

Keep With Operator's Manual

GRAPPLE FORK

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INTRODUCTION

Grapple fork kit can be installed using tools ordinarily available. Shut off tractor engine and engage tractor brakes during installation.

NOTE: *Rotation stops are required to be used with grapple fork when mounted on following models:*

1. 32LA standard loader 716603006 (2-6598) or when equipped with 716653006 (2-6599) or 716653076 (2-6936) SSL compatible quick attach device.
2. 52LA standard loader 716603026 (2-6632) when equipped with 716653036 (2-6683) or 716653086 (2-6955) SSL compatible quick attach device.
3. 52LA MSL loader.
4. 46LB loader 716966026 (2-7167) and 5211 loader (2-6894) when equipped with 716653106 (2-7124) SSL compatible quick attach device.

The rotational stops are required to prevent grapple (when fully opened) from hitting tractor and loader. If you are installing grapple on a 32LA, 33LA, 52LA, 46LB, LX146 or 5211 loader that is not one of the four combinations listed above, then rotational stops may be removed for additional grapple opening.

When grapple is mounted on a 32LA or 33LA loader, hose kit 716662006 (2-6633) will supply power from a third valve slice at rear remote.

When grapple is mounted on a 46LB, LX146, 52LA or 5211 loader, hose kit 716662026 (2-6701) is used to power grapple from rear remotes.

Electric third function kit 716805006 (2-6688) can be used to divert oil usually used to power bucket tilt cylinders to power grapple on 32LA, 33LA and 52LA loaders. This option is also preferred if you want to power grapple using joy stick.

THE FOLLOWING INTENDED USE STATEMENTS ARE SUGGESTED TO HELP PREVENT ACCIDENTS

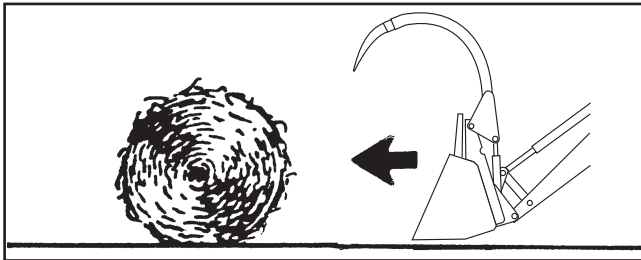
1. Using a front end loader without special attachments for handling large heavy objects, such as large round or rectangular bales, logs, fertilizer bags and liquid containers is **NOT RECOMMENDED**.
2. Handling large heavy objects can be extremely dangerous due to:
 - Danger of tractor tipping over.
 - Danger of upending tractor.
 - Danger of object falling or sliding down loader arms onto operator.
3. If you must perform above work, protect yourself by:
 - Using proper attachment.
 - Never lift loader higher than necessary to clear ground when moving.
 - Ballast tractor rear to compensate for load.
 - Move slowly and carefully avoiding rough terrain.
4. By properly balancing tractor and exercising caution, loader with grapple fork attachment can be used to handle large round or rectangular bales and loose bulky material like hay and silage. Do not attempt to use loader to handle logs, bagged material or liquid containers, since such use is **NOT RECOMMENDED**.
5. Do not use grapple fork and loader bucket cylinders to apply downward force great enough to lift tractor tires off ground. This operation could damage grapple fork or make tractor unstable.

OPERATING GRAPPLE FORK

Operation of your tractor and loader with grapple fork option requires some same basic considerations as operation with a bucket, plus new requirements: you now have to operate a grapple fork while already operating your tractor and loader; and you must also take into account additional space requirements (added length and height) needed because of attached grapple fork.

- GRASPING ROUND BALES

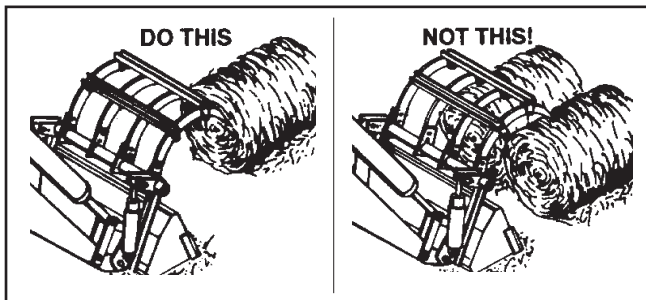
Approach bale with grapple fork open and bucket level. Use loader float position if bale is on ground.



Ease valve control lever for grapple fork forward to close grapple fork around bale.

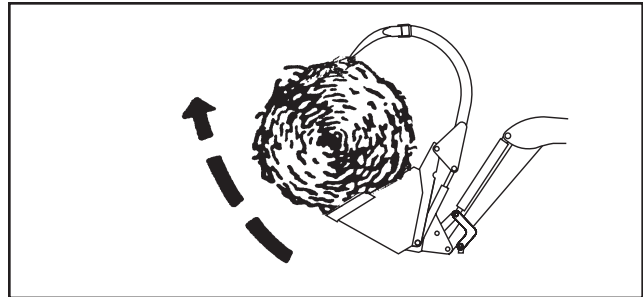


NOTE: While large round bales are best grasped as shown above, they may also be grasped from either side if necessary. **DO NOT ATTEMPT TO LIFT MORE THAN ONE LARGE ROUND BALE AT A TIME** as this can cause overloading of loader or tractor or cause unstable conditions.

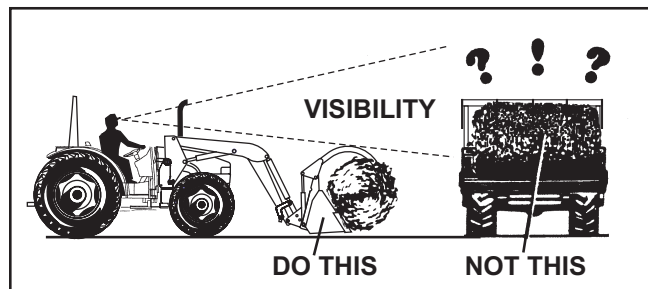


- LIFTING AND CARRYING LOAD

Ease both loader control levers back to lift and roll bucket back.



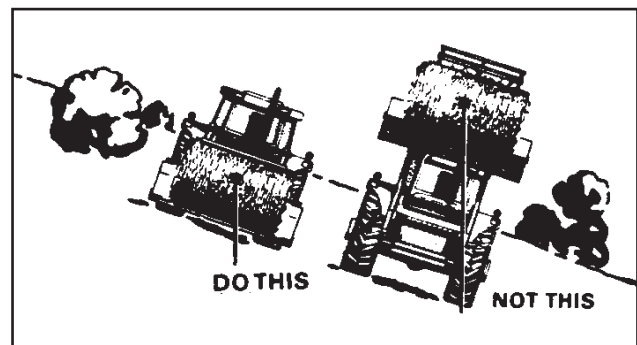
Position bucket low for maximum stability and visibility whether bucket is loaded or empty.



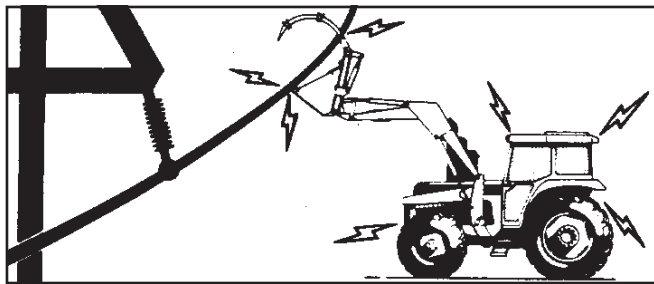
Use extreme care when operating loader on a slope. Carry load as low as possible. This keeps center of gravity for bale, tractor and loader low and will provide maximum tractor stability.



CAUTION: Operating a loader on a hillside is dangerous. Extreme care is recommended to avoid overturns.



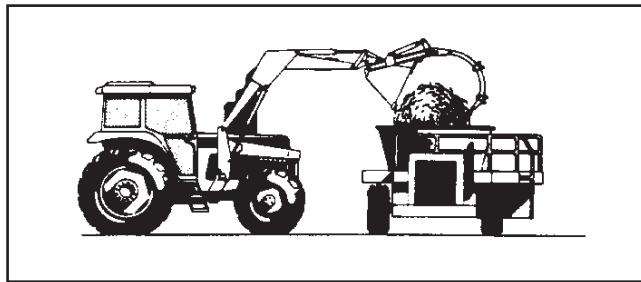
Even on level ground, transport bucket and load as low as possible to avoid tipping in case a wheel drops in a rut and to avoid power lines.



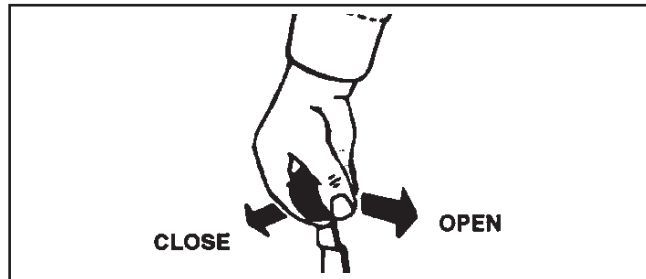
WARNING: Keep bucket, grapple fork and loader boom clear of overhead lines. Allowing loader boom or any attachments to contact overhead power lines may electrify entire tractor and electrocute (kill) operator.

• **LOADING INTO TUB GRINDER**

Lift bucket high enough to clear tub grinder sides. Move tractor toward tub grinder to position load near center. Extend bucket cylinders to position bucket in dump attitude.



Gradually open grapple fork tines, allowing material to drop into tub grinder. For round bales it may be necessary to gradually set bale into tub grinder to avoid shock loading tub grinder due to bale weight and to avoid sudden load on grinder mechanism.

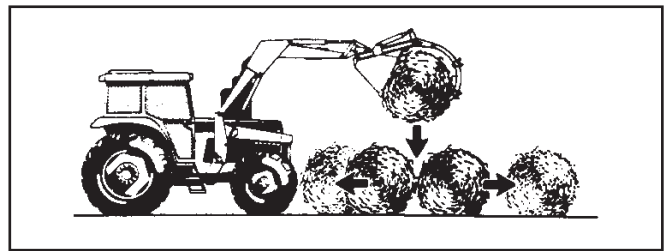


Roll bucket back, close grapple fork and back tractor away from tub grinder, then lower loader boom after dumping.

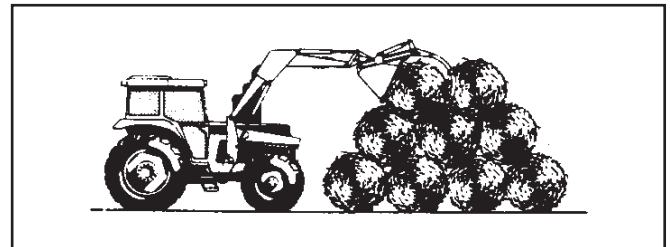
• **STACKING BALES**



WARNING: Because of size and weight of large bales, extreme care must be taken in handling them. Be aware of forces acting on stacked bales due to gravity and keep workers far from zones of potential hazard from shifting or falling bales. **DO NOT ALLOW BYSTANDERS!**



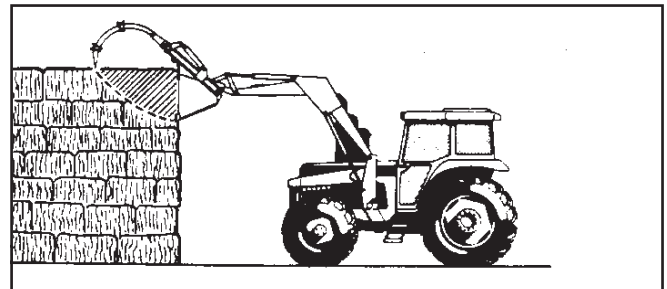
Use loader and grapple fork to gently position bale on stack, then release bale while removing bucket and fork.



Slowly back tractor away from stack.

• **LOADING FROM A STACK, BUNKER SILO OR PIT SILO**

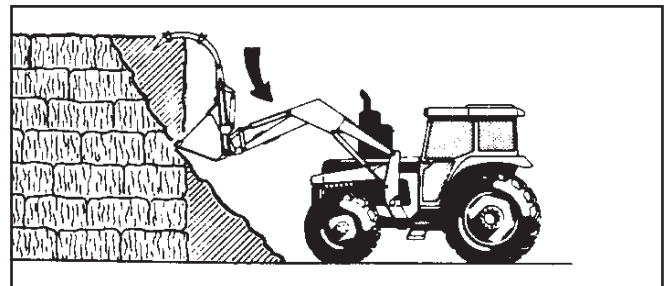
Choose a forward gear that provides sufficient ground speed for loading.



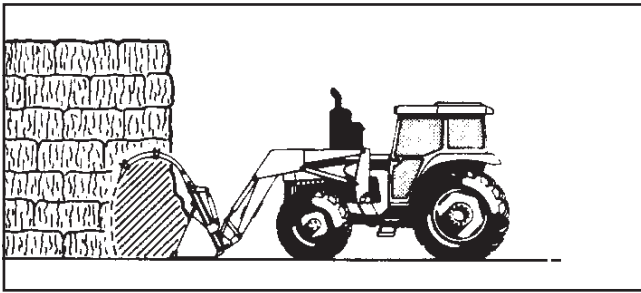
Touch pile as near as possible to top with bucket positioned in dump attitude and grapple fork open. Close grapple fork while maneuvering bucket to grasp loose material.



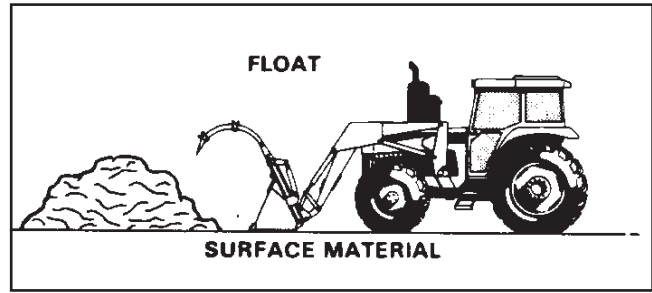
CAUTION: Loader lift and break-away capacity diminish as loader height is increased. Care must be taken not to grasp more material than your loader can safely support.



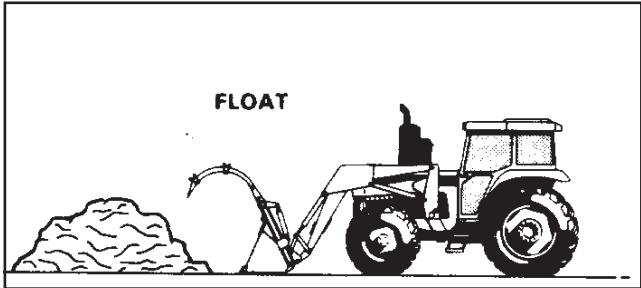
An alternative method is to use your loader and grapple fork to knock material down from top of pile so it can be loaded from ground.



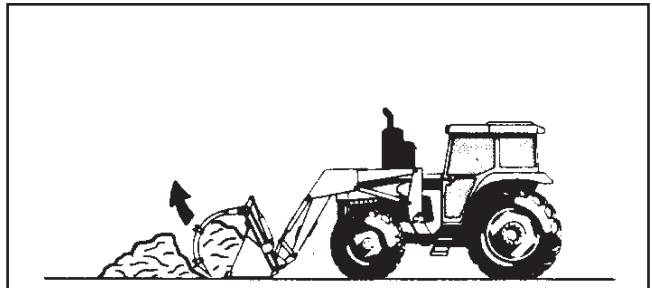
Exercise caution when undercutting a high pile. Avalanching material can be dangerous.



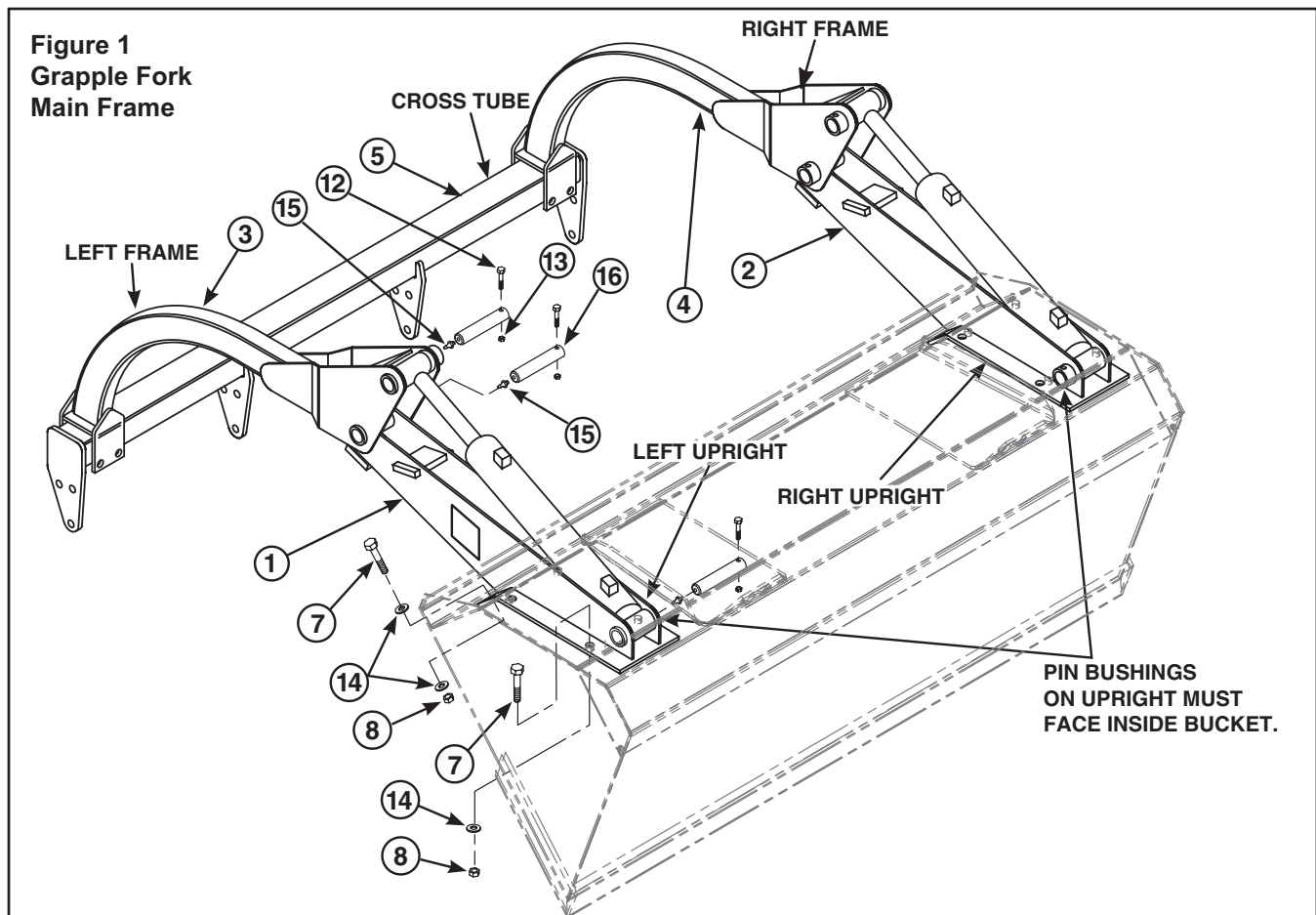
Keeping a level bucket and using loader float will reduce surface gouging and mixing surface material with stockpile material.



When loading material from ground, keep a level bucket and use lift control float position. If hydraulic down pressure is exerted on a bucket, it will wear faster than normal. Keep bucket level when approaching pile.



When a sufficient amount of material has accumulated in front of bucket, close grapple fork to grasp material and curl bucket.



GRAPPLE FORK ASSEMBLY (Figures 1- 6)

NOTE: *It is not necessary to detach bucket from loader to install grapple fork.*

1. Remove top of pallet. Remove cap screw securing grapple tines to grapple uprights. Remove cap screws securing pins to grapple uprights, remove pins and cylinders.
2. With bucket attached to tractor rotate bucket until bucket back is parallel to ground. Place grapple uprights on bucket back. Holes-in bushings used to fasten pins should face toward center of bucket. Center uprights on bucket back center to center dimension of uprights should be 59.88" (See figures 4, 5 & 6, page 9).

NOTE: Step 3 applies only to buckets not equipped with holes for mounting grapple. If bucket already has mounting holes proceed to step 4.

3. Using grapple uprights (1 & 2) as a template mark and drill 12 - 13/16 (.81") diameter holes in back of bucket. Also drill 2 - 13/32 (.41) diameter holes. See figures 4, 5 & 6, on page 9 for hole placement.

NOTE: *Hole location critical for proper grapple alignment.*

4. Install grapple uprights to back of bucket using 12 - 3/4 x 2 cap screws (7) 16-3/4 flat washers (14) and 12 - 3/4 lock nuts (8) as shown in figure 2. Do not fully tighten hardware.
5. Attach grapple frame assemblies (3 & 4) to uprights (1 & 2) using 1-1/4 x 6.44 pins (16) and 3/8-16 x 2-1/4" cap screws (12) and 3/8-16 lock nuts (13). Again bushing securing pin should face towards center of bucket.
6. Attach grapple cylinders (17) to grapple uprights (1 & 2) and grapple frames (3 & 4) using 1-1/4 x 6.44 pins (16) and 3/8-16 x 2-1/4 cap screws (12) and 3/8-16 lock nuts (13). Ports on cylinders face rear or open side of grapple uprights. Remove plastic plugs from grapple cylinder ports.

7. Install grease fittings (15) into all pivot pins (16) as shown in figure 2.
8. Install 3/4 x 2 stop bolt (7) and jam nut (10) on grapple uprights (1 & 2).
9. Plumb grapple fork according to plumbing instructions and figure 3, page 8.

Start tractor and lift loader slightly. Rotate bucket until bucket bottom is level with ground. Install cross tube (5) to grapple frames using 3/4-10 x 5-1/2 cap screws (9). Cross tube installed with flat side of teeth brackets facing inside of bucket as shown in illustration 2A.

10. Tighten and torque all hardware. Cap screws securing cross tube (5) to grapple fork frames (3 & 4) are not torqued to maximum torque specification of 262 ft. lbs., but are tightened until clevis starts to deform.

NOTE: *Torque all other hardware to torques specified in general torque specifications table.*

11. Attach overhead hoist to cross tube and remove slack. Attach teeth to cross tube as shown in illustration. Teeth are on inside surface of tooth brackets.
12. Remove overhead hoist. Adjust grapple stop bolt to prevent teeth from projecting below bucket cutting edge. (See figure 2B for various positions).
13. **IMPORTANT:** *To prevent possible damage to equipment or injury to operator, rotation stops must remain or be installed if grapple fork is being installed on loaders specified below parts list on page 6 of 12.*
14. Attach hoses to third function kit. Start tractor and cycle grapple to purge air from system. Check hydraulic fluid level and replenish if necessary.

NOTE: *Torque all other hardware to torques specified in general torque specifications table.*

PARTS LIST - GRAPPLE FORK ASSEMBLY (Figures 1, 2 & 3)

Item	SMC No.	NH No.	Case IH No.	Description	Qty.
1	48861-1	SML488611	SML488611	UPRIGHT, Grapple Fork, Left, with Decal	1
2	48861-2	SML488612	SML488612	UPRIGHT, Grapple Fork, Right, with Decal	1
3	52841-1	SML528411	SML528411	FRAME, Grapple Fork, Left	1
4	52841-2	SML528412	SML528412	FRAME, Grapple Fork, Right	1
5	47510	SML47510	SML47510	CROSS TUBE, Grapple Fork	1
6	47872	86583615	86583615	TINE	4
7	41836-8	88557	413-1232	SCREW,Cap, 3/4-10 x 2	22
8	41840-8	9626598	232-42412	NUT, Lock, 3/4-10	24
9	41838-65	86507002	413-1288	SCREW,Cap, 3/4-10 x 5-1/2	4
10	48948-8	84972	425-1412	NUT, Jam, 3/4-10	2
11	41838-23	88044	413-624	SCREW, Cap, 3/8-16 x 1-1/2	2
12	41838-19	88546	413-636	SCREW, Cap, 3/8-16 x 2-1/4	6
13	41840-3	9637692	231-4246	NUT, Lock, 3/8-16	12
14	42502-33	81543	495-21081	WASHER, Flat, 3/4	16
15	6075-2	PL	PL	FITTING, Grease (2 contained on pins in packaging)	6
16	46584	86583636	86583636	PIN, 1-1/4 x 6.44 (2 contained in packaging)	6
17	47520	86583616	86583616	CYLINDER ASSEMBLY	2
18	41233-2	SML412332	SML412332	HOSE, 3/8 x 60 (See figure 3 - page 8)	1
19	41233-10	SML4123310	SML4123310	HOSE, 3/8 x 42 (See figure 3 - page 8)	1
20	47968-1	SML479681	SML479681	HOSE, 3/8 x 31 (See figure 3 - page 8)	1
21	47968-2	SML479682	SML479682	HOSE, 3/8 x 44 (See figure 3 - page 8)	1
22	47969-1	SML479691	SML479691	HOSE, 3/8 x 58 (See figure 3 - page 8)	2
23	45292-2	86582403	86582403	COUPLING, Male (See figure 3 - page 8)	1
24	36665-1	76355	218-593	FITTING, Union Tee (See figure 3 - page 8)	2
25	13722	86583623	86583623	HOSE CLAMP (See figure 3 - page 8)	2
26	34853-35	SML3485335	SML3485335	NYLON SLEEVE (See figure 3 - page 8)	1
27	4838-16	86582406	86582406	DUST CAP (See figure 3 - page 8)	1
28	4838-15	86582405	86582405	DUST CAP (See figure 3 - page 8)	1
29	45291-2	86582402	86582402	COUPLING, Female (See figure 3 - page 8)	1
30	8137-1	86582400	86582400	STRAP, Adjustable, 3/8 x 15 (See figure 3 - page 8)	4
31	48857	86583638	86583638	DECAL, Warning	2
32	49090	SML49090	SML49090	ROTATION STOP	4
33	41838-9	88011	413-620	SCREW, Cap, 3/8-16 x 1-1/4	4
34	49152	SML49152	SML49152	DECAL, Caution	2

NOTE: *Rotation stops are required to be used with grapple fork when mounted on the following models:*

1. 32LA standard loader 716603006 (2-6598) when equipped with 716653006 (2-6599) or 716653076 (2-6936) SSL compatible quick attach device.
2. 52LA standard loader 716603026 (2-6632) when equipped with 716653036 (2-6683) or 716653086 (2-6955) SSL compatible quick attach device.
3. 52LA MSL loader.
4. 46LB loader 716966026 (2-7167) and 5211 loader (2-6894) when equipped with 716653106 (2-7124) SSL compatible quick attach device.

Rotational stops are required to prevent grapple (when fully opened) from hitting tractor and loader. If you are installing grapple on a 32LA, 33LA, 52LA, 46LB, LX146 or 5211 loader that is not one of the four combinations listed above, then rotational stops may be removed for additional grapple opening.

Figure 2
Grapple Fork Assembly

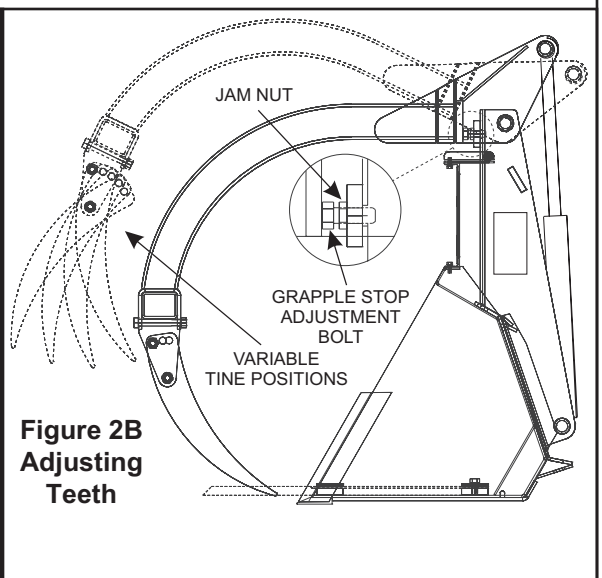
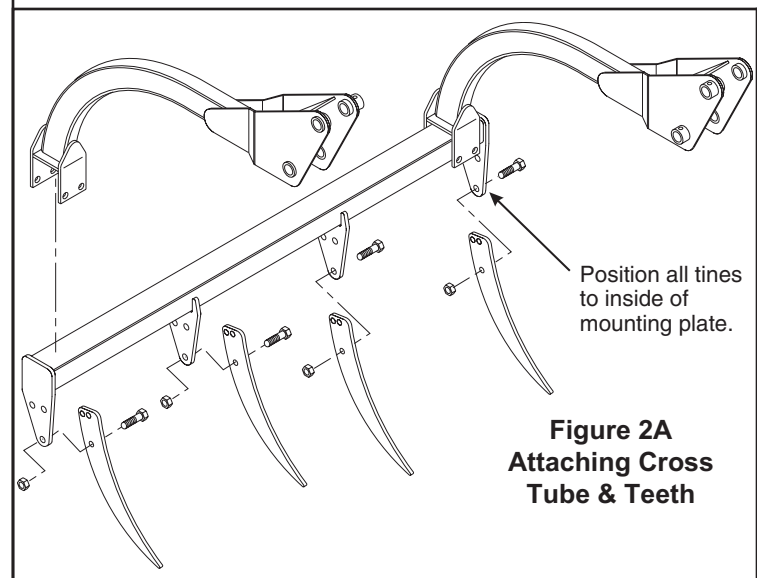
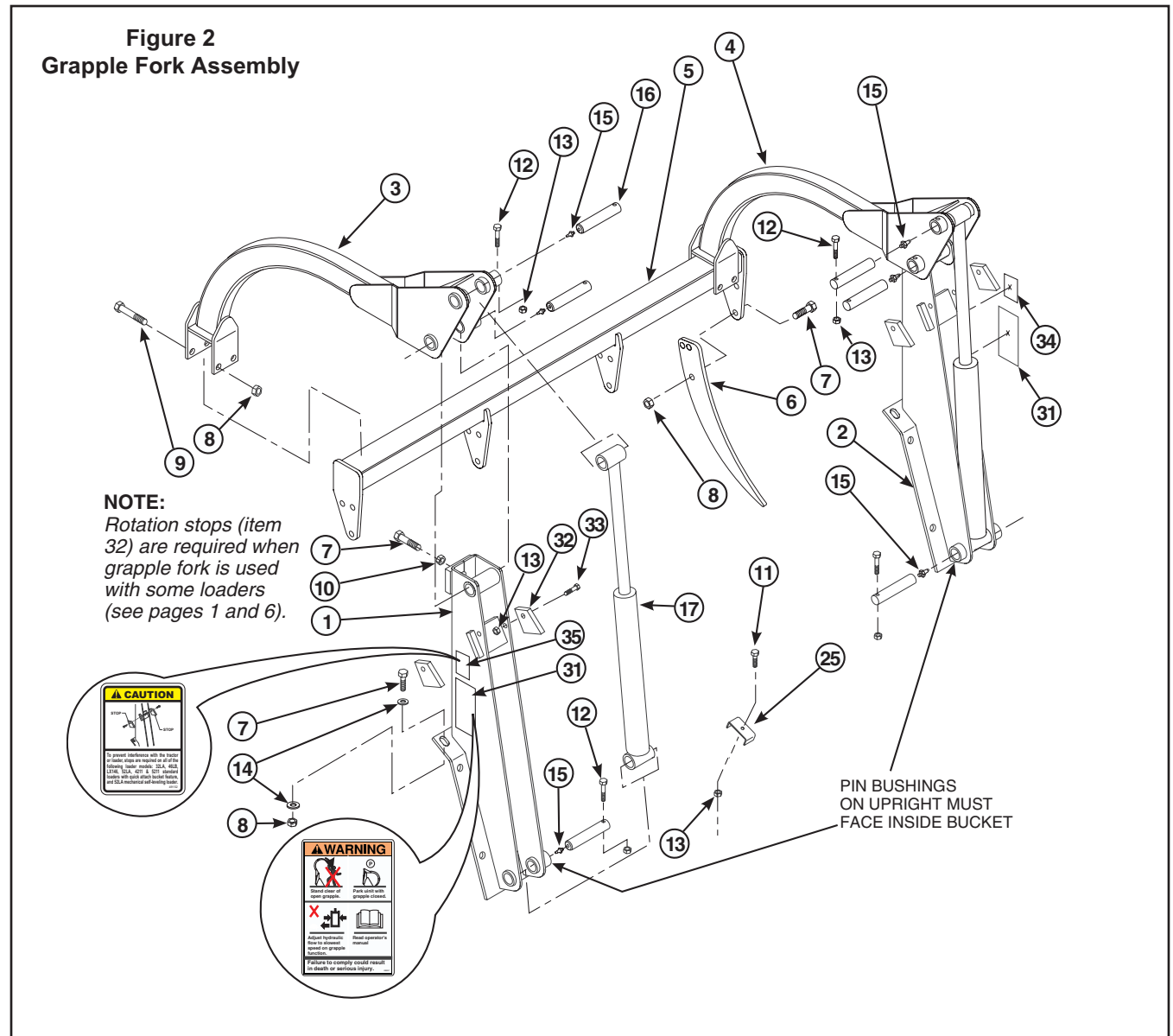
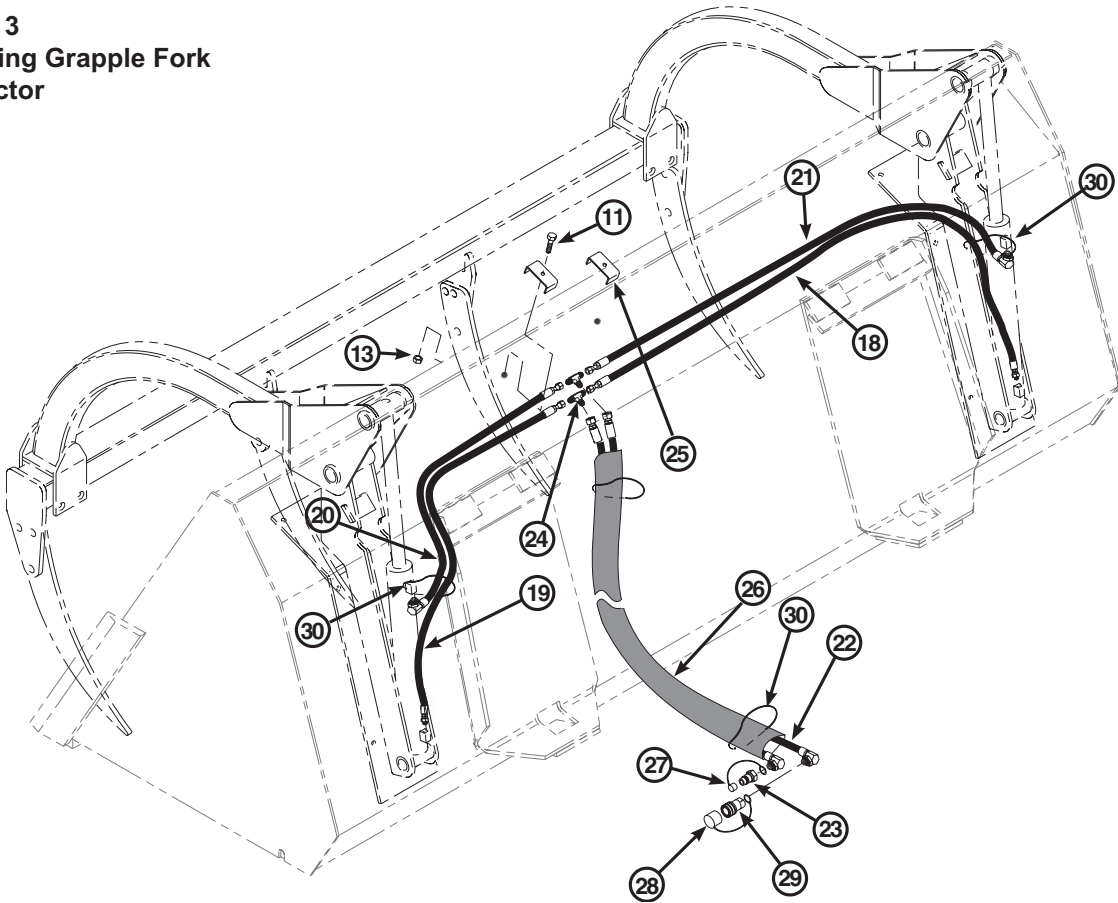


Figure 3
Plumbing Grapple Fork
To Tractor



PLUMBING GRAPPLE FORK TO TRACTOR
(Figure 3)

1. Attach 90° end of 3/8 x 31" hose (20) to left grapple cylinder rod end.
2. Attach 90° end of 3/8 x 44" hose (21) to right grapple cylinder rod end.
3. Connect union tee fitting (24) between 3/8 x 31 (20) hose and 3/8 x 44" hose (21).
4. Attach SAE - o-ring fitting end of 3/8 x 60" hose (18) to right grapple cylinder base end.
5. Attach SAE - o-ring fitting end of 3/8 x 42" hose (19) to left grapple cylinder base end.
6. Attach union tee fitting (24) between 3/8 x 60" hose (18) and 3/8 x 42" hose (19).
7. Attach hoses to bucket back using two hose clamps (25), 3/8-16 x 1-1/2 cap screws (11) and 3/8-16 lock nuts (13).
8. Slide 56" hose sleeve (26) over 3/8 x 58" hoses (22) and attach to union tees (24). Attach dust cap (28) and female coupler (29) to hose feeding rod end of

cylinders. Attach dust cap (27) and male coupler (23) to hoses feeding base end of cylinders. Make sure all hydraulic fittings have been tightened.

12. Create a small incision through nylon sleeve (26) about 1" from each end of nylon sleeve (26). Slide adjustable straps (30) through incision and tighten onto hoses (22). Secure hoses to each other at 90° fitting using adjustable straps (30).
13. Operate loader to extend and retract cylinders to purge all air from system. Adjust flow control for third function to reduce flow to insure safe operation of grapple fork.



WARNING: *To avoid serious injury:*

- Do not allow anyone within 10 feet of loader and grapple fork during operation or anytime grapple fork is in open position.
- ALWAYS keep grapple fork closed except when loading or unloading bucket.
- Before operating grapple fork, adjust hydraulic flow speed control on valve body to slower speed setting. Refer to tractor operators manual for instructions.

Figure 4
72" Bucket

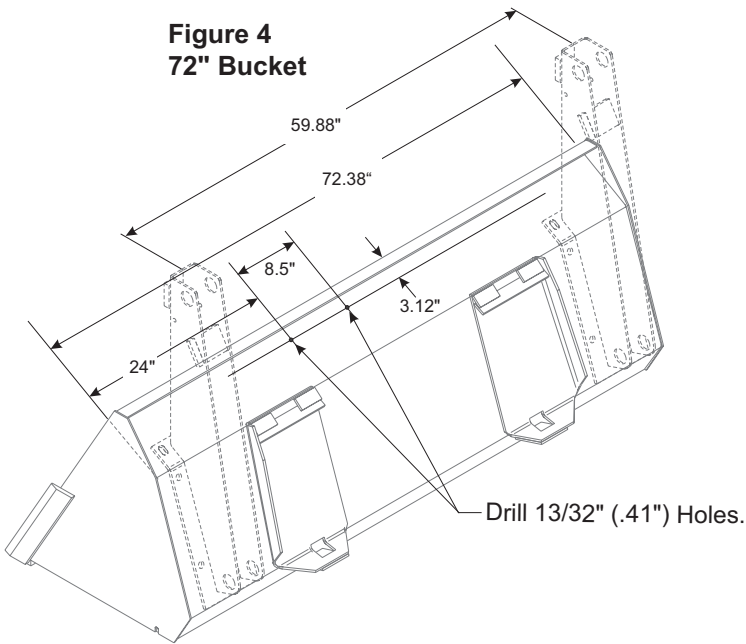


Figure 5
84" Bucket

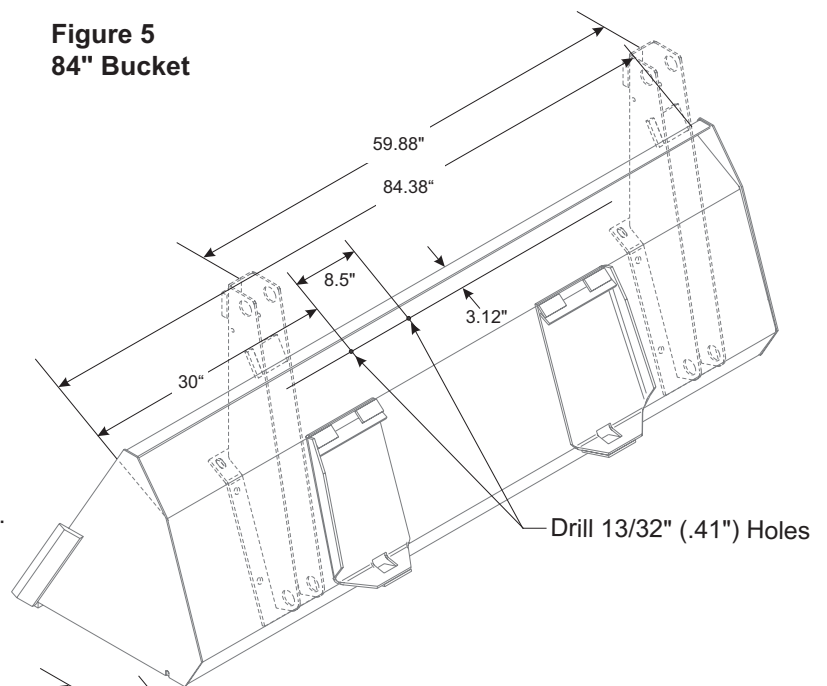
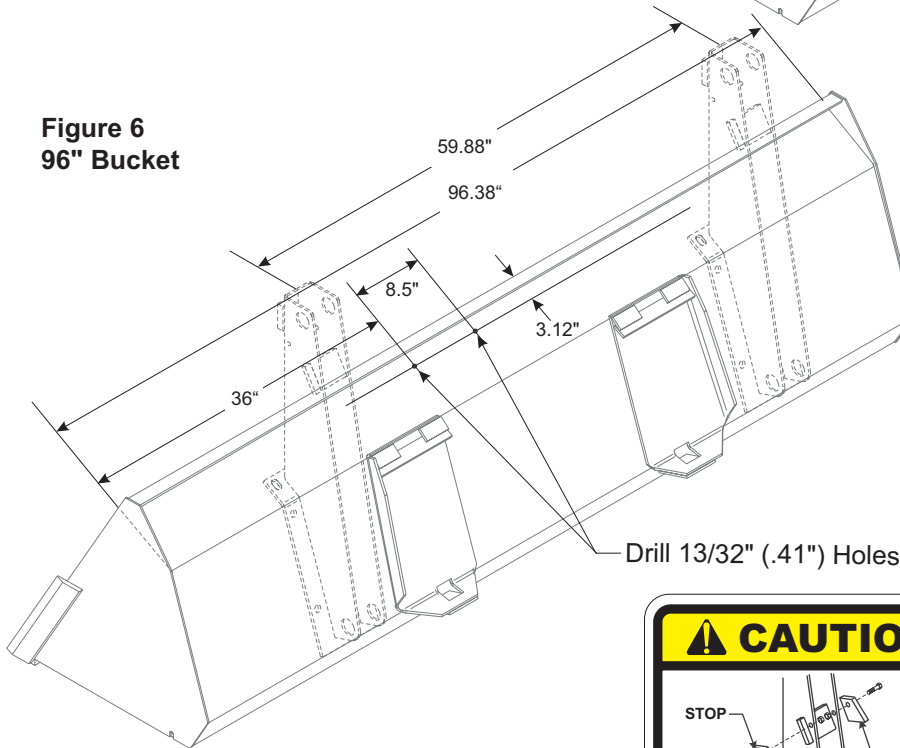
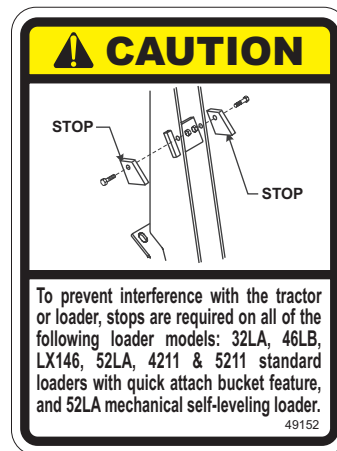


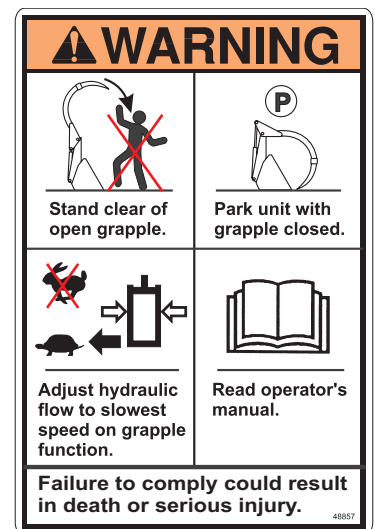
Figure 6
96" Bucket



NOTE: Loader safety decals are at locations listed below each decal part number. Replace decals if they are damaged or illegible. Replacement decals are available from your dealer.



DECAL P.N. 49152
Location: Grapple Fork Left and Right Frame Uprights

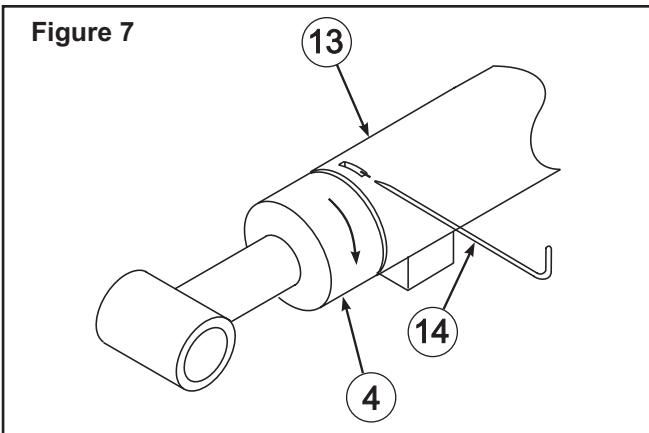


DECAL P.N. 48857
Location: Grapple Fork Left and Right Frame Uprights

GRAPPLE FORK CYLINDER DISASSEMBLY (Figures 7 & 8)

NOTE: Use penetrating fluid in cylinder groove to loosen retaining ring (14) before disassembling cylinder.

1. Hold cylinder tube (13) stationary and rotate cylinder head (4) so beveled end of wire ring (14) will thread out through slot. Using clamping pliers on wire to pull as head is rotated will ease removal.
2. Pull shaft (1) with all assembled parts out of cylinder tube (13).



NOTE: Resistance will be felt until head seal (7) and piston seal (8) slides over wire retaining ring groove. This procedure may shave some off these seals.

3. Remove lock nut (12) from end of shaft and slide cylinder piston (10), and cylinder head (4) off shaft.
4. Remove piston wear ring (11), piston seal (8) and o-ring (9) from out side grooves of piston (10).
5. Remove wiper seal (2), rod seal (3), wear ring (5) from inside of cylinder head and o-ring (7) and back-up ring (6) from groove on outside of head.
6. Clean all parts, including cylinder tube, in a suitable cleaning solvent, then use air pressure to blow any dirt or excess solvent from all parts.
7. Examine all parts for wear or damage and replace, if necessary.

GRAPPLE FORK CYLINDER ASSEMBLY

NOTE: Be careful not to damage seals, packings and o-rings on edges or holes in cylinder tube. Inspect and remove burrs and sharp edges if necessary before reassembling.

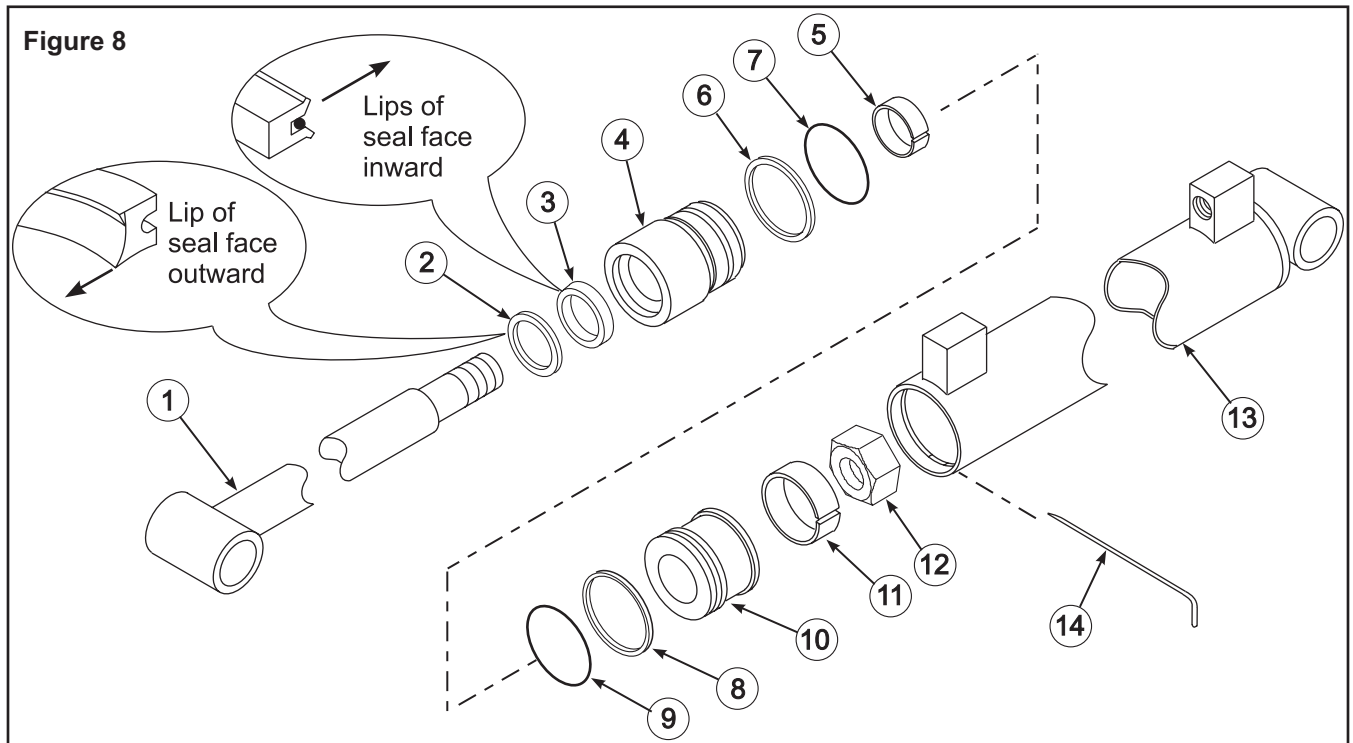
1. Place rod seal (3) into groove inside cylinder head.

NOTE: Lips of seal must face toward inside of head.

2. Install wiper seal (2) with lip of seal facing out and flush with top of cylinder head. Install wear ring (5) inside other end of head.
3. Place o-ring (7) with back-up ring (6) in groove on outside of head. Back-up ring must be on rod side.
4. Remove sharp edges on outer edge of threaded end of shaft (1). Lubricate wiper seal (2), rod seal (3) and wear ring (5) in head and carefully slide head onto shaft.
5. Place o-ring (9), piston seal (8) and piston wear ring (11) in grooves on outside of piston.

NOTE: For easier installation, place piston seal (8) in 120° F water to warm seal.

6. Slide piston (10) onto threaded end of shaft. Install 3/4 lock nut (12) and tighten to 150 ft. lb. of torque.
7. Lubricate piston wear ring (11) and piston seal (8) on piston (10), o-ring (7) and back-up ring (6) on head (4) and inside of cylinder tube (13) then carefully slide piston and head into cylinder tube (13).
8. Insert wire retaining ring (14) into slot in cylinder tube (13) and turn cylinder head while applying pressure to wire ring to thread it into groove.



PARTS LIST - GRAPPLE FORK CYLINDER 2.00 (47520) (Code MQ)

Item	SMC No.	NH No.	Case IH No.	Description	Qty.
1	47522	SML47522	SML47522	ROD, Weldment, 1.38	1
2	*	*		SEAL, Wiper	1
3	*	*		ROD, Seal	1
4	44021	86024101	86024101	HEAD	1
5	*	*		RING, Wear	1
6	*	*		RING, Back-up	1
7	*	*		O-RING	1
8	*	*		SEAL, Piston	1
9	*	*		O-RING	1
10	36592	86024083	86024083	PISTON	1
11	*	*		RING, Wear	1
12	38998-3.	86018103	86018103	NUT, Lock	1
13	47518	SML47518	SML47518	TUBE, Cylinder, Assembly	1
14	*	*		RETAINER, Wire	1
*	43755	86024103	86024103	Repair Kit, Includes (*) Items	1

GENERAL TORQUE SPECIFICATIONS

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN

Standard American and Metric Cap Screws

AMERICAN STANDARD CAP SCREWS										METRIC CAP SCREWS								
SAE Grade	5				8				Metric Class	8.8				10.9				
Typ. Head Markings									Typ. Head Markings									
Cap Screw	TORQUE				TORQUE				Cap Screw	TORQUE				TORQUE				
Size	FT·LBS		N·m		FT·LBS		N·m		Size	FT·LBS		N·m		FT·LBS		N·m		
Inches	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	Millimeters	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
1/4 - 20	6.25	7.25	8.5	10	8.25	9.5	11	13	M6 x 1.00	6	8	8	11	9	11	12	15	
1/4 - 28	8	9	11	12	10.5	12	14	16	M8 x 1.25	16	20	21.5	27	23	27	31	36.5	
5/16 - 18	14	15	19	20	18.5	20	25	27	M10 x 1.50	29	35	39	47	42	52	57	70	
5/16 - 24	17.5	19	23	26	23	25	31	34	M12 x 1.75	52	62	70	84	75	91	102	123	
3/8 - 16	26	28	35	38	35	37	47.5	50	M14 x 2.00	85	103	115	139	120	146	163	198	
3/8 - 24	31	34	42	46	41	45	55.5	61	M16 x 2.50	130	158	176	214	176	216	238	293	
7/16 - 14	41	45	55.5	61	55	60	74.5	81	M18 x 2.50	172	210	233	284	240	294	325	398	
7/16 - 20	51	55	69	74.5	68	75	92	102	M20 x 2.50	247	301	335	408	343	426	465	577	
1/2 - 13	65	72	88	97.5	86	96	116	130	M22 x 2.50	332	404	450	547	472	576	639	780	
1/2 - 20	76	84	103	114	102	112	138	152	M24 x 3.00	423	517	573	700	599	732	812	992	
9/16 - 12	95	105	129	142	127	140	172	190	M27 x 3.00	637	779	863	1055	898	1098	1217	1488	
9/16 - 18	111	123	150	167	148	164	200	222	M30 x 3.00	872	1066	1181	1444	1224	1496	1658	2027	
5/8 - 11	126	139	171	188	168	185	228	251	<p>NOTE: These values apply to fasteners as received from supplier, dry or when lubricated with normal engine oil. They do not apply if special graphite or molysulphide greases or other extreme lubricants are used.</p>									
5/8 - 18	152	168	206	228	203	224	275	304										
3/4 - 10	238	262	322	355	318	350	431	474										
3/4 - 16	274	305	371	409	365	402	495	544										
7/8 - 9	350	386	474	523	466	515	631	698										
7/8 - 14	407	448	551	607	543	597	736	809										
1 - 8	537	592	728	802	716	790	970	1070										
1 - 14	670	740	908	1003	894	987	1211	1337										

37° JIC Fittings

Size	Thread Size	Assembly Torque		Tube Connection F. F. F. T.	Swivel Nut or Hose Connection F. F. F. T.
		in.·lb.	ft.·lb.		
-4	7/16 - 20	140 ± 10	12 ± 1	2	2
-5	1/2 - 20	180 ± 15	15 ± 1	2	2
-6	9/16 - 18	250 ± 15	21 ± 1	1 1/2	1 1/4
-8	3/4 - 16	550 ± 25	45 ± 5	1 1/2	1
-12	1 1/16 - 12	1000 ± 50	85 ± 5	1 1/4	1
-16	1 5/16 - 12	1450 ± 50	120 ± 5	1	1
-20	1 5/8 - 12	2000 ± 100	170 ± 10	1	1
-24	1 7/8 - 12	2400 ± 150	200 ± 15	1	1
-32	2 1/2 - 12	3200 ± 200	270 ± 20	1	1

O-Ring Face Seal Tube/ Hose Swivel Nut

Metric Tube O.D. (mm)	Dash Size	Thread Size (in.)	Swivel Nut Hex Size (in.)	Swivel Nut Torque	
				N·m	lb·ft
5	-3	--	--	--	--
6	-4	9/16 - 18	11/16	16	12
8	-5	--	--	--	--
10	-6	11/16 - 16	13/16	24	18
12	-8	13/16 - 16	15/16	50	37
16	-10	1 - 14	1-1/8	69	51
20	-12	1-3/16 - 12	1-3/8	102	75
22	-14	1-3/16 - 12	--	102	75
25	-16	1-7/16 - 12	1-5/8	142	105
32	-20	1-11/16 - 12	1-7/8	190	140
38	-24	2 - 12	2-1/4	217	160
50.8	-32	--	--	--	--

SAE O-Ring Fittings

Size	Swivel Nut or Hose	Assembly Torque		F. F. F. T.
		in.·lb.	ft.·lb.	
2	5/16 - 24	90 ± 5	7.5 ± 0.5	1 ± .25
3	3/8 - 24	170 ± 10	14 ± 1	1 ± .25
4	7/16 - 20	220 ± 15	18 ± 1	1 ± .25
5	1/2 - 20	260 ± 15	22 ± 1	1 ± .25
6	9/16 - 18	320 ± 20	27 ± 2	1.5 ± .25
8	3/4 - 16	570 ± 25	48 ± 2	1.5 ± .25
10	7/8 - 14	1060 ± 50	90 ± 5	1.5 ± .25
12	1 1/16 - 12	1300 ± 50	110 ± 5	1.5 ± .25
14	1 3/16 - 12	1750 ± 75	145 ± 6	1.5 ± .25
16	1 5/16 - 12	1920 ± 125	160 ± 6	1.5 ± .25
20	1 5/8 - 12	2700 ± 150	225 ± 12	1.5 ± .25
24	1 7/8 - 12	3000 ± 150	250 ± 12	1.5 ± .25
32	2 1/2 - 12	3900 ± 200	325 ± 15	1.5 ± .25

INSTALLATION INSTRUCTIONS