

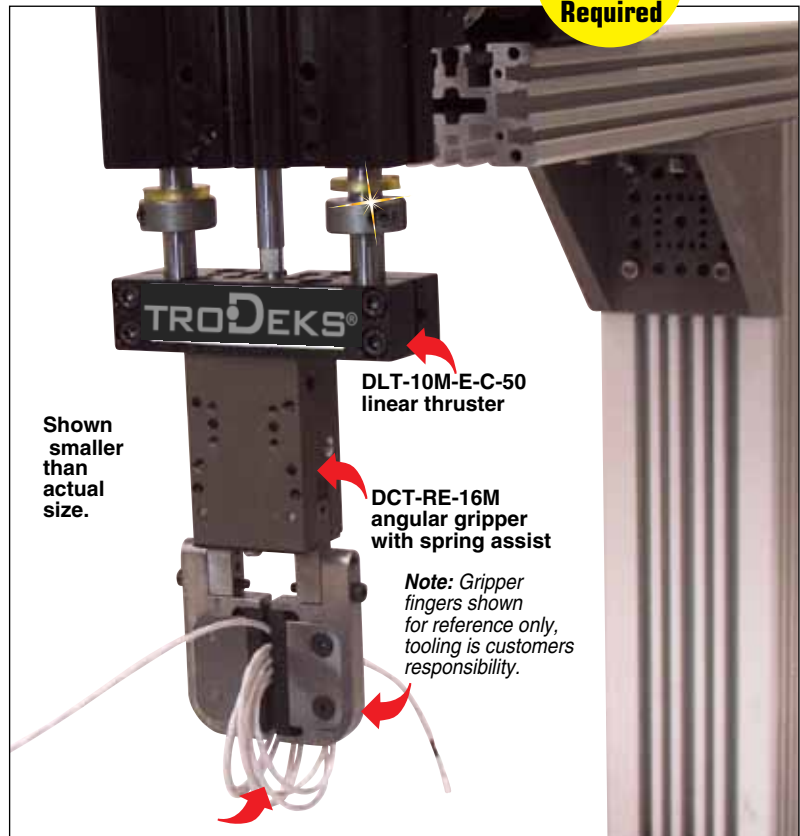
ANGULAR PNEUMATIC GRIPPERS 180° SERIES DIRECTCONNECT™ WITH SPRING ASSIST

TRODEKS®

No
Adaptor
Plates
Required

DCT-RE Series

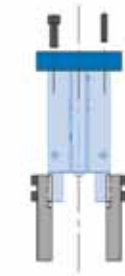
- Highly Configurable Modular Construction, Exclusive DIRECTCONNECT™ Technology
- Full Jaw Opening (180°) Allows Part to be Direct Fed into Gripper, Eliminating One Additional Motion
- Fail Safe Operation-Internal Spring to Maintain Gripper Force if Gripper Loses Air Pressure
- Compact Design for Use 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 4 to 7 bar (60 to 100 psi) Dry Filtered (40 Microns or Better) Air Supply
- Accessory Equipment Required—4-Way 2-Position Pneumatic Control Valve



MOUNTING INFORMATION

Grippers Can be Mounted and Operated in Any Orientation

Gripper is located from the top with 2 dowel pins and assembled with 2 screws.



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.



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.



Gripper can be operated utilizing top manifold air ports.

PNEUMATIC SPECIFICATIONS IMPERIAL METRIC

Pressure Operating Range: 4 to 7 bar (60 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.

Gripper Attachment

Gripper mounting from side or bottom

FKM Seals

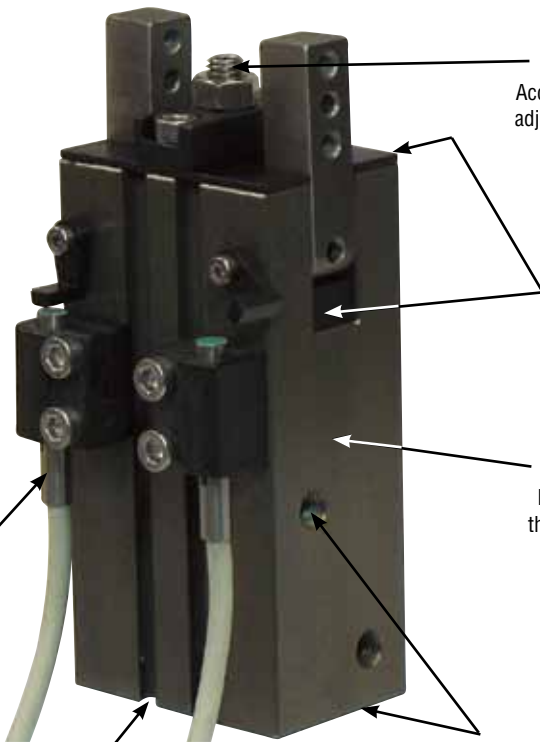
FKM seals for high temperatures -30 to 150°C (-20 to 300°F) are optional

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).



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

Fail Safe Spring

Internal spring allows the gripper to hold onto part with loss of air pressure

Magneto Resistive Sensor Mounting Kit

The gripper comes with adjustable slots for the 2 magnetic sensors (to control jaw position)

Multiple Air Ports

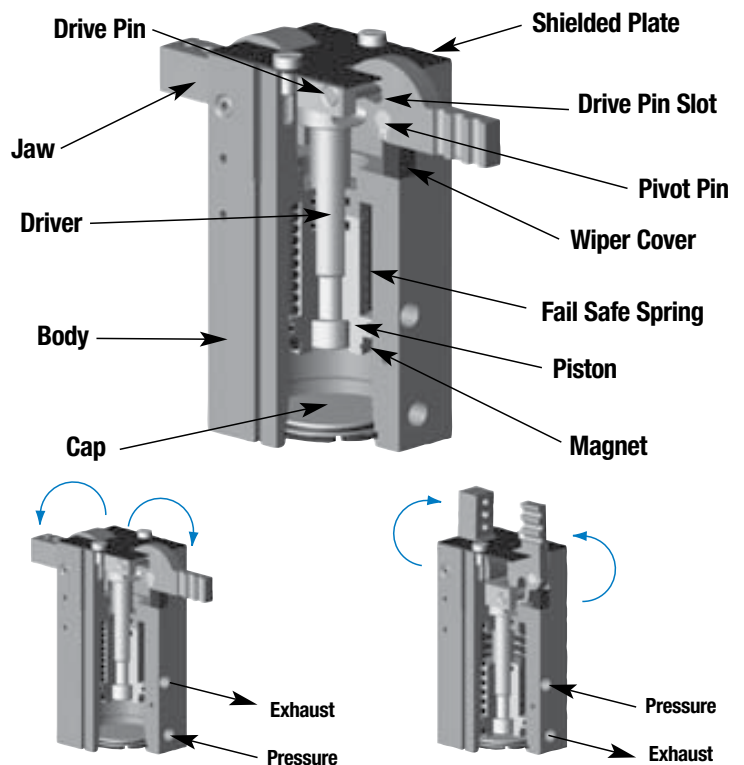
Side or top air ports (top ports require O-ring)

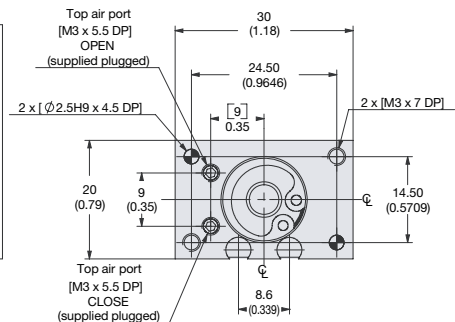
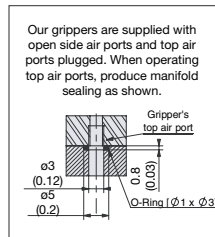
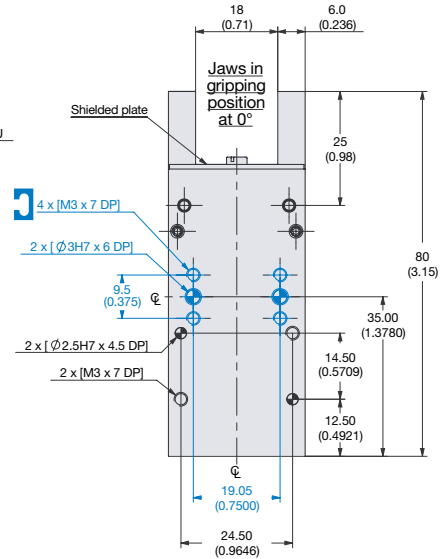
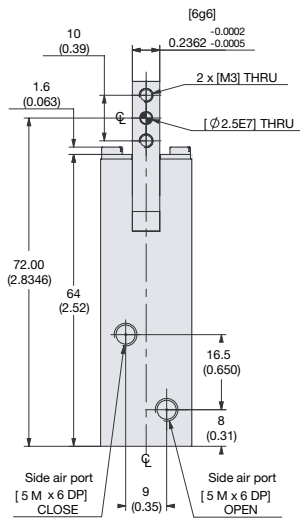
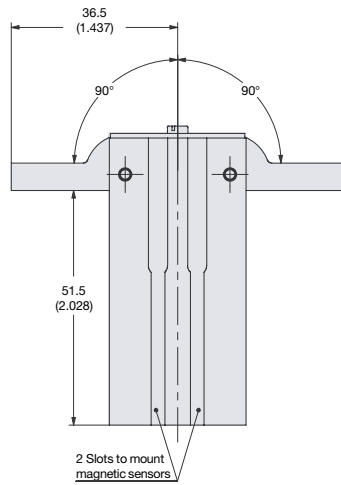
DIRECTCONNECT™ Mounting Patterns

DIRECTCONNECT™ mounting surface on back of body (sizes 12-25)

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)
- The Fail Safe Spring Allow the Gripper to Retain the Component Should the Air Supply Fail or for the Gripper to be Used in Single Acting Mode





Dimensions: mm (inch)

SPECIFICATIONS DCT-12M-RE

Total Rated Grip Force, F @ 7 bar (100 psi)

L = 25 mm (1") @ 0°: 40 N (9 lb)

Stroke: 90° of stroke for each finger

Weight: 0.12 Kg (0.26 lb)

Pressure Range: 4 to 7 bar (60 to 100 psi)

Cylinder Bore Ø: 12 mm (0.472")

Displacement: 1.92 cm³ (0.117 in³)

TEMPERATURE RANGE

Standard Seals: -35 to 80°C (-30 to 180°F)

FKM Seals: -30 to 150°C (-20 to 300°F)

Actuation Open/Close: 0.08/0.05 sec

Accuracy: ±0.07 mm (±0.0028")

Repeatability: ±0.05 mm (±0.002")

Valve Required to Actuate Single Acting:

3-way, 2-position

Valve Required to Actuate Double Acting:

4-way, 2-position

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW



Dimensions are symmetrical about centerline



Third Angle Projection



Metric Threads
Course Pitch

Imperial inch

0.00 = ±0.0
0.000 = ±0.005
0.0000 = ±0.0005

Metric mm

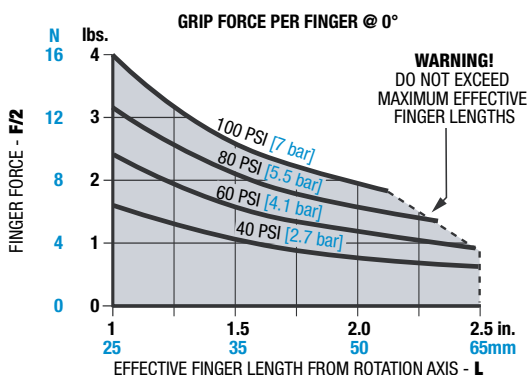
0.0 = ±0.25
0.0 = ±0.13
0.00 = ±0.013

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.

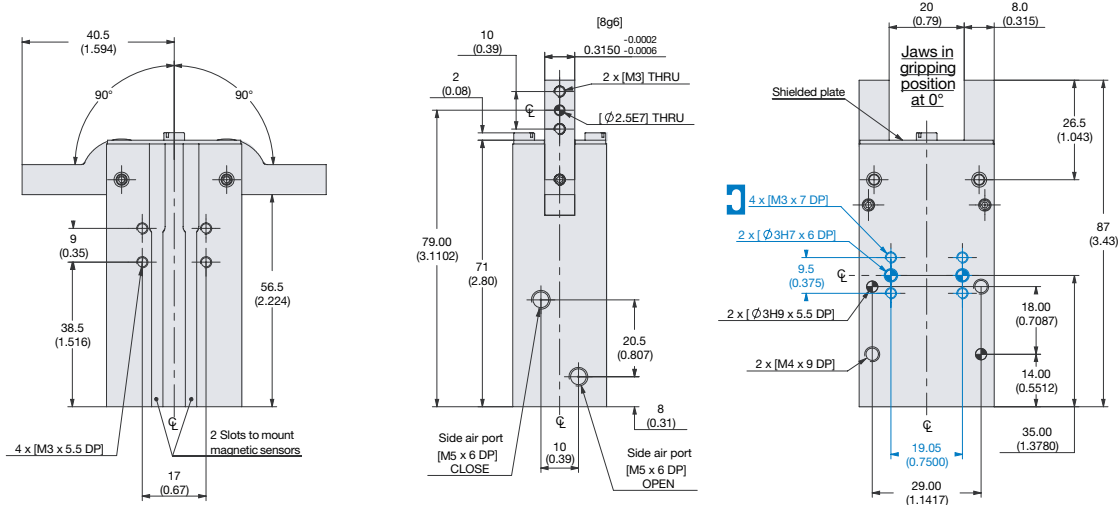
LOADING INFORMATION



| LOADING CAPACITY† | STATIC | DYNAMIC |
|------------------------------|-------------------|------------------|
| DCT-12M-RE | | |
| Maximum Tensile T | 47 N (11 lb) | 9.4 N (2 lb) |
| Maximum Compressive C | 47 N (11 lb) | 9.4 N (2 lb) |
| Maximum Moment Mx | 1.1 Nm (10 in-lb) | 0.3 Nm (3 in-lb) |
| Maximum Moment My | 1.1 Nm (10 in-lb) | 0.3 Nm (3 in-lb) |
| Maximum Moment Mz | 1.1 Nm (10 in-lb) | 0.3 Nm (3 in-lb) |

† Capacities are per set of jaws and are not simultaneous.

DCT-16M-RE DIRECTCONNECT™



SPECIFICATIONS DCT-16M-RE

Total Rated Grip Force, $F @ 7 \text{ bar}$ (100 psi)
 $L = 25 \text{ mm}$ (1") @ 0° : 87 N (19 lb)

Stroke: 90° of stroke for each finger

Weight: 0.20 Kg (0.44 lb)

Pressure Range: 4 to 7 bar (60 to 100 psi)

Cylinder Bore \varnothing : 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 Open/Close: 0.15/0.12 sec

Accuracy: $\pm 0.07 \text{ mm}$ (± 0.0028 ")

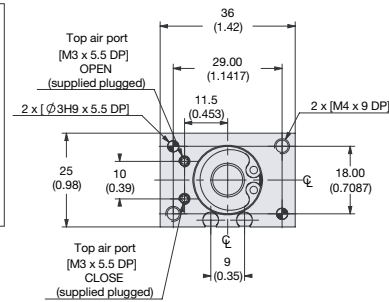
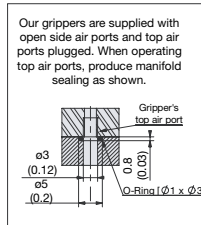
Repeatability: $\pm 0.05 \text{ mm}$ (± 0.002 ")

Valve Required to Actuate Single Acting:

3-way, 2-position

Valve Required to Actuate Double Acting:

4-way, 2-position



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.

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW



Dimensions are symmetrical about centerline



Third Angle Projection



Metric Threads
Course Pitch

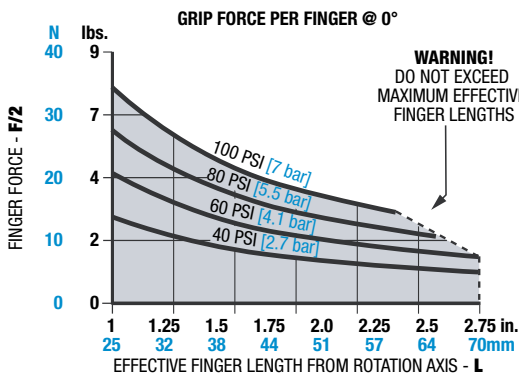
Imperial inch

0.00 = ± 0.0
0.000 = ± 0.005
0.0000 = ± 0.0005

Metric mm

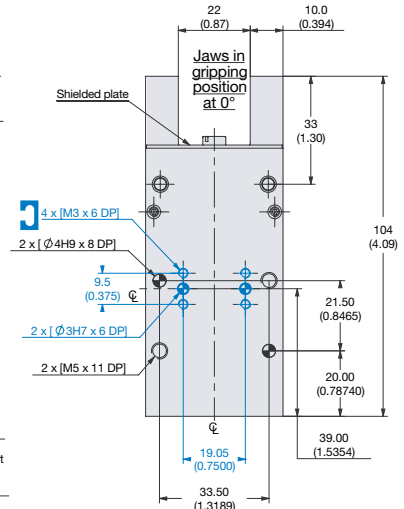
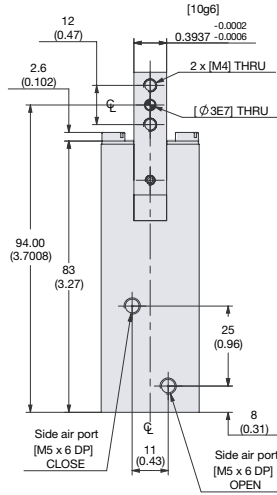
0.0 = ± 0.25
0.0 = ± 0.13
0.00 = ± 0.013

LOADING INFORMATION



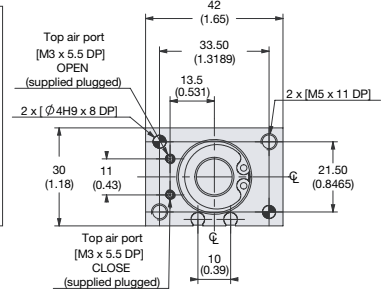
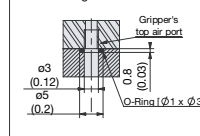
| LOADING CAPACITY† | STATIC | DYNAMIC |
|------------------------------|-------------------|------------------|
| DCT-16M-RE | | |
| Maximum Tensile T | 90 N (20 lb) | 18 N (4 lb) |
| Maximum Compressive C | 90 N (20 lb) | 18 N (4 lb) |
| Maximum Moment Mx | 2.9 Nm (26 in-lb) | 0.7 Nm (6 in-lb) |
| Maximum Moment My | 2.9 Nm (26 in-lb) | 0.7 Nm (6 in-lb) |
| Maximum Moment Mz | 2.9 Nm (26 in-lb) | 0.7 Nm (6 in-lb) |

† Capacities are per set of jaws and are not simultaneous.



4-way, 2-position

Our grippers are supplied with open side air ports and top air ports plugged. When operating top air ports, produce manifold sealing as shown.



Flow Controls make it possible to reduce the rotation speed and are highly recommended.

Metric mm
0.0 = ± 0.25
0.0 = ± 0.13
0.00 = ± 0.013

GRIP FORCE PER FINGER @ 0°

WARNING: DO NOT EXCEED MAXIMUM EFFECTIVE FINGER LENGTH

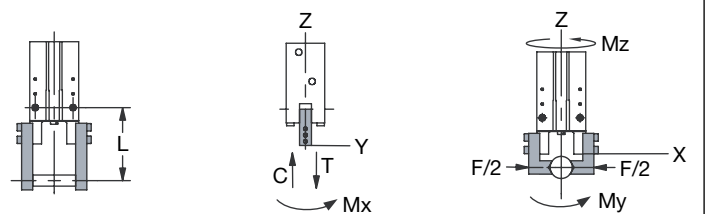
Curves shown for different pressures:

- 100 PSI [7 bar]
- 80 PSI [5.5 bar]
- 60 PSI [4.1 bar]
- 40 PSI [2.7 bar]

Y-axis: FINGER FORCE - F/2 (lbs. 0-13, N 0-50)

X-axis: EFFECTIVE FINGER LENGTH FROM ROTATION AXIS - L (inches 1.25-3.25, mm 32-83)

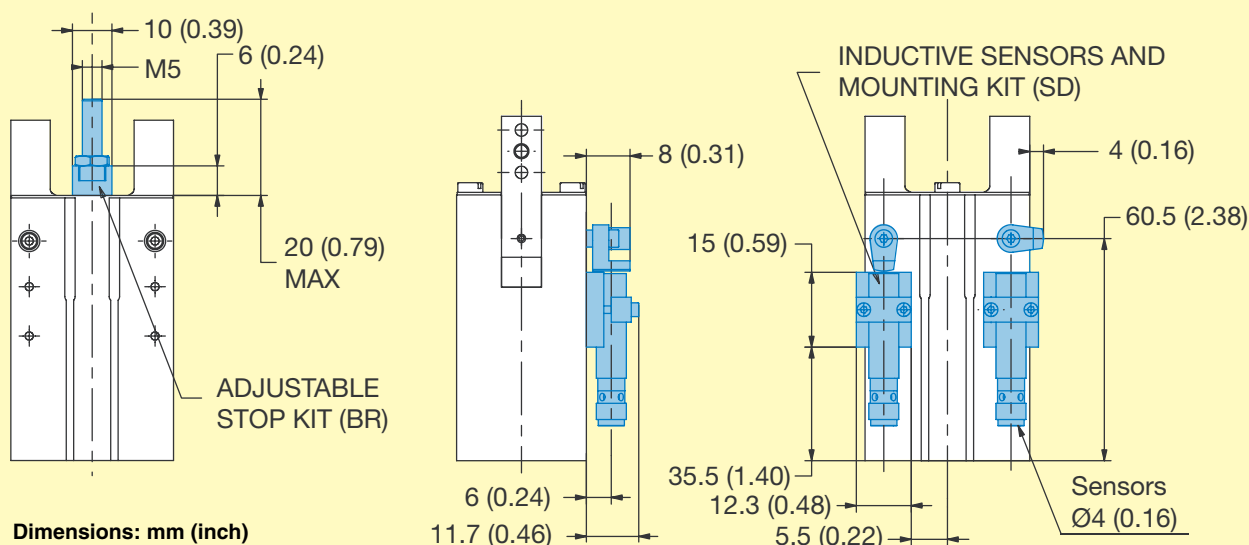
WARNING!
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



| LOADING CAPACITY† | STATIC | DYNAMIC |
|-------------------------------------|-----------------|-------------------|
| DCT-20M-RE | | |
| Maximum Tensile T | 150 N (34 lb) | 30 N (7 lb) |
| Maximum Compressive C | 150 N (34 lb) | 30 N (7 lb) |
| Maximum Moment M_x | 6 Nm (53 in-lb) | 1.5 Nm (13 in-lb) |
| Maximum Moment M_y | 6 Nm (53 in-lb) | 1.5 Nm (13 in-lb) |
| Maximum Moment M_z | 6 Nm (53 in-lb) | 1.5 Nm (13 in-lb) |

[†] Capacities are per set of jaws and are not simultaneous.

ACCESSORIES DIAGRAM



To Order

| MODEL NO. | DESCRIPTION | FORCE N (lb) |
|------------|---|--------------|
| DCT-12M-RE | 180° Series angular gripper with spring assist, 18 mm (0.71") jaw opening | 40 (9) |
| DCT-16M-RE | 180° Series angular gripper with spring assist, 20 mm (0.79") jaw opening | 87 (19) |
| DCT-20M-RE | 180° Series angular gripper with spring assist, 22 mm (0.87") jaw opening | 141 (32) |

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

Ordering Example: DCT-12M-RE, 180° Series pneumatic angular gripper with spring assist, 18 mm (0.71") jaw opening and gripper force of 40 N (9 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-RE, 180° Series pneumatic angular gripper with spring assist, 20 mm (0.79") jaw opening and gripper force of 87 N (19 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, each 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 each. See accessory table below.

ACCESSORIES

| MODEL NO. | QUANTITY | DESCRIPTION |
|-----------|----------|---|
| OISP-014 | 1 or 2 | 4 mm PNP inductive sensor with quick disconnect |
| OISN-014 | 1 or 2 | 4 mm NPN Inductive sensor with quick disconnect |
| OHSP-017 | 1 or 2 | PNP magneto resistive sensor long barrel with quick disconnect |
| OHSN-017 | 1 or 2 | NPN magneto resistive sensor long barrel with quick disconnect |
| OHSP-011 | 1 or 2 | PNP magneto resistive sensor short 90° barrel with quick disconnect |
| OHSN-011 | 1 or 2 | NPN magneto resistive sensor short 90° barrel with quick disconnect |
| CABL-010 | 1 or 2 | Quick disconnect cable 2 m (6.6') in length |
| CABL-013 | 1 or 2 | Quick disconnect cable 5 m (16') in length |
| BR-CT-12 | 1 | Adjustment stop kit (1 stop and 1 shielded plate) for DCT-12M-RE |
| BR-CT-16 | 1 | Adjustment stop kit (1 stop and 1 shielded plate) for DCT-16M-RE |
| BR-CT-20 | 1 | Adjustment stop kit (1 stop and 1 shielded plate) for DCT-20M-RE |
| SD-CT-16 | 1 or 2 | Inductive sensor mounting kit for DCT-16M-RE |
| SD-CT-20 | 1 or 2 | Inductive sensor mounting kit for DCT-20M-RE |