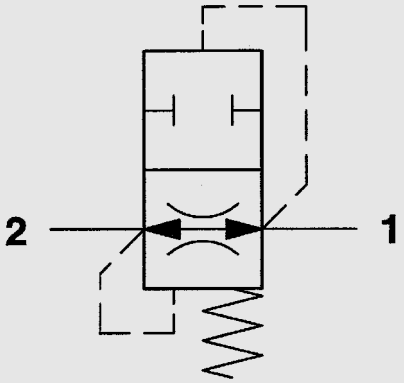
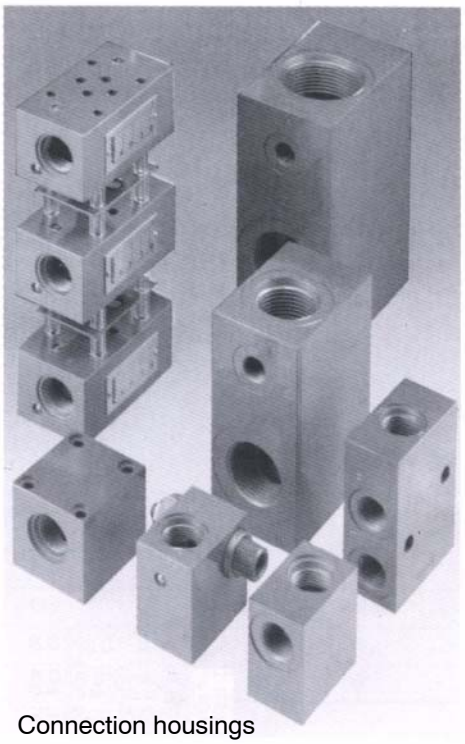
HYDAC INTERNATIONAL

Hose Break Valves
RBE



up to 350 bar
up to 150 l/min



Connection housings

E 5.174.9/06.03

1. DESCRIPTION

1.1. GENERAL

HYDAC hose break valves are flow operated flat seat valves which prevent undue and uncontrolled movement in the user unit in the event of hose breaks.

Special advantages are:

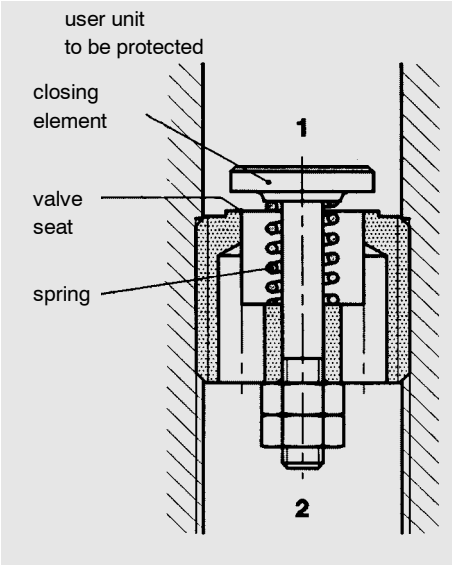
- high safety due to fast response
- compact construction enables direct mounting into cylinders
- unauthorised adjustment impossible when valve is built in
- in accordance with relevant accident prevention regulations
- four sizes mean optimum system adaptation
- suitable for a variety of pipe dimensions due to different connection housings

1.2. FUNCTION

During normal operating conditions HYDAC hose break valves are in the open position. The closing element is kept in the open position by a spring, as long as the spring force is greater than the force acting on the closing element which is caused by the flow resistance during flow from 1 to 2. The valve remains open and allows flow in both directions. If the flow rate from 1 to 2 exceeds the pre-set value of the valve, the spring force is overcome by the increase in the flow rate resistance and the closing element is pushed abruptly onto the valve seat.

The seal between the closing element and the valve seat is more or less leak-free. Any leakage around the valve thread can be prevented by using a thread sealant.

The valve opens automatically by pressure being applied to port 2 when P2 > P1. The actuating flow rate of the valve can be adjusted by changing dimension ”h” (see 2.2.8. Setting the valve).



1.3. APPLICATIONS

HYDAC hose break valves are used to prevent undue and uncontrolled movement of a loaded user unit in the event of pipe breaks, for example during a hose break on a gravity type cylinder. For this purpose the valve is fitted between the user unit and the line to be protected. This can be done by fitting the cartridge valve directly into the port of the cylinder (RBE...) or, when using inline valves, by fitting port 1 of the valve directly to the cylinder.

Particularly suitable for:

- elevating platforms
- scissor lifts
- bridge cranes
- fork lifts
- other safeguards, also in accordance with relevant accident prevention regulations.

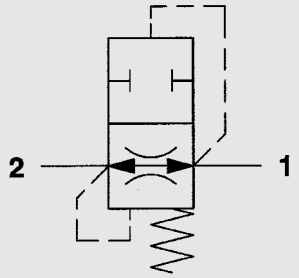
1.4. RECOMMENDATIONS

- Hose break valves, type RBE must only be used to safeguard user units in the event of hose breaks. They must not be used as switching valves for repeated closing actions.
- If closing actions occur during normal operation, the setting of the hose break valve is not suitable for the operating parameters of the system. The hose break valve must be replaced by a new one with a modified setting.
- In order to prevent hose break valves reacting to flow rate fluctuations inherent in the system, e.g. due to switching of directional valves, the actuating flow rate should be at least 20 % above the normal system flow rate. If high viscosity fluctuations occur, the valves must be set to a higher actuating flow rate to ensure trouble-free operation at high viscosity. However, the valves must still react at low viscosity. Since this range depends largely on the system, in which the operational flow rate fluctuations can also depend on viscosity, the appropriate setting value is best determined on site.
- After hose breaks it is recommended that the hose break valve is replaced.

2. TECHNICAL SPECIFICATIONS

2.1. GENERAL

2.1.1. **Designation and hydraulic symbol**
Hose break valve
1: user unit to be protected



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

RBE - R 3/8 - X - 50

Hose break valve

Size of connection
(see point 3.)
R1/4
R3/8
R1/2
R3/4

Series
(Determined by manufacturer)

Actuating flow rate
R 1/4 4 - 25 l/min
R 3/8 6 - 50 l/min
R 1/2 12 - 75 l/min
R 3/4 25 -150 l/min
Standard = max. actuating flow rate
See 2.1.3.

Standard models:

Material no. (= Order no.)	Model code
710025	RBE - R1/4-X- 25
710026	R3/8-X- 50
710028	R1/2-X- 75
710029	R3/4-X-150

Please quote material number when ordering.
Delivery for non-standard models is longer and the price is higher.

2.1.3. **Note on model code**
The valves are normally supplied with the setting at maximum actuating flow rate. Accurate setting is possible by means of the setting graphs (see point 2.2.8. Setting the valve). If setting is required to be carried out by the manufacturer, the actuating flow rate (in l/min) must be stated when ordering. This setting is based on a slow increase of the flow rate at a kinematic viscosity of the hydraulic oil of 34 mm^2/s.

2.1.4. **Type of construction**
Flat seat valves

2.1.5. **Mounting type**
RBE ... cartridge valve

2.1.6. **Weight RBE**
R 1/4"- 9 g
R 3/8"- 16 g
R 1/2"- 31 g
R 3/4"- 57 g

2.1.7. **Mounting position**
optional

2.1.8. **Flow rate**
2-1 free flow
1-2 effective flow direction, valve closes when the pre-set actuating flow rate is exceeded

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

2.1.10. **Type of connection**
Suitable connection housings with corresponding installation dimensions are available.
See separate housing brochure no. E 5.252../..

Connection size	Installation dimension
R 1/4	05520
R 3/8	08520
R 1/2	10520
R 3/4	12520

2.2. HYDRAULIC DETAILS

2.2.1. Working pressure range
Nominal pressure
PN = 350 bar = p_{max}
p_{min} = 10 bar

2.2.2. Actuating flow rate ranges
R 1/4: 4 - 25 l/min
R 3/8: 6 - 50 l/min
R 1/2: 12 - 75 l/min
R 3/4: 25 -150 l/min

2.2.3. Operating fluid
Hydraulic oil to DIN 51524, part 1 and part 2

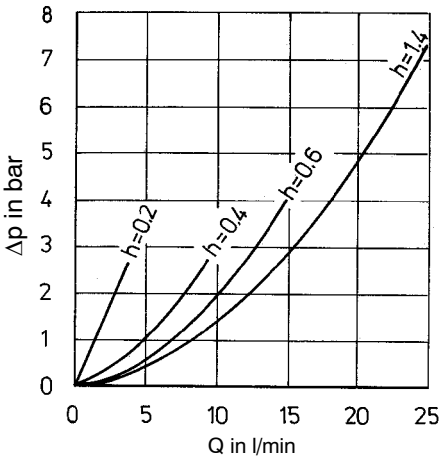
2.2.4. Temperature range of medium
min. - 20 °C
max. + 80 °C

2.2.5. Viscosity range
min. 10 mm²/s
max. 380 mm²/s

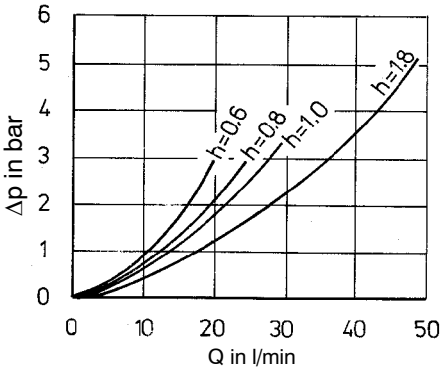
2.2.6. Filtration
Maximum permissible contamination rate of the operating fluid to ISO 4406 class 21/19/16 (NAS 1638 class 10). We therefore recommend a filter with a minimum retention rate of $\beta_{20} \geq 100$.
The fitting of filters and regular replacement of elements guarantees correct functioning,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

2.2.7. Dp-Q Graphs
Pressure differential Dp depending on flow rate Q at different setting values "h" (mm), measured at ν = 34 mm²/s and t = 46 °C.

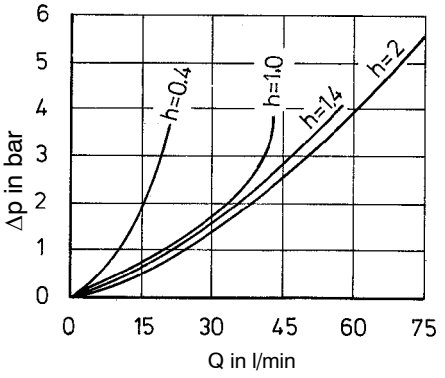
RBE-R1/4



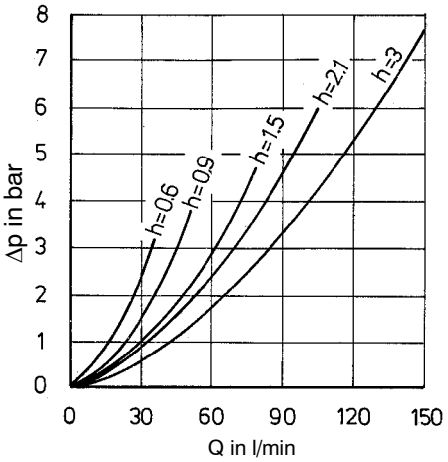
RBE-R3/8



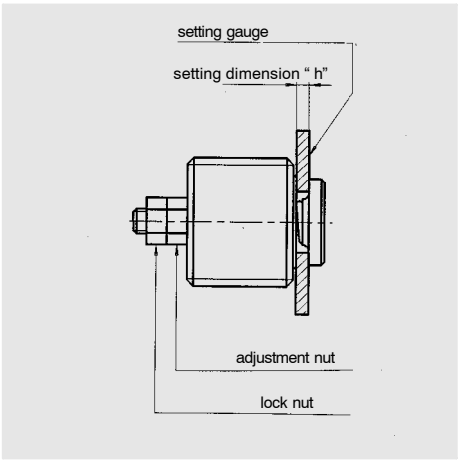
RBE-R1/2



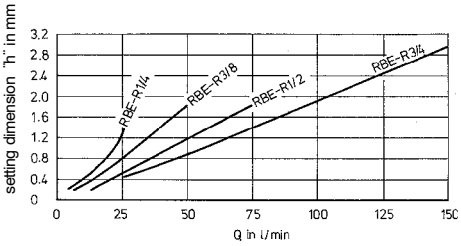
RBE-R3/4



2.2.8. Setting the valve
The actuating flow rate depends on the setting dimension "h". The setting is carried out as follows: loosen lock nut and adjust setting dimension "h" by means of the adjustment nut; this can be done with the help of setting gauges or appropriate fitter's gauge strips. After the adjustment has been made it must be secured by tightening the lock nut.



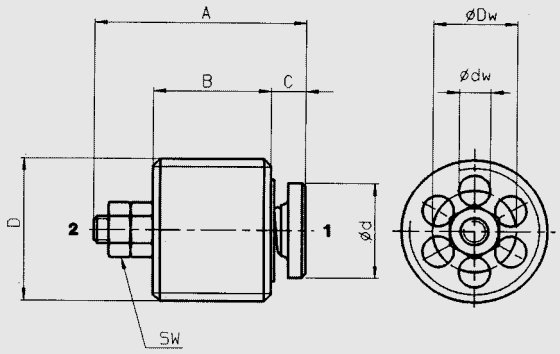
Setting graphs
measured at ν = 34mm²/s



The setting graphs are approximate values for a slow increase of the flow rate and a kinematic viscosity of the hydraulic oil of 34 mm²/s.

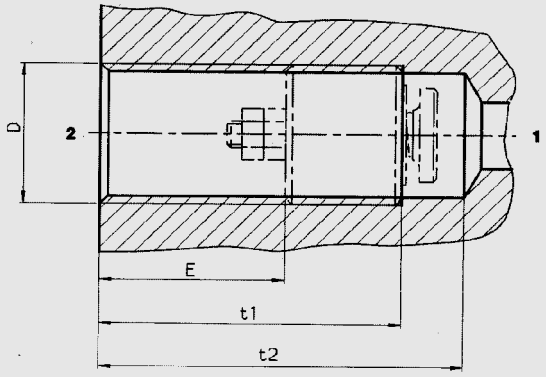
3. Dimensions

Cartridge



Type	D	A	B	C	Ød	SW	$ØD_w$	$Ød_w$
RBE R1/4-X-...	R1/4"	21	11.5	3.5	9.5	5	8	2.5/5
RBE R3/8-X-...	R3/8"	23.5	13.5	5	12	5.5	10	3.5/6
RBE R1/2-X-...	R1/2"	30.5	17	5.5	14	7	12	4.5/8
RBE R3/4-X-...	R3/4"	38	23.5	6.5	18	7	16	6.5/9

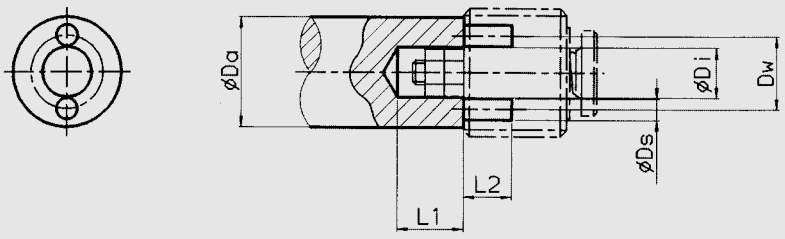
Installation dimensions



Type	D	E	$t_1 \pm 0.5$	t_{2min}
RBE R1/4-X-...	R1/4"	20.5	32	38
RBE R3/8-X-...	R3/8"	22.5	36	44
RBE R1/2-X-...	R1/2"	27	44	53
RBE R3/4-X-...	R3/4"	27.5	51	61

The installation dimensions shown in the table are minimum values for pipe fittings and male adaptors to DIN 3852.

Assembly tool



Type	$Da_{max.}$	Dw	Di	Ds	L_{1min}	L_{2max}
RBE R1/4-X-...	11.5	8	5.8	2	9	5
RBE R3/8-X-...	15	10	6.5	3	9	6
RBE R1/2-X-...	18	12	8.2	3.5	11	8
RBE R3/4-X-...	24	16	8.5	6	12	8

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.