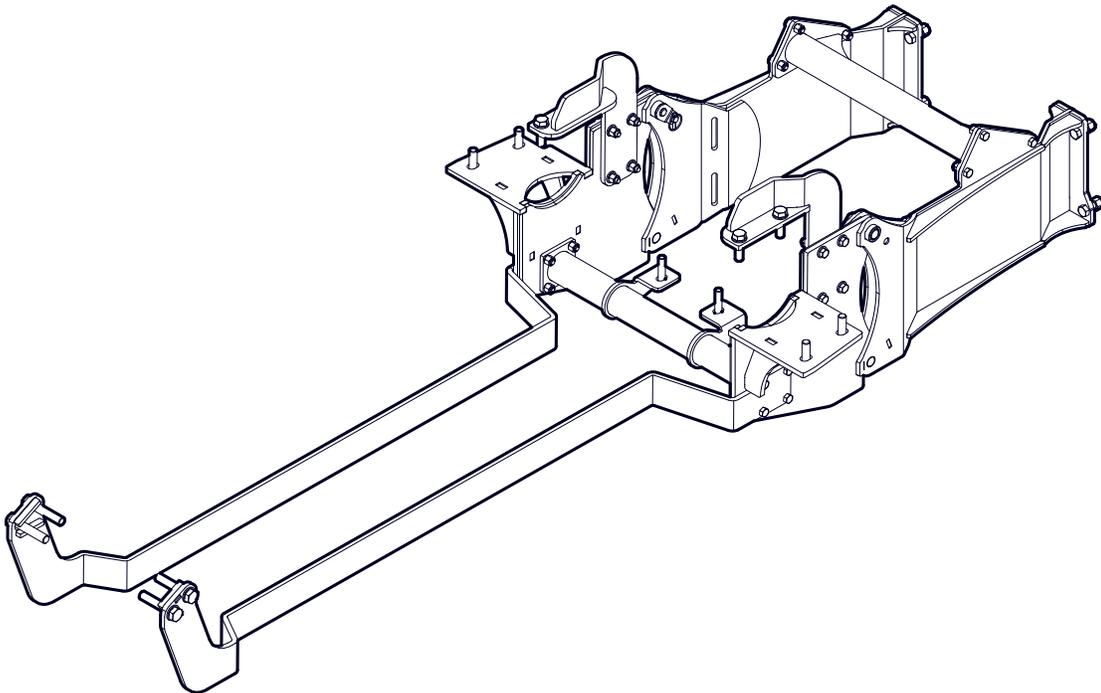


# INSTALLATION INSTRUCTIONS

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## 3651A950 Backhoe Subframe Kit



## 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.

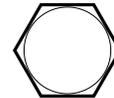
Please review the backhoe operators manual. Safe, efficient and trouble free operation of your Wallenstein Backhoe requires that you and anyone else who will be operating or maintaining the machine, read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within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

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

**Metric**



**Imperial**



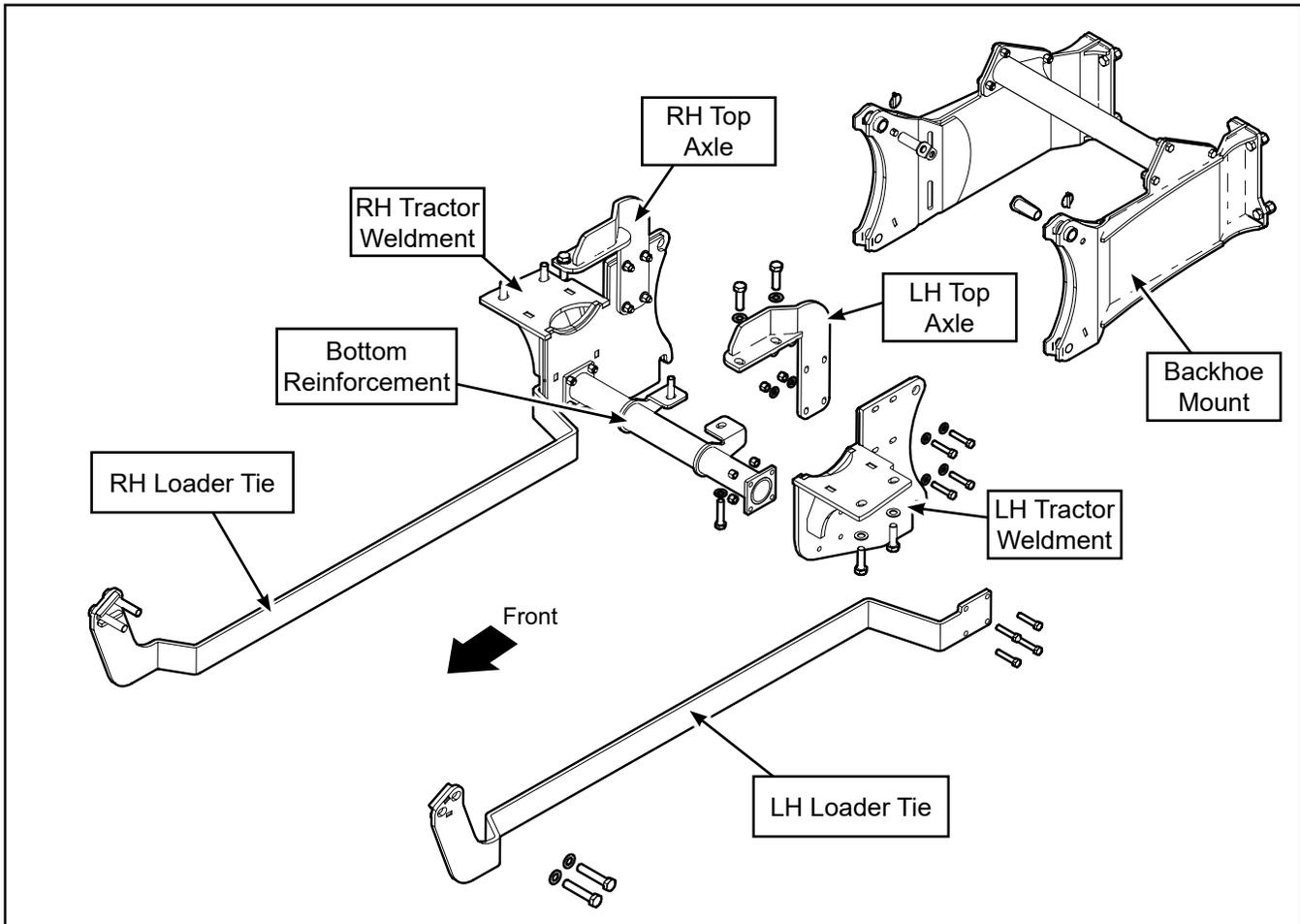
SAE Gr. 2

SAE Gr. 5

SAE Gr. 8

## 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.



Subframe Kit Components

## 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!

The loader frame could move unexpectedly when the mounts are disconnected. Make sure loader is resting on the ground in a relaxed state.

W018

### 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!

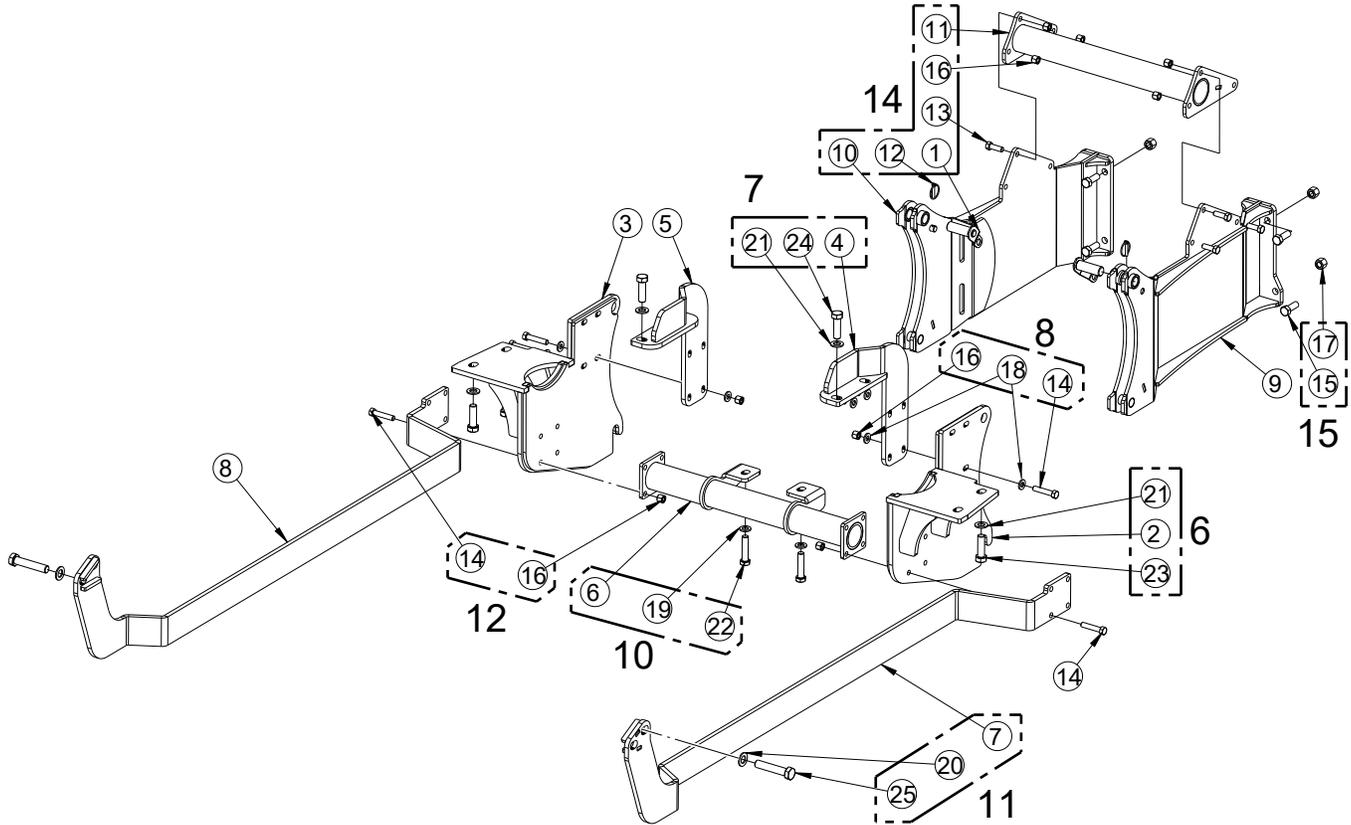
Review and understand the operating instructions for the backhoe. Part of the installation process includes operating the hydraulics to position the attachment points on the tractor.

### 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



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.

Item	Part Number	Description	Quantity
1	3600W101	Subframe Top Pin	2
2	3651W951	LH Tractor Plate	1
3	3651W951H	RH Tractor Plate	1
4	3651W952	LH Top Axle Plate	1
5	3651W952H	RH Top Axle Plate	1
6	3651W953	Bottom Reinforcement Plate	1
7	3651W954	LH Loader Tie	1
8	3651W954H	RH Loader Tie	1
9	3651W980	RH Backhoe Link	1
10	3651W980H	LH Backhoe Link	1
11	3651W981	Crossmember	1
12	Z12120	Lynch Pin, 1/4"	2
13	Z71515	Hex Bolt, 1/2"NC x 1-1/2"	6

Item	Part Number	Description	Quantity
14	Z71525	Hex Bolt, 1/2"NC x 2-1/2"	16
15	Z71617	Hex Bolt, 5/8"NC x 1-3/4"	8
16	Z72251	Hex Lock Nut, 1/2"NC	22
17	Z72261	Hex Lock Nut, 5/8"NC	8
18	Z73151	SAE Washer, 1/2"	16
19	Z77391	DIN 125 Washer, M16	2
20	Z77392	DIN 125 Washer, M20	4
21	Z77394	DIN 125 Washer, M18	8
22	Z77697G10-9	Hex Bolt, M16 x 1.5 x 70 mm G10.9	2
23	Z77698	Hex Bolt, M18 x 1.5 x 60 mm	4
24	Z77698G10-9	Hex Bolt, M18 x 1.5 x 60 mm G10.9	4
25	Z77699G10-9	Hex Bolt, M20 x 1.5 x 100 mm G10.9	4

## 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.

## Step 1

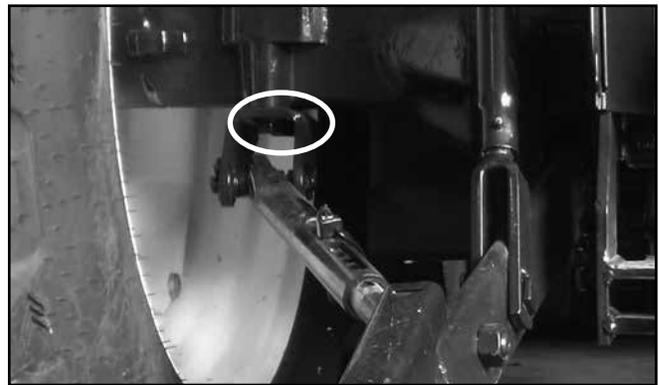
Starting on the left-hand side of the tractor, remove the anti-sway bars from the posts underneath the ROPS mounts and swing the lift arms in as far as they will go. Secure them there out of the way.

## Step 2

Remove the two bolts holding the stabilizer mount to the axle, as circled in the image. Keep the mount for re-use.

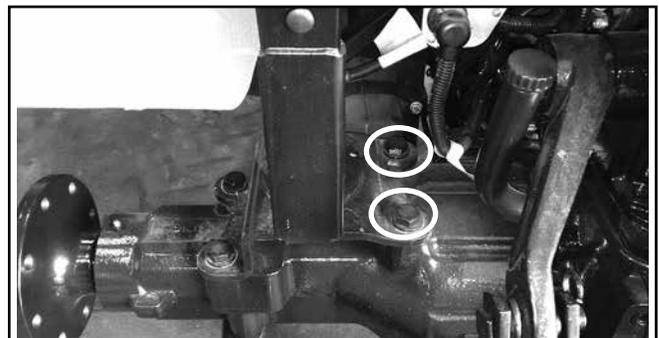
## Tools required:

- Basic shop tools
- 1/2", 5/8" wrenches and sockets
- M16, M18, M20 wrenches and sockets
- Overhead lifting device
- Jack stands
- Torque wrench



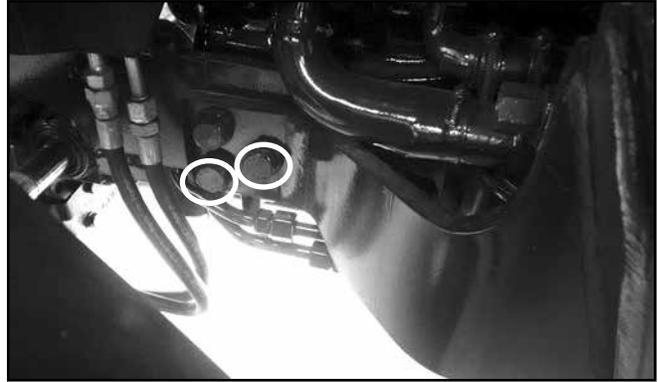
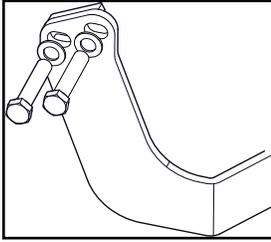
## Step 3

Remove the two bolts from the top, inside of the cab mount / bracket, as circled in the image.



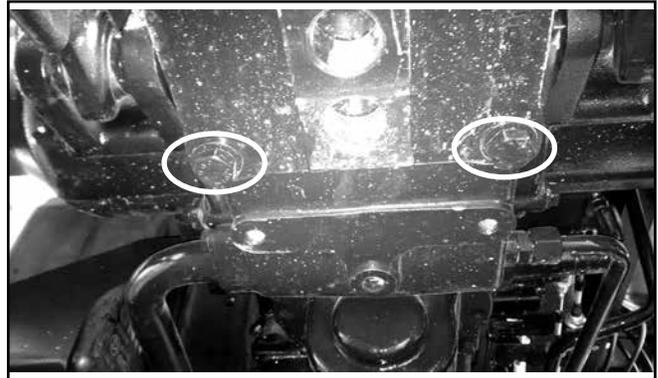
### Step 4

Remove two of the bolts at the front of the loader mount as shown so the LH Loader Tie (item 7) can be installed here. Set the bolts and washers aside as they are not reused on subframe installation.



### Step 5

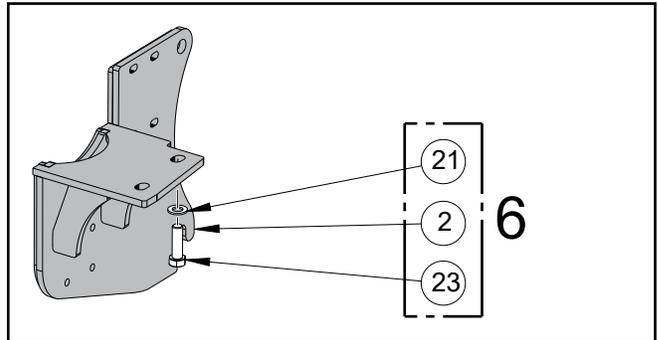
Remove the two bottom bolts from the hitch receiver. Set the bolts and washers aside as they are not reused on subframe installation.



### Step 6

Place **(3651W951)** LH Tractor Plate (item 2) under the axle with the Stabilizer Mount removed in Step 2. Use two **(Z77698)** Hex Bolts M18 x 1.5 x 60 mm (item 23) with **(Z77394)** M18 Flatwashers (item 21).

Hand tighten only for now until the subframe installation is complete.



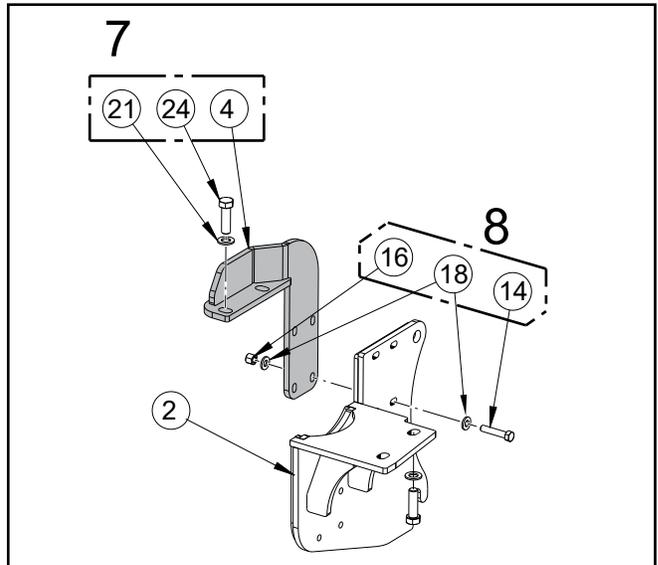
### Step 7

Install **(3651W952)** Top Axle Plate LH (item 4) and fasten to the top of the axle with two **(Z77698G10-9)** Hex Bolts M18 x 1.5 x 60 mm (item 24) and **(Z77394)** M18 Flatwashers (item 21).



Note these bolts are **Grade 10-9** as indicated on the head markings.

Hand tighten only.



### Step 8

Connect together **(3651W951)** LH Tractor Plate (item 2) and **(3651W952)** Top Axle Plate LH (item 4) using four **(Z71525)** Hex Bolts 1/2"NC x 2-1/2" (item 14), **(Z73151)** 1/2" Flatwashers (item 18), and **(Z72251)** Hex 1/2"NC Locknuts (item 16).

Hand tighten only.

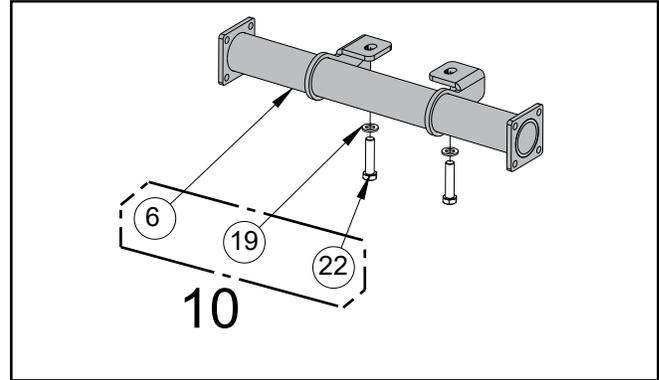
## Step 9

Repeats Steps 1–8 on the right-hand side of the tractor.

## Step 10

Install **(3651W953)** Bottom Reinforcement Plate (item 6) to the underside of the tractor where the Hitch Receiver was removed in Step 5. Use two **(Z77697G10-9)** Hex Bolts M16 x 1.5 x 70 mm (item 22) and **(Z77391)** M16 Flatwashers (item 19).

Hand tighten only.

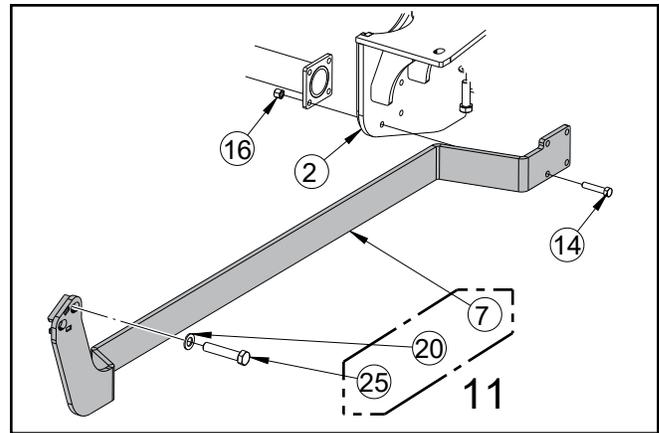


## Step 11

On the left-hand side of the tractor, install **(3651W954)** LH Loader Tie (item 7) between the front loader mount and **(3651W951)** LH Tractor Plate (item 2).

At the front loader mount, use two **(Z77699G10-9)** Hex Bolts M20 x 1.5 x 100 mm (item 25) with **(Z77392)** M20 Flatwashers (item 20).

At the rear mount, use four **(Z71525)** Hex Bolts 1/2"NX x 2-1/2" (item 14) and **(Z72251)** Hex 1/2"NC Locknuts (item 16).



## Step 12

Perform the same steps on the right-hand side of the tractor to install **(3651W954H)** RH Loader Tie (item 8).

## Step 13

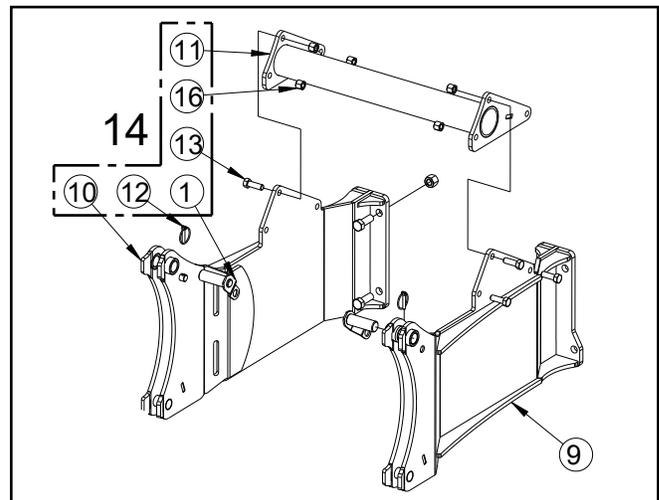
Torque-tighten all fasteners on the subframe.

## Step 14

If not already assembled, the Backhoe Subframe Mount can be put together. Install **(3651W981)** Crossmember (item 11) between the right- and left hand Backhoe Links (item 9 and 10).

Use three per side of **(Z71515)** Hex Bolts 1/2"NC x 1-1/2" (item 11) and **(Z72251)** Hex 1/2"NC Locknuts (item 16).

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



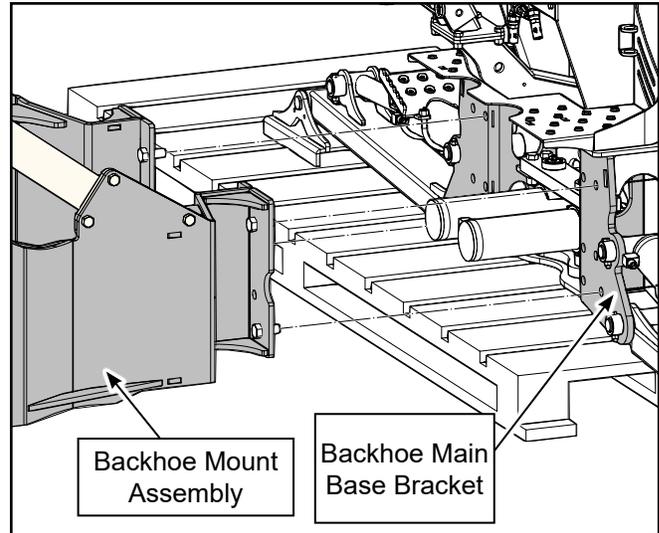
**Step 15**

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 16**

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

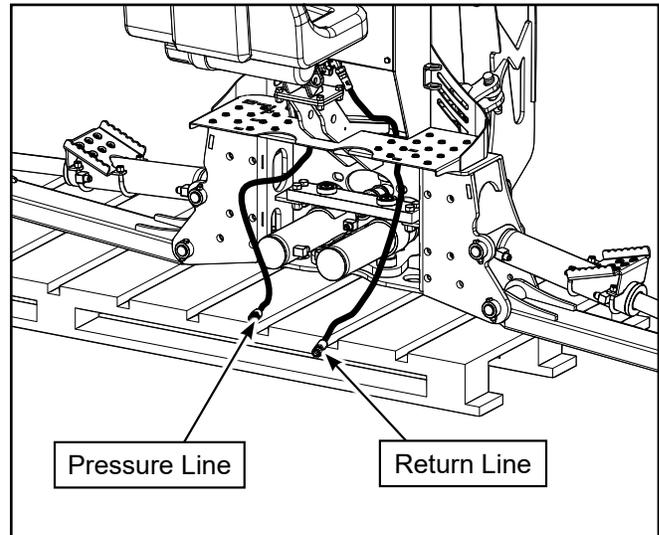
**Step 17**

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!**

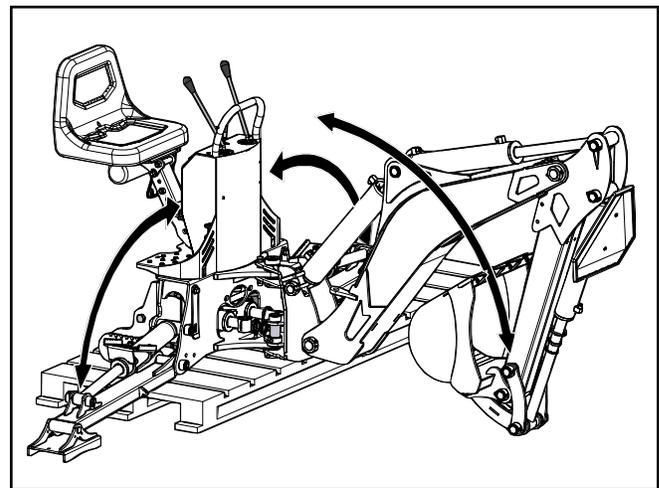
**When operating the boom and stabilizers, ensure the area is clear of bystanders and operator is safely positioned.**

**Step 18**

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 19**

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

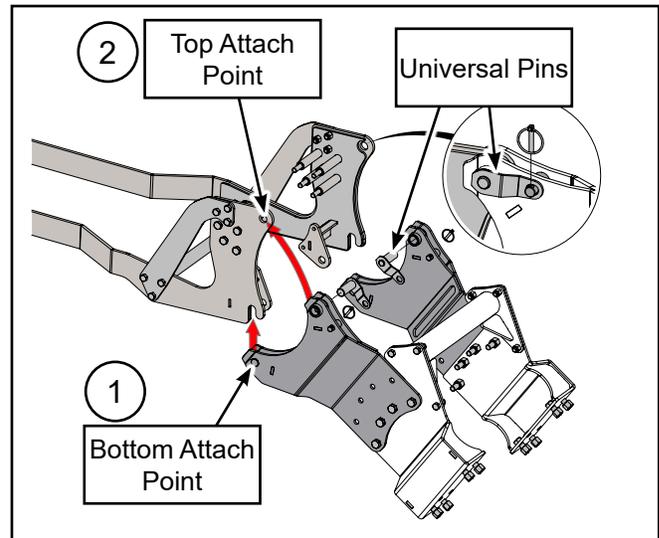


**Step 20**

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 21**

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



Generic illustration showing hitching principal.

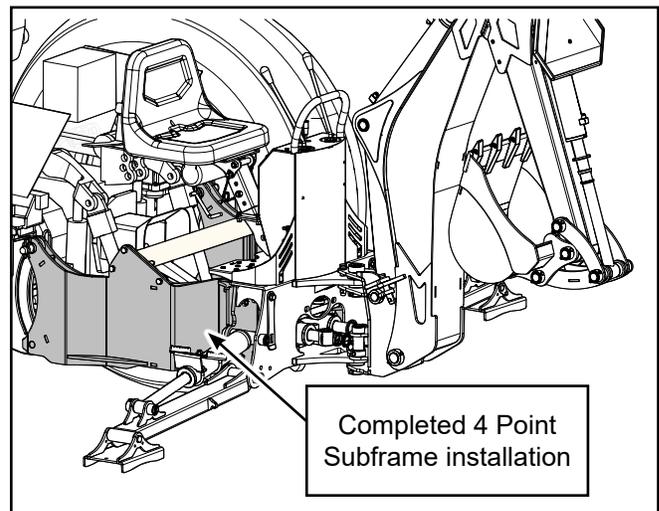
**Step 22**

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

