# QUICKSTART BASIC

QB400-7 - 04/22

**for digital proportionals with pressure transducer - analog reference signal**

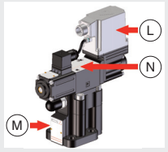
## PROPORTIONAL PRESSURE RELIEF AND REDUCING VALVES

**Valve model:**
RZMO-REB-P  RZGO-REB-P  AGMZO-REB-P  AGRCZO-REB-P

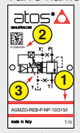
**Driver model:**
E-RI-REB-P

## IDENTIFICATION

Valve identification plates and label

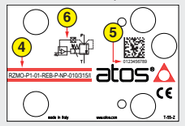



Valve name plate : **M**



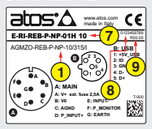
**1** : valve code
**2** : valve matrix code
**3** : valve hydraulic symbol

Pilot valve name plate : **N**



**4** : pilot valve code
**5** : pilot valve matrix code
**6** : pilot hydraulic symbol

Driver label : **L**



**7** : driver code
**8** : driver serial number
**9** : factory firmware version

## INSTALLATION TOOLS ACCORDING TO VALVE MODEL- not included

| Fastening bolts | Wrenches | | Screwdriver | Main connectors | |
|---|---|---|---|---|---|
| | | | | **std, /Q** | **/Z** |
|  |  |  |  |  |  |
| socket head screws | for fastening bolts | mechanical pilot relief | for air bleeding | 7 pin - metallic | 12 pin - metallic |
| see STEP 1 and STEP 3 | | | | see STEP 2 | |

## PROGRAMMING TOOLS - not included

| Software | USB connection KIT | | OR | Bluetooth connection KIT | |
|---|---|---|---|---|---|
| | Cable | Isolator | | Cable | Adapter |
|  |  |  | |  |  |
| **E-SW-BASIC** free basic software download from **MyAtos** at **www.atos.com** | **E-C-SB-USB/M12** | **E-A-SB-USB/OPT** | | **E-C-SB-M12/BTH** | **E-A-SB-USB/BTH** |

## PROGRAMMING SOFTWARE

The software is available in different versions according to the driver's options:

| | | | | | |
|---|---|---|---|---|---|
| **E-SW-BASIC** | supports | **NP** (USB) | **IL** (IO-Link) | **PS** (Serial) | **IR** (Infrared) |
| **E-SW-FIELDBUS** | supports | **BC** (CANopen) **EW** (POWERLINK) | **BP** (PROFIBUS DP) **EI** (EtherNet/IP) | **EH** (EtherCAT) **EP** (PROFINET RT/IRT) | |
| **E-SW-*/PQ** | supports | valves with **SP**, **SF**, **SL** alternated P/Q control | | | |

E-SW-FIELDBUS supports also valves without fieldbus communication;  E-SW-*/PQ supports also valves without P/Q control

**REMARK** Atos software is designed for Windows based operative systems - Windows XP SP3 or later

## DOWNLOAD AREA


Download area
electronics

Perform the registration at **www.atos.com/en-it/login** by filling the form. In MyAtos area, perform login with personal username and password and then press the **Download area electronics** button

Free version of E-SW-BASIC can be downloaded and used by the "FREE Activation Code"

The software remains active for 10 days from the installation date and then it stops until the user inputs the Activation Code

## RELATED DOCUMENTATION - www.atos.com - section Catalog on-line

| | | | |
|---|---|---|---|
| **FS900** | Operating and maintenance information - tech. table | **STARTUP E-SW-BASIC** | Software startup guide |
| **FS010** | RZMO-010 pressure relief, direct - tech. table | **STARTUP BLUETOOTH** | Bluetooth adpter startup guide |
| **FS020** | RZGO-010 pressure reducing, direct - tech. table | **E-MAN-RI-REB** | REB - driver operating manual |
| **FS040** | AGMZO pressure relief, two stage - tech. table | | |
| **FS055** | AGRCZO pressure reducing, two stage - tech. table | | |
| **FS067** | RZMO-030 pressure relief, piloted - tech. table | | |
| **FS075** | RZGO-033 pressure reducing, piloted - tech. table | | |
| **P005** | Mounting surfaces - tech. table | | |
| **GS500** | Programming tools - tech. table | | |
| **K800** | Electric and electronic connectors - tech. table | | |

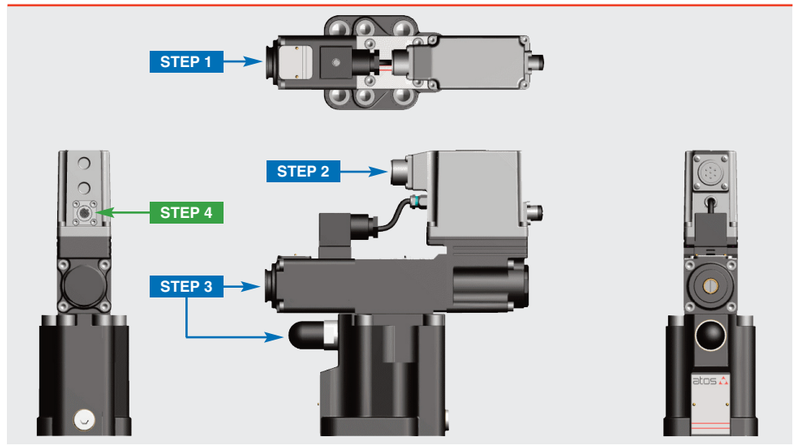
## ATTENTION !

The purpose of this quickstart guide is show a logical sequence of basic operations. This guide does not cover all details or variants of Atos valves. All operations described in this document should be performed only by qualified personnel.
Operations and images could be subject to change without notice. For further information please refer to related documentation.

## CONTACT US

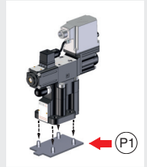

Atos spa - Italy - 21018 Sesto Calende  www.atos.com  support@atos.com


## PRODUCTS OVERVIEW




| INSTALLATION | | | PROGRAMMING |
|---|---|---|---|
| STEP 1 | STEP 2 | STEP 3 | STEP 4 |
| MECHANICAL | ELECTRICAL | HYDRAULICS | SOFTWARE |

## STEP 1 MECHANICAL




**In case of first commissioning, before the valve installation the whole system must be correctly flushed to grant the required cleanliness level**
During the flushing operation use on-off or by-pass valves in place of the proportional valve
- remove protection pad **P1** located on the valve bottom face only immediately before installation (do not remove connectors caps)
- check the presence and correct positioning of the seals on valve ports
- verify that valve mounting surface is clean and free from damages or burrs
- verify the correct valve orientation according to the pattern of the relevant mounting interface
- lock the fastening bolts respecting below sequence and tightening torque according to valve model

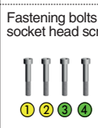
### RZMO-REB / RZGO-REB

Mounting surface layout

**4401-03-02-0-05**
(RZMO without A and B ports)
Valve size ISO 4401: **06**

RZMO **n°2 OR 108**
RZGO **n°4 OR 108**

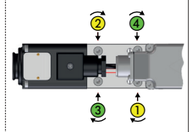

Fastening bolts socket head screws



**n°4 M5x50 class:12.9**

wrench **4 mm**

Tightening torque: **8 Nm**

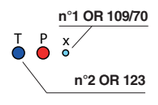


### AGMZO-REB-10

Mounting surface layout

**6264-06-09-1-97**
Valve size ISO 6264: **10**

**n°1 OR 109/70**
**n°2 OR 123**

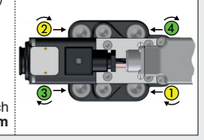



Fastening bolts socket head screws

**n°4 M12x35 class:12.9**

wrench **10 mm**

Tightening torque: **125 Nm**

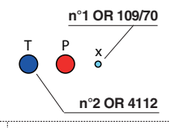


### AGMZO-REB-20

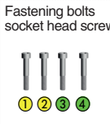
Mounting surface layout

**6264-08-13-1-97**
Valve size ISO 6264: **20**

**n°1 OR 109/70**
**n°2 OR 4112**



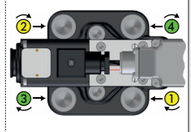

Fastening bolts socket head screws



**n°4 M16x50 class:12.9**

wrench **14 mm**

Tightening torque: **300 Nm**

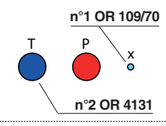


### AGMZO-REB-32

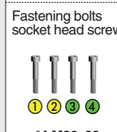
Mounting surface layout

**6264-10-17-1-97**
Valve size ISO 6264: **32**

**n°1 OR 109/70**
**n°2 OR 4131**



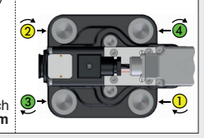

Fastening bolts socket head screws



**n°4 M20x60 class:12.9**

wrench **17 mm**

Tightening torque: **600 Nm**

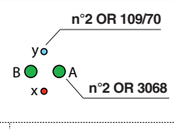


### AGRCZO-REB-10

Mounting surface layout

**5781-06-07-0-00**
Valve size ISO 5781: **10**

**n°2 OR 109/70**
**n°2 OR 3068**

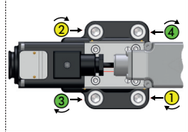



Fastening bolts socket head screws

**n°4 M10x45 class:12.9**

wrench **8 mm**

Tightening torque: **70 Nm**

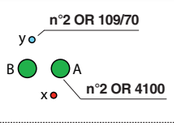


### AGRCZO-REB-20

Mounting surface layout

**5781-08-10-0-00**
Valve size ISO 5781: **20**

**n°2 OR 109/70**
**n°2 OR 4100**




Fastening bolts socket head screws

**n°4 M10x45 class:12.9**



wrench **8 mm**

Tightening torque: **70 Nm**



## STEP 2 ELECTRICAL

This section considers the different valves options, illustrating the multiple variants of the available electrical connections. The electrical connections have to be wired according to the selected valve code

**1** Remove main connector cap **P2**




**WARNING:** remove power supply before any electrical or wiring operations

**2** Select main connector according to valve code and proceed with wirings operations




Recommended LiYCY shielded cables:
7 x 0,75 mm² max 20 m
7 x 1 mm² max 40 m




Recommended LiYCY shielded cable:
12 x 0,75 mm² max 20 m

**3** Connect the valve to the system

**ZM-7P** (metallic)
**7 PIN MAIN CONNECTOR**

**ZM-12P** (metallic)
**12 PIN MAIN CONNECTOR**




**NOTE:** the use of above metallic connectors is strongly recommended in order to fulfill EMC requirements

**WARNING:** a safety fuse is required in series to driver power supply - 2,5 A time lag fuse

| Standard | | |
|---|---|---|
| A | **V+** | (power supply 24Vdc) |
| B | **V0** | (power supply 0Vdc) |
| C | **AGND** | |
| D | **P_INPUT+** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| E | **INPUT-** | |
| F | **P_MONITOR** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| G | **EARTH** | |

| /Q option | | |
|---|---|---|
| A | **V+** | (power supply 24Vdc) |
| B | **V0** | (power supply 0Vdc) |
| C | **ENABLE** | (input 24Vdc) |
| D | **P_INPUT+** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| E | **INPUT-** | |
| F | **P_MONITOR** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| G | **EARTH** | |

| /Z option | | |
|---|---|---|
| 1 | **V+** | (power supply 24Vdc) |
| 2 | **V0** | (power supply 0Vdc) |
| 3 | **ENABLE** | (input 24Vdc) |
| 4 | **P_INPUT+** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| 5 | **INPUT-** | |
| 6 | **P_MONITOR** | (0 ÷ 10Vdc / 4 ÷ 20mA) |
| 7 | **NC** | |
| 8 | **NC** | |
| 9 | **VL+** | (logic power supply 24Vdc) |
| 10 | **VL0** | (logic power supply 0Vdc) |
| 11 | **FAULT** | (output 24Vdc) |
| PE | **EARTH** | |

## ELECTRICAL WIRING EXAMPLES

### MAIN CONNECTOR - VOLTAGE

REFERENCE INPUT - DIFFERENTIAL MODE




REFERENCE INPUT - COMMON MODE




MONITOR OUTPUT




### MAIN CONNECTOR - CURRENT

REFERENCE INPUT - DIFFERENTIAL MODE




REFERENCE INPUT - COMMON MODE




MONITOR OUTPUT




## STEP 3 HYDRAULICS




Screwdriver

**Air bleeding:**
- release 2 or 3 turns the air bleed screw **V**
- cycle the valve at low pressure until the oil leaking from the **V** port is exempted from air bubbles
- lock the air bleed screw **V**




Wrenches
① **6 mm** adjustment screw
② **11 mm** locking nut

**Mechanical pressure limiter setting –** only **AGMZO** and **AGRCZO** with /P option
For safety reasons the factory setting of the mechanical pilot relief valve 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, proceeding as follow:
- apply the max reference input signal to the valve's driver. The system pressure will not increase until the mechanical pressure limiter remains unloaded
- release the locknut ②, turn clockwise the adjustment screw ① until the system pressure will increase up to a stable value corresponding to the pressure set-point 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, then tighten the locknut ②

Consult tech table **FS900** for general guidelines about component's commissioning

**WARNING:** To avoid overheating and possible damage of the electronic driver, the valves must be never energized without hydraulic supply to the valve. In case of prolonged pauses of the valve operation during the machine cycle, it is always advisable to switch off or disable the driver (option /Q or /Z)

## STEP 4 SOFTWARE

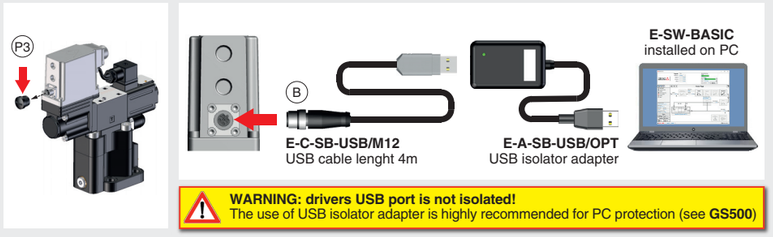
**REMARK** proportional valves with integral electronics are factory preset with default parameter and ready to use after piping and electrical connections. **Play with parameters is optional, not mandatory!**

| PROGRAMMING | | | | PC |
|---|---|---|---|---|
| 4.1 | 4.2 | 4.3 | 4.4 | 4.5 |
| CONNECTION | CONFIGURATION | SMART TUNING | STORE | BACK UP |

## 4.1 CONNECTION

**1** **In order to access valve parameterization:**
- Install E-SW-BASIC software on PC
- Insert main connector to the valve and power on with **24Vdc**

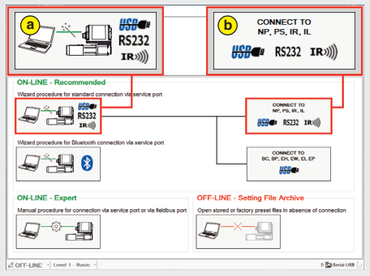
**2** Remove USB plastic protection cap **P3** and connect valve to the PC as shown below



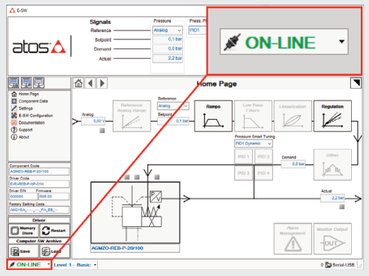

**WARNING: drivers USB port is not isolated!**
The use of USB isolator adapter is highly recommended for PC protection (see **GS500**)

**3** Launch the software using E-SW icon:
- **software does NOT detect valid connection**
  communication is not established, please follow wizard procedure 4
- **software detects valid connection**
  communication automatically established **-** valve is **ON-LINE** see 5


**4** Press buttons according the below sequence:
- (a) : **ON-LINE - Recommended**
  Wizard procedure for standard connection
- (b) : **CONNECT TO NP, PS, IR, IL**

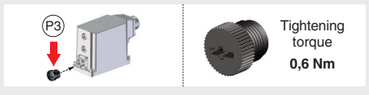



**5** Communication established, valve is **ON-LINE** and it is possible change parameters



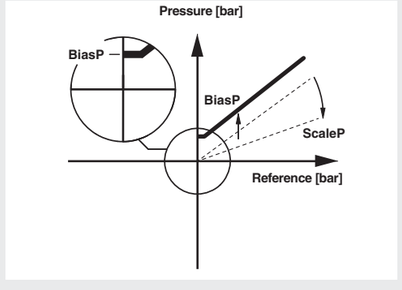

**NOTE: Bluetooth adapter available!**
For more info please refer to STARTUP BLUETOOTH guide

**REMARK:** once removed the USB cable E-C-SB-USB/M12, screw the plastic protection cap **P3** applying the correct tightening torque, in order to preserve valve's IP protection characteristics




## 4.2 CONFIGURATION

All valves

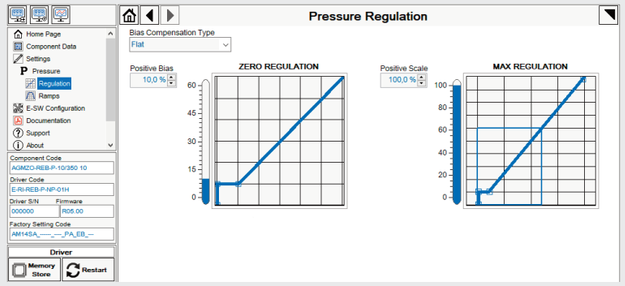



**BiasP** positive bias **ScaleP** positive scale

## BIAS AND SCALE

**Bias setting:** supply the input signal equal to 0 bar
- **relief valves:** increase the Bias until the pressure starts to increase, then lightly reduce the Bias just to bring back the pressure lightly over the minimum regulated value
- **reducing valves:** increase the Bias until is reached the minimum desired value of starting pressure

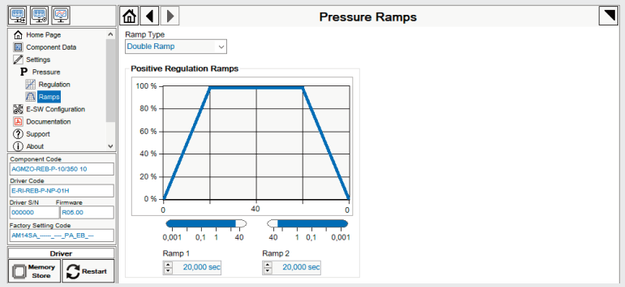
**Scale setting:** supply the max input signal; adjust the Scale to obtain the max regulated pressure




## RAMPS

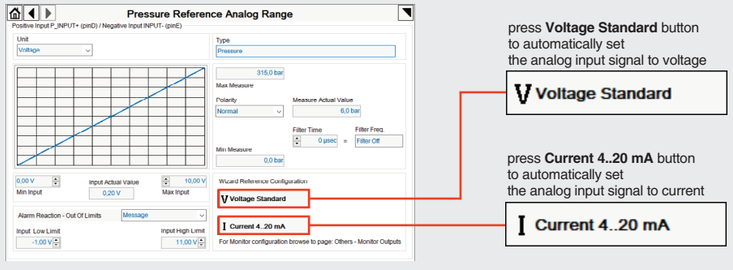
**Ramps setting:** select the required ramp configuration and adjust the ramp time to optimize the pressure response according to the system characteristics

**No Ramp**: no ramps selected **Single Ramp**: setup **Ramp 1** **Double Ramp** : setup **Ramp 1** and **2**




## WIZARD REFERENCE - E-SW level 2 functionality

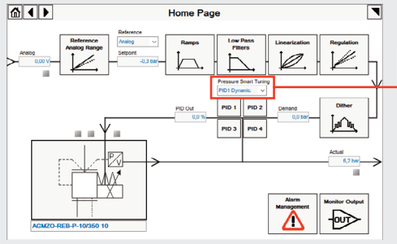
Reference input signal is factory preset according to selected valve code, defaults are 0 ÷ 10 Vdc for standard and 4 ÷ 20 mA for /I option. Input signal can be reconfigured via software selecting between voltage and current, browsing to **Reference Analog Range** page:




**REMARK: Voltage Standard** or **Current 4..20 mA** buttons do not act on Monitor output signal configuration!
For Monitor output signal configuration browse to page **Others - Monitor Outputs**

## 4.3 SMART TUNING - E-SW level 2 functionality

Smart tuning allows to adjust the valve dynamic response in order to match different performance requirements.




Pressure Smart Tuning
- PID1 Dynamic
- PID1 Dynamic
- PID2 Balanced
- PID3 Smooth

The valve is provided with 3 factory setting for the pressure control

| | |
|---|---|
| PID1 Dynamic | Fast response time for best dynamic performances - default |
| PID2 Balanced | Average response time suitable for major applications |
| PID3 Smooth | Attenuated response time for slow regulation without overshoots |

## 4.4 STORE

Parameters modifications will be stored into driver permanent memory:

- press **Memory Store** button to access **Driver - Memory Store** window
- press **Store User** button to store **Valve Parameters**

**WARNING:** During valve parameters storing operations, the driver automatically shuts down the solenoid power supply for a short time. Do not perform any storing commands while the system is working.

## 4.5 BACK UP

Parameter modifications will be saved into PC memory:

- press **Save** button to access **Computer SW Archive - Setting Files** page, **Setting File Name** pop-up appears
- input a valid name into **Description** field and press **Ok** button

## TROUBLESHOOTING

**Valve vibration or noise**
- presence of air in the solenoid; perform air bleeding procedure – see STEP 3

**The valve does not follow the reference signal**
- valve is powered off, verify presence of 24 Vdc power supply
- valve is disabled, verify presence of 24 Vdc on enable pin - only for /Q and /Z options
- the mechanical pressure limiter interferes with the regulation (AGMZO and AGRCZO with /P option) – check the pilot relief valve setting
- spool sticking (RZMO-030 and RZGO-033) – contact Atos service center
- wrong pilot/drain configuration (AGMZO) – check if the pilot/drain configuration of the valve corresponds to the effective system layout

**Pressure instability or vibration**
- select PID4 to operate the valve in open loop:
  - if the instability still persists, check eventual anomalies in the hydraulic circuit as the presence of air
  - if the instability disappears, select an alternative configuration within PID selection 1, 2 or 3 which better matches the application requirements
  - if no one of the above selection fulfills the application, tune P - I - D parameters at E-SW software level 2 to obtain the desired dynamic response

**Software parameters modifications are lost when valve is switched off**
- parameter store operation was not performed, check store procedure – see STEP 4, section 4.4

**Software parameters modifications have no effect on the valve**
- valve is OFF LINE, check connection procedure – see STEP 4, section 4.1

**After the modifications of software parameters the valve does not work properly**
- restore valve factory parameters using 'Restore Factory' button, located in 'Driver - Memory Store' window:
  - during restore, the current to the solenoid(s) will be temporarily switched to off!
  - factory parameters will be applied at next driver restart or after power off-on sequence!