

# LINEAR THRUSTER SLIDES

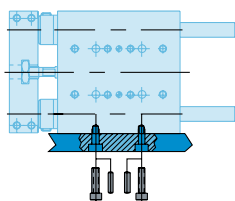
## PNEUMATIC INTERNALLY POWERED

### DIRECTCONNECT™ MODULAR SERIES

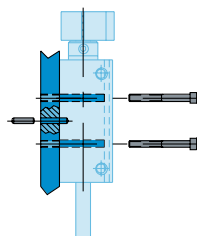
#### DLT Series



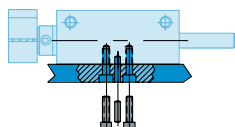
- Highly Configurable Modular Automation—Exclusive DirectConnect™ Technology
- Precision Linear Motion—5 to 150 mm (0.20 to 6") of Travel
- Thruster Force 89 to 275 N (20 to 62 lb) at 5.5 bar (80 psi)
- Repeatability 0.03 mm (0.001") with Precision Stop Option
- Up to 5 Million Cycles in Typical Application—Up to 10 Million with Maintenance
- Temperature Operating Range -35 to 80°C (-30 to 180°F)
- Double Acting Pneumatic Cylinder Requiring 3 to 7 bar (40 to 100 psi) Dry Filtered (40 micron or Better) Air Supply Along with a 4-Way, 2 Position Valve



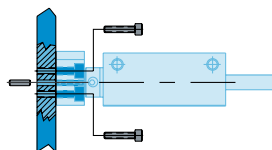
Body mounts with screws and locates with slip fit dowel pin holes on side using DIRECTCONNECT mounting patterns.



Body back mounts with screws from the front using the clearance and counterbored DIRECTCONNECT pattern and located with dowel holes.



Body can be mounted from the back using the DIRECTCONNECT pattern of threaded mounting and dowel pin holes.



Payload attaches to tooling plate DIRECTCONNECT mounting pattern with screws and locates using slip fit dowel pin holes.

# PRODUCT FEATURES

## **DIRECTCONNECT™**

### **Mounting Patterns**

Main bodies have tapped and counterbored through holes including slip fit dowel holes on DIRECTCONNECT mounting surface

### **Inductive Proximity Sensors**

4 or 8 mm diameter, threaded body with quick disconnect

### **Shock Absorbers**

With built-in hard stop; dual stop capable

### **Misalignment Coupling**

Increases service life

### **Universal Mounting Kit**

Contains mounting bracket, hardened steel target, and hardware; allows the mounting of shocks and adjustable hard stops

### **Urethane Bumpers & Clamp Collars**

### **Sensors Grooves**

For mounting Magneto Resistive Sensors

### **Sensor Magnet**

Standard in piston

### **Magneto Resistive Sensors**

Slot mounted sensor with threaded quick disconnect

### **Oil Wick**

Supplies constant bearing lubrication

### **Adjustable Hard Stops**

For precision ( $\pm 0.001$ " hard stop end point positioning; allows for stop adjustment independent of shock absorber hard stop; dual stop capable

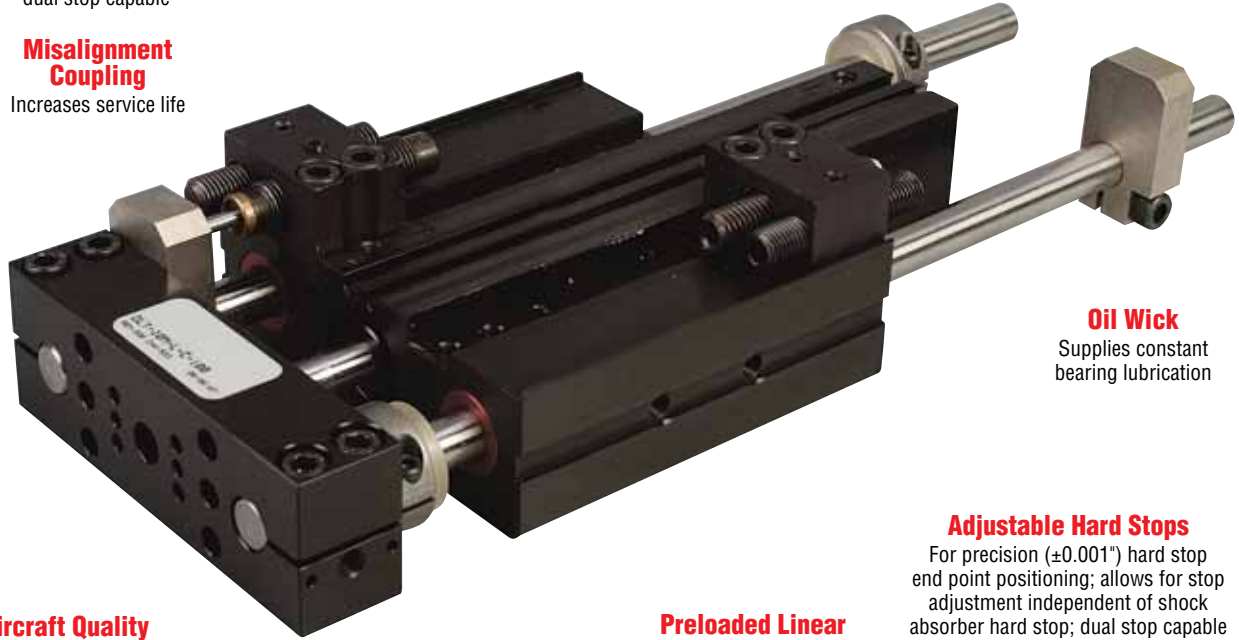
### **Preloaded Linear Ball Bushings**

### **Precision Ground Shafting**

Case hardened to RC60-65; corrosion resistant optional

**DLT-10M-L-C-100**  
shown smaller than actual size.

### **Aircraft Quality Aluminum**



## TECHNICAL SPECIFICATIONS

### **Pneumatic Specifications**

#### **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

**With Preventative Maintenance:**

10+ million cycles\*\*

**Field Repairable:** No

**Seal Repair Kits Available:** No

### **Application Restrictions:**

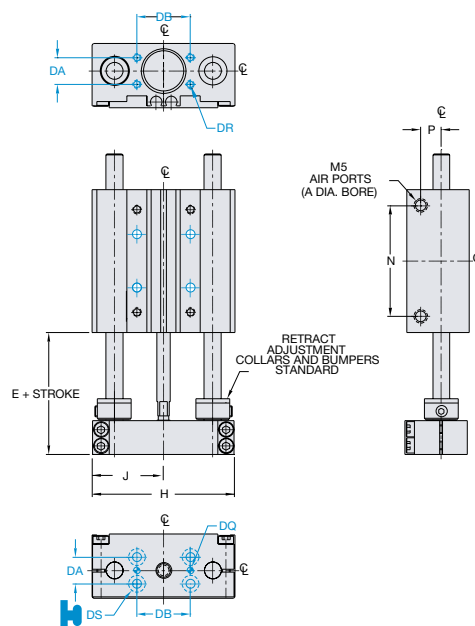
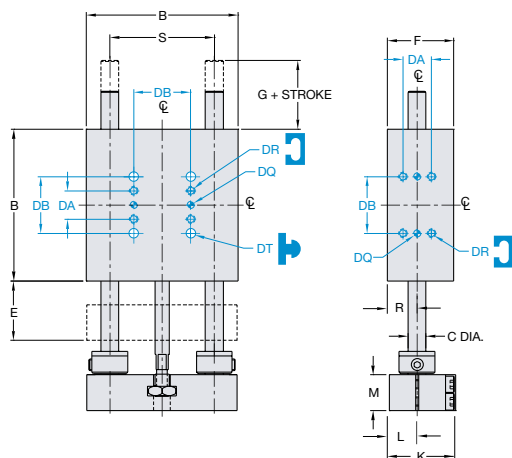
Flow controls, shock absorbers and urethane bumpers recommended for nearly all applications. Use composite bushing in dirty or gritty environments. Never use silicone based lubricants with composite bushings.

\* Higher pressure possible. Consult Sales with application details.

\*\* Addition of lubrication will greatly increase service life.

# SHORT BODY THRUSTER

## DLT-06M, 08M-E BUILT-IN REPAIRABLE CYLINDER

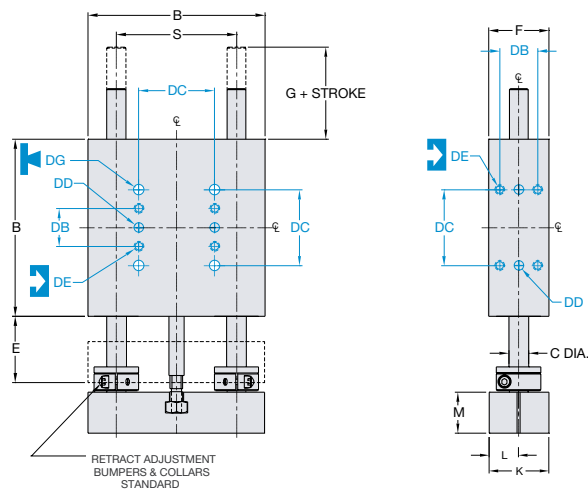
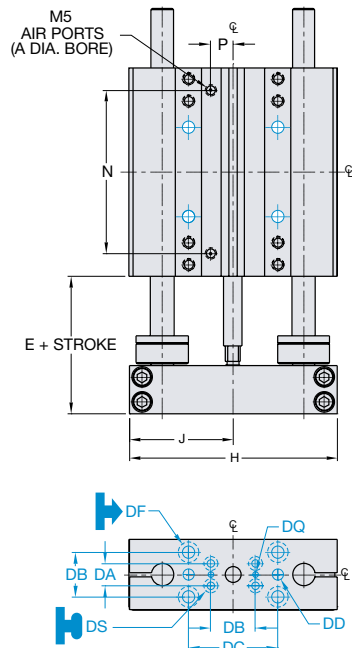


### Basic Unit Dimensions (mm)

MODEL NO.	A	B	C	E	F	G	H	J	K	L	M	N	P	R	S
DLT-06M-E	14	50.8	6	19.9	22.4	16.8	50.3	25.1	22.2	9.3	11.9	39.4	7.4	9.9	34.93
DLT-08M-E	14	63.5	8	19.9	22.4	10.4	62.7	31	22.2	9.3	11.9	52.1	7.4	9.9	44.95

# SHORT BODY THRUSTER

## DLT-10M, 12M BUILT-IN REPAIRABLE CYLINDER



### DIRECTCONNECT™ Dimensions

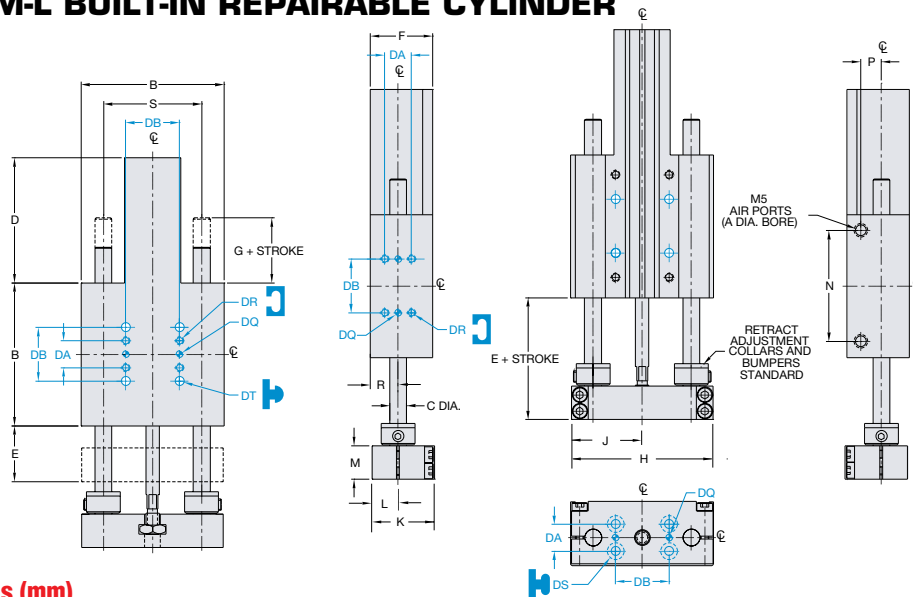
STANDARD MOUNTING PATTERN FOR ALL SIZES	
MILLIMETERS	
DA	9.5
DB	19.1
DC	38.1
DD	5 mm H7 x 6 DP
DE	M5 x 8.5 DP
DF	Clearance for M5
DG	Clearance for M5
DQ	3H7 x 2 DP
DS	Clr & C'bore for M3

### Basic Unit Dimensions (mm)

MODEL NO.	A	B	C	E	F	G	H	J	K	L	M	N	P	R	S
DLT-10M-E	19	88.9	9.5	33.4	30.2	20.8	88.6	44.2	29.9	14.8	20.7	69.7	9.4		60.33
DLT-12M-E	25	101.6	12	33.4	41.4	20.8	101.2	50.4	41	20.4	20.7	83.3	9.4		69.85

# LONG BODY THRUSTER

## DLT-06M, 08M-L BUILT-IN REPAIRABLE CYLINDER

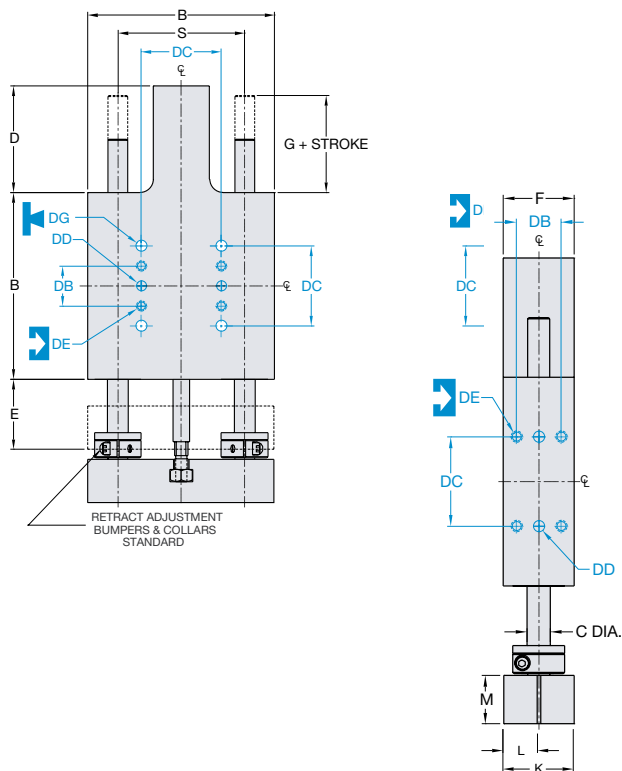


**Basic Unit Dimensions (mm)**

MODEL NO.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
DLT-06M-L	14	50.8	6	44.4	19.9	22.4	16.8	50.3	25.1	22.2	9.3	11.9	39.4	5.4		9.9	34.93
DLT-08M-L	14	63.5	8	44.4	19.9	22.4	10.4	62.7	31	22.2	9.3	11.9	52.1	5.4		9.9	44.95

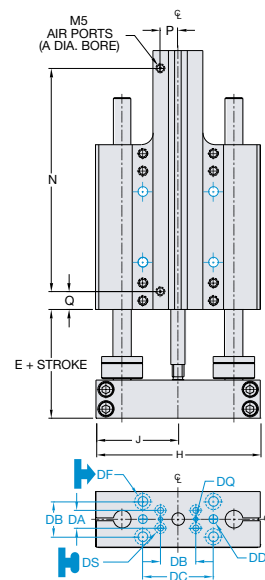
# LONG BODY THRUSTER

## DLT-10M, 12M, 16M-L BUILT-IN REPAIRABLE CYLINDER



**Basic Unit Dimensions (mm)**

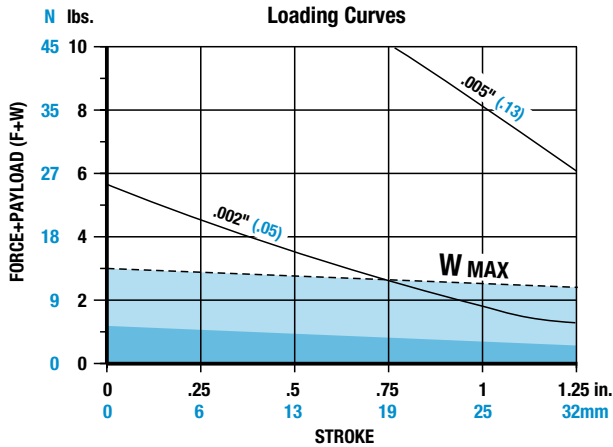
MODEL NO.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
DLT-10M-L	19	88.9	9.5	50.8	33.4	30.2	20.8	88.6	44.2	29.9	14.8	20.7	12.7	9.4	9.6		60.33
DLT-12M-L	25	101.6	12	63.5	33.4	41.4	20.8	101.2	50.4	41	20.4	20.7	146.8	9.4	9.1		69.85
DLT-16M-L	25	120.7	16	69.9	34.9	41.4	19.3	120.3	59.9	41	20.4	20.7	172.2	9.4	9.1		82.55



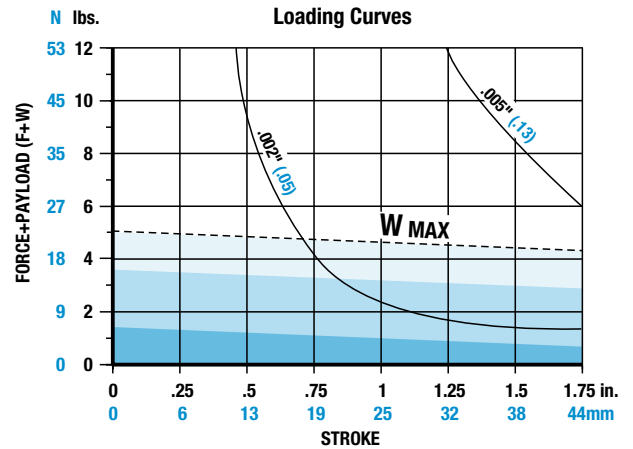
**DIRECT CONNECT™ Dimensions**

STANDARD MOUNTING PATTERN FOR ALL SIZES	
MILLIMETERS	
DA	9.5
DB	19.1
DC	38.1
DD	5 mm H7 x 6 DP
DE	M5 x 8.5 DP
DF	Clearance for M5
DG	Clearance for M5
DQ	3H7 x 2 DP
DS	Clr & C'bore for M3

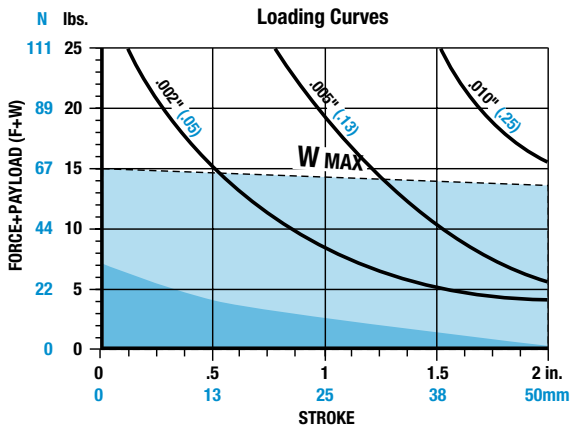
### DLT-06M-E & L



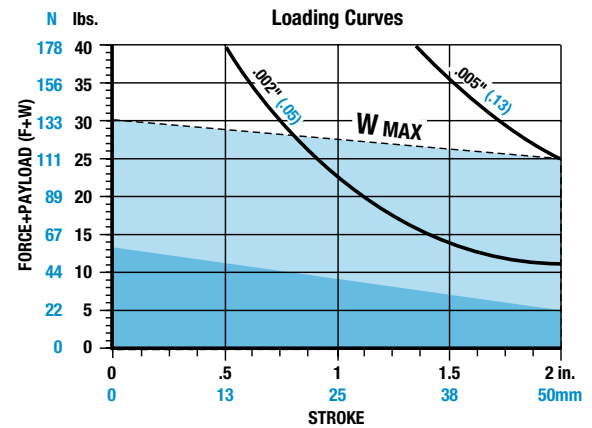
### DLT-08M-E & L



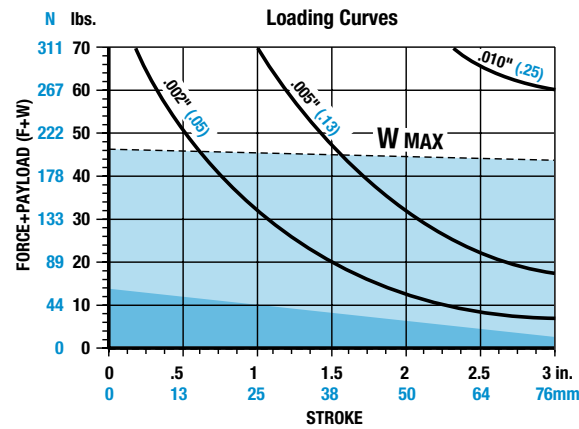
### DLT-10M-E & L



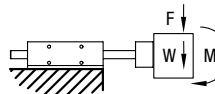
### DLT-12M-E & L



### DLT-16M-L



**F**=Externally applied force (lbs. or N)  
**W**=Weight of payload (lbs. or N)  
**F+W**=Total force (lbs. or N)



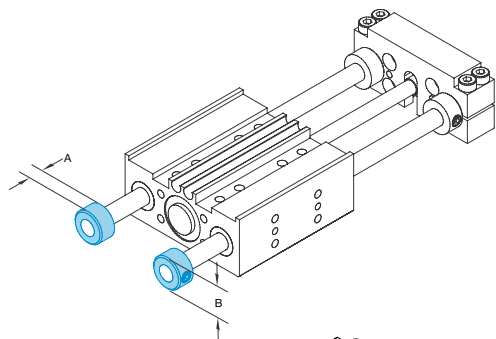
**Shock Absorbers and Flow Controls are recommended for nearly all applications**

(W) in this range use **Single Shock** in both directions

W in this range use **Urethane Bumpers**

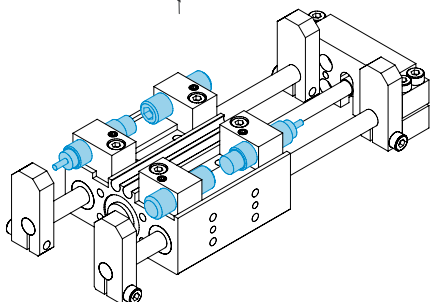
Shaded shock absorption ranges of horizontal payload (W) @ 80psi, flow controls fully open. For vertical applications do not exceed 1/2 of the recommended payload due to the additional acceleration effect of gravity.

# ACCESSORIES FOR DLT THRUSTERS



## Urethane Bumpers & Clamp Collars

- Urethane Bumpers for Shock Absorption and Noise Dampening
- Adjustable Clamp Collars for End of Stroke Position Adjustment
- Kit Contains 2 Collars and 2 Shock Pads for Adjustment of Travel in One Direction
- Kit Required for Extend (Kit for Retract Comes Standard)

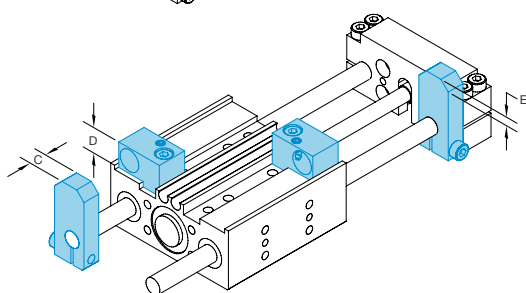


## Adjustable Hard Stops

- For Precision ( $\pm 0.001"$ ) End Point Positioning of Retract Position
- Allows for End Stop Position Adjustment Independent of Shock Absorber Hard Stop
- Allen Wrench Adjustable

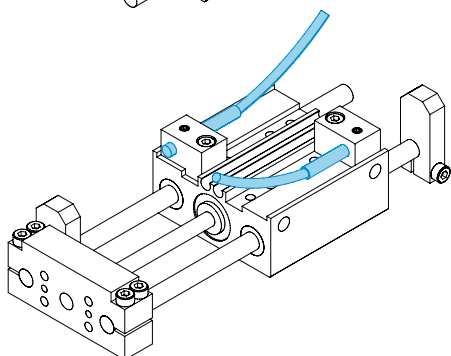
## Shock Absorbers

- Full Stroking Piston Rod
- Built-In Hard Stop
- Position Adjustable



## Universal Mounting Kit

- Kit Mounts One Shock Absorber or One Adjustable Hard Stop
- Kit Includes One Mounting Bracket, One Hardened Tool Steel Target and Hardware
- Target Allows for Unlimited Retract Stroke Adjustment (No Extend Position Adjustment); Fine Adjustment is Achieved Using Adjustable Hard Stop or Shock Absorber
- Mounting Bracket Keys Into Body for Secure Positioning and Excellent Rigidity
- Four Possible Mounting Positions

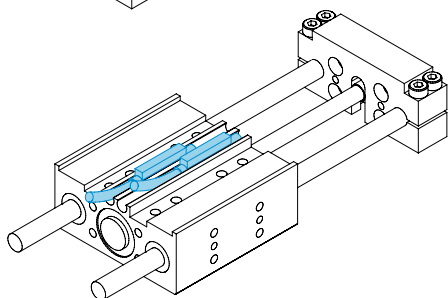


## Inductive Proximity Sensors

- 4 or 8 mm (0.16 or 0.32") Diameter
- Threaded Quick Disconnect with Built-In LED Output
- PNP and NPN Available

## Quick Disconnect Cable

- Threaded Coupling with Knurled Head for Secure Electrical Connections
- 2 m (6.6') Cable Length
- 5 m (16') Cable Length



## Magneto Resistive Sensors

- No Mounting Kit Required (Slot Mounted)
- Threaded Quick Disconnect with Built-In LED Output
- PNP and NPN Available
- Low Profile

## Quick Disconnect Cable

- Threaded Coupling with Knurled Head for Secure Electrical Connections
- 2 m (6.6') Cable Length
- 5 m (16') Cable Length

## Basic Unit Dimensions (mm)

MODEL NO.	A	B	C	D	E	F	G
DLT-06M	6.0	12	6.4	7.9	6.9	—	—
DLT-08M	6.0	16	6.4	7.9	6.9	—	—
DLT-10M	8.7	22.1	9.5	12.2	8.1	14.7	91.4
DLT-12M	9.5	23.9	9.5	11.4	5.8	14.7	91.4
DLT-16M	11.1	33.3	11.1	11.4	8.6	14.7	91.4

## To Order

MODEL NO.	BORE DIAMETER mm (inch)	BODY SIZE (Width) mm (inch)	SHAFT DIAMETER mm (inch)	LENGTH mm (inch)	HEIGHT mm (inch)	MAX STROKE mm (inch)	WEIGHT kg (lbs)	THRUSTER FORCE @ 5.5 bar (80 psi)
<b>DLT-06M-E-C-25</b>	4 (0.55)	50.8 (2)	6 (0.236)	106.1 (4.177)	22.4 (0.882)	25 (0.984)	0.15 (.34)	89 (20)
<b>DLT-08M-E-C-44</b>	14 (0.55)	63.5 (2.5)	8 (0.315)	137.8 (5.425)	22.4 (0.882)	44 (1.732)	0.30 (.65)	89 (20)
<b>DLT-10M-E-C-50</b>	19 (0.75)	88.9 (3.5)	9.5 (0.374)	193.1 (7.602)	30.2 (1.189)	50 (1.969)	0.84 (1.18)	155 (35)
<b>DLT-12M-E-C-50</b>	25 (0.98)	101.6 (4)	12 (0.473)	205.8 (8.102)	41.4 (1.630)	50 (1.969)	1.35 (2.98)	275 (62)
<b>DLT-06M-L-C-50</b>	14 (0.55)	50.8 (2)	6 (0.236)	137.5 (5.413)	22.4 (0.882)	50 (1.969)	0.28 (0.61)	89 (20)
<b>DLT-08M-L-C-75</b>	14 (0.55)	63.5 (2.5)	8 (0.315)	168.8 (6.646)	22.4 (0.882)	75 (2.953)	0.44 (1.96)	89 (20)
<b>DLT-10M-L-C-100</b>	19 (0.75)	88.9 (3.5)	9.5 (0.374)	243.1 (9.571)	30.2 (1.189)	100 (3.937)	0.88 (1.95)	155 (35)
<b>DLT-12M-L-C-125</b>	25 (0.98)	101.6 (4)	12 (0.473)	280.8 (11.055)	41.4 (1.630)	125 (4.921)	1.46 (3.21)	275 (62)
<b>DLT-16M-L-C-150</b>	25 (0.98)	120.7 (4.75)	16 (0.630)	324.9 (12.791)	41.4 (1.630)	150 (5.906)	2.03 (4.81)	275 (62)

## SHOCK/STOP ACCESSORIES

MODEL NO.	QUANTITY	DESCRIPTION
<b>OSAK-069</b>	1, 2, 3, or 4	Universal mounting kit (shock or stop) for -06M
<b>OSAK-070</b>	1, 2, 3, or 4	Universal mounting kit (shock or stop) for -08M
<b>OSAK-055</b>	1, 2, 3, or 4	Universal mounting kit (shock, stop or sensor) for -10M
<b>OSAK-057</b>	1, 2, 3, or 4	Universal mounting kit (shock, stop or sensor) for -12M
<b>OSAK-059</b>	1, 2, 3, or 4	Universal mounting kit (shock, stop or sensor) for -16M
<b>SHOK-030</b>	1, 2, 3, or 4	Shock absorber for -06M and -08M (2 max on -06)*
<b>SHOK-028</b>	1, 2, 3, or 4	Shock absorber for -10M*
<b>SHOK-010</b>	1, 2, 3, or 4	Shock absorber for -12M and -16M*
<b>DLT-0623</b>	1, 2, 3, or 4	Adjustable hard stop for -06M and -08M*
<b>DLT-1023</b>	1, 2, 3, or 4	Adjustable hard stop for -10M, -12M and -16M*
<b>OSAK-067</b>	1	Urethane bumper/stop collar kit for -06M
<b>OSAK-068</b>	1	Urethane bumper/stop collar kit for -08M
<b>OSAK-065</b>	1	Urethane bumper/stop collar kit for -10M
<b>OSAK-066</b>	1	Urethane bumper/stop collar kit for -12M
<b>OSAK-060</b>	1	Urethane bumper/stop collar kit for -16M

## SENSOR ACCESSORIES

<b>OSMK-076</b>	1 or 2	Inductive sensor mounting kit for -06M
<b>OSMK-077</b>	1 or 2	Inductive sensor mounting kit for -08M
<b>OISP-011</b>	1 or 2	Inductive PNP with quick disconnect <sub>†</sub> for -10M, -12M and -16M*
<b>OISN-011</b>	1 or 2	Inductive NPN with quick disconnect <sub>†</sub> for -10M, -12M and -16M*
<b>OISP-014</b>	1 or 2	Inductive PNP with quick disconnect <sub>†</sub> for -06M and -08M*
<b>OISN-014</b>	1 or 2	Inductive NPN with quick disconnect <sub>†</sub> for -06M and -08M*
<b>OHSP-017</b>	1 or 2	Magneto resistive sensor PNP quick disconnect all models <sub>†</sub>
<b>OHSN-017</b>	1 or 2	Magneto resistive sensor NPN quick disconnect all models <sub>†</sub>
<b>CABL-010</b>	1 or 2	Quick disconnect 2 m (6.6') cable length all models <sub>†</sub>
<b>CABL-013</b>	1 or 2	Quick disconnect 5 m (16') cable length all models <sub>†</sub>

## PNEUMATION ACCESSORIES

<b>SLKT-108</b>	1	Cylinder repair kit for -06M, -08M
<b>SLKT-100</b>	1	Cylinder repair kit for -10M
<b>SLKT-102</b>	1	Cylinder repair kit for -12M, -16M

\* Requires universal mounting kit. † Sensor and cable sold separately.

**Ordering Example:** For **DLT-06M** thruster slide order two **DLT-0623**, adjustable hard stops with two **OISP-014**, inductive PNP sensors, and two **OSMK-076**, mounting kits, [sensors require two **CABL-013**, quick disconnect cables, 5 m (16')].