/min</p> <p>20 = 20 l/min</p> <p style="padding-left: 20px;">(12 l/min and more on request)</p> <p>without = symmetrical control mode (other control modes on request)</p> <p>6 = ISO size 03 interface</p> <p>(blank) = NBR (Nitrile) seals (standard)</p> <p>V = FKM (Viton) seals (special seals - please contact BUCHER)</p> <p>1 ... 9 = design stage (omit when ordering new units)</p> <p>... = voltage e.g. 24 (24 V)</p> <p>D = current DC</p> <p>(blank) = ISO 4400 / DIN 43 650 mating plug (standard, IP 65)</p> <p>M100 = without mating DIN plug</p> <p>I = Junior Timer axial plug connection (IP 65)</p> <p>D = Deutsch axial plug connection (IP 67 / IP69)</p> <p>A = AMPSEAL 16 axial (IP 67 / IP69)</p>	<div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; height: 350px; margin-left: 20px;"></div> <div style="margin-left: 20px;"> <p style="margin-left: 100px;">} mating plug not supplied</p> </div>
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8 Related data sheets

Reference	(Old no.)	Description
400-P-030501	(i-31)	Interface ISO Size 03 to ISO 4401-03-02
On request		Coils for screw-in cartridge valves series D45/220

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Classification: 430.300.-.315.315.310