

RE 18 139-02/11.02

Replaces: 07.01

**2/2-way proportional valve
(cartridge valve), direct operated
Type KKDSR1**

Build size 1

Cavity: T-13A

Maximum operating pressure 350 bar

Maximum flow

(see technical data on page 4)



H/A/D 6726

Type KKDSR1NA/HC...

Overview of contents**Contents**

| Contents | Page |
|---|------|
| Features | 1 |
| Ordering details, preferred types, electrical connections | 2 |
| Function, section, symbol | 3 |
| Technical data | 4 |
| Characteristic curves | 5, 6 |
| Unit dimensions, cavities | 7 |
| Available individual components | 8 |

Features

- Direct operated proportional valve for the controlling the direction and size of a flow
- Operated via a proportional solenoid with central thread and removable coil
- Rotable solenoid coil
- Flow can pass in both directions
- With protected hand override, optional
- Control electronics: VT-MSPA1-50-1X



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Ordering details

| | | | | | | | | |
|-------------|----------|----------|--|--------------|----------|--|--|----------|
| KKDS | R | 1 | | A / H | C | | | V |
|-------------|----------|----------|--|--------------|----------|--|--|----------|

Direct operated proportional directional control valve

Max. operating pressure 350 bar = **R**

Build size = **1**

V = FKM seals

K4 = ISO 4400 ²⁾

N0 = Without hand override

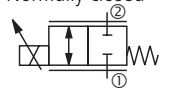
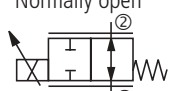
N9 = Protected hand override

G24 = 24 V DC

C = Wet pin DC solenoid with removable coil

H = High performance and T-xxA cavity

A = Series

| Cavity ¹⁾ | Pressure 350 bar | Symbols | Actuator connections |
|----------------------|---------------------|--|----------------------|
| | $q_v = L/min$ | | |
| T-13A | 35 ①→② 30 ②→① | Normally closed  | = N |
| | 32 ①→② 50 ②→① | Normally open  | = P |

¹⁾ See page 7

²⁾ Without plug-in connector!

Plug-in connector must be ordered separately (see below)

Preferred types

| Material No. | Type |
|--------------|---------------------|
| R900742635 | KKDSR1NA/HCG24N0K4V |
| R900767876 | KKDSR1PA/HCG24N0K4V |

Plug-in connectors

| | Without circuitry Material No. |
|--|-----------------------------------|
| K4 to DIN EN 175 301-803 and ISO 4400; For further technical details see RE 08006 | R900074684 |

Function, section, symbol

General:

The 2/2-way proportional valve is a direct operated cartridge spool valve. It controls the flow in proportion to the input signal steplessly from 1 to 2 and from 2 to 1.

Design:

The valve basically comprises of:

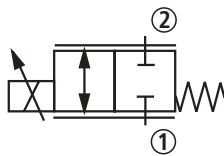
- Bush (6) with an external thread for the cavity
- Sleeve (3)
- Control spool (5) with compression spring
- Proportional solenoid (7) with central thread and removable spool

Functional description (version „N“ – normally closed):

- With a de-energised solenoid (7) the control spool (5), due to the design the adjustment forces are always pressure balanced, is held in the off-set position by the spring (8) and therefore blocks the flow between 1 and 2.
- By energising the solenoid (7) the control spool (5) is moved, this movement is directly proportional to the electrical input signal, and via orifice type cross-sections connects ports 1 and 2 with progressive flow characteristics.
- By de-energising the solenoid (7) the control spool (5) is returned to the initial position by the spring (8).
- The hand override (4) makes it possible to switch the valve without energising the solenoid.

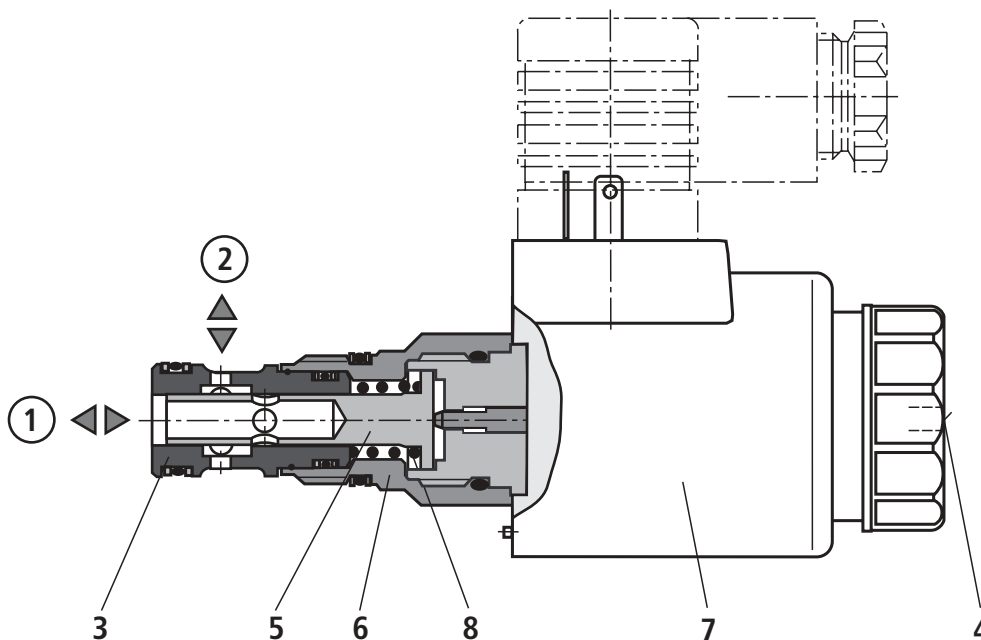
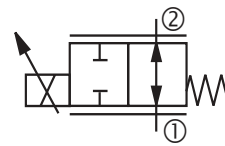
Symbol

Version „N“ – Normally closed



Symbol

Version „P“ – Normally open



Technical data (for applications outside these parameters, please consult us!)**General**

| | | |
|---------------------------|----|--------------|
| Installation | | Optional |
| Storage temperature range | °C | - 20 to + 80 |
| Ambient temperature range | °C | - 20 to + 70 |
| Weight | kg | 0.66 |

Hydraulic (measured with HLP 46, $\vartheta_{oil} = 40 \text{ °C} \pm 5 \text{ °C}$)

| | | |
|----------------------------------|--|---|
| Maximum operating pressure | bar | 350 |
| Maximum flow | N spool L/min | 35 ① → ②, 30 ② → ① |
| Jump response | 0 to 100 % N spool | ms < 35 |
| | at $p_s = 10 \text{ bar}$ 100 to 0 % N spool | ms < 40 |
| Maximum flow | P spool L/min | 32 ① → ②, 50 ② → ① |
| Jump response | 0 to 100 % P spool | ms < 40 |
| | at $p_s = 10 \text{ bar}$ 100 to 0 % P spool | ms < 50 |
| Pressure fluid | | Mineral oil (HL, HLP) to DIN 51 524; Other pressure fluids on request! |
| Pressure fluid temperature range | °C | - 20 to + 80 (preferably +40 to +50) |
| Viscosity range | mm ² /s | 20 to 380 (preferably 30 to 46) |
| Cleanliness class to ISO code | | Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (C) class 20/18/15 ³⁾ |
| Hysteresis | % | ≤ 5 |
| Reversal span | % | ≤ 2 |
| Response sensitivity | % | ≤ 1 |

Electrical

| | | |
|--|---------------------|--|
| Voltage type | | DC (other voltages on request!) |
| Max. solenoid current | A | 2.5 |
| Solenoid coil resistance | Cold value at 20 °C | Ω 2 |
| | Max. warm value | Ω 3 |
| Duty | % | 100 |
| Electrical connection | | With component plug to DIN EN 175301-803 |
| | | Plug-in connector CECC 75 301-803-A002FA-H3D08-G ¹⁾ |
| Maximum coil temperature ²⁾ | °C | 150 |
| Protection to DIN 40 050 | | IP 65 with mounted and fixed plug-in connector |

Electrical, control electronics

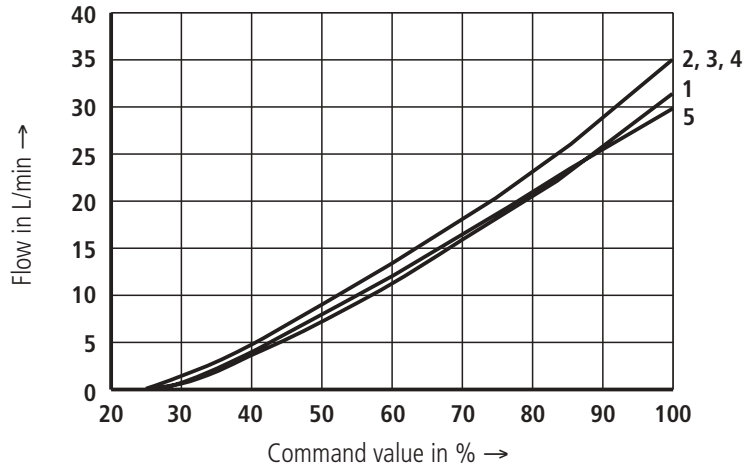
| | | |
|---|------------------------|-----------------------------|
| Amplifier of modular design ¹⁾ | | VT-MSPA1-50-1X to RE 30 225 |
| Supply voltage | Nominal voltage VDC | 24 |
| | Lower limiting value V | 21 |
| | Upper limiting value V | 35 |
| Command value | Voltage controlled V | 0 to +10 |
| Amplifier current consumption | I_{max} A | 1.8 |
| | Max. impulse current A | 3 |

¹⁾ Separate order²⁾ Due to the occurring surface temperatures of the solenoid coils the European standards EN563 and EN982 must be taken into account!³⁾ The cleanliness class stated for the components must be adhered too in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life. For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

With electric connections, the protective conductor (PE \perp) must be connected according to the relevant regulations.

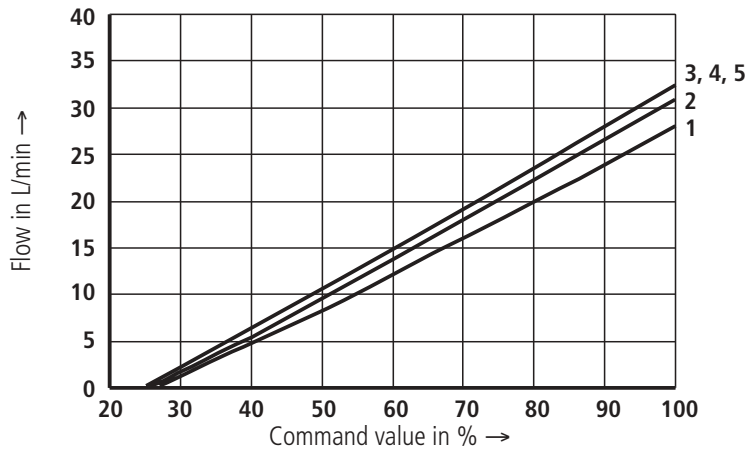
Characteristic curves (measured with HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

Flow direction
1 → 2
N - Spool



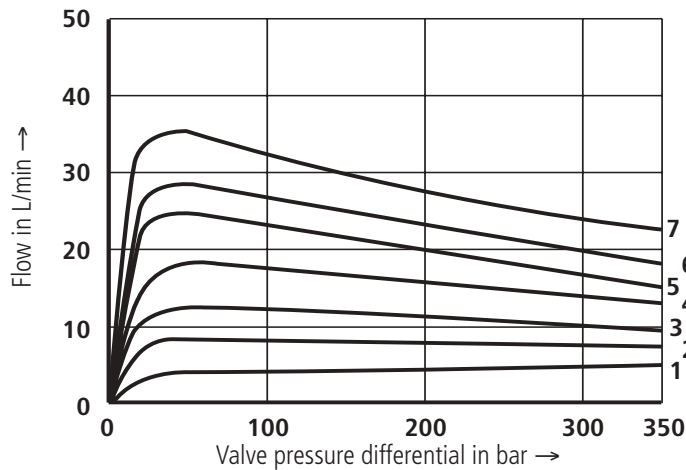
- 1 $\Delta p = 10\text{ bar constant}$
- 2 $\Delta p = 20\text{ bar constant}$
- 3 $\Delta p = 30\text{ bar constant}$
- 4 $\Delta p = 50\text{ bar constant}$
- 5 $\Delta p = 100\text{ bar constant}$

Flow direction
2 → 1
N - Spool



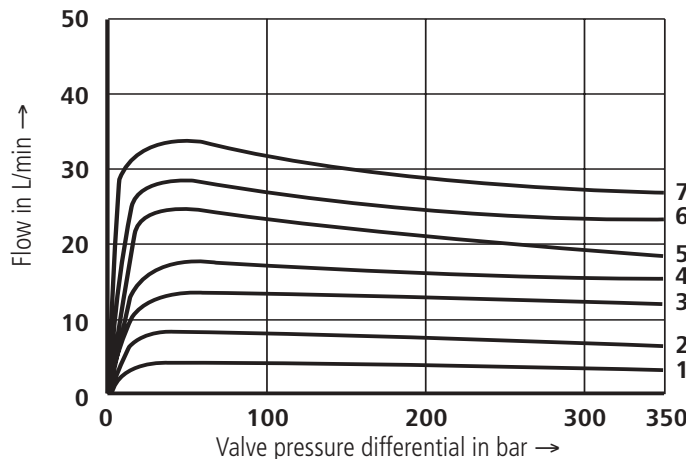
Performance limits (measured with HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

Flow direction
1 → 2
N - Spool



- 1 Com. value = 40%
- 2 Com. value = 50%
- 3 Com. value = 60%
- 4 Com. value = 70%
- 5 Com. value = 80%
- 6 Com. value = 90%
- 7 Com. value = 100%

Flow direction
2 → 1
N - Spool

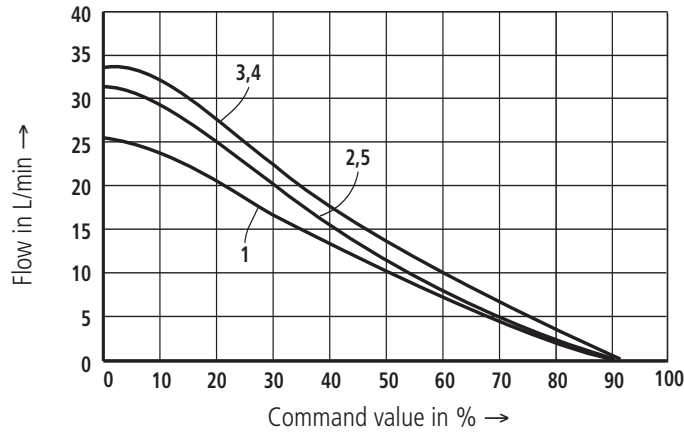


Characteristic curves (measured with HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

Flow direction

1 → 2

P - Spool

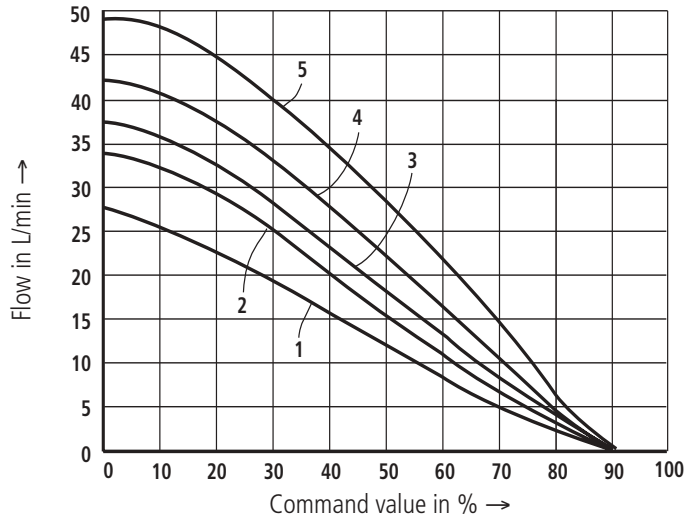


- 1 $\Delta p = 10$ bar
- 2 $\Delta p = 20$ bar
- 3 $\Delta p = 30$ bar
- 4 $\Delta p = 50$ bar
- 5 $\Delta p = 100$ bar

Flow direction

2 → 1

P - Spool

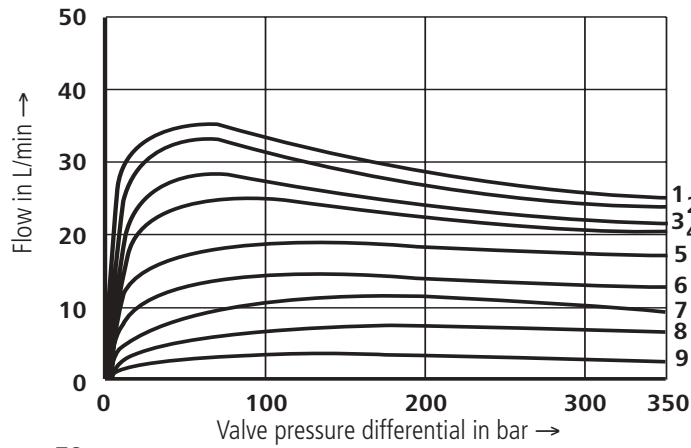


Performance limits (measured with HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

Flow direction

1 → 2

P - Spool

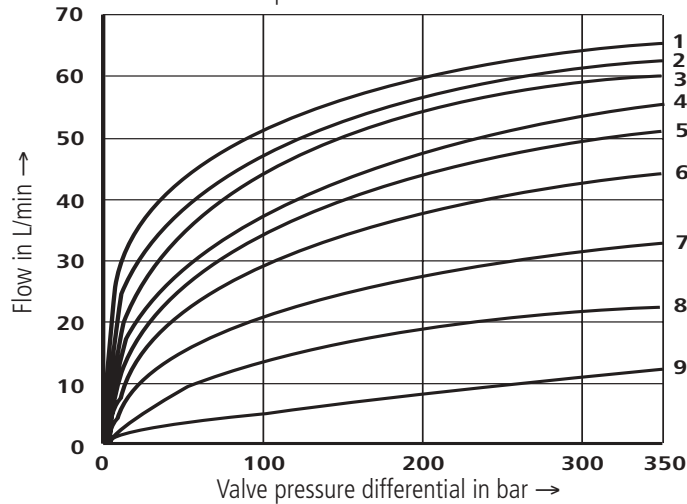


- 1 Com. value = 0%
- 2 Com. value = 10%
- 3 Com. value = 20%
- 4 Com. value = 30%
- 5 Com. value = 40%
- 6 Com. value = 50%
- 7 Com. value = 60%
- 8 Com. value = 70%
- 9 Com. value = 80%

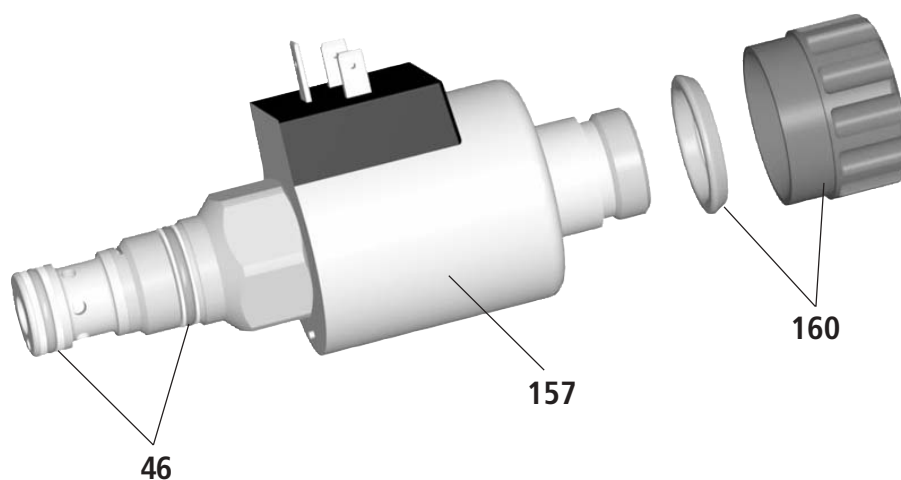
Flow direction

2 → 1

P - Spool



Available individual components



| Pos. | Description | Material No. |
|------|-----------------------------------|--------------------------|
| 157 | Coil for individual connection K4 | R900021563 |
| 160 | Nut O-ring for pole tube | R900029574 R900071532 |
| 46 | Valve seal kit | R900733593 |

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