Grip & Rotate Pivoting Arm Gripper

Features

- Grip and rotate functions can be controlled separately
- Grip and rotate, either 90° or 180°, combined in a compact module
- Gripper opening angle infinitely adjustable from 1° to 180°
- At 180° opening angle, the workpiece is clear of the jaws, therefore no linear retraction stroke is needed

Functional diagram

- **Stroke adjustment screw**
  - infinite adjustment of opening angle

- **End position 0°/90°/180° adjustment**
  - end stops for 0°/90°/180°
  - included with purchase

- **Mounting and positioning**
  - mounting possible from several sides for versatile positioning

- **Flow control air connections (included)**
  - for rotational speed adjustment

- **Gripping finger mounts with H7 fit**
  - Mounting of the tooling fingers

- **Adjustable end stop**
  - +/- 3°

- **Rotating-drive mechanism**
  - robust, wear-resistant

- **Robust, lightweight housing**
  - hard-coated aluminum alloy

- **Drive**
  - two double-acting pneumatic cylinders

- **Slot for magnetic field sensor**
  - sensing of the rotational position and gripper jaw position
Terms

**Gripping force:** the arithmetic sum of the individual forces occurring at the jaws

**Closing/opening time:** time required for gripper jaws to cover maximum stroke distance

**Repeatability:** at end stops after 50/100 consecutive cycles

**Cycle:** one complete movement of the piston forward and back

**Maintenance:** recommended at 5 million cycles (please refer to the Operating manual for constraints)
- low operating costs due to longer maintenance intervals
- long lifespan

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**Model guide**

**N:** Standard design (long stroke - standard force)

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Opening angle per jaw</th>
<th>Gripping torque in closing</th>
<th>Self locking via</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGK20N</td>
<td>90°</td>
<td>3 Nm</td>
<td>DSV*/MS</td>
<td>0.5 Nm</td>
</tr>
</tbody>
</table>

*DSV= Pressure safety valve/one-way valve (Part No.DSV1/8); MS= Mechanical self-locking at 0° opening-angle
Grip & Rotate Pivoting Arm Gripper

**Drive**

**Gripping**
Double-acting pneumatic cylinder
- maximum drive moment
- gripping torque up to 3 Nm

**Rotation**
Double-acting pneumatic cylinder with oval piston
- maximum torque during rotation
- approximately 30% more piston area with comparable round piston
- virtually no play

**Guidance**

The guides for the linkage are in the side plates
- for better repeatability
- precise guide
- virtually no play

**Power transfer**

**Piston and toggle linkage**
- maximum gripping force through the linkage
- efficient conversion of piston force to the linkage
- centrally linked
- jaws are synchronized

**Gripper jaw positioning**

Gripping finger mounts with H7 fit
- attachment of tooling fingers
Position sensing

Slot for mounting of magnetic field sensor
Sensing of the piston position

- compact – all sensors and cables are outside the swivel area
- stable, separate sensing of the gripping and rotating positions
- for magnetic field sensor with bracket for C-nut

Grip force safety device

Mechanical self-locking at 0° opening-angle via toggle linkage alternately, a pressure safety valve (Part Nr. DSV1/8) can be used, which prevents loss of grip force via pressure retention.

Rotation angle

90° or 180°
Individually adjustable

- simple relocation of end stop
- both stops included in delivery
- easily adaptable from one application to the next
Grip & Rotate Pivoting Arm Gripper

Gripping-force diagram
Gripping force as a function of opening angle.

Rotation-time diagram
Rotation time as a function of mass moment of inertia.

Forces and moments
Max. allowable static forces and moments.

Included with purchase

Flow control air fittings
Part No. DRVM5x4
End stop 90° + 180°
Part No. ANS0002

Recommended accessories

Compressed air fittings
Part No.WVM5x4
Compressed air fittings
Part No.GVM5

Magnetic field sensor
Part No.MFS103KHC42
Magnetic field sensor
Part No.MFS303KHC30

Connector 3-plug
Part No.S12-G-3
Pressure safety valve/ one-way valve
Part No.DSV1/8
<table>
<thead>
<tr>
<th><strong>Gripping</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Stroke per jaw [°]:</td>
<td>90</td>
</tr>
<tr>
<td>Gripping force in closing [N]***:</td>
<td>150</td>
</tr>
<tr>
<td>Gripping torque in closing [Nm]:</td>
<td>3</td>
</tr>
<tr>
<td>Max. suggested workpiece weight [g]*:</td>
<td>772</td>
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<tr>
<td>Closing time/opening time [s]:</td>
<td>0.25</td>
</tr>
<tr>
<td>Repeatability +/- [mm]:</td>
<td>0.1</td>
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<tr>
<td>Air volume per cycle [cm³]:</td>
<td>9</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Rotation</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque [Nm]:</td>
<td>0.5</td>
</tr>
<tr>
<td>Rotation angle (90° or 180°) adjustable +/- [°]:</td>
<td>3</td>
</tr>
<tr>
<td>Repeatability [°]:</td>
<td>0.05</td>
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<tr>
<td>Bearing load axial/ radial [N/Nm]:</td>
<td>900/10</td>
</tr>
<tr>
<td>Air volume per cycle 90°/180° [cm³]:</td>
<td>4.6/9.2</td>
</tr>
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<table>
<thead>
<tr>
<th><strong>General</strong></th>
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<tbody>
<tr>
<td>Operating pressure min./max. [bar]:</td>
<td>3/8</td>
</tr>
<tr>
<td>Operating temperature min./max. [°C]**:</td>
<td>5/80</td>
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<tr>
<td>Weight [g]:</td>
<td>550</td>
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</tbody>
</table>

All data measured at 6 bar
* Value determined with friction coefficient µ=0.1 and safety factor ν = 2, spacing from top edge of housing H = 40 mm
** High-temperature-resistant model (up to 150°C) add “T” to part number
*** Measured at 10 mm from upper housing and 1° opening angle

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1. Gripper mounting
2. Power supply
3. Jaw fastening
4. Adjustment screw
5. Slot for magnetic field sensor
6. End stop 90°
7. End stop 180°
8. Direction of rotation
9. Air connection (closing) - Gripping
10. Air connection (opening) - Gripping
11. Air connection (90°/180°) - Rotation
12. Air connection (0°) - Rotation
13. Alternate air connection (closing) - Gripping
14. Alternate air connection (opening) - Gripping
15. Alternate air connection (90°/180°) - Rotation
16. Alternate air connection (0°) - Rotation

* equivalent to ISO 4762