

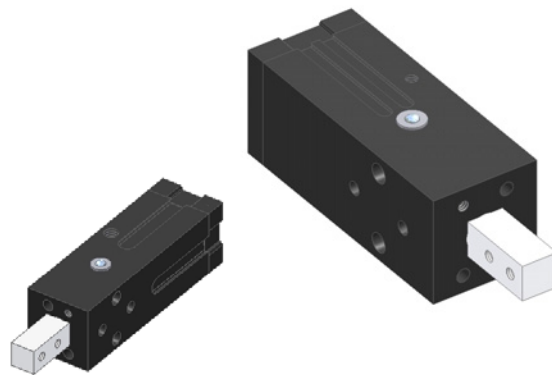
NON-ROTATING AIR CYLINDERS

SC SERIES

PREMIER LINE

- Full range of sizes and strokes
- Precision Mounting
- Hard Stops
- Robust design
- Few moving parts
- Extremely Durable
- Fully field serviceable
- Sensors Ready

See
Page **2-2.2**

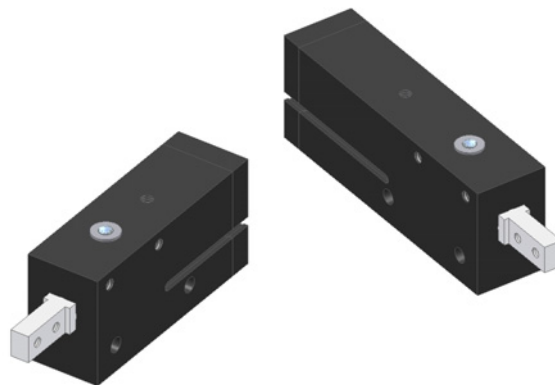


CC SERIES

STANDARD LINE

- Range of strokes
- Hard Stops
- Robust design
- Few moving parts
- Extremely Durable
- Fully field serviceable
- Sensors Available

See
Page **2-2.10**





SC-SERIES

DURA-SCAPE SC Series of Non-Rotating Air Cylinders is designed as multi purpose units. These air-operated devices provide the functionality of an air cylinder with the durability and features you've come to expect from R&I. SC units have a single, precision ground, non-rotating, square finger mated with a machined square body with precision mounting features.

FEATURES

DURA-SCAPE SC Series sets the industry standard for their extreme durability and rugged construction while still being low in cost. They provide a precise and durable alternative to air cylinders with the added capability to carry side loading. The single finger holder is square in cross-section to present a large, slide bearing surface to minimize surface wear. A flush type oiler with a ball closure permits easy lubrication while maintaining a compact package. Hard stops are provided for accurate and repeatable finger strokes with multiple standard strokes available for customer specific design requirements. Finger strokes can even be customized by end users to fit any need. The units are fully field repairable with available seal kits. Furthermore, the entire series is sensor ready.

MOUNTING STYLES

DURA-SCAPE SC Series provides a precision ground finger with standard mounting holes to allow tooling to be shaped to accommodate a wide array of part sizes and shapes. A wide variety of body mounting holes are provided to allow positioning of the units in a horizontal, vertical or angular plane to suit any of your design requirements.

The SC series of non-rotating air cylinders are ideal for use as:

- Low cost thruster
- Precision clamping device
 - Miniature Slide
- Precision Work holding device.

They can also be used in tandem or alone as feed escapement devices.

COMPACT LIGHT DUTY

SC-1

- 9/16" [14.3]
Cylinder Bore



See Page **2-2.4**

STANDARD DUTY

SC-2

- 5/8" [15.9]
Cylinder Bore



See Page **2-2.5**

HEAVY DUTY

SC-3

- 7/8" [22.2]
Cylinder Bore

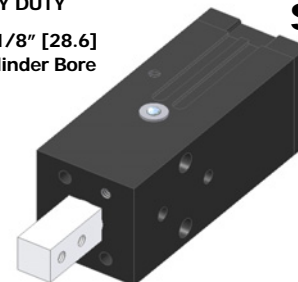


See Page **2-2.6**

HEAVY DUTY

SC-4

- 1 1/8" [28.6]
Cylinder Bore

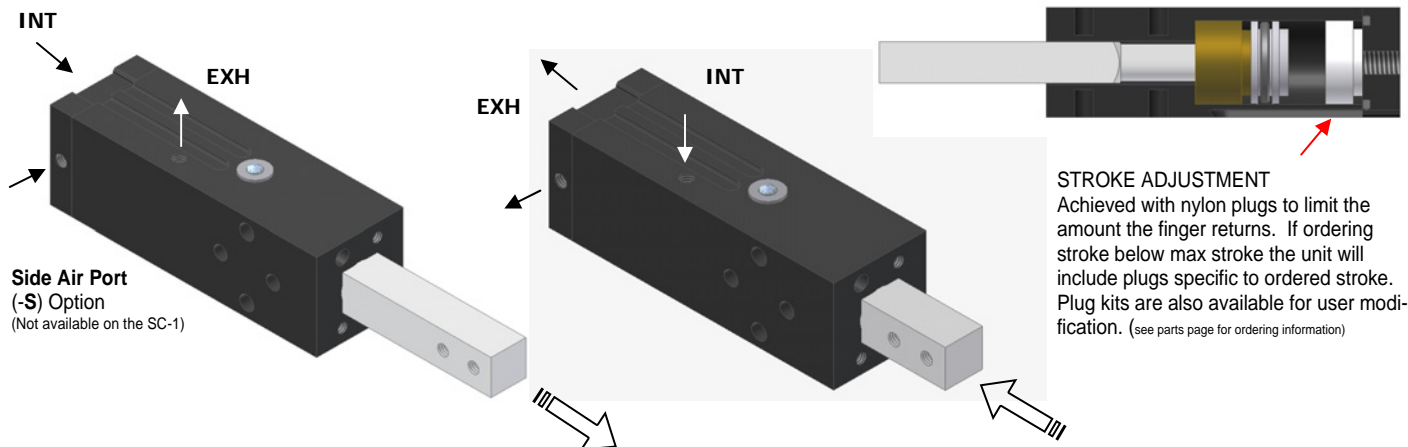


See Page **2-2.7**

TECHNICAL SPECIFICATION

Pneumatic Specifications	ENGLISH	METRIC
Pressure Range	40-100 psi	3-7 bar
Cylinder Type	Double Acting	
Dynamic Seals	Buna-N	
Required Valves	4-way, 2 position	
Temperature Range		
Buna-N Seals (standard)	-30 to 180 F	-35 to 80 C
Viton Seals (-V option)	-20 to 300 F	-30 to 150 C

OPERATING PRINCIPLES



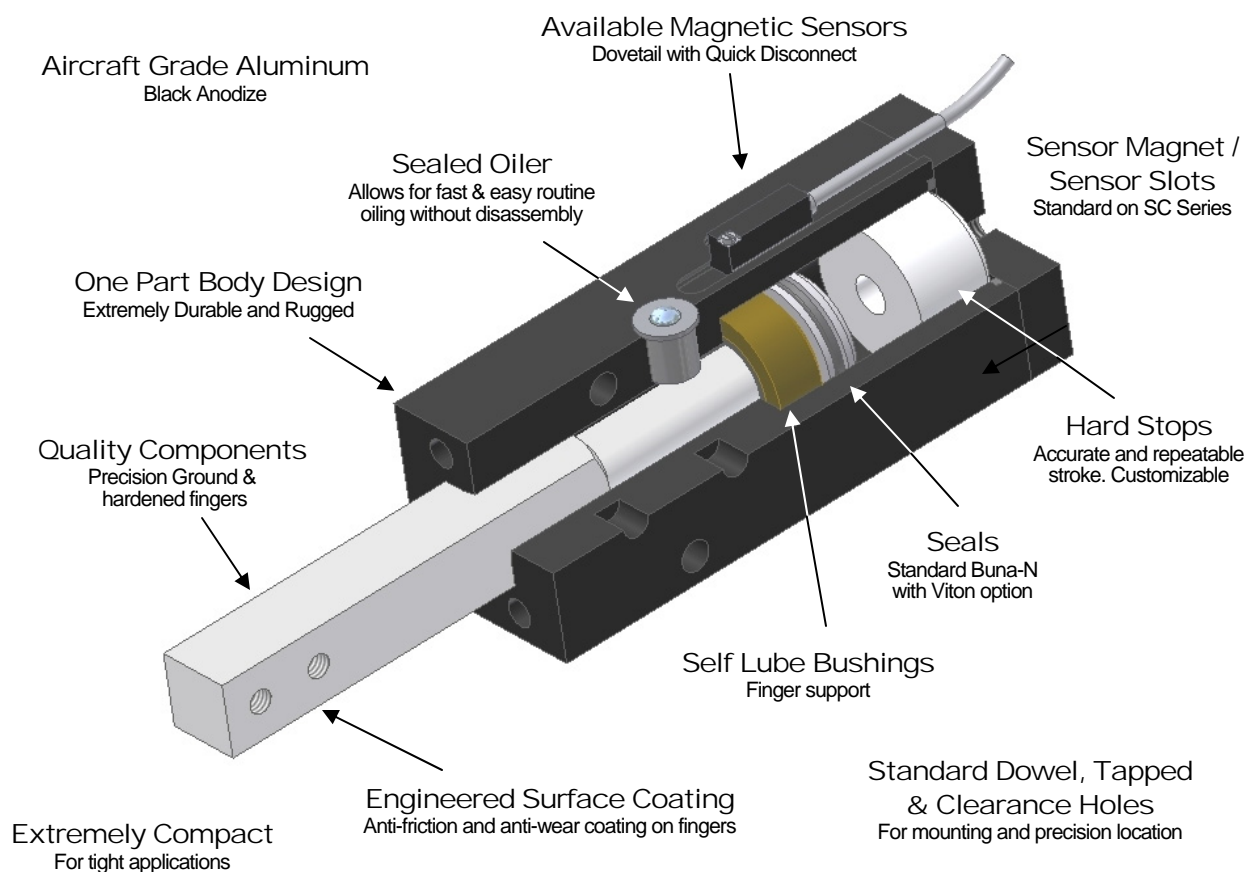


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NON-ROTATING AIR CYLINDER

SC-SERIES 

PRODUCT FEATURES

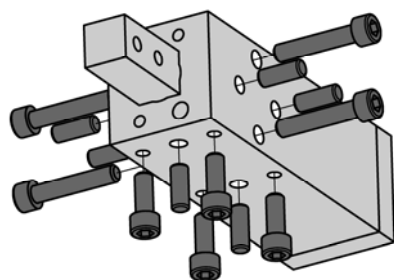


DESIGNED - MANUFACTURED - ASSEMBLED IN THE USA 

MOUNTING INFORMATION

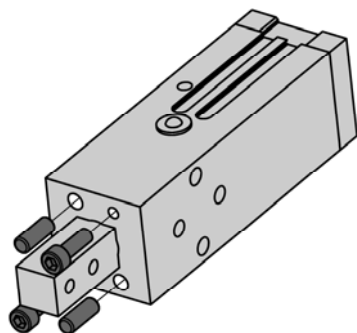
Mounts and operates in any orientation

MAIN BODY



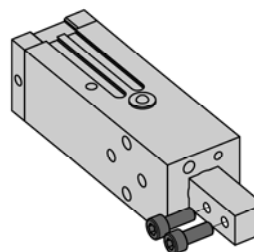
Side Mount thru Main body using Clearance holes with Dowel Pins for positive location.

Bottom Mount to Main body with Tapped holes and Dowel Pins for positive location.

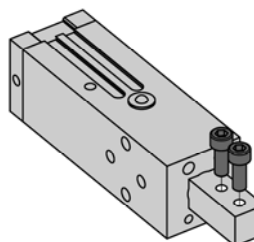


Front Mount to Main body using Tapped holes with Dowel Pins for positive location.

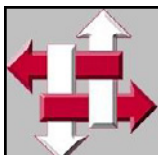
TOOLING



Mount tooling to finger using Tapped holes. Key tooling to precision ground finger for positive location.



(-R) Option rotates finger 90 degrees if required for custom tooling

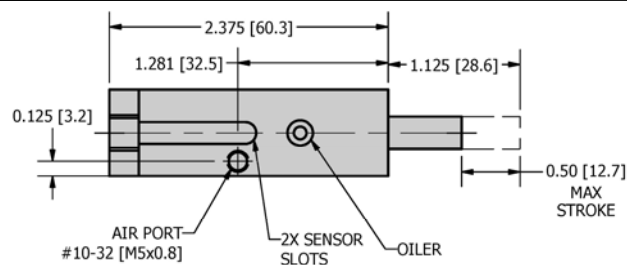


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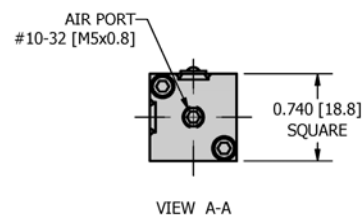
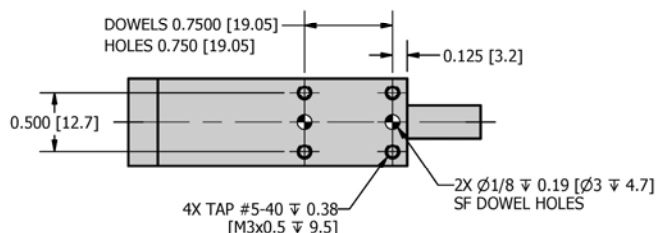
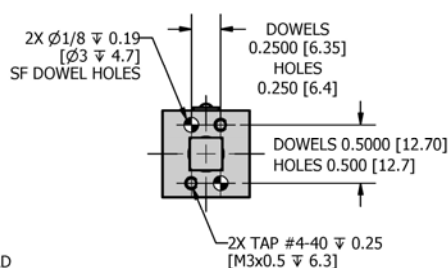
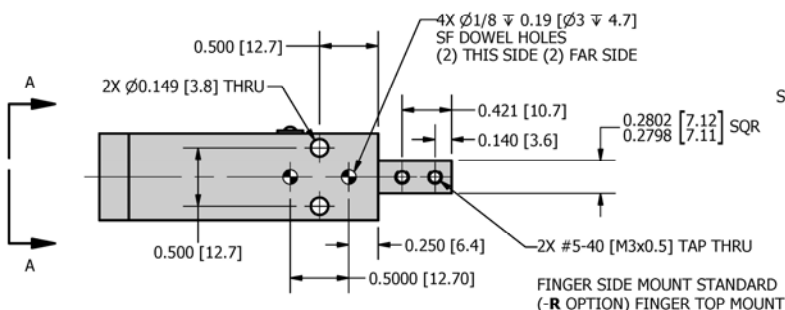
SC-1
COMPACT LIGHT DUTY

DIMENSIONAL DRAWING



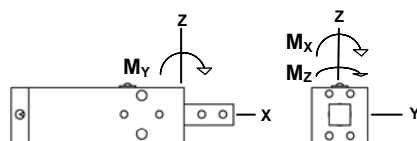
SPECIFICATIONS

	SC-1	M SC-1
Maximum Air Pressure	100 psi	6.9 bar
Maximum Stroke	0.500"	12.7 mm
Thrust Force @ 100 psi / 6.9 bar	24.8 lbf	110.3 N
Unit Force Factor - Extend	0.25 lbf/psi	16.0 N/bar
Unit Force Factor - Retract	0.20 lbf/psi	12.9 N/bar
Base Weight	0.15 lb	0.07 kg
Cylinder Bore Diameter	0.562"	11.10 mm
Displacement (per stroke)	0.124 in ³	2.03 cm ³
Actuation Time (per stroke)	0.15 sec	



LOADING

	SC-1	M SC-1
Max Static Moment M_x, M_y, M_z	50 lbf-in	5.6 N-m
Max Dynamic Moment M_x, M_y, M_z	5.0 lbf-in	0.6 N-m



HOW TO ORDER : BASIC UNIT

METRIC BASIC MODEL STROKE SEALS
M **SC-1** - **R** - **V**
 FINGERS

METRIC M

STROKE Inch: MAX-0.50", 0.25"

mm: MAX-12.7, 6.4

If no Stroke is ordered, one Hard Stop Kit (SC-1-HSK) will be included and unit will have max stroke.

FINGERS R - Finger Rotated 90°

SEALS V - Viton (standard Buna - N)

SAMPLE ORDER: SC-1-R

Ex) SC-1 with rotated fingers, includes Hard Stop Kit (no stroke is specified)

ACCESSORIES (order separately)

MAGNETIC SENSOR KITS * (Dovetail mounted)

DSK-N - Magnetic Sensor NPN w/ quick disconnect Kit

DSK-P - Magnetic Sensor PNP w/ quick disconnect Kit

* Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Dovetail mounted)

DS-N - Magnetic Sensor NPN w/ quick disconnect

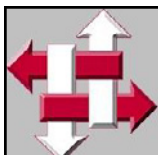
DS-P - Magnetic Sensor PNP w/ quick disconnect

* Includes (1) sensor.

SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

CUSTOM DESIGNS ALWAYS AVAILABLE
PLEASE CONTACT US FOR INFORMATION

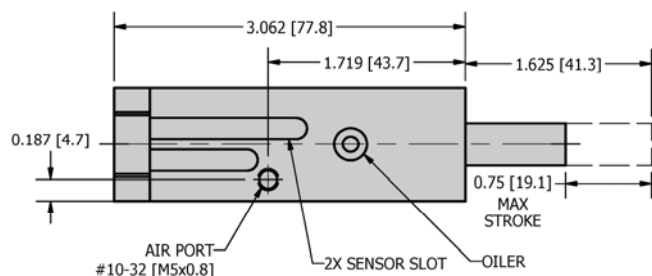


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NON-ROTATING AIR CYLINDER

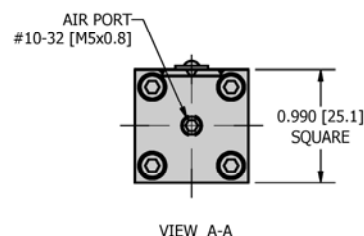
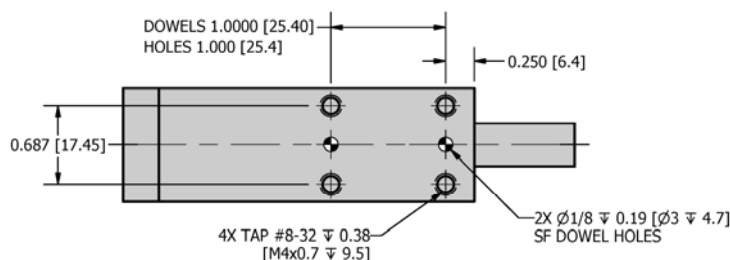
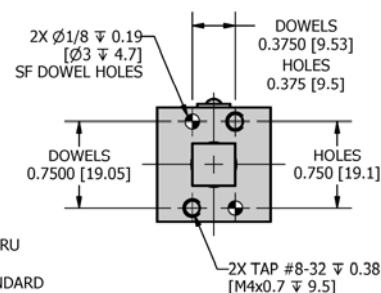
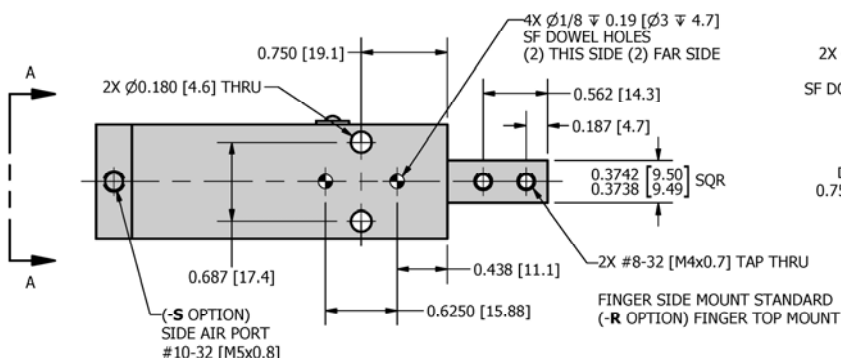
SC-2
STANDARD DUTY

DIMENSIONAL DRAWING



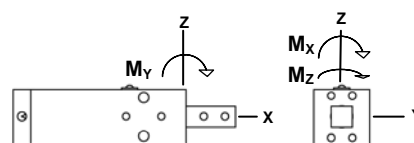
SPECIFICATIONS

	SC-2	M SC-2
Maximum Air Pressure	100 psi	6.9 bar
Maximum Stroke	0.750"	19.05 mm
Thrust Force @ 100 psi / 6.9 bar	30.7 lbf	136.4 N
Unit Force Factor - Extend	0.31 lbf/psi	19.8 N/bar
Unit Force Factor - Retract	0.26 lbf/psi	16.6 N/bar
Base Weight	0.35 lbs	0.16 kg
Cylinder Bore Diameter	0.625"	15.86 mm
Displacement (per stroke)	0.230 in ³	3.77 cm ³
Actuation Time (per stroke)	0.21 sec	



LOADING

	SC-2	M SC-2
Max Static Moment M_x , M_y , M_z	150 lbf-in	16.9 N-m
Max Dynamic Moment M_x , M_y , M_z	15.0	1.7 N-m



HOW TO ORDER : BASIC UNIT

METRIC BASIC MODEL STROKE FINGERS

M **SC-2** - **S** - **R** - **V**

METRIC M

STROKE Inch: MAX-0.75", 0.50", 0.25"

mm: MAX-19.1, 12.7, 6.4

If no Stroke is ordered, one Hard Stop Kit (SC-2-HSK) will be included and unit will have max stroke.

AIR PORT S - Side Air Port

FINGERS R - Finger Rotated 90°

SEALS V - Viton (standard Buna - N)

SAMPLE ORDER: SC-2-S-R

Ex) SC-2 with side air port and rotated fingers, includes Hard Stop Kit (no stroke is specified)

ACCESSORIES (order separately)

MAGNETIC SENSOR KITS * (Dovetail mounted)

DSK-N - Magnetic Sensor NPN w/ quick disconnect Kit

DSK-P - Magnetic Sensor PNP w/ quick disconnect Kit

* Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Dovetail mounted)

DS-N - Magnetic Sensor NPN w/ quick disconnect

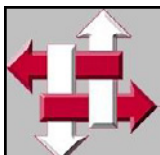
DS-P - Magnetic Sensor PNP w/ quick disconnect

* Includes (1) sensor.

SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

CUSTOM DESIGNS ALWAYS AVAILABLE
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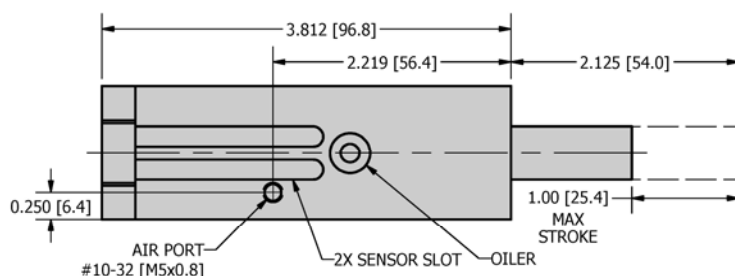
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DURA-SCAPE

NON-ROTATING AIR CYLINDER

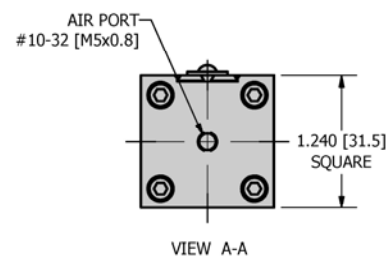
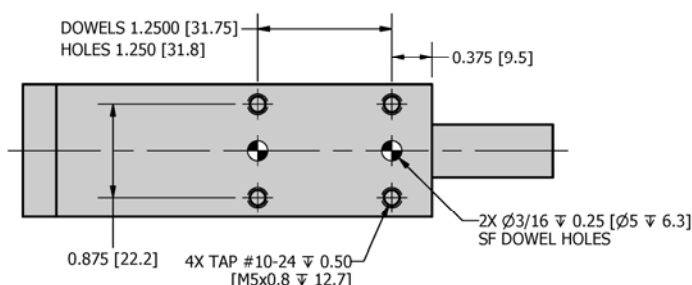
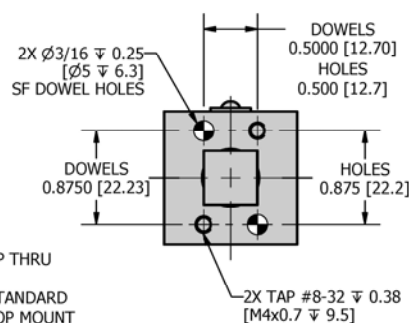
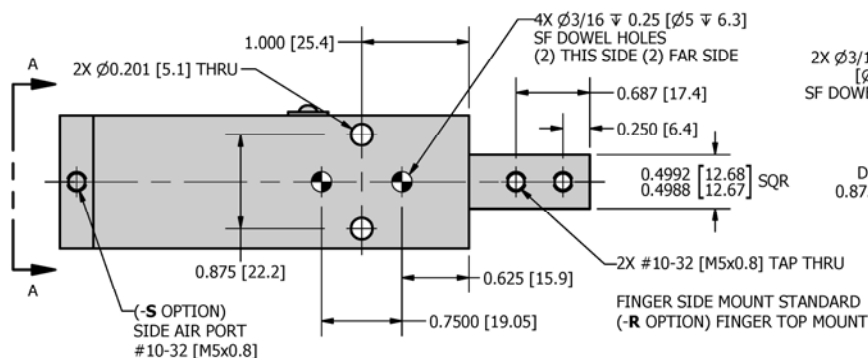
SC-3 **HEAVY DUTY**

DIMENSIONAL DRAWING



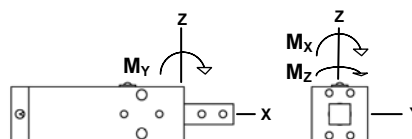
SPECIFICATIONS

	SC-3	M SC-3
Maximum Air Pressure	100 psi	6.9 bar
Maximum Stroke	1.000"	25.4 mm
Thrust Force @ 100 psi / 6.9 bar	60.1 lbf	267.3 N
Unit Force Factor - Extend	0.60 lbf/psi	38.8 N/bar
Unit Force Factor - Retract	0.49 lbf/psi	31.6 N/bar
Base Weight	0.73 lb	0.33 kg
Cylinder Bore Diameter	0.875"	22.22 mm
Displacement (per stroke)	0.601 in ³	9.85 cm ³
Actuation Time (per stroke)	0.30 sec	



LOADING

	SC-3	M SC-3
Max Static Moment M_x, M_y, M_z	250 lbf-in	28.2 N-m
Max Dynamic Moment M_x, M_y, M_z	25.0 lbf-in	2.8 N-m



HOW TO ORDER : BASIC UNIT

METRIC BASIC MODEL STROKE FINGERS
M **SC-3** - **S** - **R** - **V**
AIR PORT SEALS

METRIC M

STROKE Inch: MAX-1.00", 0.75", 0.50"
mm: MAX-25.4, 19.1, 12.7

If no Stroke is ordered, one Hard Stop Kit (SC-3-HSK) will be included and unit will have max stroke.

AIR PORT S - Side Air Port

FINGERS R - Finger Rotated 90°

SEALS V - Viton (standard Buna - N)

SAMPLE ORDER: SC-3-S-R

Ex) SC-3 with side air port and rotated fingers, includes Hard Stop Kit (no stroke is specified)

ACCESSORIES (order separately)

MAGNETIC SENSOR KITS * (Dovetail mounted)

DSK-N - Magnetic Sensor NPN w/ quick disconnect Kit
DSK-P - Magnetic Sensor PNP w/ quick disconnect Kit

* Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Dovetail mounted)

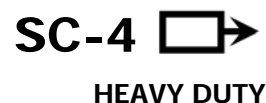
DS-N - Magnetic Sensor NPN w/ quick disconnect
DS-P - Magnetic Sensor PNP w/ quick disconnect

* Includes (1) sensor.

SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

CUSTOM DESIGNS ALWAYS AVAILABLE
PLEASE CONTACT US FOR INFORMATION



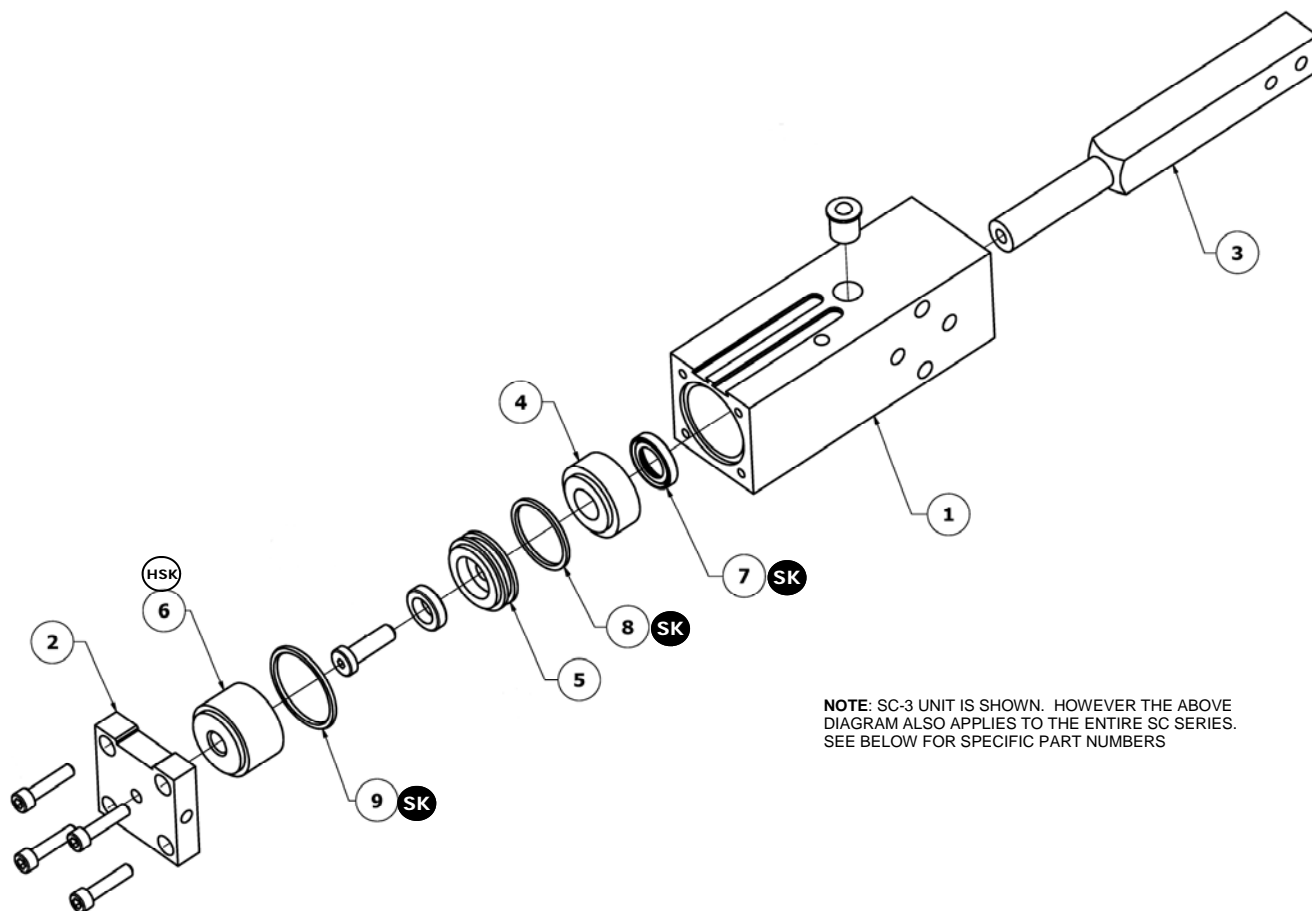


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SC-SERIES

EXPLODED VIEW



NOTE: SC-3 UNIT IS SHOWN. HOWEVER THE ABOVE DIAGRAM ALSO APPLIES TO THE ENTIRE SC SERIES. SEE BELOW FOR SPECIFIC PART NUMBERS

PARTS LIST

HOW TO ORDER PARTS

ITEM	REQ'D	NAME	SC-1	SC-2	SC-3	SC-4	OPTIONS
1	1	Main Body	SC-101	SC-201	SC-301	SC-401	
2	1	End Cap	SC-102	SC-202	SC-302	SC-402	-S ¹
3	1	Finger	BC-103	SC-203	BC-403		
4	1	Bushing *	BC-104	BC-204	BC-404		
5	1	Piston	SC-105	SC-205	SC-405	SC-605	
6	1	Hard Stop	BC-109	BC-210	BC-410	BC-610	-S ¹
7	1	Shaft Seal *	SSA-210		SSA-215		-V ²
8	1	O-ring (Piston) *	ORG-013	ORG-014	ORG-018	ORG-022	-V ²
9	1	O-ring (End Cap) *	ORG-014	ORG-016	ORG-020	ORG-024	-V ²
SK	1	Seal Kit **	SC-1-SK	SC-2-SK	SC-3-SK	SC-4-SK	-V ²
HSK	1	Hard Stop Kit @ *	SC-1-HSK	SC-2-HSK	SC-3-HSK	SC-4-HSK	

METRIC

PART NUMBER

M

-

OPTIONS

SAMPLE ORDER: SC-109-0.25

Ex) SC-1 Hard Stop for 0.25" stroke

OPTIONS (see product pages for information)

1 - S = Stroke (only required for units that have specified strokes below maximum listed on product page)

2 - V = Viton Seals option

3 - S = Side Air Port option

NOTES

† - Metric Fasteners

* - Metric code not required

- Seal Kits include req'd qty of parts marked with SK

@ - Hard Stop Kits include (1) full length Hard Stop for user to modify

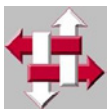
FOR MORE INFORMATION CALL US AT 1-800-588-0174 OR 860-589-6364 FAX: 860-589-6235

VISIT US AT www.RIMFG.com



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TECH NOTES



CC-SERIES

DURA-SCAPE CC Series of Non-Rotating Air Cylinders are designed as multi purpose units. The CC series is designed for applications where all the features of our SC series are not required, while still offering the time-tested quality construction and durability you've come to expect. These air-operated devices provide the same functionality as the SC Series but offer simplified mounting and optional use of sensors.

FEATURES

DURA-SCAPE CC Series sets the industry standard for their extreme durability and rugged construction while still being low in cost. They provide a precise and durable alternative to air cylinders with the added capability to carry side loading. CC units have a single, precision ground, non-rotating, square finger mated with a machined body. The single finger holder is square in cross-section to present a large, slide bearing surface to minimize surface wear. A flush type oiler with a ball closure permits easy lubrication while maintaining a compact package. Hard stops are provided for accurate and repeatable finger strokes. Finger strokes can be customized by end users to fit any need. The units are fully field repairable with available seal kits.

MOUNTING STYLES

DURA-SCAPE CC Series provides a precision ground finger with standard mounting holes to allow tooling to be shaped to accommodate a wide array of part sizes and shapes. Tapped and clearance holes are provided to allow positioning of the units in a horizontal, vertical or angular plane to suit any of your design requirements.

The CC series of non-rotating air cylinders are ideal for use as:

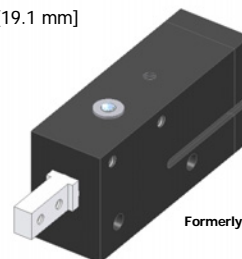
- Low cost thruster
- Clamping device
- Miniature Slide
- Work holding device.

They can also be used in tandem or alone as feed escapement devices.

SHORT STROKE

- Inch : 3/4"
- Metric : [19.1 mm]

CC-1



Formerly CC-3/4

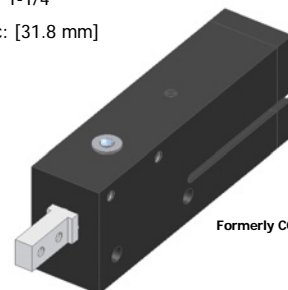
5/8" [15.8] Cylinder Bore

See Page **2-2.12**

LONG STROKE

- Inch : 1-1/4"
- Metric : [31.8 mm]

CC-2



Formerly CC-1 1/4

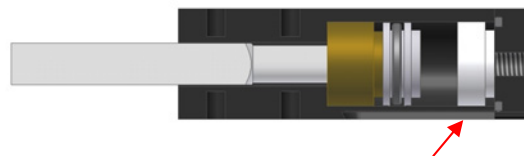
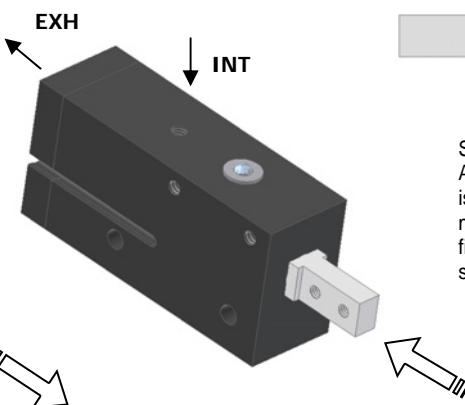
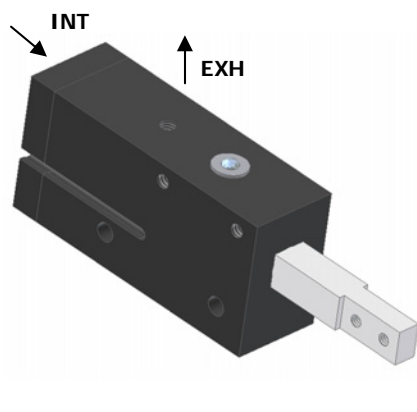
5/8" [15.8] Cylinder Bore

See Page **2-2.13**

TECHNICAL SPECIFICATION

Pneumatic Specifications	ENGLISH	METRIC
Pressure Range	40-100 psi	3-7 bar
Cylinder Type	Double Acting	
Dynamic Seals	Buna-N	
Required Valves	4-way, 2 position	
Temperature Range		
Buna-N Seals (standard)	-30 to 180 F	-35 to 80 C
Viton Seals (-V option)	-20 to 300 F	-30 to 150 C

OPERATING PRINCIPLES



STROKE ADJUSTMENT

Achieved with nylon plugs. One unmodified Hard Stop is included with each CC unit. These plugs can be modified by end user and will limit the amount the finger returns. The included Hard Stop can limit the stroke by as much as 5/8" [15.8]



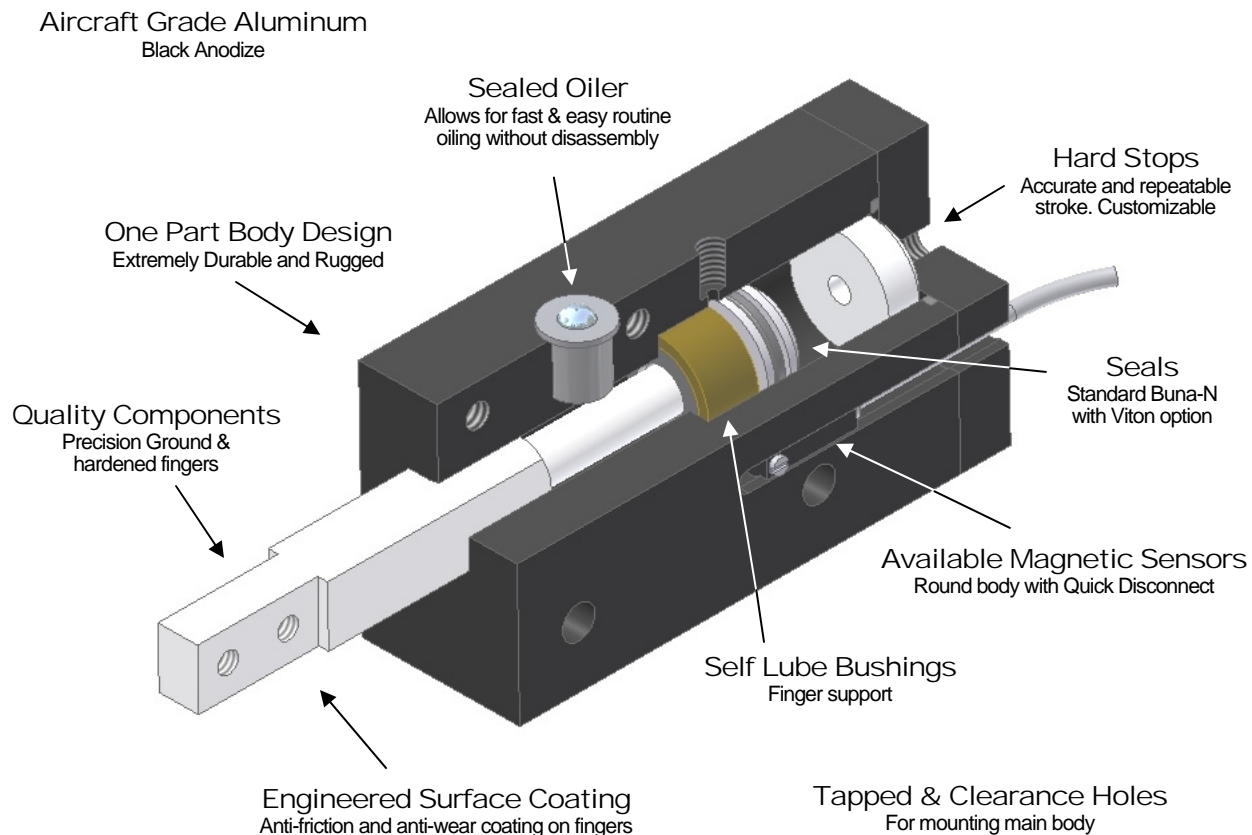
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DURA-SCAPE

NON-ROTATING
AIR CYLINDER

CC-SERIES 

PRODUCT FEATURES



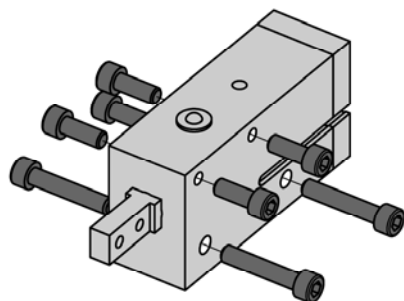
DESIGNED - MANUFACTURED - ASSEMBLED IN THE USA



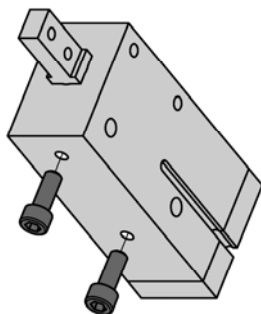
MOUNTING INFORMATION

Mounts and operates in any orientation

MAIN BODY

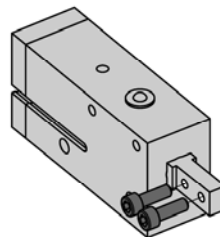


Side Mount thru Main body using Clearance
holes or up to Main body using Tapped holes

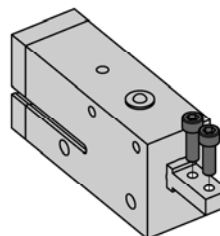


Bottom Mount to Main body with
Tapped holes .

TOOLING

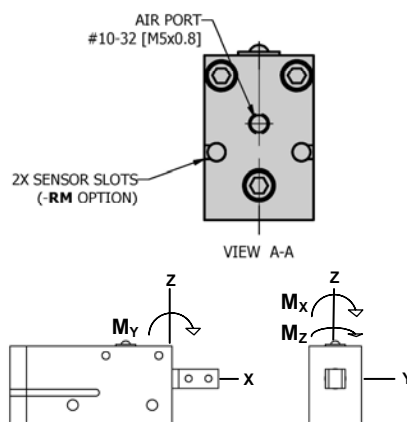
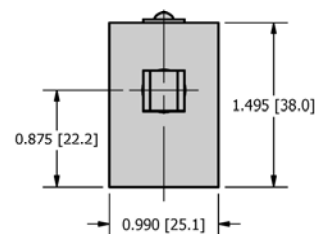
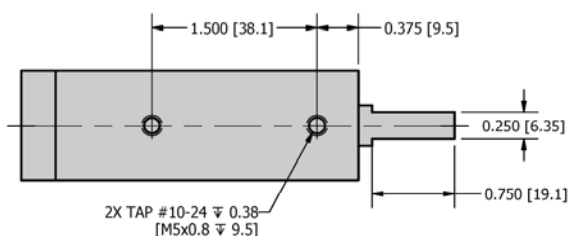
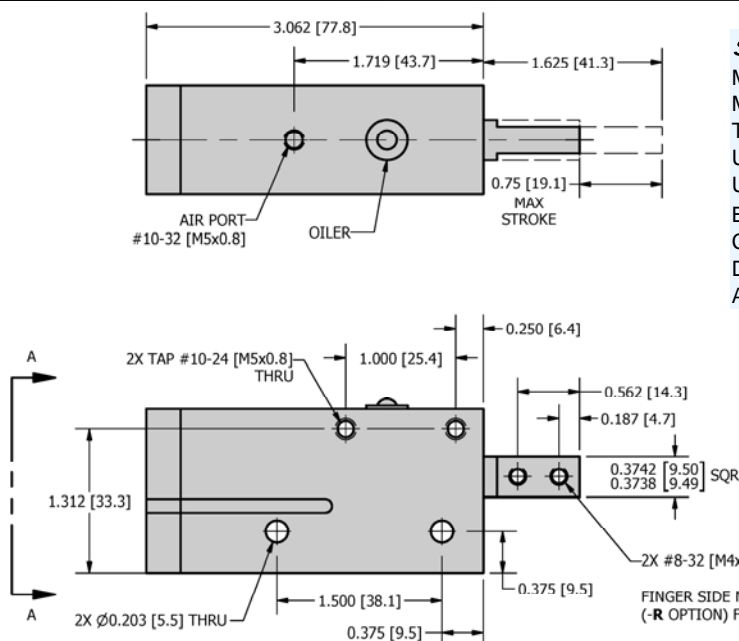


Mount tooling to finger using
Tapped holes. Key tooling to
precision ground finger for
positive location.



(-R) Option rotates finger 90
degrees if required for custom
tooling

DIMENSIONAL DRAWING



SPECIFICATIONS

<i>SPECIFICATIONS</i>	CC-1	M CC-1
Maximum Air Pressure	100 psi	6.9 bar
Maximum Stroke	0.750"	19.0 mm
Thrust Force @ 100 psi / 6.9 bar	30.7 lbf	136.4 N
Unit Force Factor - Extend	0.31 lbf/psi	19.8 N/bar
Unit Force Factor - Retract	0.26 lbf/psi	16.6 N/bar
Base Weight	0.5 lb	0.23 kg
Cylinder Bore Diameter	0.625"	15.8 mm
Displacement (per stroke)	0.230 in ³	3.77 cm ³
Actuation Time (per stroke)	0.20 sec	

LOADING

LOADING	CC-1	M CC-1
Max Static Moment M_x, M_y, M_z	150 lbf-in	16.9 N-m
Max Dynamic Moment M_x, M_y, M_z	15 lbf-in	1.7 N-m

HOW TO ORDER : BASIC UNIT

ACCESSORIES (order separately)

METRIC

BASIC MODEL

FINGERS

M

CC-1

RM

R

V

SENSOR READY

SEALS

METRIC M

SENSOR RM - Magnetic Sensor Ready

Includes Sensor slots and Piston Magnet. Sensors sold separately - see Magnetic Sensors

FINGERS R - Finger Rotated 90°

SEALS V - Viton (standard Buna - N)

MAGNETIC SENSOR KITS * (Round track mounted)

RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit

RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit

* Requires Sensor Ready (-RM). Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Round track mounted)

RS-N - Magnetic Sensor NPN w/ quick disconnect

RS-P - Magnetic Sensor PNP w/ quick disconnect

* Requires Sensor Ready (-RM). Includes (1) sensor.

SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

SAMPLE ORDER: CC-1-RM-R

Ex) CC-1 sensor ready with rotated finger

***CUSTOM DESIGNS ALWAYS AVAILABLE
PLEASE CONTACT US FOR INFORMATION***



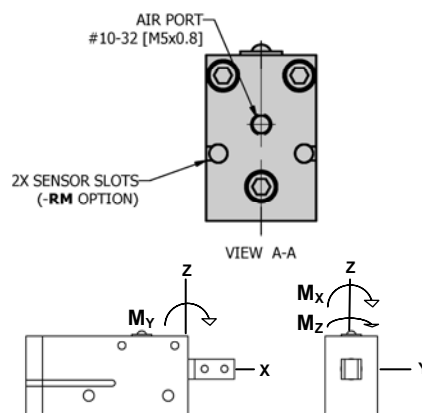
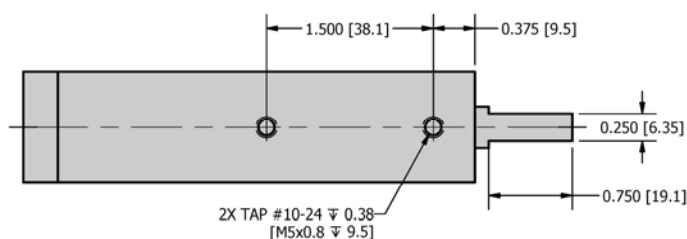
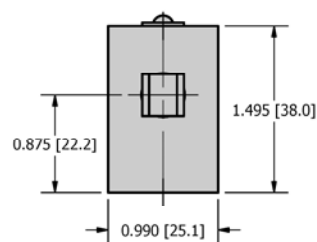
NON-ROTATING AIR CYLINDER

LONG STROKE

DIMENSIONAL DRAWING



Maximum Air Pressure	100 psi	6.9 bar
Maximum Stroke	1.250"	31.8 mm
Thrust Force @ 100 psi / 6.9 bar	30.7 lbf	136.4 N
Unit Force Factor - Extend	0.31 lbf/psi	19.8 N/bar
Unit Force Factor - Retract	0.26 lbf/psi	16.6 N/bar
Base Weight	0.66 lb	0.30 kg
Cylinder Bore Diameter	0.625"	15.8 mm
Displacement (per stroke)	0.383 in ³	6.28 cm ³
Actuation Time (per stroke)	0.25 sec	



LOADING

LOADING	CC-2	M CC-2
Max Static Moment M_x, M_y, M_z	150 lbf-in	19.8 N-m
Max Dynamic Moment M_x, M_y, M_z	15 lbf-in	2.0 N-m

HOW TO ORDER : BASIC UNIT

METRIC

BASIC MODEL

FINGERS



SENSOR READY

SEALS

METRIC M

SENSOR RM - Magnetic Sensor Ready

Includes Sensor slots and Piston Magnet . Sensors sold separately - see Magnetic Sensors

FINGERS R - Finger Rotated 90°

SEALS V - Viton (standard Buna - N)

ACCESSORIES (order separately)

MAGNETIC SENSOR KITS * (Round track mounted)

RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit

RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit

* Requires Sensor Ready (-RM). Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Round track mounted)

RS-N - Magnetic Sensor NPN w/ quick disconnect

RS-P - Magnetic Sensor PNP w/ quick disconnect

* Requires Sensor Ready (-RM). Includes (1) sensor.

SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

SAMPLE ORDER: CC-2-V

Ex) CC-2 with Viton seals

***CUSTOM DESIGNS ALWAYS AVAILABLE
PLEASE CONTACT US FOR INFORMATION***



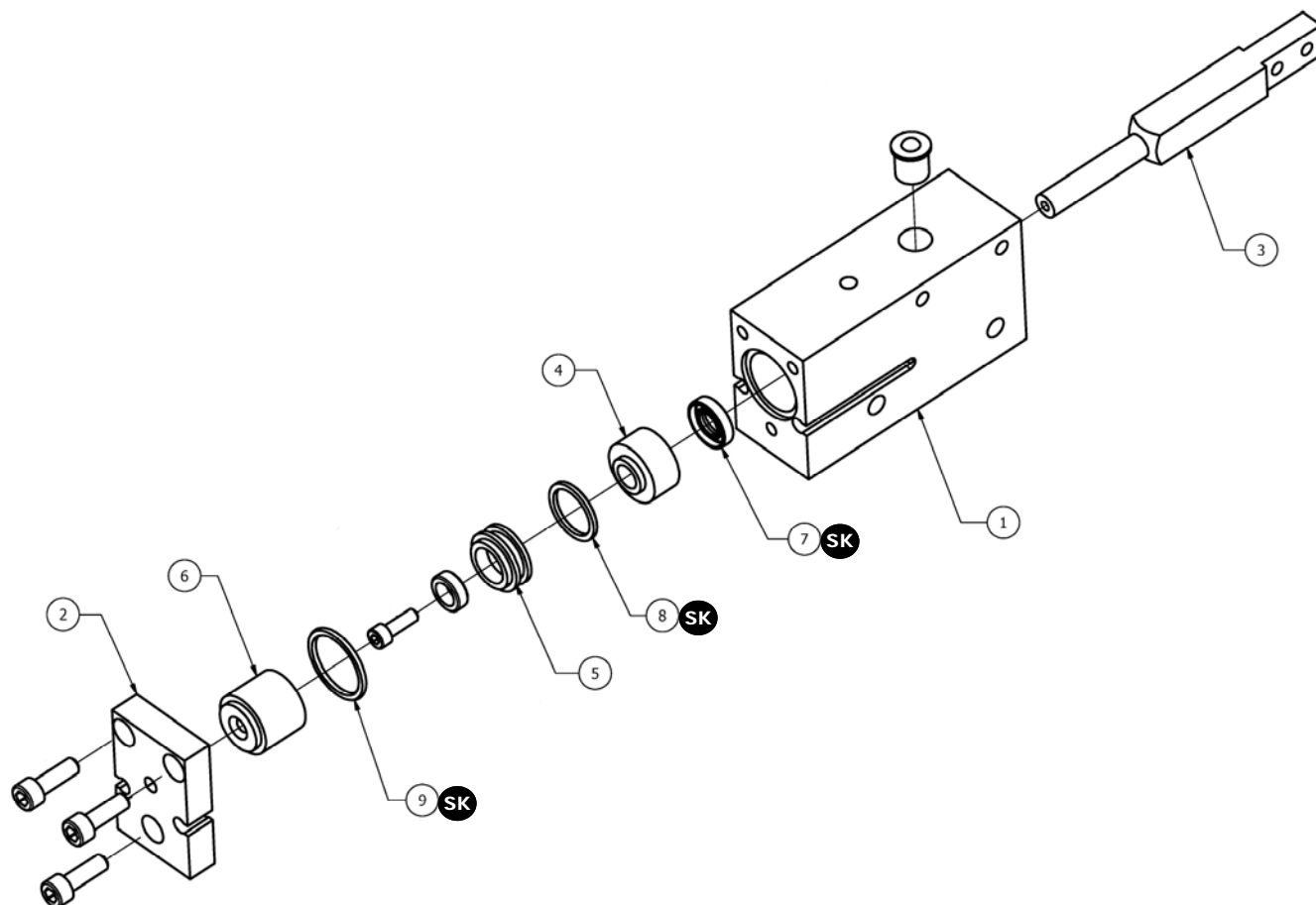
R&I
MANUFACTURING CO.

DURA-SCAPE

NON-ROTATING
AIR CYLINDER

CC-SERIES 

EXPLODED VIEW



PARTS LIST

HOW TO ORDER PARTS

ITEM	REQ'D	NAME	CC-1	CC-2	OPTIONS
1	1	Main Body	CC-101	CC-201	-RM ²
2	1	End Cap	CC-102		-RM ²
3	1	Finger	BC-203	CC-203	
4	1	Bushing *	BC-204		
5	1	Piston	BC-205		
6	1	Hard Stop *	BC-210		
7	1	Shaft Seal *	SSA-210		-V ¹
8	1	O-ring (Piston) *	ORG-014		-V ¹
9	1	O-ring (End Cap) *	ORG-016		-V ¹
SK	1	Seal Kit **	CC-SK		-V ¹

METRIC PART NUMBER



OPTIONS

SAMPLE ORDER: CC-201-RM

Ex) CC-2 Body with Sensor Ready option

OPTIONS (see product pages for information)

1 - V = Viton Seals

2 - RM = Sensor Ready

NOTES

* - Metric code not required

- Seal Kit includes req'd qty of parts marked with SK