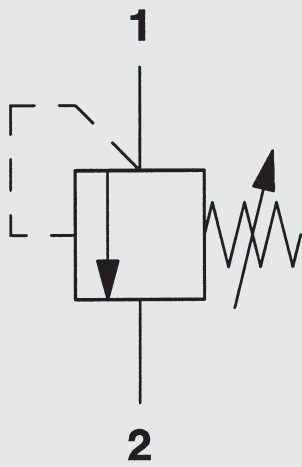
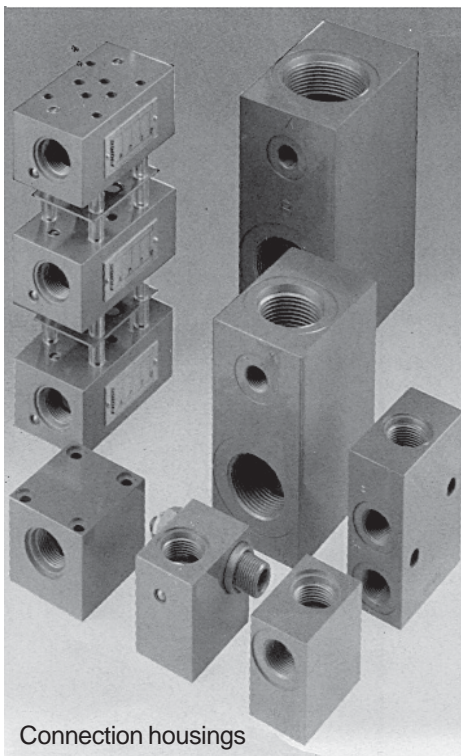


Pressure Relief Valve DB12



up to 420 bar
up to 120 l/min



Connection housings

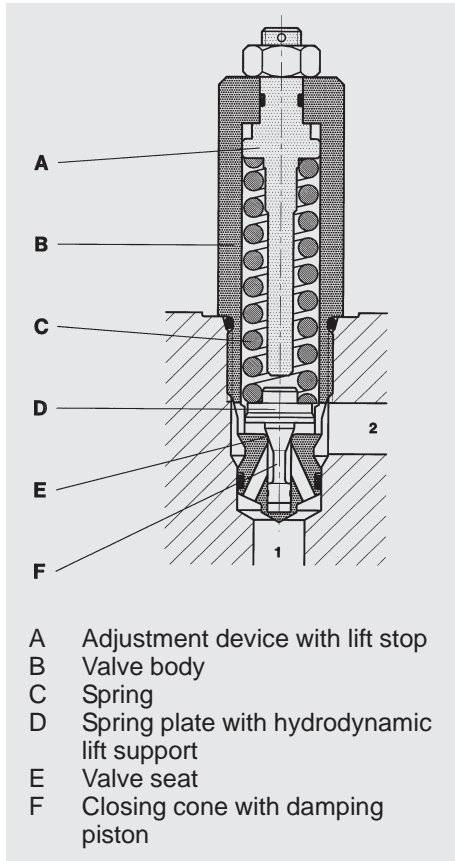
1. DESCRIPTION

1.1. GENERAL

According to DIN-ISO 1219, HYDAC pressure relief valves DB12 are valves for oil hydraulic systems to limit pressure across the inlet by opening the outlet against a spring force. The valve is designed as a direct-operated pressure relief valve in seat valve construction. This provides very good opening/closing characteristics and enables user units to be sealed leakage-free.

Further advantages of these valves are as follows:

- cavity dimensions to ISO 7789
- low hysteresis and high stability ensure accurate pressure control
- optimum system adaptation owing to various pressure ranges
- limited setting range means that the spring cannot be blocked, thereby maintaining the pressure relief function
- the damping unit ensures that stable operation is maintained over the whole capacity range and that the noise level is kept to a minimum
- small pressure increase at increased flow rate over the whole application range due to hydrodynamic lift support on the spring plate
- mechanical lift stop ensures operational safety even when pressure peaks cause an overload
- their compact design saves space when installing in connection housings, control blocks etc., especially in confined installation conditions.
- simple installation due to service-friendly cartridge valve technology



1.2. FUNCTION

HYDAC pressure relief valves DB12 are direct-operated, spring-loaded cone seat valves for oil hydraulic systems. The valve consists essentially of a valve body with built-in valve seat, a hardened and polished closing cone and the adjustment device for setting the initial spring tension. The spring applies this force to the closing cone and pushes it against the valve seat. On the opposite side of the closing cone, the system pressure acts via port 1 of the valve. If the hydraulic pressure force is below the pre-set spring tension, the valve is closed. If the hydraulic pressure force exceeds the pre-set spring tension, the closing cone is lifted off the valve seat and the operating fluid flows from pressure port 1 to tank port 2. This limits the pressure across port 1. To ensure that stable operation is maintained, the closing cone is rigidly connected to the damping piston which has to displace oil via an aperture with each movement of the closing cone. Each time, this produces an opposing damping force to the direction of movement.

1.3. APPLICATION

HYDAC pressure relief valves DB12 are used:

- as safety valves to limit pressure to the maximum permissible
- for pressure relief on pressure vessels
- as safety valves for cylinders, pumps and other pressure generators
- for limiting pressure in hydraulic units and control blocks
- for pressure control of hydraulic circuits

Areas of application are, for example:

- hydraulic units
- elevating platforms
- mobile hydraulics
- clamping hydraulics
- force or torque limiting on drive elements
- accumulator stations
- hydraulic systems with accumulators

1.4. NOTES

When fitting the valves into control blocks and housings the recommended torque ratings must be observed.

Note port configuration.

Please note:

If the connections are incorrect, the safety function of the valve is disabled.

Please note:

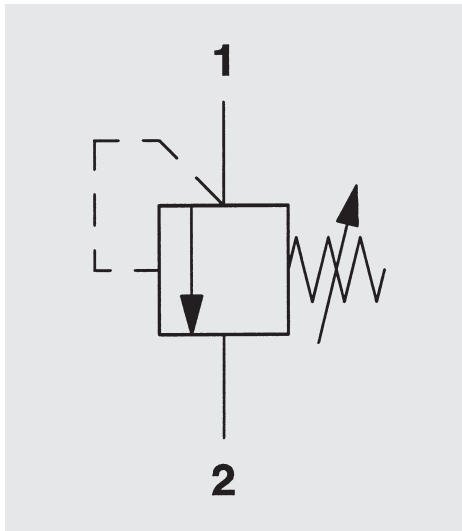
The opening pressure of the valve increases by the amount of pressure across tank port 2 (p_2)!

DB12: $p_{2max} = 100 \text{ bar}$

2. TECHNICAL SPECIFICATIONS

2.1. GENERAL

2.1.1 Designation and symbol Pressure relief valve



2.1.2 Model code (also order example)

DB 12120A - 01 X - 350 V 315

Pressure relief valve

Cavity

Type

01 = technical specifications as per this brochure

Series

(determined by manufacturer)

Setting pressure range

150 = up to 150 bar

250 = up to 250 bar

350 = up to 350 bar

420 = up to 420 bar

Type of adjustment

V = adjustable with tool (standard models)

Cracking pressure setting

No details = cracking pressure approx. 10 bar (spring relaxed)

Pressure value = customer-specific cracking pressure
(min. order quantity 50 pieces)

Standard models

Stock no. (= order no.)	Model code
552 805	DB12120A-01X-150V
552 806	DB12120A-01X-250V
552 807	DB12120A-01X-350V
552 836	DB12120A-01X-420V

Please quote material number when ordering.

Delivery for non-standard models is longer and the price is higher.

Please note:

It is possible for the customer to lead-seal the valve using a cap, stock no. 397 397 (see point 3. Dimensions).

2.1.3 Type of construction

Cone-seat valve, direct-operated

2.1.4 Type of mounting

Cartridge valve

2.1.5 Mounting position

Optional

2.1.6 Weight

0.42 kg

2.1.7 Direction of flow

From 1 to 2, pressure relief function

From 2 to 1, shut-off leakage-free

2.1.8 Ambient temperature range

min. - 20 °C

max. + 80 °C

2.1.9 Materials

Valve body: high tensile steel

Closing element: hardened and polished steel, wear-resistant

Seals: FPM and Teflon

2.1.10 Type of connection

Suitable connection housings with cavity 12120A are available.

See separate housing brochure no. E 5.252../..

2.2. HYDRAULIC DETAILS

2.2.1 Nominal pressure

inlet (port 1): up to 420 bar
 outlet (port 2): DB12: up to 100 bar

2.2.2 Operating pressure ranges

up to 150 bar
 up to 250 bar
 up to 350 bar
 up to 400 bar

For lowest setting pressures, see 2.2.7 Pressure, dependent on flow rate.

2.2.3 Pressure fluid

Mineral oil to DIN 51524, part 1 and 2

2.2.4 Operating fluid temperature range

min. - 20 °C
 max. + 80 °C

2.2.5 Viscosity range

min. 10 mm²/s
 max. 380 mm²/s

2.2.6 Filtration

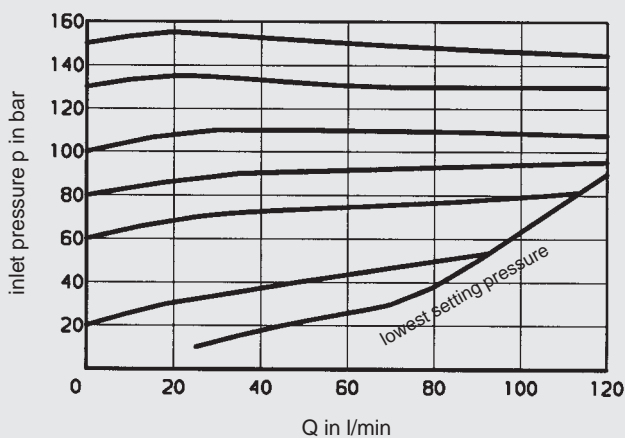
Max. permissible contamination level of the operating fluid to ISO 4406 class 21/19/16 (NAS 1638 class 10). We therefore recommend a filter with a minimum retention rate of $\beta_{20} = 100$.

The fitting of filters and regular replacement of elements ensures correct functioning, reduces wear & tear and increases the service life.

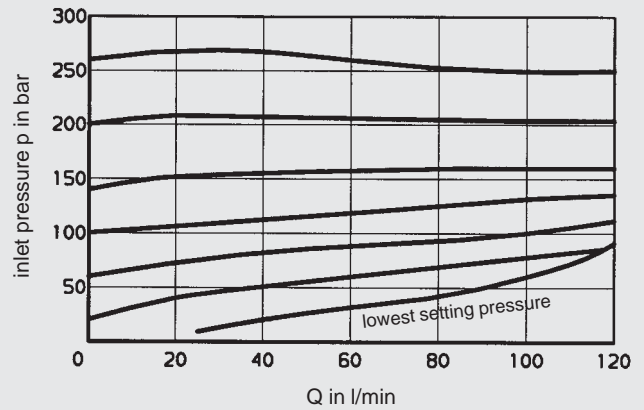
2.2.7 Pressure, dependent on flow rate

measured at $v = 28 \text{ mm}^2/\text{s}$ and $t_{\text{oil}} = 50 \text{ °C}$

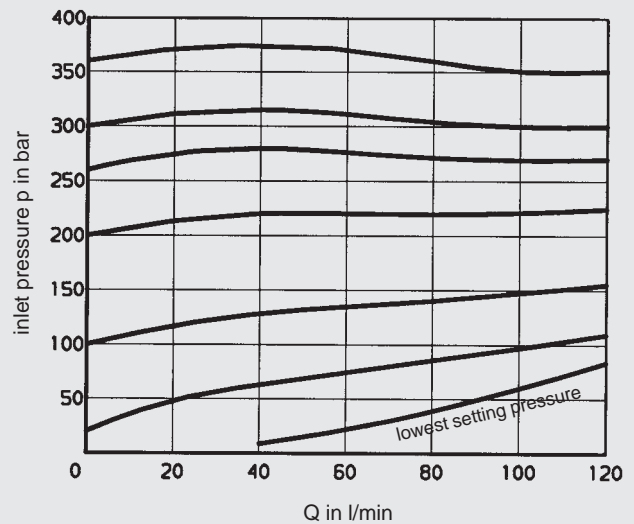
Pressure range . . . 150 bar



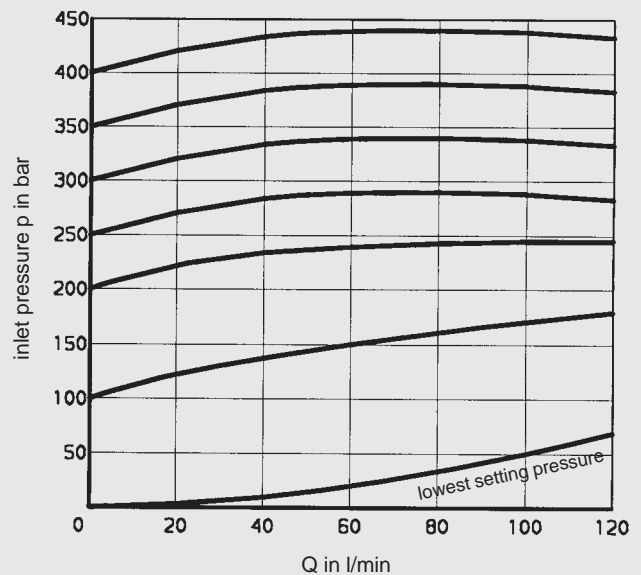
Pressure range . . . 250 bar



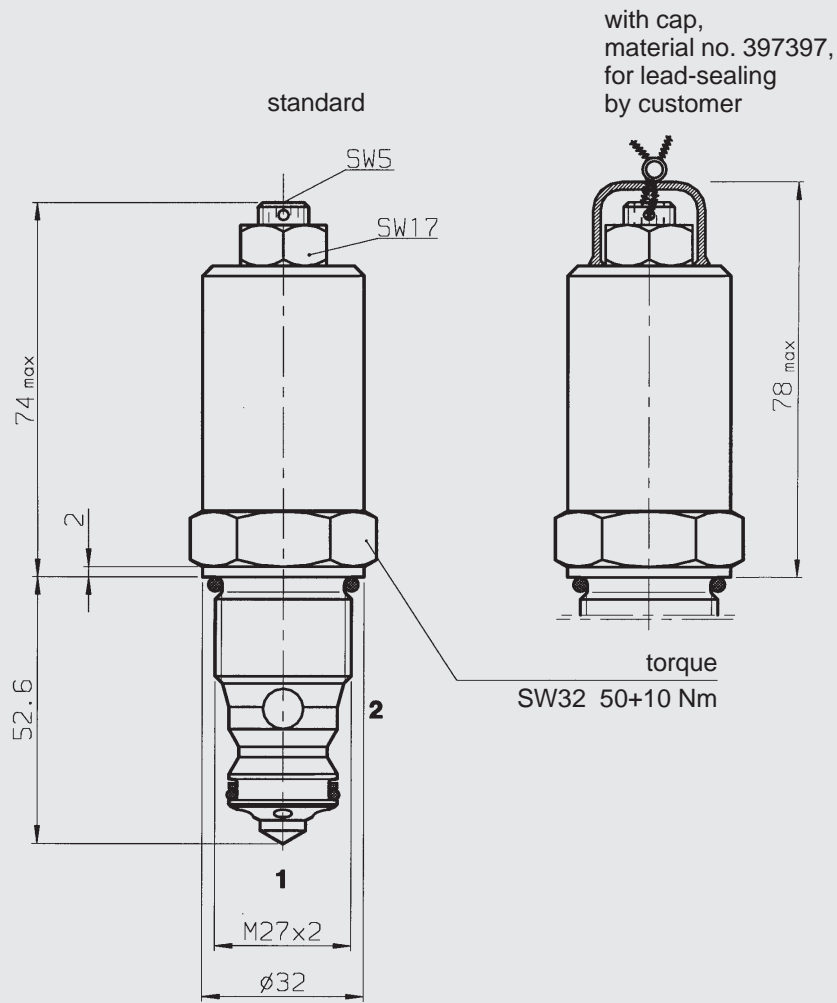
Pressure range . . . 350 bar



Pressure range . . . 420 bar

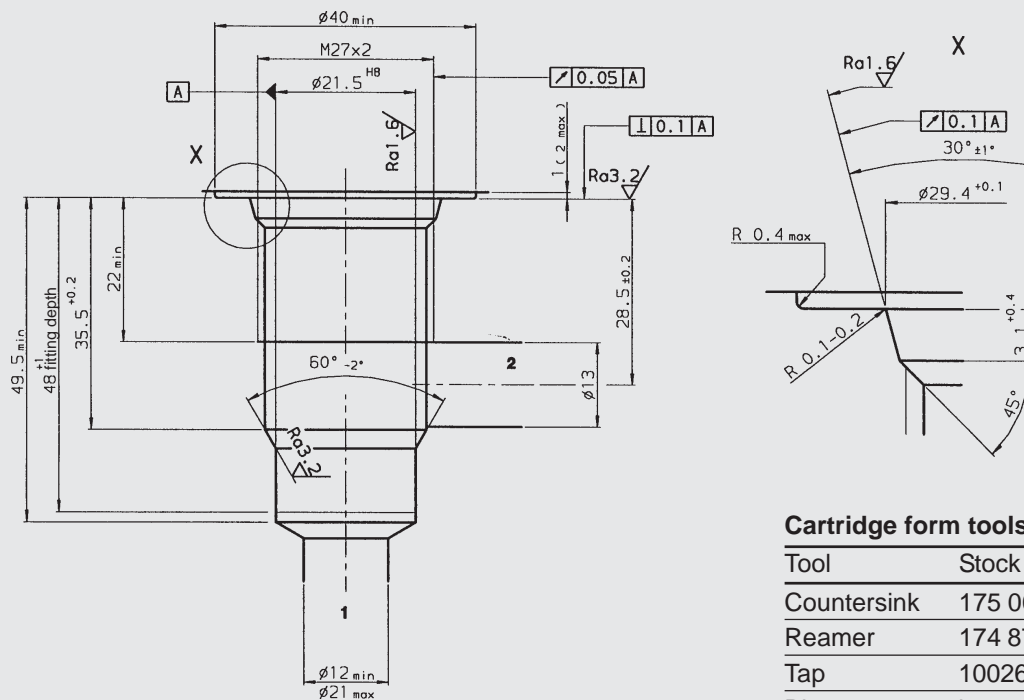


3. DIMENSIONS DB12



CAVITY DIMENSIONS 12120A (TO ISO 7789)

Geometry



Cartridge form tools

Tool	Stock no.
Countersink	175 002 / 162 128
Reamer	174 874
Tap	1002625
Plug gauge	in preparation

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.