The following tools & materials are required for disassembly & servicing of the O-rings used in the TuckAway Electric Monitor (#3352)

- 5/64” Allen wrench
- 7/64” Allen wrench*
- 3/16” Allen wrench*
- 7/32” Allen wrench*
- 1/4” Allen wrench*
- O-Ring removal tool (dental pick)*
- Open Face Spanner wrench*
- Straight-blade screwdriver*
- Adjustable wrench
- Parker O-Lube (part #92010001) 4oz, Use on all O-Rings*
- Low Temperature Lubriplate (part #92020001) or equivalent
- Clean Workbench & Vice

*These tools are part of the Akron Brass Nozzle Repair Tool Kit (part #9200)
## O-Ring Replacement Parts List

<table>
<thead>
<tr>
<th>Part #</th>
<th>Item #</th>
<th>Description</th>
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The TuckAway Electric Monitor Technical Service Parts List (document # 118585, available at AkronBrass.com in the “Resources” section) supplies further part layout & detail.

## Disassembly

1. Disconnect & remove the nozzle
2. Disconnect & remove wiring harness
3. Use 7/64” Allen wrench & remove the 4 screws holding the elevation motor to the monitor.
4. Pull off motor to expose the internal gear & O-Ring #45. Pull off the internal gear & carrier plate.

5. Use the 7/64” Allen wrench to remove the 4 screws holding the motor housing to the motor.
6. Separate the motor & housing & flip over the housing to expose O-ring #49.

7. To remove the position sensor, use the 5/64” Allen wrench and loosen both of the set screws holding the sensor housing to the monitor and slide off.
8. This will expose O-ring #202.

9. Using an adjustable wrench, unscrew & remove the bearing cap. This exposes O-Ring #34.

10. Manually depress the outlet elbow to eject the worm gear & closest set of washers & thrust bearings.
11. Pull the gear shaft out of the monitor from the motor side. This will expose the location of O-Ring #26, which is located behind the needle bearings & can be carefully removed with the hooked end of the o-ring removal tool.

12. Using the 5/64” Allen wrench, loosen the set screw on the underside of the elevation joint.
13. Note: the monitor should be placed on its side for the next step so that the bronze ball bearings stay in place when the outlet elbow is removed. Use the open face spanner to unscrew the ball retainer ring.

14. Pull off the outlet elbow & place on the bench with the elevation gear upward as shown. Place the bronze ball bearings in a separate container. Using a 3/16” Allen wrench, unscrew the 5 screws holding the outlet gear & ball retainer ring to the outlet elbow. O-ring #18 is accessible on the outer edge of the ball retainer ring.
15. Lift off the outlet gear & ball retainer ring off of the outlet elbow together to avoid losing the ball bearings between them. O-ring #17 and O-ring #10 are now accessible on the outlet elbow.

16. Use the 3/16” Allen wrench and remove the 2 screws locking the middle elbow to the inlet sleeve. Note the orientation of the middle elbow to the base for reassembly.
17. Unscrew the middle elbow from the inlet sleeve and pull off, exposing O-ring #8. This is a pressure seal for the waterway, and is not between moving parts.

18. Reassemble the middle elbow to the inlet sleeve and install the locking screws.

19. For disassembly of the inlet base, begin by removing the rotation motor, rotation sensor, gearing & associated O-rings as detailed in steps 3 through 11 (In step 10, manually rotate the inlet elbow left to eject the rotation worm gear) for the elevation motor & hardware.

20. Turn the monitor on its side and clamp the base flange into a bench vise (padded jaws are recommended to prevent damage to mating surfaces or painted finish). Remove rotation stops (denoted by a groove around the bolt head) and after placing a container to catch ball bearings, remove the 4 plastic set screws.
21. Rotate the middle elbow to work the bearings out of the set screw holes. Remove ALL of the bearings from both the upper & lower bearing tracks. Note: If you are experiencing difficulty getting the last of the bearings out, a zip-tie or similar device can be used to help push the bearings around their track toward the opposite set screw opening. Once the bearings are removed, the middle elbow & sleeve can be pulled out of the inlet base. This will expose O-ring #14 and O-ring #10.
Reassembly

Note: Clean & inspect all parts for wear/damage
Ensure that all replacement O-Rings & associated surfaces are well-lubricated with Parker O-Lube
Lubricate all other parts with Low Temperature Lubriplate

1. Push middle elbow & inlet sleeve back into the base.
2. Install the plastic ball bearing retainer set screws nearest the ground for both upper & lower bearing tracks and reinsert the bearings. It will be necessary to rotate the elbow to help distribute the bearings all the way around the track. There are 41 bearings for each track. Once all bearings are in place, grease bearing cavity & install the remaining 2 plastic set screws. Reinstall the rotation stop bolts & unclamp the monitor.
3. Grease & reinstall the gear shaft, the internal rotation gear (align with roll pins), and the rotation motor.
4. Manually rotate the middle elbow to the left and then reinstall the thrust washers, thrust bearings, and worm gear, rotating the middle elbow to the right to pull the worm gear into position on the gear shaft. Note: Ensure each thrust bearing is sandwiched by two thrust washers, and that there is a set on either side of the worm gear. (See detail below) The spring washers should be cupped away from the worm gear, as shown.

5. Reinstall the bearing cap. Do NOT reinstall position sensor at this time.
6. Place monitor on its side and place the 37 ball bearings from disassembly step 14 back into their track. Refasten elevation gear & ring ball retainer to the outlet elbow and place assembly in the monitor. Retighten ring ball.
retainer with the spanner. Note: make sure that O-ring #18 on the outer edge of the ring ball retainer is not pinched, as it may bunch up during tightening. When this happens, use the O-ring tool & nudge the o-ring back into place. Tighten set screw on the underside of the elevation joint and place the monitor back on its base.

7. Grease & reinstall the gear shaft, the internal elevation gear (align with roll pins), and the elevation motor.

8. Manually rotate the middle elbow downward and then reinstall the thrust washers, thrust bearings, and worm gear, rotating the middle elbow upward to pull the worm gear into position on the gear shaft. Note: Ensure each thrust bearing is sandwiched by two thrust washers, and that there is a set on either side of the worm gear.

9. Reinstall the bearing cap. Do NOT reinstall position sensor at this time.

10. Reconnect the wiring harness & nozzle.

**Position sensor installation & calibration**

1. Center the Monitor elevation & rotation joints in their range of travel.

2. Remove gear shafts from position sensors & install on the monitor.
3. Rotate the sensor gears inward (as shown) until resistance is felt.

4. Slide position sensors into place on the monitor & tighten set screws. Reconnect sensor wiring harness.

5. Drive monitor all the way to the left & all the way down. Position sensors are now calibrated.

**Test monitor thoroughly before returning to service.** All joints should rotate freely without binding and there should be no leaks when in use.