V2 Cylinder Repair or Replacement Instructions

These instructions will aid you in repairing or replacing the cylinder(s) on a Tommy Gate V2 series liftgate and are used for multiple kits. Locate your kit below and verify its contents.

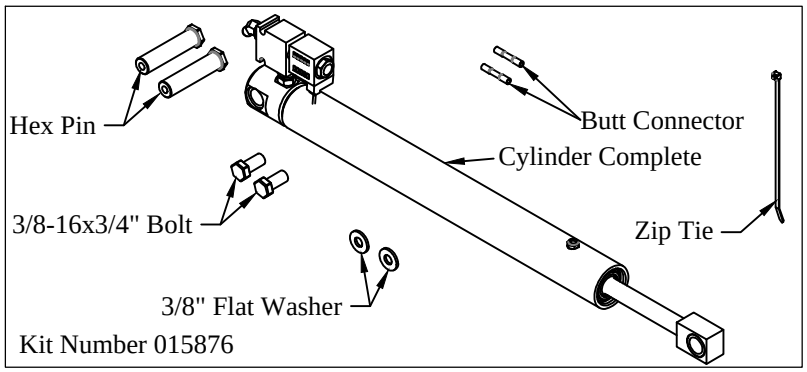

Figure 1: V2 Complete Cylinder Part Identification

Table 1: Part List

QTY.	PART NO.	DESCRIPTION
1	015177	CYLINDER COMPLETE W/ LOCK-V2
2	000508	3/8-16x3/4" HHCS GR5
2	000575	3/8" USS FLAT WASHER
2	009089	16-14 HEAT SHRINK BUTT CONNECTOR
2	015522	HEX PIN (V2) ZINC PLATED
1	009077	3/16"x7-1/2" CABLE TIE

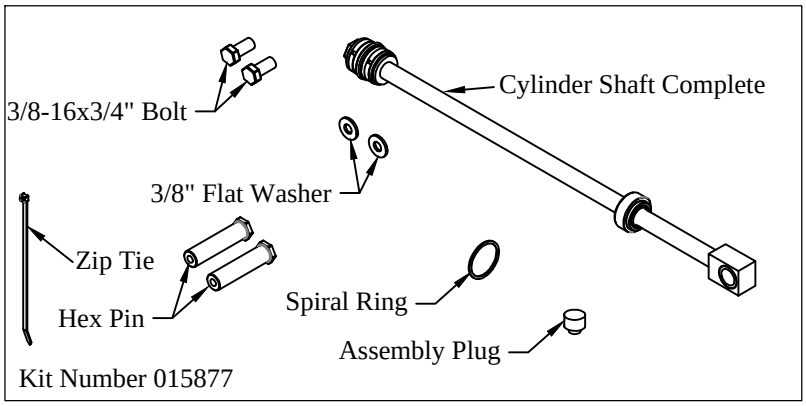

Figure 2: V2 Cylinder Shaft Part Identification

Table 2: Part List

QTY.	PART NO.	DESCRIPTION
1	015339	CYLINDER SHAFT COMPLETE-V2
1	015175	1-5/8" INTERNAL SPIRAL RING-V2
2	000508	3/8-16x3/4" HHCS GR5
2	000575	3/8" USS FLAT WASHER
1	013675	CYLINDER PORT ASSEMBLY PLUG
2	015522	HEX PIN (V2) ZINC PLATED
1	009077	3/16"x7-1/2" CABLE TIE

Note: Thoroughly check cylinder barrel for scoring or burrs before using this kit. Repair or replace as necessary.

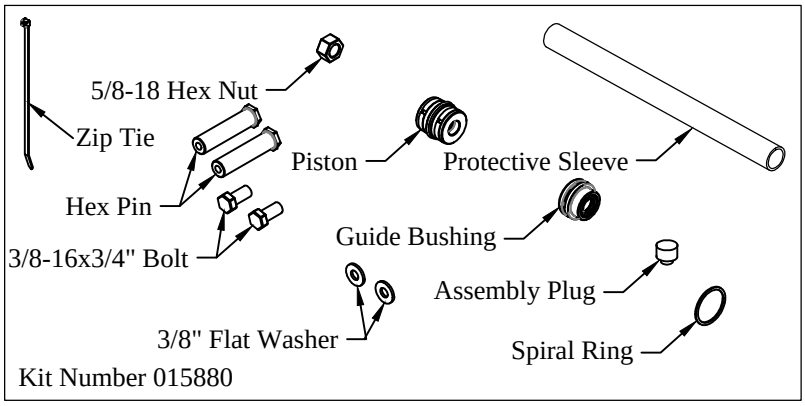

Figure 3: V2 Cylinder Seal Part Identification

Table 3: Part List

QTY.	PART NO.	DESCRIPTION
1	015878	ASSEMBLED V2 PISTON
1	015879	ASSEMBLED V2 GUIDE BUSHING
1	000552	5/8-18 SAE HEX FIN NUT
1	015175	1-5/8" INTERNAL SPIRAL RING-V2
2	000508	3/8-16x3/4" HHCS GR5
2	000575	3/8" USS FLAT WASHER
1	016199	CYL SHAFT PROTECTIVE SLEEVE
1	013675	CYLINDER PORT ASSEMBLY PLUG
2	015522	HEX PIN (V2) ZINC PLATED
1	009077	3/16"x7-1/2" CABLE TIE

Note: This kit is not compatible with Ø3/4" cylinder shafts.

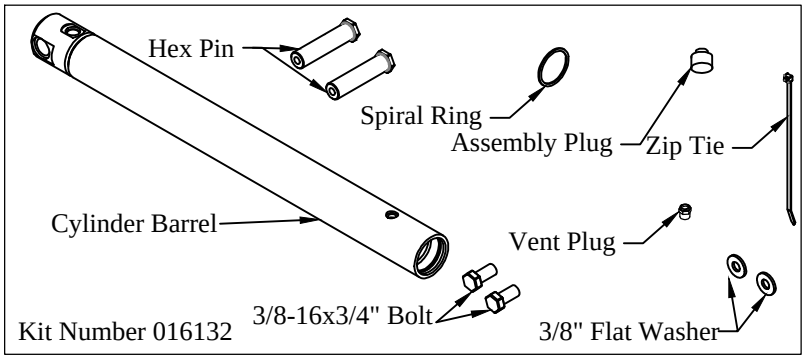

Figure 4: V2 Cylinder Barrel Part Identification

Table 4: Part List

QTY.	PART NO.	DESCRIPTION
1	015338	CYLINDER TUBE WELDMENT(V2)
1	015175	1-5/8" INTERNAL SPIRAL RING-V2
2	000508	3/8-16x3/4" HHCS GR5
2	000575	3/8" USS FLAT WASHER
1	013675	CYLINDER PORT ASSEMBLY PLUG
2	015522	HEX PIN (V2) ZINC PLATED
1	009077	3/16"x7-1/2" CABLE TIE
1	000600	VENT PLUG - CYLINDER

Removing the Cylinder

1. **Lower** the liftgate to the ground.
2. **Disconnect** the 4 GA. power cable from the positive side of the battery (Customer Connection Point on the driver seat pedestal on Ford Transit) or manually **Trip** the circuit breaker.
3. **Remove** and **Discard** the hex head bolts from pins "A" and "B" (Figure 5).
4. **Place** a rag or piece of cardboard in the lower arm to protect the paint from the cylinder (Figure 5).
5. **Remove** and **Discard** pin "A" (Figure 5).
6. **Rotate** and **Secure** the upper arm out of the way (Figure 6).
7. **Connect** the 4ga power cable to the positive side of the battery (Customer Connection Point on the driver seat pedestal on Ford Transit) or manually **Engage** the circuit breaker.
8. **Push** down on the toggle switch and **Push** in on the cylinder shaft to fully collapse the cylinder.
9. **Disconnect** the 4 GA. power cable from the positive side of the battery (Customer Connection Point on the driver seat pedestal on Ford Transit) or manually **Trip** the circuit breaker.
10. **Remove** the hose from the cylinder lock (Figure 6).
11. **Remove** the coil from the cylinder lock (Figure 6).
12. **Cut** the coil wires 2" to 3" from the coil.
    Complete this step only if replacing the coil.

Note: Support the lower arm in the next steps to keep if from falling.

13. **Remove** and **Discard** pin "B" (Figure 5).
14. **Remove** the cylinder.
15. **Insert** new pin "B" through outboard upright and far enough into lower arm to support the lower arm (Figure 6).
16. **Remove** and **Save** the cylinder lock from the cylinder (Figure 6), if reusing it for this repair.

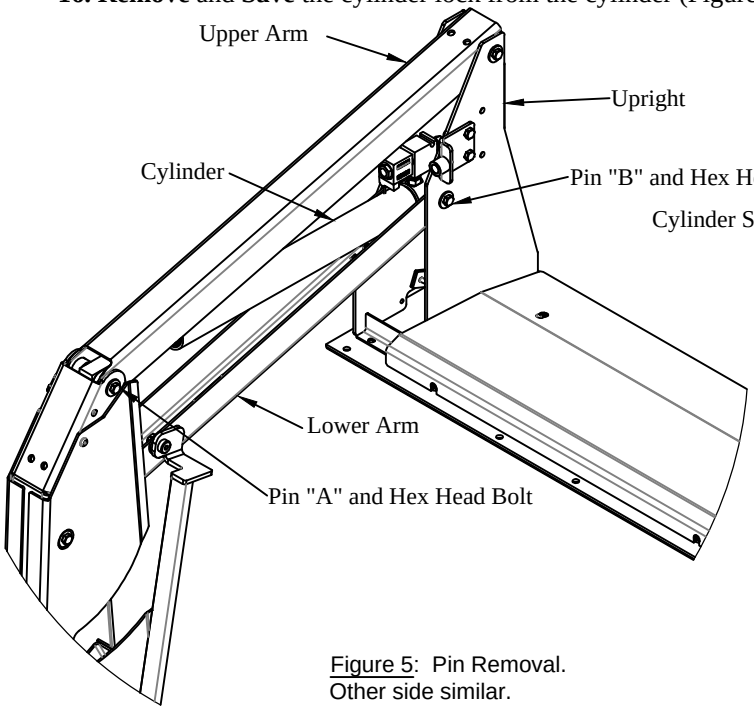

Figure 5: Pin Removal.
Other side similar.

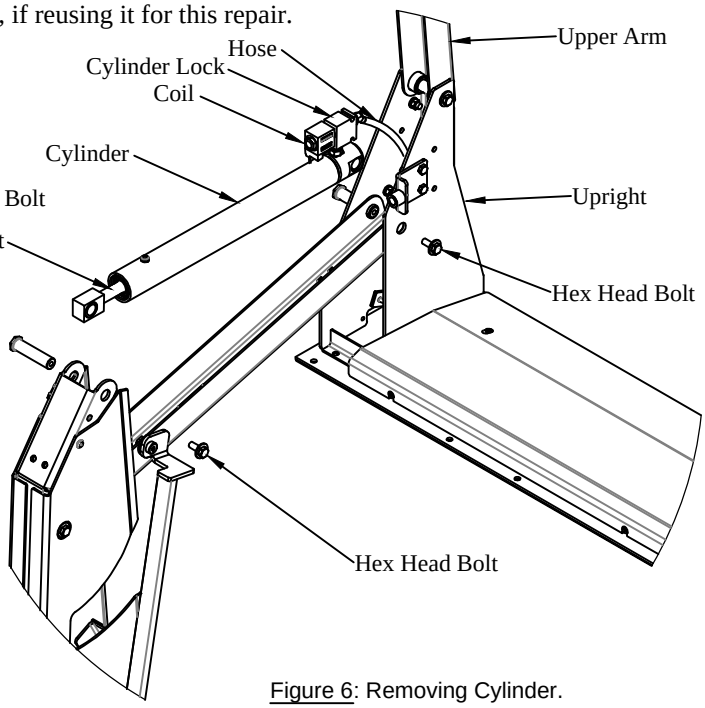

Figure 6: Removing Cylinder.
Other side similar.

Disassembling the Cylinder

Note: If you are replacing the complete cylinder, proceed to Installing the Cylinder.

1. **Pull** the cylinder shaft out to allow access to the spiral retaining ring.
2. **Remove** the cylinder vent plug (Figure 7).
3. **Remove** the spiral retaining ring (Figure 7).
4. **Pull** the cylinder shaft assembly out the end of the cylinder barrel.
   Note: This step could require significant force.
5. **Inspect** the inside of the cylinder barrel.
   a. **Check** for any scoring.
   b. **Check** for any burrs on the spiral retaining ring groove and cylinder vent port.
6. **Deburr** the inside of the cylinder barrel, if necessary, with a 240 grit flapper wheel or sand paper.
7. **Replace** the cylinder barrel if any burrs cannot be removed.
8. **Clean** the cylinder tube of all debris.

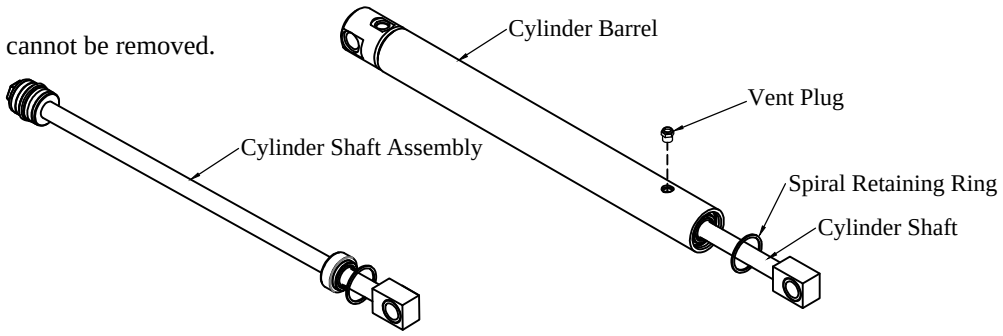

Figure 7: Cylinder disassembly.

Rebuilding the Cylinder

Note: If you are replacing the complete cylinder shaft assembly, proceed to Installing the Cylinder Shaft.
The recommended hydraulic oil for this liftgate is ISO grade 32, Dexron, or equivalent.
Do not complete this section with a Ø3/4" cylinder shaft, replace the shaft assembly instead.

1. **Hold** the shaft in a vice, using the cardboard tube provided as a protective barrier.
2. **Remove** and **Discard** the old nut.
3. **Remove** and **Discard** the piston and guide bushing.
4. **Inspect** the cylinder shaft for nicks or scarring and replace if damaged.
5. **Check** the cylinder shaft threads for damage and replace if damaged.
6. **Clean** the cylinder shaft and tube of all debris.

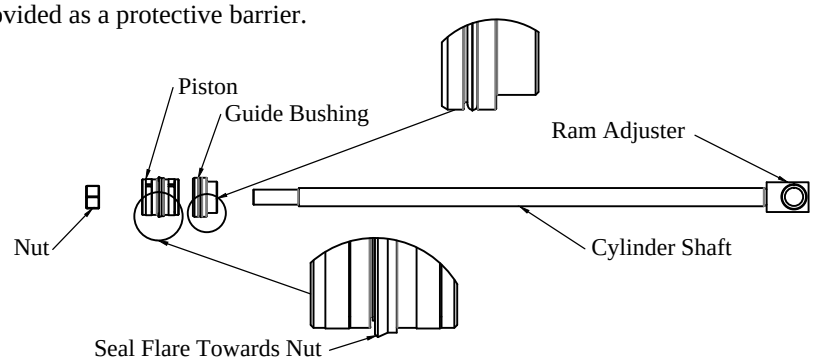

Figure 8: Cylinder shaft assembly.

7. **Lubricate** the inside of the guide bushing with the recommended hydraulic oil.
8. **Lubricate** the cylinder shaft with the recommended hydraulic oil.
9. **Install** the guide bushing on the cylinder shaft as shown in (Figure 8).
   A twisting motion will aid installation.
10. **Install** the piston and nut in the order and orientation shown in (Figure 8).
    A twisting motion is required to avoid o-ring damage.
11. **Tighten** the nut to 80 ft-lbs while holding the ram adjuster in a vice.

Installing the Cylinder Shaft Assembly

Note: The recommended hydraulic oil for this liftgate is ISO grade 32, Dexron, or equivalent.

1. **Install** the hole plug tool into the vent plug hole on the cylinder barrel (Figure 9).
   The end of the hole plug tool must be flush with the inside wall of the cylinder barrel. If this is not done or done incorrectly the seal will be cut when you install the cylinder shaft assembly in the cylinder barrel and THE CYLINDER WILL LEAK.
2. **Check** to make sure the hole plug tool is installed correctly. **Run** your finger over the plug on the inside of the cylinder barrel and check for any burrs that might cut or nick the cylinder seal.
3. **Lubricate** the piston, guide bushing, and the inside of the cylinder barrel with the recommended hydraulic oil.
4. **Install** the piston into the cylinder barrel, past the vent plug hole (Figure 9).
5. **Install** the guide bushing into the cylinder barrel (Figure 9).
6. **Install** the spiral retaining ring in the spiral retaining ring groove.
7. **Install** the cylinder lock on the cylinder (Figure 9).
8. **Remove** the hole plug tool from the vent plug hole.
9. **Install** the vent plug in the vent plug hole.
   Do not overtighten the vent plug, this could damage the piston.

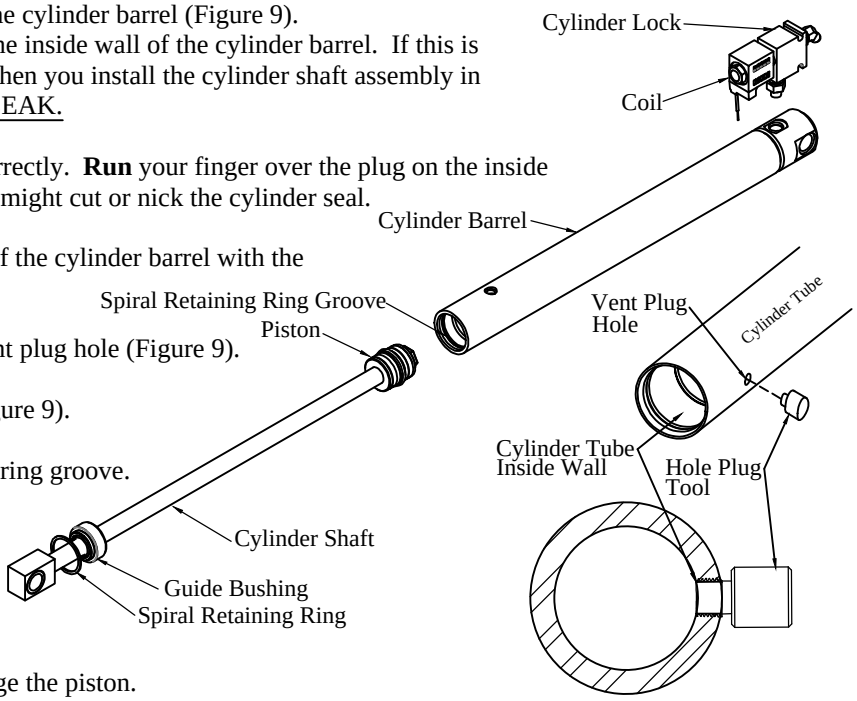

Figure 9: Cylinder assembly.

Installing the Cylinder

1. **Insert** cylinder into lower arm at pin "B".
2. **Install** pin "B" from the outboard side, through the lower arm, cylinder and uprights (Figure 10).
3. **Attach** the hose to the elbow on the cylinder lock.
4. **Install** the coil on the cylinder lock (Figure 10).
5. **Cut** the new coil wires to reach yellow wires previously cut, and **Use** butt connector to connect to the wiring harness. Complete this step only if replacing coil.
6. **Insert** new pin "A" from the outboard side, through the vertical arm, upper arm and cylinder (Figure 10).
7. **Secure** pins "A" and "B" with new hex head bolts and flat washers (Figure 10).
8. **Pull** excess hose towards center of liftgate (under cover sheet). Excess hose will kink when liftgate is raised if left in the upright.
9. **Remove** rag or cardboard previously placed in lower arm.
10. **Connect** the 4ga power cable to the positive side of the battery (Customer Connection Point on the driver seat pedestal on Ford Transit) or manually **Engage** the circuit breaker.
11. **Run** the liftgate through 3-4 complete cycles to remove air from the system.
12. **Check** for leaks and **Repair** as needed.

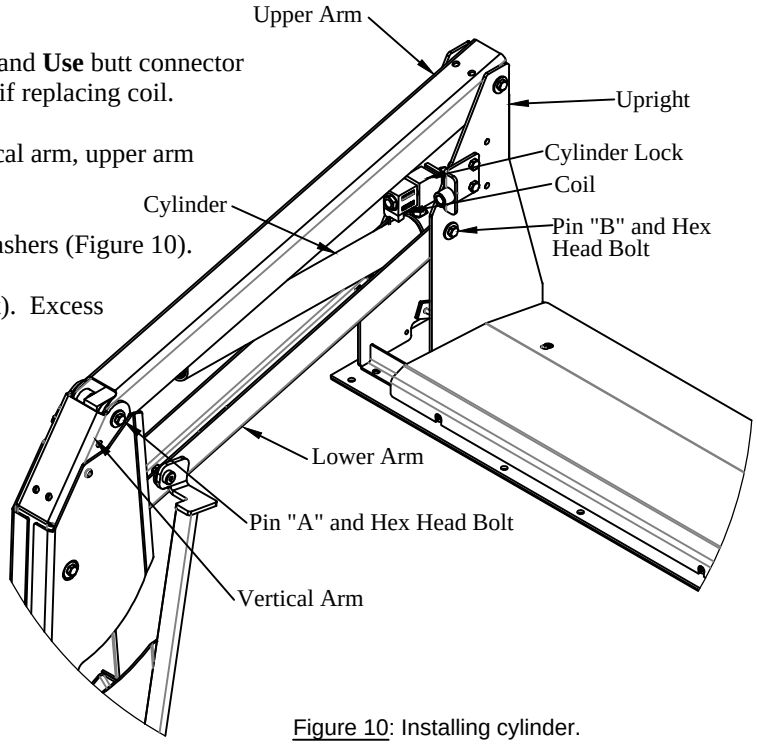

Figure 10: Installing cylinder.

Finishing the Repair

Note: The recommended hydraulic oil for this liftgate is ISO grade 32, Dexron, or equivalent.

1. **Lower** the platform until the platform taper touches the ground.
2. **Disconnect** the 4 GA power cable from the positive side of the battery
   (Customer Connection Point on the driver seat pedestal on Ford Transit) or manually **Trip** the circuit breaker.
3. **Remove** the pump box cover by removing five (5) thumb or hex screws (Figure 11).
4. **Check** if the reservoir is at least 3/4 full, if it is, Skip to Step 8.
5. **Remove** the vent plug from the pump reservoir (Figure 12).
6. **Add** enough recommended hydraulic oil to fill the reservoir 3/4 full.
   (The platform should be on the ground at this point or the reservoir will be overfilled.)
7. **Install** the vent plug in the pump reservoir.
8. **Install** the pump box cover and screws.
9. **Connect** the 4ga power cable to the positive side of the battery
   (Customer Connection Point on the driver seat pedestal on Ford Transit) or manually **Engage** the circuit breaker.
10. **Raise** and **Store** the platform.

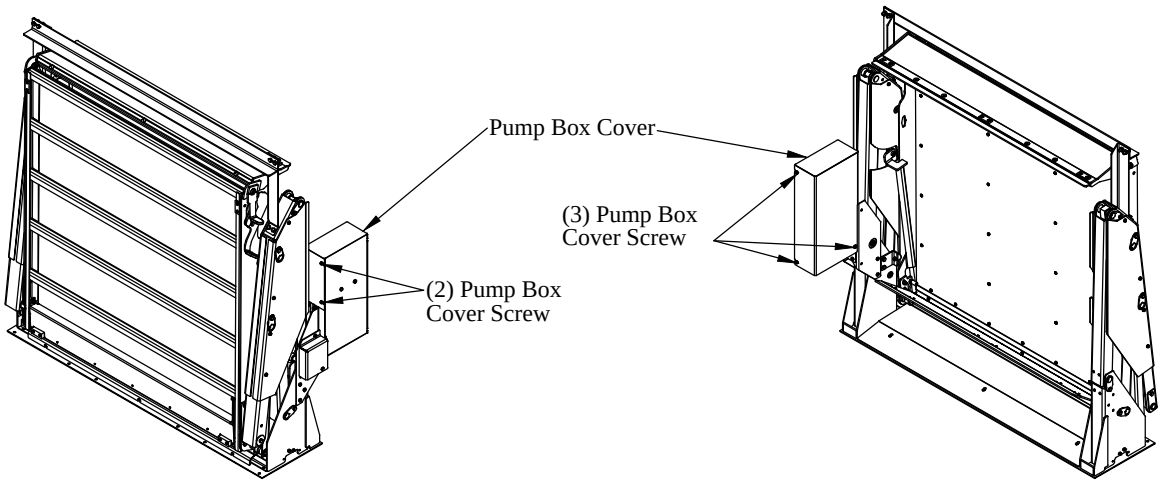

Figure 11: Pump Box.

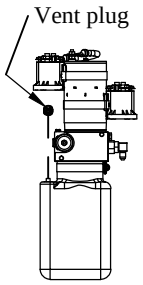

Figure 12: Vent plug.