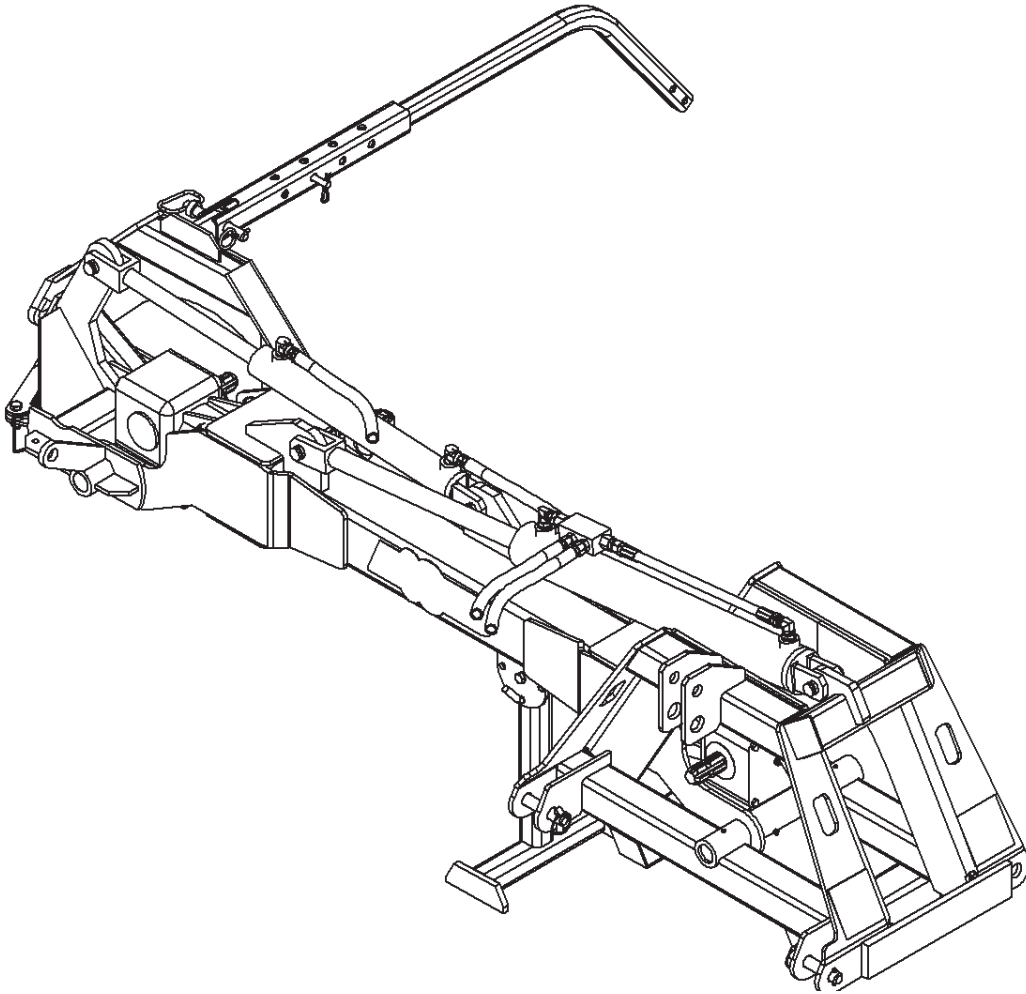




Model 4 - Axis Tool Arm
Owner/Operator Manual



M K Martin Enterprise Inc
3950 Steffler Rd Elmira On. Ca N3B 2Z3

Tel: 519-664-2752
Toll Free: 1-855-664-2752
Fax: 519-664-3695
e-mail: sales@mkmartin.ca
www.mkmartin.ca

Warranty and Limitations of Liability

All equipment is sold subject to mutual agreement that it is warranted at M K Martin Inc. (Hereafter called the company). to be free of any defects of material and workmanship. The company shall not be liable for special, indirect consequential damage of any kind under this contract or otherwise. The company's liability shall be limited exclusively to replacement or repair without charge at it's factory or elsewhere, at it's discretion, any materials or defects, which become apparent within one year form the date of purchase. In no event shall M K Martin Enterprise Inc. be liable special, direct, or incidental or consequential damages of any kind. The purchaser by acceptance of the equipment will assume all liability for ant damage which may result from use or misuse by the employees or others. The purchaser shall maintain and service the equipment as recommended in the Operator's Manual.

This warranty does not cover **Rental/Commercial or Rental** use of the equipment. This equipment is rated as agricultural.

For **Rental/Commercial or Industrial** use, Warranty is for defective material and workmanship for a period of 90 days from the date of purchase.

Warranty is null and void unless the Warranty Registration from has beens completed and on file at

M K Martin Enterprise Inc
3950 Steffler Rd
Elmira On Ca N3B 2Z3

For your Record

Purchase Date _____

Model # _____

Serial # _____

Please contact your retailer

Manufactured by
M K Martin Enterprise Inc
3950 Steffler Rd
Elmira On Ca N3B 2Z3
Tel: (519)-664-2752
(855)-664-2752
Fax: (519)-664-3695
E-mail: sales@mkmartin.ca

www.mkmartin.ca

Table of Contents

Warranty Registration

Please Cut and Return to M K Martin Enterprise Inc

Fold And Tape here *Do not tape all edges or use staples*

Fold Here

Postage
Stamp

M K Martin Enterprise Inc
3950 Steffler Rd
Elmira ON CA N3B 2Z3

**M K Martin Enterprise Inc
3950 Steffler Rd
Elmira On Ca N3B 2Z3**

Purchaser's warranty protection equipment is valid only when this completed form or a copy of this form is on file at M K Martin Enterprise Inc. By filling out this form the purchaser has acknowledged delivery of equipment and owner's / operator's manual and has accepted the condition of the equipment.

Date of delivery to purchaser -----

Type of Equipment -----

Model # ----- **Serial #** -----

Retailer's Signature Indicates

- *Equipment was properly assembled as directed by manufacturer*
- *Equipment was tested for functionality and operates properly*
- *Purchaser was instructed in safe and proper operating procedures*
- *Warranty was explained to purchaser*
- *Purchaser was given the operators manual*

Retailer

Signature -----

Company -----

Address -----

Purchaser's signature indicates

- *Acceptance of equipment fully assembled*
- *Received operator's manual*
- *Clearly understands conditions of warranty*
- *Received instructions of safe and proper operation of equipment*

Purchaser

Signature -----

Company -----

Mailing address -----

City ----- **Prov/State** ----- **Postal Code/Zip** -----

Available phone number -----

Warranty is valid only when it has been received by manufacturer at address

Safety

Take Note! This safety symbol is found throughout this manual to call your attention to instructions involving yourself and others working around the machine.

- **Failure to follow these instructions can result in injury or death!**



This symbol means

-- **Attention!**

-- **Become Alert!**

-- **Your Safety is involved!**

Signal words are used in this manual.

Caution: Indicate a potential hazardous situation that may result in injury.

Warning: Indicates a hazard situation that could result in serious injury or death.

Danger: Indicates a hazardous situation that needs to be avoided. It is you the operator that needs to be aware of these dangers.

If you have any questions not answered in this manual please contact you dealer or

M K Martin Enterprise Inc
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Elmira On Ca N3B 2Z3

Tel: 519-664-2752
1-855-664-2752
Fax: 519-664-3695
e-mail sales@mkmartin.ca

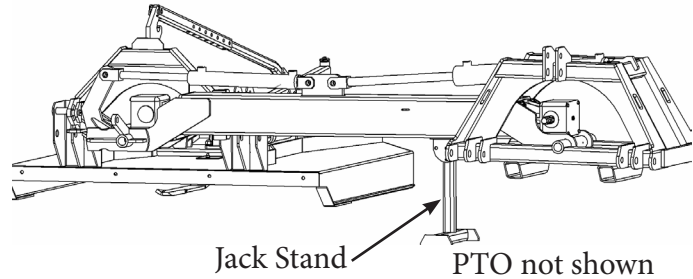
www.mkmartin.ca

Operation Attaching

The Axis Tool Arm was designed to be used in conjunction with a rotary cutter or similar device. The main function is to cut grass in the roadside ditches or on other inclines. For the Axis Tool Arm to work effectively a tractor with a CAT#2 or CAT3 three point hitch must be used. Using a CAT#1 tractor can result in unsafe conditions, as most tractors are not heavy enough to handle the added weight on the rear and side.

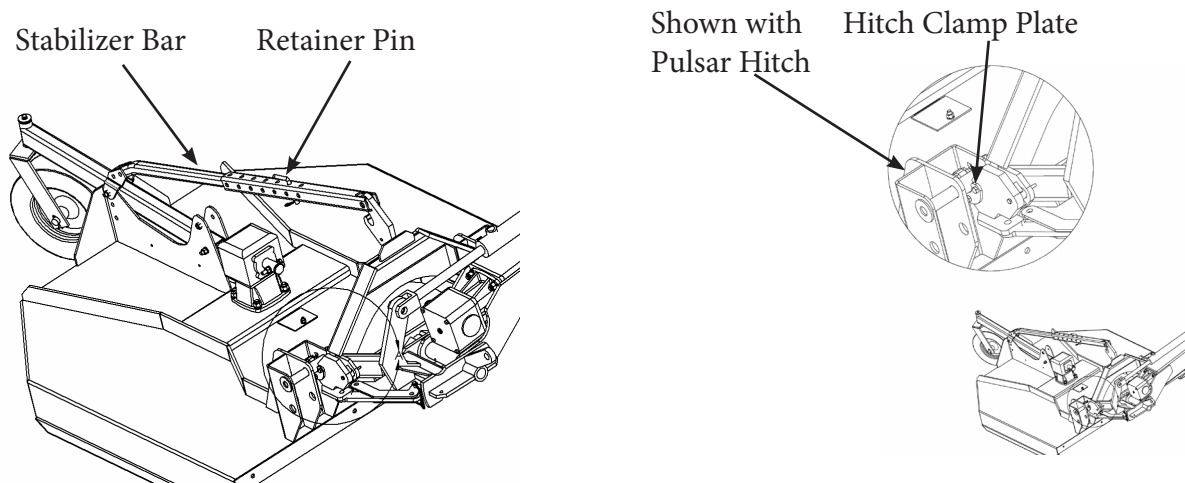
Attaching

1. Attach Axis Tool Arm to the tractor with CAT# 2 or CAT#3 three point hitch arms.
2. Install stabilizer bars to prevent side drift of the Axis Tool Arm when in operation.
3. Attach hydraulic hoses to the tractor remotes.
(2 required)
4. Attach PTO (*cut to length if required*)
See following Page
5. Raise three point hitch until drive line is horizontal, collapse jack stand and secure into position with pin.
6. Cycle the cylinders to ensure the correct hose configuration.



Cutter Attachment

1. Remove Cutter "A" Frame
2. If required, remove Hitch Clamps from Axis Tool Arm (6) bolts and place on Cutter Hitch Pins
3. Attach Cutter on Axis Tool Arm. Ensure Hitch Clamp bolts are secure.
4. Install Stabilizer Bar from Axis Tool Arm "A" Frame to Cutter Gauge Wheel bracket (*as described elsewhere in the manual.*)
5. Insert Retainer Pin on Stabilizer Arm to retain cutter horizontally.
6. Attach PTO from Cutter to Axis Tool Arm (*cut to length as required*) to fit equipment *See following Page*



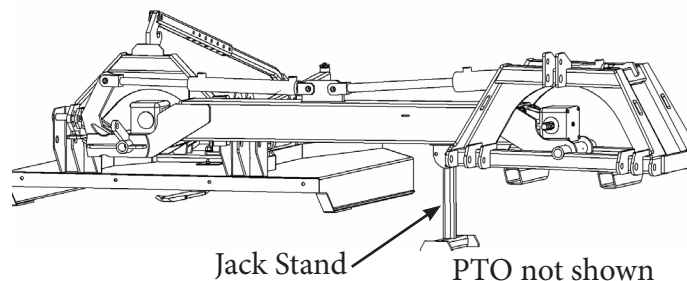
Stabilizer Bar has a Slotted hole on inside member that is be used to allow the cutter gauge wheel to float along the ground.

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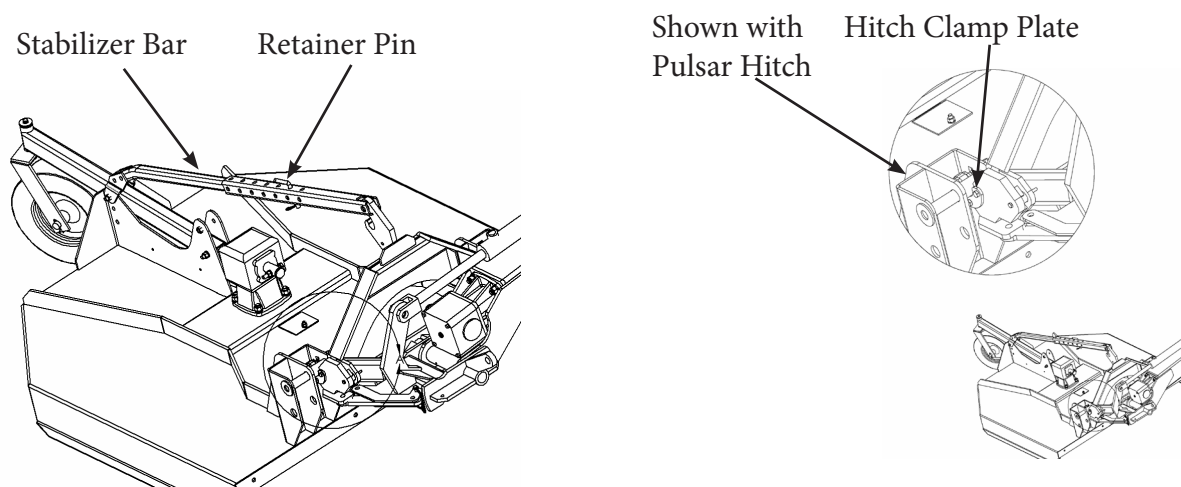
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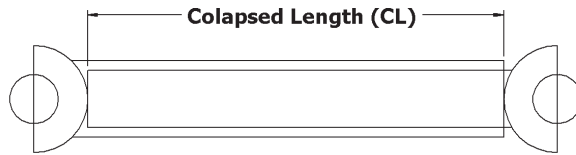
Stabilizer Bar has a Slotted hole on inside member that is be used to allow the cutter gauge wheel to float along the ground.

PTO Drive-line Dimension

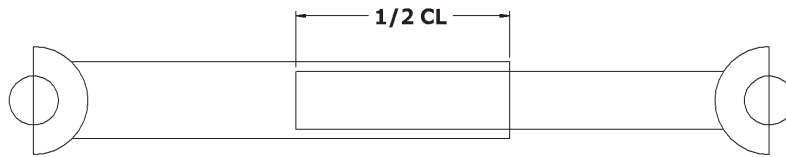
The PTO Drive-line as supplied with the machine will need to be checked for the proper length before being put into service.

To accommodate the various hitch and tractor configurations the supplied shaft may be too long, or in some cases too short. To determine shaft length, find the collapsed length, raise or lower the equipment until the PTO out on the tractor is horizontal with the input shaft on the machine. Measure lock-pin groove to lock-pin groove or bolt hole on the equipment. If this is on trailed equipment then turn tractor as sharp as possible. *See fig 1 next page*)

Measure collapsed PTO shaft from lock-pin to lock-pin or bolt hole and compare it with the measurement on the tractor. The difference of these measurements needs to be cut from Both Halves of the PTO shaft plus 1/2".

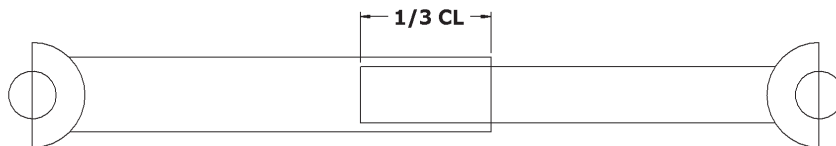


Working Length overlap is 1/2 of above collapsed length



**Min 6 in
1500 mm**

Minimum Overlap in Transport Position 1/3 of collapsed length



Following these guidelines will reduce the chances of damage to the equipment.

Use a sharp hacksaw to cut the PTO tube

Use a fine file to remove any sharp edges and burrs from sawing

Clean off all dirt and filings from tube, carefully test for smooth fit.

Apply a light coat of grease to the outside of the small tube

Reinstall the shields

Install on equipment and recheck

These procedures need to be done before first putting into operation and when attaching to a different tractor

Operating Procedures

- The Axis Tool Arm is equipped with a PO check valve in the main cylinder lines to prevent the arm from drifting when in operation.
- Pendular action of the cutter hitch allows the cutter to follow the contour of the ground. Position the cutter control valve to float position.
- If the attachment encounters a rigid object, the breakaway device will disengage. When this happens STOP the PTO and **stop the tractor and remove the keys!** Manually return the cutter to its correct position and replace the Shearbolt (1/4"x3") Grade #2. [Fig # 1]



Do not operate or have the cutter running in a raised position!



Do not exceed PTO Speed of 540 RPM!

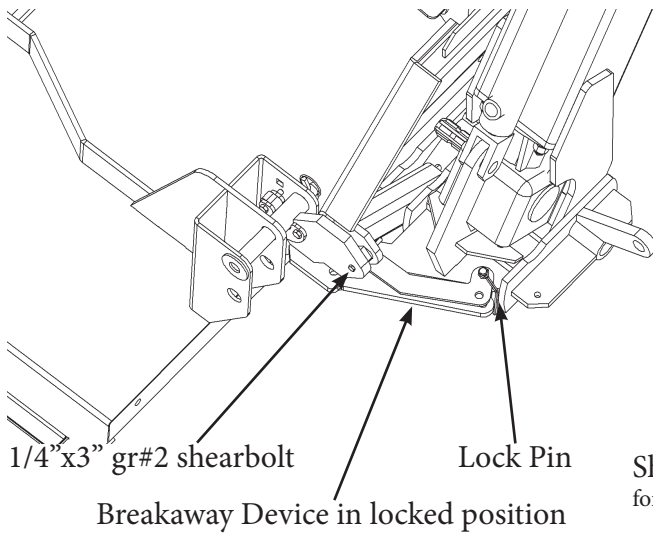


Fig #1

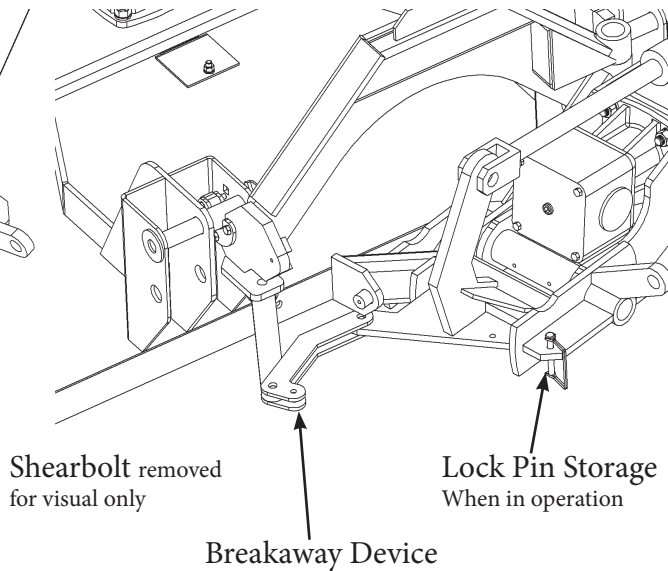
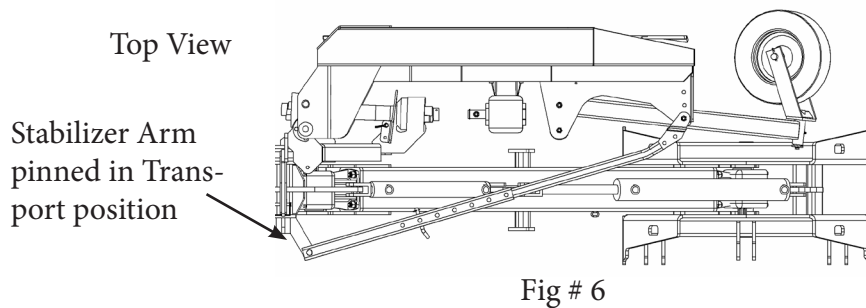
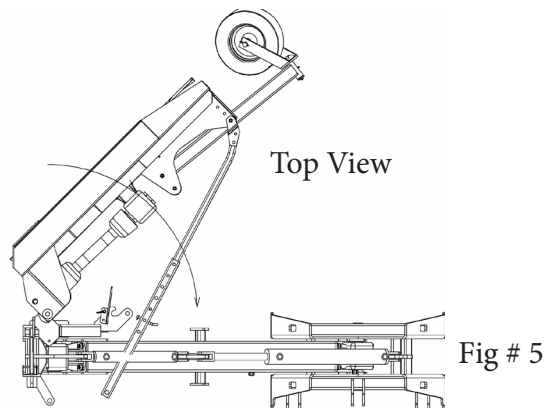
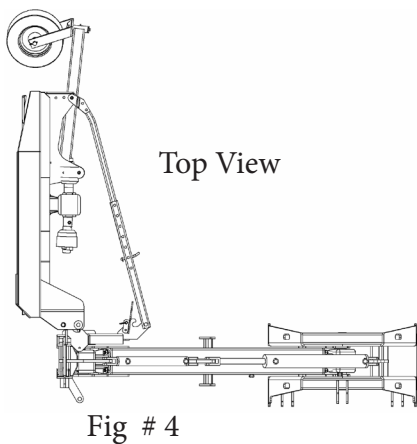
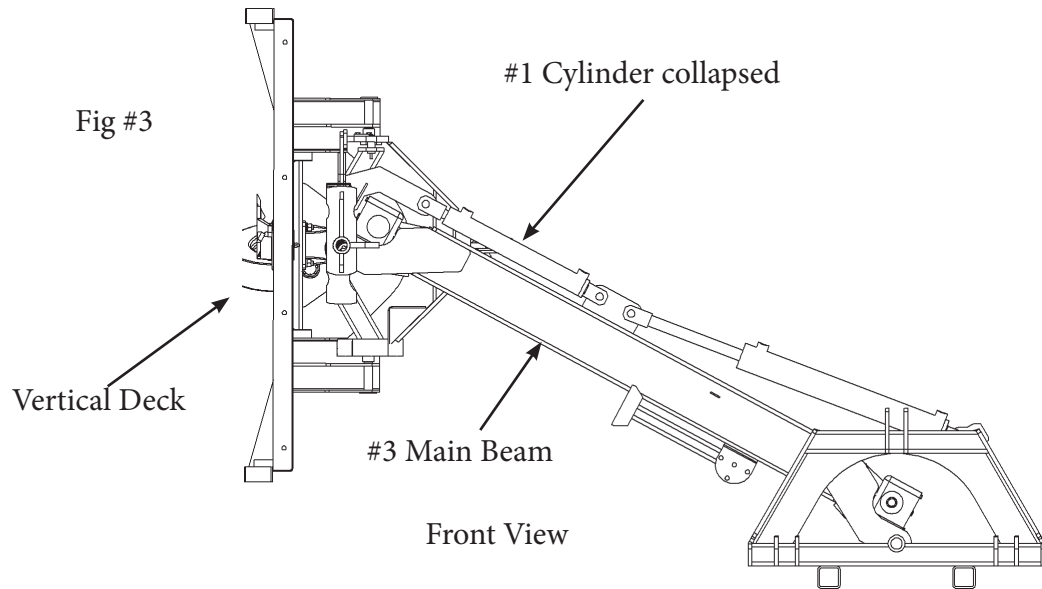


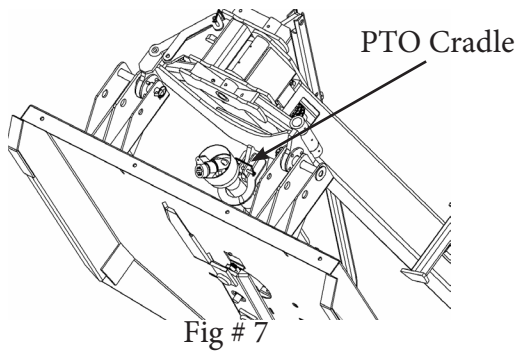
Fig #2

Operation Transport

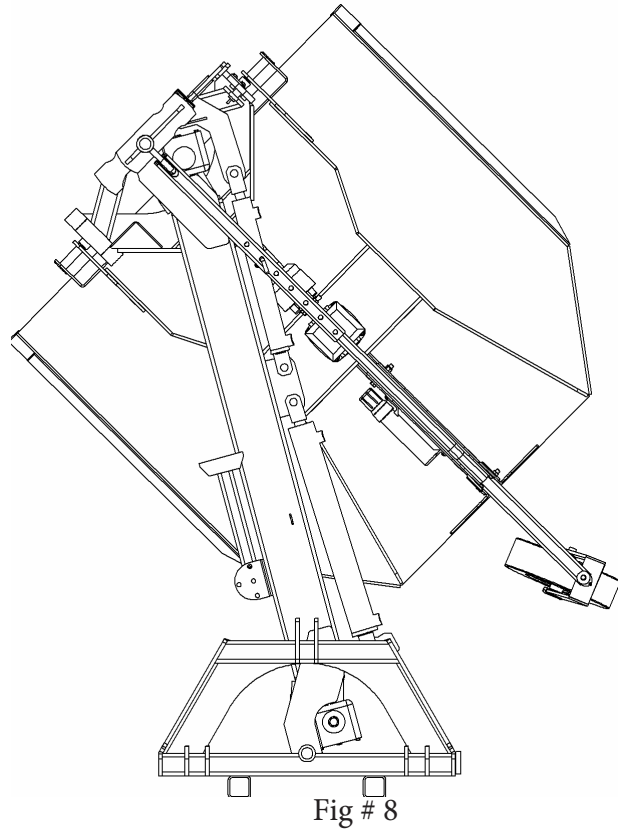
1. Rotate the Axis Too Arm "A" Frame Cylinder to the collapsed position. [Fig #3]
2. Install Breakaway Lock pin to secure the deck in transport. [Fig # 1]
3. Raise Main Arm until Deck is in a vertical position. [Fig # 3]
4. Detach Cutter PTO Drive from Axis Tool Arm Gearbox
5. Remove top link pin form Stabilizer Bar and **carefully** swing the cutter toward the tractor [Fig 4,5,6]
6. Attach the Stabilizer Bar to opposite side of "A" Frame hitch [Fig # 6]
7. Insert PTO into Cradle Bracket [Fig #7]
8. Raise the Main Arm until cutter is positioned at rear of tractor. [Fig #8]



PTO Storage for Transport



Transport Position



Counterweight arm Extended

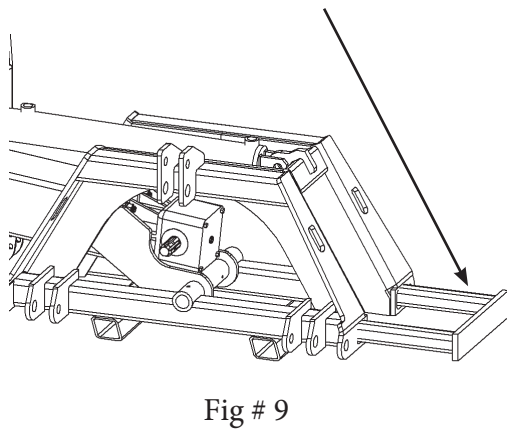
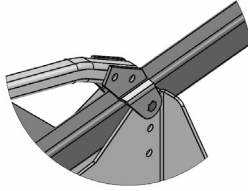


Fig # 9
If counterweight needs to be added for extra stability, the arm can be extended and tractor weights can be added.

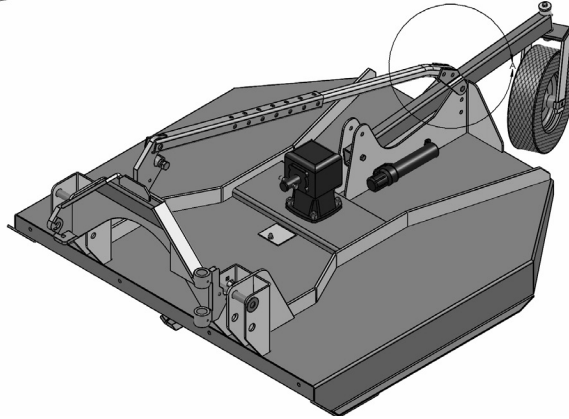
Attaching Stabilizer Arm to Cutter

Various attachment brackets are supplied with the Axis Tool bar to attach the Stabilizer Bar to the cutter.

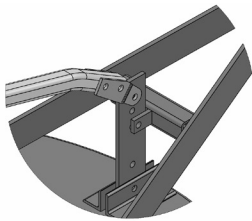
Cutter with a single Wheel Beam



Shown with Wheel Beam adjustment bolt sharing stabilizer-bar bracket

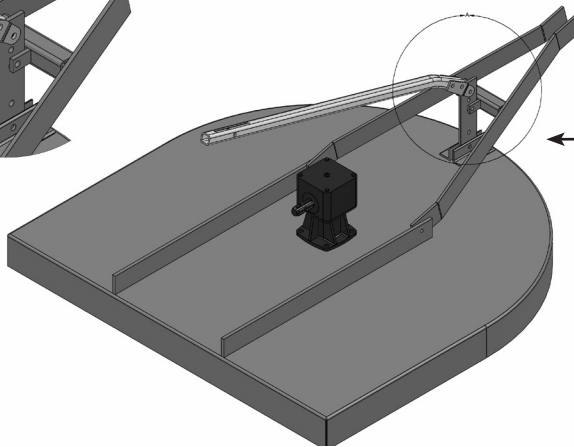


Cutter with "A" Frame Wheel Bracket



Cutter with 90° Adjuster Plate

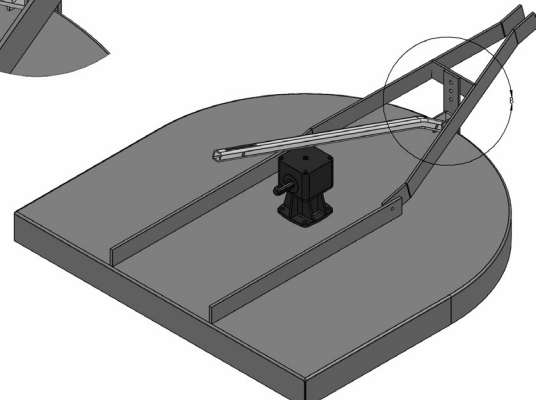
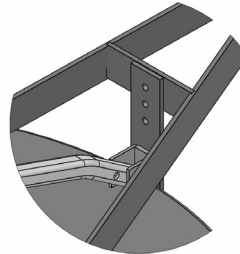
Customer may need to drill bolt hole to attach stabilizer bar.
As required.



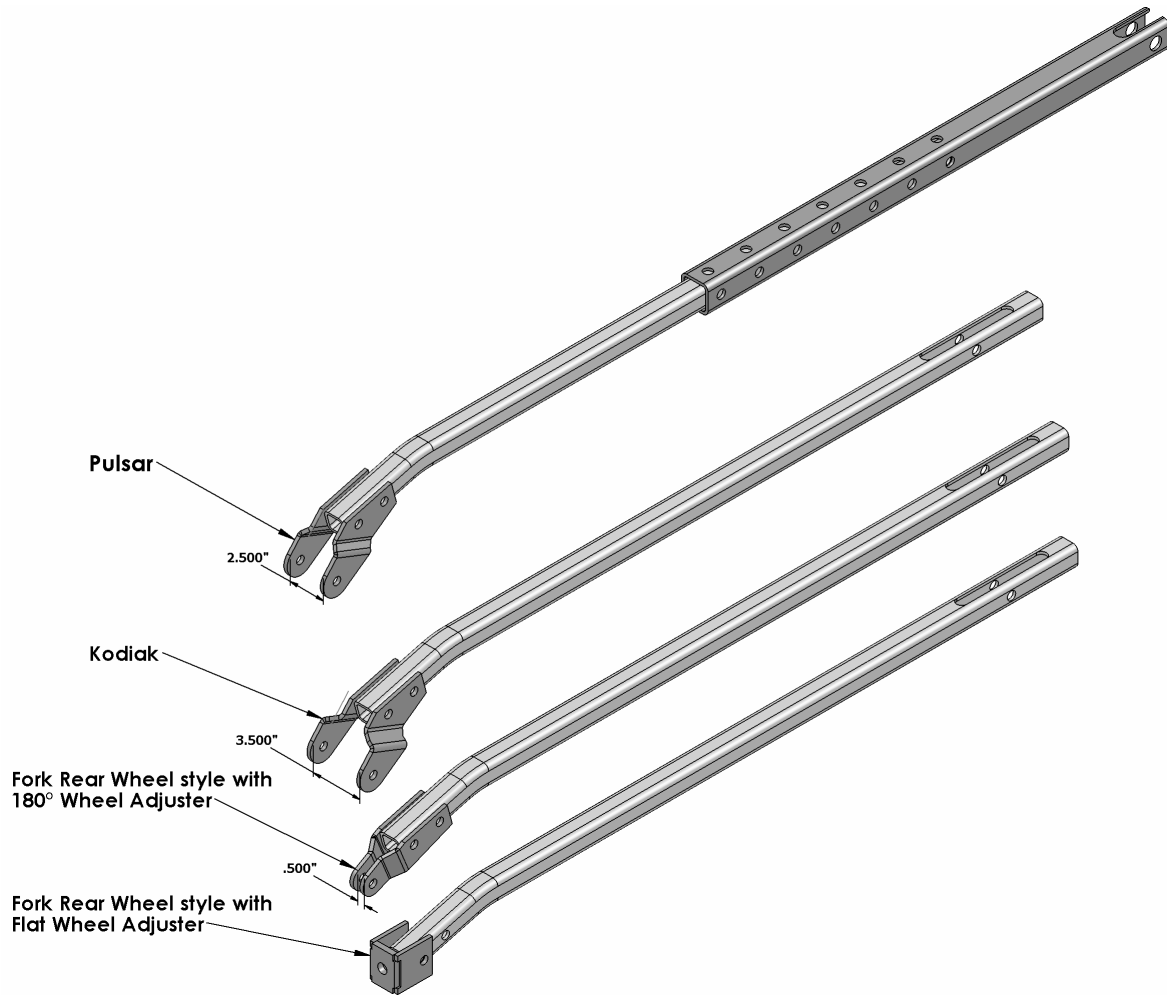
Cutter with flat 0° Adjuster Plate

Customer may need to drill bolt hole to attach stabilizer bar.

When attaching at bottom of plate as shown, check to ensure that the gearbox has clearance.

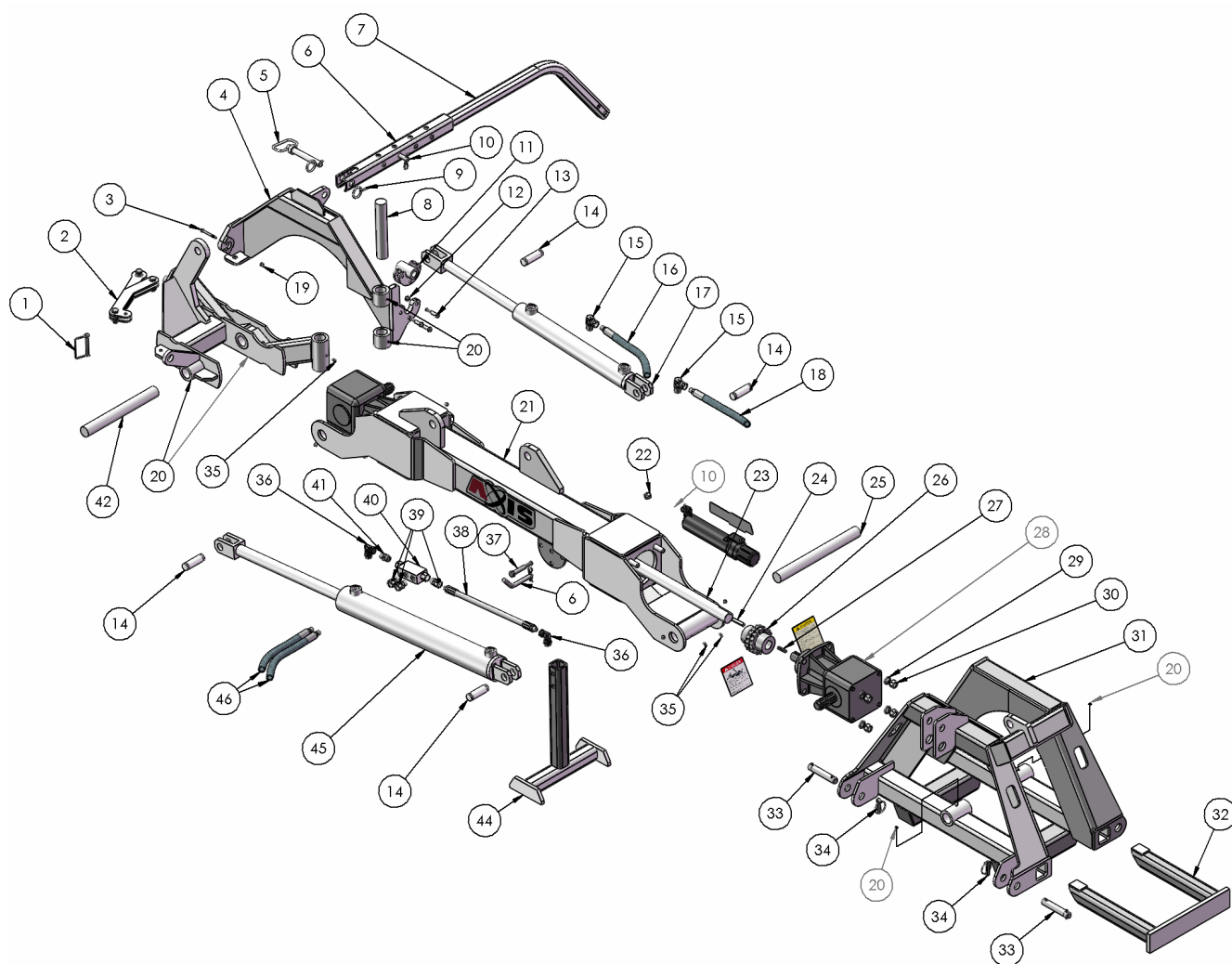


Stabilizer Arm Brackets supplied with Tool bar
Stabilizer Bar as shown for illustration only



Customer may need to modify or adapt bracket to fit

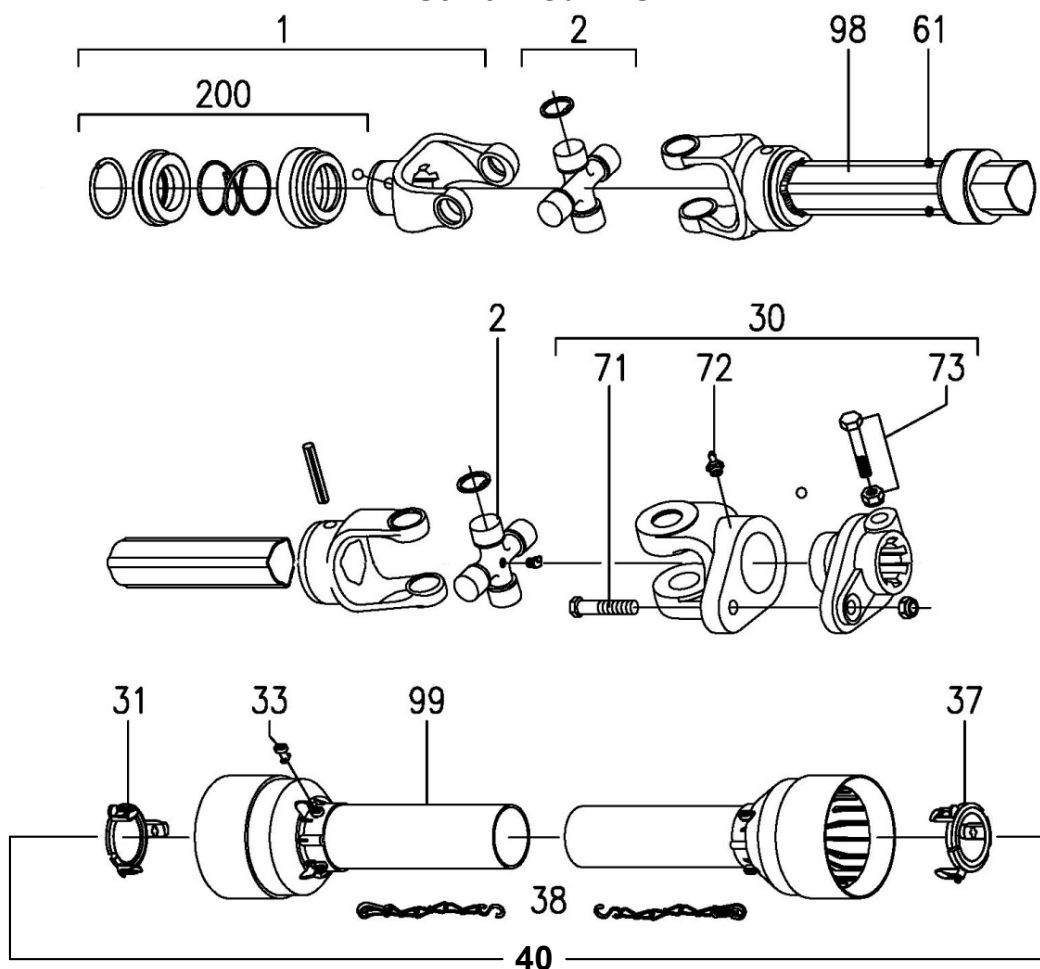
Parts



Item #	Part #	Description	Qty
1	795-560240	3/8 PTO Pin	1
2	795-400250	Breakaway Assembly	1
3	OL	Bolt 1/4-20 x 2 1/2 Gr#2	1
4	795-400260	Attachment "A" Frame	1
5	795-560310	Upper Hitch Pin	1
6	795-560130	1/2" Bent Pin	2
7	795-400280	Stabilizer Bar Assembly	1
8	795-560270	"A" Frame Pivot	1
9	OL	3/16 Lynch Pin	1
10	OL	1/8" Hairpin	2
11	795-400300	Hitch Pin Clevis	2
12	OL	Nylon Locknut 3/8-16	6
13	OL	Bolt 3/8-16 x 2	6
14	OL	Cylinder Pin	4
15	690-0606	90° M-ORB9/16-18/F-NPSM3/8-18	2
16	795-560212	1/4" Hydraulic Hose x 84//M-NPT3/8 ea end	1

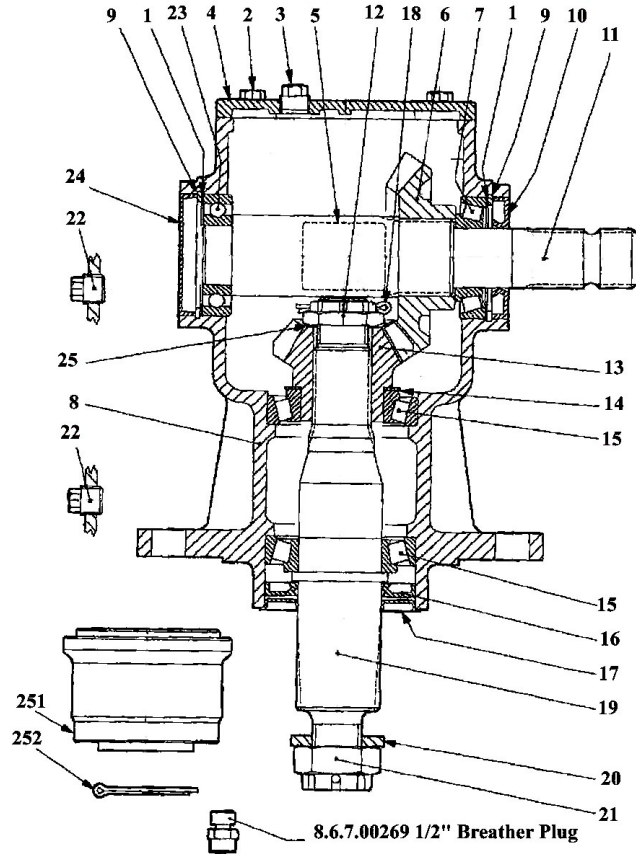
17			
17	795-560220	2 x 16 Welded Cylinder	1
18	795-560211	1/4" Hydraulic Hose x 84 // M-NPT3/8-18 ea end	1
19	OL	Nylon Locknut 1/4"	1
20	OL	Setscrew 3/8-16 x 1/2	6
21	30885	Main Beam	1
22	OL	Nylon Locknut 1/2"	1
23	795-400190	Drive Shaft	1
24	OL	3/8 Key-stock	2
25	795-560160	Main Pivot Shaft	1
26	795-560180	Chain Coupler	2
27	OL	1/4" Key-stock	2
28	795-560170	Gearbox	2
29	OL	Lockwasher 5/8"	8
30	OL	Nut 5/8-11	8
31	795-400100	Main Frame	1
32	795-400110	Weight Bar	1
33	795-400140	Hitch Lift Pin	2
34	OL	7/16 Lynch Pin	2
35	OL	1/4-28 Grease Fitting	5
36	6901-0806	90°M-ORB3/4/F-NPSM3/8-18	2
37	OL	Bolt 1/2-13x3 1/2	1
38	795-560213	1/4" Hydraulic Hose x 16 1/2 //M - NPT3/8-18 ea end	1
39	6900-0806	M-ORB3/4-16/F - MPSM3/8	3
40	795-560200	PO Check	1
41	6401-0806	M-ORB3/4-16/M-NPT3/8-18	1
42	795-400230	Pivot Shaft	1
43	795-560150	Input PTO	1
44	795-560120	Jack Stand	1
45	795-560195	3 x 24 Welded Cylinder	1
46	795-560210	1/4" Hydraulic Hose x 48" // M-NPT3/8-18 ea end	2

Comer T50 PTO



Item #	Description	Part#	Req
1	Complete Collar Yoke	141.025.363.1	1
2	Cross Journal Assy	180.015.130	2
30	Complete Shear Yoke	143.250.016.1	1
31	Guard Retaining Collar for Outer Tube	8180.015.288	1
33	Special Plastic Bolt	8180.014.240	6
37	Guard Retaining Collar of Inner Tube	8180.015.289	11
38	Safety Chain	180.016.025	2
40	Complete Guard with Instruction Manual	142.250.372.7521	1
61	Special Grease Nipple	8180.012.418	3
71	Bolt & Nut M10x55 cl. 8.8	165.000.511	1
72	Grease Fitting	190.000.020	1
73	Bolt & Nut M12x1.25x70 cl. 8.8	165.000.525	2
200	Collar Kit for 1 3/8" Yoke	165.000.628	1
	Danger Label for Outer Tube	190.000.216	1
	Danger Label for Outer Guard Tube	190.000.215	1
	PTO Instruction Manual	190.000.371	1

LF-205J Gearbox



Item #	Part #	Description	Qty	Item #	Part #	Description	Qty
1	0.135.50000.00	Crown Gear	1	15	8.5.2.00030	Snap Ring	1
2	0.205.0301.00	Casting	1	16	8.5.3.00955	Snap Ring	1
3	0.135.2003.00	Input Shaft	1	17	8.5.2.00648	Snap Ring	1
4	0.135.6013.00	Pinion	1	18	8.6.6.00201	Plug	2
5	0.135.7105.00	Spacer	1	19	8.7.1.00748	Dust Lip	1
6	8.7.3.01259	Oil Seal	1	20	8.7.0.00744	Oil Cap	1
7	1.135.7100.00	Washer	1	21	0.205.1300.00	Cover	1
8	8.0.1.00000	Ball Bearing	1	22	0.244.7500.00	Shim Kit	1
9	8.0.1.00870	Ball Bearing	1	23	8.5.1.00680	Snap Ring	1
10	8.0.1.00871	Ball Bearing	2	24	0.267.7500.00	Shim Kit	1
11	8.2.2.01144	Castle Nut	1	25	0.124.7135.00	Name Plate	1
12	8.3.2.00109	Bolt Washer	1	26	0.248.7500.00	Shim Kit	1
13	8.4.1.0093	Parallel Key	1	27	8.5.2.00131	Snap Ring	1
14	8.1.1.0054	Bolts	4	28	0.113.7500.00	Shim Kit	1

Bolt Torque

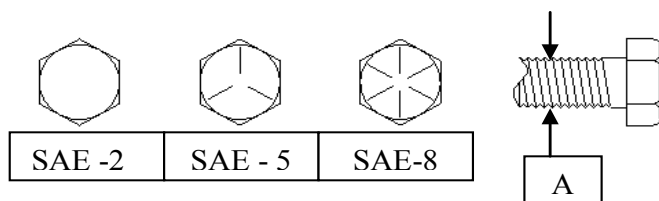
As used on this equipment

Bolt torque table shown below gives torque values for the various bolts used. This chart is for non-lubricated threads. Replace with the same strength bolt.

Torque Specifications. Torque values are identified by their head markings

Diameter	SAE 2		SAE 5		SAE 8	
	Lb-ft	N.m	Lb-ft	N.m	Lb-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)
5/8	95	(128)	160	(215)	220	(305)
3/4	165	(225)	290	(390)	400	(540)
1	225	(345)	630	(850)	970	(1320)

Allen head cap screws are similar to SAE 8 quality.



These torques are for a reference only. Not all these sizes and grades are necessarily used in this machine. Bolts that are used as a pivot or hinge have to be used with a locknut, therefore only tighten enough to secure the bolt and still allowing the part to rotate freely.

Maintenance

Ensure all shields are in place

Support equipment with timber blocks or stands, before doing any maintenance on deck of cutter or any other part of machine

Check Gearbox oil level every 50 hrs

1 US quart (.85 liter) SAE 85W90 Gear oil

Service Intervals

The period recommended is based on normal operating condition.

Severe or unusual conditions may require more frequent lubrication or oil change.

8 Hours or Daily

Lubricate PTO Drive Line (4 Locations)

Lubricate all picot bushings on Axis Tool Arm

18-20 Hours

Lubricate PTO Drive Line (3 Locations)

40 Hours or Weekly

Check Gearbox oil level. Add as required

Annually

Wash machine

Storage

Store in a dry place on sturdy blocks or on dry concrete

