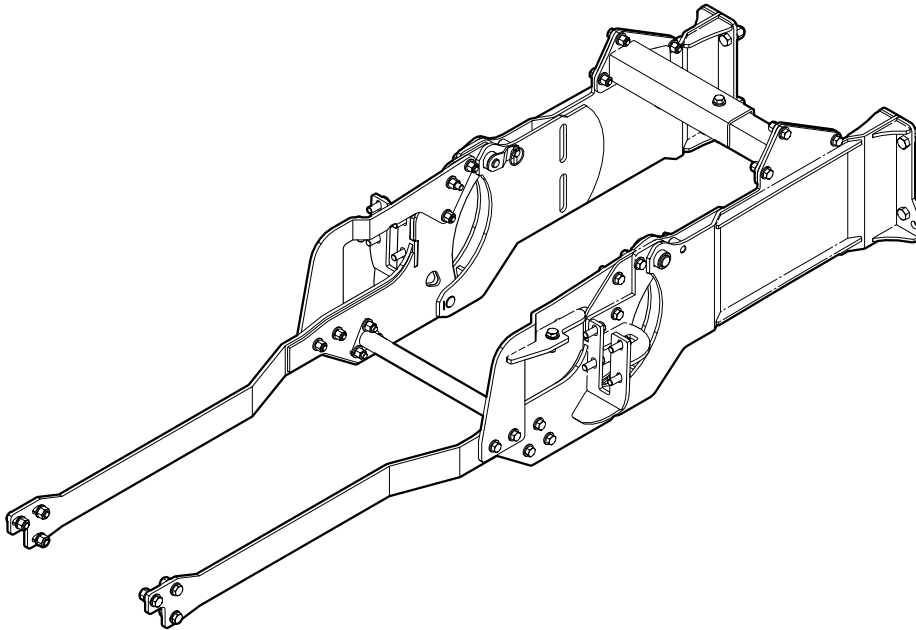


# INSTALLATION INSTRUCTIONS

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## 3684A050 Backhoe Subframe Kit



## Introduction

**This subframe is designed to work with Wallenstein backhoes.**

Wallenstein backhoes are designed to work with a wide variety of tractors. This subframe kit provides a method for you to easily attach or detach a Wallenstein backhoe to your tractor.

Some of the illustrations in this manual are general; however, important features are shown in detail to help you install the subframe kit successfully.

Before using, installing, or maintaining this equipment, read and understand the safety, operation, and maintenance information in the backhoe Operator's Manual. If you have questions or require assistance, contact your local dealer, the distributor, or Wallenstein Equipment.

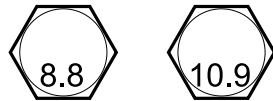
## Operator Orientation

**IMPORTANT! The directions for left-hand (LH) side, right-hand (RH) side, backward, and forward are determined when sitting in the tractor seat, facing the direction of forward travel.**

## Fasteners

**IMPORTANT! This installation kit includes metric and imperial fasteners. The bolt type is identified by the markings on the bolt head.**

### Metric



### Imperial



## Definitions

Acronym	Definition
DIN	Deutsches Institut für Normung - German Institute for Standardization
LH	Left hand
NC	National course (thread)
RH	Right hand
ROPS	Rollover protection structure
SAE	Society of Automotive Engineers

## Safety

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

### WARNING!

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

### WARNING!

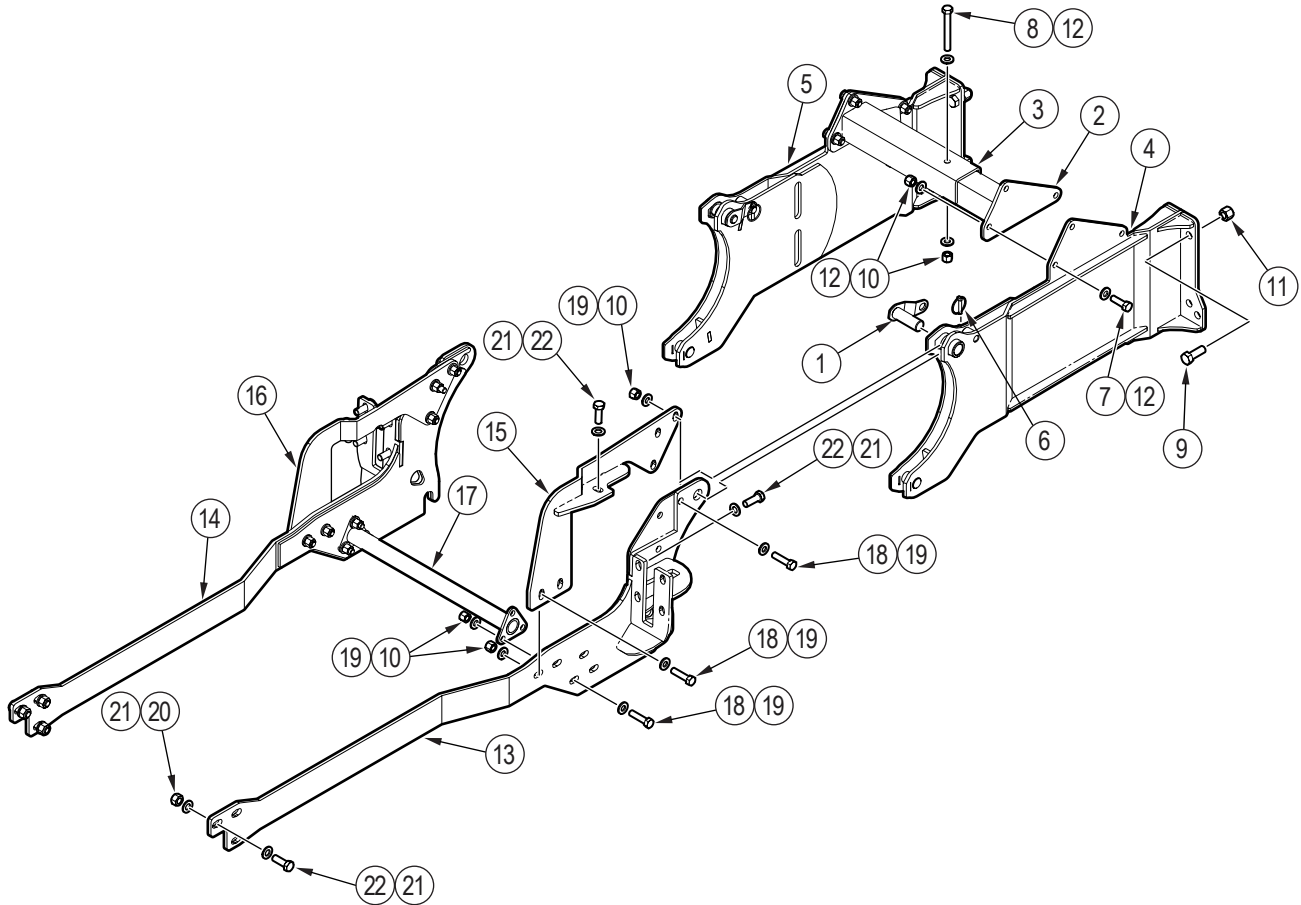
Use caution. During the course of assembly, the ROPS and cab support bolts are removed. Support the cab before you remove the cab mounting bolts. Remove and replace the bolts one side at a time.

- Do not install the backhoe and required counterweights on the tractor if the total tractor and equipment weight will exceed the tractor's rollover protection structure (ROPS) weight certification.
- Make sure that the equipment is mounted and adjusted correctly, and in good operating condition.
- Make sure that all safety guards, shields, covers, and safety signs are installed and in good condition.

## Subframe Kit Parts



All parts and hardware shown in this illustration are included in the kit. Inspect the parts to confirm that nothing was damaged during shipment.



Item	Part Number	Description	Quantity
1	3600W201	Subframe top pin	2
2	3600W132	LH crossmember	1
3	3600W133	RH crossmember	1
4	3684W080	LH backhoe mount	1
5	3684W080H	RH backhoe mount	1
6	Z12120	Linchpin, 1/4"	2
7	Z71517	Hex bolt, 1/2" NC x 1-3/4"	6
8	Z71540	Hex bolt, 1/2" NC x 4"	1
9	Z71617	Hex bolt, 5/8" NC x 1-3/4"	8
10	Z72251	Hex lock nut, 1/2" NC	22
11	Z72261	Hex lock nut, 5/8" NC	8

Item	Part Number	Description	Quantity
12	Z73151G8	SAE washer, 1/2" Gr. 8	12
13	3684W051	LH load rail	1
14	3684W051H	RH load rail	1
15	3684W052	LH top holding plate	1
16	3684W052H	RH top holding plate	1
17	3684W053	Brace	1
18	Z71520	Hex bolt, 1/2" NC x 2"	16
19	Z73151	SAE washer, 1/2"	32
20	Z77283	Hex lock nut, M14 x 1.5	6
21	Z77381	DIN 125 washer, M14	22
22	Z77682	Hex bolt, M14 x 1.5 x 40 mm	16

## Preparation



Subframe installation is easier if you remove the rear tractor tires; however, it is optional.

- a. Assemble the backhoe and leave it on the shipping skid.
- b. Make sure that the tractor has a front bucket loader installed.  
The front bucket loader is required to offset the weight of the backhoe and provides the stability that is required to operate the backhoe safely.
- c. Lower the front bucket loader until it rests on the ground.
- d. Turn off the tractor engine and remove the key.

## Tools Required

- 3/4" and 15/16" wrenches and sockets
- 22 mm wrench and socket
- Overhead lifting device
- Jack stands
- Calibrated torque wrench

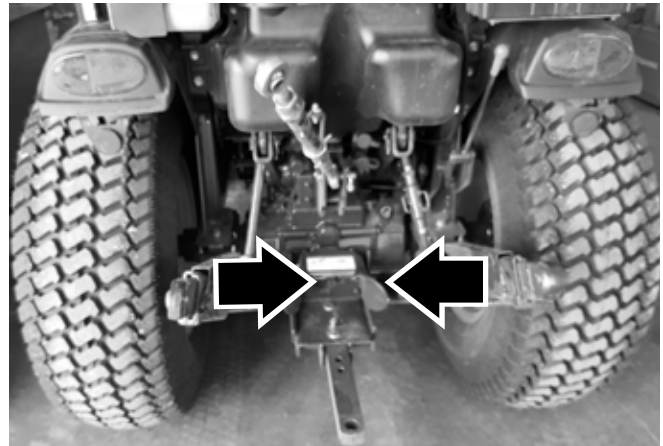
## Procedure

**After installation, the subframe should remain on the tractor and not be removed.**

Complete the following steps to install the backhoe subframe.

### Step 1

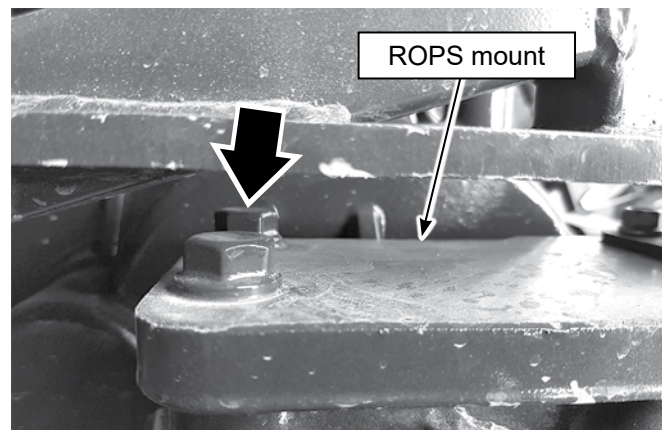
Remove the anti-sway bars from the cab mounts. Swing the lift arms in as far as they will go, and then secure them in that position to keep them out of the way.



### Step 2

Remove the inner front bolt that secures the ROPS to the axle.

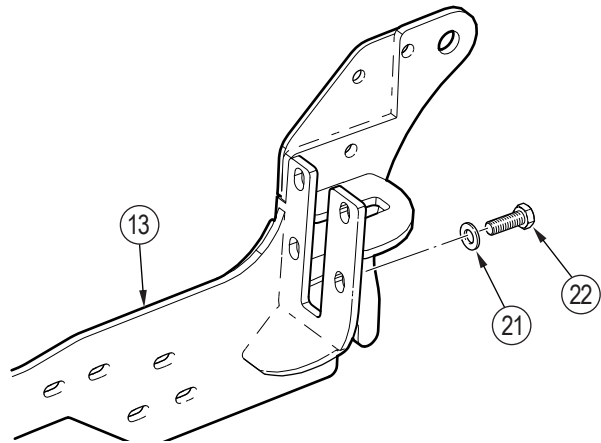
Set aside the fastener. It is not needed for installation.



### Step 3

Place the LH load rail (13) below the axle and against the ROPS mount. Install the four bolts (22) and washers (21).

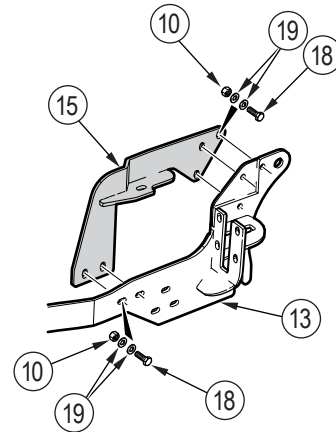
Only hand tighten the fasteners.



### Step 4

Place the LH top holding plate (15) over the axle and secure it to the LH load rail (13). Install the five bolts (18), five nuts (10), and ten washers (19).

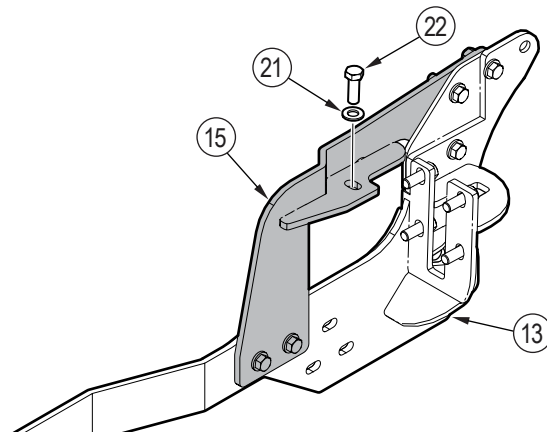
Only hand tighten the fasteners.



### Step 5

Install the LH top holding plate (15). Install the bolt (22) and washer (21) through the LH top holding plate and into the axle.

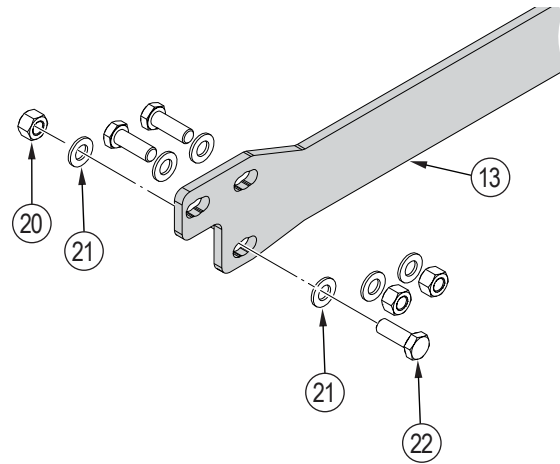
Only hand tighten the fasteners.



**Step 6**

Install the front of the LH load rail (13) on the tractor mount. Install the three bolts (22), three nuts (20), and six washers (21).

Only hand tighten the fasteners.

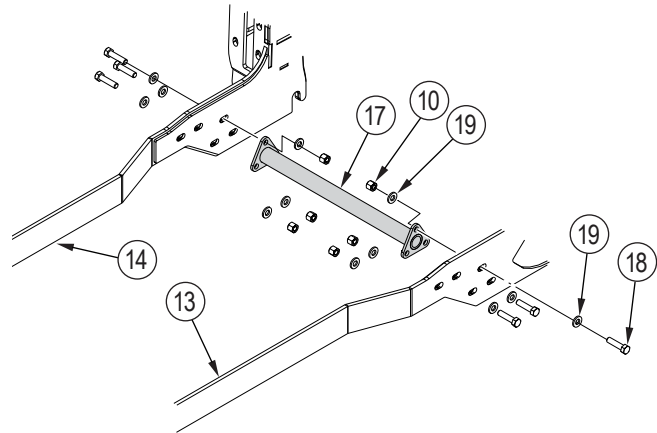
**Step 7**

Repeat steps 2 through 6 on the RH side of the tractor.

**Step 8**

Install the brace (17) on the LH (13) and RH (14) tractor plates. On each side of the tractor, install the three bolts (18), three nuts (10), and six washers (19).

Only hand tighten the fasteners.

**Step 9**

Use a calibrated torque wrench to tighten all of the fasteners to the correct torque.

For subframe torque specifications, see *Bolt Torque Specifications* on page 12. For tractor torque specifications, see the tractor owner's manual.

**Step 10**

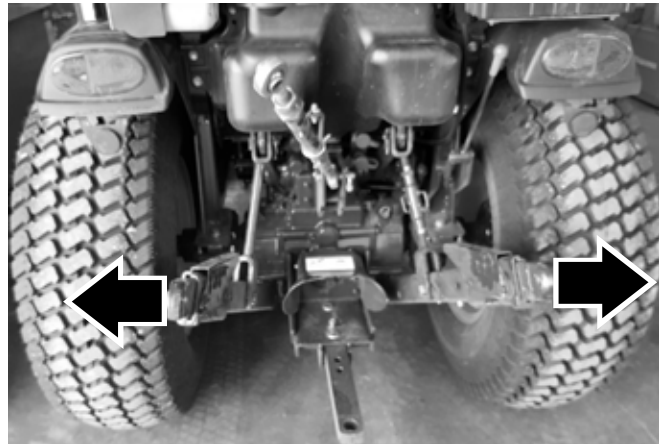
If the tractor wheels were removed, install the wheels. Tighten all of the lug nuts and bolts to the correct torque. For torque specifications, see the tractor owner's manual.

Depending on the wheels, it may be necessary to reverse the offset for subframe clearance.

## Step 11

Swing the lift arms out, and then attach the anti-sway bars to the cab mounts.

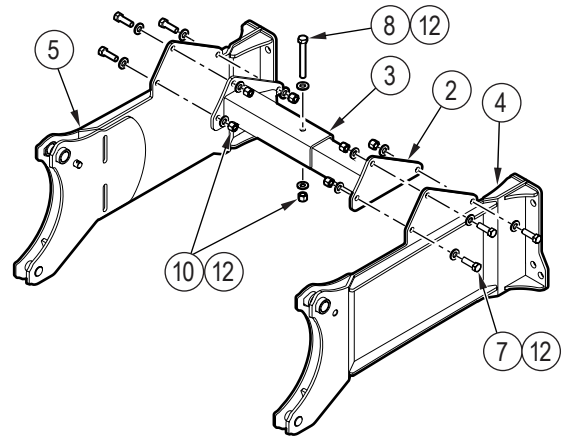
Test the lift arms to make sure that they move freely with the subframe installed.



## Step 12

If required, assemble the backhoe mount:

- Place the LH (2) and RH (3) crossmembers between the LH (4) and RH (5) backhoe mounts.
  - On each side, install the three bolts (7), three nuts (10), and six washers (12).
  - Use a calibrated torque wrench to tighten the six bolts to **80 lbf•ft (110 N•m)**.
  - Install the bolt (8), nut (10), and two washers (12) through the LH and RH crossmembers.
- Only hand tighten the fastener.



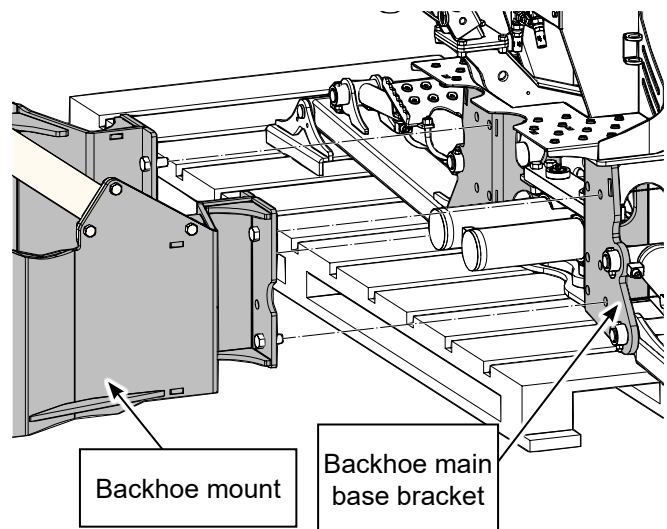
## Step 13

Install the backhoe mount on the backhoe main base bracket. Use the eight 5/8" NC bolts and nuts that are included in the subframe kit (four on the LH side and four on the RH side).

Use a calibrated torque wrench to tighten the bolts to **160 lbf•ft (215 N•m)**.

## Step 14

Align the rear of the tractor with the backhoe mount, and then reverse the tractor toward the backhoe. Position the tractor close enough to attach the hydraulic hoses to the backhoe.



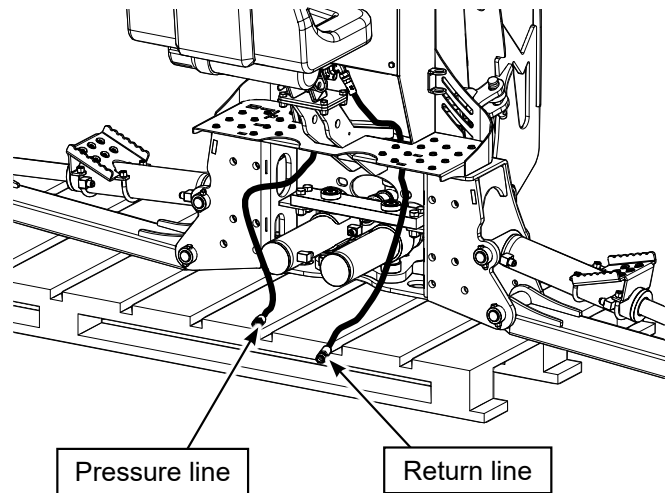


## Step 15

Attach the hydraulic hoses from the backhoe to the tractor (see the image).



The backhoe is equipped with a directional control valve that prevents reverse flow if the pressure and return hoses are connected incorrectly.

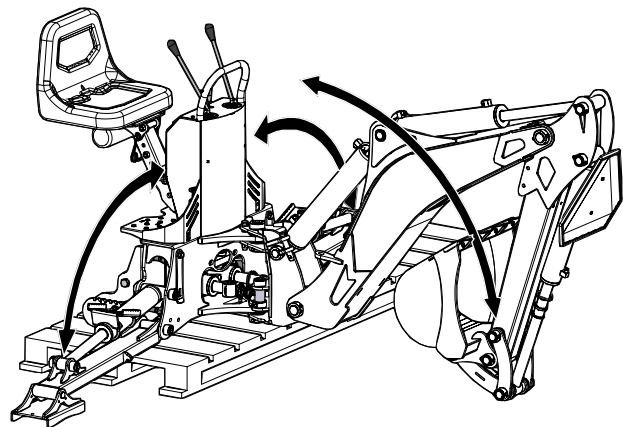


## ! WARNING!

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

## Step 16

Carefully, use the dipper arm and stabilizer legs to tilt the backhoe (with backhoe mount installed) to an angle. The bottom attachment points on the backhoe mount must align with the hooks on the bottom of the tractor subframe.



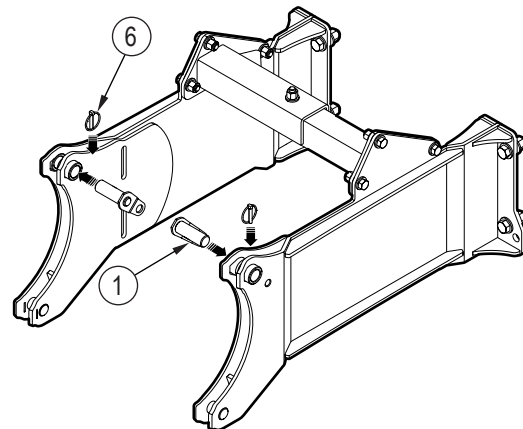
## Step 17

Carefully, use the backhoe hydraulics to raise the backhoe mount into the bottom of the tractor subframe hooks for positive attachment.

## Step 18

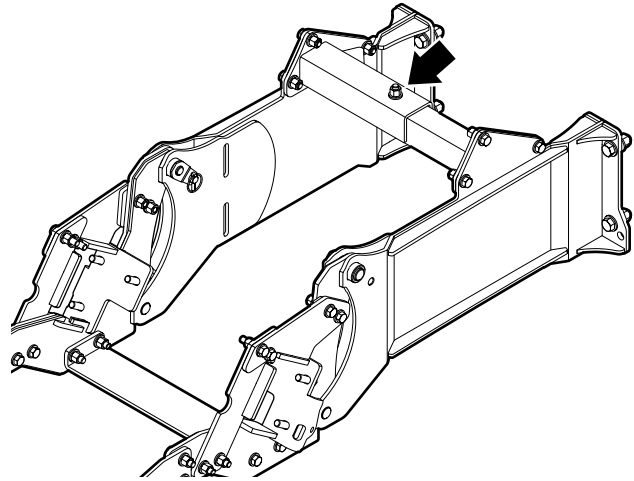
On each side of the backhoe mount, insert a subframe top pin (1), and then insert a linchpin (6) through the subframe top pin.

Each subframe top pin must be through the backhoe mount and subframe attachment holes.



## Step 19

Use a calibrated torque wrench to tighten the centre crossmember bolt to **80 lbf•ft (110 N•m)**.



## Step 20

Complete the following inspections:

- Make sure that all of the attachment points are secure.
- Make sure that all bolts and nuts are tightened to the correct torque.

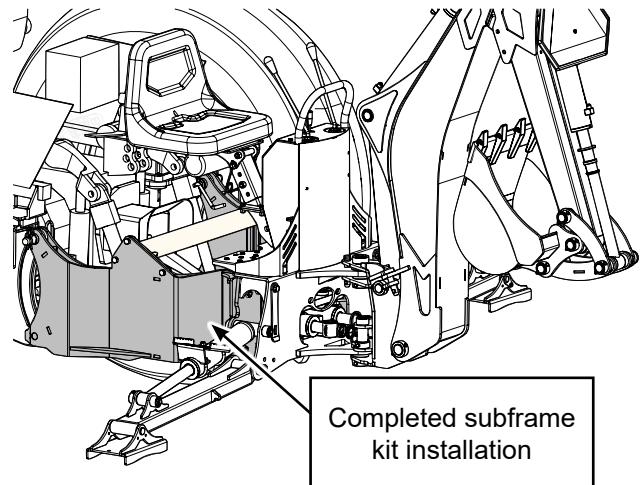
## Step 21

Test the hydraulics:

- a. Lift the stabilizer legs, and then remove the skid from under the backhoe.
- b. Lower the stabilizer legs.
- c. Test all of the boom functions.

Make sure that all of the moving parts have clearance and do not interfere with the subframe.

The backhoe subframe kit installation is complete.



## Troubleshooting



### WARNING!

**Before troubleshooting, read and understand the information under *Safety on page 3*.**

The following table lists some of the problems that you may encounter and provides possible causes and solutions.

If you encounter a problem that is difficult to solve, even after reading this information, please contact your local dealer, the distributor, or Wallenstein Equipment.

Please have the following information available:

- Backhoe:
  - Model
  - Serial number
- Tractor:
  - Make
  - Model
  - Year of manufacture
  - Cab or ROPS model number
  - Loader model number

Problem	Cause	Solution
<b>Unable to attach the subframe to the backhoe mount.</b>	The backhoe mount attachment points (two hooks and two hitch pins) do not line up with the subframe.	<ol style="list-style-type: none"> <li>a. Loosen all of the subframe bolts.</li> <li>b. Attach the subframe to the backhoe mount (with the backhoe mount installed on the backhoe).</li> <li>c. Use a calibrated torque wrench to tighten all of the subframe fasteners to the correct torque.</li> </ol>
<b>Subframe does not fit correctly.</b>	A subframe component cannot be installed because part of the tractor is interfering with the installation.	Verify that the subframe is installed correctly. For instructions, see the <i>Procedure on page 5</i> .
	One or more subframe mounting holes do not align with the tractor or other subframe components.	If there is still an interference issue, take pictures of the issue, record the part numbers that require modification, and then send them in an email to technical support at <a href="mailto:support@wallensteinequipment.com">support@wallensteinequipment.com</a> .
	Received an incorrect subframe.	Verify that the subframe is correct for your tractor: <ol style="list-style-type: none"> <li>a. Go to <a href="http://WallensteinEquipment.com">WallensteinEquipment.com</a>.</li> <li>b. Under <b>Find Your Wallenstein</b>, select <b>Tractor</b>.</li> <li>c. Select your tractor brand and model.</li> <li>d. Scroll down to <b>Backhoes &amp; Skid Diggers</b>.</li> <li>e. The subframe part number is listed under your backhoe model number.</li> </ol> If you received an incorrect subframe, send an email to technical support at <a href="mailto:support@wallensteinequipment.com">support@wallensteinequipment.com</a> .
<b>Missing or incorrect parts.</b>	Parts are missing or you received incorrect parts.	Make a list of the parts that are missing or incorrect and take pictures of the parts you received. Send the list and pictures in an email to technical support at <a href="mailto:support@wallensteinequipment.com">support@wallensteinequipment.com</a> .

# Bolt Torque Specifications

**IMPORTANT!** If you replace hardware, use fasteners of the same grade.

**IMPORTANT!** The torque specifications in these tables are for non-greased or non-oiled threads. Do not grease or oil fastener threads unless otherwise indicated. When using a thread lock, increase the specified torque 5%.



*Bolt grades are identified by the marks on top of the bolt head.*

These bolt torque specification tables provide the correct torque settings for common bolts and capscrews. Tighten all bolts to the torque that is specified in the table, unless otherwise indicated. Check the bolt tightness periodically

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



SAE Gr. 2



SAE Gr. 5



SAE Gr. 8

Metric Bolt Torque Specifications				
Bolt Diameter	Torque			
	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



8.8



10.9



[WallensteinEquipment.com](http://WallensteinEquipment.com)

