ADB.3... DIRECTIONAL CONTROL SOLENOID VALVES CETOP 3

ADB.3.E...BR.2 (PLASTIC COIL VARIANT)

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(PLASTIC COIL VARIANT)

ADB.3.E...
DIRECTIONAL CONTROL VALVES CETOP 3

The ARON directional control valves NG6 has been designed for subplate mounting with an interface in accordance with UNI ISO 4401 - 03 - 02 - 0 - 94 standard (ex CETOP R 35 H 4.2-4-03).

The use of solenoids with wet armatures allows a very practical, safe construction completely dispensing with dynamic seals; the solenoid tube is screwed directly onto the valve chest whilst the coil is kept in position by means of a lock nut.

The operation of the directional valves is in electrical way. The centre position is obtained by means of calibrated length springs which reposition the spool in the centre or end of travel position once the action of the impulse is over.

Max. pressure ports P/A/B	350 bar
Max. pressure port T (DC voltage)	160 bar
Max. pressure port T (AC voltage)	100 bar
Max flow	60 l/min
Max excitation frequency	3 Hz
Duty cycle	100% ED
Fluid viscosity	10 ÷ 500 mm^2/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 $ß_{25}≥75$
Weight with one DC solenoid	1,46 Kg
Weight with two DC solenoids	2,02 Kg
Weight with one DC plastic coil	1,35 Kg
Weight with two DC plastic coils	1,88 Kg
Weight with one AC solenoid	1,31 Kg
Weight with two AC solenoids	1,72 Kg

The solenoids are constructed with a protection class of IP65 to DIN 40050 standards and are available in either AC or DC form in different voltage and frequencies. The solenoid coils are normally arranged for DIN 43650 ISO 4400 type connectors.

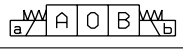
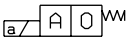
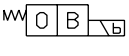
The valves are designed for use with DIN 51524 standard hydraulic mineral oils and it is recommended that filters should be fitted to ensure a maximum contamination level of class 10 in accordance with NAS 1638, $ß_{25}≥75$.

Into restrict outside ambient operating conditions, the plastic coils "BR" type variants are suggested.

CODICE DI ORDINAZIONE

ADB	Directional valve
3	CETOP 3/NG6
E	Electrical operator
**	Spool (see tables next page)
*	Mounting (table 1)
*	Voltage (table 2)
**	Variants: **00** = No variants **S1** = Solenoid without connectors **BR** = DC plastc coil (for No. 01/02/03/04/15/16 spools only)
*	Serial No.: **1** = for AC voltage (B14 coil) **2** = for DC voltage (A15 coil)

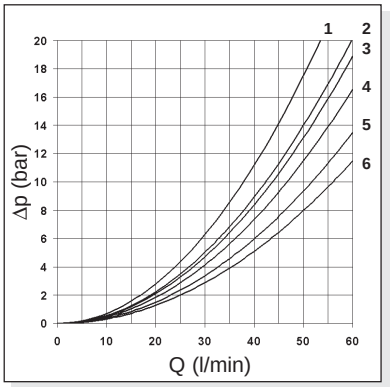
TAB.1 -

C	
E	
F	

TAB.2 - COILS

DC VOLTAGE	
L	12V
M	24V
AC VOLTAGE	
A	24V/50Hz
C	110V/50Hz
3	110V/60Hz
D	220V/50Hz
O	220V/60Hz

PRESSURE DROPS



The diagram at the side shows the pressure drop curves for spools during normal usage. The fluid used is a mineral oil with a viscosity of 46 mm²/s at 40 C°; the tests have been carried out at a fluid temperature of 40 C°. For higher flow rates than those in the diagram, the losses will be those expressed by the following formula:

$$\Delta p1 = \Delta p \times (Q1/Q)^2$$

where Δp will be the value for the losses for a specific flow rate Q which can be obtained from the diagram, Δp1 will be the value of the losses for the flow rate Q1 that is used.

Spool type	Connections				
	P →A	P →B	A →T	B →T	P →T
01	5	5	5	5	
02	6	6	6	6	5
03	5	5	6	6	
04	1	1	1	1	4
11	4			6	
22		4	6		
14	2	1	1	1	2
28	1	2	1	1	2
17	1	3			
15	4	4	6	6	
16	5	5	4	4	
Curve No.					

STANDARD SPOOL

TWO SOLENOIDS, SPRING CENTRED "C" MOUNTING

Spool type		Covering	Transient position
01		+	
02		-	
03		+	
04*		-	
22*		+	
11*		+	
14*		-	
28*		-	

ONE SOLENOID, SIDE A "E" MOUNTING

Spool type		Covering	Transient position
01		+	
02		-	
03		+	
04*		-	
15		-	
16		+	
17		+	
14*		-	
28*		-	

ONE SOLENOID, SIDE B "F" MOUNTING

Spool type		Covering	Transient position
01		+	
02		-	
03		+	
04*		-	
15		-	
16		+	
17		+	
14*		-	
28*		-	

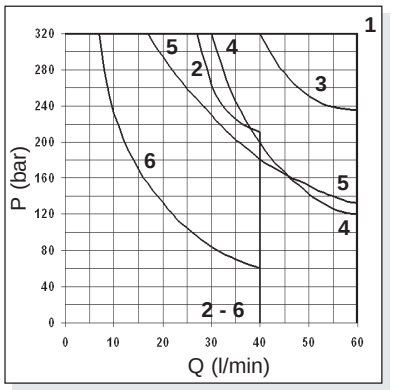
The tests have been carried out with solenoids at operating temperature and a voltage 10% less than rated voltage with a fluid temperature of 40°C. The fluid used was a mineral oil with a viscosity of 46 mm²/s at 40°C. The values in the diagram refers to tests carried out with the oil flow in two directions 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).

Direct current:	Energizing	30 ÷ 50 ms.
	De-energizing	60 ÷ 130 ms.
Alternating current:	Energizing	10 ÷ 15 ms.
	De-energizing	15 ÷ 25 ms.

* PRICE INCREASING

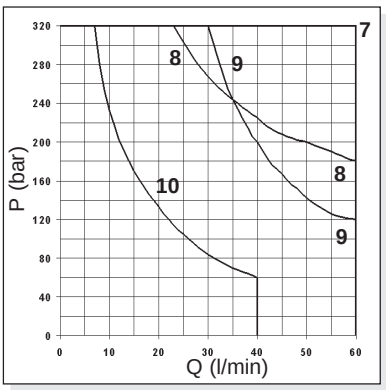
LIMITS OF USE

DC STANDARD SOLENOIDS

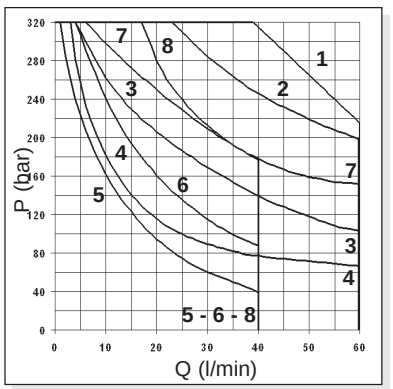


Spool type	DC Solenoids	
	Standard	Var. BR
01	1	7
02	1	7
03	3	8
04	4	9
15	6	10
16	1	7
11-22	5	-
14-28	2	-
	Curve	

BR PLASTIC COIL VARIANT



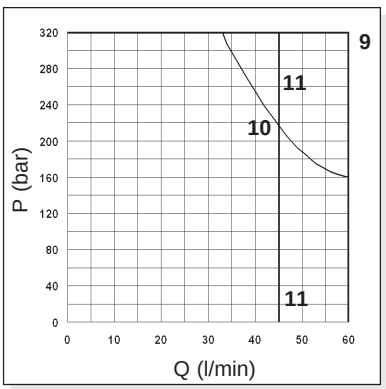
AC STANDARD SOLENOIDS



Spool type	AC Solenoids	
	Standard	220V/60Hz
01	1	9
02	2	9
03	3	9
04	4	10
15	5	-
16	6	11
11-22	7	-
14-28	8	-
	Curve	

For AC voltage at 220V/60Hz see special diagram.

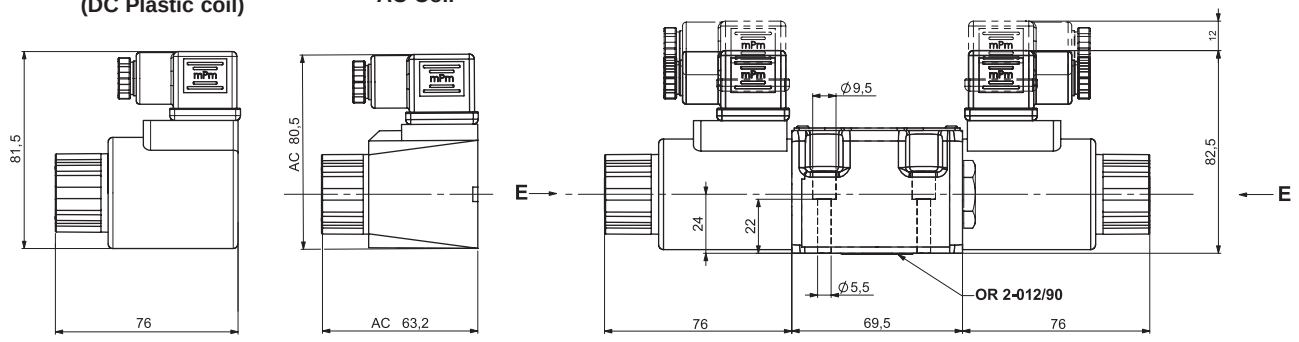
AC VOLTAGE 220V/60HZ ONLY



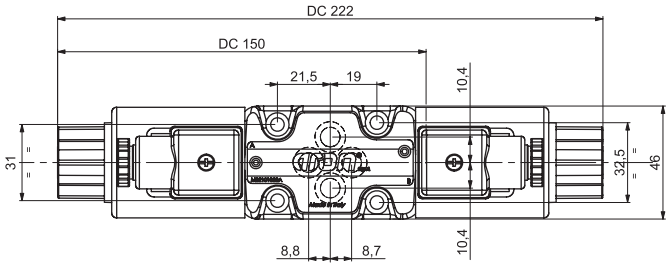
OVERALL DIMENSIONS

BR variant (DC Plastic coil)

AC Coil

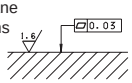


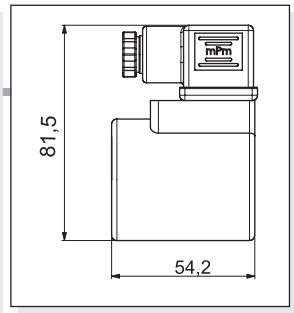
E = Manual override



Fixing screws UNI 5931 M5x30
with material specification min. 8.8
Tightening torque 5 ÷ 6 Nm / 0.5 ÷ 0.6 Kgm

Support plane specifications

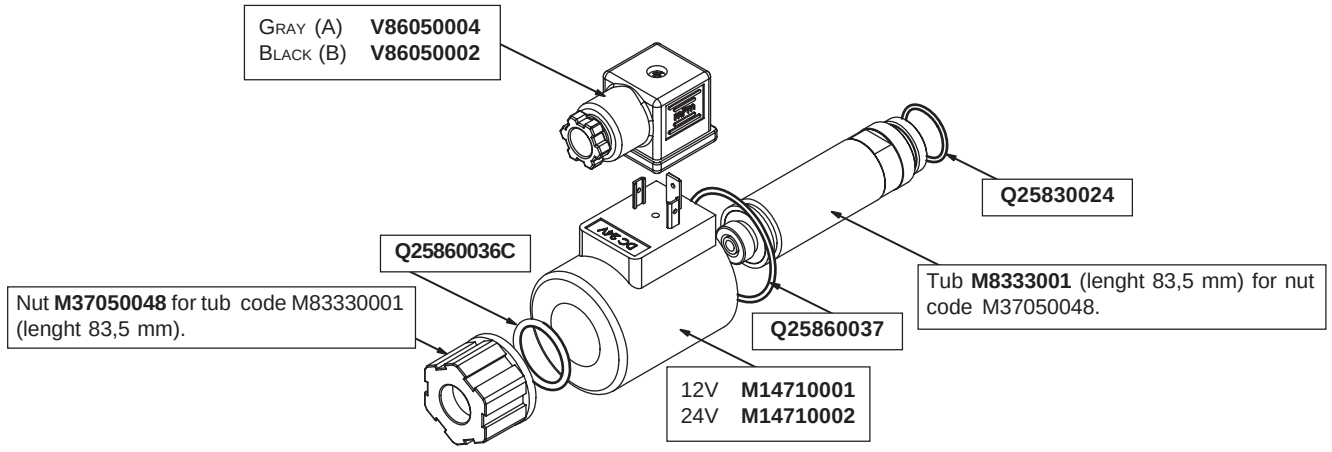




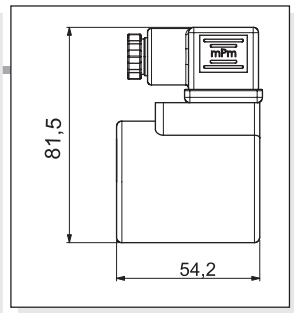
"A15" DC COILS

Type of protection	IP 65
Number of cycle	18.000/h
Supply tolerance	±10%
Ambient temperature	-30°C ÷ 60°C
Duty cycle	100% ED
Insulation class	H
Weight (coil)	0,354 Kg
Weight (solenoid)	0,526 Kg
Rated power	30W
Max. winding temperature (Ambient temperature at 20°C)	110°C
Resistance at 20°C for 12 voltage coil	4.8 Ohm (±10%)
Resistance at 20°C for 24 voltage coil	19.2 Ohm (±10%)

ETA15 - 02/2005/e



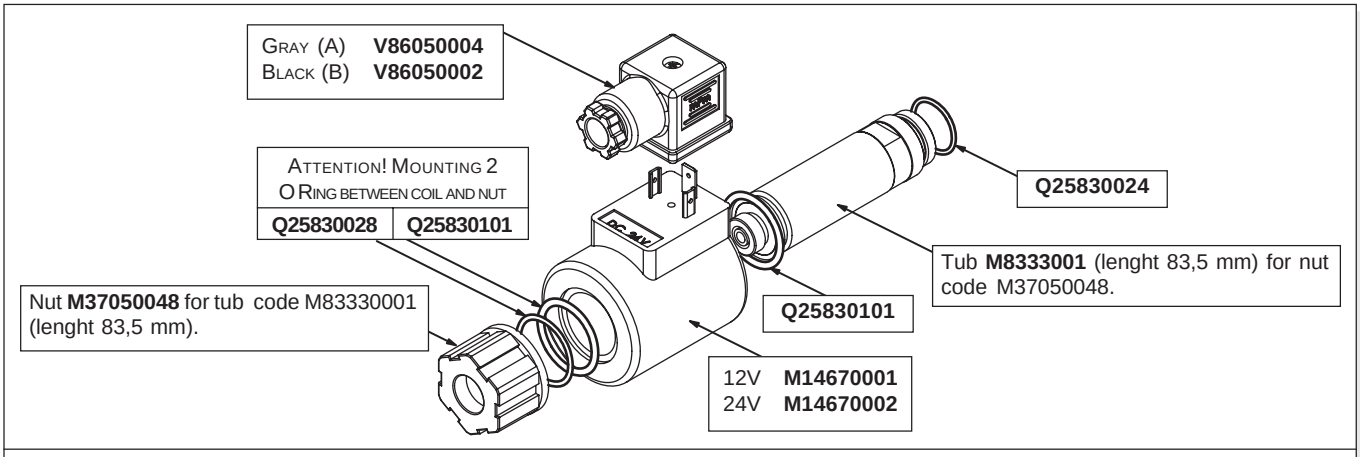
ETA15-CODE - 02/2007/e



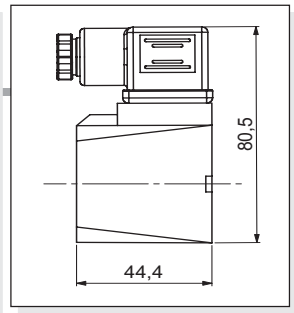
"A15" DC COILS "BR" PLASTIC VARIANT

Type of protection	IP 65
Number of cycle	18.000/h
Supply tolerance	±10%
Ambient temperature	-54°C ÷ 60°C
Duty cycle	100% ED
Insulation class	H
Weight (coil)	0,308 Kg
Weight (solenoid)	0,527 Kg
Rated power	33W
Max. winding temperature (Ambient temperature at 20°C)	110°C
Resistance at 20°C for 12 voltage coil	4.4 Ohm (±10%)
Resistance at 20°C for 24 voltage coil	17.5 Ohm (±10%)

ETA15BR - 02/2007/e



ETA15BR-CODE - 02/2007/e

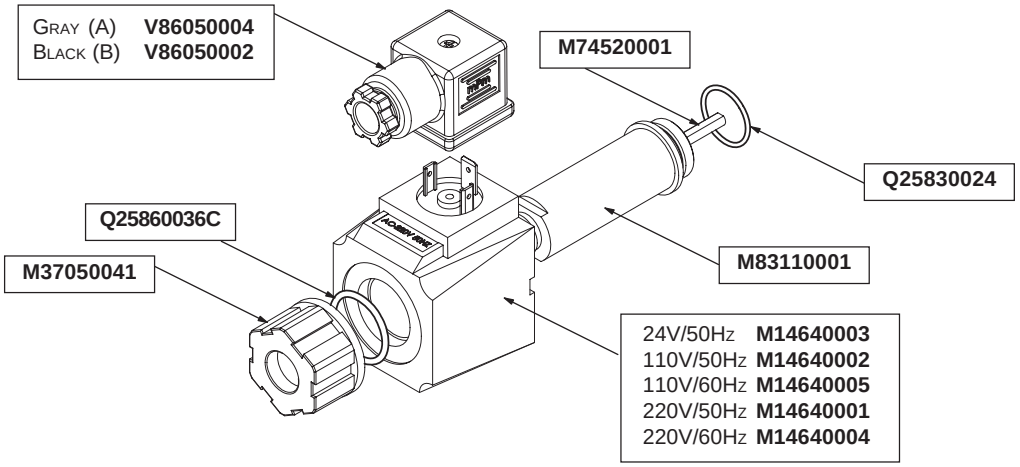


"B14" AC COILS

Type of protection	IP 65
Number of cycle	18.000/h
Supply tolerance	±10%
Ambient temperature	-30°C ÷ 60°C
Duty cycle	100% ED
Insulation class	H
Weight (coil)	0,290 Kg
Weight (solenoid)	0,436 Kg

VOLTAGE (V)	MAX. WINDING TEMPERATURE (AMBIENT TEMPERATURE 25°C)	RESISTANCE AT 20°C (OHM) ± 10%
24V/50Hz	120°C	1.7
110V/50Hz	115°C	31.7
110V/60Hz	-	-
220V/50Hz	91°C	130
220V/60Hz	98°C	86.8

ETB14 - 01/2005/e

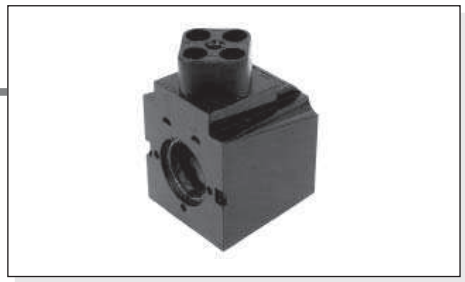


ETB14-CODE - 01/2007/e

CONNECTORS DIRECTIONAL CONTROL VALVES IN ACCORDANCE WITH DIN 43650 / ISO 4400

CONNECTOR	ORDERING CODE	CODE
STANDARD (IP65)		
Grey (side A)	V86.05.0004	No variant
Black (side B)	V86.05.0002	No variant

ETCNTADB - 00/2005/e



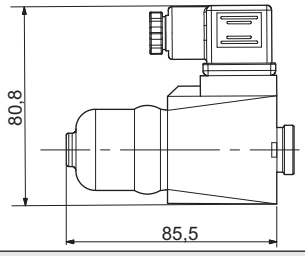
"B14" AC Solenoids for Cetop 3

Type of protection (in relation to the connector used)	IP 65
Number of cycles	18.000/h
Supply tolerance	+10% / -10%
Ambient temperature	-30°C ÷ 60°C
Duty cycle	100% ED
Insulation class wire	H
Weight	0,436 Kg

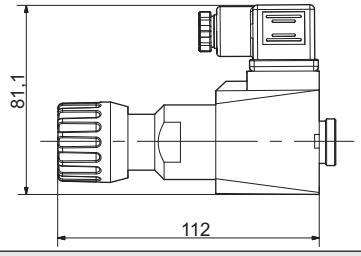
Mounting compatibility	
CETOP 3 *	Ch. I page 8
AD3.E... *	Ch. I page 11

(*) serial No. 3 (AC voltage)

ES Manual emergency

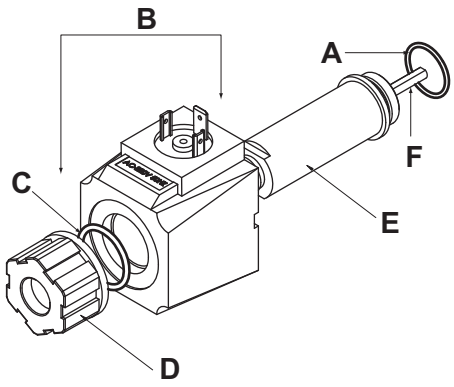


P2 Rotary emergency



Voltage (V)	Max. winding temperature (Ambient temperature 25°C)	Resistance at 20°C (Ohm) ±10%	Rated power (VA)	Pickup current (A)
24V/50Hz - 24V/60Hz	100°C - 96°C	1.7	54 - 40	5.6 - 5.0
48V/50Hz - 48V/60Hz	112°C - 98C°	6.8	45 - 34	5.3 - 5.0
115V/50Hz - 120V/60Hz	133°C - 101C°	32.5	61 - 51	3.2 - 3.2
230V/50Hz - 240V/60Hz	120°C - 103C°	134	62 - 52	1.6 - 1.6

SPARE PARTS



B = See **B14** coil table
A / C / D / E / F = Single spare parts (see codes table)

B14 AC Coil	Connection
Voltage	Hirschmann (Standard)
24V/50-60Hz (A) 48V/50-60Hz (B)	**M14640003** **M14640007**
115V/50Hz (J) 120V/60Hz	**M14640006**
230V/50Hz (Y) 240V/60Hz	**M14640001**

COMPLETE KIT	Code
Tube Kit	**V85990011**
Rotary Emergency **P2**	**V89990021**
Manual Emergency **ES**	**M19050001**

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Code Spare Parts	A O Ring	B Coil	C O Ring	D RING NUT	E TUBE	F HEX. PUSHROD	Mounting Available
AD3E*	**Q25830024**	See **B14**	**Q25860036**	**M37050041**	**M831100001**	**M74520001** **M74520002** **M74520003**	C - E - F - M G - H - I - L D

(*) serial No. 3 (AC voltage)