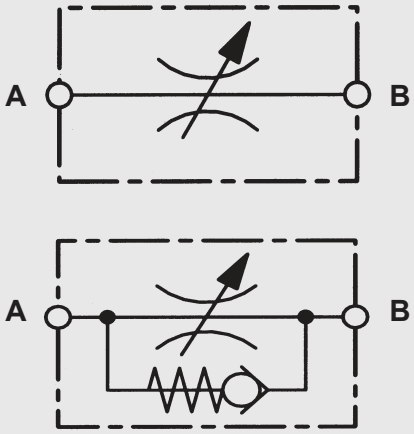
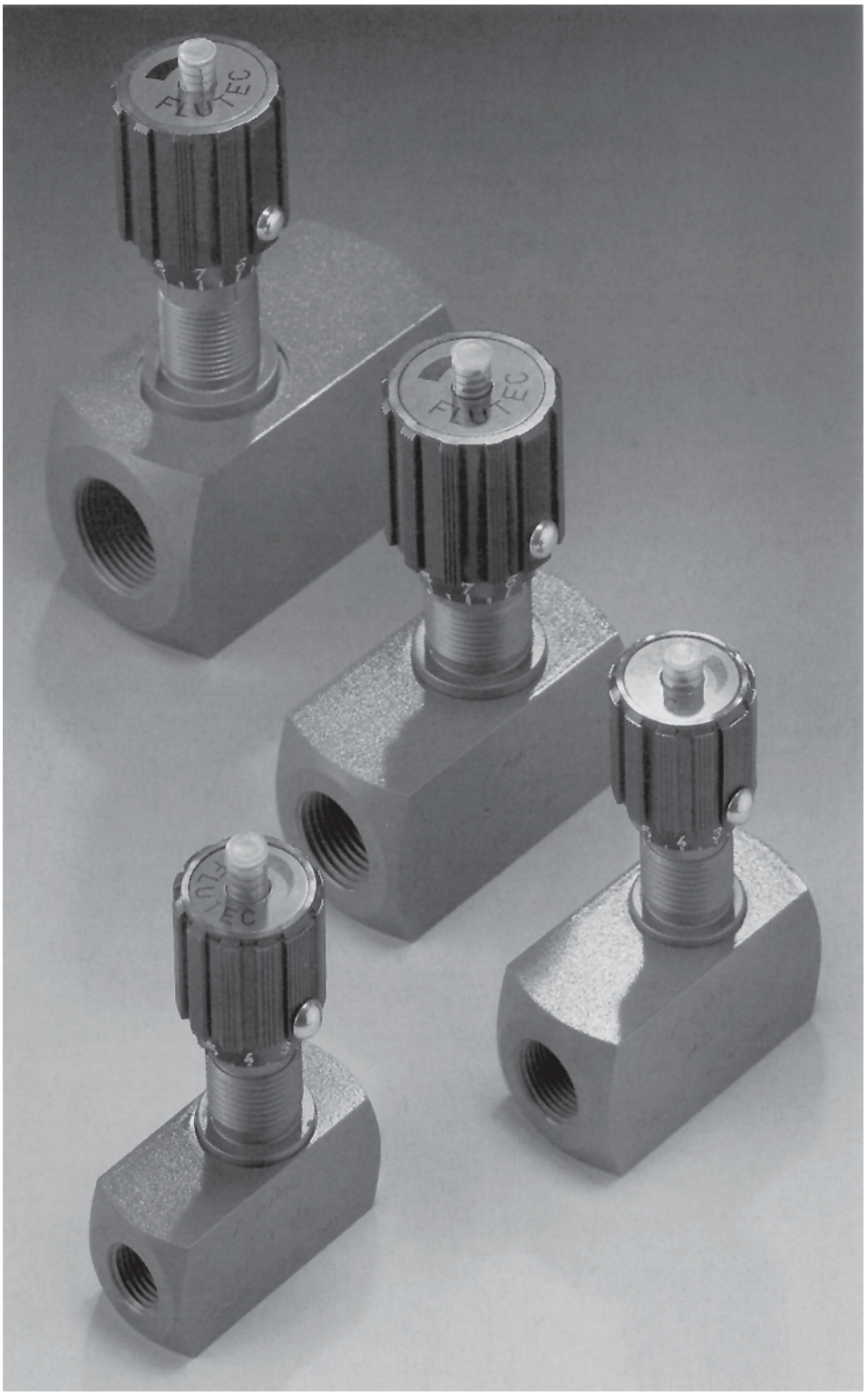
FLUTEC VALVES

Flow Control Valves and Flow Control Valves with reverse flow check DV/DRV



up to 500 bar
up to 400 l/min



1. DESCRIPTION

1.1. GENERAL

FLUTEC flow control valves and flow control valves with reverse flow check DV/DRV are, in accordance with DIN-ISO 1219, valves which are designed to control the flow rate in oil hydraulic systems by means of an adjustable constriction of the cross-section.

The flow rate is dependent on pressure differential and viscosity.

Flow control valves DV have a specially designed throttle mechanism to enable fine adjustment and shut-off of the flow. The flow control and shut-off function works in both directions.

FLUTEC flow control valves with reverse flow check DRV allow the same fine flow adjustment. The flow control and shut-off function, however, works in one direction only. Unrestricted flow in the reverse direction is via the built-in check valve.

Further advantages of these valves are:

- Space-saving inline mounting due to compact construction
- A high level of safety is achieved through patented spindle safety mechanism.
- A set-screw locks the setting.
- Choice of nine sizes ensures best possible adaptability to the system.
- Mounting position is optional.
- For size 20 and above, valve can be set using a spanner.

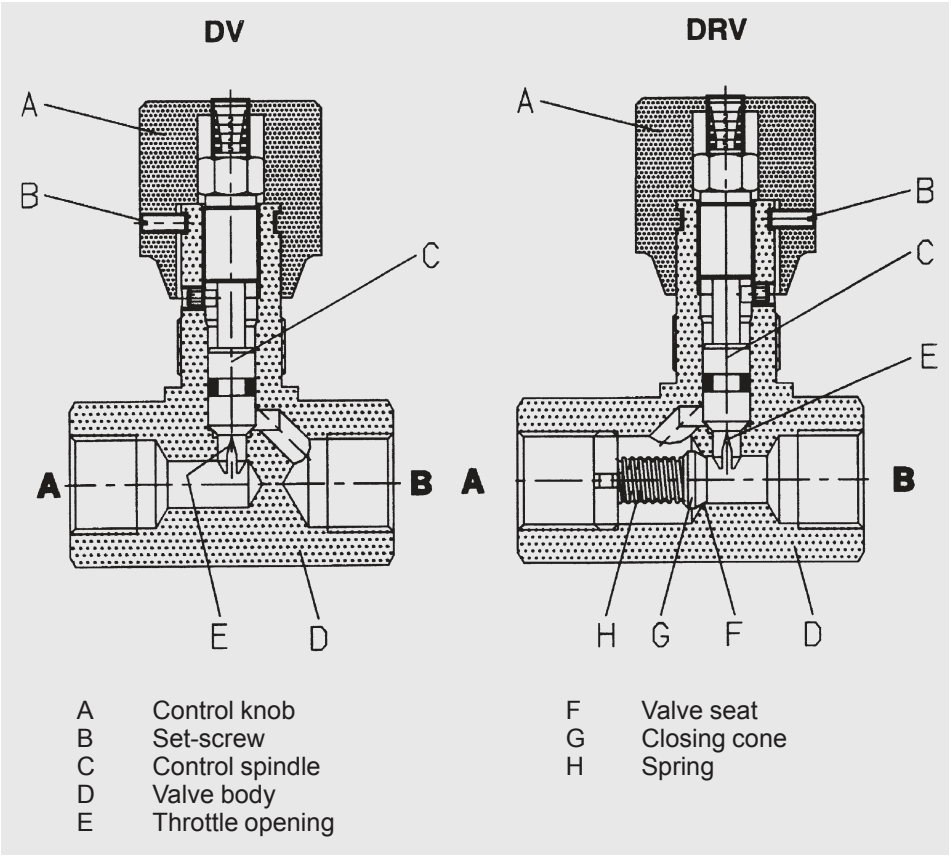
1.2. FUNCTION

1.2.1 DV

Flow control valves consist essentially of a valve body, a special control spindle and the control knob.

Starting with the control spindle in the fully closed position when the flow is shut off, the flow rate increases according to the relevant graph (see point 2.2.9) as the number of turns of the control knob is increased.

The control knob with its coloured scale and scale rings permits accurate repetition of the settings. The size of the coloured triangle on the rings indicates the size of the flow area. An increase in the size of the coloured triangle corresponds to an increase in flow area. A set-screw locks the setting. The flow is controlled in both directions.



A	Control knob	F	Valve seat
B	Set-screw	G	Closing cone
C	Control spindle	H	Spring
D	Valve body		
E	Throttle opening		

1.2.2 DRV

FLUTEC flow control valves with reverse flow check consist essentially of a valve body with built-in valve seat, a hardened and polished closing cone, a spring, the control spindle and the control knob.

The closing cone is pressed onto the valve seat by the spring, thereby shutting off port A from port B. Starting with the control spindle in the fully closed position when the flow is shut off, the flow rate in flow direction A B increases according to the relevant graph (see point 2.2.9) as the number of turns of the control knob is increased.

The control knob with its coloured scale and scale rings permits accurate repetition of the settings. The size of the coloured triangle on the rings indicates the size of the flow area. An increase in the size of the coloured triangle corresponds to an increase in flow area. A set-screw locks the setting.

The closing cone opens when the pressure across port B is higher than the pressure across port A including the cracking pressure produced by the spring force.

1.3. APPLICATIONS

FLUTEC flow control valves and flow control valves with reverse flow check DV/DRV are used:

- for controlling the speed of loads
- for system-related damping in hydraulic circuits
- for pressure-dependent control of flow rates in general
- to release pressure from accumulator systems
- as an emergency drain for lowering a load

Areas of application include, for example:

- Hydraulic units
- Elevating platforms
- Mobile hydraulics

1.4. NOTE

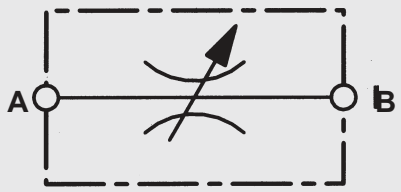
- On flow control valves with reverse flow check the cracking pressure of the closing cone increases by the pressure across port A (when control spindle is closed)!

2. TECHNICAL SPECIFICATIONS

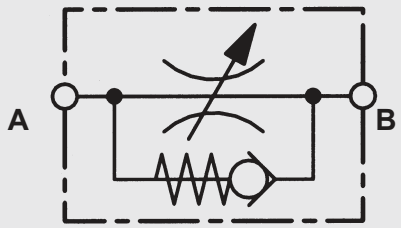
2.1. GENERAL

2.1.1 **Designation and symbol**

Flow control valve DV



Flow control valves with reverse flow check DRV



2.1.2 **Model code**
(also order example) **DRV - 10 - 01. X/0**

Designation
DV = flow control valve
DRV = flow control valves with reverse flow check

Size
06
08
10
12
16
20
25
30
40

Type
01 = technical specifications as per this brochure
30 = up to size 20 only: stainless steel housing control knob with Flutec label
11 = zinc-plated and yellow chromed housing, stainless steel spindle with 0.3 mm throttle gap, control knob without label (not for size 20 - 40)
12 = nickel-plated housing, steel spindle with 0.3 mm throttle gap, protective dome nut, adjustment with tool (not for size 40)

Series
(determined by manufacturer)

Threaded connection
0 = tapped hole to DIN 3852, Part 2-X
For panel mounting set, see point 2.2.10, page 6

Standard models

Thread Connection	Model code
1/8”	DV-06-01.X/0
1/4”	DV-08-01.X/0
3/8”	DV-10-01.X/0
1/2”	DV-12-01.X/0
3/4”	DV-16-01.X/0
1”	DV-20-01.X/0
11/4”	DV-25-01.X/0
11/2”	DV-30-01.X/0
2”	DV-40-01.X/0
1/8”	DRV-06-01.X/0
1/4”	DRV-08-01.X/0
3/8”	DRV-10-01.X/0
1/2”	DRV-12-01.X/0
3/4”	DRV-16-01.X/0
1”	DRV-20-01.X/0
11/4”	DRV-25-01.X/0
11/2”	DRV-30-01.X/0
2”	DRV-40-01.X/0

Please quote Model Code no. when ordering.
Delivery for non-standard models is longer and the price is higher.

2.1.3 **Type of construction**
DV: slot type flow control valve with shut-off function
DRV: slot type flow control valve with shut-off function and built-in check valve

2.1.4 **Type of mounting**
Inline mounting

2.1.5 **Mounting position**
Optional

2.1.6 **Weight**
See point 3

2.1.7 **Direction of flow**
DV: optional
DRV: from A to B
controlled flow
from B to A
free flow via check valve

2.1.8 **Ambient temperature range**
min. - 20 °C
max. + 80 °C

2.1.9 **Materials**
Valve body:
- Type 01
  Free-cutting steel, phosphate-plated
- Type 11
  Free-cutting steel, zinc-plated
- Type 12
  Free-cutting steel, nickel-plated
- Type 30
  Stainless steel

Control spindle:
- Type 01 + 12
  Free-cutting steel
- Type 11 + 30
  Stainless steel

Control knob:
polyamide (for metal control knob, see point 2.2.10, page 6)

Seals:
FPM and PTFE

2.1.10 **Nominal size**
NG06
NG08
NG10
NG12
NG16
NG20
NG25
NG30
NG40

2.1.11 **Type of connection**
Standard threaded connections with BSPP (F) as per ISO 228

2.2. HYDRAULIC DETAILS

2.2.1 **Nominal pressure**
p_N = 500 bar
across all ports

2.2.2 **Operating fluid**
Mineral oil to DIN 51524 Part 1 and Part 2

2.2.3 **Fluid temperature range**
min. - 20 °C to +80 °C
max. + +250 °C

2.2.4 **Viscosity range**
min. 2.8 mm²/s
max. 800 mm²/s

2.2.5 **Filtration**
Max. permissible contamination level of the operating fluid to ISO 4406 class 21/19/16 (NAS 1638 Class 10).
We therefore recommend a filter with a minimum retention rate of
$\beta_{20} \geq 100$.
The fitting of filters and regular replacement of elements guarantees correct functioning, reduces wear and tear and increases the service life.

2.2.6 **Type of adjustment**
Manually using control knob or on type 12, using Allen key.

2.2.7 **Cracking pressure of DRV**
p_O = 0.5 bar

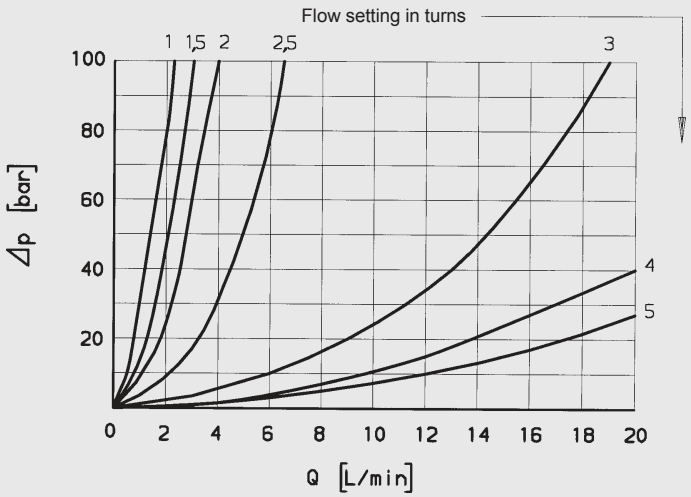
2.2.8 **Flow rate**
DV/DRV-06...Q = 20 l/min
DV/DRV-08...Q = 50 l/min
DV/DRV-10...Q = 60 l/min
DV/DRV-12...Q = 90 l/min
DV/DRV-16...Q = 180 l/min
DV/DRV-20...Q = 240 l/min
DV/DRV-25...Q = 300 l/min
DV/DRV-30...Q = 360 l/min
DV/DRV-40...Q = 400 l/min

2.2.9 **Pressure drops, dependent on flow rate**
DV
Flow direction from A to B and from B to A

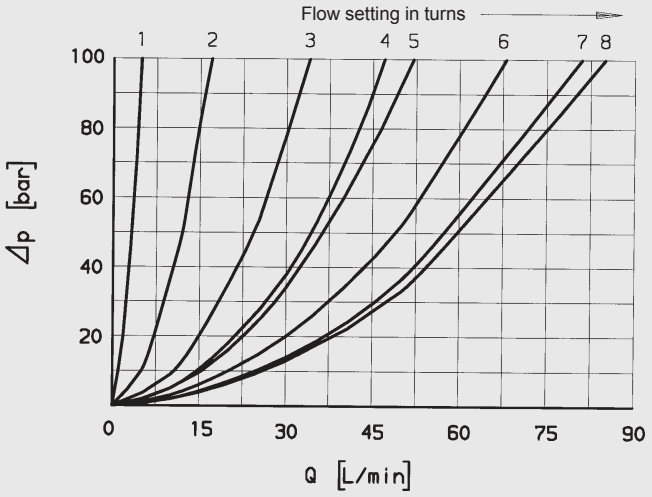
DRV
Flow direction from A to B

Pressure differential Δp depending on flow rate Q at constant flow setting measured at ν = 54 mm²/s and t_{oil} = 36 °C.

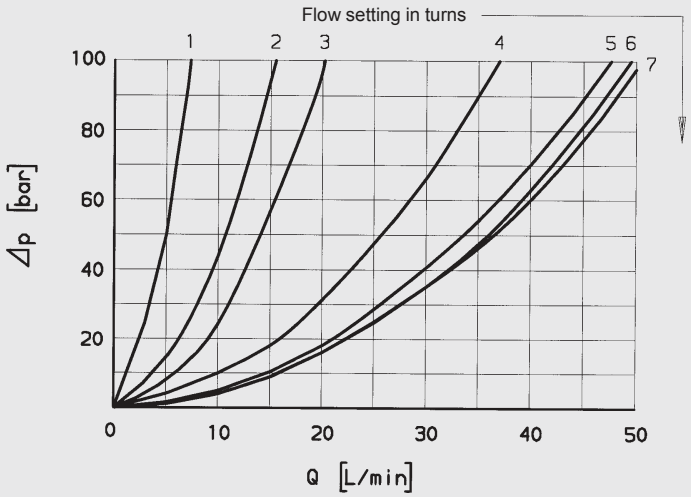
DV/DRV-06-01.X



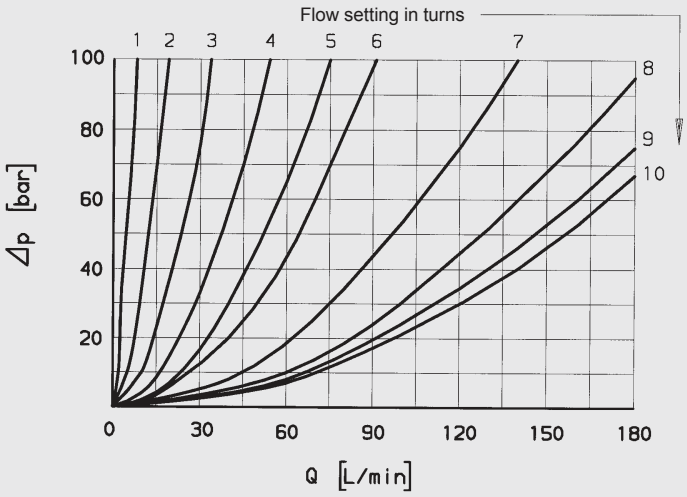
DV/DRV-12-01.X



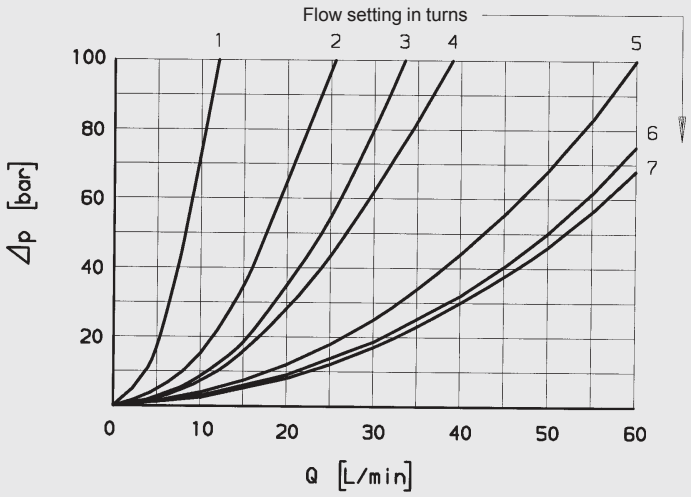
DV/DRV-08-01.X



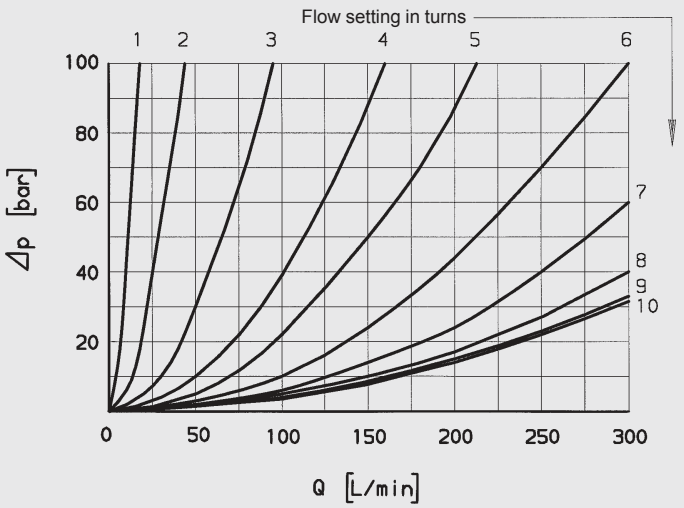
DV/DRV-16-01.X



DV/DRV-10-01.X

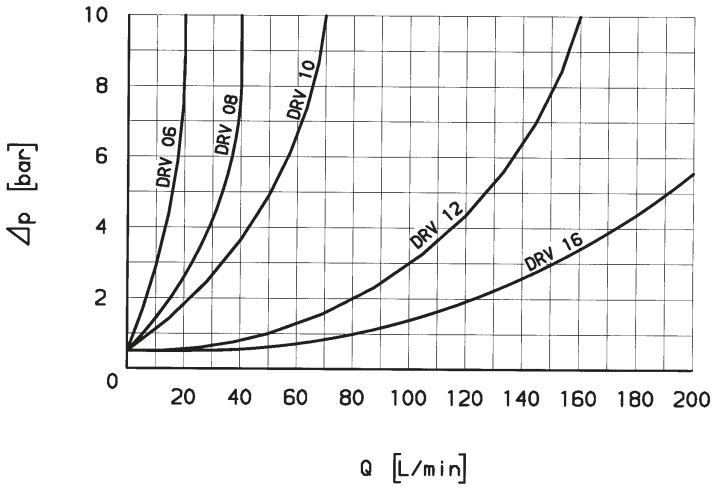


DV/DRV-20 to 40-01.X

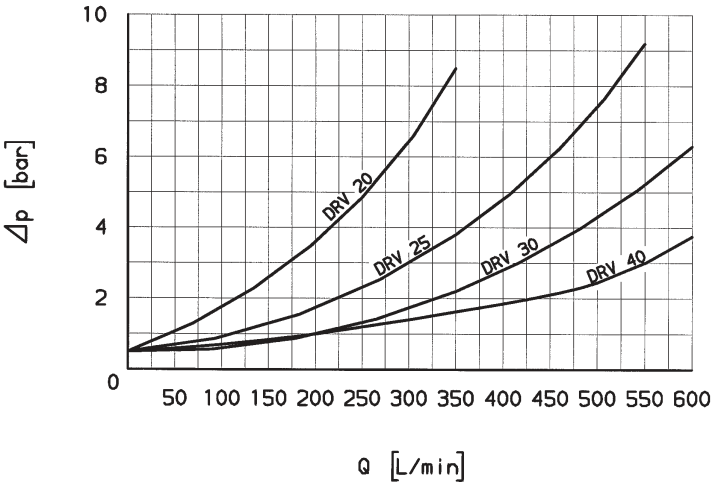


DRV
Flow direction from B to A
Pressure differential Δp depending on flow rate Q
via opened check valve at
ν = 72 mm²/s and
t_{oil} = 30 °C

DRV-06-01.X to DRV 16-01.X



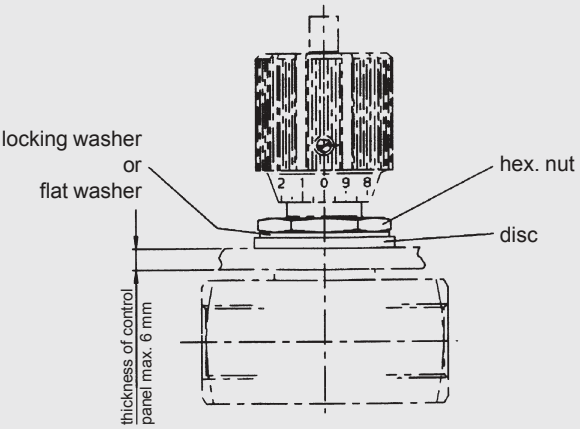
DRV-20-01.X to DRV-40-01.X



2.2.10 **Accessories**

– Panel mounting sets: nickel-plated

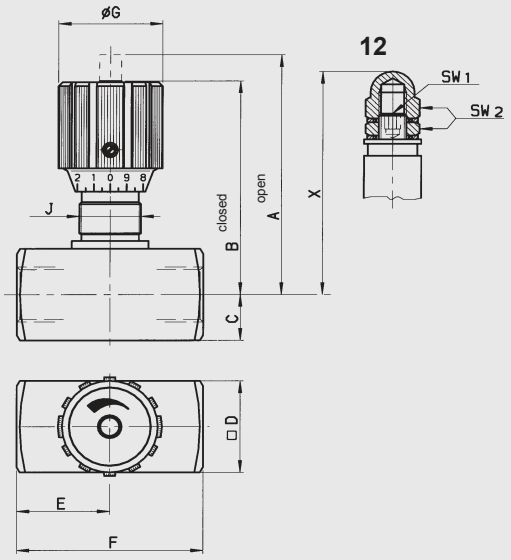
The panel mounting sets consist of a locking washer to DIN 6797 or flat washer, disc to DIN 125 and hex. nut.



3. DIMENSIONS

DV

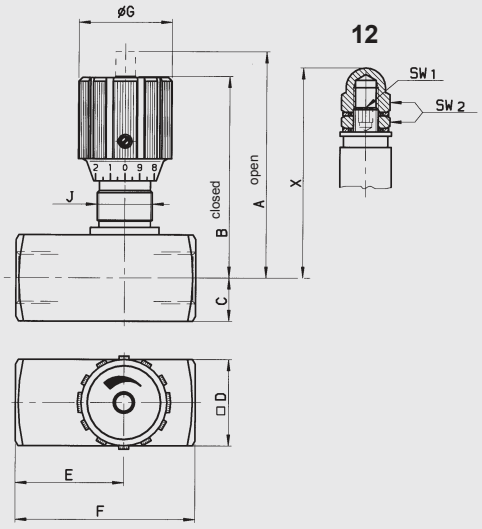
Type: 01 30 11



Size	Threaded connection	A	B	C	D	E	F	G	J	SW 1	SW 2	X	Weight [kg]
06	G1 / 8	55	50	8	25	19	38	24	Pg7	3	10	54	54
08	G1 / 4	72	65	12.5	30	24	48	29	Pg11	3	10	65	0.25
10	G3/8	74	67	15	32	29	58	29	Pg11	4	13	71	0.40
12	G1/2	92	82	17.5	38	34	68	38	Pg16	5	17	86	0.70
16	G3/4	106	96	22.5	45	39	78	38	Pg16	6	19	105	1.20
20	G1	145	128	25	50	54	108	49	Pg29	8	24	129	2.10
25	G1 1/4	150	133	30	60	54	108	49	Pg29	8	24	134	2.80
30	G1 1/2	155	138	35	70	54	108	49	Pg29	8	24	139	3.50
40	G2	165	148	45	90	65	130	49	Pg29	–	–	–	5.50

DRV

Type: 01 30 11



Size	Threaded connection	A	B	C	D	E	F	G	J	SW 1	SW 2	X	Weight [kg]
06	G1 / 8	55	50	8	25	26	45	24	Pg7	3	10	54	54
08	G1 / 4	72	65	12.5	30	33.5	58.5	29	Pg11	3	10	65	0.25
10	G3/8	74	67	15	32	41	68	29	Pg11	4	13	71	0.40
12	G1/2	92	82	17.5	38	44	78	38	Pg16	5	17	86	0.70
16	G3/4	106	96	22.5	45	57	97	38	Pg16	6	19	105	1.20
20	G1	145	128	25	50	77	127	49	Pg29	8	24	129	2.10
25	G1 1/4	150	133	30	60	93	143	49	Pg29	8	24	134	2.80
30	G1 1/2	155	138	35	70	108	143	49	Pg29	8	24	139	3.50
40	G2	165	148	45	90	130	165	49	Pg29	–	–	–	5.50

4. NOTE

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.