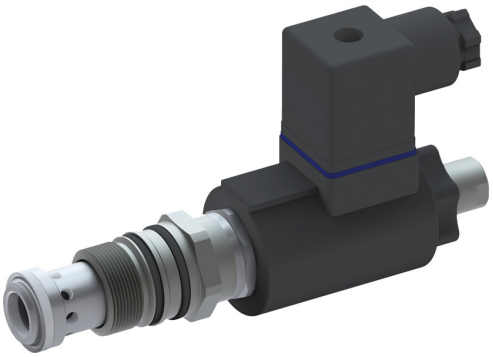
Proportional Pressure-Reducing Cartridge, Size 10

Q_{max} = 120 l/min, p_{max} = 315 bar
Seated pilot, spool-type main stage
Series DRPSA-5D…

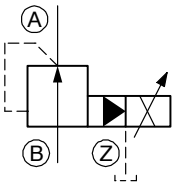


- Compact construction
  for cavity type DD – M24 x 1.5
- Operated by a proportional solenoid
- 5 pressure ranges available
- External pilot-oil drain
- Excellent stability over the whole pressure and flow range
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The 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
- Can be fitted in sandwich bodies

1 Description

Series DRPSA-5D… two-stage proportional pressure-reducing valves are size 10, high performance screw-in cartridges with an M24x1.5 mounting thread. They consist of a spool-type main stage and a leak-free, poppet-type pilot stage. These cartridges reduce the outlet pressure in A proportionally to the control current and independently of the inlet pressure in B. In the initial position (solenoid de-energised), the connection B → A is open until the pressure reaches the minimum setting. Five spring ranges are available in order to obtain precise pressure settings over the whole of the required pressure range. To achieve a high degree of functional stability in systems that are susceptible to oscillation, the pilot drain (port Z) must be routed to tank with the least possible back-pressure. These proportional pressure-reducing cartridges are predominantly used in mobile and industrial applications for reducing a system pressure. 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



3 Technical data

General characteristics	Description, value, unit
Designation	proportional pressure-reducing cartridge
Design	seated pilot, spool-type main stage
Mounting method	screw-in cartridge M24 x 1.5
Tightening torque	Can be fitted in steel 65 Nm ± 10 % Can be fitted in aluminium 50 Nm ± 10 %
Size	nominal size 10, cavity type DD

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General characteristics	Description, value, unit
Weight	0.50 kg
Mounting attitude	unrestricted (preferably vertical, coil down)
Ambient temperature range	-25 °C … +50 °C

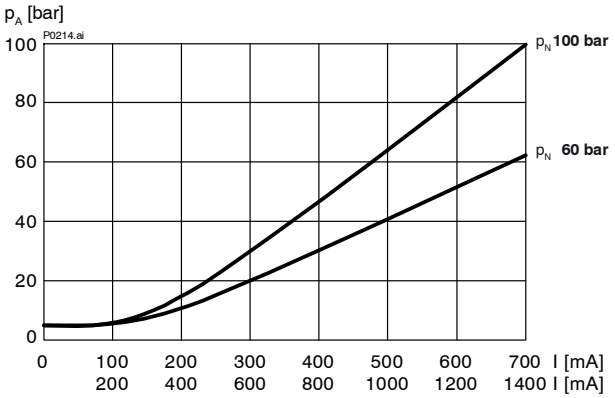
Hydraulic characteristics		Description, value, unit
Maximum operating pressure	- ports A and B - port Z	315 bar (for 350 bar, consult BUCHER) no back-pressure
Maximum flow rate		120 l/min
Nominal pressure ranges		60 bar, 100 bar, 160 bar, 250 bar, 315 bar
Pilot-oil consumption		0.1 … 0.4 l/min
Flow direction		see symbol
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact 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…1400 mA, 24 V = 0…750 mA
Power consumption at max. control current		max. 19 W
Coil resistance R	- cold value at 20 °C - max. warm value	12 V = 5.8 Ω / 24 V = 20.9 Ω 12 V = 9.1 Ω / 24 V = 32.7 Ω
Recommended PWM frequency (dither)		200 Hz
Hysteresis with PWM		2…4 % I_N
Reversal error with PWM		1…3 % 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		3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see “Ordering code”

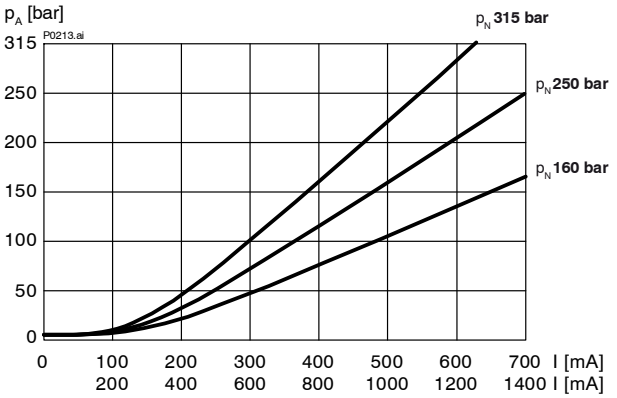
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt)

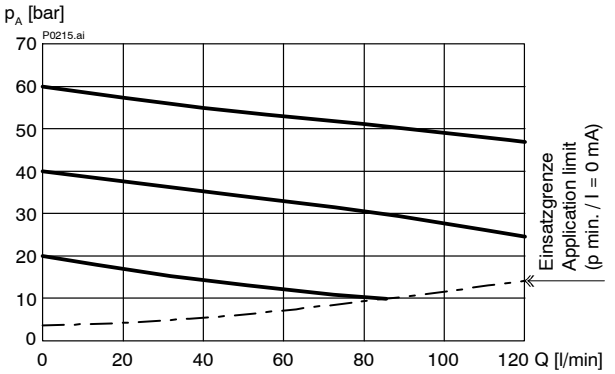
p = f (I) Pressure adjustment characteristic



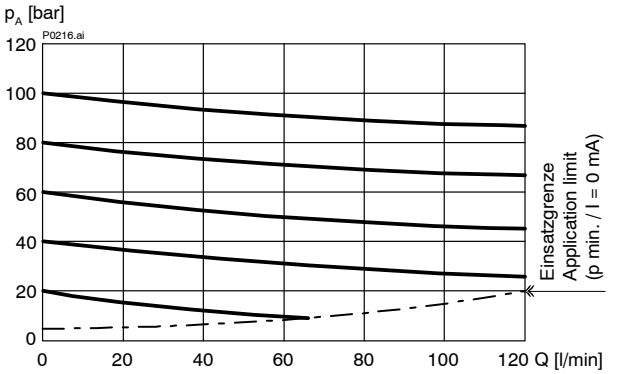
p = f (I) Pressure adjustment characteristic



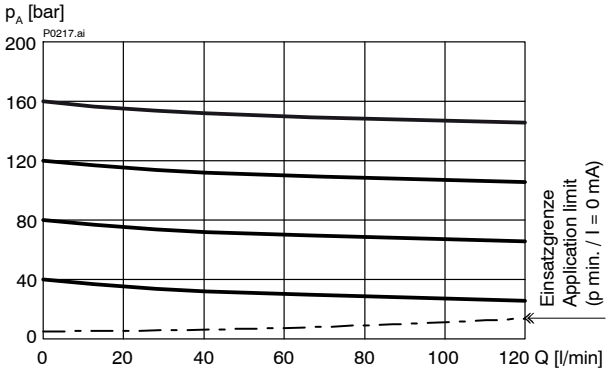
p = f (Q) Pressure - Flow rate characteristic p_N = 60 bar



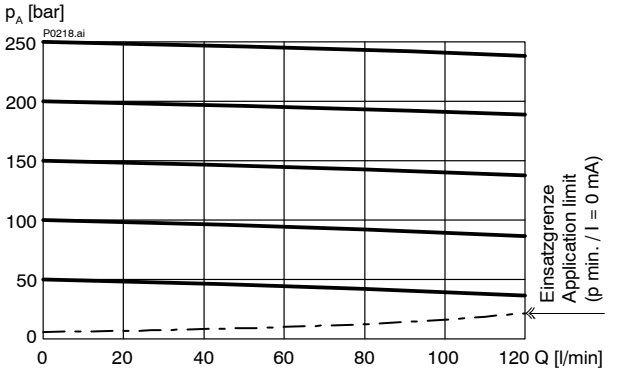
p = f (Q) Pressure - Flow rate characteristic p_N = 100 bar



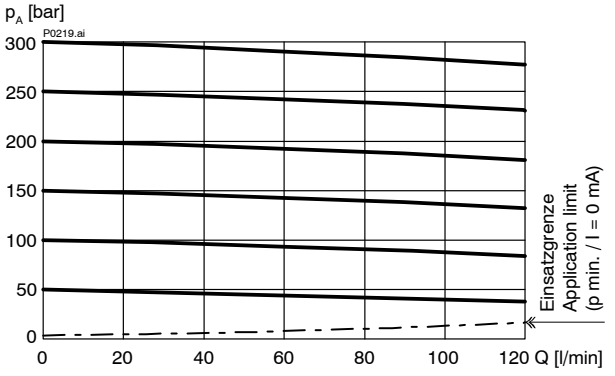
p = f (Q) Pressure - Flow rate characteristic p_N = 160 bar



p = f (Q) Pressure - Flow rate characteristic p_N = 250 bar



p = f (Q) Pressure - Flow rate characteristic p_N = 315 bar



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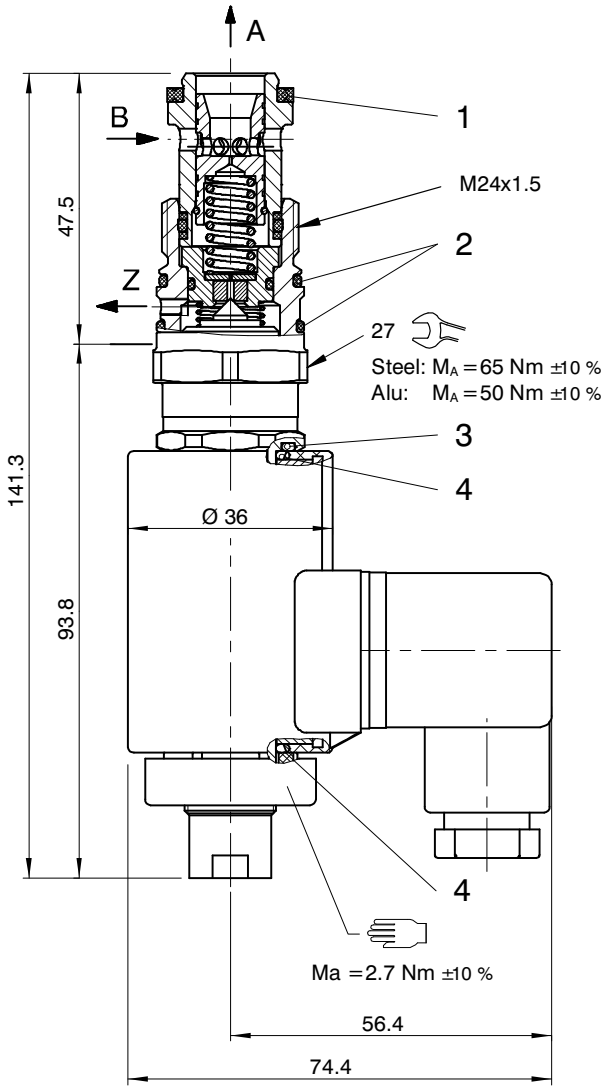
5 Dimensions & sectional view



6 Installation information

IMPORTANT!
To achieve the proportional pressure-reducing cartridge's maximum performance rating, fit the solenoid coil as shown (with the plug pins at the bottom). When fitting the cartridges, note the mounting attitude (preferably vertical, with coil down → automatic air bleed) and use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.

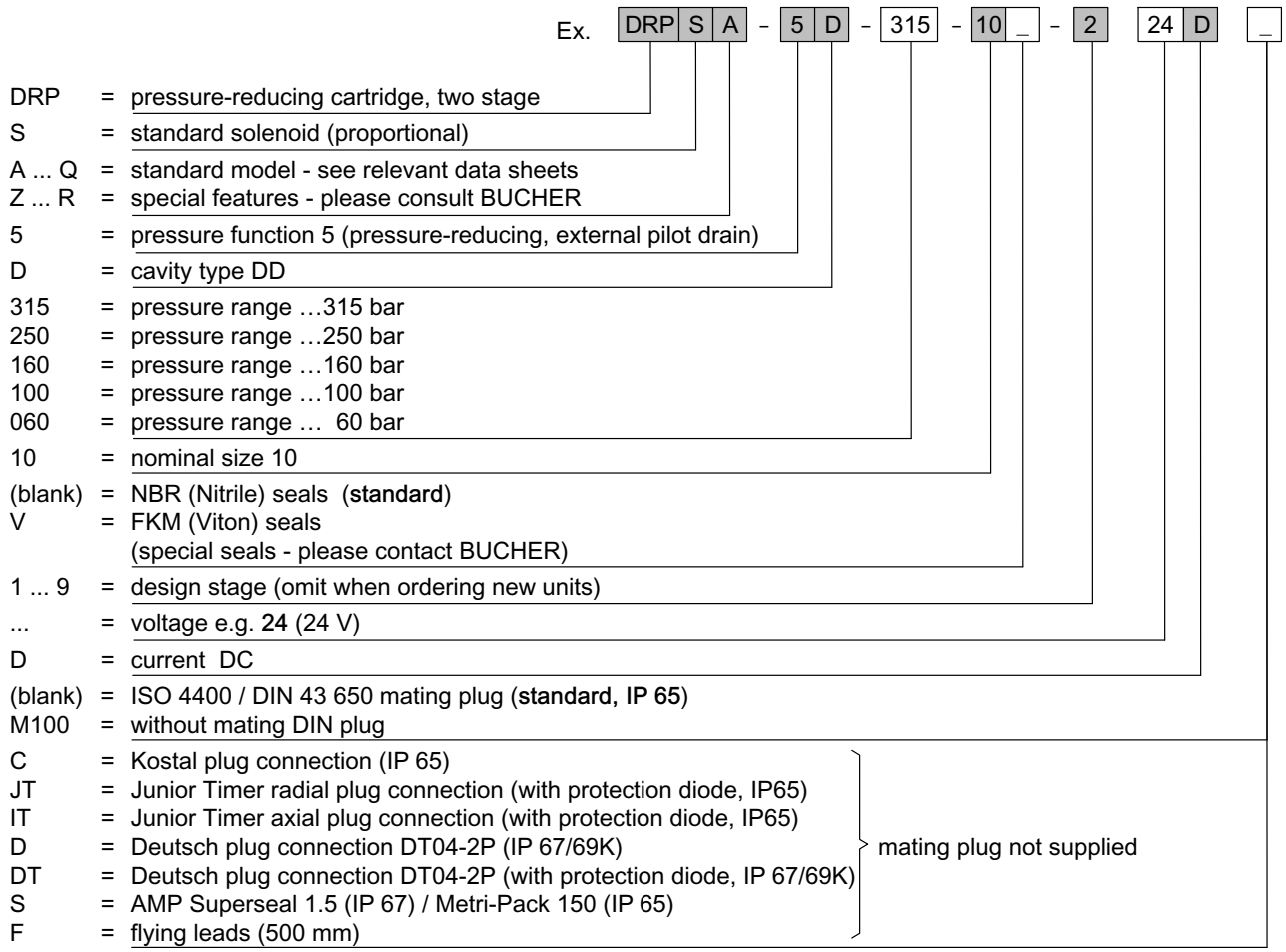
ATTENTION!
Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

Seal kit NBR no. DS-339-N [1)]

Item	Qty.	Description
1	1	Seal ring ∅ 22,10 / 16,50 x 2,50
2	2	O-ring no. 020 ∅ 21,95 x 1,78 N90
3	1	O-ring ∅ 18,00 x 2,00 Viton
4	2	O-ring ∅ 16,00 x 2,00 Viton

IMPORTANT!
1) Seal kit with FKM (Viton) seals, no. DS-339-V

7 Ordering code



8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-060121	(i-45.2)	Cavity type DD
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-510101		Amplifier unit for proportional valves (1-channel) PBS - 3A
400-P-511101	(P-3)	Amplifier card, 1-channel for valves with one solenoid, type SAN-535…
400-P-593451		Sandwich prop. presssure-reducing valve, ISO size 03, type SDRPSB-5…
400-P-593501		Sandwich prop. presssure-reducing valve, ISO size 05, type SDRPSA-5…
400-P-740111	(G-24.21)	Line- and manifold-mounting body, type DDY-12 (G 1/2")

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Classification: 430.305.305.305.320.310