UNIVERSAL MOTION COMPONENTS CO., INC.

Driving Innovation Since 1978

IRRIGATION POWERTRAIN

UMC STANDARD INSTALLATION MANUAL

Please read through this section before beginning installation:

- Each UMC Coupler Kit comes with the following components and quantity as shown in Figure 1:

  a. Coupler Load Arm– 4;
  b. Puck – 1;
  c. 1/4" Square Neck (SQUEX) Bolt – 8;
  d. 1/4" Lock Nut – 8;
  e. 3/8" Hex Bolt – 1;
  f. 3/8" Lock Nut – 1;
  g. Alignment Rod – 1.

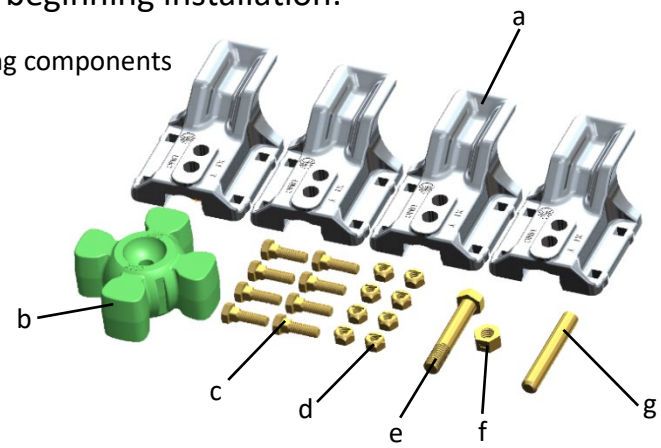

Figure 1: Coupler Kit components.

- Before you start, take a moment to identify the coupler that you have with the types listed below in Figure 2. Each type of coupler fits specific shape(s) and size of shaft(s). **FAILURE TO USE THE CORRECT COUPLER CAN RESULT IN DAMAGE UPON INSTALLATION OR FAILURE DURING OPERATION.**

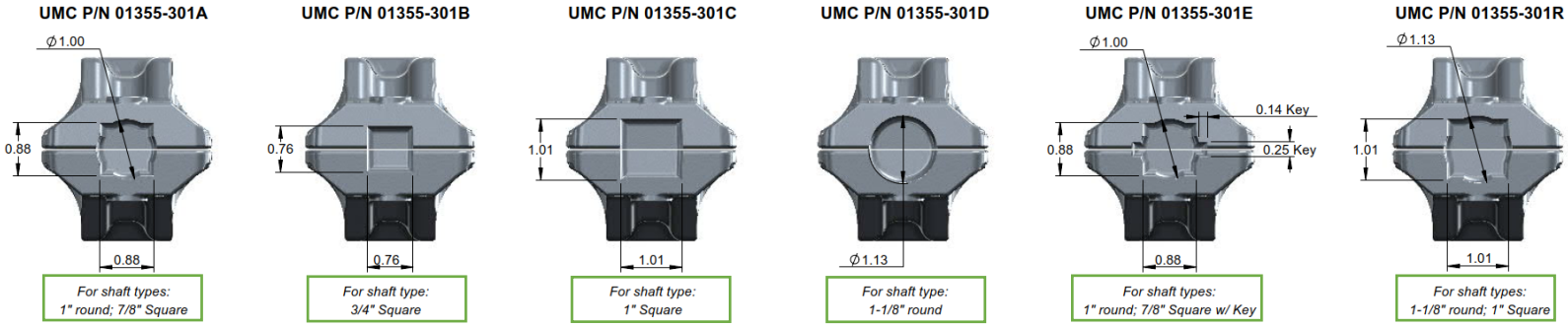

Figure 2: UMC Coupler part numbers and corresponding shaft type and size.

- Make sure machine's power source is turned off and work area is free of electric wires during installation. Failure to do so may cause serious injury.

- Clean all final drive gearbox input shafts, center drive output shafts and drive shafts so that they are free of any rust, burrs, dirt etc. **FAILURE TO PROPERLY CLEAN THE SHAFTS CAN RESULT IN BREAKING THE COUPLER LOAD ARMS.**

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INSTALLATION STEPS:

1. Pre-assemble the couplers as shown in Figure 3-1. Assemble the couplers and turn the four 1/4" lock nuts until the thread interference begins, then stop turning the lock nuts. **DO NOT TIGHTEN DOWN LOCK NUTS AT THIS POINT.** Insert the puck into the coupler's load arms.

   Note: The orientation of the puck should be the grooves on either side of the puck facing the open area on the side, as shown in Figure 3-2. Some OEM couplers do not use grooved pucks and as such, in this orientation, the note does not apply.

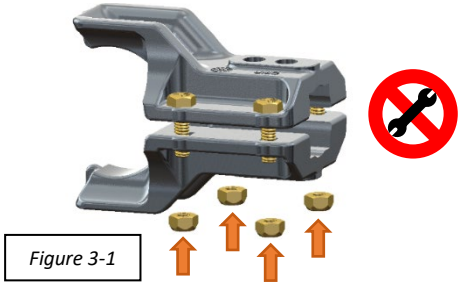

Figure 3-1

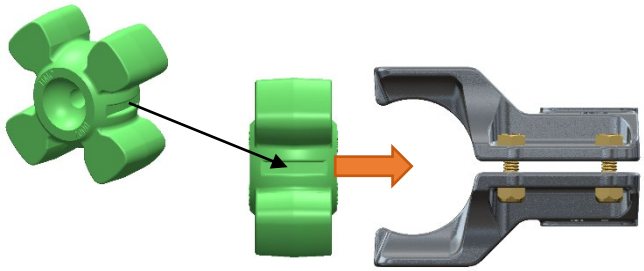

Figure 3-2

2. Install the couplers with the pucks onto final drive gearbox and center drive. Align one of the two holes on the coupler with the through hole on either the gearbox or the center drive's shaft. Insert the 3/8" bolt and engage the 3/8" lock nut into the thread as shown in figure 4. Stop turning when the thread interference begins. **DO NOT TIGHTEN DOWN LOCK NUT AT THIS POINT.**

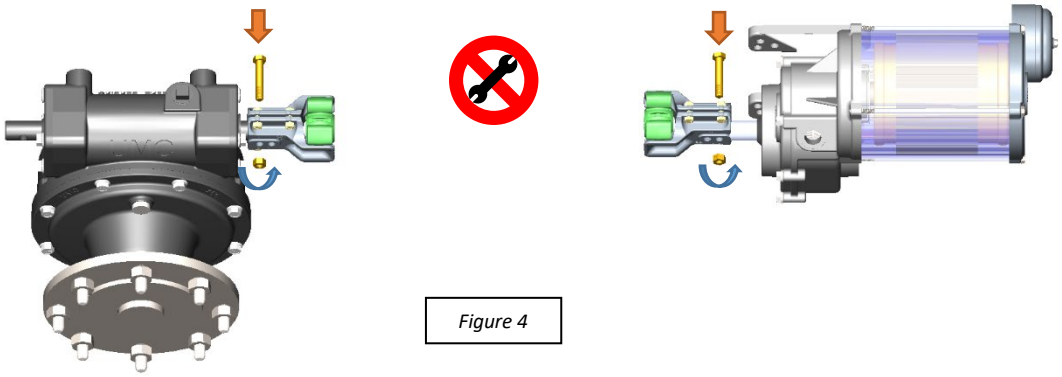

Figure 4

3. Install only one set of couplers without the puck onto one end of the drive shaft. Save the remaining set for later installation, see Figure 5. **DO NOT TIGHTEN DOWN LOCK NUTS AT THIS POINT.**

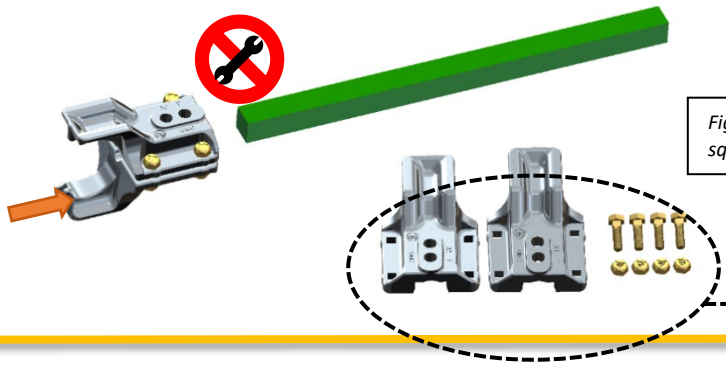

Figure 5: The illustration shown is using a 1-inch square shaft as an example.

Save for later installation.

4. Insert the alignment rods on both sides through the center hole located on the puck all the way through until they are fully seated in the couplers. Then align the couplers axially as shown in Figure 6-1 by rotating the already installed coupler on both the final drive gearbox and the center drive. See Figure 6-2 for ideal orientation for the ease of installation. Do this for both sides.

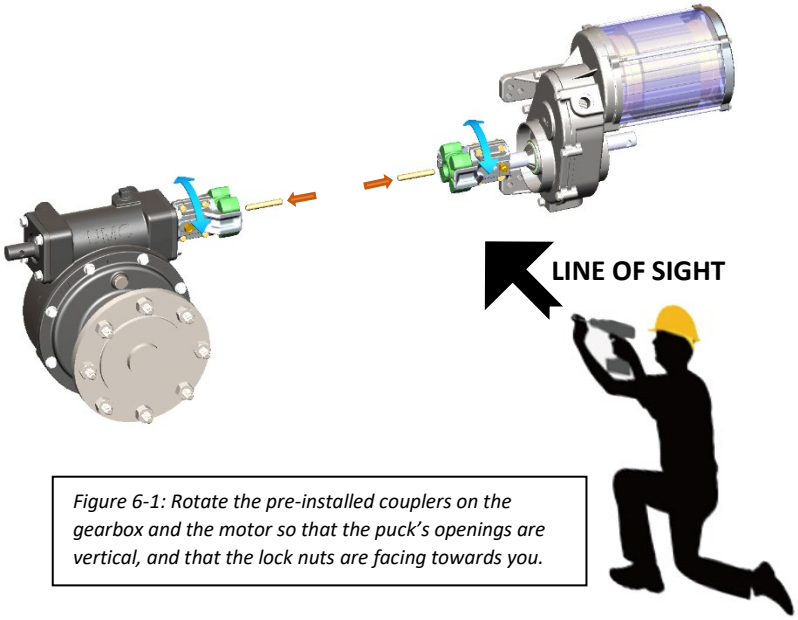

Figure 6-1: Rotate the pre-installed couplers on the gearbox and the motor so that the puck's openings are vertical, and that the lock nuts are facing towards you.

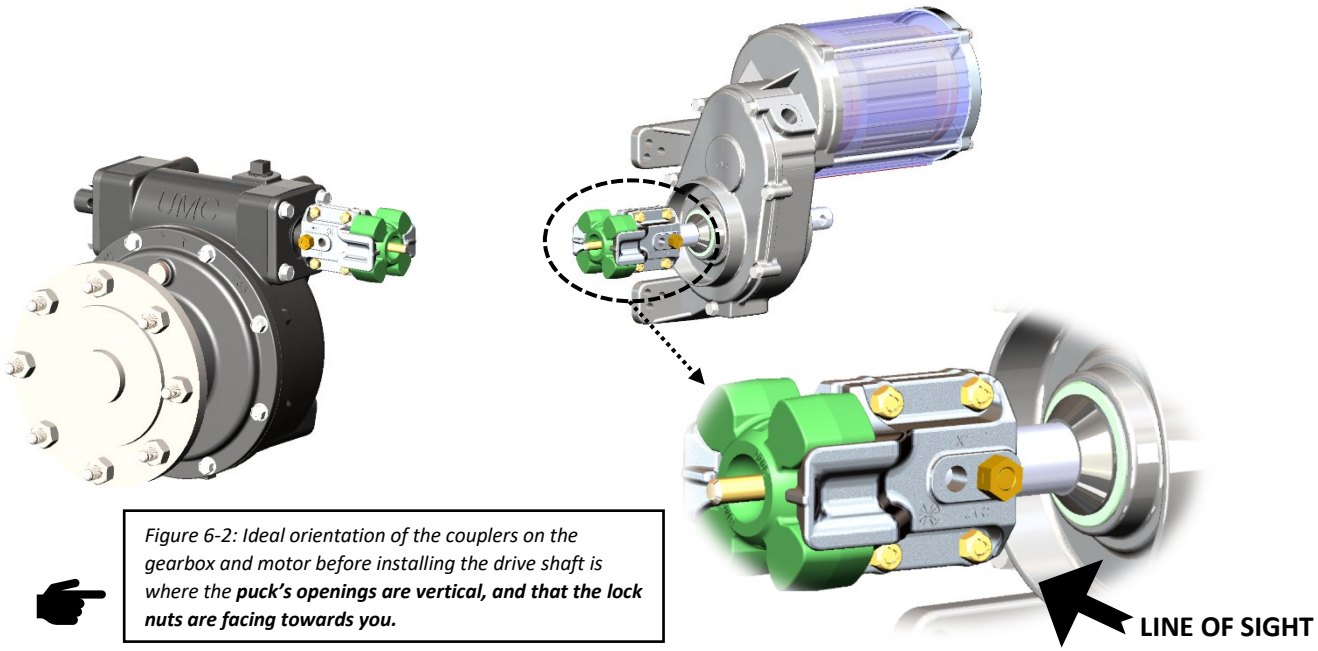

*Figure 6-2: Ideal orientation of the couplers on the gearbox and motor before installing the drive shaft is where the **puck's openings are vertical, and that the lock nuts are facing towards you.***

5. Starting with the Final Drive Gearbox side, make sure the Coupler on the Drive Shaft has its lock nuts facing downwards for the ease of installation. Insert the Coupler Load Arm opening into the grooved opening on the Puck as shown in Figure 7-1. Push the Coupler in until fully engaged with the Puck. Make sure the centering pin is also properly seated within both sides of the Couplers as indicated in Figure 7-2.

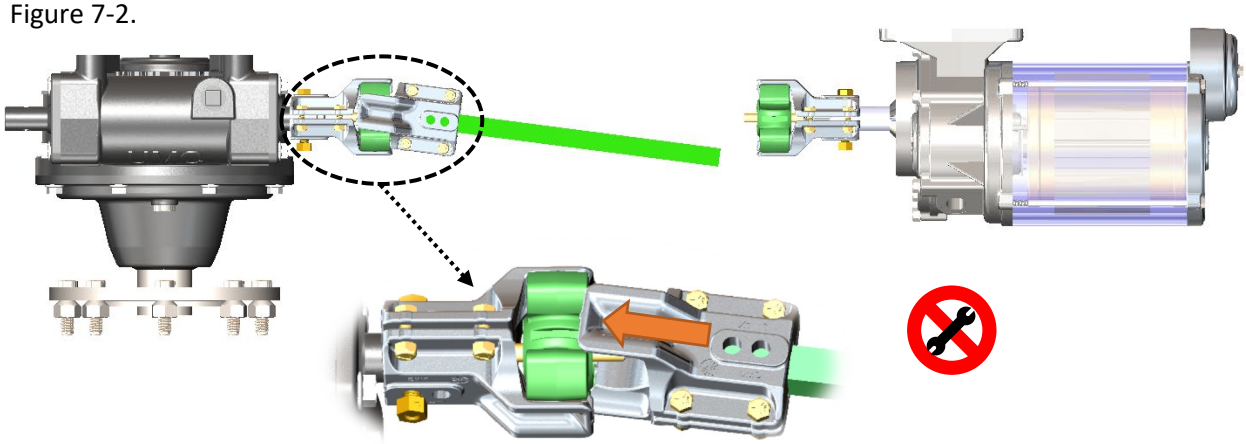

Figure 7-1: Align the coupler load arm with the slot in the opening of the puck. ***All lock nuts should be facing downwards****. Insert the coupler by engaging the coupler and the puck all the way.*

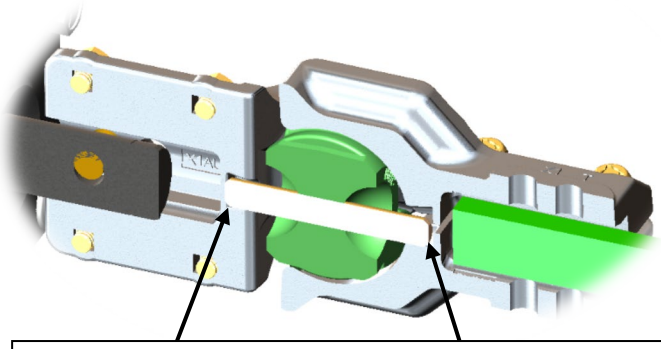

Figure 7-2: A section-view of the couplers when fully engaged. The arrows indicate the locations where the alignment rods should be fully seated.

6. Complete the installation of the drive shaft by first removing the 3/8” lock nut and 3/8” bolt from the coupler that was pre-installed on the motor’s shaft. Slide the coupler back as indicated in figure 8-1 on the motor shaft until bottoming out. Then install the couplers saved in step 3 on the open end of the drive shaft. Align the coupler load arm on drive shaft with the puck openings on the motor shaft.

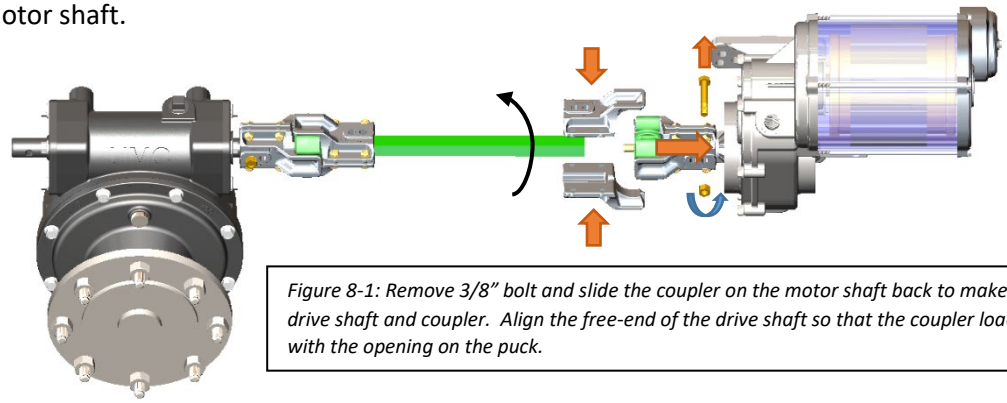

Figure 8-1: Remove 3/8” bolt and slide the coupler on the motor shaft back to make room for the drive shaft and coupler. Align the free-end of the drive shaft so that the coupler load arm is in line with the opening on the puck.

Once the coupler and puck openings are aligned, push the coupler on the motor shaft towards the other coupler to engage the coupler load arms and the puck as shown in Figure 8-2. Make sure the alignment rod is fully seated in the couplers on both ends in the same way as shown in figure 7-2. Re-install the 3/8" bolt through one of the holes on the coupler's face and the through hole on the center drive shaft, and then engage the 3/8" lock nut into the thread. Stop turning when thread interference begins. **Do not tighten down lock nut at this point.**

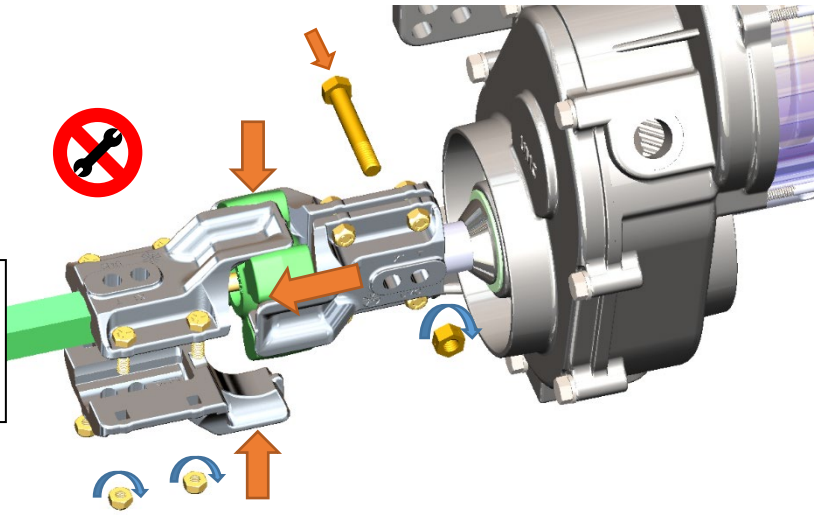

Figure 8-2: install the couplers onto the drive shaft. Push the coupler on the motor's shaft towards the drive shaft until puck and coupler arm are fully engaged, check to make sure that alignment rod is fully seated inside both couplers.

7. Once the drive shaft is in place, check both sides again to ensure that the puck and the coupler load arms are fully engaged and that the alignment rods are properly seated in the couplers. Do this for both ends. Also make sure that the drive shaft is evenly spaced on both sets of couplers.
8. To secure the system, start with the couplers either on the final drive gearbox or center drive's shafts. Begin by torqueing the 3/8" lock nut down, as shown in Figure 9. **Torque to 35 ft-lbs. of torque. DO NOT OVER-TIGHTEN, OVER-TIGHTENING CAN RESULT IN DAMAGE TO THE COUPLER LOAD ARMS.**

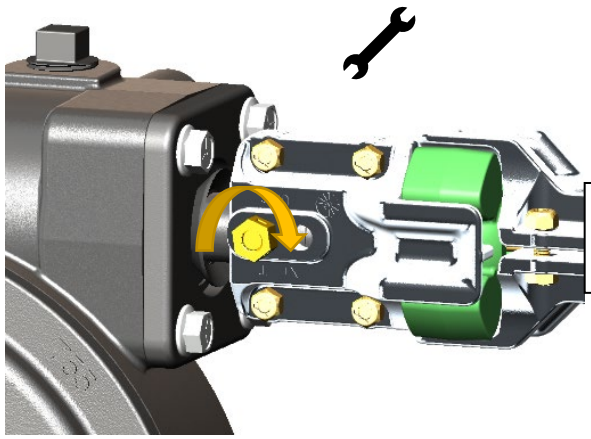

Figure 9: The illustration shown is using the Coupler on the Final Drive Gearbox side as an example.

9. Once 3/8” lock nut is tightened, proceed to the four 1/4” lock nuts on the same coupler. Tighten the four 1/4” lock nuts in an **ALTERNATING FASHION, as shown in Figure 10, one full turn at a time to avoid damaging the coupler. Tighten to 7 ft-lbs. of torque.** **DO NOT OVER-TIGHTEN, OVER-TIGHTENING CAN RESULT IN DAMAGE TO THE LOAD ARMS.**

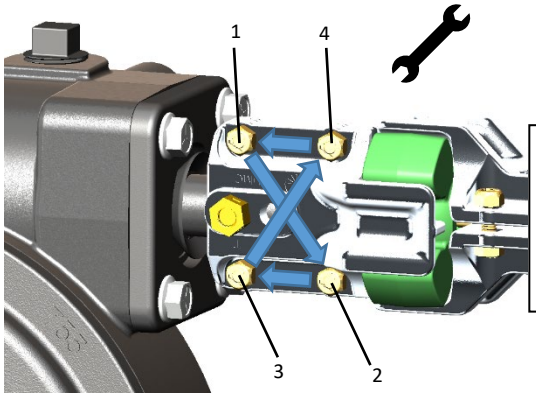

Figure 10: Shows the alternating pattern that the installer should take when tightening down the 1/4” lock nuts.

The illustration shown is using the coupler on the gearbox side as an example.

10. Repeat step 10 for the other couplers that are on either the center drive or the final drive gearbox’s shaft.

(Note: as the illustration shown in this manual, next would be the couplers on the center drive shaft)

11. Before you begin to finalize the installation of the power transmission system, take the time to check the following to ensure proper installation. First, the Couplers and the Pucks should be fully engaged. Second, the Alignment Rods should be fully seated within the Puck and Coupler pairs. Lastly, the Drive Shaft should be installed in the Couplers equally spaced on both ends.

12. After the final check is completed, begin by tightening the four 1/4” bolts on the couplers that are installed on the drive shaft. Start on one of the couplers on either end of the drive shaft. Tighten the four 1/4” lock nuts in an **ALTERNATING FASHION, as shown in Figure 11, one full turn at a time to avoid damaging the Coupler. Tighten to 7 ft-lbs. of torque.** **DO NOT OVER-TIGHTEN, OVER TIGHTENING CAN RESULT IN DAMAGE TO THE LOAD ARMS.**

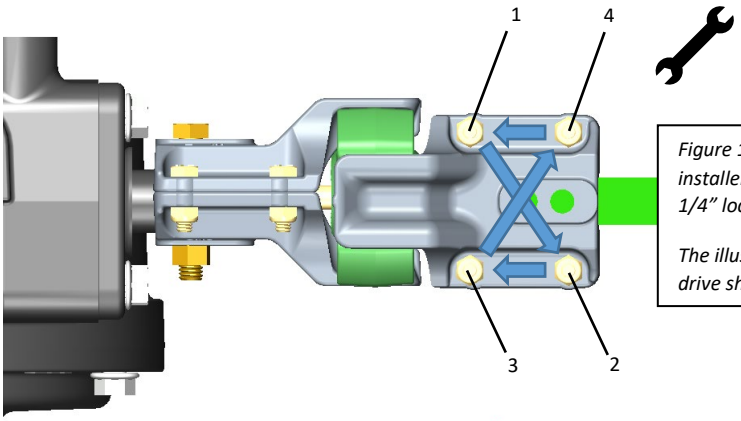

Figure 11: Shows the alternating pattern that the installer should take when tightening down the 1/4” lock nuts.

The illustration shown is using the coupler on the drive shaft at the gearbox side as an example.

13. Repeat step 13 for the other couplers that are the other end of the drive shaft.

(Note: as the illustration shown in this manual, next would be the couplers on the drive shaft at the center drive side.)