



United States Road Tanker Chassis Doubler Plate Inspection and Weldment Procedure

1 Scope

This document details the procedure for a subcontractor to complete the weldment of flange doubler plates on an Omni Tanker United States Road Tanker Cargo Tank Motor Vehicle (CTMV).

2 Bill of materials

The table below lists the possible materials which may be required to conduct the work(s) as described in this procedure.

Item # Doubler Type	Length	Width	Thickness	Qty	Material
1	76" (1930mm)	4" (102mm)	1/4" (6.35mm)	2	Flat bar; 304L SS
2	76" (1930mm)	4" (102mm)	1/4" (6.35mm)	2	Flat bar; 304L SS
3	49.2" (1250mm)	4" (102mm)	3/16" (4.77mm) OR 1/4" (6.35mm)	2	Flat bar; 304L SS

3 Procedure

3.1 Chassis inspection

There are three distinct pairs of doubler plates required on both sides of the CTMV chassis. The CTMV may not yet have all flange double plates welded to the chassis. The figure below shows the approximate location and type of each on the chassis in red (Type 1), blue (Type 2), and green (Type 3).

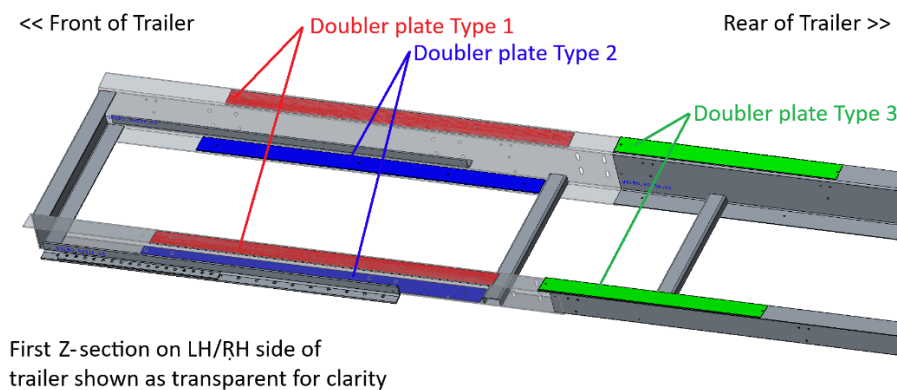


Figure 1: Typical location and Types of Doubler plates on CTMV Chassis

Doubler plate Type 1 is 304 SS and located towards the front of the chassis. It measures 76" (or 1930mm) long, 4" (100mm) wide, and of ¼" (6.35mm) thick. It is typically welded to the lower surface of the top flange on the chassis Z-section (driver and curb sides of the chassis). Each doubler plate starts approximately 28" (710mm) from the front of the trailer. These are represented in red within Figure 1.

Doubler plate Type 2 is 304 SS and also located towards the front of the chassis. It measures 76" (or 1930mm) long, 4" (100mm) wide, and of ¼" (6.35 mm) thick, 304L Stainless steel. It is typically welded to the upper surface of the bottom flange on the chassis Z-section (driver and curb sides of the chassis). Each doubler plate starts 1" (25mm) away from the first trailer cross member. These are represented in blue within Figure 1.

Doubler plate Type 3 is 304 SS and located about a quarter to a third of the way down the chassis. It measures 49.2" long (1250mm), and 4" wide (100mm), and of 9 gauge (4 mm) thick. It is typically welded to the upper surface of the upper flange the chassis Z-sections (driver and curb sides of the chassis), starting approximately 0.2" (5mm) from the second set of Z-sections on the trailer. Shown as green in Figure 1.

Use the checklist at the end of this document to assist with noting these Doubler plates are present.

If any of the Doubler plates listed above are not present on the CTMV chassis, refer to the following sections for installation and weldment instructions.

3.2 General installation procedures

If upon inspection it is found that if any of the doubler plates in Section 3.1 are not present, the following overall steps should be followed:

1. Take photos of the affected region(s) and notify Omni Tanker;
2. Determine exactly which pair(s) of Doubler plates are required;
3. Before performing any works, drain the tank of any residual fluids or chemicals;
4. Place CTMV on stands. If Doubler plate Type 2 requires installation, place the stands in a manner which will allow for the safe removal of the upper 5th wheel coupler;
5. Remove the upper 5th wheel coupler (if installing Doubler plate Type 2);
6. Cut the required materials as per Section 2, as required;
7. Disconnect or detach the cabling and pneumatics near the Doubler plate regions to be welded, or move as far away as practicable, to avoid damage;
8. Perform the welding procedures as specified in Sections 3.3, 3.4, and/or 3.5 as necessary;
9. Pickle or TIG brush welded the applicable regions where doubler plates have been installed;
10. Re-attach cabling / pneumatics; and
11. Re-attach the upper 5th wheel coupler (if required).

3.3 Doubler Plate Type 1 – Installation Instructions

This section details welding instructions for Type 1 Doubler plates, in the case they are not present on the chassis:

1. Cut two lengths of 304L SS flat bar, each 76" (1930mm) long, 4" (102mm) wide and 0.25" (6.35mm) thick, as per as per Item 1 in the bill of materials listed in Section 2.
2. Figure 2 shows the location of the Doubler plate for the curb side of the chassis only, located underneath the top flange of the Z-section.

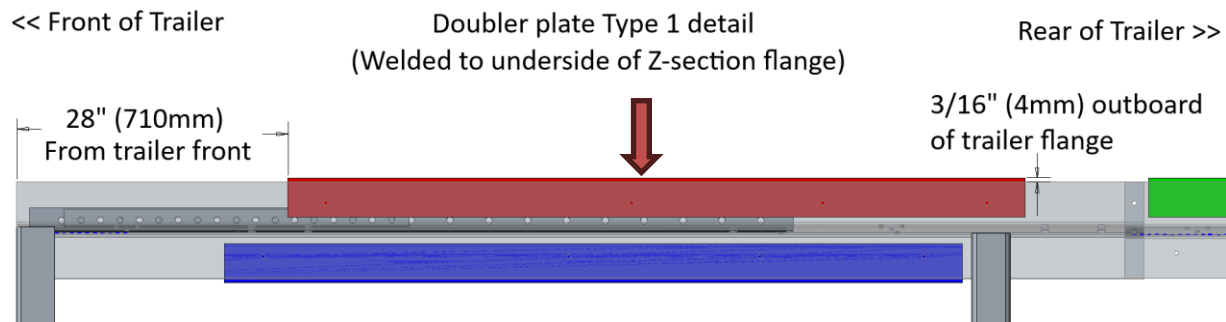


Figure 2: Location of Type 1 Doubler plate

3. The Doubler plate in step 2 is to have the following fillet welds applied:
 - a. 3/16" (4mm) continuous fillet welds on each 4" (102mm) end;
 - b. 3/16" (4mm) stitch fillet welds, 4.5 inch on, 4.5 inch off.
4. Repeat steps 2 and 3 for the driver side of the cargo tank.
5. Figure 3 shows the completed installation.

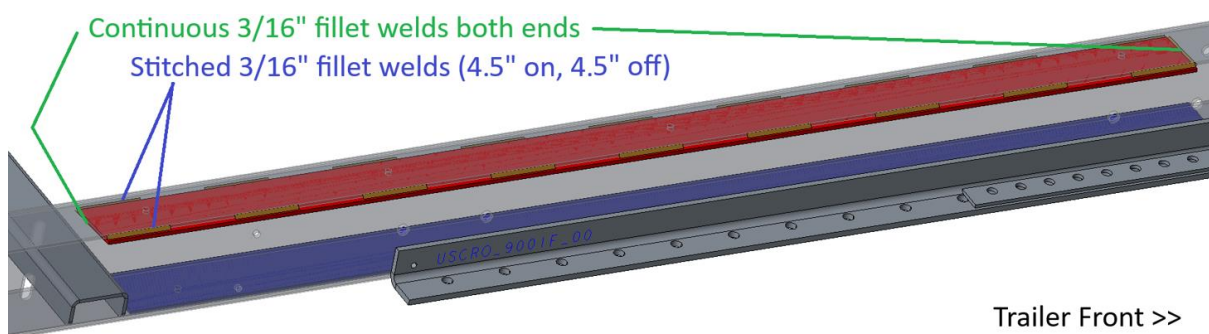


Figure 3: Completed Type 1 Doubler plate installation

3.4 Doubler Plate Type 2 – Installation Instructions

This section details welding instructions for Type 2 Doubler plates, in the case they are not present on the chassis:

1. Cut two lengths of 304L SS flat bar, each 76" (1930mm) long, from 4" (102mm) wide by 0.25" (6.35mm) thick, as per Item 2 in the bill of materials listed in Section 2.
2. Figure 4 shows the location of the Doubler plate for the curb side of the chassis only, located underneath the bottom flange of the Z-section.

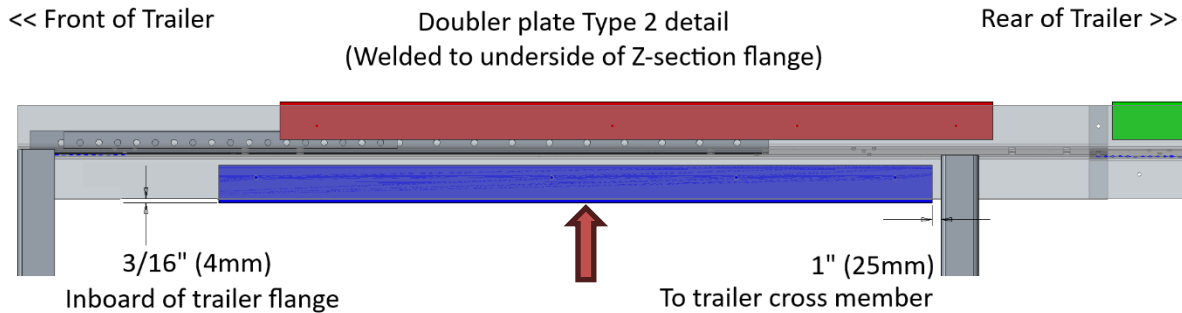


Figure 4: Location of Type 2 Doubler plate

3. Tack weld flat bar in position, and check that location will not interfere with fitment of upper 5th wheel coupler;
4. The Doubler plate in step 2 is to have the following fillet welds applied:
 - a. 3/16" (4mm) continuous fillet welds on each 4" (102mm) end;
 - b. 3/16" (4mm) stitch fillet welds, 4.5 inch on, 4.5 inch off.
5. Repeat steps 2 to 4 for the driver side of the cargo tank.
6. Figure 5 shows the completed installation.

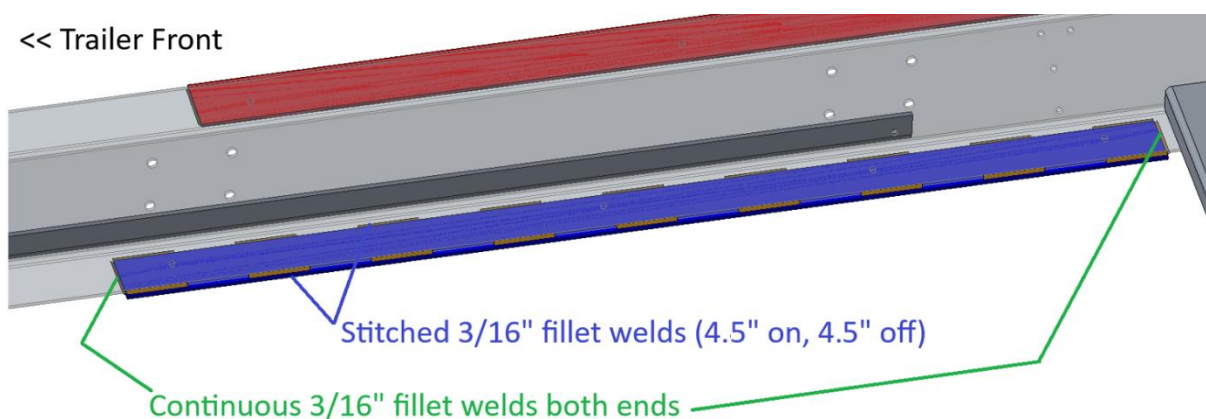


Figure 5: Completed Type 2 Doubler plate installation

3.5 Doubler Plate Type 3 – Installation Instructions

This section details welding instructions for Type 3 Doubler plates, in the case they are not present on the chassis:

1. Cut two lengths of 304 SS flat bar, each 49.2" (1250mm) long, from 4" (102mm) wide by 3/16" (4.77mm) or 1/4" (6.35mm) thick, as per Item 3 in the bill of materials listed in Section 2.
2. Figure 6 shows the location of the Doubler plate for the curb side of the chassis only, located underneath the bottom flange of the Z-section.

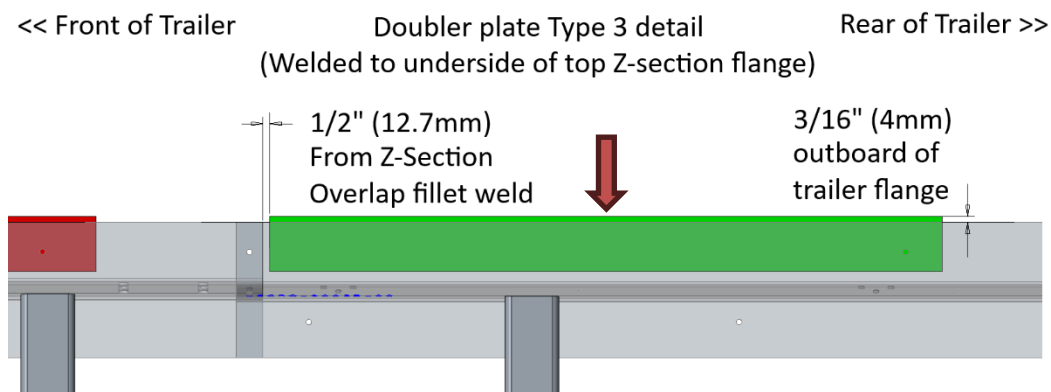


Figure 6: Location of Type 3 Doubler plate

3. The Doubler plate in step 2 is to have the following fillet welds applied:
 - a. 3/16" (4mm) continuous fillet welds on each 4" (102mm) end;
 - b. 3/16" (4mm) stitch fillet welds, 4.5 inch on, 4.5 inch off.
4. Repeat steps 2 and 3 for the driver side of the cargo tank.
5. Figure 7 shows the completed installation.

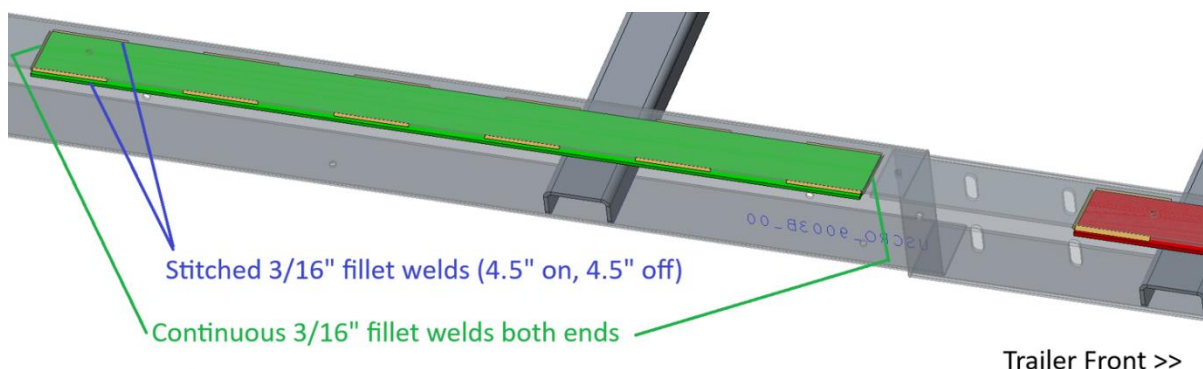


Figure 7: Completed Type 2 Doubler plate installation

3.6 Weld cleanup

All welds and weld zones are to have heat tint removed (pickled).

END OF PROCEDURE

Doubler plate inspection checklist

Doubler plate Type	Present?	Comment
Type 1	[] YES [] NO	If YES, install per Section 3.3 If NO, no action required
Type 2	[] YES [] NO	If YES, install per Section 3.4 If NO, no action required
Type 3	[] YES [] NO	If YES, install per Section 3.5 If NO, no action required

Doubler Plate installation checklist

Doubler plate Type	Welded?	Welds cleaned?	Photographed?	Reference section
Type 1				Section 3.3
Type 2				Section 3.4
Type 3				Section 3.5

Date of completion: _____

Name of person responsible for completion: _____

Signature of person responsible for completion: _____



United States Road Tanker – Cradle Washer Plate Installation Procedure

1 Scope

This document details the installation procedure of washer plates onto the United States Road Tanker (USRT) barrel support frame cradles.

2 Bill of Materials

There are two options for washer plate thicknesses depending on material availability:

Flat bar docking method (may require 1/32 edge chamfer for fitment):

Option	Length	Width	Thickness	Qty	Material
1	8.07" (205 mm)	3" (76.2 mm)	1" (25.4 mm)	12	304SS, 316SS or 201LN
2	8.07" (205 mm)	3" (76.2 mm)	1/2" (12.7 mm)	24	304SS, 316SS or 201LN

Profiled plate method:

Option	Length	Width	Thickness	Qty	Material
1	8.07" (205 mm)	75 mm	1" (25.4 mm)	12	304SS, 316SS or 201LN
2	8.07" (205 mm)	75 mm	1/2" (12.7 mm)	24	304SS, 316SS or 201LN

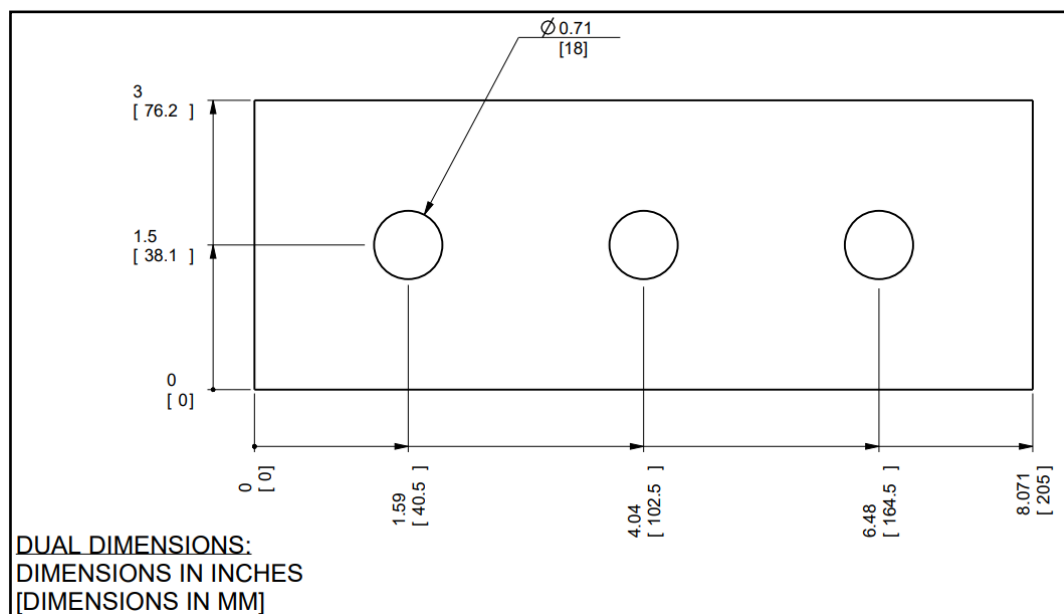


Figure 1: Dimensions of docked flat bar washer plate. Note 76.2 mm width changes to 75 mm width for profiled washer plate method

3 Procedure

The procedure to install the washer plates is as follows:

1. Remove all strap covers.
2. Loosen the fasteners on strap 1 only on both the **driver side** and **curb side** of the barrel support frame. Leave the fasteners on other straps tightened. Refer to Figure 2.

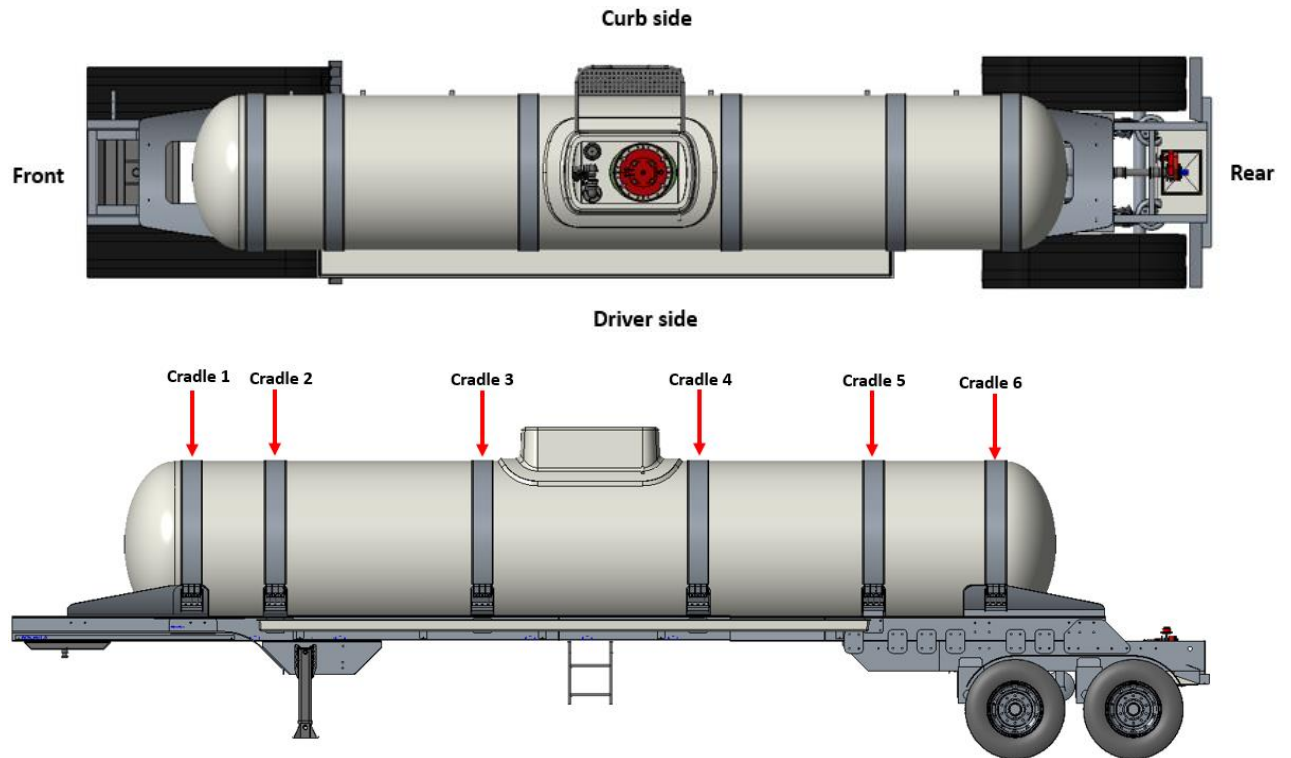


Figure 2: Driver side vs Curb side of Barrel Support Frame, Strap Numbering

3. Remove the nyloc nuts and washers located on the underside of the cradle harness channel on Cradle 1. Refer to Figure 3 for nut location and cradle numbering.

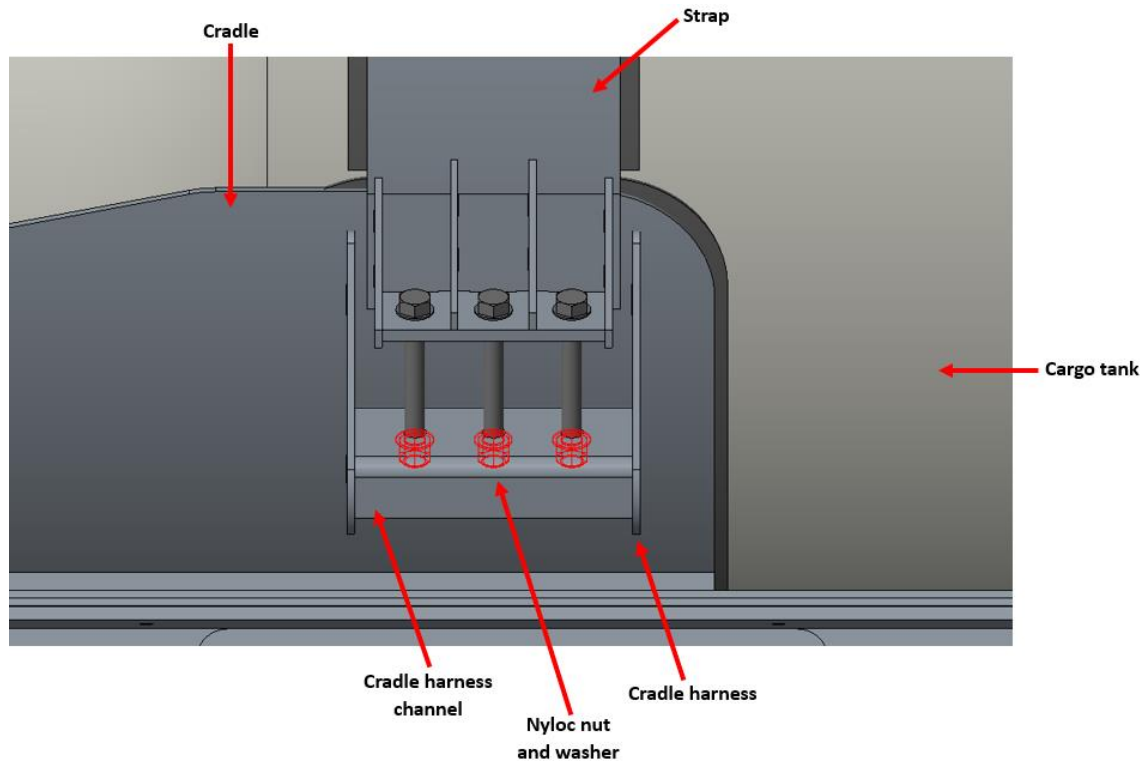


Figure 3: Diagram of cradle and strap

4. Test fit the 1" thick washer plate (Option 1) or one of the two 1/2" thick washer plates (Option 2) ensuring the washer plate sits flush with the bottom face of the cradle harness channel. If required, chamfer the edges of the washer plate. Refer to Figure 4 for washer plate location.

Note: This step is not required if a hex plate is installed on the underside of the cradle harness channel.

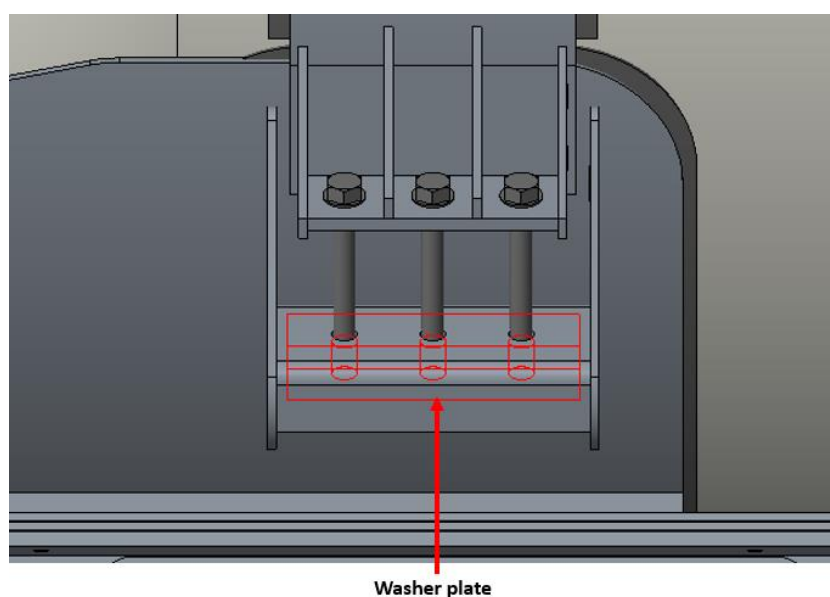


Figure 4: Location of 1" thick washer plate relative to cradle harness channel

5. Install washer plate(s) and check that the fasteners extend at least 1 inch below the washer plate(s). If required, replace existing fasteners for longer A2-70 or equivalent fasteners (304 SS fastener with proof load exceeding 100 ksi).
6. Reinstall washers and **new** nyloc nuts, applying anti-seize if required. Refer to Figure 5 and Figure 6.

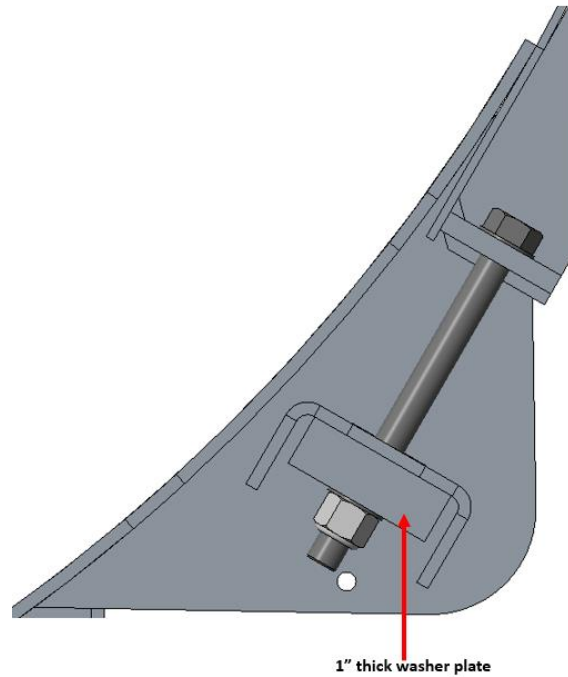


Figure 5: Option 1 installed

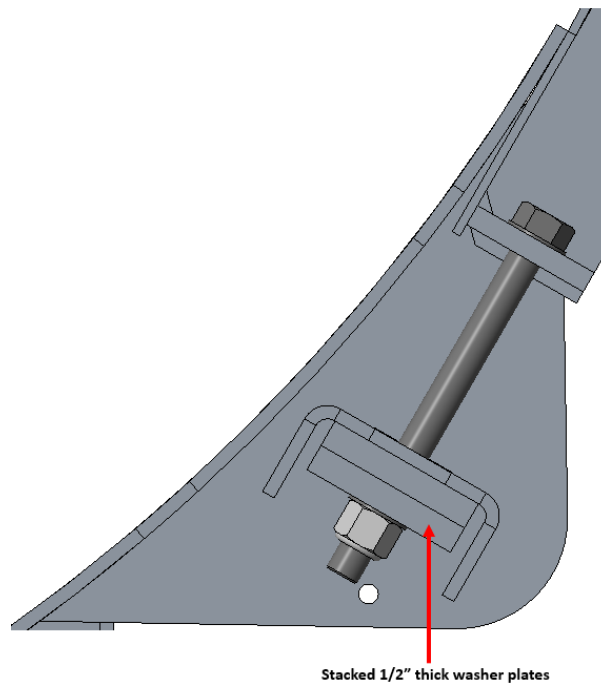


Figure 6: Option 2 installed

7. Tighten fasteners to 55 lb-ft (75 Nm).
8. Tighten fasteners to 70 lb-ft (95 Nm).
9. Note that Steps 2 to 7 are required to be undertaken on the same day to avoid rubber spring back (opposite to compression set).
10. Repeat Steps 2 to 9 for the remaining Straps / Cradles in the following order: Strap / Cradle 2, Strap / Cradle 3, Strap / Cradle 4, Strap / Cradle 5, and Strap / Cradle 6.
11. Reinstall strap covers.
12. Fill out the completion checklist attached at the end of this protocol

END OF PROTOCOL

USRT Cradle Washer Plate Installation Completion Checklist

This USRT Cradle Washer Plate Installation Completion Checklist (OTM 230029, Page 7) is to be filled out and returned to Omni Tanker.

Cargo Tank Serial Number: _____

Thickness of washer plates installed: _____

Quantity of washer plates installed: _____

Item Number	Checklist Item	Complete (Y/N)
1	Installation of washer plate – Cradle 1, driver side	
2	Installation of washer plate – Cradle 1, curb side	
3	Installation of washer plate – Cradle 2, driver side	
4	Installation of washer plate – Cradle 2, curb side	
5	Installation of washer plate – Cradle 3, driver side	
6	Installation of washer plate – Cradle 3, curb side	
7	Installation of washer plate – Cradle 4, driver side	
8	Installation of washer plate – Cradle 4, curb side	
9	Installation of washer plate – Cradle 5, driver side	
10	Installation of washer plate – Cradle 5, curb side	
11	Installation of washer plate – Cradle 6, driver side	
12	Installation of washer plate – Cradle 6, curb side	
13	All strap fasteners tightened to 70 lb-ft (95 Nm)	
14	Strap covers installed	

Date of completion: _____

Name of person responsible for job completion: _____

Signature of person responsible for job completion: _____