A1100-055SRF/SERF
A1100-056SRF/SERF
Remote Fill Assembly

INSTALLATION INSTRUCTIONS

****CRITICAL - MUST READ****

This unit can only be used for new installations or tank level retrofits that allow access to the top of the tank. The *EMCO SUPPLIED NIPPLES AND TEE MUST BE USED* to allow the system to work properly and be vapor tight. See 1.0 and 1.1 below for details.

The maximum burial depth with the supplied top nipple is 5' for slip-on spill containment; and 5 1/2' for thread-on spill containment. For deeper burial, call Emco Customer Service, 800-234-4394.

Supplied Parts:
A1100-0xxSRF Assembly
  top tube attached
  bottom tube separate
493734SRF Riser Collar Kit
493436EPA Remote Fill Kit
A0079-444 Tee
571210 Top Nipple, 4"x45"
571209 Nipple, 4"x4.5"
572719 Drill Fixture
564420 Warning Plate
572786 Extension Spring

Optional Items:
571814 Drill Fixture
A0030 Adapter
A0097 Cap

Tools Required:
Drill
13/64 drill bit
2'-3' level or straightedge
Fine tooth hacksaw
Round file - fine tooth
Tape measure
Hammer
Pop-rivet gun
Emco Z0838 Pipe Sealant/Anti-seize

1.0 The top riser nipple length must be calculated as detailed below, and the Emco supplied special thin wall tubing must be used to make the 571210 Top Nipple. **DO NOT USE standard schedule 40 pipe**, as this will not allow the OPV assembly to be lowered into place without damage to the fill cage o-ring.

1.1 Install the supplied 571209 Short Nipple in the tank bung using pipe sealant. **This Emco supplied nipple must be used**; it has a machined ID to seal properly with the fill cage o-ring.

1.2 Lubricate the nipple ID with grease to allow easier installation of the cage o-ring (later step).

1.3 Install the Emco supplied A0079-444 4" Tee using pipe sealant. Tighten thoroughly.

Note that installations are different if using a slip on or thread on spill bucket. Be sure which type unit you are using, and then follow the steps for that type installation.

Slip On Installations: Use 1.3A

Thread On Installations: Use 1.3B - ***will require Emco 494096 Riser Seal***

Top Nipple Calculation: Slip-on Grade Level Spill Containment

1.3A **Slip-On** (See Figure 1)

1.3A-1 Measure dimension A from **grade** to the top of the Tee fitting

A dimension = _____

1.3A-2 Subtract 5" from dimension A

A_____ - 5" = _____

1.3A-3 Cut the 571210 Top Nipple to the length calculated in step 1.3A-2. Thread 4" NPT.

Note: The supplied top nipple is 45" long. If a longer nipple is required for a deep bury application, contact Emco Customer Service, 800-234-4394.

1.3A-4 Install top nipple using pipe sealant. Tighten securely.

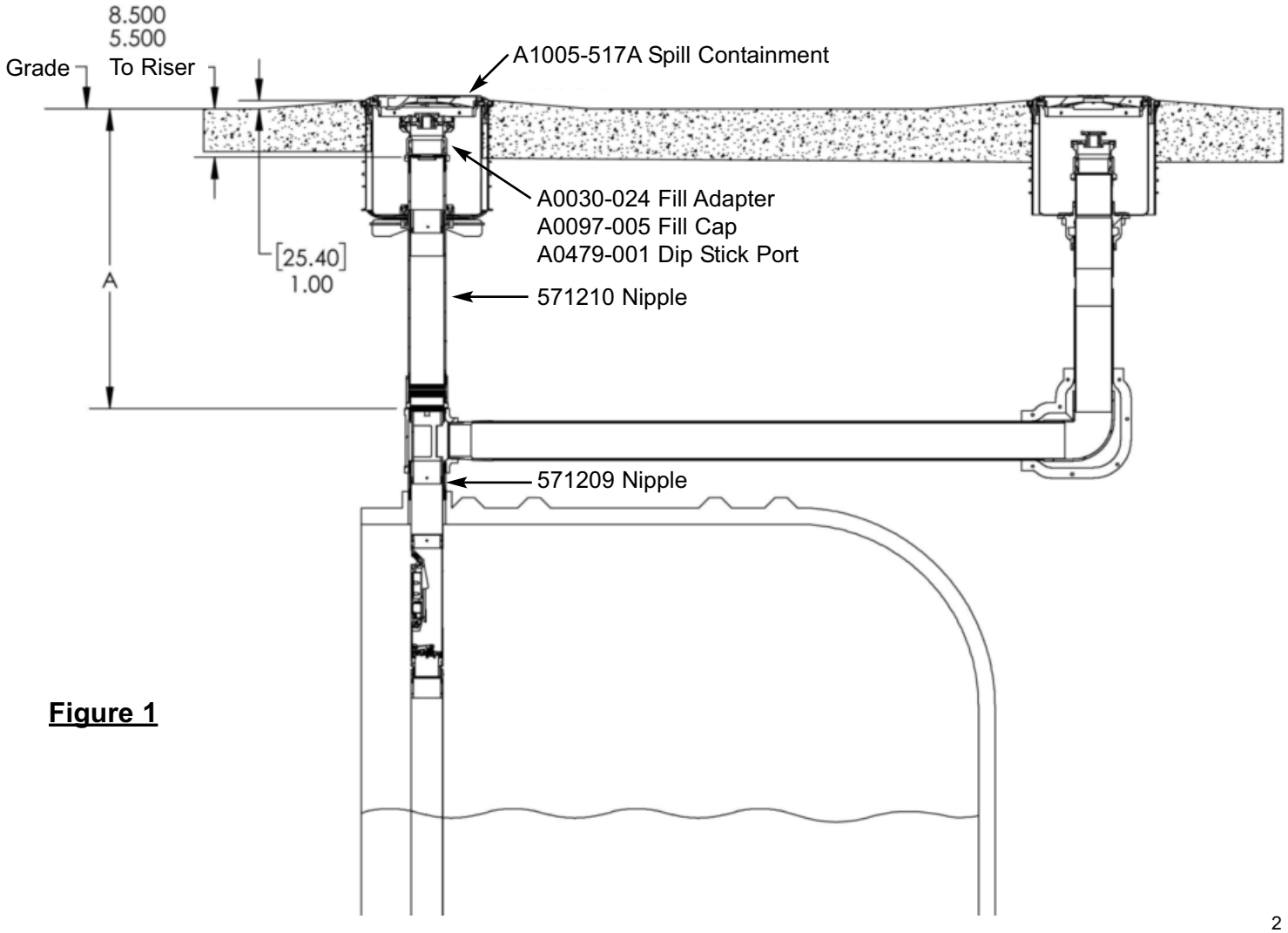


Figure 1

Top Nipple Calculation: Thread-on Grade Level Spill Containment

Note: When using a thread-on spill containment, an Emco 494096 Riser Seal is required to hold the OPV in position on the 571210 Riser Nipple. Either a fill adapter and cap or an A0585-003 Pipe Cap can be used.

1.3B **Thread-On** (See Figure 2)

1.3B-1 Measure dimension A from **grade** to the top of the Tee fitting

A dimension = _____

1.3B-2 Measure the total height of the thread-on spill containment. (See Figure 3)

B dimension = _____

1.3B-3 Subtract B from dimension A then add 3". (A - B + 3 = top nipple length)

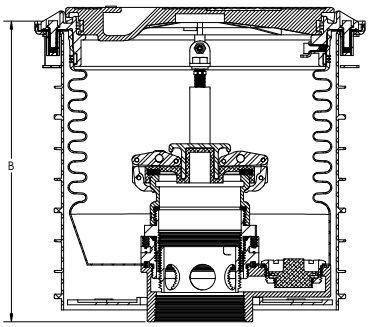
A_____ - B_____ + 3" = _____

1.3B-4 Cut the 571210 Top Nipple to the length calculated in step 1.3B-3. Thread 4" NPT.

Note: The supplied top nipple is 45" long. If a longer nipple is required for a deep bury application, contact Emco Customer Service, 800-234-4394.

1.3B-5 Install top nipple using pipe sealant. Tighten securely.

Figure 3



Emco A1004-317A shown
For A1004-317A: B = 15"

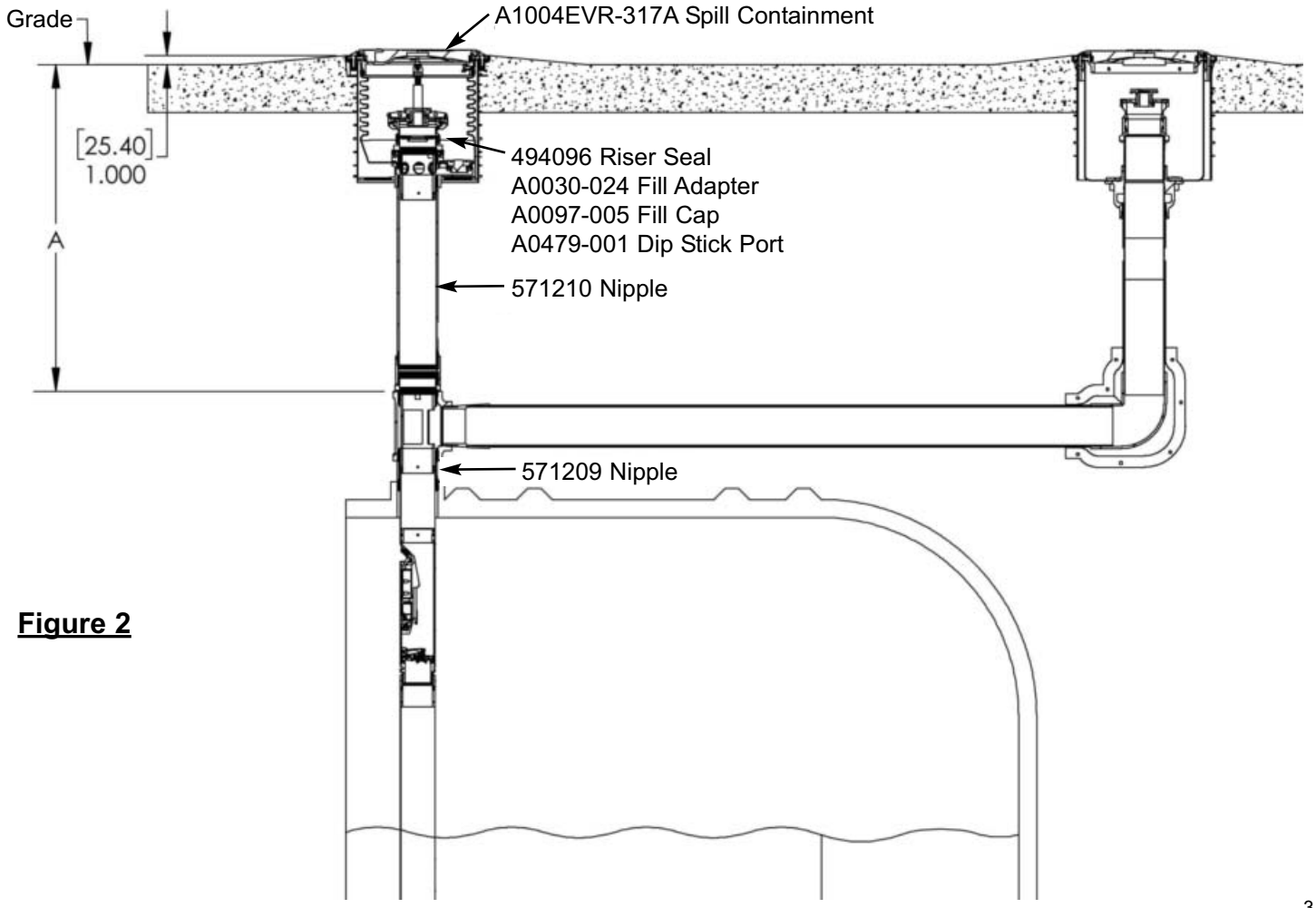


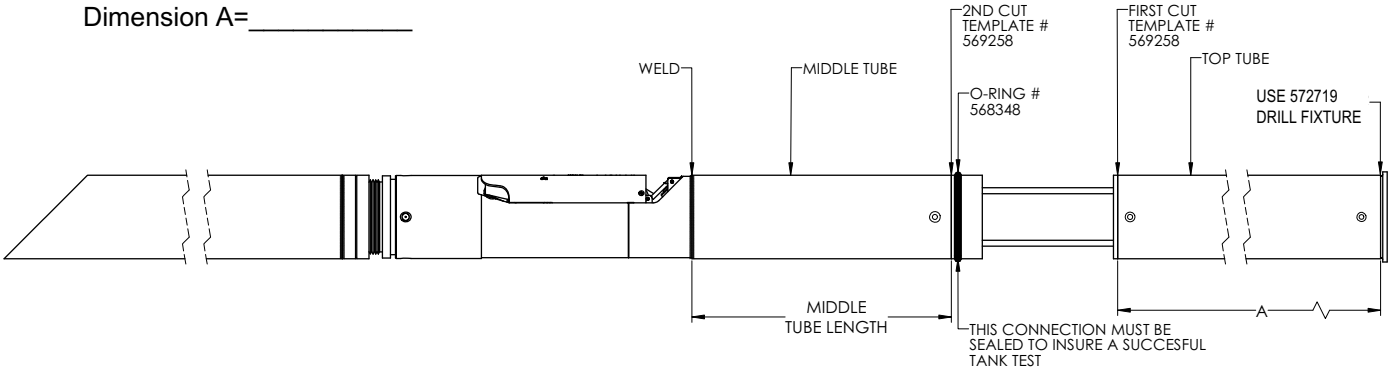
Figure 2

OPV Tube Calculations

1.4 To measure and cut the OPV tubes to length, see Figure 4, following page. Be sure to use a fine tooth hacksaw and deburr all of the tubes after cutting, to allow proper installation. ***Do not use a power saw or tubing cutter.***

1.4.1 Top Tube Length: Determine dimension A by measuring from the OPV "seat" on the nipple or riser surface, or the spill bucket surface if using a riser seal, to the bottom of the top nipple (571210). This is the top tube dimension.

Dimension A=_____



Mark the top tube from the end of the tube on the A1100 assembly. Install the supplied 564421 Hose Clamp at the cut mark to insure a square cut. The hose clamp acts as a guide for a straight cut.

1.4.2 Cut the top tube to dimension A, using a fine tooth hacksaw. Remove clamp and deburr.

1.4.3 Dimension C = dimension A + 7.5

C = A_____ + 7.5 = _____

1.4.4 Middle Tube Length: Measure dimension B from the inside edge of the tank (below the 571209 nipple) to the top of the OPV seat on the nipple or riser surface or the spill bucket surface if using a riser seal.

Dimension B = _____

1.4.5 Dimension D = dimension B + 95% shut-off dimension. See tank chart below.

D = B _____ + 95% shut-off dimension _____ = _____

1.4.6 Middle tube length = dimension D - dimension C

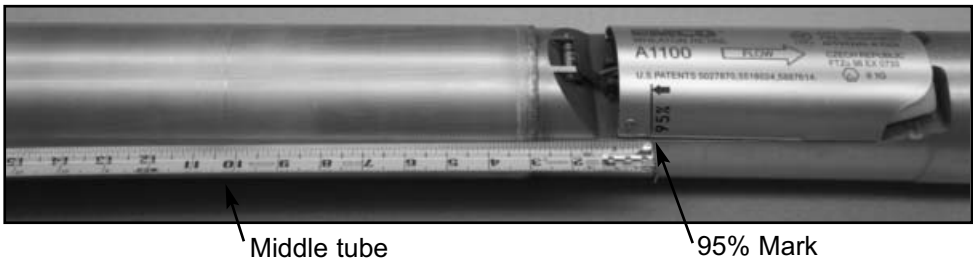
Middle tube length = D _____ - C _____ = _____

Mark the middle tube length from the 95% mark on the A1100 (see picture below and tube assembly diagram for reference).

1.4.7 Cut the middle tube to the length calculated in Step 1.4.6, using a fine tooth hacksaw. Remove clamp and deburr.

Tank Chart

Tank Diameter	95% Shut-off Dimension
6.5'	7.5"
7.0'	8.0"
7.6'	9.0"
8.0'	9.5"
8.2'	9.5"
8.5'	10.0"
9.0'	10.5"
9.5'	11.0"
10.0'	11.5"
12.0'	14.0"



Calculations are based on cylindrical tanks with flat ends. For exact dimensions, consult the tank gauge chart provided with your tank. NFPA30 Guidelines limit tank fill to 95%. The A1100 Overfill Prevention Valve is not recommended for tanks under 6.5' in diameter.

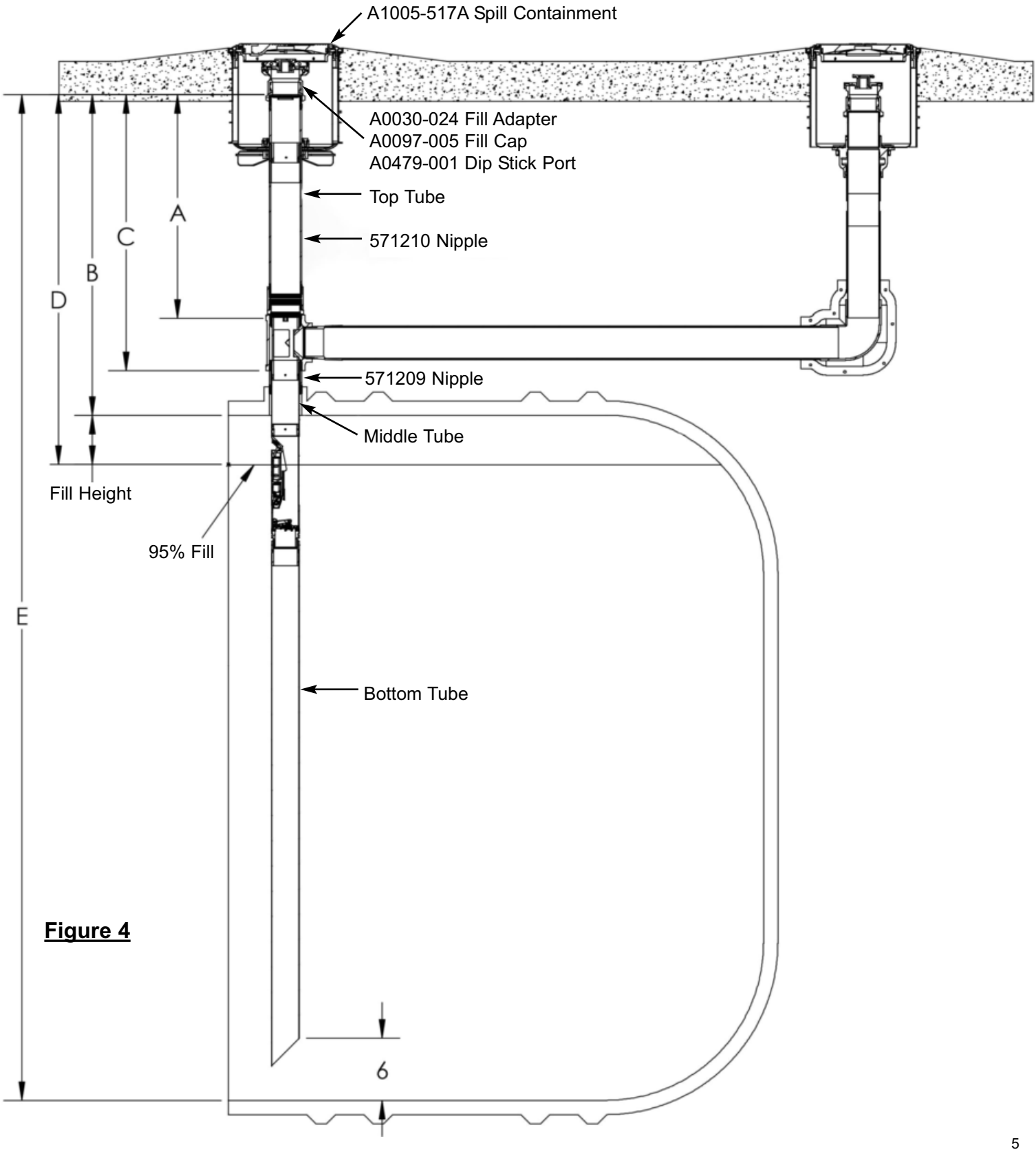
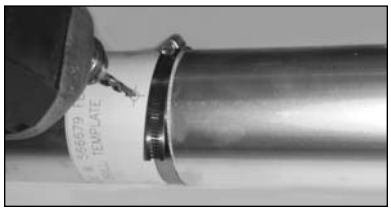

A1005-517A Spill Containment
A0030-024 Fill Adapter
A0097-005 Fill Cap
A0479-001 Dip Stick Port
Top Tube
571210 Nipple
571209 Nipple
Middle Tube
Bottom Tube
A
B
C
D
E
Fill Height
95% Fill
6

Figure 4

1.5 Assemble the A1100 OPV:

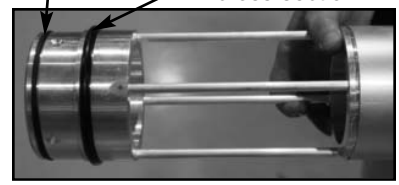
1.5.1 Prepare the A1100 assembly with the middle tube to assemble with the 493436 Fill Cage: Mark the rivet holes on the middle tube using the supplied 569258 template. The template should be positioned accurately and taped in place to prevent movement. It is suggested to used a hose clamp as a guide for a straight cut. Drill 4 pilot holes, 3/32 diameter through the drop tube as indicated on the template. Redrill the holes to final size using a 13/64 drill bit. DO NOT drill the holes oversize, as this will affect the vapor tightness. Deburr the drill holes on the inside to prevent damage to the o-ring when installed.

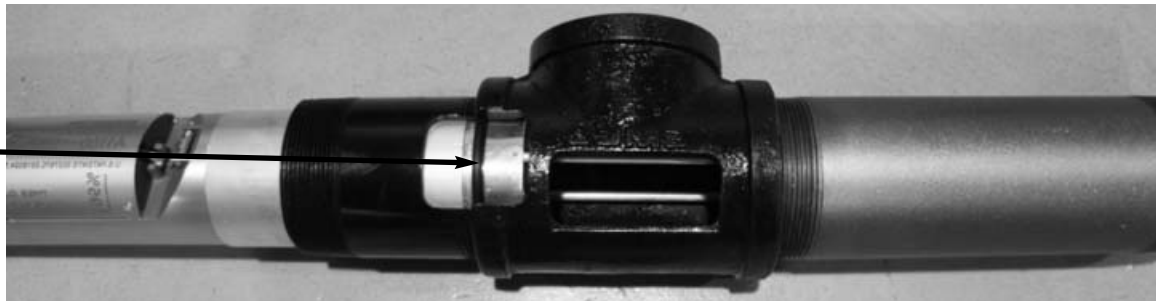


Optional: Use 571814 Drill Fixture. If using drill fixture, pilot holes are not required. Drill using 13/64 drill bit.

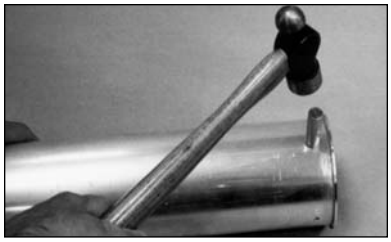
1.5.2 Assemble the A1100 with the middle tube to the 493436 Fill Cage. Insure that both o-rings are installed on the fill cage. Apply Seal-All Sealant all around the lower (smaller) o-ring only. Push the fill cage into the middle tube, with the o-ring end facing towards the OPV as shown. **It is critical to make sure that the connection at the fill cage on this end be vapor tight.**

Note: The fit of the fill cage is tight. It may be necessary to place a wood block across the end of the fill cage and tap the fill cage into position. Do not hit the fill cage directly.

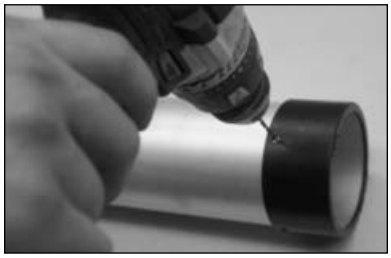




1.5.3 Indent the middle tube: Use a sharp blow on the supplied 564416 Indent Tool to form the tube into each countersink on the collar. Using only the factory supplied pop rivets, apply a good amount of the Seal-All around the base of each pop rivet before installing into each of the four holes. It is critical to use Seal-All on the rivets to insure a vapor-tight seal. Use a pop rivet gun to permanently fasten the middle tube to the fill cage. It is recommended to use a 2'-3' level or other straightedge to insure the OPV is straight before assembling with the rivets.



1.5.4 Installing the 566679 Top Collar to the top tube: Slide the supplied 572719 drill fixture on the top tube. Drill 4 holes, using a 13/64 drill bit through the drop tube as indicated on the drill fixture. Deburr the holes on the inside to allow easy installation of top collar. It is not required to use Seal-All for the installation of the top collar or the top tube to the fill cage, as these connections do not affect the tank tightness.



1.5.5 Slide the collar inside the top tube. Align the 4 holes. Use the 564416 Indent Tool to indent the 4 holes. Insert 2 rivets opposite each other. Install the 568279 Handle in the collar aligning with the 2 open holes. Rivet the handle in place. Pop the first two rivets.
Note that an o-ring seal is not required on the collar/tube interface or where the collar meets the riser, as the tank seal is made at the fill cage.

1.5.6 Use the supplied 569258 template to mark the lower rivet holes on the top tube. The template should be positioned accurately and taped in place to prevent movement. (Use a hose clamp as a guide for a straight cut.) Drill 4 pilot holes, 3/32 diameter through the drop tube as indicated on the template. Redrill the holes to final size using a 13/64 drill bit. Deburr the holes to allow easy fit of the fill cage.

Optional: Use Drill Fixture 571814. If using drill fixture, pilot holes are not required. Drill using 13/64 drill bit.

1.5.7 Fit the top tube on the fill cage. Use a sharp blow on the 564416 Indent Tool to form the tube into each countersink on the fill cage. Install all 4 factory supplied pop rivets before popping the rivets. Use a pop rivet gun to permanently fasten the top tube to the fill cage. It is recommended to use a 2'-3' level or other straightedge to insure the OPV is straight before assembling with the rivets.

OPV Bottom Tube Calculation

1.6 Bottom Tube Length: (Measure with the A1100 valve, fill cage and top tube fully assembled.)

1.6.1 Measure dimension E from the top of the nipple 571210 to the bottom of the tank.

Dimension E = _____

1.6.2 Valve overall length = dimension E - 6".

Valve overall length = E_____ - 6" = _____.

1.6.3 Use pipe dope or anti-seize on the male threads of the A1100 assembly to prevent galling of the threads. Screw the A1100 assembly into threaded end of the bottom tube and tighten, using a strap wrench. The o-ring seals the connection.

1.6.4 Mark the bottom tube at this point. If a 45 degree cut is desired, the shortest point should begin at this point to maintain the 6" maximum clearance requirement at bottom of tank. (See Figure 4, previous page)

1.7 Installing the A1100 in the Riser:

1.7.1 Lubricate the exposed fill cage o-ring generously with a heavy grease to ease installation.

1.7.2 Install the A1100 carefully. There should be very little resistance until the cage o-ring reaches the lower tank nipple 571209. The top collar will be 1-2" above the riser top at that point. Slightly rotate and push the A1100 assembly after this resistance is felt to complete the installation.

1.8 Use the extension spring (p/n 572786, supplied) or a hose clamp, to clamp the warning plate (p/n 564420, supplied) onto the riser below the threads. Make sure label is facing up.

1.9 Install the A0479-001 if used for this installation. Install the fill adapter and cap.

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