QUICKSTART FULL

QF400-5 - 01/25

for digital proportionals with pressure transducer - fieldbus

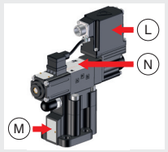
PROPORTIONAL PRESSURE RELIEF AND REDUCING VALVES

Valve model:
RZMO-RES-P RZGO-RES-P AGMZO-RES-P AGRCZO-RES-P

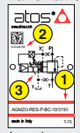
Driver model:
E-RI-RES-P

IDENTIFICATION

Valve identification plates and label

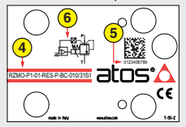


Valve name plate : **M**



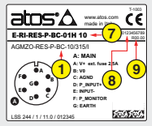
1 : valve code
2 : valve matrix code
3 : valve hydraulic symbol

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		Fieldbus connectors		
			std, /Q	/Z	BC	BP	EH
							
socket head screws	for fastening bolts and mechanical pilot relief	for air bleeding	7 pin metallic	12 pin metallic	5 pin metallic	5 pin metallic	4 pin metallic
see STEP 1 and STEP 3			see STEP 2.1		see STEP 2.2		

PROGRAMMING TOOLS - not included

PC software	mobile App	Bluetooth	OR	USB connection KIT	
		Adapter		Cable	Isolator
					
E-SW-SETUP	**Atos CONNECT**	**E-A-BTH**		**E-C-SB-USB/M12**	**E-A-SB-USB/OPT**

NOTE: Atos CONNECT supports Atos digital valve drivers equipped with E-A-BTH or with built-in Bluetooth, see STEP 5

PC SOFTWARE

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

REMARK Atos PC software is designed for Windows based operative systems - Windows 10 or later

PC SOFTWARE DOWNLOAD

Download area
electronics

Download PC software at **www.atos.com**
accessing to "**MyAtos** -> **Download area** electronics"

Free registration by filling the form at **www.atos.com/en-it/login**

E-SW-SETUP is free and available in Download area

RELATED DOCUMENTATION - www.atos.com

FS900	Operating and maintenance information - tech. table	**STARTUP BLUETOOTH**	Bluetooth adapter startup guide
FS010	RZMO-010 pressure relief, direct - tech. table	**E-MAN-RI-RES**	RES - driver operating manual
FS020	RZGO-010 pressure reducing, direct - tech. table	**E-MAN-S-BC**	CANopen protocol programming manual
FS040	AGMZO pressure relief, two stage - tech. table	**E-MAN-S-BP**	PROFIBUS DP protocol programming manual
FS055	AGRCZO pressure reducing, two stage - tech. table	**E-MAN-S-EH**	EtherCAT protocol programming manual
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		
GS510	Fieldbus - 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

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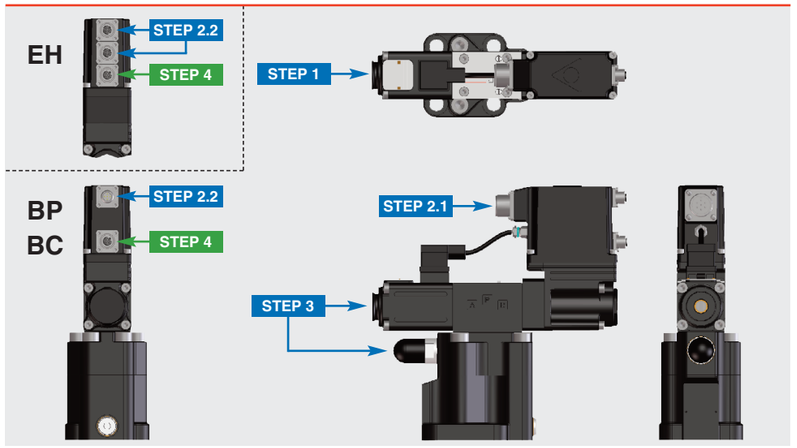
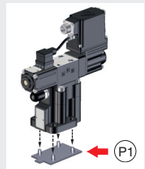
PRODUCTS OVERVIEW



INSTALLATION			PROGRAMMING	
STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
MECHANICAL	ELECTRICAL	HYDRAULICS	PC SOFTWARE	MOBILE APP

STEP 1 MECHANICAL

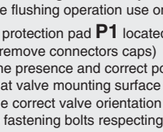


In case of first commissioning, before the valve installation the whole system must be correctly flushed to grant the required cleanliness level
During the flushing operation use on-off or by-pass valves in place of the proportional valve

- 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-RES / RZGO-RES

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

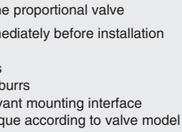


Fastening bolts socket head screws
n°4 M5x50 class:12.9
wrench **4 mm**

Tightening torque: **8 Nm**

AGMZO-RES-10

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

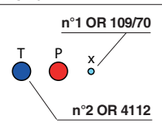


Fastening bolts socket head screws
n°4 M12x35 class:12.9
wrench **10 mm**

Tightening torque: **125 Nm**

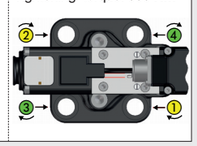
AGMZO-RES-20

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



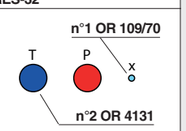
Fastening bolts socket head screws
n°4 M16x50 class:12.9
wrench **14 mm**

Tightening torque: **300 Nm**



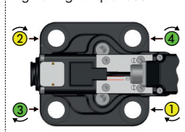
AGMZO-RES-32

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



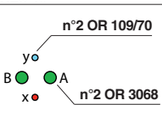
Fastening bolts socket head screws
n°4 M20x60 class:12.9
wrench **17 mm**

Tightening torque: **600 Nm**



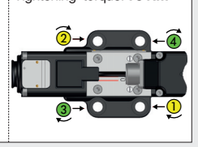
AGRCZO-RES-10

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



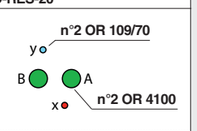
Fastening bolts socket head screws
n°4 M10x45 class:12.9
wrench **8 mm**

Tightening torque: **70 Nm**



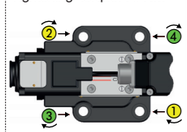
AGRCZO-RES-20

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



Fastening bolts socket head screws
n°4 M10x45 class:12.9
wrench **8 mm**

Tightening torque: **70 Nm**

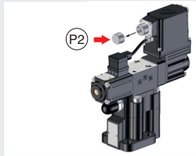


STEP 2 ELECTRICAL

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

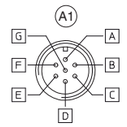
2.1 MAIN CONNECTOR

1 Remove main connector cap **P2**

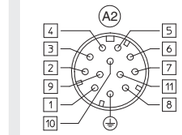


WARNING: remove power supply before any electrical or wiring operations

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

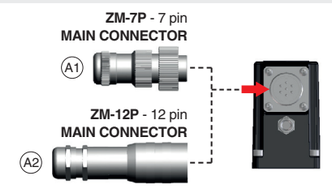


Recommended LiYCY shielded cables:
7 x 0,75 mm² max 20 m
7 x 1 mm² max 40 m



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

3 Connect the valve to the system



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**	

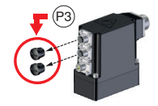
/Z option		
1	**V+**	(power supply 24Vdc)
2	**V0**	(power supply 0Vdc)
3	**ENABLE**	(input 24Vdc)
4	**P_INPUT+**	(0 ÷ 10Vdc / 4 ÷ 20mA)
5	**INPUT-**	
6	**P_MONITOR**	(0 ÷ 10Vdc / 4 ÷ 20mA)
7	**NC**	
8	**NC**	
9	**VL+**	(logic power supply 24Vdc)
10	**VL0**	(logic power supply 0Vdc)
11	**FAULT**	(output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

2.2 FIELDBUS CONNECTORS

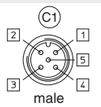
1 Remove fieldbus connectors caps **P3**

BC, BP

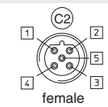
EH



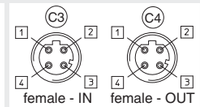
2 Select fieldbus connectors according to valve code and proceed with wirings operations



M12 Coding A
Cable diameter 6 ÷ 8 mm



M12 Coding B
Cable diameter 6 ÷ 8 mm



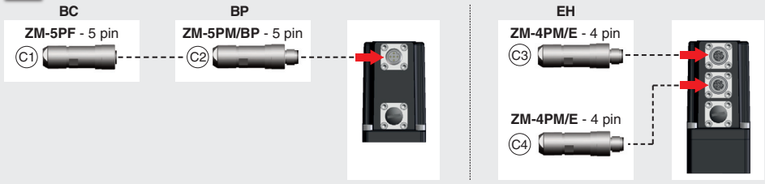
M12 Coding D
Cable diameter 4 ÷ 8 mm

BC		
1	**CAN_SHLD**	Shield
2	**not used**	
3	**CAN_GND**	Signal zero data line
4	**CAN_H**	Bus line (high)
5	**CAN_L**	Bus line (low)

BP		
1	**+5V**	Termination supply signal
2	**LINE-A**	Bus line (high)
3	**DGND**	Data line - termination signal zero
4	**LINE-B**	Bus line (low)
5	**SHIELD**	

EH		
1	**TX+**	Transmitter
2	**RX-**	Receiver
3	**TX-**	Transmitter
4	**RX-**	Receiver
housing	**SHIELD**	

3 Connect the valve to the fieldbus network. For information about fieldbus terminators see **GS500**

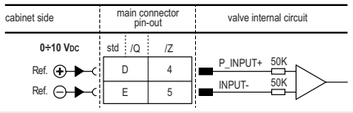


NOTE: the use of above metallic connectors is strongly recommended in order to fulfill EMC requirements

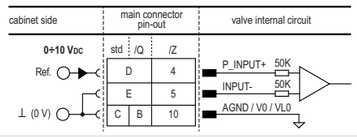
ELECTRICAL WIRING EXAMPLES

MAIN CONNECTOR - VOLTAGE

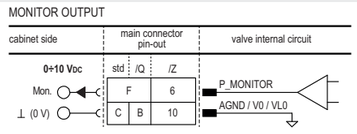
REFERENCE INPUT - DIFFERENTIAL MODE



REFERENCE INPUT - COMMON MODE

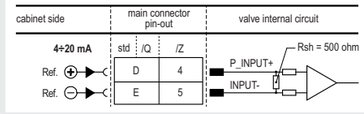


MONITOR OUTPUT

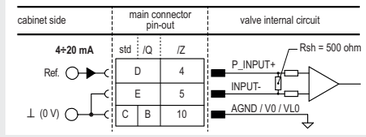


MAIN CONNECTOR - CURRENT

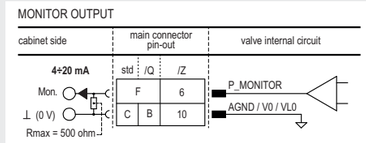
REFERENCE INPUT - DIFFERENTIAL MODE



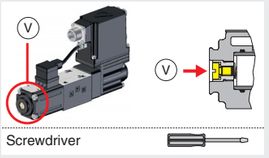
REFERENCE INPUT - COMMON MODE



MONITOR OUTPUT

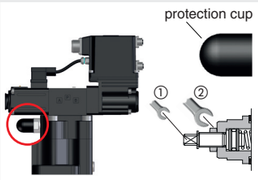


STEP 3 HYDRAULICS



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

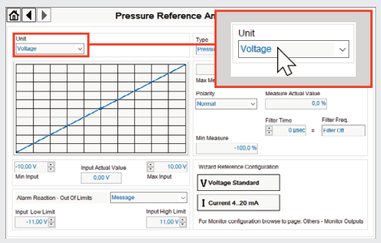
WARNING: To avoid overheating and possible damage of the electronic driver, the valves must be never energized without hydraulic supply to the valve. In case of prolonged pauses of the valve operation during the machine cycle, it is always advisable to switch off or disable the driver (option /Q or /Z)

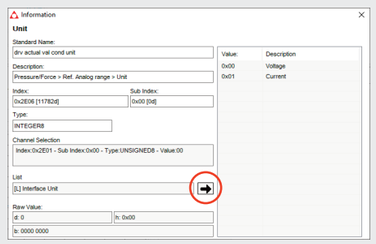
HINT ! - Wizard objects dictionary - only for **BC**, **BP**, **EH**

Press **CTRL** + **H** on the PC keyboard to open the context help form

Move arrow on parameter (e.g. **Unit**) to display the objects dictionary information to access the parameter via fieldbus

If present **List**, press ➡ to display values accepted by the parameter





NOTE: alternatively right click on any parameter

STEP 4 PC SOFTWARE

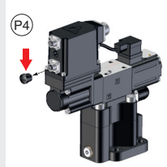
REMARK proportional valves with on-board electronics are factory preset with default parameters, only few programming operations are mandatory for setup the network parameters and the source of reference signals

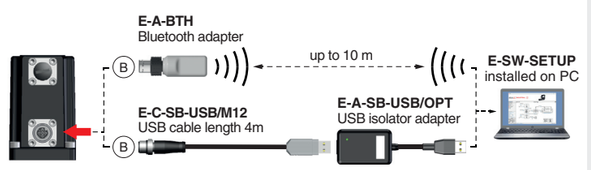
Valve programming can be performed through E-SW-SETUP software or via fieldbus

4.1 CONNECTION

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

2 Remove USB plastic protection cap **P4** and connect valve to the PC as shown below via Bluetooth (adapter only) or USB (cable and isolator adapter)





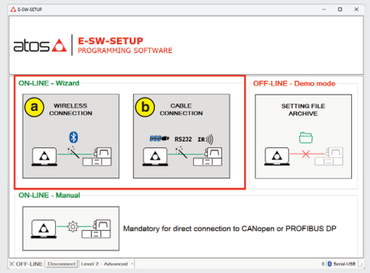
WARNING: drivers USB port is not isolated!
The use of USB isolator adapter is highly recommended for PC protection (see **GS500**)

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

4 In **ON-LINE - Wizard** press button:

a : **WIRELESS CONNECTION**
Wizard procedure for connection via Bluetooth

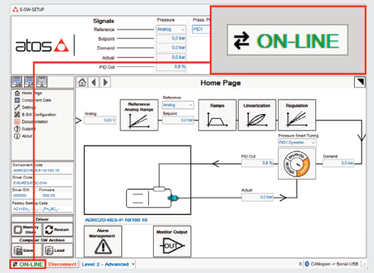
b : **CABLE CONNECTION**
Wizard procedure for connection via USB cable



NOTE: for more info about E-A-BTH Bluetooth adapter, please refer to STARTUP BLUETOOTH guide

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

NOTE: please also refer to the following parameter settings:
- see step 4.2 to change the network setup
- see step 4.3 to change the reference signals setup



REMARK: once removed the E-A-BTH Bluetooth adapter or E-C-SB-USB/M12 USB cable, screw the plastic protection cap **P4** applying the correct tightening torque, in order to preserve valve's IP protection characteristics

Tightening torque **0,6 Nm**

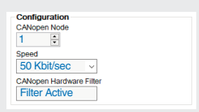
4.2 FIELDBUS - Network Management

Node, Station Alias, IP Address, Baudrate, etc... can be set through:

1) Machine central unit (master) - please refer to E-MAN-S-** fieldbus protocol programming manual

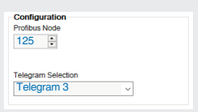
2) E-SW-SETUP
- browse to **Network Management - Configuration** to change below default settings:

BC CANopen
Configuration file: **EDS**



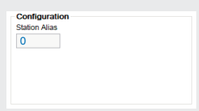
BP PROFIBUS DP
Configuration file: **GSD**

Defaults: Telegram 3



EH EtherCAT
Configuration file: **XML**

Station Alias is assigned automatically by fieldbus master



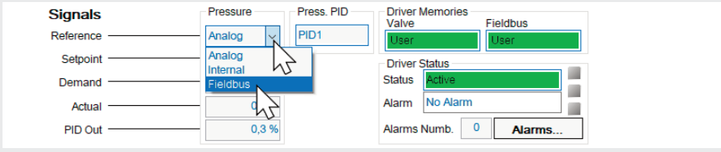
- press **Memory Store** button and press **Save User Set** button to save new setting into the driver (see 4.5)
- network configuration settings will be applied at next driver power on or pressing the **Restart** button

NOTE: configuration files are available in MyAtos area - **www.atos.com**

4.3 REFERENCES

The source of reference signals for valves with fieldbus:
- is preset as **Analog** by factory default
- can be managed through machine control unit by setting the source from **Analog** to **Fieldbus**

In **Pressure - Reference** select **Fieldbus**



4.4 SMART TUNING - E-SW-SETUP

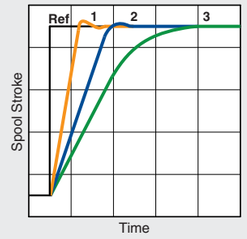
Smart tuning allows to adjust the valve dynamic response in order to match different performance requirements.

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

dynamic fast response time for best dynamic performances (default factory setting)

balanced average response time and sensitivity suitable for major applications

smooth attenuated response time for slow regulation without overshoots



1 = dynamic
2 = balanced
3 = smooth

4.5 STORE

Parameters modifications will be stored into driver permanent memory:

- press Memory Store button to access **Driver - Memory Save** window
- press Save User Set 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.

4.6 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

STEP 5 MOBILE APP

ATOS CONNECT for smartphones and tablets is a free downloadable app which allows quick access to valve main functional parameters and configuration via Bluetooth, thus avoiding physical cable connection and significantly reducing commissioning times.

ATOS CONNECT app requirements:
- iOS 14 / Android 9
- Bluetooth Low Energy (BLE), version 4.0 or higher
- Atos digital valves/drivers equipped with E-A-BTH Bluetooth adapter or with built-in Bluetooth

Download on the App Store · GET IT ON Google Play · EXPLORE IT ON AppGallery

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-SETUP software to obtain the desired dynamic response

PC software parameters modifications are lost when valve is switched off
- parameter store operation was not performed, check store procedure – see STEP 4, section 4.5

PC 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 PC software parameters the valve does not work properly
- restore valve factory parameters using 'Load Factory Set' button, located in 'Driver - Memory Save' 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!