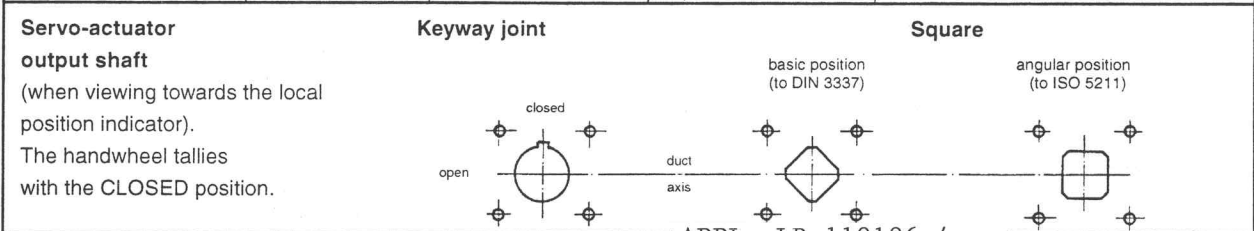


**Tab 2 - Connection of Series MODACT MOK actuators (Numeric symbols to be inserted in the 4th position of the supplementary type number instead of +)**

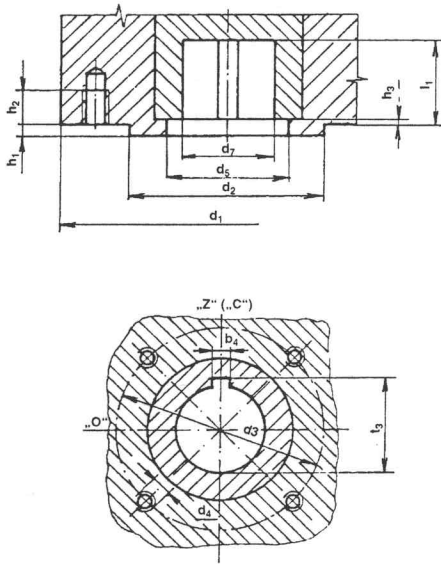
| Flange size               | Fit    | Square size s [mm] | Square position     | Marking of the 4th position in the supplementary type Number (52 32x . x = +) |
|---------------------------|--------|--------------------|---------------------|---|
| <b>Type Number 52 325</b> |        |                    |                     |   |
| F05                       | keyway |                    |                     | 52 325 . x = 0  |
| F05                       | square | 14                 | basic               | 52 325 . x = 1  |
| F04                       | keyway |                    |                     | 52 325 . x = 2  |
| F04                       | square | 11                 | basic               | 52 325 . x = 3  |
| F05                       |        | 14                 | positioned at a 45° | 52 325 . x = 4  |
| F04                       |        | 11                 | positioned at a 45° | 52 325 . x = 5  |
| F04                       |        | 12                 | basic               | 52 325 . x = 6  |
| F04                       |        | 12                 | positioned at a 45° | 52 325 . x = 7  |
| F05                       |        | 16                 | basic               | 52 325 . x = 8  |
| F05                       |        | 16                 | positioned at a 45° | 52 325 . x = 9  |
| <b>Type Number 52 326</b> |        |                    |                     |   |
| F07                       | keyway |                    |                     | 52 326 . x = 0  |
| F07                       | square | 17                 | basic               | 52 326 . x = 1  |
| F05                       | keyway |                    |                     | 52 326 . x = 2  |
| F05                       | square | 14                 | basic               | 52 326 . x = 3  |
| F07                       |        | 17                 | positioned at a 45° | 52 326 . x = 4  |
| F05                       |        | 14                 | positioned at a 45° | 52 326 . x = 5  |
| F05                       |        | 16                 | basic               | 52 326 . x = 6  |
| F05                       |        | 16                 | positioned at a 45° | 52 326 . x = 7  |
| F07                       |        | 19                 | basic               | 52 326 . x = 8  |
| F07                       |        | 19                 | positioned at a 45° | 52 326 . x = 9  |
| <b>Type Number 52 327</b> |        |                    |                     |   |
| F10                       | keyway |                    |                     | 52 327 . x = 0  |
| F10                       | square | 22                 | basic               | 52 327 . x = 1  |
| F07                       | keyway |                    |                     | 52 327 . x = 2  |
| F07                       | square | 17                 | basic               | 52 327 . x = 3  |
| F10                       |        | 22                 | positioned at a 45° | 52 327 . x = 4  |
| F07                       |        | 17                 | positioned at a 45° | 52 327 . x = 5  |
| F07                       |        | 19                 | basic               | 52 327 . x = 6  |
| F07                       |        | 19                 | positioned at a 45° | 52 327 . x = 7  |
| F10                       |        | 24                 | basic               | 52 327 . x = 8  |
| F10                       |        | 24                 | positioned at a 45° | 52 327 . x = 9  |
| F10                       |        | 27                 | basic               | 52 327 . x = A  |
| F10                       |        | 27                 | positioned at a 45° | 52 327 . x = B  |
| <b>Type Number 52 328</b> |        |                    |                     |   |
| F12                       | keyway |                    |                     | 52 328 . x = 0  |
| F12                       | square | 27                 | basic               | 52 328 . x = 1  |
| F10                       | keyway |                    |                     | 52 328 . x = 2  |
| F10                       | square | 22                 | basic               | 52 328 . x = 3  |
| F12                       |        | 27                 | positioned at a 45° | 52 328 . x = 4  |
| F10                       |        | 22                 | positioned at a 45° | 52 329 . x = 5  |
| F10                       |        | 24                 | basic               | 52 328 . x = 6  |
| F10                       |        | 24                 | positioned at a 45° | 52 328 . x = 7  |
| F10                       |        | 27                 | basic               | 52 328 . x = 8  |
| F10                       |        | 27                 | positioned at a 45° | 52 328 . x = 9  |
| F12                       |        | 32                 | basic               | 52 328 . x = A  |
| F12                       |        | 32                 | positioned at a 45° | 52 328 . x = B  |
| <b>Type Number 52 329</b> |        |                    |                     |   |
| F12                       | keyway |                    |                     | 52 329 . x = 0  |
| F12                       | square | 27                 | basic               | 52 329 . x = 1  |
| F12                       |        | 27                 | positioned at a 45° | 52 329 . x = 4  |
| F12                       |        | 32                 | basic               | 52 329 . x = 5  |
| F12                       |        | 32                 | positioned at a 45° | 52 329 . x = 6  |



Other connection of the actuator upon special request.

## Connection dimensions of Series MODACT MOK actuators

- for valves and control devices with spindles that are provided with a tight-fit keyway



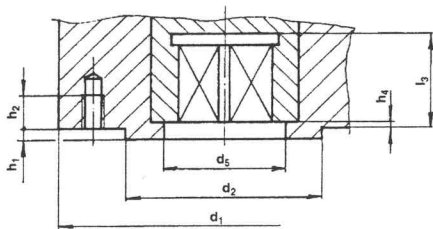
Position of the keyway, according to ISO 5211 and DIN 3337  
(The groove is in the CLOSE position whereas the OPEN position is on the left side when viewing the local position indicator)

| Flange | d <sub>1</sub> | d <sub>2</sub> | d <sub>3</sub> | d <sub>4</sub> | d <sub>7</sub> | h <sub>3max</sub> | h <sub>2min</sub> | h <sub>1max</sub> | h <sub>1min</sub> | b <sub>4</sub> | t <sub>3</sub> | d <sub>5</sub> |
|--------|----------------|----------------|----------------|----------------|----------------|-------------------|-------------------|-------------------|-------------------|----------------|----------------|----------------|
| F04    | 65             | 30             | 42             | M6             | 18             | 3                 | 12                | 3                 | 26                | 6              | 20,5           | 25             |
| F05    | 65             | 35             | 50             | M6             | 22             | 3                 | 12                | 3                 | 30                | 6              | 24,5           | 28             |
| F07    | 90             | 55             | 70             | M8             | 28             | 3                 | 13                | 3                 | 35                | 8              | 30,9           | 40             |
| F10    | 125            | 70             | 102            | M10            | 42             | 3                 | 16                | 3                 | 45                | 12             | 45,1           | 50             |
| F12    | 150            | 85             | 125            | M12            | 50             | 3                 | 20                | 3                 | 53                | 14             | 53,5           | 70             |

Note: The CLOSE position „Z“ („C“) of the keyway is identical to the „Z“ „C“ position on the local position indicator.  
Dimension d<sub>1</sub> is determined by a larger flange used by the actuator.

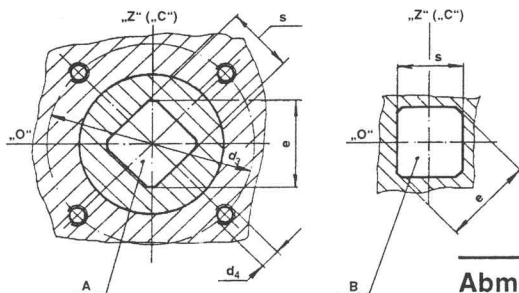
- for valves and control devices with spindles that are provided with a square hole

Position of the square hole in the end position of the actuator. The OPEN position is on the left of the CLOSE position, when viewing the local position indicator. The square hole corresponds to DIN 79. The connecting dimensions comply with DIN 3337 or ISO 5211



| Flange | d <sub>1</sub> | d <sub>2</sub> | d <sub>3</sub> | d <sub>4</sub> | d <sub>7</sub> | h <sub>3max</sub> | h <sub>2min</sub> | h <sub>1max</sub> | l <sub>3min</sub>    | S              | e <sub>min</sub>     | d <sub>5</sub> |
|--------|----------------|----------------|----------------|----------------|----------------|-------------------|-------------------|-------------------|----------------------|----------------|----------------------|----------------|
| F04    | 55             | 30             | 42             | M6             | 1,5            | 0,5               | 12                | 3                 | 15,1<br>16,1         | 11<br>12       | 14,1<br>16,1         | 25             |
| F05    | 65             | 35             | 50             | M6             | 3              | 0,5               | 12                | 3                 | 19,1<br>22,1         | 14<br>16       | 18,1<br>21,6         | 28             |
| F07    | 90             | 55             | 70             | M8             | 3              | 0,5               | 13                | 3                 | 23,1<br>26,1         | 17<br>19       | 22,2<br>25,2         | 40             |
| F10    | 125            | 70             | 102            | M10            | 3              | 1                 | 16                | 3                 | 30,1<br>33,1<br>37,1 | 22<br>24<br>27 | 28,2<br>32,2<br>36,2 | 50             |
| F12    | 150            | 65             | 125            | M12            | 3              | 1                 | 20                | 3                 | 37,1<br>44,1         | 27<br>32       | 36,2<br>42,2         | 70             |

Note: The CLOSE position „Z“ („C“) of the square hole for the spindle is identical to the „Z“ „C“ position on the local position indicator.  
Dimension d<sub>1</sub> is determined by a larger flange used by the actuator.



A - Square-end joint in the basic position

B - Square-end joint positioned at an angle of 45°

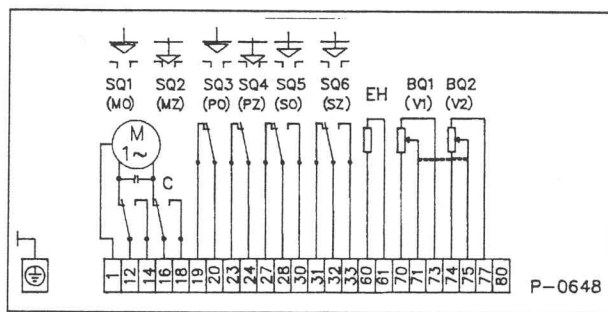
Abmessungen- und Konstruktionsänderungen vorbehalten. APPL. LR 110186-4

LR 110186-1 ATTACHMENT 1

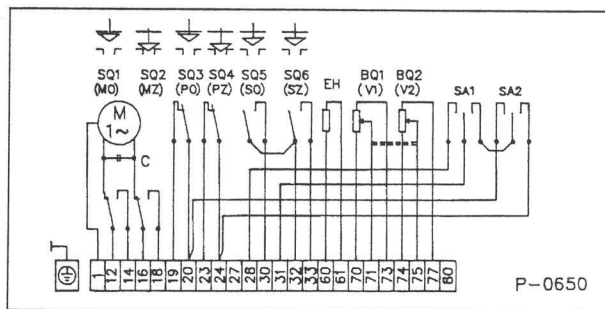
PAGE 7 OF 14

## Wiring diagrams of MODACT MOK 63 electric actuators

- with a one-phase motor

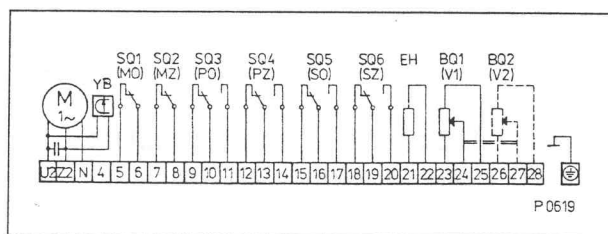


- with a one-phase motor and local control

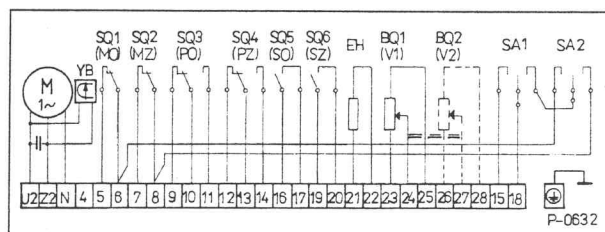


## Wiring diagrams of MODACT MOK 125 - 1000 electric actuators

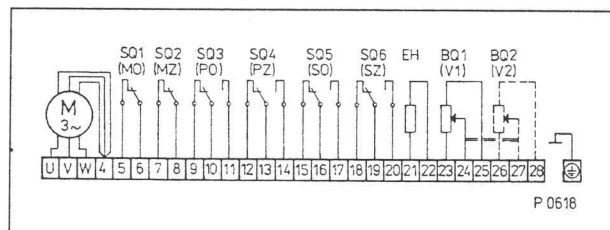
- with a one-phase motor



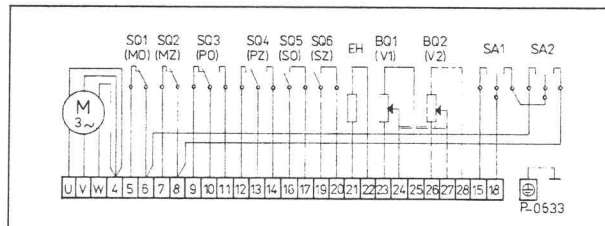
- with a one-phase motor and local control



- with a three-phase motor



- with a three-phase motor and local control



*Note: The position-limit and signalling switches can act as one-circuit devices only. The state of contacts shown applies to an intermediate position.*

### Legend:

|           |                               |
|-----------|-------------------------------|
| SQ1 (MO)  | - OPEN torque-limit switch    |
| SQ2 (MZ)  | - CLOSE torque-limit switch   |
| SQ3 (PO)  | - OPEN limit switch           |
| SQ4 (PZ)  | - CLOSE limit switch          |
| SQ5 (SO)  | - OPEN signalling switch      |
| SQ6 (SZ)  | - CLOSE signalling switch     |
| BQ1 (V1)  | - Potentiometer 1x 100 Ω      |
| BQ1 + BQ2 | - Dualpotentiometer 2 x 100 Ω |
| EH        | - Anti-condensation heater    |
| SA1       | - LOCAL/REMOTE switch         |
| SA2       | - OPEN/CLOSE switch           |
| C         | - Motor capacitor             |

|       |   |
|-------|---|
| M1    | - One-phase motor   |
| M3    | - Three-phase motor                                       |
| M, YB | - One-phase asynchronous motor with brake                 |
| YB    | - Electromagnetic brake                                   |
| CPT1  | - CPT 1/A capacitance position transmitter                |
| GS    | - Power supply of capacitance transmitter of 220 V~/24 V= |
| T     | - Mains transformer                                       |
| TRM   | - Three-position position controller                      |
| K1    | - External contact  |
| KO    | - Directional relay for the OPEN direction                |
| KZ    | - Directional relay for the CLOSE position                |
| F     | - Thermal relay   |

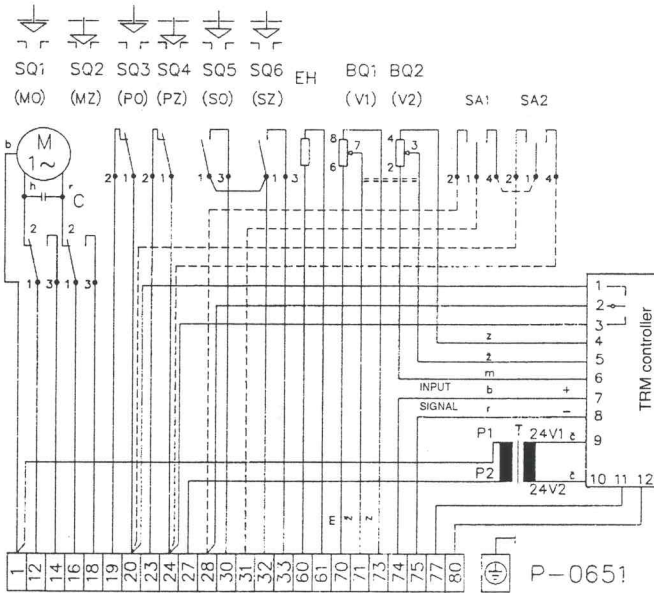
### Colors of the wires:

|   |         |
|---|---------|
| c | - black |
| b | - white |
| h | - brown |
| r | - red   |

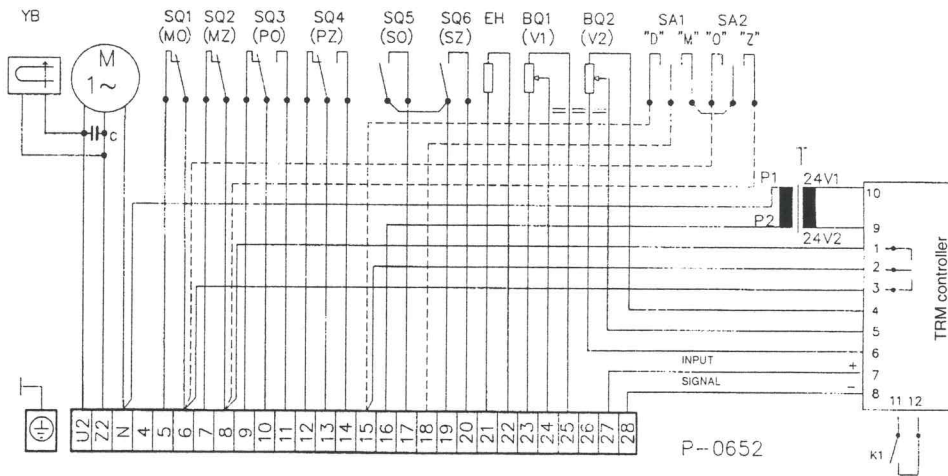
### Positions of the local/remote control switches:

|     |          |
|-----|----------|
| „M“ | - local  |
| „D“ | - remote |
| „O“ | - open   |
| „Z“ | - close  |

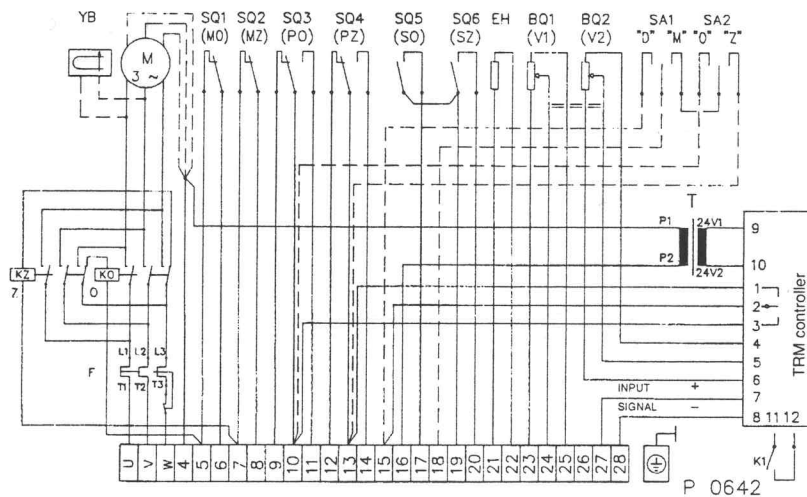
**Wiring Diagram of MODACT CONTROL MOK 63 electric actuators**  
 - with a one-phase motor, a position controller, a potentiometer and local control



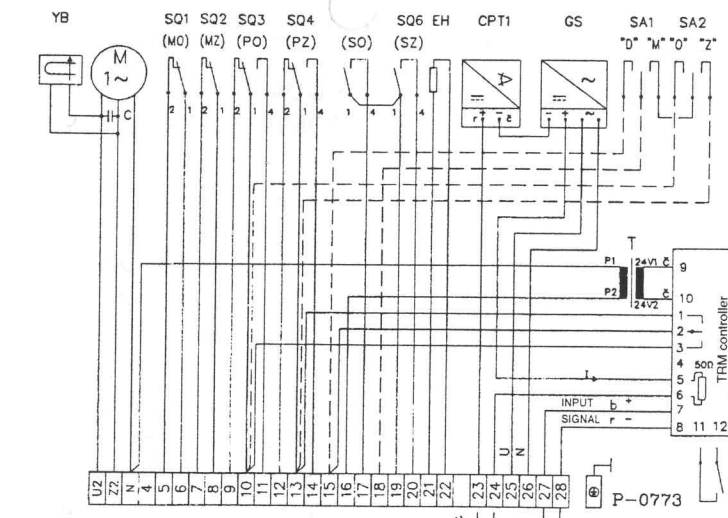
**Wiring diagram of MODACT CONTROL MOK 125 and 250 electric actuators**  
 - with a one-phase motor, a position controller, a potentiometer and local control



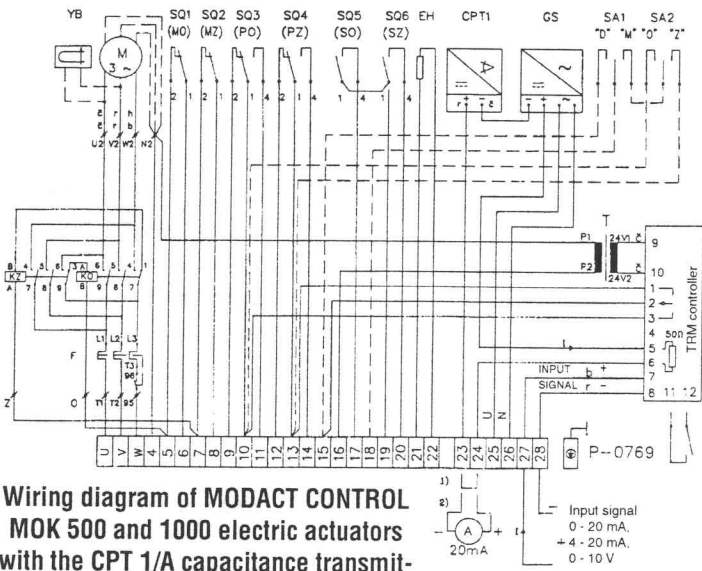
**Wiring diagram of MODACT CONTROL MOK 500 and 1000 electric actuators**  
 - with a three-phase motor and position controller



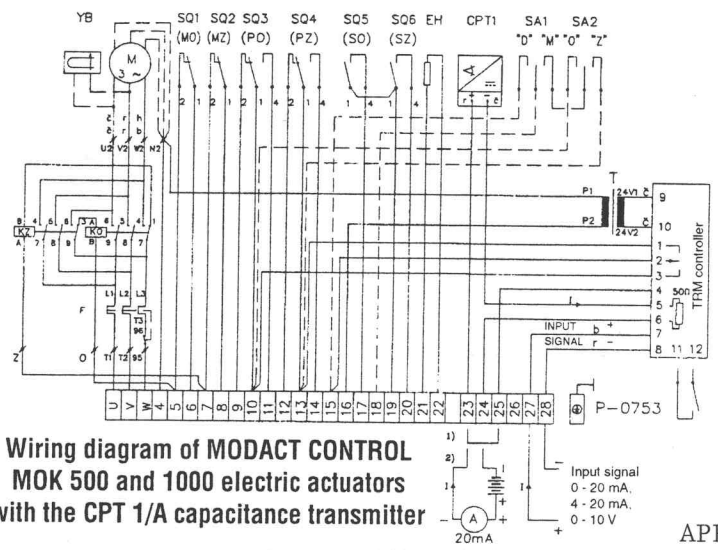




**Wiring diagram of MODACT CONTROL MOK 125 and 250 electric actuators with the CPT 1/A capacitance transmitter and a built-in power supply, Type GS**



**Wiring diagram of MODACT CONTROL MOK 500 and 1000 electric actuators with the CPT 1/A capacitance transmitter and a built-in power supply, Type GS**

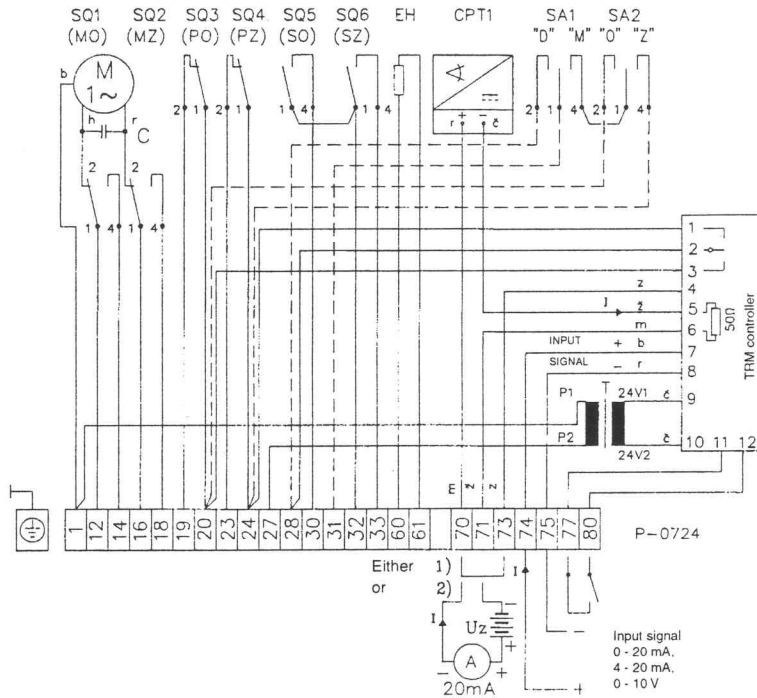


**Wiring diagram of MODACT CONTROL MOK 500 and 1000 electric actuators with the CPT 1/A capacitance transmitter**

tes:

- 1) In the case of MODACT MOK 500 and MODACT MOK 1000 actuators, the electromagnetic brake YB is used only with motors of 60 and 90 W. It is not used with motors of 120 W.
- 2) In the actuators with the CPT 1/A capacitance transmitter, the voltage between electronics and the capacitance transmitter casing should not exceed 50 V DC. Thus, in the actuators with a capacitance transmitter, the two-wire circuit of the capacitance transmitter should be connected to the electrical earth of the associated controller, computer, etc. by the user. This connection should be made only at a single point in any section of the circuit outside the actuator.
- 3) Connection of the CPT 1/A capacitance transmitter in MODACT CONTROL MOK actuators:
  - a) Strap 1 should be inserted if the feedback signal of the capacitance transmitter is not required to be brought out from the actuator.
  - b) In applications where the feedback signal of the capacitance transmitter is required to be fed to other instruments outside the actuator connection 2 should be selected, strap 1 being not used. The input terminals of the instruments (schematically shown as amperemeter A) and the external power supply (if required) which is shown schematically as a battery, should be galvanically separated from other circuits and instruments.

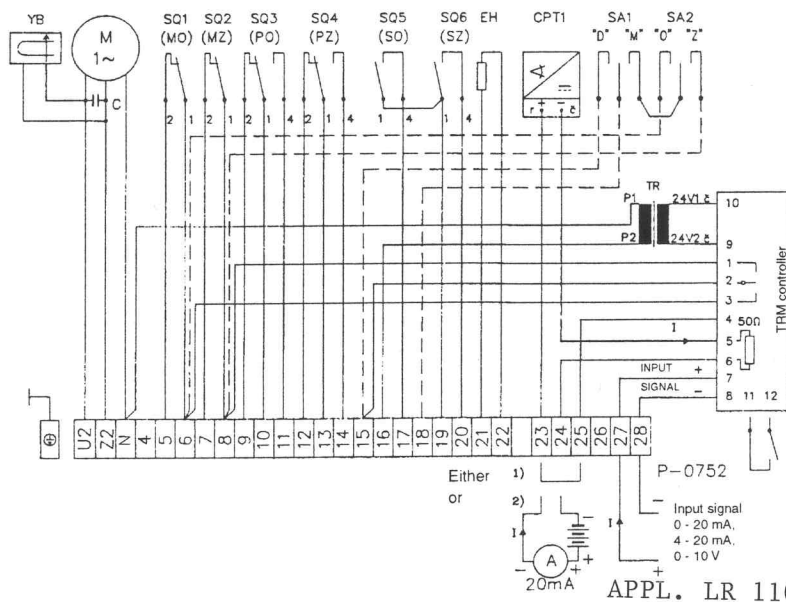
**Wiring diagram of MODACT CONTROL MOK 63 electric actuators with the CPT 1/A capacitance transmitter**



4, power supply of the CPT 1/A capacitance transmitter used in the MODACT MOK and MODACT CONTROL MOK actuators:

- a) The CPT 1/A capacitance transmitter has no power supply of its own. Thus, it should be power fed from a separate power supply.
- b) The MODACT MOK and MODACT CONTROL MOK 125, 250, 500 and 1000 actuators are available in a design variant with a built-in power supply, Type GS. In these actuators, the capacitance transmitter is arranged to operate from the built-in power supply, no external power supply being connected.
- c) In the MODACT CONTROL MOK actuators without power supply, the capacitance transmitter can be power fed from the TRM controller provided that the feedback signal need not be brought out from the actuator. In this case, strap 1 should be provided in the actuator.

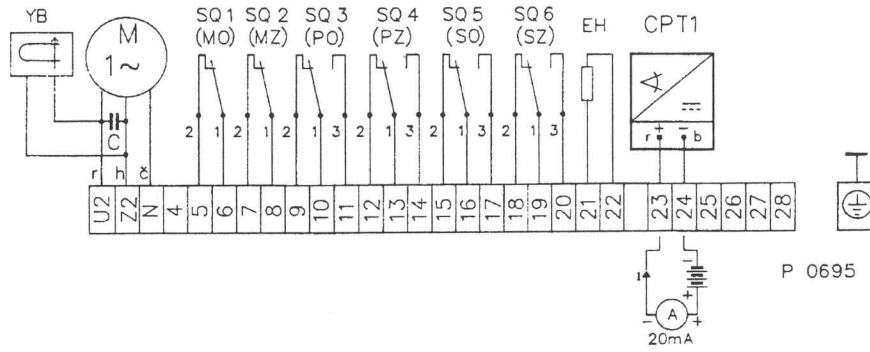
**Wiring diagram of MODACT CONTROL MOK 125 and 250 electric actuators with the CPT 1/A capacitance transmitter**



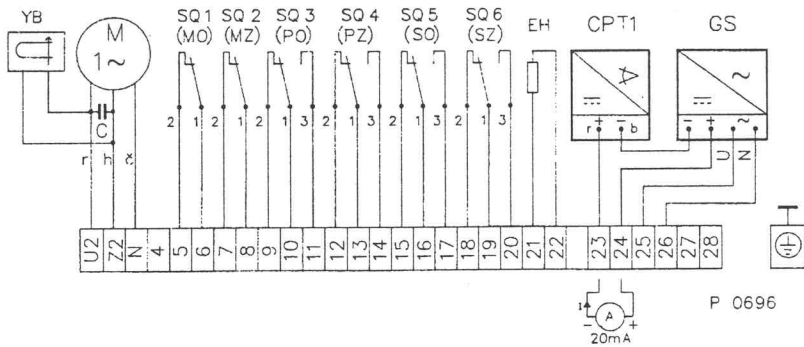
- d) If the feedback signal is required to be fed from the capacitance transmitter to other instruments outside the actuator the supply voltage obtained from the controller may not be sufficient for feeding the instruments. Therefore, an external power supply should be provided. (In this case, connection 2 should be selected).
- e) For all MODACT MOK actuators having no built-in power supply, an external power supply should be provided. The voltage of the external power supply should be 18 to 28 V DC according to CPT 1/A Technical data (Page 4.).

**Wiring diagram of MODACT MOK 125 and 500 electric actuators  
- with the CPT 1/A capacitance transmitter**

**- without built-in power supply**

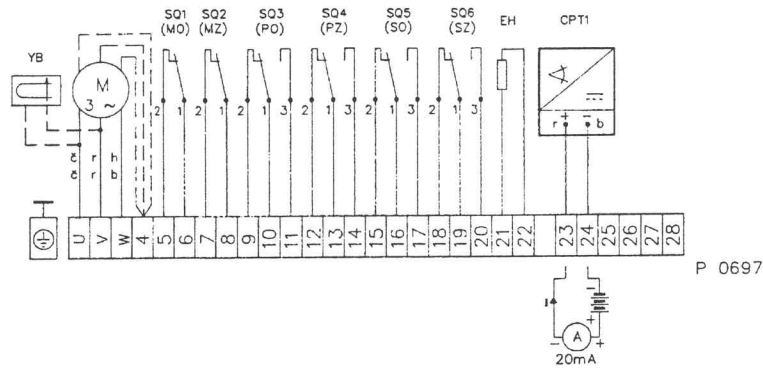


**- with built-in power supply**

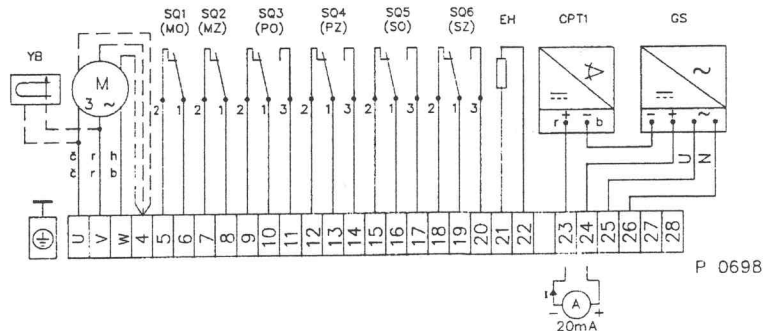


**Wiring diagram of MODACT MOK 500 and 1000 electric actuators  
- with the CPT 1/A capacitance transmitter**

**- without built-in power supply**



**- with built-in power supply**



APPL. LR 110186-4

LR 110186-1 ATTACHMENT 1

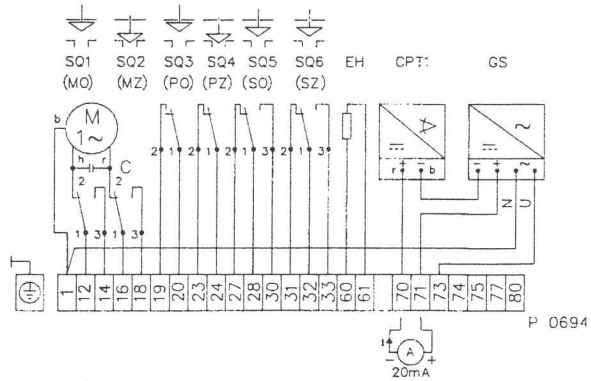
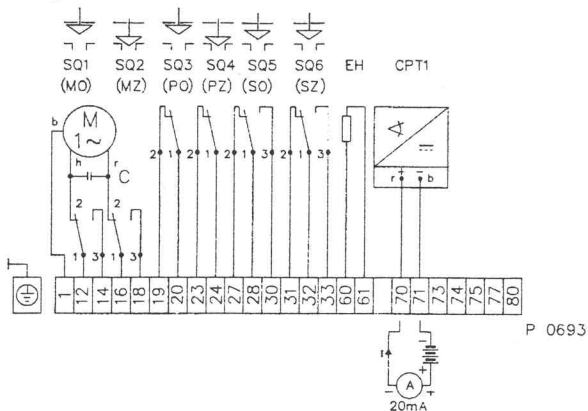
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# Wiring diagram of MODACT MOK 63 electric actuators

- with the CPT 1/A capacitance transmitter

- without built-in power supply

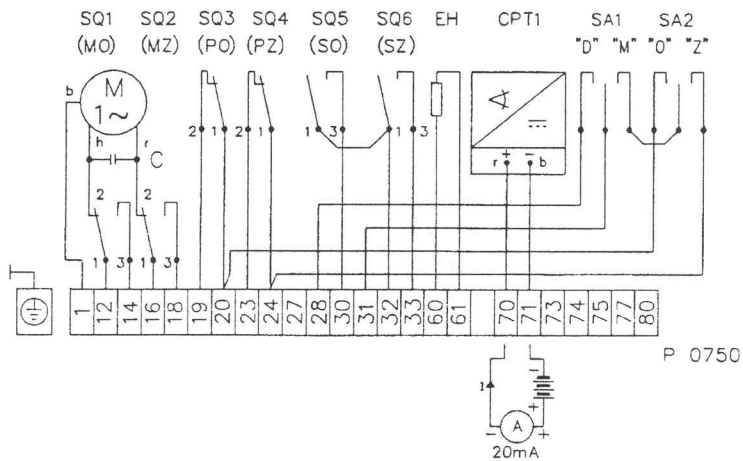
- with built-in power supply



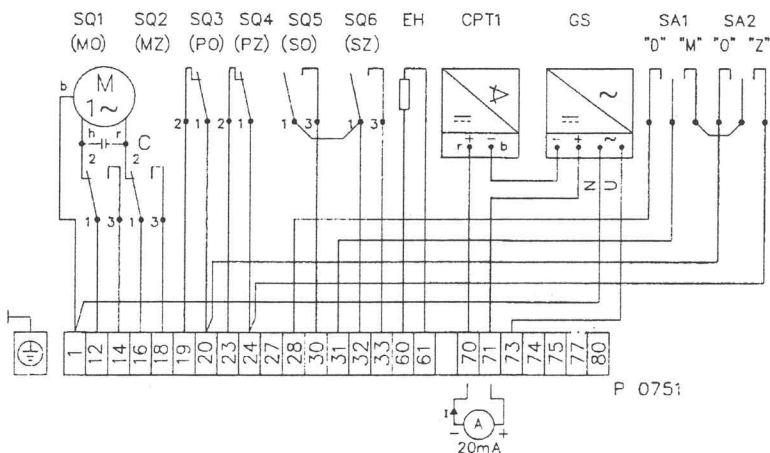
# Wiring diagram of MODACT MOK 63 electric actuators

- with the CPT 1/A capacitance transmitter and local control

- without built-in power supply

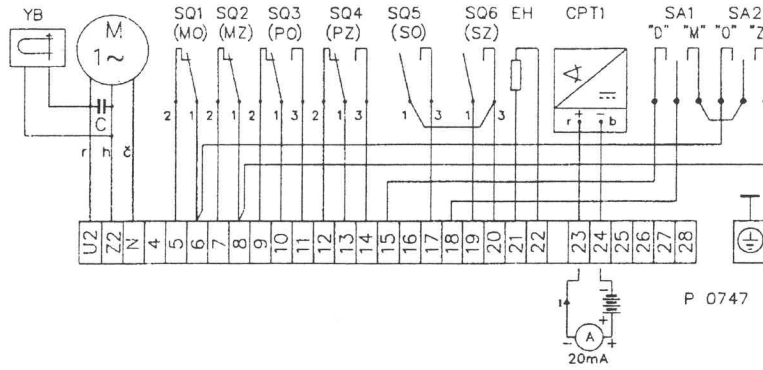


- with built-in power supply

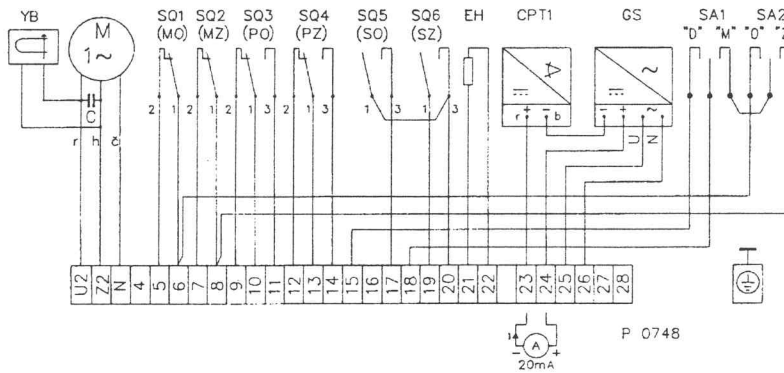


**Wiring diagram of MODACT MOK 125 and 250 electric actuators  
- with the CPT 1/A capacitance transmitter and local control**

**- without built-in power supply**

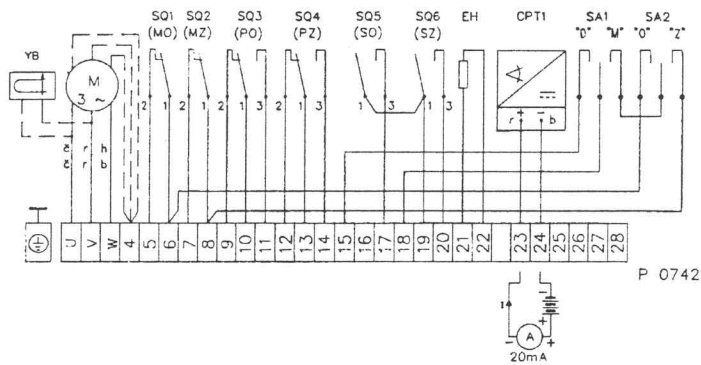


**- with built-in power supply**

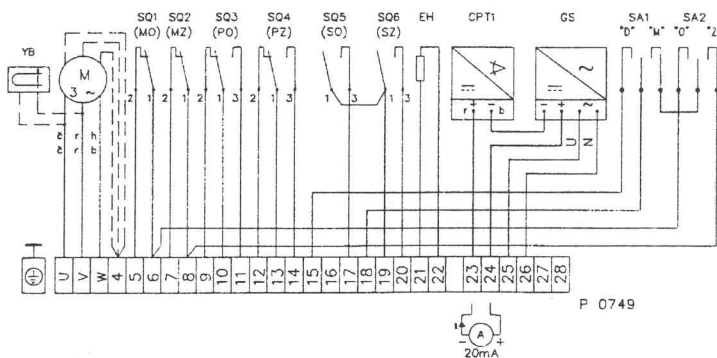


**Wiring diagram of MODACT MOK 500 and 1000 electric actuators  
- with the CPT 1/A capacitance transmitter and local control**

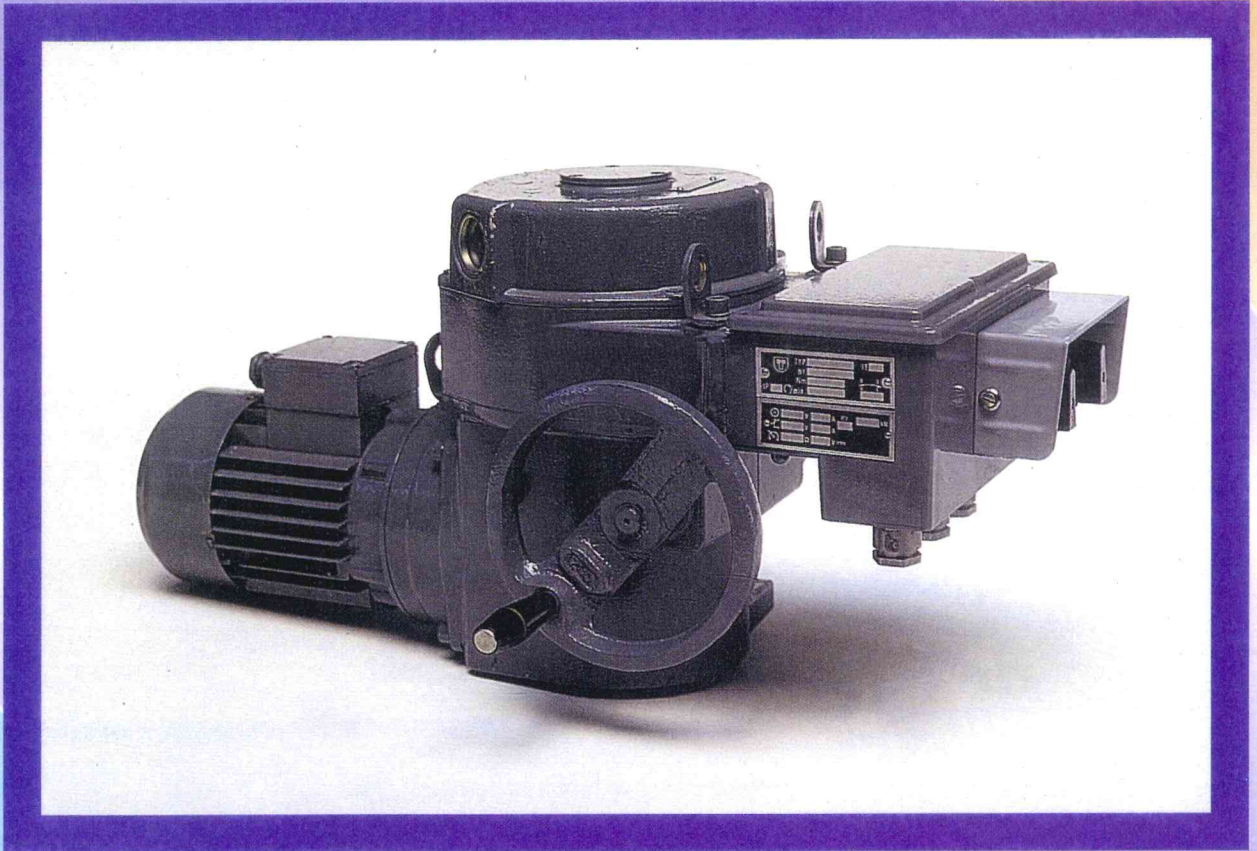
**- without built-in power supply**



**- with built-in power supply**







Electric multi-turn actuators

# MODACT MO MODACT CONTROL MO

Type No. 52 030 - 52 036

## APPLICATION

The MODACT MO actuators have been designed for adjustment of control devices by a reverse rotary motion (e.g., slide valves and other devices for which they are in respect of their characteristics suitable).

A typical example of application is remote two-position or three-position control of the control devices which are required to have a tight closure in their end positions.

Depending on their design, the MODACT CONTROL MO actuators can be fitted with a position controller, reversing contactors, overcurrent motor protection and the BAM electronic brake. They can be used to adjust control devices working in control systems, depending on the value of analogue input signal of the position controller. They can be equipped with reversing contactors only or with reversing contactors and the BAM electronic brake, according to the customer's requirements.

## DESCRIPTION

### A) MODACT MO actuators

The MODACT MO actuators have been designed for direct mounting on the control device. They can be connected by means of a flange and a clutch, according to ISO DIN 5210 and DIN 3338. For connection to the ZPA fittings with older attachments, adapters are available.

A three-phase asynchronous motor drives via a geared countershaft the sun gear of a epicyclic gear unit enclosed in the supporting actuator box (power transmission). In the mechanical power control mode, the crown gear of a planet epicyclic gear unit is held in a steady position by a self-locking work gear drive. Alternatively, the handwheel, which is connected with the worm, allows manual control to be accomplished even during motor operation without the risk of operator's injury.

The output shaft is fixedly coupled to the planet-gear carrier. It is extended to the control box in which all controls of the actuator have been concentrated.

The operation of the position-limit switches, the signalling switches and the position transmitter is derived from the rotary motion of the output shaft via drive mechanisms. The operation of the torque-limit switches is derived from the axial displacement of the „floating“ worm of the manual control unit, which is sensed and transferred to the control box by means of a lever.

All controls are accessible after removal of the cover of the control box. Access to the terminal board is obtained after removal of the cover of the terminal box. All electric control circuits of the actuator have been brought out to the terminal board. The terminal box is fitted with cable bushings intended for electrical connection of the actuator. The electric motor has its own box with a terminal board and a cable leadthrough. Alternatively, the actuators are available with a cable push-on connector, Type KBNS (See Table of design variants).

### B) MODACT CONTROL MO actuators

The MODACT CONTROL MO actuators are fitted with an electronic position controller. In conjunction with the fitting having a suitable control characteristic, they constitute a position servo-loop. The output shaft of these actuators is automatically brought into the position corresponding to the input signal value of the controller.

For application possibilities, operating conditions, technical parameters, a functional description, packaging and storing, functional tests and location of the instrument, attachment to a valve, adjustment of the actuator with the valve, operation and maintenance, failures and their removal, reference should be made to the part dealing with the MODACT MO actuators. The provisions included therein apply even to the MODACT CONTROL MO actuators. A survey of the MODACT CONTROL MO actuators now in current production are shown in Tab. 1.

In addition, the MODACT CONTROL MO actuators are fitted with a Type TRM position controller of the output shaft, a contactor combination for reversing the output shaft, a thermal relay to protect the electric motor against overloading, and the BAM electronic brake of asynchronous motors.

All of the above instruments are housed in the contactor box which can be mounted instead of the terminal box of MO actuators. These actuators can be also supplied without position controller and the BAM electronic brake - see Table of design variants.



The connection of electric circuits of the control box to external circuits is carried out on the terminal board having additional terminals for connecting the voltage supply of 3 x 230/400 V, 50 Hz (3 x 220/380 V, 50 Hz).

### **Analogue position controller TRM**

A built-in position controller, Type TRM, allows automatic position adjustment of the output shaft to be made, depending on the input signal value. The controller output is provided by two relays.

In addition to its basic function, the controller performs two auxiliary functions whose activation can be selected by rearranging the switches on the controller board, as required. One of the functions permits the controller to move the output shaft to the „open“ or „closed“ position, or the output shaft remains in the position in which the loss of signal occurred. (This option can be selected by readjusting a switch on the controller board).

Due to the other function, the same effect can be obtained by interconnecting terminals 11 and 12 of the controller via an external contact. When the external contact has been broken the actuator works again in the normal way. If this function is not required no external contact should be connected.

### **OPERATING CONDITIONS**

In design N for mild climates, the actuators should withstand the effect operating conditions characterized by the temperature range of - 25 °C to + 55 °C, relative humidity of up to 100% with condensation, and the upper limit of water content of 15 g H<sub>2</sub>O/kg in dry air.

Both in design N and design T for use in dry and humid tropical climates, the actuators can operate under the following environmental conditions:

- Dusty environment with incombustible and non-conducting dust.
- Complicated active environment or a sheltered location with light roofing for protection against the direct effect of snow, rain and solar radiation.
- Location with vibrations, with a displacement amplitude of 0.075 mm from 10 to 62 Hz and an acceleration amplitude of 9.8 m.s<sup>-2</sup> from 62 to 150 Hz.

In design T for tropical applications, the actuators should be capable of operating under difficult climatic conditions in a dry and humid tropical or industrial atmosphere. In this case, the maximum permissible ambient temperature is +55 °C.

Altitude above sea level - The actuators have been designed for operation at an altitude up to 1,000 m above sea level.

If the actuator is used at a location with an ambient temperature under -10 °C and relative humidity above 80%, at a sheltered location, or in the tropical atmosphere, the anti-condensation heater which has been built in all actuators, should be always used. One or two anti-condensation heaters (provided that the second anti-condensation heater is fitted) should be connected, if required. Installation of the actuators at a location with incombustible and non-conducting dust is possible only if this has no adverse effect on their function.

## **TECHNICAL DATA**

### **Supply voltage**

The actuators have been designed to operate at a supply voltage of 3 x 230/400 V, 50 Hz (3 x 220/380 V, 50 Hz) within + 10% to - 15% of the rated value. The permissible frequency fluctuation of the supply voltage is within ± 2%. Actuators designed to operate at another voltage and frequency than those given above are available upon special request. For more details, refer to the technical conditions.

### **Operating position**

The actuator is usually mounted in a position with the output shaft axis vertical and the control chamber upwards. Nevertheless, it can operate even in another position provided that axis of motor remains in the horizontal plane.

### **Tripping torque**

At the factory, the tripping torque has been adjusted as shown in Tab.1, according to the customer's requirements. If no tripping torque adjustment has been specified by the customer the maximum tripping torque is adjusted.

### **Protective enclosure**

The type of protective enclosure of the control box as well as of the terminal box is IP 55, whereas the type of protective enclosure of the actuator is IP 54, according to EN 60529:1991 - IEC 529:1989.

### **Insulation resistance**

Under normal operating conditions, the insulation resistance of electric circuits with respect to the chassis or to each other should be at least 20 MΩ. After a damp test, it should be at least 2 MΩ. For more details, refer to the technical conditions.

### **Terminal board**

For connection to external circuits, the actuator is fitted with a terminal board that employs screw terminals allowing both copper and aluminium conductors with a cross-sectional area of up to 2.5 mm<sup>2</sup> to be connected.

### **Cable push-on connector (KBNS)**

If required by the customer, the MODACT MO actuators can be fitted with a cable push-on connector that provides for connection of the control circuits and, in Type No. 52 030 with an unlocking controller, also of the electric motor. The cable push-on connector is provided with 32 soldering tags allowing Cu-conductors with a maximum cross-sectional area of 0.75 mm<sup>2</sup> to be used. It is also fitted with two cable bushings: a P16 for connection of a cable of 11.5 to 14 mm O.D. and a P21 for connection of a cable of 15.5 to 18 mm O.D. The cables should be attached to an external frame at a maximum distance of 150 mm from the KBNS bushings. The actuator should remain connected to a protective conductor even after the KBNS connector has been unmated. The connector should not be unmated when it is electrically connected to a source of potential.

### **Anti-condensation heater**

The anti-condensation heater consists of one or two resistance heater elements. It can be connected to the AC mains at a voltage of 230 V. In applications where the temperature is expected to exceed 35 °C only one resistance element is connected.

### **Duty**

The actuators can operate with a short-time rating in running duty S2. At a temperature of + 50 °C, the operating time is 10 minutes. The mean value of load torque should not exceed 60% of the maximum tripping torque.

The actuators can be also used in intermittent control duty S4 with starting. The maximum switching cycle is 10 minutes, the maximum switching rate is 10 switching cycles per hour. With a load factor of 25%, the mean value of load torque should not exceed 40% of the maximum tripping torque (rated torque). The maximum switching rate in automatic control is 1,200 per hour.

### **Self-locking**

The actuator is self-locking provided that the load is applied only in the opposite direction to the output shaft motion of the actuator. Self-locking is provided by an arresting roller that stops the electric motor even in the manual control mode.

For safety reasons, using the actuators for driving lifting appliances that may be used for the transport of persons or equipment in cases where people might be present under the lifted load is strictly prohibited.

### **Torque-limit switches**

The torque-limit switches incorporate locking facility to prevent the electric motor to be switched on again after the load torque has been lost. Moreover, they are locked so that they cannot be switched off during starting of the actuator when the starting torque acts.

### **Position indicator**

The actuator can be fitted with a local position indicator (excepting the actuator design variant with a capacitance transmitter).

### **Current and voltage ratings of the position transmitters**

The potentiometric position transmitter can be used at a voltage of up to 48 VDC. However, the maximum permissible current of 100 mA should not be exceeded. The capacitive transmitter can be used for voltage 24 V DC.

### **Current rating and maximum voltage of microswitches**

250 V AC/2 A, 250 V DC/0.2 A, blinker 250 V AC/0.2 A, cos phi = 1

The microswitches can be used only as single-circuit devices. Two voltages of different values and phases cannot be connected to the terminals of the same microswitch.

### **Local control of the MODACT MO actuators**

Local control of the actuators connected to the KBNS connector can be performed by a three-position control switch (with the CLOSE, STOP and OPEN positions) with a stable STOP position, or by the so-called unlocking switch. In the local control mode, this switch also provides for disconnection of the remote control equipment from the switchboard or control board. The actuators which are connected by means of a terminal board, use the same local control box as the MODACT CONTROL MO actuators.

### **Local control of the MODACT CONTROL MO actuators**

In any design variant, the MODACT CONTROL MO actuators can be supplemented with a local control box. The local control unit enables the actuator to be controlled with the remote control facility disabled, performing the same function as the unlocking control unit of the MODACT MO actuators.

### **Position transmitter**

The actuators can be fitted with a dual potentiometer with 2 x 100 Ω resistance. Nevertheless, both the MODACT MO and MODACT CONTROL MO actuators can be equipped with the CPT 1/A capacitive position transmitter employing the unified signal of 4 to 20 mA. For the capacitive transmitter, a two-wire connection is used, and the actuator has no built-in power supply.

The maximum load resistance is  $R_{load\ max} = 500\ \Omega$ . The transmitter is designed to operate at a supply voltage of 24 V DC. This voltage need not be stabilized, but should not exceed 30 V since otherwise there is the risk of a damage to the transmitter. The power supply, the position transmitter and the load are connected in series, the positive pole of the power supply being connected to the positive pole of the transmitter. This loop should be connected to the electric earth of the load at a single point (outside the actuator).

## Technical parameters of the TRM controller

Input signal (switch selectable on the controller board):

0 -  $20 \text{ mA}/R_{\text{load}} = 50 \Omega$

4 -  $20 \text{ mA}/R_{\text{load}} = 50 \Omega$

0 -  $10 \text{ V}/R_{\text{load}} = 20 \text{ k}\Omega$

Dead band:

max. 4% of the 10 V range, adjustable

within 1 : 5 minimum limits

Transmission characteristic:

P (proportional control)

The two power contacts feature a small amount of fixed switching hysteresis to avert system vibrations when the control deviation approaches a zero.

## Electronic brake BAM

After the power supply has been disconnected the running-down time of the actuator is reduced from 0.5 through 1.3 s to 40 through 60 ms as compared with the design variant without electronic brake. This permits the control accuracy to be enhanced. The electronic brake is suitable for electric motors operating at a supply voltage of 3 x 230/400 V, 50 Hz (3 x 220/380 V, 50 Hz) and producing a power of 120 W, 180 W, 370 W or 550 W.

## Reversing contact combination and thermal relay

Due to its configuration and outfit, the actuator can be connected to external electric circuits in a simple way. For connection, it is sufficient to connect the actuator power supply unit to the three-phase power supply system, a whole group of actuators being connectable over a single power supply cable. This enables power cables coming from the reversing contactors mounted in the switchboard of each controlled actuator to be saved. If the signalling switches are not required to be brought out then it is sufficient to connect the actuator to the control circuits.

## ORDERING INFORMATION

When ordering, please specify the following:

- Number of actuators required
- Actuator designation
- Type Number (9-digit), according to the tables of design Nos 1 and 2
- Special design (increased working stroke - see Tab.1)
- Aluminium engineering variant (in words), if required
- Power supply voltage and frequency (for electric motor)
- Tripping torque adjustment (if required by the customer)

## Example:

In the order, the MODACT MO rotary multispeed actuator, Type No. 52 032, with the tripping torque within a range of 160 to 250 Nm and the speed of output shaft adjustment of 25 rpm, in normal design N, with the KBNS connector wired, C-Group attachment, a position indicator and a control switch; fitted with signalling switches and a potentiometer of  $2 \times 100 \Omega$ ; designed to meet the requirement that a tripping torque other than the maximum torque is set and to operate at the supply voltage of 3 x 230/400 V, 50 Hz, should be specified as follows:

1 x Actuator 52 032.C503, torque-limit switches adjusted to 200 Nm, electric motor supply voltage 3 x 230/400 V, 50 Hz.

| Size of motor | Power [kW] | rpm [min <sup>-1</sup> ] | Normal current of electric motor [A] |       |       |       |       |
|---------------|------------|--------------------------|--------------------------------------|-------|-------|-------|-------|
|               |            |                          | 220 V                                | 380 V | 500 V | 230 V | 400 V |
| 4AP71-6s      | 0,18       | 900                      | 1,23                                 | 0,71  | 0,54  | 1,17  | 0,67  |
| 4AP71-4s      | 0,25       | 1380                     | 1,40                                 | 0,81  | 0,62  | 1,34  | 0,77  |
| 4AP71-4       | 0,37       | 1370                     | 1,90                                 | 1,10  | 0,84  | 1,82  | 1,05  |
| 4AP80-6s      | 0,37       | 910                      | 2,00                                 | 1,10  | 0,87  | 1,9   | 1,1   |
| 4AP80-4s      | 0,55       | 1380                     | 2,60                                 | 1,50  | 1,14  | 2,5   | 1,42  |
| 4AP80-4       | 0,75       | 1380                     | 3,80                                 | 2,2   | 1,67  | 3,3   | 1,9   |
| 4AP90S-4      | 1,1        | 1410                     | 4,80                                 | 2,80  | 2,15  | 4,6   | 2,7   |
| 4AP80-6       | 0,55       | 910                      | 2,80                                 | 1,60  | 1,22  | 2,6   | 1,52  |
| 4AP90L-4      | 1,5        | 1410                     | 6,20                                 | 3,60  | 2,75  | 5,95  | 3,4   |
| 4AP90L-2      | 2,2        | 2865                     | 8,10                                 | 4,70  | 3,60  | 7,8   | 4,5   |
| 4AP100L-6     | 1,5        | 935                      | 7,1                                  | 4,1   | 3,1   | 6,6   | 3,8   |
| 4AP100L-4s    | 2,2        | 1430                     | 8,8                                  | 5,1   | 3,9   | 8,4   | 4,9   |
| 4AP100L-4     | 3,0        | 1420                     | 11,8                                 | 6,8   | 5,2   | 11,1  | 6,4   |
| 4AP112M-2     | 5,5        | 2910                     | 19,2                                 | 11,1  | 8,5   | 18,3  | 10,6  |
| 4AP112M-6s    | 2,2        | 950                      | 9,4                                  | 5,4   | 4,1   | 9     | 5,2   |
| 4AP112M-4     | 4,0        | 1440                     | 15,0                                 | 8,7   | 6,6   | 14,4  | 8,3   |
| 4AP132S-6     | 4,0        | 960                      | 15,9                                 | 9,2   | 7,0   | 15,1  | 8,7   |
| 4AP132M-4     | 7,5        | 1450                     | 26,3                                 | 15,2  | 11,6  | 25,4  | 14,7  |



Table 1 - Basic parameters

Basic outfit: (except design 52 03x.60x9)  
 2 position-limit switches (OPEN - PO, CLOSE - PZ)  
 2 torque-limit switches (OPEN - MO, CLOSE - MZ)  
 1 electric motor (brake motor upon special request)  
 2 anti-condensation heaters

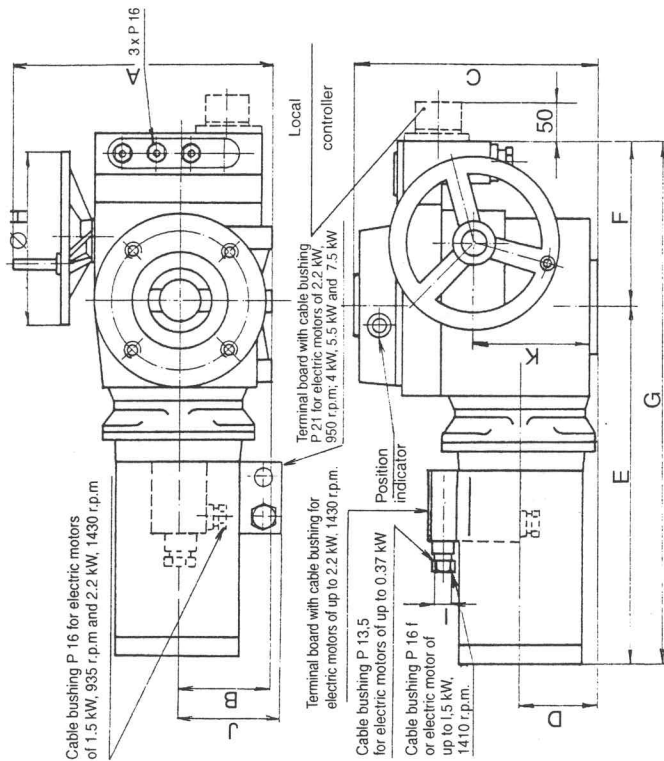
| Type designation | CONTROL MO | Torque [Nm] <sup>1)</sup> |          | Rate of adjustment [r.p.m.] | Working stroke (revolutions) | Electric motor |       |                | Weight [kg]             |      | Type Number |      |    |   |             |             |      |    |   | Notes:      |   |   |   |   |   |             |   |             |
|------------------|------------|---------------------------|----------|-----------------------------|------------------------------|----------------|-------|----------------|-------------------------|------|-------------|------|----|---|-------------|-------------|------|----|---|-------------|---|---|---|---|---|-------------|---|-------------|
|                  |            | tripping                  | starting |                             |                              | Power [kW]     | RPM   | I <sub>s</sub> | Design variant          |      | basic       |      |    |   |             | additional  |      |    |   |             |   |   |   |   |   |             |   |             |
|                  |            |                           |          | cast iron <sup>4)</sup>     |                              |                |       |                | aluminium <sup>4)</sup> | 1    | 2           | 3    | 4  | 5 | 6           | 7           | 8    | 9  |   |             |   |   |   |   |   |             |   |             |
| MO 4/12 - 10     | C          | 20-40                     | 120      | 10                          | 2-250                        | 0,18           | 900   | 2,5            | 35                      | 23   | 5           | 2    | 0  | 3 | 0           | x           | x    | 6  | x |             |   |   |   |   |   |             |   |             |
| MO 4/12 - 16     | C          |                           |          | 16                          |                              | 0,18           | 900   | 2,5            | 35                      | 23   |             |      |    |   |             | x           | x    | 0  | x |             |   |   |   |   |   |             |   |             |
| MO 4/10 - 25     | C          |                           |          | 100                         |                              | 25             | 0,25  | 1380           | 3,4                     | 35   |             |      |    |   |             | 23          | x    | x  | 1 | x           |   |   |   |   |   |             |   |             |
| MO 4/9 - 40      | C          | 90                        | 40       | 0,37                        |                              | 1370           | 3,1   | 36             | 24                      | x    |             |      |    |   |             | x           | 2    | x  |   |             |   |   |   |   |   |             |   |             |
| MO 8/12 - 10     | C          | 40-80                     | 120      | 10                          |                              | 0,18           | 900   | 2,5            | 35                      | 23   |             |      |    |   |             | x           | x    | 7  | x |             |   |   |   |   |   |             |   |             |
| MO 8/12 - 16     | C          |                           |          | 16                          |                              | 0,18           | 900   | 2,5            | 35                      | 23   |             |      |    |   |             | x           | x    | 3  | x |             |   |   |   |   |   |             |   |             |
| MO 8/10 - 25     | C          |                           |          | 25                          |                              | 0,25           | 1380  | 3,4            | 35                      | 23   |             |      |    |   |             | x           | x    | 4  | x |             |   |   |   |   |   |             |   |             |
| MO 8/10 - 40     | C          | 105                       | 40       | 0,37                        |                              | 1370           | 3,1   | 36             | 24                      | x    |             |      |    |   |             | x           | 5    | x  |   |             |   |   |   |   |   |             |   |             |
| MO 12/15 - 10    | C          | 80-125                    | 150      | 10                          |                              | 0,18           | 900   | 2,5            | 35                      | 23   |             |      |    |   |             | x           | x    | 8  | x |             |   |   |   |   |   |             |   |             |
| MO 12/15 - 16    | C          |                           |          | 16                          |                              | 0,25           | 890   | 2,5            | 36                      | 24   |             |      |    |   |             | x           | x    | 9  | x |             |   |   |   |   |   |             |   |             |
| MO 12/15 - 25    | C          |                           |          | 25                          |                              | 0,37           | 1370  | 3,1            | 36                      | 24   |             |      |    |   |             | x           | x    | A  | x |             |   |   |   |   |   |             |   |             |
| MO 10/32 - 1     |            | 63-100                    | 210      | 1                           |                              | 2-250          | 0,09  | 2770           |                         | 51   |             |      |    |   |             | 32,5        | 5    | 2  | 0 | 3           | 1 | x | x | A | x | Brake motor |   |             |
| MO 10/21 - 10    | C          |                           |          | 10                          | 0,18                         |                | 890   | 2,5            | 52                      | 34   | x           | x    | B  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 10/21 - 16    | C          |                           |          | 16                          | 0,25                         |                | 890   | 2,5            | 53                      | 35   | x           | x    | 8  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 10/21 - 25    | C          |                           |          | 25                          | 0,37                         |                | 910   | 3,3            | 55                      | 37   | x           | x    | 0  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 10/21 - 40    | C          |                           |          | 40                          | 0,55                         |                | 1380  | 4,2            | 55                      | 37   | x           | x    | 1  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 10/21 - 63    |            |                           |          | 63                          | 0,75                         |                | 1380  | 3,8            | 56                      | 38   | x           | x    | 2  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 10/21 - 100   |            |                           |          | 100                         | 1,1                          |                | 1410  | 4,6            | 59                      | 41   | x           | x    | 3  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 16/32 - 1     |            |                           |          | 325                         | 1                            |                | 0,09  | 2770           |                         | 51   | 32,5        | x    | x  | C | x           | Brake motor |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 16/21 - 10    | C          |                           |          | 10                          | 0,25                         |                | 890   | 2,5            | 53                      | 35   | x           | x    | D  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 16/21 - 16    | C          |                           |          | 16                          | 0,37                         |                | 910   | 3,3            | 55                      | 37   | x           | x    | 9  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 16/21 - 25    | C          |                           |          | 25                          | 0,37                         |                | 910   | 3,3            | 55                      | 37   | x           | x    | 4  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 16/21 - 40    | C          |                           |          | 40                          | 0,55                         |                | 1380  | 4,2            | 55                      | 37   | x           | x    | 5  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 16/21 - 63    |            | 63                        | 0,75     | 1380                        | 3,8                          | 56             | 38    | x              | x                       | 6    | x           |      |    |   |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 16/21 - 100   |            | 100                       | 1,1      | 1410                        | 4,6                          | 59             | 41    | x              | x                       | 7    | x           |      |    |   |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 25/32 - 1     |            | 100-160                   | 210      | 1                           | 2-250                        | 0,09           | 2770  |                | 51                      | 32,5 | 5           | 2    | 0  | 3 | 2           | x           | x    | E  | x | Brake motor |   |   |   |   |   |             |   |             |
| MO 25/32 - 10    | C          |                           |          | 10                          |                              | 0,37           | 910   | 3,3            | 55                      | 37   |             |      |    |   |             | x           | x    | F  | x |             |   |   |   |   |   |             |   |             |
| MO 25/32 - 16    | C          |                           |          | 16                          |                              | 0,55           | 910   | 3,4            | 56                      | 38   |             |      |    |   |             | x           | x    | 8  | x |             |   |   |   |   |   |             |   |             |
| MO 25/32 - 25    | C          |                           |          | 25                          |                              | 0,55           | 910   | 3,4            | 56                      | 38   |             |      |    |   |             | x           | x    | 0  | x |             |   |   |   |   |   |             |   |             |
| MO 25/32 - 40    |            |                           |          | 40                          |                              | 0,75           | 1380  | 3,8            | 56                      | 38   |             |      |    |   |             | x           | x    | 1  | x |             |   |   |   |   |   |             |   |             |
| MO 25/32 - 63    |            |                           |          | 63                          |                              | 1,1            | 1410  | 4,6            | 59                      | 41   |             |      |    |   |             | x           | x    | 2  | x |             |   |   |   |   |   |             |   |             |
| MO 20/26 - 80    |            |                           |          | 160-200                     |                              | 260            | 80    | 1,5            | 1410                    | 4,8  |             |      |    |   |             | 62          | 44   | x  | x | 3           | x |   |   |   |   |             |   |             |
| MO 20/26 - 125   |            |                           |          |                             |                              |                | 125   | 2,2            | 2865                    | 6    |             |      |    |   |             | 62          | 44   | x  | x | 4           | x |   |   |   |   |             |   |             |
| MO 30/32 - 40    | 2)         |                           |          |                             |                              |                | 40    | -              | -                       | -    |             |      |    |   |             | 46          | -    | 6  | 0 | 5           | 9 |   |   |   |   |             |   |             |
| MO 50/210 - 1    |            |                           |          | 250-500                     |                              | 800            | 1     | 2-240          | 0,18                    | 2820 |             |      |    |   |             | 4,6         | 89,5 | 54 | 5 | 2           | 0 | 3 | 3 | x | x | 5           | x | Brake motor |
| MO 50/80 - 16    |            |                           |          |                             |                              |                | 16    |                | 0,75                    | 685  |             |      |    |   |             | 3,0         | 100  | 68 |   |             |   |   |   | x | x | 6           | x |             |
| MO 50/80 - 25    |            |                           |          |                             |                              |                | 25    |                | 1,1                     | 930  |             |      |    |   |             | 4,1         | 100  | 68 |   |             |   |   |   | x | x | 7           | x |             |
| MO 50/80 - 40    |            | 40                        | 1,5      |                             | 935                          |                | 4,4   |                | 113                     | 81   | x           | x    | 1  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 50/80 - 63    |            | 63                        | 2,2      |                             | 1430                         |                | 5,7   |                | 113                     | 81   | x           | x    | 2  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 50/80 - 100   |            | 100                       | 3,0      |                             | 1420                         |                | 5,2   |                | 116                     | 84   | x           | x    | 3  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 50/80 - 125   |            | 125                       | 5,5      |                             | 2910                         |                | 7,5   |                | 129                     | 97   | x           | x    | 4  | x |             |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 50/80 - 40    |            | 40                        | 1,5      |                             | 935                          |                | 4,4   |                | 113                     | 81   | 2           | 2    | 8  | 3 | Brake motor |             |      |    |   |             |   |   |   |   |   |             |   |             |
| MO 63/210 - 1    |            | 320-630                   | 1100     |                             | 1                            |                | 2-240 |                | 0,18                    | 2820 | 4,6         | 89,5 | 54 | 5 | 2           | 0           | 3    | 4  |   |             |   |   |   | x | x | 5           | x | Brake motor |
| MO 63/110 - 16   |            |                           |          |                             | 16                           |                |       |                | 1,1                     | 680  | 3,0         | 112  | 81 |   |             |             |      |    |   |             |   |   |   | x | x | 6           | x |             |
| MO 63/110 - 25   |            |                           |          |                             | 25                           |                |       |                | 1,5                     | 935  | 4,4         | 110  | 79 |   |             |             |      |    |   |             |   |   |   | x | x | 7           | x |             |
| MO 63/110 - 40   |            |                           |          |                             | 40                           |                |       |                | 2,2                     | 950  | 4,5         | 120  | 88 |   |             |             |      |    |   |             |   |   |   | x | x | 1           | x |             |
| MO 63/110 - 63   |            |                           |          | 63                          | 3,0                          | 1420           |       | 5,2            | 116                     | 84   | x           | x    | 2  |   |             |             |      |    | x |             |   |   |   |   |   |             |   |             |
| MO 63/110 - 100  |            |                           |          | 100                         | 4,0                          | 1440           |       | 6,5            | 128                     | 96   | x           | x    | 3  |   |             |             |      |    | x |             |   |   |   |   |   |             |   |             |
| MO 63/110 - 125  |            |                           |          | 125                         | 5,5                          | 2910           |       | 7,5            | 129                     | 97   | x           | x    | 4  |   |             |             |      |    | x |             |   |   |   |   |   |             |   |             |
| MO 63/110 - 40   |            |                           |          | 40                          | 2,2                          | 950            |       | 4,5            | 120                     | 88   | 2           | 2    | 8  |   |             |             |      |    | 3 | Brake motor |   |   |   |   |   |             |   |             |
| MO 125/160 - 40  |            |                           |          | 630-1250                    | 1625                         | 40             |       | 4,0            | 960                     | 6,0  | 206         | -    | x  |   |             |             |      |    | x | 1           | x |   |   |   |   |             |   |             |
| MO 125/160 - 63  |            |                           |          |                             |                              | 63             |       | 4,0            | 1440                    | 6,5  | 207         | -    | 5  |   |             |             |      |    | 2 | 0           | 3 | 5 | x | x | 2 | x           |   |             |
| MO 125/160 - 100 |            |                           |          |                             |                              | 100            |       | 7,5            | 1450                    | 7,0  | 238         | -    | x  |   |             |             |      |    | x | 3           | x |   |   |   |   |             |   |             |
| MO 250/320 - 16  |            |                           |          | 1250-2500                   | 3250                         | 16             |       | 4,0            | 960                     | 6,0  | 310         | -    | x  |   |             |             |      |    | x | 0           | x |   |   |   |   |             |   |             |
| MO 250/320 - 25  |            | 25                        | 4,0      |                             |                              | 1440           | 6,5   | 311            | -                       | 5    | 2           | 0    | 3  | 6 | x           | x           | 1    | x  |   |             |   |   |   |   |   |             |   |             |
| MO 250/320 - 40  |            | 40                        | 7,5      |                             |                              | 1450           | 7,0   | 340            | -                       | x    | x           | 2    | x  |   |             |             |      |    |   |             |   |   |   |   |   |             |   |             |

- Notes:** 1) The rated torque is 60% of the maximum tripping torque for duty S2 and 40% of the maximum tripping torque for duty S4.  
 2) Design variant for India - Tripping torque 250 - 300 Nm.  
 3) As a special design variant, the actuator with a potentiometer is available with the adjustment range of the working stroke of 1 to 620 revolutions or of 1 to 280 revolutions (Type No. 52 036). When ordering, this modification should be specified in words.  
 4) The weight data are valid for the design variant with connecting dimensions C, D and E.  
 5) The corresponding number or letters from Tab.2 should be inserted in the additional number instead of Xs in the first, second and fourth positions.  
 6) The actuators, Type No. 52 030, can be supplied with connecting dimensions of the actuators. Type No 52 031, but with dia. d6 = 28, C-shape.  
 7) Series MODACT CONTROL MO actuators are available in design variants designated by letter C (second column).

Tabelle. 2 - Designes

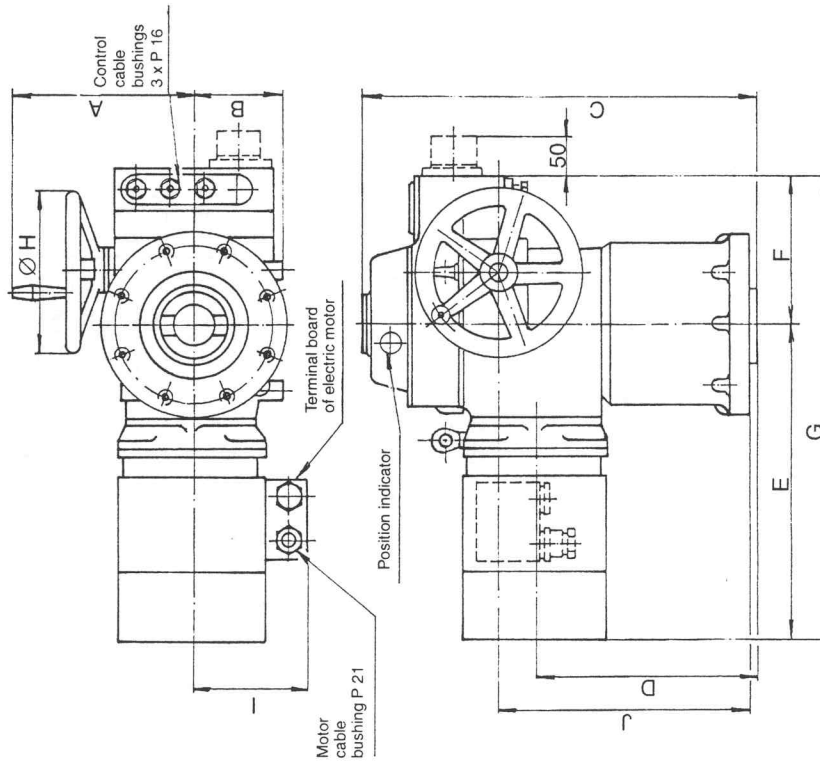
|  |   |           |                   |                             |  |                |   |
|--|---|-----------|-------------------|-----------------------------|--|----------------|---|
| Type No  | 5 2 0 3 X . X   |           |                   |                             | X  | X              | X |
| Attachment, electric wiring and climatic design. If connection to the terminal board is required, insert the the number instead of letter X. If connection by means of connector KBNS is required, write the letter.   |   |           | Design            |                             | Terminal board                                     | Connector KBNS |   |
|  |   |           |                   |                             |  |                |   |
| Attachment   | Standard design N   | Group A   | 0                 | A                           |  |                |   |
|  |   | Group B   | 1                 | B                           |  |                |   |
|  |   | Group C   | 2                 | C                           |  |                |   |
|  |   | Group D   | 3                 | D                           |  |                |   |
|  |   | Group E   | 4                 | E                           |  |                |   |
|  | Design for tropical application T<br>Design for India and | Group A   | 5                 | F                           |  |                |   |
|  |   | Group B   | 6                 | G                           |  |                |   |
|  |   | Group C   | 7                 | H                           |  |                |   |
|  |   | Group D   | 8                 | J                           |  |                |   |
|  |   | Group E   | 9                 | K                           |  |                |   |
| Local controls, position indicator, position transmitter   |   |           |                   |                             | 1)   |                |   |
| Special design for deliveries to India   |   |           |                   |                             | 0  | -              |   |
| Without local control and position indicator   |   |           |                   |                             | 1  | B              |   |
| Local position indicator   |   |           |                   |                             | 2  | -              |   |
| Local switch control   |   |           |                   |                             | -  | D              |   |
| Local unlocking switch control   |   |           |                   |                             | 4)   | E              |   |
| Local position indicator and switch controller   |   |           |                   |                             | -  | -              |   |
| Local position indicator and unlocking switch  |   |           |                   |                             | 4)   | 6              | - |
| Local control for MODACT CONTROL MO actuators  |   |           |                   |                             | 7  | H              |   |
| Local control and position indicator for MODACT CONTROL MO actuators   |   |           |                   |                             | 8  | -              |   |
| The tripping torque, rate of speed change and other technical parameters are given in Tab. 1, including designation. In this position, give the number or letter corresponding to the required parameters.   |   |           |                   |                             |  |                |   |
| Signalling, position transmitter, blinker<br>and design of MODACT CONTROL MO actuators   |   | MODACT MO | MODACT CONTROL MO |                             |  |                |   |
|  |   |           | complete outfit   | without position controller | without position controller and BAM brake of motor |                |   |
| Without signalling, position transmitter and blinker   |   | 0         | -                 | E                           | M  |                |   |
| Position transmitter   |   | 1         | A                 | F                           | N  |                |   |
| Signalling switches  |   | 2         | -                 | G                           | Ø  |                |   |
| Signalling switches and position transmitter   |   | 3         | B                 | H                           | P  |                |   |
| Blinker  |   | 4         | -                 | I                           | R  |                |   |
| Position transmitter, blinker  |   | 5         | C                 | J                           | S  |                |   |
| Signalling switches and blinker  |   | 6         | -                 | K                           | T  |                |   |
| Signalling switches, position transmitter and blinker  |   | 7         | D                 | L                           | U  |                |   |
| Special design for deliveries to India   |   | 9         | -                 | -                           | -  |                |   |
| <p><b>Notes:</b></p> <p>1) In the second position of the additional type number, insert a number if the potentiometer 2 x 100 Ω is required, or a letter if the CPT 1/A capacitive transmitter of 4 to 20 mA is required. In the design variant without transmitter, give the number.</p> <p>2) The following design variants are not available: Type Nos 52 031 and 52 032 with speed control 1 (r.p.m.), in design with local controller and blinker. In MODACT CONTROL MO design, with control switch and unlocking switch. This design is available instead of the local control variant. Any design variant with an unlocking switch combined with a blinker. Type No. 52 030 with an unlocking switch and connection of the electric motor to connector KBNS. In MODACT CONTROL MO design, connection to connector KBNS is not available. Design variant with the CPT 1/A capacitance transmitter combined with the local position indicator. MODACT CONTROL MO design with complete outfit and potentiometer 2 x 100 Ω (xxxA, xxxB, xxxC, xxxD).</p> <p>3) The power supply of 24 VDC, 2W required for the CPT 1/A transmitter has not been integrated into the MODACT MO actuators.</p> <p>4) The design with terminal board is delivered with local control unit including also funktion of local switch control. In the order is specify: x4xx or xExx, if unit of local control is demanded, or x6xx, if unit of local control with local position indicator is demanded.</p> |   |           |                   |                             |  |                |   |

Dimensional sketch of **MODACT MO** actuators,  
 Type No. 52 030 - 52 035  
 (without adapter)



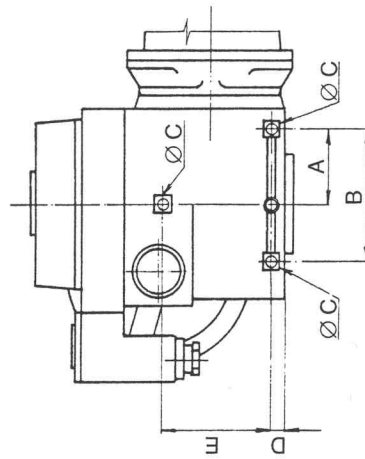
| Type number      | Dimension [mm] |     |     |     |     |     |     |     |       |     |     |
|------------------|----------------|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|
|                  | A              | B   | C   | D   | E   | F   | G   | ØH  | I     | J   | K   |
| 52 030           | 290            | 90  | 310 | 80  | 325 | 228 | 553 | 160 | P13.5 |     | 120 |
| 52 031<br>52 032 | 360            | 120 | 320 | 92  | 417 | 230 | 647 | 220 | P16   |     | 144 |
| 52 033<br>52 034 | 435            | 145 | 380 | 123 | 627 | 250 | 877 | 304 | P21   | 202 | 190 |
| 52 035           | 523            | 178 | 440 | 153 | 665 | 290 | 955 | 375 | P21   | 218 | 234 |

Dimensional sketch of **MODACT MO** actuator, Type No. 52 036



| Shape      | Dimension [mm] |     |     |     |     |     |     |     |     |     |
|------------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|            | A              | B   | C   | D   | E   | F   | G   | ØH  | I   | J   |
| A          | 342            | 178 | 750 | 463 | 665 | 290 | 955 | 375 | 218 | 484 |
| B, C, D, E | 342            | 178 | 705 | 418 | 665 | 290 | 955 | 375 | 218 | 484 |

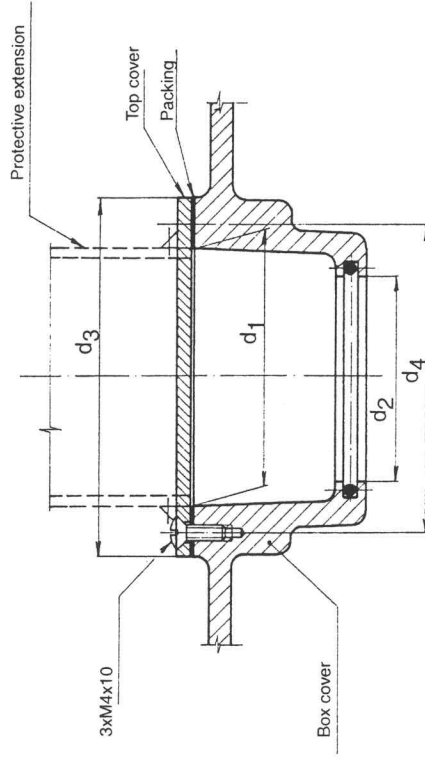
Holes for additional fixing of **MODACT MO** actuators,  
Type No. 52 030 - 52 035



| Actuator Type No. | Dimension [mm] |     |      |    |     |
|-------------------|----------------|-----|------|----|-----|
|                   | A              | B   | ØC   | D  | E   |
| 52 030            | 61             | 110 | M 10 | 16 | 120 |
| 52 031, 52 032    | 90             | 160 | M 12 | 21 | 140 |
| 52 033, 52 034    | 110            | 210 | M 16 | 23 | 200 |
| 52 035            | 120            | 240 | M 20 | 47 | 220 |

**Note:**  
Intended only for additional fixing of the MODACT actuators to carry their weight, these holes should not be stressed by another additional force.

Modifications for rising spindle



| Dimension [mm] | Type No. |                  |                  |        |        |  |
|----------------|----------|------------------|------------------|--------|--------|--|
|                | 52 030   | 52 031<br>52 032 | 52 033<br>52 034 | 52 035 | 52 036 |  |
| d <sub>1</sub> | 45       | 60               | 80               | 90     | 90     |  |
| d <sub>2</sub> | 35,5     | 50,5             | 75               | 80,5   | 80,5   |  |
| d <sub>3</sub> | 65       | 80               | 110              | 110    | 110    |  |
| d <sub>4</sub> | 55       | 70               | 100              | 100    | 100    |  |

The protective extension should be made by the customer, including the hole in its cover.

Attachment of **MODACT MO** actuators.  
Type No. 52 030 - 52 036 - Basic design (without adapter)

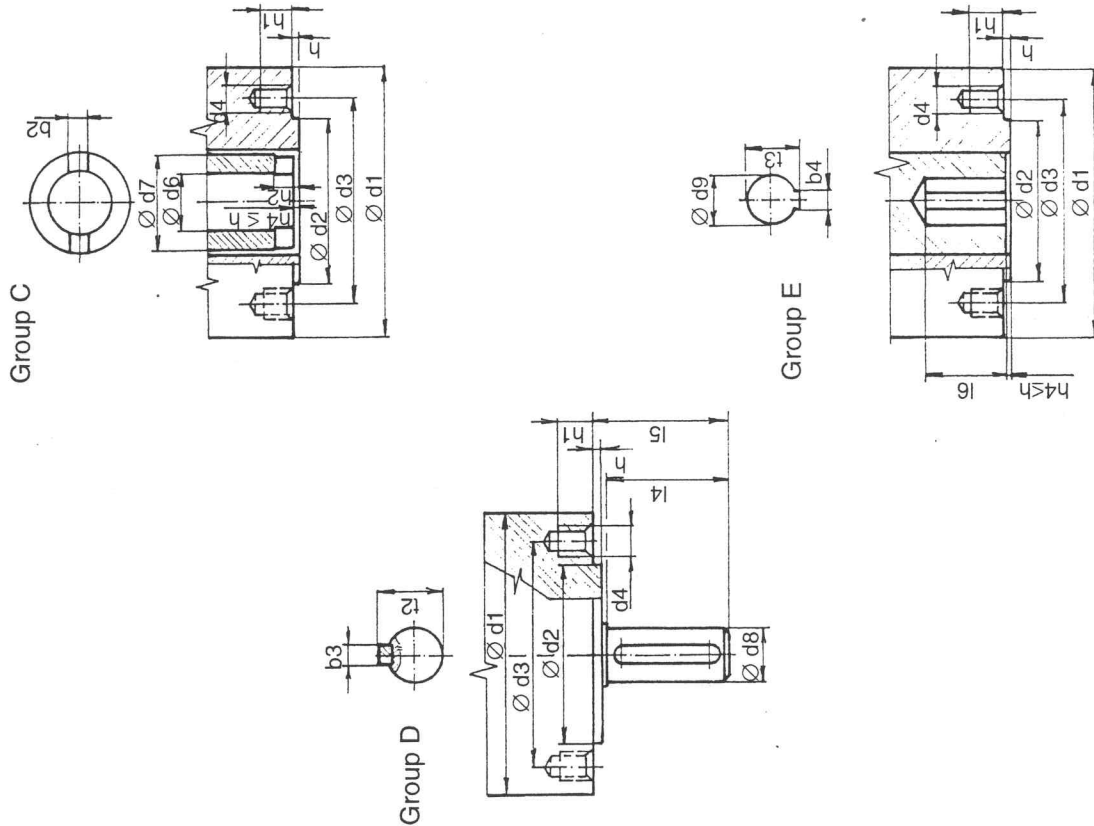


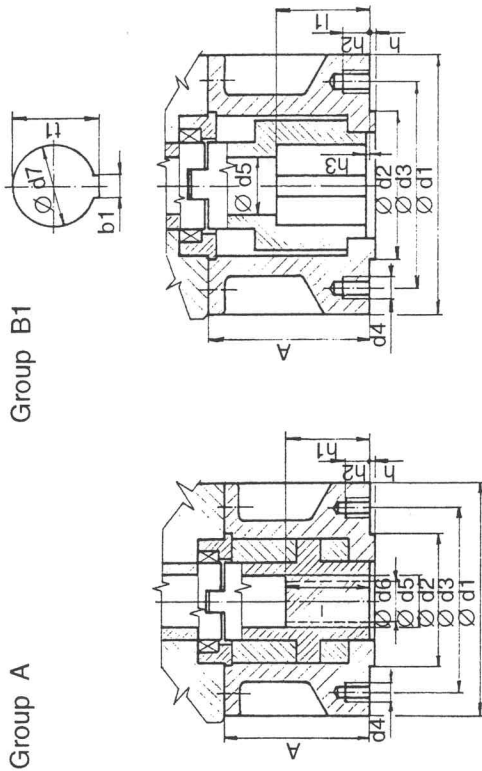
Table of basic attachment of **MODACT MO** actuators  
(without adapter)

| Group   | Dimension [mm]         | Type No. |                  |                  |        |
|---|------------------------|----------|------------------|------------------|--------|
|   |                        | 52 030   | 52 031<br>52 032 | 52 033<br>52 034 | 52 035 |
| Common data for connecting dimensions, groups C, D, E | ∅d1 informative value  | 125      | 175              | 210              | 300    |
|   | ∅d2 I8                 | 70       | 100              | 130              | 200    |
|   | ∅d3                    | 102      | 140              | 165              | 254    |
|   | d4                     | M 10     | M 16             | M 20             | M 16   |
| C   | Number of tapped holes | 4        | 4                | 4                | 8      |
|   | hmax                   | 3        | 4                | 5                | 5      |
|   | h1 min. 1,25d4         | 12,5     | 20               | 25               | 20     |
|   | ∅d7                    | 40       | 60               | 80               | 100    |
|   | h2                     | 10       | 12               | 15               | 16     |
| D   | b2 H11                 | 14       | 20               | 24               | 30     |
|   | ∅d6                    | 28       | 41,5             | 53               | 72     |
|   | ∅d8 g6                 | 20       | 30               | 40               | 50     |
|   | l4                     | 50       | 70               | 90               | 110    |
|   | l2max                  | 22,5     | 33               | 43               | 53,5   |
| E   | b3 h9                  | 6        | 8                | 12               | 14     |
|   | l5                     | 55       | 76               | 97               | 117    |
|   | ∅d9 H8                 | 20       | 30               | 40               | 50     |
|   | l5 min.                | 55       | 76               | 97               | 117    |
|   | l3                     | 22,8     | 33,3             | 43,3             | 53,8   |
|   | b4 JS9                 | 6        | 8                | 12               | 14     |

The dimensions ∅ d6 and l6 should not be smaller than those tabulated.

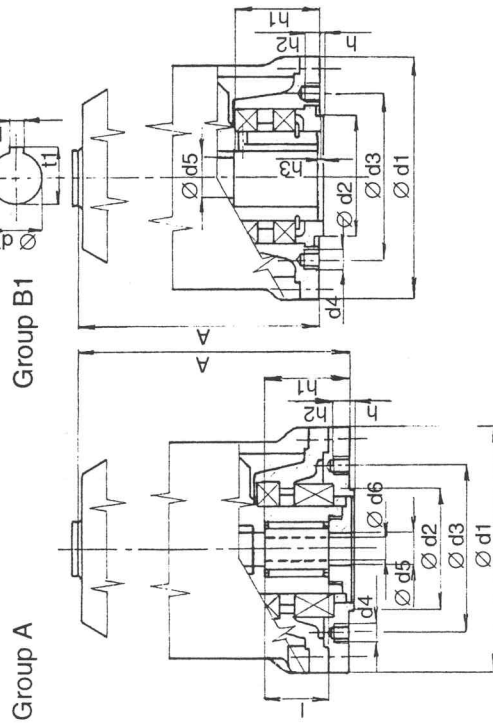


Adapters for MODACT MO actuators, Type No. 52 030 - 52 035



| Group                                  | Assignment of adapters to actuators |                  |                  |        |       |     |
|--|-------------------------------------|------------------|------------------|--------|-------|-----|
|  | 52 030                              | 52 031<br>52 032 | 52 033<br>52 034 | 52 035 |       |     |
| Common data for both types of adapters | Ød1                                 | 125              | 175              | 210    | 300   |     |
|  | Ød2 I8                              | 70               | 100              | 130    | 200   |     |
|  | Ød3                                 | 102              | 140              | 165    | 254   |     |
|  | d4                                  | M 10             | M 16             | M 20   | M 16  |     |
|  | Number of holes Ød4                 | 4                | 4                | 4      | 4     | 8   |
|  | h                                   | 3                | 4                | 5      | 5     | 5   |
|  | h2 min.                             | 12,5             | 20               | 25     | 20    | 20  |
|  | A                                   | 63,5             | 110              | 122    | 155   | 155 |
|  | Ød5                                 | 28               | 38               | 47     | 64    | 64  |
|  | Ød6 max                             | 26               | 36               | 44     | 44    | 60  |
| h1 max                                 | 43,5                                | 65               | 92               | 110    | 110   |     |
| l min                                  | 45                                  | 55               | 70               | 90     | 90    |     |
| A                                      | 63,5                                | 110              | 122              | 155    | 155   |     |
| Ød5                                    | 28                                  | 38               | 47               | 67     | 67    |     |
| l1 min                                 | 45                                  | 65               | 80               | 110    | 110   |     |
| h3 max                                 | 3                                   | 4                | 5                | 5      | 5     |     |
| b1                                     | 12                                  | 18               | 22               | 28     | 28    |     |
| Ød7 H9                                 | 42                                  | 60               | 80               | 100    | 100   |     |
| l1                                     | 45,3                                | 64,4             | 85,4             | 106,4  | 106,4 |     |

Adapters for MODACT MO actuators, Type No. 52 036

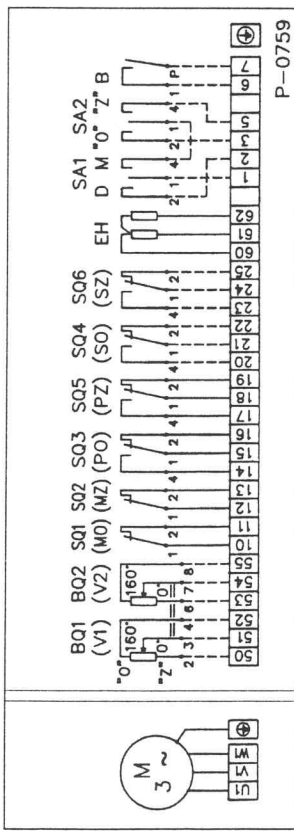


| Group                                  | Dimension [mm]      | 52 036  |
|--|---------------------|---------|
| Common data for both types of adapters | Ød1                 | 390     |
|  | Ød2 I8              | 230     |
|  | Ød3                 | 298     |
|  | d4                  | M 20    |
|  | Number of holes Ød4 | 8       |
|  | h                   | 5       |
|  | h2 min.             | 25      |
|  | A                   | 740 1+) |
|  | Ød5                 | 72      |
|  | Ød6 max             | 70      |
| h1 max                                 | 165                 |         |
| l min                                  | 110                 |         |
| A                                      | 695 2+)             |         |
| Ød5                                    | 72                  |         |
| l1 min                                 | 130                 |         |
| h3 max                                 | 5                   |         |
| b1                                     | 32                  |         |
| Ød7 H9                                 | 120                 |         |
| l1                                     | 127,4               |         |

Notes:  
1+) Nut built in actuator  
2+) Bush built in actuator

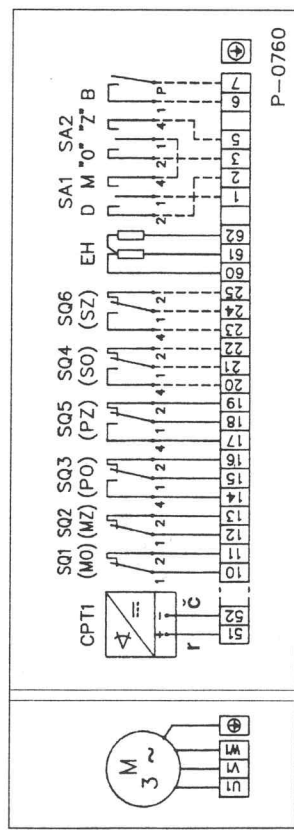
Wiring diagrams of **MODACT MO** actuators

Design: terminal board, anti-condensation heaters  
 Position transmitter: potentiometer 2 x 100 Ω or no transmitter



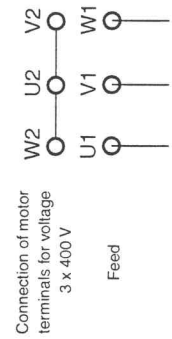
P-0759

Position transmitter: capacitance transmitter CPT1/A 4 - 20 mA



P-0760

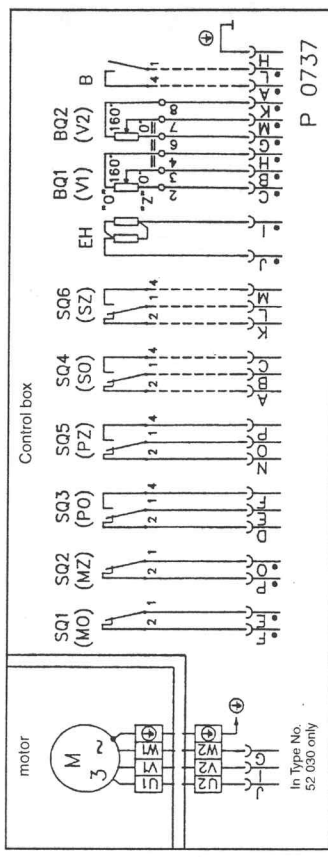
Electric motor      Control box      Load controller



**Notes:**  
 1) Local controller with blocking of remote control is shown in "local control" position.  
 2) In the design variant with the CPT1/A capacitance transmitter, the user should provide for connection of the two-wire circuit of the capacitance transmitter to the electric earth of the associated controller, computer, etc. The connection should be made only at a single point in any section of the circuit outside the electric actuator. The voltage between electronics and the capacitance transmitter case should not exceed 50 V DC.

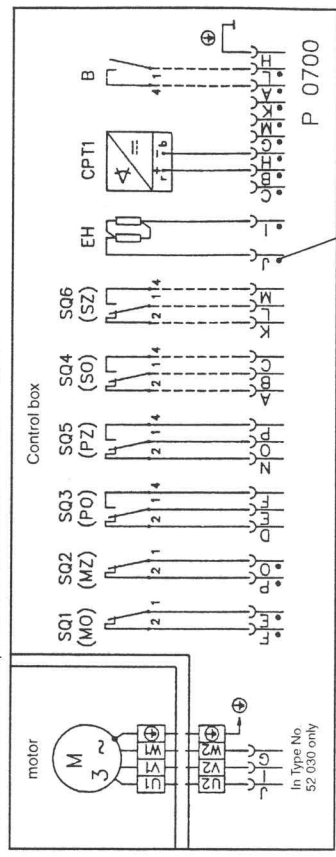
Wiring diagrams of **MODACT MO** actuators

Design: KBNS connector, anti-condensation heaters  
 Position transmitter: potentiometer 2 x 100 Ω or no transmitter

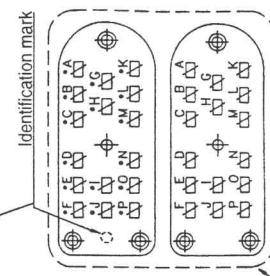


P 0737

Position transmitter: capacitance transmitter CPT1/A 4 - 20 mA



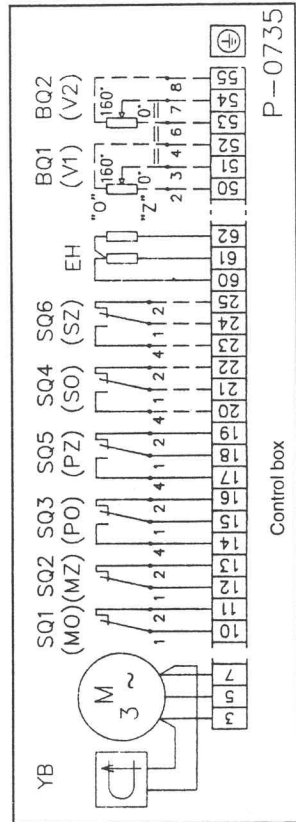
P 0700



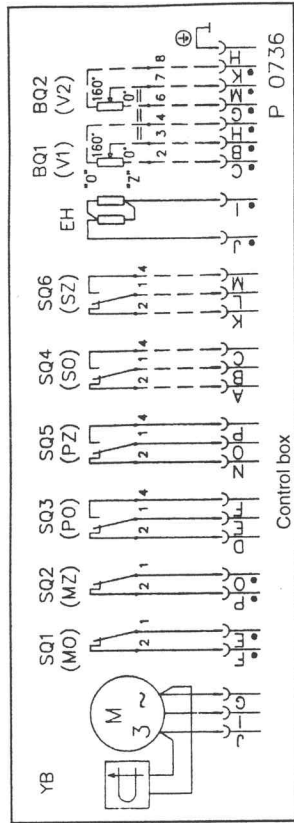
View from the side of soldering pins

**Note:**  
 In the design variant with the CPT1/A capacitance transmitter, the user should provide for connection of the two-wire circuit of the capacitance transmitter to the electric earth of the associated controller, computer, etc. The connection should be made only at a single point in any section of the circuit outside the electric actuator. The voltage between electronics and the capacitance transmitter case should not exceed 50 V DC.

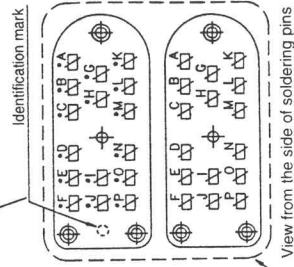
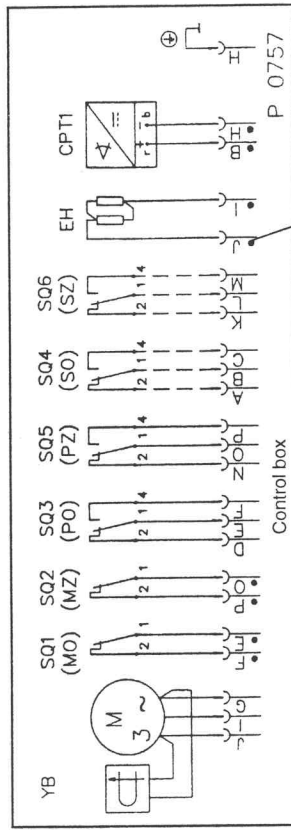
Wiring diagrams of **MODACT MO** actuators with brake motor  
 Design: KBNS connector, anti-condensation heaters, operating speed 1 min<sup>-1</sup>  
 Position transmitter: potentiometer 2 x 100 Ω or no transmitter



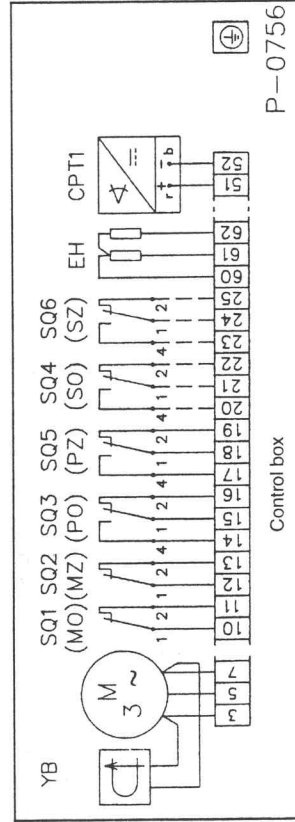
Wiring diagrams of **MODACT MO** actuators with brake motor  
 Design: KBNS connector, anti-condensation heaters, operating speed 1 min<sup>-1</sup>  
 Position transmitter: potentiometer 2 x 100 Ω or no transmitter



Position transmitter: capacitive transmitter CPT1/A 4 - 20 mA



Position transmitter: capacitive transmitter CPT1/A 4 - 20 mA

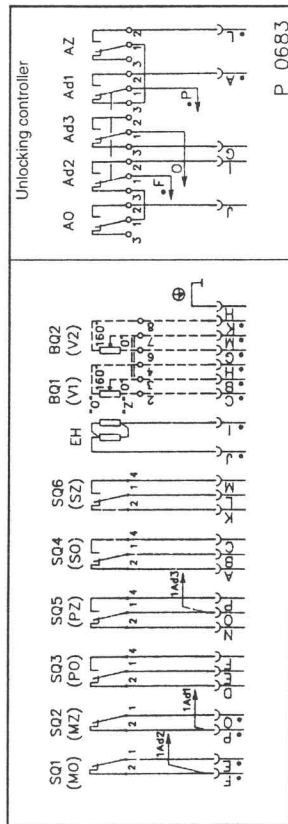


**Note:**  
 In the design variant with the CPT1/A capacitive transmitter, the user should provide for connection of the two-wire circuit of the capacitive transmitter to the electric earth of the associated controller, computer, etc. The connection should be made only at a single point in any section of the circuit outside the electric actuator. The voltage between electronics and the capacitive transmitter case should not exceed 50 V DC.

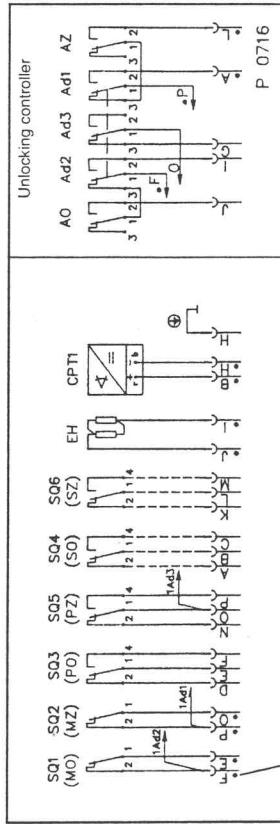
Wiring diagrams of MODACT MO electric actuators

Design: KBNS connector, local controller with blocking of remote control, heaters

Position transmitter: potentiometer 2 x 100 Ω or no transmitter



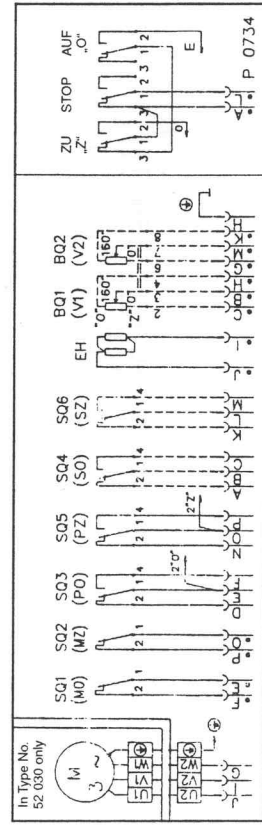
Position transmitter: capacitive transmitter CPT1/A 4 - 20 mA



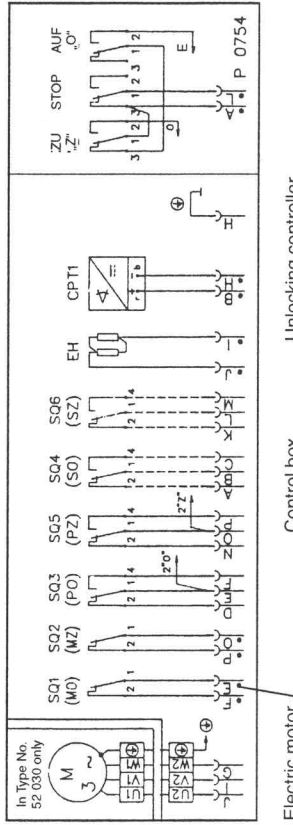
Wiring diagrams of MODACT MO electric actuators

Design: KBNS connector, control switch, heaters

Position transmitter: Potentiometer 2 x 100 Ω or no transmitter

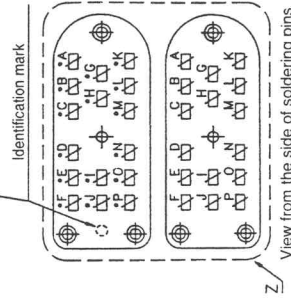


Position transmitter: capacitive transmitter CPT1/A 4 - 20 mA



Control box

Unlocking controller



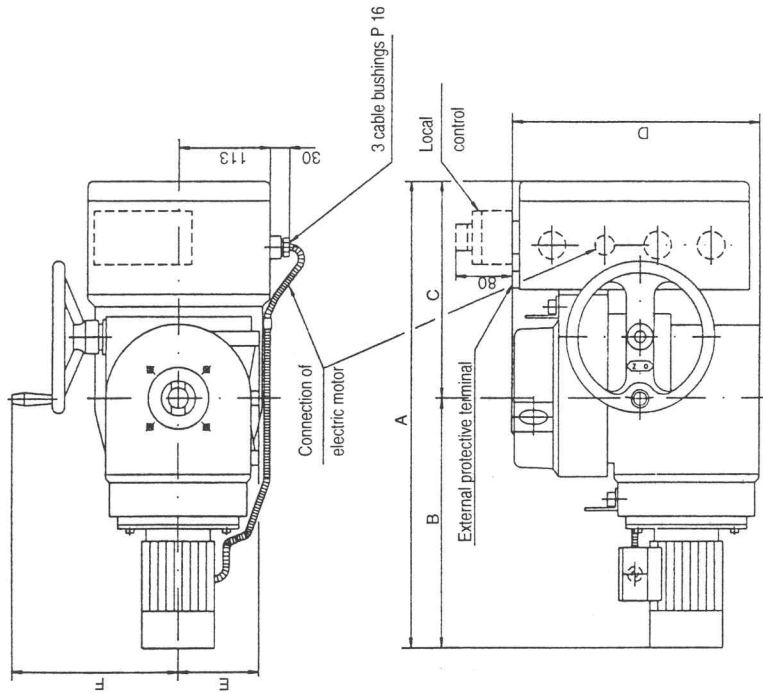
Notes:

- 1) Terminals U1, V1, W1 and U2, V2, W2 and Z in the terminal block should be interconnected by the customer.
- 2) Local controller with blocking of remote control is shown in "local control" position.

Notes:

- 1) In the actuators, Type No. 52 033.4 with a brake motor, the wiring diagram of the electric motor remains unchanged.
- 2) In the design variant with the CPT1/A capacitive transmitter, the user should provide for connection of the two-wire circuit of the capacitive transmitter to the electric earth of the associated controller, computer, etc. The connection should be made only at a single point in any section of the circuit outside the electric actuator. The voltage between electronics and the capacitive transmitter case should not exceed 50 V DC.
- 3) Local controller with blocking of remote control is shown in "local control" position.

Dimensional sketch of MODACT CONTROL MO actuators

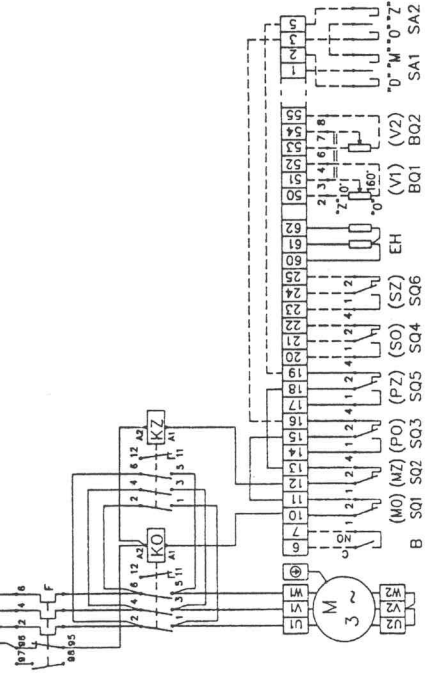


| Type No.       | Dimension [mm] |     |     |     |     |     |
|----------------|----------------|-----|-----|-----|-----|-----|
|                | A              | B   | C   | D   | E   | F   |
| 52 030         | 500            | 325 | 255 | 307 | 90  | 200 |
| 52 031, 52 032 | 630            | 382 | 255 | 316 | 120 | 355 |

**Notice:**  
The above dimensions are a maximum.  
**Warning:**  
The positions of terminals on the terminal board need not correspond to those shown on the diagrams. Nevertheless, the numbers of the terminals are identical.

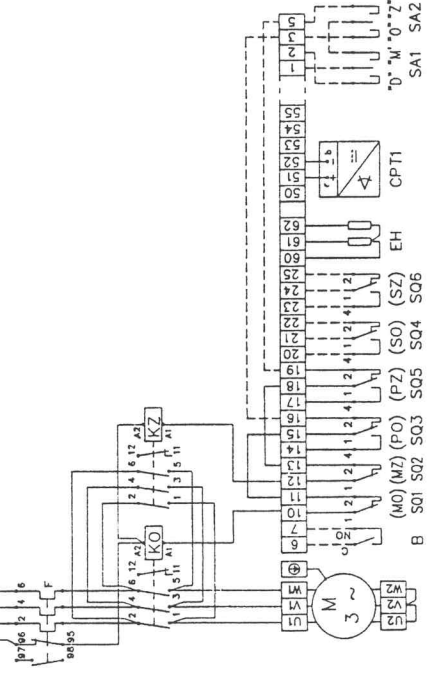
Wiring diagrams of MODACT CONTROL MO actuators with built-in contactor combination

Position transmitter: potentiometer 2 x 100 Ω or no transmitter  
P-0673



Position transmitter: capacitive transmitter CPT1/A 4 - 20 mA

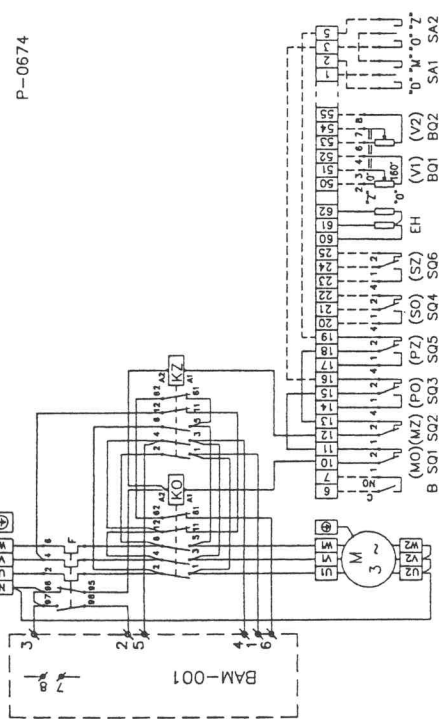
P-0739



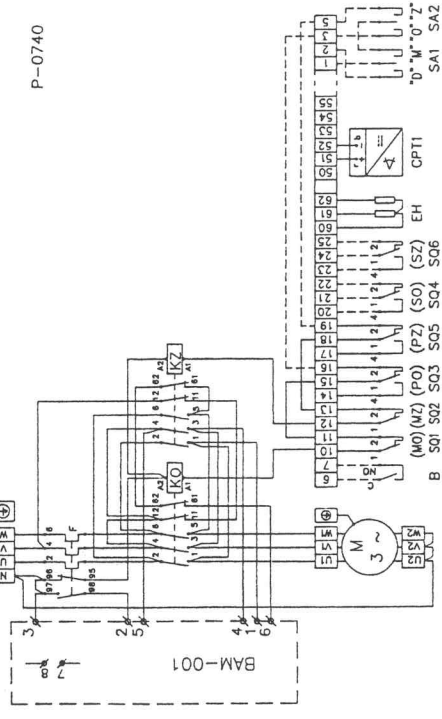
**NOTES:**  
In the design variant with the CPT1/A capacitive transmitter, the user should provide for connection of the two-wire circuit of the capacitive transmitter to the electric earth of the associated controller, computer, etc. The connection should be made only at a single point in any section of the circuit outside the electric actuator. The voltage between electronics and the capacitive transmitter case should not exceed 50 V DC.



Wiring diagrams of **MODACT CONTROL MO** actuators  
with built-in contactor combination and brake BAM

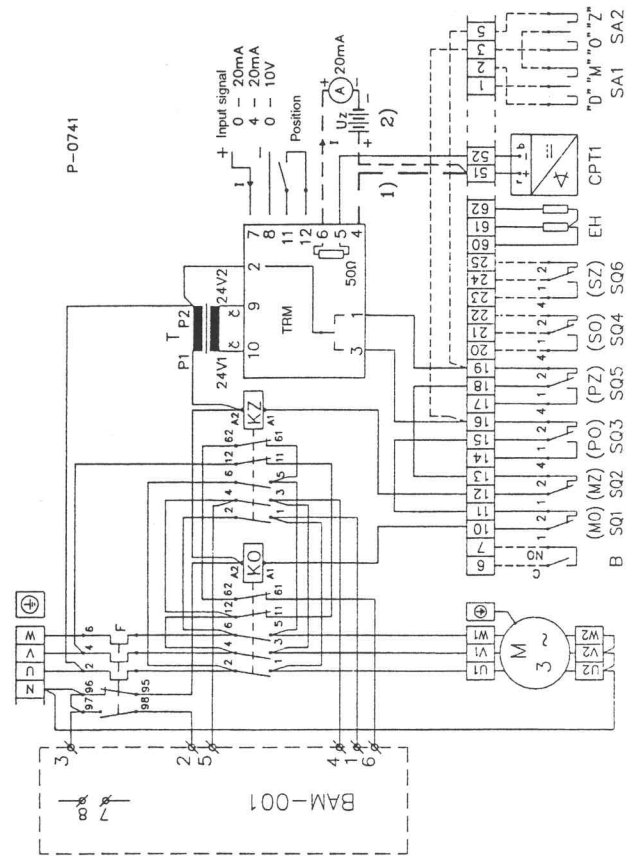


Position transmitter: capacitive transmitter CPT1/A 4 - 20 mA



**NOTES:**  
In the design variant with the CPT1/A capacitive transmitter, the user should provide for connection of the two-wire circuit of the capacitive transmitter to the electric earth of the associated controller, computer, etc. The connection should be made only at a single point in any section of the circuit outside the electric actuator. The voltage between electronics and the capacitive transmitter case should not exceed 50 V DC.

Wiring diagram of **MODACT CONTROL MO** actuators  
with built-in contactor combination, brake BAM and position controller



**Warning!**  
In the TRM controller, the circuits of the CPT 1/A capacitive transmitter are galvanically connected to the input signal in the TRM controller, the circuits extend to terminals 11 and 12 of the controller. The connection to the earth should be made only at a single point of one of the three circuits, no earth connection of the other circuits being allowed.

**Legend:**

SQ1 (MO) - OPEN torque-limit switch  
SQ2 (MZ) - CLOSE torque-limit switch  
SQ3 (PO) - OPEN limit switch  
SQ5 (PZ) - CLOSE limit switch  
SQ4 (SO) - OPEN signalling switch  
SQ6 (SZ) - CLOSE signalling switch  
EH - anti-condensation heater  
BQ1. BQ2 - potentiometer 1x 100  $\Omega$  (V1, V2)  
SA1 - LOCAL/REMOTE control switch  
SA2 - OPEN/CLOSE switch  
B - blinker

M3 ~ - three-phase asynchronous motor  
Z - KBNS connector  
YB, M3~ - three-phase asynchronous motor with electromagnetic brake  
YB - electromagnetic brake  
CPT1 - CPT 1/A capacitance position transmitter  
T - mains transformer  
TRM - three-position controller  
BAM 001 - electromagnetic brake  
KO - directional relay for the OPEN direction  
KZ - directional relay for the CLOSE position  
F - thermal relay

**Colors of the wires:**

č - black  
b - white  
h - brown  
r - red

**Positions of the LOCAL/REMOTE control switches:**

„M“ - local  
„D“ - remote  
„O“ - open  
„Z“ - close