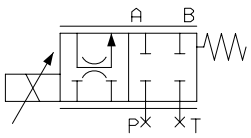
XQP.3... OPEN LOOP 2/3 WAY PROPORTIONAL PRESSURE COMPENSATED FLOW REGULATORS

The open loop proportional flow regulator is 2 and 3 way compensated with priority function. It is designed to regulate flow in proportion to an applied electrical current (REM or SE3AN power amplifier). Flow regulation is load independent - B port. Load compensation is achieved by a spool compensator which holds the pressure drop constant across the proportional spool.

Valves are available in the following versions (see hydraulic symbol):
- 2 way pressure compensated - 3 way pressure compensated with priority function.
- 3 way pressure compensated with priority and venting function.

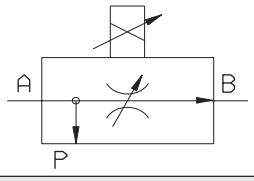


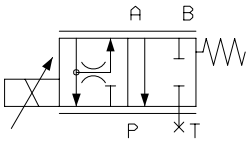
• In order to obtain the 2 way pressure compensated version the cavities P and T have be closed on the subplate.

XQP.3...	
"D15P" PROPORT. SOLENOIDS	CH. VIII PAGE 15
REM.S.RA...	CH. IX PAGE 4
SE.3.AN.21.00...	CH. IX PAGE 11
BC.06.XQP3...	CH. VII PAGE 13

HYDRAULIC SYMBOLS

SIMPLIFIED TYPE





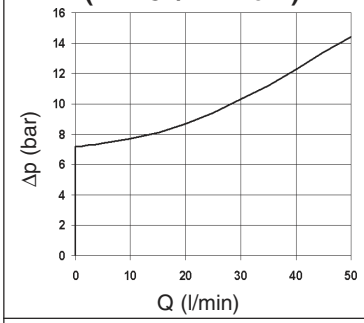
• In order to obtain the 3 way pressure compensated version the cavity T have be closed on the subplate.

ORDERING CODE

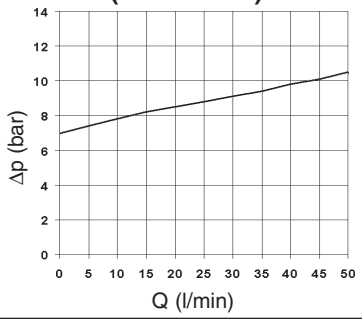
XQP	Open loop 2/3 way proportional compensated flow regulator
3	CETOP 3/NG6
C	2/3 way compensation with priority function
3	3 way version (standard) For to obtain 2-way version the P line must be closed on the subplate
*	Nominal flow rates **F** = 6 l/min **G** = 12 l/min **H** = 22 l/min **I** = 32 l/min **L** = 40 l/min
*	**S** = without decompression **D** = with decompression
*	Max. current to solenoid **E** = 2.35 A **F** = 1.76 A **G** = 0.88 A
**	**00** = No variant **P1** = Rotary emergency **P5** = Rotary emergency 180° **V1** = Viton
2	Serial No.

DIAGRAMS

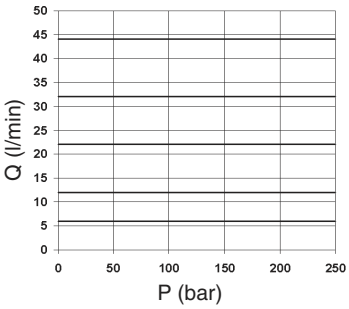
ΔP - FLOW RATE A →B (WITH 5 l/min TO P)



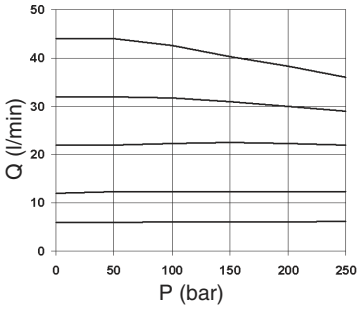
ΔP - SECONDARY LINE FLOW (A →P FREE)



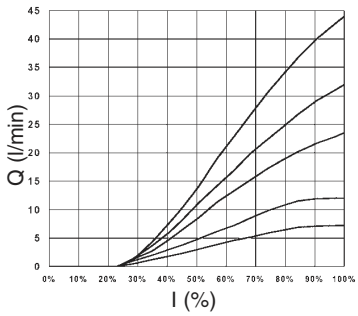
FLOW RATE BACK PRESSURE ON PRIORITY LINE



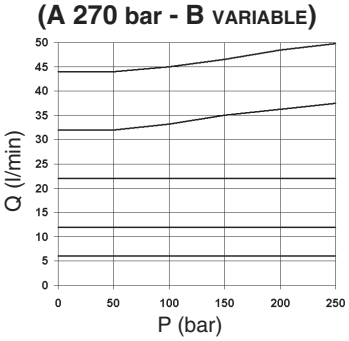
FLOW RATE BACK PRESSURE ON SECONDARY LINE



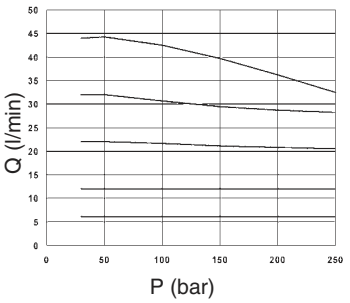
INPUT SIGNAL FLOW



2 WAY COMPENSATION (A 270 bar - B VARIABLE)



2 WAY COMPENSATION (A VARIABLE - B 30 bar)



The fluid used is a mineral based oil with a viscosity of 46 mm²/s at 40°C.
The tests have been carried out at with a fluid of a 40°C.

XQP.3... OPEN LOOP 2/3 WAY PROPORTIONAL PRESSURE COMPENSATED FLOW REGULATORS

OPERATING SPECIFICATIONS

Max. operat. pressure ports A/B /P see note (*) With T port blocked on subplate	250 bar
Regulated flow rate	6 / 12 / 22 / 32 / 40 l/min
Decompression drain flow	max 0,7 l/min
Relative duty cycle	Continuous 100% ED
Type of protection (in relation to the connector used)	IP 65
Flow rate gain	See diagram "Input signal flow"
Fluid viscosity	10 ÷ 500 mm²/s
Fluid temperature	-20°C ÷ 75°C
Ambient temperature	-20°C ÷ 70°C
Max. contamination level	from class 7 to 9 in accordance with NAS 1638 with filter $\beta_{10}\geq 75$
Weight	1,7 Kg

	2.33A	**1.76 A**	**0.88 A**
Max. current			
Solenoid coil resistance at 25°C (77°F)	2.25 Ohm	4.0 Ohm	16.0 Ohm
Hysteresis with Δp 7 bar	≤5 %	<5%	<8%
Response to step Δp = 7 bar			
0 ÷ 100%	32 ms	40 ms	85 ms
100% ÷ 0	33 ms	33 ms	33 ms
Frequency response -3db (Input signal 50% ± 25% Vmax.)	22Hz	22Hz	12Hz

(*) Pressure dynamic allowed for 2 millions of cycles

Operating specifications are valid for fluids with 46 mm²/s viscosity at 40°C, using specified ARON electronic control units.

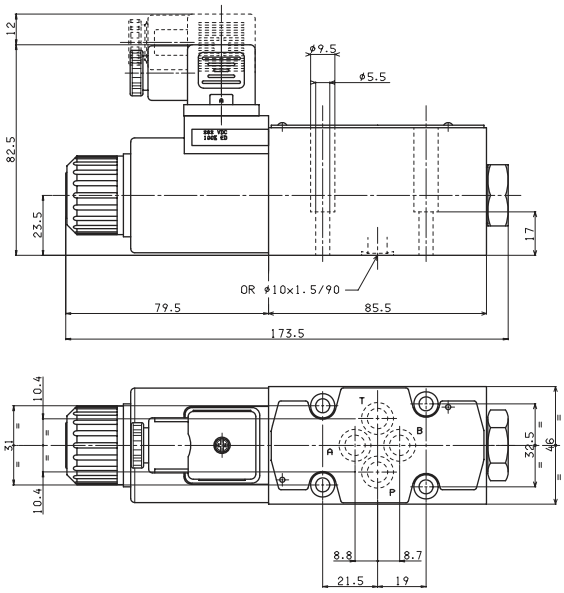
Performance data are carried out using the specified Aron power amplifier SE.3.AN...

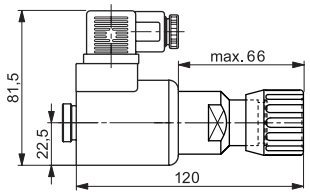
AMPLIFIER UNIT AND CONTROL

REM.S.RA.*.*...
Electronic card for control single proportional solenoid valve

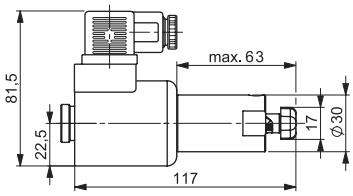
SE.3.AN.21.00...
Electronic card format EUROCARD for control single proportional solenoid valve

OVERALL DIMENSIONS



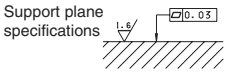


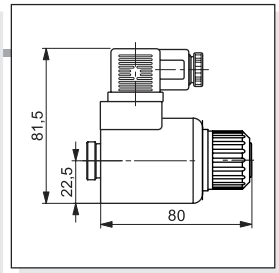
P1 Rotary emergency



P5 Rotary emergency 180°

Fixing screws UNI 5931 M5x25
(min. 8.8 material screws are recommended)
Tightening torque 4 ÷ 5 Nm / 0.4 ÷ 0.5 Kgm





"D15P" PROPORTIONAL SOLENOIDS

Type of protection (in relation to connector used)	IP 66
Duty cycle	100% ED
Insulation class	H
Weight (coil)	0,354 Kg
Weight (solenoid)	0,608 Kg

ETD15P - 01/2002/e

XQ.3... Proportional flow control valves pressure compensated CETOP 3

XQ.3...	
"D15P" Proport. solenoids	Ch. VIII page 13
REM.S.RA...	Ch. IX page 4
SE.3.AN21.00...	Ch. IX page 11
BC.3.08... / BC.3.09... BC.06.XQ3...	Ch. VII page 13

This is a proportional valve where both the flow rate and pressure control flow functions have been integrated according to the 3 way regulation concept.

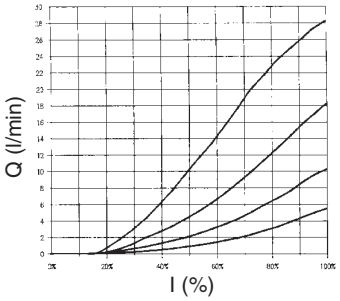
The interface UNI ISO 4401 - 03 - 02 - 0 - 94 standard (ex CETOP R 35 H 4.2-4-03) allows for direct mounting on modular block or multiple sub-bases, which makes possible many advantageous and extremely compact application solution as a consequence of their simplicity of installation.

The 3 way type pressure compensator, inserted into the valve, holds the pressure drop across the flow rate proportional regulator constant (approx. 8 bar) independently from the controlled load variations, whereby ensuring proportional between the set flow rate and the electrical command signal.

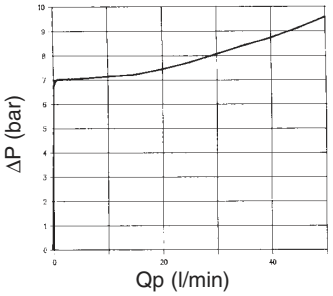
Additionally, the system maximum safety pressure can be regulated through a manual command. This valve, if mounted on the feed line to the manifold block, can be used to control several circuits which are not operating at the same time.

Diagrams

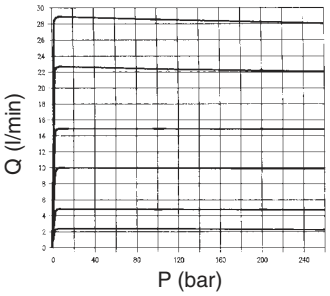
Input signal Flow rate



ΔP - Pump flow rate

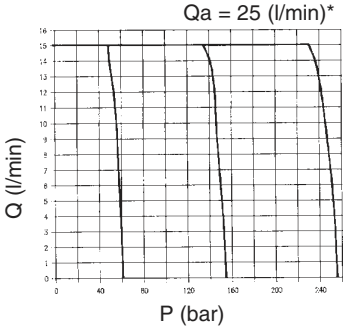


Load pressure Flow rate



Cutoff pressure (M)

Qa = 25 (l/min)*



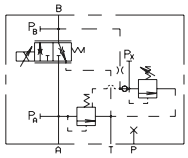
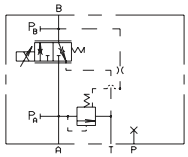
The fluid used is a mineral based oil with a viscosity of 46 mm²/s at 40°C. The tests have been carried out at with a fluid of a 40°C.

(*) Tested with 25 l/min supply

Ordering code

XQ	Proportional flow control valve
3	No. of way
C	Pressure compensation
3	CETOP 3/NG6
*	Flow rates **F** = 5 l/min **G** = 10 l/min **H** = 16 l/min **I** = 28 l/min
*	**M** = With manual pressure limiter **S** = Without manual pressure limiter
*	Setting ranges **1** = 8 ÷ 50 bar **2** = 25 ÷ 170 bar **3** = 50 ÷ 315 bar Omit for **XQ.3.C.*.S** version
*	**E** = With rotary emergency (type **P1**) **S** = Without rotary emergency
*	Voltage **E** = 9VDC (2,35 A) **F** = 12VDC (1.76 A) **G** = 24VDC (0.88 A)
**	**00** = No variant **V1** = Viton **P5** = Rotary emergency180°
2	Serial No.

Table 1 - Flow / pressure specifications

Model	Hydraulic symbol	Max flow rate (l/min)	Max flow in P (l/min)	Max limiter pressure (bar)	Max load pressure (bar)	Δp Control (bar)
XQ.3.C.3.*.M		5 10 16 28	40	8÷50 25÷170 50÷315	250	8
XQ.3.C.3.*.S		5 10 16 28	40		250	8

Max. operat. pressure ports A/B / With P port blocked on subplate	315 bar
Max. operating pressure ports T - for dynamic pressure see note (*)	250 bar
Regulated flow rate	See diagram page before
Relative duty cycle	Continuous 100% ED
Type of protection	IEC 144 class IP 65
Flow rate gain	See diagrams
Hysteresis with connection P/A/B/T Δp = 5 bar (P/A)	≤4% of max. flow rate
Fluid viscosity	10 ÷ 500 mm²/s
Fluid temperature	-20°C ÷ 75°C
Max. contamination level	class 8 in accordance with NAS 1638 with filter $ß_{10}≥75$
Weight version XQ.3.C.*.M...	2,89 Kg
Weight version XQ.3.C.*.S...	2,39 Kg

Type of voltage	9V	12V	24V
Max. current	2.35A	1.76 A	0.88 A
Solenoid coil resistance at 25°C (77°F)	2.25 Ohm	4.0 Ohm	16.0 Ohm

(*) Pressure dynamic allowed for 2 millions of cycles.

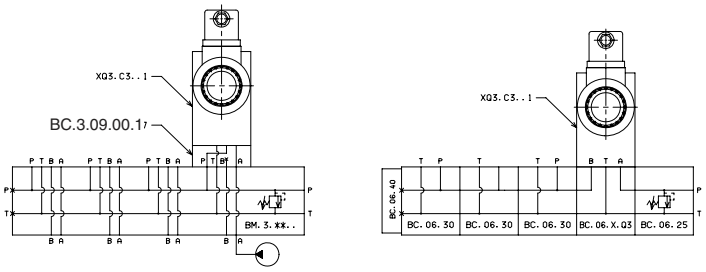
ELECTRONIC CONTROL UNIT

REM.S.RA.*.*.
Card type control for single solenoid

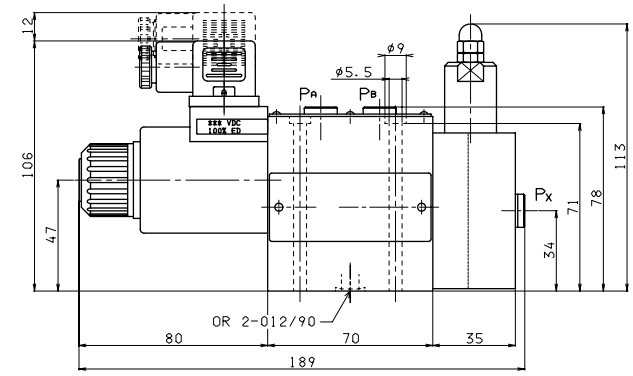
SE.3.AN.21.00...
EUROCARD type control for single solenoid

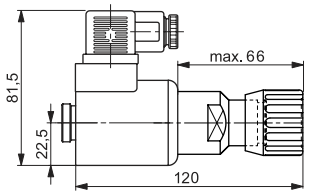
• Operating specifications are valid for fluid with 46 mm²/s viscosity at 40°C, using the specified ARON electronic control units

TYPICAL INSTALLATION

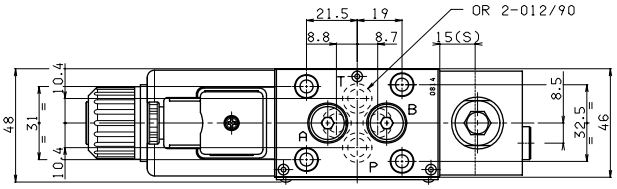


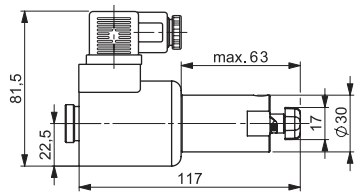
OVERALL DIMENSIONS





Rotary emergency version XQ.3.C.*.*.*.**E**

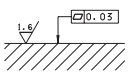


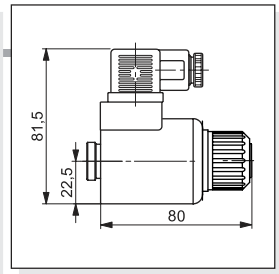


P5 Rotary emergency 180°

Fixing screws UNI 5931 M5x80
(min. 8.8 material screws are recommended)
Tightening torque 4 ÷ 5 Nm / 0.4 ÷ 0.5 Kgm

Support plane specification





"D15P" PROPORTIONAL SOLENOIDS

Type of protection (in relation to connector used)	IP 66
Duty cycle	100% ED
Insulation class	H
Weight (coil)	0,354 Kg
Weight (solenoid)	0,608 Kg

ETD15P - 01/2002/e