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## ***Electric Swivels***

*Applicable Part Numbers:  
200-386-00*

### ***Owner's Manual***

*Document Number 120-209-00  
Revision 4  
07/02/24*



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## RECORD OF REVISIONS

<i>Revision</i>	<i>Date</i>	<i>Page(s)</i>	<i>Reason for Revision</i>
0	08/17/2011	All	First Issue
1	09/10/2012	Section 2	Clarified installation instructions, added NOTICE to loosen cargo hook attach bolts if necessary to fit electrical swivel.
2	01/30/2013	1-2, 1-3	Added figure showing dimensions of electric swivel body.
3	10/10/18	3-7	Replaced 232-502-00 with 232-767-00.
4	07/02/24	1-2, 2-2	Changed Nut 510-933-00 to 510-096-00. Changed bolt 291-537-00 to 511-242-00. Added Optionally use Washer 510-172-00.

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# Section 1

## General Information

### Introduction

This Owner's Manual contains instructions for installation and maintenance of the 2K Electric Swivel kit, P/N 200-386-00.

The Electric Swivel is designed to interface with the Talon 2K Remote Cargo Hook P/N 210-242-00 and connect to the helicopter long line. The principal function of the 2K Electric Swivel is to provide an electrical connection with the remote cargo hook while allowing the cargo hook to spin to accommodate external load movement.

### Explanation of Signal Words and Symbols

The following definitions apply to the symbols used throughout this manual to draw the reader's attention to safety instructions as well as other important messages.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Draws the reader's attention to important or unusual information not directly related to safety.



Used to address practices not related to personal injury.

## Bill of Materials

The following items are included with the Electric Swivel kits. If shortages are found, contact the company from whom the system was purchased.

**Table 1-1 Bill of Materials**

Part Number	Description	Quantity 200-386-00
120-209-00	Owner's Manual	-
232-500-00	2K Electric Swivel Assembly	1
511-242-00	Bolt	1
291-646-00	2K Travel Stop	1
510-098-00	Cotter Pin	1
510-303-00*	Washer	2
510-096-00	Nut	1
512-011-00	Ty-wrap	3
590-017-00	Spiral Wrap	-

\*Optionally use Washer 510-172-00

## Specifications

**Table 1-1 Electric Swivel Kit (P/N 200-386-00) Specifications**

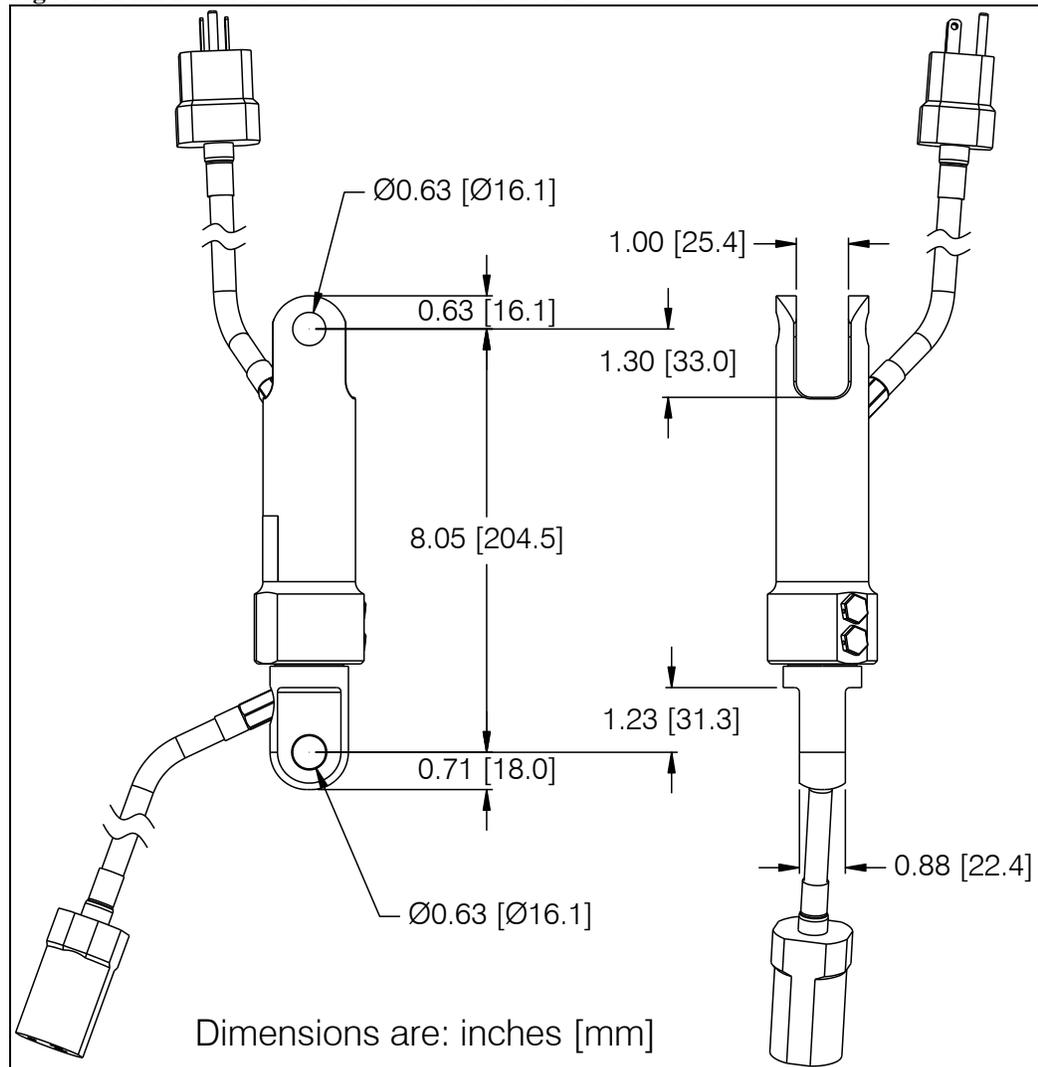
Design Load	2,000 lbs. (907 kg)
Limit Load	5,000 lbs. (2,268 kg)
Design Ultimate Strength	8,000 lbs. (3,629 kg)
Unit weight	4.0 lbs. (1.8 kg)
Conductors	2
Electrical Rating	0-250 volts, 30 amps
Compatible Electrical Connector (long line side):	Leviton 5259-VY



*Load capacities given are for the equipment described only. Load limits for the remainder of the external load lifting system and the particular helicopter model still apply. Consult your flight manual for helicopter load limits.*

## Specifications continued

Figure 1.1 2K Electric Swivel Interface Dimensions



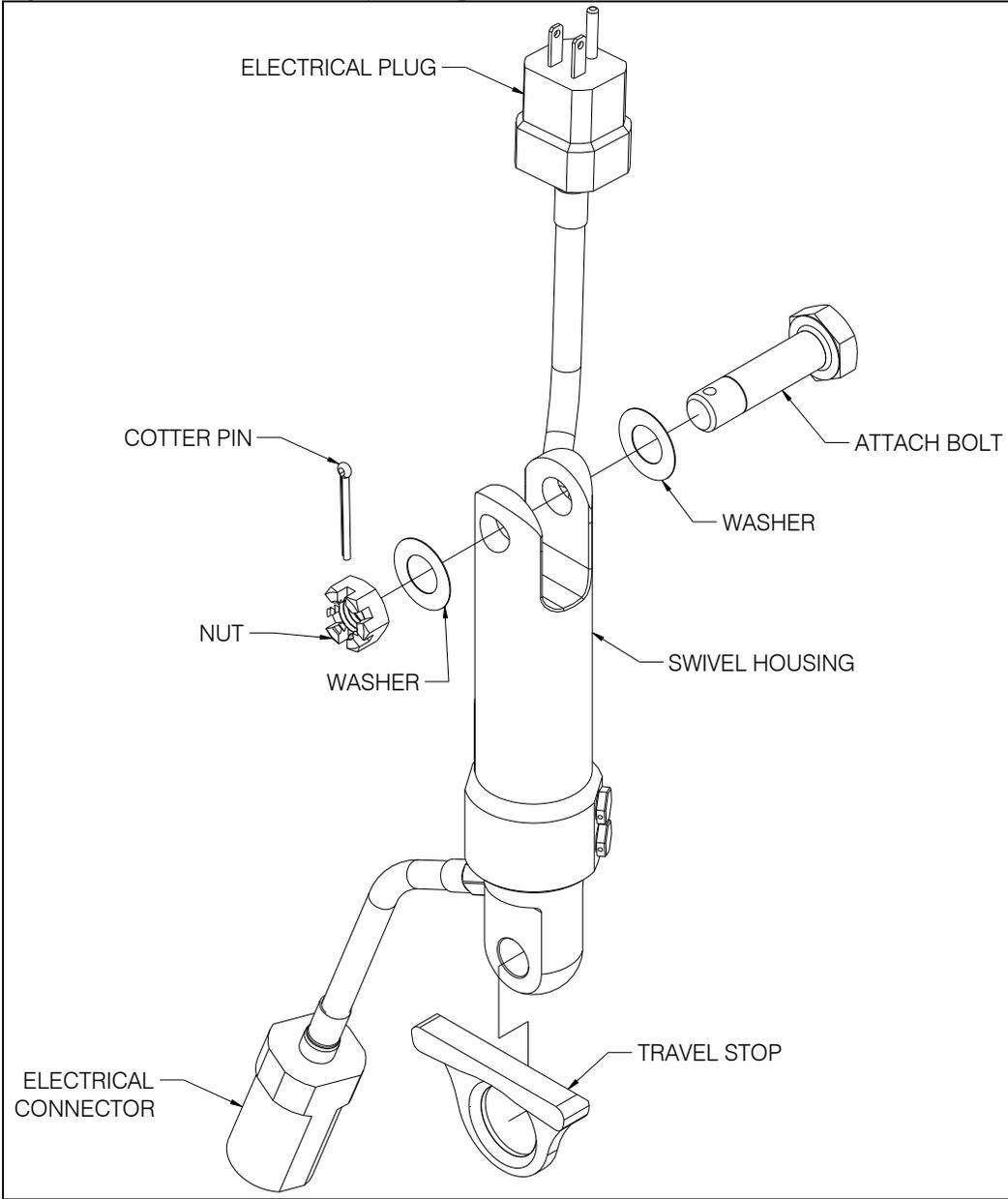
## Theory of Operation

The 2K Electric Swivel is designed to be placed between an Onboard Systems remote 2K cargo hook and the helicopter long line. The principal function is to provide an electrical connection with the cargo hook while allowing the cargo hook to spin to accommodate the external load movement.

The 2K Electric Swivel Kit includes a travel stop to prevent kinking of the electrical cable. Figure 1.2 details the major components of the 2K Electric Swivel kit.

**Theory of Operation** continued

**Figure 1.2 2K Electric Swivel Major Components**



## Section 2

# Installation Instructions

### Electric Swivel Installation

Attach the 2K Electric Swivel to the long line by placing the long line's thimble directly into the top clevis of the swivel housing—an anchor shackle or other attachment hardware is not recommended. Secure the thimble with the provided bolt, washers, and castellated nut as shown in Figure 2.1. Tighten the nut finger tight, then rotate to next castellation and install cotter pin.

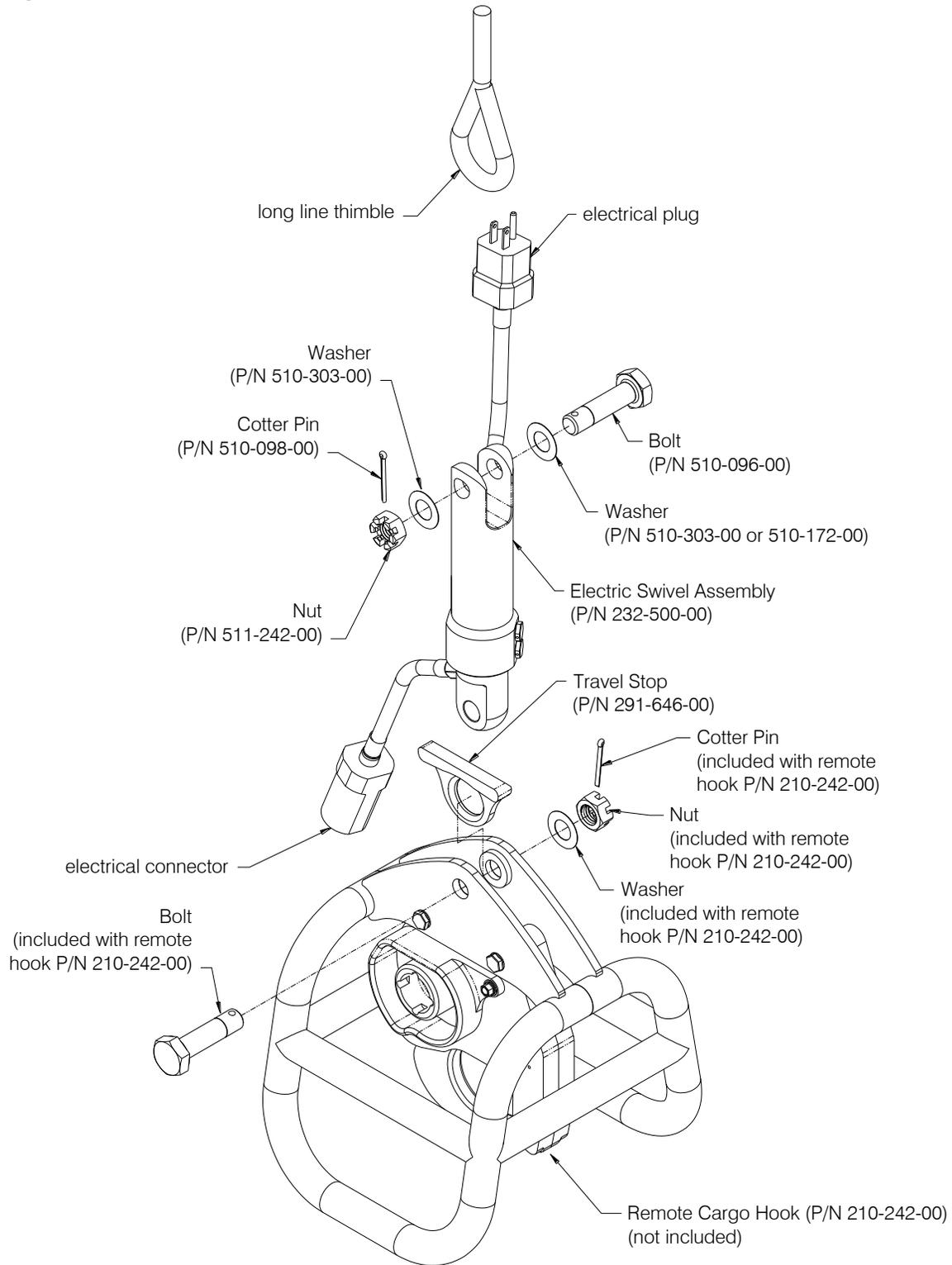
Attach the 2K Electric Swivel to the remote cargo hook (P/N 210-242-00 shown) by first placing the travel stop over the attach lug of the cargo hook cage. Line up the lower lug of the swivel with the attach lug and insert the bolt through and secure with the washer and castellated nut (the bolt, washer, nut and cotter pin are provided with the remote cargo hook P/N 210-242-00). Tighten the nut finger tight, then rotate to next castellation and install cotter pin. See Figure 2.1.

## NOTICE

*To install the electric swivel within the cage it may be necessary to loosen the nuts on the bolts which attach the cargo hook to the cage plates. If the nuts are too tight they pull the cage plates inward causing the swivel lug to not fit. Loosen the nuts just enough to fit the lower lug of the swivel and allow it to pivot.*

# Electric Swivel Installation continued

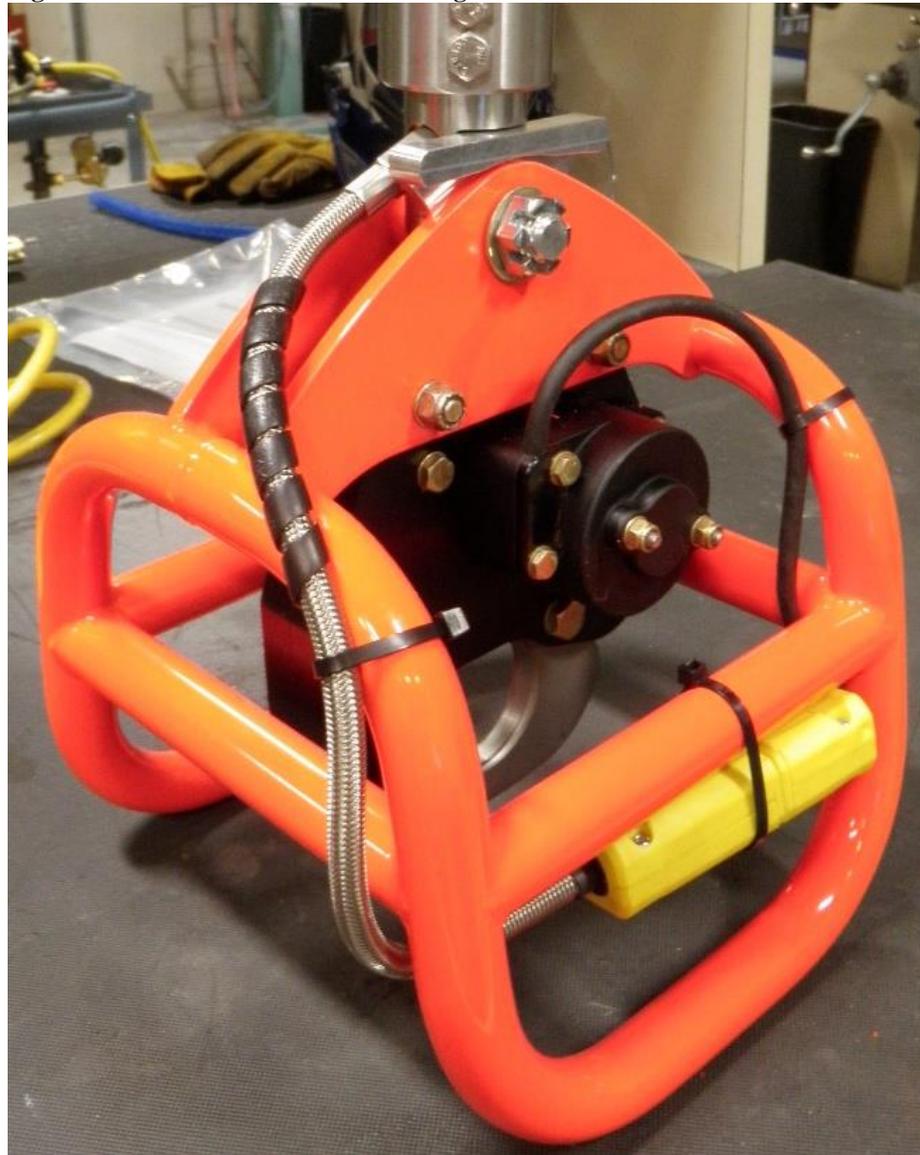
Figure 2.1 Electric Swivel Installation



## Electric Swivel Installation continued

The recommended electrical cable routing at the cargo hook is shown below. This routing follows the outside of the cargo hook's welded cage tubing as close as possible to minimize the potential of the cable being snagged or otherwise damaged. Wrap the conduit, with the provided spiral wrap (P/N 590-017-00), as shown to reduce chafing and wear on the conduit sheathing. Secure the cable to the welded cage (as shown) in several locations with the provided ty-wraps. If necessary cut the electrical cable from the cargo hook to shorten its length. Verify the swivel can move throughout its range of motion without pulling the cable tight.

**Figure 2.2 Recommended Cable Routing**



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# Section 3

## Maintenance

### Storage Instructions

Clean the 2K Electric Swivel thoroughly before packaging. Pack the unit in a sealable package such that the up arrow does not point below horizontal.

Place the sealed package upright in a suitable fiberboard box and cushion the unit to prevent shifting. Seal the fiberboard box with tape and mark the box with the contents and date of packaging.

If the unit is to be stored for long periods in a tropical climate it should be packed in a reliable manner to suit local conditions.

### Preventive Maintenance

Remove caked-on dirt from the 2K Electric Swivel with a brush and clean exposed surfaces with a mild solvent. Thoroughly dry all surfaces.

At the 5 year/1000 hour inspection lubricate the upper and lower attach point joints with grease.

### Inspection Schedule

Inspection of the 2K Electric Swivel is in accordance with the table below. If parts are to be replaced, refer to the disassembly and assembly instructions.

**Table 3-1 Inspection**

Part Number(s)	Daily Check	Inspection – Annually or 100 hours of external load operations, whichever comes first.	Inspection – 5 years or 1000 hours of external load operations, whichever comes first.
200-386-00	<ol style="list-style-type: none"> <li>1. Check all fasteners to ensure they are in place and secure.</li> <li>2. Check the housing for cracks and damage.</li> <li>3. Check the electrical cable housing for damage and security.</li> <li>4. Swivel assembly 360° to ensure proper operation.</li> <li>5. Cycle cargo hook release to verify electrical continuity to the cargo hook.</li> </ol>	Same as daily check.	Clean and inspect per the procedures in this manual. If parts are required to be replaced, refer to the disassembly and assembly instructions provided herein.

## Electric Swivel Disassembly

See Figure 3-1 for illustration and item numbers for P/N 200-386-00, and Figure 3-2 for 232-500-00. See Table 3-3 for parts list.

1. Separate the Electric Swivel from the long line and cargo hook by removing the cotter pins (4) from the nuts (6). Remove the bolts (2) and washers (5).
2. Remove travel stop (3) from the cargo hook.
3. Disassemble the electrical plug (1.10) and electrical connector (1.9) and disconnect the internal wires from their terminations.
4. Unthread conduit assemblies (1.2) from swivel top (1.4) and swivel bottom (1.5).
5. Remove the safety wire connecting the bolts (1.3) on the swivel top (1.4).
6. Remove the bolts (1.3) and then remove the ball bearings (1.13) from the swivel assembly by orienting the open holes downward and rotating the swivel top with respect to the swivel bottom.
7. Carefully separate the swivel top and swivel bottom while threading the wires through their respective holes.
8. Loosen the set screw (1.12) and remove the swivel contactor (1.8) and spacer (1.6) from the swivel bottom.
9. Remove the o-ring (1.14) from the swivel top.

### NOTICE

*The swivel contactor (1.8) contains a small amount of liquid mercury, which is sealed against leakage but because of environmental concerns it should not be disposed of in the trash. Dispose of through a qualified recycler.*

## Five Year/1000 hour Inspection

Clean the parts with a mild solvent and carefully inspect the parts in accordance with the instructions below. Inspect the parts in a clean, well-lit room.

- Visually inspect Swivel Top and Swivel Bottom for cracks paying close attention to the attach lug areas.
- Inspect for wear on inside diameter of attach lug holes in the Swivel Top and Swivel Bottom. Replace parts if diameter exceeds .650 inches (16.5 mm) in any directions.
- Spin the Swivel Top about the Swivel Bottom and verify smooth swiveling. If roughness or binding is felt, disassemble per the instructions in this section and visually inspect the ball bearing and races for wear, denting, and corrosion. Replace parts as required.
- Visually inspect travel stop for cracks and damage.
- Visually inspect wires for damaged or worn insulation which exposes internal conductors.

## Electric Swivel Assembly Procedures

1. Replace all parts found to be damaged with serviceable parts.
2. Install o-ring (1.14) using Mobilgrease 28 or equivalent into swivel top (1.4).
3. Carefully route electrical wires (1.11) through the swivel top (1.4) and swivel bottom (1.5).
4. Seat the swivel contactor (1.8) and spacer (1.6) into the swivel bottom.

**CAUTION**

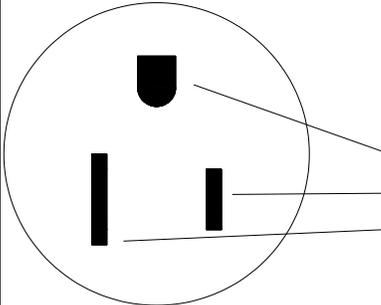
*The swivel contactor contains mercury and must be oriented so the unit will face the swivel top when installed.*

5. Using Loctite Threadlocker, install and tighten set screw (1.12) to retain the spacer (1.6).
6. Apply Mobilgrease 28 or equivalent grease to the bearing races of the swivel top (1.4) and swivel bottom (1.5).
7. Carefully insert the swivel bottom (1.5) into swivel top (1.4)
8. Hold assembly together and insert ball bearings (1.13). Insert 16 bearings into each hole of the swivel top (1.4) rotating the swivel top periodically to disperse the bearings around the bearing races.

## Electric Swivel Assembly Procedures continued

9. Install bolts (1.3) to secure bearings.
10. Rotate the swivel assembly 360° to check for smooth operation.
11. Safety wire bolts (1.3).
12. Connect male electrical plug (1.10) and female electrical connector (1.9) to wires (1.11). Connect the male end to the swivel top and the female end to the swivel bottom.

**Table 3-2 Electrical Pinout**

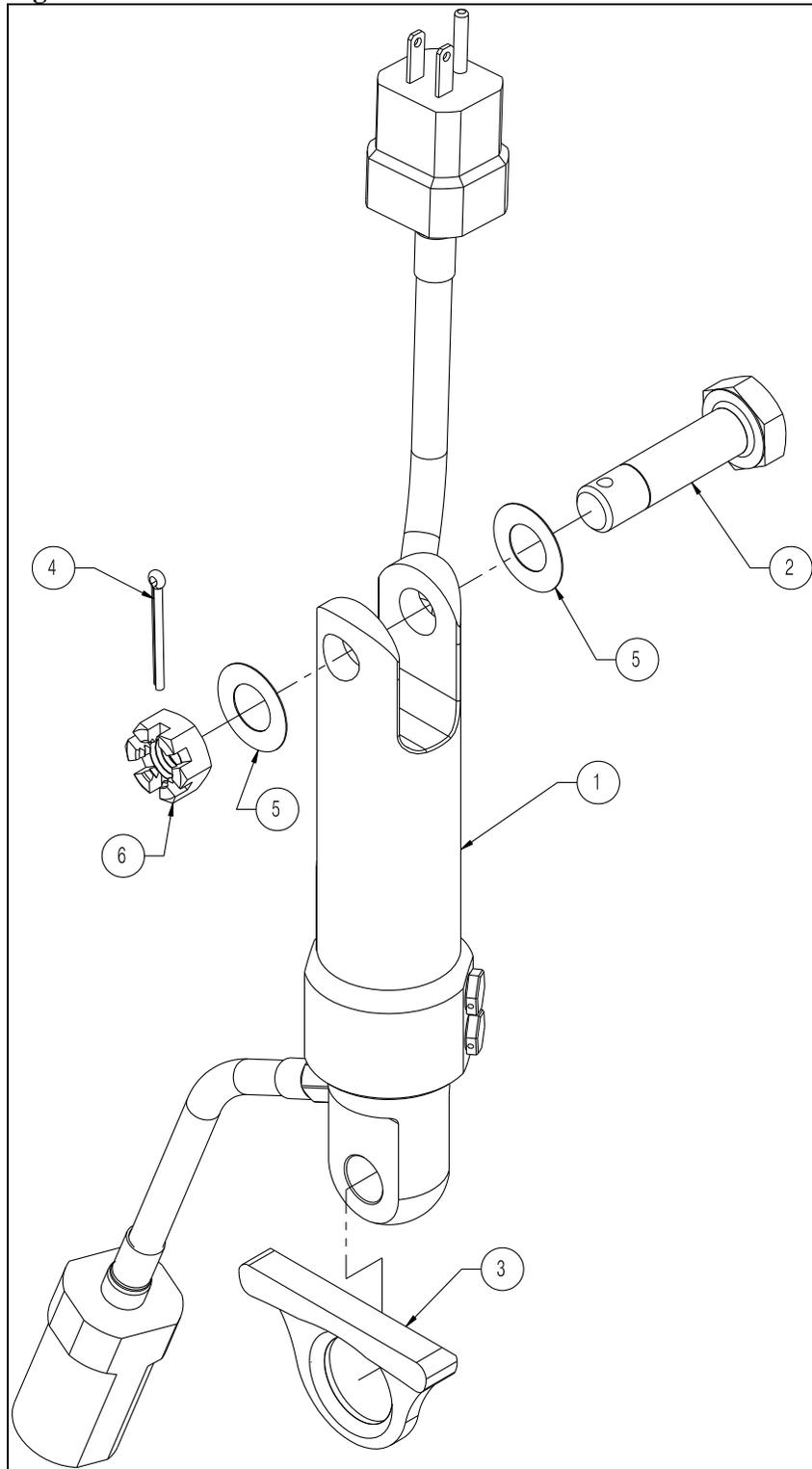


Connector Pinout (MALE)	
Screw Color	Function
Green	Not Used
Brass	Power (+28 VDC)
Silver	Return

13. Upon completion of assembly, verify continuity across connectors.

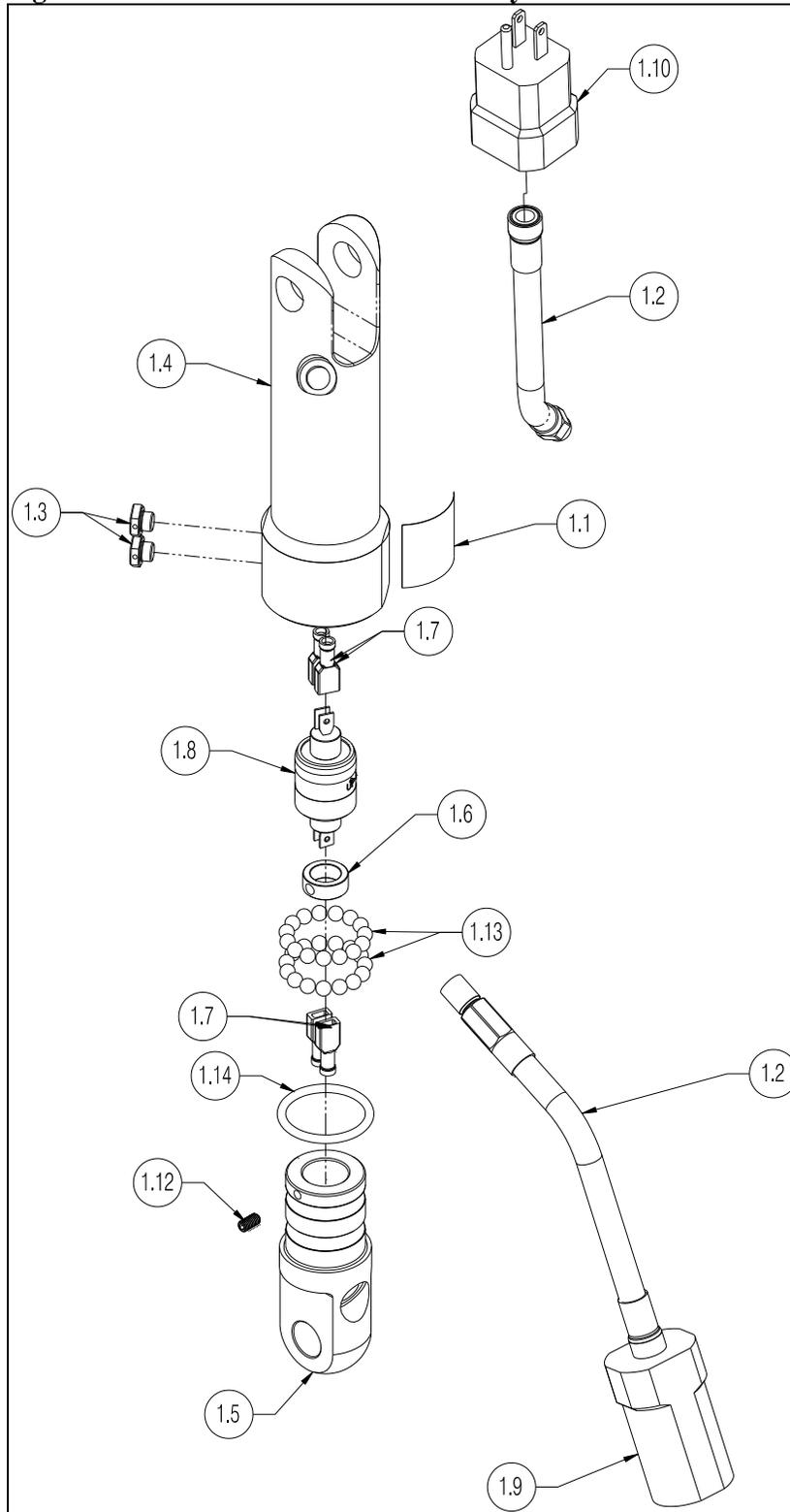
# Electric Swivel Exploded View

Figure 3-1 200-386-00 2K Electric Swivel Parts



# Electric Swivel Exploded View continued

Figure 3-2 232-500-00 Swivel Subassembly



## Electric Swivel Parts

This section describes and lists the assemblies and detail parts of the Electric Swivel kit.

**Table 3-3 Electric Swivel Parts**

<i>Item</i>	<i>Part No.</i>	<i>Description</i>	<i>Quantity per P/N 200-386-00</i>
1	232-500-00	Swivel Subassembly	1
1.1	215-273-00	Serial Number Decal	1
1.2	232-767-00 <sup>2</sup>	Conduit Assembly	2
1.3	291-544-00	Bolt	2
1.4	291-647-00	2K Swivel Top	1
1.5	291-648-00	2K Swivel Bottom	1
1.6	291-649-00	Swivel Spacer	1
1.7	410-161-00	Spade Connector	4
1.8	410-282-00	Swivel Contactor	1
1.9	410-299-00	Electrical Connector	1
1.10	410-300-00	Electrical Plug	1
1.11	420-082-00 <sup>1</sup>	16" GA Wire, 22" Length	4
1.12	510-198-00	Set Screw	1
1.13	517-109-00	Ø .25" Bearing	32
1.14	556-091-00	O-Ring	1
2	511-242-00 <sup>5</sup>	Attach Bolt	1
3	291-646-00	2K Travel Stop	1
4	510-098-00	Cotter Pin	1
5	510-303-00 <sup>3</sup>	Washer	1
6	510-096-00 <sup>4</sup>	Nut	1
7	512-011-00 <sup>1</sup>	Ty-Wrap	3

<sup>1</sup> Not shown

<sup>2</sup> Supersedes 232-448-00.

<sup>3</sup> Optionally use Washer 510-172-00

<sup>4</sup> Supersedes 510-933-00

<sup>5</sup> Supersedes 219-537-00

## Instructions for Returning Equipment to the Factory

If an Onboard Systems product must be returned to the factory for any reason (including returns, service, repairs, overhaul, etc.) obtain an RMA number before shipping your return.



*An RMA number is required for all equipment returns.*

- To obtain an RMA, please use one of the listed methods.
  - Contact Technical Support by phone or e-mail ([Techhelp@OnboardSystems.com](mailto:Techhelp@OnboardSystems.com)).
  - Generate an RMA number at our website: <http://www.onboardsystems.com/rma.php>
- After you have obtained the RMA number, please be sure to:
  - Package the component carefully to ensure safe transit.
  - Write the RMA number on the outside of the box or on the mailing label.
  - Include the RMA number and reason for the return on your purchase or work order.
  - Include your name, address, phone and fax number and email (as applicable).
  - Return the components freight, cartage, insurance and customs prepaid to:

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