C-25

ANGULAR PNEUMATIC GRIPPERS 180° SERIES
DIRECTCONNECT™

DCT Series

- Highly Configurable Modular Construction, Exclusive DIRECTCONNECT™ Technology
- Full Jaw Opening (180°) Allows Part to be Direct Fed into Gripper, Eliminating One Additional Motion
- Compact Design for Use in Confined Spaces
- Shielding to Repel Chips for Use in Harsh Environments
- Repeatability ±0.05 mm (0.002”) and Accuracy of ±0.07 mm (0.0028”)
- Up to 5 Million Cycles in Typical Applications and 10 Million with Maintenance
- Temperature Rating from -35 to 80°C (-30 to 180°F)
- System Requires 3 to 7 bar (40 to 100 psi) Dry Filtered (40 microns or better) Air Supply
- Accessory Equipment Required— 4-Way 2-Position Pneumatic Control Valve

PNEUMATIC SPECIFICATIONS

IMPERIAL METRIC
Pressure Operating Range: 3 to 7 bar (40 to 100 psi)
Cylinder Type: Double acting
Dynamic Seals: Internally lubricated Buna-N
Valve Required to Operate: 4-way, 2-position

AIR QUALITY REQUIREMENTS
Air Filtration: 40 Micron or better
Air Lubrication: Not necessary*
Air Humidity: Low moisture content (dry)

TEMPERATURE OPERATING RANGE
Buna-N Seals (Standard): -35 to 80°C (-30 to 180°F)
FKM Seals (Optional): -30 to 150°C (-20 to 300°F)

MAINTENANCE SPECIFICATIONS
Expected Life Normal Application: 5 million cycles w/preventative maintenance
10+ million cycles*
Field Repairable: Yes
Seal Repair Kits Available: Yes
*Addition of lubrication will greatly increase service life.

MOUNTING INFORMATION

Grippers Can Be Mounted and Operated in Any Orientation

DIRECTCONNECT mounting pattern:
Gripper is located with 2 dowel pins and assembled with 4 screws.
Alternative pattern: Gripper is located with 2 dowel pins and assembled with 2 screws.

Gripper can be operated utilizing top manifold air ports.

EXTT-3CU-26S thermistor and RTD extension wire.

Note: Gripper fingers shown for reference only, tooling is customers responsibility.

Showed smaller than actual size.

No Adapter Plates Required

DLT-10M-L-C-100 linear thruster slide.

The gripper is protected from falling debris when it is mounted and operated upside down.

Fingers are centered over the jaws, located with 1 dowel pin and assembled with 2 screws.
PRODUCT FEATURES

Gripper Attachment
Gripper mounting from side or bottom

FKM Seals
FKM seals for high temperatures -30 to 150°C (-20 to 300°F) are optional

Quality Components
Made from aluminum alloy anodized with PTFE impregnation. The gripper’s main components are made of heat treated steel.

Inductive Sensor Mounting Kit
Accessory (SD) in order to sense jaw position. Comes with 2 holders for tubular sensors and 2 adjustable flags (except size -12).

Magneto Resistive Sensor Mounting Kit
Standard mounting slots for magneto resistive sensors. (sensors sold separately)

Adjustable Stop
Accessory (BR) in order to adjust the opening of jaws, between 0° to 180°

Shielded Plate and Wiper Covers
Gripper body is shielded to repel chips and other particulate from internal drive mechanism

Multiple Air Ports
Side or top air ports (top ports require O-ring)

Mounting Patterns
DIRECTCONNECT™ mounting surface on back of body (sizes 12 to 20)

OPERATING PRINCIPLE

- A Double Acting Piston, with a Ring Magnet for Magneto Resistive Sensing, is Connected to a Fork Driver on which 2 Drive Pins are Fixed
- Jaw Rotation is Synchronized with the Drive Pin-Jaw Assembly
- Sliding in These Slots, Drive Pins Convert Vertical Motion of the Piston into Rotating Opposite Synchronous Motion of Both Jaws
- Each Jaw Has a Useful Rotation Stroke of 90°, Between the 90° Open Position and the 0° Gripping Position, Plus a Gripping Over-Stroke of Approximately 1.5° Before Reaching the Fully Gripped Position; Jaws Have to be Designed for a 0° Gripping Position (Parallel Jaws)
SPECIFICATIONS DCT-12M

Total Rated Grip Force, \( F @ 7 \text{ bar} \) (100 psi)
\( L = 25 \text{ mm (1")} @ 0^\circ: \) 32 N (7.2 lb)
Stroke: 90° of stroke for each finger
Weight: 0.09 Kg (0.20 lb)
Pressure Range: 3 to 7 bar (40 to 100 psi)
Cylinder Bore Ø: 12 mm (0.472")
Displacement: 1.92 cm\(^3\) (0.117 in\(^3\))

TEMPERATURE RANGE
- Standard Seals: -35 to 80°C (-30 to 180°F)
- FKM Seals: -30 to 150°C (-20 to 300°F)

Actuation: 0.06 sec
Accuracy: ±0.07 mm (±0.0028")
Repeatability: ±0.05 mm (±0.002")
Valve Required to Actuate: 4-way, 2-position

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

Dimensions: mm (inch)

Notes: Directconnect™ dimensions are shown in blue. Jaws have to be designed for a 0° gripping position (parallel jaws).
Jaws will close 1.5° past parallel. To limit shocks at the end of an opening or closing stroke, it is highly recommended to design jaws with minimal inertia (as light and short as possible).
Flow Controls make it possible to reduce the rotation speed and are highly recommended.

LOADING CAPACITY:

<table>
<thead>
<tr>
<th></th>
<th>STATIC</th>
<th>DYNAMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DCT-12M</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Tensile ( T )</td>
<td>47 N (11 lb)</td>
<td>9.4 N (2 lb)</td>
</tr>
<tr>
<td>Maximum Compressive ( C )</td>
<td>47 N (11 lb)</td>
<td>9.4 N (2 lb)</td>
</tr>
<tr>
<td>Maximum Moment ( M_x )</td>
<td>1.1 Nm (10 in-lb)</td>
<td>0.3 Nm (3 in-lb)</td>
</tr>
<tr>
<td>Maximum Moment ( M_y )</td>
<td>1.1 Nm (10 in-lb)</td>
<td>0.3 Nm (3 in-lb)</td>
</tr>
<tr>
<td>Maximum Moment ( M_z )</td>
<td>1.1 Nm (10 in-lb)</td>
<td>0.3 Nm (3 in-lb)</td>
</tr>
</tbody>
</table>

\(^{\dagger}\) Capacities are per set of jaws and are not simultaneous.
**SPECIFICATIONS DCT-16M**

Total Rated Grip Force, F @ 7 bar (100 psi)
L = 25 mm (1") @ 0°: 70 N (16 lb)
Stroke: 90° of stroke for each finger
Weight: 0.16 Kg (0.35 lb)
Pressure Range: 3 to 7 bar (40 to 100 psi)
Cylinder Bore Ø: 16 mm (0.630")
Displacement: 4.12 cm³ (0.251 in³)

**TEMPERATURE RANGE**

Standard Seals: -35 to 80°C (-30 to 180°F)
FKM Seals: -30 to 150°C (-20 to 300°F)

Actuation: 0.13 sec
Accuracy: ±0.07 mm (±0.0028")
Repeatability: ±0.05 mm (±0.002")
Valve Required to Actuate: 4-way, 2-position

**UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW**

**Dimensions: mm (inch)**

**Notes:** DirectConnect™ dimensions are shown in blue. Jaws have to be designed for a 0° gripping position (parallel jaws). Jaws will close 1.5° past parallel. To limit shocks at the end of an opening or closing stroke, it is highly recommended to design jaws with minimal inertia (as light and short as possible). Flow Controls make it possible to reduce the rotation speed and are highly recommended.
SPECIFICATIONS DCT-20M
TOTAL RATED GRIP FORCE, F @ 7 bar (100 psi)
L = 25 mm (1") @ 0°: 112 N (25 lb)
Stroke: 90° of stroke for each finger
Weight: 0.28 Kg (0.62 lb)
Pressure Range: 3 to 7 bar (40 to 100 psi)
Cylinder Bore Ø: 20 mm (0.787")
Displacement: 7.92 cm³ (0.483 in³)
TEMPERATURE RANGE
Standard Seals: -35 to 80°C (-30 to 180°F)
FKM Seals: -30 to 150°C (-20 to 300°F)
Actuation: 0.16 sec
Accuracy: ±0.08 mm (±0.003")
Repeatability: ±0.05 mm (±0.002")
Valve Required to Actuate: 4-way, 2-position

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

LOADING INFORMATION

LOADING CAPACITY

<table>
<thead>
<tr>
<th></th>
<th>STATIC</th>
<th>DYNAMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCT-20M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Tensile T</td>
<td>150 N (34 lb)</td>
<td>30 N (7 lb)</td>
</tr>
<tr>
<td>Maximum Compressive C</td>
<td>150 N (34 lb)</td>
<td>30 N (7 lb)</td>
</tr>
<tr>
<td>Maximum Moment Mx</td>
<td>6 Nm (53 in-lb)</td>
<td>1.5 Nm (13 in-lb)</td>
</tr>
<tr>
<td>Maximum Moment My</td>
<td>6 Nm (53 in-lb)</td>
<td>1.5 Nm (13 in-lb)</td>
</tr>
<tr>
<td>Maximum Moment Mz</td>
<td>6 Nm (53 in-lb)</td>
<td>1.5 Nm (13 in-lb)</td>
</tr>
</tbody>
</table>

* Capacities are per set of jaws and are not simultaneous.
To Order

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>DESCRIPTION</th>
<th>FORCE N (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCT-12M</td>
<td>180° Series angular gripper with 18 mm (0.71&quot;) jaw opening</td>
<td>32 (7.2)</td>
</tr>
<tr>
<td>DCT-16M</td>
<td>180° Series angular gripper with 20 mm (0.79&quot;) jaw opening</td>
<td>70 (16)</td>
</tr>
<tr>
<td>DCT-20M</td>
<td>180° Series angular gripper with 22 mm (0.87&quot;) jaw opening</td>
<td>112 (25)</td>
</tr>
</tbody>
</table>

Note: Sensor and cable sold separately. Inductive sensor not available on DCT-12M.

Ordering Example: DCT-12M, 180° Series pneumatic angular gripper with 18 mm (0.71") jaw opening and gripper force of 32 N (7.2 lb). See air fittings for M5 threaded flow control valve, highly recommended due to jaw closing 1.5° past parallel. Suggested accessories include two PNP magneto resistive sensors with short 90° barrel, OHSP-011, and BR-CT-16, adjustable stop kit.

Quick disconnect sensors will require cable, CABL-013, with 5 m (16’) length. See accessory table below. DCT-16M, 180° Series pneumatic angular gripper with 20 mm (0.79") jaw opening and gripper force of 70 N (16 lb). See air fittings for M5 threaded flow control valve, highly recommended due to jaw closing 1.5° past parallel. Suggested accessories include two PNP inductive quick disconnect sensors, OISP-014, with two mounting kits, SD-CT-16 and BR-CT-16, adjustable stop kit. Quick disconnect sensors will require cable, CABL-013, with 5 m (16’) length. See accessory table below. CAD file available online.

ACCESSORIES

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OISP-014</td>
<td>1 or 2</td>
<td>4 mm PNP inductive sensor with quick disconnect</td>
</tr>
<tr>
<td>OISN-014</td>
<td>1 or 2</td>
<td>4 mm NPN inductive sensor with quick disconnect</td>
</tr>
<tr>
<td>OHSP-017</td>
<td>1 or 2</td>
<td>PNP magneto resistive sensor long barrel with quick disconnect</td>
</tr>
<tr>
<td>OHSN-017</td>
<td>1 or 2</td>
<td>NPN magneto resistive sensor long barrel with quick disconnect</td>
</tr>
<tr>
<td>OHSP-011</td>
<td>1 or 2</td>
<td>PNP magneto resistive sensor short 90° barrel with quick disconnect</td>
</tr>
<tr>
<td>OHSN-011</td>
<td>1 or 2</td>
<td>NPN magneto resistive sensor short 90° barrel with quick disconnect</td>
</tr>
<tr>
<td>CABL-010</td>
<td>1 or 2</td>
<td>Quick disconnect cable 2 m (6’) in length</td>
</tr>
<tr>
<td>CABL-013</td>
<td>1 or 2</td>
<td>Quick disconnect cable 5 m (16’) in length</td>
</tr>
<tr>
<td>BR-CT-12</td>
<td>1</td>
<td>Adjustment stop kit (1 stop and 1 shielded plate) for DCT-12M</td>
</tr>
<tr>
<td>BR-CT-16</td>
<td>1</td>
<td>Adjustment stop kit (1 stop and 1 shielded plate) for DCT-16M</td>
</tr>
<tr>
<td>BR-CT-20</td>
<td>1</td>
<td>Adjustment stop kit (1 stop and 1 shielded plate) for DCT-20M</td>
</tr>
<tr>
<td>SD-CT-16</td>
<td>1 or 2</td>
<td>Inductive sensor mounting kit for DCT-16M</td>
</tr>
<tr>
<td>SD-CT-20</td>
<td>1 or 2</td>
<td>Inductive sensor mounting kit for DCT-20M</td>
</tr>
</tbody>
</table>