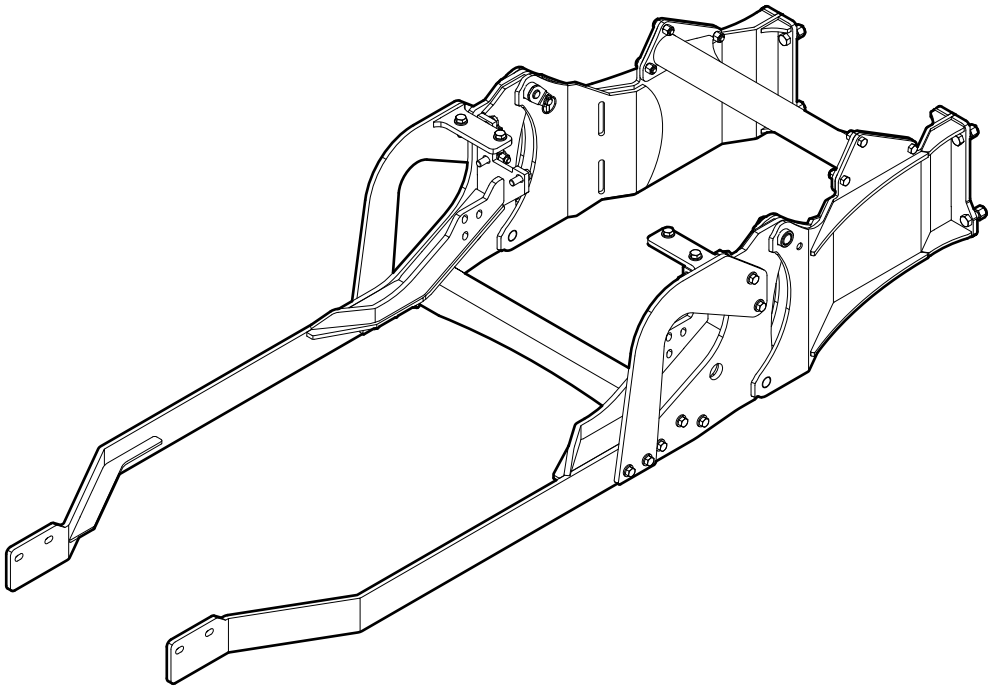
INSTALLATION INSTRUCTIONS

3684A150

Backhoe Subframe Kit



Rev May-2022

WALLENSTEIN

Introduction

This subframe is designed to work with Wallenstein Backhoes.

The Wallenstein backhoe is designed to work with a wide variety of tractors. With this Subframe Kit you can easily and quickly attach and detach your Wallenstein backhoe to your tractor.

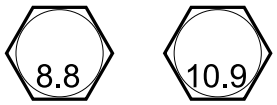
Some of the illustrations shown in this manual are general, but important features are detailed in order to install your kit successfully.

Please review the backhoe operators manual. Safe, efficient and trouble free operation of your Wallenstein Backhoe requires that you and anyone else who will be operating or maintaining the machine, read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within the Operator's Manual.

NOTE: All parts and hardware shown in the Subframe Kit Parts illustration are included in the kit. Make sure the parts are not damaged from shipping.

IMPORTANT! This installation kit includes both metric and Imperial fasteners. Bolt type is identified by looking at the bolt head markings.

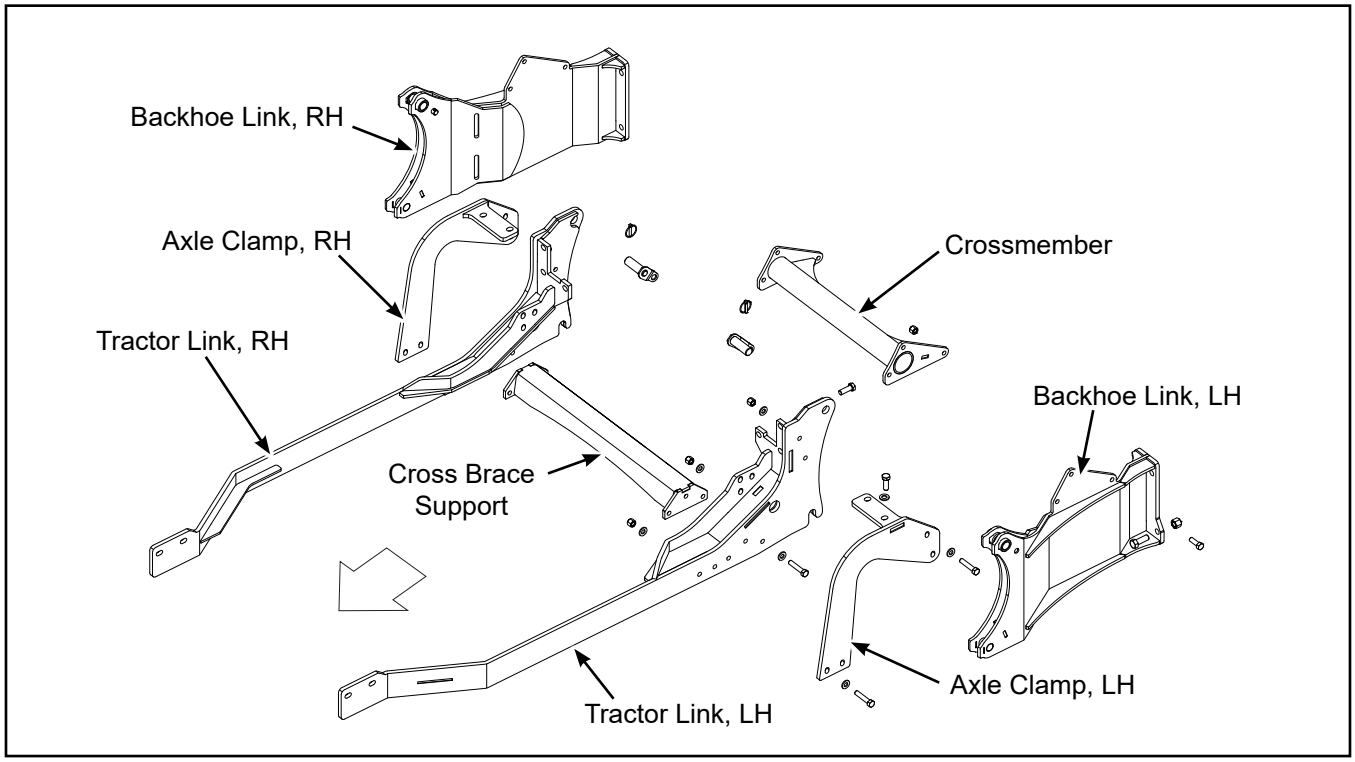
Metric



Imperial

Operator Orientation

The directions left, right, front and rear as mentioned throughout this instruction, are determined when sitting in the tractor driver's seat, facing the direction of forward travel.



Safety Rules

⚠ WARNING!

ATTENTION! BE ALERT! YOUR SAFETY IS INVOLVED!

Working around equipment can be dangerous. Always be aware of bystanders, the area around the machine, and what to do in case of emergency.

Learn how to install and operate the new equipment safely. Read and understand these instructions before attempting installation.

W007

⚠ WARNING!

Before operating the backhoe:

- **Check that all pins and adapter plates are secure and correctly attached to the sub-frame.**
- **Ensure that all fasteners are correctly torqued according to the bolt torque table.**
- **Inspect and test all hydraulic connections.**
- **Thoroughly read the backhoe operator's manual for safe operation.**

W008

⚠ WARNING!

Make sure the tractor is parked on a level surface with the front wheels chocked to prevent movement. Use properly rated jack stands to support the tractor.

W009

⚠ WARNING!

Make sure the subframe, backhoe and tractor are positioned on dry, level ground. The area around them should be clear and free of debris. Make sure the tractor is shut off, the brake is applied, and key is removed.

⚠ WARNING!

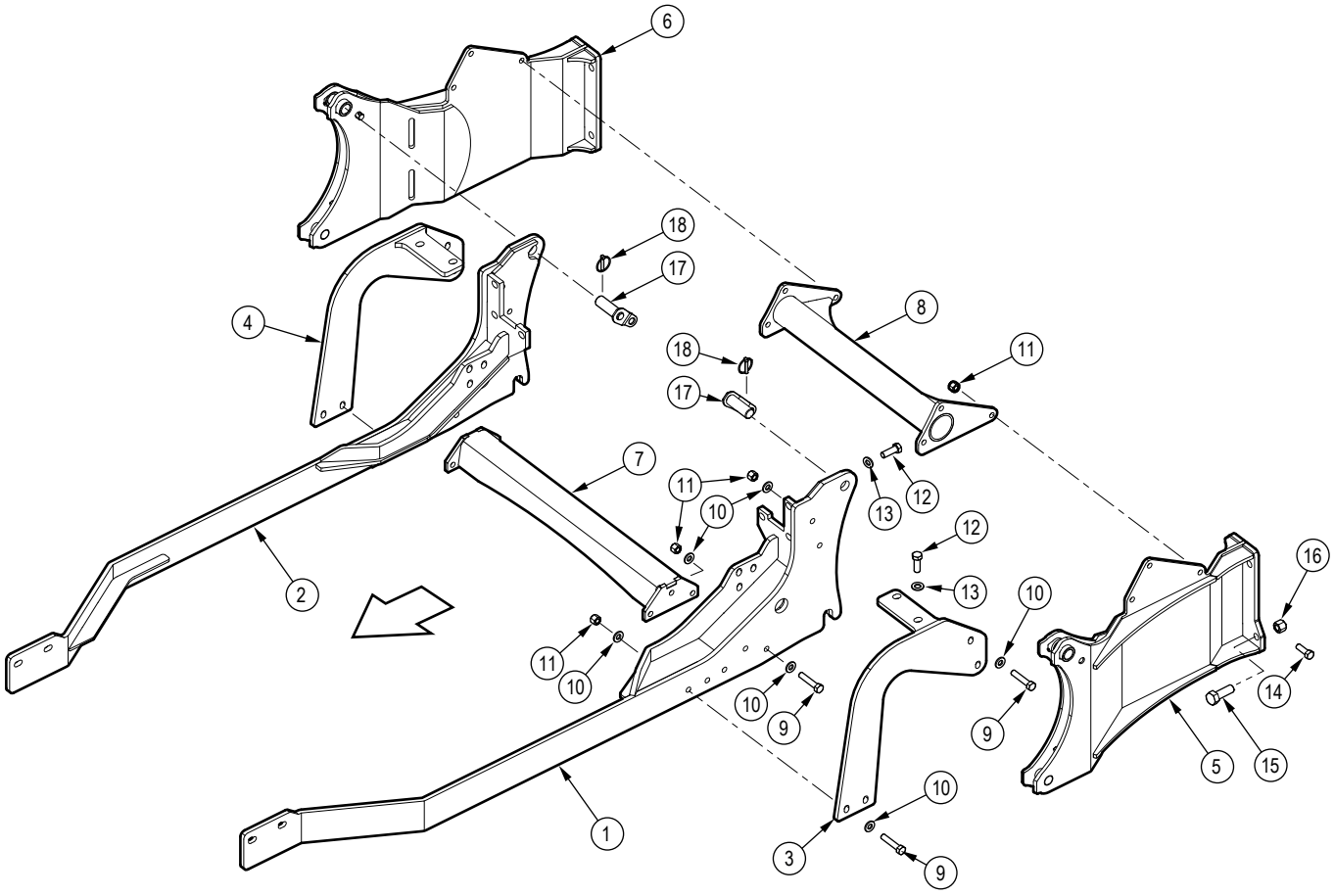
Review and understand the operating instructions for the backhoe. Part of the installation process includes operating the hydraulics to position the attachment points on the tractor.

⚠ WARNING!

Proceed with caution. During the course of assembly, the ROPS / cab support bolts are removed. Support for the cab may be required when removing cab mounting bolts. Remove and replace bolts one side at a time.

- **Do not install backhoe and required counterweights on tractor if the total tractor and equipment weight exceeds the tractor ROPS weight certification.**
- **Make sure equipment is properly mounted, adjusted and in good operating condition.**
- **Make sure that all safety shielding and safety signs are properly installed and in good condition.**

Subframe Kit Parts



Item No.	Part No.	Description	Qty
1	3684W151	Plate, Tractor Link LH	1
2	3684W151H	Plate, Tractor Link RH	1
3	3684W153	Weldment, Axle Clamp LH	1
4	3684W153H	Weldment, Axle Clamp RH	1
5	3684W180	Weldment, Backhoe Link LH	1
6	3684W180H	Weldment, Backhoe Link RH	1
7	3684W152	Weldment Cross Brace Support	1
8	3684W181	Weldment, Crossmember	1
9	Z71525	Hex Bolt, 1/2NC x 2-1/2	14
10	Z73151	SAE Washer, 1/2"	14
11	Z72251	Hex Lock Nut, 1/2NC	14

Item No.	Part No.	Description	Qty
12	Z77182	Hex Bolt, M14x2.0 x 40mm	10
13	Z77381	DIN 125 Washer, M14	10
14	Z71515	Hex Bolt, 1/2NC x 1-1/2"	6
15	Z71617	Hex Bolt, 5/8NC x 1-3/4"	8
16	Z72261	Hex Lock Nut, 5/8NC	8
17	3600W101	Weldment, Subframe Top Pin	2
18	Z12120	Lynch Pin, 1/4"	2

Preparation:

Removing the rear tractor wheels can make the installation easier.

Position the tractor with the backhoe lined up behind it.

- Backhoe should be assembled but left on the shipping skid.
- The tractor must have a front bucket loader installed. The front loader is required to offset the weight of the backhoe, as well as provide the stability required to operate the backhoe safely.
- The loader should be in the lowered position, resting on the ground.

Tools required:

- Basic shop tools
- 3/4", 15/16" wrenches and sockets
- M21 wrenches and sockets
- Overhead lifting device
- Jack stands
- Torque wrench

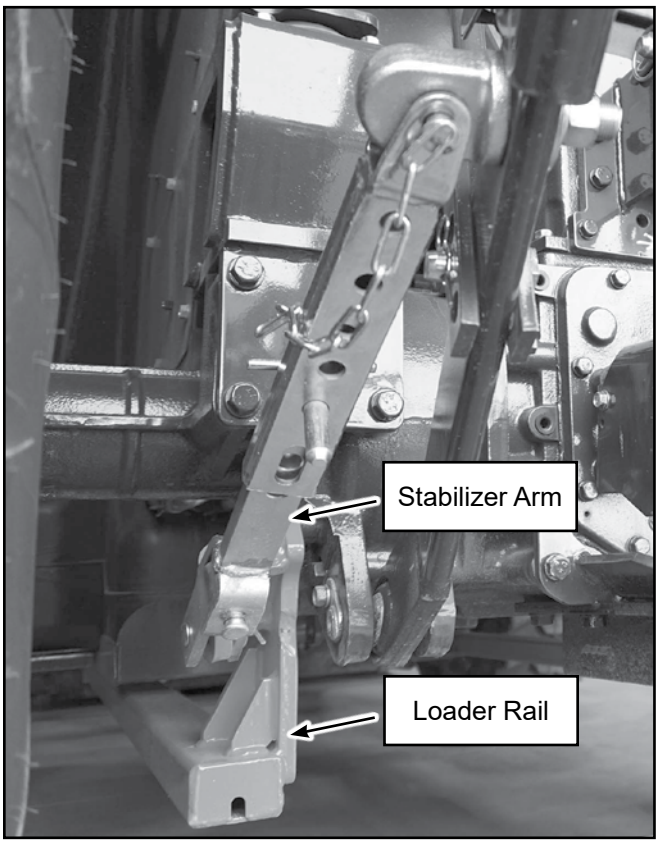
Step 1

Starting on the left-hand side of the tractor, disconnect the adjustable stabilizer arm from the mount underneath the axle.

Swing the stabilizer arm and lift arm inward as far as they can go. Secure them there out of the way.

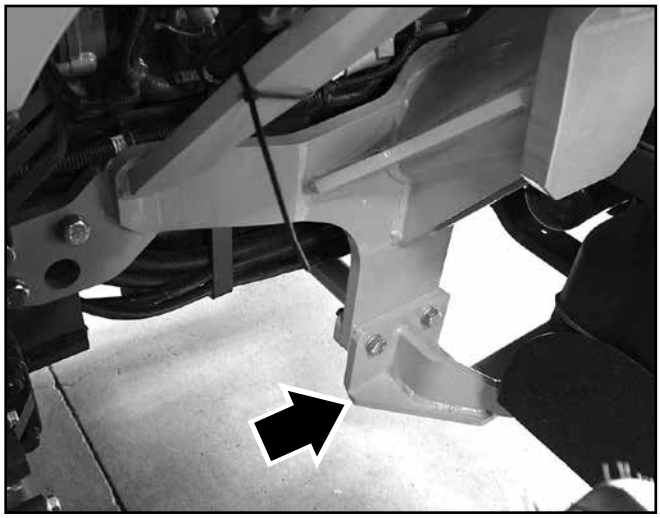
Step 2

Remove the three bolts and washers to disconnect the end of the Loader Rail from the lower axle mount. Set these fasteners aside for reuse later in Step 6.



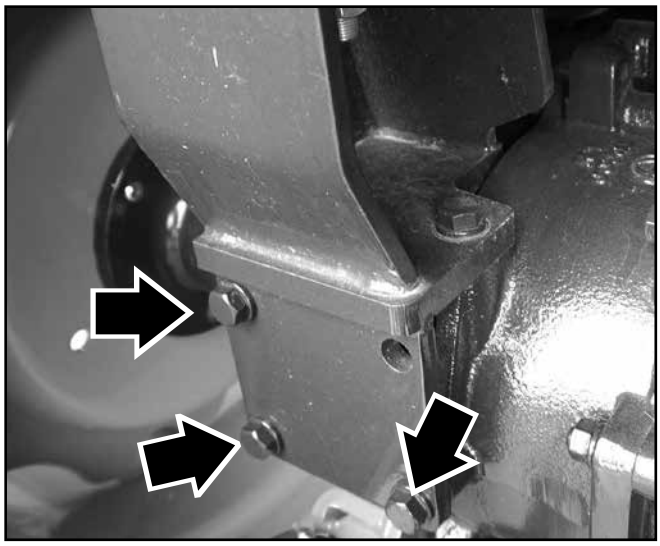
Step 3

Disconnect the front end of the Load Rail from the loader mount support. Set these bolts and washers aside for reuse on assembly.



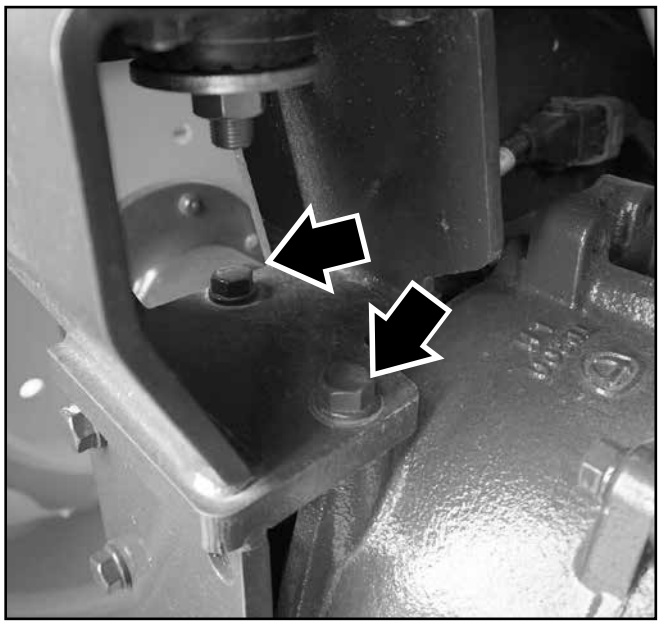
Step 4

Remove the three bolts and washers on the back side of the cab / ROPS mount. They are not reused on assembly.



Step 5

Remove the two bolts and washers fastening the top side of the cab / ROPS mount to the axle housing. They are not used on reassembly.



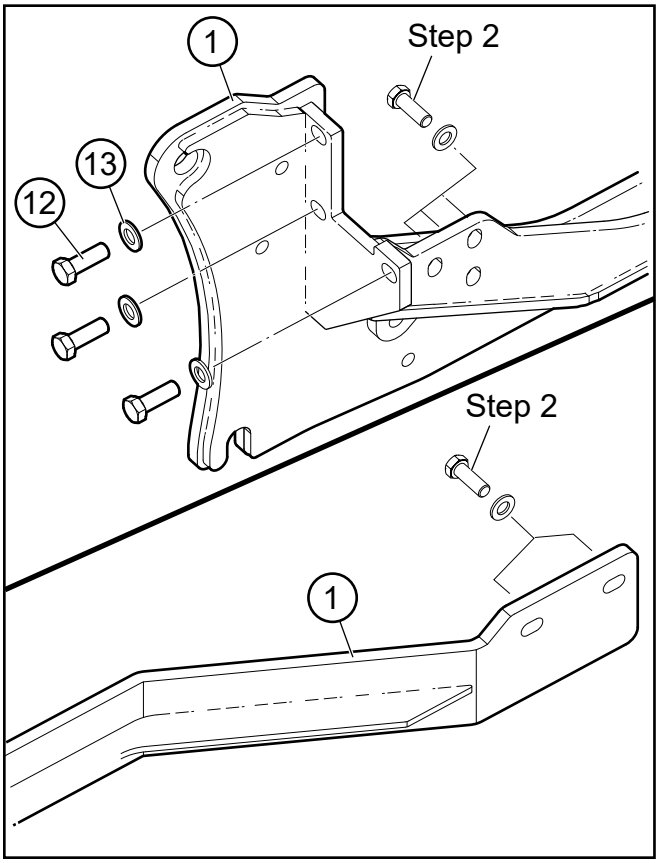
Step 6

Install (**3684W151**) Tractor Link Plate, LH (1) to the underside of the axle housing. Fasten to the cab / ROPS mount with three (**Z77182**) M14 x 2.0 x 40 mm Hex Bolts (12) and (**Z77381**) M14 washers (13).

Reinstall the three bolts and washers removed in Step 2 through the Tractor Link Plate into the axle housing.

On the front end of the tractor, connect the Tractor Link Plate to the loader mount support. Use the two bolts and washer removed in Step 3.

Hand tighten only for now.



Step 7

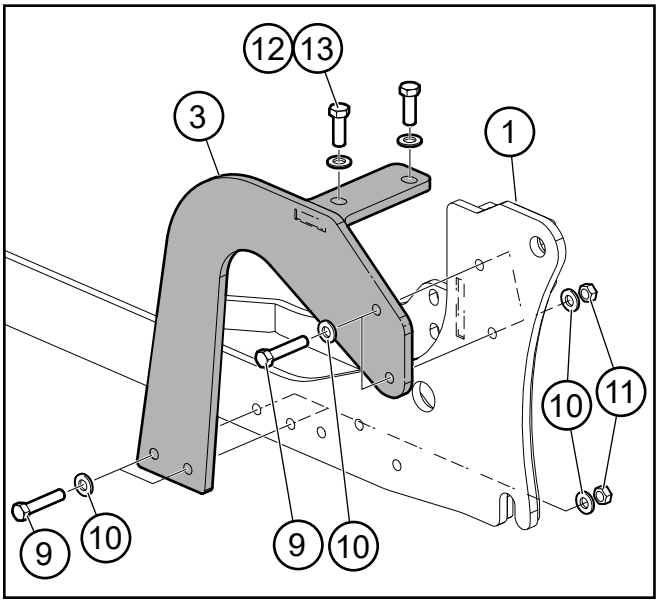
Install (**3684W153**) Axle Clamp, LH (3) over the axle.

Fasten the top of the plate onto the base of the cab / ROPS mount with two (**Z77182**) M14 x 2.0 x 40 mm Hex Bolts (12) and (**Z77381**) M14 washers (13). Hand-tighten only.

Secure to Tractor Link Plate, LH installed in the previous step using four each of (**Z71525**) 1/2"NC x 2-1/2" Hex Bolts (9), (**Z73151**) 1/2" Washers (10), and (**Z72251**) 1/2"NC Hex Lock Nuts (11). Hand tighten only.

Step 8

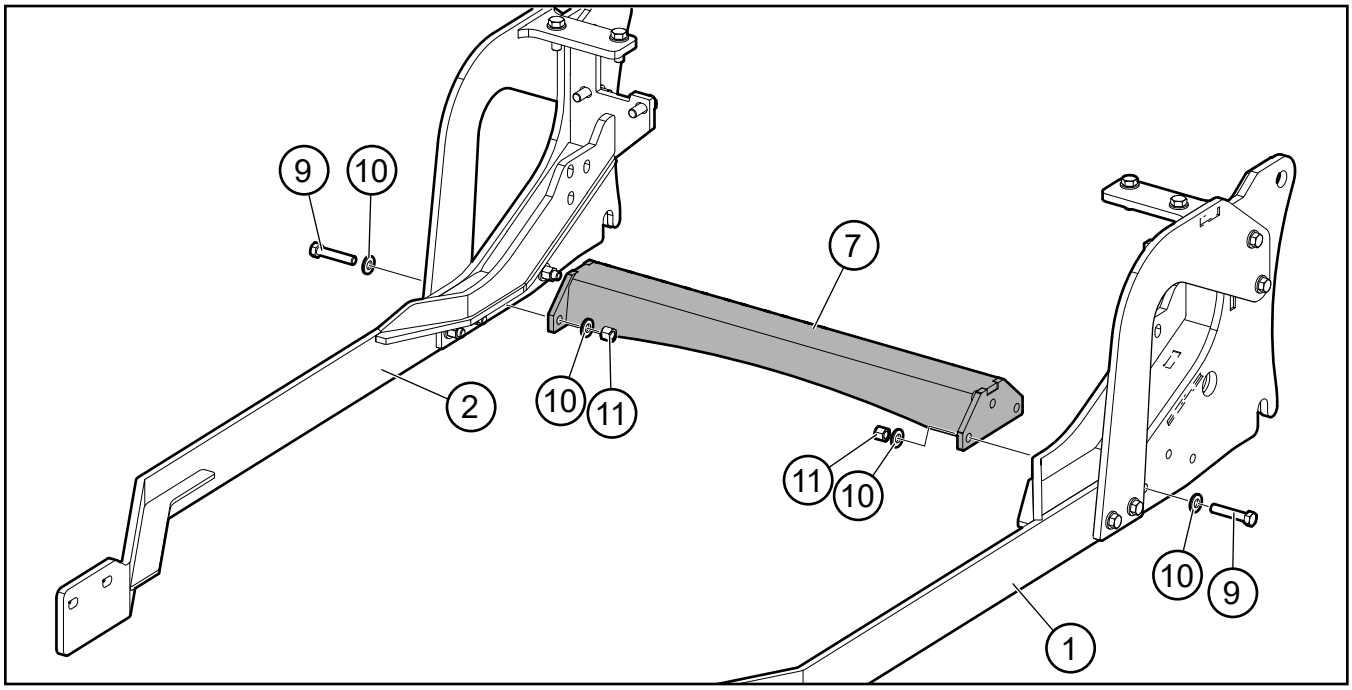
Perform Steps 1 to 7 on the right-hand side of the tractor. Hand-tighten all the fasteners.



Step 9

Install (**3684W152**) Cross Brace Support (7) between the right- and left-hand tractor supports (1 and 2).

Use three per side of (**Z71525**) 1/2"NC x 2-1/2" Hex Bolts (9), (**Z73151**) 1/2" washers (10), and (**Z72251**) 1/2" Hex Lock Nuts (11).



Torque-tighten all fasteners on the subframe:

1/2" Fasteners – 80 lbf•ft (110 N•m)
5/8" Fasteners – 180 lbf•ft (215 N•m)
M14 Fasteners – 83 lbf•ft (112 N•m)

Reconnect the 3PH lift arms to the connection points on the subframe. Install the rear wheels if removed.

The subframe should remain on the tractor and not be removed. Check that the lift arms move freely with the subframe installed.

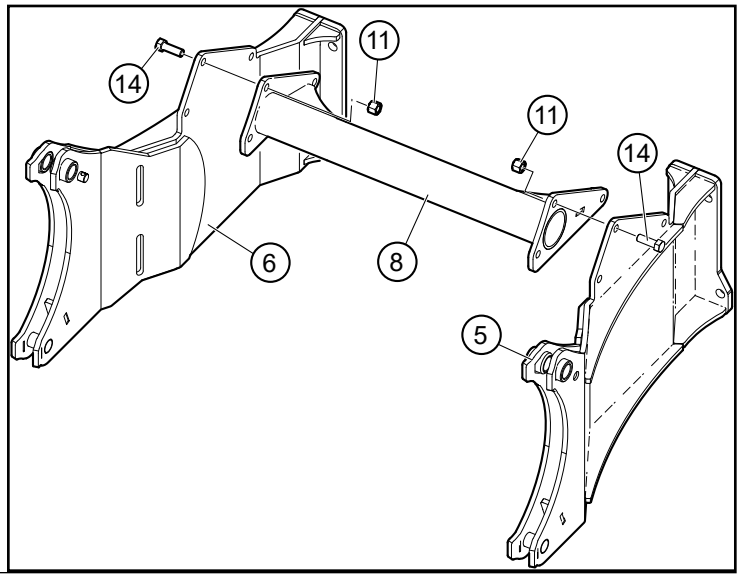
Step 10

If not already assembled, put the Backhoe Mount together.

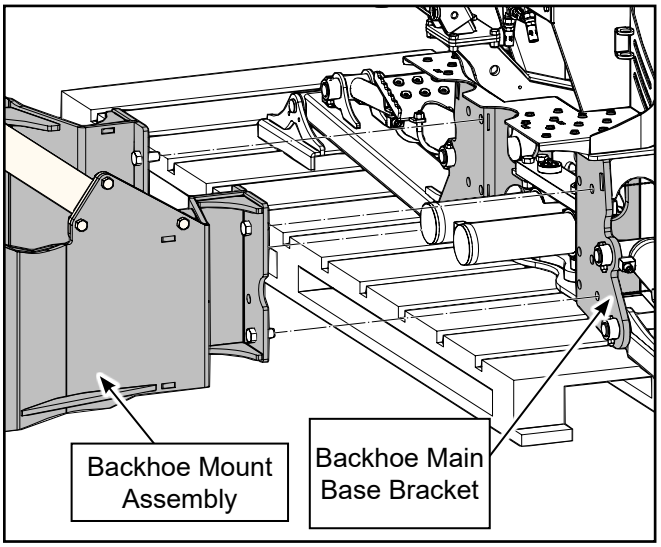
Fasten together (**3684W180**) Backhoe Link, LH (5), (**3684W181**) Crossmember (8), and (**3684W180H**) Backhoe Link RH (6).

Use three each of (**Z71515**) 1/2"NC x 1-1/2" Hex Bolt (14) and (**Z72251**) 1/2" Lock Nut (11).

Torque-tighten to 80 lbf•ft (110 N•m).



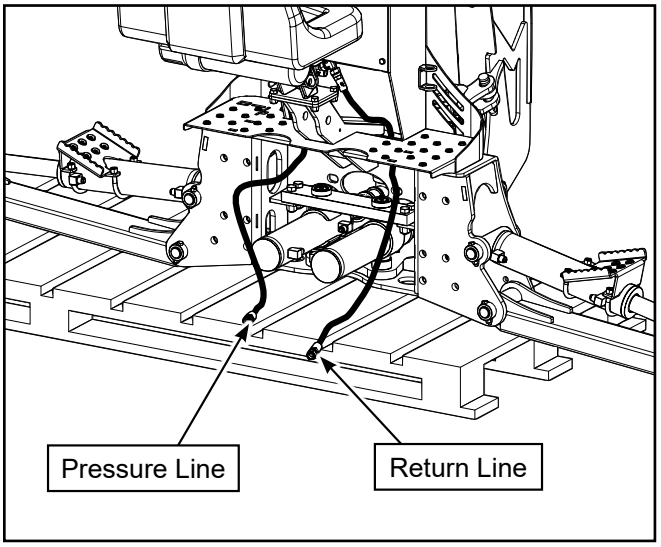
Step 11
Take the backhoe subframe mount and attach it to the backhoe on main base bracket. Use the 5/8" NC bolts and nuts provided — 4 for each left- and right-hand sides.
Torque-tighten bolts to 160 lbf•ft (215 N•m).



Step 12
Align and reverse the tractor up to the bracket. Get close enough to attach the hydraulic hoses to the backhoe.

Step 13
Attach the hydraulic lines from the backhoe to the tractor. See illustration.

NOTE: The backhoe is equipped with a directional control valve and does not allow reverse flow if pressure and return lines are connected incorrectly.

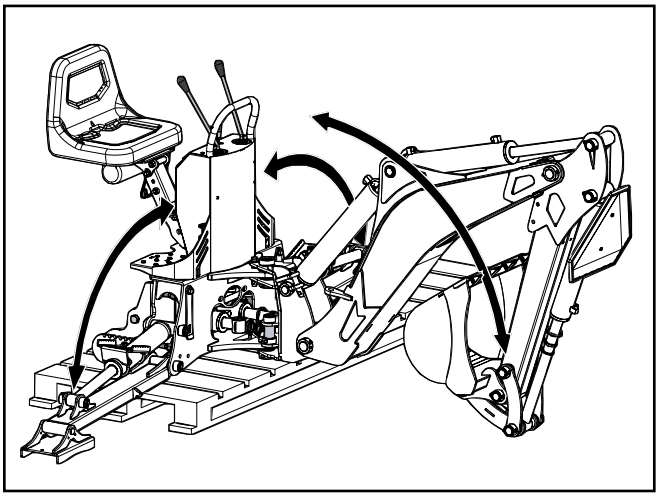


⚠ WARNING!

When operating the boom and stabilizers, ensure the area is clear of bystanders and operator is safely positioned.

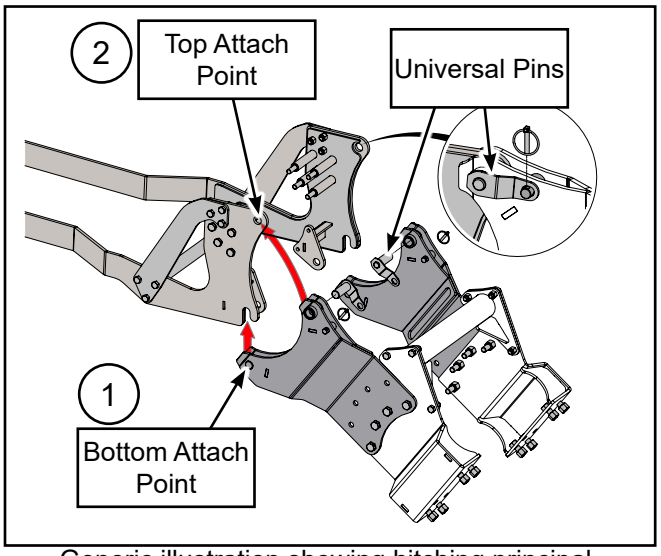
Step 14
Carefully use the dipper arm / stabilizer legs to tilt the bracket / backhoe on an angle, so that the bottom attach points line up with the hooks on the bottom of the subframe on the tractor.

Step 15
Carefully use the backhoe hydraulics to raise the bracket assembly into the bottom of the hooks for positive attachment.



Step 16
Carefully use the backhoe hydraulics to rotate the bracket assembly into the top attach points on the subframe. Rotate the bracket until it reaches the stop. The pin holes will then be aligned.

Step 17
Insert the two welded universal pins into the pin holes and secure with lynch pins.



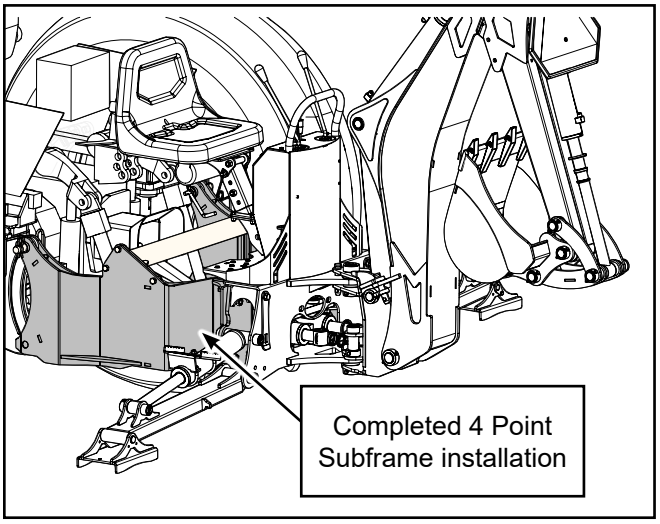
Generic illustration showing hitching principal.

Step 18
Check that all attach points are secure, and make sure all bolts / nuts are tightened and torqued.

Test the hydraulics: lift the stabilizer legs and remove the skid. Lower the stabilizers and test all boom functions.

Check that all moving parts have clearance and do not interfere with the subframe.

The subframe installation is now complete.



Common Bolt Torque values

Checking Bolt Torque

The tables shown give correct torque values for various bolts and capscrews. Tighten all bolts to the torque values specified in the table, unless indicated otherwise. Check tightness of bolts periodically.

IMPORTANT! If replacing hardware, use fasteners of the same grade.

IMPORTANT! Torque figures indicated in the table are for non-greased or non-oiled threads. Do not grease or oil threads unless indicated otherwise. When using a thread locker, increase torque values by 5%.

NOTE: Bolt grades are identified by their head markings.

Imperial Bolt Torque Specifications

Bolt Diameter	Torque Value					
	SAE Gr. 2		SAE Gr. 5		SAE Gr. 8	
	lbf•ft	N•m	lbf•ft	N•m	lbf•ft	N•m
1/4"	6	8	9	12	12	17
5/16"	10	13	19	25	27	36
3/8"	20	27	33	45	45	63
7/16"	30	41	53	72	75	100
1/2"	45	61	80	110	115	155
9/16"	60	95	115	155	165	220
5/8"	95	128	160	215	220	305
3/4"	165	225	290	390	400	540
7/8"	170	230	420	570	650	880
1"	225	345	630	850	970	1320

Metric Bolt Torque Specifications

Bolt Diameter	Torque Value			
	Gr. 8.8		Gr. 10.9	
	lbf•ft	N•m	lbf•ft	N•m
M3	0.4	0.5	1.3	1.8
M4	2.2	3	3.3	4.5
M6	7	10	11	15
M8	18	25	26	35
M10	37	50	52	70
M12	66	90	92	125
M14	83	112	116	158
M16	166	225	229	310
M20	321	435	450	610
M30	1,103	1 495	1,550	2 100