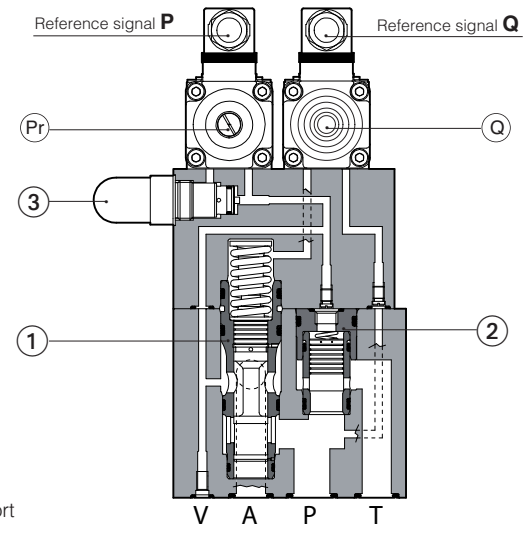
Proportional pressure and flow control valves type QVMZO

indipendent pressure and 3-way compensated flow regulation

obsolete components - availability on request

QVMZO-A-20



P = Pump port
A = User port
T = Tank port
V = Venting port

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

They operate in association with electronic drivers, see sect. 7, which supply the proportional valves with correct current signal to align valve regulation to the reference signal supplied to the electronic driver.

The cartridge ① regulates the flow at port A according to the reference signal **Q**.
The cartridge ② operates as 3-way pressure compensator between P and A ports discharging excess flow through port T.
The pressure is regulated according to the reference signal **P**.
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 Δp = 7 bar.
Max pressure: 250 bar.

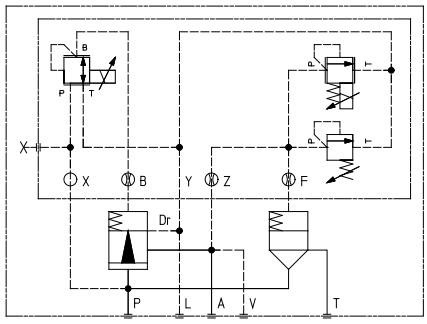
1 MODEL CODE

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

- **QVMZO**: 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
- Regulation characteristics: **L2** = linear (only for size 20); **L4** = linear; **S2** = progressive (only for size 20); **S4** = progressive
- Maximum pressure: **250** = 250 bar
- **Coil voltage (only for -A execution)**: **-** = standard coil for 24VDC Atos drivers; **6** = optional coil for 12VDC Atos drivers; **18** = optional coil for low current drivers
- Series number
- Seals material: omit for NBR (mineral oil & water glycol); **PE** = FPM

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	500
Flow regulation range		[l/min]	1÷90	1÷170	2,5 ÷ 280	5 ÷ 500
Pressure regulation range		[bar]	14 ÷ 250			
FLOW CONTROL Q	Compensating Δp	[bar]	7		7	7
	Hysteresis	[%]	≤ 3			
	Repeatability	[%]	≤1			
PRESSURE CONTROL P	Minimum piloting pressure	[bar]	14			
	Hysteresis	[%]	≤ 2			
	Repeatability	[%]	≤ 1			



Note: plug on port V is normally open.
V port can be used for optional connection to a solenoid valve for venting.

Above performances data refer to valve coupled with Atos electronic drivers, see section 7.

3 MAIN CHARACTERISTICS OF PROPORTIONAL PRESSURE AND FLOW VALVES QVMZO

Assembly position	Any position
Subplate surface finishing	Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)
Ambient temperature	-20°C ÷ +70°C
Fluid	Hydraulic oil as per DIN 51524 ... 535 for other fluids see section 1
Recommended viscosity	15 ÷100 mm^2/s at 40°C (ISO VG 15÷100)
Fluid contamination class	ISO 4406 class 20/18/15 NAS 1638 class 9, in line filters of 10 μm ($\beta_{10} \geq 75$ recommended)
Fluid temperature	-20°C +60°C (standard seals and water glycol) -20°C +80°C (/PE seals)

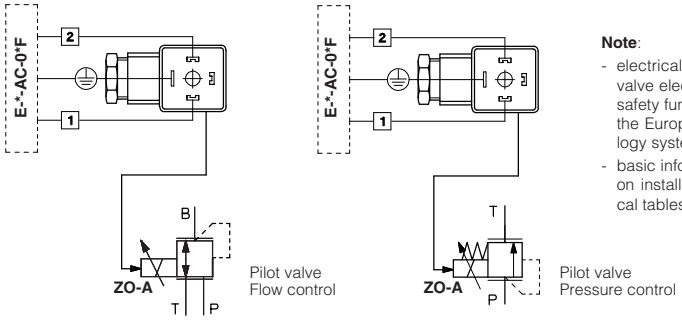
3.1 Coils characteristics

Valve model		QVMZO		
		Standard	option /6	option /18
Coil resistance R at 20°	Flow control Q	3 ÷ 3,3 Ω	2 ÷ 2,2 Ω	13 ÷ 13,4 Ω
	Pressure control P			
Max. solenoid current	Flow control Q	1,75 A	2,2 A	0,75 A
	Pressure control P	2 A	2,4 A	0,9 A
Max. power	Flow control Q	30 W	30 W	30 W
	Pressure control P	35 W	35 W	35 W
Protection degree (CEI EN-60529)		IP65		
Duty factor		Continuous rating (ED=100%)		

4 ELECTRIC WIRING

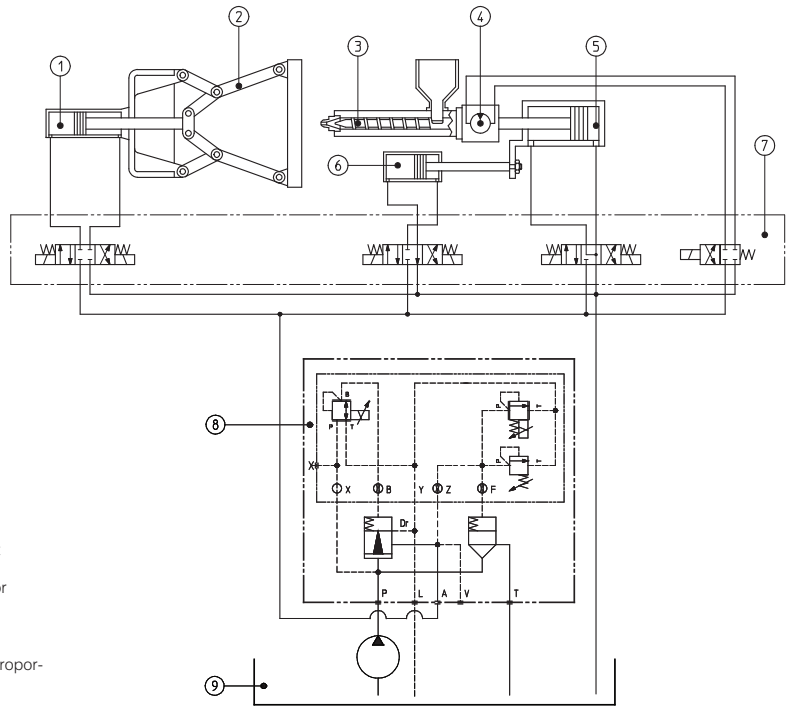
Electric wiring to reference generators must be made using shielded cables: the sheat must be connected to the power supply zero **on the generator side**. The power supply must be properly stabilized or rectified and filtered. For complete electric wiring with all available options, see section G

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 regolations 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.

5 TYPICAL APPLICATION IN PLASTIC INJECTION MACHINES

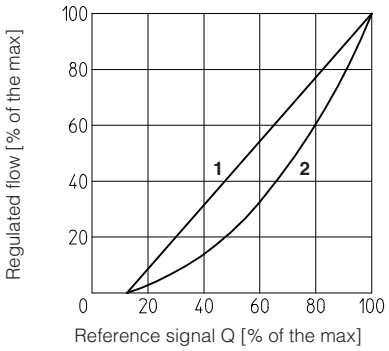


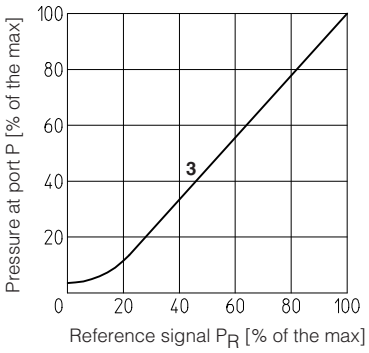
1 = Moulding clamping cylinder
2 = Five-point double toggle joint
3 = Injection screw
4 = Screw-driving hydraulic motor
5 = Injection cylinder
6 = Injection unit sliding cylinder
7 = Injection manifold
8 = Double, flow and pressure, proportional control type QVMZO
9 = Tank and motor pump unit

6 DIAGRAMS

6.1 Regulation diagrams for valves with Atos electronic drivers

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

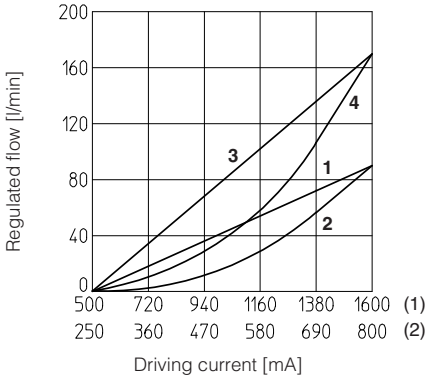


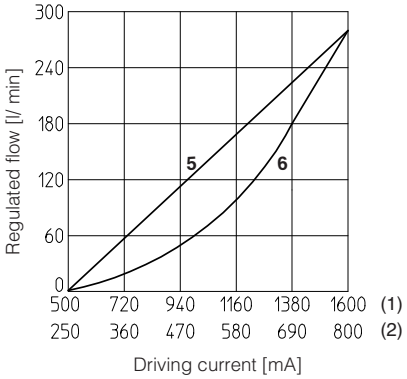


6.2 Regulation diagrams: driving current vs. regulated flow and vs. regulated pressure

1 = QVMZO-A-20/3L2
2 = QVMZO-A-20/3S2
3 = QVMZO-A-20/3L4
4 = QVMZO-A-20/3S4
5 = QVMZO-A-32/3L4
6 = QVMZO-A-32/3S4
7 = QVMZO-A-40/3L4
8 = QVMZO-A-40/3S4

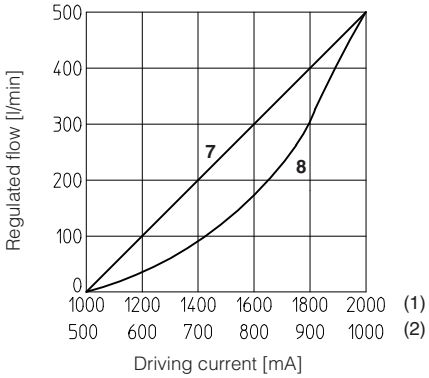
9 = QVMZO (pressure regulation)

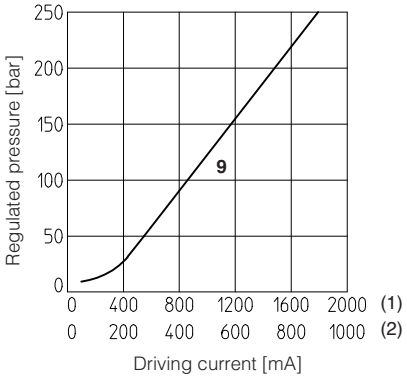




Note:

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





7 ELECTRONIC DRIVERS FOR QVMZO-A*

Valve model	-A					
Drivers model	E-MI-AC-01F	E-MI-AS-IR	E-BM-AC-011F	E-BM-AS	E-ME-AC-01F	E-RP-AC-01F
Data sheet	G010	G020	G025	G030	G035	G100

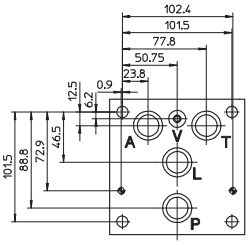
For complete information about the drivers characteristics and relevant options, see the technical data sheet specified in the table.

8 INSTALLATION DIMENSIONS [mm]

QVMZO-20

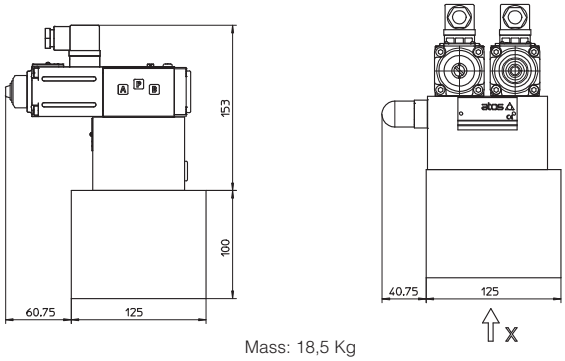
ISO 6263: 1999
Mounting surface: 6263-07-11-1-97
Fastening bolts: 4 socket head screws M10x80 class 12.9
Tightening torque = 70 Nm
Seals: 4 OR 130; 1 OR 2050
Diameter of ports A, P, T: Ø = 20 mm

P = Inlet port
A = Outlet port
T = Tank port
L = Drain port
V = Vent port



View X

QVMZO-A-20

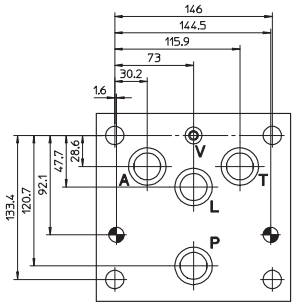


Mass: 18,5 Kg

QVMZO-32

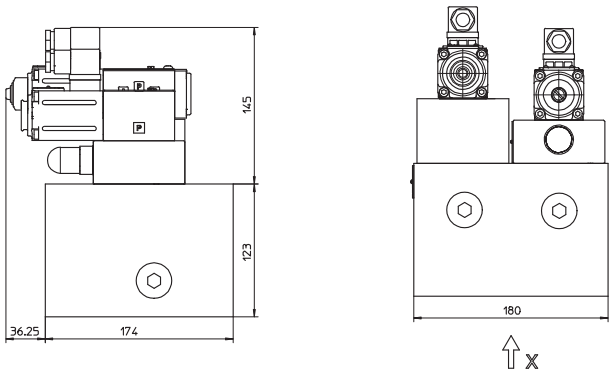
ISO 6263: 1999
Mounting surface: 6263-08-15-1-97
Fastening bolts: 4 socket head screws M16x120 class 12.9
Tightening torque = 300 Nm
Seals: 4 OR 4112, 1 OR 2050
Ports diameter:
Ø 25 mm (P, A, L, T);
Ø 5 mm (V)

P = Inlet port
A = Outlet port
T = Tank port
L = Drain port
V = Vent port



View X

QVMZO-A-32

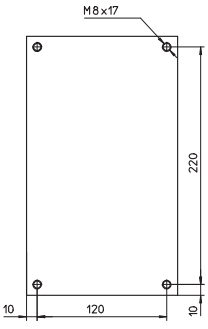


Mass: 32,8 Kg

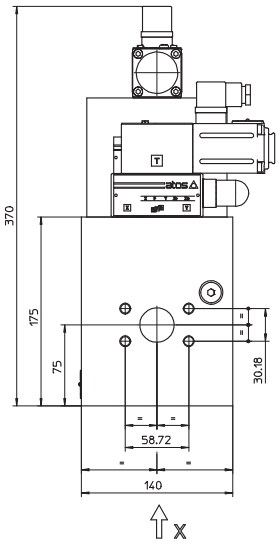
QVMZO-40

Fastening bolts: M8 class 12.9
Tightening torque = 35 Nm
Port attachments:
A, P, T = 1" 1/4 SAE 3000
L = G 1/4"

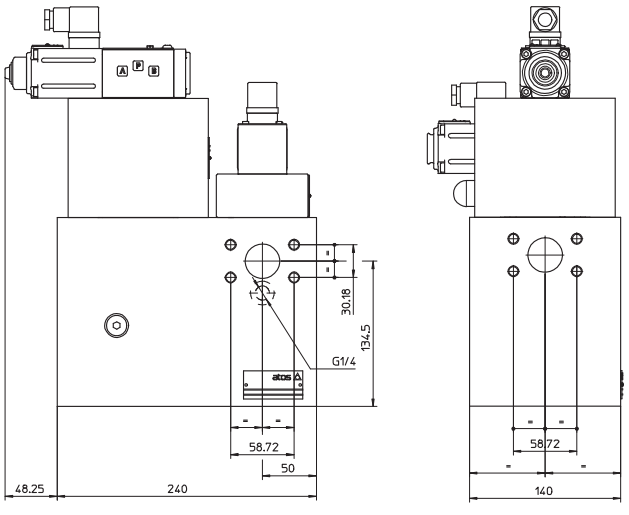
P = Inlet port
A = Outlet port
T = Tank port
L = Drain port



View X



QVMZO-A-40



Mass: 37,5 Kg