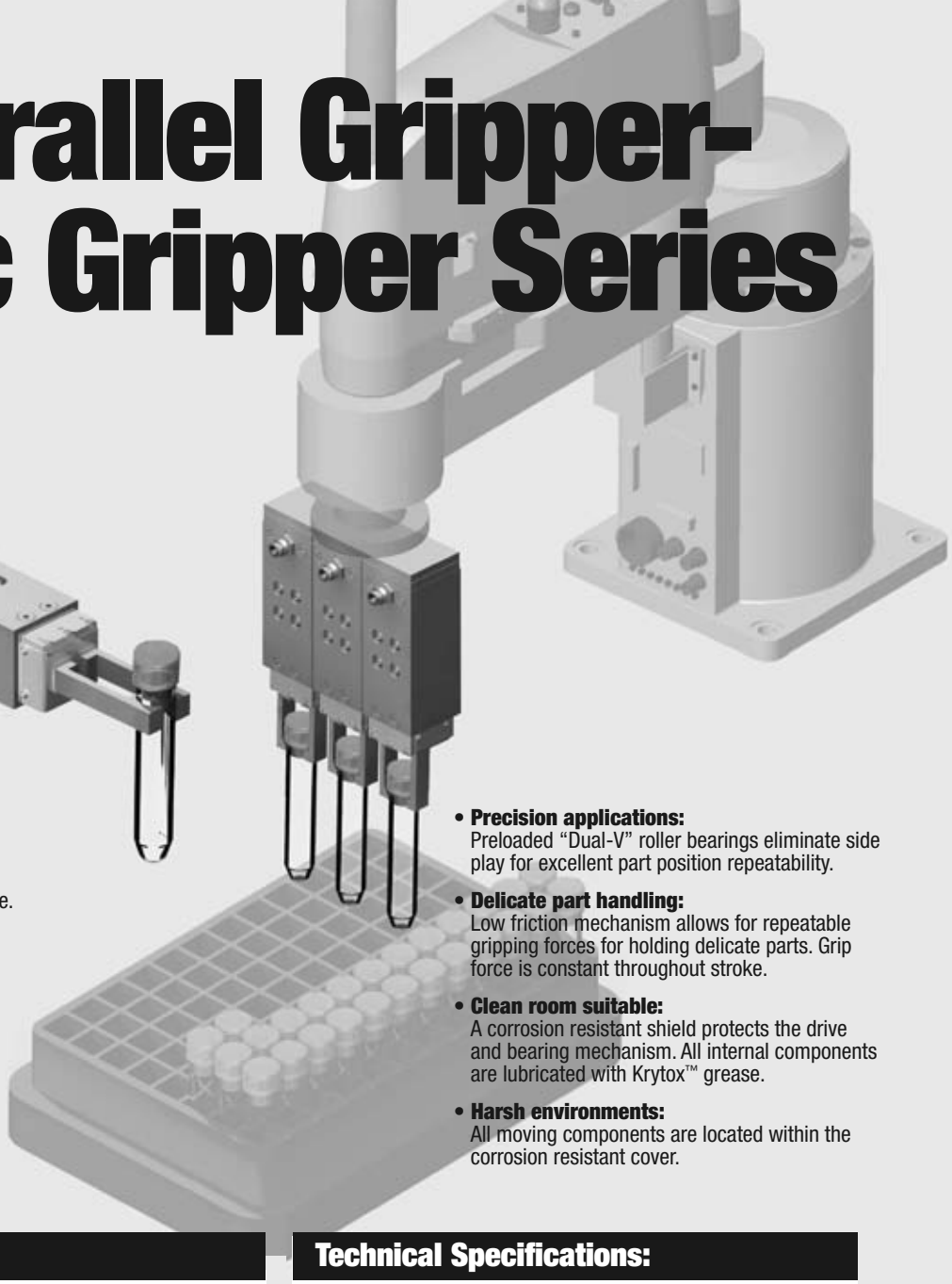
# RPE Parallel Gripper-Electric Gripper Series



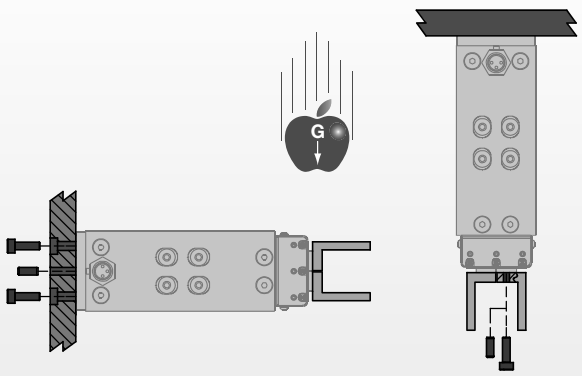
- **Failsafe Operation:**
  Spring closed feature allows for full grip force during power off conditions.
- **Electrically Actuated:**
  Requires simple 24VDC pulsed signal. **No programmable or expensive controller required.**
- **Sensing:**
  Adjustable inductive proximity sensors available.
- **Low System Impact:**
  Easily integrated into current engineering and manufacturing processes.
- **Miniature size:**
  Compact design allows for gripping small parts in small spaces.

- **Precision applications:**
  Preloaded "Dual-V" roller bearings eliminate side play for excellent part position repeatability.
- **Delicate part handling:**
  Low friction mechanism allows for repeatable gripping forces for holding delicate parts. Grip force is constant throughout stroke.
- **Clean room suitable:**
  A corrosion resistant shield protects the drive and bearing mechanism. All internal components are lubricated with Krytox™ grease.
- **Harsh environments:**
  All moving components are located within the corrosion resistant cover.

Patent Pending.
The RPE is CE marked.

## Mounting Information:

**Gripper can be mounted and operated in any orientation**




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

Fingers attach to jaws with screws and locate with dowel pins

## Technical Specifications:

**Product Specifications**

| | |
|---|---|
| Voltage | **24 VDC** |
| Power Max. | **40 W** |
| Operating Temperature | **5° / 50° C (40° / 120°F)** |
| Protection Class | **IP54** |
| Clean Room | **100** |
| Clean Room with Scavenge Port* | **10** |

*Contact Tech Support.

**Maintenance Specifications**

| | |
|---|---|
| Field Repairable | **Yes** |

**Application Restrictions**

- Timing, power and load beyond specifications
- Suitable for external gripping only

# Product Features

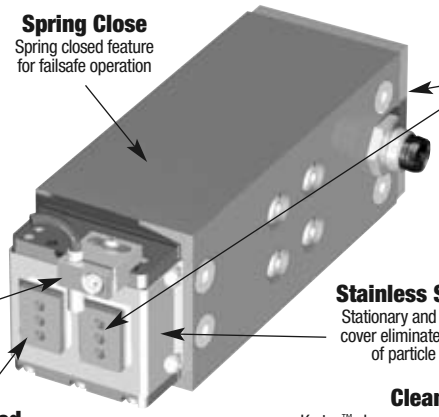
**Quality Components**
Body made from aluminum alloy with Teflon™ impregnated hardcoat anodize. Jaws, housing, and end cap nickel plated for use in medical parts handling applications.

**Energy Efficient**
Power is only required for 50 msec to open and close the gripper, no power is required to keep the part gripped or to keep the gripper fully opened.

**Adjustable Preloaded Bearings**
Adjustable preload screw allows for adjustment of preload on roller bearings. Bearings are preloaded for maximum support and zero side play.

**Spring Close**
Spring closed feature for failsafe operation

**Slip Fit Dowel Pin Holes**
Located in body and jaws



**Sensor Option**
Reads position of jaw (sold separately- see "How to order" Section for more info)

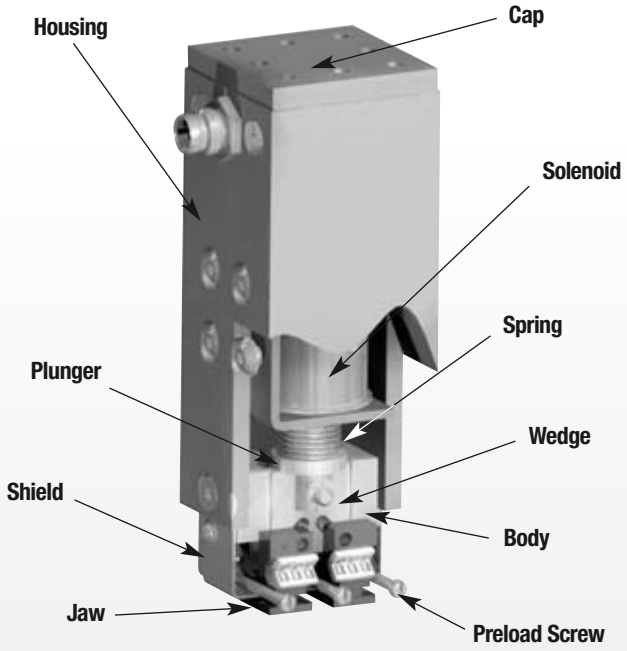
**Stainless Steel Cover**
Stationary and non-contacting cover eliminates the possibility of particle generation

**Clean Room**
Krytox™ clean-room grade lubricant standard. FDA approved lubricants available. Vacuum scavenge ports are available

**Hardened Plated Jaws**
For wear resistance and longer life

**Roller Bearings**
Patented Dual-"V" roller bearings provide low friction rolling motion and maximum rigidity for fingers

# Operating Principle




- A short power pulse releases the latching solenoid's plunger, allowing the spring to drive the wedge mechanism.
- The spring driven wedge drives the jaws towards one another to grip the part. No power is required to maintain grip force.
- To open the gripper, a short power pulse to the solenoid retracts the plunger to the latched position, which opens the jaws. No power is required to maintain the open position.
- Suitable for external gripping only.

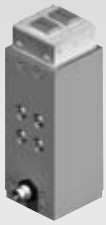
**U.S. Patent # 5,529,359. Other Patents Pending.**

## Style-RPE
## Size -100M

| | |
|---|---|
| **Style:** | **RPE-100M** |
| **Stroke:** | 4 mm (0.16 in) |
| **Grip Force:** | 5 N (1.1 lbs) |
| **Weight:** | 226 g (0.50 lbs) |

See Page 1.16

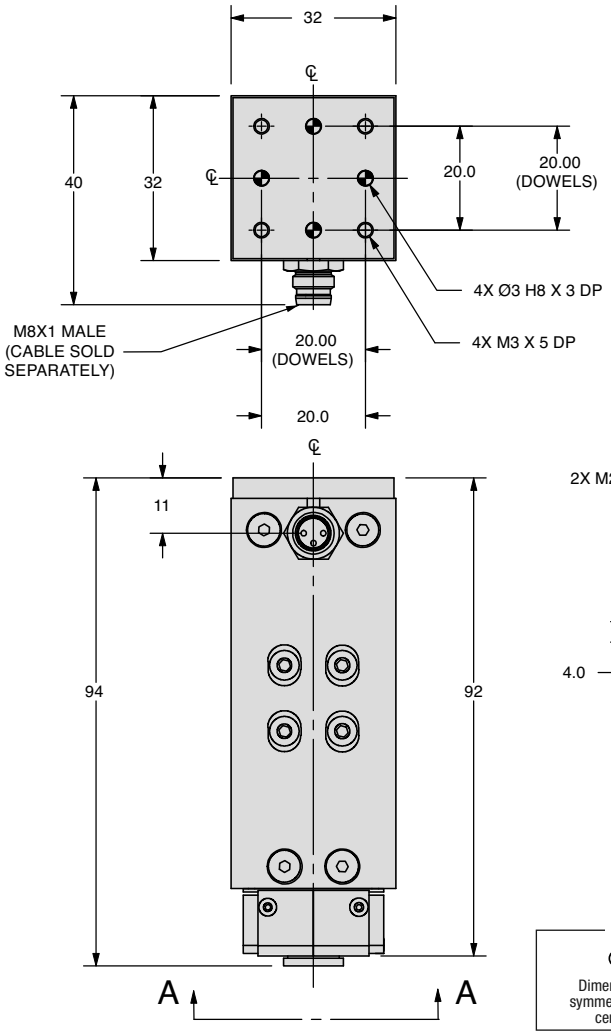
## Style-RPE
## Size -101M



| | |
|---|---|
| **Style:** | **RPE-101M** |
| **Stroke:** | 4 mm (0.16 in) |
| **Grip Force:** | 5 N (1.1 lbs) |
| **Weight:** | 226 g (0.50 lbs) |

See Page 1.16

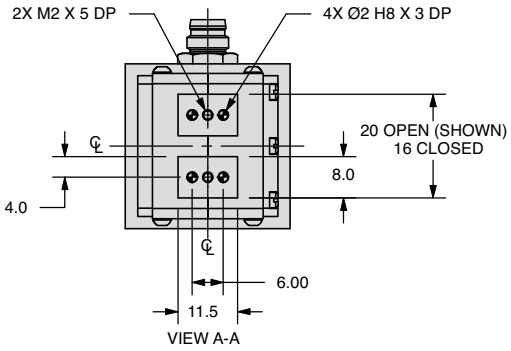
# PARALLEL GRIPPER RPE-100M/-101M
# E-GRIPPER SERIES



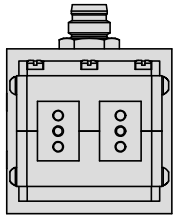

| Specifications | RPE-100M/-101M | |
|---|---|---|
| Maximum Finger Length | 50 mm | (1.9 in) |
| Stroke | 4 mm | (0.16 in) |
| Gripping Force in Closing | 5 N | (1.1 lbs) |
| Closing Time/Opening Time | 0.1 sec | (0.1 sec) |
| Repeatability | ± 0.02 mm | (0.0008 in) |
| Accuracy | ± 0.05 mm | (0.002 in) |
| Voltage | 24 VDC | |
| Power Max. | 40 Watts | |
| Min./Max Operating Temperature | 5° / 50° C | (40° / 120° F) |
| Protection Class | IP54 | |
| Clean Room | 100 | |
| Clean Room with Scavenge* | 10 | |
| Weight | 226 g | (0.50 lbs) |

*Contact Tech Support.

-101M




-100M

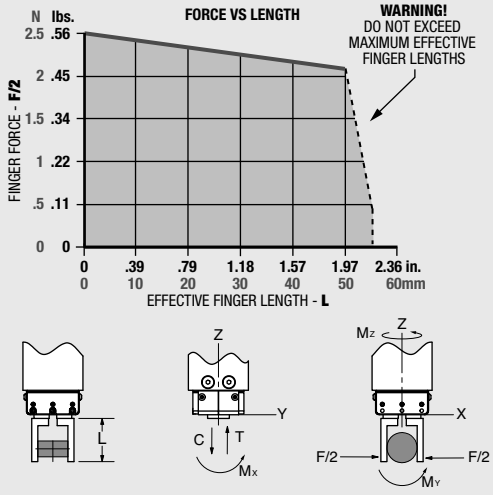


**UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW**

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

**Metric [mm]**
[0.] = [±.25]
[0.0] = [±.13]
[0.00] = [±.013]

## Loading Information




### Loading Capacity†

| | Static | | Dynamic | |
|---|---|---|---|---|
| Maximum Tensile **T** | 13 lbs | [59 N] | 4.5 lbs | [20 N] |
| Maximum Compressive **C** | 13 lbs | [59 N] | 4.5 lbs | [20 N] |
| Maximum Moment $\mathbf{M_x}$ | 2.7 lbf-in | [0.75 Nm] | 6.6 lbf-in | [0.3 Nm] |
| Maximum Moment $\mathbf{M_y}$ | 10.6 lbf-in | [1.2 Nm] | 3.5 lbf-in | [0.4 Nm] |
| Maximum Moment $\mathbf{M_z}$ | 6.6 lbf-in | [0.75 Nm] | 9.7 lbf-in | [1.1 Nm] |

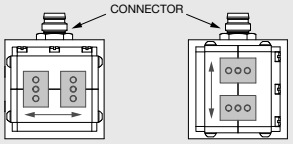
†Capacities are per set of jaws and are not simultaneous

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

BASIC MODEL | GRIPPING ORIENTATION

**RPE - 100M**

**GRIPPING ORIENTATION**
**-100M** Gripping Direction Perpendicular to Connector
**-101M** Gripping Direction In-line to Connector

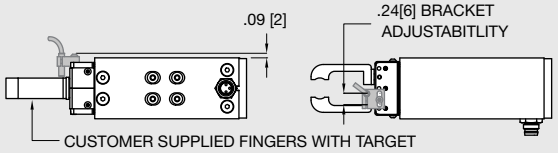



**-100M** **-101M**

**ACCESSORIES***

| | | |
|---|---|---|
| Inductive Sensor Mounting Kit (mounts one sensor) | **OSMK-130** | **1 or 2** |
| NPN Inductive Sensor with Quick Disconnect* | **OISN-019** | **1 or 2** |
| PNP Inductive Sensor with Quick Disconnect* | **OISP-019** | **1 or 2** |
| Quick Disconnect 2 Meter Cable Length* | **CABL-010** | **1, 2, or 3†** |
| Quick Disconnect 5 Meter Cable Length* | **CABL-013** | **1, 2, or 3†** |

*Sensor and cables sold separately. †Power cable plus 1 or 2 sensor cables.

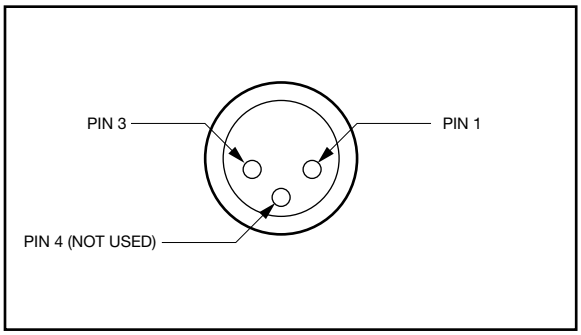


**Installation and Operation:**

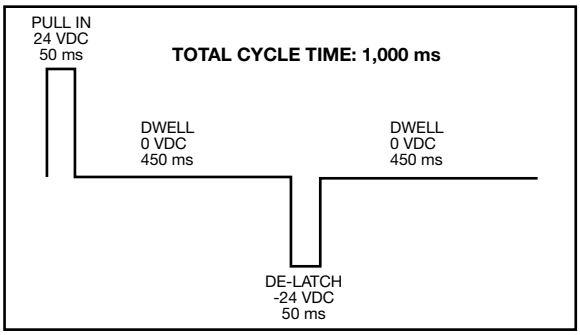
1. Mount fingers (customer supplied) to gripper jaws using dowel pins and threaded fasteners. See dimensional drawing for hole sizes. Use Loctite® 242 threadlocker or equivalent.
2. Mount gripper using dowel pins and threaded fasteners. Gripper can be mounted and operated in any orientation. See dimensional drawing for mounting hole pattern and sizes. Use Loctite® 242 threadlocker or equivalent.
3. The following instructions apply to standard operation and require a 24VDC power supply:
   To open gripper, connect positive lead of power supply to Pin 1 of the connector and negative lead to Pin 3 of the connector. See below for pin orientation. Pulse for 50msec maximum as shown in Timing Diagram. After 50 msec pulse, allow 450msec minimum dwell time. To close gripper, connect positive lead of power supply to Pin 3 of connector and negative lead to Pin 1 of connector. Pulse for 50msec maximum as shown in Timing Diagram. After 50msec pulse, allow 450msec minimum dwell time.

**WARNING:**

- Operating gripper outside of power voltages and pulse times will cause damage and void warranty
- Do not insert any foreign objects (tools, body parts, etc) between gripper fingers when power is applied.
- Disconnect power from gripper before performing maintenance or making adjustments.
- Do not apply power to gripper for more than 100msec maximum. Observe 10% duty cycle at all times.



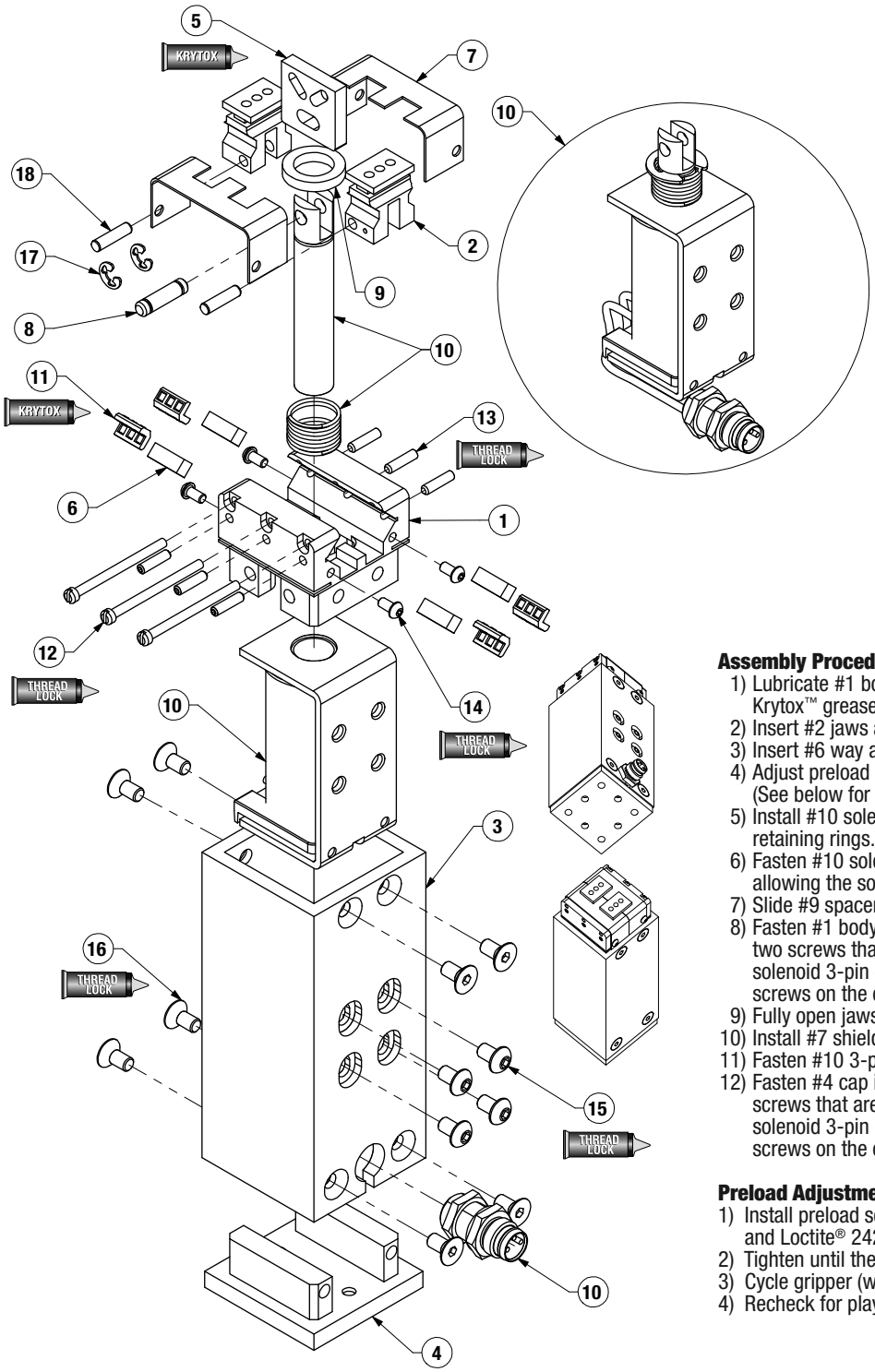

**PIN ORIENTATION**




**TIMING DIAGRAM**

**NOTE:** The RPE is CE marked.

# RPE Series Exploded View




| Item | Qty | Name |
|---|---|---|
| 01 | 1 | Body |
| 02 | 2 | Jaw |
| 03 | 1 | Housing |
| 04 | 1 | Cap |
| 05 | 1 | Wedge |
| 06 | 4 | Way |
| 07 | 2 | Shield |
| 08 | 1 | Clevis Pin |
| 09 | 1 | Spacer |
| 10 | 1 | Solenoid |
| 11 | 4 | Kit, Roller Bearing and Cage |
| 12 | 3 | Preload Screw |
| 13 | 6 | Set Screw-Way Locating |
| 14 | 4 | BHCS-Shield Mounting Screw |
| 15 | 4 | BHCS Solenoid Mounting Screw |
| 16 | 8 | FHCS-Housing Mounting Screw |
| 17 | 2 | Retaining Ring |
| 18 | 2 | Dowel Pin |

**NOTE:** Contact the DE-STA-CO Customer Service for a complete spare parts list with order numbers and prices.

**Assembly Procedure**

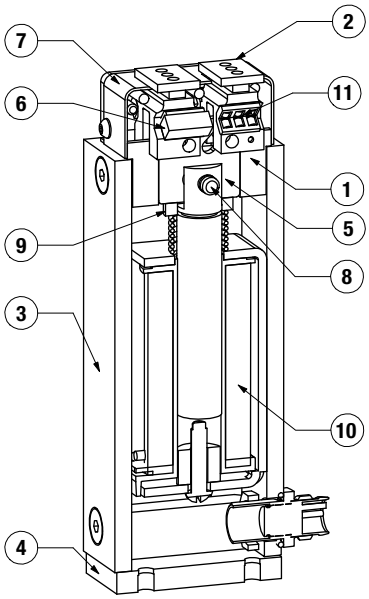
1) Lubricate #1 body, #5 wedge, and #11 bearings using Krytox™ grease.
2) Insert #2 jaws and #5 wedge into body.
3) Insert #6 way and #11 bearings into each end of the body.
4) Adjust preload by adjusting #12 preload screws. (See below for procedure)
5) Install #10 solenoid plunger with #8 clevis pin and #17 retaining rings.
6) Fasten #10 solenoid to housing. Do not tighten yet, allowing the solenoid to freely move within slots.
7) Slide #9 spacer and #10 solenoid spring onto plunger.
8) Fasten #1 body into #3 housing. Completely fasten the two screws that are located on the same side as the #10 solenoid 3-pin connector then fasten the two remaining screws on the opposite side.
9) Fully open jaws and tighten #15 screws securely.
10) Install #7 shields to gripper.
11) Fasten #10 3-pin connector.
12) Fasten #4 cap into housing. Completely fasten the two screws that are located on the same side as the #10 solenoid 3-pin connector then fasten the two remaining screws on the opposite side.

**Preload Adjustment Procedure**

1) Install preload screws (12) with Loctite® 7649 primer and Loctite® 242 thread locker on threads.
2) Tighten until there is no side play in the jaws.
3) Cycle gripper (w/finger assembly)
4) Recheck for play in jaws & tighten or loosen as needed.

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

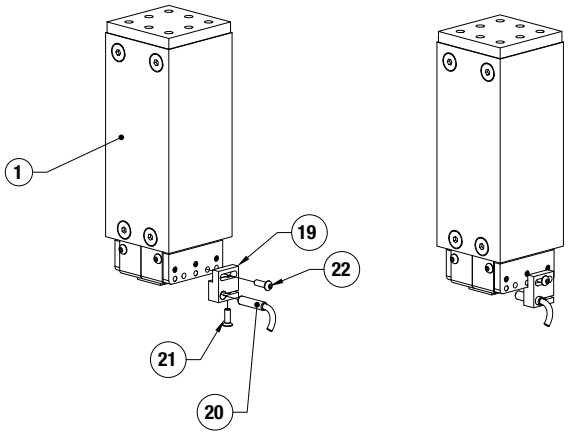
# RPE Series Assembled View




| Item | Qty | Name |
|---|---|---|
| 01 | 1 | Body |
| 02 | 2 | Jaw |
| 03 | 1 | Housing |
| 04 | 1 | Cap |
| 05 | 1 | Wedge |
| 06 | 4 | Way |
| 07 | 2 | Shield |
| 08 | 1 | Clevis Pin |
| 09 | 1 | Spacer |
| 10 | 1 | Solenoid |
| 11 | 4 | Kit, Roller Bearing and Cage |

**NOTE:** Contact the DE-STA-CO Customer Service for a complete spare parts list with order numbers and prices.

# Accessory Installation & Adjustment Instructions

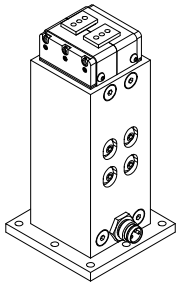



**Installation***
1) Install sensors as shown.
2) Adjust for desired end of stroke detection.

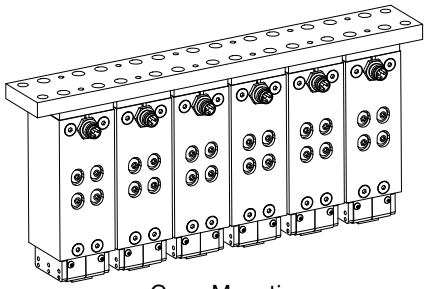
* Fingers should be designed to act as target for inductive sensor. Sensing range is 0.031 [0.8]. The center line of the sensor diameter is located 0.094 [2.4] off of jaw mounting surface.

Fingers supplied by customer.

# Flange Mounting Plate, Gang Mounting and more...



Flange Mounting Plate



Gang Mounting

Drawings shown are for concept only. Contact DE-STA-CO Tech Support with project requirements.

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