

RE
64 552/03.00

Replaces: 04.98

**Hydraulic pilot control unit type 2 TH 6
of sandwich plate design for the remote control of
directional valves, pumps, motors**

Rexroth
Bosch Group

Features:

- Progressive, sensitive control
- Precise and play-free control characteristics
- Low actuation force at the lever
- Rust-free plunger

Further remote controls and pilot control units:

• **Hydraulic remote control**

- Pilot control unit type 2 TH 6 R, pedal version (see RE 64 551)
- Pilot control unit types 4 TH 6, 4 TH 5, 4TH 6 N, for arm rest installation (see RE 64 555)
- Pilot control unit type 4/5 THF 6, with end position locks (see RE 64 553)

• **Electronic remote control**

- Electronic remote control type THE 6 for the direct control of electrical or electro-hydraulic pilot operated actuators (see RE 29 771)



Type 1-2 TH 6 L06-1X/M01



Type 3-2 TH 6 H06-1X/H06 L06 M01

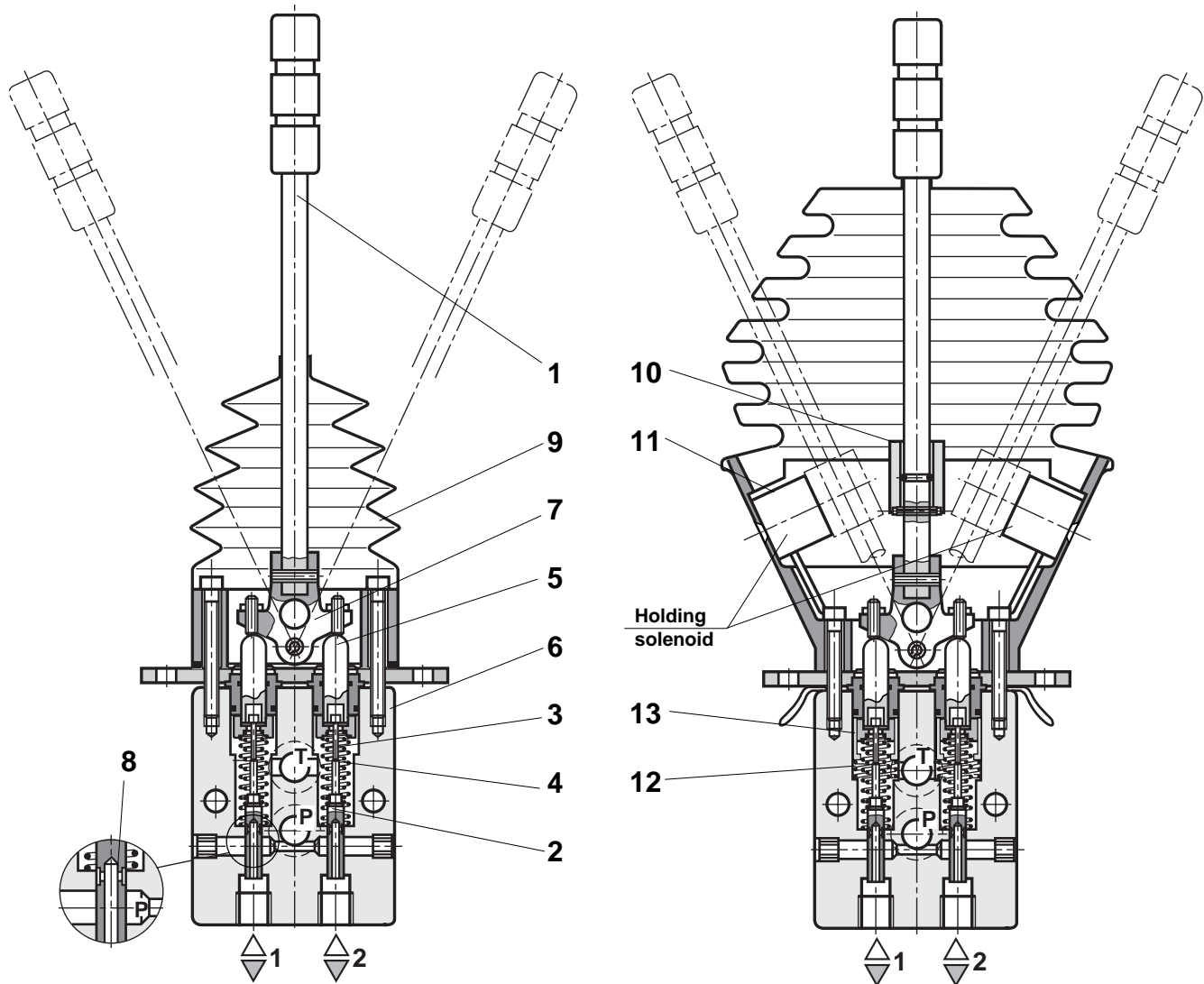
• **B2 TH 6** (see picture opposite)

- Recommended for use with a single 2 TH 6 control axis
- This pilot control unit cannot be flanged on



Type B2 TH 6 L06-1X/M01

Functional description, section



Hydraulic operating principle

Hydraulic pilot control units of the type 2TH6 operate on the basis of direct operated pressure reducing valves.

Pilot control units of the type 2TH6 basically comprise of a control lever (1), two pressure reducing valves and a housing (6).

Each pressure reducing valve consists of a control spool (2), a control spring (3), a return spring (4) and a plunger (5).

In the non-actuated condition, the control lever is held in the neutral position by the return spring (4). The control ports (1,2) are connected to tank port T via a drilling (8).

When the control lever (1) is deflected, the plunger (5) is pressed against the return spring (4) and the control spring (3). The control spring (3) initially moves the control spool (2) downwards and closes the connection between the relevant port and tank port T. At the same time, the relevant port is connected to port P via the drilling (8). The control phase starts as soon as the control spool (2) finds its balance between the force from the control spring (3) and the force resulting from the hydraulic pressure in the relevant ports (ports 1, 2).

As a result of the interaction of the control spool (2) and the control spring (3) the pressure in the relevant ports is proportional to the stroke of the plunger (5) and thus to the position of the control lever (1).

This pressure control as a function of the control lever (1) position and the characteristics of the control spring (3) enables the proportional hydraulic control of directional valves and high response control valves for hydraulic pumps and motors.

A rubber gaiter (9) protects the mechanical parts in the housing against contamination and ensures that the 2TH6 pilot control units can also be used for the arduous applications.

Electro-magnetic lock

End position locking is only provided for the control connections which require that the control lever is held in the deflected position.

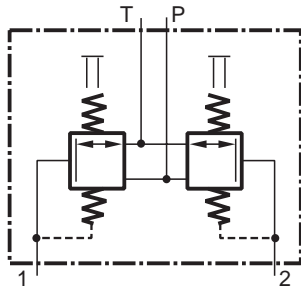
An additional spring (12), which is fitted below an additional plate (13) warns, by means of an increased force, which is required for compressing this spring, that the plunger (5) and the control lever (1) have almost reached the end position.

When this threshold is overcome, a ring (10) contacts the solenoid armature (11); if the solenoid is energised, then control lever (1) is held in its end position by magnetic force.

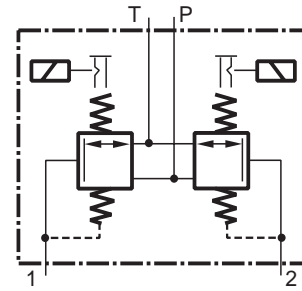
Unlocking can be performed automatically when the solenoid current is switched off.

Symbol, hydraulic

Variants without electrical detent:
L, M, P, T, N



Variants with electrical detent
G, H, J

**Technical data, mechanical** (for applications outside these parameters, please consult us!)

| | | |
|--------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inlet pressure | bar | Up to 50 |
| Back pressure at port T | bar | Up to 3 |
| Control fluid flow (P to 1 - 2) | L/min | Up to 16 |
| Hysteresis | bar | Up to 1 |
| Pressure fluid 1) suitable for NBR seals 2) suitable for FKM seals | | Mineral oil (HL, HLP) to DIN 51524 ¹⁾ Phosphate ester (HFD-R) ²⁾ |
| Pressure fluid temperature range | °C | - 20 to + 80 |
| Viscosity range | mm ² /s | 10 to 380 |
| Degree of pressure fluid contamination | | Maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 9. We, therefore, recommend a filter with a minimum retention rate of $\beta_{10} \cdot 75$ |
| Max. permissible lever actuating moment | Nm | 10 in operation 80 for an exceptional, one time loading |
| Weight (dependent on the actuating element) | kg | 1.6 to 2 |

Technical data, electrical (for applications outside these parameters, please consult us!)

| | | |
|-----------------------------------------|-----|---------------------------------------------------------------------------------------------|
| E-contact technical data for actuator N | | |
| • Switching capacity | | |
| - DC | | 1 A - 30 V 250.000 cycles |
| - AC | | 0.3 A - 250 V 250.000 cycles 0.6 A - 125 V 250.000 cycles |
| • Max. start contact resistance | m Ω | 50 |
| • Min. isolation resistance at 500 V DC | M Ω | 1 000 |
| • Dielectric strength | | 1 000 V eff. 50 Hz min. between outputs 1 500 V eff. 50 Hz min. between outputs and mass |
| Solenoid supply voltage | V | 24 (20 to 27) / DC |
| Power consumption of each solenoid | | 8.5 W at 24 V |

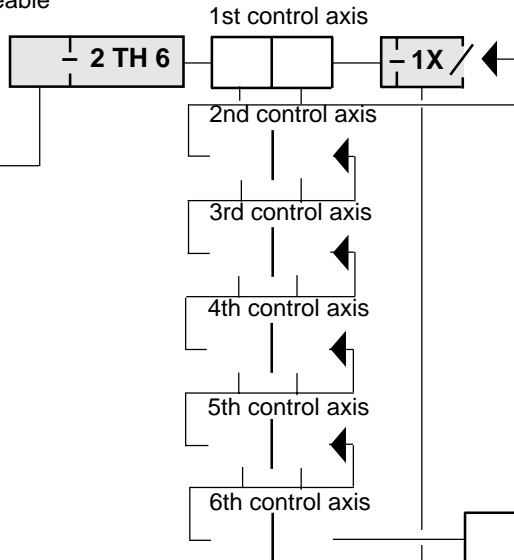
Safety guidelines (this list is not intended to be considered as complete)

- Only one function control must be allocated to an E-contact
- The circuit functions are to be so designed that uncontrolled machine movements, caused by the application, are prevented and that it is possible to switch from one function to another
- Take into account all of the application limits, particularly those application limits stated within this catalogue sheet.

Ordering details

Pilot control unit with N flangeable control axis

N = Number of control axes
1 to 6

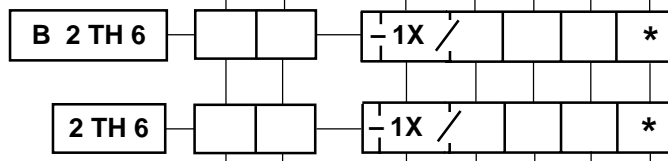


Example

3-2 TH 6 L06-1X
M70
L06 M01

[] = units stocked in Australia

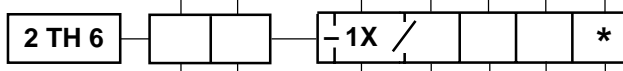
Pilot control unit with 1 control axis, not flangeable



Example

B 2 TH 6 L06-1X/M01

Control axis, separate



Example

2 TH 6 L06-1X/M01

Further details in clear text

Actuator type

- 1 lever without detent = L
- 1 lever with detent in 3 positions = M
- 1 lever held in any position by a friction coupling = P
- 1 lever with detent in 3 positions and held in any position by a friction coupling = T
- 1 lever with E-contact = N
- 1 lever with electrical detent in position 1 = G
- 1 lever with electrical detent in position 2 = H
- 1 lever with electrical detent in both positions = J

Enter the identification number of the control curve that is required (see page 5)

Series 10 to 19 =1X
(10 to 19: unchanged installation and connection dimensions)

Connection threads

- 01 = G 1/4" pipe thread to standard ISO 1179
- 05 = 9/16- 18 UNF 2 B UNF connections to standard ISO 11926

Seals

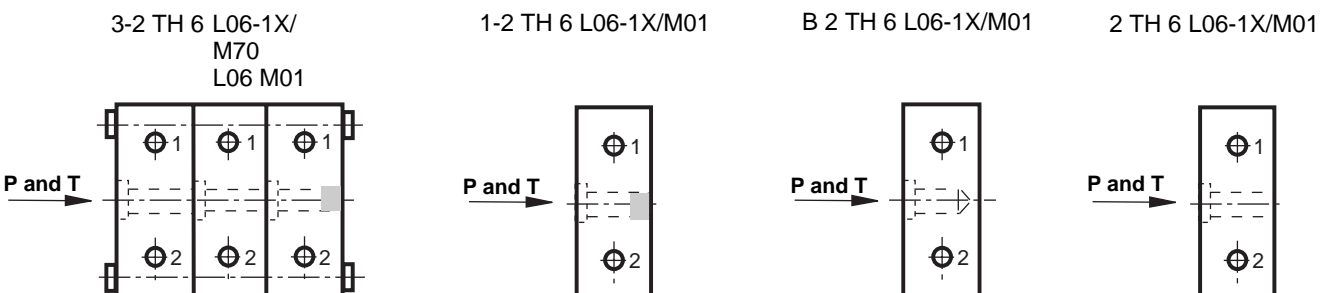
- M = NBR seals
- V = FKM seals

⚠ Attention!
The compatibility of the seals and pressure fluid has to be taken into account

Plug (see page 8)

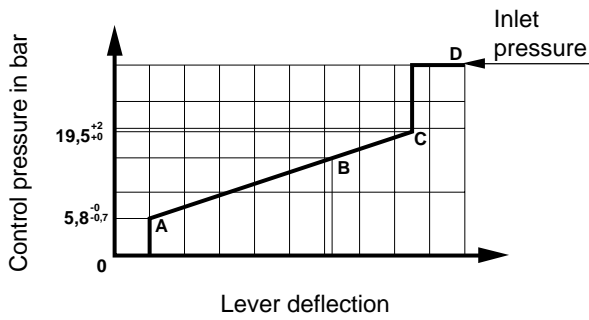
- 5 = DEUTSCH sealed plug IP 67 for wiring the solenoid on a 2 TH 6 G/H/J
- 6 = Plug AMP MAT-N-LOK for wiring the solenoid on a 2 TH 6 G/H/J
- 7 = DEUTSCH sealed plug IP 67 for wiring the solenoids on a 2 TH 6 N
- 8 = Plug AMP MAT-N-LOK for wiring the solenoids on a 2 TH 6 N
- No code = Without plug

Drillings for connections P and T: connection possibilities (seen from above)



Characteristic curves: control ranges, actuation moments

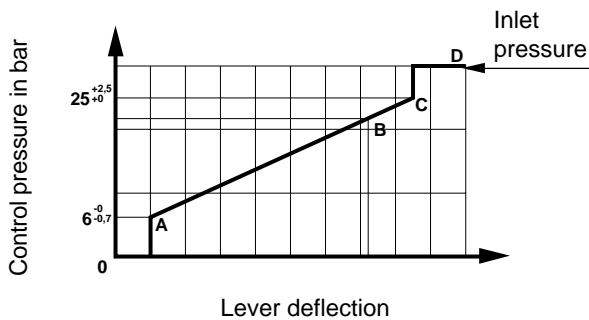
06 Control curve, identification no. 06
 This curve is used for the pilot control of the SM12, SM18, M1 control blocks



| Inter-section point | A | B | C | D |
|----------------------------------------------|-----|-----|-----|------------------|
| Lever deflection | 3° | 18° | 21° | 25° |
| Actuation moment for actuator L in Nm | 0.8 | / | 2.7 | 3.8 (p = 35 bar) |
| Actuation moment for actuators G, H, J in Nm | 0.8 | 1.8 | 3.2 | 4.3 (p = 35 bar) |

B = resistance point before changeover to inlet pressure

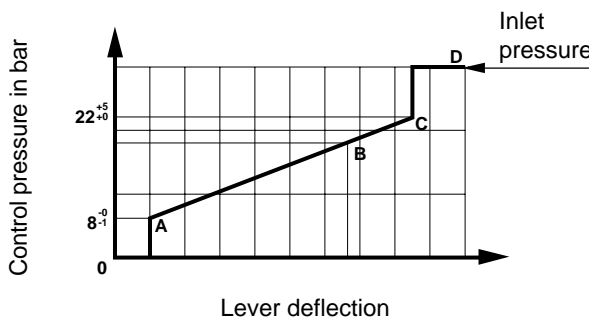
70 Control curve, identification no. 70
 This curve is used for the pilot control of the SX14, SX18 control blocks



| Inter-section point | A | B | C | D |
|----------------------------------------------|-----|-----|-----|------------------|
| Lever deflection | 3° | 18° | 21° | 25° |
| Actuation moment for actuator L in Nm | 0.8 | / | 3.1 | 3.8 (p = 35 bar) |
| Actuation moment for actuators G, H, J in Nm | 0.8 | 3.2 | 3.6 | 4.3 (p = 35 bar) |

B = resistance point before changeover to inlet pressure

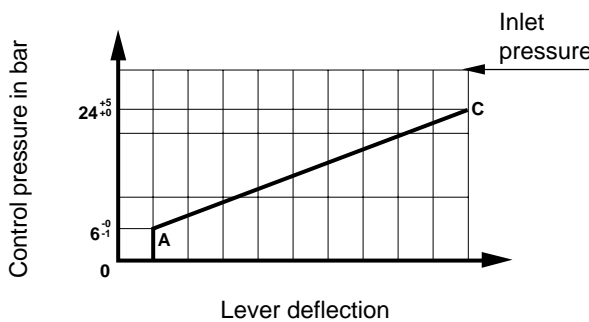
20 Control curve, identification no. 20
 This curve is used for the pilot control of the SP12 control blocks



| Inter-section point | A | B | C | D |
|-----------------------------------------------|----|-----|-----|------------------|
| Lever deflection | 3° | 18° | 21° | 25° |
| Actuation moment for actuator L in N.m | 1 | / | 2.9 | 3.8 (p = 35 bar) |
| Actuation moment for actuators G, H, J in N.m | 1 | 3.1 | 3.4 | 4.3 (p = 35 bar) |

B = resistance point before changeover to inlet pressure

97 Control curve, identification no. 97 (only for actuators L, M, P, N and T)
 This curve is used for the pilot control of the M7 control blocks



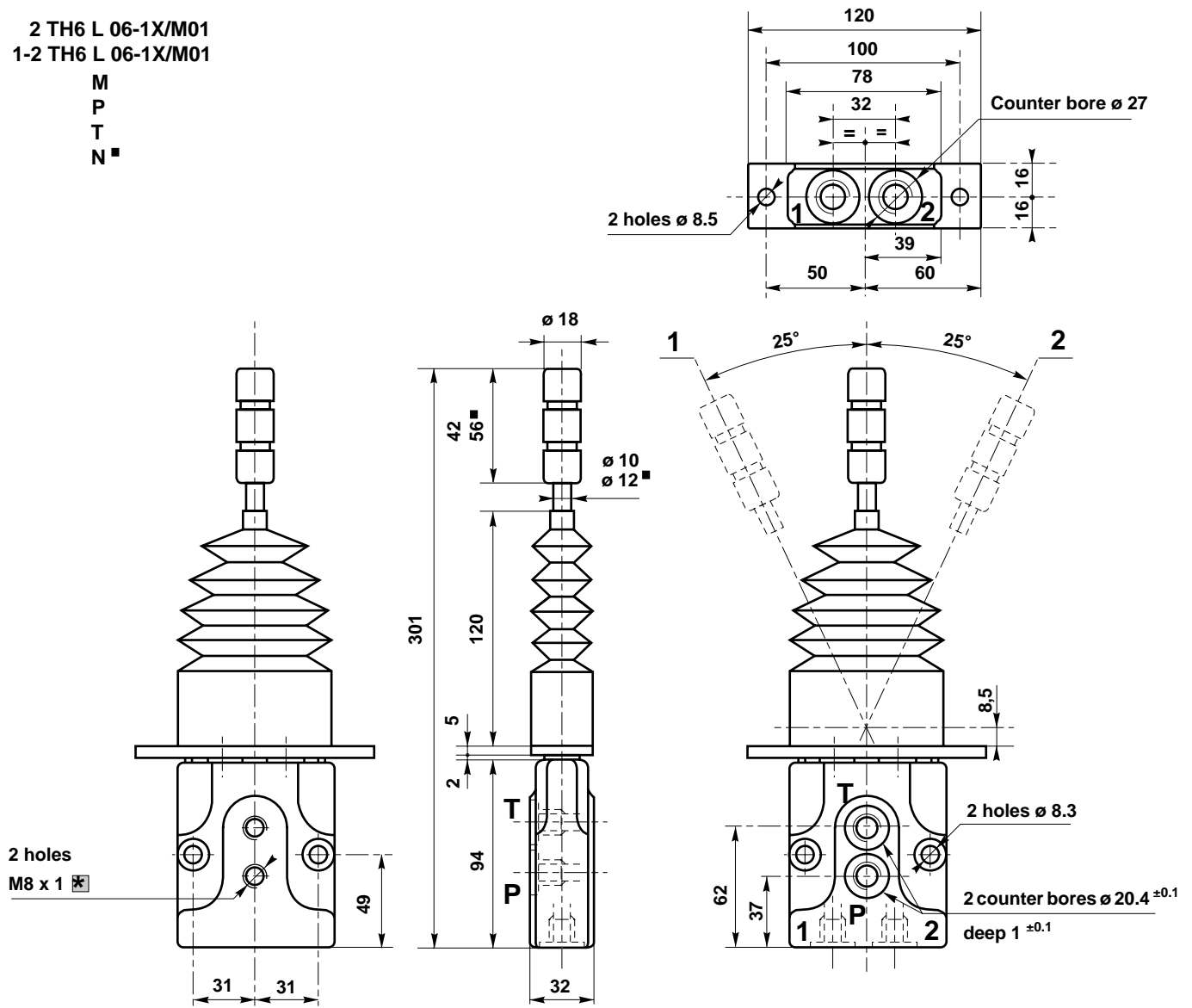
| Inter-section point | A | C |
|---------------------------------------|-----|-----|
| Lever deflection | 3° | 25° |
| Actuation moment for actuator L in Nm | 0.8 | 3.3 |

The stated actuation moments take into account the hydraulic force acting on the piston area, the return spring force (standard version) and the rubber grommet resistance.

Unit dimensions

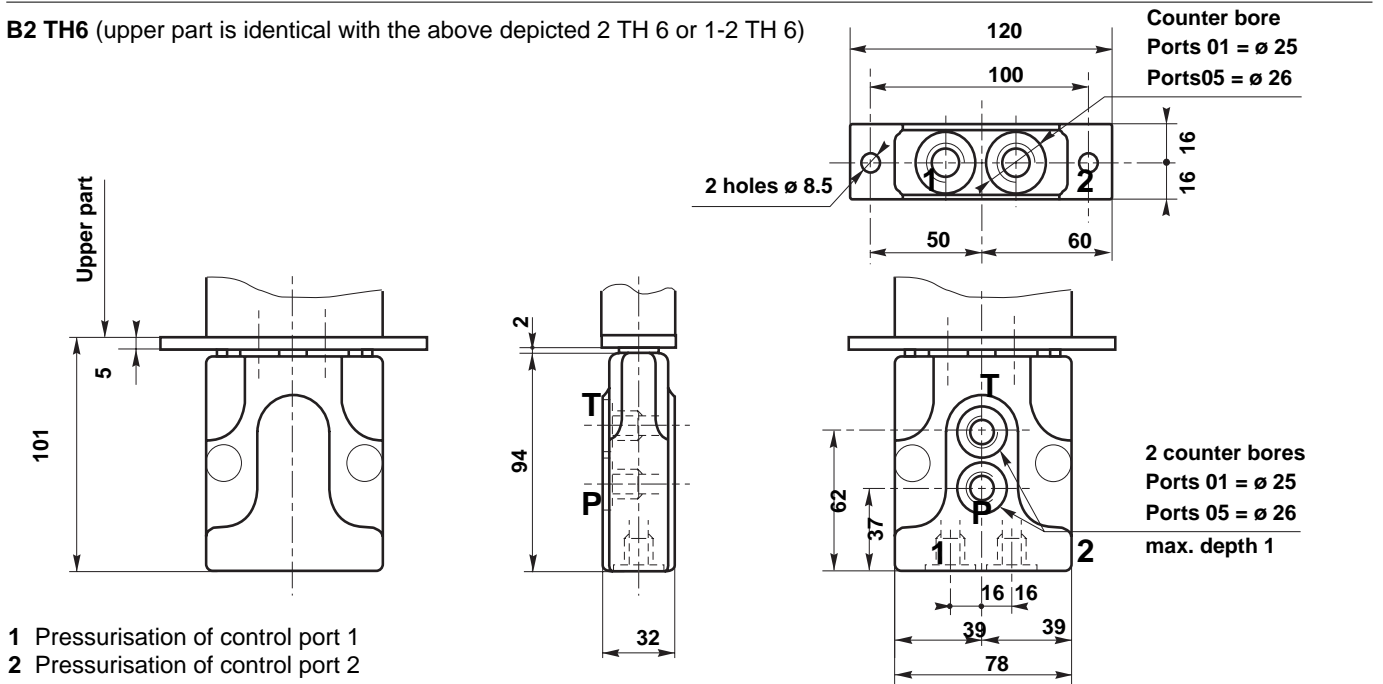
(Dimensions in mm)

2 TH6 L 06-1X/M01
 1-2 TH6 L 06-1X/M01
 M
 P
 T
 N ■



☒ for version 2 TH 6 the threads are open
 for version 1-2 TH 6 the threads are closed
 ■ the version 2 TH 6 N has other dimensions for the lever and bush.

B2 TH6 (upper part is identical with the above depicted 2 TH 6 or 1-2 TH 6)



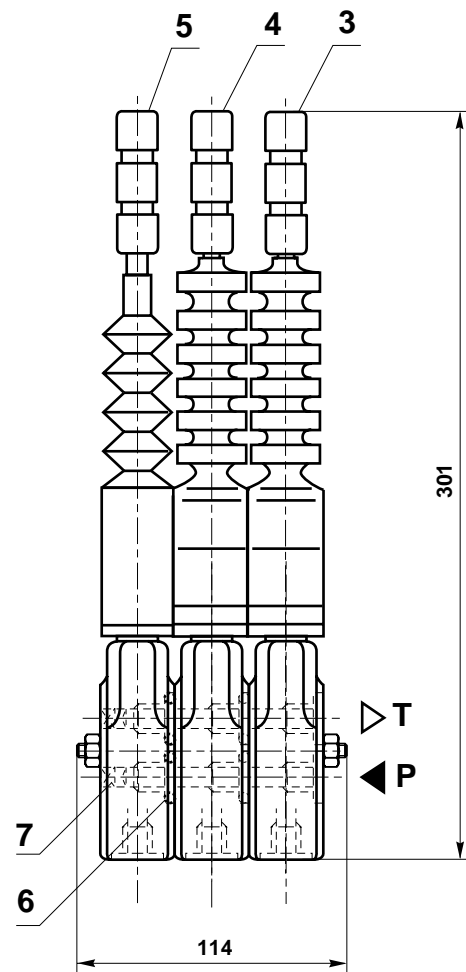
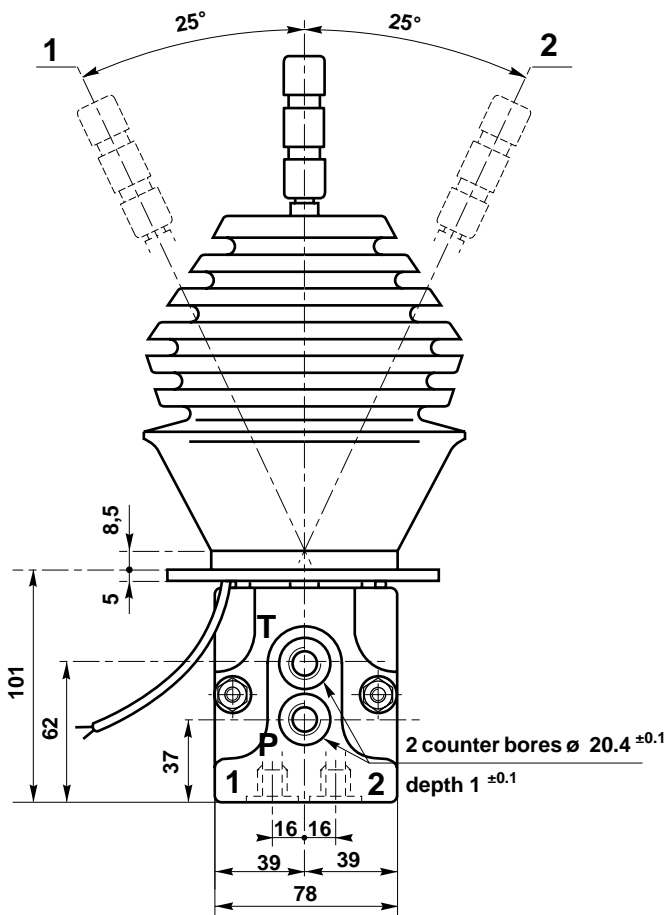
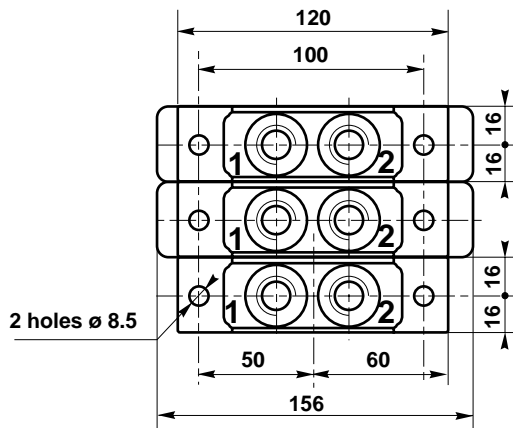
1 Pressurisation of control port 1
 2 Pressurisation of control port 2

Unit dimensions

(Dimensions in mm)

3-2 TH6 H06-1X/H06 L06 M01

G G
J J



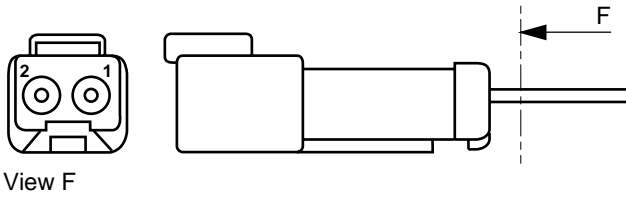
- 1 Pressurisation of control port 1
- 2 Pressurisation of control port 2
- 3 1st control axis (H06)
- 4 2nd control axis (H06)
- 5 3rd control axis (L06)
- 6 O-rings: 17.5 x 1.5 (2 off per contact surface)
- 7 Plug, factory fitted

Electrical contact symbol for version 2 TH 6 N



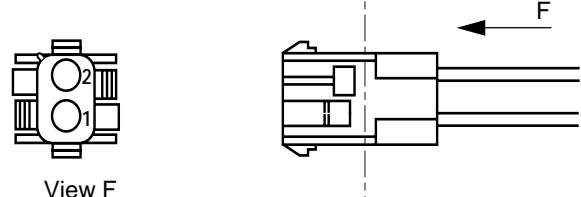
Contact location within the plugs for wiring the 2 TH 6 N

DEUTSCH sealed plug IP 67 (ordering code = 7)



Box DEUTSCH DT 04 - 2P - EP 04

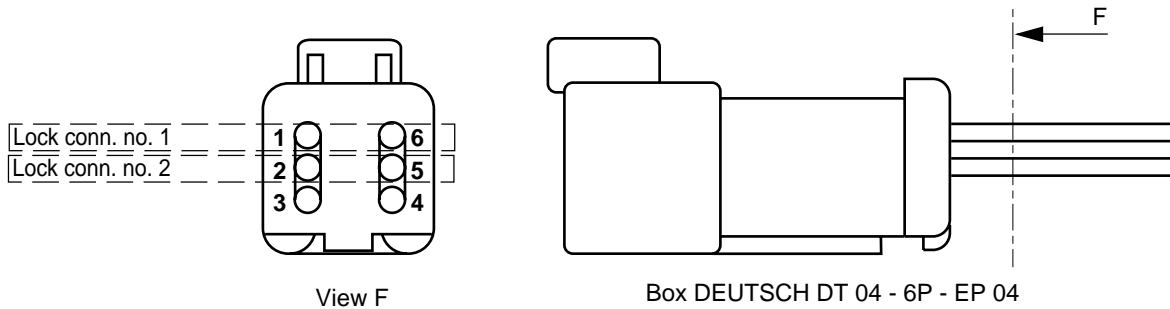
Plug AMP MAT-N-LOK (ordering code = 8)



Box AMP 350778 - 1

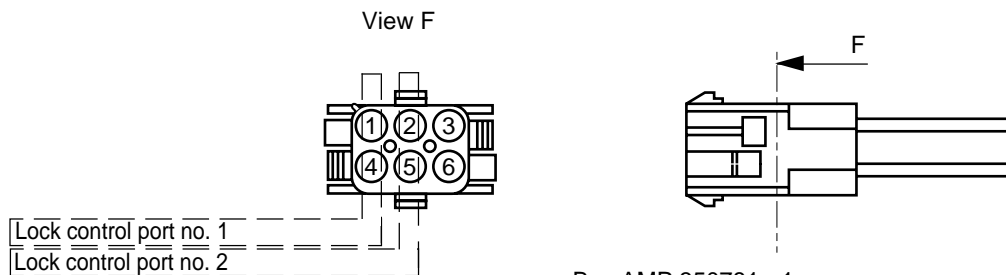
Contact location within the plugs for wiring the solenoids of the electro-magnetic lock 2 TH 6 G / H / J

DEUTSCH sealed plug IP 67 (ordering code = 5)



Box DEUTSCH DT 04 - 6P - EP 04

Plug AMP MAT-N-LOK (ordering code = 6)



Box AMP 350781 - 1



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