Proportional relief valves
pilot operated, open loop

SAGMZE-A
Poppet type, pilot operated proportional relief valves for pressure open loop controls.
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 solenoid coils are available with different nominal resistances depending to the voltage supply to the electronic driver (12 VDC or 24 VDC) and to the driver characteristics, see section 2 and 3.
Mounting surface: ISO 6264
Size: 10, 20, 32
Max flow: 200, 400, 600 l/min
Max pressure: 350 bar

1 MODEL CODE

<table>
<thead>
<tr>
<th>SAGMZE</th>
<th>A</th>
<th>10</th>
<th>315</th>
</tr>
</thead>
</table>

Proportional pressure relief valve pilot operated

A = open loop pressure control

Valve size ISO 6264
10, 20, 32

Max regulated pressure:
50 = 50 bar 210 = 210 bar 350 = 350 bar
100 = 100 bar 315 = 315 bar

Hydraulic options, see section 8
E = external pilot
Y = external drain (only pipe connection G 1/4")

(1) select valve’s coil voltage /18 in case of electronic drivers not supplied by Atos, with power supply 24Vdc and with max current limited to 1A.

2 ELECTRONIC DRIVERS - see www.atos.com, catalog on-line, section “electronics” or KT master paper catalog

<table>
<thead>
<tr>
<th></th>
<th></th>
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<td>Type</td>
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<td>digital</td>
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<td>analog</td>
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<tr>
<td>Voltage supply (Vdc)</td>
<td>12 24 12 24</td>
<td>12 24 12 24</td>
<td>12 24 12 24</td>
<td>12 24 12 24</td>
<td>12 24 12 24</td>
<td>12 24 12 24</td>
</tr>
<tr>
<td>Valve coil option</td>
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<td>/6 std /6 std</td>
<td>/6 std /6 std</td>
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<td>/6 std /6 std</td>
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<td>Format</td>
<td>DIN 43650 plug-in to solenoid</td>
<td>DIN 43700 UNDECAL</td>
<td>DIN-rail panel</td>
<td>EUROCARD</td>
<td></td>
<td></td>
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<tr>
<td>Data sheet</td>
<td>G010</td>
<td>G020</td>
<td>G025</td>
<td>G030</td>
<td>GS050</td>
<td>G035</td>
</tr>
</tbody>
</table>
3 HYDRAULIC CHARACTERISTICS (based on mineral oil ISO VG 46 at 50 °C)

Hydraulic symbols

- Assembly position / location: Any position
- Subplate surface finishing: Roughness index Ra 0.4 - flatness ratio 0.01/100 (ISO 1101)
- MTTFd values according to EN ISO 13849: 75 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

- Standard: standard coil to be used with Atos drivers with power supply 24Vcc
- Option /6: optional coil to be used with Atos drivers with power supply 12 Vcc
- Option /18: optional coil to be used with electronic drivers not supplied by Atos, with power supply 24 Vcc and max current limited to 1A

<table>
<thead>
<tr>
<th>Valve size</th>
<th>10</th>
<th>20</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max regulated pressure [bar]</td>
<td>50, 100, 210, 315, 350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. regulated pressure [bar]</td>
<td>see min. pressure / flow diagrams at sect. 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. pressure at port P [bar]</td>
<td>350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. pressure at port T [bar]</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. flow [l/min]</td>
<td>200</td>
<td>400</td>
<td>600</td>
</tr>
<tr>
<td>Response time 0-100% step signal (1) [ms]</td>
<td>120</td>
<td>135</td>
<td>150</td>
</tr>
<tr>
<td>Hysteresis [% of the max pressure]</td>
<td>≤ 0.5</td>
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<tr>
<td>Linearity [% of the max pressure]</td>
<td>≤ 1.0</td>
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<tr>
<td>Repeatability [% of the max pressure]</td>
<td>≤ 0.2</td>
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</tbody>
</table>

Notes: above performance data refer to valves coupled with Atos electronic drivers, see section 2.

1 Average response time values; the pressure variation in consequence of a modification of the reference input signal to the valve is affected by the stiffness of the hydraulic circuit: greater is the stiffness of the circuit, faster is the dynamic response.

4 SEALS AND HYDRAULIC FLUID

- 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 mm²/s - max allowed range 15 – 380 mm²/s

Fluid contamination class

- ISO 4406 class 20/18/15 NAS 1638 class 9, in line filters of 10 μm (β10 ≥ 75 recommended)

Hydraulic fluid

- Suitable seals type
- Classification
- Ref. Standard
- Mineral oils: NBR, FKM, HNBR
- HIL, HLP, HLPD, HLVP, HLVPD: DIN 51524
- Flame resistant without water: FKM
- HFDU, HFDR: ISO 12922
- Flame resistant with water: NBR, HNBR
- HFC

Note: For other fluids not included in above table, consult our technical office

5 GENERAL NOTES

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

6 SOLENOID CONNECTIONS

SOLENOID POWER SUPPLY CONNECTOR TYPE 666

<table>
<thead>
<tr>
<th>PN</th>
<th>Signal description</th>
<th>666</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>SUPPLY</td>
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</tr>
<tr>
<td>2</td>
<td>SUPPLY</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td></td>
</tr>
</tbody>
</table>
7 DIAGRAMS (based on mineral oil ISO VG 46 at 50 °C)

1 = Regulation diagrams
with flow rate Q = 50 l/min

2 = Pressure/flow diagrams
with reference signal set at Q = 50 l/min

3-8 = Min. pressure/flow diagrams
with zero reference signal

3 = SAGMZE-A-10/50, 100, 210, 315
4 = SAGMZE-A-10/350
5 = SAGMZE-A-20/50, 100, 210, 315
6 = SAGMZE-A-20/350
7 = SAGMZE-A-32/50, 100, 210, 315
8 = SAGMZE-A-32/350

8 HYDRAULIC OPTIONS

8.1 Option E
External pilot option to be selected when the pilot pressure is supplied from a different line respect to the P main line.
With option E the internal connection between port P and X of the valve is plugged.
The pilot pressure must be connected to the X port available on the valve’s mounting surface or on main body (threaded pipe connection G ¼").

8.2 Option Y
The external drain is mandatory in case the main line T is subjected to pressure peaks or it is pressurized.
The Y drain port has a threaded connection G ¼” available on the pilot stage body.
9 MECHANICAL PRESSURE LIMITER

The SAGMZE are provided with mechanical pressure limiter acting as protection against overpressure. For safety reasons the factory setting of the mechanical pressure limiter is fully unloaded (min pressure). At the first commissioning it must be set at a value lightly higher than the max pressure regulated with the proportional control.

For the pressure setting of the mechanical pressure limiter, proceed according to following steps:

- apply the max reference input signal to the valve’s driver. The system pressure will not increase until the mechanical pressure limiter remains unloaded.
- turn clockwise the adjustment screw until the system pressure will increase up to a stable value corresponding to the pressure setpoint at max reference input signal.
- turn clockwise the adjustment screw of additional 1 or 2 turns to ensure that the mechanical pressure limiter remains closed during the proportional valve working.

10 AIR BLEEDING

At the first valve commissioning the air eventually trapped inside the solenoid must be bled-off through the screw located at the rear side of the solenoid housing.

The presence of air may cause pressure instability and vibrations.

11 REMOTE PRESSURE UNLOADING

The main line can be remotely unloaded by connecting the valve X port to a solenoid valve as shown in the below scheme (venting valve).

This function can be used in emergency to unload the system pressure by-passing the proportional control.

12 COILS TYPE WITH SPECIAL CONNECTORS

Options -J
- Coil type COZEJ
- AMP Junior Timer connector
- Protection degree IP67

Options -K
- Coil type COZEK
- Deutsch connector, DT-04-2P male
- Protection degree IP67

Options -S
- Coil type COZES
- Lead Wire connection
- Cable length = 180 mm
SIZE 10

ISO 6264: 2007
Mounting surface: 6264-06-09-1-97
Fastening bolts:
4 socket head screws M12x35 class 12.9
Tightening torque = 125 Nm
Seals: 2 OR 123; 1 OR 109/70
Ports P, T: Ø = 14.5 mm
Ports X: Ø = 3.2 mm

Valve’s bottom view

SIZE 20

ISO 6264: 2007
Mounting surface: 6264-08-13-1-97
(see table P005)
Fastening bolts: 4 socket head screws
M16x50 class 12.9
Tightening torque = 300 Nm
Seals: 2 OR 4112; 1 OR 109/70
Ports P, T: Ø = 24 mm
Port X: Ø = 3.2 mm

Valve’s bottom view

= Screw for air bleeding
ISO 6264: 2007
Mounting surface: 6264-10-17-1-97
(with M20 fixing holes instead of standard M18)
Fastening bolts: 4 socket head screws
M20x60 class 12.9
Tightening torque = 600 Nm
Seals: 2 OR 4131, 1 OR 109/70
Ports P, T: Ø = 28 mm
Port X: Ø = 3.2 mm
Mass 8 Kg