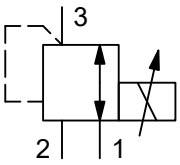
BUCHER hydraulics

Pressure valve
Reducing function

Q_{max} = 25 l/min, p_{max} = 250 bar
Direct acting, spool type, proportional solenoid
Type series: DRDTA-7M-_-5...

- Screw-in cartridge valve for cavity AM
- All external parts with zinc-nickel plating according to DIN EN ISO 19598
- Installation in threaded port body type GAMA
- Excellent stability over the whole pressure and flow range
- With integral manual pressure setting
- 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
- High pressure wet-armature solenoids

Symbol



Description

The proportional pressure-reducing valves, series DRDTA-7M... , are size 5, pilot-operated, high performance screw-in valves with a 3/4-16 UNF-2A mounting thread. They are designed on the proven sliding-spool principle. These cartridges reduce the output pressure in proportion to the control flow, regardless of the input pressure. The required secondary pressure is controlled to the value set independently of the inlet pressure. If the specified pressure is exceeded, connection opens to restore the balance. To obtain a reliable pressure setting over the entire pressure range, the overall pressure range is divided into different pressure levels. These valves are mainly used in certain mobile and industrial applications to reduce the system pressure. The pressure is set by means of an adjusting spindle. All external parts of the screw-in valves are zinc-nickel plated and are thus suitable for use in the harshest operating environments. For installation and further information, please refer to the section related data sheets.

Technical data

General characteristics	Description, value, unit
Function group	pressure valve
Function	reducing function
Design	screw-in cartridge valve
Controls	proportional solenoid
Characteristic	direct acting, spool type
MTTFd value	150 years
Construction size	NG 5
Thread size	3/4-16 UNF-2A
Mounting attitude	unrestricted (preferably vertical, coil down)
Weight	0.40 kg
Cavity acc. factory standard	AM
Tightening torque steel	40 Nm
Tightening torque aluminium	40 Nm
Tightening torque tolerance	± 10 %
Minimum ambient temperature	- 30 °C
Maximum ambient temperature	+ 60 °C
Surface protection	all external parts with zinc-nickel plating according to DIN EN ISO 19598
Sealing material	see ordering code
Seal kit order number	NBR: DS-247-N / FKM: DS-247-V

Hydraulic characteristics	Description, value, unit
Maximum operating pressure	250 bar
Maximum flow rate	25 l/min
Restriction of the flow rate	depend on the inlet pressure [1])
Flow direction	see symbol
Hydraulic fluid	HL and HLP mineral oil according to DIN 51 524; other fluids on request!
Minimum fluid temperature	- 30 °C
Maximum fluid temperature	+ 70 °C
Viscosity range	15 ... 380 mm^2/s (cSt)
Recommended viscosity range	20 ... 130 mm^2/s (cSt)
Minimum fluid cleanliness (cleanlineless class according to ISO 4406:1999)	class 18/16/13
Opening pressure	...70 /...100 / ...150 bar
Pilot-oil consumption	0.1 ... 0.4 l/min
Nominal pressure range	pressure range 070 = ...70 bar pressure range 100 = ...100 bar pressure range 150 = ...150 bar

IMPORTANT!
[1]) The restrictions of the maximum flow rate depend on the inlet pressure. See performance graphs.

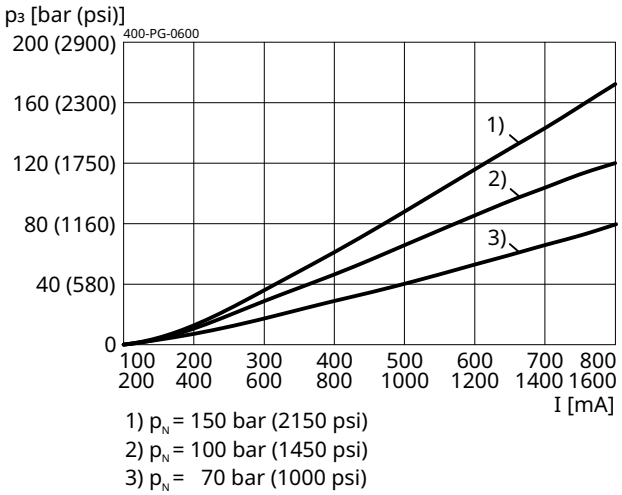
ATTENTION!
If there is pressure at the secondary connection, this is added to the set pressure value.

Electric characteristics	Description, value, unit
Actuator type	solenoid coil
Solenoid coils type	36X48/16.1
Supply voltage DC	12/24 V DC
Supply voltage tolerance	± 10 %
Control current	12 V = 0...1600 mA / 24 V = 0...800 mA
Nominal power consumption	17.5 W
Relative duty cycle	100 %
Coil resistance R	Cold value at 20° 12 V = 4.35 Ώ 24 V = 17.2 Ώ max. warm value 12 V = 6.8 Ώ 24 V = 26.9 Ώ
Response sensitivity with PWM	< 2 % I_N
Reproducibility with PWM	< 3 % p_N
Hysterese with PWM	3...6 % I_N
Reversal error with PWM	3...6 % I_N
Electrical connection coil	DIN EN 175301-803, 3-pole 2 P+E (IP 65)
Protection class solenoid coil 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)

Performance graphs

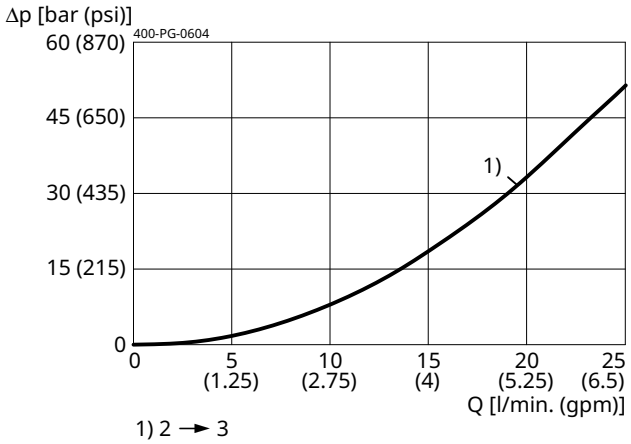
measured with oil viscosity 33.0 mm²/s (cSt)

p = f (I) Pressure adjustment



1) p_N = 150 bar (2150 psi)
2) p_N = 100 bar (1450 psi)
3) p_N = 70 bar (1000 psi)

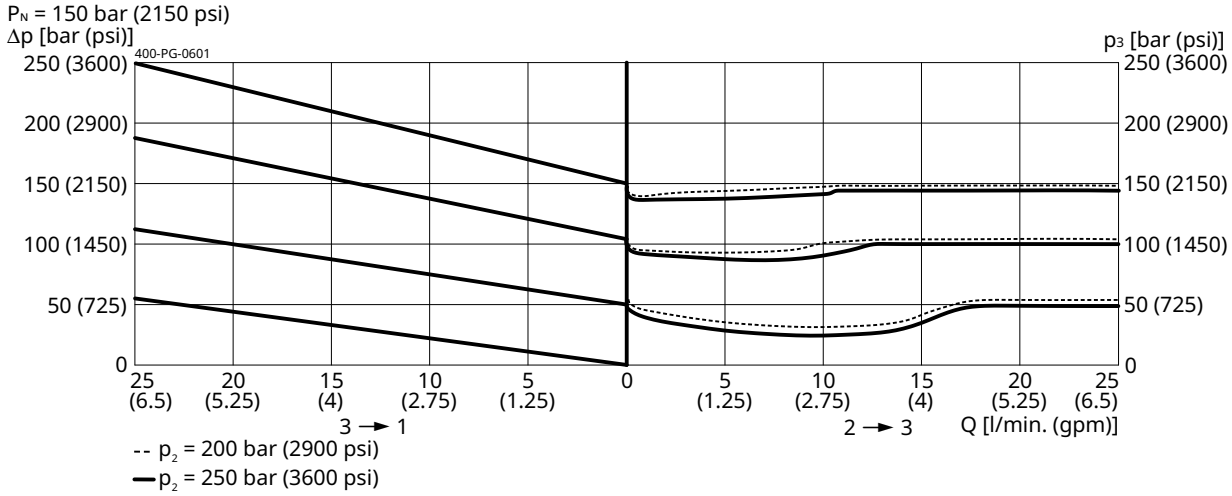
Δp = f (Q) Pressure drop-flow rate characteristic



1) 2 → 3

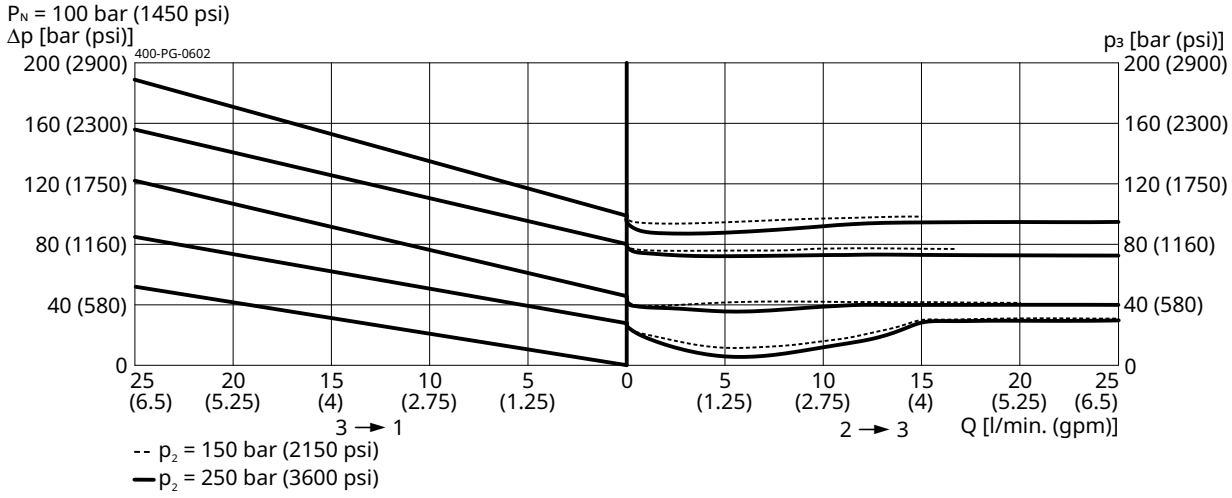
Δp = f (Q) Pressure drop-flow rate characteristic

P_N = 150 bar (2150 psi)



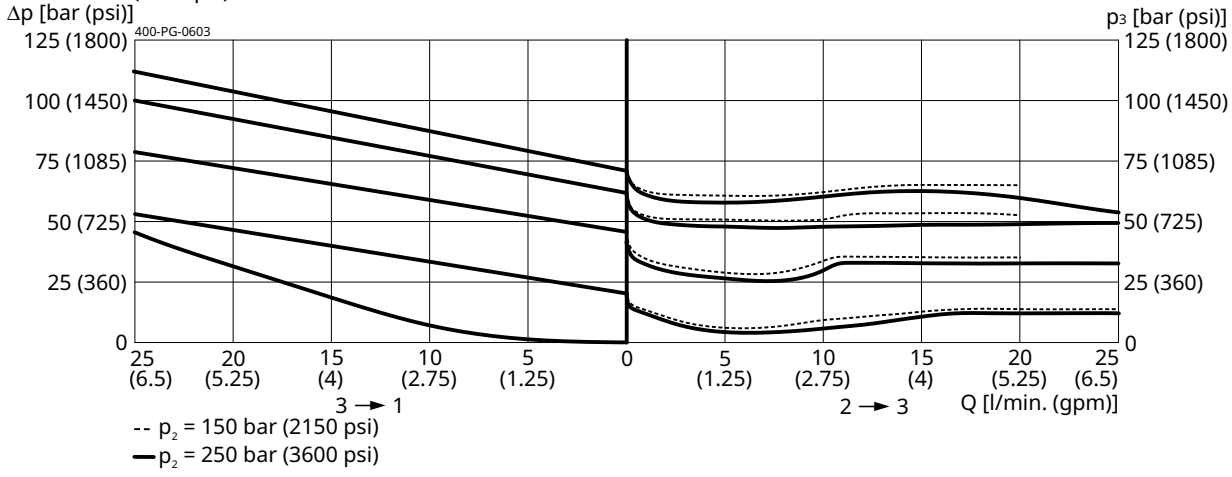
Δp = f (Q) Pressure drop-flow rate characteristic

P_N = 100 bar (1450 psi)



Δp = f (Q) Pressure drop-flow rate characteristic

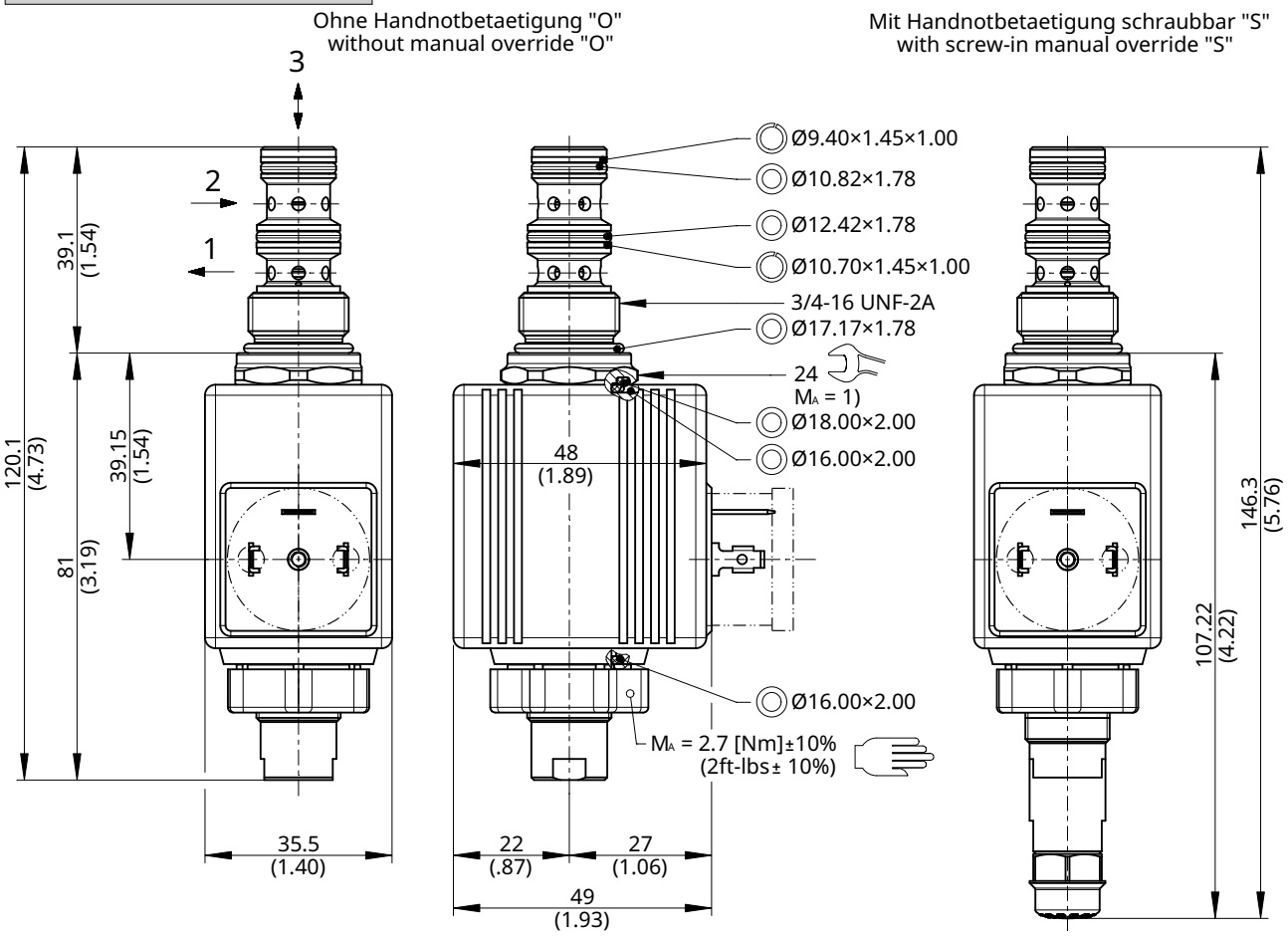
P_N = 070 bar (1000 psi)



Installation

Beispiel für die Masseinheit:
Exampel for the dimensional units:

0.79 = 0.79 mm millimeter
(.031) = 0.031" inch



NOTE!
1) When fitting the screw-in cartridge valve, use the specified tightening torque. The value can be found in the chapter "Technical data".

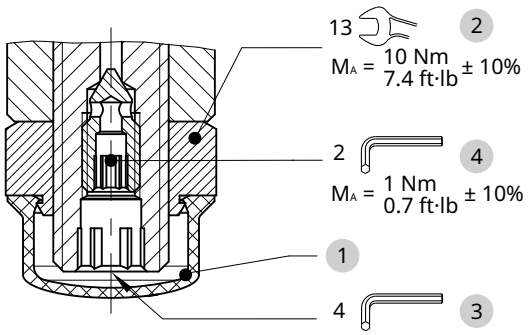
IMPORTANT!
To achieve the screw-in valve's maximum performance rating, fit the solenoid coil as shown (with the plug pins nearest the knurled nut). The valve must be installed in a steel body.

NOTE!
The seals are not available individually. The seal kit order number can be found in the chapter "Technical data".

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.

Manual pressure setting

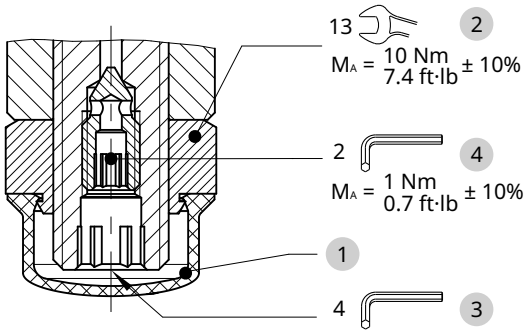
Optionally, the proportional pressure screw-in cartridge valves can be supplied with an integral manual emergency pressure setting. If a proportional solenoid is faulty, for example, this manual pressure setting enables the required pressure to be set mechanically up to max. 60% of the nominal pressure. The manual pressure setting is not designed for adjusting the pressure in a dynamic control mode. The following steps must be observed.



1. Remove the protective cap 1
2. Loosen the lock nut 2
3. Screw-in (turn to right) the adjusting spindle 3 until the required pressure is set.
4. Tighten the lock nut 2 to the specified torque.
5. Fit the protective cap 1

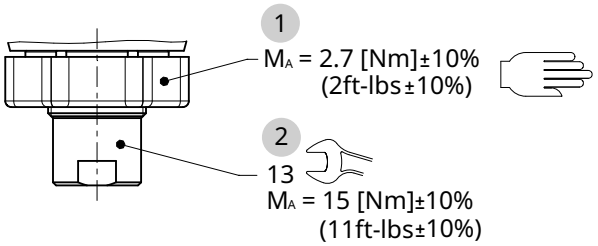
Reset to factory settings

To reset the proportional pressure-relief cartridges to their initial position (the factory setting), a constant flow rate and a pressure gauge that measures the pressure in the input port are needed. The pressure setting must not exceed the nominal pressure of the spring range in use. The following steps must be observed.



1. Ensure that the solenoid coil is de-energized
2. Remove the protective cap 1
3. Loosen the lock nut 2
4. Unscrew the adjusting spindle 3 to its end-stop
5. Screw-in the adjusting spindle 3 until the pressure on the gauge reaches the nominal pressure (pN) of the spring range in use
6. Tighten the lock nut 2 to the specified torque
7. Fit the protective cap 1

Air-bleeding (Type "O")

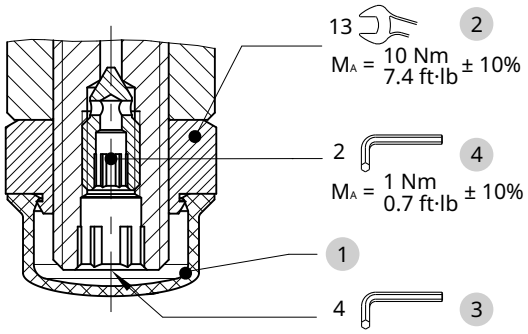


1. Set reduced pressure to minimum.
2. Loosen and remove the knurled nut 1 .
3. ⚠ **Caution!**

   Loosen the cap nut 2 approx. 1.5 turns. Oil will spray out when you loosen the cap nut 2 .
4. Slightly increase the reduced pressure several times and then lower it again until no more air escapes.
5. Tighten the cap nut 2 to the specified torque.
6. Refit the knurled nut 1 and tighten it to the specified torque.

Air-bleeding (Type "S")

The integrated air-bleed screw allows the proportional pressure valves to be vented if necessary. If the screw-in valve is mounted as preferred (solenoid-coil hanging), it is self-venting. To vent the valve manually, follow the steps below.



1. Remove the protective cap 1
2. Loosen the air-bleed screw 4 approx. 2 turns
3. Switch the valve ON/OFF several times until no more air bubbles escape
4. Tighten the air-bleed screw 4 to the specified torque
5. Fit the protective cap 1

Ordering code

Ex. DR D T A - 7 M - 150 - 5 _ - O - 1 - 24 D G _

DR	=	pressure reducing cartridge			
D	=	direct acting			
T	=	electrically operated, COIL 36X48, 30 W,prop.			
A ... Q	=	standard model according to valid data sheet			
Z ... R	=	special model (on request)			
7	=	pressure-reducing with full-flow pressure relief			
M	=	cavity type AM			
070	=	pressure range ...70 bar / ...1000 psi			
100	=	pressure range ...100 bar / ...1450 psi			
150	=	pressure range ...150 bar / ...2150 psi			
5	=	nominal size 5			
(blank)	=	NBR (nitril-butadien-rubber / BUNA) seals **(standard)**			
V	=	FKM (fluorocarbon rubber / VITON) seals (special seals on request)			
O	=	without manual override **(standard)**			
S	=	with screwable manual override			
1 ... 9	=	technical design no. (omit by ordering)			
...	=	voltage e.g. 24 (24 V)			
D	=	current DC			
G	=	DIN EN 175301-803 connection	3-pole 2 P+E **(standard)**	(IP 65)	mating plug not supplied
GR	=	DIN EN 175301-803 connection	3-pole 2 P+E, with protection diode	(IP 65)	
J	=	Junior Timer plug connection	2-pole radial	(IP 65)	
JR	=	Junior Timer plug connection	2-pole radial, with protection diode	(IP 65)	
U	=	Deutsch plug connection DT04-2P	2-pole radial	(IP 67/69K)	
UR	=	Deutsch plug connection DT04-2P	2-pole radial, with protection diode	(IP 67/69K)	
		other plug-variants, please consult BUCHER.			
(blank)	=	connection without mating plug **(standard)**			
Q	=	only connection “G“ and “GR“ with mating plug			

IMPORTANT!
Not every combination of voltage values and plug connections available.

Related data sheets

Reference	Description
400-P-040011	form tools
400-P-040181	cavity AM
400-P-120112	solenoid coil 36X48-161
400-P-720111	threaded port body GAMA
400-P-010101	MTTFd Values for Hydraulic Valves

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