Proportional relief valves
pilot operated, open loop

AGMZE-A
Open loop, poppet type pilot operated proportional pressure relief valves with proportional solenoids certified according to North American standard cURus. They operate in association with electronic drivers, see section 3, which supply the proportional valves with proper current to align the valve regulation to the reference signal.

The solenoid coils are plastic encapsulated with insulation class H and they are available with different nominal resistances depending on the voltage supply (12 VDC or 24 VDC) and to the electronic driver type, see section 3 and 4.

Size: 10, 20, 32
Max flow: 200, 400, 600 l/min
Max pressure: 350 bar

1 MODEL CODE

AGMZE - A - 10 / 315 / * - * - ** / *

Seals material, see section 3:
- = NBR
PE = FKM
BT = HNBR

Series number

Coil voltage, see section 3 and 4:
- = standard coil for 24Vdc Atos drivers
6 = optional coil for 12Vdc Atos drivers
18 = optional coil for low current drivers (1)

Coils with special connectors, see section 3:
E = external pilot
J = AMP Junior Timer connector
K = Deutsch connector
S = Lead Wire connection

(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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>analog</td>
<td>digital</td>
<td>analog</td>
<td>digital</td>
<td>digital</td>
<td>analog</td>
</tr>
<tr>
<td>Voltage supply (Vdc)</td>
<td>12</td>
<td>24</td>
<td>12</td>
<td>24</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Valve coil option</td>
<td>/6</td>
<td>std</td>
<td>/6</td>
<td>std</td>
<td>/6</td>
<td>std</td>
</tr>
<tr>
<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>
</tr>
<tr>
<td>Data sheet</td>
<td>G010</td>
<td>G020</td>
<td>G025</td>
<td>G030</td>
<td>G0505</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)

Ambient temperature
Standard: -20°C ÷ +70°C, /PE option: -20°C ÷ +70°C, /BT option: -40°C ÷ +70°C

Coil code

<table>
<thead>
<tr>
<th>Standard</th>
<th>option /6</th>
<th>option /18</th>
</tr>
</thead>
<tbody>
<tr>
<td>standard coil to be used with Atos drivers with power supply 24 Vdc</td>
<td>optional coil to be used with Atos drivers with power supply 12 Vdc</td>
<td>optional coil to be used with electronic drivers not supplied by Atos, with power supply 24 Vdc and max current limited to 1A</td>
</tr>
</tbody>
</table>

Coil resistance R at 20°C
Standard: 3 ÷ 3.3 Ω, option /6: 2 ÷ 2.2 Ω, option /18: 13 ÷ 13.4 Ω

Max. solenoid current
Standard: 2.2 A, option /6: 2.75 A, option /18: 1 A

Max. power
30 Watt

Protection degree (CEI EN-60529)
IP65

Duty factor
Continuous rating (ED=100%)

Certification
cURus North American Standard

Valve size

<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; 400; 600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time 0-100% step signal (1) [ms] (depending on installation)</td>
<td>120; 135; 150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hysteresis [% of the max pressure]</td>
<td>≤ 0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linearity [% of the max pressure]</td>
<td>≤ 1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability [% of the max pressure]</td>
<td>≤ 0.2</td>
<td></td>
<td></td>
</tr>
</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

Seals, recommended fluid temperature
NBR seals (standard) = -20°C ÷ +60°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

<table>
<thead>
<tr>
<th>Classification</th>
<th>Ref. Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral oils</td>
<td>DIN 51524</td>
</tr>
<tr>
<td>Flame resistant without water</td>
<td>FKM HFDU, HFDR</td>
</tr>
<tr>
<td>Flame resistant with water</td>
<td>NBR, HNBR HFC</td>
</tr>
</tbody>
</table>

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

5 GENERAL NOTES

AGMZE proportional valves are CE marked according to the applicable Directives (e.g. Immunity/Emission EMC Directive and Low Voltage Directive).
Installation, wirings and start-up procedures must be performed according to the general prescriptions shown in table F003 and in the installation notes supplied with relevant components.

6 SOLENOID CONNECTIONS

<table>
<thead>
<tr>
<th>SOLENOID POWER SUPPLY CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</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 = AGMZE-A-10/50, 100, 210, 315
4 = AGMZE-A-10/350
5 = AGMZE-A-20/50, 100, 210, 315
6 = AGMZE-A-20/350
7 = AGMZE-A-32/50, 100, 210, 315
8 = AGMZE-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 AGMZE 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 mm
Port X: Ø = 3.2 mm
Mass 5.4 Kg

SIZE 20
ISO 6264: 2007
Mounting surface: 6264-08-13-1-97
Fastening bolts: 4 socket head screws M16x50 class 12.9
Tightening torque = 300 Nm
Seals: 2 OR 412, 1 OR 109/70
Ports P, T: Ø = 24 mm
Port X: Ø = 3.2 mm
Mass 6.6 Kg

SIZE 32
ISO 6264: 2007
Mounting surface: 6264-10-17-1-97
Fastening bolts: 4 socket head screws M20x60 class 12.9
Tightening torque = 600 Nm
Seals: 2 OR 431, 1 OR 109/70
Ports P, T: Ø = 28 mm
Port X: Ø = 3.2 mm
Mass 8 Kg

= Screw for air bleeding