

Angular Grippers - Cam Driven Series

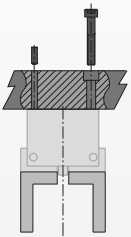
RA SERIES

2.22

- General Purpose:**
 This style gripper is widely used in the industry and is a rugged design that supplies very high grip force for its size.
- Cost Effective:**
 The simplified drive mechanism makes these grippers an excellent value.

Mounting Information:

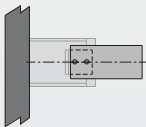
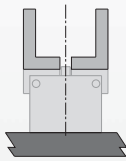
Gripper can be mounted and operated in any orientation



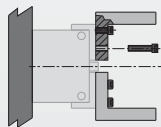
Body mounts with screws and locates with slip fit dowel pins for accuracy



Warning! Protect jaw mechanism from falling debris when mounted upside down



Fingers attach to jaws with screws and locate by keying



Technical Specifications:

Pneumatic Specifications	Imperial	Metric
Pressure Operating Range	40-100 psi	3-7 bar
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)	-30°~180° F	-35°~80° C
Viton® Seals (optional)	-20°~300° F	-30°~150° C

Maintenance Specifications†	
Expected Life	5 million cycles
Normal Application w/ Preventative Maintenance	10+ million cycles*
Field Repairable	Yes
Seal Repair Kits Available	Yes

*Addition of lubrication will greatly increase service life
 † See Maintenance Section

Product Features

Hard Coat Anodize
The body has hard-coat anodize 60 RC with Teflon® impregnation

Quality Components
Dynamic components are hardened for wear resistance and long life

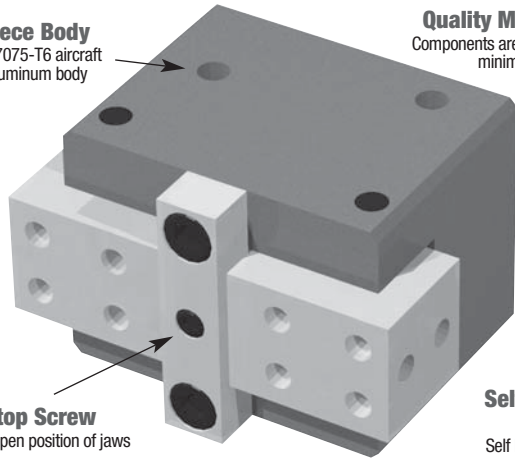
One Piece Body
One piece 7075-T6 aircraft quality aluminum body

Quality Manufacturing
Components are precision ground for minimal jaw play

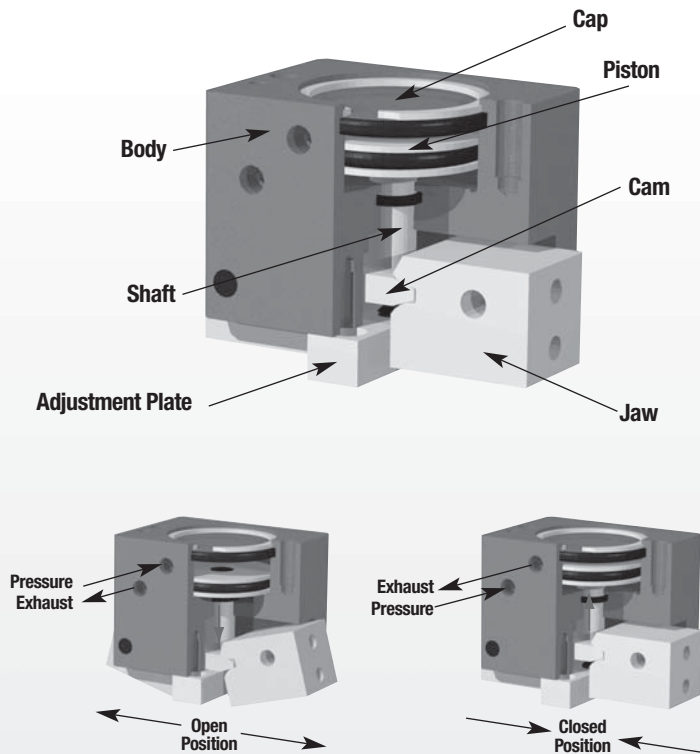
Sensor Magnets
Standard

Stop Screw
Limits open position of jaws

Self-Lubricating Seals
Self lubricating dynamic seals (Buna-N only)



Operating Principle



- A double acting piston is connected by a shaft to a cam.
- The cam rolls in a slot located in each of the jaws converting vertical motion of the wedge into angular synchronous motion of the jaws.
- This gripper is suitable for internal or external gripping.

Designed and manufactured in the USA

Style -RA Angular Gripper

Size -5M

Style:	RA-5	RA-5M
Stroke:	15° each finger	
Grip Force:	20 lbs.	89 N
Weight:	.25 lbs.	.11 Kg



See Page **2.24**

Style -RA Angular Gripper

Size -6M

Style:	RA-6	RA-6M
Stroke:	15° each finger	
Grip Force:	44 lbs.	196 N
Weight:	.68 lbs.	.31 Kg



See Page **2.25**

Style -RA Angular Gripper

Size -10M

Style:	RA-10	RA-10M
Stroke:	15° each finger	
Grip Force:	16 lbs.	71 N
Weight:	.06 lbs.	.03 Kg



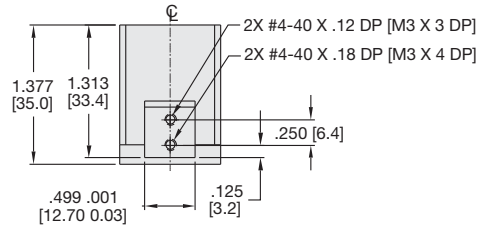
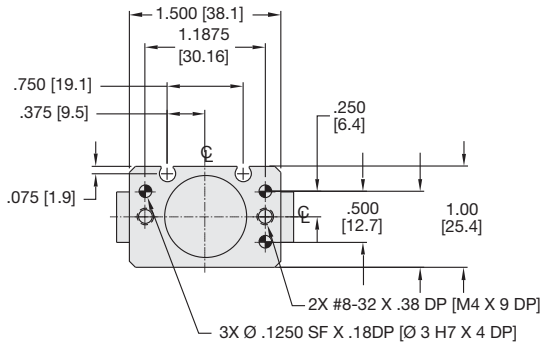
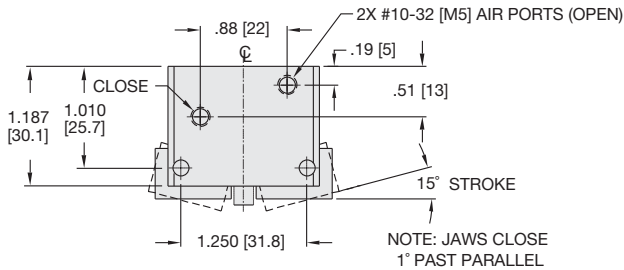
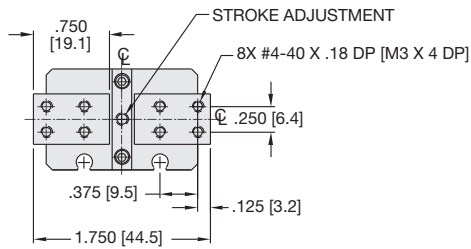
See Page **2.28**

ANGULAR GRIPPER RA-5M CAM DRIVEN SERIES



RA SERIES

2.24



Specifications

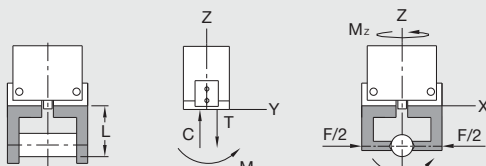
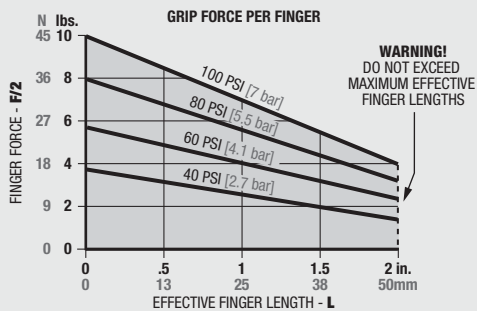
	RA-5	RA-5M
Total Rated Grip Force F @ 100 psi, 7 bar.	20 lbs.	89 N
Stroke	15° of stroke for each finger	15° of stroke for each finger
Open Stroke Adjustment	15° of stroke for each finger	15° of stroke for each finger
Weight	0.25 lbs.	0.11 Kg
Pressure Range	40-100 psi	3-7 bar
Cylinder Bore Ø	.813 in.	20.6 mm
Displacement	0.130 in ³	2.1 cm ³
Temperature Range		
Standard Seals	-30°~180° F	-35°~80° C
Viton® Seals	-20°~300° F	-30°~150° C
Actuation	0.10 sec.	0.10 sec.
Accuracy	±0.005 in.	±0.13 mm
Repeatability	±0.003 in.	±0.08 mm
Valve required to actuate	4-way, 2-position	

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.0005" or [±.013mm]
Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]

Loading Information

How to Order: (Order Accessories separately from Basic Model)



Loading Capacity†

	Static		Dynamic	
	Imperial	Metric	Imperial	Metric
Maximum Tensile T	10 lbs.	44 N	10 lbs.	44 N
Maximum Compressive C	10 lbs.	44 N	10 lbs.	44 N
Maximum Moment M_x	10 in.-lbs.	1.1 Nm	10 in.-lbs.	1.1 Nm
Maximum Moment M_y	10 in.-lbs.	1.1 Nm	10 in.-lbs.	1.1 Nm
Maximum Moment M_z	10 in.-lbs.	1.1 Nm	10 in.-lbs.	1.1 Nm

†Capacities are per set of jaws and are not simultaneous

BASIC MODEL METRIC

RA-5 M - V

VITON® SEALS

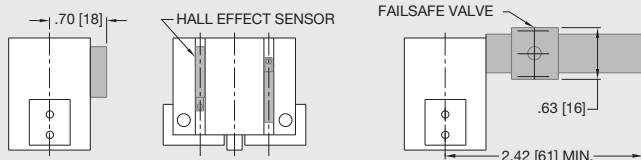
SENSOR ACCESSORIES

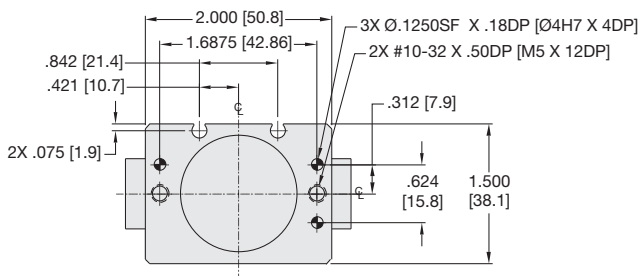
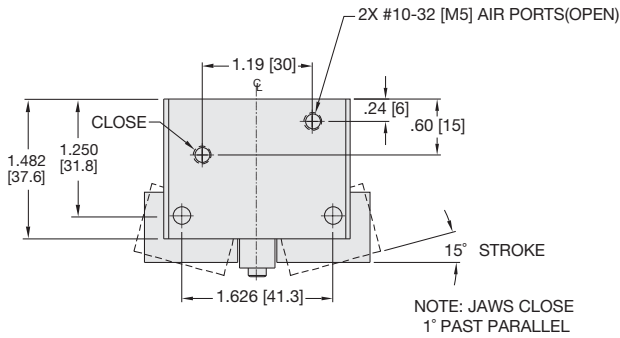
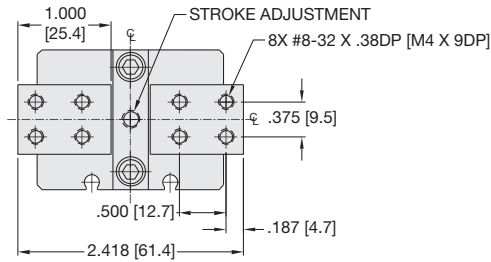
	ORDER #	QTY/UNIT
4mm NPN Magneto Resistive Sensor*	OHSN-017	1 or 2
4mm PNP Magneto Resistive Sensor*	OHSP-017	1 or 2
4mm NPN 90° Magneto Resistive Sensor*	OHSN-011	1 or 2
4mm PNP 90° Magneto Resistive Sensor*	OHSP-011	1 or 2
Quick Disconnect 2 Meter Cable Length*	CABL-010	1 or 2
Quick Disconnect 5 Meter Cable Length*	CABL-013	1 or 2

PNEUMATIC ACCESSORIES

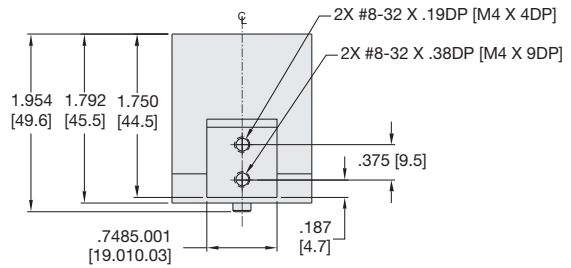
Fail Safe Valve (Imperial)	OFSV-001	1
Fail Safe Valve (Metric)	OFSV-004	1
Standard Seal Repair Kit	SLKT-022	1
Viton® Seal Repair Kit	SLKT-022V	1

*Sensor and cable sold separately.





Specifications	RA-6	RA-6M
Total Rated Grip Force F @ 100 psi, 7 bar4	4 lbs.	196 N
Stroke	15° of stroke for each finger	15° of stroke for each finger
Open Stroke Adjustment	15° of stroke for each finger	15° of stroke for each finger
Weight	0.69 lbs.	0.31 Kg
Pressure Range	40-100 psi	3-7 bar
Cylinder Bore Ø	1.250 in.	31.8 mm
Displacement	0.300 in ³	4.9 cm ³
Temperature Range		
Standard Seals	-30°~180° F	-35°~80° C
Viton® Seals	-20°~300° F	-30°~150° C
Actuation	0.11 sec.	0.11 sec.
Accuracy	±0.005 in.	±0.13 mm
Repeatability	±0.003 in.	±0.08 mm
Valve required to actuate	4-way, 2-position	

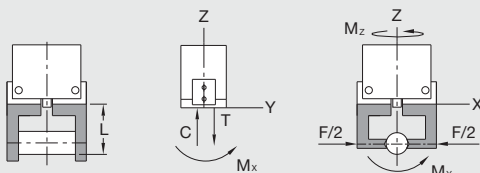
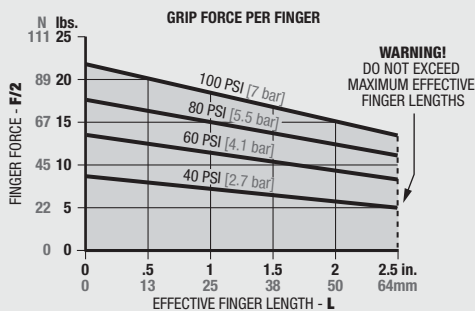


UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.0005" or [±.013mm]
Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]

Loading Information

How to Order: (Order Accessories separately from Basic Model)



Loading Capacity†

	Static		Dynamic	
	Imperial	Metric	Imperial	Metric
Maximum Tensile T	20 lbs.	89 N	20 lbs.	89 N
Maximum Compressive C	20 lbs.	89 N	20 lbs.	89 N
Maximum Moment M_x	20 in.-lbs.	2.3 Nm	20 in.-lbs.	2.3 Nm
Maximum Moment M_y	20 in.-lbs.	2.3 Nm	20 in.-lbs.	2.3 Nm
Maximum Moment M_z	20 in.-lbs.	2.3 Nm	20 in.-lbs.	2.3 Nm

†Capacities are per set of jaws and are not simultaneous

BASIC MODEL METRIC

RA-6 M - V

VITON® SEALS

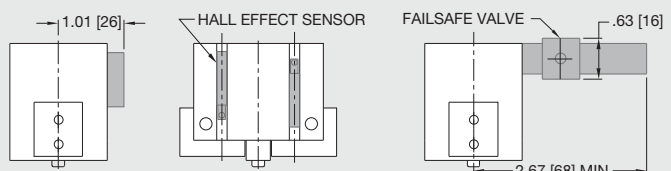
SENSOR ACCESSORIES

	ORDER #	QTY/UNIT
4mm NPN Magneto Resistive Sensor*	OHSN-017	1 or 2
4mm PNP Magneto Resistive Sensor*	OHSP-017	1 or 2
4mm NPN 90° Magneto Resistive Sensor*	OHSN-011	1 or 2
4mm PNP 90° Magneto Resistive Sensor*	OHSP-011	1 or 2
Quick Disconnect 2 Meter Cable Length*	CABL-010	1 or 2
Quick Disconnect 5 Meter Cable Length*	CABL-013	1 or 2

PNEUMATIC ACCESSORIES

Fail Safe Valve (Imperial)	OFSV-001	1
Fail Safe Valve (Metric)	OFSV-004	1
Standard Seal Repair Kit	SLKT-023	1
Viton® Seal Repair Kit	SLKT-023V	1

*Sensor and cable sold separately.

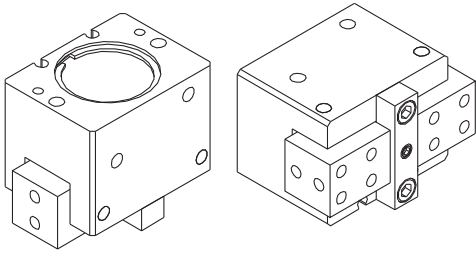


RA-5 & 6 SERIES EXPLODED VIEW



RA 5 & 6
SERIES
MAINTENANCE

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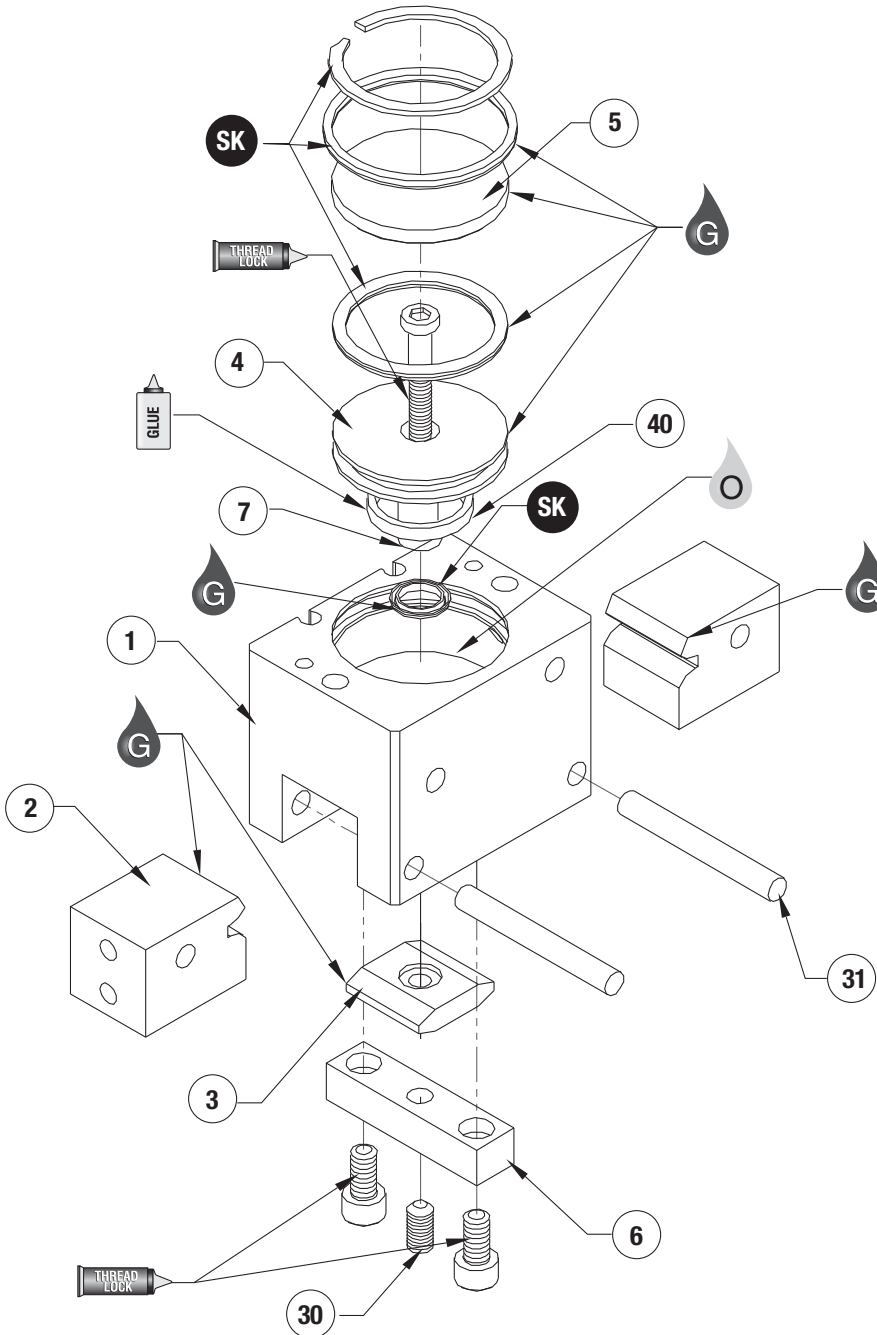
Item	Qty	Name
01	1	Body
02	2	Jaw
03	1	Wedge
04	1	Piston
05	1	Cap
06	1	Plate, Adjustment
30	1	SSS, Nylon Patch, Cup Point
31	2	Dowel Pin
40	2	Magnet

NOTE: Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.

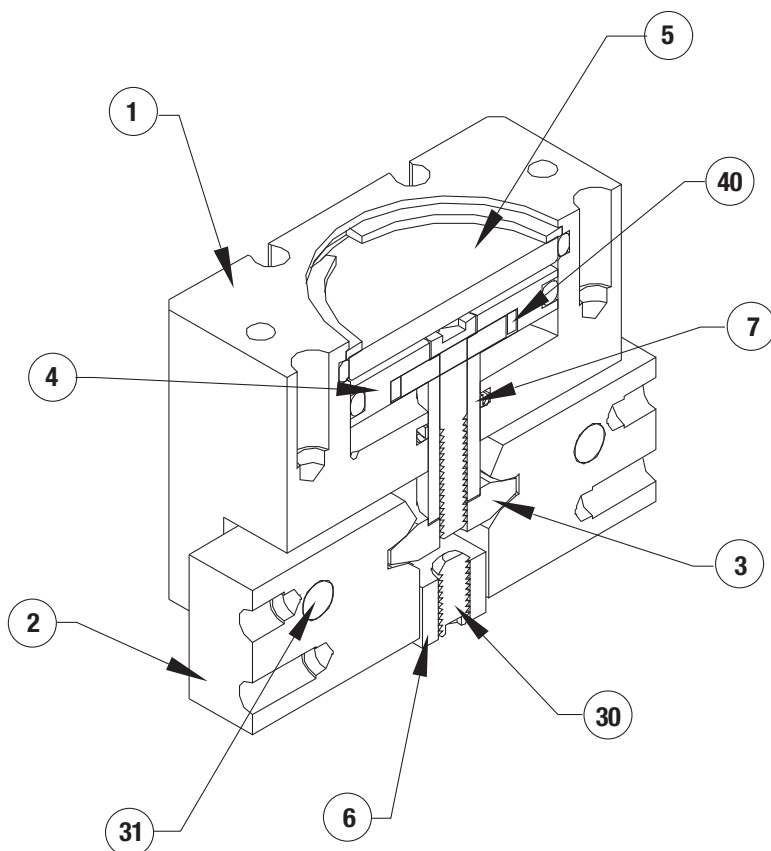
Assembly Procedure

- 1) Lubricate and install seals.
- 2) Glue magnet into piston.
- 3) Install piston and wedge.
- 4) Install jaws (press dowel pins through fingers from air port side).
- 5) Install cap and retaining ring.
- 6) Install adjustment plate.
- 7) Set adjustment screw for desired stroke.

SK Seal Repair Kit Order #'s See Product Data Sheets



Seal Kit Items	Thread Locker	Krytox™ Lubricant	Lightweight Machine Oil	Teflon™ Based Grease	Super Bonder	Third Angle Projection



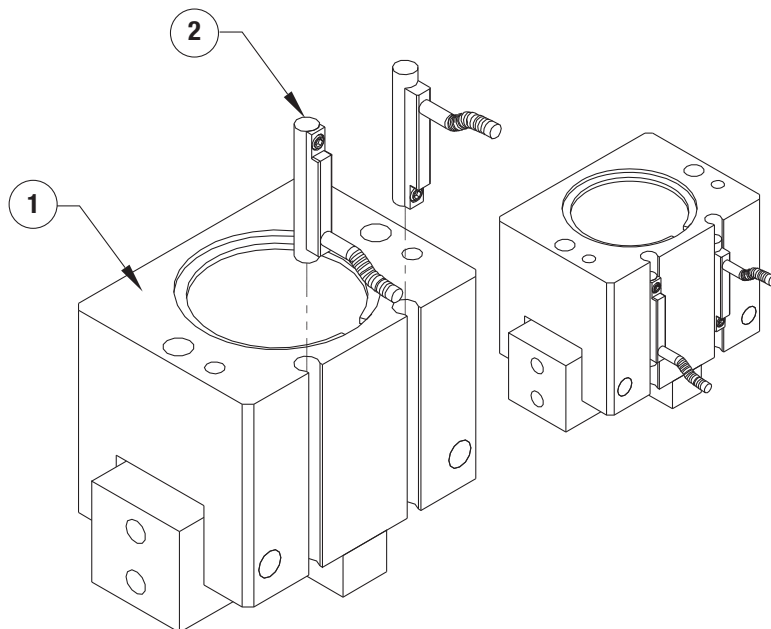
Item	Qty	Name
01	1	Body
02	2	Jaw
03	1	Wedge
04	1	Piston
05	1	Cap
06	1	Plate, Adjustment
30	1	SSS, Nylon Patch, Cup Point
31	2	Dowel Pin
40	2	Magnet

NOTE: Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.

RA 5 & 6
SERIES
MAINTENANCE

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ACCESSORY INSTALLATION & ADJUSTMENT INSTRUCTIONS



Installation

- 1) Install sensors in profile slots as shown.
- 2) Set with integrated set screw.

SK

Seal Kit Items



Thread Locker



Krytox™ Lubricant



Lightweight Machine Oil



Teflon™ Based Grease



Super Bonder



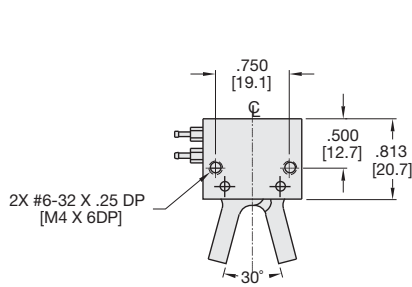
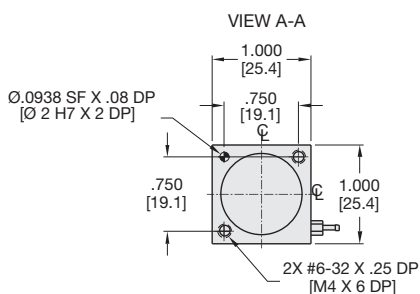
Third Angle Projection

ANGULAR GRIPPER RA-10M CAM DRIVEN SERIES

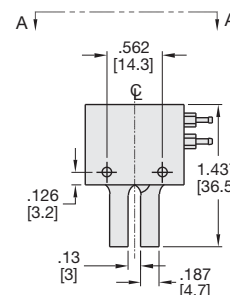
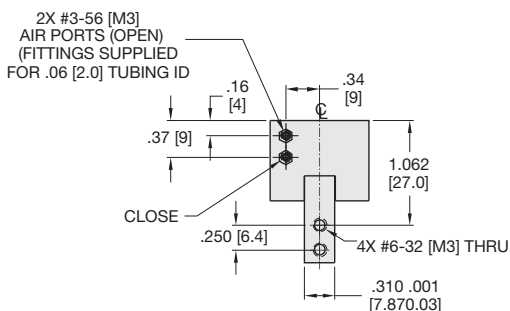


RA SERIES

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NOTE: JAWS CLOSE 1° PAST PARALLEL



Specifications

	RA-10	RA-10M
Total Rated Grip Force F @ 100 psi, 7 bar	16 lbs.	71 N
Stroke	15° of stroke for each finger	
Weight	0.063 lbs.	0.03 Kg
Pressure Range	40-100 psi	3-7 bar
Cylinder Bore Ø	.813 in.	20.6 mm
Displacement	0.026 in ³	.4 cm ³
Temperature Range		
Standard Seals	-30°~180° F	-35°~80° C
Viton® Seals	-20°~300° F	-30°~150° C
Actuation Time	0.08 sec.	0.08 sec.
Accuracy	±0.003 in.	±0.08 mm
Repeatability	±0.001 in.	±0.03 mm
Valve required to actuate	4-way, 2-position	

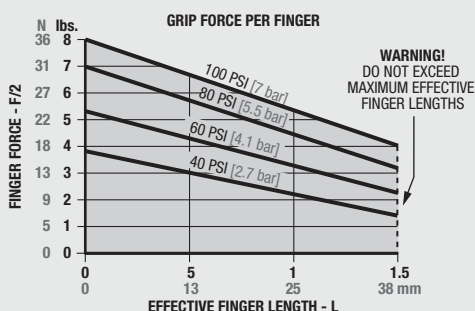
UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

Symbol	Imperial in.	Metric [mm]
	0.00 = ±.01	[0.] = ±.25
	0.000 = ±.005	[0.0] = ±.13
	0.0000 = ±.0005	[0.00] = ±.013

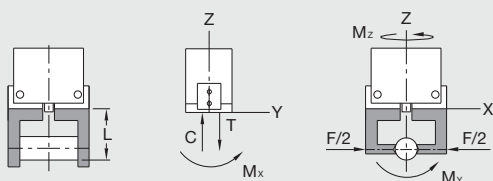
Dimensions are symmetrical about centerline
Third Angle Projection
All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.0005" or ±.013mm
Metric Threads Course Pitch

Loading Information

How to Order: (Order Accessories separately from Basic Model)



BASIC MODEL METRIC
RA-10 M - V
VITON® SEALS



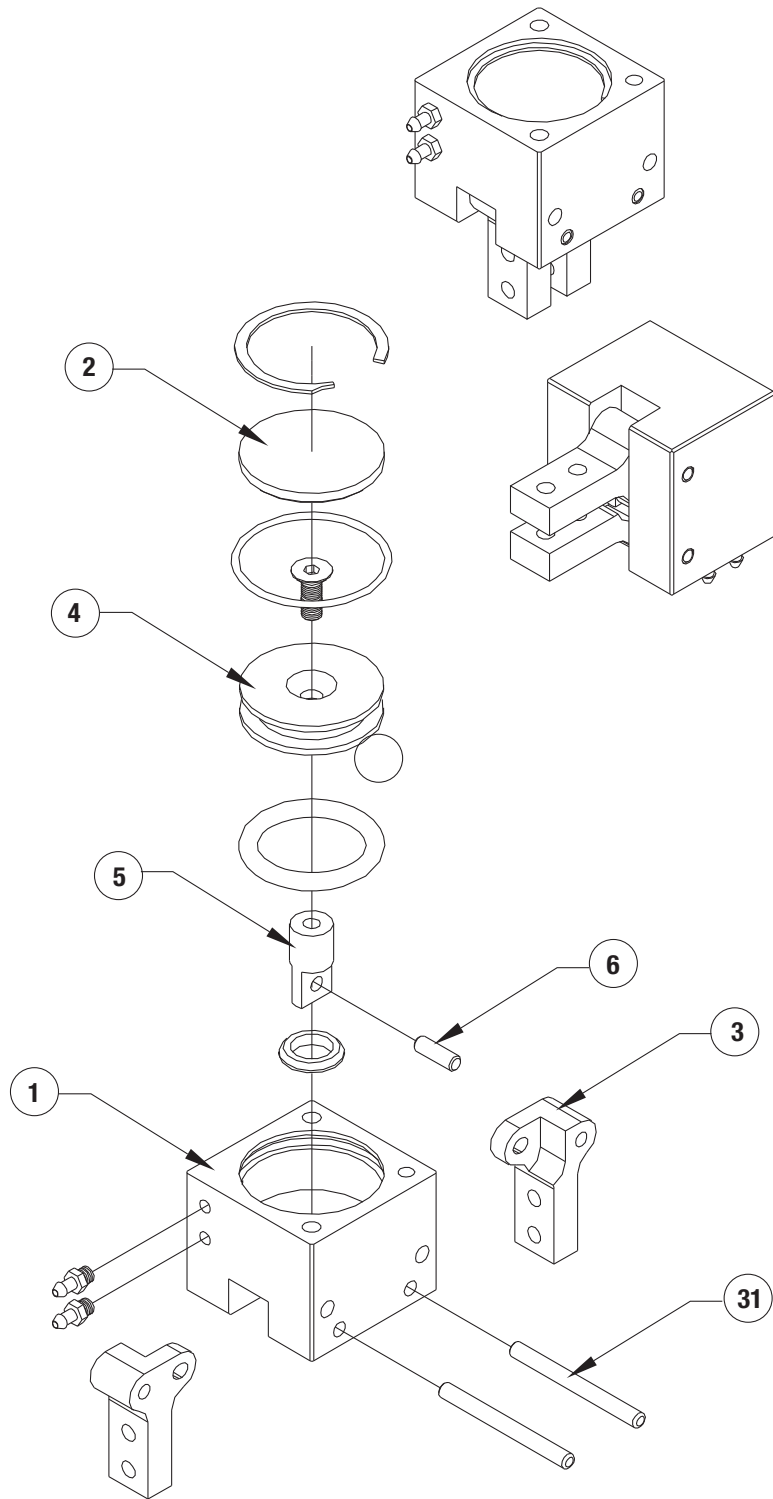
PNEUMATIC ACCESSORIES

	ORDER #	QTY/UNIT
Standard Seal Repair Kit	SLKT-018	1
Viton® Seal Repair Kit	SLKT-018V	1

Loading Capacity†

	Static		Dynamic	
	Imperial	Metric	Imperial	Metric
Maximum Tensile T	5 lbs.	22 N	5 lbs.	22 N
Maximum Compressive C	5 lbs.	22 N	5 lbs.	22 N
Maximum Moment M_x	5 in.-lbs.	0.6 Nm	5 in.-lbs.	0.6 Nm
Maximum Moment M_y	5 in.-lbs.	0.6 Nm	5 in.-lbs.	0.6 Nm
Maximum Moment M_z	5 in.-lbs.	0.6 Nm	5 in.-lbs.	0.6 Nm

†Capacities are per set of jaws and are not simultaneous



Item	Qty	Name
01	1	Body
02	1	Cap
03	2	Jaw
04	1	Piston
05	1	Shaft
06	1	Pin
31	2	Dowel Pin

NOTE: Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.

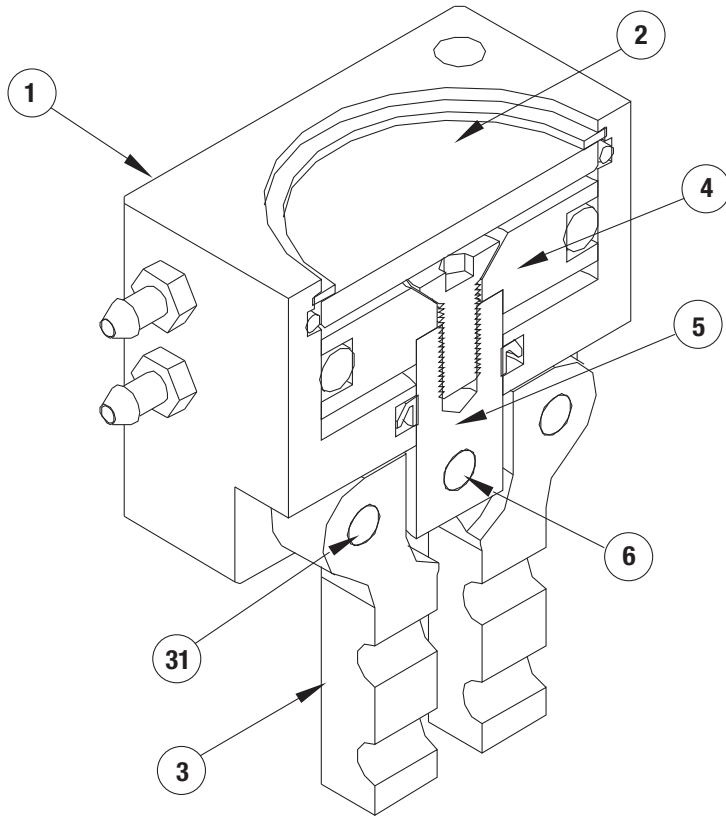
SK Seal Repair Kit Order #'s See Product Data Sheets

<p>SK Seal Kit Items</p>	<p>THREAD LOCKER Thread Locker</p>	<p>KRYTOX Lubricant</p>	<p>O Lightweight Machine Oil</p>	<p>G Teflon™ Based Grease</p>	<p>GLUE Super Bonder</p>	<p>Third Angle Projection</p>
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RA-10 SERIES ASSEMBLED VIEW



RA-10 SERIES
MAINTENANCE
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Item	Qty	Name
01	1	Body
02	1	Cap
03	2	Jaw
04	1	Piston
05	1	Shaft
06	1	Pin
31	2	Dowel Pin

NOTE: Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.



Seal Kit Items



Thread Locker



Krytox™ Lubricant



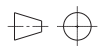
Lightweight Machine Oil



Teflon™ Based Grease



Super Bonder



Third Angle Projection



DESIGN NOTES

RA SERIES

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