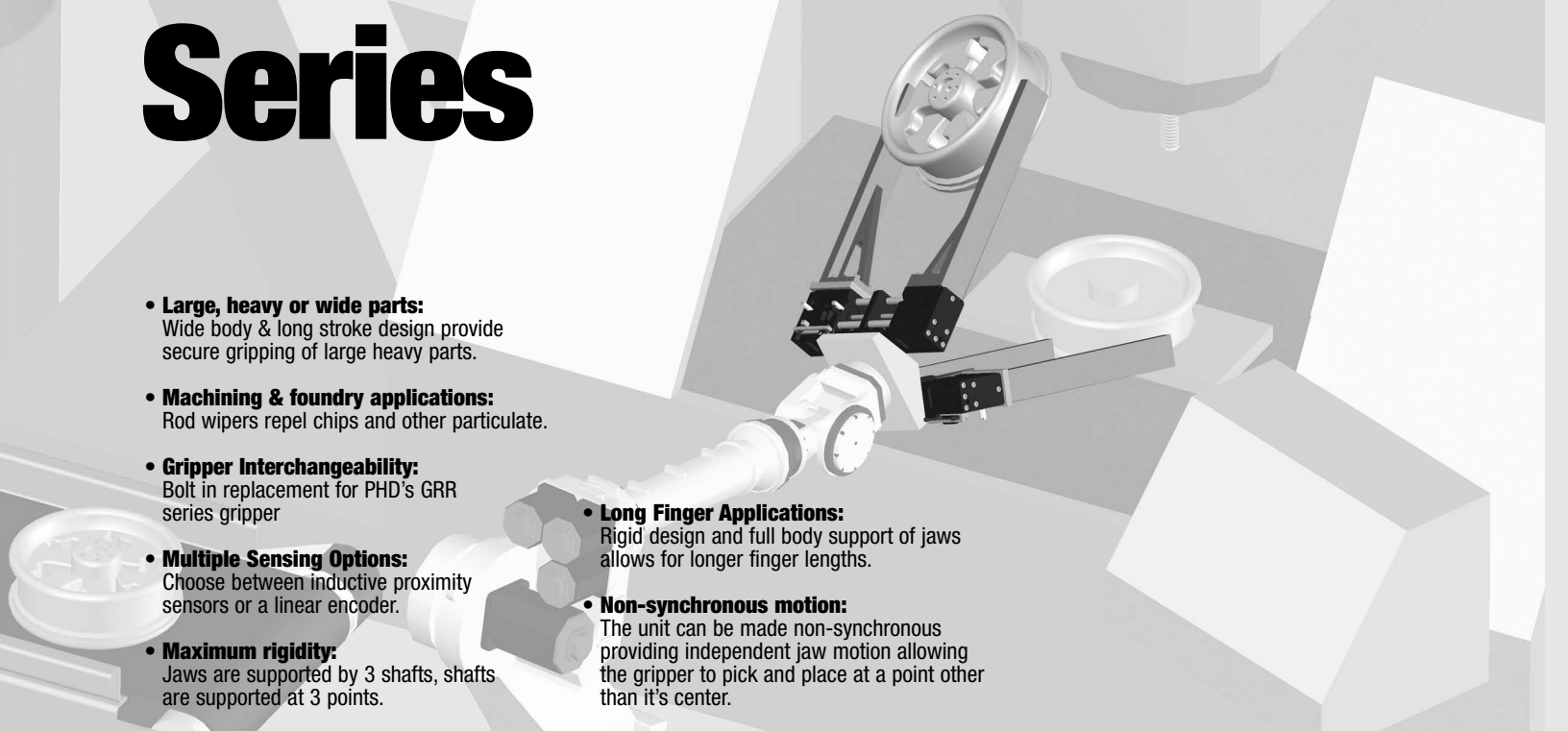
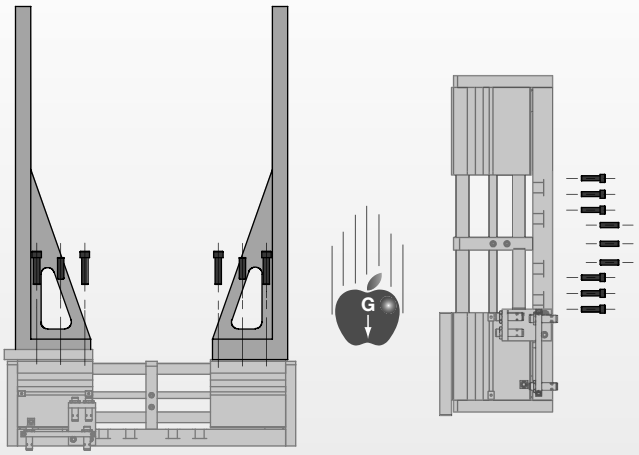
Parallel Grippers - RPR Gladiator Series



- **Large, heavy or wide parts:** Wide body & long stroke design provide secure gripping of large heavy parts.
- **Machining & foundry applications:** Rod wipers repel chips and other particulate.
- **Gripper Interchangeability:** Bolt in replacement for PHD's GRR series gripper
- **Multiple Sensing Options:** Choose between inductive proximity sensors or a linear encoder.
- **Maximum rigidity:** Jaws are supported by 3 shafts, shafts are supported at 3 points.
- **Long Finger Applications:** Rigid design and full body support of jaws allows for longer finger lengths.
- **Non-synchronous motion:** The unit can be made non-synchronous providing independent jaw motion allowing the gripper to pick and place at a point other than it's center.

Mounting Information:

Grippers can be mounted & operated in any orientation



Fingers mount on the bottom of the jaws with screws and dowel pins.

Body mounts with screws from behind and slip fit dowel pin holes for accuracy.

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	
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

Product Features

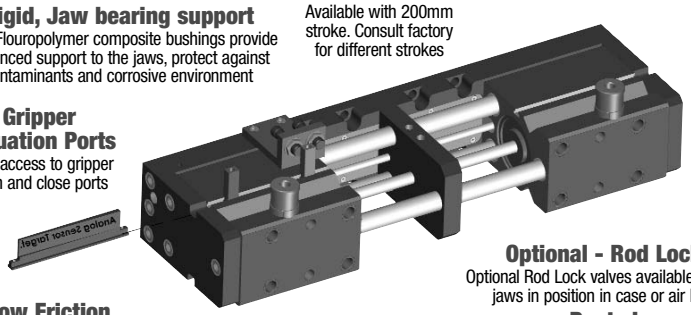
Rack & Pinion Synchronizer
Rack and Pinion Synchronizer built inside the back plate for protection against contaminants and harsh environment. Optional non-synchronized gripper available.

Optional - Gripper Open and Gripper Close Inductive Sensors
Optional Inductive sensors available to detect gripper open and close positions

Stroke
Available with 200mm stroke. Consult factory for different strokes

Rigid, Jaw bearing support
Four, Flouropolymer composite bushings provide enhanced support to the jaws, protect against contaminants and corrosive environment

Gripper Actuation Ports
Easy access to gripper open and close ports



Optional - Rod Lock
Optional Rod Lock valves available to lock jaws in position in case or air loss

Pented
Rod lock design integral inside the jaw provide provide protection against contaminants.

Low Friction Seals and Wipers
Pressure energized seals inside jaws offer minimum breakaway friction and enhanced cycle time. Other optional seals available for higher temperature and specific chemical compatibility

Enhanced Piston Tube
Ground, stainless steel piston tube for superior wear and corrosion resistsance

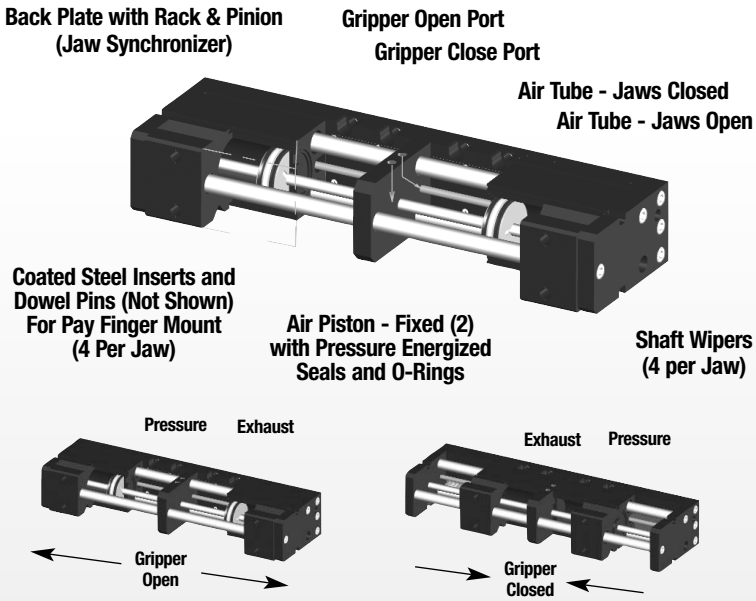
Superior Jaw Support
Three, One piece, Case hardened, Precision ground linear guides provide higher stiffness and precision guide to the Jaws

Optional - Jaw Position Analog sensors
Optional Analog sensors available to continuously detect jaw positions along the stroke

Bearing and Shaft Protection
Four shaft wipers provide continuous protection to the bearings inside the jaws

Simplified Finger Mounting
Large jaw configuration to accept heavy loads and equipped with dowel holes for precision assembly with fingers. The jaws are supplied with coated steel inserts for superior clamping force and corrosion resistance.

Operating Principle

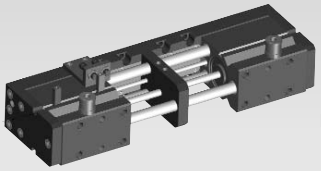


- Two jaws are equipped with linear bearings and supported on three precision ground shafts.
- Each of the jaws are also engaged with stationary piston assembly inside them.
- Each of the piston assemblies receive pressurized air via any one of the two air tubes. Depending upon the gripper port used, the corresponding air tube will direct the pressurized air to open or close the jaws.
- The jaws are mechanically synchronized with two racks and a pinion located in the back plate.
- The gripper is also available without rack and pinion in non-synchronous configurtion.
- This gripper is available with inductive sensors to detect jaw open and jaw closed positions.
- This gripper is also available with anolog sensor to detect jaw positions any where along the gripper stroke.
- This gripper is suitable for internal or external gripping and can be mounted in any orientation.

Style -RPR-63M Parallel Gripper

Size -63M-200

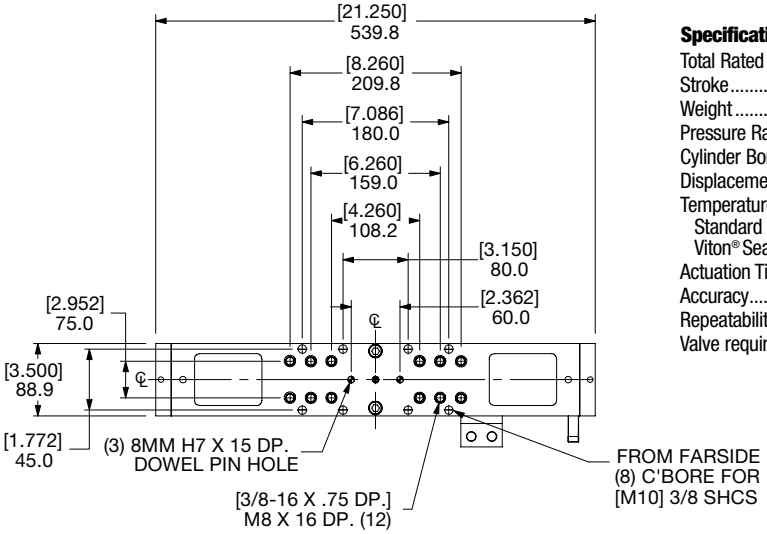
	RPR-63M-200	
Stroke:	7.87 in.	200 mm
Grip Force:	800 lbs.	3520 N
Weight:	35 lbs.	15.8 Kg



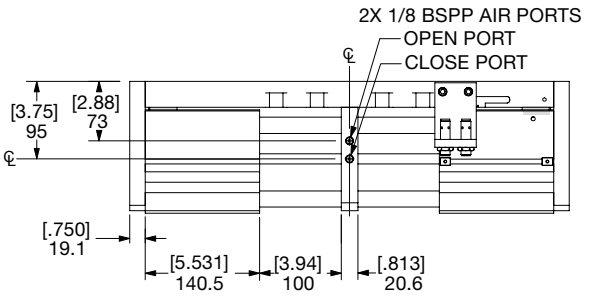
See Page 1.224

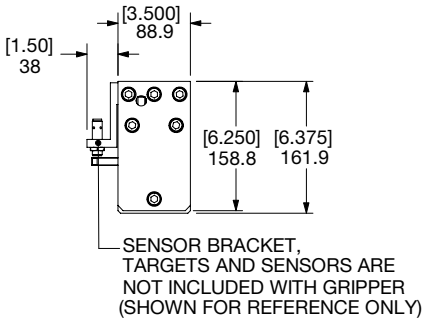
Note: Additional strokes availble upon request. Contact DE-STA-CO for more information.

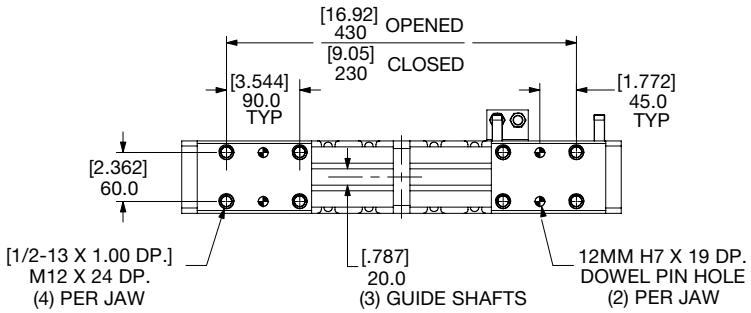
PARALLEL GRIPPER RPR
GLADIATOR SERIES



Specifications	RPR-63	RPR-63M
Total Rated Grip Force **F** @ 100 psi, 7 bar	800 lbs.	3520 N
Stroke	7.87 in.	200 mm
Weight	35 lbs.	15.8 Kg
Pressure Range	40-100 psi	3-7 bar
Cylinder Bore Ø	2.48 in.	63 mm
Displacement	38.2 in³.	623 cm³
Temperature Range		
Standard Seals	-30°~180° F	-35°~80° C
Viton® Seals	-20°~300° F	-30°~150° C
Actuation Time	1.3 sec.	1.3 sec.
Accuracy	±0.005 in.	±0.13 mm
Repeatability	±0.002 in.	±0.05 mm
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	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]

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

BASIC MODEL | METRIC | STROKE | SYNCHRONIZATION | VITON SEALS | HARDWARE | ROD LOCK

RPR-63 M - 200 - NS - V - S - R2

BASIC MODEL	**RPR-63**	
METRIC	**M**	
STROKE	**200**	(consult factory for additional strokes)
SYNCHRONIZATION	__	Leave Blank for Synchronous (standard)
	NS	Non-Synchronized
VITON® SEALS	__	Leave Blank for Buna (standard)
	V	High Temperature Viton® Seals
HARDWARE	__	Leave Blank for Steel (standard)
	S	Stainless Steel
ROD LOCK	__	Leave Blank for No Rod Lock (standard)
	R1-RS	One Rod Lock (Right Side)
	R1-LS	One Rod Lock (Left Side)
	R2	Two Rod Locks

SAMPLE ORDER: RPR-63M-150-NS-V-S-R2

Ex: RPR-63M, Metric Gripper, 150 Stroke, Non Synchronized, Viton® Seals, Stainless Steel, 2 Rod Locks

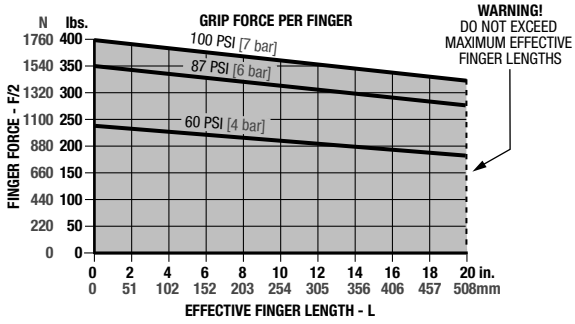
SENSOR ACCESSORIES	ORDER #	QTY/UNIT
12 mm Sensor Mounting Kit (Mounts 2 Inductive sensors)	**OSMK-131**	**1**
12 mm Inductive NPN Sensor with Quick Disconnect	**OISN-017**	**1 or 2**
12 mm Inductive PNP Sensor with Quick Disconnect	**OISP-017**	**1 or 2**
Straight Quick Disconnect Cable (2M cable length)**	**CABL-014**	**1 or 2**
Straight Quick Disconnect Cable (5M cable length)**	**CABL-018**	**1 or 2**
Analog Sensor	**OISA-001**	**1**
Analog Sensor cable with Quick Disconnect (5M cable length)	**CABL-045**	**1**
Analog sensor Mounting Kit	**OSMK-132**	**1**

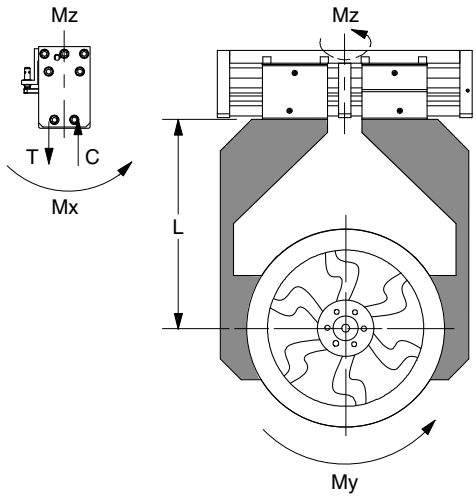
PNEUMATIC ACCESSORIES	ORDER #	QTY/UNIT
Fail Safe Valve 1/4 NPT (Imperial)	**OFSV-003**	**1**
Fail Safe Valve 1/4 BSPP (Metric)	**OFSV-006**	**1**
Plumbing Adapter 1/4 BSPP Male to 1/4 NPT Female	**PLFT-024**	**1 or 2**
Buna-N Seal Repair Kit	**SLKT-452**	**1**
Viton Seal Repair Kit	**SLKT-453**	**1**

**Sensor and cable sold separately

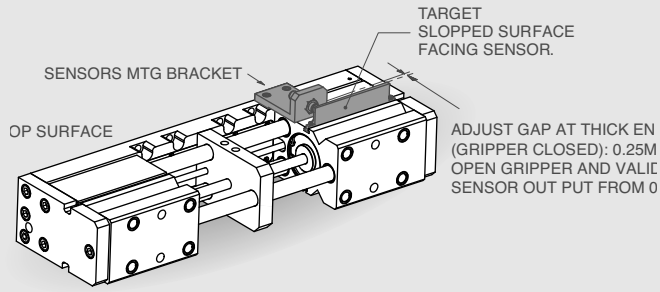
Loading Capacity:

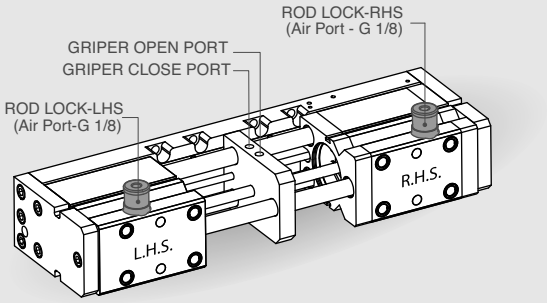
Maximum Tensile **T**	3500 lbs. [15570 N]
Maximum Compressive **C**	3500 lbs. [15570 N]
Maximum Moment $\mathbf{M_x}$	7500 in.-lbs. [825 Nm]
Maximum Moment $\mathbf{M_y}$	9000 lbs. [990 N]
Maximum Moment $\mathbf{M_z}$	7500 in.-lbs. [825 Nm]
Maximum Effective Finger Length **L**	20 in. [500mm]





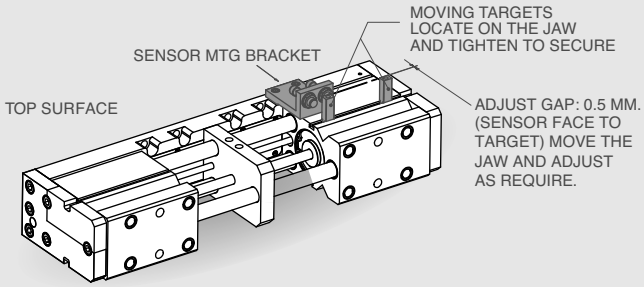
Accessory Mounting Technical Data





Analog Sensor

- Used in applications where jaw position information is required along the stroke
- Sensor is mounted on a stationary bracket and the target is mounted on the moving jaw. The target has 'slopped' surface facing the sensor. Thus when the target moves with the Jaw, it creates varying air gap between the slopped surface and the sensor
- The sensor is supplied with 24 vdc and generates 0~10 vdc signal as a function of the air gap, as described earlier. Thus the sensor outputs 0~10 vdc signal as a function of jaw position



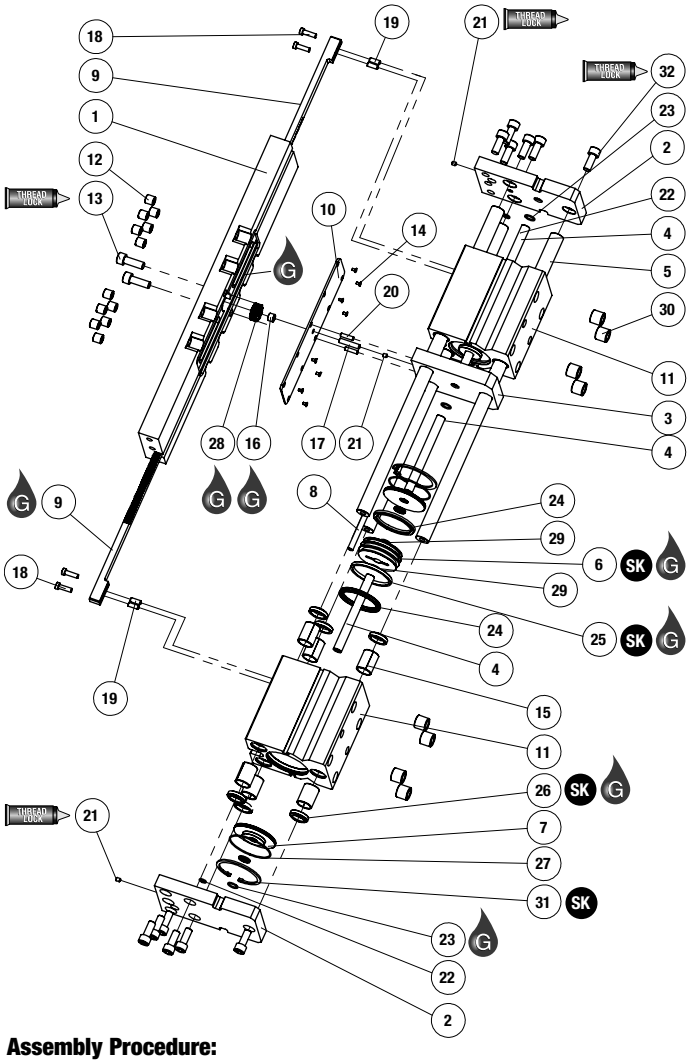
Inductive Sensor: Gripper Open/Close

- Used in applications where jaw open and closed positions must be detected as process requirements
- PNP and NPN inductive sensors are available
- The two inductive sensors are stationary and mounted with a bracket directly to the back plate
- The target is mounted on the moving jaw
- The sensor cable has quick disconect connector at the sensor end and open pig tail wires at the otherend. Cable available in two lengths - 2M & 5M
- Adjustments required after assembly:
- Air gap between sensor face and moving target to 0.5 mm and fine adjust as required. Tighten the lock nuts on the sensors to avoid loosensing under application.
- Location of the moving target on the jaw to suit stroke

Rod Lock (Fail Safe Valve)

- Used in applications where the part being gripped not be dropped if the air pressure is lost
- Mounts directly to the jaw. (Must use Jaw with Rod lock option)
- Available options:
  - LHS Rod Lock
  - RHS Rod Lock
  - Two Rod locks. (As shown)
- Holding force: 1400 N (318 Lbf) max per rod lok.
  Note: If holding forces are exeeded, slippage may occur.
- Rod lock 'clamp time' when air loss:
  - 250 ms..... ref
  - Will greatly depend upon flow coefficient of air exhaust line.
  - (Line I.D., Length, Qty & Type of bends, other air circuit elements like valve, mufflers ... , and as apply)
- Air port: G 1/8
  Note: Must be connected to fully exhaused line when air pressure is lost
- Air specifications:
  - Air Supply pressure: 10 bar (147 psig) max.
  - Minimum release pressure: 3 bars (44.1 psig)
- Air quality:
  - Filteration: 40 micron, min.
  - Non Lubricated, dry air.

RPR SERIES EXPLODED VIEW



Item	Qty	Name
01	1	Base Plate
21	2	End Block
03	1	Mid Block
04	4	Piston Tube
05	3	Guide Shaft
06	2	Piston
07	4	Cap
08	2	Cross Tube
09*	2	Rack
10	1	Cover
11*	2	Jaw
12	12	EZ-Lock Insert- Back Plate
13	2	Base Plate MTG Screws
14	8	Cover MTG Screws
15	12	Composite BushingS
16*	1	Needle Bearing
17*	1	Needle Bearing MTG Dowel
18	4	Rack MTG Screw
19*	4	Rack MTG Dowel
20	2	Cover MTG DoweL
21	3	Air Passage Plug - Set Screw
22	4	Cross Tube O-Ring
23	4	Piston Tube O-Ring
24	4	U-Cup Piston
25	2	Wear Band
26	12	Shaft Wiper
27	4	Cap O-Ring
28*	1	Pinion
29	4	Piston Tube O-Ring- Inner
30	8	EZ-Lock Insert- Jaws
31*	4	Cap Retaining Ring
32	12	End Block MTG Screw

***Notes:**

1) Contact De-Sta-Co Sales Department for complete spare parts list with order number and process.
2) Item # 31 will be different between Imperial and Metric grippers. All other features will remain same.
3) Item numbers #9, #16, #17, # 19, and #28, are for Synchronous gripper only.
4) Item # 11 will be different for gripper with Rod lock options.
5) For High Temperature option, all O-rings will be of viton material.
6) For Corrosion resistant option, all fasteners will be stainless steel.

Note: Customer to plumb the rod lock valves to his safety circuit.

Assembly Procedure:

A. Standard - Synchronous Gripper

1) Lubricate and install O-rings in the two end blocks and in the middle block. Install set screws (air plug, Item 21) into the two end blocks and the middle block.
2) Assemble RHS and LHS Jaws E-Z locks, bushings, o-rings and piston assembly
3) Assemble RHS jaw assembly to the three guide shafts. Assemble RHS end block to the guide shafts.
4) Assemble the mid block and assemble RHS piston tubes and RHS cross tubes.
5) Assemble the LHS jaw to the three guide shafts. Install the piston tubes and the Cross tubes as described earlier. Install LHS end block and install it's fasteners, `snug tight' to the three guide rods. Verify that the two jaws can traverse along the guide bars without any binding.
6) Install the cover to the middle block by locating it with the dowel pins above. Install the racks to the jaws by first locating with the dowel pins and then with fasteners. Lubricate the needle bearing, install it into the pinion and install this assembly to the middle dowel pin.
7) Lubricate the racks, the pinion and inside of the grooves of the back plate. Locate the back plate between the two end blocks and carefully engage it to the three dowel pin, protruding out of the middle block. Install the fasteners and snug tight to secure the back plate to the middle plate and to the end blocks. Install fastensers for the cover and tighten them.
8) Assembly validation and torque the fastener
   A) Torque all the fasteners to their specification.
   B) Connect 40 psig air to the gripper ports. Cycle the gripper open/close and verify that the jaw motions are smooth, free of binding, noise and without air leak.
   C) Increase air pressure to 100 psig. Cycle the gripper open/close and verify that the jaw motions are smooth, free of binding, noise and wituout air leak.

B. Standard - Non Synchronous Gripper

For Non-Synchronous gripper, DO NOT install items #9, #16, #17, #19 and #28.

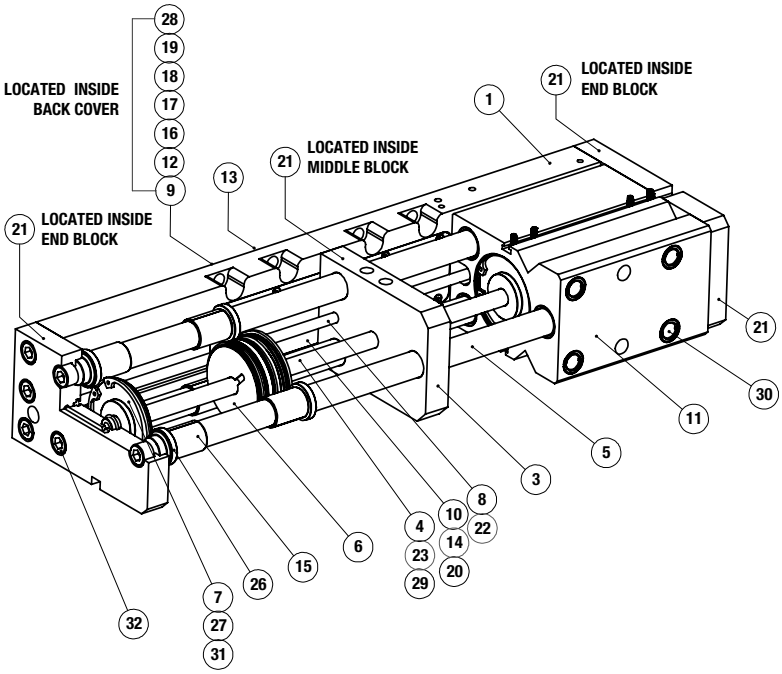
C. Gripper with ROD LOCK option

Note: Gripper with Rod Lock option will use different item #11 and will use Rod lock valve.

A) Assemble the jaws to the guide shafts with Rod Lock.
B) All other steps, as above.

SK — Seal Kit Items
THREAD LOCK — Thread Locker
KRYTOX — Krytox™ Lubricant
O — Lightweight Machine Oil
G — Teflon™ Based Grease
GLUE — Super Bonder
Third Angle Projection

RPR SERIES ASSEMBLED VIEW



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13	2	Base Plate MTG Screws
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17*	1	Needle Bearing MTG Dowel
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21	3	Air Passage Plug - Set Screw
22	4	Cross Tube O-Ring
23	4	Piston Tube O-Ring
24	4	U-Cup Piston
25	2	Wear Band
26	12	Shaft Wiper
27	4	Cap O-Ring
28*	1	Pinion
29	4	Piston Tube O-Ring- Inner
30*	8	EZ-Lock Insert- Jaws
31	4	Cap Retaining Ring
32	12	End Block MTG Screw

***Notes:**

1) Contact De-Sta-Co Sales Department for complete spare parts list with order number and prices.
2) For Synchronous gripper Items #9, #16, #17, #19 & #28 are installed in back plate.
3) For Metric gripper, item# 30 will be with metric threads. Other features remain same as in Imperial version.
4) For High Temperature option all O-rings will be of Viton material.
5) For Corrosion environment, all fasteners will be of stainless steel material.
6) For Rod-lock option item # 11 will be intrgrated with Rod-lock unit.

Note: Customer to provide and plumb their pneumatic safety circuitry to vent Rod-lock unit in case of air loss.