



# ANGULAR PNEUMATIC GRIPPERS 180° SERIES DIRECTCONNECT™ WITH SPRING ASSIST

No Adaptor Plates Required



DCT-RE Series Starts at \$507

- 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  $\pm 0.05$  mm (0.002") and Accuracy of  $\pm 0.07$  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

## 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

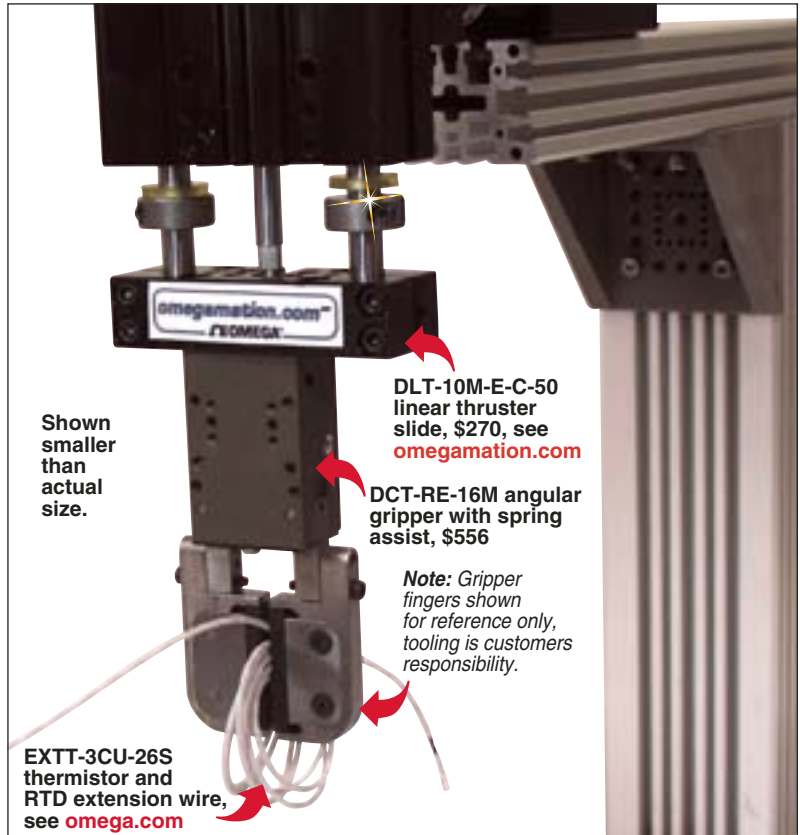
**Expected Life Normal Application:**

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.



## MOUNTING INFORMATION

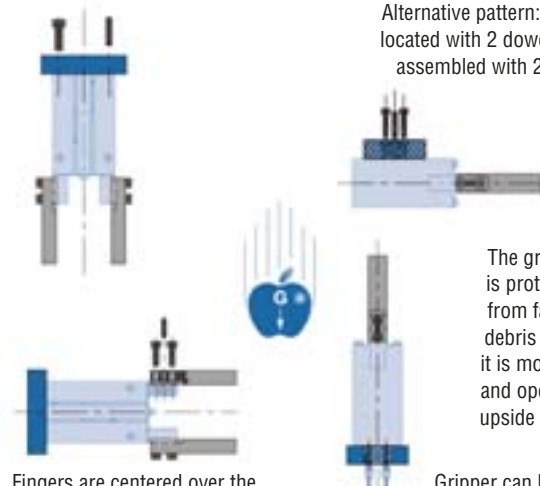
### Grippers Can be Mounted and Operated in Any Orientation

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 2 screws.

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



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

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

Gripper can be operated utilizing top manifold air ports.

# 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

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

## 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

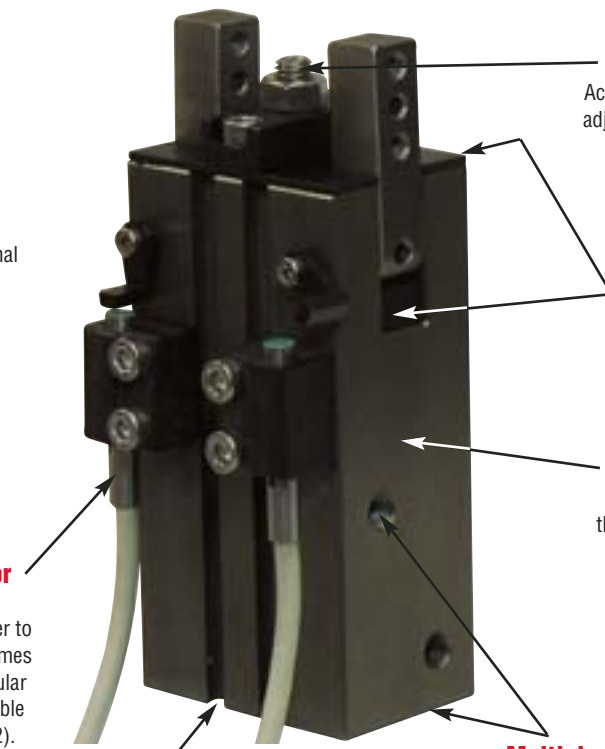
Internal spring allows the gripper to hold onto part with loss of air pressure

## DIRECTCONNECT™ Mounting Patterns

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

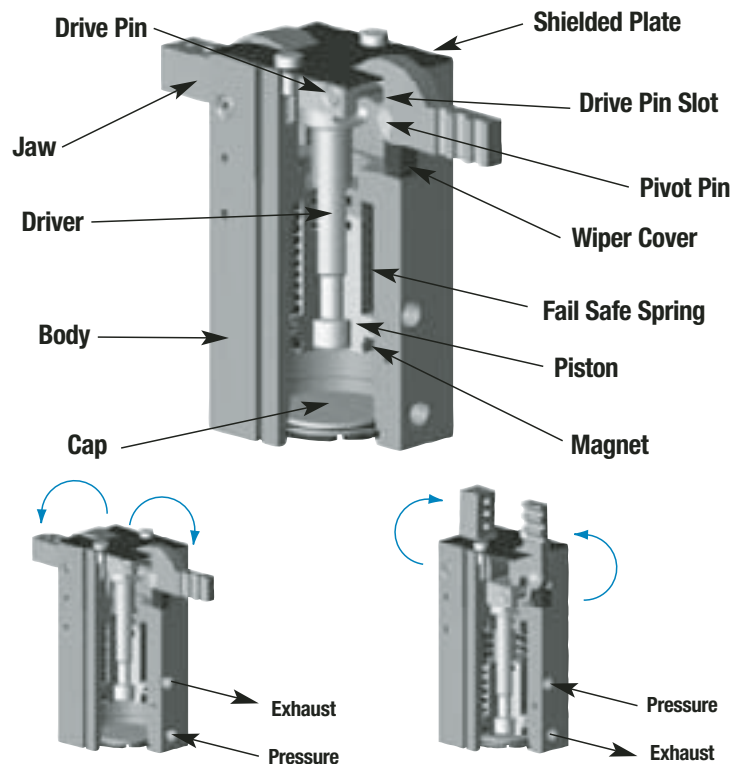
## Multiple Air Ports

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



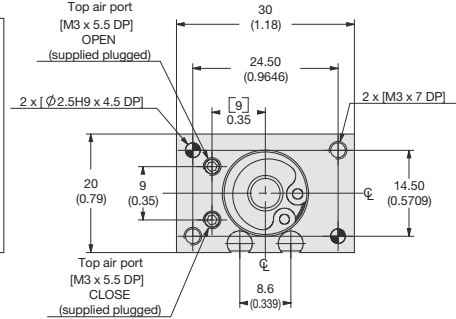
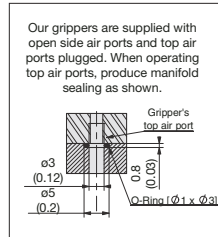
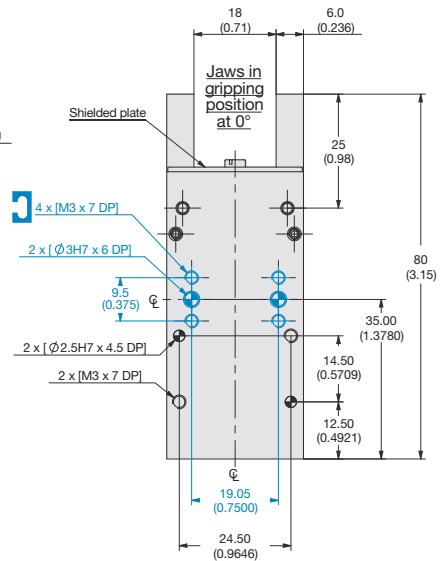
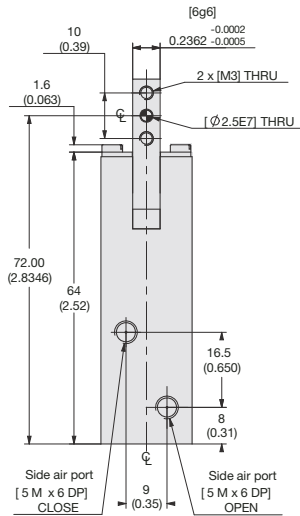
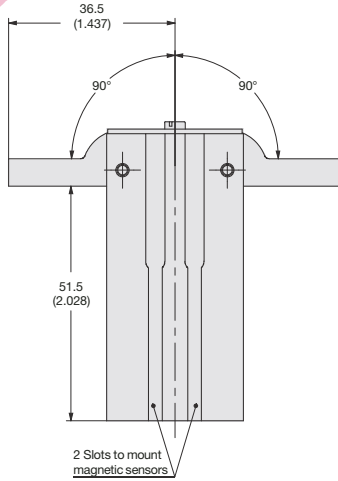
# OPERATING PRINCIPLE

- 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





# DCT-12M-RE DIRECTCONNECT™



Dimensions: mm (in)

## 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 cm<sup>3</sup> (0.117 in<sup>3</sup>)**

### 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 in**  
0.00 = ±0.0  
0.000 = ±0.005  
0.0000 = ±0.0005

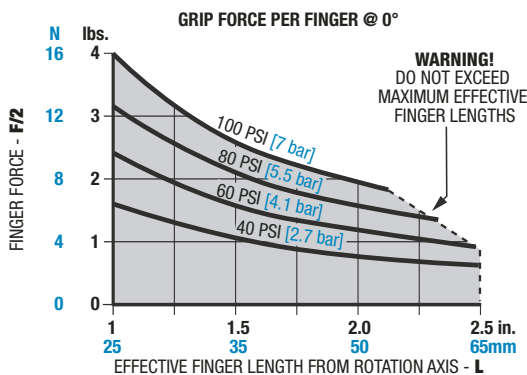
**Metric [mm]**  
[0.0] = ±0.25  
[0.0] = ±0.13  
[0.00] = ±0.013

**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.

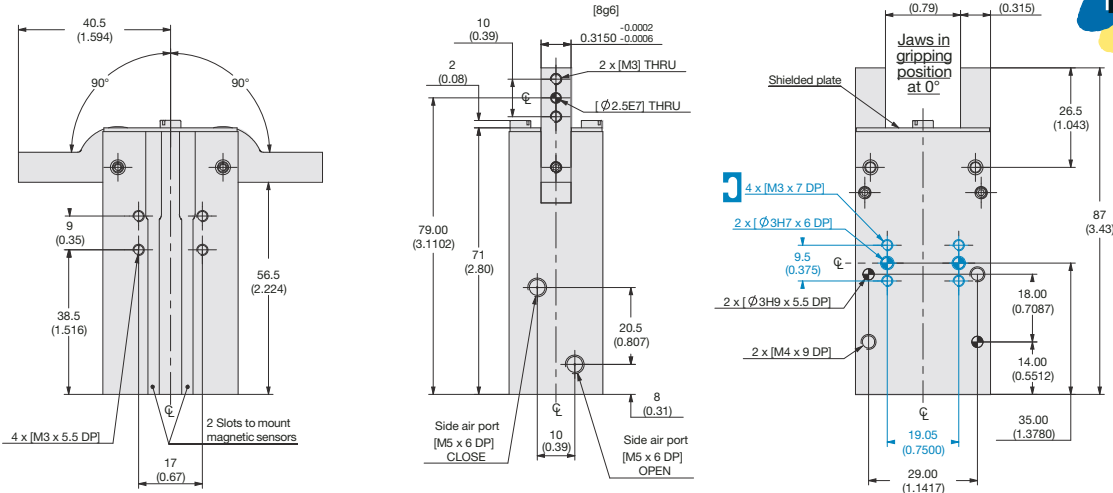
## LOADING INFORMATION



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 M <sub>x</sub>	1.1 Nm (10 in-lb)	0.3 Nm (3 in-lb)
Maximum Moment M <sub>y</sub>	1.1 Nm (10 in-lb)	0.3 Nm (3 in-lb)
Maximum Moment M <sub>z</sub>	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 bar (100 psi)**

**L = 25 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 Ø: 16 mm (0.630")**

**Displacement: 4.12 cm<sup>3</sup> (0.251 in<sup>3</sup>)**

### 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: ±0.07 mm (±0.0028")**

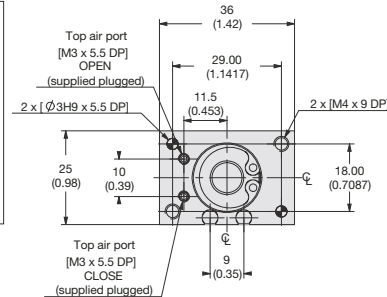
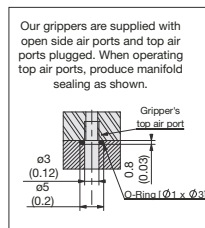
**Repeatability: ±0.05 mm (±0.002")**

**Valve Required to Actuate Single Acting:**

3-way, 2-position

**Valve Required to Actuate Double Acting:**

4-way, 2-position



Dimensions: mm (in)

**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

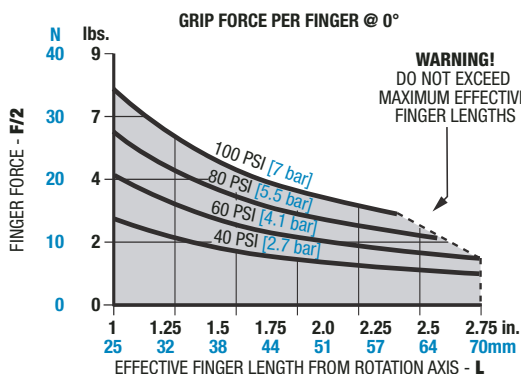
Third Angle Projection

Metric Threads Course Pitch

Imperial in  
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

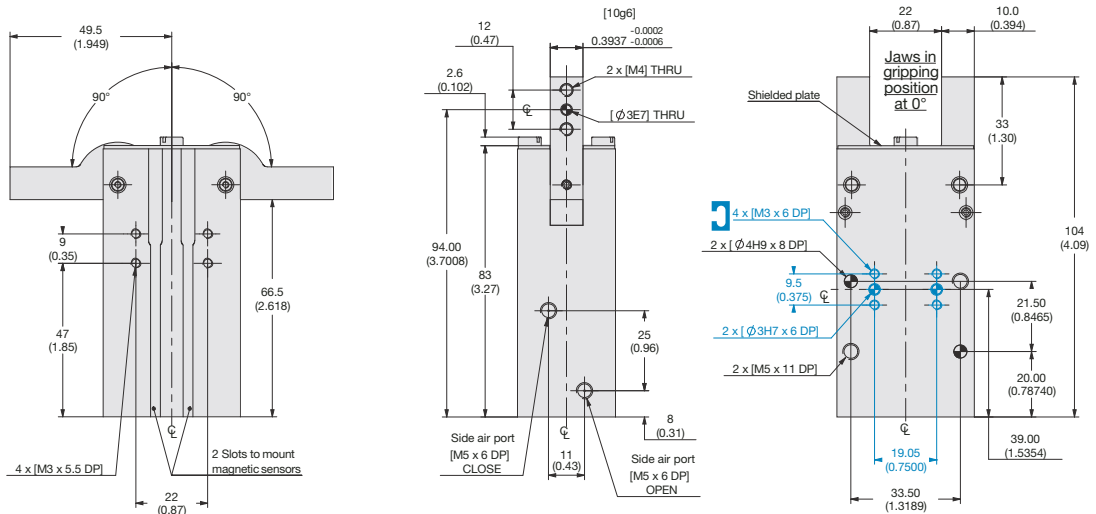


LOADING CAPACITY†	STATIC	DYNAMIC
<b>DCT-16M-RE</b>		
Maximum Tensile <b>T</b>	90 N (20 lb)	18 N (4 lb)
Maximum Compressive <b>C</b>	90 N (20 lb)	18 N (4 lb)
Maximum Moment <b>M<sub>x</sub></b>	2.9 Nm (26 in-lb)	0.7 Nm (6 in-lb)
Maximum Moment <b>M<sub>y</sub></b>	2.9 Nm (26 in-lb)	0.7 Nm (6 in-lb)
Maximum Moment <b>M<sub>z</sub></b>	2.9 Nm (26 in-lb)	0.7 Nm (6 in-lb)

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



# DCT-20M-RE DIRECTCONNECT™



## SPECIFICATIONS DCT-20M-RE

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

**L = 25 mm (1") @ 0°: 141 N (32 lb)**

**Stroke: 90° of stroke for each finger**

**Weight: 0.33 Kg (0.73 lb)**

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

**Cylinder Bore Ø: 20 mm (0.787")**

**Displacement: 7.92 cm<sup>3</sup> (0.483 in<sup>3</sup>)**

### 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: 0.20/0.14 sec**

**Accuracy: ±0.08 mm (±0.003")**

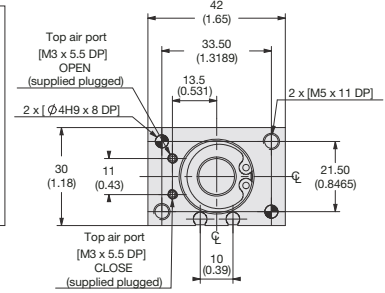
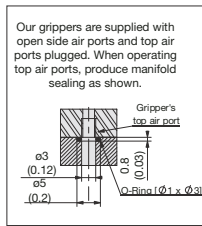
**Repeatability: ±0.05 mm (±0.002")**

**Valve Required to Actuate Single Acting:**

3-way, 2-position

**Valve Required to Actuate Double Acting:**

4-way, 2-position



Dimensions: mm (in)

**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

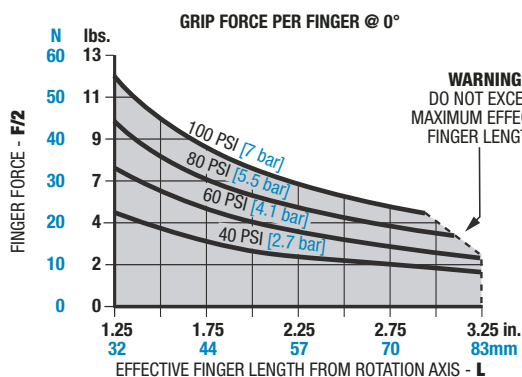
Third Angle Projection

Metric Threads Course Pitch

Imperial in  
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]

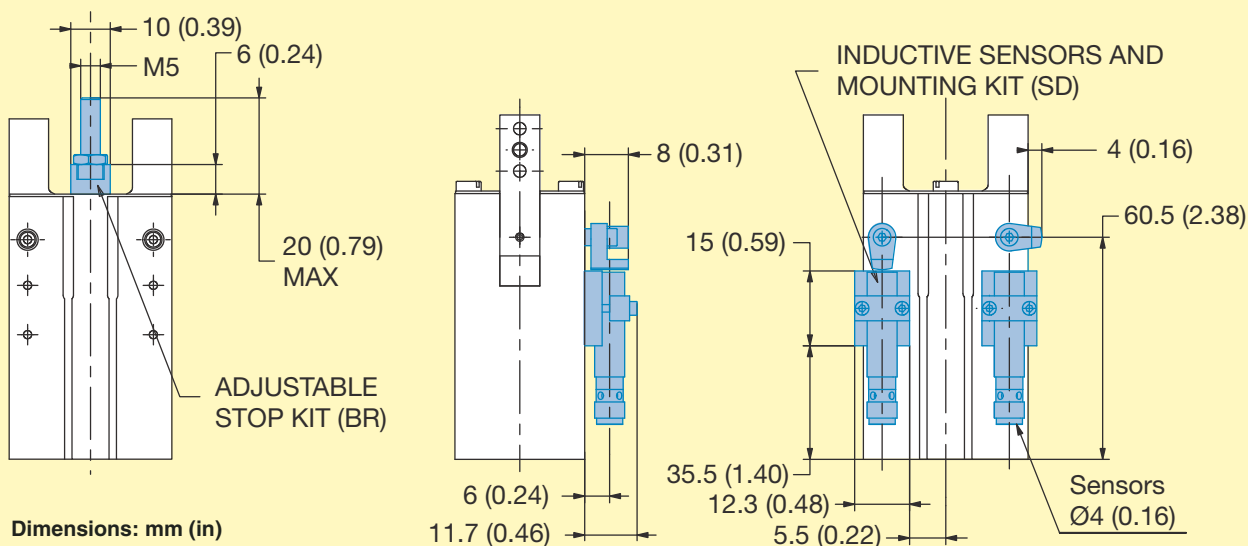
## LOADING INFORMATION



LOADING CAPACITY <sup>†</sup>	STATIC	DYNAMIC
	DCT-20M-RE	
Maximum Tensile <b>T</b>	150 N (34 lb)	30 N (7 lb)
Maximum Compressive <b>C</b>	150 N (34 lb)	30 N (7 lb)
Maximum Moment <b>M<sub>x</sub></b>	6 Nm (53 in-lb)	1.5 Nm (13 in-lb)
Maximum Moment <b>M<sub>y</sub></b>	6 Nm (53 in-lb)	1.5 Nm (13 in-lb)
Maximum Moment <b>M<sub>z</sub></b>	6 Nm (53 in-lb)	1.5 Nm (13 in-lb)

<sup>†</sup> Capacities are per set of jaws and are not simultaneous.

## ACCESSORIES DIAGRAM



### To Order (Specify Model Number)

AVAILABLE FOR FAST DELIVERY!

MODEL NO.	PRICE	DESCRIPTION	FORCE N (lb)
DCT-12M-RE	\$507	180° Series angular gripper with spring assist, 18 mm (0.71") jaw opening	40 (9)
DCT-16M-RE	556	180° Series angular gripper with spring assist, 20 mm (0.79") jaw opening	87 (19)
DCT-20M-RE	631	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), \$507. 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, \$63 each and BR-CT-16, adjustable stop kit, \$31. Quick disconnect sensors will require cable CABL-013, with 5 m (16') length, \$26 each. 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), \$556. 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, \$114 each with two mounting kits, SD-CT-16, \$46 and BR-CT-16, adjustable stop kit, \$31. Quick disconnect sensors will require cable, CABL-013, with 5 m (16') length, \$26 each. See accessory table below. CAD file available at [omegamation.com](http://omegamation.com).

### ACCESSORIES

MODEL NO.	PRICE	QUANTITY	DESCRIPTION
OISP-014	\$114	1 or 2	4 mm PNP inductive sensor with quick disconnect
OISN-014	114	1 or 2	4 mm NPN Inductive sensor with quick disconnect
OHSP-017	63	1 or 2	PNP magneto resistive sensor long barrel with quick disconnect
OHSN-017	63	1 or 2	NPN magneto resistive sensor long barrel with quick disconnect
OHSP-011	63	1 or 2	PNP magneto resistive sensor short 90° barrel with quick disconnect
OHSN-011	63	1 or 2	NPN magneto resistive sensor short 90° barrel with quick disconnect
CABL-010	23	1 or 2	Quick disconnect cable 2 m (6') in length
CABL-013	26	1 or 2	Quick disconnect cable 5 m (16') in length
BR-CT-12	31	1	Adjustment stop kit (1 stop and 1 shielded plate) for DCT-12M-RE
BR-CT-16	31	1	Adjustment stop kit (1 stop and 1 shielded plate) for DCT-16M-RE
BR-CT-20	36	1	Adjustment stop kit (1 stop and 1 shielded plate) for DCT-20M-RE
SD-CT-16	46	1 or 2	Inductive sensor mounting kit for DCT-16M-RE
SD-CT-20	46	1 or 2	Inductive sensor mounting kit for DCT-20M-RE

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