

## Position Transducers 25,50,75,100,150 mm

Series T, TS



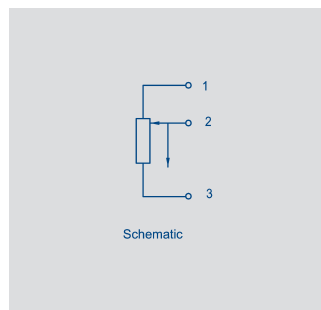
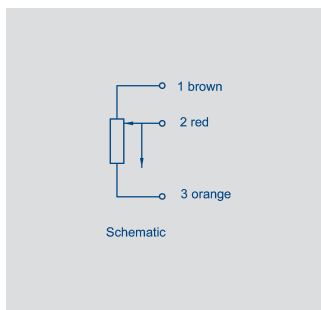
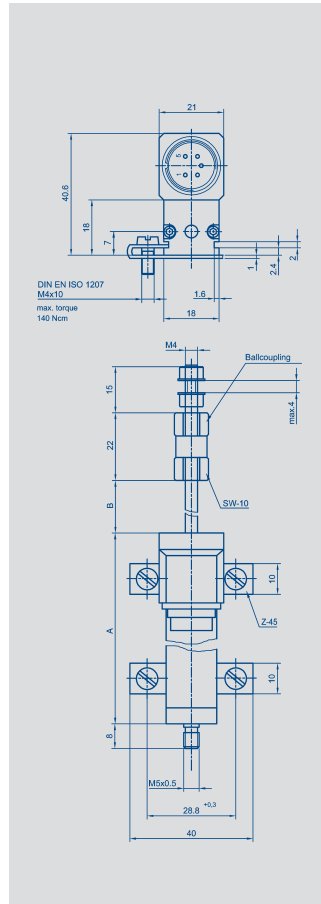
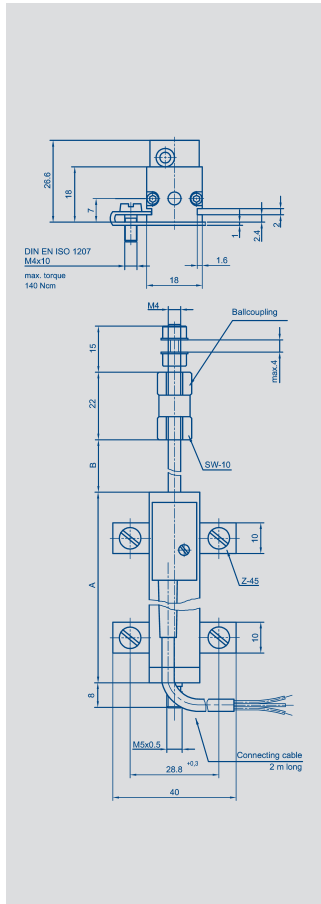
### Special features

- long life -  $100 \times 10^6$  movements
- outstanding linearity up to  $\pm 0.075\%$
- actuating shaft with double bearing system
- special ball coupling eliminates sideways forces
- high operational speeds up to 10 m/s
- insensitive to shock and vibration
- choice of plug or cable connection

Position transducers employing conductive plastic resistance and collector tracks provide direct means of measurement in control and regulation systems and in instrumentation.

Using this type of transducer, problems traditionally associated with rotary potentiometers, especially reliability, life expectancy, accuracy and operational speed, are overcome. Thus opening up new fields of application in direct position measurement.

A ball coupling (which may be fitted to either end of the shaft) offers backlash-free operation even where there are parallel or angular errors between the transducer axis and the direction of movement. The elastomer-damped, independently sprung precious metal multi-finger wiper has been designed to provide a reliable contact even at high speeds or when experiencing shock or vibration.



#### Description

|   |  |
|---|--|
| Housing   | aluminium, anodized  |
| Actuating shaft                                 | stainless steel  |
| Bearings  | both ends in DU plastic bearings   |
| Fixings   | adjustable clamps  |
| Ball coupling                                   | stainless steel with a hardened ball sprung against a hardened plate surface |
| Resistance element                              | conductive-plastic   |
| Wiper assembly                                  | precious metal multi-finger wiper, elastomer-damped                          |
| Electrical connections<br>series T<br>series TS | 3core stress-relieved shielded cable, 2 m<br>plug connector                  |

| Type designations  | T25<br>TS25  | T50<br>TS50 | T75<br>TS75 | T100<br>TS100 | T150<br>TS150 | with cable<br>with plug |
|--|--|-------------|-------------|---------------|---------------|-------------------------|
| <b>Electrical Data</b>   |  |             |             |               |               |                         |
| Defined electrical range   | 25   | 50          | 75          | 100           | 150           | mm                      |
| Nominal resistance   | 1  | 5           | 5           | 5             | 5             | k $\Omega$              |
| Resistance tolerance   | 20   |             |             |               |               | $\pm\%$                 |
| Independent linearity  | 0.2  | 0.15        | 0.1         | 0.075         | 0.075         | $\pm\%$                 |
| Repeatability  | 0.002  |             |             |               |               | mm                      |
| Recommended operating wiper current                                      | $\leq 1$   |             |             |               |               | $\mu\text{A}$           |
| Max. wiper current in case of malfunction                                | 10   |             |             |               |               | mA                      |
| Max. permissible applied voltage   | 42   |             |             |               |               | V                       |
| Effective temperature coefficient of the output-to-applied voltage ratio | typical 5  |             |             |               |               | ppm/K                   |
| Insulation resistance (500 VDC, 1 bar, 2 s)                              | $\geq 10$  |             |             |               |               | M $\Omega$              |
| Dielectric strength (50 Hz, 2 s, 1 bar, 500 VAC)                         | $\leq 100$   |             |             |               |               | $\mu\text{A}$           |
| <b>Mechanical Data</b>   |  |             |             |               |               |                         |
| Overall length (dimension A)   | 63   | 88          | 113         | 138           | 188           | +1 mm                   |
| Mechanical stroke (dimension B)  | 30   | 55          | 80          | 105           | 155           | $\pm 1,5$ mm            |
| Weight with cable  | 140  | 160         | 170         | 190           | 220           | g                       |
| Weight with plug   | 86   | 107         | 132         | 150           | 190           | g                       |
| Weight of the actuating shaft, with coupling and wiper block             | 35   | 43          | 52          | 58            | 74            | g                       |
| Operating force (horizontal)   | $\leq 0.30$  |             |             |               |               | N                       |
| Compensation provided by ball bearing                                    | $\pm 1$ mm parallel offset, $\pm 2.5^\circ$ angular offset |             |             |               |               |                         |
| Maximum permitted torque for fixing screws (with washer)                 | 140  |             |             |               |               | Ncm                     |

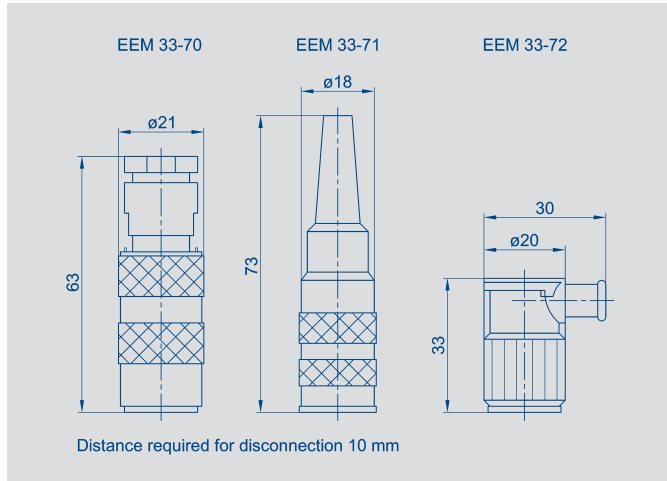
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|---------------------------|---|------------------|
| <b>Environmental Data</b> |   |                  |
| Temperature range         | -30... +100   | $^\circ\text{C}$ |
| Vibration                 | 5... 2000<br>$A_{\text{max}} = 0.75$<br>$a_{\text{max}} = 20$ | Hz<br>mm<br>g    |
| Shock                     | 50<br>11  | g<br>ms          |
| Life                      | $>100 \times 10^6$  | movements        |
| Protection class          | IP 40 (DIN 400 50 / IEC 529)                                  |                  |

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#### Included in delivery

2 fixing clamps Z-45 incl.  
4 screws M4x10,  
1 ball coupling

#### Recommended accessories

Plug type EEM 33-70  
protection class IP 67,  
Plug type EEM 33-71  
protection class IP 40,  
Plug type EEM 33-72  
protection class IP 40,  
Process-controlled indicators  
MAP... with display,  
Signal conditioner  
MUP... /MUK ... for  
standardized output signals.

#### Important

All the values given in this data sheet for linearity, lifetime and temperature coefficient in the voltage dividing mode are quoted for the device operating with the wiper voltage driving on operational amplifier working as a voltage follower, where virtually no load is applied to the wiper ( $I_e \leq 1 \mu A$ ).

#### Order designations

| Type   | Art.no. |
|--------|---------|
| T 25   | 002302  |
| TS 25  | 002332  |
| T 50   | 002303  |
| TS 50  | 002333  |
| T 75   | 002304  |
| TS 75  | 002334  |
| T 100  | 002305  |
| TS 100 | 002335  |
| T 150  | 002306  |
| TS 150 | 002336  |