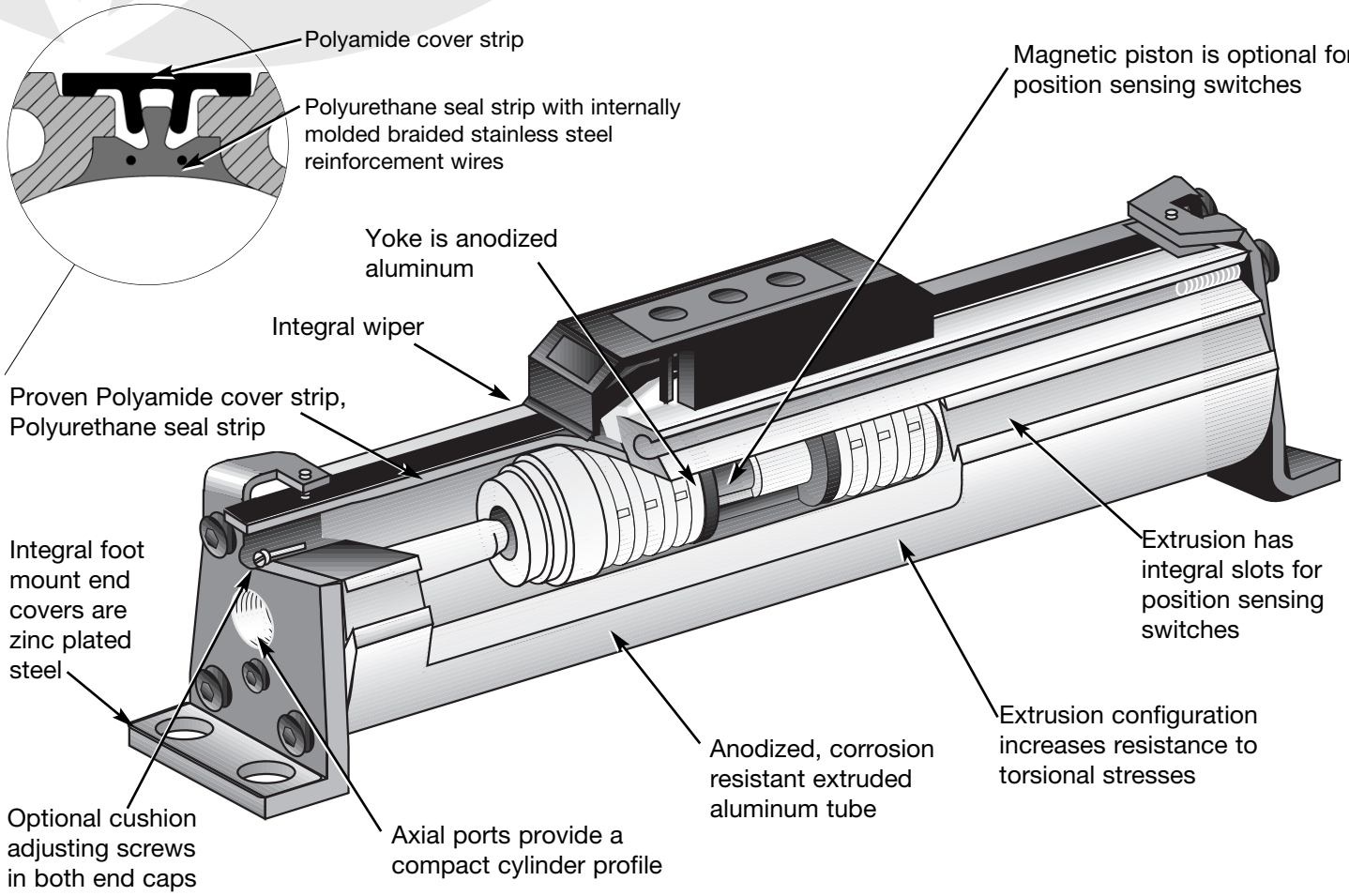
Lintra-Lite Actuators

Series A44000, Rodless Cylinders Double Acting

LINTRA®-LITE Series A44000 Rodless Cylinders
Series A44000 Features ACT-11-2
Series A44000 Specifications ACT-11-3
Series A44000 Basic Cylinder ACT-11-4
Series A44000 Cylinder Mounting Styles ACT-11-5
Series A44000 How to Order ACT-11-6
Series A44000 Spare Kits ACT-11-7
M/40 Magnetically Operated Reed Switches ACT-11-8
M/41, M/42 Magnetically Operated Solid State Switches ACT-11-10

Self-retaining Sealing System has one of the lowest leakage rates in the industry.

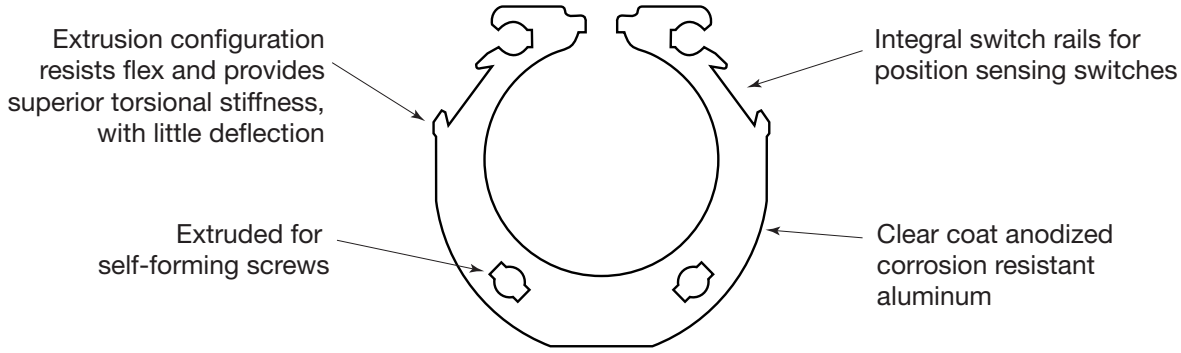
The LINTRA®-LITE rodless cylinder is a cost effective solution for application where light loading is required or where external guiding will be used to support the load.



Features

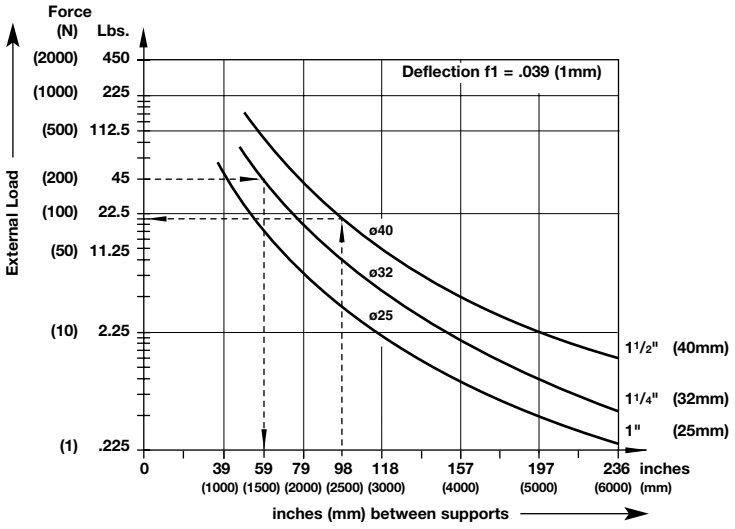
- LINTRA®-LITE rodless cylinders require less space for installation since the stroke of the cylinder is contained within the length of the cylinder itself.
- Non-rotating load carrying capability without additional guide rods and bearings.
- Rodless design means there is no rod that can buckle or kink.
- Equal forces can be applied to each stroke direction.
- All stroke lengths are custom made to customer requirements.
- Stroke lengths are available up to 236" (6000mm). For longer stroke lengths, consult factory.
- LINTRA®-LITE features a choice of bore sizes:
  Ø 1" = 0.984" (Ø 25mm)
  Ø 1¼" = 1.260" (Ø 32mm)
  Ø 1½" = 1.575" (Ø 40mm)
- Cushion adjustment optional at both ends of the cylinder.
- Magnetic piston optional.
- Integral switch rail on both sides of the extrusion.
- Main components are made of anodized, corrosion resistant aluminum, with zinc plated steel integral foot mount end covers.
- Velocities up to 4.9 ft/sec (1.5 m/s) are achievable.
- The LINTRA®-LITE is designed for easy maintenance.
- Polyurethane seals provide long life.

The Extruded Tube of the LINTRA®-LITE Series A44000 Cylinder



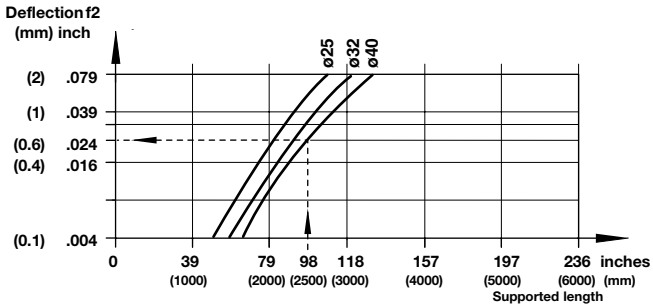
Cylinder Deflection

Deflection due to external load.



Cylinder ∅1¼" (32mm), stroke length 138" (3500mm), external load 45 lbs. (200 N). Maximum distance between supports = 59 inches (1500mm) (see diagram). Therefore additional support is required.

Deflection due to cylinder weight.



Cylinder ∅ 40mm, external force 25 lbs. force (120 N), distance between supports 98 inches (2500mm).
Required: Total deflection

1.Deflection due to external force (f1): See diagram ➔ .039"/20.23 lbs. (1mm/90 N) · 25 lbs. (120 N)	**.051" (1.3mm)**
2.Deflection due to cylinder weight (f2): See diagram ➔	**+.024" (0.6mm)**
Total deflection:	**.075" (1.9mm)**

Maximum permitted deflection:
f1 + f2 ≤ .039 inches (1mm) per 39.37 inches (1000mm) stroke.
Result: .075 inches (1.9mm) are below the maximum permitted deflection of .098 inches (2.5mm).

Operating Specifications

Operating Temperature:

-22° to 180°F* (-30°C to 80°C)

*With dewpoint of supply air less than ambient air temperature at cylinder, consult our Technical Service for use below +36°F (+2°C)

Operating Pressure:

15 to 116 psig (1 to 8 bar)

Bore Sizes:

Ø 1" = 0.984" (Ø 25mm)
Ø 1¼" = 1.260" (Ø 32mm)
Ø 1½" = 1.575" (Ø 40mm)

Stroke Lengths:

236 inches (6000mm) max.

Supply:

Compressed air, filtered to 50-microns and lubricated.

Cushion Lengths:

Ø 1" = 0.709" (Ø 25mm = 18mm)
Ø 1¼" = 0.906" (Ø 32mm = 23mm)
Ø 1½" = 1.378" (Ø 40mm = 35mm)

Magnetic Sensing Switches:

Refer to pp. 8 - 11

Materials of Construction

Barrel: Anodized aluminum alloy
End covers: Zinc plated steel/aluminum
Yoke: Anodized aluminum alloy
Cover and Pistons: Plastic
Sealing strip: Polyurethane
Cover strip: Polyamide
Seals: Nitrile rubber and polyurethane

Loading values for LINTRA®-LITE cylinders

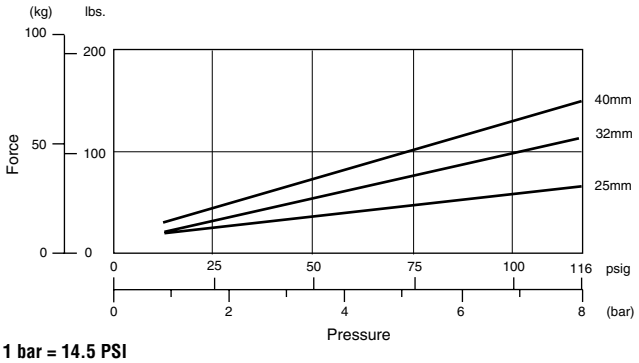
The values given in the table below show the forces in the directions Fy and Fz and the maximum moments Mx, My and Mz. All values are applicable for speeds up to .66 ft/s (0.2 m/s). A requirement for using these values is a smooth movement of the mass over the whole stroke length of the cylinder. The reference point from which the moments for all cylinders should be calculated is the center line of the piston.

Total loads

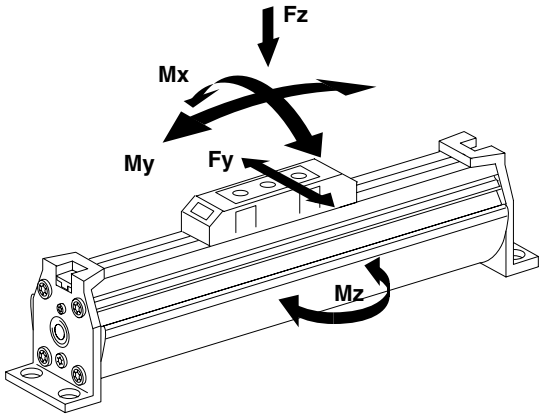
When a LINTRA®-LITE cylinder has to take several loads and moments, an additional calculation is necessary using the following formula:

$$\frac{Mx}{Mx\ max} + \frac{My}{My\ max} + \frac{Mz}{Mz\ max} + \frac{Fy}{Fy\ max} + \frac{Fz}{Fz\ max} \leq 1$$

Thrust – Based on 75% of Theoretical Thrust



1 bar = 14.5 PSI
1 kg = 2.205 lbs.
1 m/s = 3.3 ft/s



Thrust • Air Consumption • Cushion Length • Loading Values

Cylinder Inch	Ø mm	Theoretical forces at 6 bar lbs	(N)	Air consumption per stroke at 6 bar cu.ft./in.	(l/cm)	Cushion length Inch	(mm)	Loading values Fy lbs	(N)	Fz lbs	(N)	Mx in/lbs	(Nm)	My in/lbs	(Nm)	Mz in/lbs	(Nm)
1"	25	56	(250)	0.03	(0.035)	.709	(18)	20	(90)	63	(280)	9	(1)	115	(13)	35	(4)
1¼"	32	92	(410)	0.04	(0.056)	.906	(23)	27	(120)	83	(370)	18	(2)	186	(21)	53	(6)
1½"	40	143	(640)	0.06	(0.088)	1.378	(35)	54	(240)	162	(720)	36	(4)	496	(56)	142	(16)

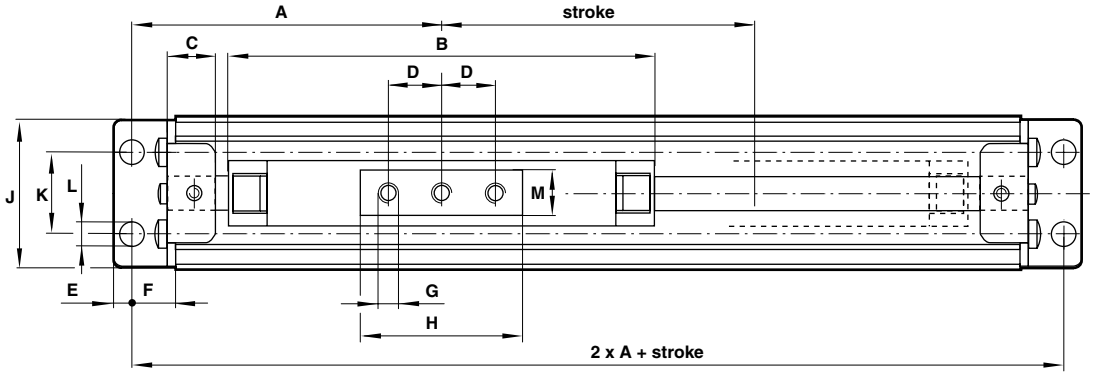
Loading values applicable to a speed of ≤ .66 ft/s (≤ 0.2 m/s). Maximum working life is normally reached below a speed of 3.3 ft/s (1 m/s).

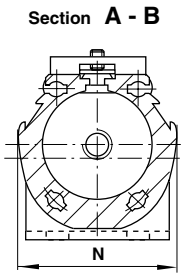
Lintra-Lite Actuators

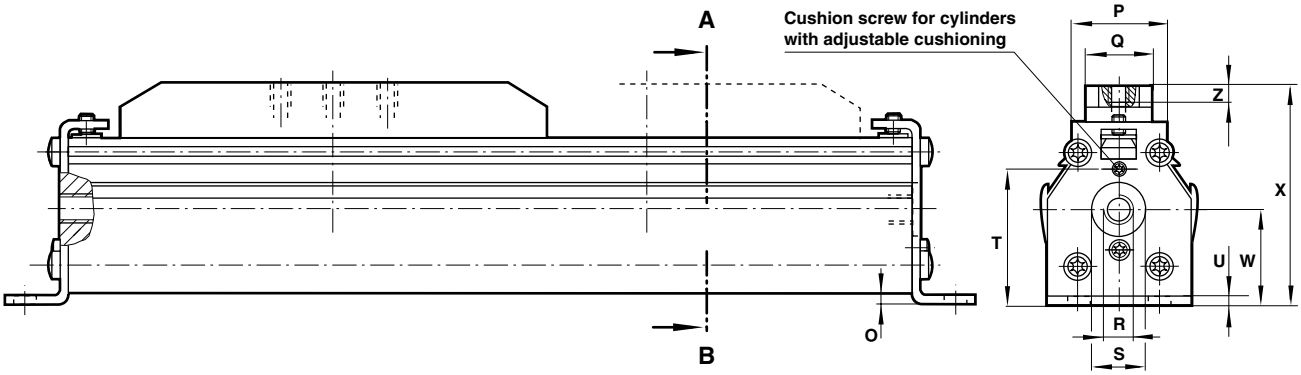
LINTRA®-LITE Rodless Cylinders
Non-magnetic and Magnetic Piston
Double Acting ∅ 1", 1 1/4", 1 1/2" (25, 32, 40mm)

- **New compact, space-saving design**
- **Proven sealing system**
- **Integral switch mounting**
- **Bumper or adjustable cushioning**
- **Integral foot mount end covers are standard**

Basic Dimensions
A44000 Standard Cylinders







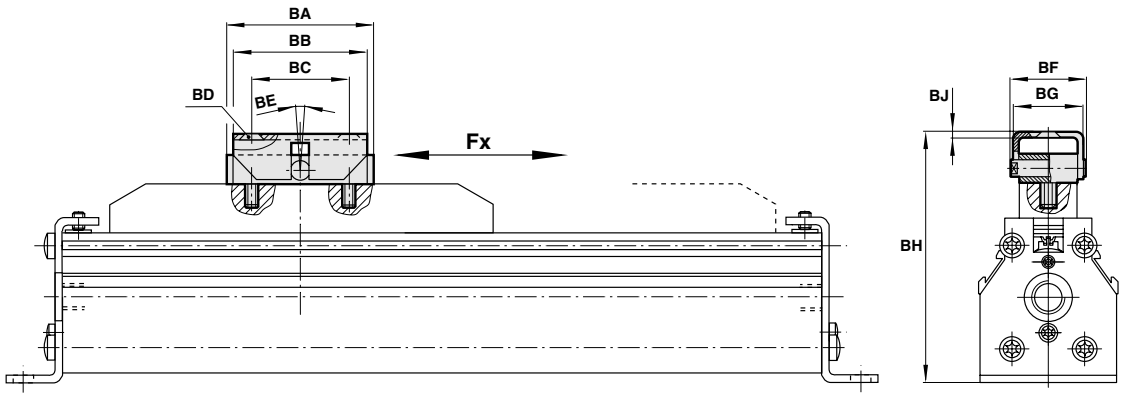
Dimension	A	B	C	D	E	F	G	H	J	K	∅ L
1" 25mm	3.03 (77)	3.94 (100)	.47 (12)	.49 (12.5)	.20 (5)	.47 (12)	M 5	1.57 (40)	1.42 (36)	.71 (18)	.28 (7)
1 1/4" 32mm	3.66 (93)	4.72 (120)	.71 (18)	.59 (15)	.28 (7)	.59 (15)	M 6	1.97 (50)	1.89 (48)	1.02 (26)	.35 (9)
1 1/2" 40mm	4.62 (117.5)	6.50 (165)	.71 (18)	.79 (20)	.28 (7)	.67 (17)	M 6	2.36 (60)	2.13 (54)	1.18 (30)	.35 (9)

Dimension	M	N	O	P	Q	R*		∅ S	T	U	W	X	Z max.
1" 25mm	.71 (18)	1.57 (40)	.10 (2.5)	1.10 (28)	.87 (22)	NPT 1/8	G 1/8	.47 (12)	1.20 (30.5)	.08 (2)	.85 (21.5)	2.10 (53.5)	.28 (7)
1 1/4" 32mm	.79 (20)	1.95 (49.5)	.14 (3.5)	1.26 (32)	.94 (24)	NPT 1/8	G 1/8	.67 (17)	1.57 (40)	.12 (3)	1.12 (28.5)	2.76 (70)	.39 (10)
1 1/2" 40mm	.79 (20)	2.24 (57)	.14 (3.5)	1.42 (36)	.94 (24)	NPT 1/4	G 1/4	.79 (20)	1.95 (49.5)	.12 (3)	1.38 (35)	3.21 (81.5)	.39 (10)

*Optional NPT or ISO G thread. NPT dimensions are in inches, ISO G dimensions are in mm.

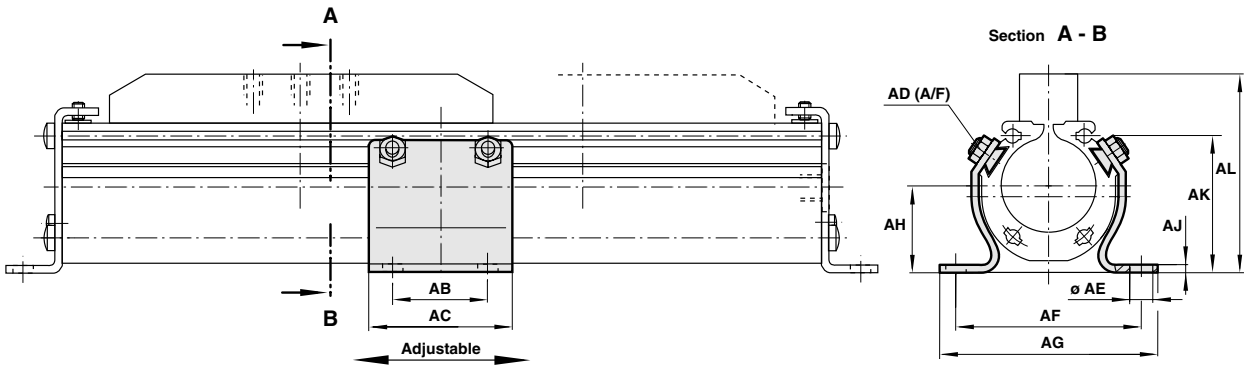
MOUNTINGS

Q44000AAAAAM337 — Swinging Bridge Mounting Style 'S'



Dimension	BA	BB	BC	BD (DIN 74)	BE	BF	BG	BH	BJ
1" 25mm	1.57 (40)	1.57 (40)	1.10 (28)	BM 6	±.315 ±(8)	1.14 (29)	1.10 (28)	2.70+.2 (68.5+5)	.08 (2)
1¼" 32mm	1.97 (50)	2.17 (55)	1.57 (40)	BM 6	±.315 ±(8)	1.22 (31)	1.18 (30)	3.44+.2 (87.5+5)	.08 (2)
1½" 40mm	2.36 (60)	2.17 (55)	1.57 (40)	BM 6	±.315 ±(8)	1.22 (31)	1.18 (30)	3.92+.2 (99.5+5)	.08 (2)

Q44000AAAAAM332 — Center Support Mounting Style 'V'



Dimension	AB	AC	AD (A/F)	∅ AE	AF	AG	AH	AJ	AK	AL
1" 25mm	.98 (25)	1.57 (40)	.39 (10)	.26 (6.6)	2.28 (58)	2.76 (70)	.85 (21.5)	.12 (3)	1.22 (31)	2.11 (53.5)
1¼" 32mm	1.18 (30)	1.97 (50)	.39 (10)	.35 (9)	2.76 (70)	3.27 (83)	1.12 (28.5)	.12 (3)	1.69 (43)	2.76 (70)
1½" 40mm	1.57 (40)	2.36 (60)	.39 (10)	.35 (9)	3.11 (79)	3.62 (92)	1.37 (35)	.12 (3)	2.17 (55)	3.21 (81.5)

All Dimensions in Inches (mm)
All Weights in Pounds (Kilograms)

Model Codes for Inch (Metric)

A440✶✶AA✶A✶✶✶✶✶

Cylinder Diameters Nominal Inch (mm)		Specify
ø 1"	(ø 25mm)	25
ø 1¼"	(ø 32mm)	32
ø 1½"	(ø 40mm)	40

Variants	Specify
Bumper cushioning, non-magnetic piston	A
Bumper cushioning, magnetic piston	B
Adjustable cushioning, non-magnetic piston	C
Adjustable cushioning, magnetic piston	D

Porting	Specify
ISO G-thread (Specify stroke in mm)	A
NPT-Thread (Specify stroke in inches)	N

Fractional Increments of Stroke in Inch			
A = 0	**E** = 1/4	**J** = 1/2	**P** = 3/4
B = 1/16	**F** = 5/16	**K** = 9/16	**R** = 13/16
C = 1/8	**G** = 3/8	**M** = 5/8	**S** = 7/8
D = 3/16	**H** = 7/16	**N** =11/16	**T** = 15/16
X = Special			

Specify Stroke Length in **Inches** (with NPT-thread port)
236 Inches maximum

✶✶✶✶

Specify Stroke Length in **mm** (with ISO G-thread port)
6000mm maximum

Bore Size Conversion:

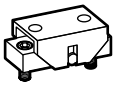
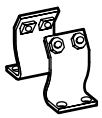
ø 25mm =	**.984"**	**1"**
ø 32mm =	**1.260"**	**1¼"**
ø 40mm =	**1.575"**	**1½"**

Cylinder Weights

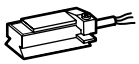
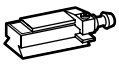
In pounds (kilograms)

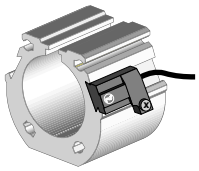
Cylinder Ø	Basic Cylinder Weight lbs.	Kg	Style 'S' Mounting Weight lbs.	Kg	Style 'V' Mounting Weight lbs.	Kg	Weight per Inch of Stroke	per 100mm of Stroke
1" (25mm)	1.1	0.5	0.33	0.15	0.15	0.07	0.08 lbs.	0.15 Kg
1¼" (32mm)	1.76	0.8	0.44	0.20	0.33	0.15	0.14 lbs.	0.25 Kg
1½" (40mm)	2.87	1.3	0.55	0.25	0.55	0.25	0.19 lbs.	0.35 Kg

Mountings

Cylinder Ø	Style 'S'  Page 05	Style 'V'  Page 05
1" (25mm)	Q44025AAAAAM337	Q44025AAAAAM332
1¼" (32mm)	Q44032AAAAAM337	Q44032AAAAAM332
1½" (40mm)	Q44040AAAAAM337	Q44040AAAAAM332

Switches

Model		
Reed	M/40	M/40/P
Solid state	M/41, M/42	M/42/P

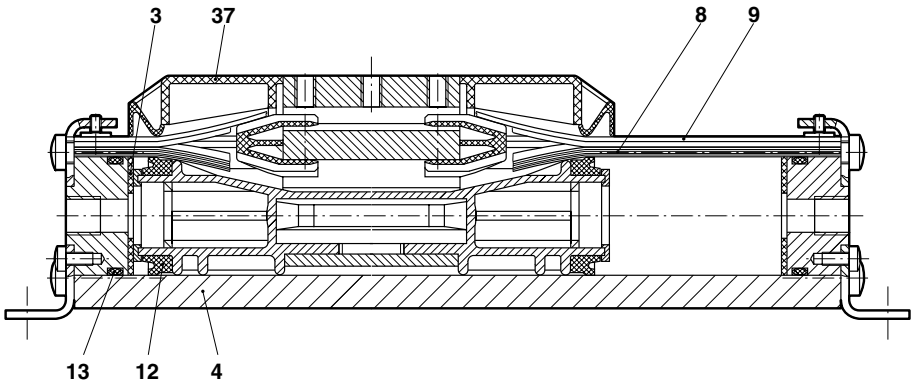


Model Reed	Solid state	Voltage a.c.	d.c.	Current Max.	Temperature °F	°C	LED	Features	Cable Length	Cable Type	Plug-in Cable Straight	90°	Page
M/40/2	—	10 to 240	10 to 170	0.18 A	-4° to 176°	-20° to +80°	●	—	6.5' (2m)	PVC 2 x 0.25	—	—	ACT-11-8
M/40/C/2	—	10 to 110	10 to 175	0.25 A	-4° to 176°	-20° to +80°	—	Changeover	6.5' (2m)	PVC 3 x 0.25	—	—	ACT-11-8
M/40/P	—	10 to 60	10 to 75	0.18 A	-4° to 176°	-20° to +80°	●	—	16.25' (5m)	PVC 3 x 0.25	M/P34614/5	M/P34615/5	ACT-11-8
—	M/41/2	—	10 to 30	0.20 A	-4° to 158°	-20° to +70°	●	NPN	6.5' (2m)	PVC 3 x 0.25	—	—	ACT-11-10
	M/42/2	—	10 to 30	0.20 A	-4° to 158°	-20° to +70°	●	PNP	6.5' (2m)	PVC 3 x 0.25	—	—	ACT-11-10
—	M/42/P	—	10 to 30	0.20 A	-4° to 158°	-20° to +70°	●	PNP	16.25' (5m)	PVC 3 x 0.25	M/P34614/5	M/P34615/5	ACT-11-10

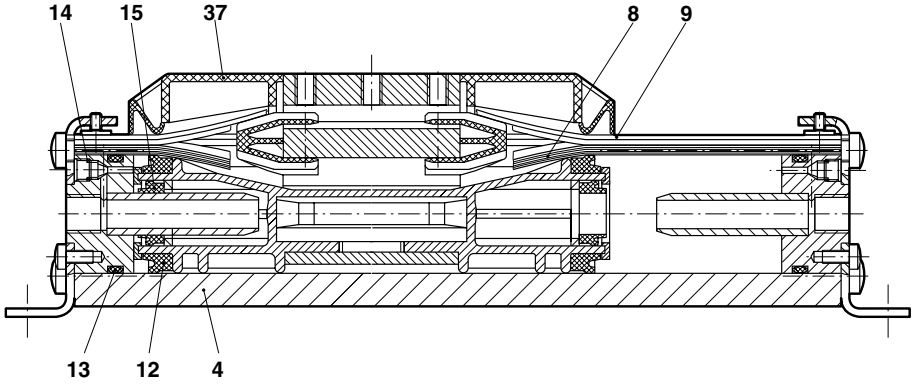
Full information on switches (technical data, polyurethane cable, dimensions etc.) please refer to relevant catalog ACT-11-8 thru 11.

Spares

Cylinders with Bumper Cushioning



Cylinders with Adjustable Cushioning



Replacement Parts for A44000AA✶AN with NPT Port Thread and Stroke in inches

Cylinder Ø	Model	Spares kit includes:	Item	Description	Quantity	Seal strip Item 8	Cover strip Item 9	Tube Item 4
1"	A44025AA✶AN	Q44025AACANT788*	3	Bumper	2	C/P41628/*	C/P41631/*	C/P41607/*
1 1/4"	A44032AA✶AN	Q44032AACANT788*	8/9	Seal/cover strip	1/1	C/P41629/*	C/P41632/*	C/P41613/*
1 1/2"	A44040AA✶AN	Q44040AACANT788*	12/15	Piston/cushion seal	2/2	C/P41630/*	C/P41633/*	C/P41602/*
	✶ Variants A, B, C or D	* Insert stroke length in inches.	13/14	O-Ring	2/2	* Insert stroke length in inches.		
			37	Cover	1			
				Grease	2			

NOTE: Spares kits are common for all cylinder variants. Please specify the cylinder model number when ordering spare parts.

Replacement Parts for A44000AA✶AA with ISO-G Port Thread and Stroke in mm

Cylinder Ø	Model	Spares kit includes:	Item	Description	Quantity	Seal strip Item 8	Cover strip Item 9	Tube Item 4
25mm	A44025AA✶AA	Q44025AACAAT788*	3	Bumper	2	M/P41628/*	M/P41631/*	M/P41607/*
32mm	A44032AA✶AA	Q44032AACAAT788*	8/9	Seal/cover strip	1/1	M/P41629/*	M/P41632/*	M/P41613/*
40mm	A44040AA✶AA	Q44040AACAAT788*	12/15	Piston/cushion seal	2/2	M/P41630/*	M/P41633/*	M/P41602/*
	✶ Variants A, B, C or D	* Insert stroke length in mm.	13/14	O-Ring	2/2	* Insert stroke length in mm.		
			37	Cover	1			
				Grease	2			

NOTE: Spares kits are common for all cylinder variants. Please specify the cylinder model number when ordering spare parts.

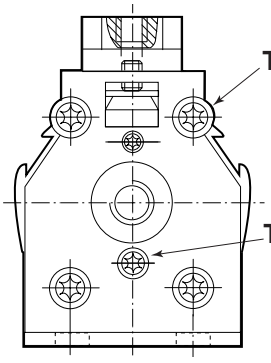
Torx® Screws

Tube Torque Torx® Screw 1 (4)

Cylinder Ø	Screw Size	Torque	Tool Size
1" (25mm)	M4x16	3-3.5 Nm	T-20
1 1/4" (32mm)	M5x20	6-7 Nm	T-25
1 1/2" (40mm)	M6x25	9-10 Nm	T-30

Cap to Mounting Plate Torx® Screw 2 (1)

Cylinder Ø	Screw Size	Torque	Tool Size
1" (25mm)	M3x8	.8-1 Nm	T-10
1 1/4" (32mm)	M3x8	.8-1 Nm	T-10
1 1/2" (40mm)	M4x10	3-3.5 Nm	T-20



Lintra-Lite Actuators

Magnetically Operated Switches
Reed Switches M/40, M/40/C, TM/40, M/40/P

- **Compact, low profile reed switches.**
- **M/40, M/40/P, and TM/40 feature LED indicators.**
- **Simple, reliable switching for fast response times.**
- **TM/40 high temperature model.**
- **M/40/P features a plug-in cable connection.**
- **CE – Marking.**

Specifications

Form:
- M/40 M/40/P – Normally open with LED
- M/40/C – Normally open/normally closed
- TM/40 – Normally open

Switching Voltage:
- M/40, M/40/C, TM/40 – 110 VAC or 100 VDC maximum
- M/40/P – 60 VAC and 75 VDC maximum

Switching Current:
- M/40, M/40/P – 180 mA (temperature dependent), ACT-11-9
- M/40/C, TM/40 – 250 mA

Contact Rating:
- M/40, TM/40, M/40/P – 10 VA
- M/40/C – 5 VA

Response Time:
- M/40, M/40/C, M/40/P – 0.6 ms
- TM/40 – 1.0 ms

Operating Temperature:
- 32° to 158°F (0° to 70°C)
- TM/40 – 32° to 248°F (0° to 120°C)

Protection Rating:
- I.P.67

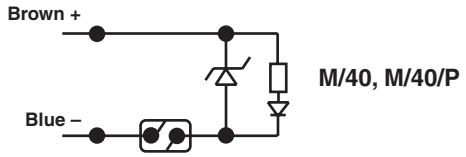
Vibration Resistance:
- M/40, TM/40, M/40/P – 10 to 2000Hz 0.11 lbs. (50g) (Resonant Frequency = 3 kHz)
- M/40/C – 10 to 2000Hz 0.11 lbs. (50g) (Resonant Frequency = 13 kHz)

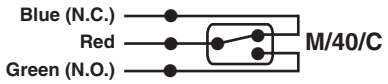
Cable Length:
- M/40 – 6.5' (2m),16.25' (5m) of P.V.C. covered two core cable
- M/40/C – 6.5' (2m) of P.V.C. covered three core cable
- TM/40 – 6.5' (2m) of silicon rubber covered two core cable
- M/40/P – 16.25' (5m) of P.V.C. or Polyurethane covered three core cable with plug-in connection

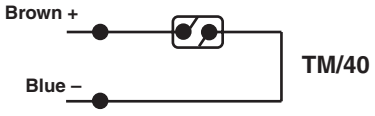
Materials

M/40, M/40/C, M/40/P – Nylon 66 body
TM/40 – 30% Glass filled Nylon 66 body

NOTE: When used to switch inductive loads such as solenoids, relays etc., arcing can occur across the switch contacts depending on the current and voltage involved. This arcing can be eliminated on d.c. loads by connecting a suitably rated diode across the load or switch.
On a.c. loads, arcing is more difficult to eliminate, but the contact life can be greatly extended by reducing the peak voltages by connecting a suitable non-linear resistor (V.D.R.) across the load or switch.







Alternative Models

M/41 Solid state model with hardwired cable – see ACT-11-10

M/42 Solid state model with hardwired cable – see ACT-11-10

M/42/P Solid state model with plug-in cable – see ACT-11-10

General Information

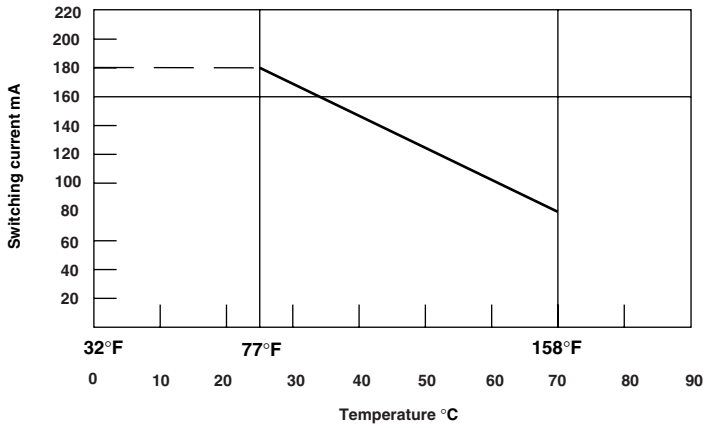
Model	Switch type	Cable length
M/40	LED, Normally open, hardwired	6.5' (2), 16.25' (5)
M/40/C	Normally open/Normally closed - changeover, hardwired	6.5' (2)
TM/40	Normally open, high temperature, hardwired	6.5' (2)
M/40/P	Normally open with LED, plug-in cable	16.25' (5)

NOTE: Switches are ordered separately.

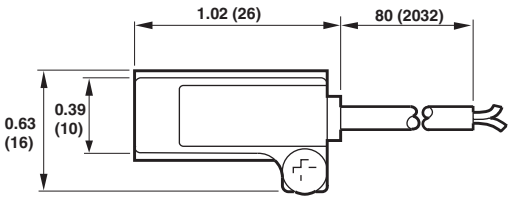
Effect of High Temperatures – M/40 and M/40/P with LED

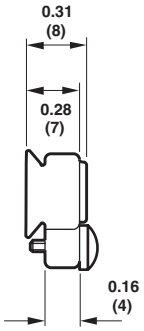
When using a Reed Switch that incorporates an LED, the maximum switching current should be reduced in direct proportion to the rise in temperature above 77°F (25°C).

At maximum temperature of 158°F (70°C) the maximum switching current must be derated to 80mA.



M/40, M/40/C, TM/40 Magnetically Operated Switches, with hardwired cable



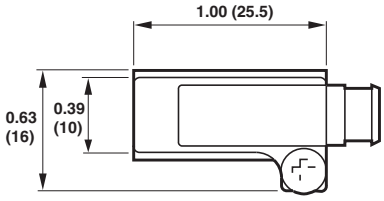


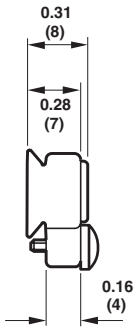
Switches are mounted in the integral slot of the extruded tube.

Polarity:
- Red +
- Blue –

Normally open/normally closed:
- Red common
- Blue normally closed
- Green normally open

M/40/P Magnetically Operated Switches, with plug-in cable*





*Cable must be ordered separately.

Switches are mounted in the integral slot of the extruded tube.

Polarity:
- Brown +
- Blue –

Cable No.	Connector type	Outer cover
M/P34595/5	Straight	Polyurethane
M/P34596/5	Angled 90°	Polyurethane
M/P34614/5	Straight	P.V.C.
M/P34615/5	Angled 90°	P.V.C.

Lintra-Lite Actuators

Magnetically Operated Switches
Solid State Switches M/41, M/42, M/42/P

- **Compact, low profile solid state switches.**
- **LED indicator is standard.**
- **Simple, reliable switching with fast response times.**
- **Particularly suited for use where high levels of vibration are present.**
- **M/42/P features a plug-in cable connection.**
- **CE – Marking.**

Specifications

Form:
- M/41 – Solid state with LED (NPN, sinking, grounded emitter output)
- M/42, M/42/P – Solid state with LED (PNP, sourcing, open collector output)

Switching Voltage:
- 10V to 28VDC only
- M/42/P – 10V to 30VDC only

Switching Current:
- M/41 – 20 mA
- M/42, M/42/P – 300 mA

Response Time:
- 1.5 µs

Operating Temperature:
- 32° to 158°F (0° to 70°C)

Protection Rating:
- I.P.67

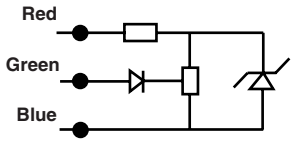
Vibration Resistance:
- Immune to shock loads

Cable Length:
- M/41, M/42 – 6.5' (2m) of P.V.C. covered three core cable
- M/42/P – 16.25' (5m) of P.V.C. or Polyurethane covered three core cable with plug-in connection.

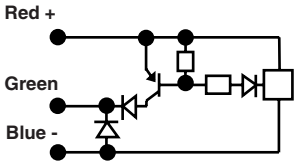
Switch Protection:
- Diode protection must be used with inductive loads.

Materials

Nylon 66 body.



M/41



M/42, M/42/P

Alternative Models

M/40 Hardwired cable model – see ACT-11-8

M/40/C Normally open/normally closed model with integral cable – see ACT-11-8

M/40/P Plug-in cable model – see ACT-11-8

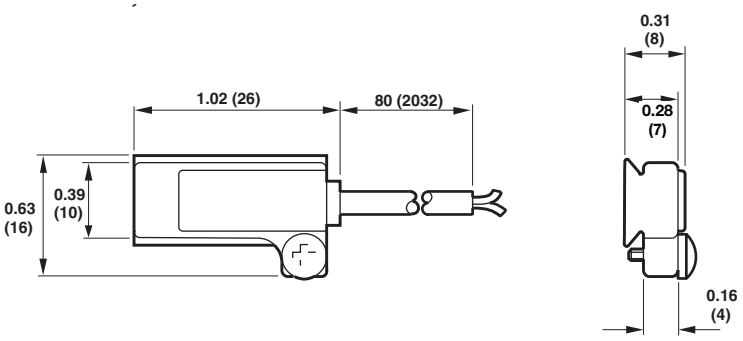
TM/40 High temperature model – see ACT-11-8

General Information

Model	Switch type	Cable length
M/41	Solid State with LED, sinking, NPN, hardwired cable	6.5' (2)
M/42	Solid State with LED, sourcing, PNP, hardwired cable	6.5' (2)
M/42/P	Solid State with LED, sourcing, PNP, plug-in cable	16.25' (5)

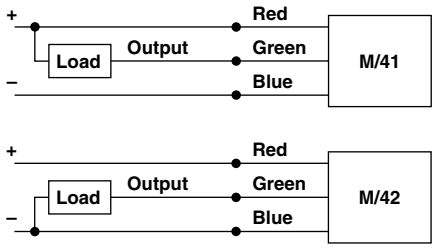
NOTE: Switches are ordered separately.

M/41, M/42 Magnetically Operated Switches, with hardwired cable

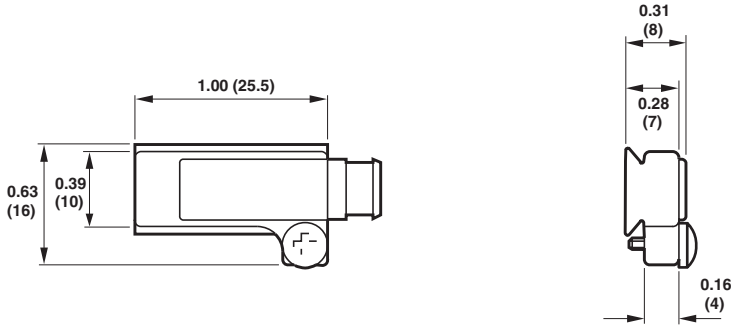


Switches are mounted in the integral slot of the extruded tube.

Polarity:
Red +
Blue –
Green Output



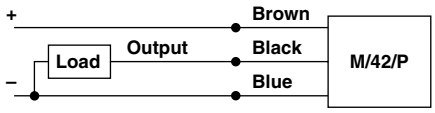
M/42/P Magnetically Operated Switches, with plug-in cable*



*Cable must be ordered separately.

Switches are mounted in the integral slot of the extruded tube.

Polarity:
Brown +
Blue –
Black Output



Cable No.	Connector type	Outer cover
M/P34595/5	Straight	Polyurethane
M/P34596/5	Angled 90°	Polyurethane
M/P34614/5	Straight	P.V.C.
M/P34615/5	Angled 90°	P.V.C.