aron®

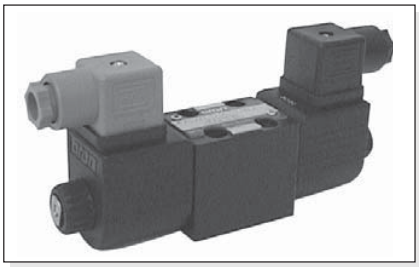
TECHNICAL CATALOGUE

June
2011

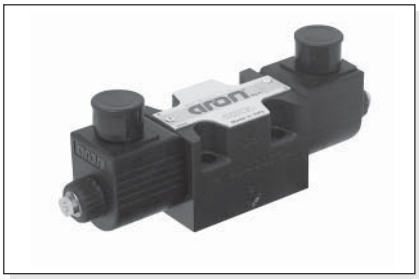
brevini fluid power

1

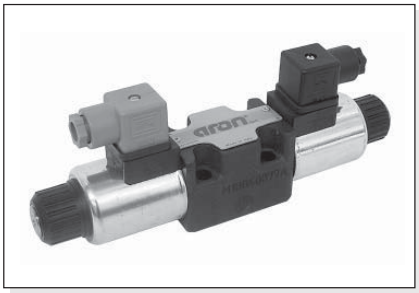
CETOP 2/NG04



CETOP 3/NG06

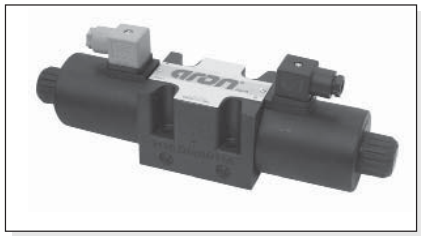


CETOP 3



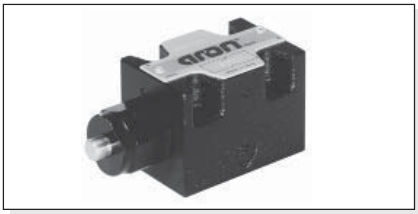
ATEX 94/9/CE
DIRECTIVE

CETOP 5/NG10

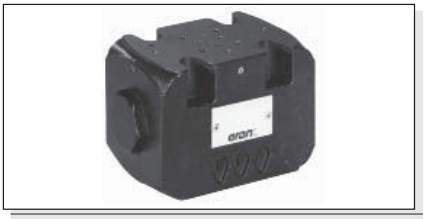


CETOP 5/NG10
High performances

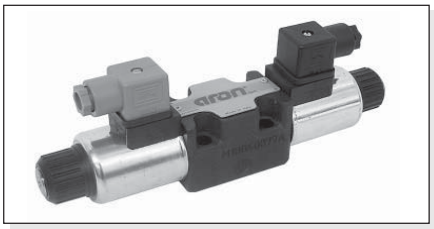
AUTOMATIC RECIPROCATING VALVES



PILOTED VALVES AND SUBPLATE MOUNTING



FLOW DIVERSION VALVES



A max. counter-pressure of 8 bar at T is permitted for the variant with a microswitch (**MS**).

(*) DC: Dynamic pressure allowed for 2 millions of cycles.
AC: Dynamic pressure allowed for 350.000 of cycles. For dynamic pressure of 100 bar are allowed 1 milion cycles.

Max. pressure port P/A/B	350 bar
Max. pressure port T (for DC) see note (*)	250 bar
Max. pressure port T (for AC) see note (*)	160 bar
Max. flow	60 l/min
Max. excitation frequency	3 Hz
Duty cycle	100% ED
Fluid viscosity	10 ÷ 500 mm²/s
Fluid temperature	-25°C ÷ 75°C
Ambient temperature	- 25°C ÷ 60°C
Max. contamination level	class 10 in accordance with NAS 1638 with filter $\beta_{25} \geq 75$
Weight with one DC solenoid	1,65 Kg
Weight with two DC solenoids	2 Kg
Weight with one AC solenoid	1,31 Kg
Weight with two AC solenoids	1,72 Kg

CALIBRATED DIAPHRAGMS (**)

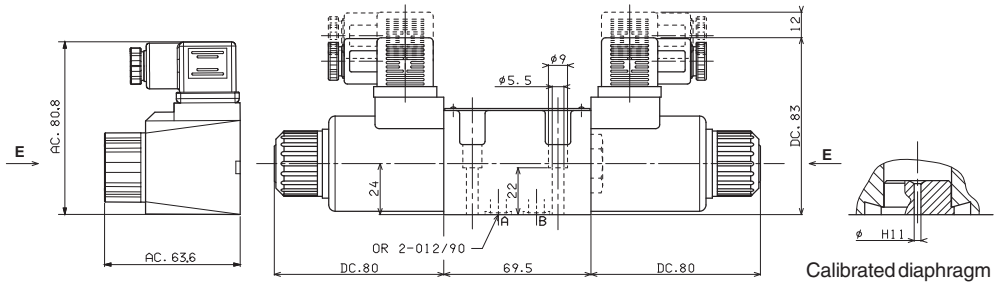
ø (mm)	Code
blind	M52.05.0023/4
0.5	M52.05.0023/1
0.6	M52.05.0023/6
0.7	M52.05.0023/8
0.8	M52.05.0023
1.0	M52.05.0023/2
1.2	M52.05.0023/3
1.5	M52.05.0023/7
2.0	M52.05.0023/10
2.2	M52.05.0023/9
2.5	M52.05.0023/5

(**) For high differential pressure please contact our technical department.

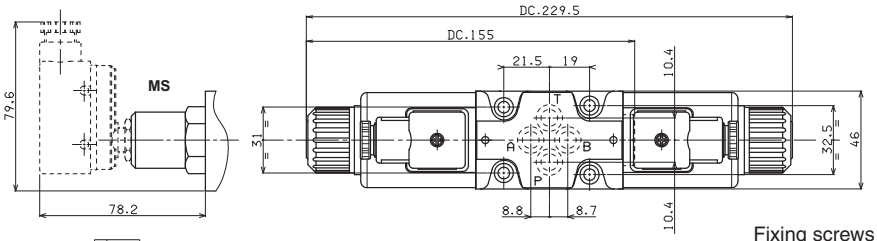
OVERALL DIMENSIONS

E = Manual override

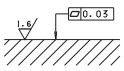
MS = Microswitch



Calibrated diaphragm



Fixing screws UNI 5931 M5x30
with material specifications min. 8.8
Tightening torque 5 Nm / 0.5 Kgm



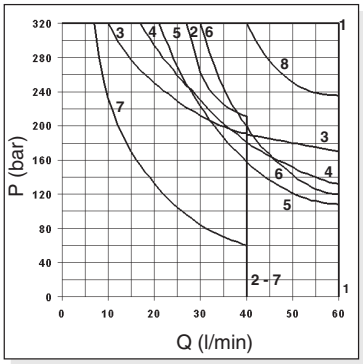
Support plane specifications

LIMITS OF USE (MOUNTING C-E-F)

The tests have been carried out with solenoids at operating temperature and a voltage 10% less than rated voltage with a fluid temperature of 40°C. The fluid used was a mineral oil with a viscosity of 46 mm²/s at 40°C. The values in the diagram refers to tests carried out with the oil flow in two directions simultaneously T = 2 bar (e.g.. from P to A and the same time B to T). In the case where valves 4/2 and 4/3 were used with the flow in one direction only, the limits of use could have variations which may even be negative. Rest times: the values are indicative and depend on following parameters: hydraulic circuit, fluid used and variations in hydraulic scales (pressure P, flow Q, temperature T). The limit of use for AC solenoids were detected with 50 Hz power.

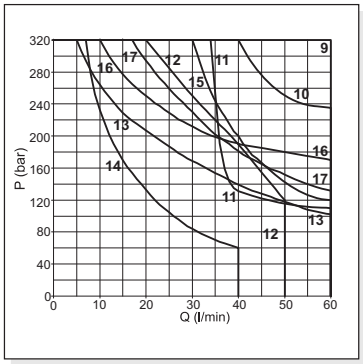
Direct current:	Energizing	30 ÷ 50 ms.	Alternating current:	Energizing	8 ÷ 30 ms.
	De-energizing	10 ÷ 30 ms.		De-energizing	15 ÷ 55 ms.

DIRECT CURRENT SOLENOIDS (DC)



Spool type	Solenoids DC	Solenoids AC
01	1	9
02	1	9
03	8	10
04	6	15
44	1	9
05	3	16
06 - 66	5	13
11 - 22	4	17
14 - 28	2	12
15	7	14
16	1	11
	Curves	

ALTERNATING CURRENT SOLENOIDS (AC)



A max. counter-pressure of 4 bar at T is permitted for the variant with a microswitch (**MS**).

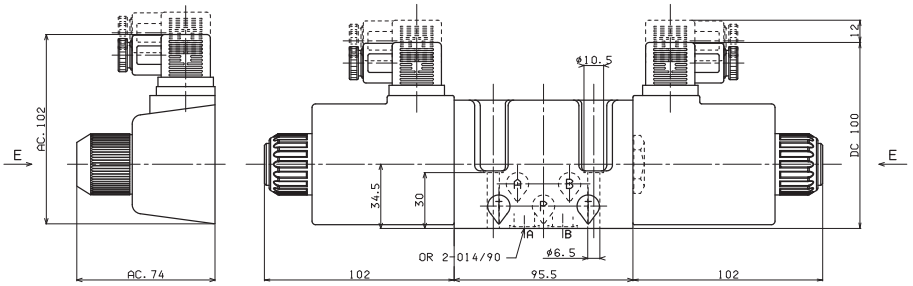
Max. pressure ports P/A/B	350 bar
Max. pressure port T (DC coil) see note (*)	250 bar
Max. pressure port T (AC coil)	160 bar
Max. flow	100 l/min
Max. excitation frequency	3 Hz
Duty cycle	100% ED
Fluid viscosity	10 ÷ 500 mm²/s
Fluid temperature	-25°C ÷ 75°C
Ambient temperature	-25°C ÷ 60°C
Max. contamination level	class 10 in accordance with NAS 1638 with filter $\beta_{25} \geq 75$
Weight (with one DC solenoid)	4 Kg
Weight (with two DC solenoids)	5,1 Kg
Weight (with one AC solenoid)	3,5 Kg
Weight (with two AC solenoids)	4,3 Kg

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

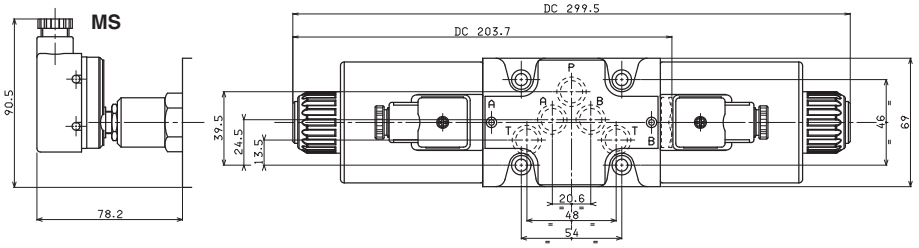
OVERALL DIMENSIONS

E = Manual override

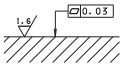
Fixing screws UNI 5931 M6x40
with material specifications min 8.8
Tightening torque 8 Nm / 0.8 Kgm



MS = Microswitch



Support plane specifications



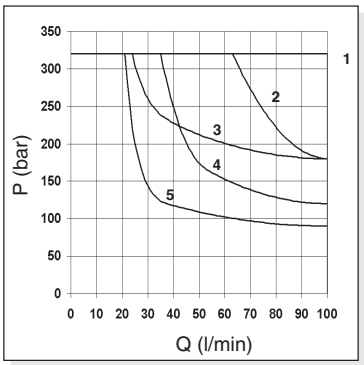
LIMITS OF USE (MOUNTING C-E-F)S

The tests have been carried out with solenoids at operating temperature and a voltage 10% less than rated voltage with a fluid temperature of 40°C. The fluid used was a mineral oil with a viscosity of 46 mm²/s at 40°C.
The values in the diagram refer to tests carried out with the oil flow in two directions simultaneously T = 2 bar (e.g. from P to A and the same time B to P).

In the cases where valves 4/2 and 4/3 were used with the flow in one direction only, the limits of use could have variations which may even be negative. Rest time: the values are indicative and depend on the following parameters: hydraulic circuit, fluid used and variations in hydraulic scales (pressure P, flow Q, temperature T).

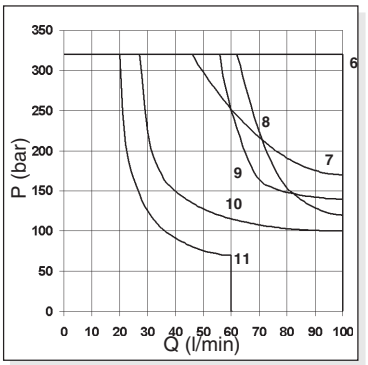
Direct current	:	Energizing	60 ÷ 95 ms.	Alternating current:	Energizing	12 ÷ 30 ms.
		De-energizing	25 ÷ 70 ms.		De- energizing	10 ÷ 55 ms.

DIRECT CURRENT SOLENOIDS (DC)



Spool type	Solenoids	
	DC	AC
01	1	8
02	1	6
03	2	7
04	4	10
05	1	6
06 - 66	3	9
14-28	5	11
15	3	10
16	1	6
	Curves	

ALTERNATING CURRENT SOLENOIDS (AC)



1

PILOT SOLENOID CONTROL VALVE SPECIFICATIONS

FOR DIFFERENT CONTROLS, PLEASE CONTACT OUR TECHNICAL ARON SERVICE

Max. operating pressure ports P/A/B	350 bar
Max. operating pressure port T (int. drainage)	160 bar
Max. operating pressure port T (ext. drainage)	250 bar
Max. piloting pressure	210 bar
Min. piloting pressure	12 bar
Max flow	300 l/min.
Piloting oil volume for engagement 3 position valves	4 cm^3
Piloting oil volume for engagement 2 position valves	8 cm^3
Hydraulic fluid	mineral oil DIN 51524
Fluid viscosity	2.8 ÷ 380 mm^2/s
Fluid temperature	-20°C ÷ 70°C
Ambient temperature	-20°C ÷ 50°C
Max. contamination level	class 10 in accordance with NAS 1638 with filter $\beta_{25} \geq 75$
Weight ADH7 without pilot valve	7 Kg
Weight ADH7 with pilot valve with 1 AC solenoid	8,2 Kg
Weight ADH7 with pilot valve with 1 DC solenoid	8,4 Kg
Weight ADH7 with pilot valve with 2 AC solenoids	8,5 Kg
Weight ADH7 with pilot valve with 2 DC solenoids	9 Kg

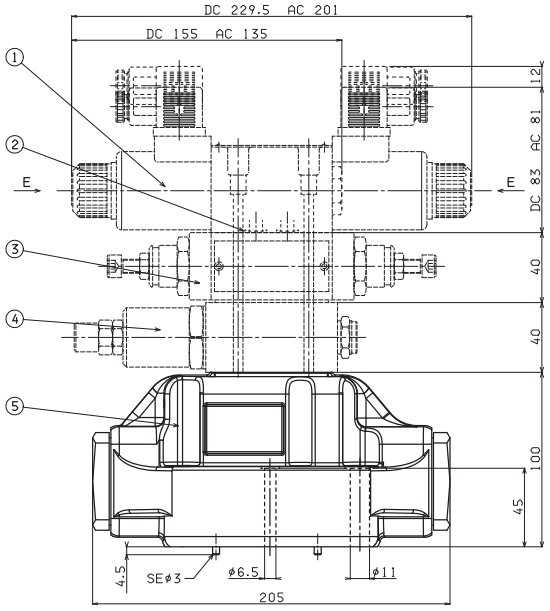
Note: the solenoid valve type **ADC.3.E...** (with A09 coil) and **AD3.E...** (with D15 or K12 coils) could be used both as pilote valve, without any changement of technical features.

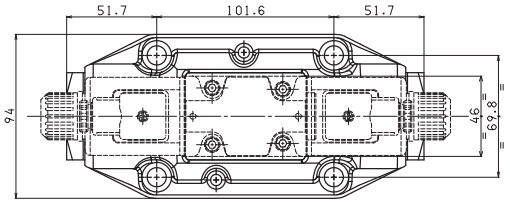
Switching time

Such values refer to a tests carried out with Aron solenoid valve type AD3E03 with P = 100 bar pressure and Q = 100 l/min flow. Orifice ø1.5 mm, insert on piloting port, using a mineral oil at 40°C. with 46 mm^2/s viscosity.

TEMPI DI RISPOSTA VALVOLA PILOTATA

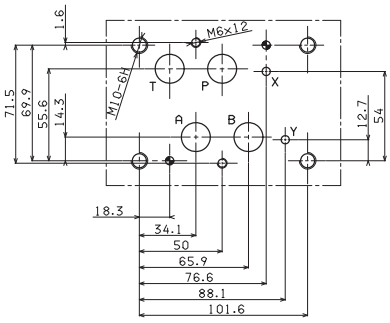
Solenoids	ENERGIZING ±10% (ms)			DE-ENERGIZING ±10% (ms)	
No. Spool	01 - 03			01 - 03	
Scheme	2 positions	3 positions		2 positions	3 positions
AC	50	20		25	30
DC	70	35		40	50
No. Spool	02	04	02 - 04	02 - 04	
Scheme	2 posit.	2 posit.	3 posit.	2 positions	3 positions
AC	35	60	30	25	25
DC	55	80	40	40	50





1 Piloted solenoid valve type **AD3E...** or **ADC.3.E... CETOP 3/NG6**
2 Calibrated diaphragms **AD3E...**
3 Flow regulation valve type **AM3QF..C**
4 Pressure reduction valve type **AM3RD..C**
5 Main valve type **ADH7..E**

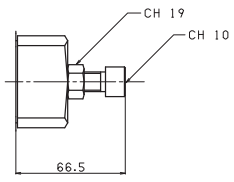
CETOP 7 MOUNTING SURFACE



• Piloted valve fixing:
n° 4 screws T.C.E.I. M10x60 - Tightening torque 40 Nm
n° 2 screws T.C.E.I. M6x55 - Tightening torque 8 Nm
Fixing screws UNI 5931 with material specifications 12.9

• Seals:
n° 4 OR 2-118 PARKER (type 130)
n° 2 OR 2-013 PARKER (type 2043)

SPOOL STROKE ADJUSTMENT



PILOT SOLENOID CONTROL VALVE SPECIFICATIONS

FOR DIFFERENT CONTROLS, PLEASE CONTACT OUR TECHNICAL ARON SERVICE

Max. operating pressure ports P/A/B	320 bar
Max. operating pressure port T (int. drainage)	160 bar
Max. operating pressure port T (ext. drainage)	250 bar
Max. piloting pressure	210 bar
Min. piloting pressure	5 bar
Max. flow with 04-14-28 spools	500 l/min a 210 bar 450 l/min a 320 bar
Max. flow with all other spools	600 l/min a 210 bar 500 l/min a 320 bar
Piloting oil volume for engagement 3 position valves	11.1 cm^3
Piloting oil volume for engagement 2 position valves	22.12 cm^3
Hydraulic fluid	mineral oil DIN 51524
Fluid viscosity	2.8 ÷ 380 mm^2/s
Fluid temperature	-20°C ÷ 70°C
Ambient temperature	-20°C ÷ 50°C
Max. contamination level	class 10 in accordance with NAS 1638 with filter $\beta_{25} \geq 75$
Weight ADH8 without pilot valve	13,1 Kg
Weight ADH8 with pilot valve with 1 AC solenoid	14,3 Kg
Weight ADH8 with pilot valve with 1 DC solenoid	14,5 Kg
Weight ADH8 with pilot valve with 2 AC solenoids	14,6 Kg
Weight ADH8 with pilot valve with 2 DC solenoids	15,1 Kg

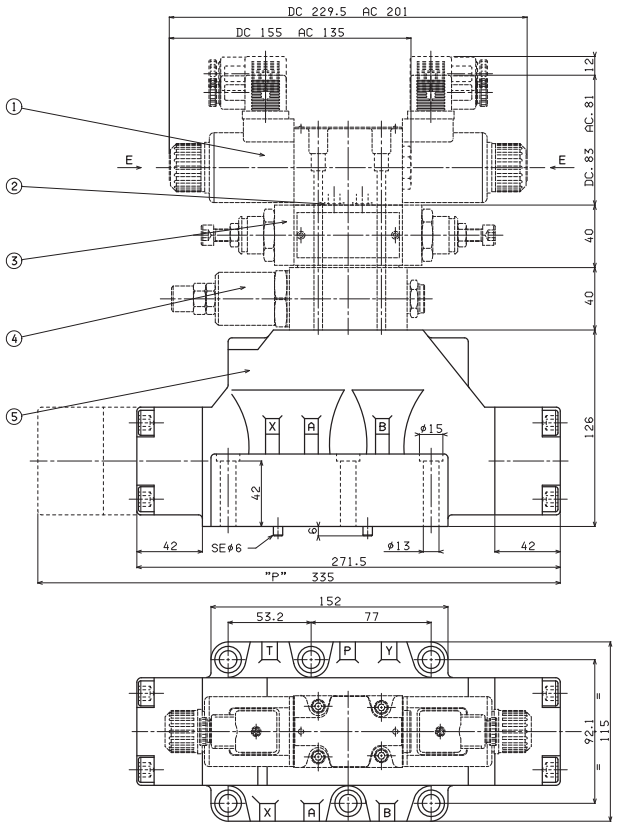
Switching time

Such values refer to a solenoid valve with P = 100 bar pressure using a mineral oil at 50°C with 36 mm^2/sec viscosity PA and BT connections.

SWITCHING TIMES PILOTED VALVE

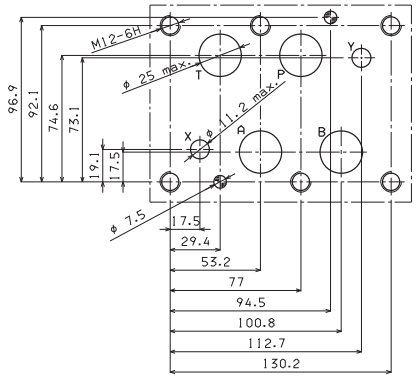
Solenoids	ENERGIZING ±10% (ms) 2 posit.	ENERGIZING ±10% (ms) 3 posit.	DE-ENERGIZING ±10% (ms) 2 posit.	DE-ENERGIZING ±10% (ms) 3 posit.
AC	60	45	90	60
DC	75	55	90	60

OVERALL DIMENSIONS



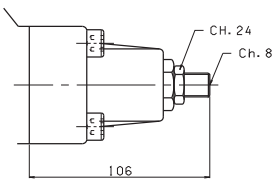
1 Piloted solenoid valve type **AD3E... CETOP 3/NG6**
2 Calibrated diaphragms **AD3E...**
3 Flow regulation valve type **AM3QF..C**
4 Pressure reduction valve type **AM3RD..C**
5 Main valve type **ADH7..E**

CETOP 8 MOUNTING SURFACE



- Piloted valve fixing: n° 6 screws T.C.E.I. M12x60
- Tightening torque: 69 Nm

- Seals: n° 4 OR 2-123 PARKER (type 3118)
  n° 2 OR 2-117 PARKER (type 3081)



SPOOL STROKE ADJUSTMENT

OPERATING SPECIFICATIONS

Max. operating pressure ports P/A/B	350 bar
Max. operating pressure ports T - for dynamic pressure see note (*)	250 bar
Regulated flow rate	3 / 10 / 15 / 20 / 25 l/min
Relative duty cycle	Continuous 100% ED
Type of protection	IP 65
Flow rate gain	See diagrams
Hysteresis with connection P/A/B/T Δp = 5 bar (P/A)	≤ 7% of max. flow rate
Fluid viscosity	10 ÷ 500 mm^2/s
Fluid temperature	-20°C ÷ 75°C
Max. contamination level	class 8 in accordance with NAS 1638 with filter $ß_{10}≥75$
Weight XD.3.A... (single solenoid)	1,5 Kg
Weight XD.3.C... (double solenoid)	1,7 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.

• Operating specifications are valid for fluid with 46 mm^2/s viscosity at 40°C, using the specified ARON electronic control units.

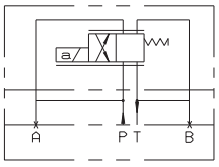
ELECTRONIC CONTROL UNIT

REM.S.RA.*.*. and REM.D.RA.*.*.
Card type control for single and double solenoid

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

AM.3.H.2V.P1 and AM.3.H.3V.P1
Hydrostats 2 or 3 way.

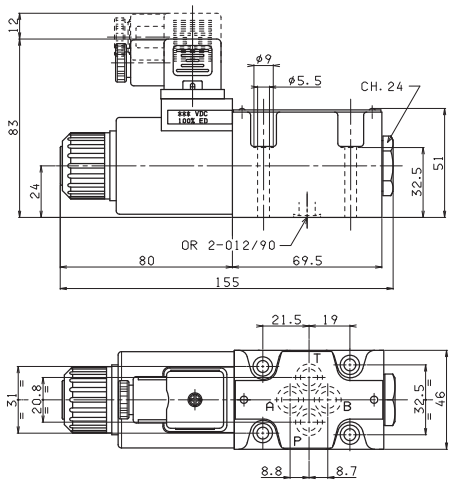
SCHEMA FOR DOUBLE FLOW RATE

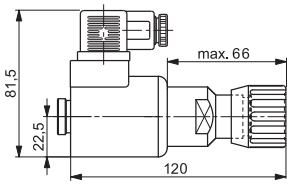


XD.3.A...

BC.3.07
Standard base

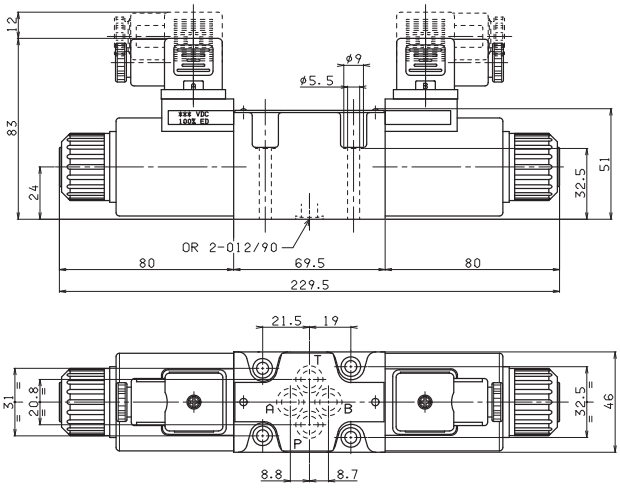
XD.3.A... OVERALL DIMENSIONS

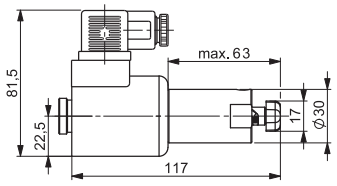




P2 Rotary emergency

XD.3.C... OVERALL DIMENSIONS

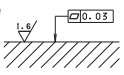


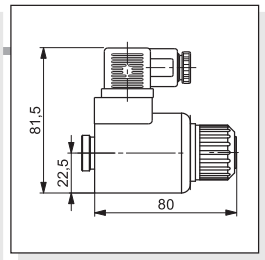


R5 Rotary emergency 180°

Fixing screws UNI 5931 M5x40 (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 wire	H
Weight (coil)	0,354 Kg
Weight (solenoid)	0,608 Kg

ETD15P - 01/2002/e

8

OPERATING SPECIFICATIONS

Max. operating pressure ports P/A/B	350 bar
Max. pressure port T - for dynamic pressure see note (*)	250 bar
Nominal flow	8 / 15 / 25 / 40 l/min
Duty cycle	Continuous 100% ED
Type of protection (depending on the connector used)	IP 65
Flow rate gain	See diagram
Power limits curves transmitted	See diagram
Fluid viscosity	10 ÷ 500 mm²/s
Fluid temperature	-20°C ÷ 75°C
Ambient temperature	-20°C ÷ 70°C
Max. contamination level	from class 7 at 9 in accordance with NAS 1638 with filter $\beta_{10}\geq 75$
Weight XDP.3.A... (single solenoid)	1,7 Kg
Weight XDP.3.C... (double solenoid)	2,9 Kg

	2.35A	**1.76 A**	**0.88 A**
Max. current			
Solenoid coil resistance 25°C (77°F)	2.25 Ohm	4.0 Ohm	16.0 Ohm
Hysteresis P / A / B / T with a pressure compensator AM.3.H.3V...	≤5%	<5%	<8%
Response to step Δp = 5 bar (P/A)			
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 the specified ARON electronic control units. Performance data carried out using the specified Aron power amplifier SE.3.AN... serie 1 - EUROCARD format - powered to 24V.

AMPLIFIER UNIT AND CONTROL

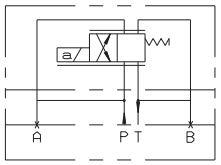
REM.S.RA.*.*. and REM.D.RA.*.*.
Electronic card control single and double proportional solenoid valve.

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

AM.3.H.2V.P1 / AM.3.H.3V.P1 and AM.5.H.3V.P1 (*)

Hydrostats 2 or 3 way
(*) for rated flow XDP3 version at 40 l/min only

CONFIGURATION FOR DOUBLE FLOW RATE

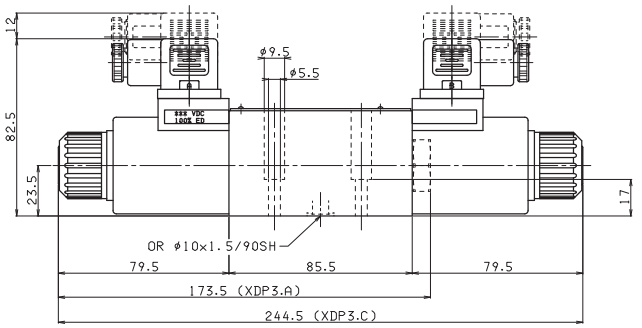


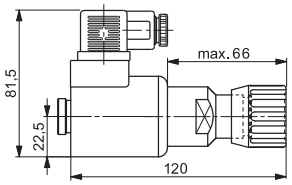
XDP.3.A...

BC.3.07

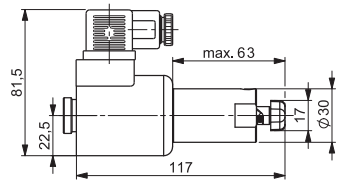
Standard subplate

OVERALL DIMENSIONS





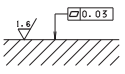
P2 Rotary emergency

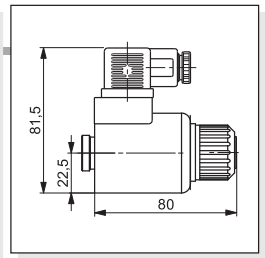


R5 Rotary emergency 180°

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

Support plane specifications





"D15P" PROPORTIONAL SOLENOIDS

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

ETD15P - 01/2002/e

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OPERATING SPECIFICATIONS

Max. operating pressure ports P/A/B	320 bar
Max. pressure port T - for dynamic pressure see note (*)	250 bar
Max. pressure port T (with external drainage - S5 variant)	320 bar
Nominal flow	45 / 60 / 100 l/min
Duty cycle	Continuous 100% ED
Type of protection (depending on the connector used)	IP 65
Flow rate gain	See diagram
Power limits curves transmitted	See diagram
Fluid viscosity	10 ÷ 500 mm²/s
Fluid temperature	-20°C ÷ 75°C
Ambient temperature	-20°C ÷ 70°C
Max. contamination level from class 7 at 9 in accordance with NAS 1638 with filter $\beta_{10}\geq 75$	
Weight XDP.5.A... (single solenoid)	4,97 Kg
Weight XDP.5.C... (double solenoid)	6,55 Kg

	2.5 A	**1.25 A**
Max. current		
Solenoid coil resistance 20°C (68°F)	2.85 Ohm	11.4 Ohm
Hysteresis P/A/B/T with a pressure compensator AM.5.H.3V...	<5%	<8%
Response to step Δp = 10 bar (P/A)		
0 ÷ 100%	56 ms	118 ms
100% ÷ 0	32 ms	32 ms
Frequency response -3db (Input signal 50% ±25% Vmax)	10Hz	7Hz

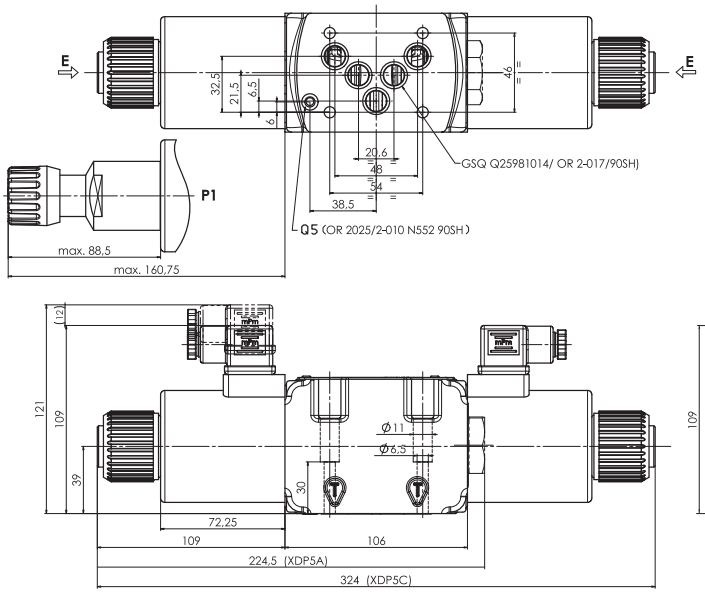
(*) Pressure dynamic allowed for 2 millions of cycles

Operating specifications are valid for fluids with 46 mm²/s viscosity at 40°C, using the specified ARON electronic control units. Performance data carried out using the specified Aron power amplifier type REM.S.RA... power supplied at 24V.

AMPLIFIER UNIT AND CONTROL

REM.S.RA.*.*. and REM.D.RA.*.*.
Electronic card control single and double proportional solenoid valve.

AM.5.H.2V.P1 / AM.5.H.3V.P1(Δp=10bar)
Hydrostats 2 or 3 way.



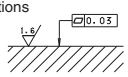
E = Manual override
P2 = Rotary emergency button

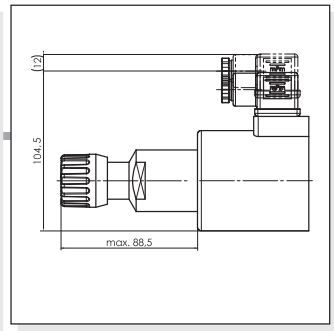
S5 = External draining hole for XDP5 variante S5 only **(Screws: material specifications 12.9 must be used)**

GSQ = Square section seal

Fixing screws UNI 5931 M6x40
(12.9 material screws are recommended)
Tightening torque 8 ÷ 10 Nm / 0.8 ÷ 1 Kgm

Support plane specifications





"D19P" PROPORTIONAL SOLENOIDS

Type of protection (in relation to connector used)	IP 65
Ambient temperature	-54°C ÷ 60°C
Duty cycle	100% ED
Insulation class wire	H
Weight	1,58 Kg

ETD19P - 01/2002/e