Proportional reducing valves type RZGO, HZGO, KZGO
pilot operated, subplate or modular mounting, ISO 4401 size 06, 10

They are proportional pressure reducing valves, 3-way, pilot operated, available in two different executions:
- R subplate mounting;
- H or K modular mounting.

They operate in association with electronic drivers, see section 3, which supply the proportional valve with the proper current to align valve regulation to the reference signal supplied to the electronic driver.

They are available in different executions:
- A, without 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 reduced pressure is controlled by the spool (●) piloted by the proportional pilot relief valve (●). The intermediate compensated flow control cartridge (●) assures constant pilot flow and therefore high pressure stability.

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

Following communication interfaces 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 (●);
- 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 (●).

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

Reduced pressure on port A for valves 033 and on port P1 for valves 031.

Minimum regulated pressure is 0 bar;

Surface mounting: ISO 4401 size 06, 10.

Max flow: 100 l/min.

Max pressure: 315 bar.

Above performance data refer to valves coupled with Atos electronic drivers, see section 3.

Table F070-7/E
3 MAIN CHARACTERISTICS OF PROPORTIONAL PRESSURE REDUCING VALVES TYPE RZGO, HZGO, KZGO

Assembly position
Any position

Subplate surface finishing
Roughness index, $\sqrt{\frac{1}{2}}$, fatness ratio 0,01/100 (ISO 1101)

Ambient temperature
-20°C ± 70°C for -A execution; -20°C ± 60°C for -AE and -AES, -20°C ± 50°C for -TERS and -AERS

Fluid
Hydraulic oil as per DIN 51524 ... 535 for other fluids see section 1

Recommended viscosity
15 ± 100 mm²/s at 40°C (ISO VG 15±100)

Fluid contamination class
ISO 18/15 achieved with in line filters of 10 μm and |ρ| ≥ 75 (recommended)

Fluid temperature
-20°C ± 60°C (standard and /WG seals); -20°C ± 80°C (PE seals)

3.1 Electrical characteristics

Coil resistance $R$ at 20°C
3.3 ± 3.3 $\Omega$ for standard 12 V; 2 ± 2.2 $\Omega$ for 6 V; 13 ± 13.4 $\Omega$ for 18 V; 12 $\Omega$

Max solenoid current
2.6 $\pm$ 2 A for standard 12 V; 3.25 A for 6 V; 1.5 A for 18 V

Max power
40 Watt

Protection degree
IE65 for -A execution; IP66+67 for -AE, -TERS and AERS executions, depending on the connector type (see sect. 4.6)

Duty factor
Continuous rating (ED=100%)

4 INTEGRAL ELECTRONICS OPTIONS AND WIRING

4.1 Option /I
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 breaching 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 EN954-1 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 electric wiring shielded cables must be provided: the shield must be connected to the power supply zero on the generator side, see tab. F003

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL DESCRIPTION</th>
<th>-AE, -AES, -TERS, -AERS</th>
<th>-AES, -TERS, -AERS/</th>
<th>-AE/Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Power supply 24 Vcc</td>
<td>Stabilized +24Vcc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Power supply zero</td>
<td>Filtered and rectified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Signal zero</td>
<td>Reference 0 Vcc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Input signal +</td>
<td>0 ± 10 Vcc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Input signal -</td>
<td>0 ± 10 Vcc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Monitor driving current (for -AE, -AES)</td>
<td>0 ± 10 V referred to pin C (signal 0 Vcc)</td>
<td>0 ± 5 V (AE/I) 4 + 20 mA (-TERS/I)</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Earth</td>
<td>Connect only when the power supply is not conform to VDE 0551 (IEC 1468)</td>
<td>0 ± 5 V referred to pin B (signal 0 Vcc)</td>
<td></td>
</tr>
</tbody>
</table>

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-PS 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 Atos.

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 = 10 l/min

1 = RZGO-A; RZGO-AE; RZGO-AES, HZGO-A
2 = RZGO-TERS
3 = KZGO-A

**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 with Q = 10 l/min

4 = RZGO-A; RZGO-AE; RZGO-AES, KZGO-A
5 = RZGO-TERS

### 6.3 Pressure drop/flow diagram
with reference signal "null"

6 = RZGO-A; RZGO-AE; RZGO-AES, RZGO-TERS, HZGO-A
7 = KZGO-A

### 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.
7 INSTALLATION DIMENSIONS [mm]

RZGO-A

ISO 4401: 2000
Mounting surface: 4401-03-02-0-05
Fastening bolts: 4 socket head screws M5x50 bolts class 12.9
Tightening torque = 8 Nm
Seals: 4 OR 108
Ports P, A, B, T: ø 5 mm

RZGO-AE
RZGO-AES-* (dotted line)

ISO 4401: 2000
Mounting surface: 4401-03-02-0-05
Fastening bolts: M5x** class 12.9
Tightening torque = 8 Nm
Seals: 4 OR 108
Ports P, A, B, T: ø = 5 mm

RZGO-TERS-*

ISO 4401: 2000
Mounting surface: 4401-03-02-0-05
Fastening bolts: M5x** class 12.9
Tightening torque = 8 Nm
Seals: 4 OR 108
Ports P, A, B, T: ø = 5 mm

RZGO-AERS-*

ISO 4401: 2000
Mounting surface: 4401-03-02-0-05
Fastening bolts: M6x** class 12.9
Tightening torque = 15 Nm
Seals: 5 OR 2050.1 OR 108
Ports P, A, B, T, Y: ø = 11.5 mm (max)
Ports P, A, B, T: ø = 5 mm

HZGO-A

Mass: 3.8 Kg

ISO 4401: 2000
Mounting surface: 4401-05-04-0-05
Fastening bolts: M6x** class 12.9
Tightening torque = 15 Nm
Seals: 5 OR 2050.1 OR 108
Ports P, A, B, T: ø = 5 mm

KZGO-A

Mass: 4.4 Kg

8 ELECTRONIC DRIVERS FOR RZGO, HZGO AND KZGO

<table>
<thead>
<tr>
<th>Valve model</th>
<th>Drivers model</th>
<th>Data sheet</th>
<th>-A</th>
<th>-AE</th>
<th>-AES</th>
<th>-TERS</th>
<th>-AERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E-MI-AC-01F</td>
<td>G010</td>
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<tr>
<td></td>
<td>E-BM-AC-01F</td>
<td>G025</td>
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<tr>
<td></td>
<td>E-ME-AC-01F</td>
<td>G035</td>
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<tr>
<td></td>
<td>E-RP-AC-01F</td>
<td>G100</td>
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<tr>
<td></td>
<td>E-RI-AC-01F</td>
<td>G110</td>
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<tr>
<td></td>
<td>E-RI-AE</td>
<td>G115</td>
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<tr>
<td></td>
<td>E-RI-AES</td>
<td>G205</td>
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<tr>
<td></td>
<td>E-RI-TERS</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>E-RI-AERS</td>
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</table>

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

(1) Only for RZGO

9 MOUNTING PLATES FOR RZGO

<table>
<thead>
<tr>
<th>Model</th>
<th>Ports location</th>
<th>Gas Ports A-B-P-T</th>
<th>Ø Counterbore [mm] A-B-P-T</th>
<th>Mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-202</td>
<td>Ports A, B, P, T underneath;</td>
<td>3/8&quot;</td>
<td>25.5</td>
<td>1.2</td>
</tr>
<tr>
<td>BA-204</td>
<td>Ports P, T underneath; Ports A, B on lateral side</td>
<td>3/8&quot;</td>
<td>25.5</td>
<td>1.8</td>
</tr>
<tr>
<td>BA-302</td>
<td>Ports A, B, P, T underneath;</td>
<td>1/2&quot;</td>
<td>30</td>
<td>1.8</td>
</tr>
</tbody>
</table>

The subplates are supplied with 4 bolts M5x50. For further details see table K280.