Please read these Operational Instructions carefully and follow them accordingly!
Ignoring these Instructions may lead to malfunctions or to clutch failure, resulting in damage to other parts.

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- Mounting the Clutch onto the Shaft
- De-installation of the Cone Bushings and Shrink Disks
Page 11: - Shaft Installation via Key Connection
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Page 17: - Malfunctions / Breakdowns Type 494._._._
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Attachment: Adjustment Diagram
### Safety Regulations

These Installation and Operational Instructions (I + O) are part of the clutch delivery. Please keep them handy and near to the clutch at all times.

- It is forbidden to start use of the product until you have ensured that all applicable EU directives, directives for the machine or system into which the product has been installed have been fulfilled.
- At the time these Installation and Operational Instructions go to print, the EAS®-clutches accord with the known technical specifications and are operationally safe at the time of delivery.
- Without a conformity evaluation, this product is not suitable for use in areas where there is a high danger of explosion. This statement is based on the ATEX directive.

#### CAUTION

- If the EAS®-clutches are modified.
- If the relevant standards for safety and / or installation conditions are ignored.

### User-implemented Protective Measures

- Cover all moving parts to protect against seizure, dust or foreign body impact.
- The clutches may not be put into operation without a limit switch unless mayr® has been contacted and has agreed otherwise.

To prevent injury or damage, only professionals and specialists should work on the devices, following the relevant standards and directives. Please read the Installation and Operational Instructions carefully before installation and initial operation of the device.

These Safety Regulations are user hints only and may not be complete!

### Safety and Guideline Signs

#### CAUTION

Danger of injury to personnel and damage to machines.

**Please Observe!**

Guidelines on important points.

According to German notation, decimal points in this document are represented with a comma (e.g. 0,5 instead of 0.5).
Installation and Operational Instructions for EAS®-Compact®
Ratchetting clutch, Type 49_._.0._ Size 4
Synchronous clutch, Type 49_._.5._ Size 4

Fig. 1
## Installation and Operational Instructions for EAS®-Compact®

**Ratchetting clutch**, Type 49._ _0._ Size 4  
**Synchronous clutch**, Type 49._ _5._ Size 4

### Parts List

**Parts List (Only use mayr® original parts)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hub</td>
</tr>
<tr>
<td>2</td>
<td>Pressure flange</td>
</tr>
<tr>
<td>3</td>
<td>Thrust washer</td>
</tr>
<tr>
<td>4</td>
<td>Adjusting nut</td>
</tr>
<tr>
<td>5</td>
<td>Thrust ring</td>
</tr>
<tr>
<td>6</td>
<td>Deep groove ball bearing</td>
</tr>
<tr>
<td>7</td>
<td>Locking ring</td>
</tr>
<tr>
<td>8</td>
<td>Steel ball</td>
</tr>
<tr>
<td>9</td>
<td>Cup spring</td>
</tr>
<tr>
<td>10</td>
<td>Type tag</td>
</tr>
<tr>
<td>11</td>
<td>Cone bushing</td>
</tr>
<tr>
<td>12</td>
<td>Hexagon head screw</td>
</tr>
<tr>
<td>13</td>
<td>Set screw 1)</td>
</tr>
<tr>
<td>14</td>
<td>Set screw</td>
</tr>
<tr>
<td>15</td>
<td>Hexagon nut</td>
</tr>
<tr>
<td>16</td>
<td>Limit switch 2)</td>
</tr>
<tr>
<td>17</td>
<td>Limit switch</td>
</tr>
<tr>
<td>18</td>
<td>Connection flange</td>
</tr>
<tr>
<td>19.1</td>
<td>Shrink disk hub</td>
</tr>
<tr>
<td>19.2</td>
<td>Key hub</td>
</tr>
<tr>
<td>20</td>
<td>Shrink disk</td>
</tr>
<tr>
<td>21</td>
<td>Hexagon head screw</td>
</tr>
<tr>
<td>22</td>
<td>Disk pack</td>
</tr>
<tr>
<td>23</td>
<td>Collar bushing</td>
</tr>
<tr>
<td>24</td>
<td>Connection plate</td>
</tr>
<tr>
<td>25</td>
<td>Hexagon head screw</td>
</tr>
<tr>
<td>26</td>
<td>Hexagon nut</td>
</tr>
<tr>
<td>27</td>
<td>Washer</td>
</tr>
<tr>
<td>28</td>
<td>Hexagon head screw</td>
</tr>
<tr>
<td>29</td>
<td>Connection flange</td>
</tr>
<tr>
<td>30</td>
<td>Cap screw</td>
</tr>
<tr>
<td>31</td>
<td>Elastomeric element 3)</td>
</tr>
<tr>
<td>32.1</td>
<td>Shrink disk hub</td>
</tr>
<tr>
<td>32.2</td>
<td>Clamping hub</td>
</tr>
<tr>
<td>32.3</td>
<td>Key hub</td>
</tr>
<tr>
<td>33</td>
<td>Cap screw</td>
</tr>
<tr>
<td>34</td>
<td>Cap screw</td>
</tr>
<tr>
<td>35</td>
<td>Adjustment table</td>
</tr>
<tr>
<td>36</td>
<td>Set screw</td>
</tr>
<tr>
<td>37</td>
<td>Set screw</td>
</tr>
</tbody>
</table>

1) Secure the set screws Item 13 and cap screws Item 18 with Loctite 243  
2) The limit switch Item 16 is not part of the standard scope of delivery  
3) Elastomeric element colours (hardness): red (98 Sh A), yellow (92 Sh A), green (64 Sh D)
## General Technical Data

### Table 1

<table>
<thead>
<tr>
<th>Size</th>
<th>Type 49_.<em>.</em>  [Nm]</th>
<th>Type 49_.<em>.</em>  [Nm]</th>
<th>Type 49_.<em>.</em>  [Nm]</th>
<th>Type 49_.<em>.</em>  [Nm]</th>
<th>Max. speed [rpm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>120 – 300</td>
<td>240 – 600</td>
<td>480 – 1200</td>
<td>600 – 1500</td>
<td>800</td>
</tr>
</tbody>
</table>

1) Only available in synchronous design, max. speed = 250 rpm.

### Table 2

<table>
<thead>
<tr>
<th>Size</th>
<th>Thrust washer stroke (Fig. 1; Item 3) on overload [mm]</th>
<th>Bore from – to Hub (1) with cone bushing (11) Ø d [mm]</th>
<th>Hub (1) with keyway Ø d_d [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2,5</td>
<td>40 – 65</td>
<td>40 – 65</td>
</tr>
</tbody>
</table>

### Table 3

<table>
<thead>
<tr>
<th>Size</th>
<th>Maximum torque M₀ [Nm]</th>
<th>Inspection dimension “a” (Fig. 1) at approx. 70 % M₀ [mm]</th>
<th>Dimension “b” (Fig. 1) [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>300</td>
<td>4,4</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4,7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size</th>
<th>Maximum torque M₀ [Nm]</th>
<th>Inspection dimension “a” (Fig. 1) at approx. 70 % M₀ [mm]</th>
<th>Dimension “b” (Fig. 1) [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1200</td>
<td>4,8</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5,2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

### Table 4

<table>
<thead>
<tr>
<th>Size</th>
<th>Axial forces [N] 1-bearing design</th>
<th>Radial forces [N] 2-bearing design</th>
<th>Transverse force torques 2) [Nm]</th>
<th>Permitted ambient temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5000</td>
<td>5000</td>
<td>7500</td>
<td>-20 °C to +80 °C</td>
</tr>
</tbody>
</table>

2) Torques, which put strain on the deep groove ball bearing due to the non-centric axial forces having an effect on the pressure flange.

### Table 5

<table>
<thead>
<tr>
<th>Size</th>
<th>Item 12</th>
<th>Item 18</th>
<th>Item 21</th>
<th>Item 25</th>
<th>Item 28</th>
<th>Item 30</th>
<th>Item 33</th>
<th>Item 34</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>25</td>
<td>75</td>
<td>25</td>
<td>35</td>
<td>35</td>
<td>75</td>
<td>200</td>
<td>90</td>
</tr>
</tbody>
</table>

3) Secure Item 18 with Loctite 243.
**Installation and Operational Instructions for EAS®-Compact®**

Ratchetting clutch, Type 49._._ 0._  Size 4  
Synchronous clutch, Type 49._._ 5._  Size 4  

(B.4.14.4.EN)

Technical Data Type 494._._ _._

### Table 6

<table>
<thead>
<tr>
<th>Size [mm]</th>
<th>Bore lastic-side from – to</th>
<th>Clamping hub Type 494.<em>0.</em></th>
<th>Shrink disk hub Type 494.<em>1.</em></th>
<th>Key hub Type 494.<em>2.</em></th>
<th>Nominal and maximum torques flexible backlash-free shaft coupling $T_{KN}$ and $T_{K\text{ max}}$.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>45 – 80</td>
<td>45 – 75</td>
<td>38 – 80</td>
<td>900</td>
<td>$T_{KN}$ [Nm] 1800 $T_{K\text{ max}}$ [Nm] 1040 $T_{KN}$ [Nm] 2080 $T_{K\text{ max}}$ [Nm] 1250 $T_{KN}$ [Nm] 2500</td>
</tr>
</tbody>
</table>

### Table 7

<table>
<thead>
<tr>
<th>Size [mm]</th>
<th>Transmittable torques [Nm] on clamping hubs frictional locking (Type 494.<em>0.</em> / Ø d) / on shrink disk hubs frictional locking (Type 494.<em>1.</em> / Ø d) – dependent on bore - suitable for tolerance constellation F7/k6 for clamping hubs and H7/k6 for shrink disk hubs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 45</td>
<td>d₃₁ d₄₁ d₃₂ d₄₂ d₃₃ d₄₃ d₃₄ d₄₄ d₃₅ d₄₅ d₃₆ d₄₆ d₃₇ d₄₇ d₃₈ d₄₈</td>
</tr>
<tr>
<td>Ø 48</td>
<td>545 1402 590 1596 630 1731 662 1873 710 2095 764 2308 800 2420 840 2570</td>
</tr>
<tr>
<td>Ø 50</td>
<td>65</td>
</tr>
<tr>
<td>Ø 52</td>
<td>68</td>
</tr>
<tr>
<td>Ø 55</td>
<td>70</td>
</tr>
<tr>
<td>Ø 58</td>
<td>72</td>
</tr>
<tr>
<td>Ø 60</td>
<td>75</td>
</tr>
<tr>
<td>Ø 62</td>
<td>78</td>
</tr>
<tr>
<td>Ø 65</td>
<td>80</td>
</tr>
<tr>
<td>Ø 68</td>
<td>d₃₁ d₄₁ d₃₂ d₄₂ d₃₃ d₄₃ d₃₄ d₄₄ d₃₅ d₄₅ d₃₆ d₄₆ d₃₇ d₄₇ d₃₈ d₄₈</td>
</tr>
<tr>
<td>Ø 70</td>
<td>900 2750 954 2989 990 3157 1032 3306 1095 3550 1158 1200 -</td>
</tr>
<tr>
<td>Ø 72</td>
<td>990 3157 1032 3306 1095 3550 1158 - 1200 -</td>
</tr>
<tr>
<td>Ø 75</td>
<td>1200 -</td>
</tr>
<tr>
<td>Ø 78</td>
<td>-</td>
</tr>
<tr>
<td>Ø 80</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 8

<table>
<thead>
<tr>
<th>Size [mm]</th>
<th>Shaft misalignments flexible coupling Type 49.</th>
<th>Axial $\Delta K_a$ [°] 92 Sh A / 98 Sh A</th>
<th>Radial $\Delta K_r$ [°] 64 Sh D</th>
<th>Angular $\Delta K_w$ [°] 92 Sh A / 98 Sh A</th>
<th>Dimension &quot;E&quot; (Fig. 7) [mm]</th>
<th>Locking set screw (36) for hub (item 32.3 / Fig. 1) Thread</th>
<th>Tightening torque [Nm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2.6</td>
<td>0.25</td>
<td>0.18</td>
<td>0.13</td>
<td>1.0</td>
<td>0.9</td>
<td>0.8</td>
</tr>
</tbody>
</table>
## Installation and Operational Instructions for EAS®-Compact®

**Ratchetting clutch, Type 49_._ _0._ Size 4**

**Synchronous clutch, Type 49_._ _5._ Size 4**  
(B.4.14.4.EN)

### Technical Data Type 496._ _ _0.

#### Table 9

<table>
<thead>
<tr>
<th>Size</th>
<th>Bore torsionally rigid side from – to</th>
<th>Nominal torque $T_{Kn}$ and peak torque $T_{Ks}$ for torsionally rigid backlash-free shaft coupling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shrink disk hub Type 496.<em>1</em>.0 [mm]</td>
<td>Key hub Type 496.<em>2</em>.0 [mm]</td>
</tr>
<tr>
<td>4</td>
<td>55 – 90</td>
<td>35 – 70</td>
</tr>
</tbody>
</table>

#### Table 10

<table>
<thead>
<tr>
<th>Size</th>
<th>Transmittable torques [Nm] on shrink disk hubs frictional locking (Type 496.<em>1</em>.0) - dependent on bore - suitable for tolerance constellation H7/g6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ø 55</td>
</tr>
<tr>
<td>4</td>
<td>2074</td>
</tr>
</tbody>
</table>

#### Table 11

<table>
<thead>
<tr>
<th>Size</th>
<th>Max. permitted shaft misalignments for torsionally rigid coupling Type 496._ _ _0.</th>
<th>Locking set screw (37) for hub (Item 19.2 / Fig. 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Axial $\Delta K_a$ [mm]</td>
<td>Radial $\Delta K_r$ [mm]</td>
</tr>
<tr>
<td>4</td>
<td>1,5</td>
<td>0,3</td>
</tr>
</tbody>
</table>

1) Only permitted as a static or virtually static value.
Installation and Operational Instructions for EAS®-Compact®
Ratchetting clutch, Type 49_._ _0._ Size 4
Synchronous clutch, Type 49_._ _5._ Size 4

Design
The EAS®-Compact® clutch is designed as a mechanical overload clutch according to the ball-detent principle.

State of Delivery
The EAS®-Compact® clutch is completely installed, including the clamping units, for backlash-free shaft installation.
If no other torque adjustment is requested customer-side, the EAS®-Compact® clutch will always be pre-set and calibrated to approx. 70 % of the maximum torque.
The set screws (13) are not secured with Loctite 243 on a calibrated clutch.
On Type 496._ _0., the misalignment-flexible part (ROBA®-DS) must be separated for customer-side installation from the overload clutch (EAS®-Compact®) by loosening the cap screws (18). On delivery, the cap screws (18) and the set screws (13) are not secured with Loctite 243.

Please check state of delivery!

Function
The clutch protects the drive line from excessively high, unpermitted torque impacts which can occur due to unintentional blockages.
When in operation, the EAS®-Compact® clutch transmits the set torque backlash-free from the hub (1) via the pressure flange (2) to the customer-side output element.
If the set limit torque is exceeded (overload), the clutch disengages, the thrust washer (3) carries out an axial hub movement, a customer-side mounted limit switch (16) senses this stroke movement and emits a signal to switch off the drive.
The residual torque is approx. 5 to max. 15 % of the set torque. This means that the EAS®-Compact® clutch is not load holding.

Re-engagement:
The ratchetting division on the EAS®-Compact® ratchetting clutch Type 49_._ _0._ is 15°.
The ratchetting division on the EAS®-Compact® synchronous clutch Type 49_._ _5._ is 360°.

General Installation Guidelines
The bore tolerance in the hubs (1 / 19.1 / 19.2 / 32.1 / 32.3) is designed as H7. The bore tolerance in the hub (32.2) is designed as F7.
The surface roughness depth in the bores is produced to Ra = 1,6 μm.
Installation and Operational Instructions for EAS®-Compact®
Ratchetting clutch, Type 49_._ _0._ Size 4
Synchronous clutch, Type 49_._ _5._ Size 4

Output Elements Installation

The output element is centred on a deep groove ball bearing (6) (tolerance H7/h5) and bolted together with the pressure flange (2).

Please observe the maximum permitted screw-in depth in the pressure flange (2) as well as the connection dimensions “a” and “e” for the output elements, see Figs. 3 or 4 and Table 12.

If the resulting radial force from the output element is anywhere near the centre of the ball bearing (6) and under the max. permitted radial load acc. Table 4, an additional bearing for the output element is not necessary.

No appreciable axial forces (see Table 4) should be transferred from the output element onto the clutch pressure flange (2).

The EAS®-Compact® with a long protruding hub (Type 490.71_.1 / Fig. 2) is recommended for extremely wide output elements, or for elements with small diameters.

On very small diameters, the output element is screwed together with the clutch pressure flange (2) via a customer-side intermediate flange.

In case of increased radial forces, a 2-bearing design (Type 490.71_.2 / Fig. 2) should be used.

Example:
Type 490.71_.1 Type 490.71_.2

Fig. 2

Ball bearings, needle bearings or bearing bushings are suitable as bearings for the output element, depending on the installation situation and the installation space.

Please ensure that the output element bearing is designed as a fixed bearing (Fig. 4).

Table 12

<table>
<thead>
<tr>
<th>Size</th>
<th>Thread in the pressure flange (Fig. 3) with required screw quality and tightening torque for the customer-side screw connection</th>
<th>Max. screw-in depth [mm] in the pressure flange (Fig. 3)</th>
<th>Connection dimensions [mm] (Fig. 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>8 x 45° / M10 or 6 x 60° / M10 12.9 75 Nm</td>
<td>15</td>
<td>a&lt;sup&gt;®&lt;/sup&gt;1  e&lt;sub&gt;H7&lt;/sub&gt; n5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12  130</td>
</tr>
</tbody>
</table>
Installation and Operational Instructions for EAS®-Compact®

Ratchetting clutch, Type 49_._ _0._ Size 4
Synchronous clutch, Type 49_._ _5._ Size 4

(B.4.14.4.EN)

Cup Spring Layering (Fig. 5)
Correct cup spring layering is a prerequisite for problem-free clutch function and torque adjustment.

For the different torque ranges (see Adjustment Table (35)):
- one cup spring for Type 49_._ _0._
- two cup springs for Type 49_._ _5._
- four cup springs for Type 49_._ _7._
- five cup springs for Type 49_._ _8._

The maximum torque range (Type 49_._ _5._) can only be delivered in synchronous clutch design.

1x layered

2x layered

4x layered

5x layered

Fig. 5

Mounting onto the Shaft
EAS®-Compact® clutches Size 4 include cone bushings or shrink disks or keyways as part of the standard delivery.

During installation of cone bushings or shrink disks, please observe the following:
- The shafts must be solid shafts without a keyway. Shaft tolerance up to diameter 38 h6, over diameter 38 h8 or k6.
- Shaft surface: finely turned or ground (Ra = 0.8 µm).
- Shaft material: Yield point at least 350 N/mm², e.g. St 60, St 70, C 45, C 60.
- Degrease or remove conserving layers on the shafts and bores before installing the clutch or the clutch hubs. Greasy or oily bores or shafts do not transmit the torques defined in the catalogue.

Mount the clutch or clutch hubs onto both shaft ends using a suitable device and bring it / them into the correct position.

- Tighten the tensioning screws (12) of the cone bushing (11) in 2 steps cross-wise and then in 3 to max. 6 tightening sequences evenly using a torque wrench to the torque stated in Table 5.
- Type 494.: Tighten the tensioning screws (34) in the shrink disks (38) stepwise (in 3 to max. 6 tightening sequences) and cross-wise evenly using a torque wrench to the torque stated in Table 5.
- Type 496.: Tighten the tensioning screws (21) in the shrink disks (20) using a torque wrench evenly and one after the other in max. 6 sequences to the torque stated in Table 5.

- The transmittable torques of the shaft-hub connection are dependent on the bore diameter and the quality of the drive shafts used. Please observe the respective transmission tables in the valid and applicable product catalogue.

De-installation of the Cone Bushings and Shrink Disks
In the cone bushings and the shrink disks, there are tapped extracting holes next to the tensioning screws (12/21/34).

1) Loosen all tensioning screws (12/21/34) by several thread turns.
2) Screw out the tensioning screws (12/21/34) located next to the tapped extracting holes and screw them into the tapped extracting holes up to their limits.
3) Tighten the tensioning screws (12/21/34) evenly and step-wise so that the cone bushing (11) or the shrink disk (20/38) is loosened from the hub (1/19.1/32.1).
4) Screw out the tensioning screws (12/21/34) from the tapped extracting holes.
Shaft Installation via Key Connection (Figs. 1 and 6)

On the EAS®-Compact® with a keyway, the clutch must be axially fixed onto the shaft after mounting, e.g.:

- with a press cover and a screw, screwed into the shaft threaded centre hole (for Type 490._.2_.)
- and/or a locking set screw (for Types 494._.2_. and 496._.2_.0):
  - Locking set screw (36) for hub (32.3), see Fig. 1 on page 3 and table 8 on page 6.
  - Locking set screw (37) for hub (19.2), see Fig. 1 on page 3, Fig. 6 on page 11 and table 11 on page 7.

Joining Both Clutch Components (1/32) for Type 494._.0 (Figs. 1 and 7)

The flexible elastomeric element (31) is pre-tensioned between the metallic claws by joining the hub (32.1, 32.2 or 32.3) with the connection flange (29). To do this, an axial installation force is required.

The force required can be reduced by lightly greasing the elastomeric element.

Use PU-compatible lubricants (e.g. Vaseline or Mobilgrease XHP 222)!

No unpermittedly high axial pressure should be placed on the elastomeric element (31) in completely assembled condition.

Keep to distance dimension “E” acc. Fig. 7 and Table 8!

Joining Both Clutch Components for Type 496._.0 (Fig. 1)

Join the misalignment-flexible part and the overload clutch and screw together with cap screws (18) to the tightening torque 75 Nm.

The cap screws (18) must be protected using a screw-securing product, e.g. Loctite 243.

The clutch or clutch hub carries out an axial movement in the direction of the cone bushing (11) when tightening the cone bushing (11). Because of this effect, please ensure that on the EAS®-Compact® clutch with disk pack (Type 496._.0), first the cone bushing (11) is completely tightened, then the other (disk pack) side.

![Fig. 7](image-url)

![Fig. 6](image-url)
Permitted Shaft Misalignments

The EAS®-Compact® clutches Types 494._ _ _._ (elastic backlash-free) and 496._ _ _.0 (torsionally rigid backlash-free) compensate for radial, axial and angular shaft misalignments (Fig. 8) without losing their backlash-free function. However, the Type-specific permitted shaft misalignments indicated in Tables 8 and 11 must not simultaneously reach their maximum value.

If more than one kind of misalignment takes place simultaneously, they influence each other. This means that the permitted misalignment values are dependent on one another, see Fig. 9. The sum total of the actual misalignments in percent of the maximum value must not exceed 100%.

The permitted misalignment values given in Tables 8 and 11 refer to clutch operation at nominal torque, an ambient temperature of +30 °C and an operating speed of 1500 rpm. If the clutch is operated in other or more extreme operating conditions, please observe the dimensioning guidelines stated in the individual shaft coupling catalogues or contact the manufacturer.

Type 494._ _ 4._ (elastic backlash-free)

Type 496._ _ _.0 (torsionally rigid backlash-free)

Fig. 8

Example (Type 496._ _ _.0):
Axial displacement occurrence ΔK_a = 0.6 mm equals 40 % of the permitted maximum value ΔK_a = 1.5 mm.
Angular misalignment occurrence ΔK_w = 0.42° equals 30 % of the permitted maximum value ΔK_w = 1.4°.
⇒ permitted radial misalignment ΔK_r = 30 % of the maximum value ΔK_r = 0.3 mm ⇒ ΔK_r = 0.09 mm

Fig. 9

Clutch Alignment

Exact alignment of the clutch improves the running smoothness of the drive line substantially, reduces the load on the shaft bearings and increases the clutch service lifetime.

We recommend alignment of the clutch using a dial gauge or special laser on drives operating at very high speeds.
Installation and Operational Instructions for EAS®-Compact®

Ratchetting clutch, Type 49_. _0._ Size 4
Synchronous clutch, Type 49_. _5._ Size 4

(B.4.14.4.EN)

Torque Adjustment (Manufacturer-side)

The clutch is set to the torque stipulated in the order. Adjustment is carried out via dimension “a” by turning the set screws (14) (Fig. 11).

The installed cup springs (9) are operated in the negative range of the characteristic curve (see Fig. 10); this means that a stronger pre-tensioning of the cup spring results in a decrease of the spring force.

Turning the set screws (14) clockwise causes a reduction in torque. Turning them anti-clockwise causes an increase in torque. You should be facing the adjusting nut (4) as shown in Fig. 11.

Even if the customer does not intend to change the pre-set torque, the hexagon head screw (13) must still be screwed out customer-side, painted with Loctite 243 and screwed back in again.

Changing the Torque (Fig. 11)

CAUTION

The torque is changed exclusively via the set screws (14) and not via the adjusting nut (4).

- Loosen all hexagon nuts (15) (6 pieces).
- Adjust all set screws (14) (6 pieces) evenly to the required dimension “a” using a hexagon socket wrench.
- Find dimension “a” in the Adjustment Table (35) (Fig. 12) (the Adjustment Table (35) is glued to the thrust washer (3), see also Fig. 12).
- Counter (secure) set screws (14) (6 pieces) again using hexagon nuts (15).

Adjusting the adjusting nut (4) or distorting the cup spring (9) outside of the cup spring characteristic curve (see Fig. 10) stops the clutch functioning.

The inspection dimension “a” (see Table 3) can show deviations due to construction tolerances or to clutch wear. After de-installing the clutch (e.g. due to cup spring replacement or changes to the cup spring layering), the clutch must be re-adjusted and calibrated using dimension “a” and dimension “b” (see Adjustment Table (35) Fig. 12, Table 3 and Fig. 11).

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Fig. 10

Graph of spring characteristic curve

Fig. 11

Fig. 12 (Adjustment Table (35))

<table>
<thead>
<tr>
<th>Größe/size</th>
<th>Tellerfedersprings</th>
<th>M-Bereich torque range</th>
<th>&quot;b&quot; [mm]</th>
<th>100%</th>
<th>90%</th>
<th>80%</th>
<th>70%</th>
<th>60%</th>
<th>50%</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>49_ . <em>0.</em></td>
<td>1x1 /</td>
<td>120-300Nm</td>
<td>20</td>
<td>3.4</td>
<td>3.8</td>
<td>4.1</td>
<td>4.4</td>
<td>4.7</td>
<td>5.1</td>
<td>5.4</td>
</tr>
<tr>
<td>49_ . <em>6.</em></td>
<td>1x2 /</td>
<td>240-600Nm</td>
<td>18</td>
<td>3.7</td>
<td>4.1</td>
<td>4.4</td>
<td>4.7</td>
<td>5.1</td>
<td>5.4</td>
<td>5.7</td>
</tr>
<tr>
<td>49_ . <em>7.</em></td>
<td>1x4 /</td>
<td>480-1200Nm</td>
<td>14</td>
<td>3.8</td>
<td>4.1</td>
<td>4.4</td>
<td>4.8</td>
<td>5.1</td>
<td>5.5</td>
<td>5.7</td>
</tr>
<tr>
<td>49_ . <em>8.</em></td>
<td>1x5 /</td>
<td>600-1500Nm</td>
<td>12</td>
<td>4.1</td>
<td>4.5</td>
<td>4.9</td>
<td>5.2</td>
<td>5.5</td>
<td>5.8</td>
<td>6.2</td>
</tr>
</tbody>
</table>
Installation and Operational Instructions for EAS®-Compact®
Ratchetting clutch, Type 49_._ _0._ Size 4
Synchronous clutch, Type 49_._ _5._ Size 4
(B.4.14.4.EN)

Limit Switch Installation

The switching direction arrow on the housing lid of the mechanical limit switch faces in the direction of the adjusting nut (4) or in the thrust washer (3) stroke direction, Fig. 1. Adjust the switch distances for the contactless and mechanical limit switch acc. Fig. 13 or Fig. 14. The distance from the switching point to the thrust washer (3) can be finely adjusted using a hexagon head screw SW7 (Figs. 13 and 14).

Maintenance and Maintenance Intervals

Maintenance work, which should be carried out after approx. 2000 operating hours, after 100 disengagements or at the latest after 1 year, includes:

- Visual inspection
- Functional inspection
- Inspection of the shaft-hub connection
- Inspection of the screw tightening torques
  The specified tightening torques (Table 5) must be maintained.
- Inspection of the set torque
- Clutch release inspection
- Bearing or bearing pre-tension inspection
- Re-greasing of the transmission geometries, balls, recesses and sealing elements.

Clutch re-greasing must only be carried out by specially trained personnel.

For greasing, please use NLGI Class 2 grease with a basic oil viscosity of 220 mm²/s at 40 °C, e.g. Mobilgrease XHP222.

When re-installing the clutch, please secure all screws with Loctite 243 (medium hard).

If large amounts of dirt or dust are present or in extreme ambient conditions, it may well be necessary to carry out inspections at shorter intervals.

We recommend that maintenance work is carried out at the site of manufacture.

Disposal

Electronic components (Limit switch):
Products which have not been disassembled can be disposed of under Code No. 160214 (mixed materials) or components under Code No. 160216, or can be disposed of by a certified disposal firm.

All steel components:
Steel scrap (Code No. 160117)

Seals, O-rings, V-seals, elastomers:
Plastic (Code No. 160119)
<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible Causes</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Premature clutch release</strong></td>
<td>Incorrect torque adjustment</td>
<td>1) Set the system out of operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Check the torque adjustment</td>
</tr>
<tr>
<td></td>
<td>Adjusting nut has changed position</td>
<td>3) Secure the adjusting nut</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) If the cause of malfunction cannot be found, the clutch must be</td>
</tr>
<tr>
<td></td>
<td>Worn clutch</td>
<td>inspected at the place of manufacture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clutch does not release on overload</strong></td>
<td>Incorrect torque adjustment</td>
<td>1) Set the system out of operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Check whether foreign bodies influence the disengagement mechanism function</td>
</tr>
<tr>
<td></td>
<td>Adjusting nut has changed position</td>
<td>3) Check the torque adjustment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Secure the adjusting nut</td>
</tr>
<tr>
<td></td>
<td>Worn clutch</td>
<td>5) If the cause of malfunction cannot be found, the clutch must be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inspected at the place of manufacture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Running noises in normal operation</strong></td>
<td>Insufficient clutch securement</td>
<td>1) Set the system out of operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Check the clutch securement</td>
</tr>
<tr>
<td></td>
<td>Loosened screws</td>
<td>3) Check the screw tightening torques</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Check the torque adjustment and that the adjusting nut sits</td>
</tr>
<tr>
<td></td>
<td>Loosened adjusting nut</td>
<td>securely</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) If the cause of malfunction cannot be found, the clutch must be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inspected at the place of manufacture</td>
</tr>
<tr>
<td>Malfunction</td>
<td>Possible Causes</td>
<td>Solutions</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
| Changes in running noise and / or vibration occurrence | Incorrect alignment | 1) Set the system out of operation  
2) Find / resolve the cause of incorrect alignment (e. g. loose foundation screws, motor securement breakage, heat expansion of system components, changes in the clutch installation dimension “E”)  
3) Check the clutch for wear |
| | Wear on the elastomeric element, temporary torque transmission due to metal contact | 1) Set the system out of operation  
2) Dismantle the clutch and remove the remainders of the elastomeric element  
3) Check the clutch parts and replace if damaged  
4) Insert a new elastomeric element, install clutch components  
5) Check the alignment and correct if necessary. |
| | Tensioning and clamping screws or locking set screw for axial hub securement or connection screws are loose | 1) Set the system out of operation  
2) Check the clutch alignment  
3) Tighten the tensioning and clamping screws for axial hub securement and the connection screws to the required torque or tighten the locking set screw and secure it against self-loosening using sealing lacquer  
4) Check the clutch for wear |
| Cam breakage | Wear on the elastomeric element, torque transmission due to metal contact | 1) Set the system out of operation  
2) Replace the entire clutch  
3) Check the alignment |
| | Cam breakage due to high impact energy / overload / excessively high shaft misalignments | 1) Set the system out of operation  
2) Replace the entire clutch  
3) Check the alignment  
4) Find the cause of overload |
| | Operating parameters are not appropriate for the clutch performance | 1) Set the system out of operation  
2) Check the operating parameters and select a suitable clutch (observe installation space)  
3) Install a new clutch  
4) Check the alignment |
| | Operational mistakes due to clutch characteristic data being exceeded | 1) Set the system out of operation  
2) Check clutch dimensioning  
3) Replace the entire clutch  
4) Check the alignment  
5) Train and advise operating personnel |
## Malfunctions / Breakdowns Type 494.____ (continued)

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible Causes</th>
<th>Solutions</th>
</tr>
</thead>
</table>
| Premature wear on the elastomeric element | Incorrect alignment | 1) Set the system out of operation  
2) Find / resolve the cause of incorrect alignment (e.g. loose foundation screws, motor securement breakage, heat expansion of system components, changes in the clutch installation dimension “E”)  
3) Check the clutch for wear  
4) Insert a new elastomeric element |
| Premature wear on the elastomeric element | e.g. Contact with aggressive liquids / oils, ozone influences, excessively high ambient temperature etc., which lead to physical changes in the elastomeric element | 1) Set the system out of operation  
2) Dismantle the clutch and remove the remainders of the elastomeric element  
3) Check the clutch parts and replace if damaged  
4) Insert a new elastomeric element, install clutch components  
5) Check the alignment and correct if necessary  
6) Make sure that further physical changes to the elastomeric element can be ruled out |
| The ambient or contact temperatures permitted for the elastomeric element are exceeded | | 1) Set the system out of operation  
2) Dismantle the clutch and remove the remainders of the elastomeric element  
3) Check the clutch parts and replace if damaged  
4) Insert a new elastomeric element, install clutch components  
5) Check the alignment and correct if necessary  
6) Check the ambient or contact temperature and regulate them (if necessary, use other elastomeric element materials) |
| Premature wear on the elastomeric element (material liquidation inside the elastomeric element toothing) | Drive vibrations | 1) Set the system out of operation  
2) Dismantle the clutch and remove the remainders of the elastomeric element  
3) Check the clutch parts and replace if damaged  
4) Insert a new elastomeric element, install clutch components  
5) Check the alignment and correct if necessary  
6) Find the cause of vibration (if necessary, use an elastomeric element with a lower or higher shore hardness) |
## Malfunctions / Breakdowns Type 496._ _ .0

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible Causes</th>
<th>Solutions</th>
</tr>
</thead>
</table>
| Changes in running noise and | Incorrect alignment, incorrect installation                                      | 1) Set the system out of operation  
2) Find / resolve the cause of incorrect alignment  
3) Check the clutch for wear |
| or vibration occurrence      | Loose connecting screws, minor fretting corrosion under the screw head and on the disk pack | 1) Set the system out of operation  
2) Check the clutch parts and replace if damaged  
3) Tighten the connecting screws to the specified torque  
4) Check the alignment and correct if necessary |
|                              | Tensioning screws or locking set screw for axial securement of the hubs are loose | 1) Set the system out of operation  
2) Check the clutch alignment  
3) Tighten the tensioning and clamping screws for axial hub securement to the required torque or tighten the locking set screw and secure it against self-loosening using sealing lacquer  
4) Check the clutch for wear |
| Disk pack breakage           | Disk pack breakage due to high load impacts / overload                          | 1) Set the system out of operation  
2) Dismantle the clutch and remove the remainders of the disk packs  
3) Check the clutch parts and replace if damaged  
4) Find the cause of overload and remove it |
|                              | Operating parameters are not appropriate for the clutch performance              | 1) Set the system out of operation  
2) Check the operating parameters and select a suitable clutch (observe installation space)  
3) Install a new clutch  
4) Check the alignment |
|                              | Incorrect operation of the system unit                                           | 1) Set the system out of operation  
2) Dismantle the clutch and remove the remainders of the disk packs  
3) Check the clutch parts and replace if damaged  
4) Train and advise operating personnel |
| Disk packs / connecting      | Drive vibrations                                                                  | 1) Set the system out of operation  
2) Dismantle the clutch and remove the remainders of the disk packs  
3) Check the clutch parts and replace if damaged  
4) Check the alignment and correct if necessary  
5) Find the cause of vibration and remove it |
| screws cracks or breakage    |                                                                                  |                                                                                                                                       |

**Please Observe!**

*mayr®* will take no responsibility or guarantee for replacement parts and accessories which have not been delivered by *mayr®,* or for damage resulting from the use of these products.