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**PIEZO**  

**NEMA AND IEC STANDARD CHART**
GENERAL
The push button, keylock, rotary, signal lamps and buzzers of the th4, th5, th25, and th60/th61 series are suited for a wide range of applications. They also have a multitude of technical possibilities as well as a large choice of differently shaped bezels and lenses. Faultless functioning during many switching operations is guaranteed by solid construction and high precision tooling of the components.

GENERAL CONSTRUCTION FEATURES
Switches can be built up with 1-4 contact blocks. Precise mounting is realized with either two screws (th4 and th5) or a special locking cam (th25) which gives the user the important advantage of adding additional contact blocks up to a maximum of 4. The contact blocks can be supplied either: (a) 1NO+1NC, (b) 1NO, (c) 1NC or in the case of th25, in addition to the above, (d) 2NO+2NC, (e) 2NO, (f) 2NC. The contact blocks distinguish themselves by an optimum self cleaning movement. They can be used with the smallest currents and voltages. The non-oxidizing gold plated silver nickel contacts warrant a long life span, even at full load. The th4 and th5 contact blocks have large bendable solder terminals (patented) to facilitate wiring. Silver plated contacts are available in 1NO+1NC or 2NO+2NC contact blocks. The position of the lens indicates ON or OFF of the switch.

LENS
Lenses consist of an upper and a lower part. The upper part is available in different colors. Opaque (non-transparent, translucent) and transparent versions can be supplied. The opaque lens consists of a white, opaque lower diffuser and a colored, opaque upper part. Black versions are non-transparent. The transparent lens in standard version consists of a white opaque lower diffuser and a colored transparent upper part. When using neon bulbs or LED's, the use of colorless transparent lower diffusers is recommended. These are available on special request, the selected part number should be followed with the suffix - 010 (i.e. 461112 yellow lens with opaque diffuser, 461112 010 yellow lens with clear diffuser). In the case of the th25 IP67 lens, the diffuser is universal and does not require the 010 suffix. Legends can be engraved. When using transparent versions, a film legend can be inserted.

IP RATINGS
IP40 similar to NEMA 5, IP65 similar to NEMA 4 & 13, and IP67 which exceeds NEMA 6.

DIMENSIONS
The mounting depth of the th5 series is 17mm shorter than the th4 series, and uses a smaller T 1½ lamp. In the case of the th25 series the mounting depth behind the panel remains constant from 1 pole to 4 pole and includes a matching indicator lamp holder.

LAMPS
th4
Telephone lamps with plug-in socket T 5.5. Incandescent lamps, neon bulbs, LED's, and bi-pin incandescent lamps with adapter.

th5 & th25
Midget-grooved lamps T 1½.
Incandescent lamps, neon bulbs, and LED's.

th25 & th4 INTERLOCKED SWITCH ASSEMBLIES
By using interlocked switch assemblies a simplification of the switching technique can often be realized, providing an increase in security of an installation. Due to many years of experience we can offer a program with many possibilities. The individual switches are connected by a mechanical device and put in a reciprocal relationship. Multiple functions, such as mutual release, interlocking, and releasing or locking through solenoids are possible.

th5 & th25 BIFUNCTIONAL
All th5 and th25 maintained switches incorporate a simple bifunctional selector mechanism. By shifting the selector pin with a small pointed device (e.g. paper clip), the user can select its function, i.e. maintained switch or momentary switch. This selection procedure can be repeated many times. Applications for its use are prototypes or in installations, where, for service purposes, the required function can be selected on the spot.

Keylock Switches
Additional or replacement keys can be supplied for any of the KABA cylinders.

KABA - Tough key switch with a higher level of security. A large number of different coded locks are available upon request including KABA 20 (customers own unique key code). Switches supplied with two keys. Switches can be specified with other locks including KESO, SEA.

KABA MICRO - Precision made cylinders with a high level of security. A large number of different key codes as well as master key and central locking key is available upon request. Unless specified the switch will be supplied with two keys (EB0001).

KABA MICRO-E - Built with the same precision made cylinders as KABA MICRO but a low cost version, available with one key code (ED9001). Supplied with one key only.
General

BEZEL
Noryl, anodized aluminum alloy.

MOUNTING
Central with metal nut. Mounting tools available from T&H.

LENS
Engravable polycarbonate in different colors.

CONTACT BLOCK CASING
Diallylphthalate, heat-resisting and self-quenching (UL 94 VO).

SWITCHING CONTACTS
Silver nickel contacts, 5μ gold-plated (for small currents and voltage) or, 5μ silver plated.

CONTACT BLOCK TERMINALS
th4 & th5. Patented, bendable gold-plated double solder terminals will accept 2 x AWG 18 stranded or 4 x AWG 20 wire. th25 gold or silver plated solder terminals accept 2 solid AWG 18 or 2 stranded AWG 20 wire. Faston accepts 2.8 x 0.5 mm (.110 x .020) terminals.

AMBIENT TEMPERATURE
-30°C to +55°C
Heat congestion in assemblies of illuminated switches and signal lamps should be avoided.

PROTECTIVE SYSTEMS
General IP40, oil tight and dust proof.
Special oil-tight, splash-proof and submersible switches in accordance with IP65 and IP67.

TEST MARKS
SEV, VDE, DEMKO, SEMKO, NEMKO, CEE, SUVA, OEVE, UL and CSA.

VIBRATION
Amplitude 1.5mm pp at 55 Hz at 0.060 D.A.

ACCELERATION
10g in all three planes.

DIELECTRIC STRENGTH
2000 VAC one minute duration.

INSULATION RESISTANCE
2000 Megohms.

Mechanical

SWITCHING MECHANISM
Snap-action contacts with a minimum of bouncing and optimum self cleaning.

CONTACT ASSEMBLY
th4 & th5 1 NO and/or 1 NC contact per contact block. Up to four contact blocks can be assembled.

th25 1 NO and/or 1 NC or 2 NO and/or 2 NC contacts per block. Up to two contact blocks can be assembled.

LIFE-MECHANICAL
2,000,000 switching operations.

ACTUATING FORCE
Approximately 30 grams.

CHANGE OVER MECHANISM
From maintained to momentary.

Electrical

SWITCHING CAPACITY
250V AC/5A (cos w 0.7).

DC LOAD
(resistive load)
12V/5A, 24V/4A, 36V/3A, 48V/2A, 60V/1.5A, 125V/0.5A, 250V/0.3A.
(inductive load L/R = 15 ms)
12V/3A, 24V/2A, 36V/1.7A, 48V/1.5A, 60V/1.2A, 125V/0.3A, 250V/0.2A.

LIFE
Approx. 70,000 switching operations at 5 amps, 250VAC (cos w 0.7).

LAMPS th4
Telephone lamps with plug-in socket T 5 5 (incandescent lamps, neon bulbs, LED’s).

LAMPS th5 AND th25
Midget-grooved lamps T 1¾ (incandescent lamps, LED’s, and neon bulbs).

CONTACT RESISTANCE
Gold contacts ≤ 20 mΩ.
Silver contacts ≤ 50 mΩ.

Subject to change without notice.
Momentary / Maintained / Signal Lamps

**Rectangular tapered bezel style**

Contact Block Bezel
1NO+1 NC Black

- Momentary Switch base 400000 400100 400200 400300 400400
- Maintained Switch base 410000 410100 410200 410300 410400

**Rectangular concealed bezel style**

Contact Block Bezel
1NO+1 NC Black

- Momentary Switch base 400002 400102 400202 400302 400402
- Maintained Switch base 410002 410102 410202 410302 410402

**Rectangular flat lens exposed bezel style**

Contact Block Bezel
1NO+1 NC Black

- Momentary Switch base 400008 400108 400208 400308 400408
- Maintained Switch base 410008 410108 410208 410308 410408

**Rectangular concave lens exposed bezel style**

Contact Block Bezel
1NO+1 NC Black

- Momentary Switch base 400008 400108 400208 400308 400408
- Maintained Switch base 410008 410108 410208 410308 410408

**Lens 14 x 20mm**

- Opaque: white 460012, yellow 460112, green 460212, blue 460312, red 460412, black 460512, orange 460512
- Transparent: white 460017, yellow 460117, green 460217, blue 460317, red 460417, black 460517, orange 460617

**Lens 18 x 24mm**

- Opaque: white 460012, yellow 460112, green 460212, blue 460312, red 460412, black 460512, orange 460512
- Transparent: white 460017, yellow 460117, green 460217, blue 460317, red 460417, black 460517, orange 460617

**Lens flat 15 x 21mm**

- Opaque: white 460021, yellow 460121, green 460221, blue 460321, red 460421, black 460521, orange 460621
- Transparent: white 460017, yellow 460117, green 460217, blue 460317, red 460417, black 460517, orange 460617

**Lens concave 15 x 21mm**

- Opaque: white 460022, yellow 460122, green 460222, blue 460322, red 460422, black 460522, orange 460622
- Transparent: white 460017, yellow 460117, green 460217, blue 460317, red 460417, black 460517, orange 460617

**COMMON INFORMATION**

For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010). The concealed bezel style is especially suitable for mimic diagrams and for mounting with lens immediately next to each other.

**WIRING DIAGRAM**

250V AC/5A (cos w 0.7)
Lamp holder T5.5

**PANEL CUT-OUTS**

*Dimensional Data for behind panel*

<table>
<thead>
<tr>
<th>Pole</th>
<th>Length (L) mm</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44.5</td>
<td>1.75</td>
</tr>
<tr>
<td>2</td>
<td>53</td>
<td>2.087</td>
</tr>
<tr>
<td>3</td>
<td>61.5</td>
<td>2.421</td>
</tr>
<tr>
<td>4</td>
<td>70</td>
<td>2.755</td>
</tr>
<tr>
<td>Indicator Lamp</td>
<td>30</td>
<td>1.181</td>
</tr>
</tbody>
</table>

*Lamps and accessories page 36 and 37.*
COMMON INFORMATION

For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010).

The concealed bezel style is especially suitable for mimic diagrams and for mounting with lens immediately next to each other.

WIRING DIAGRAM

250V AC/5A (cos w 0.7)
Lamp holder T5.5

Lamps and accessories page 36 and 37.
Please remember to order the proper tools for use with T&H switches:

- Lens Remover
- Mounting Wrench
- Lamp Remover

<table>
<thead>
<tr>
<th>Momentary Switch</th>
<th>Bezel Block 1NO+1 NC Black</th>
<th>Contact Block 1NO+1 NC Black</th>
<th>Maintained Switch</th>
<th>Bezel Block 1NO+1 NC Black</th>
<th>Contact Block 1NO+1 NC Black</th>
<th>Indicator Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>base 1</td>
<td>404002</td>
<td>404102</td>
<td>base 1</td>
<td>414002</td>
<td>414102</td>
<td>454037</td>
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<tr>
<td>1</td>
<td>404102</td>
<td>404202</td>
<td>2</td>
<td>404208</td>
<td>404308</td>
<td>404408</td>
</tr>
<tr>
<td>2</td>
<td>404202</td>
<td>404302</td>
<td>3</td>
<td>404308</td>
<td>404408</td>
<td>404408</td>
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<tr>
<td>3</td>
<td>404302</td>
<td>404402</td>
<td>4</td>
<td>404408</td>
<td>404408</td>
<td>404408</td>
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</tbody>
</table>

- Indicator Lamp 454037

<table>
<thead>
<tr>
<th>Lens Ø18</th>
<th>Opaque</th>
<th>Transparent</th>
</tr>
</thead>
<tbody>
<tr>
<td>white</td>
<td>464015</td>
<td>465015</td>
</tr>
<tr>
<td>yellow</td>
<td>464115</td>
<td>465115</td>
</tr>
<tr>
<td>green</td>
<td>464215</td>
<td>465215</td>
</tr>
<tr>
<td>blue</td>
<td>464315</td>
<td>465315</td>
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<tr>
<td>red</td>
<td>464415</td>
<td>465415</td>
</tr>
<tr>
<td>black</td>
<td>464515</td>
<td>465515</td>
</tr>
<tr>
<td>orange</td>
<td>464615</td>
<td>465615</td>
</tr>
</tbody>
</table>

This type is especially suitable for mimic diagrams.

COMMON INFORMATION

For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012.010).

WIRING DIAGRAM

250V AC/6A (cos w 0.7)
Lamp holder T5.5

PANEL CUT-OUTS

<table>
<thead>
<tr>
<th>Dimensional Data for behind panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length = L mm</td>
</tr>
<tr>
<td>Pole 1    44.5 m</td>
</tr>
<tr>
<td>Pole 2    53</td>
</tr>
<tr>
<td>Pole 3    61.5</td>
</tr>
<tr>
<td>Pole 4    70</td>
</tr>
<tr>
<td>Indicator Lamp 30</td>
</tr>
</tbody>
</table>

Lamps and accessories page 36 and 37.
## IP40/IP65
### Momentary / Maintained / Signal Lamps

<table>
<thead>
<tr>
<th>Round aluminum bezel style</th>
<th>Round sealed aluminum bezel style</th>
<th>Round sealed aluminum bezel style</th>
<th>Round flush metal bezel style</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IP40</strong></td>
<td><strong>Special lens increases rating to IP65</strong></td>
<td><strong>With built-in Silicone Cap</strong></td>
<td><strong>IP40</strong></td>
</tr>
<tr>
<td><strong>Bezel Dimension</strong></td>
<td><strong>Bezel Dimension</strong></td>
<td><strong>Bezel Dimension</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.7</td>
<td>0.7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact Block 1NO+1 NC</th>
<th>Standard Bezel</th>
<th>Bezel Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Momentary base</td>
<td>404018</td>
<td>25</td>
</tr>
<tr>
<td>Switch 1</td>
<td>404118</td>
<td></td>
</tr>
<tr>
<td>Switch 2</td>
<td>404218</td>
<td></td>
</tr>
<tr>
<td>Switch 3</td>
<td>404318</td>
<td></td>
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<tr>
<td>Switch 4</td>
<td>404418</td>
<td></td>
</tr>
<tr>
<td>Maintained base</td>
<td>414018</td>
<td>25</td>
</tr>
<tr>
<td>Switch 1</td>
<td>414118</td>
<td></td>
</tr>
<tr>
<td>Switch 2</td>
<td>414218</td>
<td></td>
</tr>
<tr>
<td>Switch 3</td>
<td>414318</td>
<td></td>
</tr>
<tr>
<td>Switch 4</td>
<td>414418</td>
<td></td>
</tr>
<tr>
<td>Indicator Lamp</td>
<td>454018</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lens Ø18mm</th>
<th>IP40</th>
<th>Lens Ø18mm</th>
<th>IP65</th>
<th>Lens Ø18mm</th>
<th>IP65</th>
<th>Lens Ø18mm</th>
<th>IP40</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP40</td>
<td></td>
<td>IP65</td>
<td></td>
<td>IP40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bezel made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500 i.e. 404018 500. Bezel made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500 i.e. 404018 500. Bezel made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500 i.e. 404018 500. Bezel made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500 i.e. 404018 500.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### COMMON INFORMATION
For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010).

### WIRING DIAGRAM
250V AC/6A (cos ϕ 0.7) Lamp holder T5.5

### PANEL CUT-OUTS

### Dimensional Data for behind panel (not flush bezel)

<table>
<thead>
<tr>
<th>Length (L)</th>
<th>mm</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole 1</td>
<td>43.5</td>
<td>1.713</td>
</tr>
<tr>
<td>Pole 2</td>
<td>62</td>
<td>2.047</td>
</tr>
<tr>
<td>Pole 3</td>
<td>60.5</td>
<td>2.382</td>
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<tr>
<td>Pole 4</td>
<td>69</td>
<td>2.717</td>
</tr>
<tr>
<td>Indicator Lamp</td>
<td>29</td>
<td>1.142</td>
</tr>
</tbody>
</table>

### Dimensional Data for behind panel (flush bezel)

<table>
<thead>
<tr>
<th>Length (L)</th>
<th>mm</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole 1</td>
<td>52</td>
<td>2.047</td>
</tr>
<tr>
<td>Pole 2</td>
<td>60.6</td>
<td>2.382</td>
</tr>
<tr>
<td>Pole 3</td>
<td>69</td>
<td>2.717</td>
</tr>
<tr>
<td>Pole 4</td>
<td>77.5</td>
<td>3.051</td>
</tr>
<tr>
<td>Indicator Lamp</td>
<td>37.5</td>
<td>1.476</td>
</tr>
</tbody>
</table>

Lamps and accessories page 36 and 37.
th4 Ø 24 Ø 30 18 x 24 24 x 24

Mushroom / Momentary / Maintained

Round concealed bezel style
IP40

Sealed round aluminum bezel style
IP65

Rectangular tapered bezel style
IP40

Square tapered bezel style
IP40

Contact Block 1NO+1 NC Bezel
Momentary base 404004 1 404014 2 404024 3 404034 4 404044
Switch 1 404019 2 404029 3 404039 4 404049
Maintained base 414004 1 414104 2 414204 3 414304 4 414404
Switch 1 414019 2 414119 3 414219 4 414319

Contact Block 1NO+1 NC Bezel
Momentary base 400004 1 400014 2 400024 3 400034 4 400044
Switch 1 400104 2 400204 3 400304 4 400404
Maintained base 410004 1 410104 2 410204 3 410304 4 410404
Switch 1 410019 2 410119 3 410219 4 410319

CAP & ACTUATOR ORDERED AS ONE UNIT, SPECIFY CAP COLOR

Mushroom caps Ø24
white 464006
yellow 464106
green 464206
blue 464306
red 464406
black 464506

Mushroom caps Ø30
white 464007
yellow 464107
green 464207
blue 464307
red 464407
black 464507

Mushroom caps 18 x 24
white 460004
yellow 460104
green 460204
blue 460304
red 460404
black 460504

Mushroom caps 24 x 24
white 462005
yellow 462105
green 462205
blue 462305
red 462405
black 462505

Panel Cut-Outs Ø24

Panel Cut-Outs Ø30 Sealed

Panel Cut-Outs 18 x 24

Panel Cut-Outs 24 x 24

Common Information
Maintained mushroom switches are unlatched by pulling the mushroom caps. (Larger spacing between switches is required).
For a PUSH PUS version use maintained switch part number and add suffix 300.
The bezel Ø30 is made of anodized aluminum alloy and is also available in black anodized aluminum by adding the suffix 500 i.e. 404018 500.

Wiring Diagram
250V AC/5A (cos w 0.7)

Dimensional Data for behind panel
Length = L Ø24 Ø30
18 x 24 24 x 24

Pole 1 44.5 1.782 43.5 1.710
Pole 2 53 2.087 52 2.047
Pole 3 61.5 2.421 60.5 2.382
Pole 4 70 2.756 69 2.717
1. **IO40/IP65 2 - Position Key Switches**

**Round Sealed Aluminum Bezel Style Ø25**
- **IP65 Bezel A**
  - Bezel Dimension: 10.7 x 12 x 25

**Round Sealed Aluminum Bezel Style Ø25**
- **IP65 Bezel B**
  - Bezel Dimension: 14.2 x 25

**Round Flush Aluminum Bezel Style Ø25**
- **IP40 Bezel C**
  - Bezel Dimension: 4.5 x 25

**Interchangeable Bezel Style**
- **IP40 Bezel D**
  - Bezel Dimension: 93

**KABA**
- Base: 44401 444012 444013 444014
- 1 44411 444112 444113 444114
- 2 44421 444212 444213 444214
- 3 44431 444312 444313 444314
- 4 44441 444412 444413 444414

**KABA MICRO**
- Base: 444040 444041 444042 444043
- 1 444140 444141 444142 444143
- 2 444240 444241 444242 444243
- 3 444340 444341 444342 444343
- 4 444440 444441 444442 444443

**KABA MICRO-E**
- Base: 444075 444076 444077
- 1 444175 444176 444177
- 2 444275 444276 444277
- 3 444375 444376 444377
- 4 444475 444476 444477

**Panel Cut-Outs Ø25 Sealed**
- Min: 25

**Panel Cut-Outs Ø25 Sealed**
- Min: 25

**Panel Cut-Outs Ø25 Flush**
- Min: 25

**Common Information**

**Positions of Key**
- 1 Off
- 2 On
- 1' off
- M

**Wiring Diagram**
- 250V AC/5A (cos w 0.7)

**Dimensional Data for Behind Panel**

<table>
<thead>
<tr>
<th>Pole</th>
<th>Sealed Bezel A</th>
<th>Sealed Bezel B</th>
<th>Flush Bezel C</th>
<th>Interchangeable Bezel D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>51.5</td>
<td>34.5</td>
<td>40.5</td>
<td>35.5</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
<td>43</td>
<td>49</td>
<td>44</td>
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<tr>
<td>3</td>
<td>68.5</td>
<td>51.5</td>
<td>57.5</td>
<td>52.5</td>
</tr>
<tr>
<td>4</td>
<td>77</td>
<td>60</td>
<td>66</td>
<td>61</td>
</tr>
</tbody>
</table>

**Notes:**
- Bezel made of anodized aluminum alloy. It is splash proof and oil tight in accordance with IP65.
- See KABA information on page 2.
- Bezel made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500 i.e. 404018 500. It is splash proof and oil tight in accordance with IP65.
- See KABA information on page 2.

**Panel Cut-Outs Interchangeable Bezel**

**Black Bezel**
- 18 x 24
- 24 x 24
- 18 x 18
- 018

**Panel Cut-Out Profile When 18x24 & 24x24 Bezel Style is Used.**

**Notes:**
- NB: This dimension will increase to 24mm if 2x24 Bezel Style is used.
- NB: This dimension will increase to 24mm if 2x24 or 18x24 Bezel Style is used.
Cylinder element with interchangeable bezels,
18x24 18x18 24x24 Ø18

Key removable in position
Part number
448040
448041
448042
448043
448044

Part number
448045
448046
448047
448048
448049

Switch unit
Contact blocks (1 N0 + 1 NC each)

1:1 2:2 3:3 4:4
493541 493542 493543 493544

Black Bezel
18 x 24 24 x 24 18 x 18 Ø18

18 x 24
24 x 24 (engraveable)
493060
493066
493062
493064

The bezels are easily interchangeable. The key-switch cannot be installed without a bezel.

Panel cut-outs

Dimensional data for behind panel
Interchangeable Bezel Ø25 Length = L

<table>
<thead>
<tr>
<th>Contact blocks</th>
<th>Bezel</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td>44.5</td>
<td>40</td>
</tr>
<tr>
<td>2:2</td>
<td>53</td>
<td>48.5</td>
</tr>
<tr>
<td>3:3</td>
<td>61.5</td>
<td>57</td>
</tr>
<tr>
<td>4:4</td>
<td>70</td>
<td>65.5</td>
</tr>
<tr>
<td>Inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:1</td>
<td>1.752</td>
<td>1.575</td>
</tr>
<tr>
<td>2:2</td>
<td>2.087</td>
<td>1.791</td>
</tr>
<tr>
<td>3:3</td>
<td>2.421</td>
<td>2.244</td>
</tr>
<tr>
<td>4:4</td>
<td>2.756</td>
<td>2.579</td>
</tr>
</tbody>
</table>

Common information
See KABA information of page 2.

Wiring diagram

NB THIS DIMENSION WILL INCREASE TO 24MM IF 24x24 BEZEL STYLE IS USED.
IP40/IP65
3 - Position Rotary Switches

<table>
<thead>
<tr>
<th>Function</th>
<th>Part number</th>
<th>Function</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-0-2</td>
<td>408040</td>
<td>1-0-2</td>
<td>408045</td>
</tr>
<tr>
<td>1-0-2</td>
<td>408044</td>
<td>1-0-2</td>
<td>408049</td>
</tr>
</tbody>
</table>

Switch unit
Contact blocks (1 N0 + 1 NC each)

| 1:1      | 2:2        | 3:3      | 4:4        |
| 493541   | 493543     | 493543   | 493544     |

Upon request the switch unit can be equipped individually, e.g. 2:1, 3:2, 1:3, etc.

Black Bezel
18 x 24  24 x 24  18 x 18  Ø18

493060   493065   493062   493064

The bezels are easily interchangeable. The rotary switch cannot be installed without a bezel.

PANEL CUT-OUTS
* NB THIS DIMENSION WILL INCREASE TO 24MM IF 24X24 BEZEL STYLE IS USED.

COMMON INFORMATION
See KABA information of page 2.

WIRING DIAGRAM

250V AC/5A (cos ϕ 0.7)

Dimensional Data for behind panel

<table>
<thead>
<tr>
<th>Contact blocks</th>
<th>Bezel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interchangeable</td>
<td>Ø25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>mm</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td>44.5</td>
<td>1.752</td>
</tr>
<tr>
<td>2:2</td>
<td>53</td>
<td>2.087</td>
</tr>
<tr>
<td>3:3</td>
<td>61.5</td>
<td>2.421</td>
</tr>
<tr>
<td>4:4</td>
<td>70</td>
<td>2.756</td>
</tr>
</tbody>
</table>

Length = L

11
Interchangeable bezel style, 18 x 24, 18 x 18, 24 x 24, Ø18

<table>
<thead>
<tr>
<th>Contact Block</th>
<th>Function</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1NO+1 NC</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>base</td>
<td>408020</td>
<td>408021</td>
</tr>
<tr>
<td>1</td>
<td>408120</td>
<td>408121</td>
</tr>
<tr>
<td>2</td>
<td>408220</td>
<td>408221</td>
</tr>
<tr>
<td>3</td>
<td>408320</td>
<td>408321</td>
</tr>
<tr>
<td>4</td>
<td>408420</td>
<td>408421</td>
</tr>
</tbody>
</table>

Round sealed aluminum bezel style, Ø25

<table>
<thead>
<tr>
<th>Contact Block</th>
<th>Function</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1NO+1 NC</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>base</td>
<td>408030</td>
<td>408031</td>
</tr>
<tr>
<td>1</td>
<td>408130</td>
<td>408131</td>
</tr>
<tr>
<td>2</td>
<td>408230</td>
<td>408231</td>
</tr>
<tr>
<td>3</td>
<td>408330</td>
<td>408331</td>
</tr>
<tr>
<td>4</td>
<td>408430</td>
<td>408431</td>
</tr>
</tbody>
</table>

Bezels made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500 i.e., 404018 500. It is splash proof and oil tight in accordance with IP65, similar to NEMA 4 and 13.

Black Bezel

<table>
<thead>
<tr>
<th>Size</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 x 24</td>
<td>white</td>
</tr>
<tr>
<td>24 x 24</td>
<td>yellow</td>
</tr>
<tr>
<td>18 x 18</td>
<td>green</td>
</tr>
<tr>
<td>18 x 18 Ø18</td>
<td>blue</td>
</tr>
<tr>
<td>18 x 18 Ø18</td>
<td>red</td>
</tr>
<tr>
<td>18 x 18 Ø18</td>
<td>black</td>
</tr>
<tr>
<td>18 x 18 Ø18</td>
<td>orange</td>
</tr>
<tr>
<td>18 x 18 Ø18</td>
<td>grey</td>
</tr>
<tr>
<td>18 x 18 Ø18</td>
<td>*</td>
</tr>
</tbody>
</table>

The bezels are easily interchangeable. The rotary switch cannot be installed without a bezel.

The rotary knob is supplied in black. The indicating bar is marked in white.

Panel Cut-Outs Ø25

Panel Cut-Outs Ø18, 18x18

Panel Cut-Outs 18x24, 24x24

Panel Cut-Outs 18x24, 24x24

Common Information

Wiring Diagram

250V AC/5A (cos w 0.7)

Dimensional Data for behind panel

<table>
<thead>
<tr>
<th>Pole 1</th>
<th>Pole 2</th>
<th>Pole 3</th>
<th>Pole 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.5</td>
<td>44</td>
<td>62.5</td>
<td>61</td>
</tr>
<tr>
<td>34.5</td>
<td>43</td>
<td>51.5</td>
<td>60</td>
</tr>
<tr>
<td>44.5</td>
<td>53</td>
<td>61.5</td>
<td>70</td>
</tr>
<tr>
<td>43.5</td>
<td>52</td>
<td>68.5</td>
<td>69</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pole 1</th>
<th>Pole 2</th>
<th>Pole 3</th>
<th>Pole 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.398</td>
<td>1.732</td>
<td>2.067</td>
<td>2.402</td>
</tr>
<tr>
<td>1.398</td>
<td>1.693</td>
<td>2.028</td>
<td>2.362</td>
</tr>
<tr>
<td>1.762</td>
<td>2.067</td>
<td>2.421</td>
<td>2.766</td>
</tr>
<tr>
<td>1.713</td>
<td>2.047</td>
<td>2.362</td>
<td>2.717</td>
</tr>
</tbody>
</table>

△ NB THIS DIMENSION WILL INCREASE TO 24MM IF 24X24 BEZEL STYLE IS USED.
IP40/IP65
Rotary and Key Selector - up to 6 Positions

Rotary knob, nickel plated brass bezel style

IP65

<table>
<thead>
<tr>
<th>Number of Switching Positions</th>
<th>Part Number w/o Contact Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>418002</td>
</tr>
<tr>
<td>3</td>
<td>418003</td>
</tr>
<tr>
<td>4</td>
<td>418004</td>
</tr>
<tr>
<td>5</td>
<td>418005</td>
</tr>
<tr>
<td>6</td>
<td>418006</td>
</tr>
</tbody>
</table>

KABA cylinder-lock version, nickel plated brass bezel

IP40

<table>
<thead>
<tr>
<th>Number of Switching Positions</th>
<th>Part Number w/o Contact Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>448002</td>
</tr>
<tr>
<td>3</td>
<td>448003</td>
</tr>
<tr>
<td>4</td>
<td>448004</td>
</tr>
<tr>
<td>5</td>
<td>448005</td>
</tr>
<tr>
<td>6</td>
<td>448006</td>
</tr>
</tbody>
</table>

The selector switch can be equipped with 2 to 6 switching positions. The number of switching positions can also be decided, adjusted or charged by you. Up to 4 contact blocks (1 NO + NC each) are possible per switching position. In addition to the part number for the amount of switching positions, indications for the necessary contact blocks (493500) are required.

Ordering example: required is 1 selector switch with 3 switching positions and a black rotary knob. Position 1 with 2 contact blocks, position 2 with 3 blocks, position 3 with 1 block.
Designation: 1 selector switch 418003/2,3,1.
1 rotary knob 464003.

KABA STAR and KABA 20 are available at a surcharge. Key-removal is possible in any switching position.
In addition to the part number for how many switching positions, also indications need to be given as to the required contact blocks (493500).

Ordering example: required is 1 selector switch with 4 switching positions. Position 1 with 2 contact blocks, position 2 with 3 blocks, position 3 with 1 block, position 4 with 2 blocks.
Designation: 1 selector switch 448004/2,3,1,2.

Ordering information:
- Number of keys (if more than 2 keys per lock are required).
- Code number of key with repeat orders.
- Complete information about group systems when using security cylinders.

COMMON INFORMATION

WIRING DIAGRAM

250V AC/5A (cos w 0.7)

Accessories:
Printed legend plate (0–5) aluminum anodized, 40 x 40mm, part number 403061. Unprinted legend plate (0–5) aluminum anodized, 43 x 40mm, part number 493051-001. Engravable plastic legend plate black <0 x 40mm for letters, numbers or symbols, part number 493052.

Dimensional Data for behind panel

<table>
<thead>
<tr>
<th>Pole</th>
<th>Rotary switch Ø25</th>
<th>Key switch Ø25</th>
<th>Rotative switch Ø25</th>
<th>Key switch Ø25</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40</td>
<td>52</td>
<td>1.575</td>
<td>2.047</td>
</tr>
<tr>
<td>2</td>
<td>48.5</td>
<td>60.5</td>
<td>1.791</td>
<td>2.382</td>
</tr>
<tr>
<td>3</td>
<td>67</td>
<td>69</td>
<td>2.244</td>
<td>2.717</td>
</tr>
<tr>
<td>4</td>
<td>65.5</td>
<td>77.5</td>
<td>2.579</td>
<td>3.051</td>
</tr>
</tbody>
</table>
COMMON INFORMATION
For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010).

The concealed bezel style is especially suitable for mimic diagrams and for mounting with lens immediately next to each other.

All maintained switches incorporate a bifunctional mechanism for changing the function from maintained to momentary and back again.

WIRING DIAGRAM

250V AC/5A (cgs w 0.7)
Lamp holder T 1/4 MG

Lamps and accessories page 36 and 37.
COMMON INFORMATION
For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010).

The concealed bezel style is especially suitable for mimic diagrams and for mounting with lens immediately next to each other.

All maintained switches incorporate a bifunctional mechanism for changing the function from maintained to momentary and back again.

WIRING DIAGRAM

250V AC/5A (cos φ 0.7)
Lamp holder T 1 1/4 MG

PANEL CUT-OUTS

Dimensional Data for behind panel

<table>
<thead>
<tr>
<th></th>
<th>Length L</th>
<th>Min.</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole 1</td>
<td>27.5</td>
<td>1.083</td>
<td></td>
</tr>
<tr>
<td>Pole 2</td>
<td>36.0</td>
<td>1.417</td>
<td></td>
</tr>
<tr>
<td>Pole 3</td>
<td>44.5</td>
<td>1.752</td>
<td></td>
</tr>
<tr>
<td>Pole 4</td>
<td>53.0</td>
<td>2.087</td>
<td></td>
</tr>
<tr>
<td>Indicator lamp</td>
<td>23.5</td>
<td>.925</td>
<td></td>
</tr>
</tbody>
</table>
Please remember to order the proper tools for use with T&H switches:
- Lens Remover
- Mounting Wrench
- Lamp Remover

COMMON INFORMATION

For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010).

The concealed bezel style is especially suitable for mimic diagrams and for mounting with lens immediately next to each other.

All maintained switches incorporate a bifunctional mechanism for changing the function from maintained to momentary and back again.

WIRING DIAGRAM

250V AC/5A (cos w 0.7)
Lamp holder T 1/2 MG

Lamps and accessories page 36 and 37.
IP40/IP65
Momentary / Maintained / Signal Lamps

Round aluminum bezel style
IP40

Round sealed aluminum bezel style
Special lens increases rating to IP65

Round sealed aluminum bezel style
With built-in silicone cap. IP65

Round flush metal bezel style
IP40

Bezel Dimension

| Momentary Base | 504018 |
| Momentary Switch 1 | 504118 |
| Momentary Switch 2 | 504218 |
| Momentary Switch 3 | 504318 |
| Momentary Switch 4 | 504418 |
| Maintained Base | 514018 |
| Maintained Switch 1 | 514118 |
| Maintained Switch 2 | 514218 |
| Maintained Switch 3 | 514318 |
| Maintained Switch 4 | 514418 |
| Indicator Lamp | 554018 |

Lens Ø18mm IP40

| Lens Ð18mm IP65 |
| Opaque | Transparent |
| white | 464015 | 465015 |
| yellow | 464115 | 465115 |
| green | 464215 | 465215 |
| blue | 464315 | 465315 |
| red | 464415 | 465415 |
| black | 464515 | 465515 |
| orange | 464615 | 465615 |

Bezels made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500 i.e. 404018 600. It is splash proof and oil tight in accordance with IP65. The IP65 standard (splash proof oil tight) is achieved with a sealing ring which comes supplied with corresponding lens.

COMMON INFORMATION
For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010).

WIRING DIAGRAM

250V AC/5A (cos v 0.7)
Lamp holder T 1/4 MG

Lamps and accessories page 36 and 37.
## Contact Block Selector Chart

<table>
<thead>
<tr>
<th>CONTACT ARRANGEMENT AND WIRING DIAGRAM</th>
<th>Solder terminals</th>
<th>Faston terminals 2.8 x 0.5 mm</th>
<th>Faston terminals shielded 2.8 x 0.5 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>250V AC/6A (cos w 0.7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gold 593561 000</td>
<td>Gold 593566 000</td>
<td>Gold 593560 000</td>
</tr>
<tr>
<td></td>
<td>Silver 593561 100</td>
<td>Silver 593566 100</td>
<td>Silver 593560 100</td>
</tr>
<tr>
<td>1 NC + 1 NO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 NC + 2 NO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 NO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 NC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 NO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 NC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>250V AC/6A</td>
<td>250V AC/16A</td>
<td>250V AC/16A</td>
</tr>
<tr>
<td></td>
<td>593650 000</td>
<td>593651 000</td>
<td>593651 000</td>
</tr>
<tr>
<td></td>
<td>Screw Terminal</td>
<td>Screw Terminal</td>
<td>Screw Terminal</td>
</tr>
<tr>
<td></td>
<td>593650 200</td>
<td>593650 200</td>
<td>593650 200</td>
</tr>
<tr>
<td></td>
<td>wires from AWG 18 to AWG 32</td>
<td>wires from AWG 18 to AWG 32</td>
<td>wires from AWG 18 to AWG 32</td>
</tr>
</tbody>
</table>

### MINIMUM REQUIREMENT
- Switch body for example: 501000-000
- Contact block for example: 593561-000
- Lens cap for example: 460012-000

Contact blocks are ordered separately from switch activator.

### QUICK MOUNTING OF THE CONTACT BLOCKS SIMPLY BY SLIDING ON AND SECURING

**ASSEMBLY:**
- The contact block slides onto the dovetail of the switch body while the slot in the red locking pin is parallel to the dovetail.

**SECURING:**
- Once the contact block is fully in position, the red locking cam is turned through 90° with a suitable screwdriver.

### SELECTOR MECHANISM
All maintained switches in the th25 series feature a simple bifunctional selector mechanism that converts the maintained switch to momentary and back again. The selector is made by moving a small wire clip which is visible through an aperture in the body of the switch, with a device such as a paper clip.
### IP40 Momentary / Maintained / Signal Lamps

#### Rectangular tapered bezel style

<table>
<thead>
<tr>
<th>Bezel Dimension</th>
<th>Connection</th>
<th>Solder Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Momentary</td>
<td>501000</td>
<td>501100</td>
</tr>
<tr>
<td>Maintained</td>
<td>511000</td>
<td>511100</td>
</tr>
<tr>
<td>Indicator lamps</td>
<td>551000</td>
<td>551100</td>
</tr>
</tbody>
</table>

#### Rectangular concealed bezel style

<table>
<thead>
<tr>
<th>Bezel Dimension</th>
<th>Connection</th>
<th>Solder Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Momentary</td>
<td>501002</td>
<td>501102</td>
</tr>
<tr>
<td>Maintained</td>
<td>511002</td>
<td>511102</td>
</tr>
<tr>
<td>Indicator lamps</td>
<td>551002</td>
<td>551102</td>
</tr>
</tbody>
</table>

#### Rectangular flat lens exposed bezel style

<table>
<thead>
<tr>
<th>Bezel Dimension</th>
<th>Connection</th>
<th>Solder Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Momentary</td>
<td>501008</td>
<td>501108</td>
</tr>
<tr>
<td>Maintained</td>
<td>511008</td>
<td>511108</td>
</tr>
<tr>
<td>Indicator lamps</td>
<td>551008</td>
<td>551108</td>
</tr>
</tbody>
</table>

#### Rectangular exposed bezel style, concave lens

<table>
<thead>
<tr>
<th>Bezel Dimension</th>
<th>Connection</th>
<th>Solder Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Momentary</td>
<td>501009</td>
<td>501106</td>
</tr>
<tr>
<td>Maintained</td>
<td>511008</td>
<td>511106</td>
</tr>
<tr>
<td>Indicator lamps</td>
<td>551009</td>
<td>551106</td>
</tr>
</tbody>
</table>

### Lens flat 14x20

<table>
<thead>
<tr>
<th>Lens</th>
<th>Opaque</th>
<th>Transparent</th>
</tr>
</thead>
<tbody>
<tr>
<td>white</td>
<td>460012</td>
<td>461012</td>
</tr>
<tr>
<td>yellow</td>
<td>460112</td>
<td>461112</td>
</tr>
<tr>
<td>green</td>
<td>460212</td>
<td>461212</td>
</tr>
<tr>
<td>blue</td>
<td>460312</td>
<td>461312</td>
</tr>
<tr>
<td>red</td>
<td>460412</td>
<td>461412</td>
</tr>
<tr>
<td>black</td>
<td>460512</td>
<td>461512</td>
</tr>
<tr>
<td>orange</td>
<td>460612</td>
<td>461612</td>
</tr>
</tbody>
</table>

### Lens flat 18x24

<table>
<thead>
<tr>
<th>Lens</th>
<th>Opaque</th>
<th>Transparent</th>
</tr>
</thead>
<tbody>
<tr>
<td>white</td>
<td>460017</td>
<td>461017</td>
</tr>
<tr>
<td>yellow</td>
<td>460117</td>
<td>461117</td>
</tr>
<tr>
<td>green</td>
<td>460217</td>
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<tr>
<td>blue</td>
<td>460317</td>
<td>461317</td>
</tr>
<tr>
<td>red</td>
<td>460417</td>
<td>461417</td>
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<tr>
<td>black</td>
<td>460517</td>
<td>461517</td>
</tr>
<tr>
<td>orange</td>
<td>460617</td>
<td>461617</td>
</tr>
</tbody>
</table>

### Lens flat 15x21

<table>
<thead>
<tr>
<th>Lens</th>
<th>Opaque</th>
<th>Transparent</th>
</tr>
</thead>
<tbody>
<tr>
<td>white</td>
<td>460021</td>
<td>461021</td>
</tr>
<tr>
<td>yellow</td>
<td>460121</td>
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<tr>
<td>green</td>
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<td>461221</td>
</tr>
<tr>
<td>blue</td>
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<td>461321</td>
</tr>
<tr>
<td>red</td>
<td>460421</td>
<td>461421</td>
</tr>
<tr>
<td>black</td>
<td>460521</td>
<td>461521</td>
</tr>
<tr>
<td>orange</td>
<td>460621</td>
<td>461621</td>
</tr>
</tbody>
</table>

### Lens concave 15x21

<table>
<thead>
<tr>
<th>Lens</th>
<th>Opaque</th>
<th>Transparent</th>
</tr>
</thead>
<tbody>
<tr>
<td>white</td>
<td>460022</td>
<td>461022</td>
</tr>
<tr>
<td>yellow</td>
<td>460122</td>
<td>461122</td>
</tr>
<tr>
<td>green</td>
<td>460222</td>
<td>461222</td>
</tr>
<tr>
<td>blue</td>
<td>460322</td>
<td>461322</td>
</tr>
<tr>
<td>red</td>
<td>460422</td>
<td>461422</td>
</tr>
<tr>
<td>black</td>
<td>460522</td>
<td>461522</td>
</tr>
<tr>
<td>orange</td>
<td>460622</td>
<td>461622</td>
</tr>
</tbody>
</table>

### COMMON INFORMATION

For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010).

CONTACT BLOCKS TO BE SPECIFIED SEPARATELY – SEE PAGE 18.

Lamp holder T 13\(^3\) MG

Lamps and accessories page 36 and 37.
COMMON INFORMATION
For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010).
CONTACT BLOCKS TO BE SPECIFIED SEPARATELY – SEE PAGE 16.
Lamp holder T ½ MG

LAMPS AND ACCESSORIES PAGE 35 AND 37.
**IP40 Momentary / Maintained / Signal Lamps**

**Round concealed bezel style**

**Round flat lens exposed bezel style**

**Round concave lens exposed bezel style**

**Round Ø15mm threaded version**

---

**Lamp holder T 1\(\frac{3}{4}\)MG**

**Lamp holder T 1\(\frac{3}{4}\)MG**

**Lamp holder T 1\(\frac{3}{4}\)MG**

**Lamp holder Bi-pin T**

---

**COMMON INFORMATION**

For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use 010 suffix (i.e. 461012 010). (010 version not available with lens flat Ø8).

CONTACT BLOCKS TO BE SPECIFIED SEPARATELY – SEE PAGE 18.

Lamps and accessories page 36 and 37.

---

**PANEL CUT-OUTS FOR UP TO 2 SINGLE CONTACT BLOCKS**

**PANEL CUT-OUTS FOR 1 SINGLE CONTACT BLOCK+ 1 DOUBLE CONTACT BLOCK**

**PANEL CUT-OUTS FOR 2 DOUBLE CONTACT BLOCKS**

---

**Front ring**

Part Number

Ø15, conical, knurled bright chrome 593055
Ø14, flat, knurled bright chrome 593056
Ø15, conical, knurled (black anodized) 593055-500

---

**Panel Cut-Outs**

SWITCH SPACING SEE PANEL CUT OUT

DIMENSIONAL DATA BELOW

---

**Panel Dimensions**

**Panel Dimensions**

**Panel Dimensions**
Momentary / Maintained / Signal Lamps

IP40/IP65/IP67

Round aluminum bezel style
IP65/IP40

Bezel Dimension

Faston Connection  Solder Connection

Momentary  505018  505118
Maintained  515018  515118
Indicator lamps  555018  555118

Lens Ø18  IP65

Opaque  Transparent

white  464001  465001
yellow  464101  465101
green  464201  465201
blue  464301  465301
red  464401  465401
black  464501  465601
orange  464601  465601

Bezels made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500 I.e. 404018 500. It is flush proof and oil tight in accordance with IP65.

The IP65 standard (splash proof oil tight) is achieved with a sealing ring which comes supplied with the corresponding lens.

An IP40 version can be achieved by specifying standard lens caps Ø18 IP40.

COMMON INFORMATION
CONTACT BLOCKS TO BE SPECIFIED SEPARATELY – SEE PAGE 18.

Lamp holder T 1/4 MG

For a brighter light, all transparent lens can be specified with a clear lower lens diffuser. Use O10 suffix (i.e. 461012 O10).

Lamps and accessories page 36 and 37.

Panel Cut-Outs for up to 1 Single Contact Block

Panel Cut-Outs for 2 Double Contact Block
COMMON INFORMATION

The switch is dust proof and oil tight and is submersible up to 1.2 meters. Exceeds NEMA 6.
When using incandescent lamps ambient temperature = max. 55°C.
CONTACT BLOCKS TO BE SPECIFIED SEPARATELY – SEE PAGE 16.

Lamp holder T \( \frac{3}{4} \) MG

Panel cut-outs for up to 2 single contact blocks (18x18 and Ø18 style only).

Panel cut-outs for up to 1 single + 1 double contact block.

Panel cut-outs for up to 2 double contact blocks.

Lamps and accessories page 36 and 37.
KABA MICRO & KABA MICRO-E, 2 position with interchangeable bezels

Key Removable in Position
1 (mom.) 2 1 1+2
Off On Off On+Off
KABA MICRO 548032 548034 548036 548038
KABA MICRO-E 548075 548076 548077

Black Bezel
18 x 24 24 x 24 18 x 18 Ø 18
493060 548051 493062 493064
493066 548052 493067 493C64

The bezels are easily interchangeable. The key switch cannot be installed without a bezel.

KEY POSITION

1 Off momentary
2 On

Function Part Number Function Part Number Function Part Number
Cylinder Element
1 548050 548055 548060
2 548051 548056 548061
3 548052 548057 548062
4 548053 548058
5 548054 548059

= Key in removable position.

KEY POSITION

0 Off
momentary (60°)

1 on
momentary (60°)

2 on

WIRING DIAGRAM

COMMON INFORMATION
See KABA Information on page 1.

PANEL CUT-OUTS FOR UP TO 2 SINGLE CONTACT BLOCKS (18X18 AND Ø18 STYLE ONLY).

PANEL CUT-OUTS FOR UP TO 1 SINGLE + 1 DOUBLE CONTACT BLOCK

PANEL CUT-OUTS FOR UP TO 2 DOUBLE CONTACT BLOCKS

* NB THIS DIMENSION WILL INCREASE TO 24MM IF 24X24 BEZEL STYLE IS USED.

PLEASE USE FOLLOWING PANEL-CUT OUT PROFILE WHEN 18X24 & 24X24 BEZEL STYLE IS USED.

CONTACT BLOCKS TO BE SPECIFIED SEPARATELY – SEE PAGE 18.
IP65
2 - Position / 3 - Position / Key Switches

KABA MICRO & KABA MICRO-E
2 position with snap-on bezels

Key Removable in Position
1 (mcm) 2 1 +2
Off 548102 548103 548108 548109
On 548104 548105 548110 548111
On+Off 548106 548107 548112 548113

Black Bezel
18 x 24 24 x 24 18 x 18 18 x 18
593060 593061 593062 593064

Once a bezel has been assembled it can no longer be removed.

KEY POSITION
1 Off momentary
2 On

KABA MICRO 3 position with snap-on bezels

Function Part Number
Cylinder Element
- 548150
- 548151
- 548152
- 548153
- 548154

Function Part Number
1 548155
2 548156
2 548157
2 548158
2 548159

Function Part Number
1 548160
2 548161
2 548162

= Key in removable position

KEY POSITION
0 Off

momentary (60°)
momentary (60°)
1 on
2 on

WIRING DIAGRAM

COMMON INFORMATION
See KABA information on page 1.

CONTACT BLOCKS TO BE SPECIFIED SEPARATELY – SEE PAGE 18.

PANEL CUT-OUTS FOR
UP TO 2 SINGLE
CONTACT BLOCKS
(18X18 AND Ø18 STYLE
ONLY).

PANEL CUT-OUTS
FOR UP TO
1 SINGLE + 1 DOUBLE
CONTACT BLOCK

PANEL CJUT-OUTS FOR
UP TO 2 DOUBLE
CONTACT BLOCKS

* NB THIS DIMENSION WILL INCREASE TO 24MM IF 24X24 BEZEL STYLE IS USED.
KABA MICRO Metal bezel 2 position
KABA MICRO-E

Key Removable in Position
1(on) 2 1 1+2
Off On Off CnvOff
KABA MICRO 544040 544041 544042 544043
KABA MICRO-E 544075 544076 544077

KEY POSITION

Bezels made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500 i.e. 404018 500. It is splash proof and oil tight in accordance with IP65, similar to NEMA 4 and 13.

COMMON INFORMATION
See KABA information on page 1.
CONTACT BLOCKS TO BE SPECIFIED SEPARATELY - SEE PAGE 18.
IP40/IP65
2-Position Rotary Switches

2 position interchangeable bezel

IP40

Functions 1 Momentary T+2 Off/On
Rotary switches 508021 508020

Black Bezel
18 x 24 24 x 24 18 x 18 Ø18
493060 493066 493062 493064

The bezels are easily interchangeable. The switch cannot be installed without a bezel.

2 position snap-on bezel

IP65

Functions 1 Momentary T+2 Off/On
Rotary switches 508026 508025

Black Bezel
18 x 24 24 x 24 18 x 18 Ø18
593060 593066 593062 593064

Once a bezel has been assembled it can no longer be removed.

2 position Metal bezel Ø25

IP65

Bezel Dimension

Functions 1 Impulse T+2 Off/On
Rotary switches 508031 508030

Bezels made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500. i.e. 404018 500. It is splashproof and oil tight in accordance with IP65, similar to NEMA 4 and 13.

Please remember to order the proper tools for use with T&H switches:
- Lens Remover
- Mounting Wrench
- Lamp Remover

Panel cut-outs for up to 2 single contact blocks (18x18 and Ø18 style only).

Panel cut-outs for up to 1 single + 1 double contact block (18x18 and Ø18 style only).

Panel cut-outs for up to 2 double contact blocks

Panel cut-outs for up to 1 single + 1 double contact block

Panel cut-outs for up to 2 double contact blocks

Panel cut-outs for up to 2 single contact blocks

Please use following panel-cut out profile when 18x24 & 24x24 bezel style is used.

Common information
- The rotary knob is supplied in black.
- The indicating bar is marked in white.
- Contact blocks to be specified separately – see page 18.

* NB THIS DIMENSION WILL INCREASE TO 24MM IF 24X24 BEZEL STYLE IS USED.

Panel thickness

1 Off

2 On

momentary
### 3 Position Snap-on Bezel

**IP65**

<table>
<thead>
<tr>
<th>Function</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>508045</td>
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</tr>
<tr>
<td>508046</td>
<td></td>
</tr>
<tr>
<td>508047</td>
<td></td>
</tr>
</tbody>
</table>

**Black Bezel**

- 18 x 24
- 24 x 24 24 x 24 (not applicable)
- 18 x 18
- Ø 18
- 593060
- 593066
- 593062
- 593064

The bezels are easily interchangeable. The switch cannot be installed without a bezel.

**Panel Cut-outs for Up to 2 Single Contact Blocks (18x18 and Ø18 Style Only)**

**Panel Cut-outs for Up to 1 Single + 1 Double Contact Block**

**Panel Cut-outs for Up to 2 Double Contact Blocks**

### 3 Position Metal Bezel Ø25

**IP65**

<table>
<thead>
<tr>
<th>Function</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>508060</td>
<td></td>
</tr>
<tr>
<td>508062</td>
<td></td>
</tr>
</tbody>
</table>

Bezels made of anodized aluminum alloy are also available in black anodized aluminum by adding the suffix 500. I.e. 404018 500. It is splash proof and oil tight in accordance with IP65, similar to NEMA 4 and 13.

### 3 Position Interchangeable Bezel

**IP40**

<table>
<thead>
<tr>
<th>Function</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>508040</td>
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</tr>
<tr>
<td>508042</td>
<td></td>
</tr>
</tbody>
</table>

**Panel Cut-outs for Up to 1 Single + 1 Double Contact Block**

**Panel Cut-outs for Up to 2 Double Contact Blocks**

Please use following panel-cut out profile when 18x24 & 24x24 bezels are used.

### Common Information

The rotary knob is supplied in black. The indicating bar is marked in white.

* NB This dimension will increase to 24mm if 24x24 bezel style is used.

Contact blocks to be specified separately - see page 18.

**Wiring Diagram (3 Position)**

- Knob position
  - 0: off
  - 1: off

- Impulse (60°)
  - 1 on
  - 2 on
**IP40/IP65**

**Emergency Stop Switch / Two Tone Buzzer**

**Emergency stop mushroom style, Ø24**

**Part Number**
- Basic element vertical*: 518039-000
- Basic element horizontal*: 518039-090
- Basic element mushroom cap-No Imprint: 518039-005

*Based on Imprint stamping

**Contact element with forced break**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>593591</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faston contacts with insulation</td>
<td>593590</td>
</tr>
<tr>
<td>Solder contacts</td>
<td>593591</td>
</tr>
<tr>
<td>Faston contacts without insulation</td>
<td>593593</td>
</tr>
</tbody>
</table>

**Disk, yellow, Ø43mm**

**Part Number**
- Neutral: 593054
- German: NOT-AUS 593057
- English: EMERGENCY STOP 593058
- French: ARRET D'URGENCE 593059

**Technical details**

SUVA regulations: The Emergency-stop switch must bear a series connected safely fuse, max. 4A.
SUVA certificate No. 3413 of 9.11.88.
For auxiliary circuits.
Life expectancy = approx. 10,000 operations
Unlatched by pulling the red mushroom-head.
It is splash proof and oil tight in accordance with IP65, similar to NEMA 4 and 13.

CONTACT BLOCKS TO BE SPECIFIED SEPARATELY – SEE PAGE 18.

**Buzzer 18x18, 18x24, 24x24, Ø18**

With interchangeable bezel

**Part Number**
- Buzzer: 590900

**Black Bezel**

<table>
<thead>
<tr>
<th>18 x 24</th>
<th>24 x 24 (engravable)</th>
<th>18 x 18</th>
<th>Ø 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>403060</td>
<td>403096</td>
<td>493062</td>
<td>493064</td>
</tr>
</tbody>
</table>

The bezels are easily interchangeable. The buzzer cannot be installed without a bezel.

**PANEL CUT-OUTS**

**Technical details**

Current: 10 – 30V DC
Current-consumption: 20mA
Frequency: 2048Hz
Signal strength: min. 85dB at 10cm distance
Ambient temperature: -20° up to +60°C
Weight: app. 8g
Protective system: IP40
Plastic material: UL standard Noryl
Fixation: Central, with metal fixing nut

CHOICE OF INTERMITTENT OR CONTINUOUS SIGNAL.
If connected to the direct current in conformity with the marked polarity the sound is an intermittent whistle signal.
If connected against the marked polarity the sound is a continuous whistle signal.

Meets 2000 Hz OSHA requirements.
Examples of Interlock Assemblies

Direct Incorporation into Front Panel

The panel cut-outs are round and are therefore made without any special tools. For reliable performance of interlock assemblies, the spacing between switches must be accurate and within tolerances. Also, the front panel must be rigid.

Incorporation on Mounting Rail

The interlocking switches are mounted on a rail and supplied as complete assemblies. Reliable performance is guaranteed. The complete assemblies, which may be previously wired, are mounted from the rear of the front panel. They are fixed with screws from the front or with threaded pins at the rear of the front panel.

See accessory page 37 for mounting rail.

Rack-Mounting Assembly

The rack-mounting frame, complete with the switches, will slide easily and quickly from the front into a rectangular slot made in the front panel. It is then fastened with clamping screws. This rigid way of construction guarantees proper functioning of the assembly. The rack-mounting frame can only be assembled horizontally with switches having a bezel of 16x24mm and with 24mm centers.

COMMON INFORMATION

The interlock assemblies consist of mechanically interacting switches. Thus, many problems in control applications can be solved easily and safely. A maximum of 12 switches can be interlocked with spacing of 18, 24, or 25mm.

RELEASE SOLENOIDS, LOCKING SOLENOIDS

The addition of solenoids allows the following combinations: Release, Locking, Lock-Out.

<table>
<thead>
<tr>
<th>Locking Solenoids:</th>
<th>Percentage Duty Cycle</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>10%</td>
<td>4.5W</td>
</tr>
<tr>
<td>24V</td>
<td>49100</td>
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</tr>
<tr>
<td>36V</td>
<td>491200</td>
<td></td>
</tr>
<tr>
<td>48V</td>
<td>491400</td>
<td></td>
</tr>
<tr>
<td>60V</td>
<td>491500</td>
<td></td>
</tr>
<tr>
<td>220V</td>
<td>491000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Release Solenoids:</th>
<th>Percentage Duty Cycle</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>25%</td>
<td>18W</td>
</tr>
<tr>
<td>6V</td>
<td>491002</td>
<td></td>
</tr>
<tr>
<td>12V</td>
<td>491102</td>
<td></td>
</tr>
<tr>
<td>24V</td>
<td>491202</td>
<td></td>
</tr>
<tr>
<td>36V</td>
<td>491302</td>
<td></td>
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<tr>
<td>48V</td>
<td>491402</td>
<td></td>
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<tr>
<td>60V</td>
<td>491502</td>
<td></td>
</tr>
<tr>
<td>220V</td>
<td>491802</td>
<td></td>
</tr>
</tbody>
</table>

A = Bezel length x number of switches

B = Sum of the mounting centers + 22mm

<table>
<thead>
<tr>
<th>Number of Switches</th>
<th>Part Number</th>
</tr>
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<tbody>
<tr>
<td>2</td>
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<tr>
<td>3</td>
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<td>6</td>
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<td>7</td>
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<td>11</td>
<td>493961</td>
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<tr>
<td>12</td>
<td>493962</td>
</tr>
</tbody>
</table>

Solenoids are not available as separate components.
Examples of Interlock Assemblies

Direct incorporation into front panel

Photo Not Available
Same as Mounting Assembly
Previous Page

Incorporation on mounting rail

The interlocking switches are mounted on a rail and supplied as complete assemblies. Reliable performance is guaranteed. The complete assemblies, which may be previously wired, are mounted from the rear of the front panel. They are fixed with screws from the front or with threaded pins at the rear of the front panel.

See accessory page 37 for mounting rail.

B = Mounting centers x (number of switches less one switch)

Rack-mounting assembly

Photo Not Available
Same as Mounting Assembly
Previous Page

The rack-mounting frame, complete with the switches, will slide easily and quickly from the front into a rectangular slot made in the front panel. It is then fastened with clamping screws. This rigid way of construction guarantees proper functioning of the assembly. The rack-mounting frame can only be assembled horizontally with switches having a bezel of 18x24mm or with 24mm centers.

A = Bezel length x number of switches

B = Sum of the mounting centers + 22mm

COMMON INFORMATION
The interlock assemblies consist of mechanically interacting switches. Thus any problems in control applications can be solved easily and safely. A maximum of 12 switches can be interlocked in one row, with spacing 18, 24, or 25mm.

RELEASE SOLENOIDS, LOCKING SOLENOIDS
The addition of solenoids allows the following combinations: Release, Locking, Lock-Out.

<table>
<thead>
<tr>
<th>Locking Solenoids: Percentage Duty Cycle</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>4.5W</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Release Solenoids: Percentage Duty Cycle</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>18W</td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>Number of Switches</th>
<th>Part Number</th>
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<tbody>
<tr>
<td>2</td>
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Part Number

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<td>491402</td>
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<tr>
<td>491502</td>
<td>491802</td>
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</tbody>
</table>

Solenoids are not available as separate components.
# th25/th4
Interlock Assembly Selector Chart

## Function description

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Momentary switch</td>
</tr>
<tr>
<td>B</td>
<td>Maintained switch</td>
</tr>
<tr>
<td>C†</td>
<td>Push-push release</td>
</tr>
<tr>
<td>D</td>
<td>Reciprocating release</td>
</tr>
<tr>
<td>E</td>
<td>Master release</td>
</tr>
<tr>
<td>F</td>
<td>Master release solenoid</td>
</tr>
<tr>
<td>G</td>
<td>Interlock</td>
</tr>
<tr>
<td>H‡‡</td>
<td>Locking device, key-operated</td>
</tr>
<tr>
<td>I</td>
<td>Locking device, solenoid-operated</td>
</tr>
<tr>
<td>K‡‡</td>
<td>Additional maintained switches, not interlocking</td>
</tr>
<tr>
<td>M</td>
<td>Zero voltage locking</td>
</tr>
<tr>
<td>N‡‡</td>
<td>Lock-out device, key-operated</td>
</tr>
<tr>
<td>O‡‡</td>
<td>Lock-out device, solenoid-operated</td>
</tr>
</tbody>
</table>

†† This function requires a maintained switch and is not available in the th4 series. All other functions require a momentary switch.
‡‡ The locking of the switch can only be guaranteed up to a maximum pressure of 30 grams.

## Interlock Bar Function

<table>
<thead>
<tr>
<th>Interlock Bar</th>
<th>Fixing Centers 18mm</th>
<th>Fixing Centers 24mm</th>
<th>Fixing Centers 25mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABDG</td>
<td>5700..001</td>
<td>5700..002</td>
<td>5700..005</td>
</tr>
<tr>
<td>ABDEG</td>
<td>5700..002</td>
<td>5700..003</td>
<td>5700..006</td>
</tr>
<tr>
<td>ABDFG</td>
<td>5701..003</td>
<td>5701..004</td>
<td>5701..007</td>
</tr>
<tr>
<td>ABDEFG</td>
<td>5701..004</td>
<td>5701..005</td>
<td>5701..008</td>
</tr>
<tr>
<td>ABE</td>
<td>5701..005</td>
<td>5701..006</td>
<td>5701..009</td>
</tr>
<tr>
<td>ABEF</td>
<td>5701..006</td>
<td>5701..007</td>
<td>5701..010</td>
</tr>
<tr>
<td>ABFG</td>
<td>5701..007</td>
<td>5701..008</td>
<td>5701..011</td>
</tr>
<tr>
<td>ABEF</td>
<td>5701..010</td>
<td>5701..011</td>
<td>5701..012</td>
</tr>
<tr>
<td>ABGK</td>
<td>5701..012</td>
<td>5701..013</td>
<td>5701..014</td>
</tr>
<tr>
<td>ABDEG</td>
<td>5701..014</td>
<td>5701..015</td>
<td>5701..016</td>
</tr>
<tr>
<td>ABDFG</td>
<td>5701..015</td>
<td>5701..016</td>
<td>5701..017</td>
</tr>
<tr>
<td>ABDEFG</td>
<td>5701..017</td>
<td>5701..018</td>
<td>5701..019</td>
</tr>
<tr>
<td>ABGK</td>
<td>5701..019</td>
<td>5701..020</td>
<td>5701..021</td>
</tr>
<tr>
<td>ABF</td>
<td>5701..021</td>
<td>5701..022</td>
<td>5701..023</td>
</tr>
<tr>
<td>ABGK</td>
<td>5701..022</td>
<td>5701..023</td>
<td>5701..024</td>
</tr>
<tr>
<td>ABGK</td>
<td>5701..025</td>
<td>5701..026</td>
<td>5701..027</td>
</tr>
</tbody>
</table>

* FOR THESE RAILS THE CORRECT SOLENOID MUST BE ORDERED AT THE SAME TIME.
# FOR THESE RAILS THE CORRECT TWO SOLENOIDS MUST BE ORDERED AT THE SAME TIME.
Δ ONLY AVAILABLE TO A MAXIMUM OF ELEVEN SWITCHES.

## Part number build up for interlock bar

Series (4=TH4, 5=TH25): [5 7 3 0 0 5]

### Interlock bar

- **Fixing centre**: 0 = 18mm, 3 = 24mm, 6 = 25mm
- **Solenoid function**: 0 = no solenoid, 1 = lock out or release, 2 = lock preselected position, 3 = lock and release
- **Number of switches in assembly**
- **Interlock function bar** (see table above)

THE MAXIMUM NUMBER OF SWITCHES IN AN ASSEMBLY IS 12.

---

### Diagram

[Diagram of interlock assembly selector chart]

---

32
KABA MICRO and KABA MICRO-E
2 position - interchangeable bezels

Key removable in position KABA MICRO KABA MICRO-E
1 off (momentary) 548033 548081
2 on 548035
1 off 548037 548082
1+2 off-on 548039 548083

KABA MICRO and KABA MICRO-E
2 position - snap-on bezels

Key removable in position KABA MICRO KABA MICRO-E
1 off (momentary) 548133 548181
2 on 548135
1 off 548137 548182
1+2 off-on 548139 548183

KABA MICRO and KABA MICRO-E
2 position - Ø25 aluminum bezel

Key removable in position KABA MICRO KABA MICRO-E
1 off (momentary) 545040 545081
2 on 545041
1 off 545042 545082
1+2 off-on 545043 545083

Black Bezel
18 x 24 24 x 24 (non-usable) 18 x 18 Ø18
493060 493066 493062 493064

The bezels are easily interchangeable.
The switch cannot be installed without a bezel.

PLEASE USE FOLLOWING PANEL-CUT OUT PROFILE WHEN 18X24 & 24X24 BEZEL STYLE IS USED.

INTERLOCK CENTERS 18MM, PANEL CUT-OUTS FOR UP TO 2 SINGLE CONTACT BLOCKS (18X16 Ø18 ONLY).

INTERLOCK CENTERS 24MM, PANEL CUT-OUTS FOR UP TO 2 SINGLE CONTACT BLOCKS (18X24 AND 24X24 ONLY).

INTERLOCK CENTERS 25MM, PANEL CUT-OUTS FOR UP TO 1 SINGLE + 1 DOUBLE CONTACT BLOCK (Ø25 ONLY).

MAXIMUM PANEL THICKNESS FOR INTERLOCK ASSEMBLY SWITCHES

HOLE CUT OUT DIMENSIONS FOR IP65 INTERCHANGEABLE BEZEL STYLE KEY SWITCH

COMMON INFORMATION FOR INTERLOCK SWITCHES FOR THE TH25 AND TH4
CONTACT BLOCKS TO BE SPECIFIED SEPARATELY - SEE PAGE 18.
Switches for Interlock Assemblies

Rectangular tapered bezel style 16x24

Contact Block  
1 NO + 1 NC
Length L (mm)  
Base  
1  
2  
3  
Bezel  
Black  
Black  
Black

Square concealed bezel style 18 x 18

Contact Block  
1 NO + 1 NC
Length L (mm)  
Base  
1  
2  
3  
Bezel  
Black  
Black  
Black

Round aluminum bezel style ø25

Contact Block  
1 NO + 1 NC
Length L (mm)  
Base  
1  
2  
3  
Bezel  
Black  
Black  
Black

Lens caps 14 x 20 - page 4.

Rectangular concealed bezel style 18x24

Contact Block  
1 NO + 1 NC
Length L (mm)  
Base  
1  
2  
3  
Bezel  
Black  
Black  
Black

Square exposed bezel style 18 x 18

Contact Block  
1 NO + 1 NC
Length L (mm)  
Base  
1  
2  
3  
Bezel  
Black  
Black  
Black

Interchangeable bezel style

Contact Block  
1 NO + 1 NC
Length L (mm)  
Catalog Number  
KABA MICRO  
KABA MICRO-E

1 Base  
1 Off  
1 On  
1 + 2 Off  
1 + 2 On + Off  
18 x 24  
18 x 18  
18 x 18 ø18

Lens caps 14 x 14 - page 5.

Square tapered bezel style 18 x 18

Contact Block  
1 NO + 1 NC
Length L (mm)  
Base  
1  
2  
3  
Bezel  
Black  
Black  
Black

Round exposed bezel style ø18

Contact Block  
1 NO + 1 NC
Length L (mm)  
Base  
1  
2  
3  
Bezel  
Black  
Black  
Black

Lenses caps Ø18 - page 7.

Lens caps 14 x 14 - page 5.

Lens caps 14 x 14 - page 5.

Lens caps 15 x 15 - page 5.

Lens caps 15 x 21 - page 4.

Square exposed bezel style 18 x 18

Contact Block  
1 NO + 1 NC
Length L (mm)  
Base  
1  
2  
3  
Bezel  
Black  
Black  
Black

Lens caps Ø18 - page 6.

The bezels are easily interchangeable. The switch cannot be installed without a bezel.
## Accessories

### Contact block
- 250V AC 5A
  - 1NC + 1NO: Gold 493500 000
  - 1NO: Gold 493500 020
  - 1NC: Gold 493500 050
  - 1NC + 1NO: Silver 493500 100

### Pair of screws
- for 1 contact block: 493521
- for 2 contact blocks: 493522
- for 3 contact blocks: 493523
- for 4 contact blocks: 493524

### End plate
- 493520

### Hold module
- for impulse switches with impulse-hold contact: 493501

### Incandescent lamps T 5.5 wedge base
- average life time ca 2000 hours
  - 6V: 200mA 490000
  - 12V: 100mA 490001
  - 24V: 50mA 490002
  - 28V: 20mA 490007
  - 36V: 35mA 490003
  - 48V: 25mA 490004
  - 60V: 20mA 490005

### Neon bulbs T 5.5 wedge base
- with built-in resistor
  - 110V: 490100

### Multi-LED T 5.5 wedge base
- 6V: red 490230
  - yellow 490231
  - green 490232
  - 12V: red 490233
  - yellow 490234
  - green 490235
  - 24V: red 490236
  - yellow 490237
  - green 490238
  - 48V: red 490239
  - yellow 490240
  - green 490241

### Bi-Pin incandescent lamps T1
- 6V: 115mA 590010
- 12V: 60mA 590011
- 16V: 26mA 590012
- 24V: 24mA 590013
- 28V: 24mA 590014
- 36V: 20mA 590015

### Bi-Pin LED T1
- red 590211
- yellow 590212
- orange 590213
- green 590214

### Multi-LED T 1/2, midget grooved
- 6V: red 590230
  - yellow 590231
  - green 590232
  - 12V: red 590233
  - yellow 590234
  - green 590235
  - 24V: red 590236
  - yellow 590237
  - green 590238
  - 48V: red 590239
  - yellow 590240
  - green 590241

### Incandescent lamp T 1/2, midget grooved
- 6.3V: 200mA 590000
- 14V: 80mA 590001
- 28V: 40mA 590002
- 36V: 30mA 590003
- 48V: 25mA 590004
- 60V: 20mA 590005

### Neon bulbs T 1/2, midget grooved
- without built-in resistor
  - 90V: 1mA 590100

### Lamp extractor
- 492000

### Mounting spanner
- metal ø16mm box 492100
  - ø22.5mm box 492105
- metal ø16mm side wise 492111
  - ø22.5mm side wise 492116
- plastic ø16mm side wise 492110
  - ø22.5mm side wise 492115

### Lens extractor
- 492005

### Fixing nut
- metal ø16mm box 593545
  - ø22.5mm box 593547

### Anti-rotation plate
- for key-switches or rotary switches with build-in diameter 22.5mm
  - for key-switches and rotary switches ø16mm with exchangeable bezels
  - 493532
  - 053205

### Guard bracket 18 x 24
- anodized aluminum
  - length: 26mm, width: 20.3mm, height: 11mm (Silver) 493010
  - length: 26mm, width: 20.3mm, height: 11mm (Back) 493010 500

### Guard bracket 18 x 18
- anodized aluminum
  - length: 18mm, width: 20.3mm, height: 11mm (Silver) 493011
  - length: 18mm, width: 20.3mm, height: 11mm (Back) 493011 500
<table>
<thead>
<tr>
<th>Part Number</th>
<th>th 4</th>
<th>th 5</th>
<th>th 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guard ring Ø18</td>
<td>493012</td>
<td>493012</td>
<td>500</td>
</tr>
<tr>
<td>anodized aluminum outside diameter: width: 20mm, height: 11mm (silver) outside diameter: width: 20mm, height: 11mm (black)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guard frame 18 x 24</td>
<td>493020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>against accidental operation of concealed bezel style switches - rectangular, black</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>length: 25.7mm, width: 16.9mm, height: 11.8mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U-shaped switches to be mounted with 25mm spacing, black</td>
<td>493026</td>
<td></td>
<td></td>
</tr>
<tr>
<td>length: 24.9mm, width: 16.9mm, height: 11.8mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protecting cover</td>
<td>493032</td>
<td>493035</td>
<td>593037</td>
</tr>
<tr>
<td>with transparent cover, can be leadsealed for tapered and exposed bezel style 24.2 x 18 (switches 18 x 18) 24.2 x 24 (switches 18 x 24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for concealed bezel style 24.2 x 24 (switches 18 x 24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protecting cover IP67</td>
<td>593033</td>
<td>593036</td>
<td></td>
</tr>
<tr>
<td>for straight bezel style IP67 24.2 x 18 (switches 18 x 18) 24.2 x 24 (switches 18 x 24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Splash proof protection 18 x 24, 18 x 18, IP65</td>
<td>493031</td>
<td></td>
<td></td>
</tr>
<tr>
<td>splash proof protection 18 x 24 length: 30mm, width: 24mm, height:12.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>splash proof protection 18 x 18 length: 24mm, width: 24mm, height: 12.5mm</td>
<td>493032</td>
<td></td>
<td></td>
</tr>
<tr>
<td>made of transparent plastic, in two pieces, conforms to standard IP65. Not suitable for concealed bezels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bezel Ø25</td>
<td>493033</td>
<td>493033</td>
<td>500</td>
</tr>
<tr>
<td>with transparent silicone cap, offers IP40 protection against oil and dust. Silver Black</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel plug standard, black, Ø16 cut out</td>
<td>493000</td>
<td>493002</td>
<td>493004</td>
</tr>
<tr>
<td>18 x 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 x 18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel plug, IP67, black, Ø16 cut out</td>
<td>593000</td>
<td>593002</td>
<td>593004</td>
</tr>
<tr>
<td>18 x 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 x 18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal cover</td>
<td>493510</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to prevent accidental touching of the switch terminals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drilling gauge</td>
<td>492121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting rail</td>
<td>49388</td>
<td>49399</td>
<td></td>
</tr>
<tr>
<td>for all bezels measuring 18 x 18, 18 x 24, Ø18 Spacing of switches 18mm 24mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*the last two digits correspond to the number of switches, e.g. 2 switches = 493802, 11 switches = 493911</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faston pin 2.8 x 0.5mm</td>
<td>593571</td>
<td></td>
<td></td>
</tr>
<tr>
<td>insulated for wires 0.8 - 1.4mm²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faston pin 2.8 x 0.5mm</td>
<td>593572</td>
<td></td>
<td></td>
</tr>
<tr>
<td>insulated for wires 0.5 - 1.0mm²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulating sleeve</td>
<td>593577</td>
<td></td>
<td></td>
</tr>
<tr>
<td>for faston pin: 593572 for wires 0.8 - 1.4mm²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For faston pin plugs:</td>
<td>593573</td>
<td>593581</td>
<td>593574</td>
</tr>
<tr>
<td>faston pin 2.8 x 0.5mm for wires 0.3 - 0.6mm²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>faston pin remover to unlock the catch in the casing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>faston casings for contact blocks 1 NO + 1 NC for lamp connection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual faston pin 2.8 x 0.5mm</td>
<td>593579</td>
<td></td>
<td></td>
</tr>
<tr>
<td>for looping connections. On contact blocks with extended insulation, due to space requirements to only the NO or only the NC contacts can accommodate dual pins</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plug-in sockets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for switches and contact blocks PCB mounting rating: 250V AC, 1A contact resistance: typical 10mΩ</td>
<td>593578</td>
<td>593568</td>
<td>593582</td>
</tr>
<tr>
<td>for 1 NO + 1NC and indicator terminals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for 2 NO + 2NC and indicator terminals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for signal lamp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for 1 NO + 1NC without indicator terminals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engravable Escutcheon Plate</td>
<td>493052</td>
<td></td>
<td></td>
</tr>
<tr>
<td>engravable escutcheon 40 x 40mm for key and rotary switches c25 Black Plastic</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
th6
Key Release Emergency Stop Switch

Emergency stop switches (latching), Ø40

Part Number

Mounting Diameter
22.5mm
28.3mm

Solder terminals
644121
644120

Fusion terminals
644321
644320

Mushroom push button Ø40, made of red polycarbonate, automatically latches when pushed down. Unlatching follows after the key has been turned to either left or right.

Unless requested otherwise, standard locks (KABA 8) will be supplied.

WIRING DIAGRAM

Technical details

Electrical
250 VAC 5A 750 VA

DC Load
(resistive load)
12V / 5A, 24V / 4.2A, 36V / 3.7A,
48V / 3.2A, 60V / 2.8A, 125V / 1.8A,
250V / 1.2A

(inductive load)
12V / 3A, 24V / 2A, 36V / 1.5A,
48V / 1.1A, 60V / 0.8A, 125V / 0.4A,
250V / 0.2A

Life
> 10⁶ actuations

Lamps
Bayonet base lamps Ba 9s (incandescent lamps, neon bulbs and LED's)

Contact Resistance
Typical 5mΩ

Test Marks
SEV, VDE, NEMKO, DEMKO

Vibration
Lift 1.5 mm at 55 Hz

Ambient Temperature
-30° to +55° C
Technical details

Housing
Anodized aluminum alloy (illuminated versions with antirotation)

Switch Mounting
Central, with fixing nut, from the rear

Protective System
IP68 (after installation)

Switching System
Piezo electronic, without auxiliary energy

Contact Resistance
< 10 Ohm (ON)

Insulation Resistance
> 5 MOhm (OFF)

Life Expectancy
> 15 x 10^6 cycles
Europe IEC specifications 144 & 529 define the degree of protection provided electrical enclosures to safeguard personnel against electric shock and equipment within the enclosure from environmental contamination such as entry of water. This is expressed by the letters IP followed by two numerals.

In the USA, NEMA and UL have established a rating system for enclosures which provides for different levels of protection. A direct comparison between IEC and NEMA is not possible but the following table gives an approximate guide.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Protection to IEC 144/855420</th>
<th>Protection to NEMA enclosure type</th>
<th>NEMA Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection against solid objects greater than 12mm</td>
<td>IP 20</td>
<td>NEMA 1 (ventilated)</td>
<td>general purpose</td>
</tr>
<tr>
<td>Protection against solid objects greater than 2.5mm</td>
<td>IP 30</td>
<td>NEMA 1</td>
<td>general purpose</td>
</tr>
<tr>
<td>Protection against solid objects greater than 12mm and dripping water</td>
<td>IP 21</td>
<td>NEMA 2 (ventilated)</td>
<td>drip proof</td>
</tr>
<tr>
<td>Protection against solid objects greater than 2.5mm and dripping water</td>
<td>IP 31</td>
<td>NEMA 2</td>
<td>drip proof</td>
</tr>
<tr>
<td>Protection against solid objects greater than 12mm and dripping water</td>
<td>IP 24</td>
<td>NEMA 3R (ventilated)</td>
<td>rain proof, sleet (ice) resistant outdoor use</td>
</tr>
<tr>
<td>Protection against solid objects greater than 2.5mm and dripping water</td>
<td>IP 34</td>
<td>NEMA 3R</td>
<td>rain proof, sleet (ice) resistant outdoor use</td>
</tr>
<tr>
<td>Protection against dust and splashing liquids</td>
<td>IP 54</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dusttight and protected against water jets</td>
<td>IP 65</td>
<td>NEMA 12</td>
<td>industrial use dusttight &amp; dripltight</td>
</tr>
<tr>
<td>Dusttight and protected against heavy seas</td>
<td>IP 66</td>
<td>NEMA 35</td>
<td>dusttight dripltight</td>
</tr>
<tr>
<td>Dusttight and protected against heavy seas</td>
<td>IP 66</td>
<td>NEMA 4</td>
<td>dusttight watertight</td>
</tr>
<tr>
<td>Dusttight and protected against water entry at one meter immersion</td>
<td>IP 67</td>
<td>NEMA 4X</td>
<td>dusttight, watertight corrosion resistant</td>
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<tr>
<td>Dusttight and protected against heavy submersion</td>
<td>IP 68</td>
<td>NEMA 6</td>
<td>submersible watertight, dusttight sleet (ice) resistant indoor &amp; outdoor</td>
</tr>
<tr>
<td>Protection against sleet (ice) not specified by IEC</td>
<td>NEMA 13</td>
<td>-</td>
<td>oiltight &amp; dusttight</td>
</tr>
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