

Electrically Operated Pressure-Relief Cartridge, Size 10

$Q_{max} = 140 \text{ l/min (37 gpm)}$, $p_{max} = 350 \text{ bar (5000 psi)}$

seated pilot stage, spool-type design, with remote control port Z

Series WUVPOC-2..., WUVPLC-2...



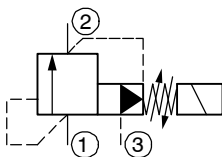
- Compact construction for cavity type DD – M24x1.5 to Bucher standard
- Bypass circuit ON / OFF
- 2-pressure switching HI / LO
- Low unloaded bypass pressure with “OC” model to 100 l/min
- With remote-control port Z
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- All exposed parts with zinc-nickel plating
- Can be fitted in a line-mounting body

1 Description

Series WUVPOC-2... and WUVPLC-2... valves are size 10 electrically operated pressure relief cartridges with an M24x1.5 mounting thread. They have a seated pilot stage and a spool-type main stage. Using the external pressure adjustment, the higher pressure p_1 (relief setting) and the lower pressure p_2 (a secondary pressure, or the unloaded pressure) can be varied smoothly and independently of one another without opening the hydraulic envelope, and either pressure can be selected. The “OC” model is mainly used for bypass circuits that can be unloaded with low Δp values (ON / OFF). The lower Δp values result in less heating of the oil and thus lower energy costs for the user. The “LC” model

is mainly used for 2-pressure circuits (HI / LO). Using the remote-control port Z, these valves can also be remotely controlled or unloaded by means of external pressure relief valves or directional valves. When the pilot stage is active (pressure relief function), pilot oil is drained internally to port B. Any residual- or surge-pressure in port B (Tank) is therefore additive to the valve setting. 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. 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	pressure-relief cartridge valve
Design	spool-type design, seated pilot, with remote control port Z, electrically operated
Mounting method	screw-in cartridge M24 x 1.5
Size	nominal size 10, cavity type DD to Bucher standard
Weight	0.52 kg (1.15 lb)
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C (-13 °F ... +122 °F)

Reference: 400-P-290111-EN-03

Hydraulic characteristics	Description, value, unit
Maximum operating pressure in port A and Z ¹⁾	350 bar (5000 psi)
Maximum allowable pressure in port B (tank)	250 bar (3600 psi)
Pressure adjustment range:	350 bar (5000 psi) 250 bar (3600 psi) 160 bar (2300 psi) 100 bar (1400 psi) 40 bar (570 psi)
Maximum flow rate	140 l/min (37 gpm) (at > 100 l/min, "LC" model recommended by the manufacturer)
Flow direction	A → B, 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 (-13 °F ... +176 °F)
Viscosity range	10...500 mm ² /s (cSt), recommended 15...250 mm ² /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	V DC = 27 W V AC = 25 W
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"



ATTENTION!

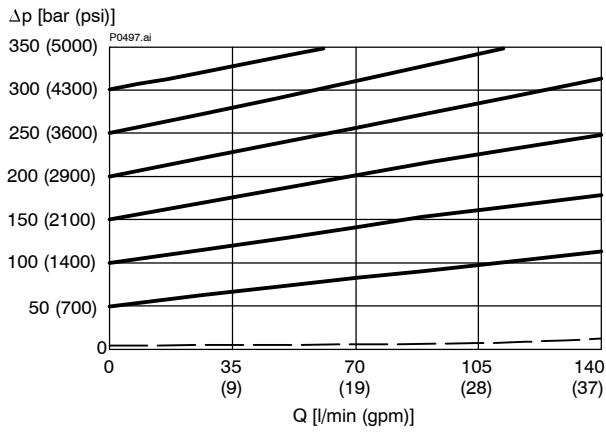
¹⁾ Any residual- or surge-pressure in port B (tank pressure) is additive to the pressure setting in port A.

4 Performance graphs

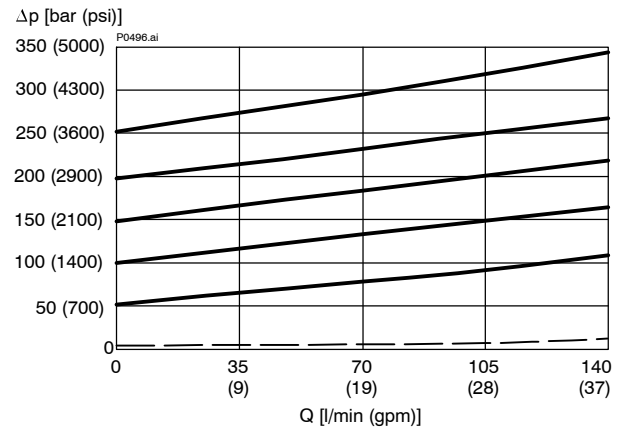
measured with oil viscosity 33 mm²/s (cSt)

bypass circuit (ON/OFF) – WUVPOC-...

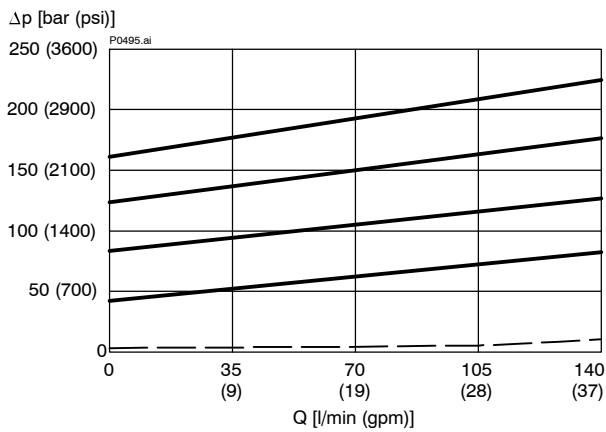
$\Delta p = f(Q)$ Pressure-drop characteristic (350 bar)



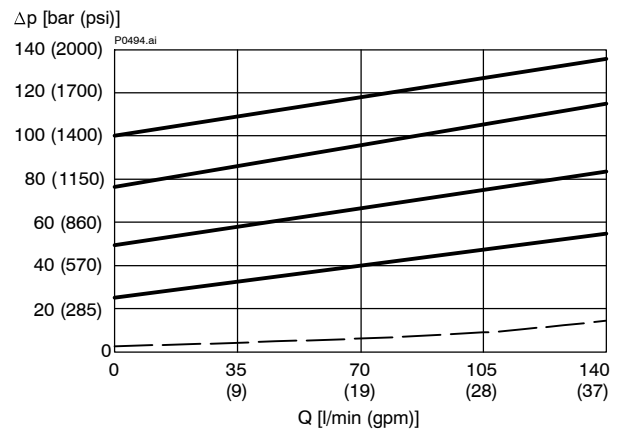
$\Delta p = f(Q)$ Pressure-drop characteristic (250 bar)



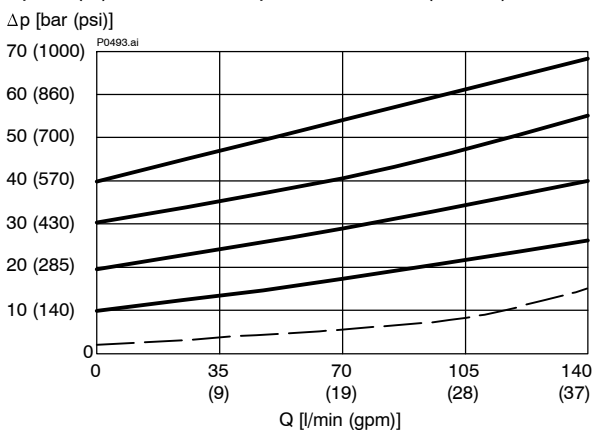
$\Delta p = f(Q)$ Pressure-drop characteristic (160 bar)



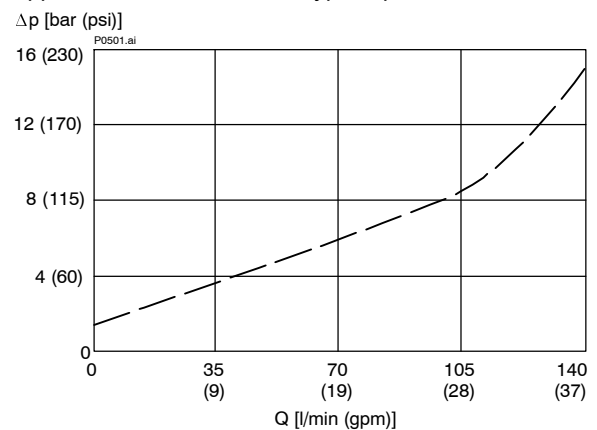
$\Delta p = f(Q)$ Pressure-drop characteristic (100 bar)



$\Delta p = f(Q)$ Pressure-drop characteristic (40 bar)



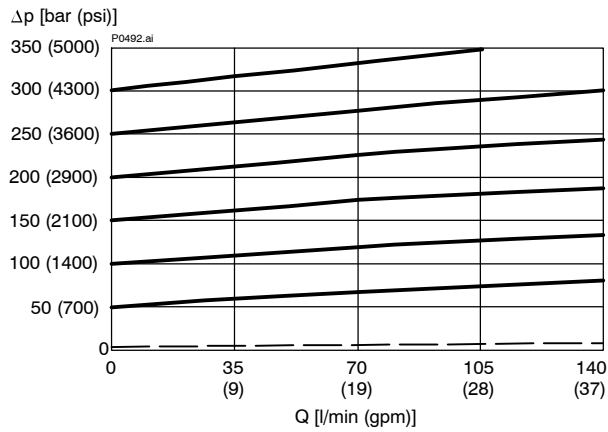
application limit / minimum bypass pressure



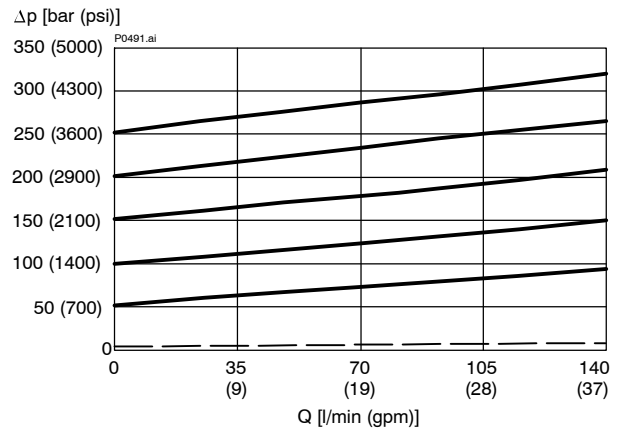
----- p2 min. = application limit / minimum bypass pressure

2-pressure switching (HI/LO) – WUVPLC-...

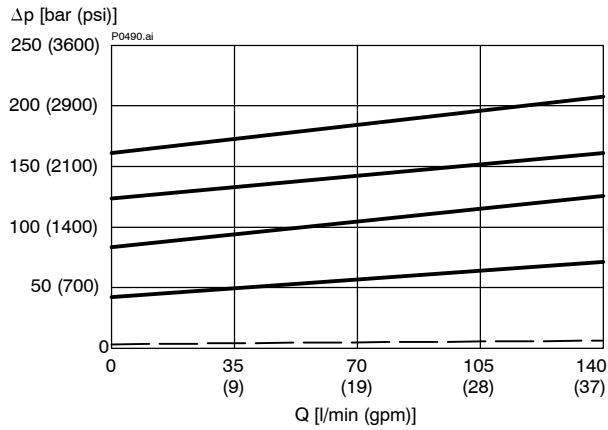
$\Delta p = f(Q)$ Pressure-drop characteristic (350 bar)



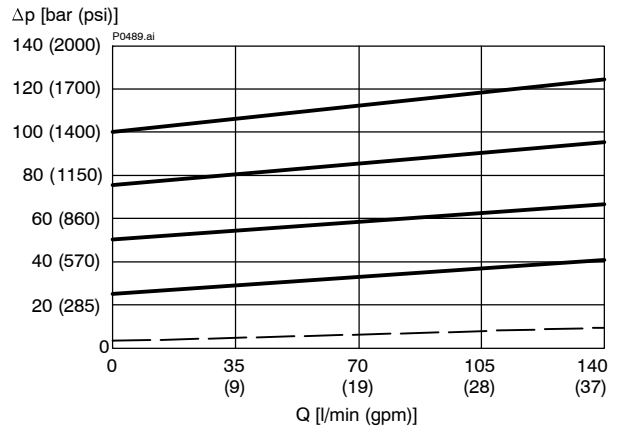
$\Delta p = f(Q)$ Pressure-drop characteristic (250 bar)



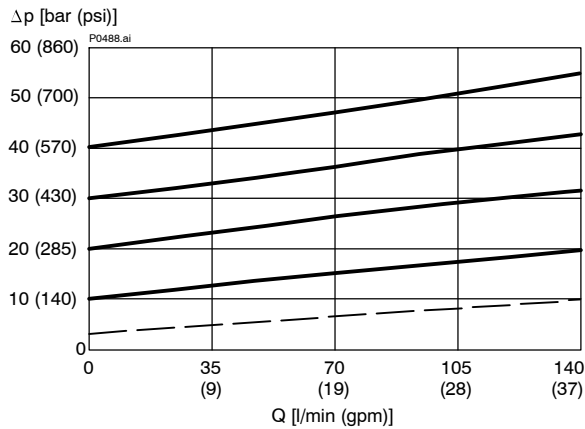
$\Delta p = f(Q)$ Pressure-drop characteristic (160 bar)



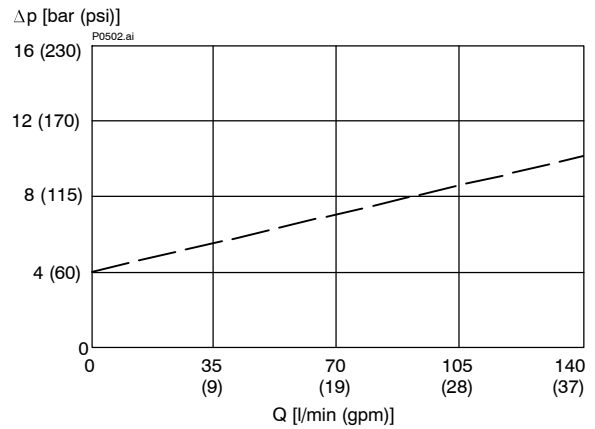
$\Delta p = f(Q)$ Pressure-drop characteristic (100 bar)



$\Delta p = f(Q)$ Pressure-drop characteristic (40 bar)

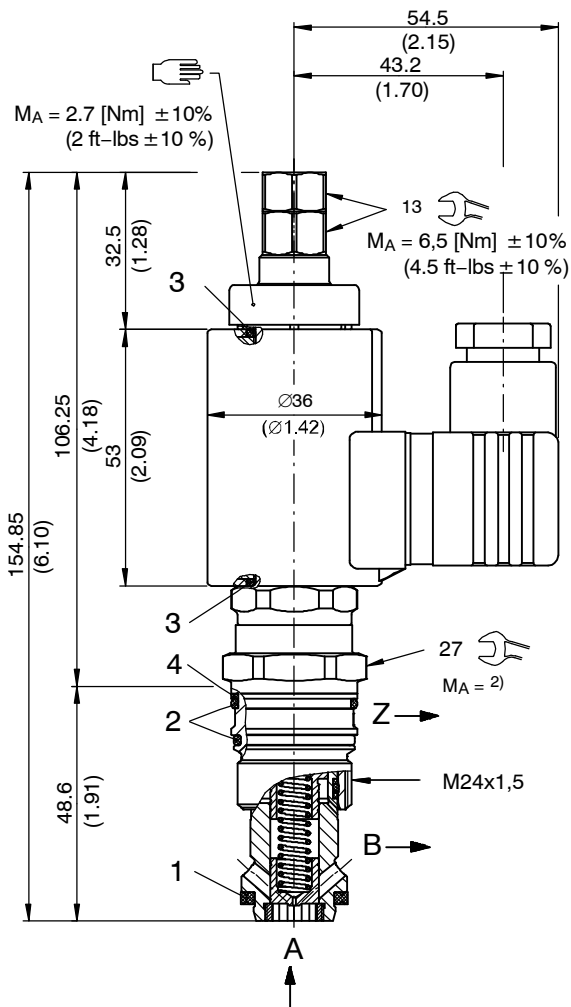


application limit / minimum bypass pressure



----- p2 min. = application limit / minimum bypass pressure

5 Dimensions & sectional view



Type WUVPOC...

6 Installation information

IMPORTANT!
When fitting the cartridges, use the specified tightening torque.

Tightening torque $M_A^{2)} \pm 10\%$

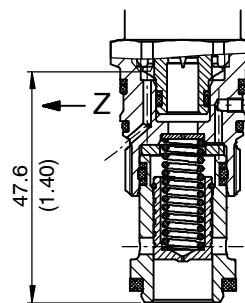
Cavity type	DD	
When fitted in steel	65 [Nm]	(50 [ft-lbs])
When fitted in aluminium	50 [Nm]	(35 [ft-lbs])

Seal kit NBR no. DS-261-N ³⁾

Item	Qty.	Description
1	1	Seal ring $\varnothing 22.10 / 16.50 \times 2.50$
2	2	O-ring no. 020 $\varnothing 21.95 \times 1.78$ N90
3	2	O-ring $\varnothing 16.00 \times 2.00$ V83
4	1	Backup ring $\varnothing 20.90 \times 1.4 \times 1.0$

IMPORTANT!
³⁾ Seal kit with FKM (Viton) seals, no. DS-261-V

Type WUVPLC...



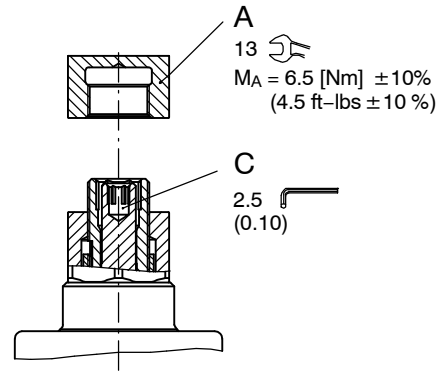
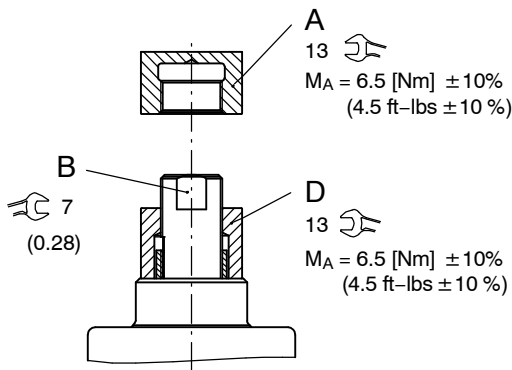
ATTENTION!
Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

7 Pressure adjustment

(pressure p1 must be set first, followed by pressure p2)

Nr.	Setting the higher pressure p1 on series WUVPOC... / WUVPLC... as the higher working pressure with solenoid energised:
1)	Slacken and remove cap nut item A (13 A/F).
2)	Slacken lock nut item D (13 A/F) approx. ½ turn.
3)	With pump running and with the solenoid energised, use the two flats (7 A/F) to turn adjusting screw item B until the required pressure is set in port A.
4)	Hold the adjusting screw item B using the 7 A/F flats while tightening the lock nut item D (13 A/F).
5)	Refit and tighten the cap nut item A.

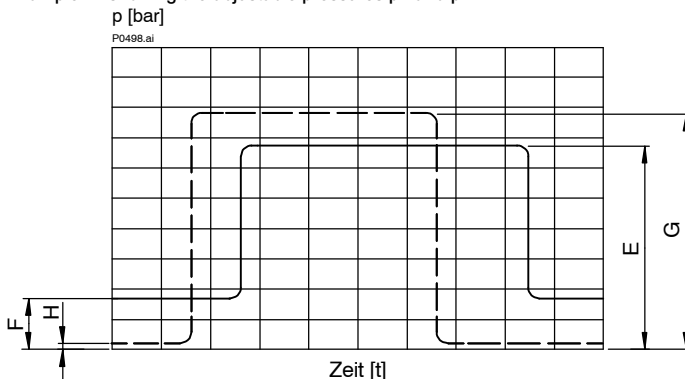
Nr.	Setting the lower pressure p2 (emergency pressure setting) on series WUVPOC... / WUVPLC... (a second pressure or alternatively, unload) with solenoid de-energised:
1)	Slacken and remove cap nut item A (13 A/F).
2)	With pump running and with the solenoid de-energised, use the adjusting screw item C (2.5 A/F hex. socket) to set the pressure p2 in port A.
3)	Refit and tighten the cap nut item A. (p2 min.: 2 ... 15 bar for WUVPOC, dependent on flow). (p2 min.: 4 ... 10 bar for WUVPLC, dependent on flow).



ATTENTION!

When setting pressure p1, adjusting screw item B must not be overtightened as this can damage the shoulder which limits the maximum pressure setting. As soon as a definite end-stop can be felt, do not turn any further.

Example – showing the adjustable pressures p1 and p2:



H = when item C is unscrewed until flush

E, G = pressure p1; as set with item B, solenoid energised

F = pressure p2, min. as H, max. as E and G, adjustable at item C, solenoid de-energised

—————
Type WUVPLC...

The relief pressure p1 is set as the higher working pressure (E) (solenoid energised)

p2 as the lower working pressure (F) (solenoid de-energised)

- - - - -
Type WUVPOC...

The relief pressure p1 is set as the higher working pressure (G) (solenoid energised)

p2 as the lowest unloaded bypass pressure (H) = item C flush (solenoid de-energised)

8 Ordering code

Ex. WU V P O C - 2 D O - 35 - 10 _ - 1 24 D _

WU = electr. operated pressure-relief valve
 V = seated two-stage
 P = cartridge design
 O = for unloading duty (ON/OFF)
 L = for two-pressure duty (HI/LO)
 C ... Q = standard model per relevant data sheet
 Y ... R = special features - please consult BUCHER
 2 = pressure function 2 (with remote control port Z)
 D = cavity type DD
 O = normally open
 35 = pressure range 10 ... 350 bar
 25 = pressure range 10 ... 250 bar
 16 = pressure range 10 ... 160 bar
 10 = pressure range 10 ... 100 bar
 04 = pressure range 10 ... 040 bar
 10 = nominal size 10
 (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 DT04-2P (IP 67/69K)
 DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K)
 S = AMP Superseal 1.5 (IP67) / Metri-Pack 150 (IP65) plug connection
 F = flying leads (500 mm)

} mating plug not supplied

9 Related data sheets

Reference	(Old no.)	Description
400-P-040011		The form-tool hire programme
400-P-060121		Cavity type DD
400-P-120110		Coils for screw-in cartridge valves
400-P-740111		Line- and manifold-mounting body, type DDY-12 (G 1/2")

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Classification: 430.305.300.305.320.300