



# A1100 GUARDIAN COAXIAL OVERFILL PREVENTION SYSTEM

## Assembly and Installation Instructions

***IMPORTANT: Read these instructions completely and carefully before attempting to install and operate this valve. Failure to do so may result in improper valve operation allowing for a potential storage tank overflow. An overflowed tank can create extremely hazardous fuel spills which may result in personal injury and property damage. For further information, please call our Customer Service Department at (252) 243-0150.***

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*Note: All information, illustrations and specifications in this manual are based on the latest product information available. We reserve the right to make changes at any time without notice.*

**CAUTION:** Never disconnect the drop elbow from the tight-fill adapter when the A1100 has reached the positive shut-off level. At this point, the tank truck hose is still full and must not be disconnected until enough fuel has been removed from the underground storage tank to drain the hose. Premature disconnection will result in a hazardous spill and a potential for personal injury and property damage.

**WARNING:** If the underground storage tank is equipped with a ball float vent valve, make sure it is not extended below the positive shut-off point of the A1100, or remove the float vent valve.

## **ASSEMBLY**

### **TOOLS NEEDED**

- |                       |                             |
|-----------------------|-----------------------------|
| 1. 13/64" drill bit   | 6. Fine half round file     |
| 2. Hand drill         | 7. Heavy duty pop rivet gun |
| 3. Tape measure       | 8. Masking tape             |
| 4. Fine tooth hacksaw | 9. Marker                   |
| 5. Screwdriver        | 10. Hammer                  |

**WARNING:** Do not use electrical devices near gasoline vapors, as it could result in fire or explosion.

### **PACKING LIST**

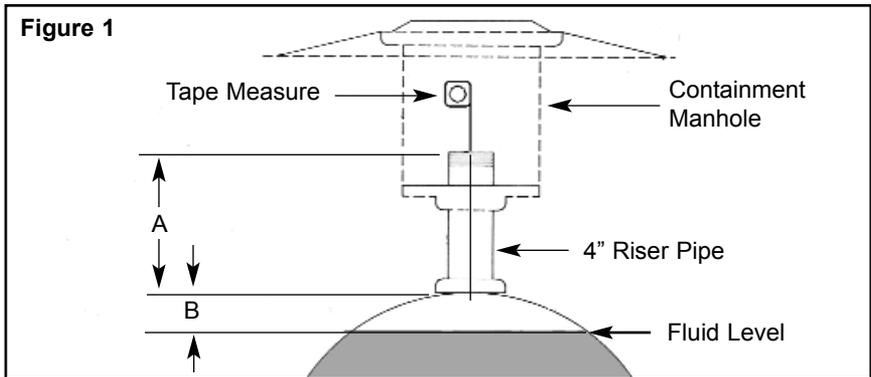
| <u>Standard</u>  |           |        | <u>Self-Sealing</u>   |           |        |
|--|-----------|--------|---|-----------|--------|
| Top Tube   | Model No. | Bottom | Top Tube  | Model No. | Bottom |
| 60"  | A1100-065 | 84"    | 60"   | A1100-085 | 84"    |
| 72"  | A1100-066 | 96"    | 72"   | A1100-086 | 96"    |
| 84"  | A1100-067 | 120"   | 84"   | A1100-087 | 120"   |
|  |           |        | 120"  | A1100-187 | 120"   |
| <b><u>493768 Assembly Kit</u></b>  |           |        | <b><u>493785 Assembly Kit</u></b>   |           |        |
| <ul style="list-style-type: none"> <li>(1) Collar #565004</li> <li>(1) Centering ring #565504</li> <li>(4) Pop rivets #564412</li> <li>(8) Pop rivets #564394</li> <li>(1) Indent tool #564416</li> <li>(1) Hose clamp #564421</li> <li>(1) Seal-All #566726</li> <li>(1) Warning plate #564420</li> </ul> |           |        | <ul style="list-style-type: none"> <li>(1) Collar #565006</li> <li>(1) Gasket #565023</li> <li>(1) Disc seal #566539</li> <li>(1) Wave spring #564441</li> <li>(1) Thrust washer #566038</li> <li>(1) Centering ring #565504</li> <li>(4) Pop rivets #564412</li> <li>(8) Pop rivets #564394</li> <li>(1) Indent tool #564416</li> <li>(1) Hose clamp #564421</li> <li>(1) Seal-All #566726</li> <li>(1) O-ring #565023</li> <li>(1) Warning plate #564420</li> </ul> |           |        |

## TOP TUBE INSTALLATION PROCEDURE

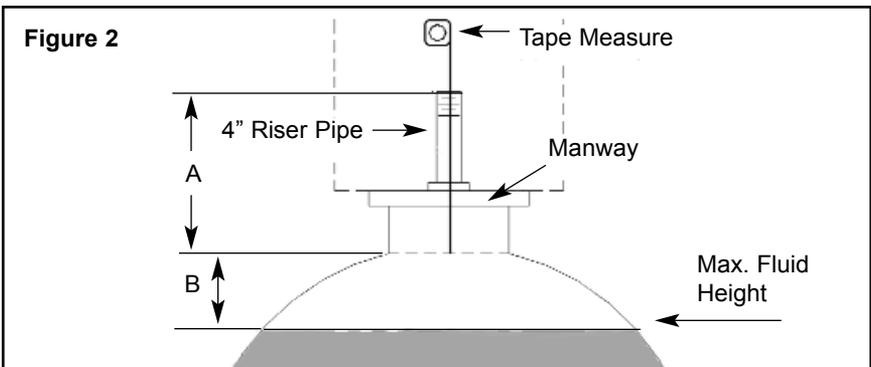
The A1100 Guardian can only be installed after the containment manhole has been installed.

**Step 1:** If already in place, remove the existing 4" cap, adapter and drop tube assembly.

**Step 2:** Find measurement A which is the distance from the inside top of the tank to the top of the 4" riser pipe as shown in Figure 1. If the tank has a manway, make sure to include the height of the manway when finding Dimension A as shown in Figure 2.



**Riser Pipe With Spill Containment Manhole**



**Riser Pipe Installed On Manway**

**Step 3:** Find Measurement B from the chart below. It is the distance from the maximum fluid height allowed to the inside top of the tank. Calculations are based on cylindrical tanks with flat ends. For exact dimensions, consult the tank gauge chart provided with your tank. Local requirements may limit fill capacity to 95% or 97%.

| <b>Tank Diameter</b> |        | <b>95% Shut-off B Dimension</b> |     | <b>97% Shut-off B Dimension</b> |     |
|----------------------|--------|---------------------------------|-----|---------------------------------|-----|
| Feet                 | Meters | Inches                          | MM  | Inches                          | MM  |
| 6.5'                 | 1.98   | 7.5"                            | 190 | 5.4"                            | 136 |
| 7.0'                 | 2.13   | 8.0"                            | 203 | 5.8"                            | 147 |
| 7.6'                 | 2.29   | 9.0"                            | 229 | 6.2"                            | 157 |
| 8.0'                 | 2.44   | 9.5"                            | 241 | 6.5"                            | 168 |
| 8.2'                 | 2.50   | 9.5"                            | 241 | 6.8"                            | 172 |
| 8.5'                 | 2.59   | 10.0"                           | 254 | 7.0"                            | 178 |
| 9.0'                 | 2.74   | 10.5"                           | 267 | 7.4"                            | 189 |
| 9.5'                 | 2.90   | 11.0"                           | 279 | 7.8"                            | 199 |
| 10.0'                | 3.05   | 11.5"                           | 292 | 8.5"                            | 216 |
| 12.0'                | 3.66   | 14.0"                           | 336 | 9.5"                            | 241 |

The A1100 Overfill Prevention Valve is not recommended for tanks under 6.5' (1.98 m) in diameter.

**Step 4:** To determine the top tube cut length C, add A and B.

$$\text{Top tube cut length, } C = A + B$$



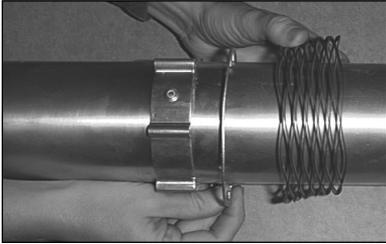
**Step 5:** Measure length C from the bottom of top tube.

**Step 6:** Use a fine tooth hacksaw to cut the tube. The hose clamp (p/n 564421, supplied) acts as a guide for a straight cut.

**IMPORTANT:** Do not use a power saw or tubing cutter to cut the tube.

**Step 7:** File away cutting burrs with a fine tooth file to prevent installation damage to the O-ring seal of the collar. File a slight chamfer on the OD of the tube to allow easier installation in the collar.

## CONNECT THE CENTERING RING TO THE DROP TUBE

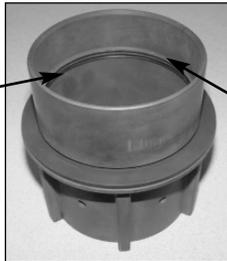


### **Self-Sealing Models Only**

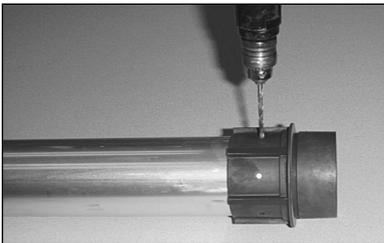
Remove thrust washer (p/n 566038, supplied) and wave spring (p/n 564441, supplied) from the collar (p/n 565006, supplied). Place thrust washer first, then wave spring over the top of the tube.

## CONNECT THE COLLAR TO THE TOP TUBE

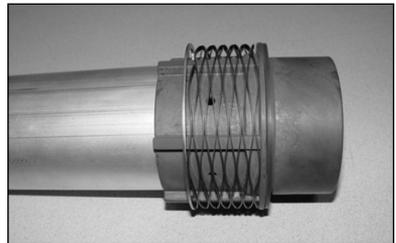
**Step 9:** Insert the o-ring (p/n 565023, supplied) into the o-ring groove in the collar.



**Step 10:** Liberally lubricate the top 1" of the OD of the top drop tube with Seal-All. Slide the collar on to the drop tube, smallest end up, and push down past o-ring until the tube stops at the lip inside the collar.



**Step 11:** Using the collar as a guide, drill (1) 13/64" diameter hole through the top tube. Place a rivet (p/n 564394, supplied) through this hole to maintain correct orientation of the drop tube and the collar. Drill the remaining 5 holes. Fasten the collar using the rivets (p/n 564394). Apply Seal-All over the rivets.



### **Self-Sealing Models Only**

Push wave spring up onto collar. Line up thrust washer with grooves on the outside of the collar and push up onto collar.

## CONNECT THE A1100 TO THE LOWER DROP TUBE



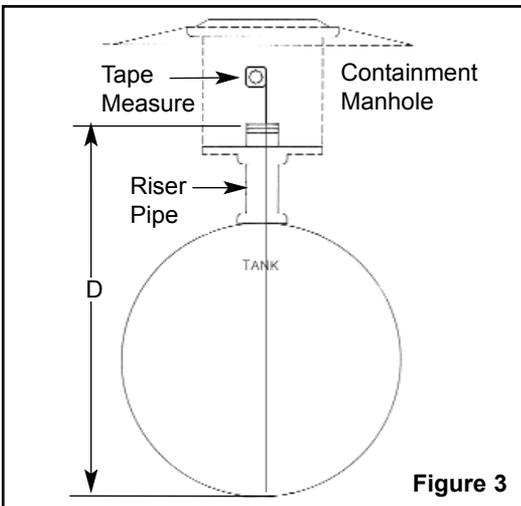
**Step 13:** Apply a liberal coat of pipe dope to male threads of the A1100 base.



**Step 14:** Screw male threaded end of A1100 base into threaded end of drop tube.



**Step 15:** Tighten. The use of strap wrenches is recommended in order to prevent raising burrs on the aluminum parts.



**Figure 3**

**Step 16:** Measure the distance from the top of the 4" riser pipe to the bottom of the tank (dimension D). See Figure 3. Tube length should be 6" above tank bottom to determine overall length E ( $D - 6" = E$ ). Mark tube to length E.

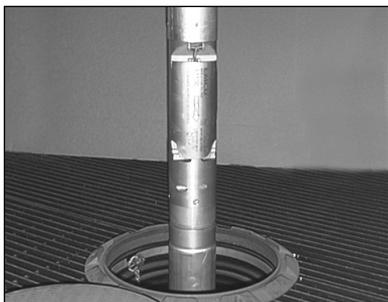


**Step 17:** Square cut the lower tube to length E.

**Optional:** 45 degree cut - The shortest point should start at length E to maintain the 6" minimum clearance requirement at bottom of tank.



## INSTALLATION OF COMPLETED ASSEMBLY INTO THE TANK



**Step 18:** Turn the completed assembly upside down and shake vertically to remove any metal chips left from the drilling process. Position the completed assembly vertically over the riser pipe with the square cut down. Carefully lower the completed drop tube/valve assembly into the riser pipe until the collar rests on the riser pipe.



**Step 19:** Use the hose clamp to clamp the warning plate (p/n 564420, supplied), onto the riser pipe below the threads. Make sure label is facing up.

**Step 20:** Emco recommends installing the Emco A0032-001 Adapter Clamp to prevent the adapter from loosening in use.



### **Step 21: Self Sealing Models**

**It is critical that the A0089-001 Fill Adapter be properly installed to allow proper vapor flow. Improper installation can result in greatly reduce vapor flow that will prevent a normal fuel drop.**

Apply pipe dope to the adapter and riser pipe threads. Position the adapter on the riser and begin to turn the adapter to engage the riser pipe threads. Once the threads engage, turn the A0089-001 adapter approximately 5 turns. The adapter is not designed to seal on the riser. Apply minimal torque (30 ft. lbs. max.) to seat the adapter. Do not over torque. Tighten the set screws (7-10 ft. lbs.) to secure the adapter to the riser pipe once the adapter is positioned as described above. Installing the A0032-001 Adapter Clamp is suggested to ensure the adapter does not loosen.

## **MAINTENANCE**

The A1100 Guardian is maintenance free. Periodic inspection of drop tube wear due to corrosion is suggested.

*Please leave these instructions with the owner/operator of the service station for future reference.*

## **WARRANTY**

Emco Wheaton Retail Corporation service station products are warranted to be free from defects in material and workmanship under normal use and service for a period of twelve (12) months from the date of manufacture.

The warranty set forth herein shall be the exclusive warranty made by Emco Wheaton Retail Corporation and in lieu of all other warranties, expressed or implied, (whether written or oral), including but not limited to any implied warranty of merchantability or fitness for any particular purpose.

Emco Wheaton Retail Corporation's liability under this warranty is limited to, at Emco Wheaton Retail Corporation's option, the repair or replacement of that part which proves to be defective within twelve (12) months of date of manufacture. Emco Wheaton Retail Corporation is not responsible for claims for damage due to improper installation or maintenance, corrosive fluids, or use of a product for a purpose other than that for which it was specifically designed.

Emco Wheaton Retail Corporation shall have no liability or be required to fulfill any obligation under this warranty unless the original purchaser returns the claimed defective item to Emco Wheaton Retail Corporation for inspection to determine whether the claimed defect is covered by this warranty.

Under no circumstances shall Emco Wheaton Retail Corporation be liable for any consequential, special or contingent damages or expenses or any other charges beyond the invoice value of the defective items. The remedies set forth herein shall be the exclusive remedies available to the user and are in lieu of all other remedies except for the remedies described below.

If an Emco Wheaton Retail Corporation product fails within the warranty period, call the Customer Service Department at **(800) 234-4394**. Describe the problem and provide the product date stamp information to the customer service representative. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

Emco Wheaton Retail Corporation products should be used in compliance with applicable federal, state and local laws and regulations. Product selection should be based on physical specifications and limitations and compatibility with the environment and material to be handled. **EMCO WHEATON RETAIL CORPORATION MAKES NO WARRANTY OF FITNESS FOR A PARTICULAR USE.** All illustrations and specifications in this catalog are based on the latest product information available at the time of publication. Emco Wheaton Retail Corporation reserves the right to make changes at any time in prices, materials, specifications and models and to discontinue models without notice or obligation.