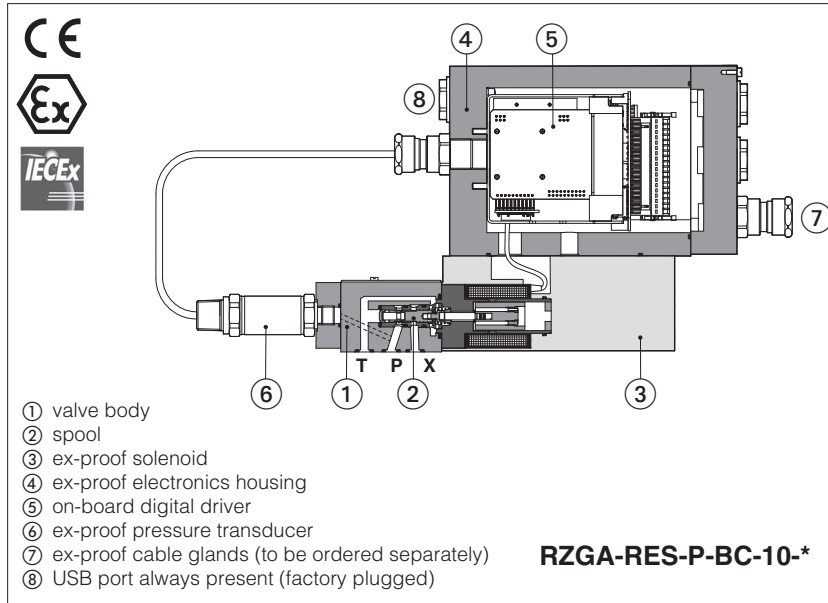


# Ex-proof digital proportional reducing valves high performance

direct or piloted, with on-board driver and pressure transducer - **ATEX** and **IECEX**



## RZGA-RES, AGRCZA-RES

Ex-proof digital, high performance proportional reducing valves, direct or piloted, with pressure transducer for pressure closed loop controls.

They are equipped with ex-proof on-board digital driver, pressure transducer and proportional solenoids certified for safe operations in hazardous environments with potentially explosive atmosphere.

- Multicertification ATEX and IECEX for gas group **II 2G** and dust category **II 2D**

The flameproof enclosure of on-board digital driver, solenoid and transducer, prevents the propagation of accidental internal sparks or fire to the external environment.

The driver and solenoid are also designed to limit the surface temperature within the classified limits.

**RZGA**, direct or piloted:

Size: **06** - ISO 4401  
Max flow: **12** and **40** l/min

**AGRCZA**, piloted:

Size: **10** and **20** - ISO 5871  
Max flow: **160** and **300** l/min

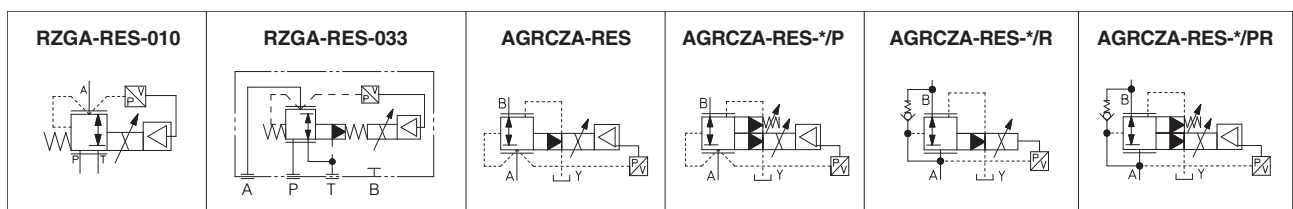
Max pressure: **250 bar**

## 1 MODEL CODE

|   |   |            |   |          |   |           |   |            |   |            |   |          |   |          |   |          |   |               |   |  |  |
|---|---|------------|---|----------|---|-----------|---|------------|---|------------|---|----------|---|----------|---|----------|---|---------------|---|--|--|
| <b>RZGA</b>   | - | <b>RES</b> | - | <b>P</b> | - | <b>NP</b> | - | <b>010</b> | / | <b>210</b> | / | <b>M</b> | / | <b>*</b> | / | <b>*</b> | / | <b>*</b>      | / | <b>*</b>   |  |
| Ex-proof proportional pressure reducing valves<br><b>RZGA</b> = subplate size 06<br><b>AGRCZA</b> = subplate size 10, 20  |   |            |   |          |   |           |   |            |   |            |   |          |   |          |   |          |   | Series number |   | Seals material, see section 9:<br>- = NBR<br><b>PE</b> = FKM<br><b>BT</b> = HNBR   |  |
| <b>RES</b> = on-board driver  |   |            |   |          |   |           |   |            |   |            |   |          |   |          |   |          |   |               |   | Dynamic response preset, see sect. 16:<br>- = omit for PID 1 fast (default)<br><b>2</b> = PID 2 standard<br><b>3</b> = PID 3 smooth  |  |
| <b>P</b> = on-board ex-proof pressure transducer  |   |            |   |          |   |           |   |            |   |            |   |          |   |          |   |          |   |               |   | Hydraulic options - only AGRCZA (1):<br><b>P</b> = with integral mechanical pressure limiter<br><b>R</b> = with integral check valve for free reverse flow   |  |
| Fieldbus interfaces, USB port always present:<br><b>NP</b> = Not Present<br><b>BC</b> = CANopen<br><b>BP</b> = PROFIBUS DP<br><b>EH</b> = EtherCAT                          |   |            |   |          |   |           |   |            |   |            |   |          |   |          |   |          |   |               |   | Electronic options (1):<br><b>I</b> = current reference input and monitor<br>4 ÷ 20 mA (omit for std voltage 0 ÷ 10 VDC)   |  |
| Valve size and configuration:<br>RZGA: direct <b>010</b> = Qmax 12 l/min<br>RZGA: piloted <b>033</b> = Qmax 40 l/min<br>AGRCZA: piloted <b>10, 20</b> = Qmax 160, 300 l/min |   |            |   |          |   |           |   |            |   |            |   |          |   |          |   |          |   |               |   | Cable entrance threaded connection:<br><b>M</b> = M20x1,5  |  |
|   |   |            |   |          |   |           |   |            |   |            |   |          |   |          |   |          |   |               |   | Max regulated pressure:<br>only for RZGA-010<br><b>32</b> = 32 bar <b>100</b> = 100 bar <b>210</b> = 210 bar<br>only for RZGA-033 and AGRCZA<br><b>80</b> = 80 bar <b>180</b> = 180 bar <b>250</b> = 250 bar |  |

(1) Possible combined options: /IP, /IR, /PR

## 2 CONFIGURATIONS AND HYDRAULIC SYMBOLS (representation according to ISO 1219-1)



### 3 GENERAL NOTES

Atos digital proportionals valves are CE marked according to the applicable directives (e.g. Immunity and Emission EMC Directive). Installation, wirings and start-up procedures must be performed according to the general prescriptions shown in tech table **FX900** and in the user manuals included in the E-SW-\* programming software.

### 4 VALVE SETTINGS AND PROGRAMMING TOOLS

**WARNING:** The below operation must be performed in a safety area

Valve's functional parameters and configurations, can be easily set and optimized using Atos E-SW programming software connected via USB port to the digital driver (see table **GS003**). For fieldbus versions, the software permits valve's parameterization through USB port also if the driver is connected to the central machine unit via fieldbus.

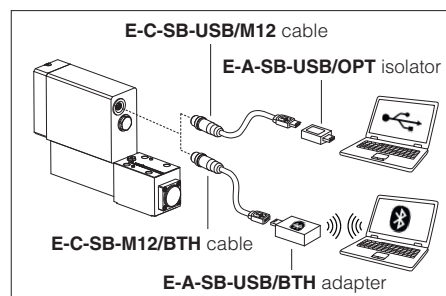
The software is available in different versions according to the driver's options (see table **GS500**):

**E-SW-BASIC** support: NP (USB) PS (Serial) IR (Infrared)  
**E-SW-FIELDBUS** support: BC (CANopen) BP (PROFIBUS DP) EH (EtherCAT)  
 EW (POWERLINK) EI (EtherNet/IP) EP (PROFINET)  
**E-SW-\*/PQ** support: valves with SP, SF, SL alternated control (e.g. E-SW-BASIC/PQ)

**WARNING: drivers USB port is not isolated!** For E-C-SB-USB/M12 cable, the use of isolator adapter is highly recommended for PC protection

**WARNING:** see tech table **GS500** for the list of countries where the Bluetooth adapter has been approved

#### USB or Bluetooth connection



### 5 FIELDBUS - see tech. table **GS510**

Fieldbus allows valve direct communication with machine control unit for digital reference, valve diagnostics and settings. These executions allow to operate the valves through fieldbus or analog signals available on the terminal board.

### 6 GENERAL CHARACTERISTICS

|  |  |
|--|--|
| Assembly position                      | Any position   |
| Subplate surface finishing to ISO 4401 | Acceptable roughness index, Ra ≤0,8 recommended Ra 0,4 - flatness ratio 0,01/100   |
| MTTFd valves according to EN ISO 13849 | RZGA-010 150 years, RZGA-033 and AGRCZA 75 years see technical table P007  |
| Ambient temperature range              | <b>Standard</b> = -20°C ÷ +60°C <b>/PE option</b> = -20°C ÷ +60°C <b>/BT option</b> = -40°C ÷ +60°C  |
| Storage temperature range              | <b>Standard</b> = -20°C ÷ +70°C <b>/PE option</b> = -20°C ÷ +70°C <b>/BT option</b> = -40°C ÷ +70°C  |
| Surface protection                     | Zinc coating with black passivation - salt spray test (EN ISO 9227) > 200 h  |
| Compliance                             | Explosion proof protection, see section <b>10</b><br>-Flame proof enclosure "Ex d"<br>-Dust ignition protection by enclosure "Ex t"<br><br>RoHs Directive 2011/65/EU as last update by 2015/65/EU<br>REACH Regulation (EC) n°1907/2006 |

### 7 HYDRAULIC CHARACTERISTICS - based on mineral oil ISO VG 46 at 50 °C

| Valve model  | RZGA                            |           |  | AGRCZA     |            |
|--|---------------------------------|-----------|--|------------|------------|
|  | 010                             | 033       |  | 10         | 20         |
| Size code  | 06                              | 06        |  | 10         | 20         |
| Valve size   | 06                              | 06        |  | 10         | 20         |
| Max regulated pressure [bar]   | <b>32</b> <b>100</b> <b>210</b> | <b>80</b> |  | <b>180</b> | <b>250</b> |
| Max pressure at port P, A, B, X [bar]  | 315                             |           |  |            |            |
| Max pressure at port T, Y [bar]  | 210                             |           |  |            |            |
| Min regulated pressure [bar]   | 0,8                             | 2,5       |  | 1,0        |            |
| Max flow [l/min]   | 12                              | 40        |  | 160        | 300        |
| Response time 0-100% step signal (depending on installation) <b>(1)</b> [ms] | ≤ 50                            |           |  | ≤ 60       |            |
| Hysteresis [% of the max pressure]   | ≤ 0,3                           |           |  |            |            |
| Linearity [% of the max pressure]  | ≤ 1,0                           |           |  |            |            |
| Repeatability [% of the max pressure]  | ≤ 0,2                           |           |  |            |            |

**(1)** Average response time value; 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


## 8 ELECTRICAL CHARACTERISTICS

|                                     |  |
|-------------------------------------|--|
| Power supplies                      | Nominal : +24 VDC<br>Rectified and filtered : VRMS = 20 ÷ 32 VMAX (ripple max 10 % VPP)  |
| Max power consumption               | 35 W   |
| Analog input signals                | Voltage: range ±10 VDC (24 VMAX tollerant)      Input impedance: Ri > 50 kΩ<br>Current: range ±20 mA      Input impedance: Ri = 500 Ω                              |
| 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                  |
| Monitor outputs                     | Voltage: range 0 ÷ 10 VDC @ max 5 mA<br>Current: range 0 ÷ 20 mA @ max 500 Ω load resistance   |
| Enable input                        | Range: 0 ÷ 9 Vdc (OFF state), 15 ÷ 24 Vdc (ON state), 9 ÷ 15 Vdc (not accepted); Input impedance: Ri > 87 kΩ   |
| Fault output                        | Output range : 0 ÷ 24 VDC (ON state ≡ VL+ [logic power supply] ; OFF state ≡ 0 V) @ max 50 mA; external negative voltage not allowed (e.g. due to inductive loads) |
| Pressure transducer power supply    | +24VDC @ max 100 mA (E-ATRA-7 see tech table <b>GX800</b> )  |
| Alarms                              | Solenoid not connected/short circuit, cable break with current reference signal, over/under temperature, power supplies level, pressure transducer failure         |
| Protection degree to DIN EN60529    | IP66/67 with relevant cable gland  |
| Duty factor                         | Continuous rating (ED=100%)  |
| Tropicalization                     | Tropical coating on electronics PCB  |
| Additional characteristics          | Short circuit protection of solenoid current supply; current control by P.I.D. with rapid solenoid switching; protection against reverse polarity of power supply  |
| Electromagnetic compatibility (EMC) | According to Directive 2014/30/UE (Immunity: EN 61000-6-2; Emission: EN 610006-3)  |
| Communication interface             | USB      CANopen      PROFIBUS DP      EtherCAT,<br>Atos ASCII coding      EN50325-4 + DS408      EN50170-2/IEC61158      EC 61158                                 |
| Communication physical layer        | not insulated      optical insulated      optical insulated      Fast Ethernet, insulated<br>USB 2.0 + USB OTG      CAN ISO11898      RS485      100 Base TX       |

**Note:** a maximum time of 500 ms (depending on communication type) have be considered between the driver energizing with the 24 VDC power supply and when the valve is ready to operate. During this time the current to the valve coils is switched to zero

## 9 SEALS AND HYDRAULIC FLUIDS - for other fluids not included in below table, consult our technical office

|                                       |   |   |                             |
|---------------------------------------|---|---|-----------------------------|
| Seals, recommended fluid temperature  | NBR seals (standard) = -20°C ÷ +60°C, with HFC hydraulic fluids = -20°C ÷ +50°C<br>FKM seals (/PE option) = -20°C ÷ +80°C<br>HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C |   |                             |
| Recommended viscosity                 | 20 ÷ 100 mm <sup>2</sup> /s - max allowed range 15 ÷ 500 mm <sup>2</sup> /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 |
| <b>Hydraulic fluid</b>                | <b>Suitable seals type</b>  | <b>Classification</b>                     | <b>Ref. Standard</b>        |
| 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 <b>(1)</b> | NBR, HNBR   | HFC                                       |                             |

 The ignition temperature of the hydraulic fluid must be 50°C higher than the max solenoid surface temperature

### (1) Performance limitations in case of flame resistant fluids with water:

- max operating pressure = 210 bar
- max fluid temperature = 50°C

## 10 CERTIFICATION DATA

|   |   |   |                                      |
|---|---|---|--------------------------------------|
| Valve type                              | RZMA, AGMZA   |   |                                      |
| Certifications                          | Multicertification Group II<br><b>ATEX IECEx</b>  |   |                                      |
| Solenoid certified code                 | <b>OZA-RES</b>  |   |                                      |
| Type examination certificate <b>(1)</b> | • ATEX: TUV IT 18 ATEX 068 X  | • IECEx: IECEx TPS 19.0004X   |                                      |
| Method of protection                    | • ATEX 2014/34/EU<br>Ex II 2G Ex db IIC T6/T5/T4 Gb<br>Ex II 2D Ex tb IIIC T85°C/T100°C/T135°C Db | • IECEx<br>Ex db IIC T6/T5/T4 Gb<br>Ex tb IIIC T85°C/T100°C/T135°C Db |                                      |
| Temperature class                       | <b>T6</b>   | <b>T5</b>   | <b>T4</b>                            |
| Surface temperature                     | ≤ 85 °C   | ≤ 100 °C  | ≤ 135 °C                             |
| Ambient temperature <b>(2)</b>          | -40 ÷ +40 °C  | -40 ÷ +55 °C  | -40 ÷ +70 °C                         |
| Applicable Standards                    | EN 60079-0: 2012+A11:2013<br>EN 60079-1:2014  | EN 60079-31:2014  | IEC 60079-0:2017<br>IEC 60079-1:2014 |
| Cable entrance: threaded connection     | <b>M</b> = M20x1,5  |   |                                      |

**(1)** The type examiner certificates can be downloaded from [www.atos.com](http://www.atos.com)

**(2)** The driver and solenoids are certified for minimum ambient temperature -40°C.

In case the complete valve must withstand with minimum ambient temperature -40°C, select **/BT** in the model code.

 **WARNING: service work performed on the valve by the end users or not qualified personnel invalidates the certification**

**11 CABLE SPECIFICATION AND TEMPERATURE** - Power supply and grounding cables have to comply with following characteristics:

|  |   |
|--|---|
| <b>Power supply and signals:</b> section of wire = 1,0 mm <sup>2</sup> | <b>Grounding:</b> section of external ground wire = 4 mm <sup>2</sup> |
|--|---|

**11.1 Cable temperature**

The cable must be suitable for the working temperature as specified in the "safety instructions" delivered with the first supply of the products.

| Max ambient temperature [°C] | Temperature class | Max surface temperature [°C] | Min. cable temperature [°C] |
|------------------------------|-------------------|------------------------------|-----------------------------|
| 40 °C                        | T6                | 85 °C                        | 80 °C                       |
| 55 °C                        | T5                | 100 °C                       | 90 °C                       |
| 70 °C                        | T4                | 135 °C                       | 110 °C                      |

**12 CABLE GLANDS**

Cable glands with threaded connections M20x1,5 for standard or armoured cables have to be ordered separately, see tech table **KX600**

**Note:** a Loctite sealant type 545, should be used on the cable gland entry threads

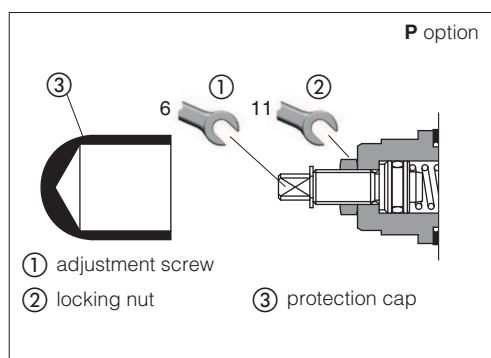
**13 HYDRAULIC OPTIONS** - only for AGRCZA

**P** = The AGRCZA 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.

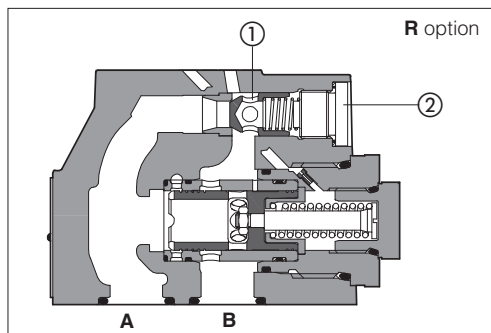
For the pressure setting of the mechanical pressure limiter, proceed according to following steps:

- 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 ① 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 ① of additional 1 or 2 turns to ensure that the mechanical pressure limiter remains closed during the proportional valve working



**R** = The AGRCZA are provided with integral check valve for free reverse flow A→B

- ① Check valve - cracking pressure = 0,5 bar
- ② Plug



**14 ELECTRONIC OPTIONS**

**I** = It provides 4 ÷ 20 mA current reference signal, instead of the standard 0 ÷ 10 Vbc. Input signal can be reconfigured via software selecting between voltage and current, within a maximum range of ±10 Vbc or ±20 mA. 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; the valve functioning is disabled in case of reference signal cable breakage.

**15 POSSIBLE COMBINED OPTIONS**

/IP, /IR, /PR

**16 DYNAMIC RESPONSE** - 4 pressure PIDs

The valve is provided with 4 PIDs configurations to match different hydraulic conditions. The required PID configuration can be selected before the valve commissioning, through Atos E-SW software via USB port. Only for **RES** the PID can be also selected in real time, through PLC via fieldbus.

(1) interchangeable with previous TERS version

| PID | Dynamic response   |
|-----|--------------------|
| 1   | Fast - default (1) |
| 2   | Standard           |
| 3   | Smooth             |
| 4   | Open Loop          |

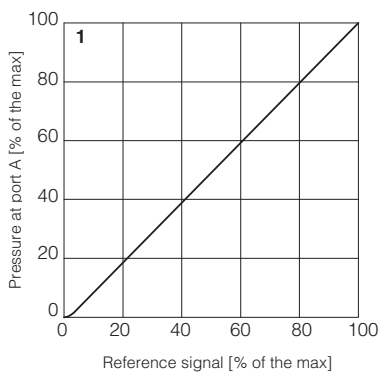
**17 PRESSURE TRANSDUCER FAILURE**

In case of pressure transducer failure, the valve's reaction can be configured through Atos E-SW software to:

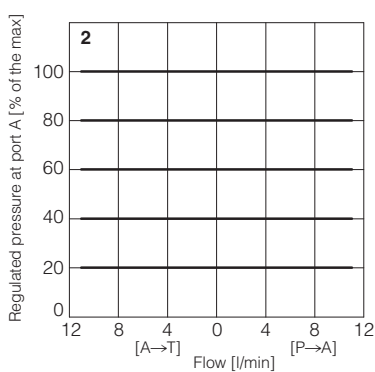
- cut off the current to solenoid, therefore the regulated pressure will be reduced to minimum value (default setting)
- automatically switch the pressure control from closed loop (PID1,2,3) to open loop (PID4), to let the valve to temporarily operate with reduced regulation accuracy

**18 DIAGRAMS RZGA-010** (based on mineral oil ISO VG 46 at 50 °C)

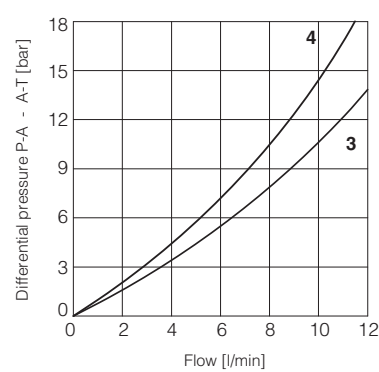
**1 Regulation diagrams**  
with flow rate Q = 1 l/min



**2 Pressure/flow diagrams**  
with reference signal set at Q = 1 l/min



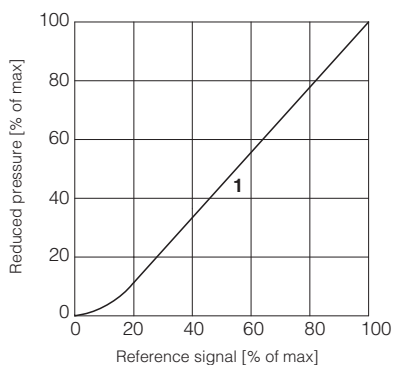
**3-4 Min. pressure/flow diagrams**  
with zero reference signal



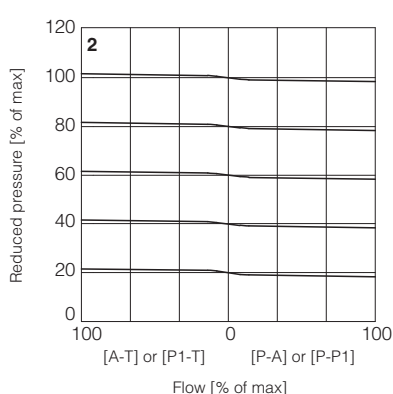
**3** = Pressure drops vs. flow P→A  
**4** = Pressure drops vs. flow A→T

**19 DIAGRAMS RZGA-033** (based on mineral oil ISO VG 46 at 50 °C)

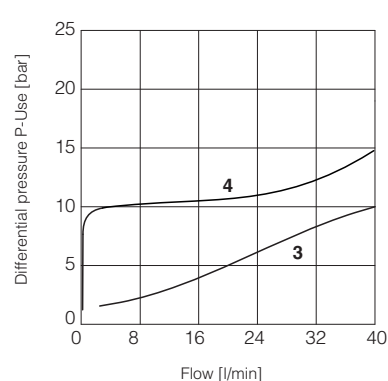
**1 Regulation diagrams**  
with flow rate Q = 10 l/min



**2 Pressure/flow diagrams**  
with reference pressure set with Q = 10 l/min



**3-4 Pressure drop/flow diagram**

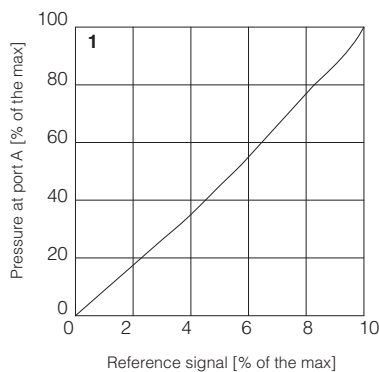


**3** = A-T or P1-T (dotted line /350)  
**4** = P-P1 or P-A

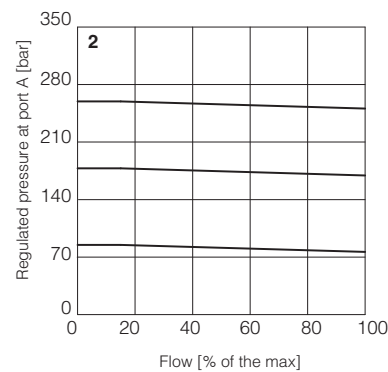
**Note:** the presence of counter pressure at port T can affect the effective pressure regulation

**20 DIAGRAMS AGRCZA** (based on mineral oil ISO VG 46 at 50 °C)

**1 Regulation diagrams**  
with flow rate Q = 10 l/min

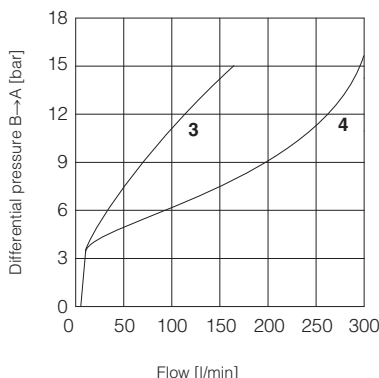


**2 Pressure/flow diagrams**  
with reference pressure set with Q = 10 l/min

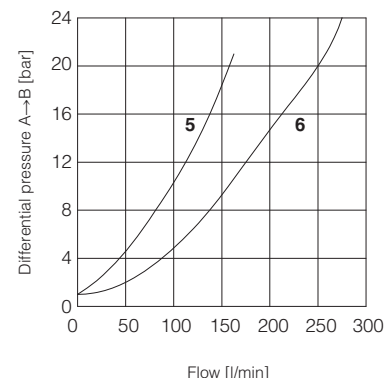


**3-6 Pressure drop/flow diagrams**  
with zero reference signal

Differential pressure B→A  
**3** = AGRCZA-\*-10  
**4** = AGRCZA-\*-20



Differential pressure A→B  
(through check valve)  
**5** = AGRCZA-\*-10\*/R  
**6** = AGRCZA-\*-20\*/R




## 21 POWER SUPPLY AND SIGNALS SPECIFICATIONS

Generic electrical output signals of the valve (e.g. fault or monitor signals) must not be directly used to activate safety functions, like to switch-ON/OFF the machine's safety components, as prescribed by the European standards (Safety requirements of fluid technology systems and components-hydraulics, EN-982).

### 21.1 Power supply (V+ and V0)

The power supply must be appropriately stabilized or rectified and filtered: apply at least a 10000  $\mu\text{F}/40\text{ V}$  capacitance to single phase rectifiers or a 4700  $\mu\text{F}/40\text{ V}$  capacitance to three phase rectifiers.

 A safety fuse is required in series to each power supply: 2,5 A time lag fuse.

### 21.2 Power supply for driver's logic and communication (VL+ and VL0)

The power supply for driver's logic and communication must be appropriately stabilized or rectified and filtered: apply at least a 10000  $\mu\text{F}/40\text{ V}$  capacitance to single phase rectifiers or a 4700  $\mu\text{F}/40\text{ V}$  capacitance to three phase rectifiers.

The separate power supply for driver's logic on pin 3 and 4, allow to remove solenoid power supply from pin 1 and 2 maintaining active the diagnostics, USB and fieldbus communications.

 A safety fuse is required in series to each driver's logic and communication power supply: 500 mA fast fuse.

### 21.3 Pressure reference input signal (P\_INPUT+)

The driver controls in closed loop the current to the valve pressure proportionally to the external reference input signal.

Reference input signal is factory preset according to selected valve code, defaults are 0  $\div$  10 Vdc for standard and 4  $\div$  20 mA for /I option.

Input signal can be reconfigured via software selecting between voltage and current, within a maximum range of  $\pm 10\text{ Vdc}$  or  $\pm 20\text{ mA}$ .

Drivers with fieldbus interface can be software set to receive reference signal directly by the machine control unit (fieldbus reference).

Analog reference input signal can be used as on-off commands with input range 0  $\div$  24Vdc.

### 21.4 Pressure monitor output signal (P\_MONITOR)

The driver generates an analog output signal proportional to the actual pressure of the valve; the monitor output signal can be software set to show other signals available in the driver (e.g. analog reference, fieldbus reference).

Monitor output signal is factory preset according to selected valve code, defaults settings are 0  $\div$  10 Vdc for standard and 4  $\div$  20 mA for /I option.

Output signal can be reconfigured via software selecting between voltage and current, within a maximum range of 0  $\div$  10 Vdc or 0  $\div$  20 mA.

### 21.5 Enable input signal (ENABLE)

To enable the driver, supply a 24 VDC on pin 6: Enable input signal allows to enable/disable the current supply to the solenoid, without removing the electrical power supply to the driver; it is used to active the communication and the other driver functions when the valve must be disabled for safety reasons. This condition **does not comply** with norms IEC 61508 and ISO 13849.

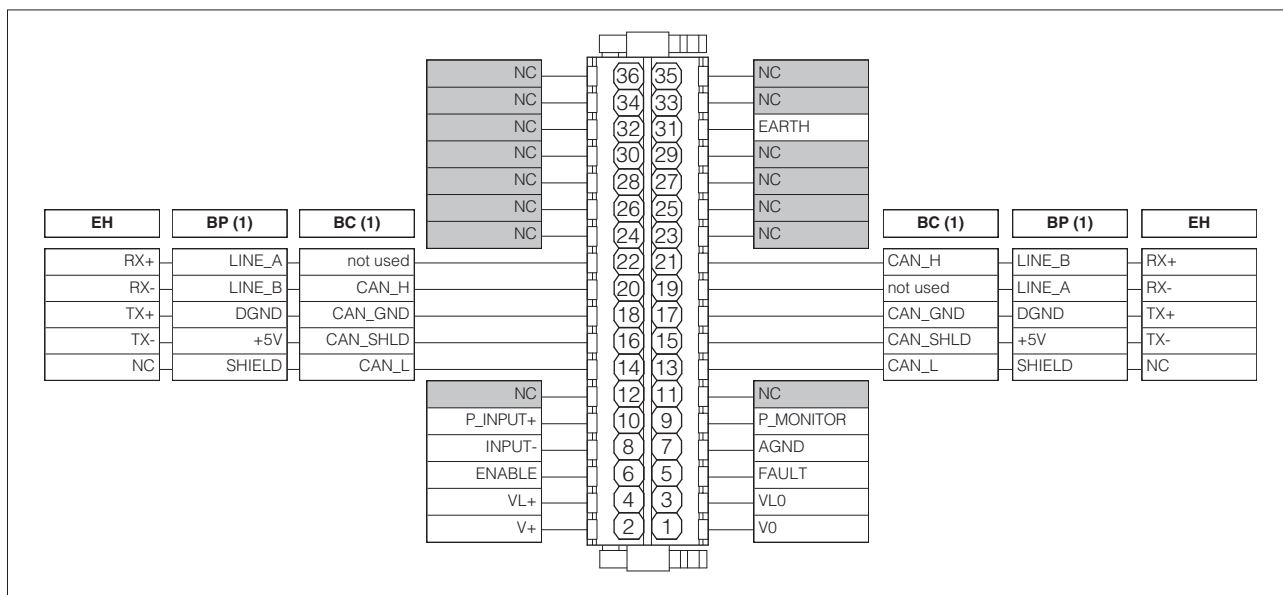
Enable input signal can be used as generic digital input by software selection.

### 21.6 Fault output signal (FAULT)

Fault output signal indicates fault conditions of the driver (solenoid short circuits/not connected, reference signal cable broken for 4  $\div$  20 mA input, spool position transducer cable broken, etc.). Fault presence corresponds to 0 Vdc, normal working corresponds to 24 Vdc.

Fault status is not affected by the Enable input signal. Fault output signal can be used as digital output by software selection.

## 22 TERMINAL BOARD OVERVIEW



(1) For BC and BP executions the fieldbus connections have an internal pass-through connection



## 23 ELECTRONIC CONNECTIONS

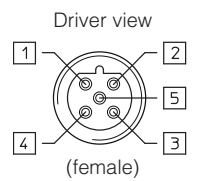
### 23.1 Main connections signals

| CABLE ENTRANCE | PIN | SIGNAL    | TECHNICAL SPECIFICATIONS   | NOTES  |
|----------------|-----|-----------|--|--|
| A              | 1   | V0        | Power supply 0 Vdc   | Gnd - power supply                                   |
|                | 2   | V+        | Power supply 24 Vdc  | Input - power supply                                 |
|                | 3   | VL0       | Power supply 0 Vdc for driver's logic and communication  | Gnd - power supply                                   |
|                | 4   | VL+       | Power supply 24 Vdc for driver's logic and communication   | Input - power supply                                 |
|                | 5   | FAULT     | Fault (0 Vdc) or normal working (24 Vdc), referred to VL0  | Output - on/off signal                               |
|                | 6   | ENABLE    | Enable (24 Vdc) or disable (0 Vdc) the driver, referred to VL0   | Input - on/off signal                                |
|                | 7   | AGND      | Analog ground  | Gnd - analog signal                                  |
|                | 8   | INPUT-    | Negative pressure reference input signal for INPUT+  | Input - analog signal                                |
|                | 9   | P_MONITOR | Pressure monitor output signal: 0 ÷ 10 Vdc / 0 ÷ 20 mA maximum range, referred to AGND<br>Default is: 0 ÷ 10 Vdc or 4 ÷ 20 mA        | Output - analog signal<br><b>Software selectable</b> |
|                | 10  | P_INPUT+  | Pressure reference input signal: ±10 Vdc / ±20 mA maximum range<br>Defaults are: 0 ÷ 10 Vdc for standard and 4 ÷ 20 mA for /I option | Input - analog signal<br><b>Software selectable</b>  |
|                | 31  | EARTH     | Internally connected to driver housing   |  |

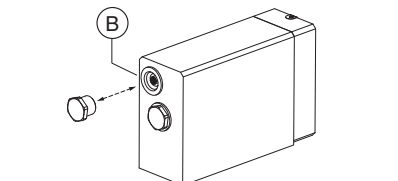
### 23.2 USB connector - M12 - 5 pin always present

| CABLE ENTRANCE | PIN | SIGNAL  | TECHNICAL SPECIFICATIONS |
|----------------|-----|---------|--------------------------|
| B              | 1   | +5V_USB | Power supply             |
|                | 2   | ID      | Identification           |
|                | 3   | GND_USB | Signal zero data line    |
|                | 4   | D-      | Data line -              |
|                | 5   | D+      | Data line +              |

Driver view



(female)



### 23.3 BC fieldbus execution connections

| CABLE ENTRANCE | PIN | SIGNAL   | TECHNICAL SPECIFICATIONS    |
|----------------|-----|----------|-----------------------------|
| C1             | 14  | CAN_L    | Bus line (low)              |
|                | 16  | CAN_SHLD | Shield                      |
|                | 18  | CAN_GND  | Signal zero data line       |
|                | 20  | CAN_H    | Bus line (high)             |
|                | 22  | not used | Pass-through connection (1) |

| CABLE ENTRANCE | PIN | SIGNAL   | TECHNICAL SPECIFICATIONS    |
|----------------|-----|----------|-----------------------------|
| C2             | 13  | CAN_L    | Bus line (low)              |
|                | 15  | CAN_SHLD | Shield                      |
|                | 17  | CAN_GND  | Signal zero data line       |
|                | 19  | not used | Pass-through connection (1) |
|                | 21  | CAN_H    | Bus line (high)             |

(1) pin 19 and 22 can be fed with external +5V supply of CAN interface

### 23.4 BP fieldbus execution connections

| CABLE ENTRANCE | PIN | SIGNAL | TECHNICAL SPECIFICATIONS              |
|----------------|-----|--------|---------------------------------------|
| C1             | 14  | SHIELD |                                       |
|                | 16  | +5V    | Power supply                          |
|                | 18  | DGND   | Data line and termination signal zero |
|                | 20  | LINE_B | Bus line (low)                        |
|                | 22  | LINE_A | Bus line (high)                       |

| CABLE ENTRANCE | PIN | SIGNAL | TECHNICAL SPECIFICATIONS              |
|----------------|-----|--------|---------------------------------------|
| C2             | 13  | SHIELD |                                       |
|                | 15  | +5V    | Power supply                          |
|                | 17  | DGND   | Data line and termination signal zero |
|                | 19  | LINE_A | Bus line (high)                       |
|                | 21  | LINE_B | Bus line (low)                        |

### 23.5 EH fieldbus execution connections

| CABLE ENTRANCE | PIN | SIGNAL | TECHNICAL SPECIFICATIONS |
|----------------|-----|--------|--------------------------|
| C1<br>(input)  | 14  | NC     | do not connect           |
|                | 16  | TX-    | Transmitter              |
|                | 18  | TX+    | Transmitter              |
|                | 20  | RX-    | Receiver                 |
|                | 22  | RX+    | Receiver                 |

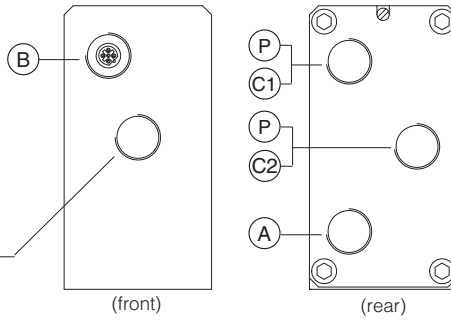
| CABLE ENTRANCE | PIN | SIGNAL | TECHNICAL SPECIFICATIONS |
|----------------|-----|--------|--------------------------|
| C2<br>(output) | 13  | NC     | do not connect           |
|                | 15  | TX-    | Transmitter              |
|                | 17  | TX+    | Transmitter              |
|                | 19  | RX-    | Receiver                 |
|                | 21  | RX+    | Receiver                 |

**CABLE ENTRANCE OVERVIEW**

**Cables entrance description:**

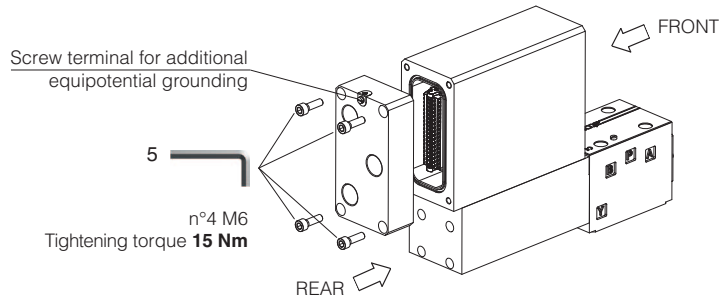
- (A) main connections
- (B) USB connector always present (factory plugged)
- (C1) fieldbus interface (input)
- (C2) fieldbus interface (output)
- (P) threaded plug

**PRESSURE TRANSDUCER CONNECTION**  
factory wired



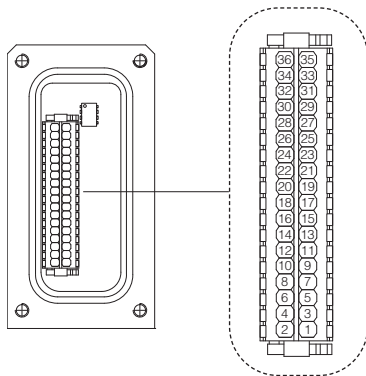
**TERMINAL BOARD AND FIELDBUS TERMINATOR**

Remove the 4 screws of driver's rear cover to access terminal board and fieldbus terminator



**WARNING:** the above operation must be performed in a safety area

Terminal board - see section 22



Fieldbus terminator only for BC and BP executions (1)

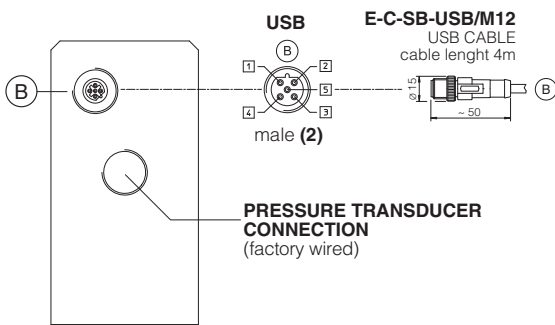
**BC - CANopen setting:**

| Switch | Termination enabled |
|--------|---------------------|
| 1      | OFF                 |
| 2      | OFF                 |
| 3      | OFF                 |
| 4      | ON                  |

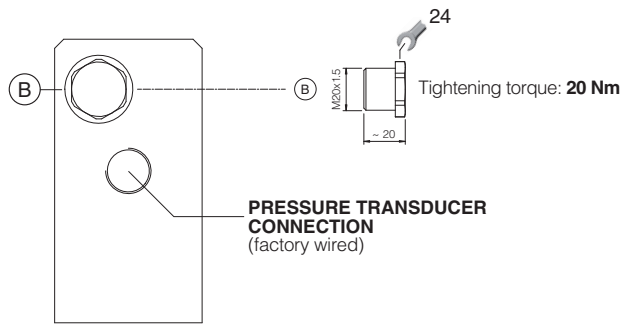
**BP - PROFIBUS DP setting:**

| Switch | Termination enabled |
|--------|---------------------|
| 1      | ON                  |
| 2      | ON                  |
| 3      | OFF                 |
| 4      | OFF                 |

**USB CONNECTOR**



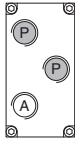
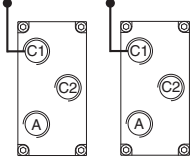
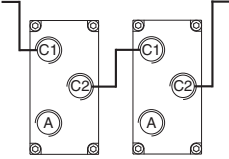
**METALLIC PROTECTION CAP** - supplied with the valves



(1) Drivers with BC and BP fieldbus interface are delivered by default 'Not Terminated'. All switches are set OFF  
 (2) Pin layout always referred to driver's view

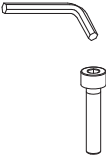



**24.1 Cable glands and threaded plug** - see tech table **KX800**

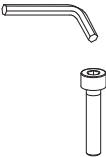

| Communication interfaces                  | To be ordered separately |               |                        |          | Cable entrance overview   | Notes  |
|---|--------------------------|---------------|------------------------|----------|---|--|
|   | Cable gland quantity     | entrance      | Threaded plug quantity | entrance |   |  |
| NP  | 1                        | A             | none                   | none     |  | Cable entrance P are factory plugged<br>Cable entrance A is open for costumers |
| BC, BP, EH<br>"via stub"<br>connection    | 2                        | C1<br>A       | 1                      | C2       |  | Cable entrance A, C1, C2 are open for costumers                                |
| BC, BP, EH<br>"daisy chain"<br>connection | 3                        | C1<br>C2<br>A | none                   | none     |  | Cable entrance A, C1, C2 are open for costumers                                |

**25 FASTENING BOLTS AND SEALS**

**25.1 RZGA valves**

|   |   |   |
|---|---|---|
|  | <b>RZGA-RES-*-010</b>   | <b>RZGA-RES-*-033</b>   |
|   | <p><b>Fastening bolts:</b><br/>4 socket head screws M5x50 class 12.9<br/>Tightening torque = 8 Nm</p> | <p><b>Fastening bolts:</b><br/>4 socket head screws M5x50 class 12.9<br/>Tightening torque = 8 Nm</p> |
|  | <b>Seals:</b><br>4 OR 108<br>Diameter of ports P, A, T: Ø 5 mm  | <b>Seals:</b><br>4 OR 108<br>Diameter of ports P, A, T: Ø 7,5 mm                                      |

**25.2 AGRCZA valves**

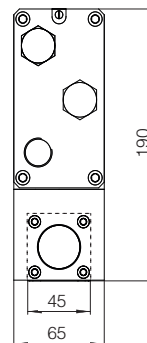
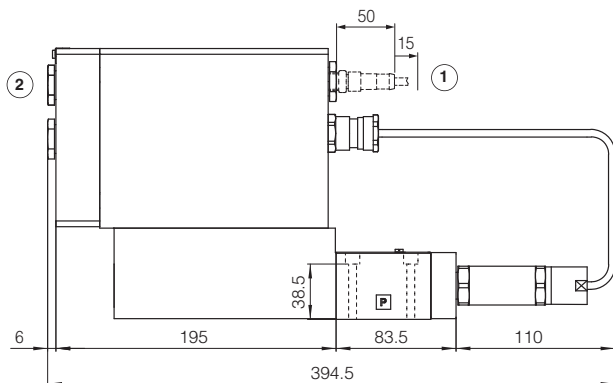
|   |   |   |
|---|---|---|
|  | <b>AGRCZA-RES-*-10</b>  | <b>AGRCZA-RES-*-20</b>  |
|   | <p><b>Fastening bolts:</b><br/>4 socket head screws M10x45 class 12.9<br/>Tightening torque = 70 Nm</p>       | <p><b>Fastening bolts:</b><br/>4 socket head screws M10x45 class 12.9<br/>Tightening torque = 70 Nm</p>       |
|  | <b>Seals:</b><br>2 OR 3068<br>Diameter of ports A, B: Ø 14 mm<br>2 OR 109/70<br>Diameter of port X, Y: Ø 5 mm | <b>Seals:</b><br>2 OR 4100<br>Diameter of ports A, B: Ø 22 mm<br>2 OR 109/70<br>Diameter of port X, Y: Ø 5 mm |

**RZGA-RES-\*-010**

ISO 4401: 2005

Mounting surface: 4401-03-02-0-05 (see table P005)  
(port B not used)

| Mass [kg]      |     |
|----------------|-----|
| RZGA-RES-*-010 | 8,5 |

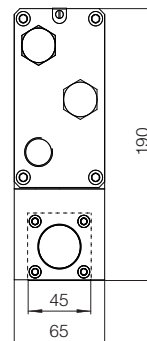
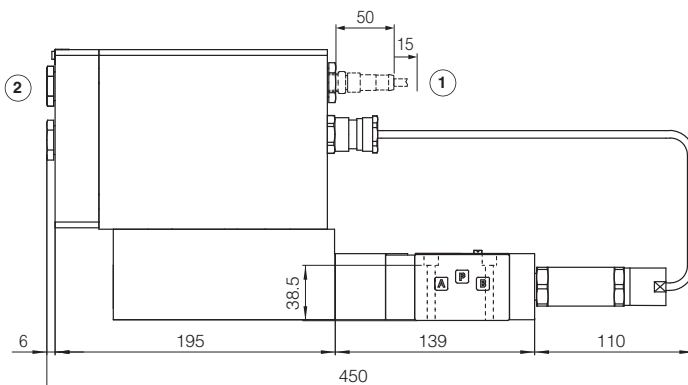


**RZGA-RES-\*-033**

ISO 4401: 2005

Mounting surface: 4401-03-02-0-05 (see table P005)  
(port B not used)

| Mass [kg]      |     |
|----------------|-----|
| RZGA-RES-*-033 | 9,5 |



① = Space to remove the USB connector

② = The dimensions of cable glands must be considered (see tech table **KX800**)

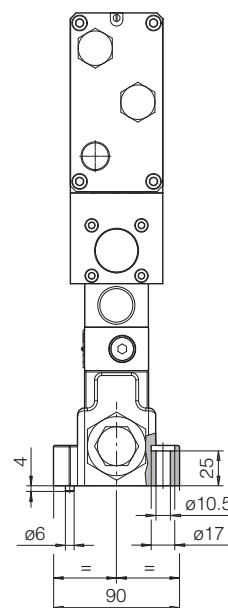
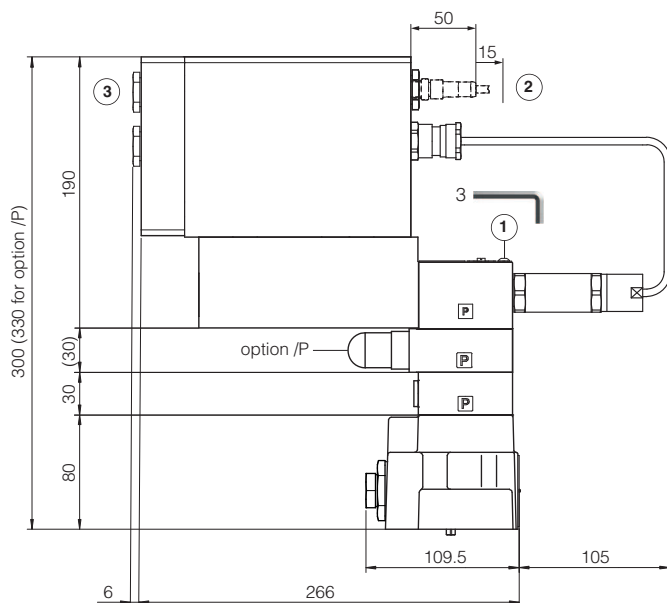
27 INSTALLATION DIMENSIONS FOR AGRCZA [mm]

**AGRCZA-RES-\*-10**

ISO 5781: 2000

Mounting surface: 5781-06-07-0-00 (see table P005)

| Mass [kg]       |      |
|-----------------|------|
| AGRCZA-RES-*-10 | 12,1 |

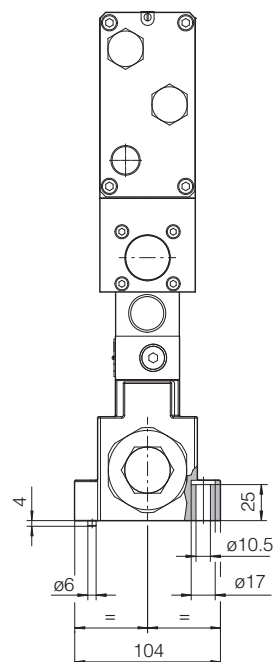
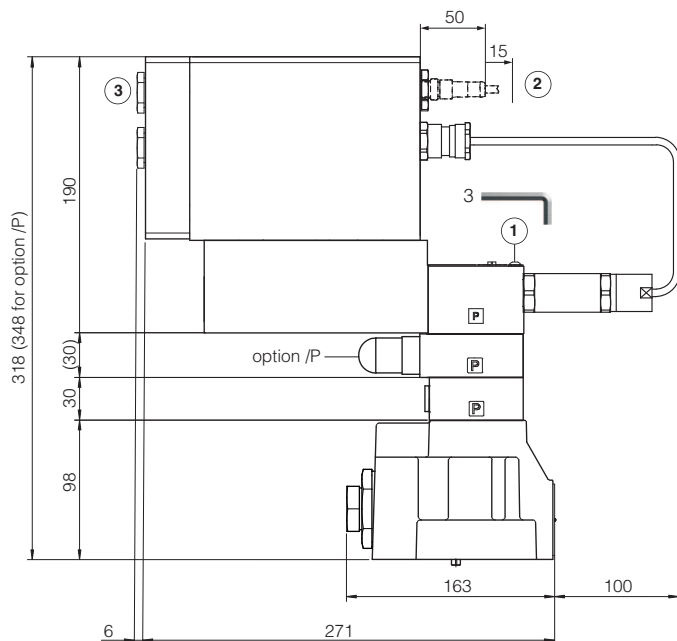


**AGRCZA-RES-\*-20**

ISO 5781: 2000

Mounting surface: 5781-08-10-0-00 (see table P005)

| Mass [kg]       |      |
|-----------------|------|
| AGRCZA-RES-*-20 | 13,3 |



- ① = Air bleed off
- ② = Space to remove the USB connector
- ③ = The dimensions of cable glands must be considered (see tech table **KX800**)

28 RELATED DOCUMENTATION

- X010** Basics for electrohydraulics in hazardous environments
- X020** Summary of Atos ex-proof components certified to ATEX, IECEx, EAC, PESO
- FX900** Operating and maintenance information for ex-proof proportional valves
- GS500** Programming tools
- GS510** Fieldbus

- GX800** Ex-proof pressure transducer type E-ATRA-7
- KX800** Cable glands for ex-proof valves
- P005** Mounting surfaces for electrohydraulic valves