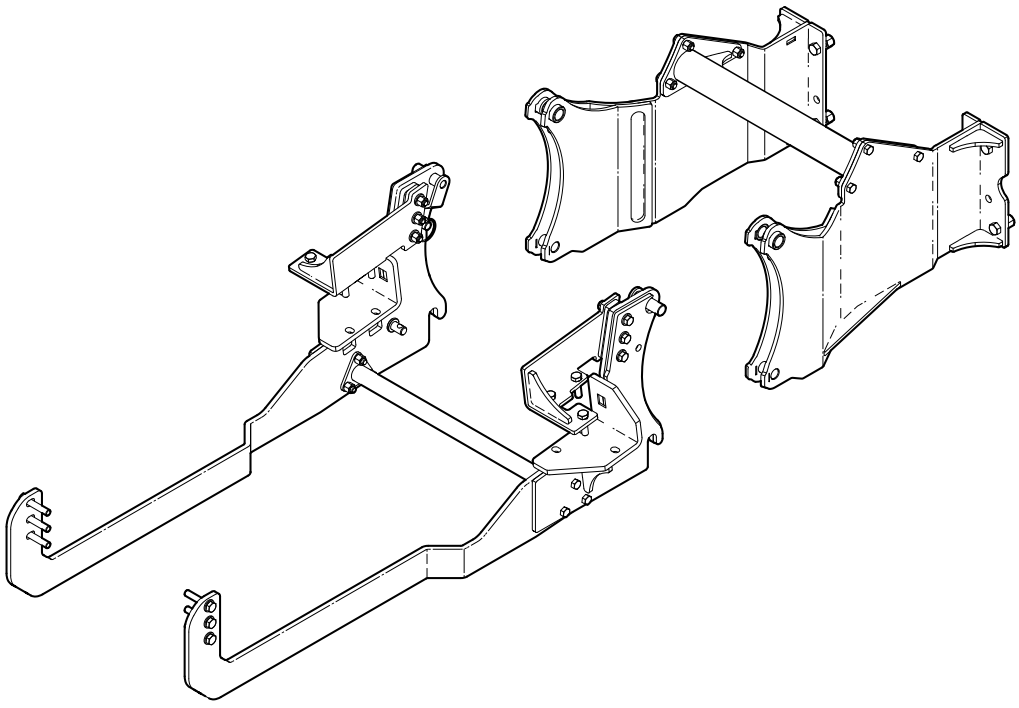
INSTALLATION INSTRUCTIONS

3652A150

Backhoe Subframe Kit



Rev Dec-2021

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 the Wallenstein Subframe Kit you can easily and quickly attach and detach your Wallenstein backhoe to your particular tractor.

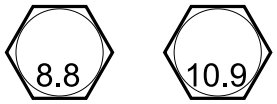
Some of the illustrations shown in this manual are general, but important features are detailed in order to install your kit successfully.

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. Bolt torque tables are included at the end of this instruction.

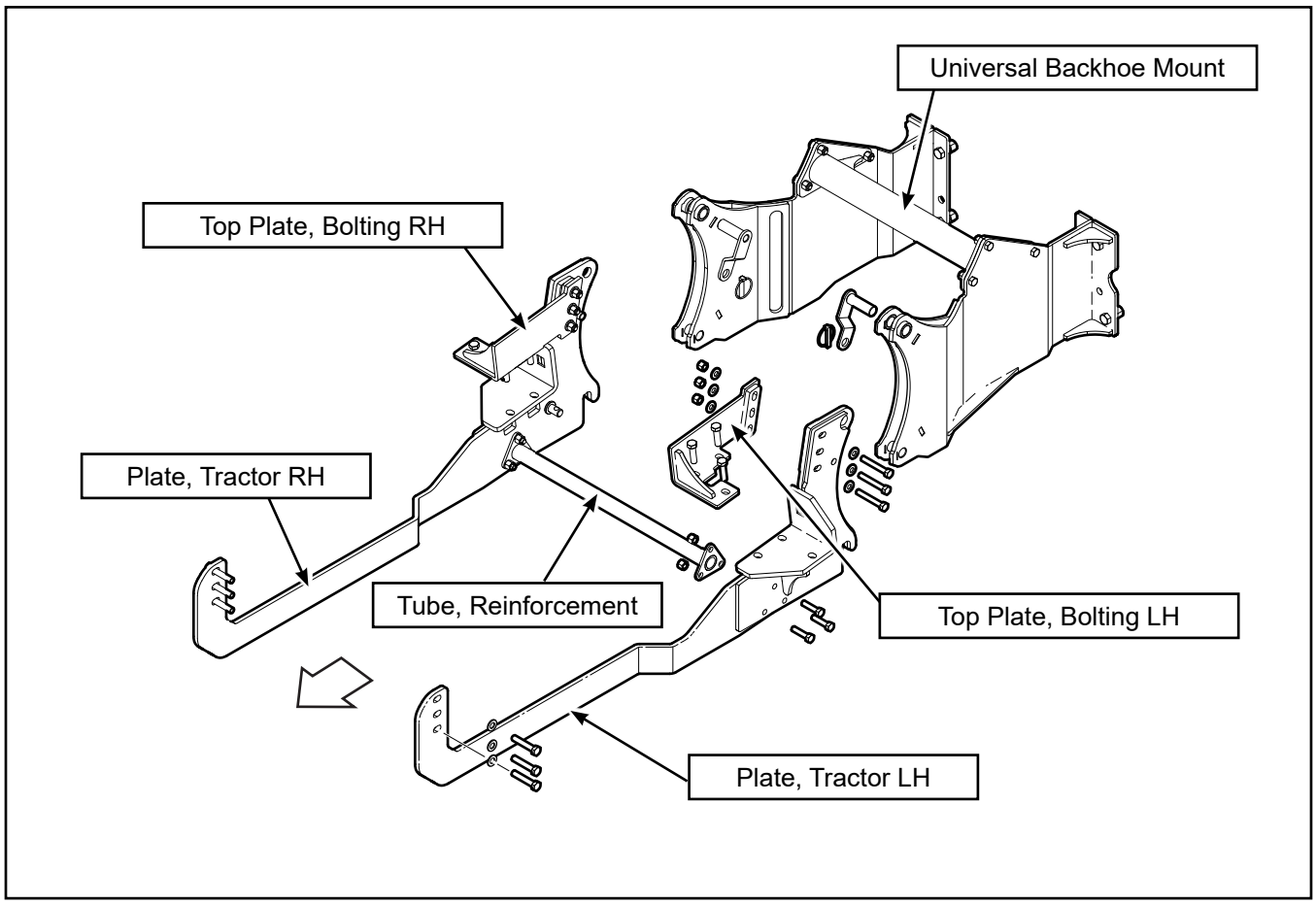
Metric



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 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!

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!

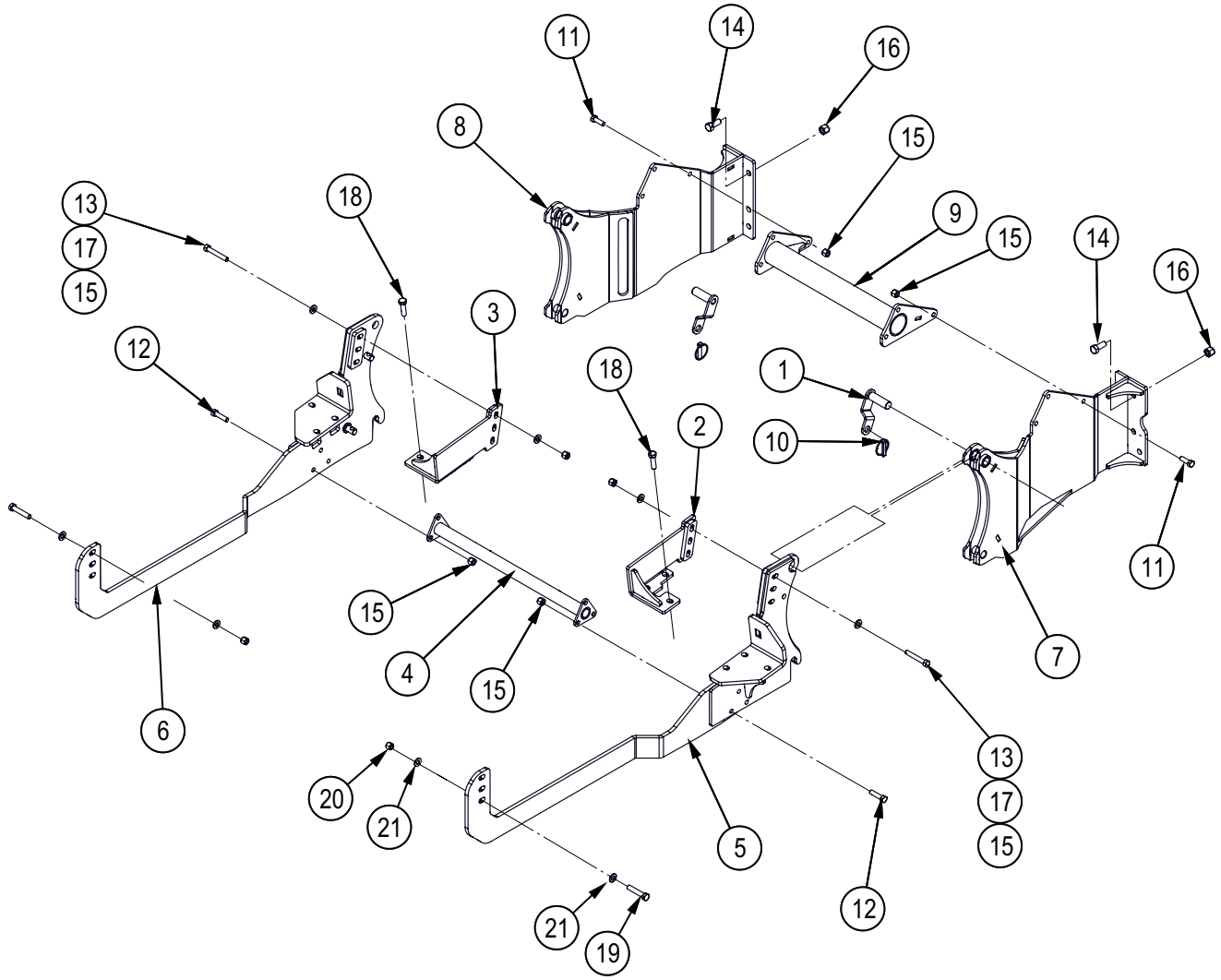
Review and understand the operating instructions for the backhoe. Part of the installation process includes operating the hydraulics to position the attachment points on the tractor.

⚠ 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	Part Number	Description	Quantity
1	3651W803	Blind Pin	2
2	3651W852	Top Bolting LH	1
3	3651W852H	Top Bolting RH	1
4	3651W853	Reinforcement Tube	1
5	3652W151	Tractor Plate LH	1
6	3652W151H	Tractor Plate RH	1
7	3651W880	LH Backhoe Mount	1
8	3651W880H	RH Backhoe Mount	1
9	3651W881	Crossmember	1
10	Z12140	Lynch Pin, 7/16"	2
11	Z71515	Hex Bolt, 1/2"NC x 1-1/2"	6

Item	Part Number	Description	Quantity
12	Z71520	Hex Bolt, 1/2"NC x 2"	6
13	Z71532	Hex Bolt, 1/2"NC x 3-1/4"	6
14	Z71615	Hex Bolt, 5/8"NC x 1-1/2"	8
15	Z72251	Hex Lock Nut, 1/2"NC	18
16	Z72261	Hex Lock Nut, 5/8"NC	8
17	Z73151	SAE Washer, 1/2"	12
18	Z77185	Hex Bolt, M14 x 2.0 x 50 mm G10.9	6
19	Z77187	Hex Bolt, M14 x 2.0 x 70 mm G10.9	4
20	Z77381	DIN 125 Washer, M14	4
21	Z77391	DIN Washer M16	8

Preparation:

Removing the tractor rear 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.

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

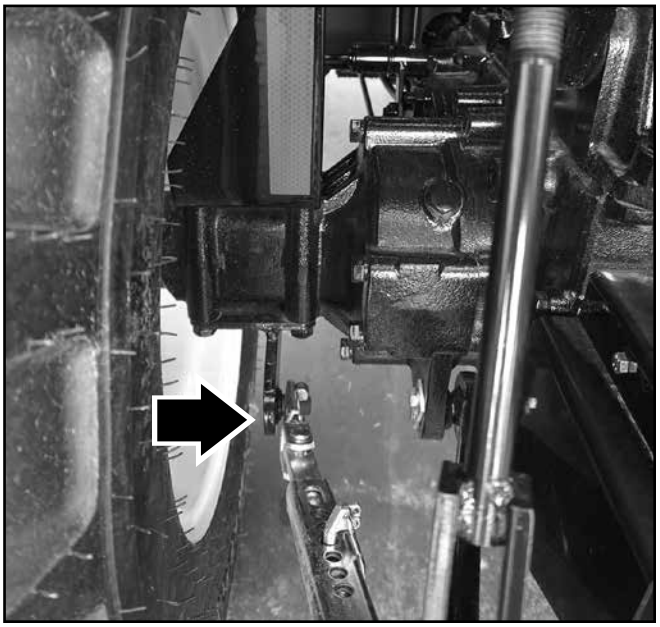
Tools required:

– 3/4" spanner and socket wrenches
– 21 mm spanner and socket wrenches
– Basic shop tools
– Overhead lifting device
– Jack stands
– Torque wrench

Procedure

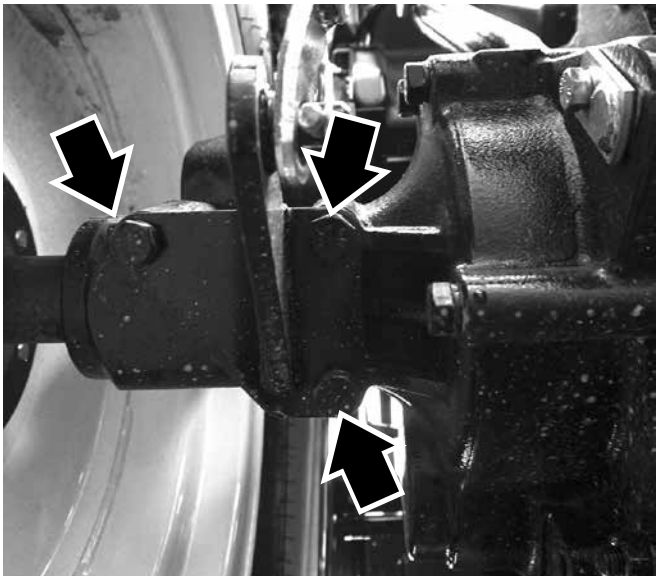
Step 1

Starting on the left-hand side of the tractor, remove the anti-sway bar from the axle mount. Set the pin and lynch pin aside to be reused. Swing the lift arm in as far as it will go and secure it out of the way.



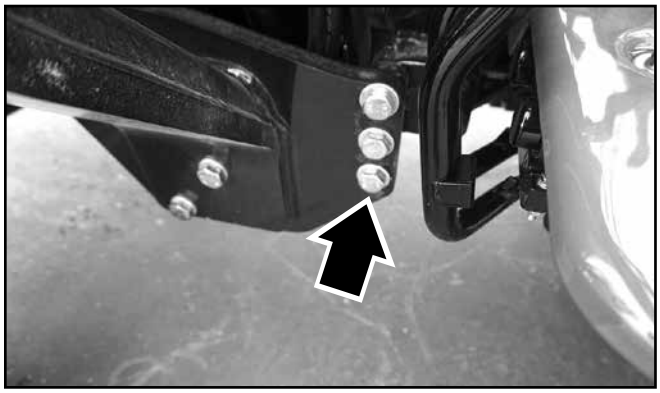
Step 2

Remove sway bar and sway bracket from the underside of the axle by removing three bolts under the axle casting. Set the bolts aside to be reused.



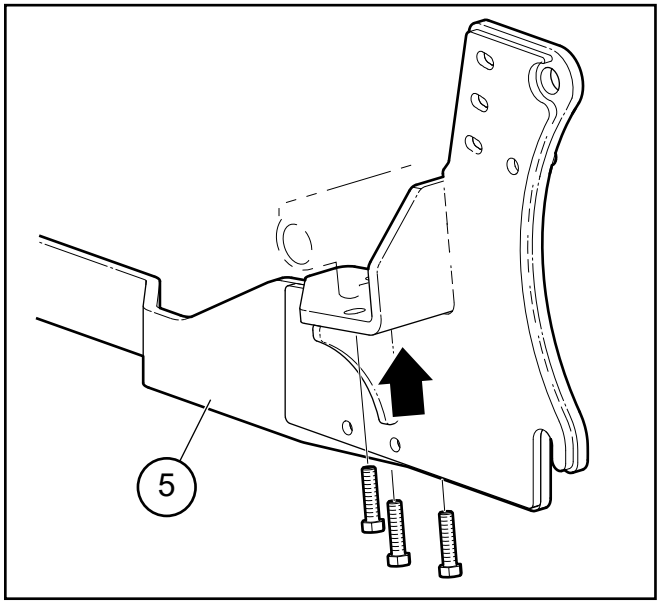
Step 3

Remove the three bolts on the base of the loader mount. (These bolts are not reused.)



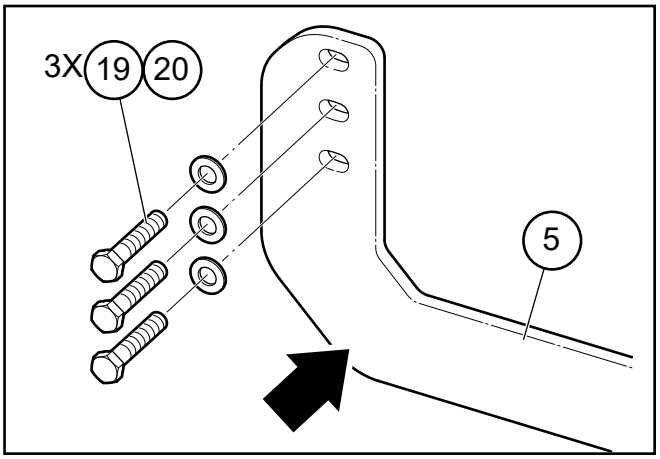
Step 4

Lift the **(3652W151)** Tractor plate, LH (5) up to the underside of the axle/ROPS mount. Bolt up to the axle casting with the bolts removed in Step 2. Hand-tighten only.



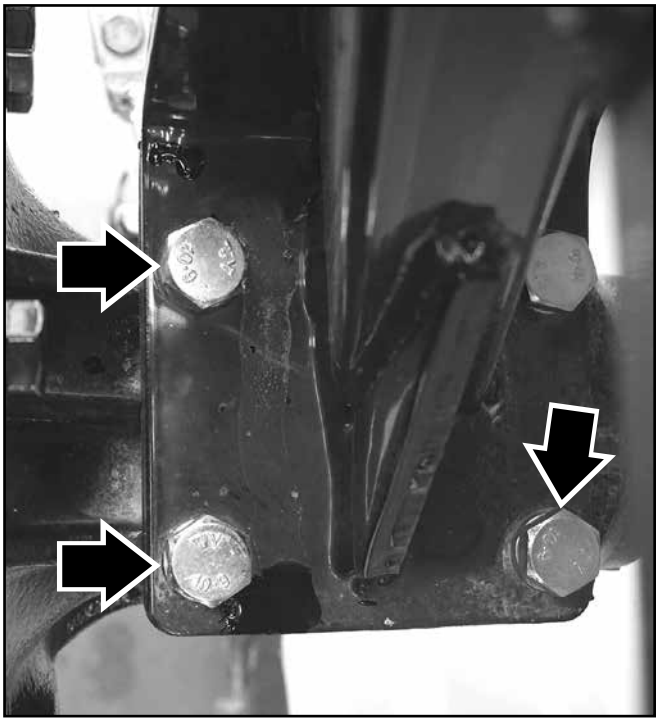
Step 5

Bolt on the front end of the **(3652W151)** Tractor plate, LH (5) to the base of the loader mount. Use three **(Z77187)** M14 x 2 x 70 mm hex head bolts (19) with **(Z77381)** M14 flatwashers (20)
Hand-tighten only.



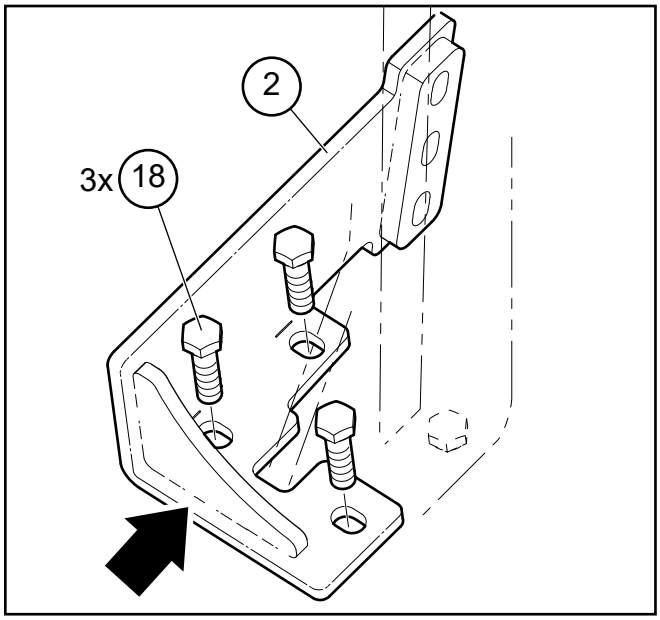
Step 6

On the top of the axle, remove three of the ROPS mounting bolts—two front bolts, and the rear inner bolt. (These bolts are not reused.)



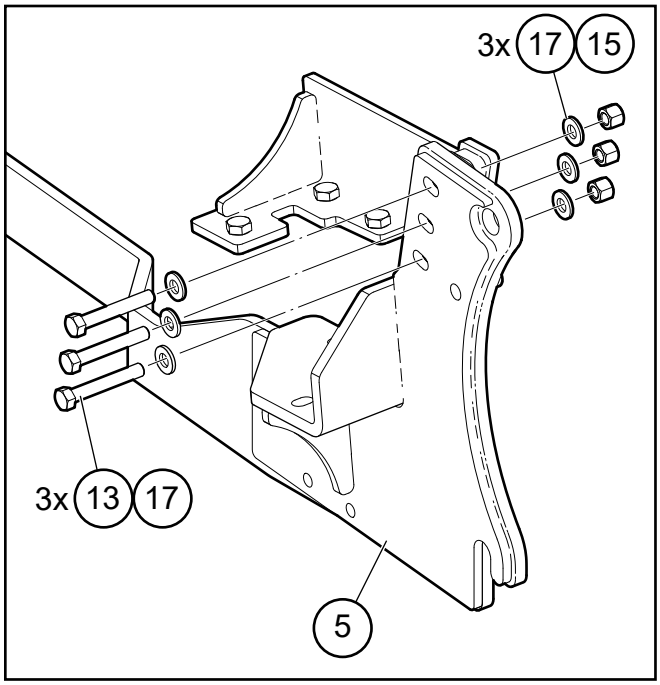
Step 7

From the front side, place **(3651W852)** Top Bolting Weldment (2) on top of the ROPS mount. Use three **(Z77185)** M14 x 2.0 x 50 mm hex head bolts (18).
Hand-tighten only.



Step 8

Bolt (2 and 5) together using three **(Z71532)** 1/2"NC x 3-1/4" hex head bolts (13), **(Z73151)** 1/2" washers (17), and **(Z72251)** 1/2" locknuts (15).
Hand-tighten only.

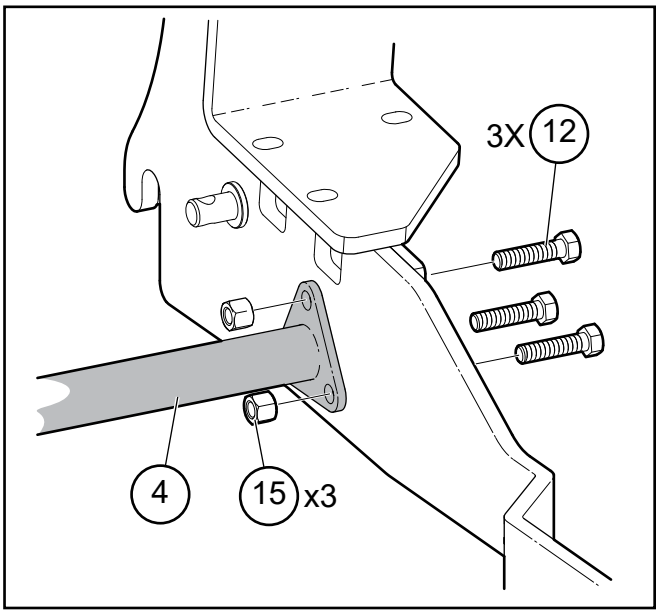


Step 9

Continue on the right-hand side of the tractor repeating Steps 1–8.
Leave all bolts hand-tight for now.

Step 10

Install **(3651W853)** Reinforcement Tube (4) between the LH and RH Tractor Plates using three **(Z71520)** 1/2"NC x 2" hex head bolts (12) and **(Z72251)** 1/2" locknuts (15).
Torque-tighten these bolts to **80 lbf•ft (110 N•m).**

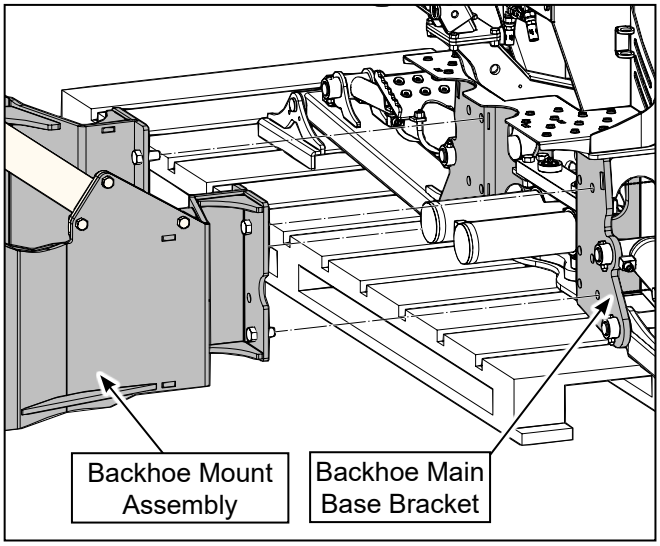


Step 11
Tighten all of the other bolts on the sub frame.

M14 bolts 116 lbf•ft (158 N•m)
1/2" bolts 80 lbf•ft (110 N•m)

Step 12
Reconnect the sway bars to the mounts on the underside of the axle at the back of the tractor.

Step 13
Take the backhoe Subframe attach it to the backhoe on main base bracket. Use **(Z71615)** 5/8"NC x 1-1/2" bolts (14) and **(Z72261)** hex locknuts (16) — 4 for each left- and right-hand side.
Torque-tighten to **160 lbf•ft (215 N•m)**.

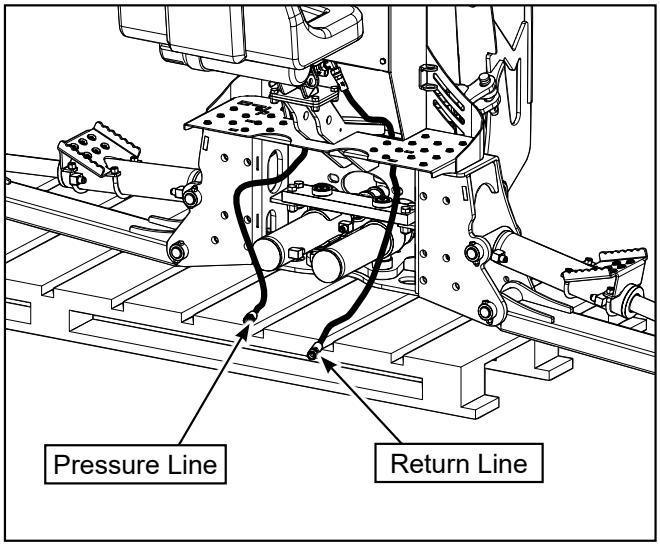


The Subframe should remain on your backhoe and not be removed. Check that the lift arms move freely with the Subframe installed.

Step 14
Align and reverse the tractor up to the bracket. Get close enough to attach the hydraulic hoses to the backhoe.

Step 15
Attach the hydraulic lines from the backhoe to the tractor. See illustration.

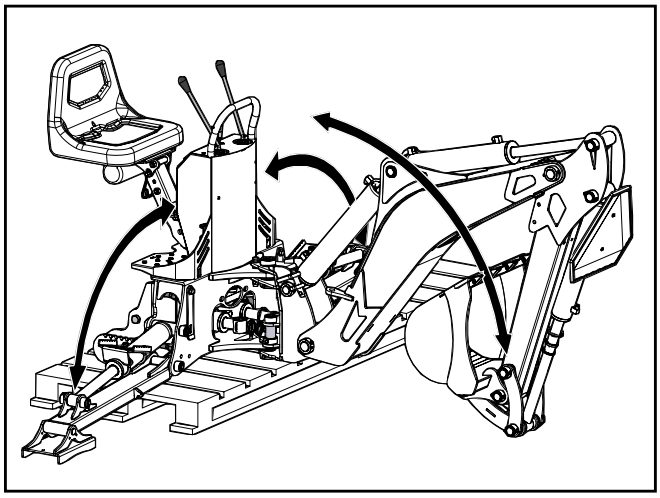
NOTE: The backhoe is equipped with a directional control valve and does not allow reverse flow if pressure and return lines are connected incorrectly.



⚠ WARNING!

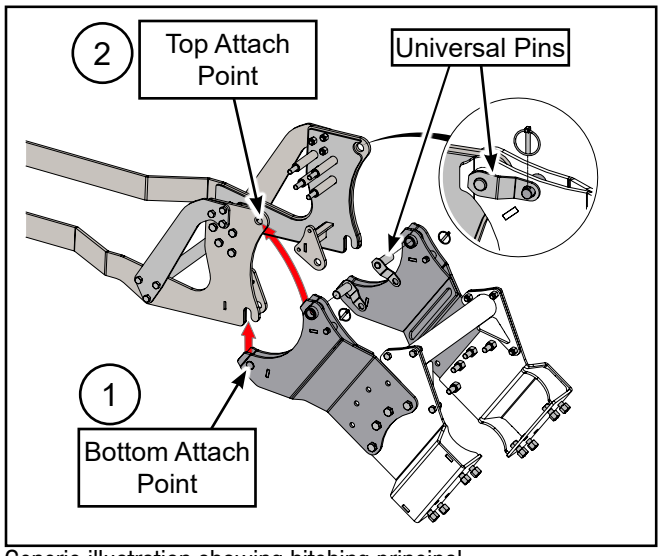
When operating the boom and stabilizers, ensure the area is clear of bystanders and operator is safely positioned.

Step 16
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 17
Carefully use the backhoe hydraulics to raise the bracket assembly into the bottom of the hooks for positive attachment.

Step 18
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.



Generic illustration showing hitching principal.

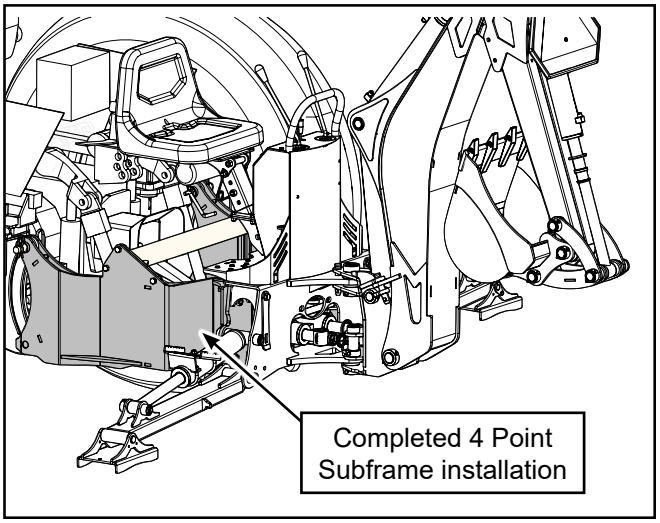
Step 19
Insert the two welded universal pins into the pin holes and secure with lynch pins.

Step 20
Check that all attach points are secure, and make sure all bolts / nuts are tightened and torqued.

Step 21
Test the hydraulics: lift the stabilizer legs and remove the skid. Lower the stabilizers and test all boom functions.

Step 22
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