



**JOHN DEERE 8RT
TRACK TANK GEN 5
INSTALLATION and PARTS MANUAL**



INSTALLATION & PARTS





Limited Warranty

Fast Ag Solutions warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warranty is only effective as to any new machinery which has not been altered, changed, repaired or treated since its delivery to the buyer, other than by Fast Ag Solutions or its authorized dealers or employees, and does not apply to accessories, attachments, tools or parts, sold or operated with the new machinery, if they have not been manufactured by Fast Ag Solutions.

Fast Ag Solutions shall only be liable for defects in the materials or workmanship attributable to faulty material or bad workmanship that can be proved by the buyer, and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery or in any other manner whatsoever, and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with this operator's manual, specifications, or printed instructions.

Written notice shall be given by registered mail, to the Manufacturer within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows:

Fast Ag Solutions
4130 Commerce Boulevard
Windom, MN 56101

This warranty shall expire one (1) year after the date of delivery of the new machinery.

If these conditions are fulfilled, Fast Ag Solutions shall at its own cost and at its own option either repair or replace any defective parts provided that the buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation or any other work, unless Fast Ag Solutions has authorized such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by Fast Ag Solutions or its authorized dealers or employees.

This warranty extends only to the original owner of the new equipment.

Rubber parts (including tires, hoses, grommets) are not warrantied.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether express or implied, and without limiting the generality of the foregoing, excluded all warranties, express or implied or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment. The Manufacturer disclaims all liability for incidental or consequential damages.

This Track Tank Gen 5 is subject to design changes and Fast Ag Solutions shall not be required to retrofit or exchange items on previously sold units except at its own option.

Warranty void if not registered.



FAST TRACK TANK GEN 5

Warranty Registration

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer Name				
Address				
City		State		Zip
Phone				

Dealer Name				
Address				
City		State		Zip

Tank Model				
Serial Number				
Delivery Date				

Warranty Inspection Report

DEALER INSPECTION REPORT

- All Fasteners Tight
- Fertilizer Hoses and Fittings Free and Tight
- Frame and Tanks Level

SAFETY

- Safety Chain Installed
- All Guards Installed
- All Safety Signs Installed
- Reflectors, SMV, and Lights Clean
- Review Operating and
- Safety Instructions

I have thoroughly instructed the buyer on the above-described equipment in which review included the Manual content, equipment care, adjustments, safe operation, and applicable warranty policy.

Date _____
Dealer's Rep. Signature _____

The above equipment and Manual have been received by me, and I have been thoroughly instructed as to care, adjustments, safe operation, and applicable warranty policy.

Date _____
Owner's Signature _____

White - FAST
Yellow - Dealer
Pink - Customer



INSTALLATION & PARTS

FAST 8RT Series Tank

TANK SERIAL NUMBER _____

DATE PURCHASED _____ / _____ / _____



General Information

All rights, especially copying and distribution rights are reserved. No part of this publication may be reproduced in any form or by any means, electronic or mechanical, including photocopying, without express written permission from Fast Ag Solutions.

Parts information in this manual represents components installed when product was manufactured based upon the best available information. Modifications made subsequent to initial delivery are not included. Always verify the parts and color required when ordering parts.

If you have any questions, please contact your Fast Ag Solutions Parts and Service Department.

Explanation of Lists

The Manual is organized as follows:

Table of Contents

INSTALLATION

PARTS

TORQUE SPECIFICATIONS

The parts lists are broken down into sub-assemblies and listed in four (4) columns:

- **ITEM** - These numbers are found on the illustration associated with the parts list.
 - NS - This item is NOT SHOWN, included for reference.
- **QTY.** - This is the quantity of parts needed in an assembly.
 - AR - The quantity of this item is applied AS REQUIRED for the location.
- **PART NO.** - These are the part numbers associated with the ITEM.
- **DESCRIPTION** - This is the description of the part.



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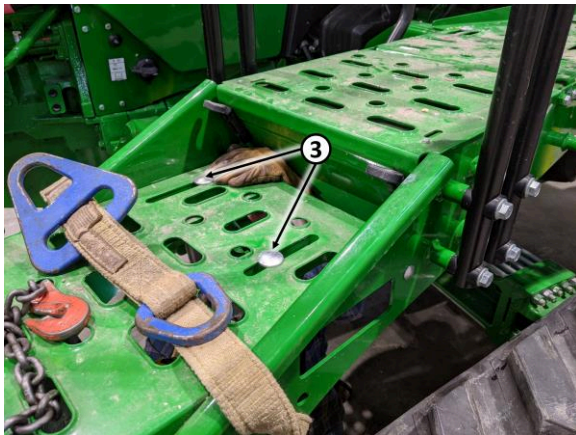
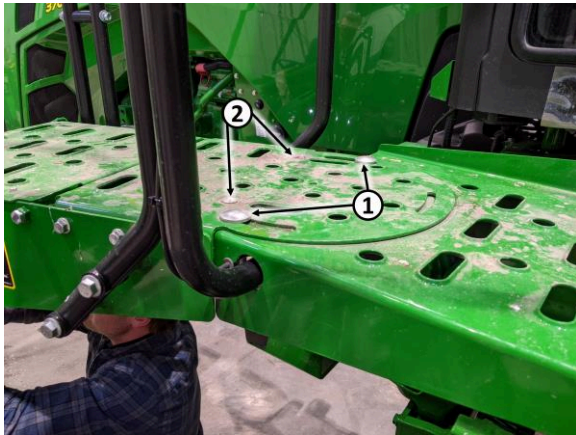


INSTALLATION

Remove Step Assembly, Step Bracket, and Toolbox

▲ WARNING: Step assembly weighs approximately 300 lbs. Use an appropriate lifting device to prevent injury.

1. Attach lifting device to the step assembly.
2. Remove nuts, washers, and carriage bolts (1, 2, 3). Save all for reuse.



3. Remove the step assembly.
4. Remove the step bracket (4).



5. Remove the toolbox (5) from its bracket. The toolbox bracket does not need to be removed.



6. Remove the battery cover, shroud, and contents. Access to the mounting bolt (6) is required.



- Securely store the battery cables (7) out of the way for reuse.

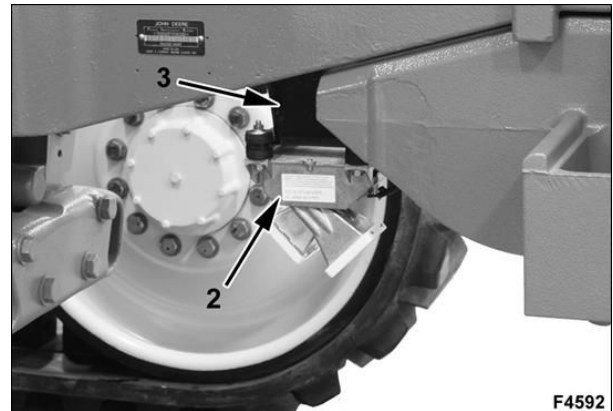


Remove Center Link Bracket and Radar

- Remove the center link (1) and its mounting bracket from the right-hand side of the tractor.



- Disconnect the radar harness from the radar (2).
- Remove the mounting bracket (3) from the tractor. The mounting bracket will not be reused.



Remove Exhaust Light Bracket

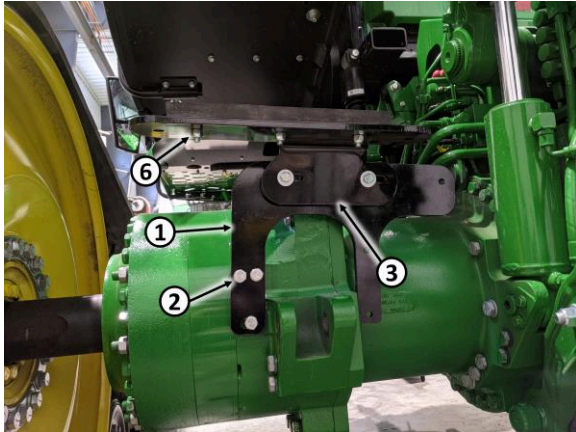
For 2014 – 2019 8RT models, a light bracket on the exhaust of the tractor needs to be replaced by the supplied Light Relocation Bracket.

- Remove the Exhaust Light Bracket and its hardware. Save all for later use.

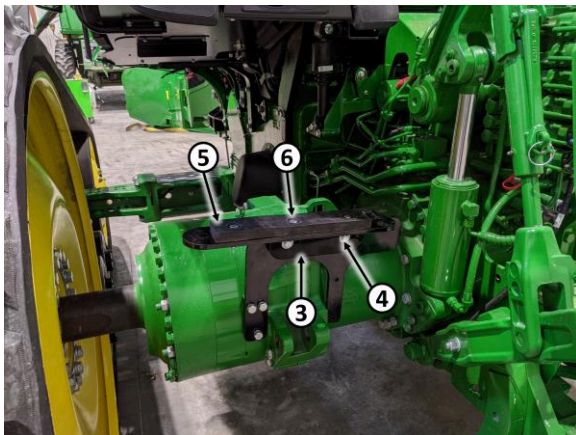


Install Rear Tank Supports

1. Install the left-hand tank mount (1) with three M16 x 40mm GR8.8 bolts and three M16 lock washers (2). Repeat on the right-hand side using the right-hand tank mount.



2. Install the tank support (3) with two 1/2" X 2" bolts (4), 1/2" washers, and 1/2" center-lock nuts. Do not fully tighten them yet as the brackets will need to be adjusted when the tanks are installed later.

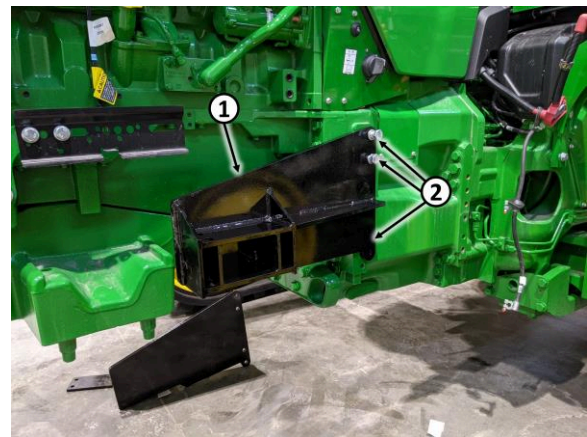


3. Install the rubber isolator(s) (5) with three (left-hand side) or four (right-hand side) each 3/8" flat washers, 3/8" x 2" bolts (6), and 3/8" center-lock nuts. Snug the bolts to slightly compress the rubber. Repeat the procedure for the right-hand side.

Install Receiver Mounting Brackets

⚠ WARNING: Mounting bracket weighs approximately 105 lbs. Use an appropriate lifting device to prevent injury.

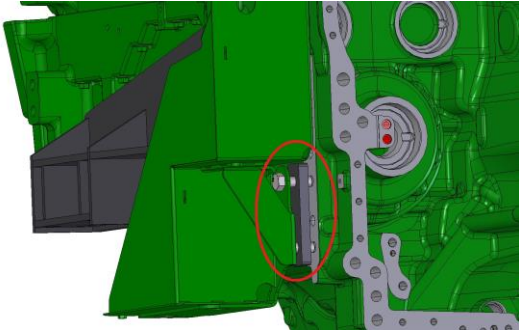
1. Install the left-side mounting bracket (1) on the tractor with three M20 x 60mm GR 10.9 bolts (2) and M20 lock washers. Refer to the [torque charts](#) in this Manual for bolt torque values. **If DEF is used in the tractor, keep these bolts loose for Step 3 in [Install Radar and DEF Components](#).**



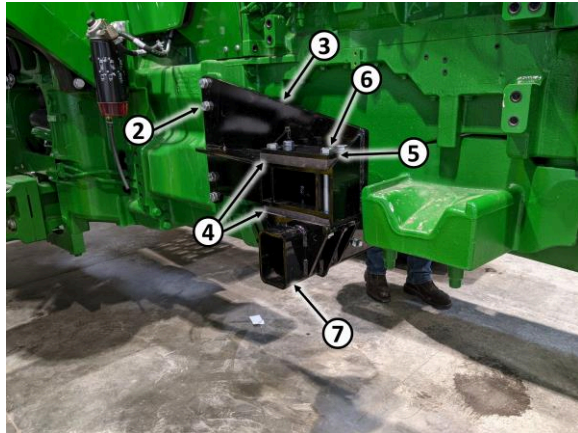
2. Rotate the battery ground cable 45° counterclockwise to allow it to through the box's hole.



- Reinstall the battery box with the three supplied longer M20 x 60mm bolts, lock washers, and (two) 3/4" spacers on (the rear of) the battery box.



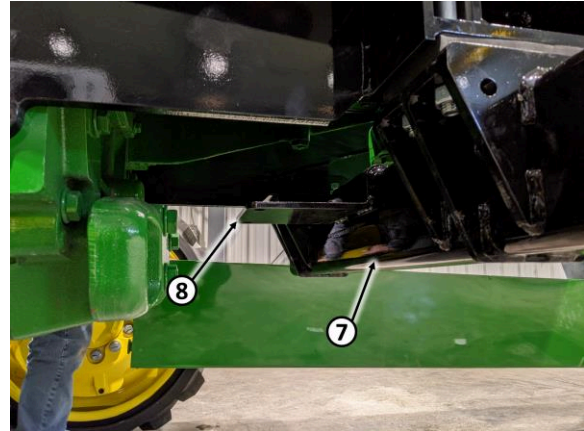
- Install the right-side mounting bracket (3) on the tractor with four M20 x 60mm GR 10.9 bolts (2) and M20 lock washers. Refer to the [torque charts](#) in this Manual for bolt torque values.



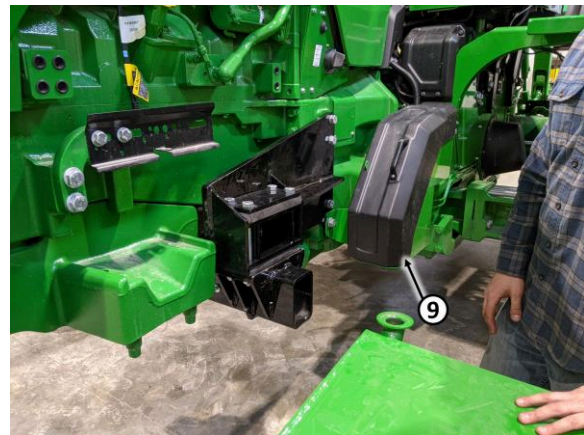
- Place the rubber isolators (4) on the top and bottom of the bracket.
- Place the plate (5) on top of the isolator and insert four 3/4" x 9" GR5 bolts (6) through the plate and both isolators.
- Repeat Steps 5 and 6 for the left-hand side receiver mounting bracket.

⚠ WARNING: Receiver mounting tube weighs approximately 115 lbs. Use an appropriate lifting device to prevent injury.

- Raise the receiver mounting tube (7) into position with the radar bracket (8) to the rear and install eight 3/4" center-lock nuts.



- Tighten all eight bolts equally so some bulge is seen on the rubber isolators.
- Reinstall the battery cover, shroud, and contents (9). Refer to [torque charts](#) in this instruction set for all bolt torque values.



Install Setscrews

1. Install four setscrews with jam nuts (1) in the receiver tube. Verify setscrews do not extend inside tubes.

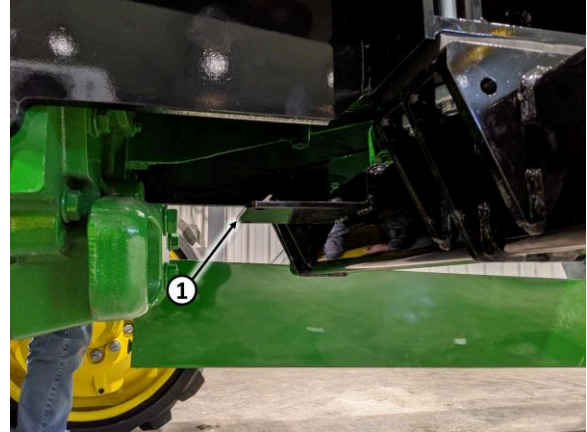


2. Install setscrews (1) in each receiver on the left- and right-hand tanks. Verify that the setscrews do not extend inside the tubes.

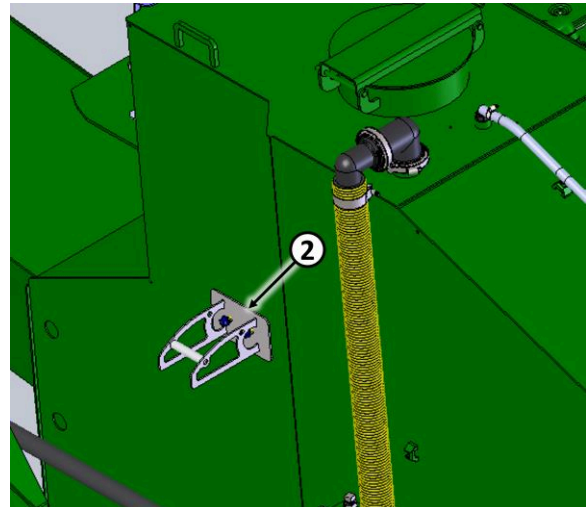


Install Radar, Light, and DEF Components

1. Attach the radar to its mounting bracket (1) with existing hardware.

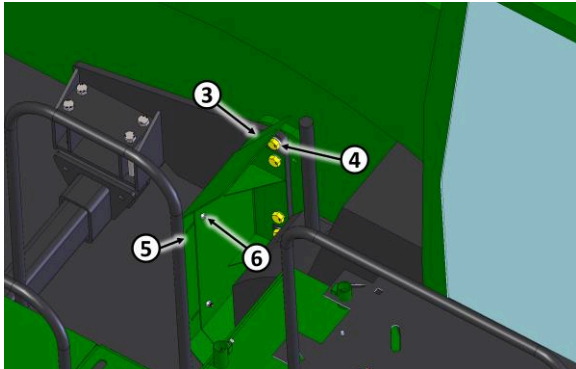


2. Install the DEF filler mount (2) (if applicable) on the inboard side of the left-hand tank with two 3/8" x 1" carriage bolts and flange nuts.

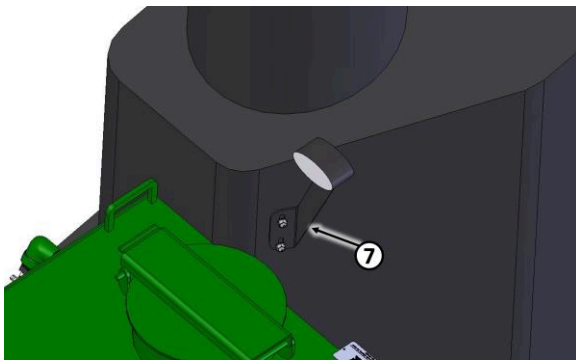


3. Install the DEF Tank Heat Shield kit (if applicable) with two lock washers and bolts (3) from Step 1 of [Install Receiver Mounting Brackets](#) on the left-hand side of the tractor. Refer to [torque charts](#) in this instruction set for all bolt torque values.
4. Install the outer, sliding DEF Tank Heat Shield with the supplied 3/8" hardware, leaving a 1/2" of clearance

between the outer edge of the plate and the tank (installed next).



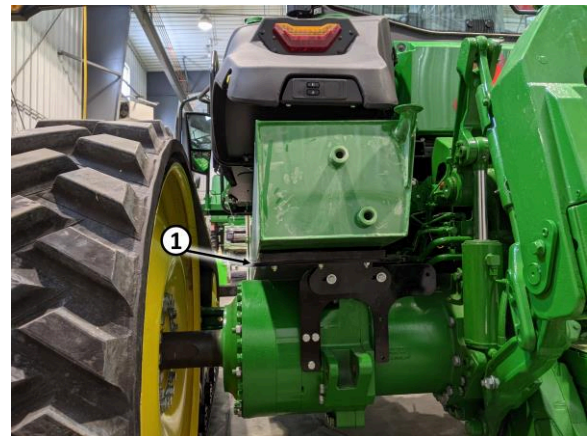
5. If the tractor is a 2014-2019 8RT, reinstall the supplied Relocation Light Bracket with existing hardware as shown.



Install Tanks

⚠ WARNING: Each tank weighs approximately 1100 lbs. Use an appropriate lifting device to prevent injury.

1. Connect an appropriate lifting device to the left-hand tank.
2. Raise the tank and guide it into position onto the rear support bracket (1).



3. Align the tank receiver with the front receiver and insert the tube (2) through the tank and into the front receiver.



4. Verify that the tube (2) does not extend past the front receiver on the right-hand side of the tractor before the right-hand side tank is installed.
5. Install the right-hand side tank (3) using Steps 1 and 2.



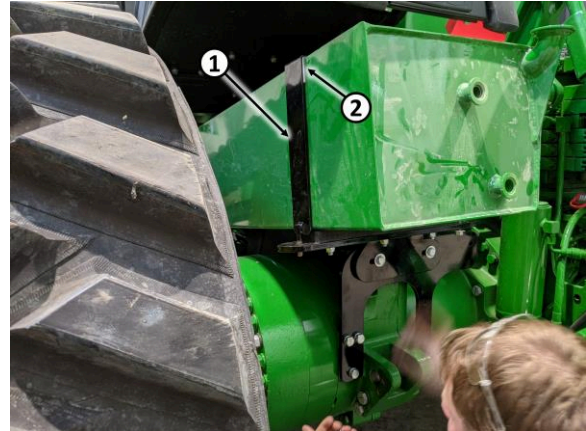
6. With the right-hand tank (3) aligned with the front receiver, push the tube (2) through the right-hand tank.



7. Push both tanks inward against the front receiver and tighten eight setscrews (4) on the front receiver and outside of both tanks. Refer to [torque charts](#) in this instruction set for bolt torque values.
8. Disconnect the lifting devices.

Install Straps and Nylon Protector

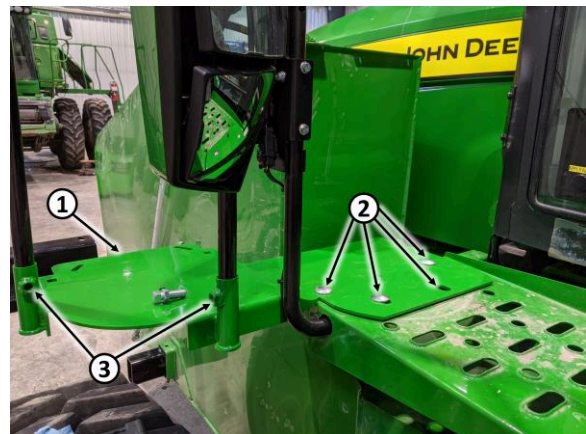
1. Position the strap (1) into place and insert the nylon web (2) between the strap and tank. Insert studs onto its straps through the holes in the tank supports.



2. Place two ½” washers and two center-lock nuts on the studs and tighten them only enough to keep the nylon web in place and the tank from moving side-to-side.
3. Tighten the bolts (see Page 11, Step 2) that hold the tank support to the tank mounts. Repeat the procedure on the right-hand side.

Install Step Assembly

1. Install the top step bracket with handrail (1) with four M16 x 40mm carriage bolts, lock washers, and nuts (2). Install two 5/8” x 2” setscrews with nuts (3) for the handrail. Refer to [torque charts](#) in this instruction set for all bolt torque values.



2. Install the step support tube (4) as shown into its receiver on the left-hand tank. Do not tighten the setscrews yet.

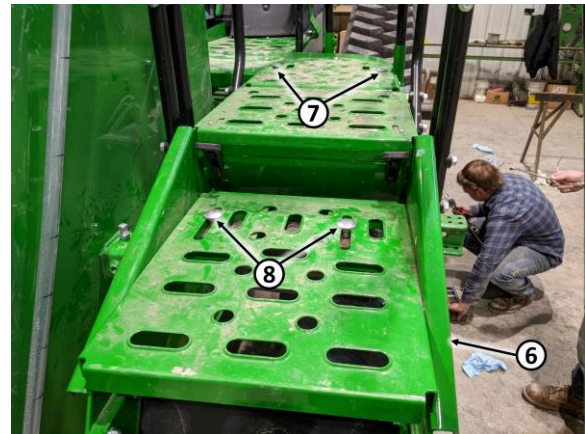


3. Position the rubber isolator (5) on top of the step support tube (the step assembly is shown as already installed).

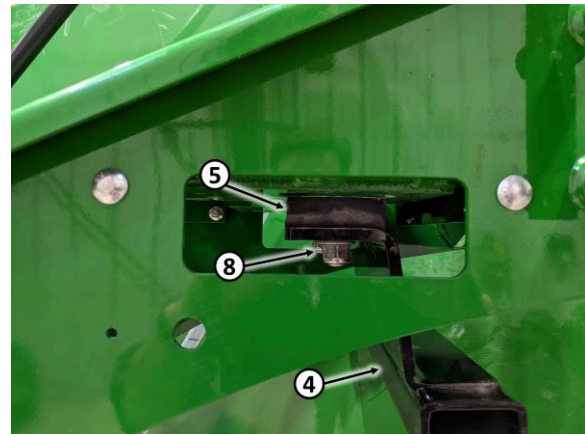


⚠ WARNING: Step assembly weighs approximately 300 lbs. Use an appropriate lifting device to remove step assembly.

4. Attach a lifting device to the step assembly.
5. Raise the step assembly (6) into its position and attach it to the top step bracket (1) with the carriage bolts, lock washers, and nuts (7) saved from Page 9, Step 2.



6. Attach the step assembly to the support tube with existing carriage bolts (8) and flange nuts.



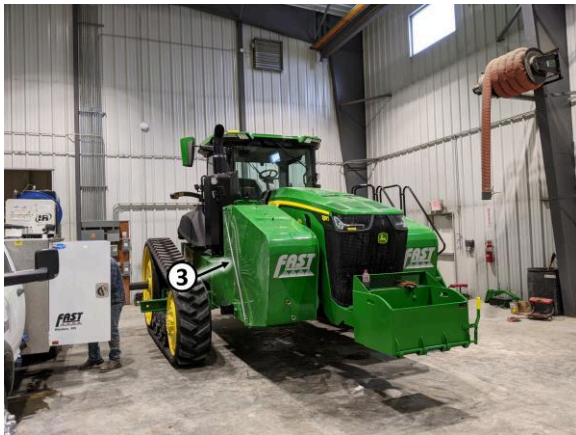
7. Adjust step and tighten all step hardware and setscrews. **There are setscrews on the inboard side of the left-hand tank.** Refer to [torque charts](#) in this instruction set for bolt torque values.

Install Plumbing Components

1. Install rear plumbing components (1, 2) on both sides as applicable.



2. Install sight gauges (3) on both tanks with the fill-line decals aligned to them.



3. Install all other plumbing components as shown in the [PARTS](#) section(s).



Figure 1: Right-hand tank plumbing assembly



Figure 2: Right-hand tank plumbing assembly



Figure 3: Left-hand tank plumbing assembly



Figure 4: Left-hand tank plumbing assembly

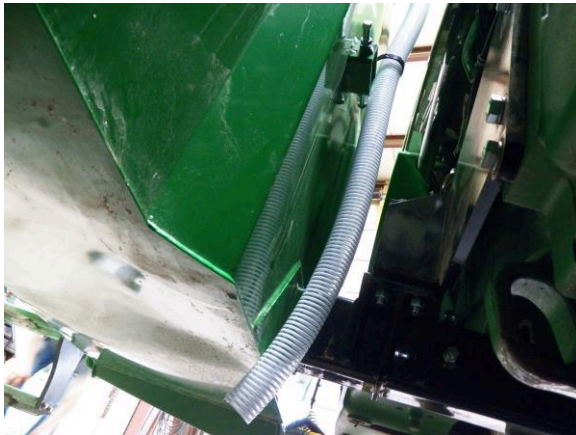


Figure 5: Left-hand tank drain line secured to side of tank. A mirror image exists on the right-hand tank.



Figure 6: Under-frame plumbing assembly viewed from rear-left.



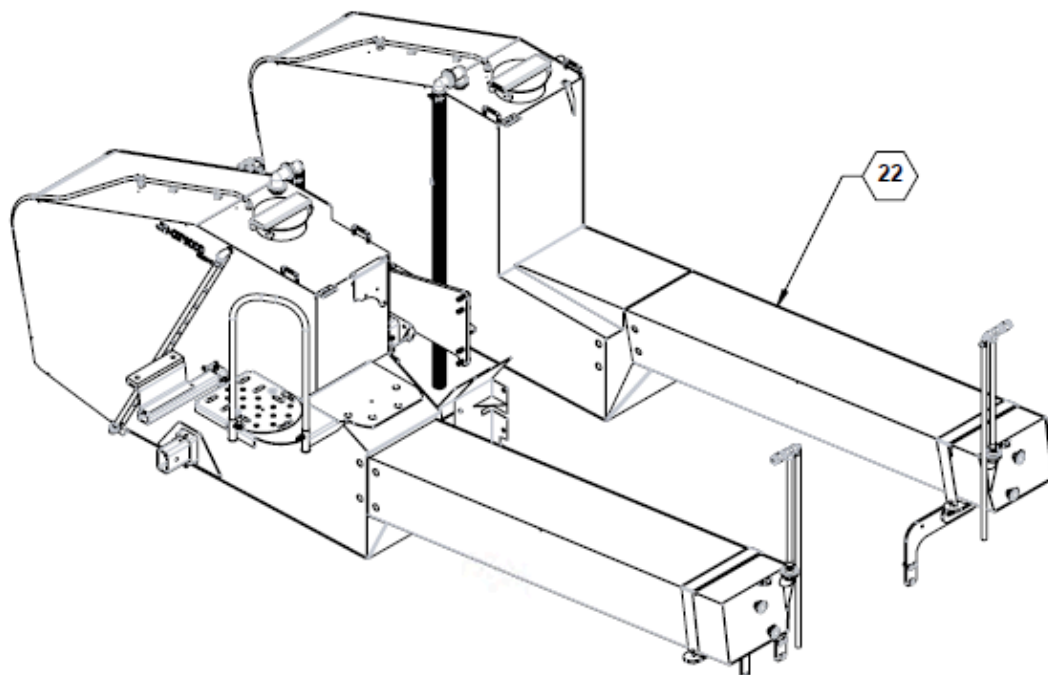
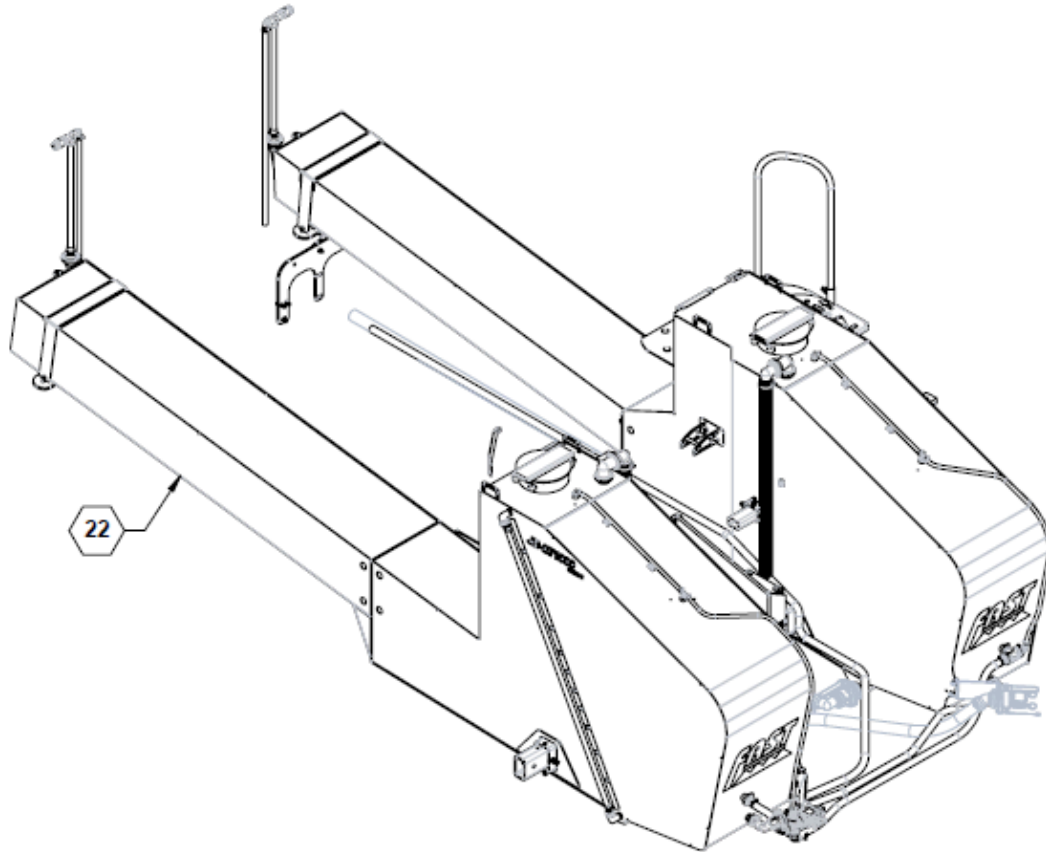
Figure 7: Under-frame plumbing assembly viewed from rear-right.



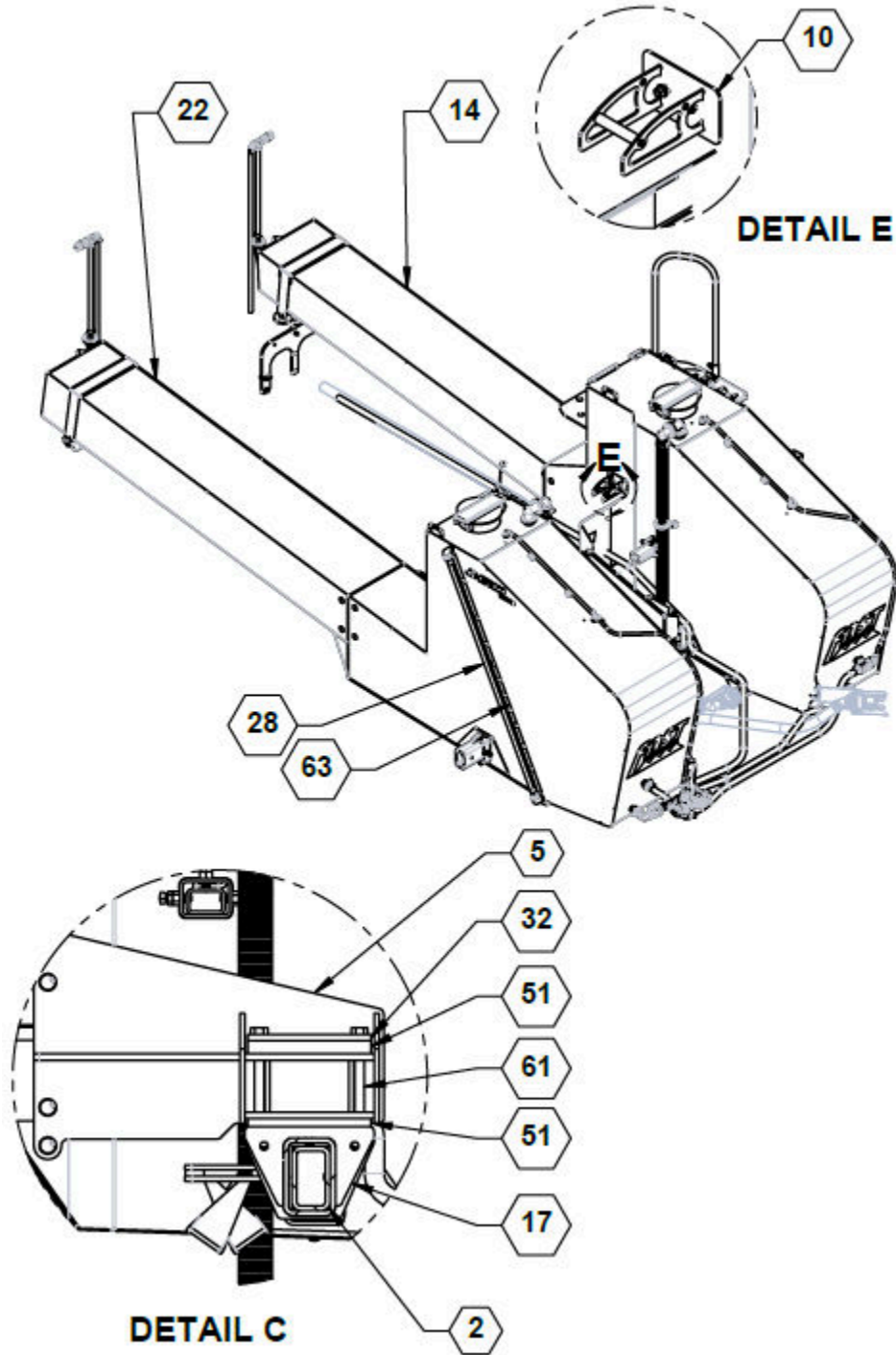
Figure 8: Supply hose to rear of tractor zip-tied to frame components.

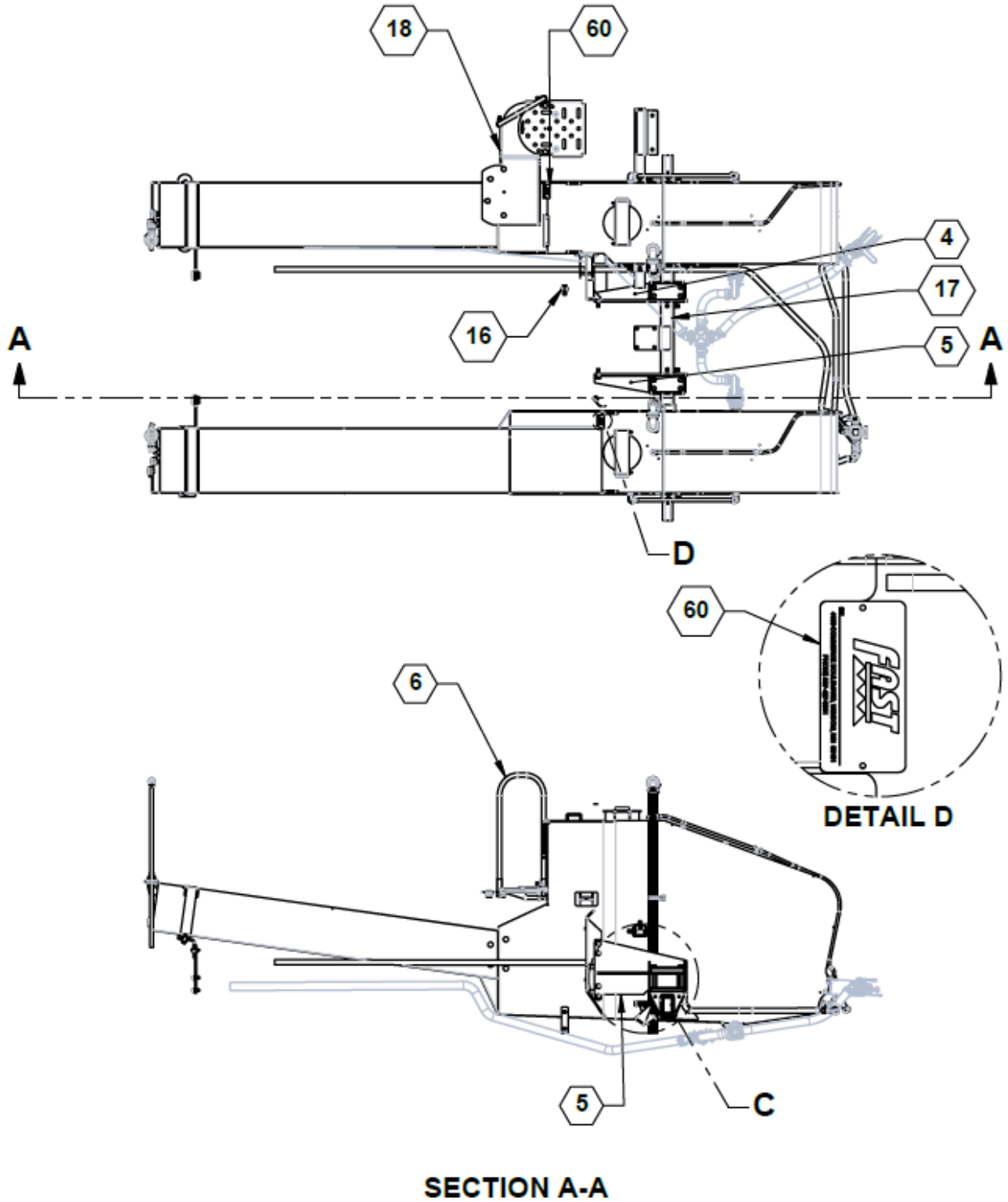
PARTS

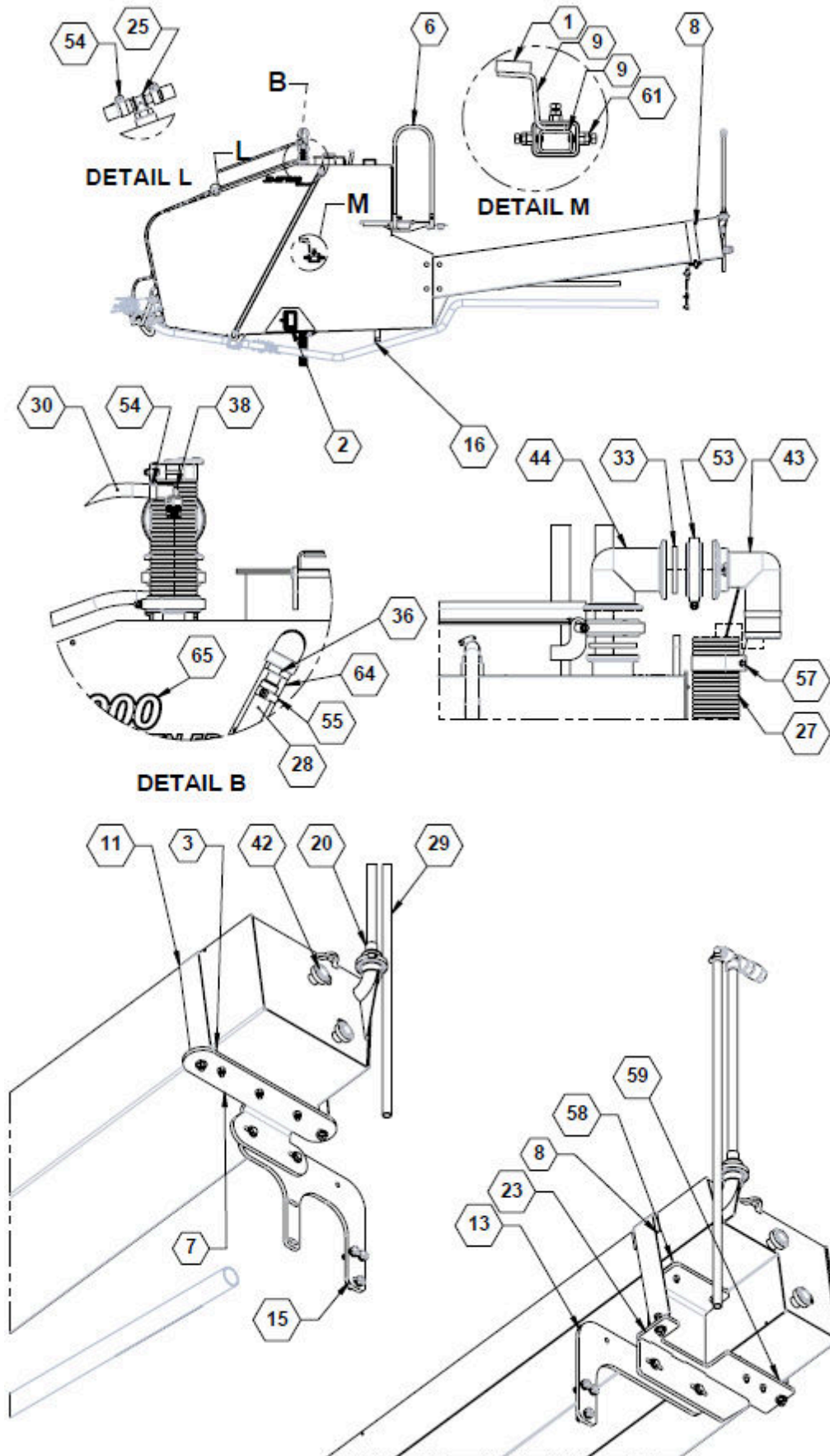
Tanks & Plumbing, Gen 5 (Standard Transmission variant)

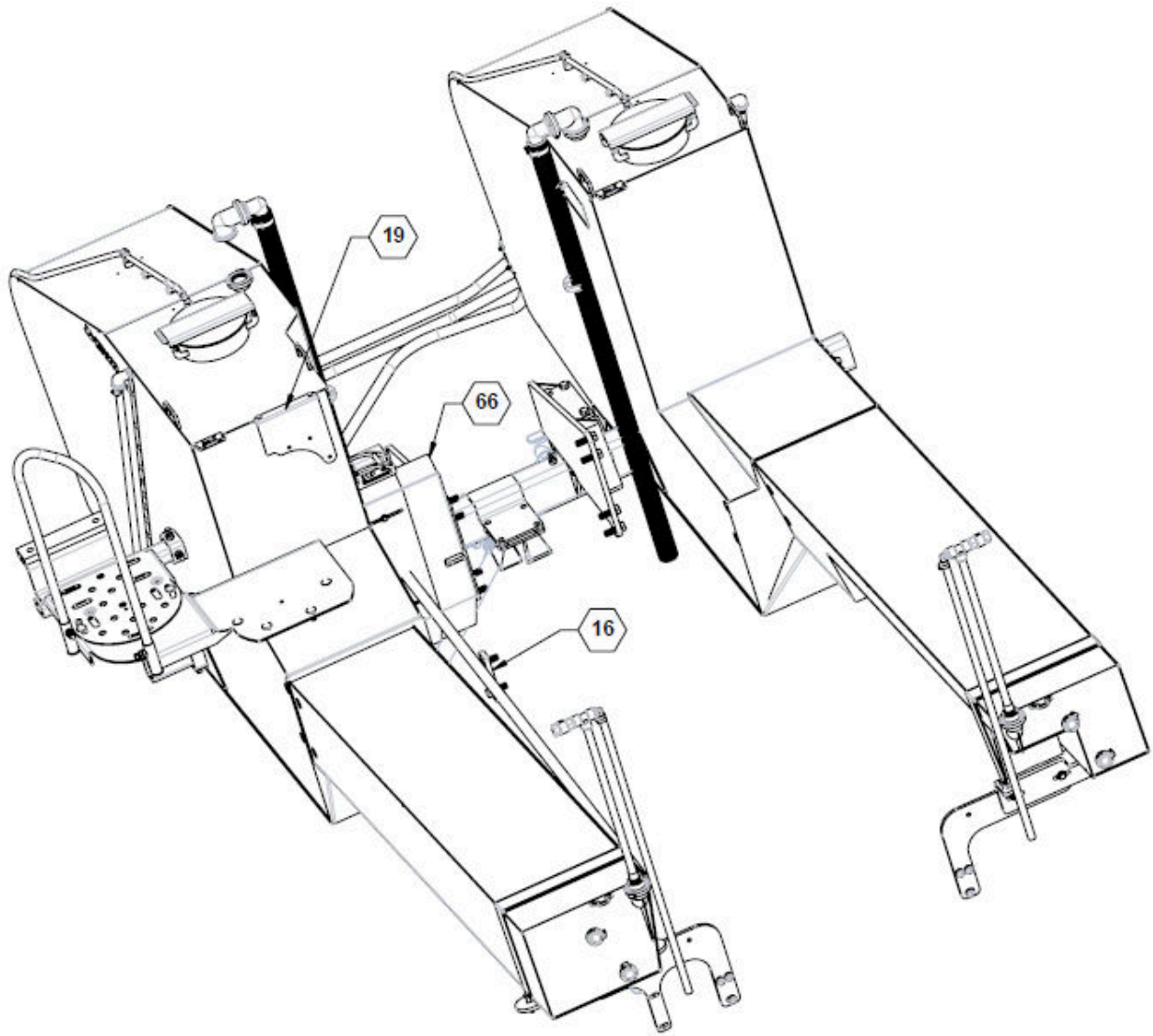


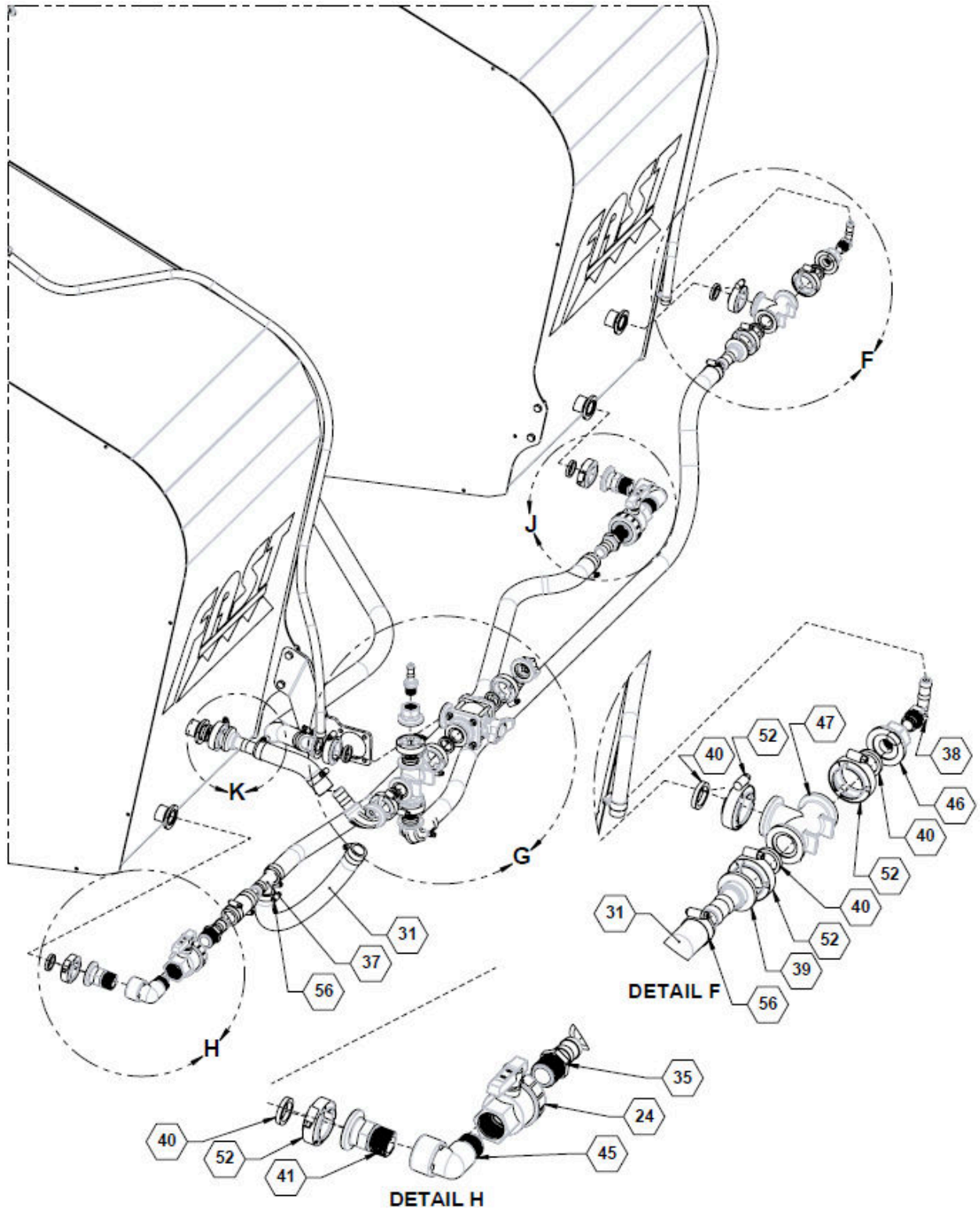
Tanks & Plumbing, Gen 5B (Electric Variable Transmission variant)

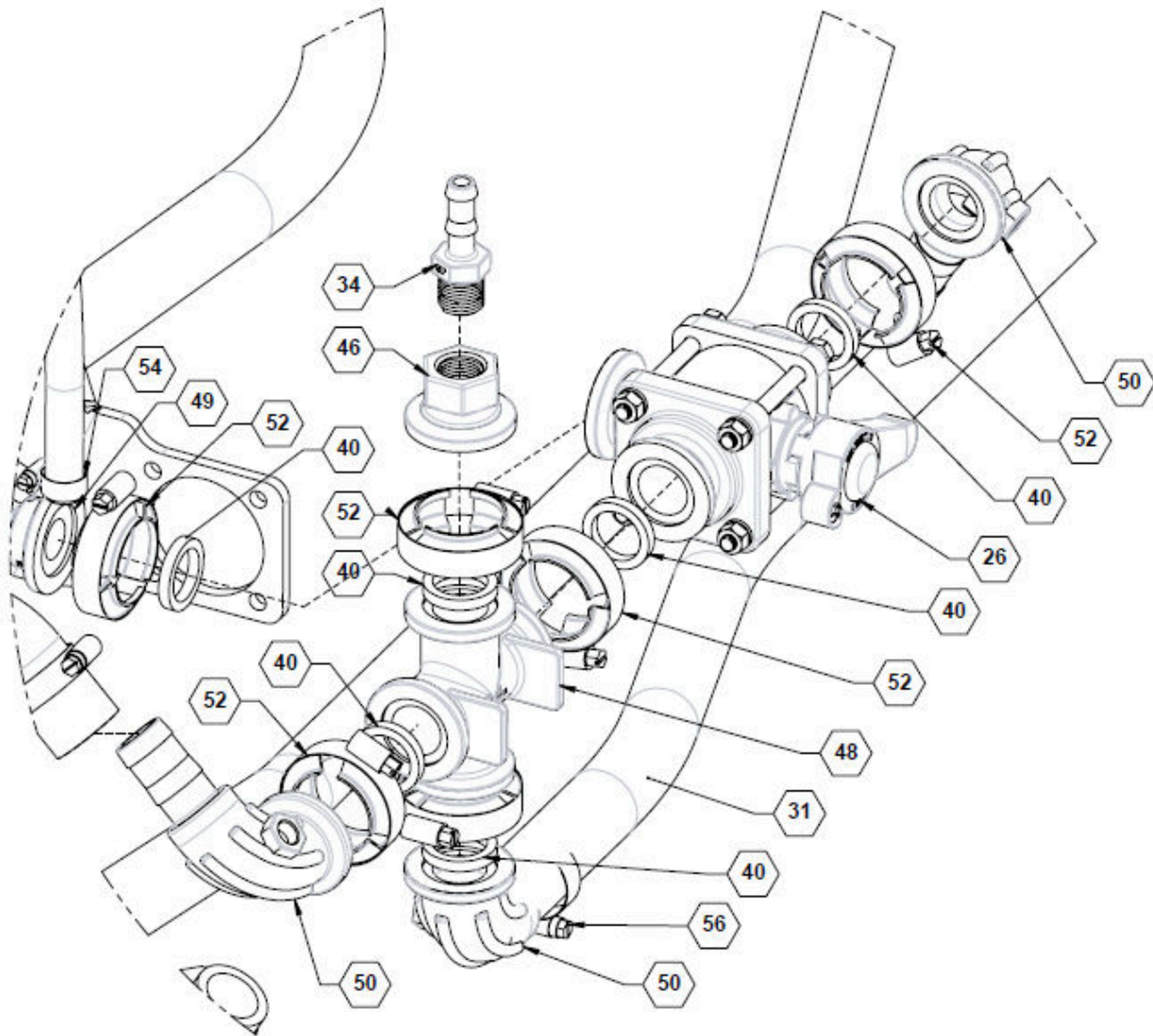




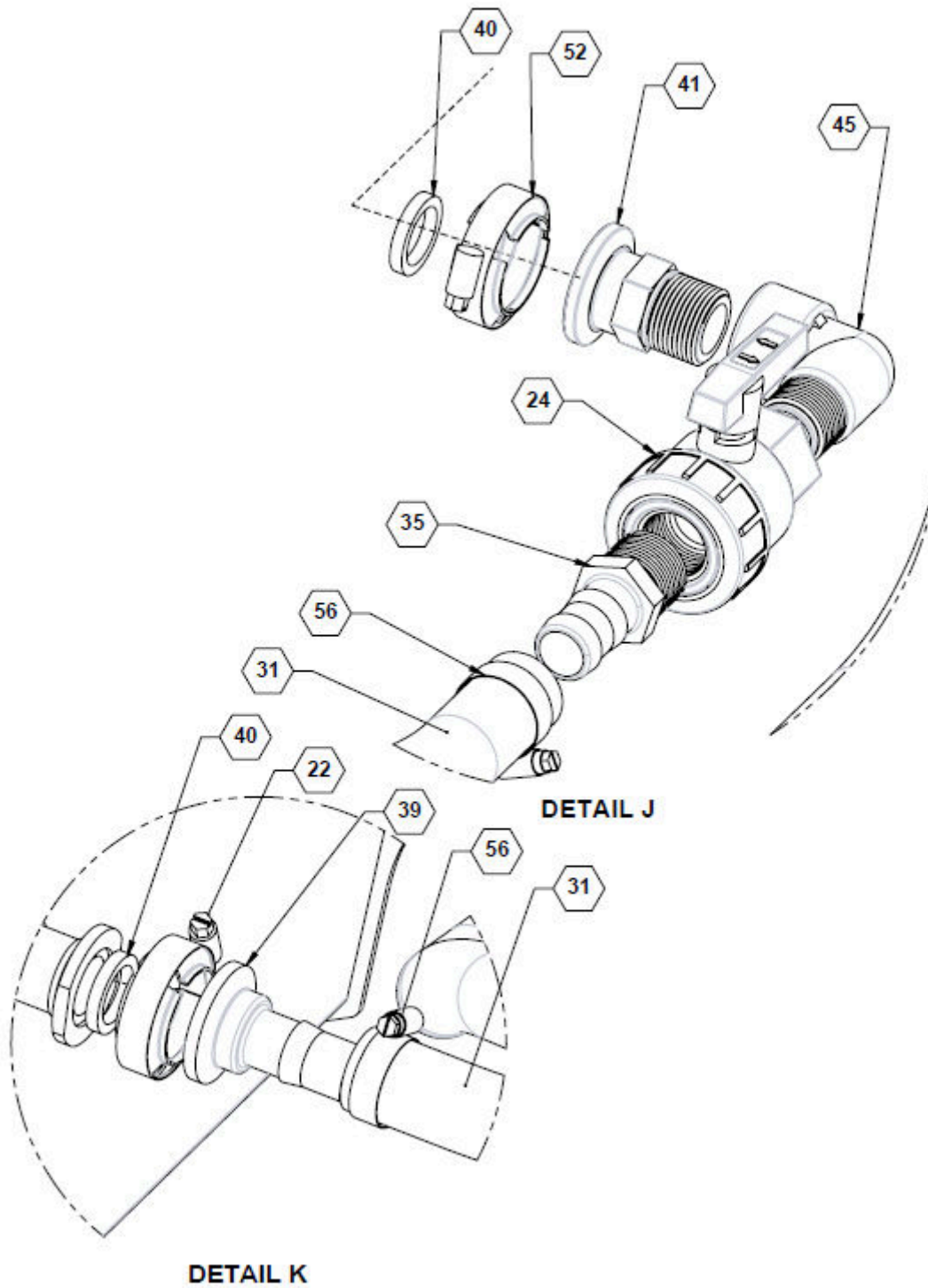








DETAIL G





INSTALLATION & PARTS

Parts List 28300 / 35750: Tanks & Plumbing

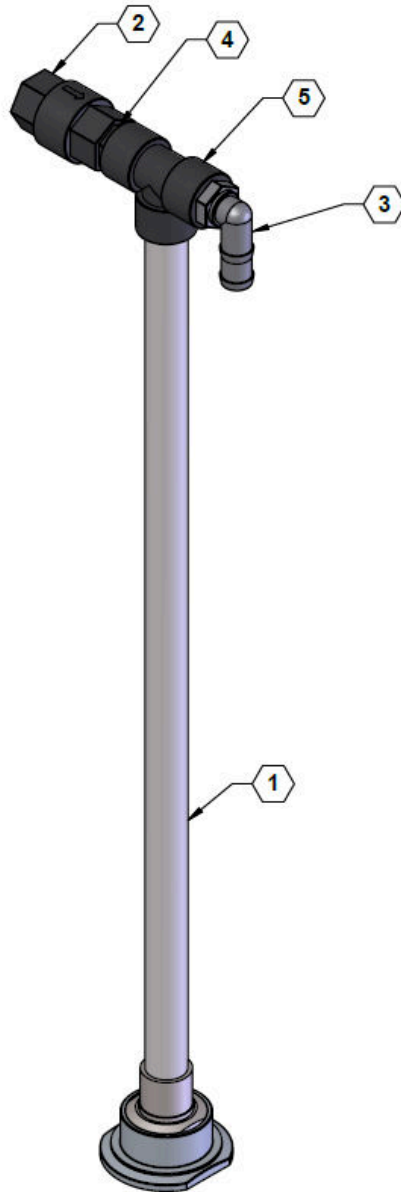
ITEM	PART	QTY	DESCRIPTION
1	14547	1	MOUNT, RUBBER STEP
2	14554	1	TUBE, TANK CARRIER
3	14894	1	JD 4G RUBBER TANK PAD
4	14898L	1	JD 4G LH RECEIVER MOUNT
5	14898R	1	JD 4G RH RECIEVER MOUNT
6	14932	1	SAFETY RAIL
7	19337L	1	LH TAIL STRAP BRACKET
8	19340	2	TANK PROTECTOR
9	19918	1	STEP MOUNT WLDMT, LH
10	19920	1	DEF FILLER MOUNT WELDMENT
11	19937	2	JD RH TAIL STRAP WELDMENT
12	25027	1	BRACKET, VALVE MOUNT
13	28169	1	PLATE, RH REAR DEERE TANK MOUNT
14	28301	1	TANK, JD LEFT HAND W/ RINSE
15	28331	1	PLATE, LH REAR TANK MOUNT
16	28333	1	PLATE, SPACER
17	28335	1	WLDMNT, UNDERFRAME MOUNT
18	28621	1	WLDMNT, JD PLATFORM EXTENSION
19	28875	1	BRACKET, WINDSHIELD WASHER RESERVOIR
20	28876	2	ASSY, JD SS RISER
21	28880	1	BRACKET, LIGHT RELOCATION
22	28302	1	(GEN 5) TANK, JD RIGHT HAND W/ RINSE
	35332		(GEN 5B) TANK, JD RIGHT HAND W/ RINSE
23	19337R	1	(GEN 5) RH TAIL STRAP BRACKET
	35445		(GEN 5B) PLATE, TAIL SUPPORT RH
24	500009	2	VALVE, 1.00 FULL PORT SINGLE UNION
25	500065	2	TEE, .50 MPT X .50 HB
26	500075	1	VALVE, 1.00 MANIFOLD, 3-WAY BOTTOM LOAD
27	510003	12	(FT) HOSE, 2.00, FERTILIZER, EPDM
28	510006	10.4	(FT) 3/4" ID VINYL HOSE
29	510006	8	(FT) 3/4" ID VINYL HOSE
30	510012	11	(FT) HOSE, 1/2 EPDM
31	510016	31.4	(FT) HOSE, 1.00" EPDM
32	5289	2	TOP LOCK WASHER PLATE
33	530019	6	GASKET, 2.00 EPDM
34	530035	1	STRAIGHT, 1/2 MPT 1/2" HB



INSTALLATION & PARTS

ITEM	PART	QTY	DESCRIPTION
35	530041	2	FITTING, 1.00 MNPT X 1.00 HB, POLY
36	530043	4	FITTING, 1.00 MPT X .75 HB
37	530056	1	FITTING, TEE, 1.00 HB, POLY
38	530059	3	ELBOW 90, .50 MPT X .50 HB, POLY
39	530066	2	FITTING, 1.00 MANIFOLD X 1.00 HB
40	530068	16	GASKET, 1.00 EPDM
41	530069	2	FITTING, 1.00 MANIFOLD X 1.00 MPT
42	530070	4	PLUG, MANIFOLD, 1.00
43	530104	2	ELBOW 90, 2.00 FP MANIFOLD X 2.00 HB
44	530106	2	MANIFOLD COUPLING 90° 2" FP
45	530152	2	ELBOW 90, 1.00 STREET
46	530265	2	FITTING, 1.00 MANIFOLD X .50 FPT
47	530298	1	MANIFOLD TEE, 1"
48	530413	1	CROSS FITTING, 1.00
49	530426	1	ELBOW 45, 1.00 FLANGE X 1.00 HB
50	530445	3	FLANGE SWEEP X 1 IN HB
51	5333	4	PAD, BOLT
52	540000	16	CLAMP, WORM SCREW, 1.00
53	540002	6	CLAMP, FP WORM SCREW, 2.00
54	540012	8	HOSE CLAMP, SS 1/2" #12
55	540013	6	HOSE CLAMP, SS .75 #12
56	540014	11	HOSE CLAMP, SS 1.00 #16
57	540069	2	HOSE CLAMP, 2.00 T-BOLT
58-59	14894	1	(GEN 5) JD 4G RUBBER TANK PAD
58	590065	1	(GEN 5B) BUMPER PAD, WING REST
59	590094	1	(GEN 5B) BUMPER PAD, 6" LG
60	590216	2	FAST SERIAL TAG
61	590811	1	(GEN 5) BOLT KIT, JD TRACK TANK G5
	590829		(GEN 5B) BOLT KIT, JD TRACK TANK G5B
62	800079	2	FAST TANK LOGO
63	800329	1	DECAL, RH GALLON MARKER
64	800330	1	DECAL, LH GALLON MARKER
65	800331	2	(GEN 5) DECAL, TANK JD-2T1000 GEN 5
	800364		(GEN 5B) DECAL, TANK JD-2T1000 GEN 5B

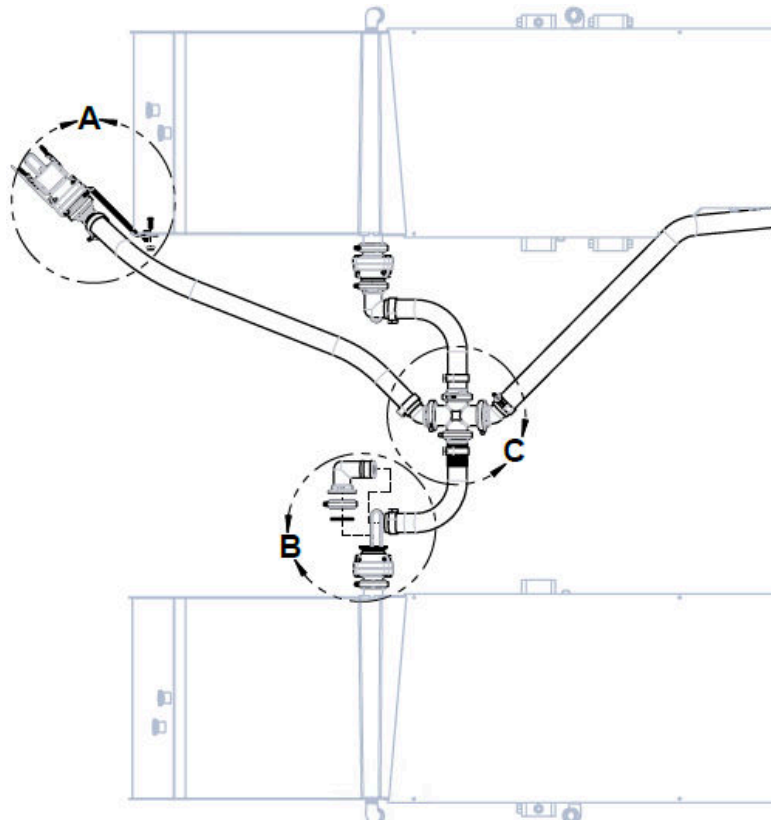
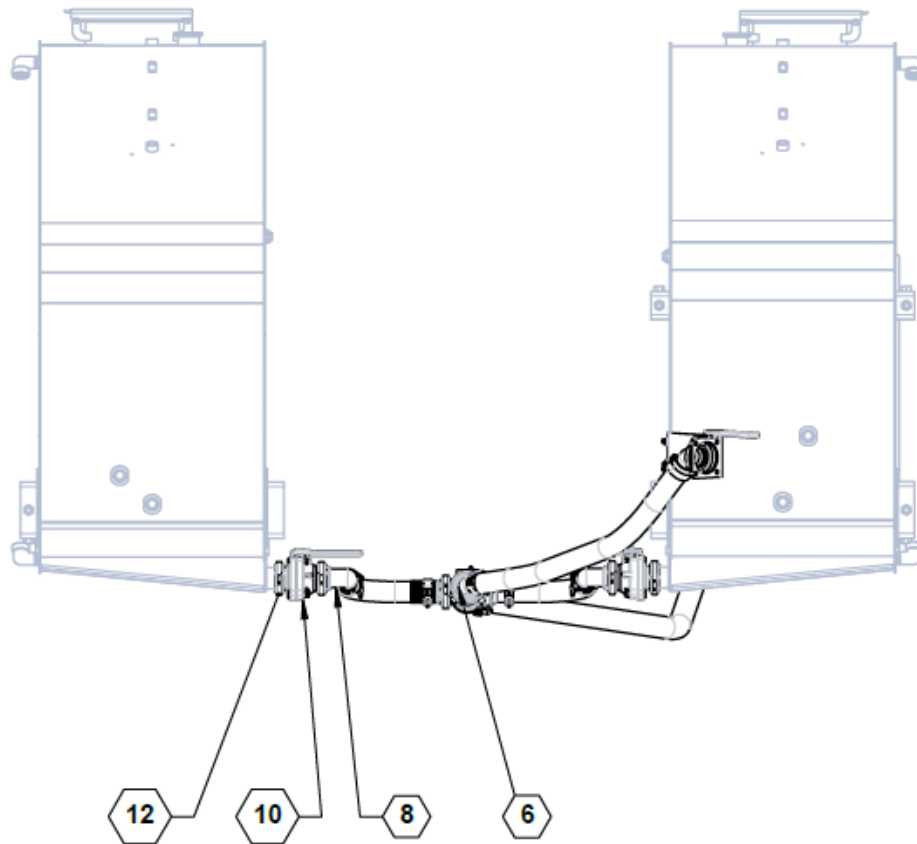
JD SS Riser

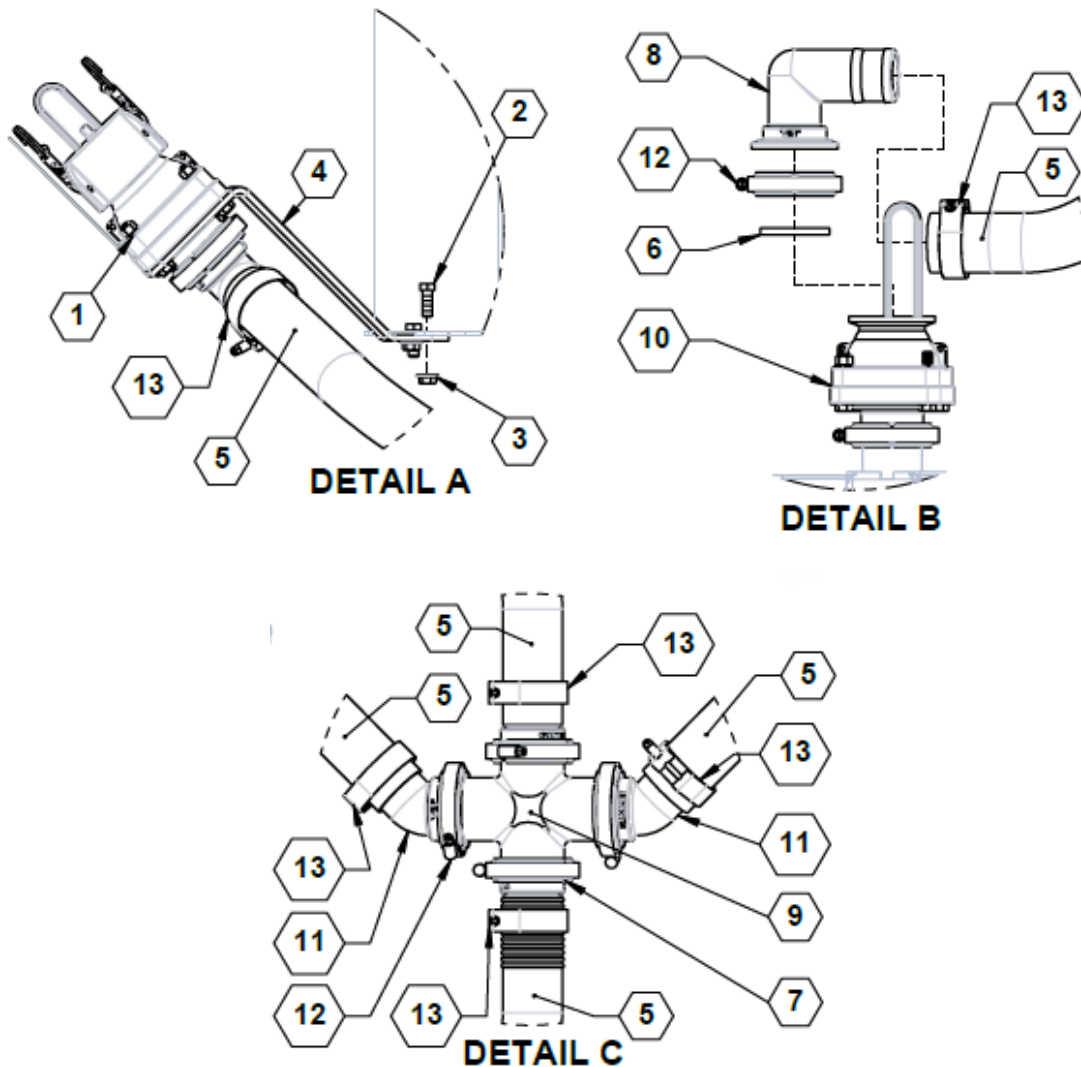


Parts List 28876: JD SS Riser

ITEM	PART NO.	QTY.	DESCRIPTION
1	28877	1	WLDMNT, JD REAR TANK SS RISER
2	500014	1	CHECK VALVE, .75 VITON F, POLY
3	530040	1	HOSE SHANK, 3/4" MPT X 3/4" HB 90~
4	530131	1	NIPPLE, POLY PIPE 3/4" SHORT
5	530156	1	TEE, 3/4" POLY PIPE

Quick Fill, 2"

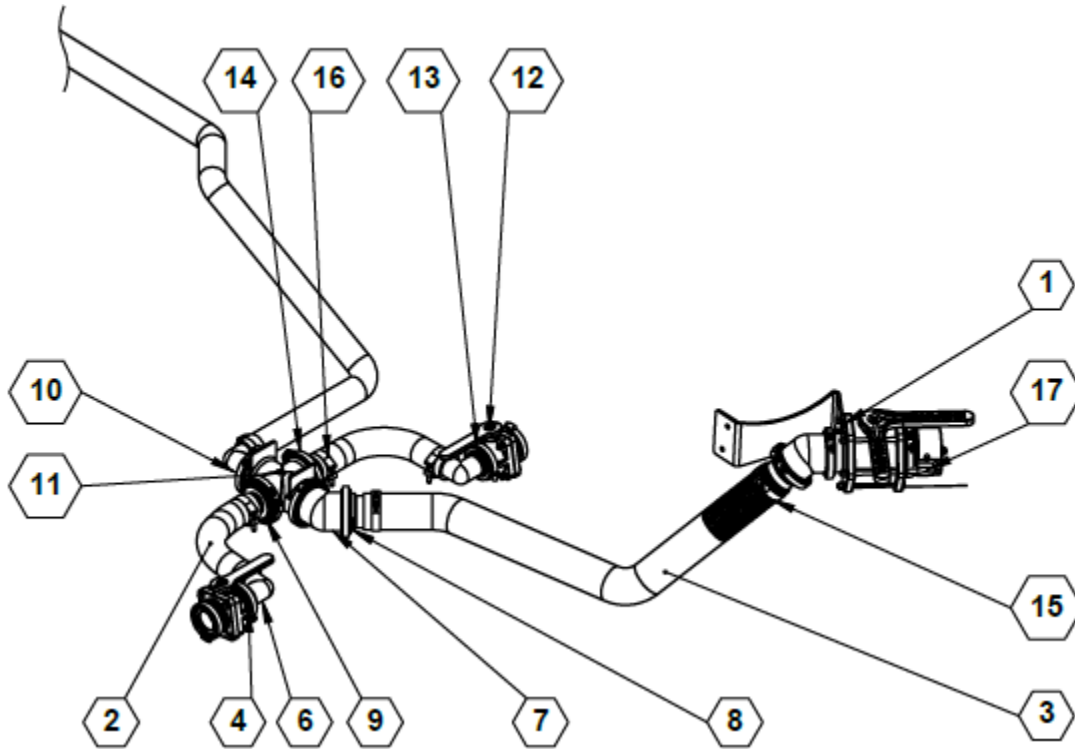




Parts List 99FTTJDRO2QF: Quick Fill, 2"

ITEM	PART NO.	QTY.	DESCRIPTION
1	90SA2QF45	1	ASSY, 2.00 45 DEG QUICK FILL VALVE
2	128	2	BOLT, HH 3/8-16 X 1 GR5 ZINC
3	769	2	NUT, 3/8-16 WHIZLOCK, ZP
4	10206	1	BRACKET, 2.00 QUICK FILL MOUNT
5	510003	23'	HOSE, 2.00 FERT.
6	530019	8	GASKET, 2.00 EPDM
7	530103	2	FITTING, 2.00 FP FLANGE X 2.00 HB
8	530104	2	ELBOW 90, 2.00 FP MANIFOLD X 2.00 HB
9	530107	1	CROSS, 2.00 FULL PORT
10	530327	2	VALVE, 2.00 FP MANIFOLD, STUBBY
11	530354	2	ELBOW 45, 2.00 MANIFOLD X 2.00 HB
12	540002	8	CLAMP, FP WORM SCREW, 2.00
13	540007	7	HOSE CLAMP, 2.00 T-BOLT

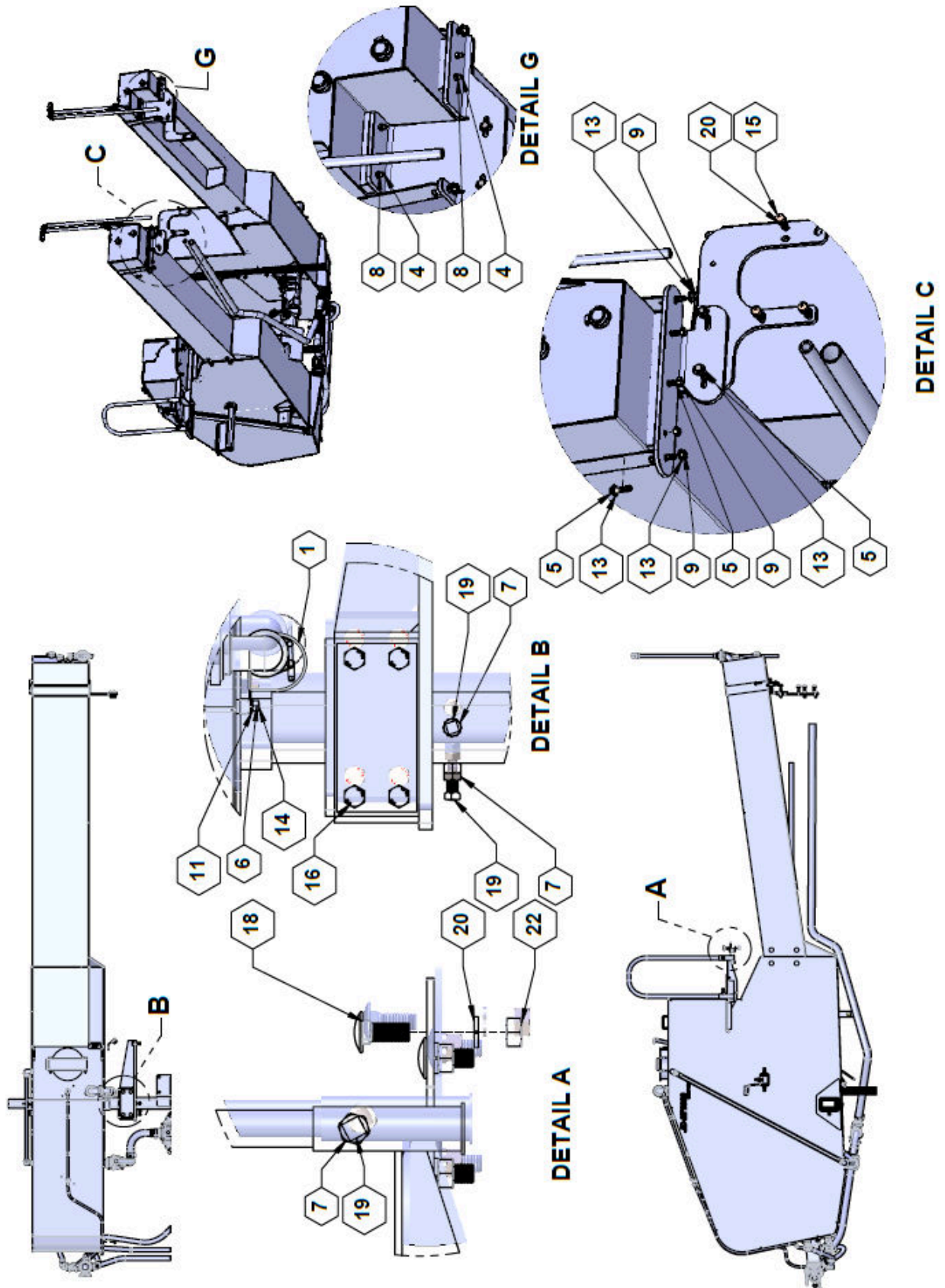
Quick Fill, 3"

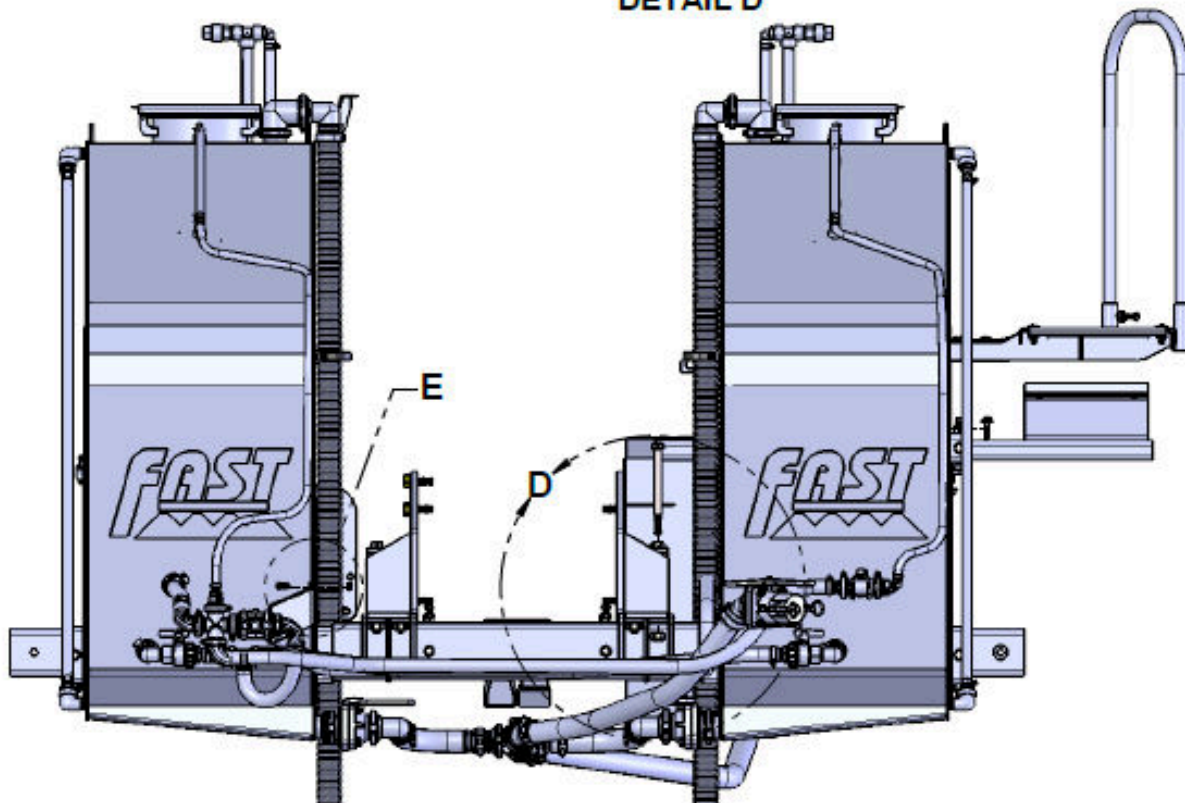
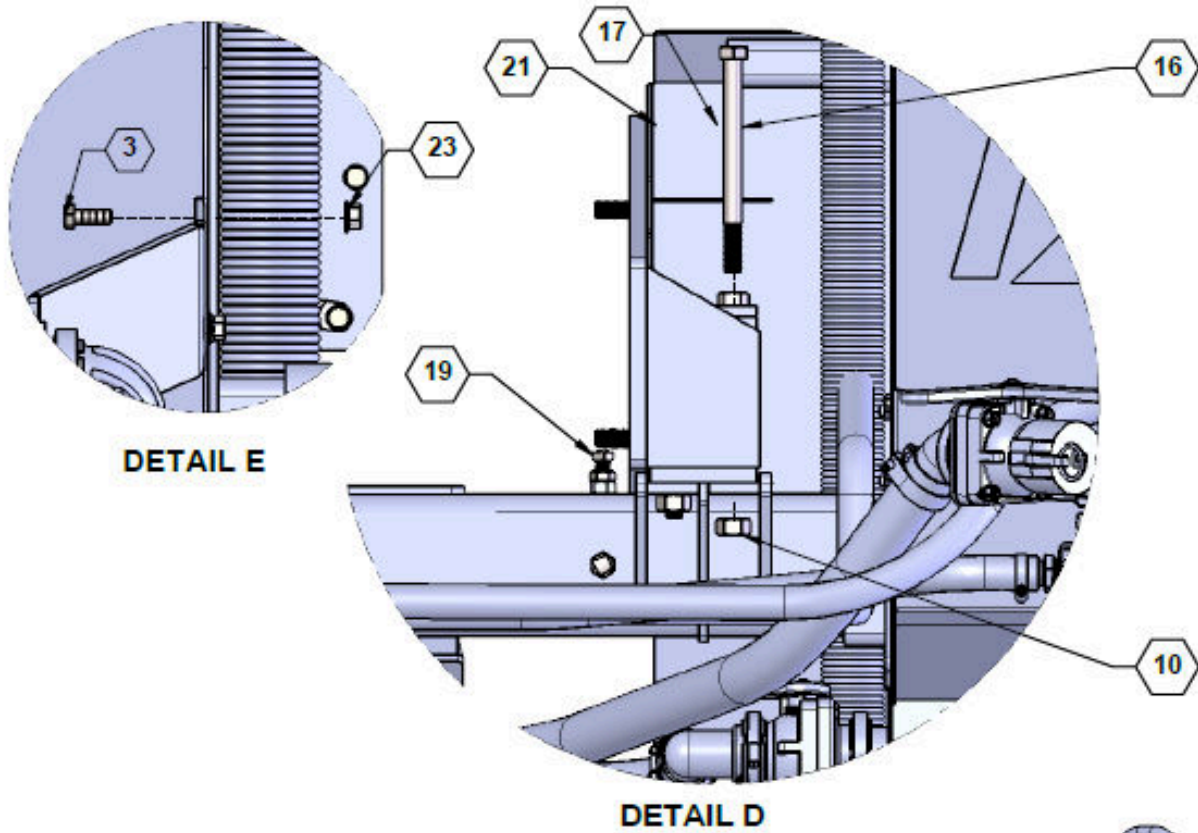


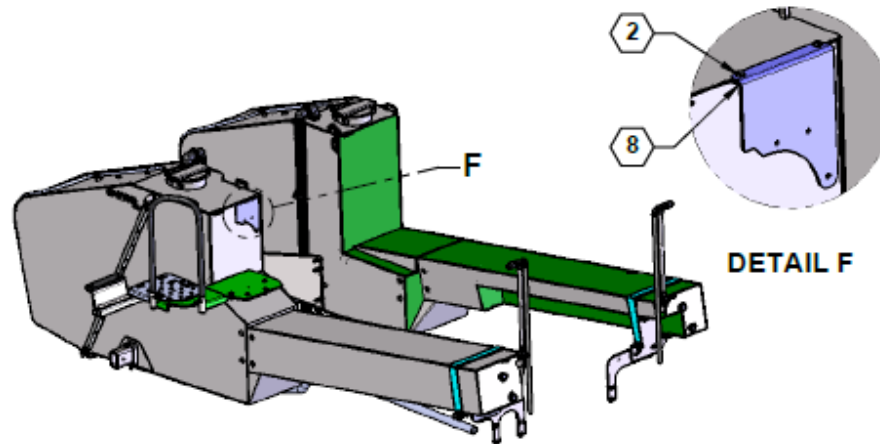
Parts List 99FTTJDRO3QF: Quick Fill, 3"

ITEM	PART	QTY.	DESCRIPTION
1	19176	1	BRACKET, JD 3" QUICK FILL MOUNT
2	510003	17'	HOSE, 2.00 FERT
3	510004	1	HOSE, 3" FERTILIZER X 50"
4	530019	4	GASKET, 2.00 EPDM
5	530024	5	GASKET, 3" EPDM
6	530104	2	ELBOW 90, 2.00 FP MANIFOLD X 2.00 HB
7	530234	1	COUPLER, 3" X 45°
8	530113	1	MANIFOLD FLANGE, 3" HB
9	530111	2	MANIFOLD, 3" X 2" HB
10	530112	1	3' MANIFOLD X 2" HBRB 90~
11	530297	1	Flanged Cross 3 Inch
12	530327	2	VALVE, 2.00 FP MANIFOLD, STUBBY
13	540002	4	CLAMP, FP WORM SCREW, 2.00
14	540003	5	CLAMP, WORM SCREW 3"
15	540027	2	CLAMP, HOSE 3" T-BOLT
16	540007	5	HOSE CLAMP, 2.00 T-BOLT
17	90SA3QF45	1	3" QUICK FILL VALVE @ 45°

Hardware







Parts List 590829: Hardware

ITEM	PART NO.	QTY.	DESCRIPTION
1	540052	2	P-CLAMP, 3" WITH 3/8" HOLE
2	596127M	2	BOLT, HH 3/8-16 x 3/4" GR5 MAGNI
3	596128M	4	BOLT, HH 3/8-16 X 1 GR5 MAGNI
4	596130M	4	BOLT, HH 3/8-16 X 2 GR5 MAGNI
5	596154M	7	BOLT, HH 1/2-13X2 GR5 MAGNI
6	596213M	2	NUT, HEX 3/8-16 MAGNI
7	596224M	16	NUT, HEX JAM 5/8-11 MAGNI
8	596229M	6	NUT, HEX NYLOCK 3/8-16 MAGNI
9	596231M	11	NUT, HEX NYLOCK 1/2-13 MAGNI
10	596241M	8	NUT, CENTERLOCK 3/4-10 MAGNI
11	596250M	2	LOCKWASHER, 3/8 MAGNI
12	596258M	4	WASHER, FLAT 3/8 MAGNI
13	596260M	11	WASHER, FLAT 1/2 MAGNI
14	596592M	5	BOLT, CARRIAGE 3/8-16 X 1 MAGNI
15	596595M	6	BOLT, HH, M16 X 40MM GR 8.8 MAGNI
16	596596M	8	BOLT, HH, 3/4-10 X 9" GR5 MAGNI
17	596597M	10	BOLT, HH, M20-2.5 x 60M, 10.9 MAGNI
18	596598M	6	BOLT, CARRIAGE, M16 X 40MM GR 8.8 MAGNI
19	596599M	16	SET SCREW, SH, 5/8-11 X 2" GR 5 MAGNI
20	596600M	12	WASHER, LOCK, 16MM MAGNI
21	596601M	10	WASHER, LOCK, 20MM, MAGNI
22	596602M	6	NUT, HH, M16, MAGNI
23	596769M	7	NUT, HEX FLANGE 3/8-16 MAGNI

TORQUE SPECIFICATIONS

Check the tightness of ALL BOLTS, U-BOLTS, and CAP SCREWS after the first 10-15 hours of operation and again at end of the first week (50 hours) of operation. Tighten all bolts to torques specified unless otherwise noted. Check tightness of hardware periodically.

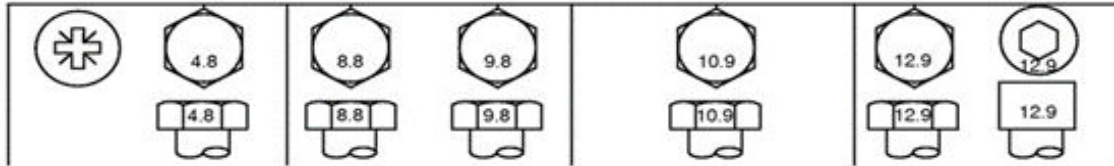


Figure 9: Common metric bolt grade markings

Metric Bolt and Screw Torque Values

Screw Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated ¹		Dry ²		Lubricated ¹		Dry ²		Lubricated ¹		Dry ²		Lubricated ¹		Dry ²	
	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
									N-m	lb.-ft.	N-m	lb.-ft.	N-m	lb.-ft.	N-m	lb.-ft.
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
			N-m	lb.-ft.	N-m	lb.-ft.	N-m	lb.-ft.								
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
	N-m	lb.-ft.														
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	480	820	600	920	680	1150	850	1080	800	1350	1000
M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific application. Tighten plastic insert or crimped steel type lock nuts by turning the nut to the dry torque shown in the chart, unless different instructions are given for the specific application.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class. Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts, or wheel nuts, unless different instructions are given for the specific application.

¹ "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

² "Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.

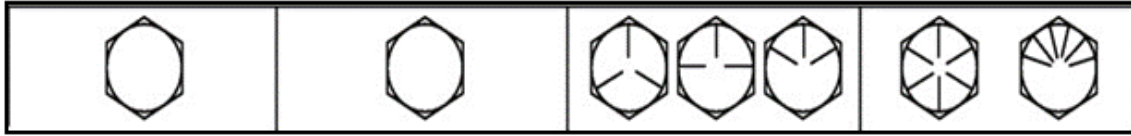


Figure 10: Common imperial bolt grade markings

Unified Inch Bolt and Screw Torque Values

Screw Size	SAE Grade 1				SAE Grade 2 ³				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
	Lubricated ⁴		Dry ⁵		Lubricated ⁴		Dry ⁵		Lubricated ⁴		Dry ⁵		Lubricated ⁴		Dry ⁵	
	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.	N-m	lb.-in.
1/4	3.7	33	4.7	42	6	53	7.5	66	9.5	84	12	106	13.5	120	17	150
													N-m	lb.-ft.	N-m	lb.-ft.
5/16	7.7	68	9.8	86	12	106	15.5	137	19.5	172	25	221	28	20.5	35	26
									N-m	lb.-ft.	N-m	lb.-ft.				
3/8	13.5	120	17.5	155	22	194	27	240	35	26	44	32.5	49	36	63	46
			N-m	lb.-ft.	N-m	lb.-ft.	N-m	lb.-ft.								
7/16	22	194	28	20.5	35	26	44	32.5	56	41	70	52	80	59	100	74
	N-m	lb.-ft.														
1/2	34	25	42	31	53	39	67	49	85	63	110	80	120	88	155	115
9/16	48	35.5	60	45	76	56	95	70	125	92	155	115	175	130	220	165
5/8	67	49	85	63	105	77	135	100	170	125	215	160	240	175	305	225
3/4	120	88	150	110	190	140	240	175	300	220	380	280	425	315	540	400
7/8	190	140	240	175	190	140	240	175	490	360	615	455	690	510	870	640
1	285	210	360	265	285	210	360	265	730	540	920	680	1030	760	1300	960
1-1/8	400	300	510	375	400	300	510	375	910	670	1150	850	1450	1075	1850	1350
1-1/4	570	420	725	535	570	420	725	535	1280	945	1630	1200	2050	1500	2600	1920
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2140	1580	2700	2000	3400	2500
1-1/2	990	730	1250	930	990	730	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For plastic insert or crimped steel type lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application.
Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Replace fasteners with the same or higher grade. If higher grade fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts, or wheel nuts, unless different instructions are given for the specific application.

³ Grade 2 applies for hex cap screws (not hex bolts) up to 6 in. (152 mm) long. Grade 1 applies for hex cap screws over 6 in. (152 mm) long, and for all other types of bolts and screws of any length.

⁴ "Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or 7/8 in. and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.

⁵ "Dry" means plain or zinc plated without any lubrication, or 1/4 to 3/4 in. fasteners with JDM F13B, F13E or F13H zinc flake coating.



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