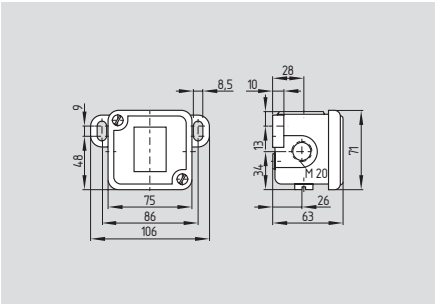


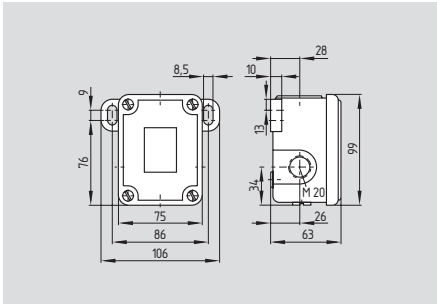
# Position and limit switches

## T 422



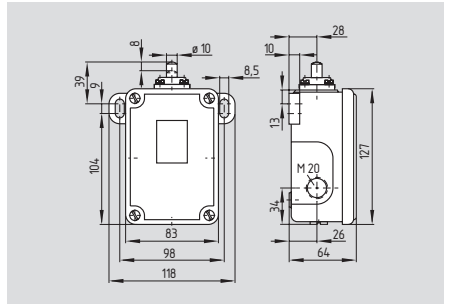
- Metal enclosure
- 1 contact, slow action ⊖
- 2 cable entries
- Protection class IP 65

## T/M 441



- Metal enclosure
- 2 contact, slow action ⊖
- Slow action available with overlapping contacts
- Snap action, change-over contact with double break
- 2 cable entries
- Protection class IP 65

## T 452



- Metal enclosure
- 2 or 3 contact, slow action ⊖
- Slow action available with overlapping or staggered contacts
- 2 cable entries
- Protection class IP 65

The switch travel of the contacts complies with the T/M 441 or T 422 series (see page 1-126).

### Approvals



### Approvals



### Approvals



### Ordering details

T① 422-②y-③

No.	Replace	Description
①		For the appropriate actuator: see page 1-126 and following
②	01	1 NC
	10	1 NO
③	k	Tropical version with ceramic insulation
	t	Tropical and temperature-resistant version - 40 °C ... + 200 °C
	1276-2	Gold-plated contacts

### Ordering details

①② 441-11y③-④-⑤

No.	Replace	Description
①	T	Slow action ⊖
	M	Snap action
②		For the appropriate actuator: see page 1-126 and following
③	ü	Slow action with overlapping contacts
④	a	Cast iron enclosure
		Aluminium enclosure
⑤	k	Tropical version with ceramic insulation
	t	Tropical and temperature-resistant version - 40 °C ... + 200 °C
	1276-2	Gold-plated contacts

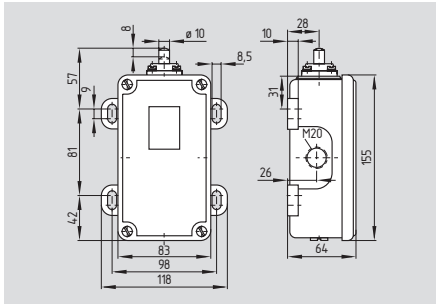
### Ordering details

T① 452-②y-③

No.	Replace	Description
①		For the appropriate actuator: see page 1-126 and following
②	02	2 NC
	12	1 NO/2 NC
	20	2 NO
	21	2 NO/1 NC
③	k	Tropical version with ceramic insulation
	t	Tropical and temperature-resistant version - 40 °C ... + 200 °C
	1276-2	Gold-plated contacts

# Position and limit switches

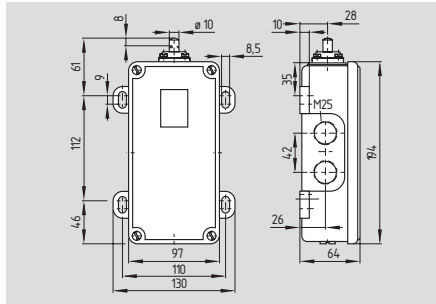
## T/M 461



- Metal enclosure
- 3 or 4 contact, slow action ⊖
- Slow action available with overlapping or staggered contacts
- Snap action, change-over contact with double break
- 2 cable entries
- Protection class IP 65

The switch travel of the contacts complies with the T/M 441 or T 422 series (see page 1-126).

## T 470



- Metal enclosure
- 6 contact, slow action ⊖
- Slow action available with overlapping or staggered contacts
- 4 cable entries
- Protection class IP 65

The switch travel of the contacts complies with the T/M 441 or T 422 series (see page 1-126).

## Technical data

Standards:	IEC/EN 60947-5-1
Enclosure:	cast iron, galvanised, chromated, paint finish
Protection class:	IP 65 to EN 60529
Contact material:	silver
Switching system:	slow or snap action, double break
Contact type:	slow action: change-over contact up to 250 V, with galvanically separated contact bridges
	slow action: positive break NC contacts ⊖
Termination:	screw terminals M 4
Cable section:	max. 2.5 mm <sup>2</sup> (incl. conductor ferrules)
U <sub>imp</sub> :	slow action: 4 kV
U <sub>i</sub> :	slow action: 6 kV
	slow action: 250 V
	slow action: 400 V
	suffix -k or -t: 500 V
I <sub>the</sub> :	16 A
I <sub>e</sub> /U <sub>e</sub> :	slow action: 4 A / 230 V
	slow action: 4 A / 400 V
Utilisation category:	AC-15
Max. fuse rating:	16 A gL/gG D-fuse
Contact opening:	slow action: max. 2 x 2.5 mm
	slow action: max. 2 x 6.0 mm
Switchover time:	slow action: ≤ 35 ms
Bounce duration:	slow action: ≤ 5 ms
Ambient temperature:	- 30 °C ... + 90 °C
Mechanical life:	slow action: 5 million operations
	slow action: 10 million operations
Contact life:	10 million operations at 1 A / 400 V, cos φ = 0,4
	max. 3000/h
Switching frequency:	max. 1 m/s,
Actuating speed:	min. 1 mm/s on plunger

### Approvals



### Ordering details

①② 461-②y-③

No.	Replace	Description
①	T	Slow action ⊖
	M	Snap action (only for -22y)
②		For the appropriate actuator: see page 1-126 and following
②	03	3 NC
	13	1 NO/3 NC
	22	2 NO/2 NC
	30	3 NO
	31	3 NO/1 NC
③	k	Tropical version with ceramic insulation
	t	Tropical and temperature-resistant version - 40 °C ... + 200 °C
	1276-2	Gold-plated contacts

### Approvals



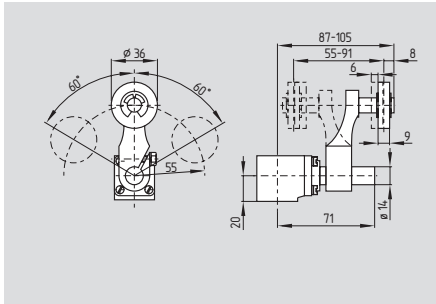
### Ordering details

T① 470-②y-③

No.	Replace	Description
①		For the appropriate actuator: see page 1-126 and following
②	33	3 NO/3 NC (every other contact combination is possible, except 6 NO contacts or 6 NC contacts)
③	k	Tropical version with ceramic insulation
	t	Tropical and temperature-resistant version - 40 °C ... + 200 °C
	1276-2	Gold-plated contacts

# Position and limit switches

## Roller lever L



- Actuating speed max. 3 m/s with an actuating angle of  $\alpha$  and  $\beta = 30^\circ$
- Plastic roller
- In temperature-resistant version, the roller can be mounted in two different positions on the shaft
- Continuous adjustment of lever position  $360^\circ$
- Lever can be transposed by  $180^\circ$
- Actuator head can be repositioned in steps  $4 \times 90^\circ$
- Metal roller available on request
- Splined shaft and lever available, ordering suffix -1801

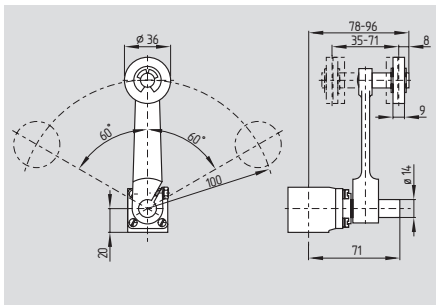
### Legend

$\alpha$ : Actuating angle from right of switch axis  
 $\beta$ : Actuating angle from left of switch axis

## Contact variants

Contacts/ Switch travel	Snap action	Slow action
1 NO / 1 NC	<b>ML 441-11y</b> 	<b>TL 441-11y</b> 
1 NC		<b>TL 422-01y</b> 
1 NO		<b>TL 422-10y</b> 

## Roller lever D



- Actuating speed max. 3 m/s with an actuating angle of  $\alpha$  and  $\beta = 30^\circ$
- Plastic roller
- In temperature-resistant version, the roller can be mounted in two different positions on the shaft
- Continuous adjustment of lever position  $360^\circ$
- Lever can be transposed by  $180^\circ$
- Actuator head can be repositioned in steps  $4 \times 90^\circ$
- Metal roller available on request
- Splined shaft and lever available, ordering suffix -1801

### Legend

$\alpha$ : Actuating angle from right of switch axis  
 $\beta$ : Actuating angle from left of switch axis

## Contact variants

Contacts/ Switch travel	Snap action	Slow action
1 NO / 1 NC	<b>MD 441-11y</b> 	<b>TD 441-11y</b> 
1 NC		<b>TD 422-01y</b> 
1 NO		<b>TD 422-10y</b> 