Rotating Grippers

pneumatic
## Grip and Rotate Parallel Gripper - with T-slot guides

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Stroke per jaw [mm]</th>
<th>Gripping force [N]</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Information</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>DGP404N</td>
<td>4</td>
<td>115</td>
<td>10</td>
</tr>
<tr>
<td>DGP404NC</td>
<td>4</td>
<td>155</td>
<td>10</td>
</tr>
<tr>
<td>DGP404NO</td>
<td>4</td>
<td>155</td>
<td>10</td>
</tr>
<tr>
<td>DGP404S</td>
<td>2</td>
<td>255</td>
<td>10</td>
</tr>
<tr>
<td>DGP404SC</td>
<td>2</td>
<td>350</td>
<td>10</td>
</tr>
<tr>
<td>DGP404SO</td>
<td>2</td>
<td>350</td>
<td>10</td>
</tr>
</tbody>
</table>

## Grip and Rotate Parallel Gripper - with roller slides

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Stroke per jaw [mm]</th>
<th>Gripping force [N]</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Information</td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>DGP12N</td>
<td>3</td>
<td>31</td>
<td>18</td>
</tr>
<tr>
<td>DGP12NC</td>
<td>3</td>
<td>52</td>
<td>18</td>
</tr>
<tr>
<td>DGP12NO</td>
<td>3</td>
<td>52</td>
<td>18</td>
</tr>
</tbody>
</table>
### Grip and Rotate Three Jaw Gripper - with T-slot guides

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Stroke per jaw [mm]</th>
<th>Gripping force [N]</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGD304N</td>
<td>4</td>
<td>114</td>
<td>22</td>
</tr>
<tr>
<td>DGD304NC</td>
<td>4</td>
<td>154</td>
<td>26</td>
</tr>
<tr>
<td>DGD304NO</td>
<td>4</td>
<td>154</td>
<td>26</td>
</tr>
<tr>
<td>DGD304S</td>
<td>2</td>
<td>238</td>
<td>26</td>
</tr>
<tr>
<td>DGD304SC</td>
<td>2</td>
<td>318</td>
<td>26</td>
</tr>
<tr>
<td>DGD304SO</td>
<td>2</td>
<td>318</td>
<td>26</td>
</tr>
</tbody>
</table>

### Grip and Rotate Pivoting Arm Gripper

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Opening angle per jaw [*]</th>
<th>Gripping torque in closing [Nm]</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Information</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>DGK20N</td>
<td>90</td>
<td>3</td>
<td>34</td>
</tr>
</tbody>
</table>
Features

- Grip and rotate functions can be controlled separately
- Grip and rotate, either 90° or 180°, combined in a compact module
- Six different types in this series, for inside - and outside-gripping, with a stroke of 2 or 4 mm per jaw, also available with mechanical gripping-force-retention
- Stable T-Slot guides to aid the absorption of large forces and moments, optimally suited for high loads

Functional diagram

- Removable centering sleeves - fast and accurate positioning of the gripper jaws
- Endposition 0/90/180° adjustment - endstops for 0°/90°/180° included with purchase
- Robust, lightweight housing - hard coated aluminum alloy
- Mounting and positioning - mounting possible from several sides for versatile positioning
- Flow control air connections (included) - for rotational speed adjustment
- Slot for magnetic field sensor - sensing of the rotational position and gripper jaw position
- Wedge and piston design - synchronized parallel movement of the gripper jaws
- Precise T-Slot guides - high force and moment absorption
- Adjustable endstop - +/- 3°
- Rotating-drive mechanism - robust, wear-resistant
- Drive - two double acting pneumatic cylinders
- Integrated grip force safety device - optional via integrated spring (C or O models)
**Model guide**

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Stroke per jaw</th>
<th>Gripping force in opening</th>
<th>Gripping force in closing</th>
<th>Self locking via</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGP404N</td>
<td>4 mm</td>
<td>115 N</td>
<td>115 N</td>
<td>DSV*</td>
<td>0.5 Nm</td>
</tr>
<tr>
<td>DGP404NC</td>
<td>4 mm</td>
<td>-</td>
<td>155 N</td>
<td>Spring</td>
<td>0.5 Nm</td>
</tr>
<tr>
<td>DGP404NO</td>
<td>4 mm</td>
<td>155 N</td>
<td>-</td>
<td>Spring</td>
<td>0.5 Nm</td>
</tr>
<tr>
<td>DGP404S</td>
<td>2 mm</td>
<td>255 N</td>
<td>255 N</td>
<td>DSV*</td>
<td>0.5 Nm</td>
</tr>
<tr>
<td>DGP404SC</td>
<td>2 mm</td>
<td>-</td>
<td>350 N</td>
<td>Spring</td>
<td>0.5 Nm</td>
</tr>
<tr>
<td>DGP404SO</td>
<td>2 mm</td>
<td>350 N</td>
<td>-</td>
<td>Spring</td>
<td>0.5 Nm</td>
</tr>
</tbody>
</table>

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

*S*: Heavy duty design (short stroke - large force)

*C*: self-locking, spring closing

*O*: self-locking, spring opening

*DSV* = Pressure safety valve/one-way valve (Part No. DSV1/8)

**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 endstops after 50/100 consecutive cycles

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

**Maintenance:** recommended at 10 million cycles (please refer to the operating manual for constraints)

Available for download at: www.sommer-automatic.com

- low operating costs due to longer maintenance intervals
- long lifespan

*low operating costs due to longer maintenance intervals
long lifespan*
Parallel Grip & Rotate Module

Drive
Gripping
N and S Models
Double acting pneumatic cylinder
- maximum power in both opening and closing
- grip force up to 350N
NC, NO and SC, SO Models
Double acting pneumatic cylinder with integrated spring as mechanical safety device (in the event of pressure loss)
- optimal transmission of power and grip force by spring
Rotation
Double acting pneumatic cylinder with oval piston
- maximum torque during rotation
- approximately 30% more piston area than with comparable round-piston

Guidance
Ground T-slot jaws made from hardened steel
- T-slot guides for maximum force and moment resistance
- high precision, play-free guides
- convenient service via external lubrication fitting

Power transfer
Wedge and piston design with mechanically restricted guides
- optimal transmission of power to grip-force
- self-centering
- synchronized jaw movement
- high repeatability

Gripper jaw positioning
Positioning of the tooling fingers via centering sleeves
- precise positioning of the individual gripper fingers
- fast, easy, and economical switching of tooling fingers
- space saving design maximizes size of mounting holes
Position sensing
Built-in mount for magnetic field sensors
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 sensors with bracket for C-Nut

Gripping force safety device
NC, NO and SC, SO Models
Energy retention through spring mounted in cylinder
- reliable mechanical grip force retention
- compact design

N and S external pressure retention safety valve
- gripping force retention through the use of optional pressure retention safety valve (Part Nr. DSV1/8).

Rotation angle
90° or 180°
Individually adjustable
- simple relocation of endstop
- both stops included in delivery
- easily adaptable from one application to the next
Parallel Grip & Rotate Module

Gripping force diagram
Gripping force as a function of jaw length.

Forces and moments
Max allowable static forces and moments on jaws.

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

Included with purchase

T
Flow control air fittings
Part.-Nr. DRVM5x4

L+L'
Endstop 90° + 180°
Part.-Nr. ANS0002

G
Centering sleeves
Part.-Nr. BDST40400

Accessories

DGP404N/S DGP404NC/NO/SC/SO

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>B</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>C</td>
<td>26</td>
<td>34</td>
</tr>
<tr>
<td>D</td>
<td>34</td>
<td>46</td>
</tr>
<tr>
<td>X</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Y</td>
<td>23.5</td>
<td>33.5</td>
</tr>
</tbody>
</table>

subject to change without prior notice

Accessorie list

T
Compressed air fittings
Bst.-Nr. WVM5

E
Magnetic field sensor
Bst.-Nr. MFS103KHC42

K+C
Universal jaw set
Part No. UB404 (Al)
Part No. UB404ST (St)

Pressure safety valve/one-way valve
Part No. DSV1/8

Magnetic field sensor incl. bracket

Data, Drawings, 3-D Models, Operating Instructions– www.techno-sommer.com
### Gripping

<table>
<thead>
<tr>
<th>Order No.:</th>
<th>DGP404N</th>
<th>DGP404NC</th>
<th>DGP404NO</th>
<th>DGP404S</th>
<th>DGP404SC</th>
<th>DGP404SO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke per jaw (mm):</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Gripping force in closing and opening (N):</td>
<td>115</td>
<td>-</td>
<td>-</td>
<td>255</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gripping force in closing (N):</td>
<td>-</td>
<td>115</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gripping force in opening (N):</td>
<td>-</td>
<td>-</td>
<td>155</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Max. suggested workpiece weight [kg]*:</td>
<td>0,59</td>
<td>0,79</td>
<td>0,79</td>
<td>1,3</td>
<td>1,8</td>
<td>1,8</td>
</tr>
<tr>
<td>Gripping force secured by spring min./max. (N):</td>
<td>-</td>
<td>40</td>
<td>40</td>
<td>-</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td>Closing time/opening time [s]:</td>
<td>0,01</td>
<td>0,015</td>
<td>0,015</td>
<td>0,01</td>
<td>0,015</td>
<td>0,015</td>
</tr>
<tr>
<td>Repeatability +/- [mm]:</td>
<td>0,05</td>
<td>0,05</td>
<td>0,05</td>
<td>0,05</td>
<td>0,05</td>
<td>0,05</td>
</tr>
<tr>
<td>Air volume per cycle [cm³]:</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

### Rotation

| | Torque (Nm): | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| Rotation angle (90° or 180°) | adjustable +/- [°]: | 3 | 3 | 3 | 3 | 3 | 3 |
| Bearing load axial/radial [N/Nm]: | 950/10 | 950/10 | 950/10 | 950/10 | 950/10 | 950/10 |
| Air volume per cycle [°/180°] [cm³]: | 4,5/9 | 4,5/9 | 4,5/9 | 4,5/9 | 4,5/9 | 4,5/9 |
| Repeatability [°]: | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| Rotation angle (90° or 180°) adjustable +/- [°]: | 3 | 3 | 3 | 3 | 3 | 3 |
| Bearing load axial/radial [N/Nm]: | 950/10 | 950/10 | 950/10 | 950/10 | 950/10 | 950/10 |
| Air volume per cycle [°/180°] [cm³]: | 4,5/9 | 4,5/9 | 4,5/9 | 4,5/9 | 4,5/9 | 4,5/9 |
| Air volume per cycle [90°/180°] [cm³]: | 4,5/9 | 4,5/9 | 4,5/9 | 4,5/9 | 4,5/9 | 4,5/9 |

### General

| Weight [g]: | 440 | 480 | 480 | 440 | 480 | 480 |

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*Value determined with friction coefficient $\mu=0.1$ and safety factor $\nu=2$

**High temperature resistant model (up to 150 °C) add "T" to part number

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**subject to change without prior notice**
Parallel Grip & Rotate Module
pneumatic

DGP12
Parallel Grip & Rotate Module

Features

- Grip and rotate can be controlled separately
- Grip and rotate, either 90° or 180°, combined in a compact module
- Inside and outside gripping, with stroke of 3mm per jaw, also available with mechanical grip force safety device
- With low friction roller slide and double-acting pneumatic cylinder for larger grip forces

Functional diagram

- Endposition 0°/90°/180° adjustment: endstops for 0°/90°/180° included with purchase
- Rotating drive mechanism: robust, wear resistant
- Slot for magnetic field sensor: sensing of the rotational position and gripper jaw position
- Flow control air connections (included): for the adjustment of the rotational speed
- Drive: two double acting pneumatic cylinders
- Wedge and piston design: synchronized parallel movement of the gripper jaws
- Roller slide: low friction power transmission
- Adjustable endstop: +/- 3°
- Robust, lightweight housing: hard coated aluminum alloy
- Mounting and positioning: mounting possible from several sides for versatile positioning of the gripper
- Integrated grip force safety device: optional via integrated spring (C or O models)
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 endstops after 50/100 consecutive cycles
Cycle: one complete movement of the piston forward and back
Maintenance: recommended at 10 million cycles (please refer to the Operating manual for constraints),
Available for download at: www.sommer-automatic.com
- low operating costs due to longer maintenance intervals
- long lifespan

Model guide

N: Standard design (long stroke - standard force)
C: Self-locking, spring closing
O: Self-locking, spring opening

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Stroke per jaw</th>
<th>Gripping force in opening</th>
<th>Gripping force in closing</th>
<th>Self locking via</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGP12N</td>
<td>3 mm</td>
<td>31 N</td>
<td>31 N</td>
<td>DSV*</td>
<td>0,25 Nm</td>
</tr>
<tr>
<td>DGP12NC</td>
<td>3 mm</td>
<td>-</td>
<td>52 N</td>
<td>spring</td>
<td>0,25 Nm</td>
</tr>
<tr>
<td>DGP12NO</td>
<td>3 mm</td>
<td>52 N</td>
<td>-</td>
<td>spring</td>
<td>0,25 Nm</td>
</tr>
</tbody>
</table>

*DSV* = Pressure safety valve/one-way valve (Part No. DSV1/8)
Parallel Grip & **Rotate Module**

**Drive**

**Gripping**
- N Models
  - Double acting pneumatic cylinder
  - maximum power in both opening and closing
  - grip force up to 31N

- NC, NO Models
  - Double acting pneumatic cylinder with integrated spring as mechanical safety device (in the event of pressure loss)
  - optimal transmission of power and grip force by spring

**Rotation**
- Double acting pneumatic cylinder with oval piston
  - maximum torque during rotation
  - approximately 30% more piston area than with comparable round-piston

**Guidance**
- Double roller slide
  - harden steel pin
  - jaw made of hard coat, anodized aluminum

**Power transfer**
- Wedge and piston design with Roller slide
  - optimum transmission of power to grip-force
  - wear resistant
  - self-centering
  - synchronized jaw movement
  - high repeatability

**Gripper jaw positioning**
- Positioning of the tooling via threaded holes
  - attachment of tooling fingers
Position sensing

Built-in mount for magnetic field sensors

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 sensors with bracket for C-Nut

Gripping force safety device

NC, NO Models

Energy retention through spring mounted in cylinder
- reliable mechanical grip force retention
- compact design

N external pressure retention safety valve

- Gripping force retention through the use of optional pressure safety valve (Part. Nr. DSV1/8). This type of grip force retention is restricted by the inevitable leakage of the pneumatic system.

Rotation angle

90° or 180°

Individually adjustable
- simple relocation of endstop
- both stops included in delivery
- easily adaptable from one application to the next
Parallel Grip & Rotate Module

Gripping force diagram
Gripping force as a function of jaw length.

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c}
\text{[mm]} & 0 & 5 & 10 & 15 & 20 & 25 & 30 \\
\hline
\text{NC/NO} & \text{N} & \text{N} & \text{N} & \text{N} & \text{N} & \text{N} & \text{N} \\
\end{array}
\]

Colored area: increased wear or tear to be expected.

Forces and moments
Max allowable static forces and moments on jaws

\[\begin{align*}
F_R &= 0,15 \text{N/nm} \\
M_R &= 0,15 \text{N/m} \\
F_A &= 16 \text{N}
\end{align*}\]

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

Included with purchase
- Flow control air fittings Part No. DRVM5x4
- Endstop 90° + 180° Part No. ANS0001

Accessory list
- Compressed air fittings Part No. WVMS
- Universal jaw set Part No. UB12 (Al) Part No. UB12ST (St)
- 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

Subject to change without prior notice

Colored area: increased wear or tear to be expected.
<table>
<thead>
<tr>
<th>Order No.:</th>
<th>DGP12N</th>
<th>DGP12NC</th>
<th>DGP12NO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gripping</strong></td>
<td>Stroke per jaw (mm)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Gripping force in closing and opening [N]:</td>
<td>31</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gripping force in closing [N]:</td>
<td>-</td>
<td>52</td>
<td>-</td>
</tr>
<tr>
<td>Gripping force in opening [N]:</td>
<td>-</td>
<td>-</td>
<td>52</td>
</tr>
<tr>
<td>Max suggested workpiece weight [g]*:</td>
<td>158</td>
<td>265</td>
<td>265</td>
</tr>
<tr>
<td>Gripping force secured by spring min. [N]:</td>
<td>-</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Closing time/opening time [s]:</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Repeatability +/- [mm]:</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Air volume per cycle [cm³]:</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Rotation</strong></td>
<td>Torque [Nm]:</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Rotation angle 90° oder 180° adjustable +/- [°]:</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Repeatability [°]:</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Bearing load axial/radial [N/Nm]:</td>
<td>600/7</td>
<td>600/7</td>
<td>600/7</td>
</tr>
<tr>
<td>Max suggested workpiece weight [g]*:</td>
<td>1,9/3,8</td>
<td>1,9/3,8</td>
<td>1,9/3,8</td>
</tr>
<tr>
<td>Closing time/opening time [s]:</td>
<td>5/80</td>
<td>5/80</td>
<td>5/80</td>
</tr>
<tr>
<td>Operating pressure min./max. [bar]:</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Torque [Nm]:</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Rotation angle 90° oder 180° adjustable +/- [°]:</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Repeatability [°]:</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Bearing load axial/radial [N/Nm]:</td>
<td>600/7</td>
<td>600/7</td>
<td>600/7</td>
</tr>
<tr>
<td>Max suggested workpiece weight [g]*:</td>
<td>1,9/3,8</td>
<td>1,9/3,8</td>
<td>1,9/3,8</td>
</tr>
<tr>
<td>Closing time/opening time [s]:</td>
<td>5/80</td>
<td>5/80</td>
<td>5/80</td>
</tr>
<tr>
<td>Operating pressure min./max. [bar]:</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

All data measured at 6 bar

* Value determined with friction coefficient µ=0.1 and safety factor v = 2

** High temperature resistant model (up to 150 °C) add “T” to part number

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The diagram on the right illustrates the components and features of the DGP12 series, including Gripper mounting, Power supply, Jaw fastening, and various connection points for air and rotation. The diagrams are subject to change without prior notice.

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Subject to change without prior notice.
Features

- Grip and rotate functions can be controlled separately
- Grip and rotate, either 90 or 180°, combined in a compact module
- Six different types in this series, for inside-and-outside-gripping, with a stroke of 2 or 4 mm per jaw, also available with mechanical gripping-force-retention
- Stable T-slot guides to aid the absorption of large forces and moments, optimally suited for high loads

Functional diagram

- Precise T-Slot guides
  - high force and moment absorption

- Endposition 0/90/180° adjustment
  - endstops 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

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

- Removal centering sleeves
  - fast and accurate positioning of the gripper jaws

- Wedge and piston design
  - synchronized parallel movement of the gripper jaws

- Adjustable endstop
  - +/- 3°

- Rotating drive mechanism
  - robust, wear resistant

- Drive
  - two double acting pneumatic cylinders

- Robust, lightweight housing
  - hard coated aluminum alloy

- Integrated grip force safety device
  - optional via integrated spring (C or O models)
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 endstops after 50/100 consecutive cycles
Cycle: one complete movement of the piston forward and back
Maintenance: recommended at 10 million cycles (please refer to the operating manual for constraints)

Available for download at: www.sommer-automatic.com
• low operating costs due to longer maintenance intervals
• long lifespan

Model guide

N: Standard design (long stroke - standard force)
S: Heavy duty design (short stroke - large force)
C: self-locking, spring closing
O: self-locking, spring opening

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Stroke per jaw</th>
<th>Gripping force in opening</th>
<th>Gripping force in closing</th>
<th>Self locking via</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGD304N</td>
<td>4</td>
<td>114 N</td>
<td>114 N</td>
<td>DSV*</td>
<td>0,5 Nm</td>
</tr>
<tr>
<td>DGD304NC</td>
<td>4</td>
<td>-</td>
<td>154 N</td>
<td>Spring</td>
<td>0,5 Nm</td>
</tr>
<tr>
<td>DGD304NO</td>
<td>4</td>
<td>154 N</td>
<td>-</td>
<td>Spring</td>
<td>0,5 Nm</td>
</tr>
<tr>
<td>DGD304S</td>
<td>2</td>
<td>238 N</td>
<td>238 N</td>
<td>DSV*</td>
<td>0,5 Nm</td>
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<tr>
<td>DGD304SC</td>
<td>2</td>
<td>-</td>
<td>318 N</td>
<td>Spring</td>
<td>0,5 Nm</td>
</tr>
<tr>
<td>DGD304SO</td>
<td>2</td>
<td>318 N</td>
<td>-</td>
<td>Spring</td>
<td>0,5 Nm</td>
</tr>
</tbody>
</table>

*DSV= Pressure safety valve/one-way valve (Part No. DSV1/8)
Drive

Gripping
N and S Models
Double acting pneumatic cylinder
- maximum power in both opening and closing
- grip force up to 238 N

NC, NO and SC, SO Models
Double acting pneumatic cylinder with integrated spring as mechanical safety device (in the event of pressure loss)
- optimal transmission of power and grip force by spring

Rotation
Double acting pneumatic cylinder with oval piston
- maximum torque during rotation
- approximately 30% more piston area than with comparable round-piston

Guidance

Ground T-slot jaws made from hardened steel
- T-slot guides for maximum force and moment resistance
- high precision, play-free guides
- convenient service via external lubrication fitting

Power transfer

Wedge and piston design with mechanical restricted guides
- optimal transmission of power to grip-force
- self-centering
- synchronized jaw movement
- high repeatability

Gripper jaw positioning

Positioning of the tooling fingers via centering sleeves
- precise positioning of the individual gripper fingers
- fast, easy, and economical switching of tooling fingers
- space saving design maximizes size of mounting holes
Position sensing
Built-in mount for magnetic sensors
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 sensors with bracket for C-Nut

Gripping force safety device
NC, NO and SC, SO Models
Energy retention through spring mounted in cylinder
- reliable mechanical grip force retention
- compact design
N and S external pressure retention safety valve
- Gripping force retention through the use of optional pressure retention safety valve (Part No. DSV1/8).

Rotation angle
90° or 180°
Individually adjustable
- simple relocation of endstop
- both stops included in delivery
- easily adaptable from one application to the next
Three-Jaw Grip & Rotate Module

Gripping force diagram
Gripping force as a function of jaw length.

Colored area: increased wear or tear to be expected.

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

Included with purchase

- Flow control air fittings
  Part No. DRVM5x4

- Endstop 90° + 180°
  Part No. ANS0002

- Centering sleeves
  Part No. BDST40400

Accessory list

- Compressed air fittings
  Part No. WVM5

- Magnetic field sensor
  Part No. MFS103KHC42

- Universal jaw set
  Part No. UB304 (Al)
  Part No. UB304ST (St)

- Pressure safety valve/one-way valve
  Part No. DSV1/8

- Magnetic field sensor includes bracket

Forces and moments
Max allowable static forces and moments on jaws.

Colored area: increased wear or tear to be expected.

Accessories

<table>
<thead>
<tr>
<th>Accessories</th>
<th>DGD304N/S</th>
<th>DGD304NC/NO/SC/SO</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>B</td>
<td>12</td>
<td>16</td>
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<tr>
<td>C</td>
<td>26</td>
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<tr>
<td>Y</td>
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subject to change without prior notice
<table>
<thead>
<tr>
<th>Order No.:</th>
<th>DGD304N</th>
<th>DGD304NC</th>
<th>DGD304NO</th>
<th>DGD304S</th>
<th>DGD304SC</th>
<th>DGD304SO</th>
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<tbody>
<tr>
<td>Gripping</td>
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<tr>
<td>Stroke per jaw (mm)</td>
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<td>Gripping force in closing and opening [N]:</td>
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<td>318</td>
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<td>Max suggested workpiece weight [kg]**:</td>
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<td>Air volume per cycle [cm³]:</td>
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<td>18</td>
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<td>9</td>
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<tr>
<td>Rotation</td>
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<tr>
<td>Torque (Nm):</td>
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<td>Rotation angle 90° oder 180° adjustable +/- [°]:</td>
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</tbody>
</table>

All data measured at 6 bar
* Value determined with friction coefficient $\mu=0.1$ and safety factor $v = 2$
** High temperature resistant model (up to 150 °C) add “T” to part number

subject to change without prior notice
Angular **Grip & Rotate Module**

pneumatic

DGK20N
Angular **Grip & Rotate Module**

**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
- Endposition 0°/90°/180° adjustment
  - Endstops 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 endstop
  - +/- 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 endstops 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)

Available for download at: www.sommer-automatic.com

• low operating costs due to longer maintenance intervals
• long lifespan

Model guide

<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.
Angular Grip & Rotate Module

Drive
Gripping
Double acting pneumatic cylinder
- maximum drive moment
- gripping torque up to 3,0Nm

Rotation
Double acting pneumatic cylinder with oval piston
- maximum torque during rotation
- approximately 30% more piston area than with comparable round-piston

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 thru the linkage
- efficient conversion of piston force to the linkage
- centrally linked
- jaws are synchronized

Gripper jaw positioning
Gripping jaw 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

**Gripping 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 prevent loss of grip force via pressure retention.

**Rotation angle**

*90° or 180°*

Individually adjustable

- simple relocation of endstop
- both stops included in delivery
- easily adaptable from one application to the next
Angular Grip & Rotate Module

Included with purchase

Flow control air fittings
Part No. DRVM5x4

Endstop 90° + 180°
Part No. ANS0002

Accessory list

Compressed air fittings
Part No. WVM5

Compressed air fittings
Part No. GVMS

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

Magnetic field sensor incl. bracket
Part No. DSV1/8

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

Gripping force diagram
Gripping force as a function of jaw length (measured at 1° opening angle)

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

Forces and moments
Max allowable static forces and moments on jaws.

Measured from top edge of housing

subject to change without prior notice

Data, Drawings, 3-D Models, Operating Instructions – www.techno-sommer.com
### DGK20N

**Order No.:**

<table>
<thead>
<tr>
<th>DGK20N</th>
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</table>

<table>
<thead>
<tr>
<th><strong>Gripping</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke per jaw [°]:</td>
<td>90</td>
</tr>
<tr>
<td>Gripping force in closing [N]**:</td>
<td>150</td>
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<tr>
<td>Gripping torque in closing [Nm]:</td>
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<tr>
<td>Max suggested workpiece weight [g]**:</td>
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<tr>
<td>Closing time/opening time [s]:</td>
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<tr>
<td>Repeatability +/- [mm]:</td>
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</tr>
<tr>
<td>Air volume per cycle [cm³]:</td>
<td>9</td>
</tr>
</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>
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</tr>
<tr>
<td>Repeatability [°]:</td>
<td>0.05</td>
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<tr>
<td>Bearing load axial/axial (N/Nm):</td>
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<tr>
<td>Air volume per cycle 90°/180° [cm³]:</td>
<td>4.9/2.2</td>
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</table>

<table>
<thead>
<tr>
<th><strong>General</strong></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure min/max (bar):</td>
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</tr>
<tr>
<td>Operating temperature min/max (°C)**:</td>
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<tr>
<td>Weight [g]:</td>
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</tr>
</tbody>
</table>

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All data measured at 6 bar

* Value determined with friction coefficient $\mu=0.1$ and safety factor $\nu=2$,
  Spacing from top edge of housing $= 40$ mm

** High temperature resistant model (up to 150 °C) add “T” to part number

*** Measured at 10 mm ab from top housing and 1° opening angle

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**Diagram:**

- Gripper mounting
- Power supply
- Jaw fastening
- Adjustment screw
- Slot for magnetic field sensor
- Endstop 180°
- Endstop 90°
- Direction of rotation
- Air connection(closing) - Gripping
- Air connection(opening) - Gripping
- Air connection(90°/180°) - Rotation
- Air connection(0°) - Rotation
- Alternate air connection (closing) - Gripping
- Alternate air connection (opening) - Gripping
- Alternate air connection (90°/180°) - Rotation
- Alternate air connection (0°) - Rotation

* equivalent to ISO 4762

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