



CETOP 2/NG04

| | |
|---------------------|-------------|
| AD2E... | CAP. I • 4 |
| "A09" DC COILS | CAP. I • 4 |
| STANDARD CONNECTORS | CAP. I • 20 |

DIRECTIONAL CONTROL VALVES CETOP 2/NG4

The 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).

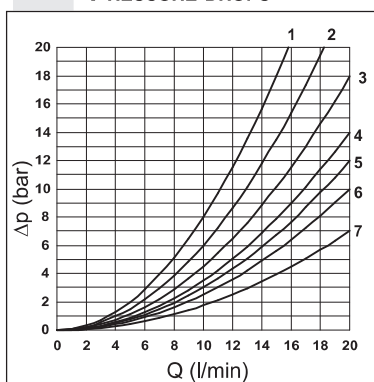
The spool rest positions are obtained by means of springs which centre it when there is no electrical impulse. The solenoids are constructed to DIN 40050 standards and are supplied by means of DIN 43650 ISO 4400 standard connectors which, suitably assembled, ensure a protection class of IP 65.

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 | |
| 06 | 5 | 5 | 5 | 7 | |
| 06 | 5 | 5 | 7 | 5 | |
| 15 | 4 | 4 | 4 | 4 | |
| 16 | 5 | 5 | 6 | 6 | |
| 20* | 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 Q_1 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 | |

TAB.3 - VARIANTS

| VARIANT | CODE |
|--|-----------|
| No variant (without connectors) | S1(*) |
| Viton | SV(*) |
| Emergency button | ES(*) |
| Rotary emergency button | P2(*)(**) |
| AMP Junior connection | AJ(*) |
| Solenoid with flying leads (250 mm) | FL |
| Solenoid with flying leads (130 mm) integrated diode | LD |
| Deutsch connection with bidir. diode | CX |
| Coil 8W (only 24V) | 8W |
| Other variants available on request. | |

(*) Coils with Hirschmann and AMP Junior connection supplied without connectors. The connectors can be ordered separately, CAP. I • 20.

(**) **P2 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

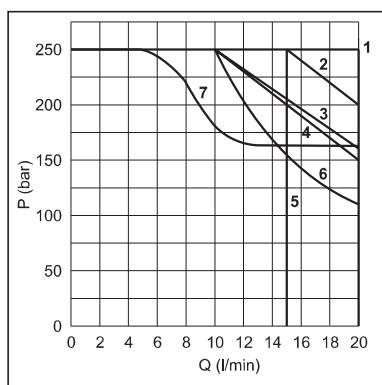
Voltage codes are not stamped on the plate, they are readable on the coils.

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

* Special voltage

** Technical data see page CAP. I • 4

LIMITS OF USE (MOUNTING C-E-F)



| Spool Type | |
|------------|-------|
| 01 | 1 |
| 02 | 3 |
| 03 | 1 |
| 04 | 4 |
| 05 | 1 |
| 06 | 1 |
| 15 | 1(7*) |
| 16 | 2(6*) |
| 20 | 5 |

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

(7*) = with 8W coil

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.

NOTE: Limits of use are available for C, E, F mounting.

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 | | + | |
| 15 | | - | |
| 16 | | + | |

ONE SOLENOID, SIDE B "F" MOUNTING

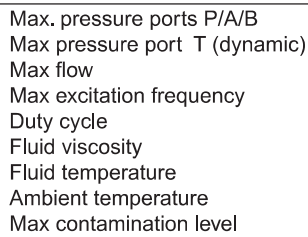
| Spool Type | | Covering | Transient position |
|------------|--|----------|--------------------|
| 01 | | + | |
| 02 | | - | |
| 03 | | + | |
| 04* | | - | |
| 05 | | + | |
| 66 | | + | |
| 06 | | + | |
| 15 | | - | |
| 16 | | + | |

TWO SOLENOIDS "D" MOUNTING

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

* SPOOLS WITH PRICE INCREASING

1



250 bar
250 bar
20 l/min
3 Hz
100% ED
100 mm²/s
T_C ÷ 75°C
T_C ÷ 60°C
Distance with
er $\beta_{25} \geq 75$
0,88 Kg
1,1 Kg

Motion Systems