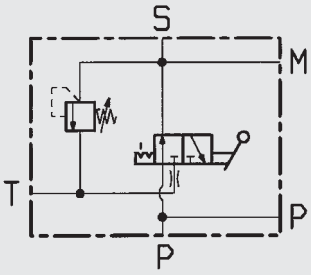
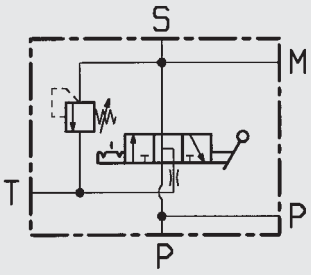
HYDAC INTERNATIONAL

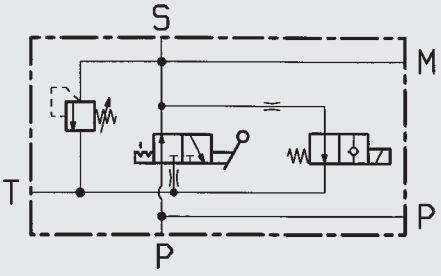
3-Way Safety Block
DSV



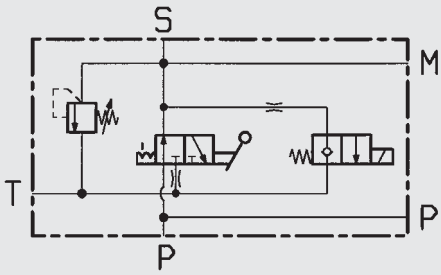
DSV 10 - M



DSV 10 - M - T-ball

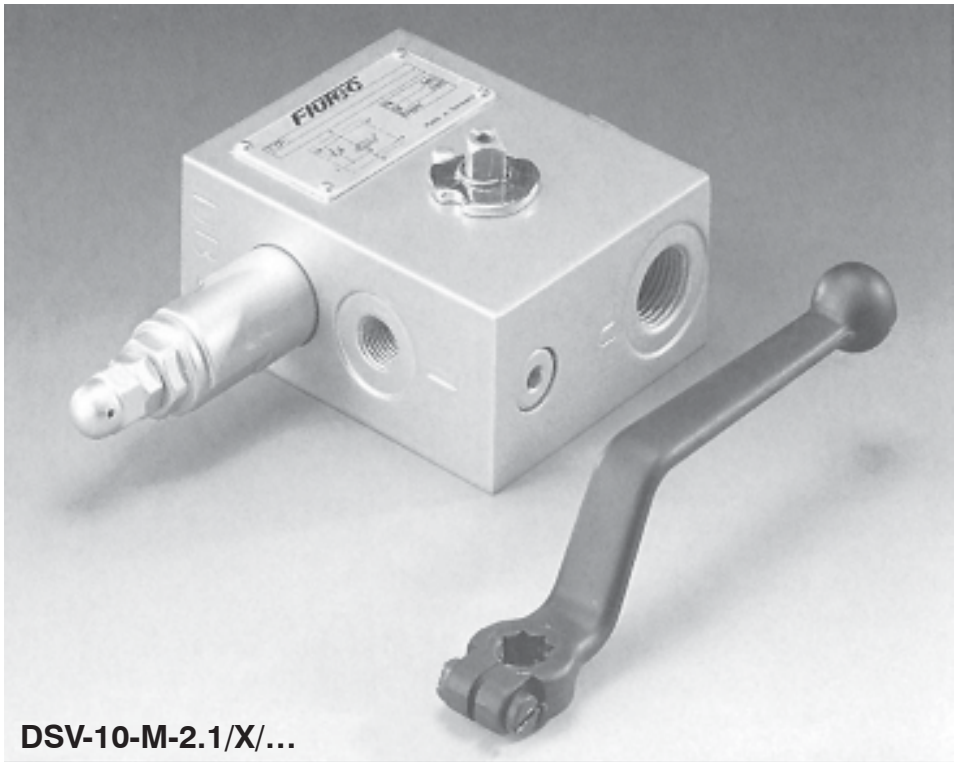


DSV 10 - EY

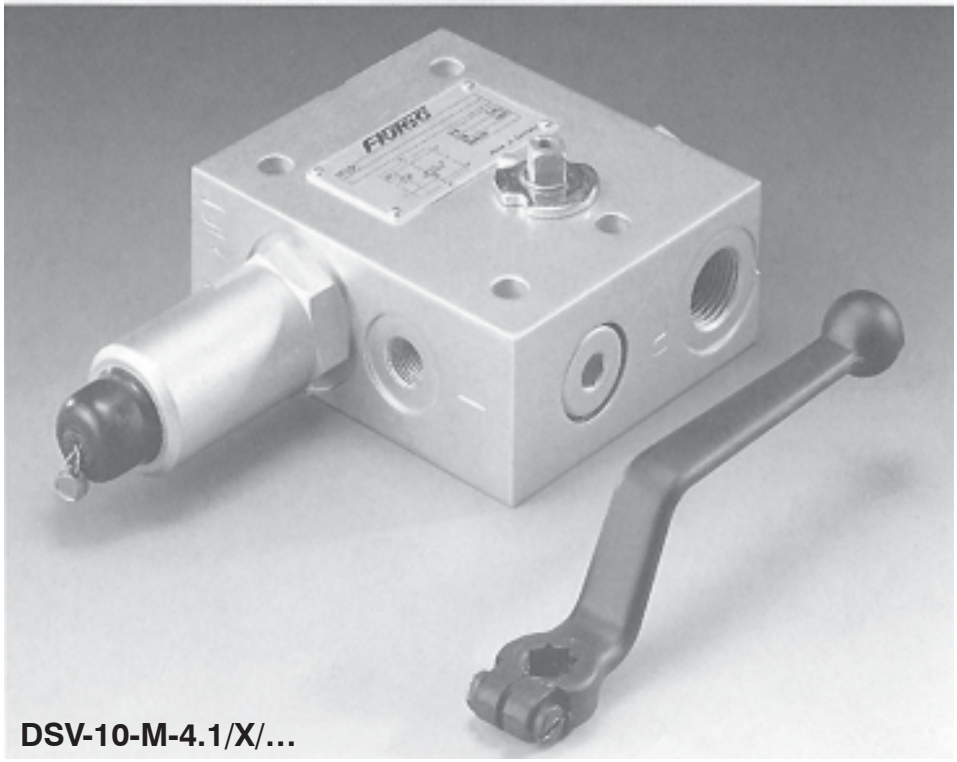


DSV 10 - EZ

up to 350 bar
DN 10



DSV-10-M-2.1/X/...



DSV-10-M-4.1/X/...

1. DESCRIPTION

1.1. GENERAL

The 3-way safety block DSV 10 is used to shut off and discharge hydraulic accumulators or user units. It complies with relevant safety standards in accordance with DIN EN 982 and the German industrial safety regulations, BetrSichV.

The HYDAC pressure relief valve DB 12 is used with the DSV series. This is a direct-operated pressure relief valve in seat valve construction with excellent opening and closing characteristics.

This version of DB 12 complies with the requirements of the Pressure Equipment Directive 97/23/EC with CE marking.

There are four different models:

– DSV 10 M
Manual discharge
Standard L-ball

– DSV 10 M - T-ball
Manual discharge
T-ball

– DSV 10 EY
Manual / solenoid-operated discharge
Open when de-energised

– DSV 10 EZ
Manual / solenoid-operated discharge
Closed when de-energised

Advantages of the accumulator block:

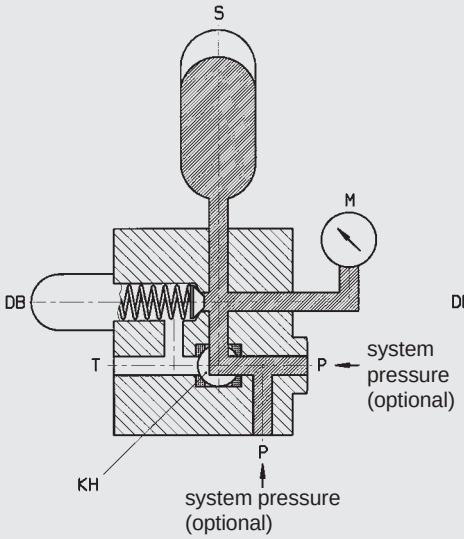
– Visual indication of the switching position by means of a slot on the control spindle
– Switching limited by means of stop pin and stop disc
– Sealing principle with floating ball, sealing on the inlet side
– Easy operation
– Double pump port
– Block construction
– Minimum space and installation required
– Variety of adaptors for nearly all accumulator systems and makes
– Surface phosphate-plated

For pressure relief valves, see brochure nos. E 5.161../.. (DB4), E 5.163../.. (DB4E) and E 5.169../.. (DB12)

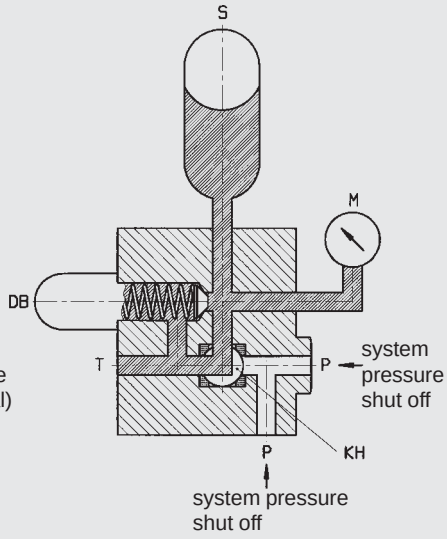
For solenoid-operated directional seat valves, see brochure no. E 5.204../..

On request we can supply other models to cover nearly all applications, e.g. for aggressive media. On request we can supply test certificates to EN 10204 and quality test certificates to DIN 55350, Part 18.

Accumulator operation



Shutting off the system pressure whilst simultaneously discharging the accumulator



P	Pump port
KH	Change-over ball valve
M	Pressure gauge connection
S	Accumulator
DB	Pressure relief valve
T	Tank port

1.2 FUNCTION

When the accumulator is in operation the change-over ball valve connects the pump port with the accumulator. At the same time the accumulator is monitored for pressure via the built-in pressure relief valve. By switching over the ball valve, the pump port is shut off leakage-free on the inlet side and the accumulator is discharged simultaneously to the tank. During switching all three ports (P, S and T) are momentarily interconnected (negative switching overlap).

If a solenoid-operated 2/2 directional seat valve is fitted, automatic discharge is possible (e.g. in the event of a power failure or breakdown).

1.3. APPLICATIONS

The 3-way safety block DSV is used to protect, shut off and relieve hydraulic pressure accumulators and user units.

Areas of application are, for example:

– Hydraulic systems with accumulator operation
– Accumulator stations
– System engineering

1.4. NOTES

Ball valves are not designed to be used as flow control valves; therefore they should always be either fully open or fully closed, to avoid destroying the sealing cups.

To ensure correct functioning, pressure and temperature specifications must be observed.

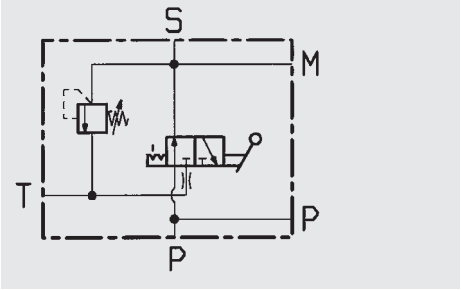
The handles are supplied loose with the ball valves.

2. TECHNICAL SPECIFICATIONS

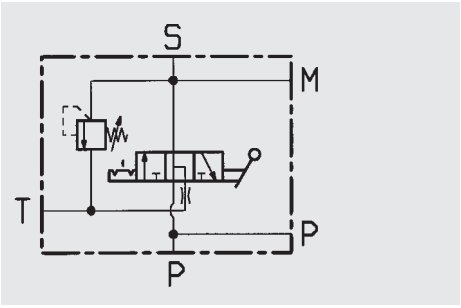
2.1. GENERAL

2.1.1 **Designation and symbol**
3-way safety block DSV

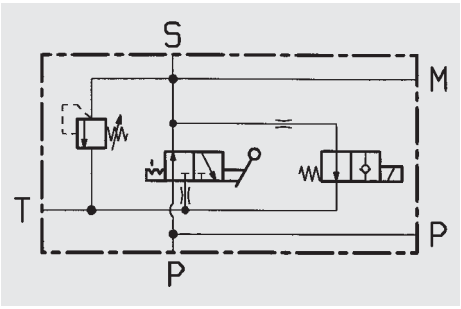
DSV 10 - M



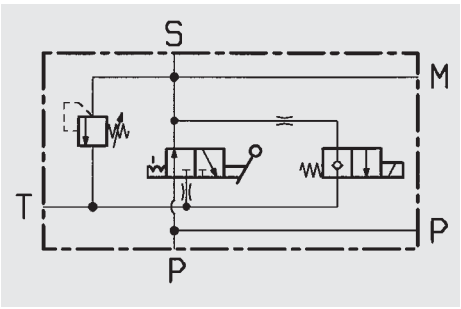
DSV 10 - M - T-ball



DSV 10 - EY



DSV 10 - EZ



2.1.2 **Model code**
(also order example)

DSV - 10 - M . - 4 . 1 / 1 / X / T 100 - G 24 - Z4 - ...

3-way safety block

Nominal bore
10

Discharge
M = manual
E = solenoid-operated with manual override

For solenoid-operated discharge with manual override please also state
Y = open when de-energised
Z = closed when de-energised

Construction - pressure relief valve
4 = DB 12
2 = DB 4
(DBD 6 on request)

With/without fitted pressure relief valve
1 = with pressure relief valve
0 = without pressure relief valve

Accumulator port
1 = M 33 x 2
(M 20 x 1.5 on request)

Series
(determined by manufacturer)

Setting of pressure relief valve
T = TÜV approval (lead-sealed)
V = adjustable using tool
F = preset by manufacturer
x = no details (for model without relief valve cartridge)

Setting of cracking pressure
... = pressure setting
... = pressure range
xxx = no details (for model without relief valve cartridge)

Pressure setting range

DB 4	– 100 bar
DB 12	– 150 bar
DB 4	– 200 bar
DB 12	– 250 bar
DB 4 / 12	– 350 bar

Voltage for actuating solenoid (see point 2.3.2)
G = DC
W = AC

Nominal voltage for actuating solenoid (see point 2.3.2)
24 = 24 V DC (for voltage type G)
230 = 230 V 50/60 Hz AC (for voltage type W)

Type of connection for actuating solenoid
Z4 = connector socket to DIN 43650 - AF2 - PG11

Supplementary details
T-ball = ball bore (180° switch)
Viton (FKM) = O-ring seal

When ordering please quote stock number (see table 2.1.3).
Delivery for non-standard valves is longer.

2.1.3 **Standard valves**

Nominal bore / type	Pressure relief valve	Order no. = stock no.	Weight [kg]
DSV - 10 - M - 2.0/1/X/XXXX	without DB 4	555998	2.5
DSV - 10 - M - 2.1/1/X/T100	DB 4	557361	2.7
DSV - 10 - M - 2.1/1/X/T200	DB 4	557362	2.7
DSV - 10 - M - 2.1/1/X/T210	DB 4	555408	2.7
DSV - 10 - M - 2.1/1/X/T315	DB 4	557363	2.7
DSV - 10 - M - 2.1/1/X/T330	DB 4	557364	2.7
DSV - 10 - EY - 2.0/1/X/XXXX - G24 - Z4	without DB 4	557366	2.9
DSV - 10 - EY - 2.1/1/X/T210 - G24 - Z4	DB 4	557365	3.1
DSV - 10 - M - 4.0/1/X/XXXX	without DB 12	555999	3.1
DSV - 10 - M - 4.1/1/X/T100	DB 12	555971	3.5
DSV - 10 - M - 4.1/1/X/T200	DB 12	555973	3.5
DSV - 10 - M - 4.1/1/X/T210	DB 12	555974	3.5
DSV - 10 - M - 4.1/1/X/T315	DB 12	555977	3.5
DSV - 10 - M - 4.1/1/X/T330	DB 12	555978	3.5
DSV - 10 - EY - 4.0/1/X/XXXX - G24 - Z4	without DB 12	557367	3.5
DSV - 10 - EY - 4.1/1/X/T100 - G24 - Z4	DB 12	555983	3.9
DSV - 10 - EY - 4.1/1/X/T200 - G24 - Z4	DB 12	555985	3.9
DSV - 10 - EY - 4.1/1/X/T210 - G24 - Z4	DB 12	555986	3.9
DSV - 10 - EY - 4.1/1/X/T315 - G24 - Z4	DB 12	555989	3.9
DSV - 10 - EY - 4.1/1/X/T330 - G24 - Z4	DB 12	555990	3.9

2.1.4 **Type of construction**
Ball valve isolating device

Pressure relief valve is direct-operated as a cone seat valve

Seat valve is pilot-operated

2.1.5 **Mounting position**
Optional

2.1.6 **Weight**
See table 2.1.3

2.1.7 **Flow direction**
According to symbol

2.1.8 **Ambient temperature**
- 10 °C to + 80 °C

2.1.9 **Materials**
Housing and locking screw in steel, surface protection: phosphate-plated

Ball in steel, hard-chromed

Pressure relief valve and seat valve body in high tensile steel, closing element in hardened and polished steel, wear-resistant, surface protection: phosphate-plated

Ball seal in high quality synthetic material (POM)

Soft seals in Perbunan (NBR)

Clamped handle SW 09, cranked, in red anodised aluminium

2.2. HYDRAULIC DETAILS

2.2.1 **Nominal pressure**
PN 350 bar

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

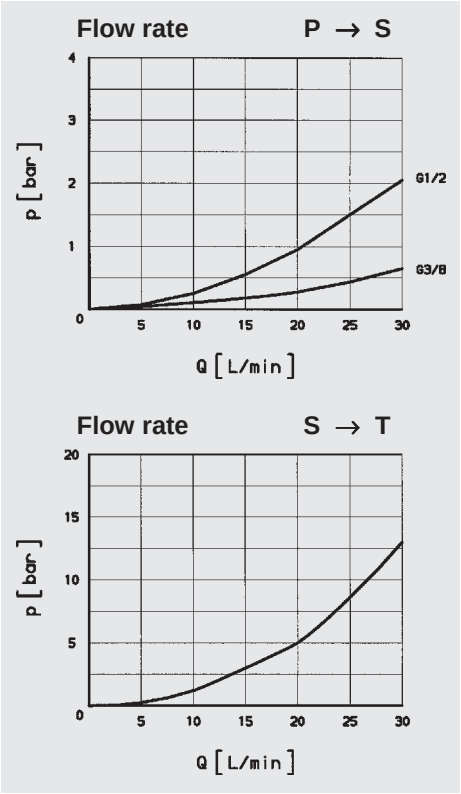
(Other media on request)

2.2.3 **Temperature of operating fluid**
- 10 °C to + 80 °C

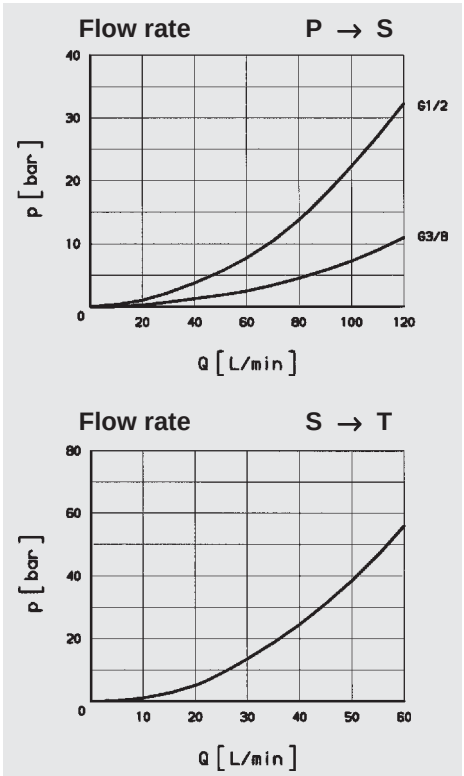
2.2.4 **Viscosity range**
Min. 10 mm²/s
Max. 380 mm²/s

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

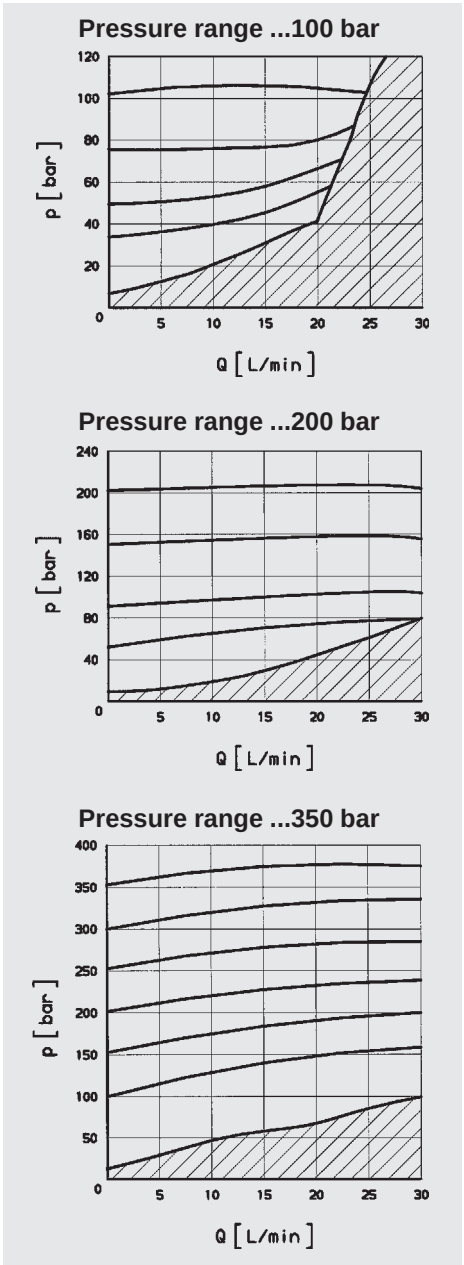
2.2.6 **Δp - Q graph DSV 10 with pressure relief valve DB 4**
measured at ν = 30 mm²/s and t_{oil} = 50 °C



2.2.7 **Δp - Q graph DSV 10 with pressure relief valve DB 12**
measured at ν = 30 mm²/s and t_{oil} = 50 °C

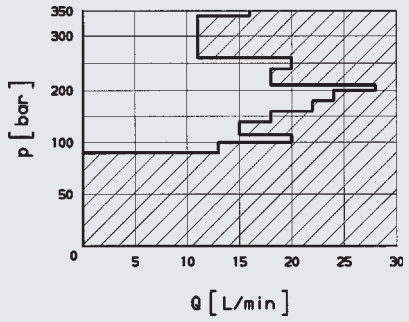


2.2.8 **Pressure, dependent on flow rate DB 4**
measured at ν = 36 mm²/s and t_{oil} = 50 °C



2.2.9 **Pressure, dependent on flow rate DB 4 - TÜV**
measured at ν = 36 mm²/s and t_{oil} = 50 °C

Application range DB 4 - TÜV

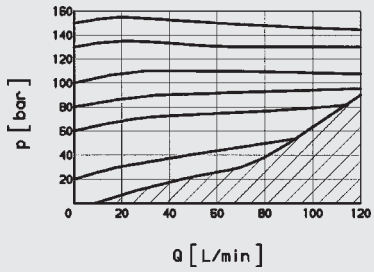


Qmax table DB 4 - TÜV
max. permissible flow rate of the pump

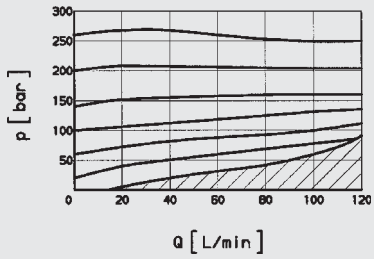
Qmax. [l/min]	p [bar]
13	90 - 100
20	101 - 115
15	116 - 140
18	141 - 160
22	161 - 180
24	181 - 200
28	201 - 210
18	211 - 240
20	241 - 260
11	261 - 340
16	341 - 360

2.2.10 **Pressure, dependent on flow rate DB 12**
measured at ν = 28 mm²/s and t_{oil} = 50 °C

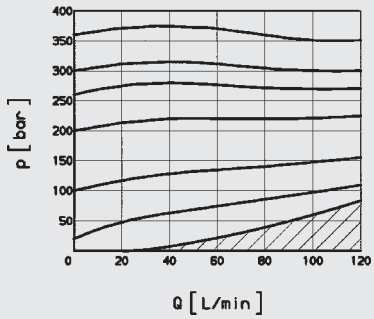
Pressure range ...150 bar



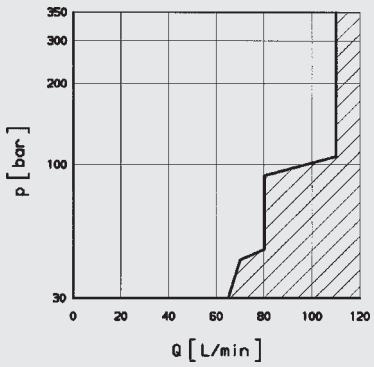
Pressure range ...250 bar



Pressure range ...350 bar



Application range DB 12 - TÜV



Qmax table DB 12 - TÜV
max. permissible flow rate of the pump

Qmax. [l/min]	p [bar]
65	30, 35
72	40, 45
80	50, 60, 70, 80, 90
95	100
110	110, 120, 140, 160… up to 400

Note:
Valves cannot be set to values within the shaded areas

2.3. ELECTRICAL DETAILS

2.3.1 **Type of operation**
Solenoid-operated by means of pressure-tight, oil-immersed, single-stroke solenoids in accordance with VDE 0580.
Actuating solenoid with plug to DIN 43650, standard for general industrial applications, available for DC 24 V and AC 230 V.

2.3.2 **Type of voltage**
DC solenoid (code G)
When connected to AC voltage (code W) the necessary DC voltage is produced by means of a bridge rectifier connector.

2.3.3 **Nominal voltage**
Standard nominal voltages:
G : 24 V
W : 230 V

2.3.4 **Voltage tolerance**
– 5 %
+ 10 %

2.3.5 **Nominal current**
Dependent on the nominal voltage
G 24 V : 1.04 A
W 230 V : 0.13 A

2.3.6 **Power consumption**
p_{20} = 26 W

2.3.7 **Switch-on time**
100 % = continuous operation

2.3.8 **Switching time**
Depending on symbol, pressure across the individual ports and flow rate,
switch-on time = approx. 25 ms
switch-off time = approx. 35 ms

2.3.9 **Protection class**
IP 65 to DIN 40050 for correctly fitted connector

2.3.10 **Ambient temperature range**
- 10 °C to + 40 °C

3. ADAPTORS

3.1 GENERAL

Adaptors for extending the different accumulator systems and makes must be ordered separately.

3.2. MODEL CODE

(also order example)

UEBERG–ST – S30 – NBR

Adaptor

Type

S10 = M 33 x 2 / G 3/4 A
S11 = M 33 x 2 / G 1 A
S12 = M 33 x 2 / G 1 1/4 A
S13 = M 33 x 2 / G 2 A

S20 = M 33 x 2 / M 30 x 1.5
S21 = M 33 x 2 / M 40 x 1.5
S22 = M 33 x 2 / M 50 x 1.5

S30 = M 33 x 2 / G 1/2 A
S31 = M 33 x 2 / G 3/4 A
S32 = M 33 x 2 / G 1 A
S33 = M 33 x 2 / G 1 1/4 A

(M 20 x 1.5 / ..... on request)

Seals

NBR = Perbunan

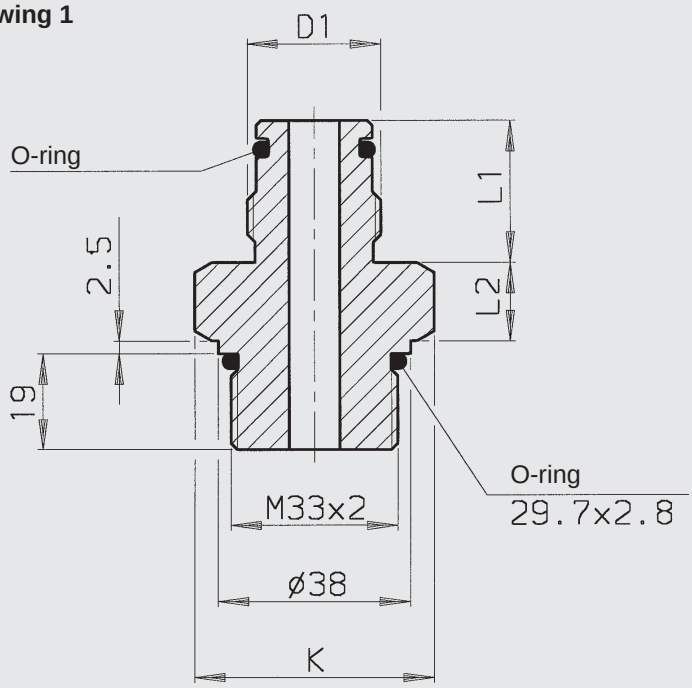
When ordering please quote stock number (see table 3.3.)
Delivery for non-standard adaptors is longer.

3.3. STANDARD ADAPTORS

Adaptor / type	Order no. = stock no.
UEBERG-ST - S10 - NBR	369479
UEBERG-ST - S11 - NBR	372750
UEBERG-ST - S12 - NBR	369480
UEBERG-ST - S13 - NBR	369481
UEBERG-ST - S20 - NBR	369482
UEBERG-ST - S21 - NBR	369483
UEBERG-ST - S22 - NBR	369484
UEBERG-ST - S30 - NBR	369485
UEBERG-ST - S31 - NBR	369486
UEBERG-ST - S32 - NBR	369487
UEBERG-ST - S33 - NBR	379009

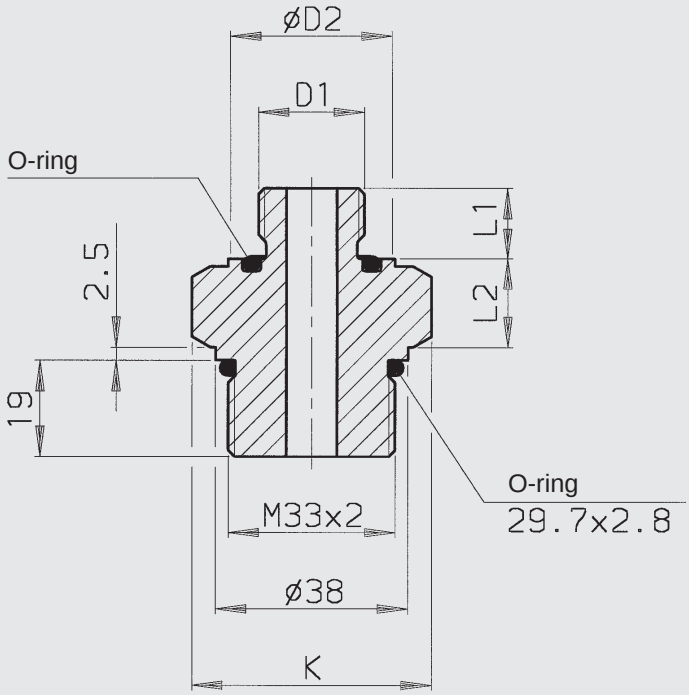
3.4. ADAPTOR DIMENSIONS

Adaptor - M 33 x 2, drawing 1



Type	Thread D1	D2	L1	L2	K	O-ring
S10	ISO 228 - G ¾ A	-	28	15.5	SW 41	17 x 3
S11	ISO 228 - G 1 A	-	34	16.5	SW 46	22 x 3
S12	ISO 228 - G 1¼ A	-	37	16.5	SW 46	30 x 3
S13	ISO 228 - G 2 A	-	44	20.5	SW 65	48 x 3

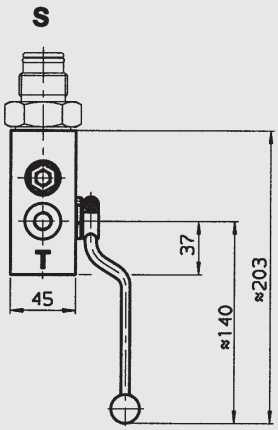
Adaptor - M 33 x 2, drawing 2

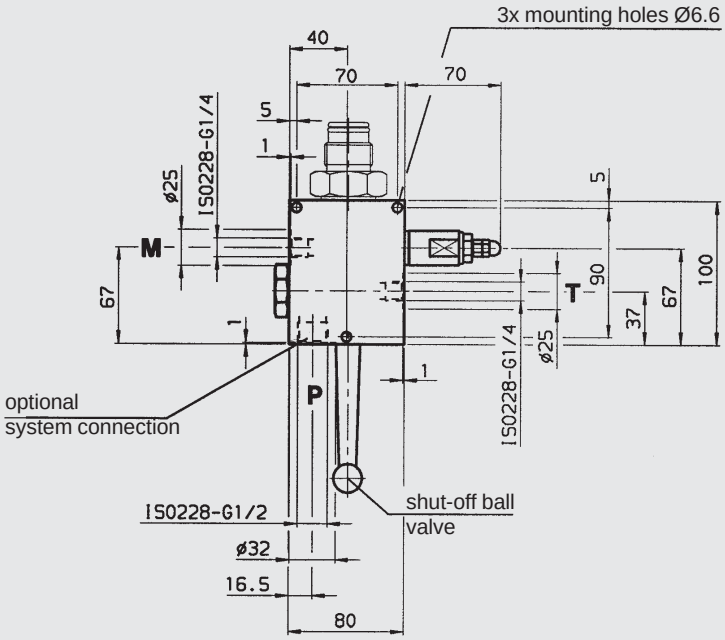


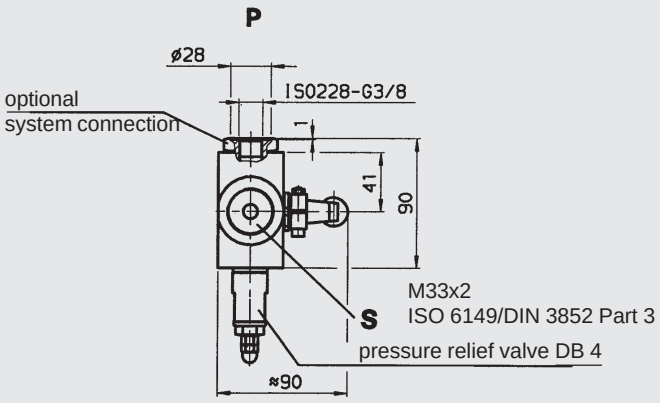
Type	Thread D1	D2	L1	L2	K	O-ring
S20	M 30 x 1.5	40	15	17.5	SW 41	32 x 2
S21	M 40 x 1.5	54	20	20.5	SW 55	43 x 3
S22	M 50 x 1.5	64	20	20.5	SW 65	53 x 3
S30	ISO 228 - G ½ A	33	14	17.5	SW 41	22 x 3
S31	ISO 228 - G ¾ A	40	16	17.5	SW 41	28 x 3
S32	ISO 228 - G 1 A	45	18	18.5	SW 46	35 x 3
S33	ISO 228 - G 1¼ A	55	20	18.5	SW 65	44 x 3

4. SAFETY BLOCK DIMENSIONS

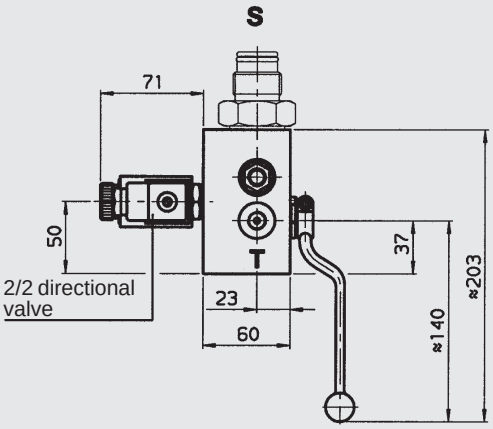
DSV - 10 - M - 2.1/1/X/....

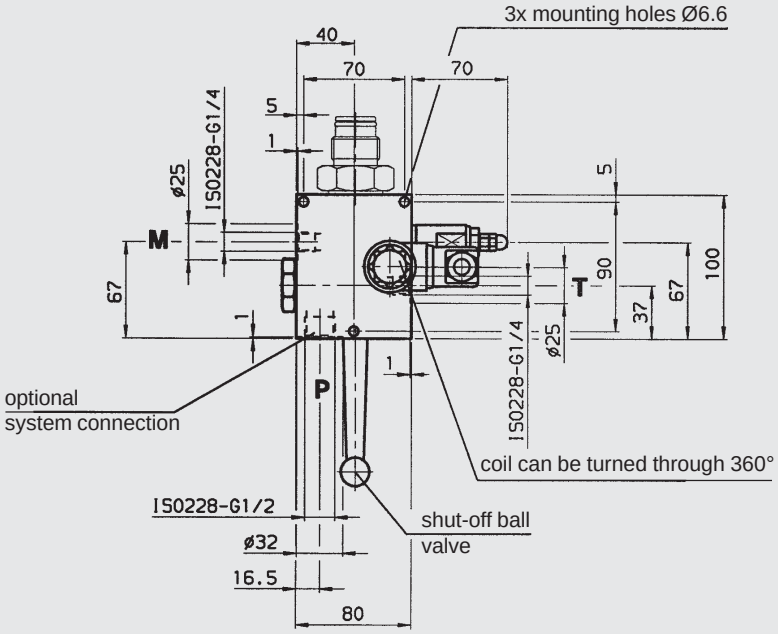


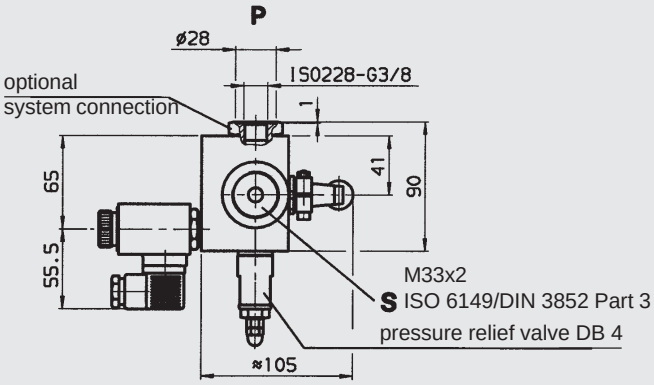




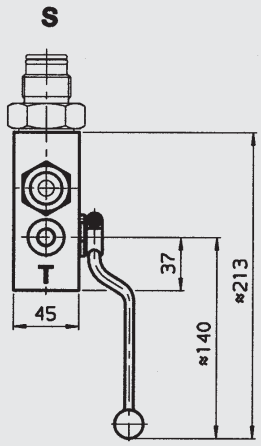
DSV - 10 - E. - 2.1/1/X/....

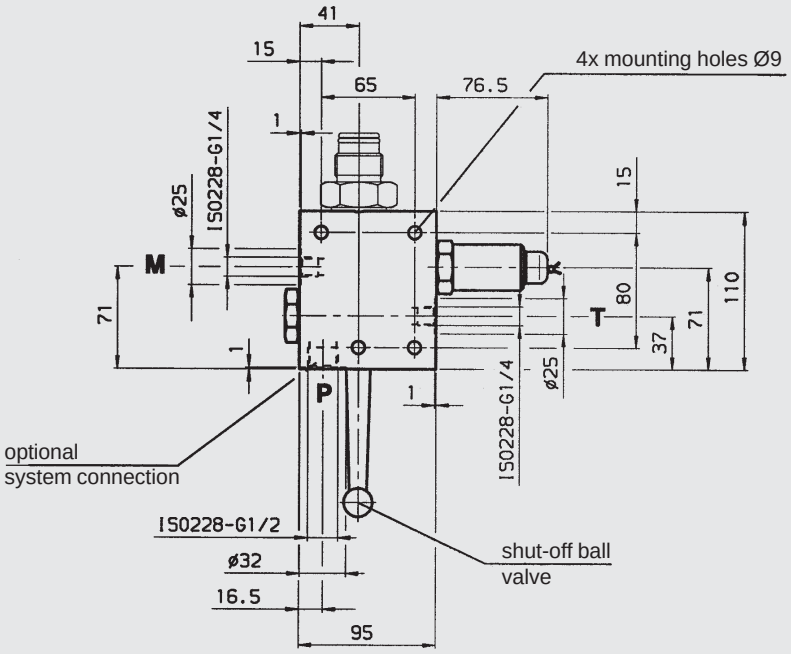


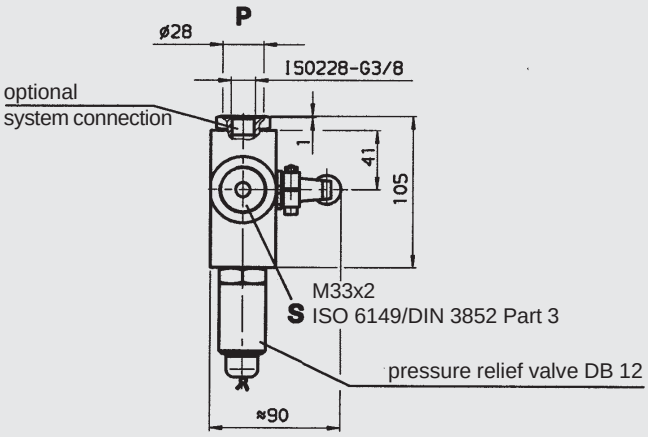




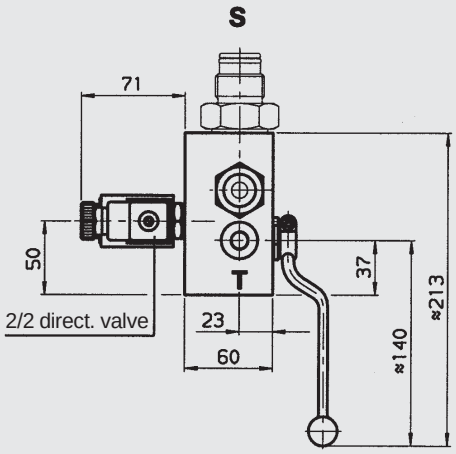
DSV - 10 - M - 4.1/1/X/....

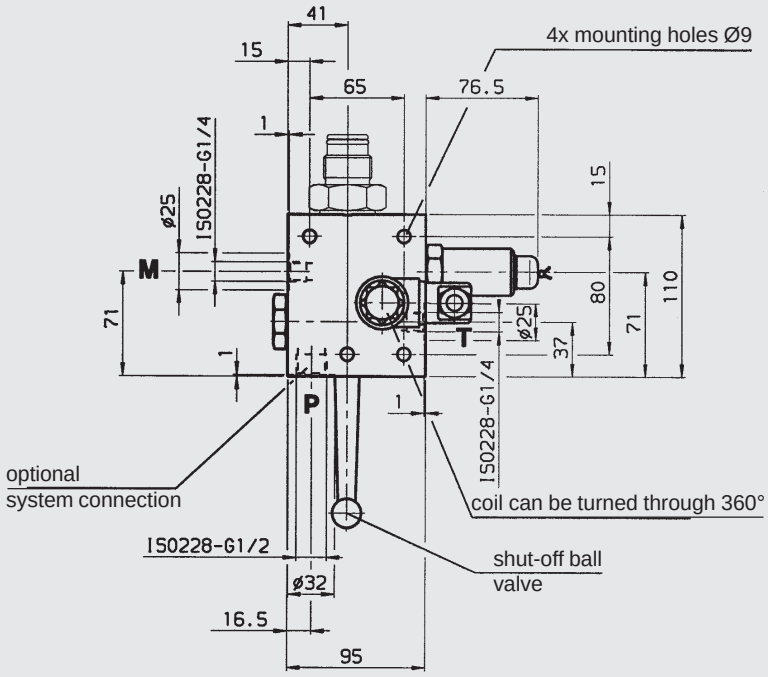


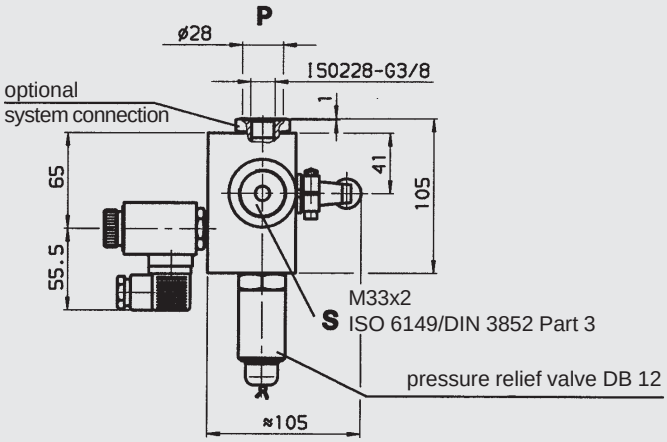




DSV - 10 - E. - 4.1/1/X/....

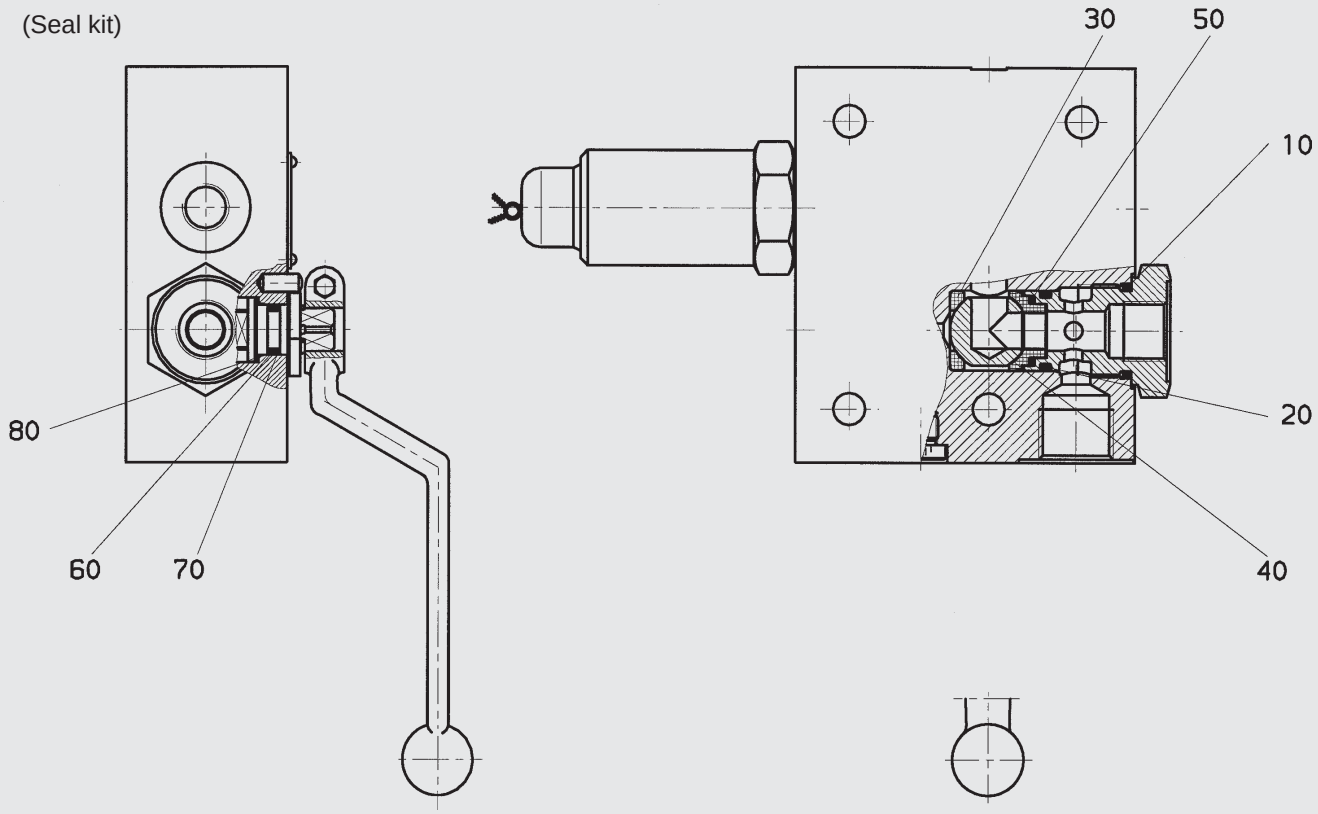






5. SPARE PARTS

(Seal kit)



The parts indicated by numbers on the above drawing are all included in the seal kit.

Seal kit	Order no. = stock no.
DSV - 10	702513
DB 4	715870
DB 12	557399
2 SV 5	480078

6. 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.