Proportional relief valves type AGMZO

two stage, ISO 6264 size 10, 20 and 32

AGMZO are poppet type proportional pressure relief valves, pilot operated with pressure regulation proportional to electronic reference signal.

They operate in association with electronic drivers, see table [8], which supply the proportional valve with proper current to align valve regulation to the reference signal supplied to the electronic driver.

They are available in different executions:
- A, without integral pressure transducer.
- AE, -AES, as A plus analogue (AE) or digital (AES) integral electronics.
- TERS with integral pressure transducer plus digital electronics preset in closed loop, featuring improved static and dynamic performances.
- AERS as -TERS but without integral pressure transducer (presupposed for connection of remote pressure transducer).

The piloting pressure to the poppet (I) is modulated by a proportional relief valve type RZMO [x], see table F007.

The pilot relief valve (I) with manual adjustment is installed to limit the max pressure value.

The integral electronics ensures factory presetting, fine functionality plus valve-to-valve interchangeability and simplified wiring and installation.

Following communication interfaces [n] are available for the digital -AES, -TERS and -AERS executions:
- PS, RS232 serial communication interface. The valve reference signal is provided with analogue commands via the 7 (or 12) pins connector (m).
- BC, CANbus interface
- BP, PROFIBUS-DP interface

In the -BC and -BP interfaces the valve reference signal is provided via fieldbus; during start up or maintenance, the valves can be operated with analogue signals via the 7 (or 12) pins connector (m).

The coils are fully plastic encapsulated (insulation class H), and the valves have antivibration, antishock and weather-proof features.

Surface mounting: ISO 6264 size 10, 20 and 32.

Max flow: 200, 400, 600 l/min

Max pressure: 315 bar.

Above performance data refer to valves coupled with Atos electronic drivers, see section [8].
3 MAIN CHARACTERISTICS OF PROPORTIONAL PRESSURE RELIEF VALVES TYPE AGMZO

<table>
<thead>
<tr>
<th>Assembly position</th>
<th>Any position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subplate surface finishing</td>
<td>Roughness index, $\sqrt{2}$, flatness ratio 0.01/100 (ISO 1101)</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>$-20^\circ C \div +70^\circ C$ for -$A$ execution; $-20^\circ C \div +50^\circ C$ for -$TERS$ and -$AERS$</td>
</tr>
<tr>
<td>Fluid</td>
<td>Hydraulic oil as per DIN 51524 ... SGS for other fluids see section 4</td>
</tr>
<tr>
<td>Recommended viscosity</td>
<td>$15 \pm 100$ mm²/s at $40^\circ C$ (ISO VG 15÷100)</td>
</tr>
<tr>
<td>Fluid contamination class</td>
<td>ISO 18/15 achieved with in line filters of 10 µm and $</td>
</tr>
<tr>
<td>Fluid temperature</td>
<td>$-20^\circ C \div +60^\circ C$ (standard and /WG seals); $-20^\circ C \div +80^\circ C$ (IPE seals)</td>
</tr>
</tbody>
</table>

3.1 Electrical characteristics

| Coil resistance R at $20^\circ C$ | $3 \div 3.3$ Ω for standard 12 Vcc coil; $2 \div 2.2$ Ω for 6 Vcc coil; $13 \div 13.4$ Ω for 18 Vcc coil |
| Max solenoid current | 2.6 A for standard 12 Vcc coil; 3.25 A for 6 Vcc coil; 1.5 A for 18 Vcc coil |
| Max power | 40 Watt |
| Protection degree (CEI EN-60529) | IP65 for -$A$ execution; IP65+67 for -$AE$, -$TERS$ and -$AERS$ executions, depending on the connector type (see section 4.6) |
| Duty factor | Continuous (ED=100%) |

3.2 Electronic options and wiring

4.1 Option /A

- It provides the 4÷20 mA current reference signal and the current monitor signal instead of the standard 0÷10 V.
- It is normally used in case of long distance between the machine control unit and the valve or where the reference signal can be affected by electrical noise.
- In case of breakage of the reference signal cable, the valve functioning is disabled.

4.2 Option /Q

- Safety option providing the possibility to enable or disable the valve functioning without cutting the power supply.

4.3 Option /Z

- Safety option, specifically introduced for -$BC$ and -$BP$ communication interfaces, provides two separated electric power supplies for the digital electronic circuits and for the solenoid power supply stage. The Enable and Fault signals are also available. The option /Z allows to interrupt the valve functioning by cutting the solenoid power supply (e.g. for emergency, as provided by the European Norms EN54-1 for components with safety class 2), but keeping energized the digital electronic circuits, thus avoiding fault conditions of the machine fieldbus controller.

For the electrical wiring, see tab. G115 and G205.

4.4 Option /C

- The valve electronics is set to receive the 4÷20 mA feedback signal from the remote pressure transducer, instead of the standard 0÷10 V.

4.5 Integral electronics wiring

For the electrical wiring, shielded cables must be provided: the shield must be connected to the power supply zero on the generator side, see tab. F003.

4.6 Model codes of power supply and communication connectors

- For standard 12 VDC coil: 2 ÷ 2.2 Ω
- For 6 VDC coil: 13 ÷ 13.4 Ω
- For 18 VDC coil: 13 ÷ 13.4 Ω

5 PROGRAMMING DEVICES

The functional parameters of the digital valves, as the bias, scale, ramp and linearization of the regulation characteristic, can be easily set and optimized with graphic interface by using the following software programming devices suitable for standard PC:

**KIT-E-SW-PS** for electronics with RS232 interface (option -$PS$)
**KIT-E-SW-PS-TERS** only for -$TERS$ electronics - simplified version of KIT-E-SW-PS with only bias and scale settings.
**KIT-E-SW-PS-TERS/U** as KIT-E-SW-PS-TERS with serial to USB interface.
**KIT-E-SW-BC** for electronics with CANbus interface (option -$BC$)
**KIT-E-SW-BP** for electronics with PROFIBUS-DP interface (option -$BP$)

see tab. G500 for complete information about the programming device kits and for the PC minimum requirements.

Only for the -$BC$ and -$BP$ communication options, the functional parameters can be alternatively set via fieldbus through the machine control unit, using the standard communication protocol implemented by Alfa.

The protocol operating instructions to be implemented in the standard protocols (DS301V4.02, DSP408 for CANbus and DPVO for PROFIBUS-DP) are described in the user manuals MAN-S-BC (for -$BC$ option) and MAN-S-BP (for -$BP$ option) supplied with the relevant programming device kits.

The above programming devices have to be ordered separately.
6.1 Regulation diagrams
with flow rate $Q = 50$ l/min
1 = AGMZO-A, AGMZO-AE, AGMZO-AES
2 = AGMZO-TERS, AGMZO-AERS

Notes:
1) For the valves with digital electronics the regulation characteristic can be modified by setting the internal software parameters, see tab. G500.
2) For executions -A, -AE and -AES the presence of counter pressure at port $T$ can alter the effective pressure regulation.

6.2 Pressure/flow diagrams
with reference pressure set at $Q = 50$ l/min
3 = AGMZO-A, AGMZO-AE, AGMZO-AES
4 = AGMZO-TER, AGMZO-AERS

6.3 Min. pressure/flow diagrams
with reference signal "null"
5 = AGMZO-*-10
6 = AGMZO-*-20
7 = AGMZO-*-32

6.4 Dynamic response
The response times in section 2 have to be considered as average values.
The integral closed loop control of -TERS and -AERS valves is affected by the stiffness of the hydraulic circuit: greater is the stiffness of the circuit, the better are the performances. The valves dynamic performances can be optimized depending on the stiffness characteristics of the hydraulic circuit, by setting the internal software parameters. This regulation is particularly helpful in case of circuits with accumulators and/or with great fluid volumes and/or with long hoses.
ISO 6264: 2007
Mounting surface: 6264-06-09-0-97
Fastening bolts: 4 socket head screws
M12x35 class 12.9
Tightening torque = 125 Nm
Seals: 2 CR 123, 1 OR 109/70
Ports P, T: Ø = 14 mm
Port X: Ø = 3.2 mm

Mass: 6.1 Kg
AGMZO-A-10

Mass: 6.7 Kg
AGMZO-AE-10 (-AES-* dotted line)

Mass: 7 Kg
AGMZO-TERS-10

Mass: 6.8 Kg
AGMZO-AERS-10
ISO 6264: 2007
Mounting surface: 6264-08-13-0-97
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

AGMZO-A-20

Mass: 9.7 Kg

AGMZO-AE-20 (-AES-* dotted line)

Mass: 10.3 Kg

AGMZO-TERS-20

Mass: 10.6 Kg

AGMZO-AERS-20

Mass: 10.4 Kg
TABLE 10 ELECTRONIC DRIVERS FOR AGMZO

<table>
<thead>
<tr>
<th>Valve model</th>
<th>-A</th>
<th>-AE</th>
<th>-AES</th>
<th>-TERS</th>
<th>-AERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data sheet</td>
<td>G010</td>
<td>G025</td>
<td>G035</td>
<td>G100</td>
<td>G115</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For complete information about the drivers characteristics and relevant options, see the technical data sheet specified in the table.

TABLE 11 MOUNTING PLATES

<table>
<thead>
<tr>
<th>Size</th>
<th>Model</th>
<th>Ports location</th>
<th>Gas ports</th>
<th>Ø Countercore [mm]</th>
<th>Mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>BA-306</td>
<td>Attachments P, T, X underneath</td>
<td>1 1/2&quot;</td>
<td>36.5 31.5 21.5</td>
<td>1.5</td>
</tr>
<tr>
<td>20</td>
<td>BA-406</td>
<td>Attachments P, T, X underneath</td>
<td>3/4&quot;</td>
<td>36.5 36.5 21.5</td>
<td>3.5</td>
</tr>
<tr>
<td>32</td>
<td>BA-706</td>
<td>Attachments P, T, X underneath</td>
<td>1&quot;</td>
<td>46 46 21.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>

The subplates are supplied with fastening bolts. For further details see table K280.