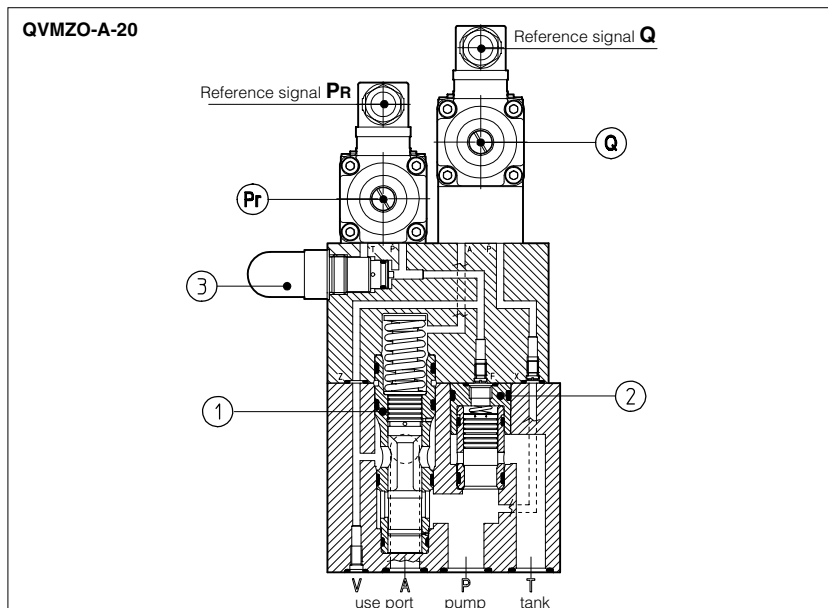


Proportional pressure and flow valves type **QVMZO**

pressure compensated, pilot operated, 3-way flow regulation



QVMZO are double proportional valves, which provide flow and pressure control in systems with fixed displacement pump, according to the electronic reference signal.

They operate in association with electronic drivers, see table 4, which supply the proportional valves with correct current signal to align valve regulation to the reference signal supplied to the electronic driver (which may be integral or Eurocard type).

The cartridge ② regulates the pressure when actual pressure reaches the set reference signal **Pr**.

The cartridge ① regulates the flow at port A according to the reference signal **Q** when actual pressure is below the set reference signal **Pr**.

The cartridge ② operates as pressure compensator between P and A ports discharging excess flow through port T. The pressure relief valve with manual setting ③ operates as safety valve.

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

Surface mounting: ISO size 16, 25, flange attachment 1 1/4" SAE 3000.

Max flow up to 170 l/min, 280 l/min, 500 l/min respectively with compensating $\Delta p = 7$ bar.

Max pressure: 250 bar.

1 MODEL CODE

QVMZO - A - 20 / 3 L4 / 250 / 18 ** /*

Double proportional valve for pressure and flow control

A = without integral transducer

Size:
20 = ISO 6263 size 20
32 = ISO 6263 size 25
40 = flange 1" 1/4 SAE 3000

3 = 3-way

Synthetic fluids:
WG = water-glycol
PE = phosphate ester

Design number

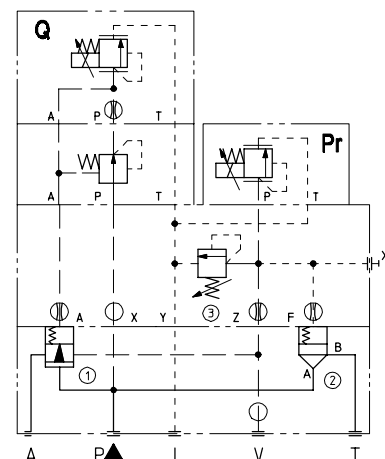
Options:
18 = with 18 Vdc coil instead of standard 12 Vdc coil

Maximum pressure
250 = 250 bar

Regulation characteristics:
L2 = linear (only for size 20); **S2** = progressive (only for size 20)
L4 = linear; **S4** = progressive

2 HYDRAULIC CHARACTERISTICS (based on mineral oil ISO VG 46 at 50 °C)

Model	QVMZO-20	QVMZO-32	QVMZO-40	
Regulation characteristics	L2, S2 L4, S4	L4, S4	L4, S4	
Maximum pressure [bar]	250			
Maximum flow [l/min]	90	170	280	
Flow regulation range [l/min]	1 ÷ 90	1 ÷ 170	2,5 ÷ 280	
Pressure regulation range [bar]	14 ÷ 250			
FLOW CONTROL Q	Compensating Δp [bar]	7	7	7
	Coil resistance R at 20° C [Ohm]	3 ÷ 3,3 Ω for standard 12 Vdc coil 13 ÷ 13,4 Ω for 18 Vdc coil		
	Max. solenoid current [A]	2 A for standard 12 Vdc coil 0,9 A for 18 Vdc coil		
	Max power [Watt]	30		
	Hysteresis [%]	≤ 3		
Repeatability [%]	≤ 1			
PRESSURE CONTROL P	Minimum piloting pressure [bar]	14		
	Coil resistance R at 20° C [Ohm]	3 ÷ 3,3 Ω for standard 12 Vdc coil 13 ÷ 13,4 Ω for 18 Vdc coil		
	Max. solenoid current [A]	2 A for standard 12 Vdc coil 0,9 A for 18 Vdc coil		
	Max power [Watt]	35		
	Hysteresis [%]	≤ 2		
Repeatability [%]	≤ 1			



Note: plug on port V is normally open. V port can be used for optional connection of valve Pr when an auxiliary pressure relief control is required.

Above performances data refer to valve coupled with Atos electronic drivers, see section 8.

3 MAIN CHARACTERISTICS OF PROPORTIONAL PRESSURE AND FLOW VALVES QVMZO

Assembly position	Any position
Subplate surface finishing	Roughness index, $\sqrt{0.4}$ flatness ratio 0,01/100 (ISO 1101)
Ambient temperature	-20°C ÷ +70°C for -A execution
Fluid	Hydraulic oil as per DIN 51524 ... 535 for other fluids see section I
Recommended viscosity	15 ÷ 100 mm ² /s at 40°C (ISO VG 15÷100)
Fluid contamination class	ISO 18/15 achieved with in line filters of 10 µm and $\beta_{10} \geq 75$ (recommended)
Fluid temperature	-20°C +60°C (standard and /WG seals) -20°C +80°C (/PE seals)

3.1 Coils characteristics

Valve model	with 12 V _{DC} coil	QVMZO with 6 V _{DC} coil	with 18 V _{DC} coil
Coil resistance R at 20°C	3 ÷ 3,3 Ω	2 ÷ 2,2 Ω	13 ÷ 13,4 Ω
Max. solenoid current	2,2 A	2,75 A	1,2 A
Max. power	30 Watt		
Protection degree (CEI EN-60529)	IP65		
Duty factor	Continuous rating (ED=100%)		

4 ELECTRONIC DRIVERS

For full information regarding electronic drivers, see section G.

Models	Execution (1)	Max power consumption (2)	Driver response	Reference signals (3)	Ramps (4)	Special functions (5)
E-MI-AC-01F	I	40 W	normal	C, (A)	YES	NO
E-BM-AC-01F	B	40 W	fast	C	YES	NO
E-RP-AC-01F	S	50 W	fast	C, (A)	YES	NO
E-ME-AC-01F	E	50 W	fast	C, (A)	YES	ENABLE

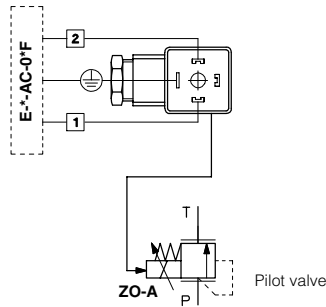
NOTE

- (1) Execution, Format/Connection
 I = plug DIN 43650-IP65, VDE 0110 direct on solenoid
 B = fast plug-in standard undecal base housing, relay type
 S = sealed box with cable clamp binding screw type
 E = Eurocard 100x160 mm (plug-in unit DIN 41494);
 X = sealed box on the valve; IP67 - DIN40050
- (2) Power supply at 24 V_{DC} ± 10%.
- (3) Reference signals
 A (option/I) = 4÷20 mA 0÷20 mA (only for E-MI)
 C = 0÷10 V_{DC}; 0÷5 V_{DC} (not available for E-RI)
- (4) Ramps options, i.e. control of rapidity on rise and fall of supply current and consequently of hydraulic parameters.
- (5) Enable: to allow driver operation only with an electric enabling signal.
 Monitor: driving current

5 ELECTRIC WIRING

Electric wiring to reference generators must be made using shielded cables: the sheath must be connected to the power supply zero **on the generator side**. The power supply must be properly stabilized or rectified and filtered. For complete electric wiring with all available options, see section G

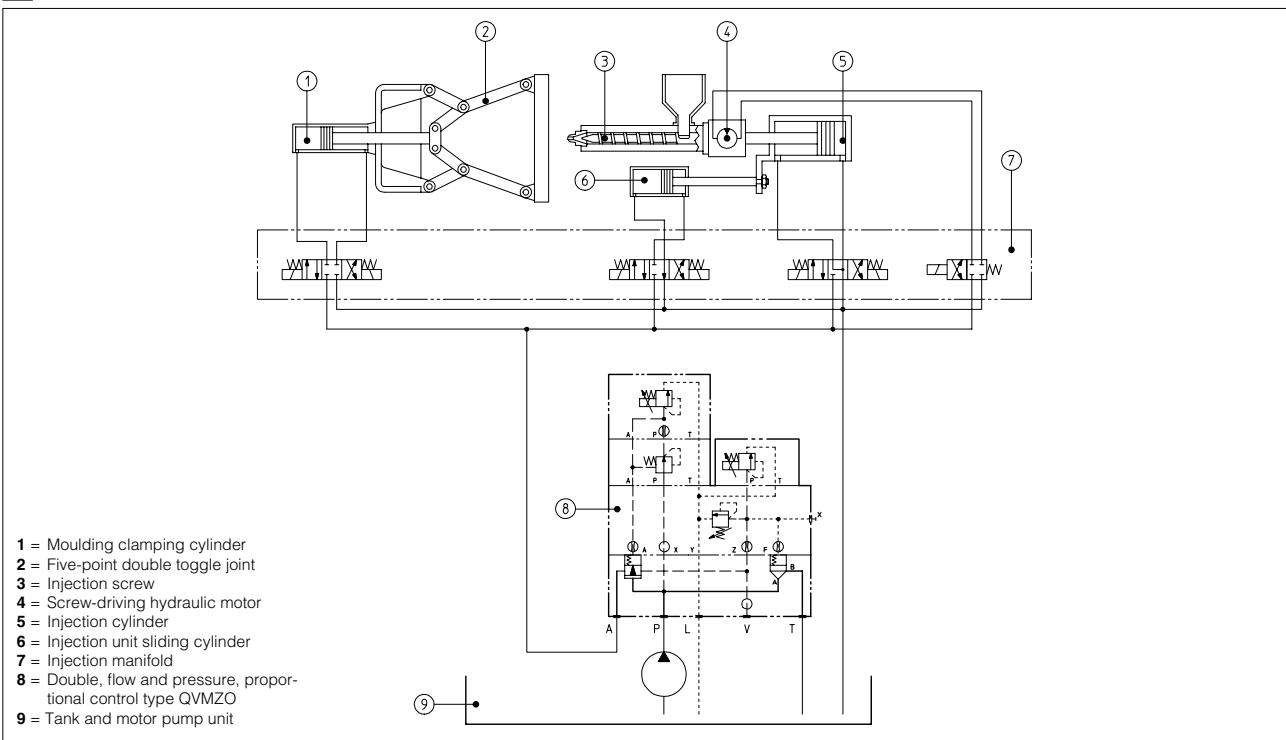
PIN	Connector
1	COIL LEAD
2	COIL LEAD
⊕	EARTH CONDUCTOR



Note:

- electrical signals (e.g. actual - feedback signals) taken via valve electronics must not be used to switch off the machine safety functions. This is in accordance with the regulations to the European standard (Safety requirements of fluid technology systems and components - hydraulics).
- basic information for commissioning and start-up are present on installation notes always enclosed to the specific technical tables and relevant components.

6 TYPICAL APPLICATION SKETCH

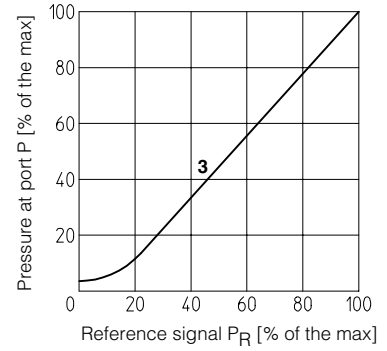
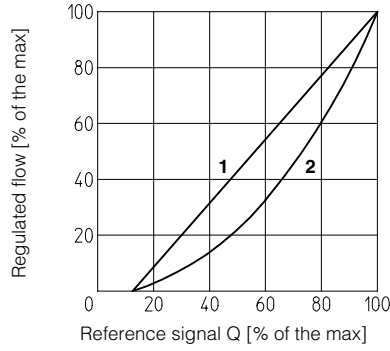


- 1 = Moulding clamping cylinder
- 2 = Five-point double toggle joint
- 3 = Injection screw
- 4 = Screw-driving hydraulic motor
- 5 = Injection cylinder
- 6 = Injection unit sliding cylinder
- 7 = Injection manifold
- 8 = Double, flow and pressure, proportional control type QVMZO
- 9 = Tank and motor pump unit

7 DIAGRAMS

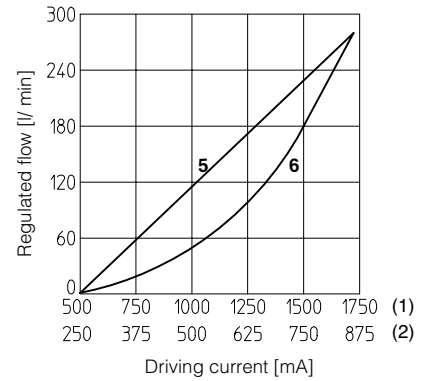
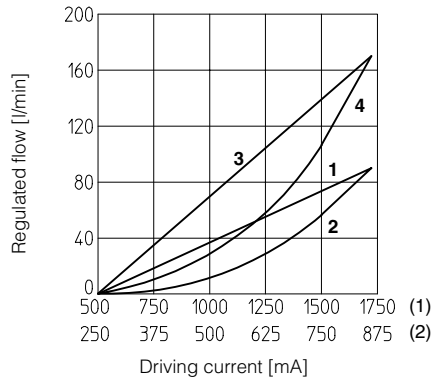
7.1 Regulation diagrams for valves with Atos electronic drivers

- 1 = QVMZO...L2, L4
- 2 = QVMZO...S2, S4
- 3 = QVMZO (pressure regulation)



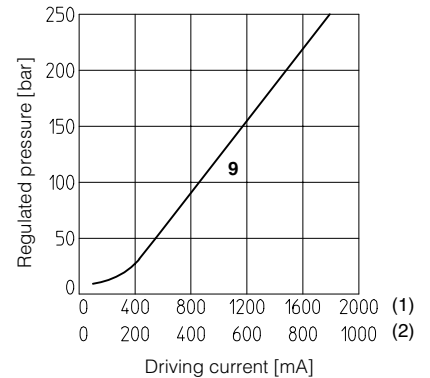
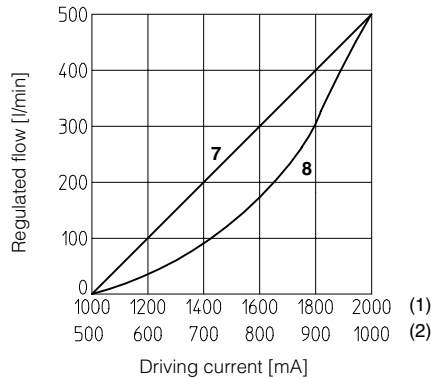
7.2 Regulation diagrams: driving current vs. regulated flow and vs. regulated pressure

- 1 = QVMZO*-20/3L2
- 2 = QVMZO*-20/3S2
- 3 = QVMZO*-20/3L4
- 4 = QVMZO*-20/3S4
- 5 = QVMZO*-32/3L4
- 6 = QVMZO*-32/3S4
- 7 = QVMZO*-40/3L4
- 8 = QVMZO*-40/3S4
- 9 = QVMZO (pressure regulation)



Note:

- (1) = with standard coil 12 V_{DC}
- (2) = with coil 18 V_{DC}



9 ELECTRONIC DRIVERS FOR QVMZO-A*

Valve model	-A				-AE	-AES
Drivers model	E-MI-AC-01F	E-BM-AC-011F	E-ME-AC-01F	E-RP-AC-01F	E-RI-AE	E-RI-AES
Data sheet	G010	G025	G035	G100	G110	G115

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

