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First Release

RECEIVER TANK BRACKET IMPROVEMENT

Prevost vehicles

DESCRIPTION

On the vehicles affected by this bulletin, the condenser compartment wall may present fatigue cracks on or near the A/C receiver tank support. Follow these instructions to repair and improve the support.

MODEL YEAR(S) AND VEHICLES INVOLVED

NOTICE TO SERVICE CENTERS		
Verify vehicle eligibility by checking warranty bulletin status with SAP or via ONLINE WARRANTY SYSTEM available on Service / Warranty tab of Prevost website.		
Model	VIN	Fleet Number
X3-45 Commuter Model Year : 2014 - 2016	From 2PCG33495EC735590 up to 4RKG33491G9737299 incl.	From 2490 up to 2789, incl.
This bulletin does not necessarily apply to all the above-mentioned vehicles, some vehicles may have been modified before delivery.		

MATERIAL NEEDED

Order kit SP18-303 which includes the following parts:

Part No.	Description	Qty
217814	BRACKET, A/C TANK	1
950332	FILTER DRYER	1
033203	BRACKET, FUEL FILTER	1
5001780	SCREW CAP HEXF M8-1.25x16	3
504016	CABLE TIE, 5/16" X 14 1/2"	1
507169	O-RING 1/2 I.D. .426 x 562 x .070	2

The following parts may be required depending on vehicle condition:

Part No.	Description	Qty
454935P	VALVE ASSY / REFRIGERANT WITHOUT SOLENOID	1
507344	O-RING / ORS FITTING / #10 NEO	2
507278	O-RING / ORS FITTING / #4 NEO	1
501803	O-RING / ORS FITTING / #20 NEO	1

NOTE

Material can be obtained through regular channels.

TOOLS

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MIG Welding machine 	Welders Clamps 		
ROTARY GRINDER TOOL 			

PROCEDURE



DANGER

Park vehicle safely, apply parking brake, stop engine. Prior to working on the vehicle, set the ignition switch to the OFF position and trip the main circuit breakers equipped with a trip button. On Commuter type vehicles, set the battery master switch (master cut-out) to the OFF position.



CAUTION

Welding should be performed by a qualified welder using the appropriate personal protection equipment.

Install OSHA safe portable welding screens or curtains around the work area to protect bystanders.

1. This procedure involves welding. Disconnect all electronic modules to prevent any damage prior to welding.

Refer to MULTIPLEX MODULE DISCONNECTION PROCEDURE in *Appendix A*.

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STEP A: REMOVING THE FUEL PRO UNIT

STOP! SOME VEHICLES MAY NOT HAVE A FUEL PRO UNIT INSTALLED.

If confirmed, proceed to **STEP B**.



Figure 1: A/C TANK WITHOUT FUEL PRO UNIT



WARNING

Avoid fuel contamination by using clean work procedures and tools.
Before removing any fuel line, prepare clean caps for the fuel fittings and lines.

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1. Close shutoff valve at the engine fuel filter housing fitting inlet on the cold side of the engine.



Figure 2: Shutoff Valve in engine compartment

2. Place a drip pan under the fuel pro unit to collect any spilt fuel.
3. Close shutoff valve yellow handle
4. Open the drain valve at the bottom of the unit.

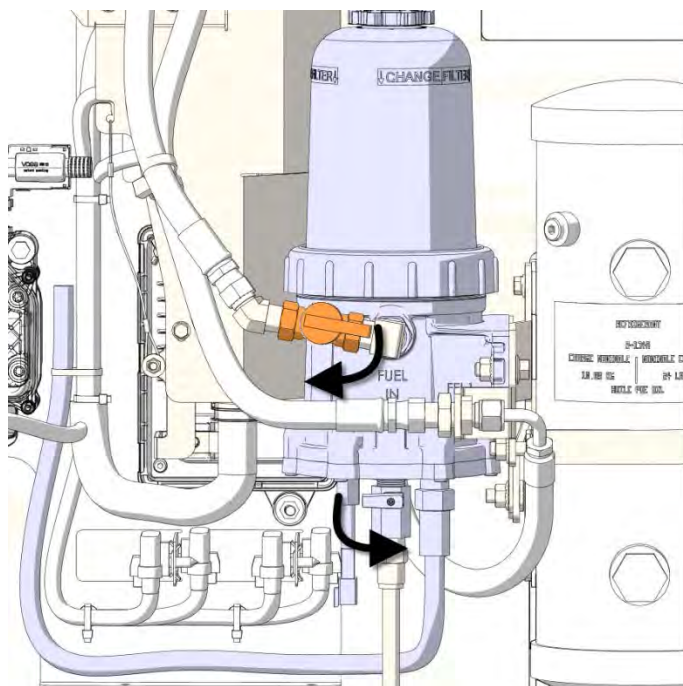


Figure 3

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5. Disconnect the supply to the fuel pro at the shutoff valve and immediately raise the line above the top of the tank. and secure it.
6. Cap the fuel line fitting.
The supply line comes from the top of the tank and goes to the shutoff valve on the fuel pro unit. (Figure 4)

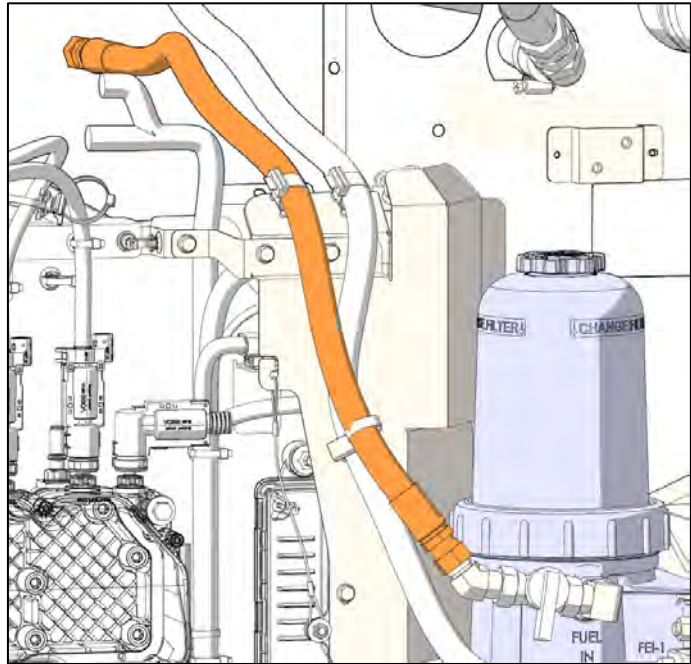


Figure 4: Supply line

7. Remove all lines on the fuel pro unit. (Figure 6)
8. Cap the fuel lines and fuel fittings on the unit.
9. Move them away from the work zone.

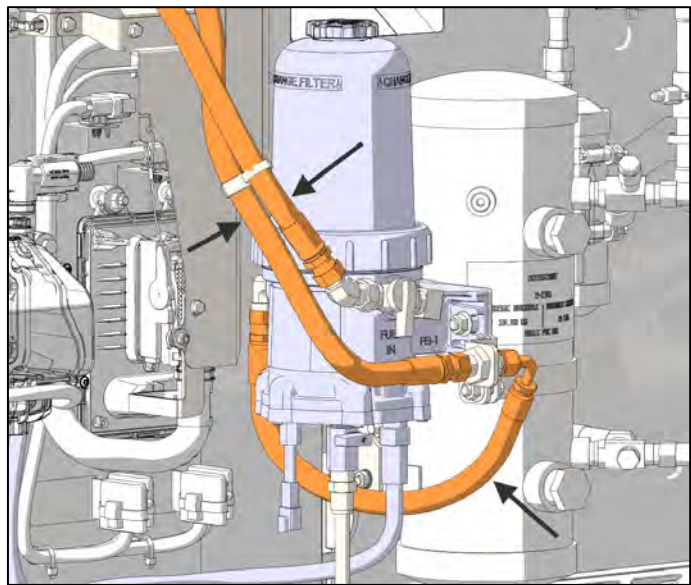


Figure 5: Fuel lines

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10. On the fuel pro unit, remove the front mounting screw and nut. (Figure 7)
11. Remove the rear mounting nut. (Figure 7)
12. Carefully remove the unit. Leave fittings and adapter bracket on the fuel pro unit.

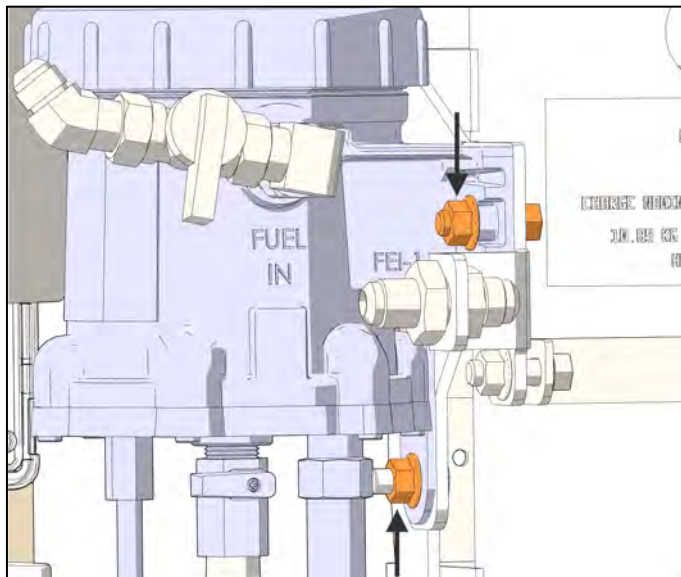


Figure 6: Fuel Pro mounting hardware

13. Remove the fuel pro mounting bracket and clamp. (Figure 9)

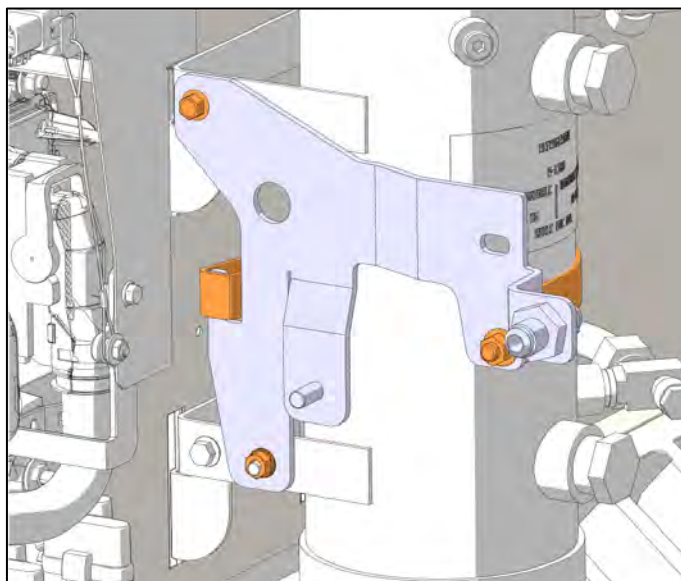


Figure 7: Fuel Pro mounting bracket

STEP B: REMOVING THE A/C RECEIVER TANK

14. Recover refrigerant in the A/C system. Refer to instructions provided in the Maintenance Manual PA1605 Paragraph 6.4 "LIQUID REFRIGERANT RECOVERY".
15. Before proceeding to removal, inspect A/C piping attached to the receiver tank and filter dryer to make sure there are no broken lines.

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16. Prepare caps for the A/C piping, lines and fittings.
17. Remove inlet A/C line at the top connection of the receiver tank. (Figure 9)
18. Remove piping between receiver tank and dryer filter. (Figure 9)

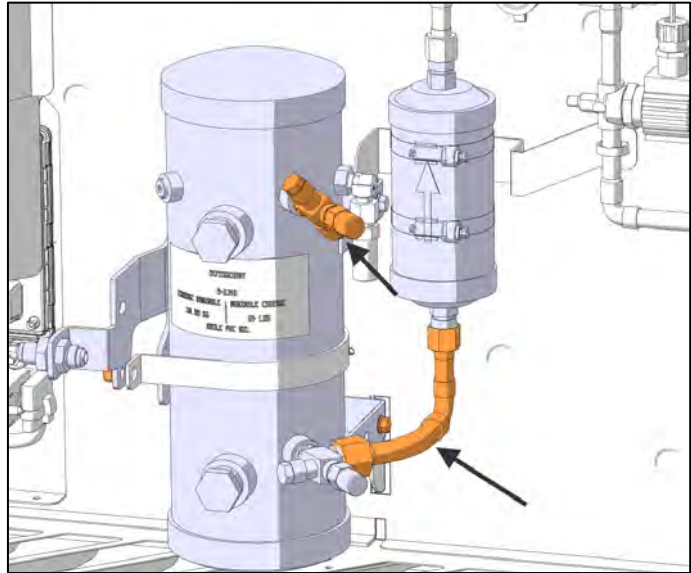


Figure 8: A/C inlet line and piping removal

19. Remove the filter dryer and A/C receiver tank. (Figure 10)

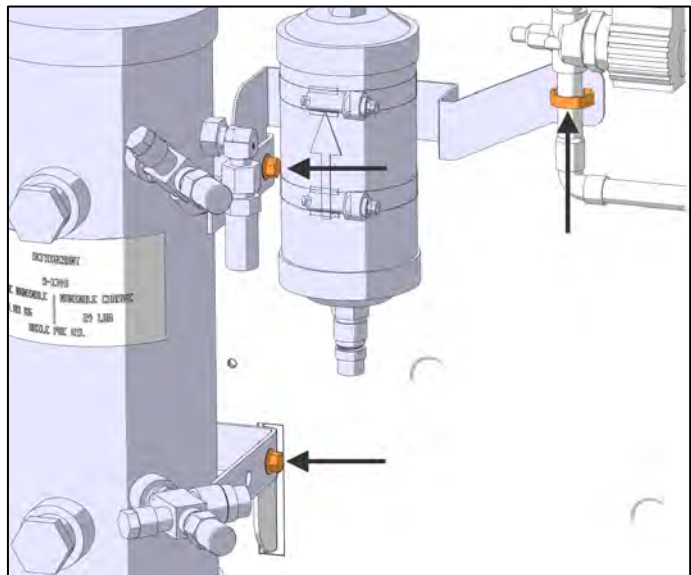


Figure 9: Receiver and filter dryer removal

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STEP C: PREPARING THE VEHICLE STRUCTURE

20. Clean the area of any split fuel.
21. Cut the wall at the dimensions shown, using the existing cutouts to align and locate the cutting lines. (Figure 11)

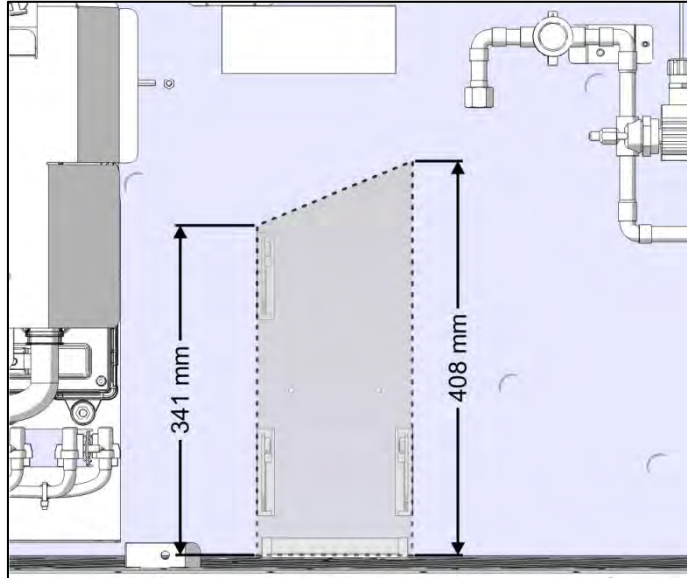


Figure 10: cutout dimensions

22. Locate any remaining cracks on the wall
SHORT CRACKS (LESS THAN 1/4")
23. Find the very end of the crack. Use a punch to locate precisely the relief hole.
24. Drill a 1/8" diameter relief hole. (Figure 12)

LONGER CRACKS (1/4" AND UP)

25. Repair cracks with weld. Refer to APPENDIX C

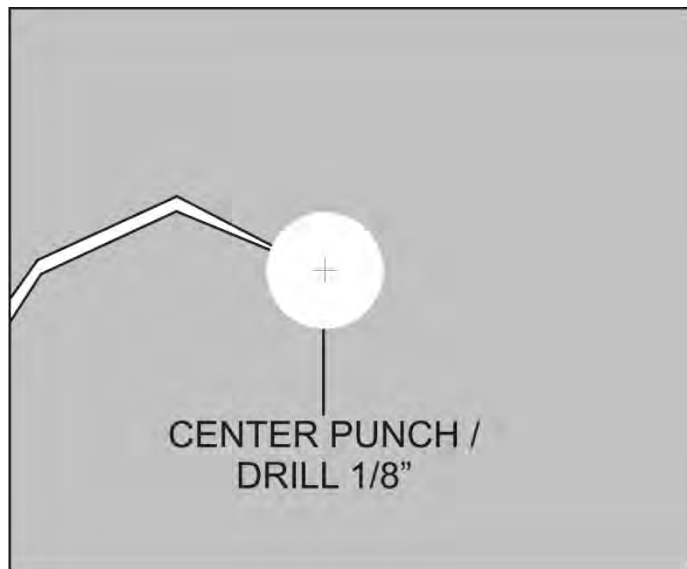


Figure 11: Crack, less than 1/4"

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26. Cut the bracket along the dotted lines (Figure 13)
27. Remove the welds (Figure 13).
28. Grind flat any remaining welds on the tube and floor plate.

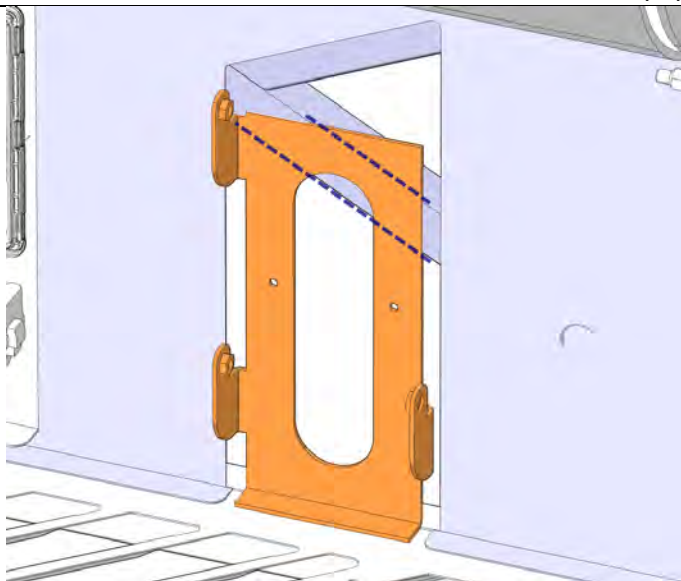


Figure 12: Removing the existing bracket

STEP D: INSTALLING THE NEW SUPPORT

29. Weld according to specifications in Appendix C.

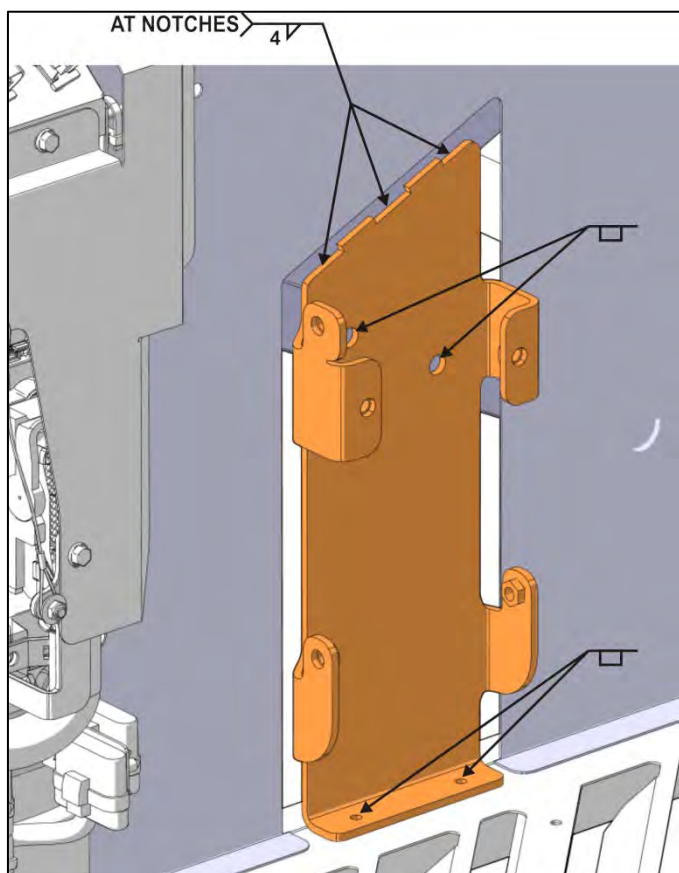


Figure 13: Refer to Appendix C

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30. If a fuel pro unit was present on the vehicle, install new bracket 030018 at the same time

Tighten to 17lb-ft

Add torque seal mark

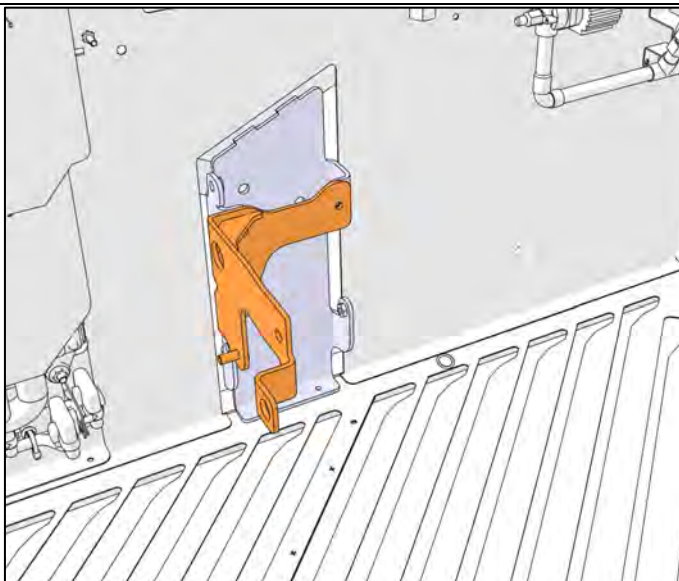


Figure 14: New fuel pro bracket

31. Install the receiver tank on the new support.

Tighten to 17lb-ft

Add torque seal mark

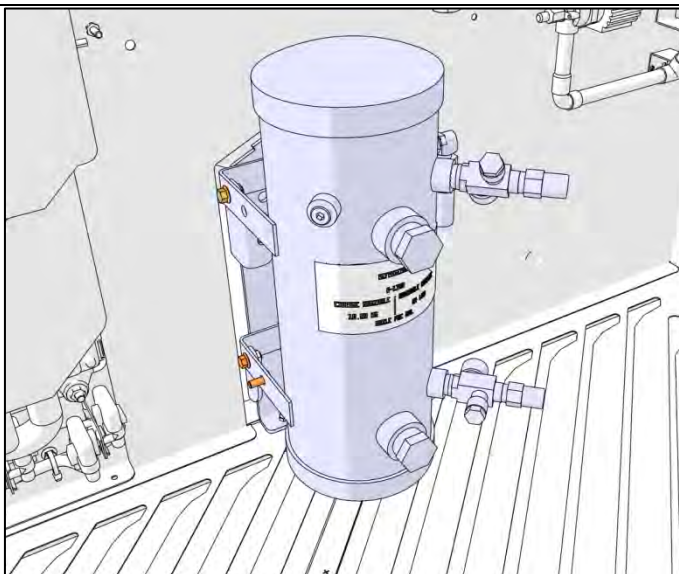


Figure 15: Receiver tank installation

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32. Install the filter dryer bracket.
33. Install previously removed screws 5001780 and cable tie 504016, 5/16"x 14 1/2".

Tighten to 17lb-ft

Add torque seal mark

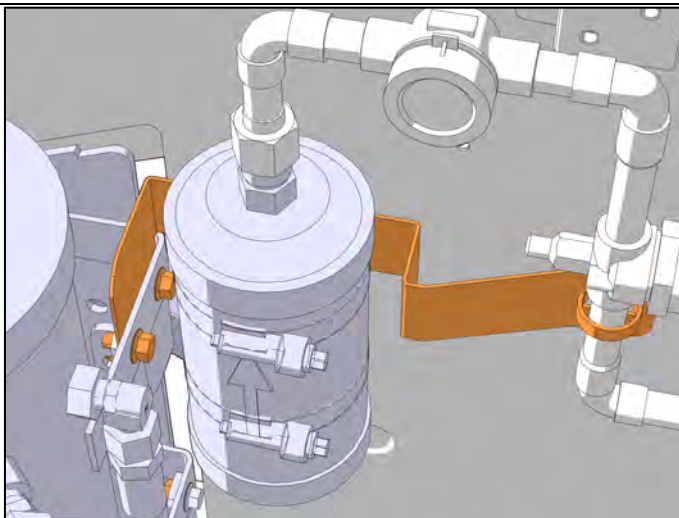


Figure 16: Filter dryer bracket.

34. Install piping between receiver tank and dryer filter.
35. Tighten according to Appendix D
36. Apply torque seal on each tightened fitting.

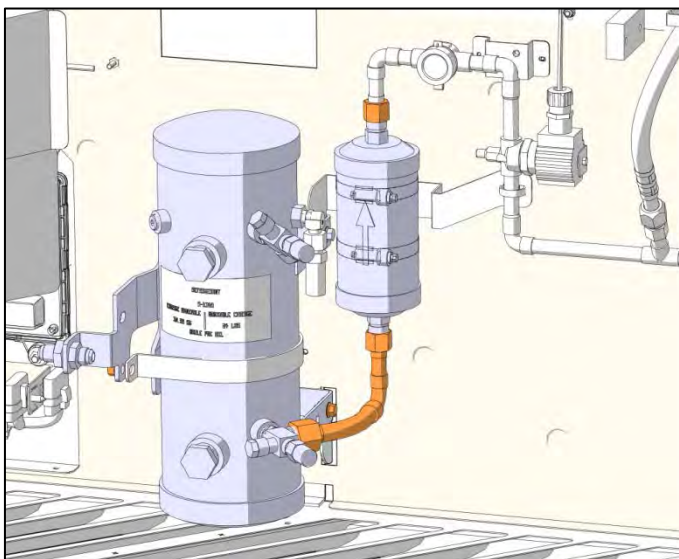


Figure 17: Piping

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STEP E: INSTALLING THE FUEL PRO UNIT

STOP! SOME VEHICLES MAY NOT HAVE A FUEL PRO UNIT INSTALLED.

If your vehicle falls into this category, proceed to **STEP F**

37. Install the fuel pro unit on the bracket.

38. Tighten bulkhead fitting to:

50 lb-ft

Add torque seal mark

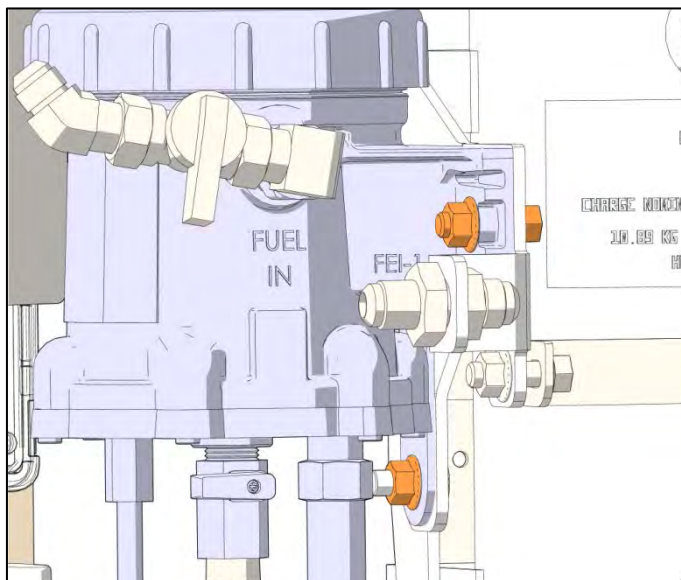


Figure 18

39. Re-install the fuel pro lines.

40. Tighten according to Appendix D

41. Apply torque seal on each tightened fitting.

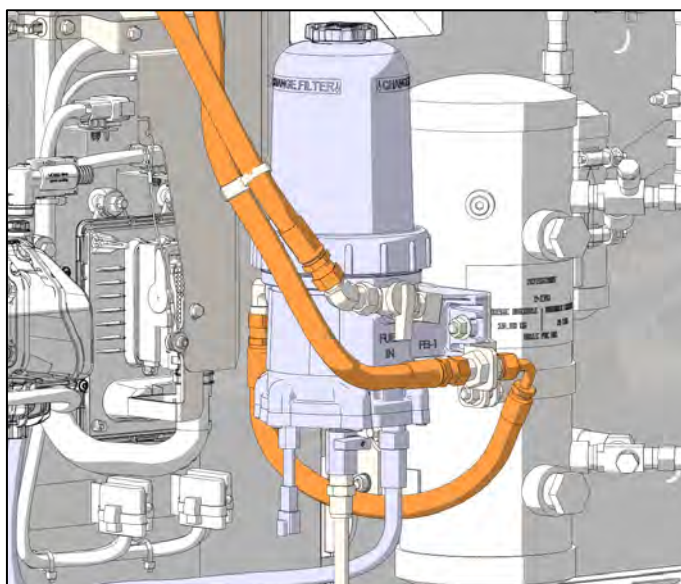


Figure 19: Fuel lines

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- 42. Close the drain valve
- 43. Open the yellow shut-off valve.

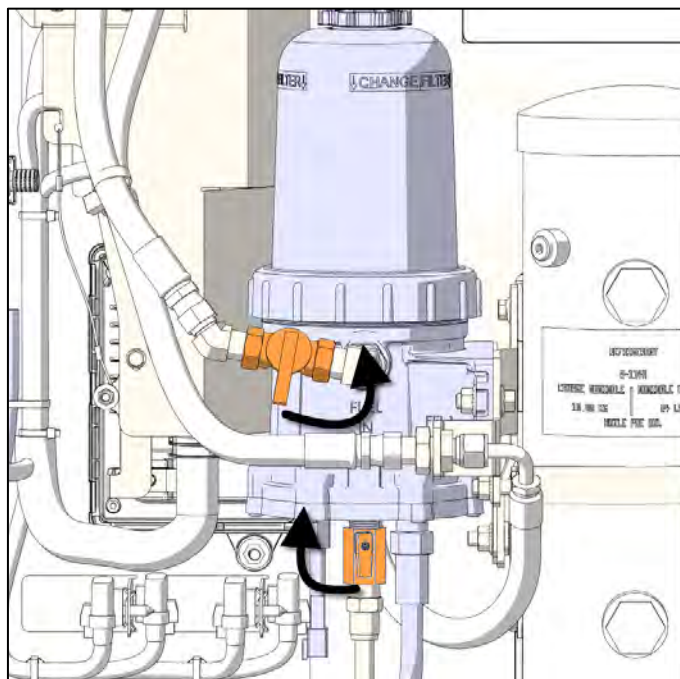


Figure 20: Returning shut-off valves to working position

STEP F: PUTTING THE VEHICLE BACK IN SERVICE

- 44. Prime the fuel system.
- 45. Look for leaks.
- 46. Dry and clean the A/C system.
- 47. Return refrigerant in the system.
- 48. Look for leaks
- 49. Confirm proper operation of the A/C system and fuel system.

PARTS / WASTE DISPOSAL

Discard waste according to applicable environmental regulations (Municipal/State[Prov.]/ Federal)

ESTIMATED TIME

The time required to perform this special bulletin is approximately 2.0 hours.

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OTHER

VBC Bulletin	N/A
Fail Code	18.08
Defect Code	09
Syst. Cond	B
Causal Part	219094

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Prevost engages in a continuous program of testing and evaluating to provide the best possible product. Prevost, however, is not committed to, or liable for updating existing products.

Multiplex Module Disconnection Procedure

APPENDIX A

PROCEDURE NO: PR060041

REVISION 02

2013-04-08

Material: N/A

Equipment(s): Phillips-head screwdriver
Ratchet handle
3/8" socket
Electric tape
Long nose pliers

Reference schematics: N/A

Safety rules: - Wear safety goggles
- Set the battery master switch to the OFF position first

Recommendations: This procedure should be performed by qualified personnel only.

	Effective
Revision 00 : New procedure for cooling 2007 Revision 01 : Modified for EPA 2010 Revision 02 : Added: battery equalizer data connection (PRIME).	

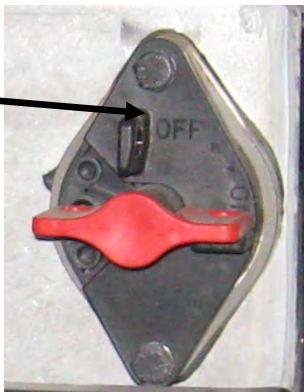
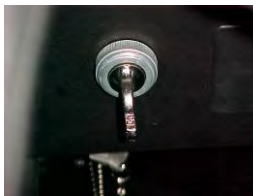
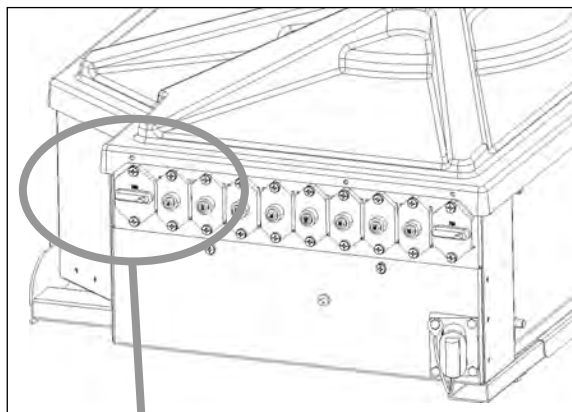
APPENDIX A

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X3 Series Coaches

2.00*	Location: Rear Electrical Panel and Dashboard Set the battery master switch to the OFF position Place the ignition switch to the OFF position.	 
2.05*	Location: Rear Junction Panel Lift cover, trip circuit breakers CB2-CB6 located on junction panel. Push the red button to open the circuit	 

APPENDIX A

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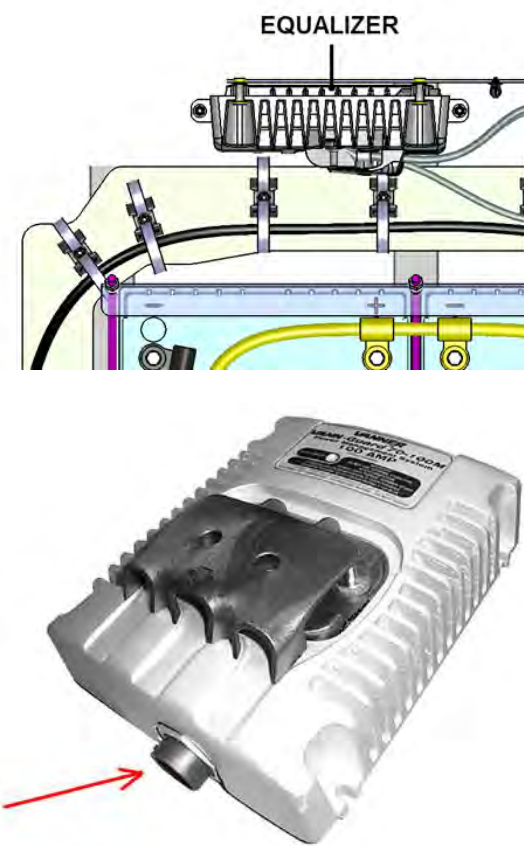
2.10*	Location: Rear Electrical Panel Disconnect the electronic ground terminals from this stud. Use electric tape; make sure that cables do not touch each others and the vehicle body. Note : <i>With disconnection of the electronic ground terminals, disconnecting the engine ECM, transmission TCM and the dashboard electronic components (telltale module, HVAC module, radio, control head ...) is not required.</i>	 A photograph of the rear electrical panel showing a row of electronic ground terminals. A bundle of orange and yellow wires is connected to the terminals. A metal stud is visible on the right side of the panel.
2.15*	Location: Rear Electrical Panel Disconnect the electronic modules: Disconnect all I/O A, I/O B modules. Disconnect C717 Disconnect 3 connectors from each I/O A module Disconnect 3 connectors from each I/O B module Disconnect C397	  Two photographs of the rear electrical panel. The top photograph shows a row of I/O A and I/O B modules with multiple connectors. Arrows point from the text 'Disconnect C717' and 'Disconnect 3 connectors from each I/O A module' to specific connectors. The bottom photograph is a close-up of the I/O modules, with an arrow pointing from the text 'Disconnect C397' to a specific connector.

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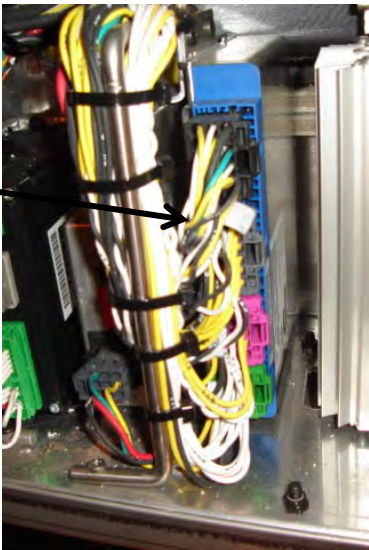
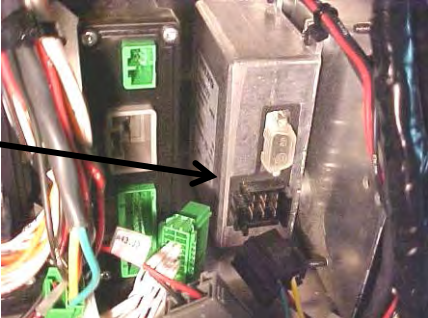
2.15.2	Location: battery compartment: Disconnect data connector on equalizer	 The diagram shows an equalizer unit with multiple output channels. A label 'EQUALIZER' points to the top of the unit. Below the diagram is a photograph of the physical unit, which is a white plastic enclosure with a black top. A red arrow points to a data connector on the side of the unit.
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APPENDIX A

PROCEDURE NO: PR060041

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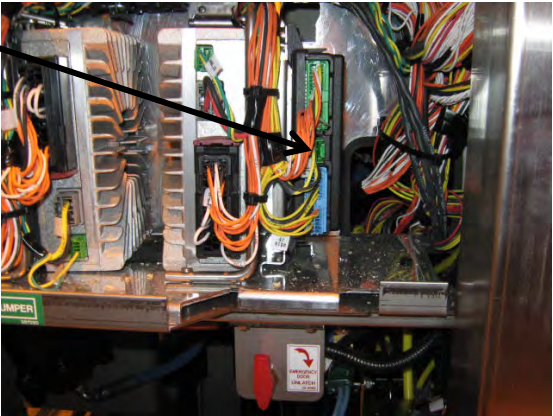
2.20 *	Location: Front Electrical Compartment Disconnect the I/O A, I/O B, ABS, master ID, VECU, CECM, BERU, Volvo Link, Gsecu modules. Disconnect 3 connectors from I/O B and I/O A modules	 A photograph of the front electrical compartment of a vehicle. It shows various electronic modules and a dense bundle of multi-colored wires. A black arrow points from the text 'Disconnect 3 connectors from I/O B and I/O A modules' to a specific area within the wire bundle.
	Disconnect 4 connectors from the ABS module	 A close-up photograph of a wire bundle held together by black zip ties. Several electrical connectors are visible at the end of the wires. A black arrow points from the text 'Disconnect 4 connectors from the ABS module' to these connectors.
	Disconnect connector from master ID	 A close-up photograph of a specific electrical connector, which is a small, light-colored plastic plug. A black arrow points from the text 'Disconnect connector from master ID' directly to this connector.

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	Disconnect 3 connectors from VECU	
	Disconnect 3 connectors from CECM	

APPENDIX A

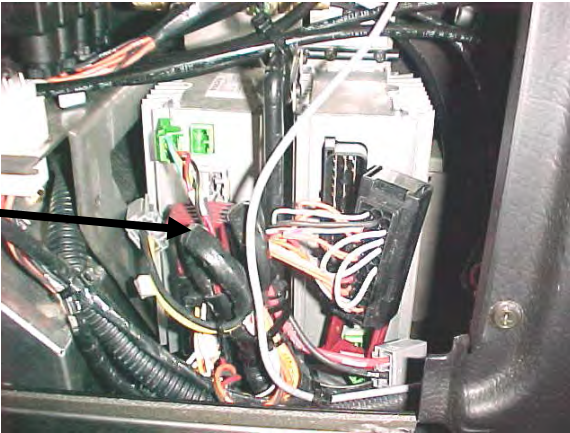
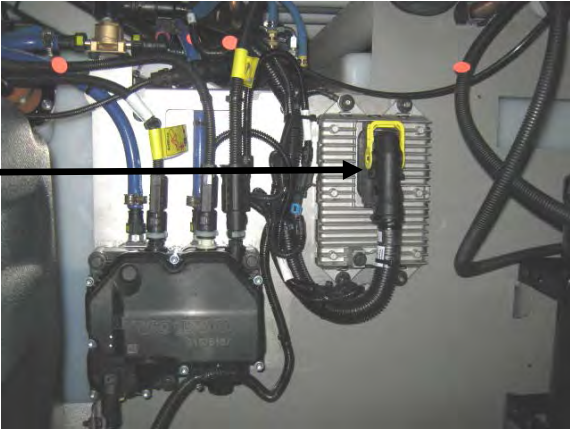
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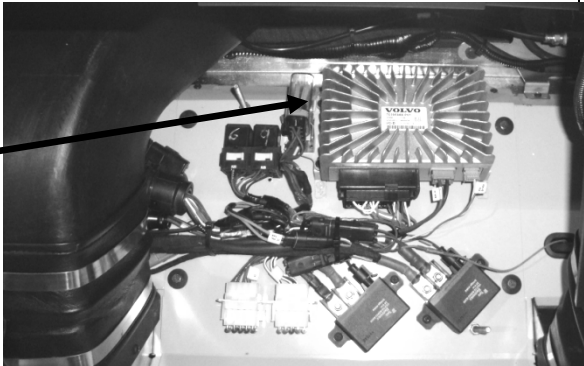
2.30	Location: Pneumatic accessory panel inside right console Remove the access panel on the right console (R.H. side of dashboard) Disconnect both I/O B modules	
2.40	Location: Condenser Compartment Disconnect connector A 137	

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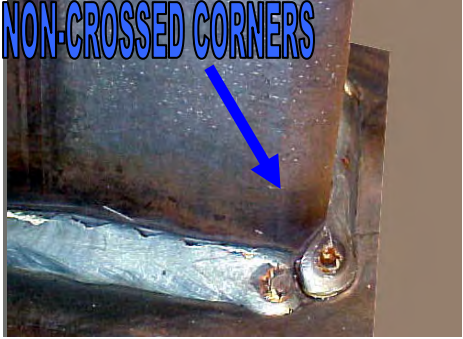
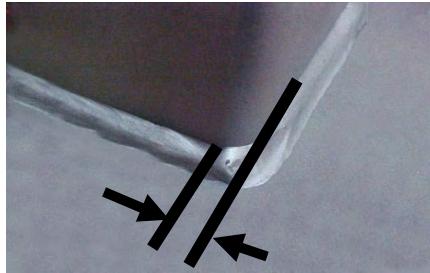
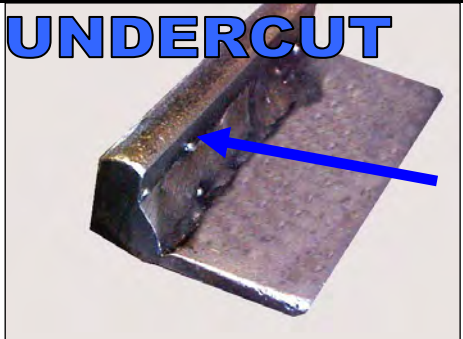
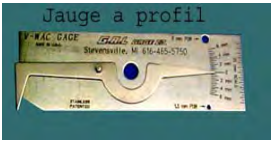
2.50	Location: Evaporator Compartment Disconnect A54 module located inside the evaporator compartment	
2.60	When all the previous steps are done, you can do welding on the vehicle.	ENSURE THAT THE WELDING GROUND RETURN CLAMP IS WELL SECURED AND MAKES A GOOD ELECTRICAL CONTACT WITH A LARGE METALLIC AREA OF THE CHASSIS LOCATED NEAR THE WELDING POINT AS MUCH AS POSSIBLE.
2.70	When welding is completed, reconnect all the modules. Make sure that the connectors locking tab are well engaged!	BE CAREFUL TO MAKE THE PROPER CONNECTIONS, IF NOT, SOME SYSTEMS OR COMPONENTS MAY NOT BE USABLE.

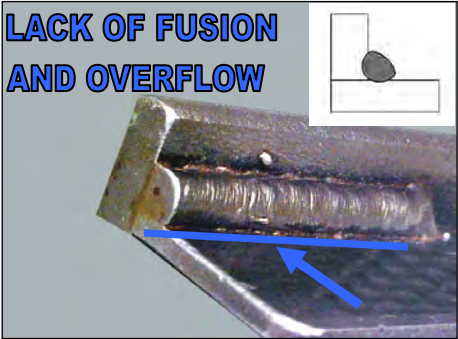
IT750004 Weld Inspection

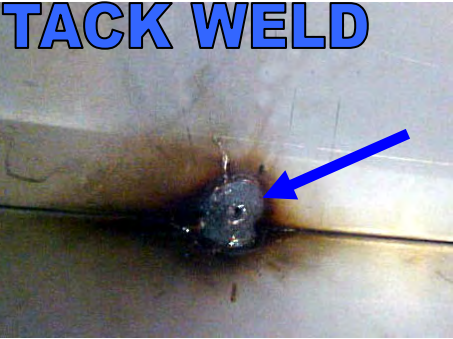
TITRE: WELD INSPECTION

NO: IT750004A

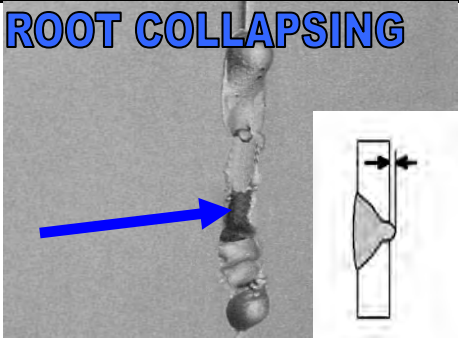
MAJOR DEFECTS				
TYPE OF DISCONTINUITY	MATERIAL THICKNESS			REPAIR
		t > 3.2 mm	t ≤ 3.2 mm	
CRACKS 	NONE	NONE	NONE	Gouge or grind to sound metal at craked locations and reweld. Contact the welding technician.
ROUND POROSITIES 	NONE	NONE	NONE	Gouge or grind to sound metal and reweld. Contact the welding technician.
VERMICULAR POROSITIES 	NONE	NONE	NONE	Gouge or grind to sound metal and reweld. Contact the welding technician.
CRATERS  FOR THICKNESSES LESS THEN 3.2MM 	No unfilled crater allowed.		Hole accepted at the end of the seam if diameter less than 0.5 mm. No unfilled crater allowed.	Fill with welding Note : If presence of cracks in the crater, grind and weld
SHARP CORNERS 	NONE	NONE	NONE	Grind to eliminate stress concentration or hammering to remove the sharp corner. Reweld if possible.

TITRE: WELD INSPECTION			NO: IT750004A		
TYPE OF DISCONTINUITY	MATERIAL THICKNESS			REPAIR	
		t > 3.2 mm	t ≤ 3.2 mm		
NON-CROSSED CORNERS  	Unless otherwise stated on the shop drawing, all welded joints must be so to cross the corners Visually check that : Minimum covering : 3 mm Desirable covering : 5 mm			Add weld.	
UNDERCUT    Jauge a profil Check the depth using the profile gauge.	NONE	Max. depth : 0.5 mm Max. 10% of weld length	Max. depth : NONE	Grind if required (MAX 10% of material thickness) Make an additional weld seam , adhering to the weld profile. DOWNWARD WELDING is forbidden with FCAW et MCAW processes.	

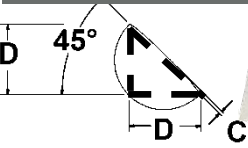
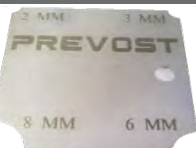
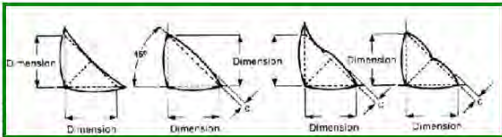
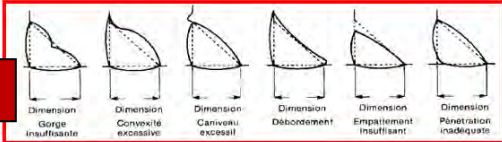
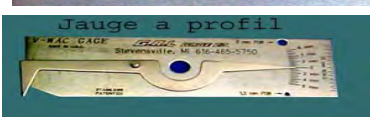
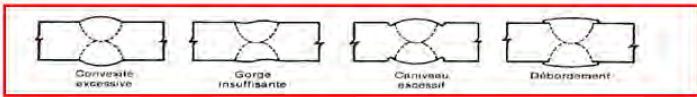
TITRE: WELD INSPECTION			NO: IT750004A		
LACK OF FUSION AND OVERFLOW 					
	NONE	NONE	NONE	Grind and weld an additional bead.	

TYPE OF DISCONTINUITY	MATERIAL THICKNESS			RÉPARATION
	 CC1	t > 3.2 mm	t ≤ 3.2 mm	
OVERFLOW 	NO overflow having a less than 90 degree angle. 			Grind or weld.
TACK WELD 	NONE	NONE	NONE	Grind or fuse with bead, minimum length : 10 mm. Blend with weld bead.

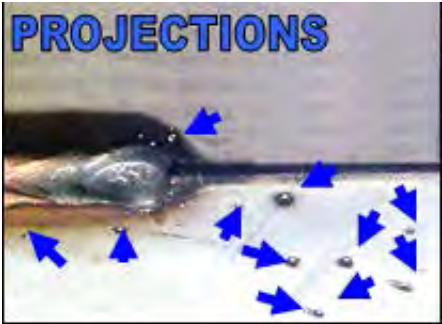
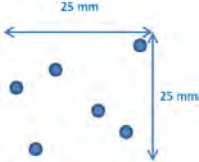
TITRE: WELD INSPECTION		NO: IT750004A		
TYPE OF DISCONTINUITY	MATERIAL THICKNESS			REPAIR
	 CC1	t > 3.2 mm	t ≤ 3.2 mm	
	NONE	NONE	NONE	Grind
	For a skewed weld to be acceptable, it should not exceed the following criterias: Max. length: 10 % of weld length Max. skew distance. : 1.5 mm Not to be located at the end of the weld seam: (12 mm)			Grind and reweld
	No cut line, cracks or other defects on parts.			The repair must meet the quality criterias. Contact the welding technician to see if the repair is possible, to be analyzed for exemption request.

TITRE: WELD INSPECTION		NO: IT750004A	
ROOT COLLAPSING 		The extra thickness of the collapse should not exceed 2 mm. Note : Repair if presence of porosity or undercut.	Excessive thickness : Grind Porosity or undercut: Grind and weld

TITRE: WELD INSPECTION	NO: IT750004A	
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DIMENSIONAL INSPECTION OF WELDS				
TYPE OF DISCONTINUITY	MATERIAL THICKNESS			REPAIR
	 CC1	t > 3.2 mm	t ≤ 3.2 mm	
FILLET WELD PROFILE   	Visually check and control with a dimensionnal gauge to make sure that weld profile is acceptable.			Weld or grind as required.
	The dimension of a continous fillet weld may be 2 mm less than required without correction if it is present on less than 10% of weld length.		As noted on drawing.	
	ACCEPTABLE  UNACCEPTABLE 			
OVER THICKNESS  	Max 3.2 mm	Max 3.2 mm	Max 1.6 mm	Grind excess welding. Weld to add material.
	Bead must be convex. 			

TITRE: WELD INSPECTION	NO: IT750004A	
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MINOR DEFECTS				
TYPE OF DISCONTINUITY	MATERIAL THICKNESS			REPAIR
	 CC1	t > 3.2 mm	t ≤ 3.2 mm	
	NONE	NONE	NONE	Remove with a flux hammer
  	Remove projections which do not fit the acceptable profile. For carbon and stainless steels, non adhesive projections are not permitted. Maximum projections allowed without repair: 6 projections per 625 mm² (1 po²)			Grind.
	NONE	NONE	NONE	Remove

Welding Procedure

BRACKET WELDING PARAMETERS

Volt : 19 – 22 V
Amp. : 130- 190 A
Wire speed. : 360- 500 in/min
Welding Wire: ER308 LSI 0.035 ''
Shelding Gas: 90%He- 7.5% Ar- 2.5 CO2
Welding Speed: 15- 22 in/min

INSTRUCTIONS

Weld support bracket to tubing behind panel by performing two plug welds and three 4mm fillet welds at the notches. Weld according to "welding parameters" above.

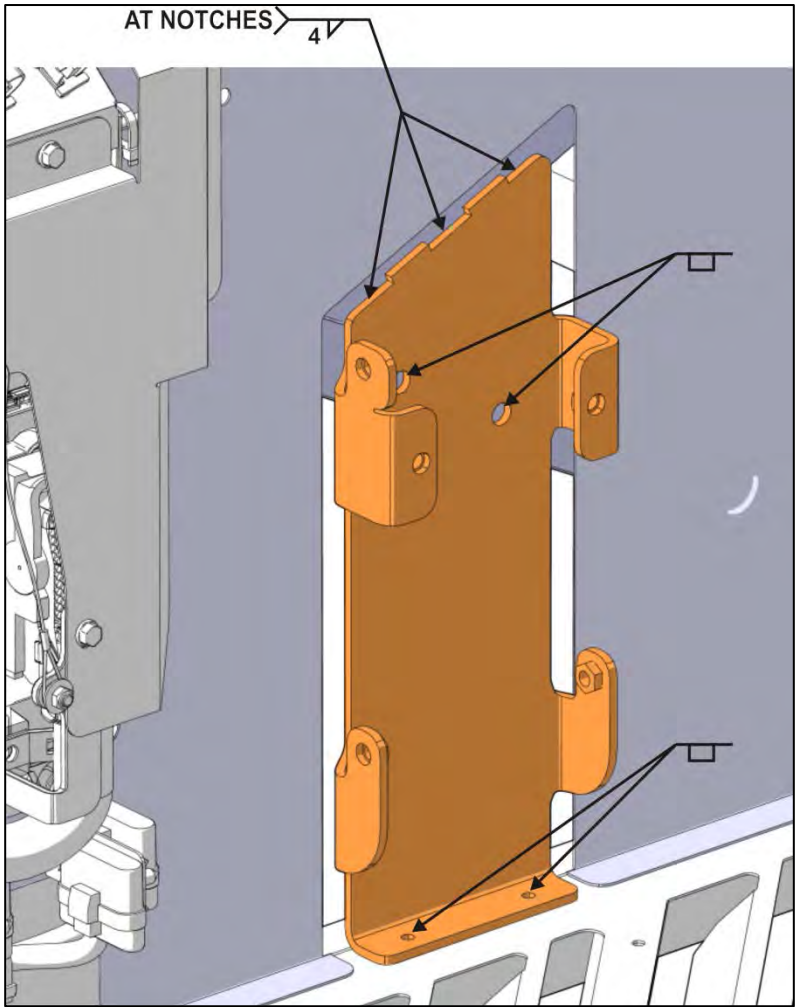


Figure 21: Bracket Welding

CRACK WELDING PARAMETERS

Volt : 18.5– 21.5V
Amp. : 130- 190 A
Wire speed. : 290- 380 in/min
Welding Wire: ER308 LSI 0.035 "
Shelding Gas: 90%He- 7.5% Ar- 2.5 CO2
Welding Speed: 12- 17 in/min

INSTRUCTIONS

Weld cracks over 1/4" long according to "welding parameters" above.

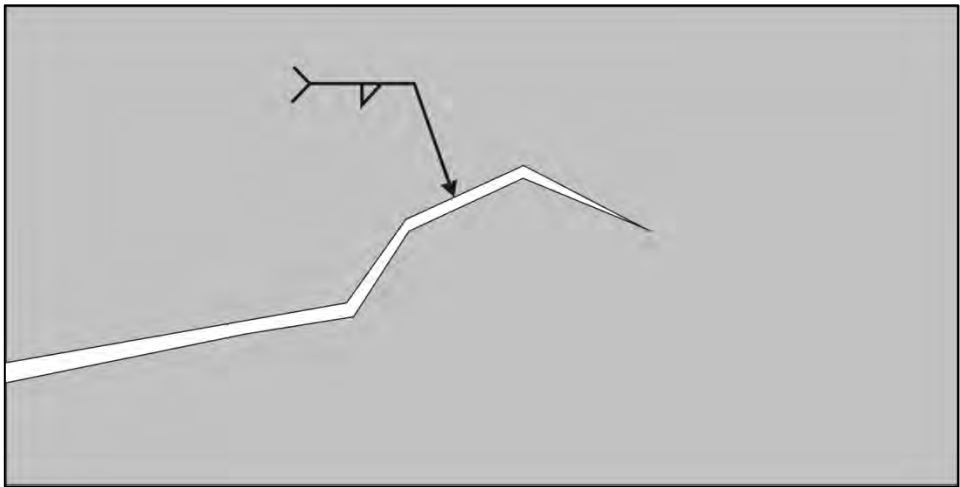


Figure 22: Crack welding

Fitting torque tables

General

- This specification is for tightening an adaptor to a component and a hose fitting to an adaptor,
- Tightening an adaptor hose fitting must always be done with 2 wrenches: one on the fitting and one on the adaptor.
- The O-ring on adaptor with O-ring found in systems like AC must be lubricated with the appropriate oil before torquing.
- The size column in tables hereafter is based on 1/16 inches. The size -XX is engraved on the hexagon flat of one part of the fitting. This is standard for any type of fitting. See images below.
- If two fittings of different material are used together, use the lowest torque associated with each one the two fittings.

NPT

- The male pipe thread will always need a sealant, either Teflon paste (ref 680098) or AC sealant (ref 680869) according to the drawing.
- The torque is determined by a number of turns after being hand tight. For straight adaptor, use **2 turns**. For elbows and Tee adaptor, use **1.5 turns** plus the necessary angle according to the drawing.



37° JIC / 45° SAE, Steel



JIC 37° et 45° steel, dry		
Size	Lbs/ft	N-m
-6	20 – 22	27 – 30
-8	44 – 48	59 – 65
-10	50 – 58	68 – 79
-12	79 – 88	107 – 119
-16	117 – 125	158 – 170
-20	158 – 175	215 – 237

JIC 37° with Flare-tite seals		
Size	Lbs/ft	N-m
-6	26 – 28	35 – 38
-8	55 – 60	74 – 81
-10	80 – 88	108 – 119
-12	110 – 121	149 – 164
-16	140 – 154	190 – 209
-20	190 – 209	258 – 283

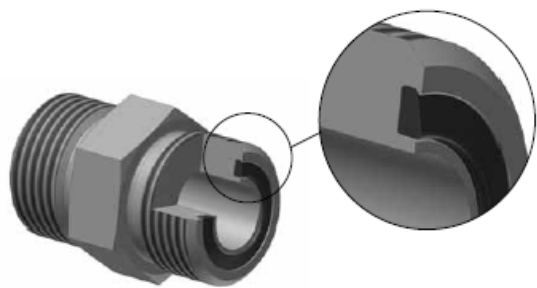
37°JIC / 45°SAE, Brass

JIC 37° et 45° brass, Dry		
Size	Lbs/ft	N-m
-6	13 – 14	17 – 19
-8	28 – 31	39 – 42
-10	32 – 38	44 – 51
-12	51 – 57	70 – 78
-16	76 – 81	103 – 110
-20	103 – 114	139 – 154

Fitting, brass SAE 45°		
Size	Lbs/in	N-m
-04	90 -100	10.1 – 11.3

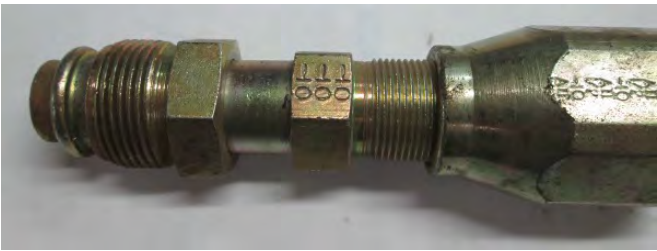
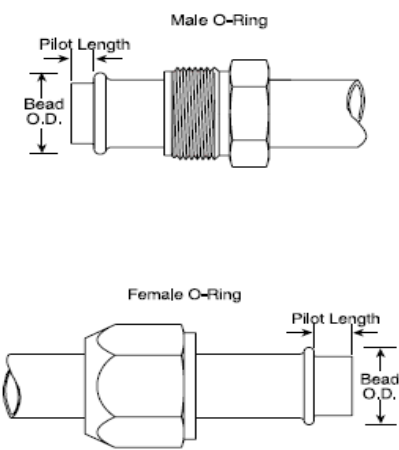
JIC 37° brass with Flaretite seals		
Size	Lbs/ft	N-m
-6	17 – 18	23 – 25
-8	36 – 39	48 – 53
-10	52 – 57	70 – 77
-12	71 – 79	97 – 107
-16	91 – 100	123 – 136
-20	123 – 136	168 – 184

ORS



Size	Lbs/ft	N-m
-16	92-100	125-136
-24	145-155	195-210

Pilot tube ORing



Size	Lbs/ft	N-m
-06	11.6 – 13.3	15.8 - 18.1
-08	15 – 17.5	21.5 - 23.7
-10	20 – 22	27.1 - 29.3
-12	40.5 - 43	54.8 – 58.2