

# 2/2 way directional seat valve

# 3/2 way directional seat valve

# NG3 and NG6 for water oil and air

- Protection against Inadvertent operation
- Operating solenoid protected against dirt and humidity
- Operating elements can each be rotated trough 90°
- Wear parts easily accessible and can be replaced quickly

# **Application**

The valves are used for water and oil hydraulic Systems. They con also be used as Pilot valves.

#### Technical data:

# Type

Directly controlled ball seated valve

#### Connections

Plate mounting with 'O' ring seal on request, available with connection plate, connection thread: NG 3 = R  $\frac{1}{4}$ " or  $\frac{1}{4}$ " NPT NG 6 = R  $\frac{3}{8}$ " or  $\frac{3}{8}$ " NPT

# Medium

0il and water; to be specially indicated in the Order.

#### Viscosity range

2 10 <sup>-6</sup> m<sup>2</sup> to 300 10 <sup>-6</sup> m<sup>2</sup> (1 to 300 cSt)

#### **Ambient temperature**

Dependent an the actuator; see table "Technical data of the actuators"; higher temperatures an request

#### Spale

NBR; other seat materials upon request

#### Seal an the valve seat

Ball on seat

### **Pressure Range**

0 to 320 bar (630 bar)

tor3/2 dir

The Pressure at Port "R" muss not exceed 50% of working Pressure

# Switching time

Dependent an working Pressure and temperature (see table "Technical data of **control elements**")

#### **Installation Position**

Any

## Direction of flow:

2/2W:From "P" to "A"
3/2W:From "P" to "A" or from "A" to "R".
Ports "P", "A" and "R" must not be mixed up

#### Flow rate with fluids

max. 20 l/min for NG 6 max. 5 l/min for NG 3

### Modes of operation

Electrical, hydraulic, pneumatic, mechanical or man

#### Materials

All Parts coming into contact with the flow medium are made of corrosion-resistant materials

#### **Special Features**

A distinguishing feature of the valve is its short response time. The solenoid plunger is carried in double bearings and is consequently protected against wear. The operating solenoid is protected against dirt and moisture by a diaphragm seal between the stem and plunger space. The lockable manual control becomes accessible after removing the rating plate and is consequently protected against inadvertent operation. The solenoid and all other actuators can be rotated through 90°. All wearing Paris are easily accessible and rapidly replaceable.



# 2/2 way valve

# "Valve version "positive"

(Valve is closed when magnet is de-energized)

Fig. 1 (electromagnet de-energized):

The pressure spring (2) presses the valve ball (4) via pushrod (3) into the valve seat (5). The pressure of the medium in infeed "P" supports the pressure spring action (2). Thus the passage from infeed "P" to working line "A"is blocked.

Fig. 2 (electromagnet energized):

When the electromagnet (1) is switched on, the solenoid plunger (6) presses the valve ball (4) - via lever (7) and pushrod (8), and against the force of the pressure spring (2) and the pressure of the medium in the infeed "P" - from its valve seat (5). Now the passage from infeed "P" to working line "A" is clear.

# "Valve version "negativ"

(Valve is open when magnet is de-energized)

Fig. 1 (electromagnet de-energized):

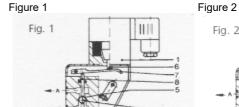
The pressure spring (2) presses the valve ball (4) via pushrod (3) from the valve seat (5). Thus the passage from infeed "P" to working line "A" is clear

Fig. 2 (electromagnet energized):

When the electromagnet (1) is switched on, the solenoid plunger (6) presses the valve ball (4) - via lever (7) and pushrod (8), and against the force of the pressure spring (2) and the pressure of the medium in the infeed "P" - into the valve seat (5). Now the passage from infeed "P" to working line "A" is blocked.

Type and order example

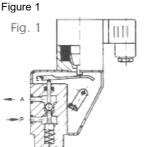
Operating modes	Symbol	Type: NG3					
Electromagnetic	t v	2/2KSV-03P-25NBNNN-ED024*					
Example for 24 V	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	2/2KSV-03N-25NBNNN-ED024**					
Hydraulic	\f\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	2/2KSV-03P-25NBGNN-Z320*					
Trydradiic	7. A N	212KSV-03N-25NBGNN-Z320**					
Pneumatic	, v ,	2/2 KSV-03P-25NBGNN-Z064					
rneumanc	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	2/2 KSV-03N-25NBGNN-Z064**					
Mechanical (roller)		2/2KSV-03P-25NBGNN-RO*					
wechanical (roller)		2/2KSV-03N-25NBGNN-RO**					
Manual		2/2KSV-03P-25NBGNN-MAN*					
iviariuai		2I2KSV-03N-25NBGNN-MAN**					
		Typ: NG6					
Electromagnetic	tal	2/2KSV-06P-25NBNNN-ED024*					
Example for 24 V	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	2/2KSV-06N-25NBNNN-ED024**					
Hydraulic		2/2KSV-06P-25NBGNN-Z320*					
Tiydradiic	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	2/2KSV-06N-25NBGNN-Z320**					
Pneumatic	, A,	2/2 KSV-06P-25NBGNN-Z064*					
Fileumatic	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	2/2 KSV-06N-25NBGNN-Z064**					
Mechanical (roller)	, v v ,	2/2KSV-06P-25NBGNN-RO*					
wechanical (folier)		2/2 KSV-06N-25N BG N N-RO**					
Manual		2/2KSV-O6P-25NBGNN-MAN*					
iviai luai	\^^\\	2/2KSV-06N-25NBGNN-MAN**					

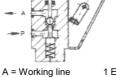


- A = Working line B = Infeed
- 1 Electromagnet 2 Pressure spring
- 3 Pushrod
- 4 Valve ball
- Fig. 2
  - 5 Valve seat
  - 6 Solenoid plunger
  - 7 Leber
  - 8 Pushrod

Figure 2

Fig. 2





B = Infeed

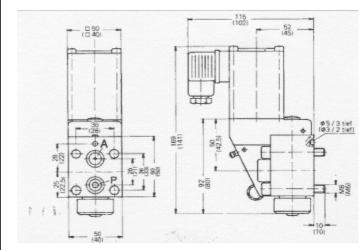
- 1 Electromagnet
- 2 Pressure spring 3 Pushrod

4 Valve ball

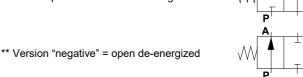
- 5 Valve seat 6 Solenoid plunger
- 7 Leber 8 Pushrod

# **Dimensional darwing**

Dimensions shown outside brackets NG6 Dimensions shown in brackets NG3



\* Version "positiv" = closed de-energized



	1	IG 3	NO	3 6
	P	Α	Р	Α
Connection bore	Ø 3	Ø 3	Ø6	Ø6
O-ring	9,25-1,78	9,25-1,78	12-2,5	12-2,5



#### 3/2 way valve

#### Valve version "Positive"

Figure 1 (electromagnet de-energised):

The medium flowing in via infeed "P" presses the valve ball (4) into the valve seat (5) supported by the pressure spring (2). Thus the passage from infeed "P" to working line "A" is blocked. Figure 2 (solenoid energised):

With the solenoid (1) is switched an, the soleoid plunger (8), presses the ball (6) - via lever (9) and pusherod (10), and against the force of the pressure spring (2) - into the valve seat (7). Now drain "R" is blocked. At the same time, using the spacer pin (3), the valve ball (4) is pressed out of the valve seat (5), so that thepassage from infeed "P" to working line "A" is

# Valve version "Negativ"

(Valve passage from "P" to "A" is open when the magnet is deenergised).

Figure 1 (electromagnet de-energised):

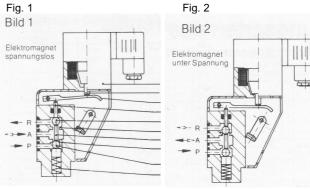
The pressure spring (2) lifts the valve ball (4) via pushrod (11) into valve (5) The medium flowing from infeed "P" to the working line supports the pressure spring action. Thuus the drain "R" is blocked and the infeed "P" is connected to the working line "A"

Figure 2 (electromagnet de-energised)

When the electromagnet (1) id switched an, the solenoid plunger (8) presses Valve ball (4) via lever (9) and pushrod (10) and against the force of the infeed "P" – into the valve seat (7). Now the infeed "P" is blocked and the working line "A" is connected to drain "R".

Type and order example

Operating modes	Symbol	Type: NG3
Electromagnetic Example for 24 V	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	3/2KSV-03P-25NBNNN-ED024* 3/2KSV-03N-25NBNNN-ED024**
Hydraulic	W	3/2KSV-03P-25NBGNN-Z320* 3/2KSV-03N-25NBGNN-Z320**
Pneumatic	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	3/2 KSV-03P-25NBGNN-Z064* 3/2 KSV-03N-25NBGNN-Z064**
Mechanical (roller)		3/2KSV-03P-25NBGNN-RO* 3/2 KSV-03N-25N BG N N-RO**
Manual	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	3I2KSV-03P-25NBGNN-MAN* 3/2KS V-03N-25NBGNN-MAN**
		Type: NG6
Electromagnetic Example for 24 V	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	3/2KSV-06P-25NBNNN-ED024* 3/2KSV-06N-25NBNNN-ED024**
Hydraulic	W	3/2KSV-06P-25N BG N N-Z320* 3/2KSV-06N-25NBGNN-Z320**
Pneumatic		3/2 KSV-06P-25NBGNN-Z064* 3/2 KSV-06N-25NBGNN-Z064**
Mechanical (roller)	W	3/2KSV-06P-25N BG N N-RO* 3/2KSV-06N-25NBGNN-RO**
Manual	\\\\	3/2KSV-06P-25NBGNN-MAN* 3/2KSV-06 N-25N BGNN-MAN**

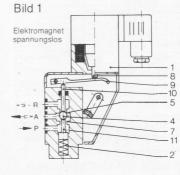


P = Infeed A = Working line

R =Return

- 1 Electromagnet 2 Pressure spring
- - 3 Specer pin
  - 4 Valve ball
  - 5 Valve seat
- 6 Valve ball 7 Valve seat

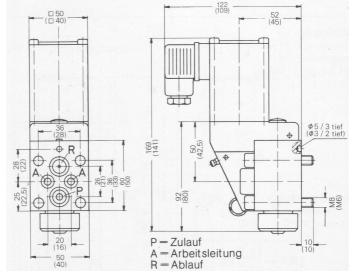
  - 8 Solenoid plunger
  - 9 Lever 10 + 11 Puchrod



- Bild 2 Elektromagnet unter Spannung
- P = Infeed A = Working line R =Return
- 1 Electromagnet 2 Pressure spring
- 3 Specer pin
- 4 Valve ball 5 Valve seat
- 6 Valve ball 7 Valve seat
- 8 Solenoid plunger
- 10 + 11 Puchrod

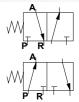
# Dimensional drawing NG3 and NG6

NG3 dimension shown in brackets



\* Version "positiv" = closed de-energized

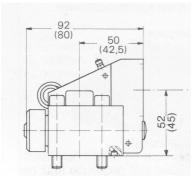
\*\* Version "negative" = open de-energized



		NG 3		NG 6					
	Р	R	Α	P	R	Α			
Connection bore	Ø3	Ø3	Ø3	Ø6	Ø 6	Ø 6			
O-ring	9,25-1,78	9,25-1,78	6,07-1,78	12-2,5	12-2,5	8-2			



# Valve body with console

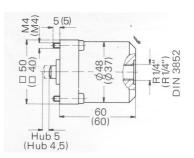


# Hydraulic and pneumatic operation

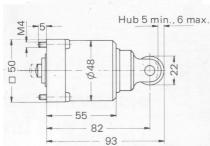
Pressure range

Pneumatic 2,5 – 64 bar

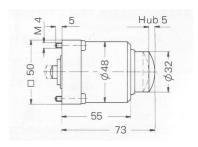
Hydraulic 2,5 – 64 bar 22 – 320 bar



# Mechanical operating



# **Manual operation**



# Elektromagnetic operation NG3 an NG6, firedampproof and explosion-proof

Type dE4 (NG3) and dE3 (NG6), protection class acc. To VDE 0170/0171

#### NG3

Sch)d/(Ex)d2 G4 certificate No.T5681/BVS

#### NG

(Sch)d/(Ex)d2 G5 Besch.-Nr. T5538/BVS

NG3 / Pg 16 DIN 22419 available for voltage from 12 – 240 V direct and alternating current.

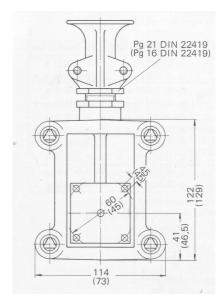
Power consumption Up to approx. 20 Watt

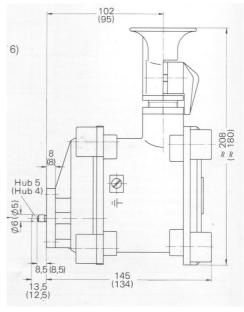
# Connetion cable

12,5 - 14 mm (A15) NG6 / Pg 21 DIN 22419 available for Voltagees from 24 -500 V direct and alternating current.

Power consumption Up to approx. 32 Watt

Connetion cable 15-19mm(A19)







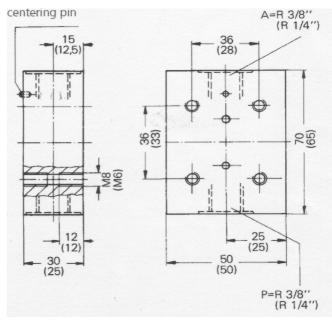
actuatorl	NG6 (NG3)										
Design typet		Elek	tromagnet		Hydraulik- oder F	Hydraulikzylinde					
			dE4	dE4	Zy1.31295	Zy1.31887	mech.				
Protection class housing for NG3 and NG6	g 3 and NG6 40050 40050 VDE 0170,			(Sch)d/(EX)d2G4 VDE 0170/0171							
Protection class connection compartment for NG3 and NG6			Sch)e/(Ex)e VDE0170/0171 IP54 DIN 40050	(Sch)e/(Ex)e VDE0170/0171 IP54 DIN 40050							
Connetion typet	Plug (Plug)	Plug (Plug)	Terminal (Terminal)	Terminal (Terminal)	Thread R1/4" (Thread R1/4")	Thread R1/4" (Thread R1/4")					
Control medium for NG3 and NG6					Öil in water emulsion, compressed air and neutel gases	Öil in water emulsion,					
Medium temperaturer					-30°C bis+110°C (-30°C bis+110°C)	-30°C bis+110°C (-30°C bis+110°C)					
Ambiont temperature	max.+35°C (max.+35°C)	max.+35°C (max.+35°C)	max.+40°C (max.+40°C)	max.+40°C (max.+40°C)	max.+80°C (max.+80°C)	max.+80°C (max.+80°C)	max.+80°C (max.+80°C)				
Pressure range					2,5-64 bar (2,5-64 bar)	25-320 bar (25-320 bar)					
Mouting position	any (any)	any (any))	any (any)	any (any)	any (any)	any (any)	any (any)				
Operating voltage*	24 V DC (24 V DC)	220 V AC (220 V AC)	24 V DC (24 V DC)	220 V AC (220 V AC)							
Current intensity	1,5A (0,54 A)	O,163 A (0,06 A)	0,542 A (0,54 A)	O,318 A (0,06 A)							
Switch-on period	100% ED (100% ED)	100% ED (100% ED)	100% ED (100% ED)	100% ED (100% ED)							
Pull-in power	36 W (13 W)	36 W (13 W)	13 W (13 W)	13 W (13 W)							
Hold performence	36 W (13 W)	13 W36 W (13 W)	13 W (13 W)	13 W (13 W)							
On period (100bar)	83 ms ( - )	73 ms ( - )	112 ms ( - )	124 ms ( - )							
Off period	20 ms	113 ms	24 ms ( - )	80 ms ( - )							
Lifting forcet	93 N (31 N)	79 N (26 N)	58 N (31 N)	54 N (26 N)							

AnderSpannungen auf Anfrage

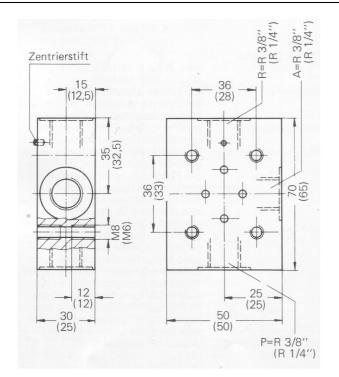
# Connetion plate 2/2 way NG3 and NG6 Dimensions in brackets NG3

3/2 way

2/2 way



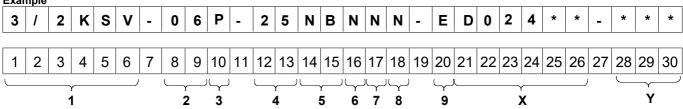






# Order code KSV 3/2 way directional seat valve

Example



#### 1. Model

3/2KSV = 3/2 way directional seat valve 2/2KSV = 2/2 way directional seat valve

### 2. Nominal value

03 = NG3 = NG6 06

# 3. Basis position

P → A closed P = Positive  $N = Negative P \rightarrow A opened$ 

# 4. Operating pressure

= 100 bar 20

= 250 bar

= 320 bar 25 = 400 bar 26

27 = 500 bar

28 = 630 bar

= 700 bar 29

30 = 800 bar

## 5. Seal

= NBR NB VT = Viton

ΡU = Polyurethan

#### 6. Spezification

Standard version: Ν

(HFA, Luft, HFC, HFD usw.)

320 bar

D Standard version with

firedamp protection - / Ex-protection

320 bar

and standard version for

higher pressure

S Sea water inside and outside

sea water bat outside

210 bar

Water / main water / W

glacier water 320 bar

deonised water / to demineralize water / sea water but inside

320 bar

G neutral gas 100 bar

Α aggressive gas 100 bar

(e.g. sour gas)

### 7. Positions monitor

= with out (Standard) G

= applicable for closed position

0 = applicable for opened position

В = applicable for the two position

#### 8. Manual operation

= Standard (with manual operation

and adjustment)

= with manual operation Н

without adjustment

S = sealing 0 = with out manual operation.

# 9. Operation

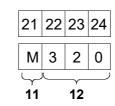
= E- Magnet Ε

RO = Mechanical operating

BL = no operation, bat with blind

Ζ = Cylinder

#### Example Z = Cylinder



# 11 Material

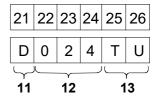
= brass M Α = aluminium

#### 12 pressure range

= 2,5 - 64 bar = 25 - 320 bar 64 320

## X. Provision the operation

#### Example E = E-Magnet



## 11 Kind of current

= alternating current (AC) = direct current (DC)

# 12 Operating voltage

012 = 12V

024 = 24V

= 36V 036

042 = 42V

048 = 48V 060 = 60V

110 = 110 V

120 = 120V

220 = 220V

500 = 500V

# 13 In addition to Operating

D31 = DE3D1

D32 = DE3D2

= DE3E1 E31

F32 = DE3E2

E43 = DE4/3

iE5 = iE5

TU = Tuchelstecker

# Y: Special design

= special model

# Additive appellation:

#### Evample

LAG	IIPIC																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
K	U	G	Е	L	S	I	Т	Z	V	Е	N	Т	I	L						