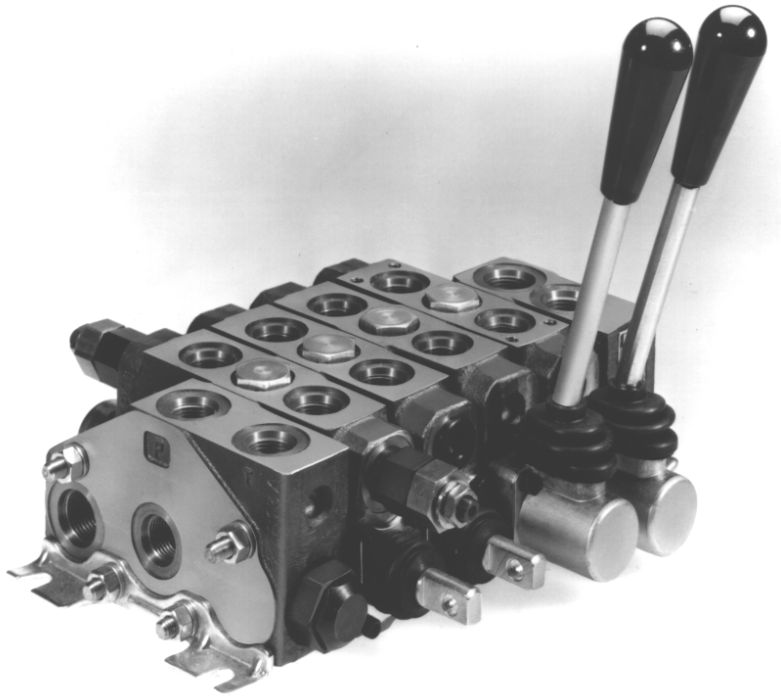
GRESEN®

Parker Hydraulics

# Model V10

## Sectional Body
## Directional Control Valve

# Service Manual



| | |
|---|---|
| **Maximum Operating Pressure:** | **3500 PSI (242 bar)** |
| **Minimum Filtration Required:** | **10 Micron** |

for the Model V10 Directional Control Valve. If further assistance is required, contact your Parker Distributor or Representative.

**Bulletin HY14-2701-M1/US - TORO Specific** **Rev: 01-01-2005 (Replaces: Revision 8/01/02)**

**⚠ WARNING**

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**Parker Hannifin Corporation**
Hydraulic Valve Division
Elyria, Ohio USA
www.parker.com/hydraulicvalve

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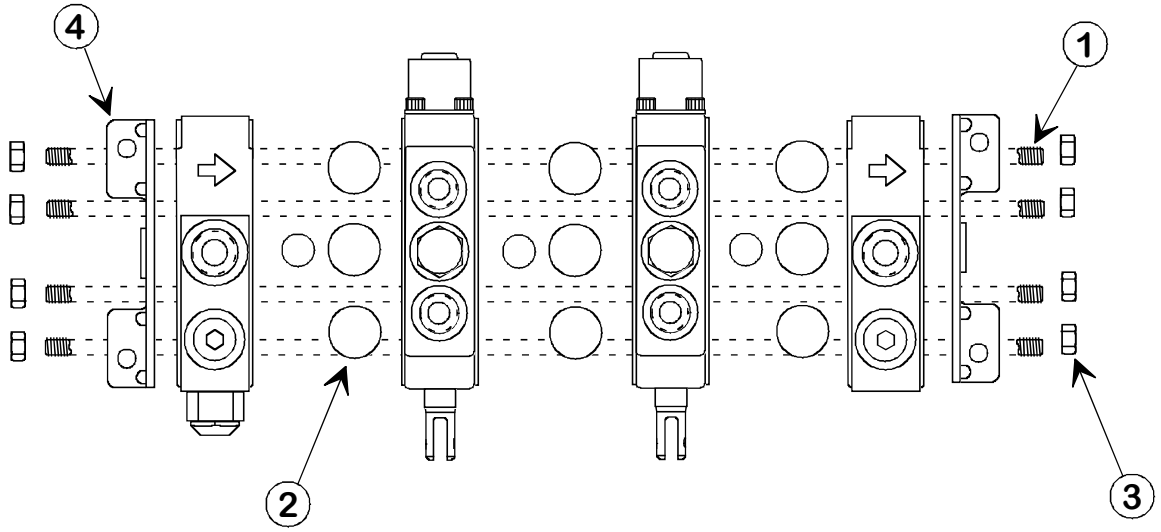
# Assembly Studs

Torque to Maximum 13 - 15 Ft Lbs (17 - 20 Nm) For Dry Tie Bolts
Torque to Maximum 10 - 13 Ft Lbs (13 - 17 Nm) For Oiled Tie Bolts




**CAUTION**

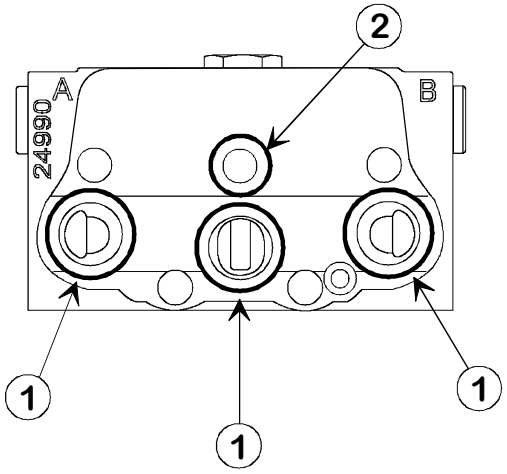
If the stud nuts are not tightened to the proper torque, valve spools may bind or stick, or cause O-Ring seals to extrude.

**Figure 1. Assembly Studs**

| Ref No. | Description | Quantity |
|---|---|---|
| 1 | Single Section Stud | 2 |
| | Two Section Stud | 2 |
| 2 | Section Seal Kit (See Page 5) | A/R |
| 3 | Nut | 8 |
| 4 | Bracket (Short) for manual valves | 2 |

*Section Seals are located in the Inlet Cover and in the downstream side of all work sections*

Manual Work Sections




Important: Do Not lubricate section seals prior to installation. Install dry.

**Figure 2. Section Seal Identification**

### Section Seal Kits

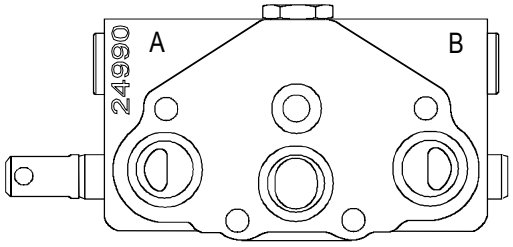
| Ref No. | Description | Quantity |
|---|---|---|
| | Section Seal Kit (Kit Includes Items 1 and 2 Only) ① | |
| 1 | O-Ring Section Seal (Open Center and Exhaust Counterbores) | 3 |
| 2 | O-Ring Section Seal (Power Core Counterbore) | 1 |

① Buna-N seals are standard for all ***Parker*** valve assemblies.

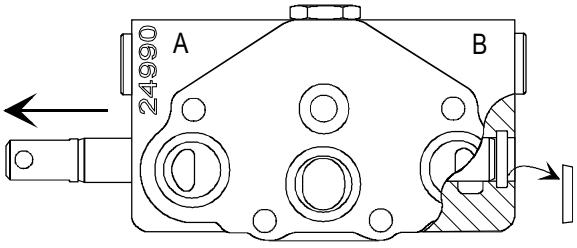
## Section Seal Replacement Precautions

- Do not lubricate the O-Ring section seals prior to installation. Compression of lubricants can distort the valve body causing spool bind.
- If the stud nuts are not torqued to the proper specifications, valve spools may bind or stick, or cause O-Ring seals to extrude.
- Replace the stud nuts and torque evenly to 13 - 15 Ft Lbs [17 - 20 Nm]. This is a dry stud torque spec. Torque evenly to 10 - 13 Ft Lbs [13 - 17 Nm] for oily studs.

Handle End Positioner End

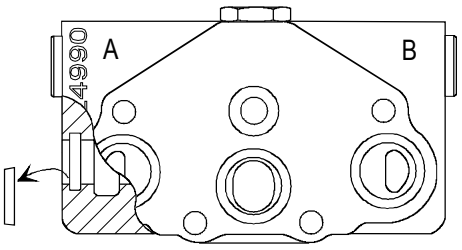


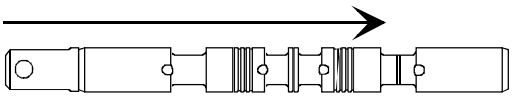

1. Remove the handle and positioner hardware from the valve section.




2. Insert a punch or screwdriver through the spool clevis. While watching the positioner end, slowly pull the spool toward the handle end. Stop when the spool seal is exposed as shown.

3. Using a small seal pick, carefully remove the spool seal from the positioner end.



4. Push the spool back through the housing and out the positioner end.

5. Remove the remaining spool seal with the seal pick.

**Figure 3. Model V10 Spool Seal Removal**

# Procedures for Installing Model V10 Spool Seals

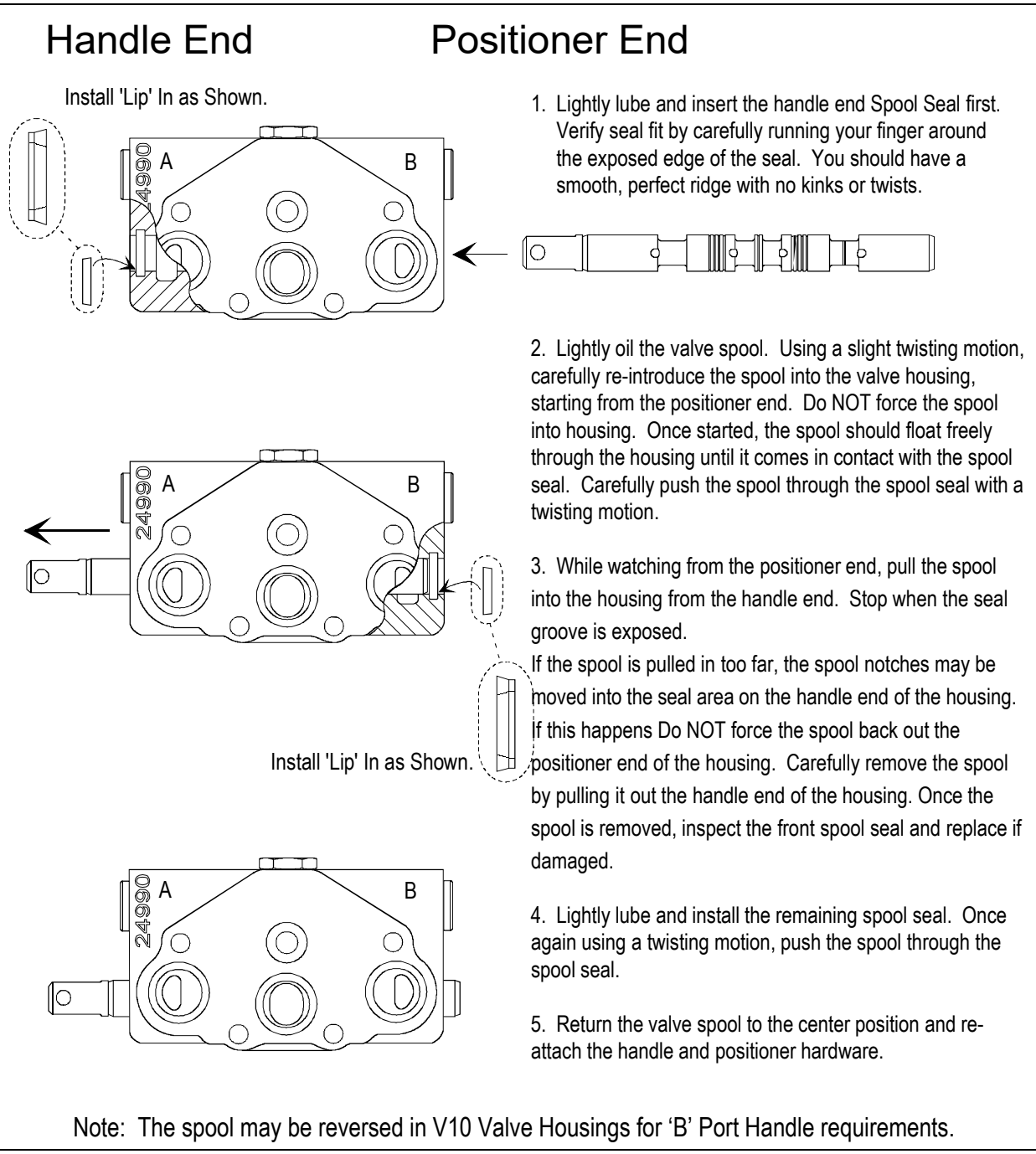



**Figure 4. Model V10 Spool Seal Installation**

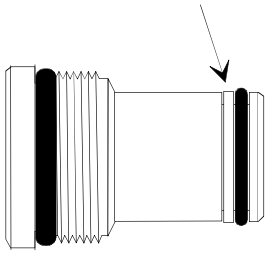
# Special Note Regarding Back-Up Rings

## Back-Up Rings in Used Seal Kits

Many of the plugs and cartridges used in the **Parker** product line utilize back-up rings. Therefore, many of the seal kits in this Service Manual include back-up rings, some of which are continuous back-up rings.

Since the continuous back-up rings are installed at the factory using a special sizing tool, only replace this back-up ring if it has been damaged.

(Continuous) Back-Up Ring

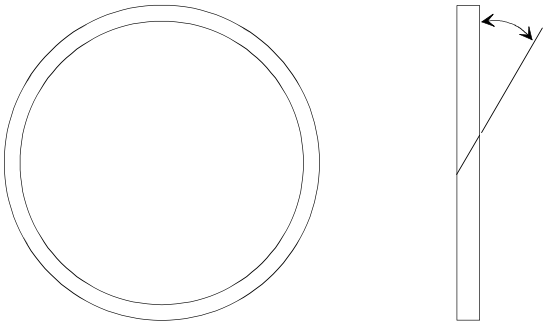


## Preparing the Back-Up Ring for Installation

If the continuous back-up ring should need replacing, follow these simple procedures.

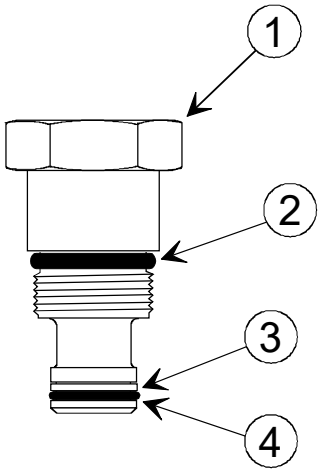
1. Using a single edge razor blade, carefully cut through the back-up ring in an angle as shown in the drawing.
   *Caution: Make only one diagonal cut thru the back-up ring.* **Do not** *separate the ring into two pieces.*
2. Slip the back-up ring over the cartridge and into place.

Carefully make one cut thru Back-Up Ring at approximately 30 degree angle as shown here.



# Power Beyond Sleeve (machines with front loader only)

Torque Option Cavity Cartridge
To: 18 - 20 Ft Lbs [24 - 27 Nm]




Power Beyond Sleeves
*(for front loader equipped machines)*

**Figure 5. Power Beyond Sleeve (machines with front loader only)**

| Ref No. | Description | Quantity |
|---|---|---|
| | SAE 10 Power Beyond Kit, Complete | |
| 1 | Power Beyond Sleeve (SAE 10) | 1 |
| 2 | O-Ring Seal ① | 1 |
| 3 | Back-Up Ring ② | 1 |
| 4 | O-Ring Seal ① | 1 |

① Buna-N seals are standard for all ***Parker*** valve assemblies.

② Continuous Back-Up Rings are installed at the factory using special sizing tools. It is Not necessary to replace the original Back-Up Rings unless they have been damaged. See Page 8 for ***Back-Up Ring Preparation and Installation*** procedures.

# Spring Return Spool Positioner

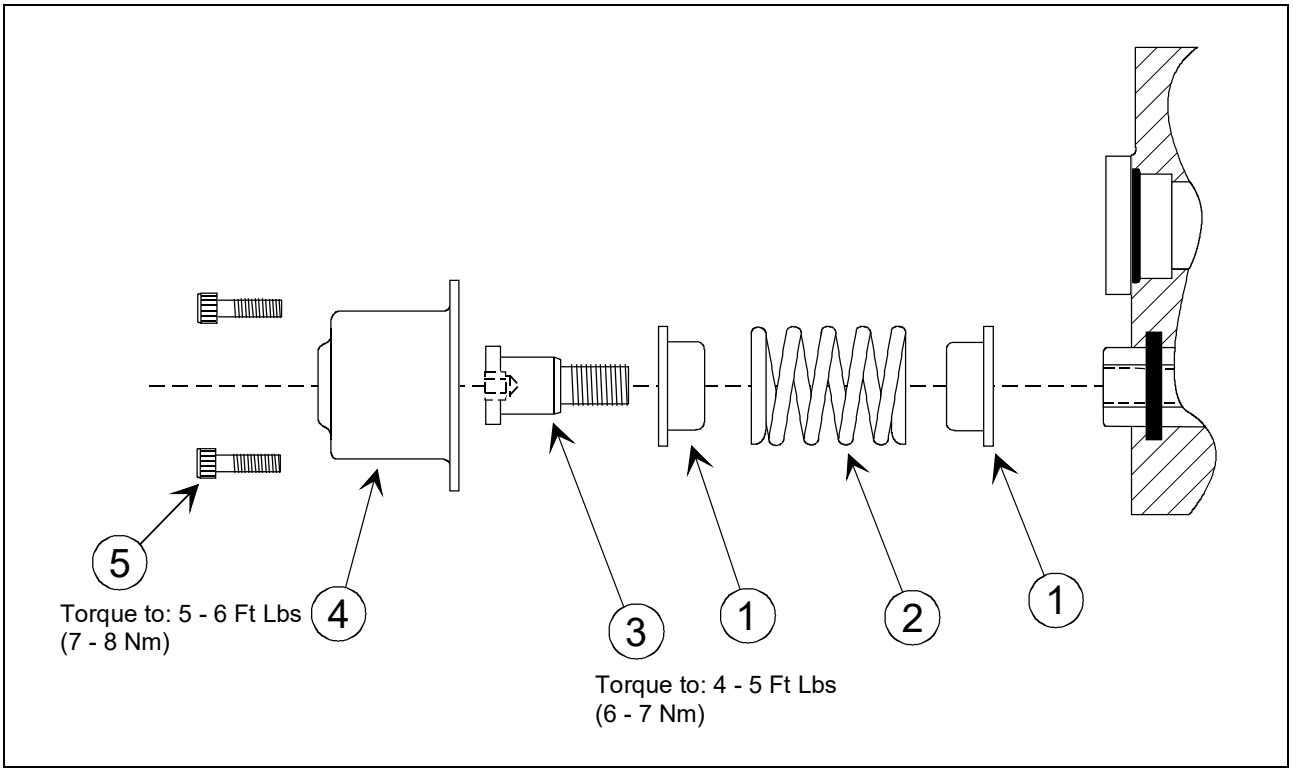



**Figure 6. Spring Return Spool Positioner**

| Ref No. | Description | Quantity |
|---|---|---|
| | 'SC' Spool Positioner Kit, Complete | |
| 1 | Spring Collar ① | 2 |
| 2 | Centering Spring ① | 1 |
| 3 | 5/16 - 24 Spool Screw ①② | 1 |
| 4 | Bonnet ③ | 1 |
| 5 | Bonnet Screw #10-24 X .375 | 4 |

① For identification purposes, these parts are black.

② Clean threads and apply Loctite No. 242 (Blue) thread locking adhesive prior to installation.

③ Unless otherwise specified, mount bonnet with drain slot down toward valve mounting feet.

# 4-Position Float Spool Positioner

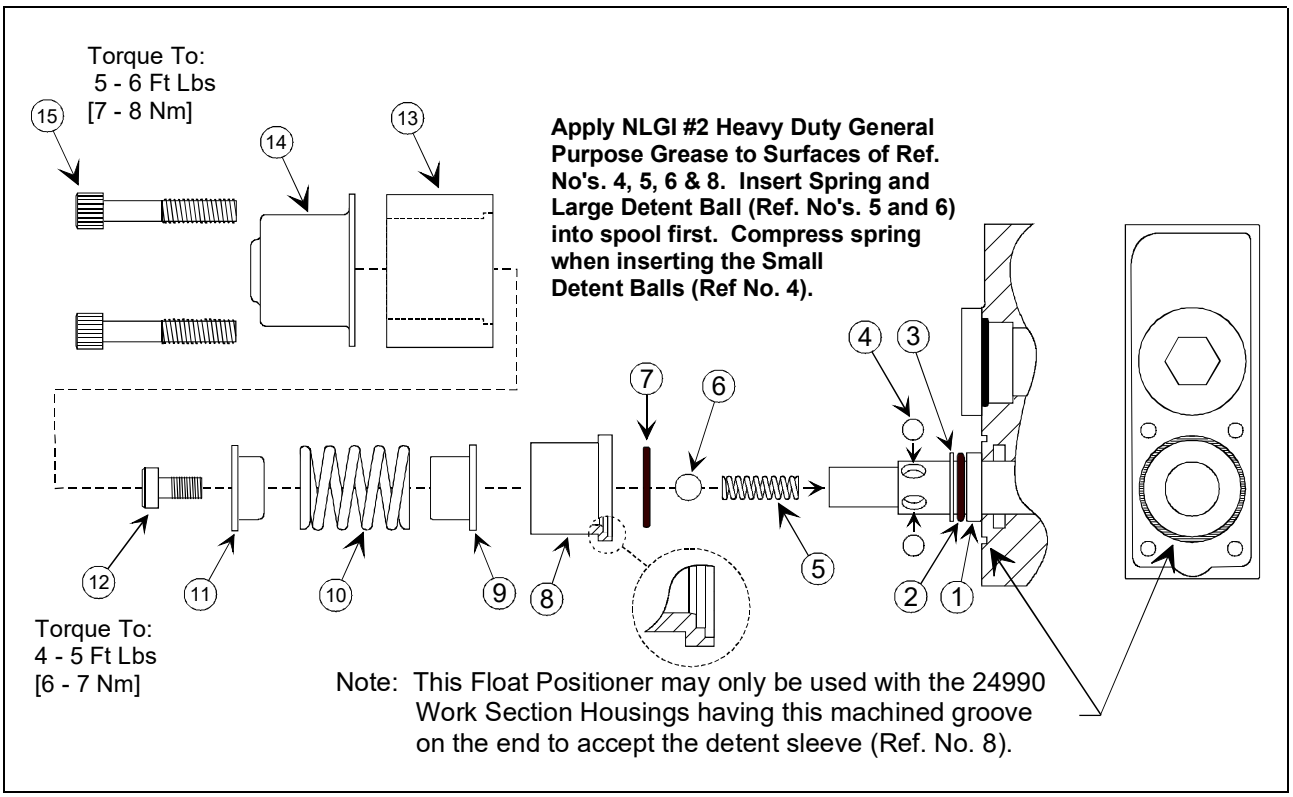



**Figure 7. 4-Position Float Spool Positioner**

Note: Float Positioner Kit Is For Servicing The Newer Float Spool Design In The 24990 Housing With The Machined Positioner Sleeve Groove Shown In The Above Drawing.

| Ref No. | Description | Quantity |
|---|---|---|
| | Float Positioner Kit for 24990 Housings with Groove, Complete ③ | |
| 1 | Spool Sleeve ③ | 1 |
| 2 | O-Ring Seal ① | 1 |
| 3 | Back-Up Ring | 1 |
| 4 | .250 Diameter Detent Ball | 4 |
| 5 | Detent Spring | 1 |
| 6 | .312 Diameter Detent Ball | 1 |
| 7 | O-Ring Seal ① | 1 |
| 8 | Float Detent Sleeve | 1 |
| 9 | Inner Spring Collar | 1 |
| 10 | Spring | 1 |
| 11 | Outer Spring Collar | 1 |
| 12 | Positioner Spud | 1 |
| 13 | Bonnet Spacer | 1 |
| 14 | Bonnet ② | 1 |
| 15 | Bonnet Screw #10-24 X 1.75 | 4 |

① Buna-N seals are standard for all ***Parker*** valve assemblies.

② Unless otherwise specified, mount bonnet with drain slot down toward valve mounting feet.

③ This Float Positioner may only be used with the 24990 Work Section Housings having this machined groove on the end to accept the detent sleeve (Ref. No. 8).

④ Apply NLGI #2 Heavy Duty General Purpose Grease to surface prior to installation.

# 5-Position Float Spool Positioner

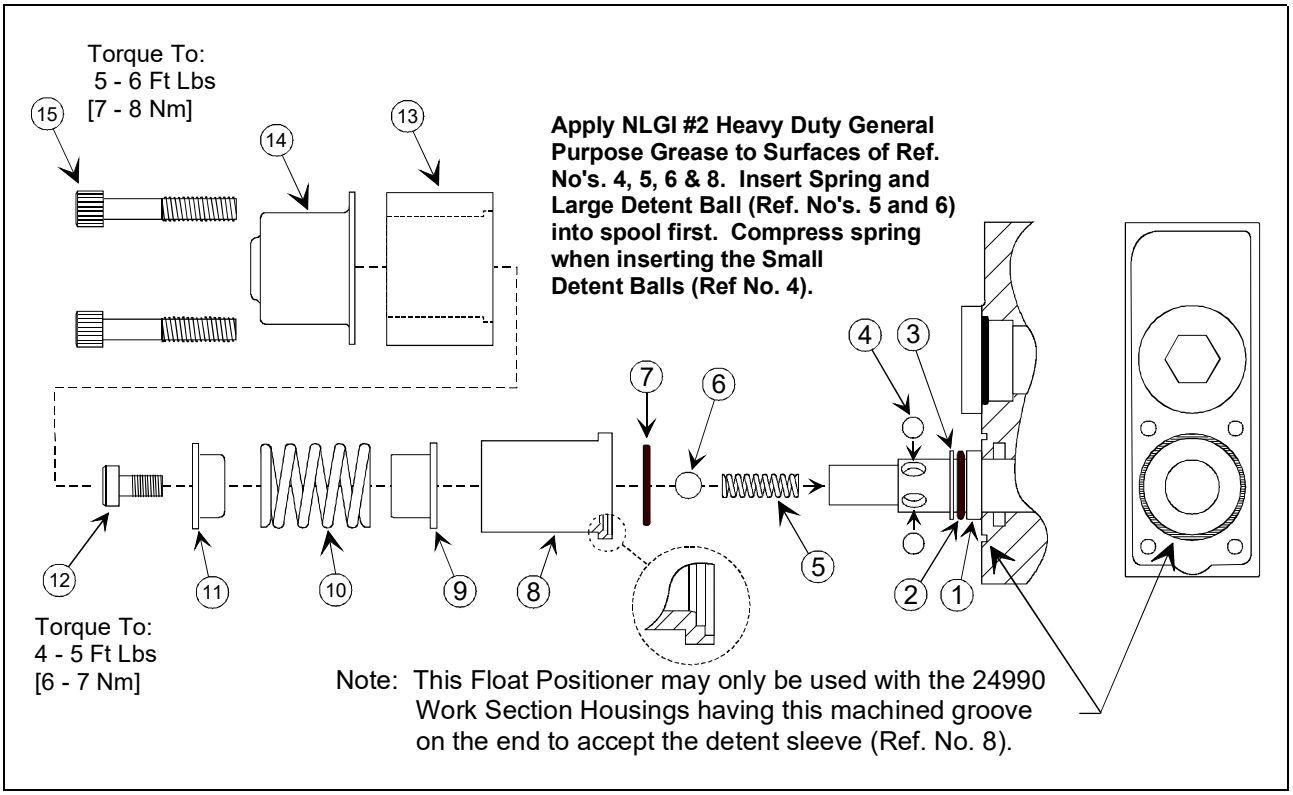



**Figure 8. 4-Position Float Spool Positioner**

Note: Float Positioner Kit Is For Servicing The Newer Float Spool Design In The 24990 Housing With The Machined Positioner Sleeve Groove Shown In The Above Drawing.

| Ref No. | Description | Quantity |
|---|---|---|
| | Float Positioner Kit for 24990 Housings with Groove, Complete ③ | |
| 1 | Spool Sleeve ③ | 1 |
| 2 | O-Ring Seal ① | 1 |
| 3 | Back-Up Ring | 1 |
| 4 | .250 Diameter Detent Ball | 4 |
| 5 | Detent Spring | 1 |
| 6 | .312 Diameter Detent Ball | 1 |
| 7 | O-Ring Seal ① | 1 |
| 8 | Float Detent Sleeve | 1 |
| 9 | Inner Spring Collar | 1 |
| 10 | Spring | 1 |
| 11 | Outer Spring Collar | 1 |
| 12 | Positioner Spud | 1 |
| 13 | Bonnet Spacer | 1 |
| 14 | Bonnet ② | 1 |
| 15 | Bonnet Screw #10-24 X 1.75 | 4 |

① Buna-N seals are standard for all ***Parker*** valve assemblies.

② Unless otherwise specified, mount bonnet with drain slot down toward valve mounting feet.

③ This Float Positioner may only be used with the 24990 Work Section Housings having this machined groove on the end to accept the detent sleeve (Ref. No. 8).

④ Apply NLGI #2 Heavy Duty General Purpose Grease to surface prior to installation.

# Work Port Relief Cavity Plug

Torque Relief Cavity Plug To:
18 - 20 Ft Lbs [24 - 27 Nm]

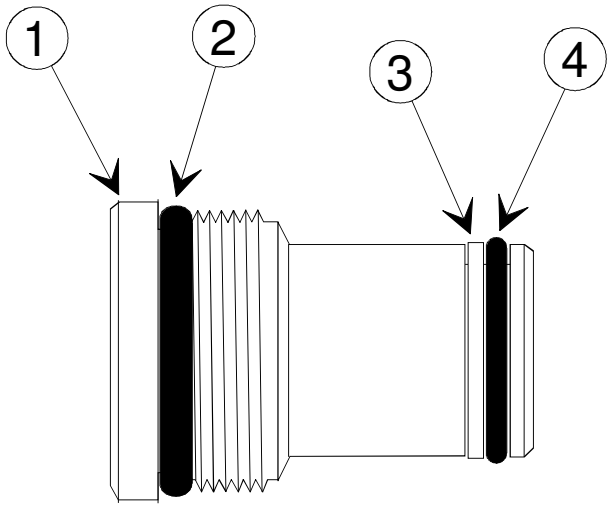



Figure 9. Work Port Relief Cavity Plug

| Ref No. | Description | Quantity |
|---|---|---|
| | Plug Seal Kit (Includes Ref No's. 2 thru 4 Only) ① | |
| 1 | NR Plug | 1 |
| 2 | O-Ring Seal ① | 1 |
| 3 | Back-Up Ring ② | 1 |
| 4 | O-Ring Seal ① | 1 |

① Buna-N seals are standard for all ***Parker*** valve assemblies. Contact the ***Parker*** factory for optional seals.

② Continuous Back-Up Rings are installed at the factory using special sizing tools. It is Not necessary to replace the original Back-Up Rings unless they have been damaged. See Page 8 for ***Back-Up Ring Preparation and Installation*** procedures.

# Extended Handle Assembly

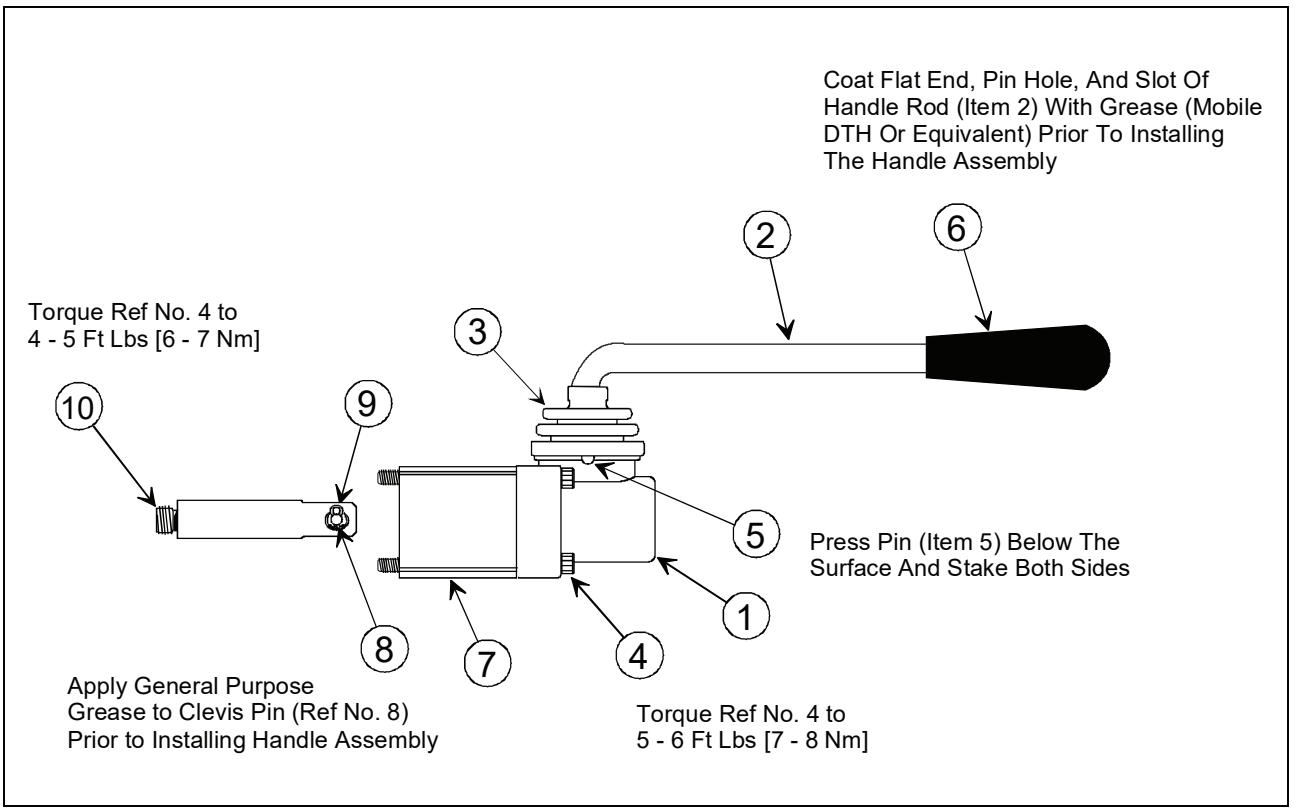



**Figure 10. Extended Handle Assembly**

| Ref No. | Description | Quantity |
|---|---|---|
| | Extended Handle Kit (Contains Items 1 thru 9 Only) | |
| 1 | Handle Bracket | 1 |
| 2 | Horizontal Handle Rod | 1 |
| 3 | Dust Boot | 1 |
| 4 | Long Bracket Screw #10-24 X 2.75 | 4 |
| 5 | Dowel Pin 3/16" X 1/2" | 1 |
| 6 | Handle Knob | 1 |
| 7 | Handle Extension | 1 |
| 8 | Clevis Pin 3/16" X 3/4" | 1 |
| 9 | Cotter Pin 5/64" X 1/2" | 1 |
| 10 | (Extended) Spool Clevis | 1 |

# Joystick Assembly

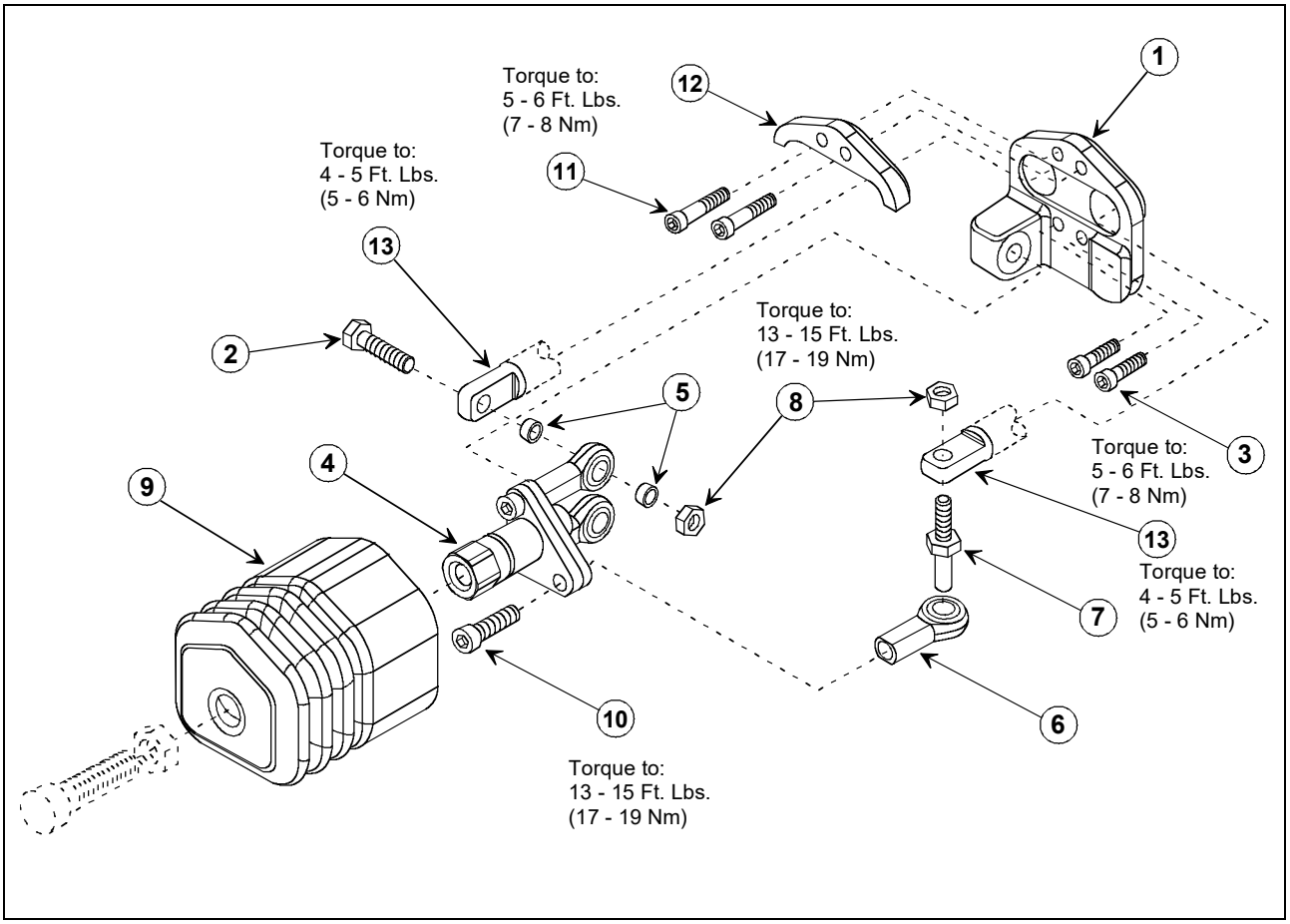



Figure 11. Joystick Assembly

| Ref No. | Description | Quantity |
|---|---|---|
| | Joystick Assembly Kit, Complete ① | |
| 1 | Base Plate Bracket | 1 |
| 2 | Screw .312 - 24 X 1.25 | 1 |
| 3 | Screw #10 - 24 X .75 | 2 |
| 4 | Joystick Adapter Plate Assembly (See Figure 12) | 1 |
| 5 | Spacer | 2 |
| 6 | Rod End (.312 – 24 Female) | 1 |
| 7 | Slide Pin | 1 |
| 8 | Lock Nut .312 – 24 UNF ② | 2 |
| 9 | Boot | 1 |
| 10 | Screw .312 - 24 X .75 | 1 |
| 11 | Screw #10 - 24 X 1.25 | 1 |
| 12 | Boot Support Bracket | 1 |
| 13 | Joystick Spool Clevis - Required for Mechanical Joysticks (24990 Housings) ② | 2 |

① This Mechanical Joystick Assembly does NOT include the Joystick Handle.

② Clean threads and apply Loctite No. 262 (Red) thread locking adhesive prior to installation.

# Joystick Adapter Plate Assembly

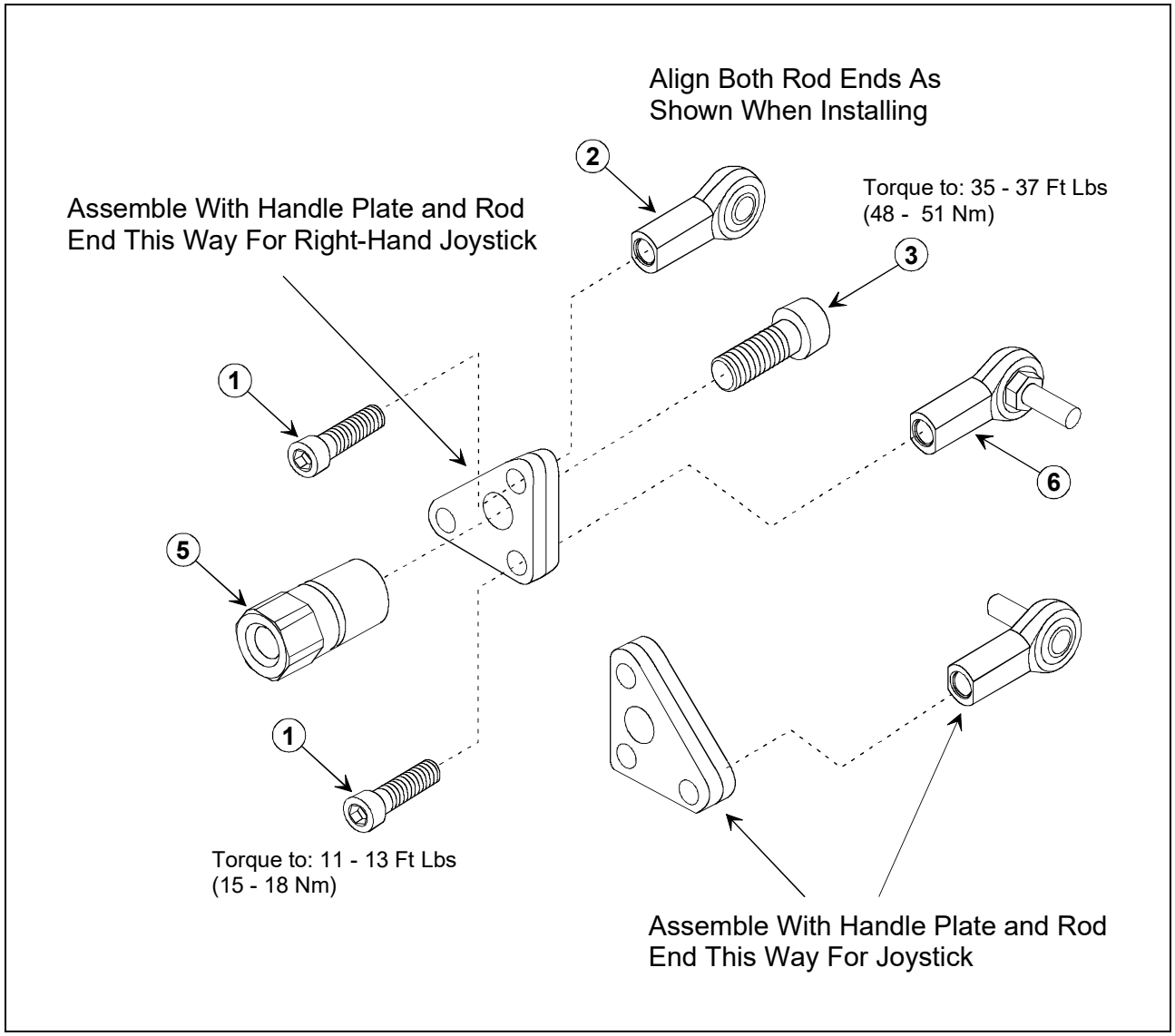



Figure 12. Joystick Adapter Plate Assembly

| Ref No. | Description | Quantity |
|---|---|---|
| 1 | Screw .312 – 24 X .75 ① | 2 |
| 2 | Rod End 5/16 - 24 Female ② | 1 |
| 3 | Screw 3/8 - 16 X 1.00 ① | 1 |
| 4 | Handle Plate | 2 |
| 5 | Handle Adapter | 1 |
| 6 | Rod End - Special ② | 1 |

① Clean threads and apply Loctite No. 262 (Red) thread locking adhesive prior to installation.

② Rod ends must be aligned as show in the above drawing for Left or Right-Hand Installation.