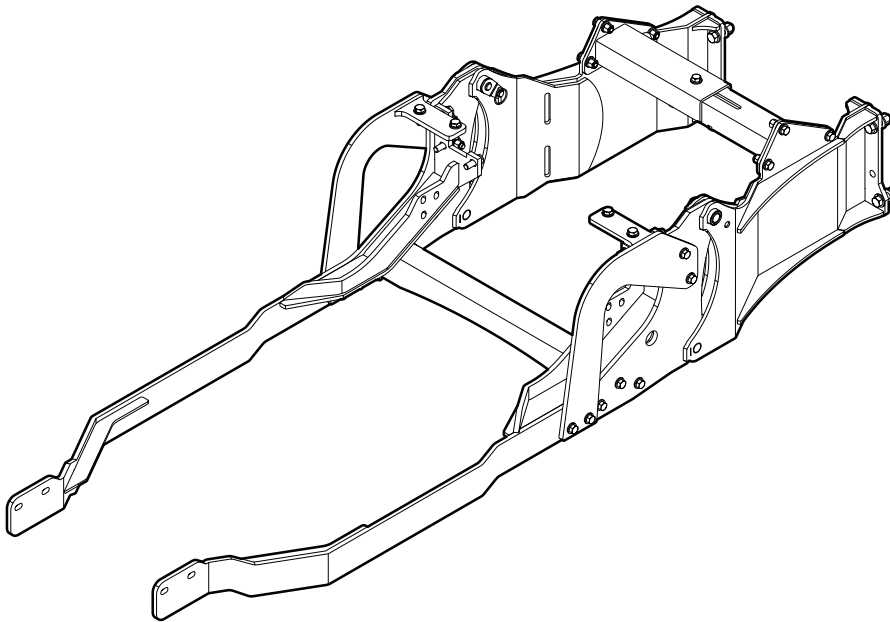


INSTALLATION INSTRUCTIONS

3684A150 Backhoe Subframe Kit



Introduction

IMPORTANT! This subframe is designed to work with Wallenstein backhoes.

Wallenstein Equipment makes every effort to design subframes that fit correctly. However, it may be necessary to modify the subframe at the time of installation due to ongoing tractor manufacturer design changes.

Contact Wallenstein technical support before you modify the subframe.

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 you use, install, or maintain this equipment, read and understand the safety, operation, and maintenance information in the backhoe Operator's Manual. If you have questions or you need assistance, contact your local dealer, the distributor, or Wallenstein Equipment.

Operator Orientation

IMPORTANT! The directions for left (LH) side, right (RH) side, front, and rear 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 shown by the markings on the bolt head.

Metric



Imperial



SAE Gr. 2

SAE Gr. 5

SAE Gr. 8

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!

Do not install the subframe before you read the installation instructions in this manual. Make sure that you understand the safety information and each step of the procedure before you install the subframe.

Keep this manual with you and available for frequent reference as you install the subframe.

W128

WARNING!

Before you operate the machine:

- Make sure that the pins and the backhoe mount are correctly attached to the subframe and the backhoe.
- Make sure that all the fasteners are torqued to the correct specifications.
- Examine and test the hydraulic connections.
- Read and understand the machine Operator's Manual.

W008

WARNING!

Make sure that the tractor is parked on a level surface with the front wheels blocked to prevent the tractor from moving. Use jack stands with the correct rating to support the tractor.

W009

WARNING!

The front loader can move unexpectedly when the load mounts are disconnected. Make sure that the front loader is lowered to the ground and on a level surface.

W018

WARNING!

Make sure that the subframe, backhoe, and tractor are 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 on, and the key is removed.

W129

WARNING!

Read and understand the operating instructions in the machine Operator's Manual. You must operate the machine's hydraulics to install the subframe.

W130

WARNING!

The ROPS or cab mount fasteners must be removed to install the subframe. Before you remove the ROPS or cab mount fasteners, put blocks or a support under the tractor. Do not remove fasteners from two sides of the tractor at one time. Always have the fasteners installed on one side of the tractor.

W131

WARNING!

Do not start or operate the machine before you read the Operator's Manual. Make sure that you fully understand all safety, operation, and maintenance information before you operate the machine.

Keep the Operator's Manual with the machine at all times and available for frequent reference.

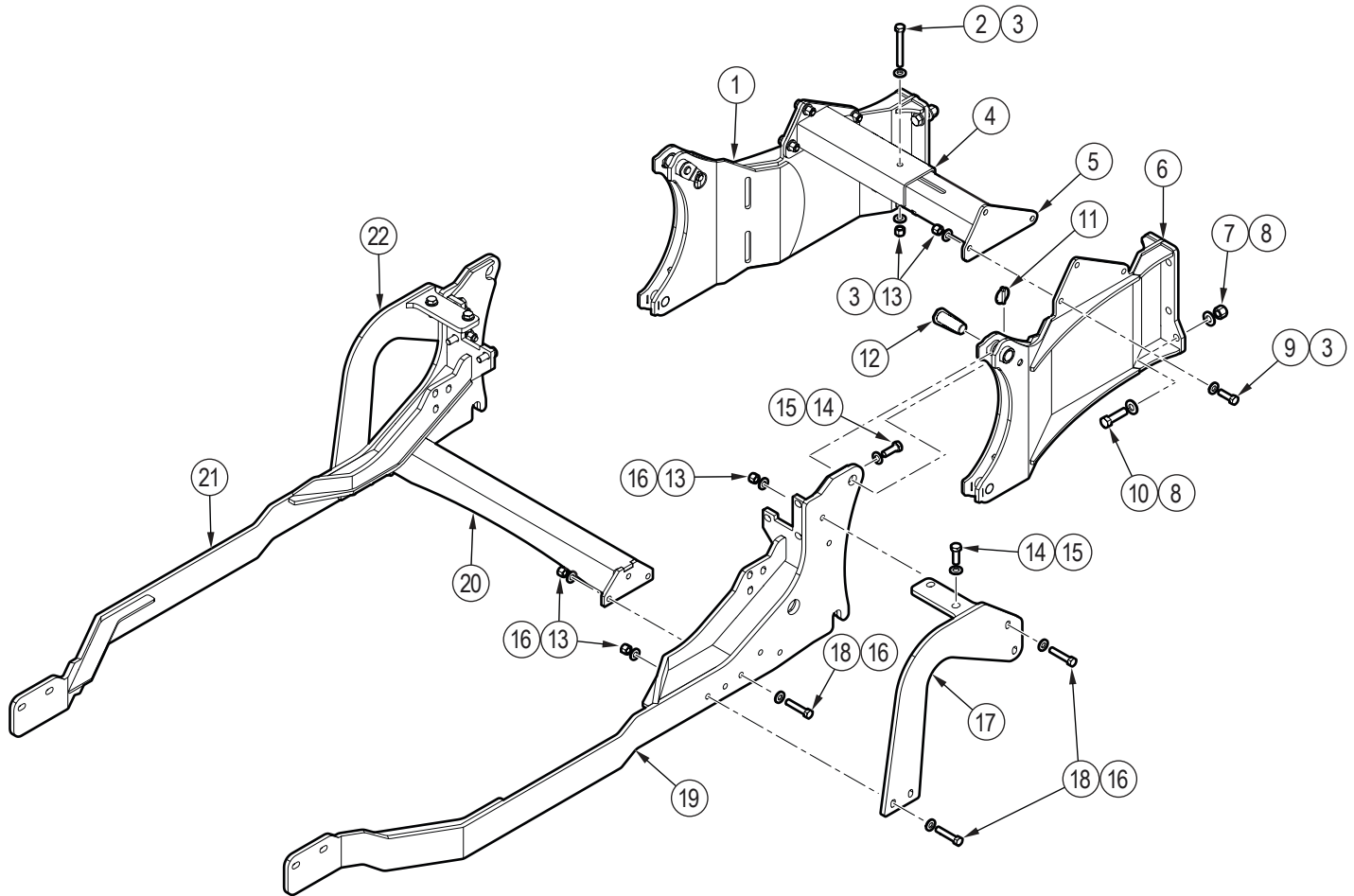
W132

- Do not install the backhoe and the necessary 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 the guards and shields are installed and the covers are closed. Make sure that the safety labels are legible 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	3684W180H	RH backhoe mount	2
2	Z71540	Hex bolt, 1/2" NC x 4"	1
3	Z73151G8	SAE washer, 1/2" Gr. 8	14
4	3600W133	RH crossmember	1
5	3600W132	LH crossmember	1
6	3684W180	LH backhoe mount	1
7	Z73161G8	SAE washer, 5/8" Gr. 8	16
8	Z72261	Hex lock nut, 5/8" NC	8
9	Z71516	Hex bolt, 1/2" NC x 1-5/8"	6
10	Z71622	Hex bolt, 5/8" NC x 2-1/4"	8
11	Z12120	Linchpin, 1/4"	2

Item	Part Number	Description	Quantity
12	3600W201	Subframe pin	2
13	Z72251	Hex lock nut, 1/2" NC	21
14	Z77182	Hex bolt, M14 x 2.0 x 40 mm	10
15	Z77381	DIN 125 washer, M14	10
16	Z73151	SAE washer, 1/2"	28
17	3684W153	LH top holding plate	1
18	Z71525	Hex bolt, 1/2" NC x 2-1/2"	14
19	3684W151	LH tractor plate	1
20	3684W152	Brace	1
21	3684W151H	RH tractor plate	1
22	3684W153H	RH top holding plate	1

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 necessary to offset the weight of the backhoe and provides the stability that is necessary to operate the backhoe safely.
- c. Lower the front bucket loader until it rests on the ground.
- d. Stop the tractor engine and remove the key.

Tools

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

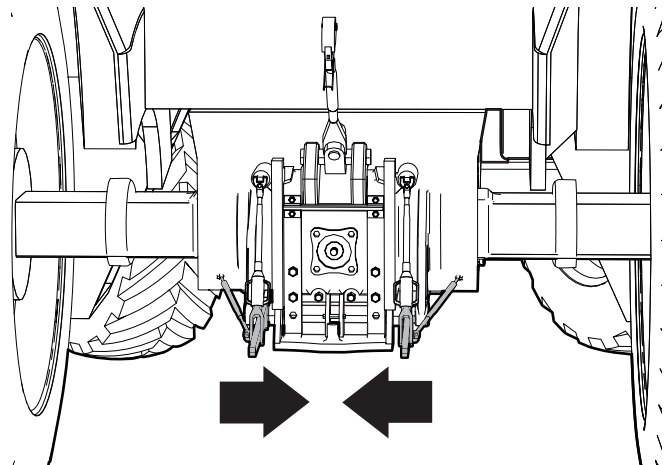
Procedure

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

Do the following steps to install the backhoe subframe.

Step 1

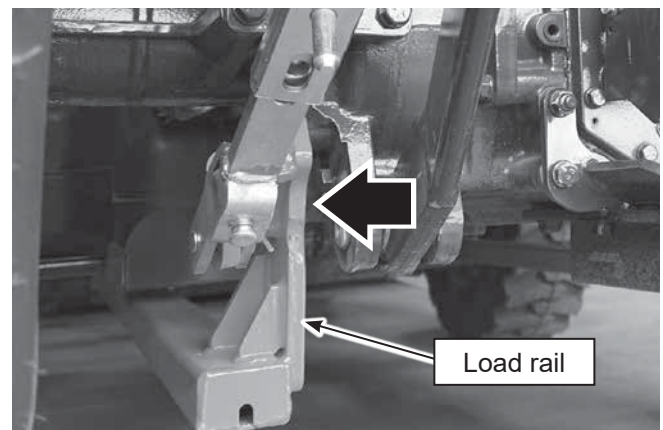
Remove the anti-sway bars from the cab mounts. Push the lift arms in as far as possible. Keep them in this position, out of the way.



Step 2

On the left side of the tractor, remove the three bolts and three washers that attach the tractor load rail to the axle casting.

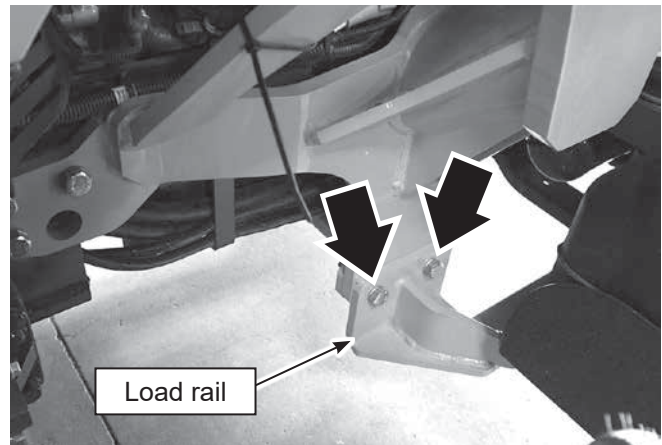
Set aside the fasteners. They are necessary for installation.



Step 3

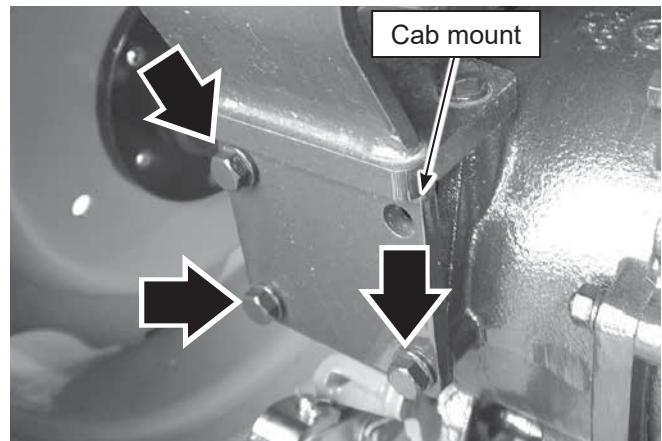
Remove the two bolts and two washers that attach the load rail to the load mount.

Set aside the fasteners. They are necessary for installation.

**Step 4**

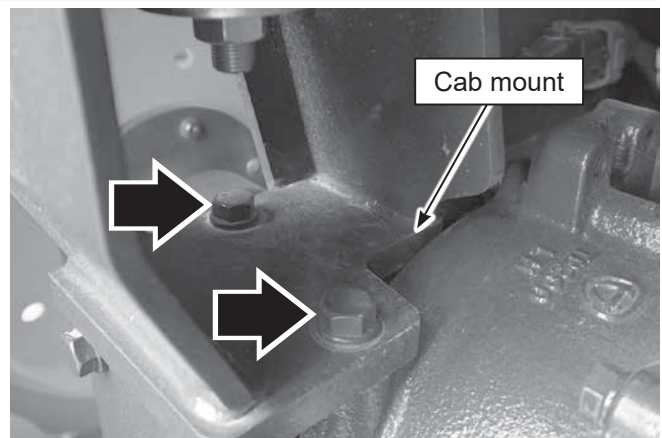
Remove the three bolts and three washers from the rear of the cab mount.

Set aside the fasteners. They are not necessary for installation.

**Step 5**

Remove the two bolts and two washers from the top of the cab mount.

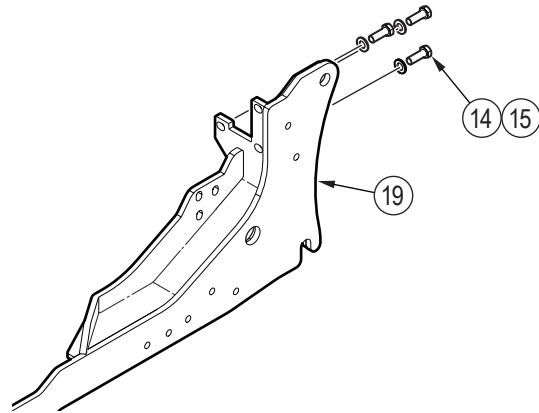
Set aside the fasteners. They are not necessary for installation.



Step 6

Put the LH tractor plate (19) below the axle casting and against the cab mount. Install the three bolts (14) and three washers (15).

Only hand tighten the fasteners.

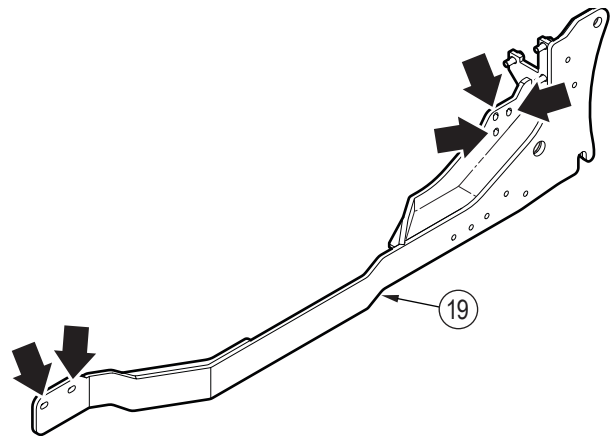


Step 7

Attach the LH tractor plate (19) to the axle casting and the load mount:

- Align the LH tractor plate with the bolt holes in the load mount.
- Install the fasteners that were removed in step 3 through the LH tractor plate and into the load mount.
- Install the fasteners that were removed in step 2 through the LH tractor plate and the into the axle casting.

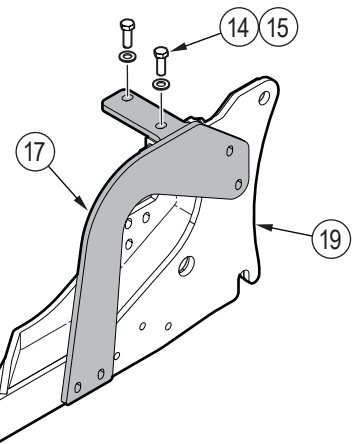
Only hand tighten the fasteners.



Step 8

Put the LH top holding plate (17) above the axle casting and against the LH tractor plate (19). Install the two bolts (14) and two washers (15).

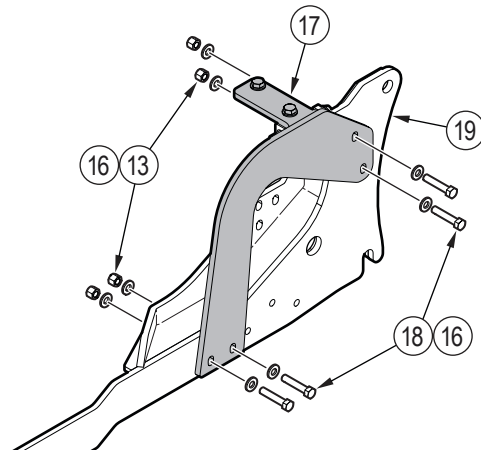
Only hand tighten the fasteners.



Step 9

Attach the LH top holding plate (17) to the LH tractor plate (19). Install the four bolts (18), four nuts (13), and eight washers (16).

Only hand tighten the fasteners.

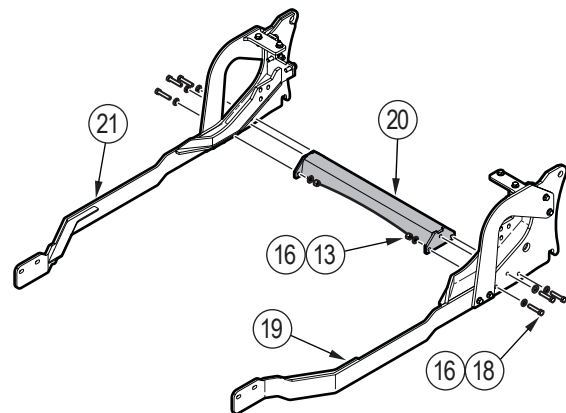
**Step 10**

Do steps 2 to 9 again on the right side of the tractor.

Step 11

Attach the brace to LH (19) and RH (21) tractor plates. On each side of the tractor, install the three bolts (18), three nuts (13), and six washers (16).

Only hand tighten the fasteners.

**Step 12**

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

For subframe torque specifications, see *Bolt Torque Specifications on page 13*. For tractor torque specifications, see the tractor owner's manual.

Step 13

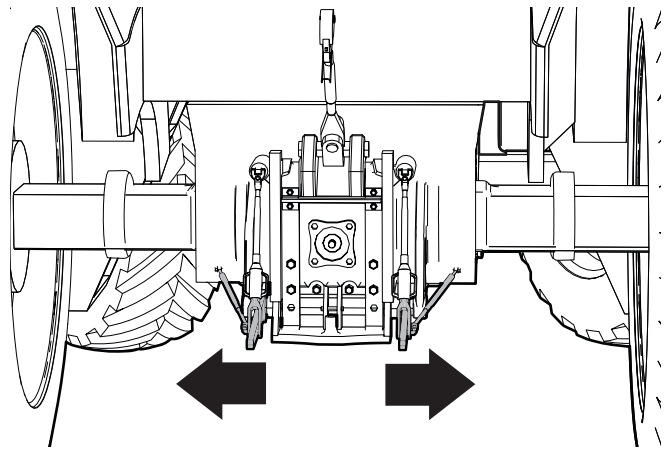
If the tractor wheels were removed, install the wheels. Torque all of the lug nuts and bolts to the correct specifications. For torque specifications, see the tractor owner's manual.

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

Step 14

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

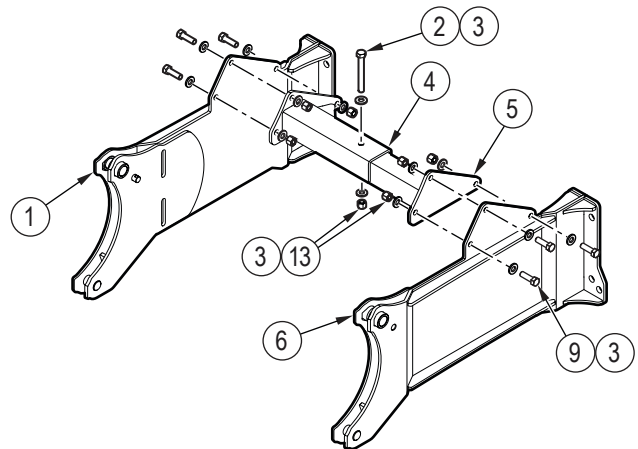
Test the lift arms to make sure that they move freely with the subframe installed.



Step 15

Assemble the backhoe mount:

- a. Put the LH (5) and RH (4) crossmembers between the LH (6) and RH (1) backhoe mounts.
 - b. On each side, install the three bolts (9), three nuts (13), and six washers (3).
 - c. Use a calibrated torque wrench to torque the six bolts to **80 lbf•ft (110 N•m)**.
 - d. Install the bolt (2), nut (13), and two washers (3) through the LH and RH crossmembers.
- Only hand tighten the fasteners.



Step 16

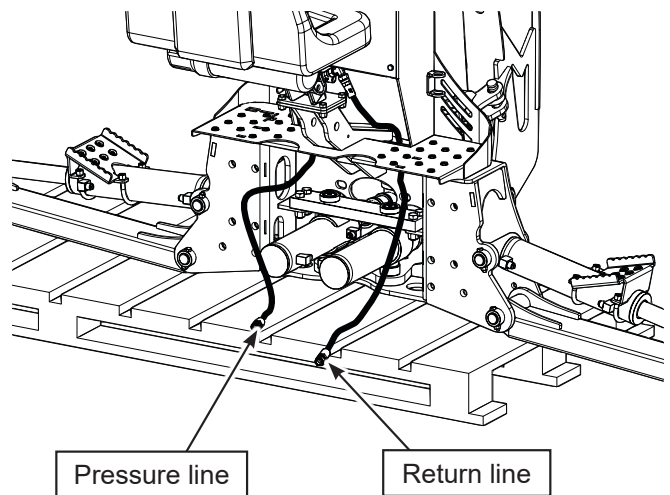
Align the rear of the tractor with the backhoe mount, and then reverse the tractor toward the backhoe.

Step 17

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

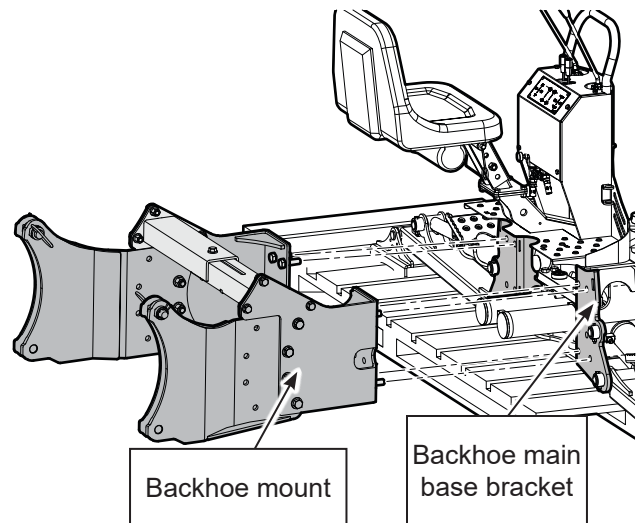


The backhoe is equipped with a directional control valve that prevents reverse flow if the pressure and return hoses are connected incorrectly.



Step 18

Attach the backhoe mount to the backhoe main base bracket. Install the eight bolts (10), eight nuts (7) and sixteen washers (8). Use a calibrated torque wrench to torque the bolts to **160 lbf • ft (215 N • m)**.



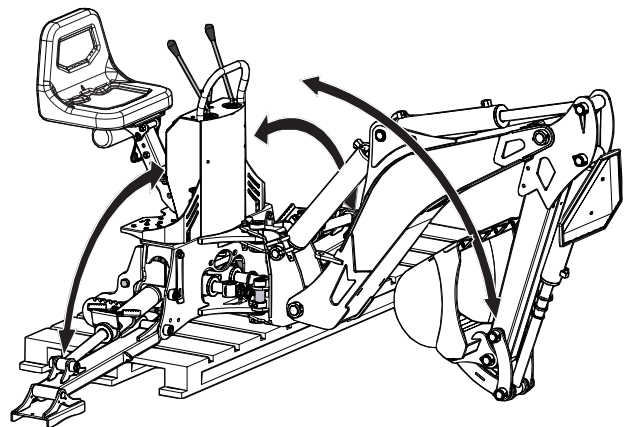
WARNING!

Before you operate the boom and stabilizers, make sure that there are no bystanders in the area and that you are in a safe position.

W133

Step 19

Carefully, use the dipper arm and stabilizer legs to tilt the backhoe (with the 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.



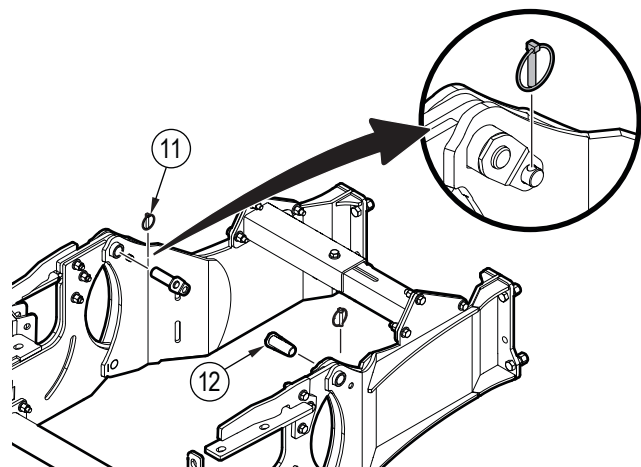
Step 20

Carefully, use the backhoe hydraulics to lift the backhoe mount into the hooks at the bottom of the LH (19) and RH (21) tractor plates.

Step 21

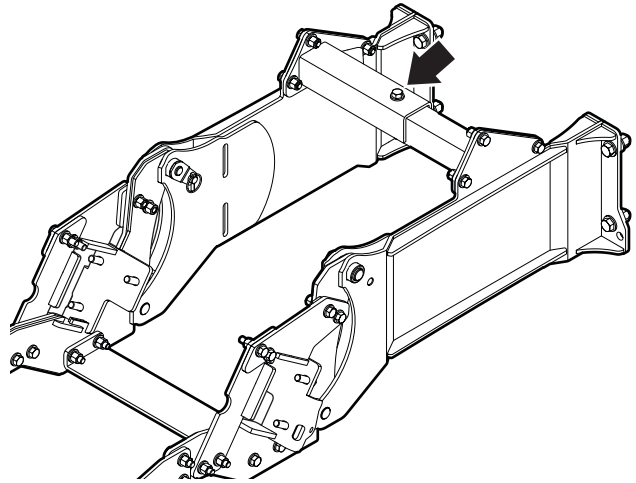
On each side of the backhoe mount, put a subframe pin (12) through the attachment hole on the tractor plate and backhoe mount. Put a linchpin (11) through the mount on the subframe.

Each subframe pin must be through the attachment holes in the backhoe mount and the tractor plates.



Step 22

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



Step 23

Do the following inspections:

- Make sure that the subframe is safely and correctly attached to the tractor and the backhoe.
- Make sure that all bolts and nuts are torqued to the correct specifications.

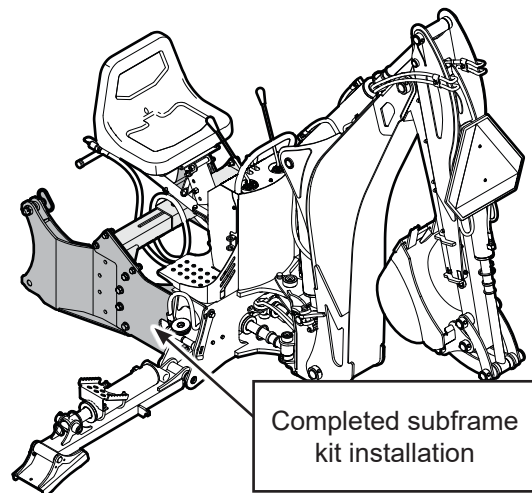
Step 24

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 enough 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 problems that you can encounter, their possible causes, and solutions.

If you have 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
Unable to attach the subframe to the backhoe mount.	The backhoe mount attachment points (two hooks and two subframe top pins) do not align with the subframe.	<ol style="list-style-type: none"> a. Loosen all of the subframe bolts. b. Attach the subframe to the backhoe mount (with the backhoe mount installed on the backhoe). c. Use a calibrated torque wrench to torque all of the subframe fasteners to the correct specifications.
The subframe does not fit correctly.	A subframe component cannot be installed because there is interference with part of the tractor.	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 interference with the tractor, take pictures of the problem, list the part numbers that are necessary to modify, and send the information to technical support at support@wallensteinequipment.com .
	Received an incorrect subframe.	Make sure that the subframe is correct for your tractor: <ol style="list-style-type: none"> a. Go to WallensteinEquipment.com. b. Under Find Your Wallenstein, select Tractor. c. Select your tractor brand and model. d. Scroll down to Backhoes & Skid Diggers. e. The subframe part number is listed under your backhoe model number. If you received an incorrect subframe, send an email to technical support at support@wallensteinequipment.com .
Missing or incorrect parts.	Parts are missing from the subframe kit 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 support@wallensteinequipment.com .

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 give the correct torque settings for common bolts and capscrews. Unless indicated otherwise, tighten all bolts to the torque that is specified in the table. Check the bolt tightness at regular intervals.

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



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