Contacts

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Every application in the industrial automation sector has different and very specific requirements. For this reason, by creating a team of expertise people devoted to the development of solutions for electric actuation, Camozzi Automation has included in its technological offerings electromechanical cylinders and axes with auxiliary motors and accessory components, combined in configurable systems.

The objective is to supply products and software tools that support the user through their decision-making and afterwards, through installation and maintenance. For this purpose, Camozzi Automation has developed QSet, an extremely intuitive and efficient configuration software, that is able to create a program for the positioning and control of cylinders and axes based on the requirements of the application in terms of load, speed, and accelerations requested.

### Movement

<table>
<thead>
<tr>
<th>Series</th>
<th>Description</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series 6E</td>
<td>Electromechanical cylinders&lt;br&gt;Sizes 32, 40, 50, 63, 80, 100</td>
<td>8</td>
</tr>
<tr>
<td>Series 5E</td>
<td>Electromechanical axis&lt;br&gt;Sizes 50, 65, 80</td>
<td>33</td>
</tr>
<tr>
<td>Series 5V</td>
<td>Vertical electromechanical axis&lt;br&gt;Sizes 50, 65, 80</td>
<td>60</td>
</tr>
<tr>
<td>Series DRWB</td>
<td>Drives for the control of electric actuation&lt;br&gt;Drives for Brushless motors, sizes in power classes 100, 400, 750, 1000 W</td>
<td>74</td>
</tr>
<tr>
<td>Series DRCS</td>
<td>Drives for Stepper motors&lt;br&gt;One-size full digital drives with bluetooth system and NFC integrated</td>
<td>83</td>
</tr>
<tr>
<td>Series MTB</td>
<td>Motors for electric actuation&lt;br&gt;Brushless motors in power classes 100, 400, 750, 1000 W</td>
<td>90</td>
</tr>
<tr>
<td>Series MTS</td>
<td>Motors for electric actuation&lt;br&gt;Stepper motors with Nema 23, 24, 34 fixing flange</td>
<td>93</td>
</tr>
<tr>
<td>Series GB</td>
<td>Planetary gearboxes&lt;br&gt;Available sizes: 40, 60, 80, 120</td>
<td>96</td>
</tr>
<tr>
<td>Series CO</td>
<td>Motion transmission devices&lt;br&gt;Mod. COE: elastomer coupling with clamps&lt;br&gt;Mod. COG: elastomer coupling with expansion shaft&lt;br&gt;Mod. COT: self-centering locking-set</td>
<td>100</td>
</tr>
</tbody>
</table>
At Camozzi we believe that there is no actuation technology that is absolutely better than another technology. Our conviction is that every application has different requirements that can be satisfied in the best way possible thanks to the use of a specific technology: pneumatics, proportional or electric. It’s precisely the ability to offer all technologies and to combine them in case of need, optimizing single movements and the performance requested in the context of an industrial application, that represents the competitive advantage that Camozzi is able to offer its customers.

To control speed, acceleration, the position in relation to the load to move and the distances to cover, the requested precision, optimizing costs and providing a solution that is easy to install and to manage, are all the result of the combination of technologies and skills that Camozzi offers its partners with one aim only: providing the solution with the highest added value.
THE IDEAL SOLUTION FOR ANY APPLICATION

To us, complete service means offering not only standard products, but also special customized solutions, pre-assembled kits, and plug & play panels and systems, each designed and built according to the exact.

Standard
A wide range of standard components designed to be integrated in special applications

Special
Special solutions
Pre-assembled kits
Panels and systems
Our Business Development Managers, who are in charge of single industrial sectors can support you in studying the requirements of the various applications, and can identify the best solution in terms of technologies and products.
Camozzi has developed a software so that every user, with no specific skill in electronics, can create a program to position or control an axis or an electric cylinder.
Once configured, it is possible to program up to 256 command lines, each of them defining an absolute, relative, or force position. All the other functions can be reached easily and promptly.
The Series 6E cylinders are mechanical linear actuators with rod, in which the rotary movement, generated by a motor, is converted into a linear movement by means of a recirculating ball screw. Available in 6 sizes, the Series 6E has dimensions based on the ISO 15552 standard and it is therefore possible to use the mounting accessories of the pneumatic cylinders.

The cylinders are equipped with a magnet that makes it possible to use external magnetic proximity switches (Series CST and CSH), allowing operations like homing or extra-stroke readings to be performed. The Series 6E is equipped with specific interface kits, which make it possible to connect the motor, both in line and parallel. High precision and easy mounting make the Series 6E the ideal solution for different applications, especially for multi-position systems.

**GENERAL DATA**

<table>
<thead>
<tr>
<th>Construction</th>
<th>Electromechanical cylinder with recirculating ball screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Profile with thread rolling screws based on the ISO 15552 standard</td>
</tr>
<tr>
<td>Operation</td>
<td>Multi-position actuator with high precision linear movement</td>
</tr>
<tr>
<td>Sizes</td>
<td>32, 40, 50, 63, 80, 100</td>
</tr>
<tr>
<td>Strokes (min - max)</td>
<td>100 ÷ 1500 mm</td>
</tr>
<tr>
<td>Anti-rotation function</td>
<td>With anti-friction pads in technopolymer</td>
</tr>
<tr>
<td>Mounting</td>
<td>Front / rear flange, with feet, with front / rear / swivel trunnion</td>
</tr>
<tr>
<td>Mounting motor</td>
<td>In line and parallel</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0°C ÷ 50°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20°C ÷ 80°C</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP40 / IP65</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not necessary. A pre-lubrication is performed on the cylinder.</td>
</tr>
<tr>
<td>Max. Reversing backlash</td>
<td>0.02 mm</td>
</tr>
<tr>
<td>Repeatability</td>
<td>± 0.02</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>100%</td>
</tr>
<tr>
<td>Max. rotation play</td>
<td>± 0.4°</td>
</tr>
<tr>
<td>Use with external sensors</td>
<td>Slots on three sides for sensors model CSH and CST</td>
</tr>
</tbody>
</table>
**STANDARD STROKES**

Intermediate strokes are available upon request.

<table>
<thead>
<tr>
<th>STANDARD STROKES</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>1000</th>
<th>1200</th>
<th>1500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>32</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>63</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CODING EXAMPLE**

<table>
<thead>
<tr>
<th>6E</th>
<th>032</th>
<th>BS</th>
<th>0200</th>
<th>P05</th>
<th>A</th>
</tr>
</thead>
</table>

**6E SERIES**

**032**

- **SIZE:**
  - 032 = 32
  - 040 = 40
  - 050 = 50
  - 063 = 63
  - 080 = 80
  - 100 = 100

**BS DESIGN:**

- BS = recirculating ball screw

**0200**

- **STROKE:**
  - 100 + 1500 mm

**P05**

- **SCREW PITCH:**
  - P05 = 5 mm
  - P10 = 10 mm
  - P16 = 16 mm (for size 40 only)
  - P20 = 20 mm (for size 50 only)
  - P25 = 25 mm (for size 63 only)
  - P32 = 32 mm (for size 80 only)
  - P40 = 40 mm (for size 100 only)

**A CONSTRUCTION:**

- A = standard with rod nut

**VERSION:**

- IP40 (not available for sizes 80 and 100)
- P = IP65

- ( _ _ _ ) = extended piston rod _ _ _ mm

**MECHANICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Size</th>
<th>BS screw diameter [mm]</th>
<th>BS screw pitch (p) [mm]</th>
<th>Dynamic load coefficient (C) [N]</th>
<th>Max admissible load (C_max) [N]</th>
<th>Max applicable torque [Nm]</th>
<th>Max linear speed [m/s]</th>
<th>Max rotational speed [rpm]</th>
<th>Max acceleration [m/s²]</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>12</td>
<td>5</td>
<td>6600</td>
<td>525(A)</td>
<td>2.50</td>
<td>0.56</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>32</td>
<td>12</td>
<td>10</td>
<td>4400</td>
<td>440(A)</td>
<td>2.80</td>
<td>1.12</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>40</td>
<td>12</td>
<td>16</td>
<td>1200</td>
<td>950(A)</td>
<td>5.50</td>
<td>0.42</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>40</td>
<td>12</td>
<td>20</td>
<td>850</td>
<td>1070(A)</td>
<td>6.50</td>
<td>0.84</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>50</td>
<td>12</td>
<td>20</td>
<td>1180</td>
<td>1180(A)</td>
<td>8.20</td>
<td>1.33</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>50</td>
<td>12</td>
<td>10</td>
<td>1130</td>
<td>1130(A)</td>
<td>9.10</td>
<td>0.67</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>63</td>
<td>10</td>
<td>16</td>
<td>1400</td>
<td>980(A)</td>
<td>13.60</td>
<td>1.33</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>63</td>
<td>10</td>
<td>5</td>
<td>1130</td>
<td>1405(A)</td>
<td>16.60</td>
<td>0.27</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>10</td>
<td>7900</td>
<td>2050(A)</td>
<td>19.90</td>
<td>0.23</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>5</td>
<td>1770</td>
<td>1535(A)</td>
<td>24.90</td>
<td>0.47</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>80</td>
<td>5</td>
<td>10</td>
<td>2000</td>
<td>2085(A)</td>
<td>30</td>
<td>0.94</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>20</td>
<td>2050</td>
<td>5250(A)</td>
<td>30</td>
<td>1.50</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>5</td>
<td>2000</td>
<td>3550(A)</td>
<td>30</td>
<td>0.38</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>100</td>
<td>5</td>
<td>10</td>
<td>2630</td>
<td>3845(A)</td>
<td>30</td>
<td>0.75</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>20</td>
<td>2630</td>
<td>2785(A)</td>
<td>30</td>
<td>1.50</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>5</td>
<td>2820</td>
<td>5590(A)</td>
<td>30</td>
<td>0.75</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>100</td>
<td>5</td>
<td>10</td>
<td>2820</td>
<td>5705(A)</td>
<td>30</td>
<td>1.50</td>
<td>6670</td>
<td>25</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>25</td>
<td>4300</td>
<td>8875(A)</td>
<td>30</td>
<td>0.75</td>
<td>6670</td>
<td>25</td>
</tr>
</tbody>
</table>

(A) Value refers to a covered distance of 10000 Km (see the diagrams “Life of the cylinder according to the average axial force applied”).

* the maximum rotational speed of the cylinder varies according to the stroke (see the diagrams “Maximum speed of the cylinder according to its stroke”)
## SERIES 6E MATERIALS

<table>
<thead>
<tr>
<th>PARTS</th>
<th>MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, Rod nut</td>
<td>Zinc-plated steel</td>
</tr>
<tr>
<td>2, Rod seal</td>
<td>PU</td>
</tr>
<tr>
<td>3, Bushing</td>
<td>Technopolymer</td>
</tr>
<tr>
<td>4, Front endcap</td>
<td>Anodized aluminium alloy</td>
</tr>
<tr>
<td>5, Rod</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>6, Magnet</td>
<td>Plastoferrite</td>
</tr>
<tr>
<td>7, Extrusion profile</td>
<td>Anodized aluminium alloy</td>
</tr>
<tr>
<td>8, Guiding element BS screw</td>
<td>Aluminium alloy</td>
</tr>
<tr>
<td>9, End stroke seals</td>
<td>NBR</td>
</tr>
<tr>
<td>10, Linear</td>
<td>Steel</td>
</tr>
<tr>
<td>11, Rear endcap</td>
<td>Anodized aluminium alloy</td>
</tr>
<tr>
<td>12, BS ball screw</td>
<td>Steel</td>
</tr>
</tbody>
</table>
### ACCESSORIES FOR SERIES 6E CYLINDERS

<table>
<thead>
<tr>
<th>Accessory Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piston rod socket joint</td>
<td>GY</td>
</tr>
<tr>
<td>Piston rod lock nut</td>
<td>U</td>
</tr>
<tr>
<td>Clevis pin</td>
<td>S</td>
</tr>
<tr>
<td>Rear trunnion ball-joint</td>
<td>R</td>
</tr>
<tr>
<td>Coupling piece</td>
<td>GKF</td>
</tr>
<tr>
<td>Swivel ball joint</td>
<td>GA</td>
</tr>
<tr>
<td>90° male trunnion</td>
<td>ZC</td>
</tr>
<tr>
<td>Swivel Combination</td>
<td>C+L+S</td>
</tr>
<tr>
<td>Front flange</td>
<td>D-E</td>
</tr>
<tr>
<td>Self aligning rod</td>
<td>GK</td>
</tr>
<tr>
<td>Foot mount</td>
<td>B-6E</td>
</tr>
<tr>
<td>Rear female trunnion</td>
<td>C</td>
</tr>
<tr>
<td>Rod fork end</td>
<td>G</td>
</tr>
<tr>
<td>Rear trunnion male</td>
<td>L</td>
</tr>
<tr>
<td>Side clamping bracket</td>
<td>BG</td>
</tr>
<tr>
<td>Housing for axial connection</td>
<td>CM</td>
</tr>
<tr>
<td>Flange for axial connection</td>
<td>FM</td>
</tr>
<tr>
<td>Kit for axial connection</td>
<td>AM</td>
</tr>
<tr>
<td>Kit for parallel connection</td>
<td>PM</td>
</tr>
<tr>
<td>Kit for axial connection</td>
<td>AR</td>
</tr>
<tr>
<td>Cylinder bracket</td>
<td>BA-6E</td>
</tr>
<tr>
<td>Front spot faced trunnion</td>
<td>FN</td>
</tr>
<tr>
<td>Counter bracket for trunnion</td>
<td>BF</td>
</tr>
<tr>
<td>Series 45 anti-rotation guide units</td>
<td></td>
</tr>
</tbody>
</table>

All accessories are supplied separately, except for piston rod lock nut Mod. U

Products designed for industrial applications.

General terms and conditions for sale are available on www.camozzi.com.
HOW TO CALCULATE THE LIFE OF THE CYLINDER

To perform a correct dimensioning of the Series 6E cylinder, you need to consider some facts.

Among these, the most important are:
- Dynamics of the system
- Operation and pause cyclicity
- Work environment
- General performance requirements: repeatability, accuracy, precision, etc.

CALCULATE THE LIFE IN ROTATIONS

\[ L_r = \left( \frac{C}{F_m \cdot f_w} \right)^3 \cdot 10^6 \]

where:
- \( L_r \) = Life of the cylinder in number of rotations of the BS ball screw
- \( C \) = Dynamic load coefficient of the cylinder [N]
- \( F_m \) = Average axial force applied [N]
- \( f_w \) = Safety coefficient according to the working conditions

CALCULATION OF LIFE IN km

\[ L_{km} = \frac{L_r \cdot p}{10^6} \]

where:
- \( L_{km} \) = Life of the cylinder in km [km]
- \( p \) = pitch of the BS ball screw [mm]

CALCULATION OF THE LIFE IN HOURS

\[ L_h = \frac{L_r}{n_m \cdot 60} \]

where:
- \( L_h \) = Life of the cylinder in hours
- \( n_m \) = average number of revolutions of the RDS ball screw [rpm]

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>ACCELERATION [ m/s²</th>
<th>SPEED [ m/s</th>
<th>DUTY CYCLE</th>
<th>( f_w ) COEFFICIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>light</td>
<td>&lt; 5.0</td>
<td>&lt; 0.5</td>
<td>&lt; 35%</td>
<td>1.0 ÷ 1.25</td>
</tr>
<tr>
<td>normal</td>
<td>5.0 ÷ 15.0</td>
<td>0.5 ÷ 1.0</td>
<td>35% ÷ 65%</td>
<td>1.25 ÷ 1.5</td>
</tr>
<tr>
<td>heavy</td>
<td>&gt; 15.0</td>
<td>&gt; 1.0</td>
<td>&gt; 65%</td>
<td>1.5 ÷ 3.0</td>
</tr>
</tbody>
</table>

Products designed for industrial applications. General terms and conditions for sale are available on www.camozzi.com.
ANALYSIS OF THE DUTY CYCLE AND OF SYSTEM PAUSES

The analysis of the duty cycle and of the pauses of the system is essential to calculate the average Fm axial loads and the number of average revolutions nm that act on the cylinder.

Normally, the duty cycle is composed by phases and for each single phase, we can have an acceleration, constant speed or deceleration.

CALCULATION OF THE AVERAGE AXIAL FORCE

\[ F_{ax} = \sqrt{\left( F_{a1} \cdot t_{a1} \right)^2 + \left( F_{c1} \cdot t_{c1} \right)^2 + \left( F_{d1} \cdot t_{d1} \right)^2 + \ldots + \left( F_{a2} \cdot t_{a2} \right)^2 + \left( F_{c2} \cdot t_{c2} \right)^2 + \left( F_{d2} \cdot t_{d2} \right)^2 + \ldots + \left( F_{a} \cdot t_{a} \right)^2 + \left( F_{c} \cdot t_{c} \right)^2 + \left( F_{d} \cdot t_{d} \right)^2 + \ldots + \left( F_{a} \cdot t_{a} \right)^2 + \left( F_{c} \cdot t_{c} \right)^2 + \left( F_{d} \cdot t_{d} \right)^2} \]

CALCULATION OF THE AVERAGE NUMBER OF REVOLUTIONS

\[ n_{ax} = \frac{\left( n_{a1} \cdot t_{a1} \right) + \left( n_{c1} \cdot t_{c1} \right) + \ldots + \left( n_{a2} \cdot t_{a2} \right) + \ldots + \left( n_{a} \cdot t_{a} \right) + \left( n_{c} \cdot t_{c} \right) + \ldots + \left( n_{d} \cdot t_{d} \right)}{t_{a1} + t_{c1} + t_{d1} + \ldots + t_{a} + t_{c} + t_{d} + \ldots + t_{a} + t_{c} + t_{d} + \ldots + t_{a} + t_{c} + t_{d}} \]

The table shown below reports the values of acceleration, speed and deceleration for each phase.

<table>
<thead>
<tr>
<th>PHASE</th>
<th>Acceleration</th>
<th>Constant speed</th>
<th>Deceleration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fa1</td>
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<td>t1</td>
</tr>
<tr>
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<td>tvc1</td>
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<td>nd1</td>
<td>t1</td>
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<td>t2</td>
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<td>tvc2</td>
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<tr>
<td></td>
<td>d2</td>
<td>nd2</td>
<td>t2</td>
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<td>nvcn-1</td>
<td>tvcn-1</td>
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<td>nvcn-1</td>
<td>ndn-1</td>
<td>ttn-1</td>
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<tr>
<td>&quot;n&quot;</td>
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<td>tvcn</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>100%</td>
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</table>

APPLICATION EXAMPLE

Phase 1

- \( F_{a1} = 142 \text{ N} \)
- \( n_{a1} = 630 \text{ rpm} \)
- \( t_{a1} = 0.7 \% \)
- \( F_{c1} = 98 \text{ N} \)
- \( n_{c1} = 1260 \text{ rpm} \)
- \( t_{c1} = 12.9 \% \)
- \( F_{d1} = 54 \text{ N} \)
- \( n_{d1} = 630 \text{ rpm} \)
- \( t_{d1} = 0.7 \% \)

Phase 2

- \( F_{a2} = 616 \text{ N} \)
- \( n_{a2} = 659 \text{ rpm} \)
- \( t_{a2} = 4.8 \% \)
- \( F_{c2} = 589 \text{ N} \)
- \( n_{c2} = 900 \text{ rpm} \)
- \( t_{c2} = 13.3 \% \)
- \( F_{d2} = 562 \text{ N} \)
- \( n_{d2} = 650 \text{ rpm} \)
- \( t_{d2} = 4.8 \% \)

Phase 3

- \( F_{a3} = 997 \text{ N} \)
- \( n_{a3} = 2410 \text{ rpm} \)
- \( t_{a3} = 7.1 \% \)
- \( F_{c3} = 981 \text{ N} \)
- \( n_{c3} = 480 \text{ rpm} \)
- \( t_{c3} = 28.6 \% \)
- \( F_{d3} = 965 \text{ N} \)
- \( n_{d3} = 240 \text{ rpm} \)
- \( t_{d3} = 7.1 \% \)

In this way it is possible to determine:

- \( K_a = \left( n_{a1} \cdot t_{a1} \right) + \left( n_{a2} \cdot t_{a2} \right) + \left( n_{a3} \cdot t_{a3} \right) + \left( n_{a} \cdot t_{a} \right) \)
- \( K_c = \left( n_{c1} \cdot t_{c1} \right) + \left( n_{c2} \cdot t_{c2} \right) + \left( n_{c3} \cdot t_{c3} \right) + \left( n_{c} \cdot t_{c} \right) \)
- \( K_d = \left( n_{d1} \cdot t_{d1} \right) + \left( n_{d2} \cdot t_{d2} \right) + \left( n_{d3} \cdot t_{d3} \right) + \left( n_{d} \cdot t_{d} \right) \)

Concluding, we know that:

- \( F_{ax} = \sqrt{\left( K_a \cdot n_{ax} \right)^2 + \left( K_c \cdot n_{ax} \right)^2 + \left( K_d \cdot n_{ax} \right)^2} \)
- \( n_{ax} = \frac{n_{a} + n_{c} + n_{d}}{t_{a} + t_{c} + t_{d}} \)

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<th>Constant speed</th>
<th>Deceleration</th>
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<td>TOTAL</td>
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**HOW TO CALCULATE THE DRIVING TORQUE [Nm]**

\[ F_e = \text{Total force acting from outside [N]} \]
\[ F_t = \text{Force to be applied externally [N]} \]
\[ g = \text{Gravitational acceleration (9.81 m/s}^2) \]
\[ m_e = \text{Mass of the body to move [kg]} \]
\[ \mu = \text{Friction coefficient of the support guide} \]
\[ p = \text{Pitch of the ball screw [mm]} \]
\[ C_{ni} = \text{Driving torque due to external agents [Nm]} \]

\[ C_{TOT} = C_{M1} + C_{M2} + C_{M3} \]

\[ F_3 = F_t + \mu \cdot m_e \cdot g \]

\[ C_{M1} = \frac{F_A \cdot p}{2\pi \cdot 1000} \]

\[ J_{TOT} = (J_F + J_v) \cdot 10^{-6} \]

\[ J_F = K_v \cdot C \]

\[ \omega = \frac{a \cdot 2\pi \cdot 1000}{p} \]

\[ C_{M2} = J_{TOT} \cdot \omega \]

\[ F_{TV} = \text{Force needed to move translating components [N]} \]
\[ F_{TF} = \text{Force needed to move fixed-length translating components [N]} \]
\[ F_{TT} = \text{Force needed to move variable-length translating components [N]} \]
\[ m_{C1} = \text{Mass of the fixed-length translating components [kg]} \]
\[ K_{TV} = \text{Mass coefficient of variable-length translating components [kg/mm]} \]
\[ C_{M3} = \text{Driving torque due to translating components [Nm]} \]

\[ F_T = F_{TF} + F_{TV} \]

\[ F_{TT} = m_{C1} \cdot a \]

\[ F_{TV} = K_{TV} \cdot C \cdot a \]

\[ C_{M3} = \frac{F_T \cdot p}{2\pi \cdot 1000} \]

**Values of masses and fixed and rotating inertia moments of 6E components**

<table>
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<tr>
<th>Size</th>
<th>( J_F ) [kg( \cdot )mm(^2)]</th>
<th>( K_v ) [kg( \cdot )mm(^2)/mm]</th>
<th>( m_{C1} ) [kg]</th>
<th>( K_{TV} ) [kg/mm]</th>
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<td>0.02</td>
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<td>526.49</td>
<td>1.98</td>
<td>3.94</td>
<td>2.37</td>
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Life of the cylinder according to the average axial force applied

Size 32

F = Axial Force [N]
L = life [km]

* Curves calculated with fw = 1

Size 40

F = Axial Force [N]
L = life [km]

* Curves calculated with fw = 1

Size 50

F = Axial Force [N]
L = life [km]

* Curves calculated with fw = 1

Size 63

F = Axial Force [N]
L = life [km]

* Curves calculated with fw = 1
Life of the cylinder according to the average axial force applied

Size 80
F = Axial Force [N]
L = life [km]
* Curves calculated with fw = 1

Size 100
F = Axial Force [N]
L = life [km]
* Curves calculated with fw = 1

Maximum speed of the cylinder according to its stroke

Size 32
V = speed [m/s]
c = stroke [mm]

Size 40
V = speed [m/s]
c = stroke [mm]
Maximum speed of the cylinder according to its stroke

Size v

\[ V = \text{speed [m/s]} \]
\[ c = \text{stroke [mm]} \]

Size 63

\[ V = \text{speed [m/s]} \]
\[ c = \text{stroke [mm]} \]

Size 80

\[ V = \text{speed [m/s]} \]
\[ c = \text{stroke [mm]} \]

Size 100

\[ V = \text{speed [m/s]} \]
\[ c = \text{stroke [mm]} \]
Maximum force of the cylinder according to its stroke

Size 32
F = static axial Force [N]
c = stroke [mm]

Size 40
F = static axial Force [N]
c = stroke [mm]

Size 50
F = static axial Force [N]
c = stroke [mm]

Size 63
F = static axial Force [N]
c = stroke [mm]
Maximum force of the cylinder according to its stroke

Size 80

\[ F = \text{static axial Force [N]} \]
\[ c = \text{stroke [mm]} \]

Size 100

\[ F = \text{static axial Force [N]} \]
\[ c = \text{stroke [mm]} \]

Series 6E cylinders

Products designed for industrial applications.
General terms and conditions for sale are available on www.camozzi.com.
Housing for axial connection Mod. CM

Material: anodized aluminium

**Supplied with:**
- 1x housing
- 4x screws

Kit for axial connection Mod. AM (Protection class IP40)

**Supplied with:**
- 1x housing
- 1x flange
- 1x flexible coupling
- 4x screws to connect on the cylinder’s side
- 4x screws to connect on the motor’s side

---

<table>
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<tr>
<th>Mod.</th>
<th>Size</th>
<th>XT</th>
<th>E</th>
<th>D</th>
<th>TG</th>
<th>FL</th>
<th>L</th>
<th>M(°)</th>
<th>T</th>
<th>TD</th>
<th>RT</th>
<th>I</th>
<th>Weight (g)</th>
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<table>
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<th>bufferSize</th>
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<th>F</th>
<th>XW</th>
<th>Weight (g)</th>
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<td>71</td>
<td>480</td>
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</tbody>
</table>

Products designed for industrial applications.
General terms and conditions for sale are available on www.camozzi.com.
Kit for axial connection Mod. AM (Protection class IP65)

Supplied with:
1x housing, 1x flange,
1x flexible coupling,
4x screws to connect on the cylinder’s side,
4x screws to connect on the motor’s side,
3x seals, 4x seal washers

<table>
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<th>øDM</th>
<th>E</th>
<th>F</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>Y</th>
<th>Y1</th>
<th>Y2</th>
<th>Y3</th>
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Kit for axial connection Mod. AR (IP65)

```
Supplied with:
2x flanges (1 for size 80)
8x screws
1x coupling
2x seals (1 for size 80)
```

| Mod.            | Size | Gearbox | XE+ | FL | F | E | DC | LC | CC | F1 | F2 | F3 | Y  | Y1 | Y2 | Y3 | DS | LS | Weight (g) |
|-----------------|------|---------|-----|----|---|---|----|----|----|----|----|----|----|----|----|----|----|----------|
| AR-6E-50-R060P  | 50   | GB-060-... | 287.4 | 74.6 | - | 64.9 | 40 | 3 | 52 | - | - | - | - | - | - | 14 | 35 | 630 |
| AR-6E-63-R060P  | 63   | GB-060-... | 338.5 | 87.8 | - | 75 | 40 | 4 | 52 | - | - | - | - | - | - | 14 | 35 | 1100 |
| AR-6E-80-R080P  | 80   | GB-080-... | 357.5 | 97.5 | - | 93 | 60 | 5 | 70 | 15 | 18 | 49 | 6 | 10 | 3.1 | 12 | 20 | 40 | 2090 |
| AR-6E-100-R120P | 100  | GB-120-... | 399 | 116 | 125 | 115 | 80 | 5 | 100 | 15 | 18 | 62 | 8 | 12 | 3.1 | 18 | 20 | 40 | 3800 |

Kit for parallel connection Mod. PM (Protection class IP40)

```
The kit includes:
1x flange to connect
the motor to the cylinder
1x cover
2x pulleys
2x locking sets
1x toothed belt
1x belt traction unit
4x fixing screws
4x screws for cylinder’s side
4x screws rear cover
6x cover fixing screws
```

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<th>A</th>
<th>F</th>
<th>G1</th>
<th>G2</th>
<th>B</th>
<th>C</th>
<th>TG</th>
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Kit for parallel connection Mod. PM (Protection class IP65)

The kit includes:
- 1x front cover
- 1x rear cover
- 2x pulleys
- 2x locking sets
- 1x toothed belt
- 1x belt traction unit
- 4x screws for cylinder’s side
- 4x cover rear screws
- + seal washers
- 6x cover fixing screws
- 3x seals
- 1x seal plug
- 4x motor seal washers

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Flange for axial connection Mod. FM
Material: anodized aluminium
Foot bracket Mod. B-6E

Material: zinc-plated steel

Supplied with:
2x feet
8x screws

* Mounting available for sizes 32, 40, 50 and 63 only

+ = add the stroke
Front spot faced trunnion Mod. FN

Material: zinc-plated steel

Supplied with:
1x spot faced trunnion
4x screws

Counter bracket for front trunnion Mod. BF

Material: aluminium

Supplied with:
2x supports

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Front flange Mod. D-E
Material: aluminium

Supplied with:
- 1x flange
- 4x screws
+ = add the stroke

Side clamping bracket Mod. BG
Material: aluminium

Supplied with:
- 2x clamps

---

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**Rear male trunnion Mod. L**

Material: aluminium

Supplied with:
1x male trunnion
4x screws

+ = add the stroke

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</tr>
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<td>L41-40</td>
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<td>60</td>
<td>15 Nm</td>
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</tbody>
</table>

**Rear female trunnion Mod. C and C-H**

Material: aluminium

Supplied with:
1x female trunnion
4x screws

+ = add the stroke

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>ØCD</th>
<th>L</th>
<th>FL</th>
<th>XD+</th>
<th>MR</th>
<th>E</th>
<th>CB</th>
<th>UB</th>
<th>torque force</th>
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<td>10</td>
<td>12</td>
<td>22</td>
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<td>6 Nm</td>
</tr>
<tr>
<td>C41-40</td>
<td>40</td>
<td>12</td>
<td>15</td>
<td>25</td>
<td>246</td>
<td>12</td>
<td>53.5</td>
<td>28</td>
<td>52</td>
<td>6 Nm</td>
</tr>
<tr>
<td>C41-60</td>
<td>60</td>
<td>12</td>
<td>15</td>
<td>25</td>
<td>246</td>
<td>12</td>
<td>53.5</td>
<td>28</td>
<td>52</td>
<td>6 Nm</td>
</tr>
<tr>
<td>C-H41-80</td>
<td>80</td>
<td>16</td>
<td>20</td>
<td>32</td>
<td>324.5</td>
<td>17</td>
<td>73</td>
<td>40</td>
<td>70</td>
<td>13 Nm</td>
</tr>
<tr>
<td>C-H41-100</td>
<td>100</td>
<td>20</td>
<td>29</td>
<td>41</td>
<td>401</td>
<td>21</td>
<td>108.5</td>
<td>60</td>
<td>110</td>
<td>15 Nm</td>
</tr>
</tbody>
</table>

Products designed for industrial applications.
General terms and conditions for sale are available on www.camozzi.com.
Accessory combination Mod. C+L+S

Material: aluminium

Supplied with:
1x male support
+ = add the stroke

90° male trunnion Mod. ZC

CETOP RP 107P
Material: aluminium

Products designed for industrial applications.
General terms and conditions for sale are available on www.camozzi.com.
Trunnion ball-joint Mod. R

This trunnion doesn’t comply with the ISO 15552 standard
Material: aluminium

<table>
<thead>
<tr>
<th>Mod</th>
<th>Size</th>
<th>σCX</th>
<th>L</th>
<th>DL</th>
<th>XN+</th>
<th>MS</th>
<th>E</th>
<th>EX</th>
<th>RP</th>
<th>Z</th>
<th>Torque force</th>
</tr>
</thead>
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<tr>
<td>R-41-32</td>
<td>32</td>
<td>10</td>
<td>12</td>
<td>22</td>
<td>212</td>
<td>18</td>
<td>45</td>
<td>14</td>
<td>10.5</td>
<td>4°</td>
<td>6 Nm</td>
</tr>
<tr>
<td>R-41-40</td>
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<td>12</td>
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<td>25</td>
<td>246</td>
<td>18</td>
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<td>16</td>
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<td>4°</td>
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</tr>
<tr>
<td>R-41-50</td>
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<td>15</td>
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<td>286</td>
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<td>20</td>
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<td>4°</td>
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<td>108.5</td>
<td>25</td>
<td>18</td>
<td>4°</td>
<td>15 Nm</td>
</tr>
</tbody>
</table>

Supplied with:
1x trunnion ball joint
4x screws
+ = add the stroke

Clevis pin Mod. S

Supplied with:
1x clevis pin in stainless steel 303
2x Seeger in steel

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<tr>
<th>Mod</th>
<th>Size</th>
<th>d</th>
<th>L</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
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<tbody>
<tr>
<td>S-32</td>
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<tr>
<td>S-63</td>
<td>63</td>
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<td>77</td>
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<tr>
<td>S-80</td>
<td>80</td>
<td>16</td>
<td>97</td>
<td>91</td>
<td>1.1</td>
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<td>20</td>
<td>121</td>
<td>111</td>
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</table>
Swivel ball joint Mod. GA
ISO 8139.
Material: zinc-plated steel

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<thead>
<tr>
<th>Mod.</th>
<th>dCN</th>
<th>U</th>
<th>EN</th>
<th>ER</th>
<th>AX</th>
<th>CE</th>
<th>KK</th>
<th>dT</th>
<th>Z</th>
<th>SW</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA-32</td>
<td>10</td>
<td>10.5</td>
<td>14</td>
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<td>20</td>
<td>43</td>
<td>M10X1.25</td>
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<td>6.5</td>
<td>17</td>
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<tr>
<td>GA-40</td>
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<td>16</td>
<td>16</td>
<td>22</td>
<td>50</td>
<td>M12X1.25</td>
<td>17.5</td>
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<td>19</td>
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<tr>
<td>GA-50-83</td>
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<td>15</td>
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<td>21</td>
<td>28</td>
<td>64</td>
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<tr>
<td>GA-80-100</td>
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<td>18</td>
<td>25</td>
<td>25</td>
<td>33</td>
<td>77</td>
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<td>27.5</td>
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Piston rod socket joint Mod. GY
Material: zama and zinc-plated steel

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<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>KK</th>
<th>AX</th>
<th>CE</th>
<th>E</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>SW</th>
<th>SW1</th>
<th>B1</th>
<th>C1</th>
<th>D</th>
<th>dT</th>
<th>Z</th>
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</thead>
<tbody>
<tr>
<td>GY-32</td>
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<td>10</td>
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<td>15</td>
<td>17</td>
<td>11</td>
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<td>28</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>GY-40</td>
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<td>M12X1.25</td>
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<td>40</td>
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<td>84</td>
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<td>GY-80-100</td>
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<td>34</td>
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Rod fork end Mod. G
ISO 8140
Material: zinc-plated steel

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<th>LE</th>
<th>CM</th>
<th>CL</th>
<th>ER</th>
<th>CE</th>
<th>KK</th>
<th>B</th>
<th>dB1</th>
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<tbody>
<tr>
<td>G-25-32</td>
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<td>20</td>
<td>10</td>
<td>20</td>
<td>12</td>
<td>40</td>
<td>M10 X 1.25</td>
<td>26</td>
<td>18</td>
</tr>
<tr>
<td>G-40</td>
<td>12</td>
<td>24</td>
<td>12</td>
<td>24</td>
<td>14</td>
<td>48</td>
<td>M12 X 1.25</td>
<td>32</td>
<td>20</td>
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<tr>
<td>G-50-63</td>
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<td>32</td>
<td>16</td>
<td>32</td>
<td>19</td>
<td>64</td>
<td>M16 X 1.5</td>
<td>40</td>
<td>26</td>
</tr>
<tr>
<td>G-80-100</td>
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<td>40</td>
<td>25</td>
<td>80</td>
<td>M20 X 1.5</td>
<td>48</td>
<td>34</td>
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Piston rod lock nut Mod. U
ISO 4035
Material: zinc-plated steel

<table>
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<th>Mod.</th>
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<th>m</th>
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<tr>
<td>U-25-32</td>
<td>M10X1.25</td>
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<td>17</td>
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<tr>
<td>U-40</td>
<td>M12X1.25</td>
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<td>19</td>
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<tr>
<td>U-50-63</td>
<td>M16X1.5</td>
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<td>24</td>
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<tr>
<td>U-80-100</td>
<td>M20X1.5</td>
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</tbody>
</table>
Self aligning rod Mod. GK
Material: zinc-plated steel

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<th>Size</th>
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<th>L1</th>
<th>L3</th>
<th>L4</th>
<th>A</th>
<th>D</th>
<th>H</th>
<th>I</th>
<th>SW</th>
<th>SW1</th>
<th>SW2</th>
<th>B1</th>
<th>AX</th>
<th>Z</th>
<th>E</th>
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<td>7.5</td>
<td>14</td>
<td>22</td>
<td>32</td>
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<td>19</td>
<td>12</td>
<td>17</td>
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<td>22</td>
<td>4</td>
<td>2</td>
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<td>GK-40</td>
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<td>M12x1.25</td>
<td>75.5</td>
<td>35</td>
<td>24</td>
<td>7.5</td>
<td>14</td>
<td>22</td>
<td>32</td>
<td>30</td>
<td>19</td>
<td>12</td>
<td>19</td>
<td>6</td>
<td>22</td>
<td>4</td>
<td>2</td>
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<tr>
<td>GK-50-63</td>
<td>50-63</td>
<td>M16x1.5</td>
<td>104</td>
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<td>10</td>
<td>22</td>
<td>32</td>
<td>45</td>
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<td>27</td>
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<td>24</td>
<td>8</td>
<td>30</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>GK-80-100</td>
<td>80-100</td>
<td>M20x1.5</td>
<td>119</td>
<td>53</td>
<td>40</td>
<td>10</td>
<td>22</td>
<td>32</td>
<td>45</td>
<td>41</td>
<td>27</td>
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<td>30</td>
<td>10</td>
<td>37</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Coupling piece Mod. GKF
Material: zinc-plated steel

| Mod.   | Size   | KK   | A   | B   | R   | TF  | L   | L1  | I   | D   | D1  | D2  | SW | E   |
|--------|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| GKF-32-32 | 32  | M10x1.25 | 37   | 60  | 23  | 36  | 22.5 | 15  | 6.8 | 18  | 11  | 6.6 | 15  | 2   |
| GKF-40   | 40  | M12x1.25 | 56   | 60  | 38  | 42  | 22.5 | 15  | 9   | 20  | 20  | 9   | 15  | 2.5 |
| GKF-50-63 | 50-63 | M16x1.5 | 80   | 80  | 58  | 58  | 26.5 | 15  | 10.5| 25  | 25  | 11  | 22  | 2.5 |
| GKF-80-100 | 80-100 | M20x1.5 | 90   | 90  | 65  | 65  | 30.5 | 20  | 13  | 30.5| 20  | 14  | 27  | 2.5 |

Slot cover profile Mod. S-CST-500
Supplied with 500 mm tube
Series 5E electromechanical axis

Sizes 50, 65, 80
Available versions: standard axis, support axis, reinforced axis

Series 5E axes are mechanical linear actuators in which the rotary movement generated by a motor is converted into a linear movement by means of a toothed belt. The Series 5E, available in 3 sizes, 50, 65 and 80, is realized by means of a special self-supporting square profile, in which the components have been completely integrated, assuring compactness and light weight. The presence of a recirculating ball guide grants high stiffness and resistance to external loads.

To protect the internal elements from potential contaminants from the external environment, the profile has been closed with a stainless steel plate. The axis is equipped with a magnet that makes it possible to use external proximity switches (Series CSH), allowing operations like homing or extra-stroke readings to be performed. Moreover, these actuators also have accessories in order to be used with inductive sensors. The Series 5E is equipped with specific interface kits making it possible to connect the motor on 4 sides. The use with high dynamics and the possibility to realize multi-axis systems, make the Series 5E particularly suitable for the packaging and assembly sectors.

**GENERAL DATA**

<table>
<thead>
<tr>
<th>Construction</th>
<th>Electromechanical axis with toothed belt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Open profile with protection plate</td>
</tr>
<tr>
<td>Operation</td>
<td>Multi-position actuator</td>
</tr>
<tr>
<td>Sizes</td>
<td>50, 65, 80</td>
</tr>
<tr>
<td>Strokes</td>
<td>50 = 4000 mm for size 50; 50 = 6000 mm for sizes 65 and 80</td>
</tr>
<tr>
<td>Type of guide</td>
<td>Internal, with recirculating balls (cage type)</td>
</tr>
<tr>
<td>Pitch</td>
<td>By means of slots on the profile and special clamps</td>
</tr>
<tr>
<td>Mounting motor</td>
<td>On all 4 sides</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10°C ÷ +50°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20°C ÷ +80°C</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 40 (available for versions A and D only)</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Centralized lubrication by means of internal channels</td>
</tr>
<tr>
<td>Repeatability</td>
<td>± 0.05 mm</td>
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<tr>
<td>Duty cycle</td>
<td>100%</td>
</tr>
<tr>
<td>Use with external sensors</td>
<td>Series CSH magnetic switches in special slots or inductives by means of supports</td>
</tr>
</tbody>
</table>

Products designed for industrial applications. General terms and conditions for sale are available on www.camozzi.com.
**MECHANICAL CHARACTERISTICS**

(\(A\)) Value refers to a covered distance of 2000 Km with fully supported system.

(\(B\)) The “suggested” speed is not the mechanical limit of the unit but represents the best compromise between high load applied and high dynamics.

In case of particular requirements, please contact our technical assistance (service@camozzi.com).

### CODING EXAMPLE

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<th>S</th>
<th>050</th>
<th>TBL</th>
<th>0200</th>
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<th>S</th>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>080 = 80x80 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRAME SIZE:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>050 = 3000 mm for size 050</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>050 = 4000 mm for size 065</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>050 = 5000 mm for size 080</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TYPE OF SLIDER:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S = standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L = long - only for standard axis (A) version</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2(500) NUMBER OF SLIDERS:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = 1 slider</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2(<strong><strong>) = 2 sliders at (</strong></strong>) mm step - only for standard axis (A) with standard slider (S)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MECHANICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Size 50</th>
<th>Size 50</th>
<th>Size 50</th>
<th>Size 65</th>
<th>Size 65</th>
<th>Size 65</th>
<th>Size 80</th>
<th>Size 80</th>
<th>Size 80</th>
<th>Size 80</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RECYCLING BALL GUIDE (CAGE TYPE)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of slider</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>H</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Number of guides</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Number of RDS blocks</td>
<td>pcs</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Dynamic load of RDS blocks (G)</td>
<td>N</td>
<td>11640</td>
<td>17460</td>
<td>11640</td>
<td>28400</td>
<td>42600</td>
<td>28400</td>
<td>56800</td>
<td>56800</td>
</tr>
<tr>
<td>Max admissible load (C(C_{ad} \leq C))</td>
<td>Nm</td>
<td>3100 (C)</td>
<td>5100 (C)</td>
<td>3100 (C)</td>
<td>8300 (C)</td>
<td>12400 (C)</td>
<td>8300 (C)</td>
<td>16600 (C)</td>
<td>16600 (C)</td>
</tr>
<tr>
<td>Max admissible moment (M(M_{ad} \leq M))</td>
<td>Nm</td>
<td>22.44</td>
<td>31.23</td>
<td>22.44</td>
<td>96.00</td>
<td>144.00</td>
<td>96.00</td>
<td>380 (B)</td>
<td>380 (B)</td>
</tr>
<tr>
<td>Max linear speed of mechanism (V_{max})</td>
<td>m/s (A)</td>
<td>5</td>
<td>2.5 (B)</td>
<td>5</td>
<td>5</td>
<td>2.5 (B)</td>
<td>5</td>
<td>2.5 (B)</td>
<td>5</td>
</tr>
<tr>
<td>Max linear acceleration of mechanism (a_{max})</td>
<td>m/s²</td>
<td>50</td>
<td>20 (B)</td>
<td>50</td>
<td>50</td>
<td>20 (B)</td>
<td>50</td>
<td>20 (B)</td>
<td>50</td>
</tr>
</tbody>
</table>

### TOOTHED BELT

| Moment of surface inertia \(I_s\) | mm² | 1.89 \(10^3\) | 1.89 \(10^3\) | 1.89 \(10^3\) | 4.94 \(10^3\) | 4.94 \(10^3\) | 4.94 \(10^3\) | 4.94 \(10^3\) | 4.94 \(10^3\) | 5.25 \(10^3\) | 5.25 \(10^3\) |
| Moment of surface inertia \(I_l\) | mm² | 2.48 \(10^3\) | 2.48 \(10^3\) | 2.48 \(10^3\) | 6.97 \(10^3\) | 6.97 \(10^3\) | 6.97 \(10^3\) | 6.97 \(10^3\) | 6.97 \(10^3\) | 1.68 \(10^4\) | 1.68 \(10^4\) |

### PULLEY

| Effective diameter of the pulley | mm | 31.83 | 31.83 | 47.75 | 47.75 | 47.75 | 47.75 | 63.66 | 63.66 | 63.66 |
| Number of teeth | | 20 | 20 | 30 | 30 | 30 | 20 | 20 | 20 | 20 |
| Linear movement per pulley round | mm/round | 100 | 100 | 150 | 150 | 150 | 200 | 200 | 200 | 200 |

**NOTE:** check the nominal admissible torque of the used motion transmission devices.
SERIES 5E STROKE

LEGEND:

C = Stroke
SE = Standard extra-stroke [ 5ES050.. = 30mm ]
[ 5ES065.. = 30mm ]
[ 5ES080.. = 30mm ]

NOTES:
- Should an additional extra-stroke be required, it must be foreseen by the client.
- The slider should never work in stop on the header.

SERIES 5E MATERIALS

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. End cap</td>
<td>Aluminium alloy</td>
</tr>
<tr>
<td>2. Pulley</td>
<td>Steel</td>
</tr>
<tr>
<td>3. End cap bumper</td>
<td>Technopolymer</td>
</tr>
<tr>
<td>4. Protection plate</td>
<td>Steel</td>
</tr>
<tr>
<td>5. Slider</td>
<td>Aluminium alloy</td>
</tr>
<tr>
<td>6. Bumper</td>
<td>Technopolymer</td>
</tr>
<tr>
<td>7. Toothed belt</td>
<td>PU + Steel</td>
</tr>
<tr>
<td>8. Recirculating</td>
<td>Steel</td>
</tr>
</tbody>
</table>

Products designed for industrial applications. General terms and conditions for sale are available on www.camozzi.com.
How to calculate the life of the axis 5E

The correct dimensioning of the axis 5E, used individually or in a cartesian system with several axes, you need to consider some facts, both static and dynamic. Among these, the most important are described on the following pages.

CALCULATION OF LIFE [km]

\[ L_{eq} = \left( \frac{C_{ma}}{C_{eq} \cdot f_w} \right)^3 \cdot 2000 \]

- \( L_{eq} \): Life of the axis 5E [km]
- \( C_{ma} \): Maximum admissible load [N]
- \( C_{eq} \): Equivalent load [N]
- \( f_w \): safety coefficient according to the working conditions

CALCULATION OF EQUIVALENT LOAD

When compression/traction and side loads as well as bending or torque moments act on the system, you need to calculate the equivalent load acting on the system.

\[ C_{eq} = |F_y| + |F_z| + C_{ma} \cdot \frac{M_x}{M_{x,ma}} + C_{ma} \cdot \frac{M_y}{M_{y,ma}} + C_{ma} \cdot \frac{M_z}{M_{z,ma}} \]

- \( C_{eq} \): Equivalent load [N]
- \( F_y \): Force acting along the Y-axis [N]
- \( F_z \): Force acting along the Z-axis [N]
- \( C_{ma} \): Max admissible load [N]
- \( M_x \): Moment along X-axis [Nm]
- \( M_y \): Moment along Y-axis [Nm]
- \( M_z \): Moment along Z-axis [Nm]
- \( M_{x,ma} \): Max admissible moment along X-axis [Nm]
- \( M_{y,ma} \): Max admissible moment along Y-axis [Nm]
- \( M_{z,ma} \): Max admissible moment along Z-axis [Nm]

How to calculate the maximum deflection and verify the distance between supports

The electromechanical axis 5E is a self-supporting system and can also be used between 2 or more supports without the need of a continuous contact surface.

The maximum value of the deflection generated by the deformation of the system must never exceed the following calculation:

\[ f_{max} = c_{max} \cdot 5 \cdot 10^{-4} \]

- \( f_{max} \): Maximum admissible deflection [mm]
- \( c_{max} \): Maximum stroke of axis 5E [mm]

NOTE: for a quicker choice, please see the graphs on the following pages.

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>ACCELERATION [ m/s² ]</th>
<th>SPEED [ m/s ]</th>
<th>DUTY CYCLE</th>
<th>( f_w )</th>
</tr>
</thead>
<tbody>
<tr>
<td>light</td>
<td>&lt; 10</td>
<td>&lt; 1.5</td>
<td>&lt; 35%</td>
<td>1 ÷ 1.25</td>
</tr>
<tr>
<td>normal</td>
<td>10 ÷ 25</td>
<td>1.5 ÷ 2.5</td>
<td>35% ÷ 65%</td>
<td>1.25 ÷ 1.5</td>
</tr>
<tr>
<td>heavy</td>
<td>&gt; 25</td>
<td>&gt; 2.5</td>
<td>&gt; 65%</td>
<td>1.5 ÷ 3</td>
</tr>
</tbody>
</table>
HOW TO CALCULATE THE DRIVING TORQUE [Nm]

\[ C_{TOT} = C_{M1} + C_{M2} + C_{M3} \]

\[ F_A = F_E + m_E \cdot a \]

\[ C_{M1} = \frac{F_A \cdot D_P}{2} \]

\[ \dot{\omega} = \frac{2 \cdot a}{D_P} \]

\[ C_{M2} = J_{TOT} \cdot \dot{\omega} \]

\[ C_{M3} = \frac{F_{TT} \cdot D_P}{2} \]

\[ F_{TT} = F_{TT} + F_{TF} \]

\[ F_{TF} = m_{C1} \cdot a \]

\[ F_{TV} = m_{C1} \cdot a \]

\[ F_{TF} = k_{TV} \cdot C \cdot a \]

\[ C_{M3} = \frac{F_{TT} \cdot D_P}{2} \]

Values of masses and fixed and rotating inertia moments of 5E components

<table>
<thead>
<tr>
<th>Mod.</th>
<th>J_{TOT} [Kg mm²]</th>
<th>m_{C1} [kg]</th>
<th>K_{TV} [Kg mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>5E050...AS1</td>
<td>48.76</td>
<td>0.51</td>
<td>0.14</td>
</tr>
<tr>
<td>5E050...AL1</td>
<td>48.76</td>
<td>0.80</td>
<td>0.14</td>
</tr>
<tr>
<td>5E050...AS2</td>
<td>48.76</td>
<td>1.01</td>
<td>0.14</td>
</tr>
<tr>
<td>5E050...DS1</td>
<td>0.00</td>
<td>0.40</td>
<td>0.00</td>
</tr>
<tr>
<td>5E065...AS1</td>
<td>372.07</td>
<td>1.27</td>
<td>0.21</td>
</tr>
<tr>
<td>5E065...AL1</td>
<td>372.07</td>
<td>1.83</td>
<td>0.21</td>
</tr>
<tr>
<td>5E065...AS2</td>
<td>372.07</td>
<td>2.53</td>
<td>0.21</td>
</tr>
<tr>
<td>5E065...DS1</td>
<td>0.00</td>
<td>1.01</td>
<td>0.00</td>
</tr>
<tr>
<td>5E065...HS1</td>
<td>372.07</td>
<td>2.84</td>
<td>0.21</td>
</tr>
<tr>
<td>5E080...AS1</td>
<td>1130.28</td>
<td>2.69</td>
<td>0.34</td>
</tr>
<tr>
<td>5E080...AL1</td>
<td>1130.28</td>
<td>3.84</td>
<td>0.34</td>
</tr>
<tr>
<td>5E080...AS2</td>
<td>1130.28</td>
<td>5.38</td>
<td>0.34</td>
</tr>
<tr>
<td>5E080...DS1</td>
<td>0.00</td>
<td>2.15</td>
<td>0.00</td>
</tr>
<tr>
<td>5E080...HS1</td>
<td>1130.28</td>
<td>5.61</td>
<td>0.34</td>
</tr>
</tbody>
</table>
According to axis size and speeds chosen, force that can be transmitted from the toothed belt has these limits.

TRANSMISSIBLE FORCE

![Graph showing transmissible force vs. rpm for Series 5E electromechanical axis](image_url)
LIFE OF THE SERIES 5E AXIS ACCORDING TO THE EQUIVALENT LOAD

**TYPE OF SLIDER: S**

Curves calculated with $fw = 1$
- $C_{eq}$ = Equivalent load applied on the axis 5E [kN]
- $Leq$ = Life of the axis 5E [km]

**TYPE OF SLIDER: L**

Curves calculated with $fw = 1$
- $C_{eq}$ = Equivalent load applied on the axis 5E [kN]
- $Leq$ = Life of the axis 5E [km]

EQUIVALENT LOAD

To determine the moment acting on the axis $x, M_x$, in an accurate way, refer to the following formula:

$$M_x = F_y \cdot (h + h_1)$$

where:
- $M_x$ = Moment along X-axis [Nm]
- $F_y$ = Force acting along the Y-axis [N]
- $h$ = fixed distance for axis 5E [mm]
- $h_1$ = application arm [mm]
- $G_1$ = origin of the system of 5E axis coordinates
- $G_2$ = barycentre of application of acting forces

**NOTE:** here below, valid for A version, the “$h$” values:
- $h = 45.5$ mm (5ES050)
- $h = 56.0$ mm (5ES065)
- $h = 69.5$ mm (5ES080)

Valid for H version, “A” and “B” version:
- “A” = 56.0 mm “B” = 32.9 mm (5ES050)
- “A” = 57.0 mm “B” = 45.0 mm (5ES065)
- “A” = 71.6 mm “B” = 51.6 mm (5ES080)
Deflection according to the distance of the supports - A version

**Size 050**

\[
f = \text{deflection generated between the supports [mm]}
\]
\[
d = \text{distance between the supports [mm]}
\]

**Size 065**

\[
f = \text{deflection generated between the supports [mm]}
\]
\[
d = \text{distance between the supports [mm]}
\]

**Size 080**

\[
f = \text{deflection generated between the supports [mm]}
\]
\[
d = \text{distance between the supports [mm]}
\]
Deflection according to the distance of the supports - H version

Size 050

\[ f = \text{deflection generated between the supports [mm]} \]
\[ d = \text{distance between the supports [mm]} \]

Size 065

\[ f = \text{deflection generated between the supports [mm]} \]
\[ d = \text{distance between the supports [mm]} \]

Size 080

\[ f = \text{deflection generated between the supports [mm]} \]
\[ d = \text{distance between the supports [mm]} \]
ACCESSORIES FOR SERIES 5E

Side clamping bracket Mod. BGS
Perforated side clamping bracket Mod. BGA
Interface plate - slider on slider
Interface plate - profile on slider
Interface plate - profile on slider - long arm
Interface plate - Series 6E cylinder on slider
Interface plate - profile side on slider, left pos.
Interface plate - profile side on slider, right pos.
Fixed interface plate
Interface plate - Guide S. 45 / Cyl. S. 6E
Kit to fix the inductive sensor
Kit to connect the gearbox
Kit to connect the gearbox, enhanced series
Direct connection kit for Stepper motor
Parallel connection kit
Nuts for slots
5E/5V connection flange
Centering ring Mod. TR-CG

All accessories are supplied separately from the axis. Together with the axis, a kit is supplied containing:
- covers to close the holes on the endcap
- centering bushings for the slider
- nipples for greasing
Electromechanical axis Mod. 5E...AS1

+ = add the stroke

Size | A | B | C | C1 | C2 | C3m | D1 | D2 | E | E1 | F | G1m | G2 | H | L1 | L2 | M1 | M2 | M3 | N | P1 | K1 | K2 | J1 | J2 | J3 | T1 | T2 | T3 | V | Y | X1 | X2 | W | Z1 | Z2
50 | 32.5 | 15 | 37 | 37 | 5 | 20 | 17 | 32 | 100 | 50 | 6 | 2 | 354 | 238 | 200 | 48 | 65 | 5 | 30 | 40 | 7 | 3 | 5.9 | 10 | 6 | 304 | 21.8 | 230 | 8 | 4
65 | 35 | 20 | 53 | 52 | 5 | 26 | 23.5 | 46 | 8.5 | 125 | 65 | 8 | 3 | 438 | 288 | 250 | 63 | 80 | 5 | 40 | 53 | 8 | 6 | 10 | 21.8 | 10 | 6 | 373 | 30.5 | 285 | 8 | 4
80 | 35 | 20 | 68 | 68 | 6.5 | 38 | 30.5 | 60.5 | 11.5 | 165 | 80 | 10 | 3 | 548 | 368 | 330 | 78 | 100 | 8 | 55 | 64 | 12 | M4 | 8.5 | M6 | 10 | 25 | 10 | 8 | 468 | 40.5 | 365 | 8 | 4

**NOTE:**
- * We recommend a coupling with a shaft of tolerance h8.
- dimension T2 in size 50 is not indicated because there is only one slot.
- Dimension Y indicates the hole for centralized lubrication by means of grease.

<table>
<thead>
<tr>
<th>Size</th>
<th>WEIGHT STROKE ZERO [kg]</th>
<th>STROKE WEIGHT PER METER [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>2.15</td>
<td>3.35</td>
</tr>
<tr>
<td>65</td>
<td>4.5</td>
<td>5.4</td>
</tr>
<tr>
<td>80</td>
<td>8.9</td>
<td>5.9</td>
</tr>
</tbody>
</table>
Electromechanical axis Mod. 5E...DS1

NOTE:
- We recommend a coupling with a shaft of tolerance h8.
- Dimension T2 in size 50 is not indicated because there is only one slot.
- Dimension Y indicates the hole for centralized lubrication by means of grease.

| Size | A | B | E | E1 | F | G1 | G2 | H | L1 | L2 | M1 | M2 | M3 | N | P1 | K1 | K2 | J1 | J2 | T1 | T2 | T3 | V | Y | W | Z1 | Z2 |
|------|---|---|---|----|---|----|----|---|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|
| 50   | 32.5 | 15 | 8.5 | 100 | 50 | 6 | 2 | 60 | 354 | 238 | 200 | 48 | 65 | 5 | 30 | 40 | 7 | 5 | 30 | 40 | M4 | 7 | M3 | 5 | 20 | 10 | 6 | 230 | 8 | 4 |
| 65   | 35 | 20 | 8.5 | 125 | 65 | 8 | 6 | 75 | 438 | 288 | 250 | 63 | 80 | 5 | 40 | 53 | 5 | M5 | 8 | M3 | 6 | 23.5 | 18 | 10 | 6 | 280 | 8 | 4 |
| 80   | 35 | 30 | 11.5 | 165 | 80 | 10 | 4 | 95 | 548 | 368 | 330 | 78 | 100 | 8 | 55 | 64 | M6 | 12 | M4 | 8.5 | 25 | 25 | 10 | 8 | 380 | 8 | 4 |

<table>
<thead>
<tr>
<th>Size</th>
<th>WEIGHT STROKE ZERO [kg]</th>
<th>STROKE WEIGHT PER METER [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>1.81</td>
<td>3.00</td>
</tr>
<tr>
<td>65</td>
<td>3.58</td>
<td>4.88</td>
</tr>
<tr>
<td>80</td>
<td>7.05</td>
<td>5.31</td>
</tr>
</tbody>
</table>
## Electromechanical axis Mod. 5E...HS1

### New version

![Diagram of Electromechanical axis Mod. 5E...HS1](image)

**NOTE:**
- * We recommend a coupling with a shaft of tolerance h8.
- ● Dimension Y indicates the hole for centralized lubrication by means of grease.

| Size | A    | B    | C   | C1   | C2   | C3   | D1  | E   | F   | F4  | G1  | G2  | H   | L1  | L2  | M1  | M2  | M3  | N   | P1  | P2  | P3  | P4  | K1  | K2  | J1  | J2  | J3  | T1  | T2  | T3  | Y   | X1  | X2  | W   | Z1  | Z2  |
|------|------|------|-----|------|------|------|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 65   | 35   | 20   | 5.3 | 5    | 26   | 23.5 | 46  | 20.5| 126 | 65  | 2    | 8    | 3   | 75  | 438 | 288 | 250 | 99  | 17  | 120 | 53  | 28  | 28  | 25  | 10  | 23.5| 18  | 10  | 6   | 373 | 30.5| 280 | 8   | 4   |
| 80   | 35   | 30   | 6.8 | 6.5  | 38   | 30.5 | 60.5| 26.5| 165 | 80  | 1    | 10   | 3   | 95  | 548 | 368 | 330 | 119 | 115 | 23  | 165 | 64  | 31  | 33.5| 12  | 33  | 30  | 10  | 5   | 80  | 80  | 10  | 8   |

### Size

<table>
<thead>
<tr>
<th>Size</th>
<th>WEIGHT STROKE ZERO [kg]</th>
<th>STROKE WEIGHT PER METER [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
<td>7.08</td>
<td>6.86</td>
</tr>
<tr>
<td>80</td>
<td>14.86</td>
<td>8.34</td>
</tr>
</tbody>
</table>
Electromechanical axis Mod. 5E...AL1

NOTE:
* We recommend a coupling with a shaft of tolerance h8.
- Dimension T2 in size 50 is not indicated because there is only one slot.
- Dimension Y indicates the hole for centralized lubrication by means of grease.

| Size (mm) | A   | B   | C   | C1  | C2  | ØC3 (H8) | D1  | D2  | E   | E1  | E2  | F   | G1 (H8) | G2  | H   | L1  | L2  | M1  | M2  | M3  | M4  | M5  | M6  | N   | P1  | P2  | J1  | J2  | J3  | T1  | T2  | T3  | T4  | V   | X1  | X2  | W   | Z1  | Z2  | Z3  | Z4  |
|-----------|-----|-----|-----|-----|-----|----------|-----|-----|-----|-----|-----|-----|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50        | 32.5| 15  | 37  | 4.5 | 20  | 17       | 32  | 32  | 8.5 | 101.5| 62  | 50  | 6        | 2   | 60  | 419 | 303 | 265 | 48  | 65  | 5   | 30  | 40  | 5   | 4   | 20.0| 10  | 6   | 369 | 21.8| 295 | 8   | 4   |
| 65        | 35.0| 20  | 53  | 5   | 26  | 23.5     | 46  | 53  | 8.5 | 126.0| 78  | 65  | 8        | 3   | 75  | 518 | 368 | 330 | 63  | 80  | 5   | 40  | 53  | 5   | 6   | 453 | 10.0| 18  | 6   | 453 | 30.5| 360 | 8   | 4   |
| 80        | 37.5| 30  | 68  | 6.5 | 38  | 30.5     | 60.5| 68  | 11.5| 167.5| 110 | 80  | 10       | 3   | 95  | 683 | 483 | 445 | 78  | 100 | 8   | 55  | 64  | 12  | 16  | 8.5 | 50  | 25.0| 10  | 8   | 453 | 40.5| 475 | 8   | 4   |

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>WEIGHT STROKE ZERO [kg]</th>
<th>STROKE WEIGHT PER METER [kg/m]</th>
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<tbody>
<tr>
<td>50</td>
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<td>3.35</td>
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<tr>
<td>65</td>
<td>3.56</td>
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</tr>
<tr>
<td>80</td>
<td>11.10</td>
<td>5.9</td>
</tr>
</tbody>
</table>
**Electromechanical axis Mod. 5E...AS2**

![Electromechanical axis Mod. 5E...AS2](image)

**NOTE:**
- We recommend a coupling with a shaft of tolerance h8.
- Dimension T2 in size 50 is not indicated because there is only one slot.
- Dimension Y indicates the hole for centralized lubrication by means of grease.

| Size | B | C | C1 | C2 | C3 | D1 | D2 | E | E1 | F | G1 | H | I | J | K | L | M | N | P | Q | R | S | T | U | V | W | X | Y | Z |
|------|---|---|----|----|----|----|----|---|----|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50   | 32.5 | 15 | 37 | 4.5 | 20 | 17 | 32 | 8.5 | 100 | 50 | 6 | 2 | 60 | 354 | 238 | 200 | 48 | 65 | 5 | 30 | 46 | 8.5 | 125 | 52 | 8 | 3 | 438 | 288 | 250 | 80 | 63 | 8 | 5 | 10 | 20 |
| 65   | 35  | 20 | 53 | 52  | 5  | 26 | 23.5 | 46 | 8.5 | 125 | 65 | 8 | 3 | 75 | 438 | 288 | 250 | 80 | 63 | M5 | 8 | 3 | 438 | 288 | 250 | 80 | 63 | 8 | 5 | 10 | 20 |
| 80   | 35  | 30 | 68 | 68  | 6.5 | 38 | 30.5 | 60.5 | 11.5 | 165 | 80 | 10 | 3 | 95 | 548 | 368 | 330 | 78 | 100 | 8 | 55 | 64 | 12 | M4 | 8.5 | M5 | 10 | 25 | 10 | 8 | 468 | 40.5 | 365 |

<table>
<thead>
<tr>
<th>Size</th>
<th>CL min</th>
<th>CL max</th>
<th>Max applicable stroke</th>
<th>WEIGHT STROKE ZERO [kg]</th>
<th>STROKE WEIGHT PER METER [kg/m]</th>
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<td>2000</td>
<td>Smax = 6132 - CL</td>
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<td>5.9</td>
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</table>
### Side clamping bracket Mod. BGS

Material: Aluminium

**Supplied with:**
2x clamps

**TABLE NOTE:**
* according to the span (max admissible deflection) recommended value 500 mm

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<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>A</th>
<th>B</th>
<th>C1</th>
<th>C2</th>
<th>ØD1</th>
<th>ØD2</th>
<th>E1</th>
<th>E2</th>
<th>H1</th>
<th>H2</th>
<th>P</th>
<th>Weight (g)</th>
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<tbody>
<tr>
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<td>66</td>
<td>68</td>
<td>*</td>
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<td>82</td>
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<td>6</td>
<td>10</td>
<td>45</td>
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<td>BGS-5E-M5</td>
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<td>85</td>
<td>*</td>
<td>5.5</td>
<td>9</td>
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<td>5.4</td>
<td>7</td>
<td>10</td>
<td>40</td>
</tr>
</tbody>
</table>

### Perforated side clamping bracket Mod. BGA

Material: Aluminium

**Supplied with:**
2x clamps with perforation

**TABLE NOTE:**
* according to the span (max admissible deflection) recommended value 500 mm

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<tr>
<th>Mod.</th>
<th>Size</th>
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<th>A2</th>
<th>B</th>
<th>C1</th>
<th>C2</th>
<th>ØD1</th>
<th>ØD2</th>
<th>E1</th>
<th>E2</th>
<th>H1</th>
<th>H2</th>
<th>P</th>
<th>Weight (g)</th>
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<td>7</td>
<td>7.5</td>
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</table>
Interface plate - slider on slider

The kit includes:
- 1x interface plate
- 8x screws + 8x lock washers to connect the plate on the slider of the main axis
- 4x screws + 4x lock washers to connect the plate on the slider of the secondary axis

### Interface plate - slider on slider

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>A1</th>
<th>A2</th>
<th>D</th>
<th>E</th>
<th>S</th>
<th>Weight (g)</th>
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<tbody>
<tr>
<td>XY-S65-S50</td>
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<td>150</td>
<td>150</td>
<td>55</td>
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<td>XY-S80-S50</td>
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<td>12</td>
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<td>XY-S80-S65</td>
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<td>190</td>
<td>150</td>
<td>70</td>
<td>85</td>
<td>12</td>
<td>720</td>
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</table>

Interface plate - profile on slider

The kit includes:
- 1x interface plate
- 8x screws + 8x lock washers to connect the plate on the slider of the main axis
- 4x clamps
- 8x screws + 8x lock washers to connect the secondary axis on the plate by means of clamps

### Interface plate - profile on slider

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>A1</th>
<th>A2</th>
<th>D</th>
<th>E</th>
<th>S</th>
<th>Weight (g)</th>
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<tr>
<td>XY-S65-P50</td>
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<td>150</td>
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<td>XY-S80-P50</td>
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<td>185</td>
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<td>85</td>
<td>12</td>
<td>1000</td>
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</tbody>
</table>
Interface plate - profile on slider - long arm

The kit includes:
1x interface plate
8x screws + 8x lock washers to connect plate on the slider of the main axis
4x clamps
8x screws + 8x lock washers to connect plate on the slider of the secondary axis by means of clamps

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>A1</th>
<th>A2</th>
<th>D</th>
<th>E</th>
<th>S</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XY-S50-P50-T</td>
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<td>162</td>
<td>130</td>
<td>50</td>
<td>85</td>
<td>12</td>
<td>600</td>
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<tr>
<td>XY-S65-P50-T</td>
<td>65</td>
<td>170</td>
<td>150</td>
<td>65</td>
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<td>12</td>
<td>750</td>
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<tr>
<td>XY-S65-P65-T</td>
<td>65</td>
<td>185</td>
<td>170</td>
<td>65</td>
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<tr>
<td>XY-S80-P50-T</td>
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<td>190</td>
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<td>XY-S80-P65-T</td>
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<td>190</td>
<td>85</td>
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<td>1100</td>
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Interface plate - Series 6E cylinder on slider

The kit includes:
1x interface plate
4x screws + 4x lock washers to connect the plate on the slider of the axis
2x clamps
4x screws + 4x lock washers to fix the Series 6E cylinder by means of clamps

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
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<th>S</th>
<th>Weight (g)</th>
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<tr>
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<td>110</td>
<td>12</td>
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<td>108</td>
<td>110</td>
<td>12</td>
<td>560</td>
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</table>
## Interface plate - profile side on slider - left position

The kit includes:
- 1x interface plate
- 8x screws + 8x lock washers to connect the plate on the slider of the main axis,
- screws and nuts for slot to connect the plate on the slider of the secondary axis

### XY-S50-LL50
- Size: 50
- A1: 130
- A2: 145
- D: 50
- E: 55
- S: 11
- Nr of holes: 4
- Weight (g): 450

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>A1</th>
<th>A2</th>
<th>D</th>
<th>E</th>
<th>S</th>
<th>Nr of holes</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XY-S50-LL50</td>
<td>50</td>
<td>130</td>
<td>145</td>
<td>50</td>
<td>55</td>
<td>11</td>
<td>4</td>
<td>450</td>
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<tr>
<td>XY-S55-LL50</td>
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<td>160</td>
<td>160</td>
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<td>12</td>
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<td>550</td>
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<tr>
<td>XY-S80-LL50</td>
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<td>175</td>
<td>50</td>
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<td>XY-S80-LL65</td>
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<td>12</td>
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</table>

## Interface plate - profile side on slider - right position

The kit includes:
- 1x interface plate
- 8x screws + 8x lock washers to connect the plate on the slider of the main axis,
- screws and nuts for slot to connect the plate on the slider of the secondary axis

### XY-S50-LR50
- Size: 50
- A1: 130
- A2: 145
- D: 50
- E: 55
- S: 11
- Nr of holes: 4
- Weight (g): 450

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>A1</th>
<th>A2</th>
<th>D</th>
<th>E</th>
<th>S</th>
<th>Nr of holes</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XY-S50-LR50</td>
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<td>130</td>
<td>145</td>
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</table>
Fixed interface plate

The kit includes:
1x interface plate
4x clamps
8x screws to connect the clamps on the plate

<table>
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<th>Mod.</th>
<th>Size</th>
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<th>A2</th>
<th>D1</th>
<th>D2</th>
<th>H</th>
<th>I1</th>
<th>I2</th>
<th>S</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-P50</td>
<td>50</td>
<td>95</td>
<td>140</td>
<td>9</td>
<td>5.5</td>
<td>6</td>
<td>45</td>
<td>80</td>
<td>8</td>
<td>275</td>
</tr>
<tr>
<td>X-P65</td>
<td>65</td>
<td>120</td>
<td>140</td>
<td>10.5</td>
<td>6.5</td>
<td>7</td>
<td>50</td>
<td>100</td>
<td>10</td>
<td>430</td>
</tr>
<tr>
<td>X-P80</td>
<td>80</td>
<td>120</td>
<td>160</td>
<td>13.5</td>
<td>8.5</td>
<td>9</td>
<td>50</td>
<td>100</td>
<td>12</td>
<td>570</td>
</tr>
</tbody>
</table>

Interface plate - Anti-rotation guides S. 45 / Cylinders S. 6E on slider

The kit includes:
1x interface plate
8x screws + 8x lock washers to connect the plate on the slider
4x screws to connect the cylinder

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>A1</th>
<th>A2</th>
<th>D</th>
<th>E</th>
<th>S</th>
<th>M(min)</th>
<th>Y</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XY-S50-45N32</td>
<td>50</td>
<td>124</td>
<td>130</td>
<td>50</td>
<td>49</td>
<td>12</td>
<td>30</td>
<td>75</td>
<td>360</td>
</tr>
<tr>
<td>XY-S65-45N32</td>
<td>65</td>
<td>139</td>
<td>170</td>
<td>65</td>
<td>49</td>
<td>12</td>
<td>30</td>
<td>82.5</td>
<td>480</td>
</tr>
<tr>
<td>XY-S65-45N40</td>
<td>65</td>
<td>147.5</td>
<td>170</td>
<td>65</td>
<td>55</td>
<td>12</td>
<td>35</td>
<td>87</td>
<td>500</td>
</tr>
<tr>
<td>XY-S65-45N50</td>
<td>65</td>
<td>157</td>
<td>170</td>
<td>65</td>
<td>66.5</td>
<td>12</td>
<td>40</td>
<td>91.5</td>
<td>530</td>
</tr>
<tr>
<td>XY-S80-45N40</td>
<td>80</td>
<td>167.5</td>
<td>190</td>
<td>85</td>
<td>55</td>
<td>12</td>
<td>35</td>
<td>97</td>
<td>660</td>
</tr>
<tr>
<td>XY-S80-45N50</td>
<td>80</td>
<td>177</td>
<td>190</td>
<td>85</td>
<td>65</td>
<td>12</td>
<td>40</td>
<td>101.5</td>
<td>690</td>
</tr>
<tr>
<td>XY-S80-45N63</td>
<td>80</td>
<td>190.5</td>
<td>190</td>
<td>85</td>
<td>75</td>
<td>12</td>
<td>45</td>
<td>110</td>
<td>740</td>
</tr>
</tbody>
</table>
### 5E/5V connection flange

<table>
<thead>
<tr>
<th>Model</th>
<th>Size</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>A1</th>
<th>A2</th>
<th>E</th>
<th>D</th>
<th>S</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YZ-40-5V60</td>
<td>80</td>
<td>137.5</td>
<td>163.5</td>
<td>202.5</td>
<td>98.5</td>
<td>150.5</td>
<td>118</td>
<td>190</td>
<td>84.5</td>
<td>78</td>
<td>15</td>
<td>770</td>
</tr>
<tr>
<td>YZ-40-5V80</td>
<td>80</td>
<td>141</td>
<td>168.5</td>
<td>222.5</td>
<td>118.5</td>
<td>-</td>
<td>120</td>
<td>190</td>
<td>99.5</td>
<td>78</td>
<td>15</td>
<td>825</td>
</tr>
<tr>
<td>YZ-45-5V65</td>
<td>65</td>
<td>130</td>
<td>154</td>
<td>179.5</td>
<td>104.5</td>
<td>-</td>
<td>101.5</td>
<td>140</td>
<td>84.5</td>
<td>76.5</td>
<td>13</td>
<td>460</td>
</tr>
<tr>
<td>YZ-45-5V85</td>
<td>65</td>
<td>130</td>
<td>154</td>
<td>179.5</td>
<td>104.5</td>
<td>-</td>
<td>101.5</td>
<td>140</td>
<td>84.5</td>
<td>76.5</td>
<td>13</td>
<td>460</td>
</tr>
<tr>
<td>YZ-45-5V50</td>
<td>65</td>
<td>112.5</td>
<td>136.5</td>
<td>16</td>
<td>87</td>
<td>124.5</td>
<td>99.5</td>
<td>140</td>
<td>64.5</td>
<td>76.5</td>
<td>13</td>
<td>445</td>
</tr>
<tr>
<td>YZ-45-5V50</td>
<td>65</td>
<td>112.5</td>
<td>136.5</td>
<td>16</td>
<td>87</td>
<td>124.5</td>
<td>99.5</td>
<td>140</td>
<td>64.5</td>
<td>76.5</td>
<td>13</td>
<td>445</td>
</tr>
<tr>
<td>YZ-50-5V50</td>
<td>50</td>
<td>105</td>
<td>121</td>
<td>147</td>
<td>79</td>
<td>-</td>
<td>81</td>
<td>130</td>
<td>64.5</td>
<td>63</td>
<td>13</td>
<td>335</td>
</tr>
</tbody>
</table>

Products designed for industrial applications. General terms and conditions for sale are available on [www.camozzi.com](http://www.camozzi.com).
Centering ring Mod. TR-CG
Supplied with:
2x centering rings in steel

<table>
<thead>
<tr>
<th>Mod.</th>
<th>M (IN)</th>
<th>N</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR-CG-04</td>
<td>Ø4</td>
<td>Ø2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>TR-CG-05</td>
<td>Ø5</td>
<td>Ø3.1</td>
<td>3</td>
</tr>
<tr>
<td>TR-CG-06</td>
<td>Ø6</td>
<td>Ø4.1</td>
<td>4</td>
</tr>
<tr>
<td>TR-CG-08</td>
<td>Ø8</td>
<td>Ø5.1</td>
<td>5</td>
</tr>
<tr>
<td>TR-CG-10</td>
<td>Ø10</td>
<td>Ø6.1</td>
<td>6</td>
</tr>
<tr>
<td>TR-CG-12</td>
<td>Ø12</td>
<td>Ø8.1</td>
<td>6</td>
</tr>
</tbody>
</table>

Kit to fix the inductive sensor

The kit includes:
1x sensor dog
2x screws to fix the sensor dog
1x sensor supporting plate
2x screws to connect the sensor supporting plate
2x nuts for the slot

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>A</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>H1</th>
<th>H2</th>
<th>I</th>
<th>L</th>
<th>M</th>
<th>N1</th>
<th>N2</th>
<th>ØO</th>
<th>P</th>
<th>Q</th>
<th>R</th>
<th>S</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI-MS-50/65</td>
<td>50-65</td>
<td>27</td>
<td>10</td>
<td>20</td>
<td>3.5</td>
<td>13</td>
<td>8.5</td>
<td>5.5</td>
<td>22</td>
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<td>14.5</td>
<td>21</td>
<td>5.5</td>
<td>6</td>
<td>14</td>
<td>26</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>SI-MS-80</td>
<td>65</td>
<td>27</td>
<td>10</td>
<td>20</td>
<td>3.5</td>
<td>13</td>
<td>8.5</td>
<td>5.5</td>
<td>25</td>
<td>15</td>
<td>10.5</td>
<td>24</td>
<td>8.5</td>
<td>10</td>
<td>18.5</td>
<td>30</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>SB-M5-80</td>
<td>80</td>
<td>45</td>
<td>15</td>
<td>20</td>
<td>4.5</td>
<td>16</td>
<td>10.5</td>
<td>5.5</td>
<td>22</td>
<td>12</td>
<td>14.5</td>
<td>21</td>
<td>5.5</td>
<td>6</td>
<td>14</td>
<td>26</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>SB-M8-80</td>
<td>80</td>
<td>45</td>
<td>15</td>
<td>20</td>
<td>4.5</td>
<td>16</td>
<td>10.5</td>
<td>5.5</td>
<td>25</td>
<td>15</td>
<td>10.5</td>
<td>24</td>
<td>8.5</td>
<td>10</td>
<td>18.5</td>
<td>30</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>
Kit to connect the gearbox

The kit includes:
1x connection flange
4x screws + 4x lock washers to connect the flange
1x locking set
4x screws + 4x lock washers to connect the gearbox

Kit to connect the gearbox - enhanced series

The kit includes:
1x connection flange
4x screws + 4x lock washers to connect the flange
1x expansion coupling
4x screws + 4x lock washers to connect the gearbox

### DIMENSIONS

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>E1</th>
<th>E2</th>
<th>S</th>
<th>BCD</th>
<th>A</th>
<th>D1</th>
<th>D2(.mm)</th>
<th>T1</th>
<th>T2</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR-5E-50</td>
<td>50</td>
<td>48</td>
<td>43</td>
<td>6</td>
<td>34</td>
<td>4.5</td>
<td>10</td>
<td>Ø26</td>
<td>10</td>
<td>10</td>
<td>85</td>
</tr>
<tr>
<td>FR-5E-65</td>
<td>65</td>
<td>63</td>
<td>60</td>
<td>7</td>
<td>52</td>
<td>5.5</td>
<td>14</td>
<td>Ø40</td>
<td>11</td>
<td>11</td>
<td>140</td>
</tr>
<tr>
<td>FR-5E-80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>11</td>
<td>70</td>
<td>6.5</td>
<td>20</td>
<td>Ø60</td>
<td>17</td>
<td>4</td>
<td>325</td>
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</table>

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>D1(mm)</th>
<th>A</th>
<th>D2</th>
<th>D3</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>F</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRH-5E-50</td>
<td>50</td>
<td>40</td>
<td>4</td>
<td>52</td>
<td>5.5</td>
<td>8</td>
<td>51</td>
<td>50</td>
<td>34</td>
<td>170</td>
</tr>
<tr>
<td>FRH-5E-65</td>
<td>65</td>
<td>60</td>
<td>4</td>
<td>70</td>
<td>6.5</td>
<td>10</td>
<td>59</td>
<td>65</td>
<td>47</td>
<td>530</td>
</tr>
</tbody>
</table>
Direct connection kit for Stepper motor

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>Motor</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>F1</th>
<th>F2</th>
<th>E</th>
<th>TG</th>
<th>K</th>
<th>M</th>
<th>N</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS-5E-50-0024</td>
<td>50</td>
<td>NEMA 24</td>
<td>4</td>
<td>37</td>
<td>41</td>
<td>47</td>
<td>45</td>
<td>60.5</td>
<td>47.1</td>
<td>M4</td>
<td>38.1</td>
<td>2.5</td>
<td>125</td>
</tr>
<tr>
<td>FS-5E-65-0024</td>
<td>65</td>
<td>NEMA 24</td>
<td>4</td>
<td>36</td>
<td>45</td>
<td>65</td>
<td>60</td>
<td>60.5</td>
<td>47.1</td>
<td>M4</td>
<td>38.1</td>
<td>2.5</td>
<td>200</td>
</tr>
</tbody>
</table>
Slot nut for sensor CSH
Material: steel

Supplied with:
2x nuts

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCV-5E-CS-M3</td>
<td>50 - 65 - 80</td>
<td>M3</td>
</tr>
<tr>
<td>PCV-5E-CS-M4</td>
<td>50 - 65 - 80</td>
<td>M4</td>
</tr>
</tbody>
</table>

Slot nut 6 - rectangular type
Material: steel

Supplied with:
2x nuts

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCV-5E-C6-M4Q</td>
<td>50 - 65</td>
<td>M4</td>
</tr>
</tbody>
</table>

Slot nut 6 for front insertion
Material: steel

Supplied with:
2x nuts

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCV-5E-C6-M4R</td>
<td>50 - 65</td>
<td>M4</td>
</tr>
</tbody>
</table>

Slot nut 8 with flexible flap
Material: steel

Supplied with:
2x nuts

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCV-5E-C8-M5</td>
<td>80</td>
<td>M5</td>
</tr>
<tr>
<td>PCV-5E-C8-M6</td>
<td>80</td>
<td>M6</td>
</tr>
</tbody>
</table>
Parallel connection kit
The kit includes:
1x parallel shaft
2x expansion couplings

EXAMPLE:
PS-5E-65-1400 corresponds to a parallel connection for axes positioned at interaxis I = 1400mm

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>I min</th>
<th>I max</th>
<th>D1</th>
<th>D2</th>
<th>E</th>
<th>Transmission torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS-5E-50-0000</td>
<td>50</td>
<td>200</td>
<td>2000</td>
<td>22</td>
<td>32</td>
<td>26</td>
<td>see graph</td>
</tr>
<tr>
<td>PS-5E-65-0000</td>
<td>65</td>
<td>250</td>
<td>2000</td>
<td>25</td>
<td>42</td>
<td>35.5</td>
<td>see graph</td>
</tr>
<tr>
<td>PS-5E-80-0000</td>
<td>80</td>
<td>300</td>
<td>2000</td>
<td>30</td>
<td>56</td>
<td>40</td>
<td>see graph</td>
</tr>
</tbody>
</table>
INTERAXIS ACCORDING TO THE MAXIMUM ADMISSIBLE TORQUE

Size 50x50

\[ C_{\text{max}} = \text{max applicable torque} \]
\[ i = \text{interaxis between the two 5E axes} \]

01 = lag error 0.1 mm
02 = lag error 0.2 mm
03 = lag error 0.3 mm

Size 65x65

\[ C_{\text{max}} = \text{max applicable torque} \]
\[ i = \text{interaxis between the two 5E axes} \]

01 = lag error 0.1 mm
02 = lag error 0.2 mm
03 = lag error 0.3 mm

Size 80x80

\[ C_{\text{max}} = \text{max applicable torque} \]
\[ i = \text{interaxis between the two 5E axes} \]

01 = lag error 0.1 mm
02 = lag error 0.2 mm
03 = lag error 0.3 mm
Series 5V vertical electromechanical axis

Sizes 50, 65, 80

The 5V vertical electromechanical axis represents the ideal solution for applications that require vertical displacements as for example pick and place, dispensing, loading/unloading systems (plastic injection moulding, assembly, machining) or palletizers. Available in three sizes, 50, 65 and 80, it can be used as vertical axis of a x,y,z gantry system or cantilever in applications that require to move loads for long strokes quickly and thus optimise the machine cycle time.

The new Series 5V axes are mechanical linear actuators with toothed belt. Thanks to a specific pulley system with omega configuration, these axes allow to reduce to a minimum the inertia of the system. Furthermore, the presence of one or more recirculating ball guides (HS version) as well as of a special self-supporting square profile provides high stiffness and resistance to dynamic loads, ensuring a precise and fast displacement of heavy loads.

» High dynamics
» Easy to integrate in x-y-z systems
» Strokes up to 1500 mm
» Version with integrated shock absorbers

GENERAL DATA

<table>
<thead>
<tr>
<th>Description</th>
<th>5V vertical electromechanical axis with toothed belt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>open profile with protection plate</td>
</tr>
<tr>
<td>Design</td>
<td>linear multi-position actuator</td>
</tr>
<tr>
<td>Operation</td>
<td>50, 65, 80</td>
</tr>
<tr>
<td>Sizes</td>
<td>max 1500 mm</td>
</tr>
<tr>
<td>Strokes</td>
<td>internal, with recirculating balls (cage type)</td>
</tr>
<tr>
<td>Fixing</td>
<td>by means of dedicated accessories</td>
</tr>
<tr>
<td>Mounting motor</td>
<td>on both sides</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10°C → +50°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20°C → +80°C</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 20</td>
</tr>
<tr>
<td>Lubrication</td>
<td>centralized lubrication by means of internal channels</td>
</tr>
<tr>
<td>Repeatability</td>
<td>± 0.05 mm</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>100%</td>
</tr>
<tr>
<td>Use with external sensors</td>
<td>CSH and CST magnetic switches by means of accessories Mod. SMS</td>
</tr>
</tbody>
</table>
### CODING EXAMPLE

<table>
<thead>
<tr>
<th>5V</th>
<th>S</th>
<th>050</th>
<th>TBL</th>
<th>0200</th>
<th>A</th>
<th>S</th>
<th>1</th>
</tr>
</thead>
</table>

#### 5V SERIES
- **PROFILE:**
  - S = square section

#### 050
- **FRAME SIZE:**
  - 050 = 50x50 mm
  - 065 = 65x65 mm
  - 080 = 80x80 mm

#### TBL
- **TRANSMISSION:**
  - TBL = toothed belt

#### 0200
- **STROKE [C]:**
  - 0050 ÷ 1500 mm

#### A
- **VERSION:**
  - A = standard

#### S
- **TYPE OF SLIDER:**
  - S = standard

#### 1
- **NUMBER OF SLIDERS:**
  - 1 = 1 slider
- **TYPE OF END CAP:**
  - = standard
  - SA = shock absorber integrated

### MECHANICAL CHARACTERISTICS

(A) Value refers to a covered distance of 2000 Km with fully supported system.

<table>
<thead>
<tr>
<th>Measuring unit</th>
<th>Size 50</th>
<th>Size 65</th>
<th>Size 80</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECIRCULATING BALL GUIDE (CAGE TYPE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Version</td>
<td>A</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Type of slider</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Number of RDS blocks (C)</td>
<td>pcs</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Dynamic load of RDS blocks (C)</td>
<td>N</td>
<td>11640</td>
<td>28400</td>
</tr>
<tr>
<td>Max admissible load (C&lt;sub&gt;max&lt;/sub&gt; Z, C&lt;sub&gt;max&lt;/sub&gt; Y)</td>
<td>N</td>
<td>3100&lt;sup&gt;(A)&lt;/sup&gt;</td>
<td>8300&lt;sup&gt;(A)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Max admissible moment (M&lt;sub&gt;max&lt;/sub&gt; X)</td>
<td>Nm</td>
<td>22.44</td>
<td>96.00</td>
</tr>
<tr>
<td>Max admissible moment (M&lt;sub&gt;max&lt;/sub&gt; Y, M&lt;sub&gt;max&lt;/sub&gt; Z)</td>
<td>Nm</td>
<td>45.30</td>
<td>269.40</td>
</tr>
<tr>
<td>Max linear speed of mechanics (V&lt;sub&gt;max&lt;/sub&gt;)</td>
<td>m/s</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Max linear acceleration of mechanics (a&lt;sub&gt;max&lt;/sub&gt;)</td>
<td>m/s²</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>PROFILE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moment of surface inertia I&lt;sub&gt;y&lt;/sub&gt;</td>
<td>mm&lt;sup&gt;4&lt;/sup&gt;</td>
<td>1.89 ∙ 10&lt;sup&gt;5&lt;/sup&gt;</td>
<td>4.94 ∙ 10&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>Moment of surface inertia I&lt;sub&gt;z&lt;/sub&gt;</td>
<td>mm&lt;sup&gt;4&lt;/sup&gt;</td>
<td>2.48 ∙ 10&lt;sup&gt;6&lt;/sup&gt;</td>
<td>6.97 ∙ 10&lt;sup&gt;6&lt;/sup&gt;</td>
</tr>
<tr>
<td>TOOTHED BELT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>P10n</td>
<td>P5</td>
<td>P5</td>
</tr>
<tr>
<td>Safe load</td>
<td>N</td>
<td>See the diagram</td>
<td>See the diagram</td>
</tr>
<tr>
<td>Linear movement per pulley round</td>
<td>mm/round</td>
<td>155</td>
<td>180</td>
</tr>
<tr>
<td>Effective diameter of the pulley</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of teeth</td>
<td>z</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear movement per pulley round</td>
<td>mm/round</td>
<td>47.75</td>
<td>57.30</td>
</tr>
</tbody>
</table>

---

Products designed for industrial applications. General terms and conditions for sale are available on www.camozzi.com.
SERIES 5V MATERIALS

COMPONENTS | MATERIALS
---|---
1. End cap | Aluminium alloy
2. Idler | Aluminium alloy
3. Pulley | Steel
4. Omega body | Aluminium alloy
5. Cover | Aluminium alloy
7. Belt | PU + Steel
8. Recirculating ball guide | Steel

HOW TO CALCULATE THE LIFE OF THE AXIS 5V

The correct dimensioning of the axis 5V, used individually or in a cartesian system with several axes, you need to consider some facts, both static and dynamic. Among these, the most important are described on the following pages.

CALCULATION OF LIFE [km]

\[ L_{eq} = \left( \frac{C_{ma}}{C_{eq} \cdot f_w} \right)^3 \times 2000 \]

- \( L_{eq} \) = Life of the axis [km]
- \( C_{ma} \) = Maximum admissible load [N]
- \( C_{eq} \) = Equivalent load [N]
- \( f_w \) = safety coefficient according to the working conditions

CALCULATION OF EQUIVALENT LOAD

When compression/traction and side loads as well as bending or torque moments act on the system, you need to calculate the equivalent load acting on the system.

\[ C_{eq} = |F_y| + |F_z| + C_{ma} \cdot \frac{M_x}{M_{x,ma}} + C_{ma} \cdot \frac{M_y}{M_{y,ma}} + C_{ma} \cdot \frac{M_z}{M_{z,ma}} \]

- \( C_{eq} \) = Equivalent load [N]
- \( F_y \) = Force acting along the Y-axis [N]
- \( F_z \) = Force acting along the Z-axis [N]
- \( C_{ma} \) = Max admissible load [N]
- \( M_x \) = Moment along X-axis [Nm]
- \( M_y \) = Moment along Y-axis [Nm]
- \( M_z \) = Moment along Z-axis [Nm]
- \( M_{x,ma} \) = Max admissible moment along X-axis [Nm]
- \( M_{y,ma} \) = Max admissible moment along Y-axis [Nm]
- \( M_{z,ma} \) = Max admissible moment along Z-axis [Nm]
HOW TO CALCULATE THE DRIVING TORQUE [Nm]

\[ C_{TOT} = C_{M1} + C_{M2} + C_{M3} \]

\[ F_a = F_E + m_c \cdot (a \pm g) \]

\[ C_{M1} = \frac{F_a \cdot D_p}{2} \]

\[ \ddot{\omega} = \frac{2 \cdot a}{D_p} \]

\[ C_{M2} = F_{TOT} \cdot \ddot{\omega} \]

\[ F_{TT} = F_{TP} + F_{TV} \]

\[ F_{TV} = m_{CL} \cdot (a \pm g) \]

\[ F_{TV} = K_{TV} \cdot C \cdot (a \pm g) \]

\[ C_{M3} = \frac{F_{TT} \cdot D_p}{2} \]

FA = Total force acting from outside [N]

FE = Force to be applied externally [N]

g = Gravitational acceleration [9.81 m/s²]

m_1 = Mass of the body to move [kg]

D_p = Pulley pitch diameter [mm]

CM1 = Driving torque due to external agents [Nm]

Jm = Moment of inertia of rotating components [kg⋅m²]

ω = Angular acceleration [rad/s²]

a = Axis linear acceleration [m/s²]

CM2 = Driving torque due to rotating components [Nm]

According to the axis size and to the speeds chosen, force that can be transmitted from the toothed belt has these limits.

TRANSMISSIBLE FORCE

The force that can be transmitted from the toothed belt depends on the axis size and speeds chosen.
MOVEMENT > Series 5V electromechanical axis

WEIGHT DISTINCTION

1 = fixed mass $M_1$
2 = moving mass with stroke zero $m_{C1}$
3 = moving mass that varies according to the stroke $K_{TV}$

<table>
<thead>
<tr>
<th>Size</th>
<th>$m_{C1}$ [Kg]</th>
<th>$K_{TV}$ [Kg/m]</th>
<th>$M_1$ [Kg]</th>
<th>tot weight stroke 0 [Kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>1.49</td>
<td>3.15</td>
<td>3.37</td>
<td>4.86</td>
</tr>
<tr>
<td>65</td>
<td>2.67</td>
<td>5.13</td>
<td>6.14</td>
<td>8.81</td>
</tr>
<tr>
<td>80</td>
<td>6.43</td>
<td>8.3</td>
<td>12.16</td>
<td>18.59</td>
</tr>
</tbody>
</table>
Life of the Series 5V Axis According to the Equivalent Load

Curves calculated with $f_w = 1$

$C_{eq}$ = Equivalent load applied on the axis [kN]
$Leq$ = Life of the axis [km]

Equivalent Load

To determine the moment acting on the axis $x$, $M_x$, in an accurate way, refer to the following formula:

$$M_x = F_y \cdot (K + K_1)$$

where:
- $M_x$ = Moment along X-axis [Nm]
- $F_y$ = Force acting along the Y-axis [N]
- $K$ = fixed distance for axis 5E [mm]
- $K_1$ = application arm [mm]

NOTE: here below, the "K" values for the three sizes
- $K = 21$ mm (5VS050)
- $K = 28$ mm (5VS065)
- $K = 36$ mm (5VS080)
DEFLECTION 5VS050

\[ f = \text{generated deflection} \ [\text{mm}] \]
\[ L = \text{arm length} \ [\text{mm}] \]

\[ f = \text{generated deflection} \ [\text{mm}] \]
\[ L = \text{arm length} \ [\text{mm}] \]
DEFLECTION 5VS065

\( f \) = generated deflection [mm]
\( L \) = arm length [mm]

\( f \) = generated deflection [mm]
\( L \) = arm length [mm]
DEFLECTION 5V/080

\[ f = \text{generated deflection [mm]} \]

\[ L = \text{arm length [mm]} \]
## ACCESSORIES FOR SERIES 5V

- Kit to connect the gearbox
- Magnet kit Mod. SMS-5V-U
- Sensor holder kit Mod. SMS-5V
- Centering ring Mod. TR-CG
- 5E/5V connection flange

All accessories are supplied separately from the axis. Together with the axis, a kit is supplied containing:
- covers to close the holes on the endcap
- centering bushings for the slider
- nipples for greasing
Kit to connect the gearbox

The kit includes:
1x connection flange
4x screws + 4x lock washers
to connect the flange
1x locking set
4x screws + 4x lock washers
to connect the gearbox

### DIMENSIONS

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>E1</th>
<th>E2</th>
<th>S</th>
<th>BCD</th>
<th>D1</th>
<th>D2(ø)</th>
<th>T1</th>
<th>T2</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR-5V-50</td>
<td>GB-060-...</td>
<td>65</td>
<td>65</td>
<td>6</td>
<td>52</td>
<td>5.5</td>
<td>14</td>
<td>10</td>
<td>-</td>
<td>130</td>
</tr>
<tr>
<td>FR-5V-65</td>
<td>GB-080-...</td>
<td>84</td>
<td>84</td>
<td>9</td>
<td>70</td>
<td>6.5</td>
<td>20</td>
<td>60</td>
<td>12</td>
<td>300</td>
</tr>
<tr>
<td>FR-5V-80</td>
<td>GB-120-...</td>
<td>115</td>
<td>115</td>
<td>13</td>
<td>100</td>
<td>10.5</td>
<td>25</td>
<td>80</td>
<td>18</td>
<td>620</td>
</tr>
</tbody>
</table>

Magnet kit Mod. SMS-5V-U

Supplied with:
1x plate
1x magnet
2x locking screws

<table>
<thead>
<tr>
<th>Mod.</th>
<th>SMS-5V-U</th>
</tr>
</thead>
</table>

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Sensor holder kit Mod. SMS-5V

Supplied with:
1x plate
2x screws

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS-5V-50</td>
<td>50</td>
<td>7.5</td>
<td>30</td>
<td>32</td>
<td>100</td>
<td>30</td>
</tr>
<tr>
<td>SMS-5V-65/80</td>
<td>65</td>
<td>5</td>
<td>30</td>
<td>47</td>
<td>112.5</td>
<td>30</td>
</tr>
<tr>
<td>SMS-5V-65/80</td>
<td>80</td>
<td>5</td>
<td>30</td>
<td>63</td>
<td>167.5</td>
<td>30</td>
</tr>
</tbody>
</table>

Centering ring Mod. TR-CG

Supplied with:
2x centering rings in steel

<table>
<thead>
<tr>
<th>Mod.</th>
<th>M (H8)</th>
<th>N</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR-CG-04</td>
<td>Ø4</td>
<td>Ø2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>TR-CG-05</td>
<td>Ø5</td>
<td>Ø3.1</td>
<td>3</td>
</tr>
<tr>
<td>TR-CG-06</td>
<td>Ø6</td>
<td>Ø4.1</td>
<td>4</td>
</tr>
<tr>
<td>TR-CG-08</td>
<td>Ø8</td>
<td>Ø5.1</td>
<td>5</td>
</tr>
<tr>
<td>TR-CG-10</td>
<td>Ø10</td>
<td>Ø6.1</td>
<td>6</td>
</tr>
<tr>
<td>TR-CG-12</td>
<td>Ø12</td>
<td>Ø8.1</td>
<td>6</td>
</tr>
</tbody>
</table>
5E/5V connection flange

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Size</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>A1</th>
<th>A2</th>
<th>E</th>
<th>D</th>
<th>S</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YZ-50-5V50</td>
<td>50</td>
<td>105</td>
<td>121</td>
<td>147</td>
<td>156</td>
<td>-</td>
<td>81</td>
<td>130</td>
<td>64.5</td>
<td>63</td>
<td>13</td>
<td>335</td>
</tr>
<tr>
<td>YZ-55-5V50</td>
<td>65</td>
<td>112.5</td>
<td>136.5</td>
<td>162</td>
<td>179</td>
<td>124.5</td>
<td>99.5</td>
<td>140</td>
<td>64.5</td>
<td>76.5</td>
<td>13</td>
<td>445</td>
</tr>
<tr>
<td>YZ-55-5V65</td>
<td>65</td>
<td>130</td>
<td>154</td>
<td>179.5</td>
<td>196.5</td>
<td>-</td>
<td>101.5</td>
<td>140</td>
<td>84.5</td>
<td>76.5</td>
<td>13</td>
<td>460</td>
</tr>
<tr>
<td>YZ-80-5V50</td>
<td>80</td>
<td>120.5</td>
<td>146.5</td>
<td>185.5</td>
<td>196.5</td>
<td>133.5</td>
<td>118</td>
<td>190</td>
<td>64.5</td>
<td>78</td>
<td>13</td>
<td>635</td>
</tr>
<tr>
<td>YZ-80-5V65</td>
<td>80</td>
<td>157.5</td>
<td>163.5</td>
<td>202.5</td>
<td>213.5</td>
<td>150.5</td>
<td>118</td>
<td>190</td>
<td>84.5</td>
<td>78</td>
<td>15</td>
<td>770</td>
</tr>
<tr>
<td>YZ-80-5V80</td>
<td>80</td>
<td>141</td>
<td>183.5</td>
<td>222.5</td>
<td>233.5</td>
<td>-</td>
<td>120</td>
<td>190</td>
<td>99.5</td>
<td>78</td>
<td>15</td>
<td>825</td>
</tr>
</tbody>
</table>
Series DRWB drives for the control of electric actuation

Drives for Brushless motors, sizes in power classes 100, 400, 750, 1000 W

» Completely digital drives
» PLC function programmable with the Camozzi QSet configuration software
» Control of speed, position and torque (torque only for Series DRWB)
» 64 positions programmable through the QSet
» Self-compensation of errors

The Camozzi drives Series DRWB have been designed to control the movement of the Camozzi electromechanical actuators (Series 5E and Series 6E).

The servo drives DRWB, compact and especially optimized for the brushless Camozzi motors, are completely digital and available in the power classes 100, 400, 750, 1000 W. Equipped with vector mode and the function of Autotuning and containment of vibrations, they are made in such a way to easily perform replacements and to have a two-line alphanumeric display with 4 control keys on the servo drive.

A digital pulse interface allows control of the direction, position, speed and torque. It is possible to control the drives with analogic signals.
## GENERAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Mod. DRWB-W01-2-D-E-A, DRWB-W04-2-D-E-A, DRWB-W07-2-D-E-A, DRWB-W10-2-D-E-A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power</strong></td>
</tr>
<tr>
<td>100 W (Mod. DRWB-W01-2-D-E-A)</td>
</tr>
<tr>
<td>400 W (Mod. DRWB-W04-2-D-E-A)</td>
</tr>
<tr>
<td>750 W (Mod. DRWB-W07-2-D-E-A)</td>
</tr>
<tr>
<td>1000 W (Mod. DRWB-W10-2-D-E-A)</td>
</tr>
<tr>
<td><strong>Electrical supply</strong></td>
</tr>
<tr>
<td>200 - 240 V AC (± 10%) single or three phase</td>
</tr>
<tr>
<td>50 - 60 Hz (± 5%)</td>
</tr>
<tr>
<td><strong>Number of phases</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td><strong>Maximum current</strong></td>
</tr>
<tr>
<td>1.5 A (Mod. DRWB-W01-2-D-E-A)</td>
</tr>
<tr>
<td>4.1 A (Mod. DRWB-W04-2-D-E-A)</td>
</tr>
<tr>
<td>7.5 A (Mod. DRWB-W07-2-D-E-A, Mod. DRWB-W10-2-D-E-A)</td>
</tr>
<tr>
<td><strong>Logic supply</strong></td>
</tr>
<tr>
<td>200 - 240 V AC (± 10%)</td>
</tr>
<tr>
<td>50 - 60 Hz (± 5%) single phase</td>
</tr>
<tr>
<td><strong>Maximum logic current</strong></td>
</tr>
<tr>
<td>0.5 A max.</td>
</tr>
<tr>
<td><strong>OUTPUT CURRENT</strong></td>
</tr>
<tr>
<td><strong>Continuous current (effective)</strong></td>
</tr>
<tr>
<td>0.9 A (Mod. DRWB-W01-2-D-E-A)</td>
</tr>
<tr>
<td>2.5 A (Mod. DRWB-W04-2-D-E-A)</td>
</tr>
<tr>
<td>5.1 A (Mod. DRWB-W07-2-D-E-A, Mod. DRWB-W10-2-D-E-A)</td>
</tr>
<tr>
<td><strong>Peak current (effective)</strong></td>
</tr>
<tr>
<td>2.7 A (Mod. DRWB-W01-2-D-E-A)</td>
</tr>
<tr>
<td>7.5 A (Mod. DRWB-W04-2-D-E-A)</td>
</tr>
<tr>
<td>15.3 A (Mod. DRWB-W07-2-D-E-A, Mod. DRWB-W10-2-D-E-A)</td>
</tr>
<tr>
<td><strong>Maximum duration of peak current</strong></td>
</tr>
<tr>
<td>1 second</td>
</tr>
<tr>
<td><strong>Type of control</strong></td>
</tr>
<tr>
<td>IGBT PWM vector control</td>
</tr>
<tr>
<td><strong>Controller sampling rate</strong></td>
</tr>
<tr>
<td>Current, speed and position: 15 kHz</td>
</tr>
<tr>
<td><strong>Motor types supported</strong></td>
</tr>
<tr>
<td>AC servo motors</td>
</tr>
<tr>
<td><strong>Status of LED</strong></td>
</tr>
<tr>
<td>Red: Error</td>
</tr>
<tr>
<td>Green: Ready</td>
</tr>
<tr>
<td><strong>OPERATING MODES</strong></td>
</tr>
<tr>
<td><strong>Encoder Interface</strong></td>
</tr>
<tr>
<td>Operating voltage + 5 VDC ± 5 % @400 mA</td>
</tr>
<tr>
<td><strong>Communication Interface</strong></td>
</tr>
<tr>
<td>USB 2.0</td>
</tr>
<tr>
<td><strong>Parameterisable I/O Interface</strong></td>
</tr>
<tr>
<td>Digital Inputs [I1..I9], (single-end, optocoupler)</td>
</tr>
<tr>
<td>Digital Outputs [O1..O4], (optocoupler)</td>
</tr>
<tr>
<td>BRAKE Output [CN2_BRK], max. 1 A DC</td>
</tr>
<tr>
<td><strong>Feedback</strong></td>
</tr>
<tr>
<td>External transducer</td>
</tr>
<tr>
<td>Activation threshold + HV= 370 V DC</td>
</tr>
<tr>
<td>Activation threshold + HV= 360 V DC</td>
</tr>
<tr>
<td>Tolerance ± 5 %</td>
</tr>
<tr>
<td><strong>Monitoring functions</strong></td>
</tr>
<tr>
<td>Short circuit, overvoltage (&gt; 390 V DC ± 5 %), undervoltage (&lt; 60 V DC); position error, encoder error, motor phase monitoring, overtemperature D2 (IGBT &gt; 90 °C ± 1°C), motor overtemperature</td>
</tr>
<tr>
<td><strong>Autotuning</strong></td>
</tr>
<tr>
<td>with automatic mass inertia calculation</td>
</tr>
<tr>
<td><strong>VIB (vibration suppression)</strong></td>
</tr>
<tr>
<td>01 Hz = 200 Hz</td>
</tr>
<tr>
<td><strong>Other functions</strong></td>
</tr>
<tr>
<td>Friction compensation, gear play compensation</td>
</tr>
<tr>
<td><strong>Ambient conditions</strong></td>
</tr>
<tr>
<td>Operating temperature 0°C - 40°C (above 55°C only with air conditioning)</td>
</tr>
<tr>
<td>Storage temperature -20°C - 65°C</td>
</tr>
<tr>
<td>UAir humidity 20% - 85% (non-condensing)</td>
</tr>
<tr>
<td>Operating altitude &lt; 1000 m above sea level</td>
</tr>
<tr>
<td>Vibration 5.88 m/s (10 Hz = 60 Hz)</td>
</tr>
<tr>
<td>Protection class IP20</td>
</tr>
</tbody>
</table>
Coding example

<table>
<thead>
<tr>
<th>DRWB</th>
<th>-</th>
<th>W01</th>
<th>-</th>
<th>2</th>
<th>-</th>
<th>D</th>
<th>-</th>
<th>E</th>
<th>-</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRWB SERIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W01</td>
<td>SIZE W:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W01 = 100 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W04 = 400 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W07 = 750 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W10 = 1000 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SUPPLY:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 = 220 V AC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>COMMUNICATION:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D = Digital I/O and Analog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>FEEDBACK:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E = Incremental encoder 13 bit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>VERSIONS:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A = Standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Drive Mod. DRWB-W01-2-D-E-A

Drive for the Camozzi Brushless motors

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Power</th>
<th>Supply</th>
<th>Encoder</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRWB-W01-2-D-E-A</td>
<td>100 W</td>
<td>230 V AC</td>
<td>13 bit</td>
</tr>
</tbody>
</table>
Drive Mod. DRWB-W04-2-D-E-A
Drive for the Camozzi Brushless motors

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Power</th>
<th>Supply</th>
<th>Encoder</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRWB-W04-2-D-E-A</td>
<td>400 W</td>
<td>230 V AC</td>
<td>13 bit</td>
</tr>
</tbody>
</table>

New size

Drives Mod. DRWB-W07-2-D-E-A and Mod. DRWB-W10-2-D-E-A
Drives for the Camozzi Brushless motors

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Power</th>
<th>Supply</th>
<th>Encoder</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRWB-W07-2-D-E-A</td>
<td>750 W</td>
<td>230 V AC</td>
<td>13 bit</td>
</tr>
<tr>
<td>DRWB-W10-2-D-E-A</td>
<td>1000 W</td>
<td>230 V AC</td>
<td>13 bit</td>
</tr>
</tbody>
</table>
Cables for Brushless (MTB) motors, 100-400-750 W

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Brake</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-200421-B300</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>EC-200421-B400</td>
<td>-</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EC-200421-BA00</td>
<td>-</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>EC-210621-B300</td>
<td>✖</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>EC-210621-B500</td>
<td>✖</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>EC-210621-BA00</td>
<td>✖</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

Cables for Brushless (MTB) motors, 100-400-750 W IP65

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Brake</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-3004P1-B300</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>EC-3004P1-B500</td>
<td>-</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EC-3004P1-BA00</td>
<td>-</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>EC-3106P1-B300</td>
<td>✖</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>EC-3106P1-B500</td>
<td>✖</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>EC-3106P1-BA00</td>
<td>✖</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>
Cables for Brushless (MTB) motor, 1000W IP65

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Brake</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-4704P1-B300</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>EC-4704P1-B500</td>
<td>-</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EC-4704P1-BA00</td>
<td>-</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

Encoder cables for Brushless (MTB) motors, 100-400-750 W

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-220923-B300</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>EC-220923-B500</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>EC-220923-BA00</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>
Encoder cables for Brushless (MTB) motors, 100-400-750 W IP65

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-3209P3-B300</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EC-3209P3-B500</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>EC-3209P3-BA00</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

New

Encoder cables for Brushless (MTB) motor, 1000W IP65

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-4809P3-B300</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EC-4809P3-B500</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>EC-4809P3-BA00</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

New
Brake cables for Brushless (MTB) motor, size 1000W IP65

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Pins</th>
<th>L ≤ cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-4902P1-B300</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>EC-4902P1-B500</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>EC-4902P1-BA00</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

Brake resistance for Brushless (MTB) motor

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-212022</td>
<td>300 W</td>
</tr>
</tbody>
</table>
Cables for DRWB drive I/O

### Cables for DRWB drive I/O

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G14W-1</td>
<td>50</td>
<td>1</td>
</tr>
<tr>
<td>G14W-3</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>G14W-5</td>
<td>50</td>
<td>5</td>
</tr>
</tbody>
</table>

New

USB to Mini USB cable Mod. G11W-G13W-2

For the hardware configuration of the Camozzi products

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Description</th>
<th>Connections</th>
<th>Material for outer sheath</th>
<th>Cable length &quot;L&quot; (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G11W-G13W-2</td>
<td>black shielded cable 28 AWG</td>
<td>standard USB to Mini USB</td>
<td>PVC</td>
<td>2</td>
</tr>
</tbody>
</table>
Series DRCS drives for Stepper motors

One-size full digital drives with Bluetooth system and NFC integrated

The Series DRCS drives, compact and optimized in one size, have been specially configured for all small and medium-sized Camozzi Stepper motors. They are capable of controlling Stepper motors with 2 phases and micro stepping feed. They are able to calculate the normal resonance frequency of the motors and optimize their driving. The use of the micro stepping technique (up to 1/16 of steps) enables the drive to almost replicate a sinusoidal current while considerably reducing the natural resonance of the motor itself. The availability of 8 inputs allows the realization of a table of 256 commands, for each of which it is possible to set position, speed, acceleration and deceleration.

Each command can be absolute or relative. Furthermore it is possible to control driving in frequency by using the Step and Direction commands. The frequency defines the speed, while the number of steps defines the position. The Series DRCS drives are equipped with the serial protocol CANopen CiA301 and CiA402 by means of which it is possible to run commands for motion control and the integration for the monitoring of the drive’s state. To configure the drive, wired (USB 2.0) or wireless (according to Bluetooth standards; BL-BLE) connections can be used. Thanks to an innovative system that takes advantage of the NFC technology, it is possible to extract production and statistic data regarding the use of the drive, as these have now become essential parameters in order to approach the 4.0 industry.

» Full digital drive
» PLC function programmable with the Camozzi QSet configuration software
» Feedback by means of incremental encoder
» NFC system integrated
» Self-compensation of errors
» 256 programmable positions (control of speed and position)
» Wire configuration by means of USB 2.0 and wireless configuration by means of Bluetooth protocol BL-BLE
» Can be controlled in frequency (step and direction), digital I/O and serial CANopen protocol
<table>
<thead>
<tr>
<th><strong>SUPPLY VOLTAGE</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic</td>
<td>18 ÷ 32 V DC</td>
</tr>
<tr>
<td>Power</td>
<td>24 ÷ 60 V DC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CURRENT</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>0.1 ÷ 7 A</td>
</tr>
<tr>
<td>Holding current</td>
<td>Automatic reduction of the holding current with motor in stop mode, this function can be set according to the holding current or its delay</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AMBIENT</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>0 ÷ 40°C (up to 55°C with forced ventilation)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20°C ÷ 70°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 ÷ 90%</td>
</tr>
<tr>
<td>Altitude</td>
<td>&lt; 1000 meters</td>
</tr>
<tr>
<td>Vibration</td>
<td>1G (10 to 500 Hz)</td>
</tr>
<tr>
<td>Protection</td>
<td>Overvoltage, minimum voltage, overtemperature, short-circuit or grounding on the motor</td>
</tr>
<tr>
<td>Control method</td>
<td>4 state PWM 20kHz</td>
</tr>
<tr>
<td>Amplification type</td>
<td>Dual H-Bridge, 4 Quadrants</td>
</tr>
<tr>
<td>Position control/encoder</td>
<td>100 to 5000 differential impulses / revolution</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>DIGITAL I/O</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input control signal</td>
<td>12 opto-isolated 24 V DC</td>
</tr>
<tr>
<td>Output control signal</td>
<td>6 opto-isolated</td>
</tr>
<tr>
<td>Input impulse control</td>
<td>Step inlet and frequency direction maximum 10kHz</td>
</tr>
<tr>
<td>Output control signal</td>
<td>Electromechanical brake max current 1A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>COMMUNICATION INTERFACE</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>USB</td>
<td>USB 2.0</td>
</tr>
<tr>
<td>Bluetooth</td>
<td>BL and standard BLE</td>
</tr>
<tr>
<td>RFID</td>
<td>with NFC devices</td>
</tr>
<tr>
<td>CANopen</td>
<td>standard</td>
</tr>
</tbody>
</table>

| **Microstep emulation** | High resolution by means of microstepping and a detailed synchronization. |

| **Anti-Resonance** | Activation of the oscillation system in order to reduce vibrations and obtain a smooth movement, control of speed and a reduction of the time of oscillation |

| **LED status** | Green led: ready |

| **Configuration** | Digital with the Camozzi QSet configuration software |

| **Control methods** | Digital inputs, Frequency, CANopen |

<table>
<thead>
<tr>
<th><strong>MEMORY</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data retention memory</td>
<td>Flash</td>
</tr>
<tr>
<td>Configuration data backup memory</td>
<td>Eeprom</td>
</tr>
</tbody>
</table>

| **Weight** | 0.46 kg |
Series DRCS drives
For the Camozzi Stepper motors

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Max current</th>
<th>Logic supply</th>
<th>Power supply</th>
<th>Communication</th>
<th>Versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRCS-A05-8-D-0-A</td>
<td>7 A</td>
<td>24 V DC</td>
<td>24 + 48 V DC</td>
<td>Digital I/O and impulse frequency</td>
<td>standard</td>
</tr>
<tr>
<td>DRCS-A05-8-C-0-A</td>
<td>7 A</td>
<td>24 V DC</td>
<td>24 + 48 V DC</td>
<td>CANopen, Digital I/O and impulse frequency</td>
<td>standard</td>
</tr>
<tr>
<td>DRCS-A05-8-D-0-B</td>
<td>7 A</td>
<td>24 V DC</td>
<td>24 + 48 V DC</td>
<td>Digital I/O and impulse frequency</td>
<td>Bluetooth BL-BLE</td>
</tr>
<tr>
<td>DRCS-A05-8-C-0-B</td>
<td>7 A</td>
<td>24 V DC</td>
<td>24 + 48 V DC</td>
<td>CANopen, Digital I/O and impulse frequency</td>
<td>Bluetooth BL-BLE</td>
</tr>
</tbody>
</table>
### Cable for Series DRCS drive with brake

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Motor</th>
<th>Brake</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-210A22-B300</td>
<td>Stepper</td>
<td>X</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>DC-210A22-B500</td>
<td>Stepper</td>
<td>X</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>DC-210A22-BA00</td>
<td>Stepper</td>
<td>X</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

### Cable for Series DRCS drive without brake

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Motor</th>
<th>Brake</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-200A22-B300</td>
<td>Stepper</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>DC-200A22-B500</td>
<td>Stepper</td>
<td>-</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>DC-200A22-BA00</td>
<td>Stepper</td>
<td>-</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

### Cable for Series DRCS drive without brake (Nema 34 only)

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Motor</th>
<th>Brake</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-200522-B300</td>
<td>Stepper</td>
<td>-</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>DC-200522-B500</td>
<td>Stepper</td>
<td>-</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>DC-200522-BA00</td>
<td>Stepper</td>
<td>-</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

Products designed for industrial applications. General terms and conditions for sale are available on www.camozzi.com.
### Encoder cable for Series DRCS drive

![Encoder cable](image)

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Motor</th>
<th>Brake</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-220A22-B300</td>
<td>Stepper</td>
<td>-</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>EC-220A22-B500</td>
<td>Stepper</td>
<td>-</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>EC-220A22-BA00</td>
<td>Stepper</td>
<td>-</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>

### Cable for Series DRCS drive logic supply

![Logic supply cable](image)

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Motor</th>
<th>Brake</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-230422-A200</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

### Cable for Series DRCS drive power supply

![Power supply cable](image)

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Motor</th>
<th>Brake</th>
<th>Pins</th>
<th>L = cable (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-140222-A200</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>
Cable for Series DRCS drive CANopen

Mod. | Motor | Brake | Pins | L = cable (m)
--- | --- | --- | --- | ---
EC-050522-A100 | - | - | 6 | 1
EC-050522-A300 | - | - | 6 | 3
EC-050522-A500 | - | - | 6 | 5

CAN terminating resistor for Series DRCS drives

Mod. | Motor | Brake | Pins | L = cable (m)
--- | --- | --- | --- | ---
EC-060623 | - | - | 6 | -

Multipole cable 25P M

Mod. | Motor | Brake | Pins | L = cable (m)
--- | --- | --- | --- | ---
G2W1 | - | - | 25 | 1
G2W3 | - | - | 25 | 3
USB to Micro USB cable Mod. G11W-G12W-2

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Description</th>
<th>Connections</th>
<th>Material for outer sheath</th>
<th>Cable length &quot;L&quot; (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G11W-G12W-2</td>
<td>black shielded cable 28 AWG</td>
<td>standard USB to Micro USB</td>
<td>PVC</td>
<td>2</td>
</tr>
</tbody>
</table>

Mounting brackets for DIN rail

DIN EN 50022 (mm 7,5 x 35 - width 1)

Supplied with:
2x plates
2x screws M4x6 UNI 5931
Series MTB motors
for electric actuation

Brushless motors in power classes 100, 400, 750, 1000 W

The Camozzi motors Series MTB have been designed to be connected in an easy and practical way to the new product range within electrical actuation, being able to drive both electromechanical cylinders and axes. The Series MTB of synchronous AC Brushless motors is available with a power of 100, 400, 750, 1000 W.

The standard motors are equipped with a 13 bit encoder with 10,000 increments per cycle and are offered with or without a motor brake. Due to the high dynamics of these motors, it is possible to guarantee a constant torque at any speed. Due to the low mass inertia, they are particularly suitable for high work dynamics, like sudden changes in direction or high moving frequencies.

» Low inertia motors
» Available with or without brake
» With incremental 13 bit encoder
» Different sizes or power classes available
» IP65 version available

GENERAL DATA

<table>
<thead>
<tr>
<th>Power</th>
<th>100 W (Mod. MTB-010-...)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>400 W (Mod. MTB-040-...)</td>
</tr>
<tr>
<td></td>
<td>750 W (Mod. MTB-075-...)</td>
</tr>
<tr>
<td></td>
<td>1000 W (Mod. MTB-100...)</td>
</tr>
<tr>
<td>Type of motor</td>
<td>permanently excited synchronous servo motor</td>
</tr>
<tr>
<td>Magnet</td>
<td>Neodymium, iron and boron (NdFeB)</td>
</tr>
<tr>
<td>Housing</td>
<td>Aluminium</td>
</tr>
<tr>
<td>Colour</td>
<td>black</td>
</tr>
<tr>
<td>Protection class: motor on the shaft connector</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td>IP40</td>
</tr>
<tr>
<td></td>
<td>IP20</td>
</tr>
<tr>
<td>Insulation class</td>
<td>class A</td>
</tr>
<tr>
<td>Shaft end</td>
<td>no machining</td>
</tr>
<tr>
<td>Nominal torque</td>
<td>0.32 Nm (100 W) - 1.27 Nm (400 W) - 2.4 Nm (750 W) - 4.77 Nm (1000 W)</td>
</tr>
<tr>
<td>Peak torque</td>
<td>3 × nominal torque</td>
</tr>
<tr>
<td>braking torque (only for motors with brake)</td>
<td>0.32 Nm (100 W) - 1.27 Nm (400 W) - 2.4 Nm (750 W) - 4.77 Nm (1000 W)</td>
</tr>
<tr>
<td>Service life</td>
<td>&gt; 20,000 h (at nominal load)</td>
</tr>
<tr>
<td>Motor connection</td>
<td>cable (300 mm) available out of the motor</td>
</tr>
<tr>
<td>Encoder connection</td>
<td>cable (300 mm) available out of the encoder (motors with 1 KW power are equipped with an outgoing motor connector)</td>
</tr>
<tr>
<td>Cooling</td>
<td>with an integrated radiator</td>
</tr>
<tr>
<td>Thermal monitoring</td>
<td>not available</td>
</tr>
<tr>
<td>Encoder</td>
<td>incremental 13-bit TTL encoder, 10 000 pulses/revolution</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>0°C ÷ 40°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>−15°C ÷ 70°C</td>
</tr>
<tr>
<td>Air humidity</td>
<td>up to 80% of relative air humidity</td>
</tr>
<tr>
<td>Max. installation height</td>
<td>at below 1000 metres above sea level</td>
</tr>
</tbody>
</table>
CODING EXAMPLE

MTB - 010 - 2 - 0 - E

MTB SERIES

010

POWER:
010 = 100 W
040 = 400 W
075 = 750 W
100 = 1000 W

2

SUPPLY:
2 = 220 V DC

0

BRAKE:
0 = without brake
F = with brake

E

ENCODER:
E = incremental 13 bit

VERSION:
= Standard
P = IP65

Series MTB Brushless motors - dimensions

Supplied with:
1 motor
4 screws

<table>
<thead>
<tr>
<th>Model</th>
<th>Power (W)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>W (mm)</th>
<th>DM (mm)</th>
<th>M (mm)</th>
<th>DC (mm)</th>
<th>C (mm)</th>
<th>TF (mm)</th>
<th>AB (mm)</th>
<th>Weight (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTB-010-2-0-E</td>
<td>100</td>
<td>110.5</td>
<td>42</td>
<td>32</td>
<td>8</td>
<td>25</td>
<td>30</td>
<td>2.5</td>
<td>31.8</td>
<td>3.4</td>
<td>12</td>
</tr>
<tr>
<td>MTB-010-2-0-EP</td>
<td>100</td>
<td>110.5</td>
<td>42</td>
<td>32</td>
<td>8</td>
<td>25</td>
<td>30</td>
<td>2.5</td>
<td>31.8</td>
<td>3.4</td>
<td>12</td>
</tr>
<tr>
<td>MTB-010-2-0-E</td>
<td>100</td>
<td>119</td>
<td>42</td>
<td>32</td>
<td>8</td>
<td>25</td>
<td>30</td>
<td>2.5</td>
<td>31.8</td>
<td>3.4</td>
<td>12</td>
</tr>
<tr>
<td>MTB-010-2-0-EP</td>
<td>100</td>
<td>119</td>
<td>42</td>
<td>32</td>
<td>8</td>
<td>25</td>
<td>30</td>
<td>2.5</td>
<td>31.8</td>
<td>3.4</td>
<td>12</td>
</tr>
<tr>
<td>MTB-040-2-0-E</td>
<td>400</td>
<td>121.5</td>
<td>60</td>
<td>46.5</td>
<td>14</td>
<td>30</td>
<td>50</td>
<td>3</td>
<td>49.5</td>
<td>5.5</td>
<td>7.5</td>
</tr>
<tr>
<td>MTB-040-2-0-EP</td>
<td>400</td>
<td>121.5</td>
<td>60</td>
<td>46.5</td>
<td>14</td>
<td>30</td>
<td>50</td>
<td>3</td>
<td>49.5</td>
<td>5.5</td>
<td>7.5</td>
</tr>
<tr>
<td>MTB-040-2-F-E</td>
<td>400</td>
<td>159</td>
<td>60</td>
<td>46.5</td>
<td>14</td>
<td>30</td>
<td>50</td>
<td>3</td>
<td>49.5</td>
<td>5.5</td>
<td>7.5</td>
</tr>
<tr>
<td>MTB-040-2-F-EP</td>
<td>400</td>
<td>159</td>
<td>60</td>
<td>46.5</td>
<td>14</td>
<td>30</td>
<td>50</td>
<td>3</td>
<td>49.5</td>
<td>5.5</td>
<td>7.5</td>
</tr>
<tr>
<td>MTB-075-2-0-E</td>
<td>750</td>
<td>140</td>
<td>80</td>
<td>56.5</td>
<td>19</td>
<td>40</td>
<td>70</td>
<td>3</td>
<td>63.6</td>
<td>6.6</td>
<td>9</td>
</tr>
<tr>
<td>MTB-075-2-0-EP</td>
<td>750</td>
<td>140</td>
<td>80</td>
<td>56.5</td>
<td>19</td>
<td>40</td>
<td>70</td>
<td>3</td>
<td>63.6</td>
<td>6.6</td>
<td>9</td>
</tr>
<tr>
<td>MTB-075-2-F-E</td>
<td>750</td>
<td>176</td>
<td>80</td>
<td>56.5</td>
<td>19</td>
<td>40</td>
<td>70</td>
<td>3</td>
<td>63.6</td>
<td>6.6</td>
<td>9</td>
</tr>
<tr>
<td>MTB-075-2-F-EP</td>
<td>750</td>
<td>176</td>
<td>80</td>
<td>56.5</td>
<td>19</td>
<td>40</td>
<td>70</td>
<td>3</td>
<td>63.6</td>
<td>6.6</td>
<td>9</td>
</tr>
<tr>
<td>MTB-100-2-0-EP</td>
<td>1000</td>
<td>141</td>
<td>130</td>
<td>113</td>
<td>24</td>
<td>55</td>
<td>110</td>
<td>3</td>
<td>102.5</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>MTB-100-2-F-EP</td>
<td>1000</td>
<td>175</td>
<td>130</td>
<td>113</td>
<td>24</td>
<td>55</td>
<td>110</td>
<td>3</td>
<td>102.5</td>
<td>9</td>
<td>12</td>
</tr>
</tbody>
</table>

Products designed for industrial applications.
General terms and conditions for sale are available on www.camozzi.com.
Torque-speed curves

MTB-010..

C = torque
n = number of revolutions per minute
The continuous line represents the peak torque of the motor.
The dashed line represents the nominal torque of the motor.

MTB-040..

C = torque
n = number of revolutions per minute
The continuous line represents the peak torque of the motor.
The dashed line represents the nominal torque of the motor.

MTB-075..

C = torque
n = number of revolutions per minute
The continuous line represents the peak torque of the motor.
The dashed line represents the nominal torque of the motor.

MTB-100..

C = torque
n = number of revolutions per minute
The continuous line represents the peak torque of the motor.
The dashed line represents the nominal torque of the motor.
Series MTS motors for electric actuation

Stepper motors with Nema 23, 24, 34 fixing flange

The new Camozzi motors Series MTS have been designed to be connected in an easy and practical way to the new product range within electrical actuation, being able to drive both electromechanical cylinders and axes.

The new Series MTS electrical Stepper motors are available in the sizes Nema 23, Nema 24 and Nema 34. Each motor version comes with its own driving version that is interfaceable with the QSet configuration software, especially developed by Camozzi in order to simplify the setting up of the electric actuator.

» Low inertia motors
» Different sizes or power classes available
» Version with incremental encoder
» Version with incremental encoder and brake
» IP65 version available

### GENERAL DATA

<table>
<thead>
<tr>
<th>Models:</th>
<th>Models:</th>
<th>Models:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTS-23-18-060-0-0-E-C</td>
<td>MTS-24-18-250-0-0-E-C</td>
<td></td>
</tr>
<tr>
<td>MTS-23-18-060-0-F-E-C</td>
<td>MTS-24-18-250-0-F-E-C</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shaft</th>
<th>Leads</th>
<th>Length</th>
<th>Holding torque</th>
<th>Current per phase</th>
<th>Resistance</th>
<th>Motor Inertia</th>
<th>Dielectric strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>single</td>
<td>4</td>
<td>41 mm</td>
<td>0.6 Nm</td>
<td>4.5 A/Phase</td>
<td>0.46 Ω/Phase</td>
<td>135 g cm²</td>
<td>500 V AC/min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.6 Nm/1.2 Nm (Nema 23 IP65 only)</td>
<td>4.5 A/Phase</td>
<td>0.65 Ω/Phase</td>
<td>900 g cm²</td>
<td>500 V AC/min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.5 Nm</td>
<td>7.1 A/Phase</td>
<td>0.49 Ω/Phase</td>
<td>2750 g cm²</td>
<td>500 V AC/min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>125.5 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Products designed for industrial applications.

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## CODING EXAMPLE

<table>
<thead>
<tr>
<th>MTS</th>
<th>23</th>
<th>18</th>
<th>060</th>
<th>0</th>
<th>0</th>
<th>S</th>
<th>C</th>
</tr>
</thead>
</table>

### MTS SERIES

**23**
- MOTOR SIZE FLANGE CONNECTION:
  - 23 = Nema 23
  - 24 = Nema 24
  - 34 = Nema 34

**18**
- RESOLUTION IN DEGREES PER REVOLUTION:
  - 18 = 1.8° per step

**060**
- TORQUE:
  - 060 = 0.6 Nm with Nema 23 only
  - 120 = 1.2 Nm with Nema 23 IP65 only
  - 250 = 2.5 Nm with Nema 24 only
  - 701 = 7.1 Nm with Nema 34 only

**0**
- ELECTRICAL CONNECTION:
  - 0 = connector

**0**
- BRAKE:
  - 0 = without brake
  - F = with brake

**S**
- ENCODER VARIANTS:
  - S = single shaft without encoder
  - E = single shaft with encoder (SIZE Nema 23 and 24 only)

**C**
- MECHANICAL SHAFT VARIANTS:
  - C = cylindrical shaft

### RESOLUTION IN DEGREES PER REVOLUTION

- 18 \(= 1.8^\circ\) per step

### TORQUE

- 060 = 0.6 Nm with Nema 23 only
- 120 = 1.2 Nm with Nema 23 IP65 only
- 250 = 2.5 Nm with Nema 24 only
- 701 = 7.1 Nm with Nema 34 only

### ELECTRICAL CONNECTION

- 0 = connector

### BRAKE

- 0 = without brake
- F = with brake

### ENCODER VARIANTS

- S = single shaft without encoder
- E = single shaft with encoder (SIZE Nema 23 and 24 only)

### MECHANICAL SHAFT VARIANTS

- C = cylindrical shaft

### SUPPLIED WITH:

- 1 motor
- 4 screws

## Series MTS Stepper motors - dimensions

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Brake</th>
<th>Encoder</th>
<th>Nema</th>
<th>DS</th>
<th>DE</th>
<th>DF</th>
<th>HE</th>
<th>E</th>
<th>L</th>
<th>(d_{\text{DM(r)}})</th>
<th>M</th>
<th>(d_{\text{DC(r)}})</th>
<th>C</th>
<th>TF</th>
<th>AB</th>
<th>BB</th>
<th>Weight (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTS-23-18-060-0-0-S-C</td>
<td>-</td>
<td>-</td>
<td>23</td>
<td>-</td>
<td>41</td>
<td>-</td>
<td>-</td>
<td>56.4</td>
<td>300 ± 10</td>
<td>6.35</td>
<td>20.6</td>
<td>38.1</td>
<td>1.6</td>
<td>47.14</td>
<td>5.1</td>
<td>5</td>
<td>0.42</td>
</tr>
<tr>
<td>MTS-23-18-120-0-0-S-CP</td>
<td>-</td>
<td>-</td>
<td>23</td>
<td>41</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>56.4</td>
<td>300 ± 10</td>
<td>6.35</td>
<td>20.6</td>
<td>38.1</td>
<td>1.6</td>
<td>47.14</td>
<td>5.1</td>
<td>7</td>
<td>0.8</td>
</tr>
<tr>
<td>MTS-23-18-060-0-0-E-C</td>
<td>✖</td>
<td>✖</td>
<td>23</td>
<td>31.5</td>
<td>-</td>
<td>64.5</td>
<td>73.6</td>
<td>56.4</td>
<td>200 ± 50</td>
<td>6.35</td>
<td>20.6</td>
<td>38.1</td>
<td>1.6</td>
<td>47.14</td>
<td>5.1</td>
<td>7</td>
<td>0.42</td>
</tr>
<tr>
<td>MTS-23-18-250-0-0-E-C</td>
<td>✖</td>
<td>✖</td>
<td>24</td>
<td>78</td>
<td>-</td>
<td>111</td>
<td>77.4</td>
<td>60</td>
<td>200 ± 50</td>
<td>8</td>
<td>20.6</td>
<td>38.1</td>
<td>1.5</td>
<td>47.14</td>
<td>4.5</td>
<td>8</td>
<td>1.6</td>
</tr>
<tr>
<td>MTS-24-18-250-0-0-S-C</td>
<td>-</td>
<td>-</td>
<td>24</td>
<td>95</td>
<td>-</td>
<td>-</td>
<td>60</td>
<td>300 ± 10</td>
<td>8</td>
<td>20.6</td>
<td>38.1</td>
<td>1.5</td>
<td>47.14</td>
<td>4.5</td>
<td>8</td>
<td>1.41</td>
<td></td>
</tr>
<tr>
<td>MTS-24-18-250-0-0-E-C</td>
<td>✖</td>
<td>✖</td>
<td>24</td>
<td>78</td>
<td>-</td>
<td>111</td>
<td>77.4</td>
<td>60</td>
<td>200 ± 50</td>
<td>8</td>
<td>20.6</td>
<td>38.1</td>
<td>1.5</td>
<td>47.14</td>
<td>4.5</td>
<td>8</td>
<td>1.62</td>
</tr>
<tr>
<td>MTS-34-18-701-0-0-S-C</td>
<td>-</td>
<td>-</td>
<td>34</td>
<td>129.5</td>
<td>-</td>
<td>-</td>
<td>98</td>
<td>86</td>
<td>300 ± 10</td>
<td>14</td>
<td>37</td>
<td>73</td>
<td>2</td>
<td>69.6</td>
<td>6.5</td>
<td>10</td>
<td>3.8</td>
</tr>
</tbody>
</table>

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**Series MTS motors**

### Torque-speed curves

**Nema 23 motors**
- Mod. MTS-23-18-060-0-0-S-C
- Mod. MTS-23-18-060-0-0-E-C
- Mod. MTS-23-18-060-0-F-E-C

**C** = torque [Nm]
**n** = revolutions per minute [Rpm]

**Nema 23 motors IP65**
- Mod. MTS-23-18-120-0-0-S-CP

**C** = torque [Nm]
**n** = revolutions per minute [Rpm]

**Nema 24 motors**
- Mod. MTS-24-18-250-0-0-S-C
- Mod. MTS-24-18-250-0-0-E-C
- Mod. MTS-24-18-250-0-F-E-C
- Mod. MTS-24-18-250-0-0-S-CP

**C** = torque [Nm]
**n** = revolutions per minute [Rpm]

**Nema 34 motors**
- Mod. MTS-34-18-701-0-0-S-C

**C** = torque [Nm]
**n** = revolutions per minute [Rpm]
Series GB planetary gearboxes

Available sizes: 40, 60, 80, 120

The Series GB planetary gearboxes, by means of a planetary gear system, enable the reduction of the angular speed and the increase of transmittable torque. These gearboxes can be used with the Series 5E and 5V electromechanical axes and with the Series 6E electromechanical cylinders.

Available in 4 sizes with 4 different reduction ratios, the Series GB planetary gearboxes can be supplied in two different configurations, in-line or orthogonal. All gearboxes are equipped with interface flanges for the connection to the Camozzi Series MTB and Series MTS motors.

» Reduced play
» Prepared to be connected with Series MTB and Series MTS motors
» High performance
» 4 Reduction ratios available (i=3,5,7,10)
» Silent operation
» Any mounting position
» Lifetime lubrication
» Available in in-line and orthogonal configurations
### CODING EXAMPLE

<table>
<thead>
<tr>
<th>GB</th>
<th>-</th>
<th>040</th>
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<th>03</th>
<th>-</th>
<th>D</th>
<th>-</th>
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**GB**

- Gearbox

**040**

- Size:
  - 040 = Ø40
  - 060 = Ø60
  - 080 = Ø80
  - 120 = Ø120

**03**

- Reduction Ratio:
  - 03 i = 3
  - 05 i = 5
  - 07 i = 7
  - 10 i = 10

**D**

- Type:
  - D = straight
  - A = angular

**0100**

- Preparation of the motor:
  - 0100 = Brushless 100W (size 040 only)
  - 0400 = Brushless 400W (size 060 only)
  - 0750 = Brushless 750W (size 080 only)
  - 1000 = Brushless 1000W (size 120 only)
  - 0024 = Nema 24
### IN-LINE PLANETARY GEARBOX

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<th>CM</th>
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[General terms and conditions for sale are available on www.camozzi.com.]
Series CO motion transmission devices

Mod. COE: elastomer coupling with clamps
Mod. COS: elastomer coupling with expansion shaft
Mod. COT: self-centering locking-set

The motion transmission devices are necessary for a proper connection of electromechanical axes and cylinders with motors or gearboxes.

Mod. COE couplings are composed of two hubs with a high concentricity clamp and an elastomeric element. Mod. COS couplings are composed of one hub with a high concentricity clamp, a hub with expansion shaft and an elastomeric element. The torque transmission is performed without angular play or vibrations. Both couplings are without angular play thanks to the pretensioning of the elastomer between the two semi-couplings.

Mod. COT locking-sets are composed by an internal and an external conical ring connected with each other by means of several screws. Through the tightening of the screws, an axial force is generated that enables the torque transmission from the shaft to the hub.
### AVAILABLE STANDARD DIAMETERS

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<thead>
<tr>
<th>Size</th>
<th>6.35</th>
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### MOD. COE CODING EXAMPLE

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<th>-</th>
<th>10</th>
<th>-</th>
<th>1200</th>
<th>-</th>
<th>1400</th>
<th>-</th>
<th>A</th>
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#### SIZE:
- 05
- 10
- 20
- 60

#### HOLE DIAMETER:
- 0635 = 6,35 mm (for sizes 5 and 10 only)
- 0800 = 8,00 mm (for sizes 5 and 10 only)
- 1000 = 10,00 mm (for sizes 5 and 10 only)
- 1100 = 11,00 mm (for size 5 only)
- 1200 = 12,00 mm (for sizes 10 and 20 only)
- 1400 = 14,00 mm (for sizes 10, 20 and 60 only)
- 1500 = 15,00 mm (for sizes 10 and 20 only)
- 1600 = 16,00 mm (for sizes 10, 20 and 60 only)
- 1900 = 19,00 mm (for sizes 20 and 60 only)
- 2000 = 20,00 mm (for sizes 20 and 60 only)
- 2400 = 24,00 mm (for sizes 20 and 60 only)
- 2500 = 25,00 mm (for size 60 only)
- 3200 = 32,00 mm (for size 60 only)

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Elastomer coupling with clamps Mod. COE

<table>
<thead>
<tr>
<th>Size</th>
<th>6E</th>
<th>6B</th>
<th>6D</th>
<th>A</th>
<th>C</th>
<th>F</th>
<th>G</th>
<th>B1</th>
<th>Tightening torque (Nm)</th>
<th>Nominal torque (Nm)</th>
<th>Weight (g)</th>
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<td>42</td>
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<td>15.5</td>
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<td>M5 (CH4)</td>
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<td>120</td>
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<td>M6 (CH5)</td>
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<td>300</td>
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## MOD. COS CODING EXAMPLE

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<th>10</th>
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<td>2500 = 25.00mm (for size 60 only)</td>
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**Elastomer coupling with expansion shaft Mod. COS**

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<th>( \phi_E )</th>
<th>( \phi_D )</th>
<th>( \phi_D )</th>
<th>A</th>
<th>C</th>
<th>CS</th>
<th>F</th>
<th>G</th>
<th>B1 [ISO4762]</th>
<th>B2 [ISO4762]</th>
<th>Tightening torque (Nm)</th>
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</thead>
<tbody>
<tr>
<td>10</td>
<td>32</td>
<td>32</td>
<td>14.2</td>
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<td>10.3</td>
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<td>M4 (CH3)</td>
<td>4</td>
<td>M5 (CH4) 9</td>
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<td>20</td>
<td>42</td>
<td>44.5</td>
<td>19.2</td>
<td>40</td>
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<td>8.5</td>
<td>M5 (CH4)</td>
<td>8</td>
<td>M6 (CH5) 12</td>
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<td>56</td>
<td>57</td>
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<td>27</td>
<td>21</td>
<td>10</td>
<td>M6 (CH5)</td>
<td>15</td>
<td>M8 (CH6) 32</td>
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### Self-centering locking-set Mod. COT

<table>
<thead>
<tr>
<th>Mod.</th>
<th>DS</th>
<th>DM</th>
<th>L</th>
<th>E</th>
<th>B1</th>
<th>Torque force (Nm)</th>
<th>Nominal torque (Nm)</th>
<th>Weight (g)</th>
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<tr>
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<td>M2.5 (CH2.5)</td>
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<td>M6 (CH5)</td>
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<td>250</td>
<td>200</td>
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Contacts
electrics@camozzi.com

For further information about our products and conditions of sale, please contact the C_Electrics department at:

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