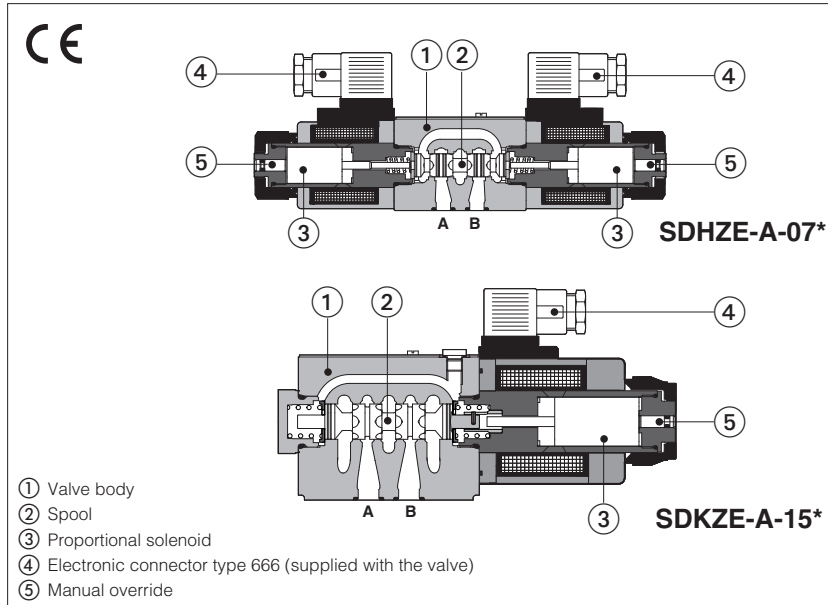


Proportional directional valves

direct operated, open loop



SDHZE-A, SDKZE-A

Direct operated proportional directional valves without position transducer and with positive spool overlap for open loop directional controls and not compensated flow regulations

They operate in association with electronic drivers, see section 2, which supply the proportional valves with proper current to align the valve regulation to the reference signal.

The spools are available with linear **L**, progressive **S** or differential **D** flow characteristics.

The valve body is 3 chambers type for SDHZE and SDKZE.

The solenoid coils are available with different nominal resistances depending to the voltage supply to the driver (12 VDC or 24 VDC) and to the electronic driver characteristics, see section 2 and 3.

Mounting surface: **ISO 4401**

Size: **06** and **10**

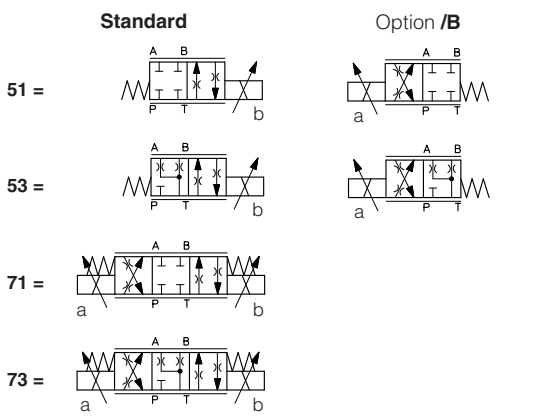
Max flow: up to **70** and **160 l/min**

Max pressure: **350 bar** (SDHZE)
315 bar (SDKZE)

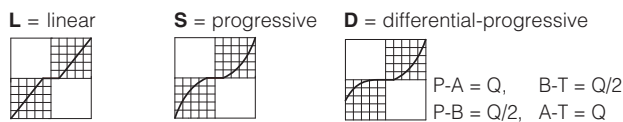
1 MODEL CODE

| | | | | | | | | | | | | | | | | | |
|--|---|----------------------|---|--|-----------|---|----------|----------|---|---|---|---|---|---|----|---|---|
| SDHZE | - | A | - | 0 | 71 | - | S | 5 | / | * | - | * | / | * | ** | / | * |
| SDHZE = size 06 SDKZE = size 10 | | A = open loop | | Valve size - ISO 4401 0 = size 06 (SDHZE) 1 = size 10 (SDKZE) | | Seals material, see section 4: - = NBR PE = FKM BT = HNBR Series number | | | | | | | | | | | |

Configuration:



Spool type - regulating characteristics:



Coil option (only for -A execution)

see section 2 and 3:

- = standard coil for 24V_{DC} Atos drivers

6 = optional coil for 12V_{DC} Atos drivers

18 = optional coil for 24V_{DC} low current drivers (1)

Coils with special connectors, see section 10

- = omit for standard DIN connector

J = AMP Junior Timer connector

K = Deutsch connector

S = Lead Wire connection

Hydraulic options

B = solenoid side of port A (only for valve configuration 5)

| | | | | |
|---------------------------------------|---------------|--------------|------------------|------------------|
| Spool size: | 14 (L) | 1 (L) | 3 (L,S,D) | 5 (L,S,D) |
| SDHZE = | 1 | 4,5 | 17 | 28 |
| SDKZE = | - | - | 45 | 60 |
| Nominal flow (l/min) at Δp 10 bar P-T | | | | |

(1) select valve's coil voltage /18 in case of electronic drivers not supply by Atos, with power supply 24V_{DC} and with max current limited to 1A.

2 ELECTRONIC DRIVERS - see www.atos.com or KTI industrial master catalog

| | | | | | | | |
|-----------------------------|----------------------------------|-----|------------|-----|----------------|-----|----------|
| Drivers model | E-MI-AC | | E-MI-AS-IR | | E-BM-AS-PS | | E-BM-AES |
| Type | analog | | digital | | digital | | digital |
| Voltage supply (V_{bc}) | 12 | 24 | 12 | 24 | 12 | 24 | 24 |
| Valve coil option | /6 | std | /6 | std | /6 | std | std |
| Format | DIN 43650 plug-in to solenoid | | | | DIN-rail panel | | |
| Data sheet | G010 | | G020 | | G030 | | GS050 |

3 MAIN CHARACTERISTICS - based on mineral oil ISO VG 46 at 50 °C

| | | | | | | |
|--|---|-----------|------------|-----------------------------------|-----------|------------|
| Assembly position | Any position | | | | | |
| Subplate surface finishing | Roughness index, Ra 0,4 flatness ratio 0,01/100 (ISO 1101) | | | | | |
| MTTFd valves according to EN ISO 13849 | 150 years, for further details see KT technical table P007 | | | | | |
| Ambient temperature range | Standard and /PE = -20°C ÷ +70°C, | | | /BT option = -40°C ÷ +60°C | | |
| Storage temperature range | Standard and /PE = -20°C ÷ +80°C, | | | /BT option = -40°C ÷ +70°C | | |
| Coil code | SDHZE | | | SDKZE | | |
| | standard | option /6 | option /18 | standard | option /6 | option /18 |
| Coil resistance R at 20°C | 3,1 Ω | 2,1 Ω | 13,1 Ω | 3,2 Ω | 2,1 Ω | 13,7 Ω |
| Max. solenoid current | 2,5 A | 3 A | 1,2 A | 2,2 A | 2,65 A | 1 A |
| Max. power | 30W | | | 35W | | |
| Insulation class | H (180°) Due to the occurring surface temperatures of the solenoid coils, the European standards ISO 13732-1 and EN982 must be taken into account | | | | | |
| Protection degree to DIN EN60529 | IP 65 (with connectors 666 correctly assembled) | | | | | |
| Duty factor | Continuous rating (ED=100%) | | | | | |

| | | | | | | |
|---------------------------------|--|-----------|-------------------|-------------------|--|-------------------|
| Valve model | SDHZE | | | | SDKZE | |
| Pressure limits [bar] | ports P, A, B = 350; T = 210 | | | | ports P, A, B = 315; T = 210 | |
| Spool type and size | L14 | L1 | S3, L3, D3 | S5, L5, D5 | S3, L3, D3 | S5, L5, D5 |
| Nominal flow (1) [l/min] | | | | | | |
| at $\Delta p = 10$ bar (P-T) | 1 | 4,5 | 18 | 28 | 45 | 60 |
| at $\Delta p = 30$ bar (P-T) | 2 | 8 | 30 | 50 | 80 | 105 |
| at $\Delta p = 70$ bar (P-T) | 3 | 12 | 45 | 70 | 120 | 160 |
| Response time (2) [ms] | < 30 | | | | < 40 | |
| Hysteresis [%] | 5 [% of max regulation] | | | | | |
| Repeatability [%] | ± 1 [% of max regulation] | | | | | |

Notes: above performance data refer to valves coupled with Atos electronic drivers, see section 2.
the flow regulated by the directional proportional valves is not pressure compensated, thus it is affected by the load variations. To keep constant the regulated flow under different load conditions, Atos modular pressure compensators are available at www.atos.com (see KT table D150).

(1) For different Δp , the max flow is in accordance to the diagrams in sections 7.2 and 8.2

(2) 0-100% step signal

4 SEALS AND HYDRAULIC FLUID - for other fluids not included in below table, consult our technical office

| | | | |
|--------------------------------------|---|--|-----------------------------|
| Seals, recommended fluid temperature | NBR seals (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C | | |
| Recommended viscosity | 20 ÷ 100 mm ² /s - max allowed range 15 ÷ 380 mm ² /s | | |
| Max fluid contamination level | normal operation | ISO4406 class 18/16/13 NAS1638 class 7 | see also filter section at |
| | longer life | ISO4406 class 16/14/11 NAS1638 class 5 | www.atos.com or KTF catalog |
| Hydraulic fluid | Suitable seals type | Classification | Ref. Standard |
| Mineral oils | NBR, FKM, HNBR | HL, HLP, HLPD, HVLP, HVLPD | DIN 51524 |
| Flame resistant without water | FKM | HFDU, HFDR | ISO 12922 |
| Flame resistant with water | NBR, HNBR | HFC | |

5 GENERAL NOTES

SDHZE and SDKZE proportional valves are CE marked according to the applicable Directives (e.g. Immunity/Emission EMC Directive and Low Voltage Directive).

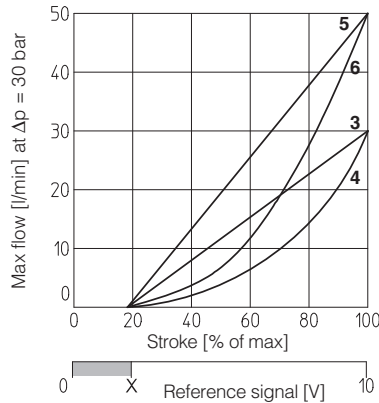
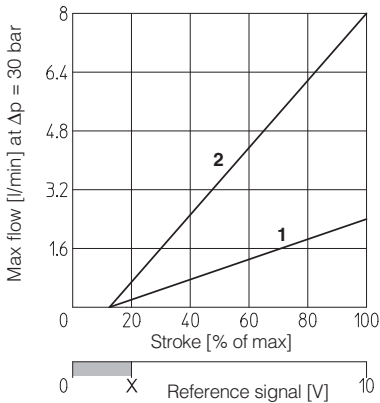
6 CONNECTIONS

| SOLENOID POWER SUPPLY CONNECTOR TYPE 666 | | |
|--|--------------------|--|
| PIN | Signal description | |
| 1 | SUPPLY | |
| 2 | SUPPLY | |
| 3 | GND | |

7 DIAGRAMS FOR SDHZE (based on mineral oil ISO VG 46 at 50 °C)

7.1 Regulation diagrams

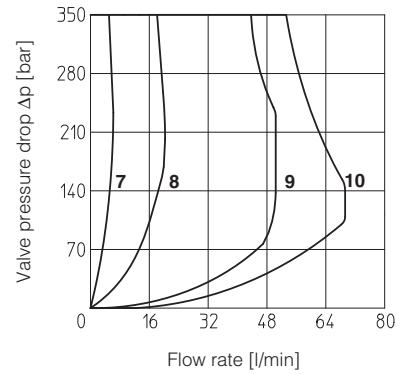
- 1 = linear spool L14 3 = linear spool L3 5 = linear spool L5
 2 = linear spool L1 4 = progressive spool S3, D3 6 = progressive spool S5, D5



X = Threshold for bias activation depending to the valve type and amplifier type

7.2 Operating limits

- 7 = spool L14 9 = spool L3, S3, D3
 8 = spool L1 10 = spool L5, S5, D5



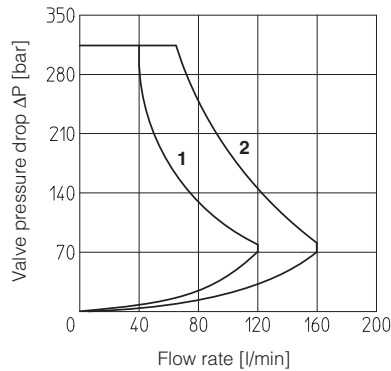
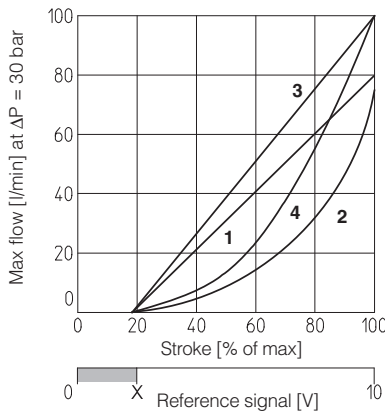
8 DIAGRAMS FOR SDKZE (based on mineral oil ISO VG 46 at 50 °C)

8.1 Regulation diagrams

- 1 = linear spool L3
 2 = progressive spool S3, D3
 3 = linear spool L5
 4 = progressive spool S5, D5

8.2 Operating limits

- 1 = spool L3, S3, D3
 2 = spool L5, S5, D5

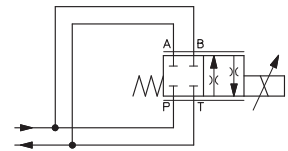


X = Threshold for bias activation depending to the valve type and amplifier type

9 OPERATION AS THROTTLE VALVE

Single solenoid valves (SDHZE-A-051 - SDKZE-A-151) can be used as simple throttle valves:
 Pmax = 210 bar

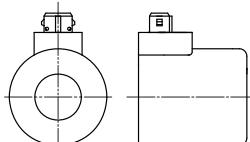
| Max flow Δp= 30bar [l/min] | SPOOL TYPE | | | | | |
|-------------------------------|------------|----|-----|----|-----|----|
| | L14 | L1 | L3 | S3 | L5 | S5 |
| SDHZE | 4 | 16 | 60 | | 100 | |
| SDKZE | - | - | 120 | | 150 | |



10 COILS WITH SPECIAL CONNECTORS

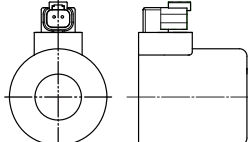
Options -J

- Coil type COZEJ (SDHZE)
- Coil type CAZEJ (SDKZE)
- AMP Junior Timer connector
- Protection degree IP67



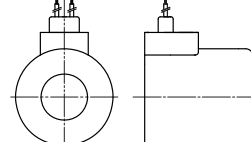
Options -K

- Coil type COZEK (SDHZE)
- Coil type CAZEK (SDKZE)
- Deutsch connector, DT-04-2P male
- Protection degree IP67



Options -S

- Coil type COZES (SDHZE)
- Coil type CAZES (SDKZE)
- Lead Wire connection
- Cable length = 180 mm



11 INSTALLATION DIMENSIONS FOR SDHZE and SDKZE [mm]

SDHZE

ISO 4401: 2005

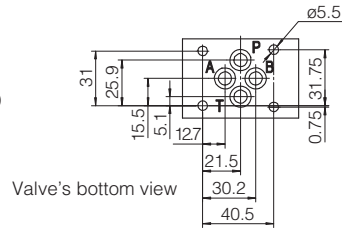
Mounting surface: 4401-03-02-0-05

Fastening bolts: 4 socket head screws M5x30 class 12.9

Tightening torque = 8 Nm

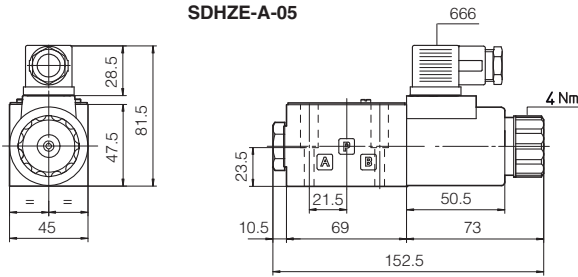
Seals: 4 OR 108

Ports P,A,B,T: $\varnothing = 7.5$ mm (max)



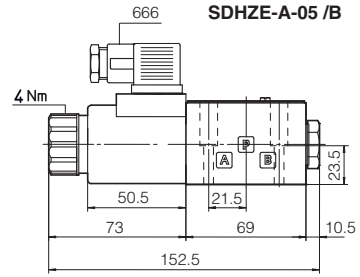
P = PRESSURE PORT
A, B = USE PORT
T = TANK PORT

SDHZE-A-05

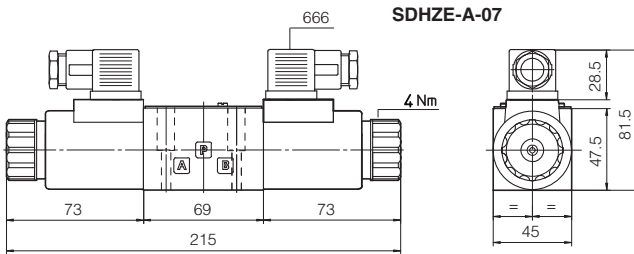


Mass: 1,5 kg

SDHZE-A-05 /B



SDHZE-A-07



Mass: 2 kg

SDKZE

ISO 4401: 2005

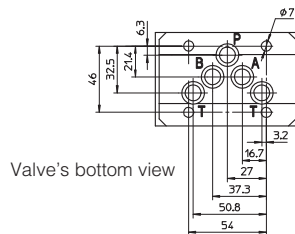
Mounting surface: 4401-05-04-0-05 (see table P005)

Fastening bolts: 4 socket head screws M6x40 class 12.9

Tightening torque = 15 Nm

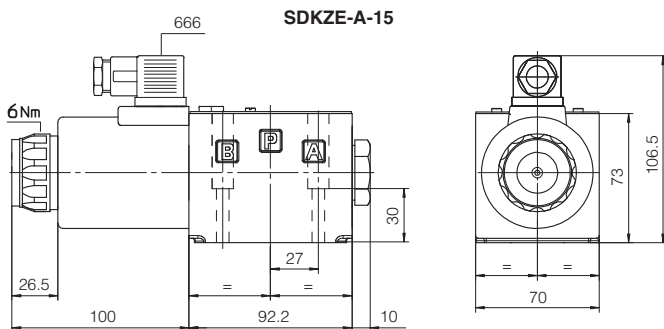
Seals: 5 OR 2050

Diameter of ports A, B, P, T: $\varnothing 11,2$ mm (max)



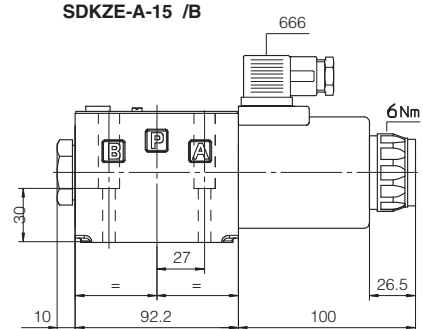
P = PRESSURE PORT
A, B = USE PORT
T = TANK PORT

SDKZE-A-15

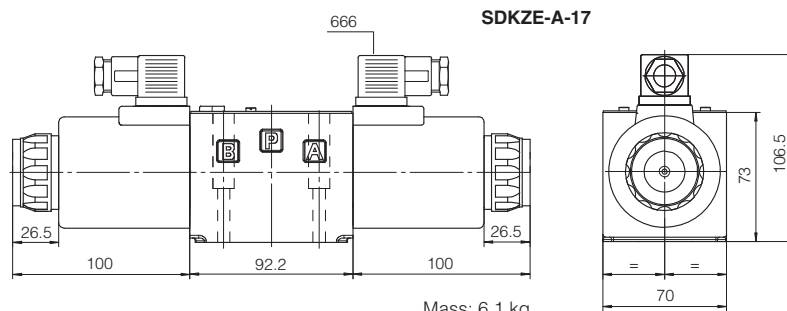


Mass: 4,5 kg

SDKZE-A-15 /B



SDKZE-A-17



Mass: 6,1 kg