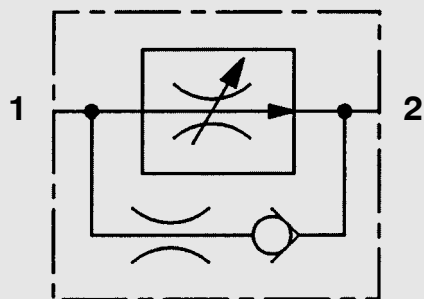


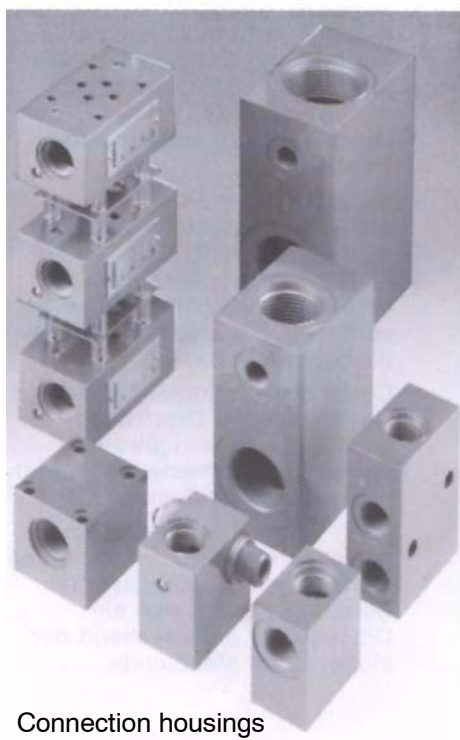
## Pressure Compensated Flow Control Valves Cartridge Type SRE



up to 350 bar  
up to 97 l/min



Cartridge valve



Connection housings

# 1. Description

## 1.1. GENERAL

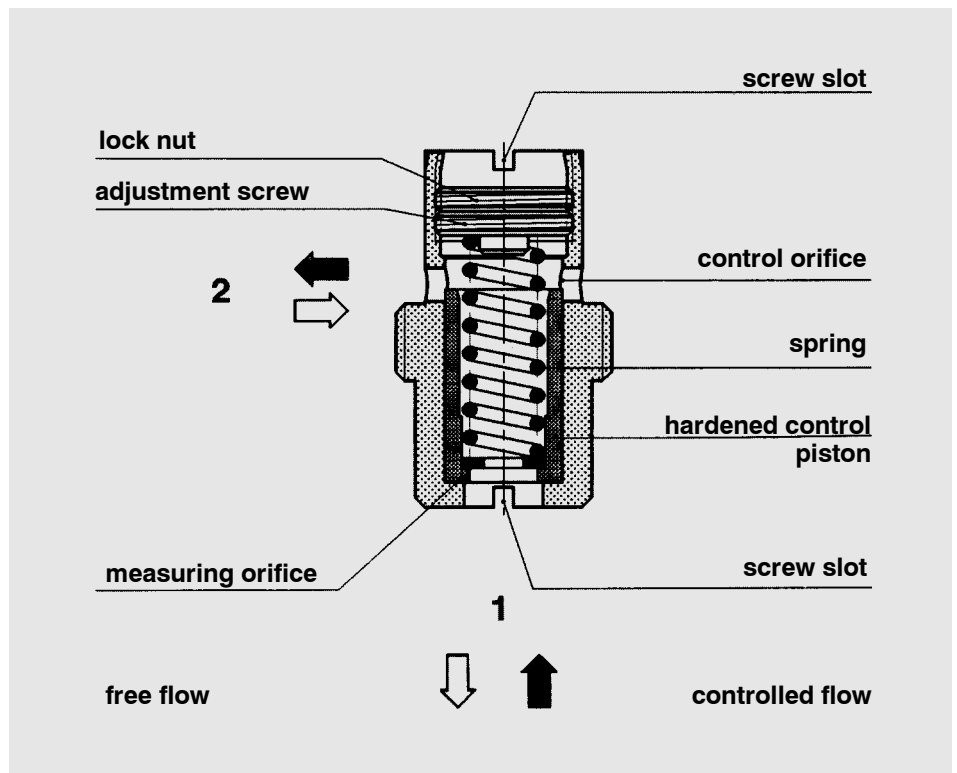
HYDAC pressure compensated flow control valves, type SRE, are, in accordance with DIN-ISO 1219, valves for oil-hydraulic systems which maintain a constant emerging flow by means of a control process.

The flow rate is largely independent of the pressure.

The flow rate is determined by a fixed orifice (measuring orifice) and can be adjusted over a certain range.

Distinct advantages are:

- unauthorised adjustment not possible since it is not accessible once it is fitted
- compact design allows space-saving installation in connection housings, control blocks, etc.
- mounting position optional
- range of connection housings available for adaptation to a multitude of applications
- change of control direction by reversing the unit
- four sizes means optimum system adaptation
- simple assembly due to service-friendly cartridge valve technology



## 1.2. FUNCTION

HYDAC pressure compensated flow control valves, type SRE, are fixed orifice valves with back-up differential pressure regulator for oil-hydraulic systems.

The differential pressure regulator (compensating piston) basically consists of a control piston, spring, control orifice and the adjustment screw to adjust the control pressure differential.

The measuring orifice determines the flow adjustment range.

Flow from 1 to 2 creates a pressure drop across the measuring orifice. The piston moves so that its control position is in equilibrium with the force of the pressure drop, multiplied by the control piston area, and the spring force.

As the flow rate increases, i. e. increasing pressure drop, the diameter of the control orifice is reduced in accordance with the increased pressure drop, until a force equilibrium exists.

Due to the continuous adjustment of the compensating piston in accordance with the prevailing pressure drop, a constant flow in control direction 1 → 2 is ensured.

In the reverse direction 2 → 1 the flow is free. The pressure drop is determined by the measuring orifice.

## 1.3. APPLICATION

HYDAC pressure compensated flow control valves, type SRE, are particularly suitable for controlling the speed of hydraulic cylinders and motors, irrespective of the pressure, and for limiting and controlling oil flows. During pump operation, the unused pump flow is fed back to the tank via a pressure relief valve.

Particularly suitable applications are:

- fork-lifts
- elevating platforms
- lift tables
- tail lifts to limit the max. speed of the loading device in accordance with current accident prevention regulations
- flow rate controls for control oil circuits in main or secondary flows
- general flow control functions in hydraulic systems.

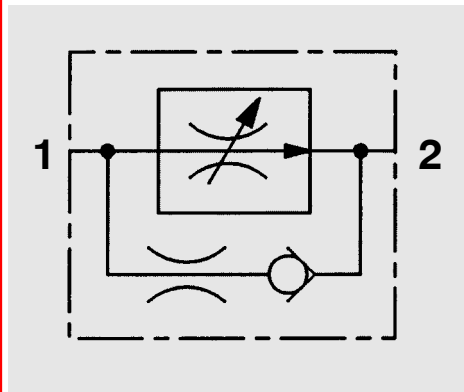
## 1.4. NOTES

- When fitting the valves into control blocks and housings the recommended torque ratings and the control direction must be taken into account! (see point 3.1.)
- In order to avoid resetting the flow rate when fitting the valve, only the screw slots provided must be used
- If the required control pressure differential is not reached, the valve operates as a speed control valve
- In applications with high dynamic load and high cyclic conditions, the particular application specifications of the valves must be taken into account, and must be clarified with the manufacturer at the design stage.

## 2. TECHNICAL SPECIFICATIONS

### 2.1. GENERAL

#### 2.1.1. Designation and symbol Pressure compensated flow control valve



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

**SRE 1 - G1/4 - 01 X / 3.8 - 4**

#### Flow control valve

#### Size

- 1 up to 10 l/min
- 2 up to 20 l/min
- 3 up to 48 l/min
- 4 up to 97 l/min

#### Cartridge thread size

- G 1/4...SRE1
- G 3/8...SRE2
- G 1/2...SRE3
- G 3/4...SRE4

(metric threads on request)

#### Type

01 = technical specifications as per this brochure

#### Series

(determined by manufacturer)

#### Flow rate factor

(see also point 2.2.8)

#### Flow rate setting value (l/min)

- if no details are specified, the valve is not set, but the flow rate is within the setting range i.e. VK 3.8 = flow rate is between 3.8 and 4.8 l/min
- if a flow rate setting is required, please indicate value when ordering. Delivery for pre-set valves is longer and the price is higher.

#### Standard types

Stock. no. (= order no.)	Model code
717583	SRE1-G1/4-01X/1.6
710355	SRE1-G1/4-01X/3.8
710351	SRE1-G1/4-01X/6.6
717586	SRE2-G3/8-01X/2.9
717588	SRE2-G3/8-01X/9
717590	SRE2-G3/8-01X/15
717689	SRE3-G1/2-01X/7
717691	SRE3-G1/2-01X/15.5
717693	SRE3-G1/2-01X/26
717825	SRE4-G3/4-01X/70
479390	SRE4-G3/4-01X/88

Please quote stock number when ordering.

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

#### 2.1.3. Type of construction

Fixed orifice valve with back-up differential pressure regulator. Control pressure differential adjustable.

#### 2.1.4. Type of mounting

Cartridge valve

#### 2.1.5. Mounting position

Optional  
The installation direction determines the direction of the controlled flow (1 → 2)  
(See also point 3.2.)

#### 2.1.6. Weight

- SRE 1... 13 g
- SRE 2... 25 g
- SRE 3... 49 g
- SRE 4...112 g

#### 2.1.7. Flow direction

From 1 to 2 controlled flow  
From 2 to 1 throttled reverse flow

#### 2.1.8. Ambient temperature range

min. - 20 °C  
max. + 80 °C

#### 2.1.9. Materials

Valve body: free-cutting steel  
Control piston: hardened and ground steel

#### 2.1.10. Type of connection

Suitable connection housings with appropriate cavities are available. See separate housing brochure No. E 5.252../..

Size	Threaded connection	Installation dimensions
SRE1	G 1/4	05520
SRE2	G 3/8	08520
SRE3	G 1/2	10520
SRE4	G 3/4	12520

## 2.2. □ HYDRAULIC DETAILS

### 2.2.1. Nominal pressure

$p_N = 350$  bar  
on all ports  
 $\Delta p_{max} 2 \rightarrow 1: 250$  bar

### 2.2.2. Working pressure range

$\Delta p =$  the required control  
pressure differential  $p_1 - p_2$   
(see point 2.2.8.)

If the differential pressure is lower  
the valve operates as a speed  
control valve.

$p_{1max.} = 350$  bar

### 2.2.3. Operating fluid

Hydraulic oil to DIN 51524,  
parts 1 and 2.

### 2.2.4. Fluid temperature range

min.  $-20$  °C  
max.  $+80$  °C

### 2.2.5. Viscosity range

min.  $2.8$  mm<sup>2</sup>/s  
max.  $380$  mm<sup>2</sup>/s

### 2.2.6. Filtration

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

The installation of a filter and the  
regular replacement or cleaning  
of the filter element ensures the  
correct functioning of the valves,  
reduces wear and tear and  
increases the service life.

### 2.2.7. Flow setting

The flow setting can only be adjusted before the valve is installed.

To change the flow rate setting, the lock nut must be unscrewed.

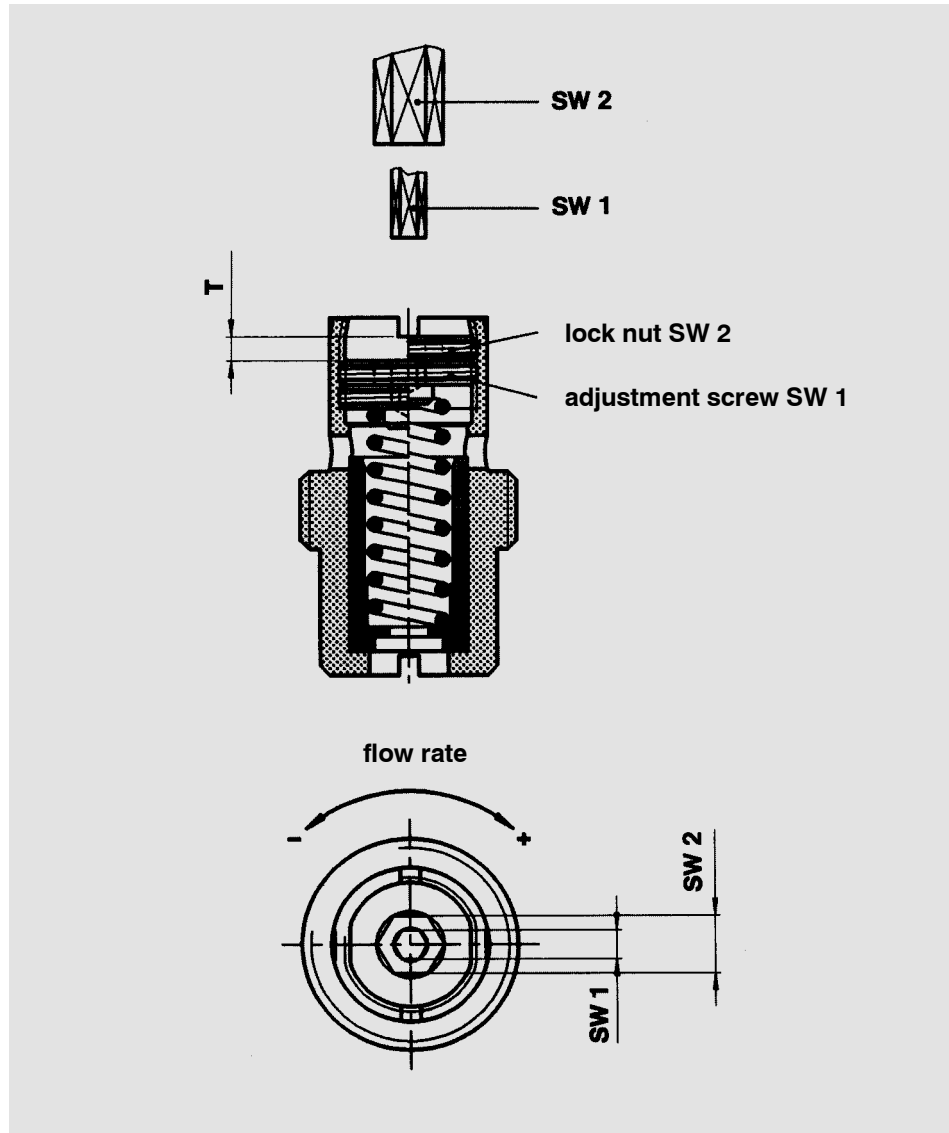
Turn the adjustment screw in the appropriate direction  
(+ increase flow; - reduce flow) to adjust the flow rate.

Subsequently, the adjustment screw is secured by means of the lock nut.

#### Please note:

The edging on both sides of the valve body limits the adjustment range.

Do not force the lock nut past the adjustment limit.



	SW 1	SW 2	adjustment range T approx. (mm)
SRE 1	2	4	1
SRE 2	3	6	2.5
SRE 3	3	6	3
SRE 4	4	6	3

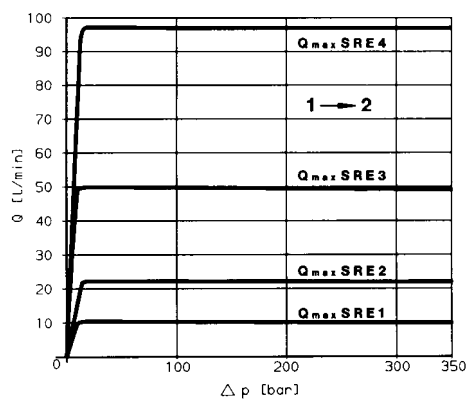
## 2.2.8. Flow rate

Size	Flow rate factor VK	Flow rate adjustment range (l/min)	Required control pressure differential (bar) $\Delta p = (p_1 - p_2)$
SRE 1	0.6	0.6 - 0.7	10 - 12
	1	1.0 - 1.3	10 - 12
	1.6	1.6 - 2.1	10 - 12
	2.3	2.3 - 3.0	10 - 12
	3.8	3.8 - 4.8	10 - 15
	6.6	6.6 - 8.6	10 - 15
SRE 2	1	1.0 - 1.5	8 - 15
	1.5	1.5 - 2.4	8 - 15
	2.9	2.9 - 4.6	8 - 15
	5	5.0 - 7.5	10 - 15
	9	9.0 - 13.0	12 - 18
SRE 3	1.7	1.7 - 2.1	8 - 12
	2.8	2.8 - 3.8	8 - 12
	4.5	4.5 - 5.5	8 - 15
	7	7.0 - 9.2	8 - 15
	10	10.0 - 12.5	8 - 15
	15.5	15.0 - 18.0	8 - 15
	26	25.5 - 30.0	8 - 15
SRE 4	35	35.0 - 42.0	10 - 18
	27	27.0 - 29.4	12 - 15
	40	40.0 - 42.9	12 - 15
	46	46.0 - 49.9	12 - 15
	55	55.0 - 59.9	13 - 17
	70	70.0 - 78.9	15 - 18
	88	88.0 - 97.0	18 - 21

The above flow rate values are standard values.  
Different flow rate values are available within the range 0.3 - 97 l/min.  
Standard manufacturer's setting is at  $\Delta p=100$  bar

## 2.2.9. Flow rate, dependent on pressure

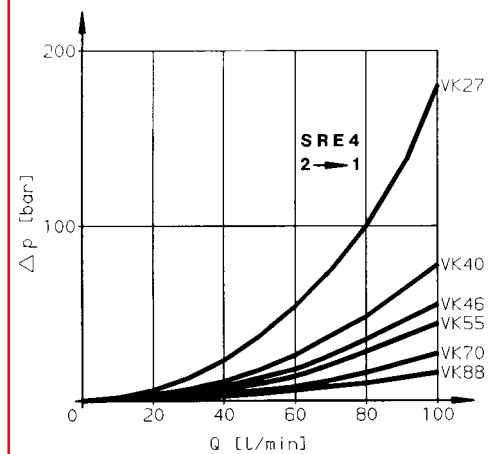
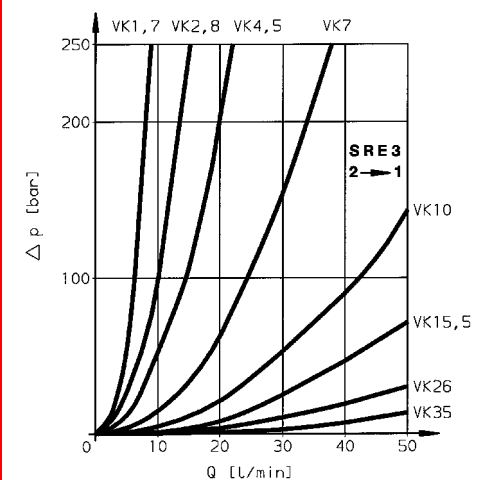
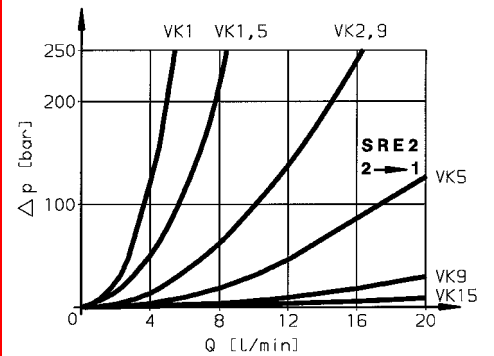
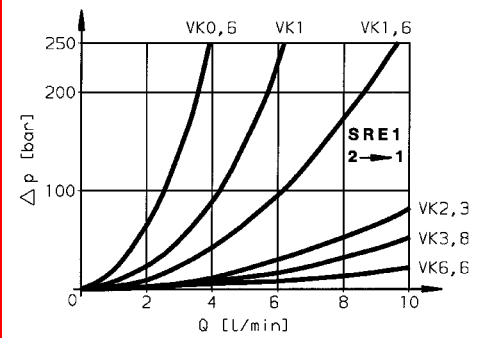
Q- $\Delta p$  graph  
measured at  $v = 72 \text{ mm}^2/\text{s}$  and  
 $t_{\text{oil}} = 30 \text{ }^\circ\text{C}$



## 2.2.10. $\Delta p$ -Q graph

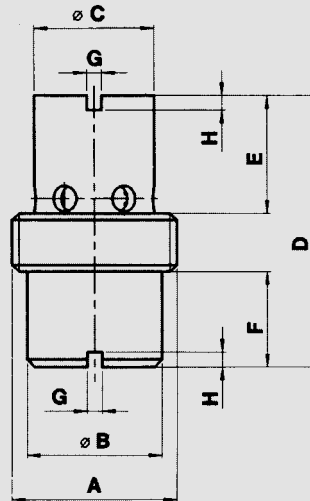
Pressure differential  $\Delta p$   
dependent on flow rate Q  
measured at  $v = 72 \text{ mm}^2/\text{s}$  and  
 $t_{\text{oil}} = 30 \text{ }^\circ\text{C}$

VK= flow rate factor  
 $\Delta p_{\text{max}} 2 \rightarrow 1: 250 \text{ bar}$



### 3. DIMENSIONS

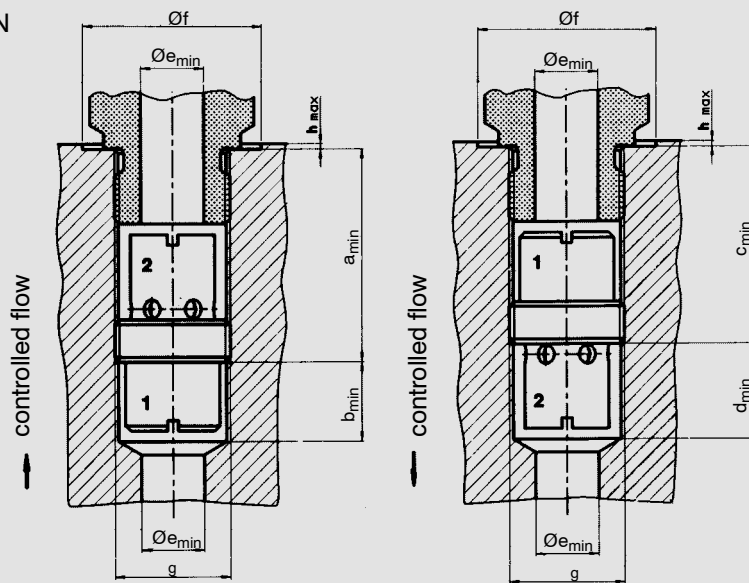
#### 3.1. CARTRIDGE VALVE



**Torque**  
 SRE1 3 - 5 Nm  
 SRE2 5 - 8 Nm  
 SRE3 8 - 12 Nm  
 SRE4 12 - 18 Nm

Size	A	ØB	ØC	D	E	F	G	H
SRE1	G 1/4	11.0	10.0	26.0	14.0	6.5	1.5	1.5
SRE2	G 3/8	14.0	13.0	30.0	14.5	9.5	1.5	1.5
SRE3	G 1/2	18.0	16.0	37.0	16.0	13.0	2.0	2.0
SRE4	G 3/4	23.0	20.0	51.0	21.0	20.0	4.0	2.0

#### 3.2. INSTALLATION DIMENSIONS



Size	a min.	b min.	c min.	d min.	Øe min.	Øf	g	h max.
SRE1	33.0	9.0	26.0	16.0	5.0	25.0	G 1/4	1.5
SRE2	34.0	11.5	30.0	16.5	7.0	28.0	G 3/8	2
SRE3	40.0	15.0	37.0	18.0	10.0	34.0	G 1/2	2.5
SRE4	51.0	24.0	51.0	24.0	12.0	42.0	G 3/4	2.5

The installation dimensions listed above are minimum values for pipe threads and male threads to DIN 3852

#### 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.