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CETOP 2/NG4

| | |
|---------------------|---------------|
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| "A09" DC COILS | CH. I PAGE 4 |
| STANDARD CONNECTORS | CH. I PAGE 19 |

The ARON directional control valves NG4 are designed for subplate mounting with an interface in accordance with UNI ISO 4401 - 02 - 01 - 0 - 94 standard (ex CETOP R 35 H 4.2-4-02), and are the smallest on the market in their category whilst still featuring excellent performance.

The use of solenoids with wet armatures ensures quiet operation, means that dynamic seals are no longer required and important levels of counter-pressure are accepted on the return line. The solenoid's tube is screwed at valve body directly, while a locking ring nut seal the coil in right position.

The cast body with a great care in the design and production of the ducts of the 5 chambers have made it possible to improve the spools allowing relatively high flow rate with low pressure drops (Δp).

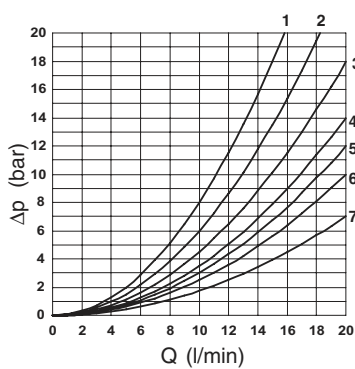
The spool rest positions are obtained by means of springs which centre it when there is no electrical impulse. The solenoids are constructed to DIN 40050 standards and are supplied by means of DIN 43650 ISO 4400 standard connectors which, suitably assembled, ensure a protection class of IP 65.

The solenoid coils are normally arranged for DIN 43650 ISO 4400 type connectors (standard version). On request, could be available the following coil connection variants: AMP Junior connections; flying leads connections, with or without integrated diode; Deutsch connections with bidirectional integrated diode.

The supply may be in either DC or AC form (with the use of a connector and rectifier) in most common voltage.

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, $\beta_{25} \geq 75$.

PRESSURE DROPS



| Spool type | Connections | | | | |
|------------|-------------|-----|-----|-----|-----|
| | P→A | P→B | A→T | B→T | P→T |
| 01 | 4 | 4 | 6 | 6 | |
| 02 | 6 | 6 | 7 | 7 | 5 |
| 03 | 4 | 4 | 7 | 7 | |
| 04 | 1 | 1 | 2 | 2 | 3 |
| 05 | 6 | 6 | 4 | 4 | |
| 66 | 5 | 5 | 5 | 7 | |
| 06 | 5 | 5 | 7 | 5 | |
| 16 | 5 | 5 | 6 | 6 | |
| 20D* | 5 | 5 | 6 | 6 | |

Curve No.

* = with energized spool

The diagram at the side shows the pressure drop curves for spools during normal usage. 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 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:

$$\Delta p_1 = \Delta p \times (Q_1/Q)^2$$

where Δp will be the value for the losses for a specific flow rate Q which can be obtained from the diagram, Δp_1 will be the value of the losses for the flow rate Q₁ that is used.

ORDERING CODE

| | |
|-----------|------------------------------|
| AD | Directional valve |
| 2 | CETOP 2/NG4 |
| E | Electrical operator |
| ** | Spool (tables next page) |
| * | Mounting (table 1 next page) |
| * | Voltage (table 2 next page) |
| ** | Variants (table 3 next page) |
| 3 | Serial No. |

TAB. 1 MOUNTING

| STANDARD | |
|----------------------------------|--|
| C | |
| D | |
| E | |
| F | |
| SPECIALS (WITH PRICE INCREASING) | |
| G | |
| H | |
| I | |
| L | |
| M | |

- Mounting type **D** is only for solenoid valves with detent
- In case of mounting **D** with detent, the supply to solenoid must be longer than 100 ms.

TAB.3-VARIANTS

| VARIANT | CODE |
|--|--------|
| No variant | 00 |
| Viton | V1 |
| Pilot light | X1 |
| Rectifier | R1 |
| Emergency button | E1 |
| Rotary emergency button | P1 (*) |
| Solenoid valve without connectors | S1 |
| Cable gland "PG 11" | C1 |
| Viton + Pilot light | VX |
| Viton + Rectifier | VR |
| Pilot light + Rectifier | XR |
| AMP Junior connection | AJ |
| Solenoid with flying leads (250 mm) | FL |
| Solenoid with flying leads (130 mm) and integrated diode | LD |
| Deutsch connection with bidir. diode | CX |
| Other variants relate to a special design | |

(*) P1 Emergency tightening torque **max. 6±9 Nm / 0.6 ± 0.9 Kgm** with CH n. 22

TAB.2 - A09 (27 W) COIL

| DC VOLTAGE | |
|------------|------------------|
| L | 12V |
| M | 24V |
| N | 48V* |
| P | 110V* |
| Z | 102V* |
| X | 205V* |
| W | Without DC coils |

115Vac/50Hz
120Vac/60Hz
with rectifier

230Vac/50Hz
240Vac/60Hz
with rectifier

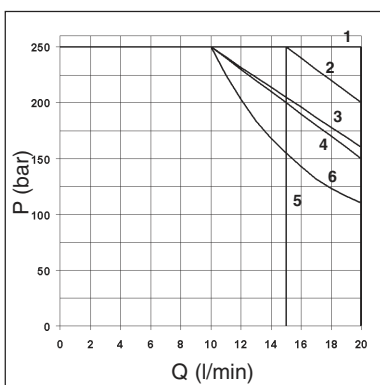
• The AMP Junior coil and with the flying leads (with or without diode) coils are available in 12V or 24V DC voltage only.

• The Deutsch coil with bidirectional diode is available in 12V DC voltage only.

Voltage codes are not stamped on the plate, they are readable on the coils.

* Special voltage

LIMITS OF USE



| Spool Type | Curves No |
|------------|-----------|
| 01 | 1 |
| 02 | 3 |
| 03 | 1 |
| 04 | 4 |
| 05 | 1 |
| 66 | 1 |
| 06 | 1 |
| 16 | 2 (6*) |
| 20 | 5 |

(6*) = 16 spool used as 2 or 3 way, follow the curve n°4

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 (e.g. from P to A and at the same time B to T). **In case of valve 4/2 or 4/3 used with flow in one direction only, the limits of use could have variations which may even be negative.**

Medium switching times Energizing: 20 ms
De-energizing: 40 ms

Tests have been carried out by spool normally closed with flow of 10 l/min at 125 bar and a 100% supply, warm standard coil and without any electronic components. These values are indicative and depend on the following parameters: the hydraulic circuit, the fluid used and the variation of pressure, flow and temperature.

STANDARD SPOOLS

TWO SOLENOIDS, SPRING CENTRED "C" MOUNTING

| Spool Type | | Covering | Transient position |
|------------|--|----------|--------------------|
| 01 | | + | |
| 02 | | - | |
| 03 | | + | |
| 04* | | - | |
| 05 | | + | |
| 66 | | + | |
| 06 | | + | |

ONE SOLENOID, SIDE A "E" MOUNTING

| Spool Type | | Covering | Transient position |
|------------|--|----------|--------------------|
| 01 | | + | |
| 02 | | - | |
| 03 | | + | |
| 04* | | - | |
| 05 | | + | |
| 66 | | + | |
| 06 | | + | |
| 16 | | + | |

ONE SOLENOID, SIDE B "F" MOUNTING

| Spool Type | | Covering | Transient position |
|------------|--|----------|--------------------|
| 01 | | + | |
| 02 | | - | |
| 03 | | + | |
| 04* | | - | |
| 05 | | + | |
| 66 | | + | |
| 06 | | + | |
| 16 | | + | |

TWO SOLENOIDS "D" MOUNTING

| Spool Type | | Covering | Transient position |
|------------|--|----------|--------------------|
| 20* | | + | |

* SPOOLS WITH PRICE INCREASING

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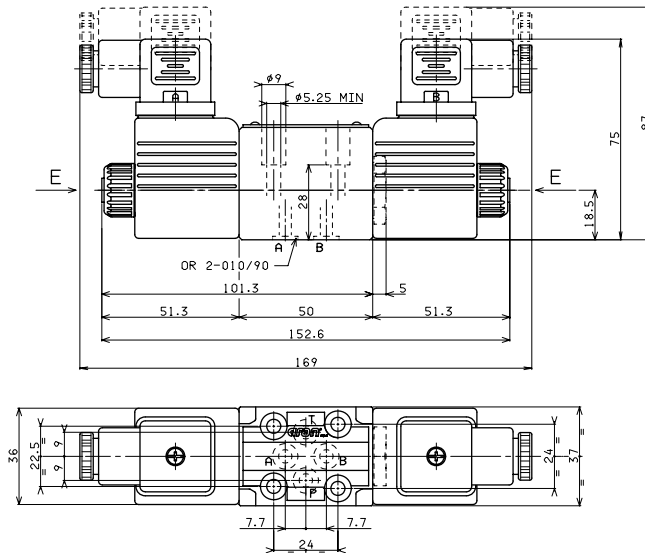
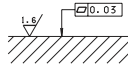


| | |
|-------------------------------|---|
| Max. pressure ports P/A/B | 250 bar |
| Max pressure port T (dynamic) | 250 bar |
| Max flow | 20 l/min |
| Max excitation frequency | 3 Hz |
| Duty cycle | 100% ED |
| Fluid viscosity | 10 ÷ 500 mm ² /s |
| Fluid temperature | -25°C ÷ 75°C |
| Ambient temperature | -25°C ÷ 60°C |
| Max contamination level | class 10 in accordance with NAS 1638 with filter $\beta_{25} \geq 75$ |
| Weight with one DC solenoid | 0,88 Kg |
| Weight with two DC solenoids | 1,1 Kg |

E = Manual override

Screws with material specifications min. 8.8 recommended - UNI 5931
Tightening torque of screws M5x35 = 5 Nm / 0.5 Kgm.

Support plane specifications



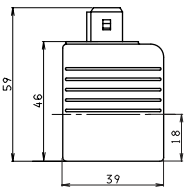
DC COILS A09



| | |
|--|--------------|
| Type of protection (in relation to connector used) | 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 | 0,215 Kg |

- The AMP Junior coil and with the flying leads (with or without diode) coils are available in 12V or 24V DC voltage only.
- The Deutsch coil with bidirectional diode is available in 12V DC voltage only.

AMP JUNIOR (AJ)

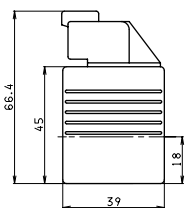


| VOLTAGE (V) | MAX WINDING TEMPERATURE (AMBIENT TEMPERATURE 25°C) | RATED POWER (W) | RESISTANCE AT 20°C (OHM) ±7% |
|-------------|--|-----------------|------------------------------|
| 12V | 123°C | 27 | 5.3 |
| 24V | 123°C | 27 | 21.3 |
| 48V* | 123°C | 27 | 85.3 |
| 102V* | 123°C | 27 | 392 |
| 110V* | 123°C | 27 | 448 |
| 205V* | 123°C | 27 | 1577 |

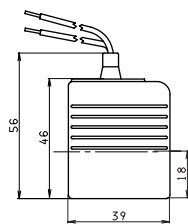
* Special voltages

ETA09/AD2-CDL04-C3V - 04/2001/e

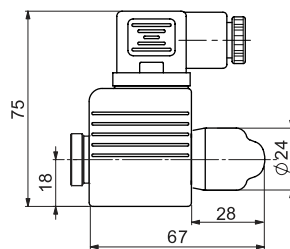
DEUTSCH COIL WITH BIDIR. DIODE (CX) DT04 - 2P



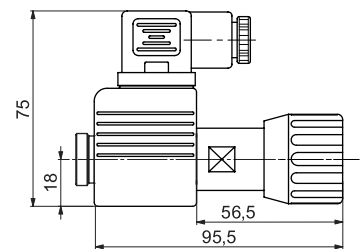
FLYING LEADS (FL) LEADS WITH DIODO (LD)



E1 MANUAL EMERGENCY



P1(*) ROTARY EMERGENCY



(*) P1 Emergency tightening torque max. 6±9 Nm / 0.6 ÷ 0.9 Kgm with CH n. 22