280/285 OPERATOR/PARTS MANUAL ADDENDUM

The Freeman 285 baler from Allied Systems is identical to the 280 baler except for the knotter system. The 285 baler employs the optional “Tail-less Twine Knotter” style knotters as opposed to the “Conventional Twine Knotter” style knotters traditionally used on Freeman balers. The key difference in the 285 knotter is that it has no knife arm to strip the knot from the bill hook. Instead, the knot remains on the bill hook for a few plunger strokes until the advancing bale pulls it off. The simple design uses fewer moving parts resulting in lower maintenance. Additional benefits of the 285 knotter are replaceable no-lube bushings for bill hook and holder, bow style knot for high strength ties, and less twine waste deposited on the baler and in the field.

KNOTTER SETTINGS

The following instructions will help you understand the Tail-less Twine Knotter and the adjustments necessary to maintain and keep the system tying at the optimum level of performance. Periodic checks of these adjustments will help alleviate tying problems and reduce the risk of equipment damage.

Note: Adjustments may vary for different crops.

TWINE FINGER

The twine fingers have two independent adjustments, fully extended and fully retracted. Unlike the Conventional Twine Knotter, the Tail-less Twine Knotter system keeps the twine finger extended while the bale forms. The extended position of each twine finger adjusts separately and is determined by the length of the twine finger drive rod. The fully retracted position of all the twine fingers is managed by a single stop bolt. (see Figure 5)

The twine finger fully extended position should be set with the needles in the home position (see Figure 1), with the twine finger drive cam holding the twine fingers extended. Needles are in home position when bolt “A”, Figure 1, is 1/4" to 1/2" past center between “B” and “C”. Before adjusting the twine fingers, ensure the twine finger drive shear bolt is tight and in good condition. Not partially sheared. (see Figure 5)

With light pressure applied at the tip of the twine finger, the finger should lie just at the rear edge of the twine guide. The proper adjustment should have the twine finger (see Figure 2) between flush, and protruding 1/8" past the twine guide.

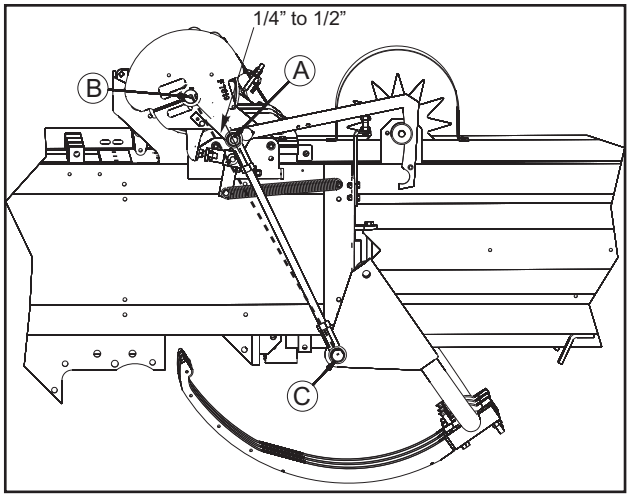


Figure 1 - Needles In Home Position

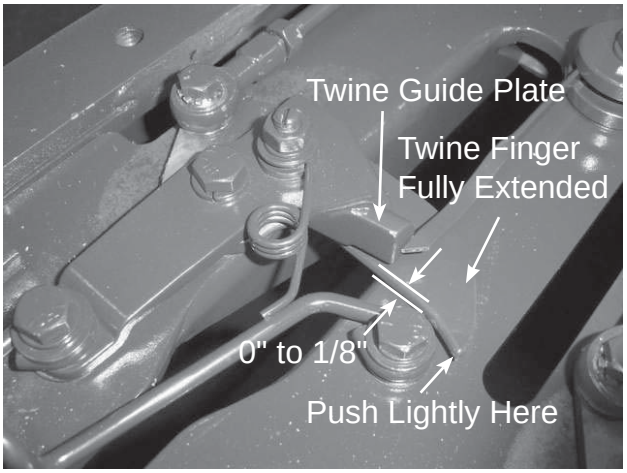


Figure 2 - Twine Guide and Twine Finger Extended

To adjust the twine finger extended position (see Figure 2 & 3), loosen the jam nuts on the twine finger drive rod and rotate the rod clockwise to increase travel.

Note: The jam nut toward the front is left-hand thread and the rear is right-hand thread.

To check the twine finger retracted position turn the knotter shaft with a wrench (see Figure 15) until the twine finger drive cam releases the cam follower. The fingers should retract far enough so that the tips are completely clear of the needle slot (see Figure 4 and 5).

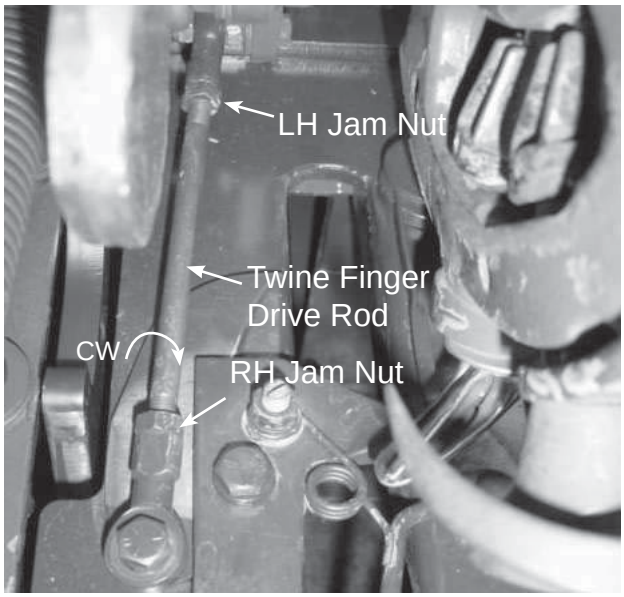


Figure 3 - Twine Finger Clearance Retracted Position

The retracted position must be adjusted if the tip of any finger is hanging over the needle slot, OR if all three finger tips are more than 1/8" from the edge of the slot. Adjust the retracted position by adjusting the twine finger stop bolt (see Figure 5) located just ahead of the twine finger drive shaft. A single adjustment affects all three twine fingers.

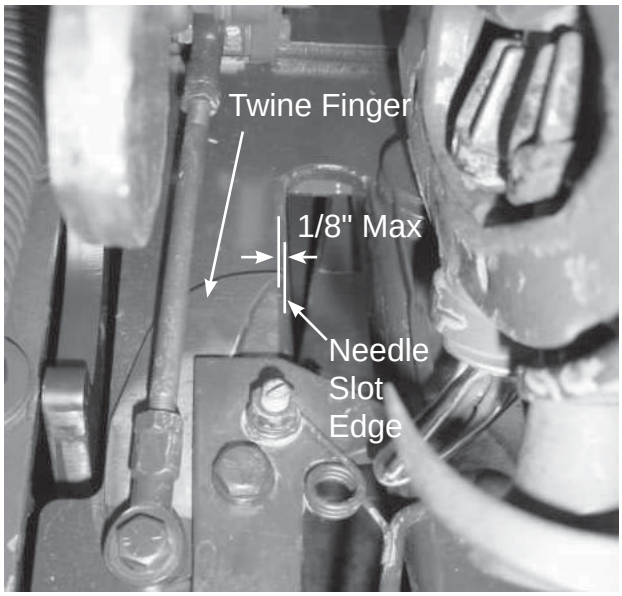


Figure 4 - Twine Finger Clearance

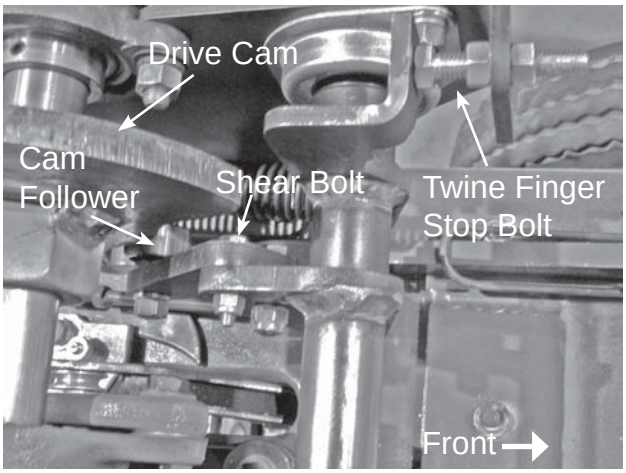


Figure 5 - Twine Finger Stop Bolt Location

NEEDLE SETTING

Note: The Twine fingers must be adjusted before resetting the needles. (see page 1)

There are three needle adjustments. Needle Alignment, Needle Height and Full Travel.

NEEDLE ALIGNMENT

Adjust your needle alignment when the needles are at **TDC (top dead center).** TDC is when the needles are at the highest point of travel. At this time the Needle Yoke Drive Rod is in the 11 o'clock position (see Figure 6). Adjust the needle alignment by loosening the bolts at the needle base and sliding the needle left or right as necessary (see Figure 9).

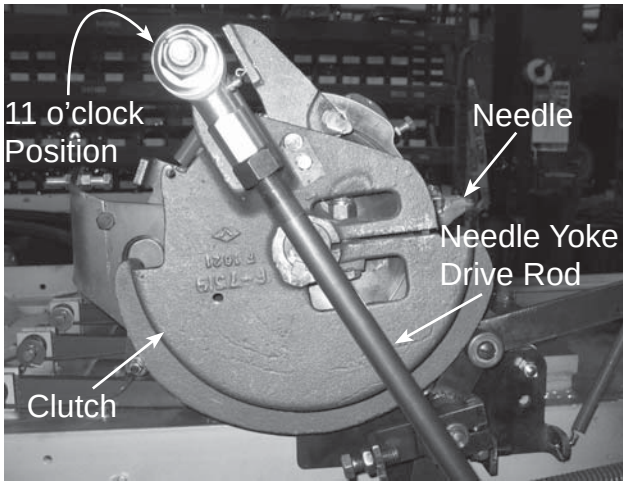


Figure 6 - Needles at TDC, left-hand view.

At TDC the needles should be close to or make light contact with the knotter frames. Make sure there is no more than 1/16" gap between the needle and the knotter frame (see Figure 7). Light contact between the needle side and the knotter is actually preferred, and is acceptable as long as no more than a 3 lb force is required to move the needle away.

The needles may be bent side to side as needed, if the needles are centered in the bottom slots but the tips of the needles do not match the conditions described above.

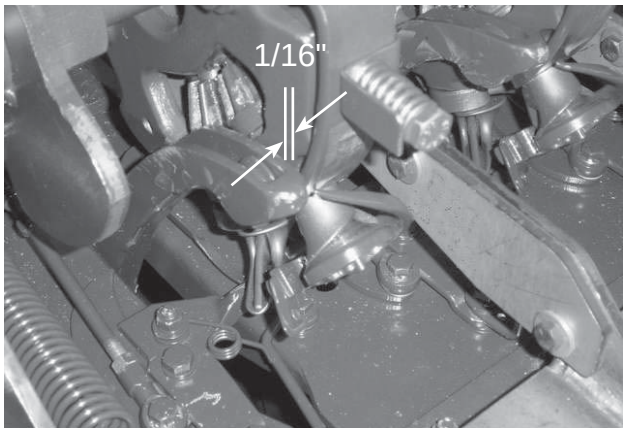


Figure 7 - Needle/Knotter Clearance

NEEDLE HEIGHT

The height of the needle is determined as it passes the twine finger while the tip of the twine finger is in the middle of the needle slot. (see Figure 8) The needles should be set such that there is 1/8" to 1/4" clearance between the needle and the edge of the twine finger at the closest point (see figure 8). Take this measurement as the needles are on the upward stroke through the chamber top plate.

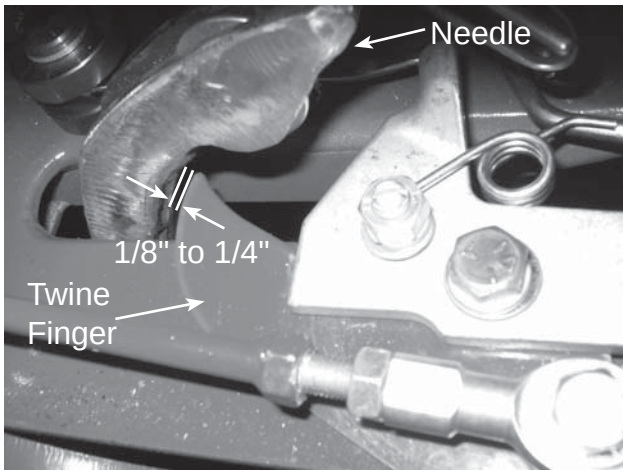


Figure 8 - Needle/Twine Finger Clearance

If necessary, adjust the needle position by loosening and tightening the appropriate bolts at the base of the needle. Tightening the front bolt to raise the needle, tightening the rear bolt lower's the needle. (see Figure 9)

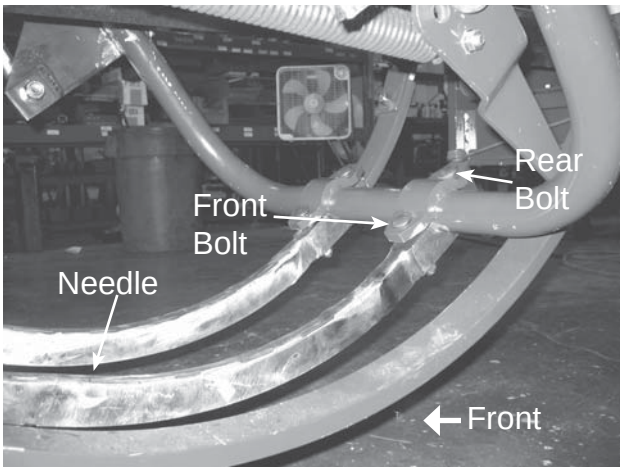


Figure 9 - Position Needles Adjustment

NEEDLE FULL TRAVEL

Measure the needle's full travel position at TDC. The center of the needle roller should measure 6" ±1/4" from the back side of the knotter shaft (see Figure 10).

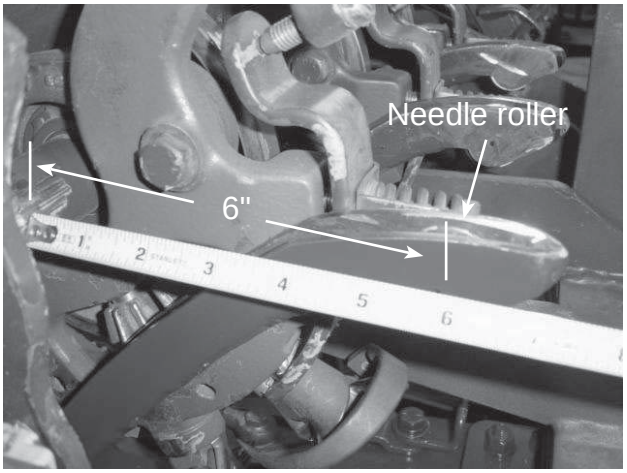


Figure 10 - Needle Measurement

Adjust the amount of needle travel by turning the needle yoke drive rods attached to each end of the knotter shaft (see Figure 11). Loosen the jam nuts and turn each rod an equal amount in order to keep them equally loaded. Note that the upper rod end bearing has left-hand thread.

IMPORTANT: At TDC load on both needle yoke drive rods must be equal. If one is to tight and the other loose, adjust accordingly.

If the twine finger collides with the needle roller on the down stroke (or needle side near the roller) adjust the needle yoke drive rods shorter to raise the needle closer to 6 1/4" position at the instant the twine fingers activate. (see Figure 10)

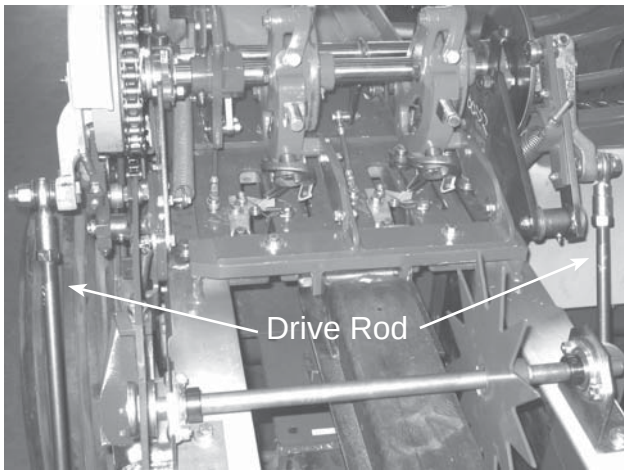


Figure 11 - Adjusting Drive Rods

KNOTTER POSITION

A properly positioned bill hook is essential for consistent tying. The proper position of knotter is determined by gauging the bill hook to the twine guide. Check the knotter position by turning the knotter shaft with a wrench until the bill hook is pointing straight forward. The distance from the front edge of the twine guide to the tip of the bill hook (see Figure 12) should be 5/8"± 1/16".

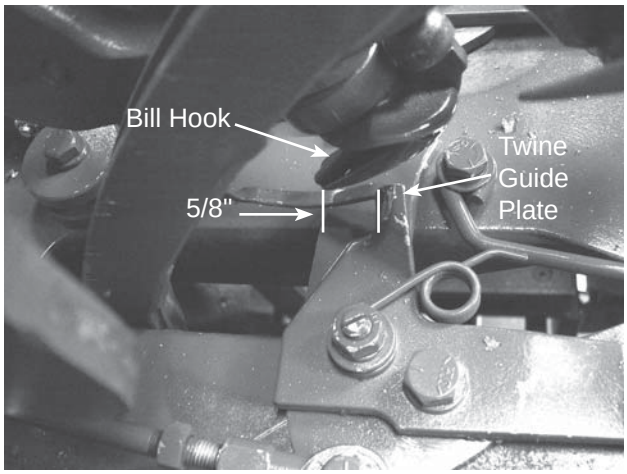


Figure 12 - Twine Guide/Bill Hook Distance

Adjust the knotter position by loosening the two bolts in the anchor plate and sliding the anchor forward or rearward as required (see Figure 13).

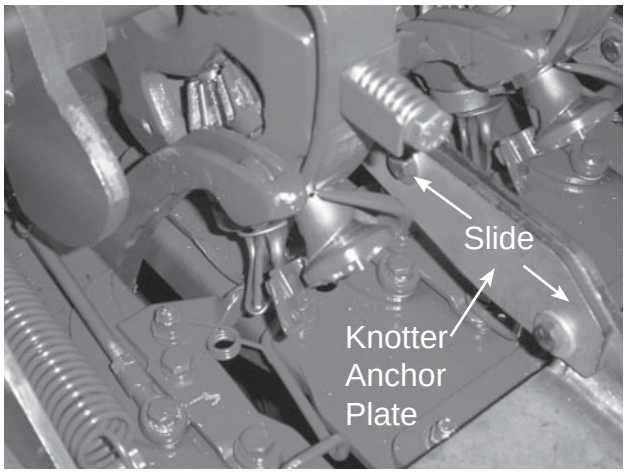


Figure 13 - Knotter Anchor Plate

BILL HOOK TWINE GUIDE CLEARANCE

Moving the knotter position affects the clearance of the bill hook over the twine guide plate, and the clearance over the twine guide plate will change.

The proper clearance between the twine guide plate and bill hook is 1/64" to 1/16" (see Figure 14) at the point of bill hook rotation which brings it closest to the guide plate.

Position the knotter with a wrench as shown in Figure 15 to check the clearance between the Twine Guide Plate and Bill Hook. Rotate the knotter shaft until the Needle Yoke Drive Arm is in the 12 o'clock position. (See Figure 15 & 16) This will rotate the bill hook above the twine guide plate. If any knotter on the baler has clearance less than 1/64", the knotter mounts should be shimmed. (see Knotter Mount Shimming Instructions)

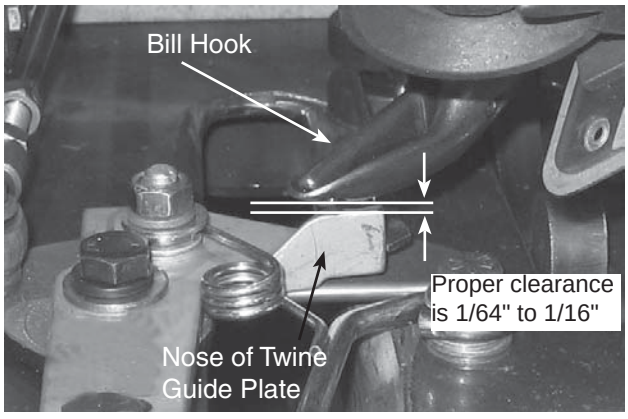


Figure 14 - Knotter Anchor Plate

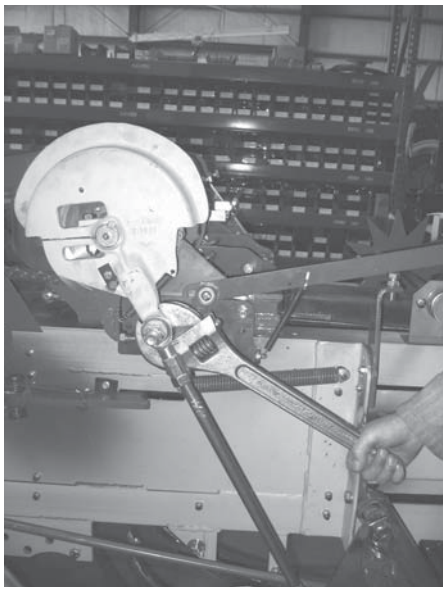


Figure 15 - Positioning the Knotter

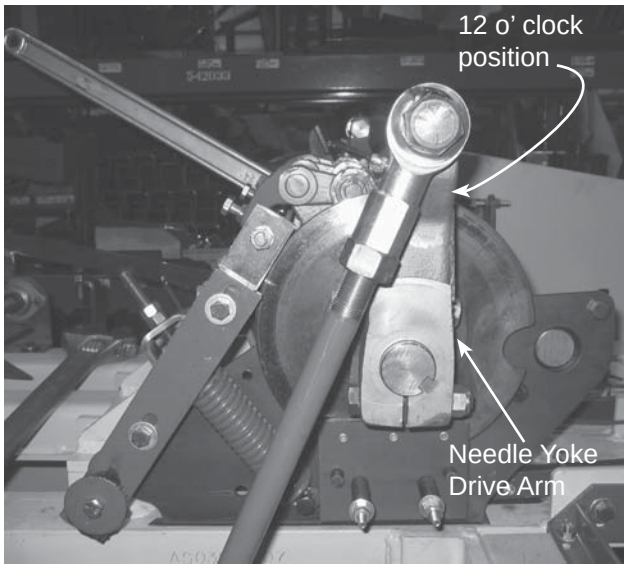


Figure 16 - Needle Yoke Arm in 12 o'clock Position
Right-Hand Side View

KNOTTER MOUNT SHIMMING INSTRUCTIONS

If the clearance between the Bill Hook and the Twine Guide Plate is less than 1/64", then you need to install Knotter Mount Shims. Install 1 shim (see Figure 18) under each knotter mount. Insure that the slots are pointing to the inside of the chamber, towards the knotter assembly.

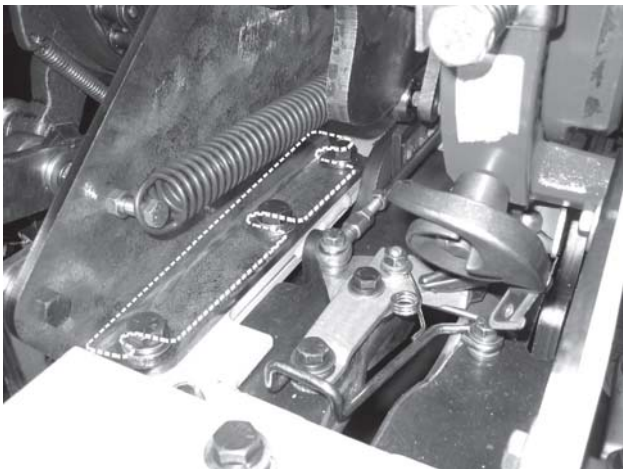


Figure 17 - Left-Hand Knotter Mount

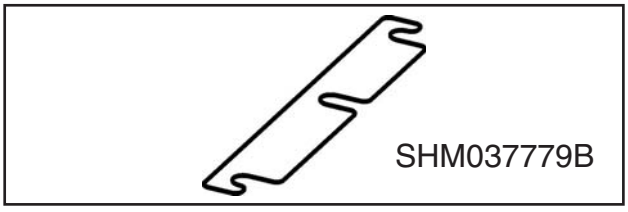


Figure 18 - Knotter Mount Shim

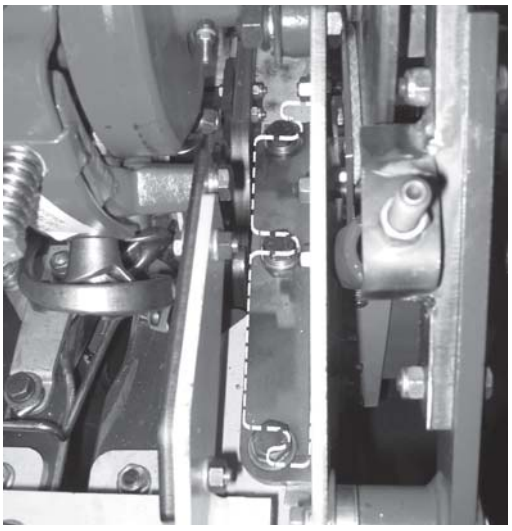


Figure 19 - Right-Hand Knotter Mount

Once the shims are in place and you have tightened the knotter mounts (torque bolts to 75ft lbs.), check the clearance between the bill hook and twine guide plate. Make sure the clearance is between 1/64" and 1/16". Add another shim to each side, if needed.

TWINE HOLDER

There are two adjustments for setting the twine holder tension. The Tying Holder Bolt controls how firmly the twine is held while the knotter is turning, the Bale Forming Bolt controls how firmly the twine is held while the bale is being formed. (see Figure 20 and 21)

Adjust the Tying Holder bolt such that the spring has 1 1/2" of compression measured from the underside of the bolt head to the base of the spring (see figure 20). This adjustment will vary slightly with different grades and sizes of twine. This setting may be too tight if you notice excessive twine strands building up in the twine holder. Material in the holder will affect tying, keep the holders clean.

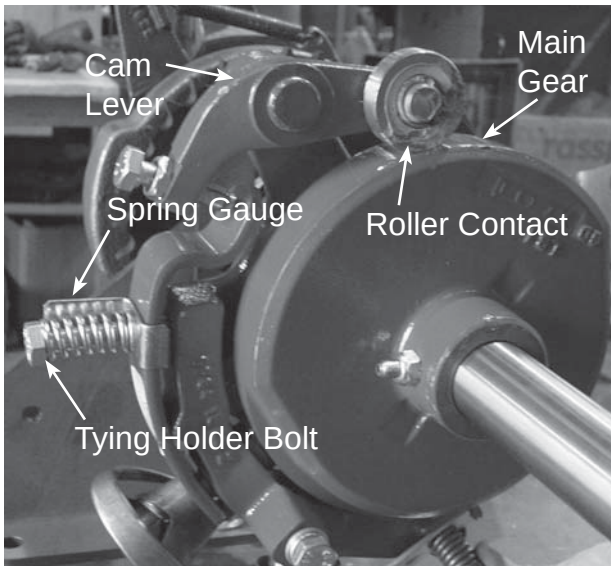


Figure 20 - Tying Holder Bolt

With needles and knotter in the home position the Bale Forming Bolt (see Figure 21) is to be loosened until no pressure is applied to leaf spring. Then, tighten the bolt 3 full turns and 1/2" turn then tighten jam nut.

It is acceptable to increase the Bale Forming Bolt tension as needed, but it is important that the leaf spring completely releases tension while the knotter cycles. After increasing the Bale Forming Bolt tension, always rotate the knotter shaft to make certain the Cam Lever releases tension with the Leaf Spring (see Figure 20) during the tie cycle.

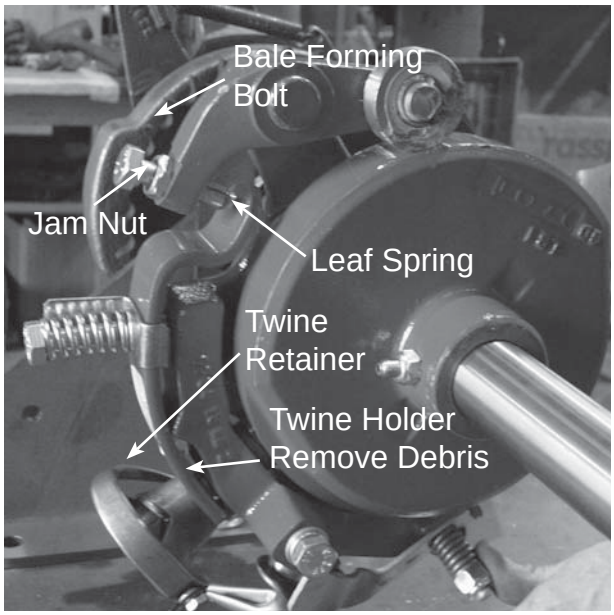


Figure 21 - Set the Bale Forming Holder

BILL HOOK TRIGGER

There is one adjustment for setting the Bill Hook trigger tension. If the bill hook trigger is too tight, the knot may stay on the Bill Hook and the twine may break. If the trigger is too loose, the tail of the knot may release to early and will knot form a good not. To adjust the trigger tension, turn the nut to compress the spring to a length of 1" (see Figure 22).

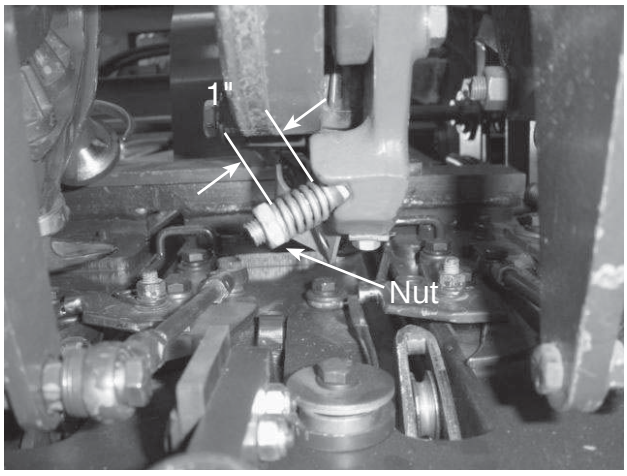


Figure 22 - Trigger Tension

TWINE STOP AND ANGLE SPRING

The twine stop spring must maintain slight pressure against the end of the twine guide plate. The twine guide spring helps hold the twine when the twine finger rotates around. If the spring is too loose then the knotter will not tie a good knot. If necessary, bend the stop spring as required (see Figure 23). The Angle and Stop spring help hold the twine while the bale is being formed.

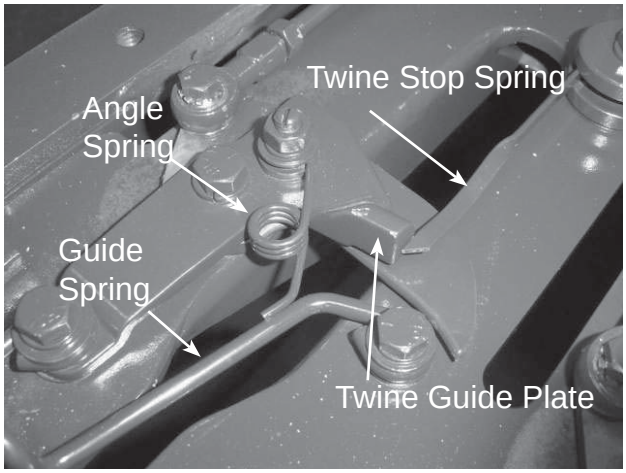


Figure 23 - Twine Stop Spring

TWINE ROUTING

1. Feed twine through twine guides.

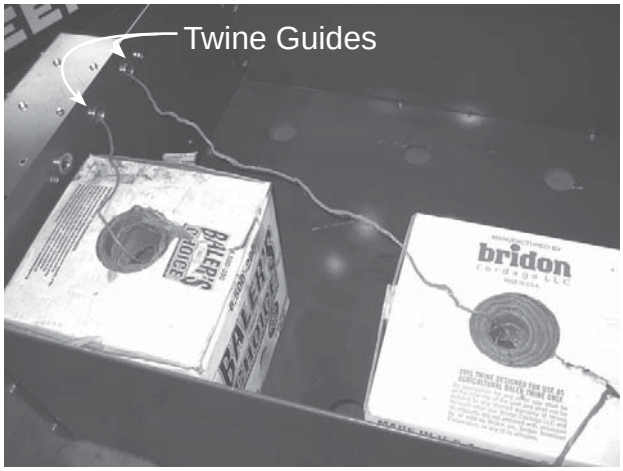


Figure 24 - Twine in Twine Box

2. Feed twine through twine tension assemblies.

It is important that the three twine tension assemblies (Figure 25) are adjusted so that there is a slight amount of drag on the twine.

If the twine tensioner is too loose, the twine lashes out and the twine fingers are not able to grasp the twine, or both. If the twine tensioner is to tight, it may break or come out of the twine holder.

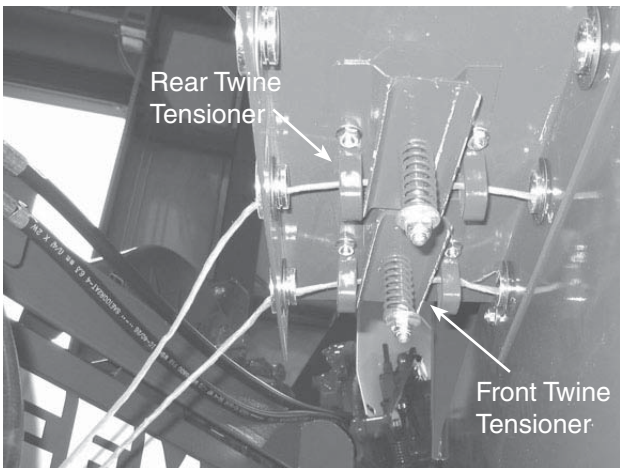


Figure 25 - Twine Tension Assemblies

3. Feed twine through guides on lower chamber.

Twine from rear tensioner should go to the top guide in bracket mounted to the lower right side of chamber. (see Figure 26)

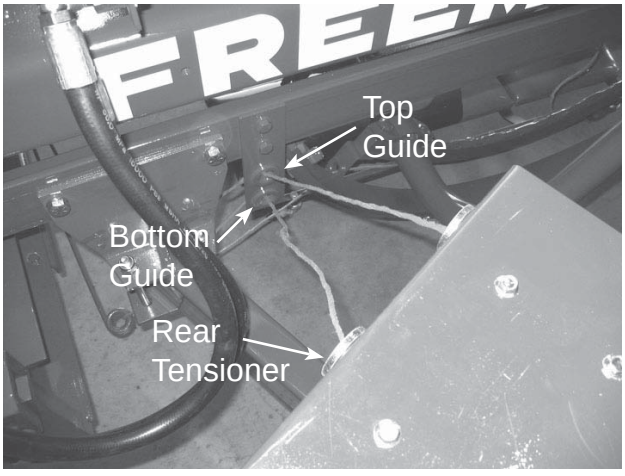


Figure 26 - Twine Box to Bottom Twine Guide Bracket

4. Feed twine through the slack pullers. Twine from top guide should go to the left slack puller.

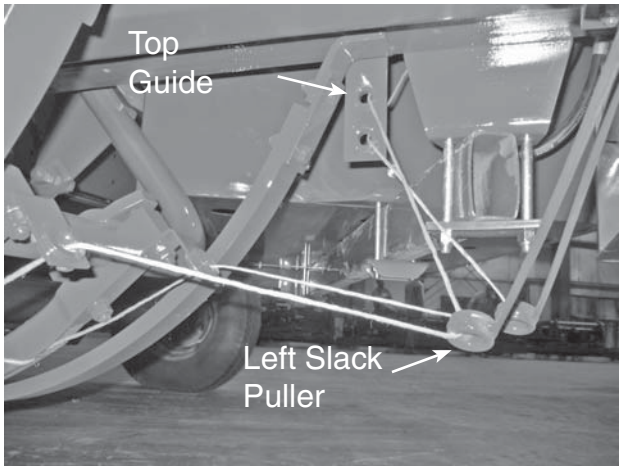


Figure 27 - Chamber Guides to Slack Pullers

5. Feed twine through the twine guides on the back of the needles.

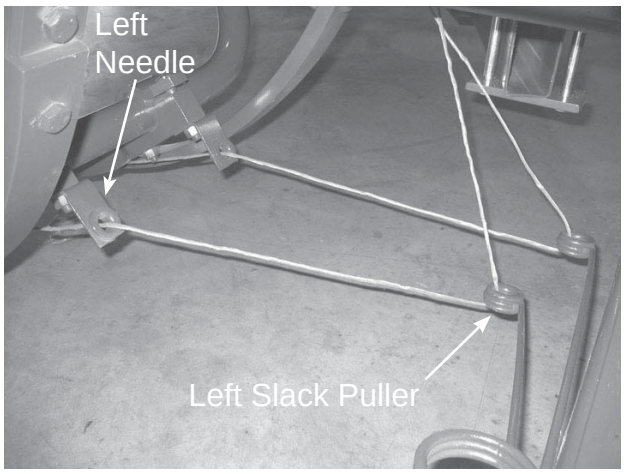


Figure 28 - Slack Pullers to Needles

6. Route twine so it glides on top of the roll pins that are in the twine needles. Each Needle has 3 roll pins.

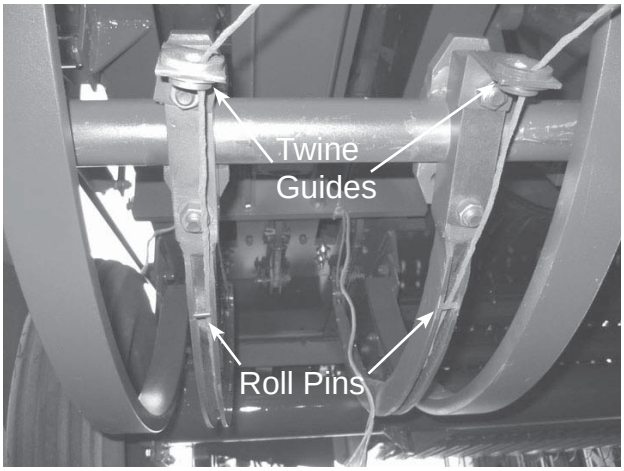


Figure 29 - Twine Needles

7. Route Twine through eye of needle and over the roller. Tie twine to frame.

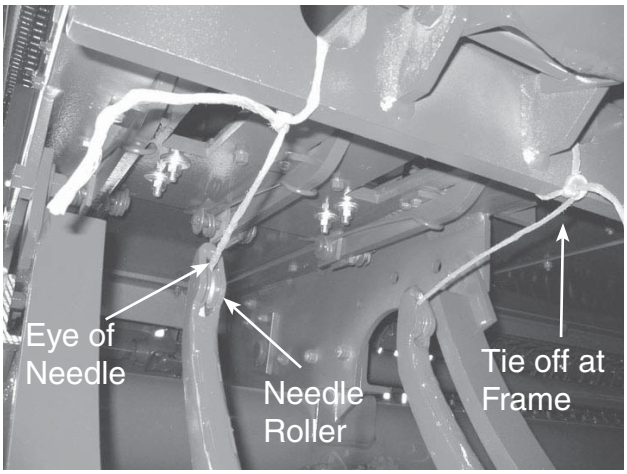


Figure 30 - Twine Over Rollers

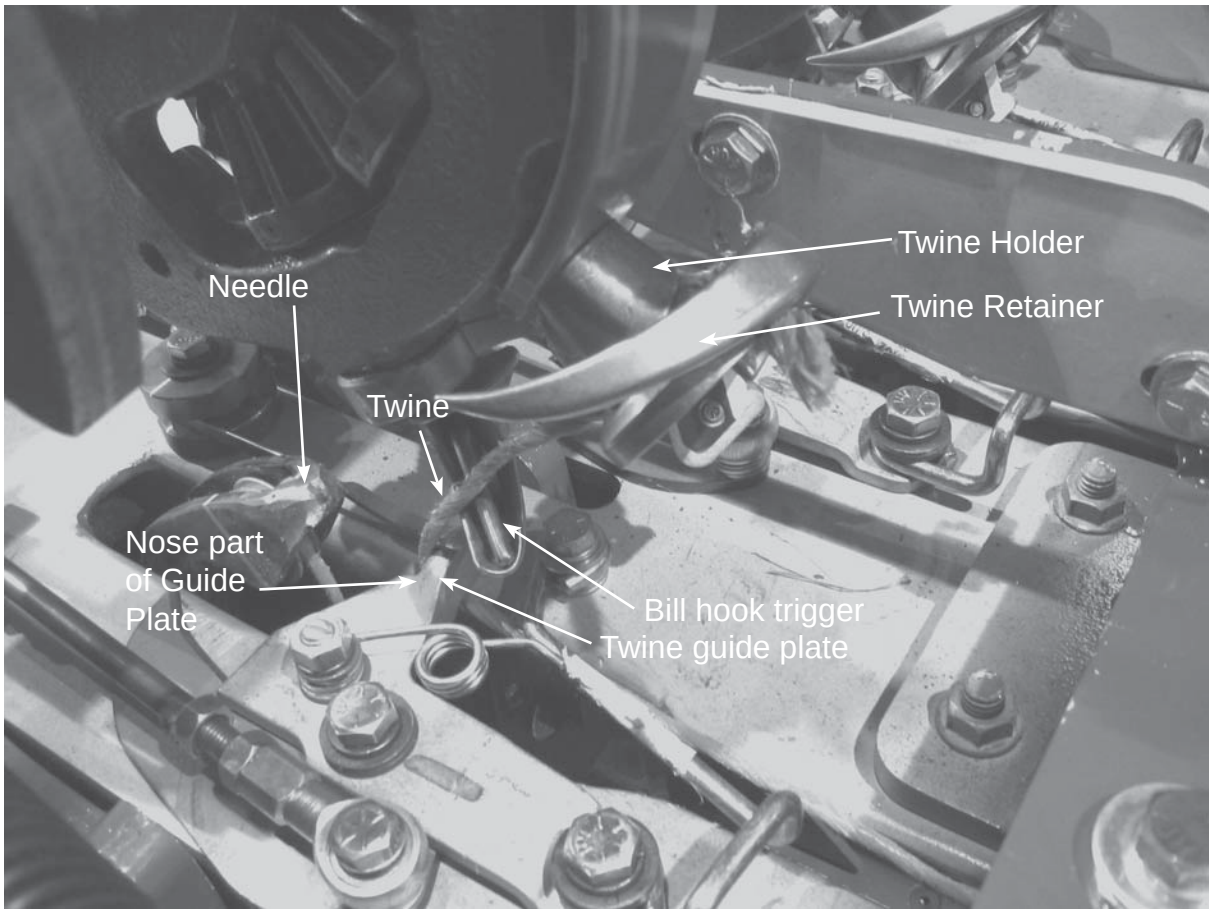


Figure 32 - Twine Position

8. Proper twine position with the needles at rest. Twine must rest on the trigger side of the bill hook and pass over the twine guide.

KNOTTER TROUBLE SHOOTING

When having a twine knotter problem, or missing a knot on one twine or another, it is important to determine which twine is not tying properly. The TOP twine is the twine that is being held in the knotter while the bale is being formed. The BOTTOM twine is the twine that the needle delivers to the knotter to tie the bale. When a mis-tie occurs you must locate the problem twine (Top or Bottom) and determine:

1. Is the end of the untied twine frayed, or squared cut?
2. Is there any damage to the twine? Frayed along the length, frayed beyond the knot?
3. Is the twine long enough to wrap around the bale?
4. Is there twine tangled in the knotter?

A majority of the time, the mis-tie is caused external of the knotter frame. Some things to always check before condemning the knotter are:

1. Check twine delivery from the twine box. Are the twine boxes correctly tied together so as not to obstruct free feeding?
2. Is the twine properly routed to the needle?
3. Ensure the twine guides and/or needles have no sharp worn edges.
4. Slack pullers must be properly threaded and operate freely.
5. Twine tensioners are properly adjusted when the twine has approximately 4 pounds of pull, while the knotter is tying.
6. Check hay dogs for proper operation, and or broke or missing springs. Hay dogs will wear and are very important. If unable to correct a twine finger mis-tie, it is possible that the hay dogs have worn and are not properly holding the end of the bale.
7. Check bale weight/density. Too light of a bale may cause the knot to hang on the bill hook, and too heavy of bale can cause several different mis-ties (see chart below).
8. Are all the necessary components in proper adjustments? Remember any time you replace or adjust a needle the twine finger must be checked and probably adjusted at the same time.
9. Next to the hay dogs, the twine fingers are important to keep in good operating condition. They cannot have excessive play in the pivot, and they must be free of any nicks or burrs that may damage the twine.

Following table includes the most common examples of failed knots with possible causes for, and possible remedies. Refer to Figures 33 and 34 for the letters referenced in the chart starting on page 11.

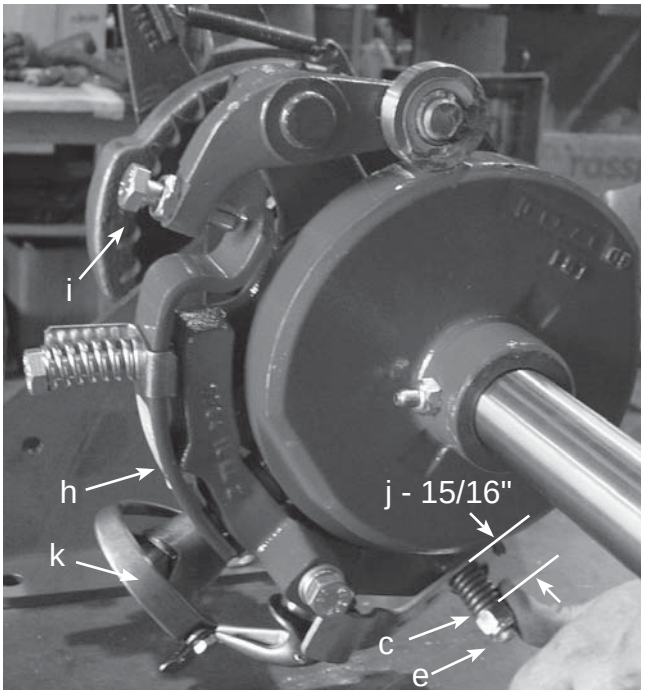


Figure 33 - McCormick Style Knotter

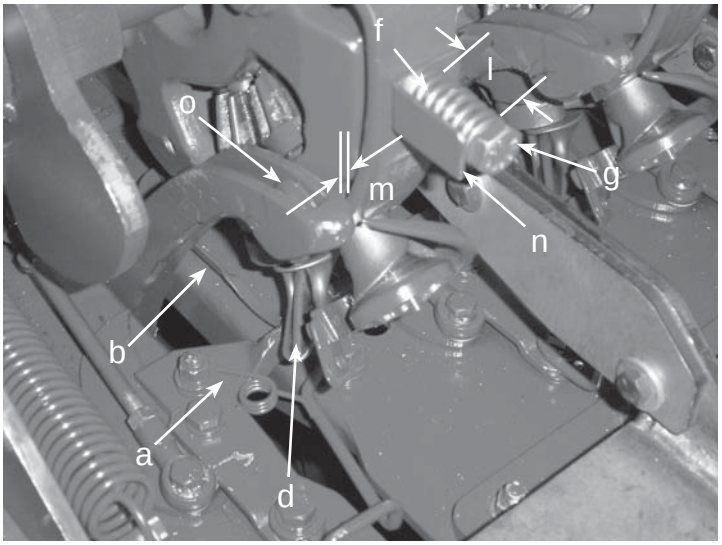
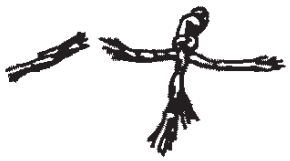
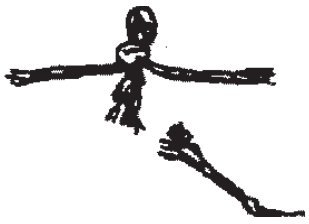


Figure 34 - McCormick Style Knotter

Problem	Possible Cause	Possible Remedy
 Knot well formed but too tight, twine torn off.	Twine tensioners (see Figure 25, page 7) are too loose; after knotting cycle, the twine continues to go past the nose of twine guiding plate (a).	Tighten springs on the twine tensioner (Figure 25, page 7)
	Twine finger does not hold twine; after knotting turn, the twine continues pass the noose of twine guiding plate (a).	Correctly adjust twine finger (Figure 2, page 1)
	Paint or dirt causes spring (b) to jam.	Clean Spring (b).
 Short Loop	Spring (c) is not tight enough, twine is not held tight enough by bill hook (d).	Tighten nut (e). Comply with control measurement (j)
 Knot is not tied	Spring (c) is much too loose. Bill hook (d) holds twine much too loosely.	
 Long end of twine frays out. Twine rest in twine holder	Spring (f) is too tight.	Loosen screw (g) , comply with control measurement (l). The measuring guide beside the the spring indicates the correct height. Use screw (g) to correct deviations.
 Ends are torn off, twine rest of approx 5 cm fall off	Spring (f) is much too tight.	

Problem	Possible Cause	Possible Remedy
 Knots seem to be tight, but when stressed, an end is pulled out	bill hook (d) does not close correctly.	Tighten nut (e) , comply with control measurement (j), if necessary clean the knotter.
 Only knotter twine end knotted, loop end too short	Spring (h) is not tight enough, twine holder (k) does not hold twine during baling.	Tighten screw (i), To set the bale forming holder.
 Tied in a single knot, whereby the twine goes back to the next bale.	Needle is too far from baling frame. Twine holder (k) and knotter do not get to the twine.	Needle lateral air to leaf spring plate (m): 1/16" max.
 Only one twine end knotted, loop end long.	Knotter (d) does not get the twine brought up by the needle. Crop between ram and upper chamber pushes twine from bill hook (d).	See page 2 & 3 for needle settings. Check twine finger and needle clearance on upward stroke. Remove crop between ram and upper ground.
 Correctly tied knot	All control measurements are correct and springs are correctly tightened.	

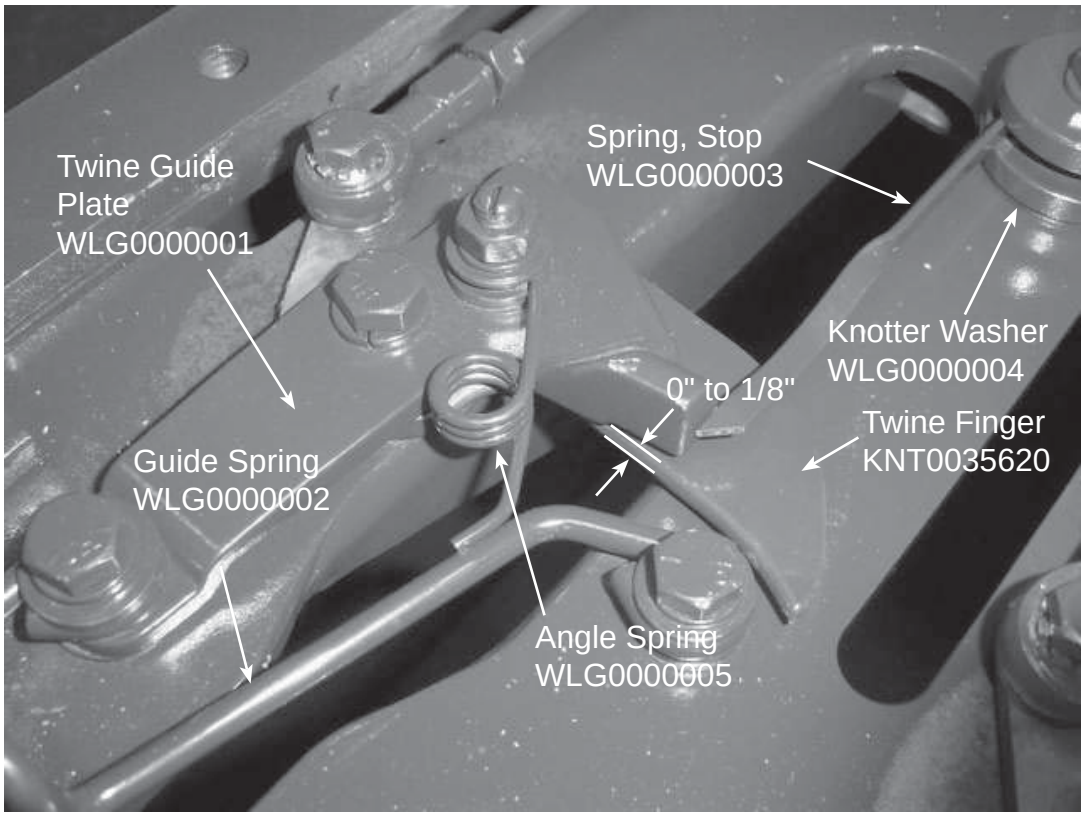


Figure 35 - Needle Slot Area

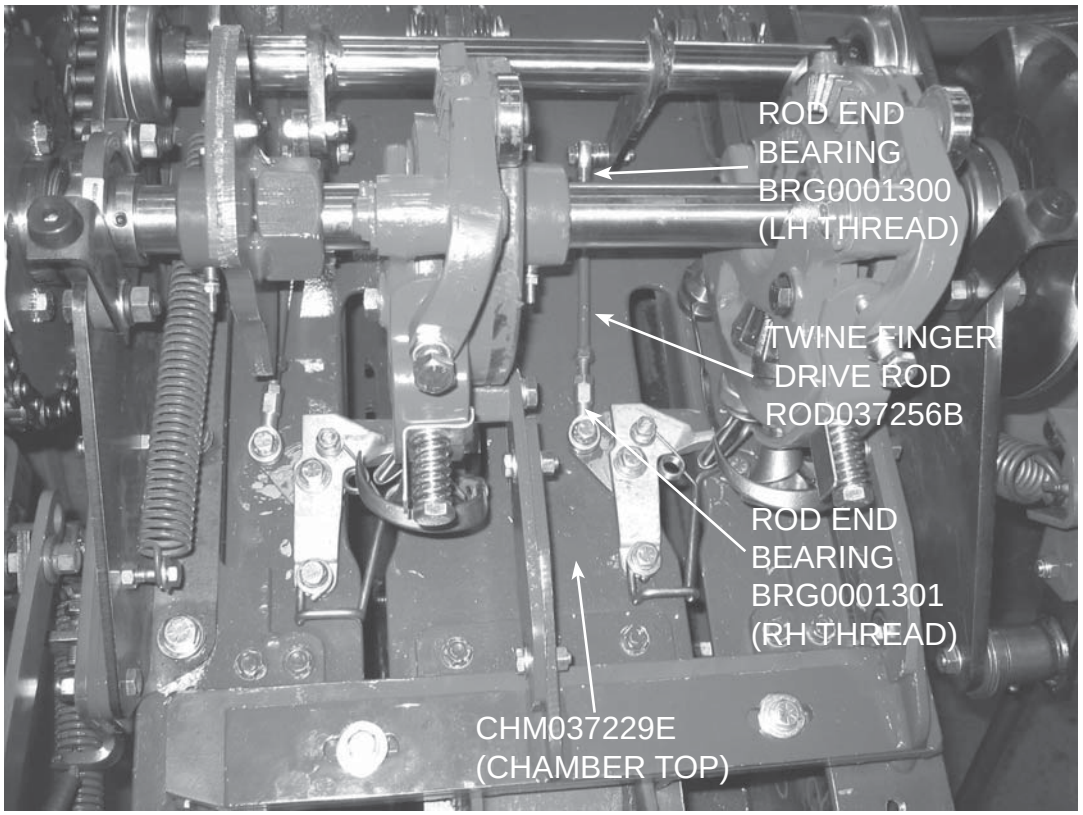


Figure 36 - Chamber Top Plate

Parts

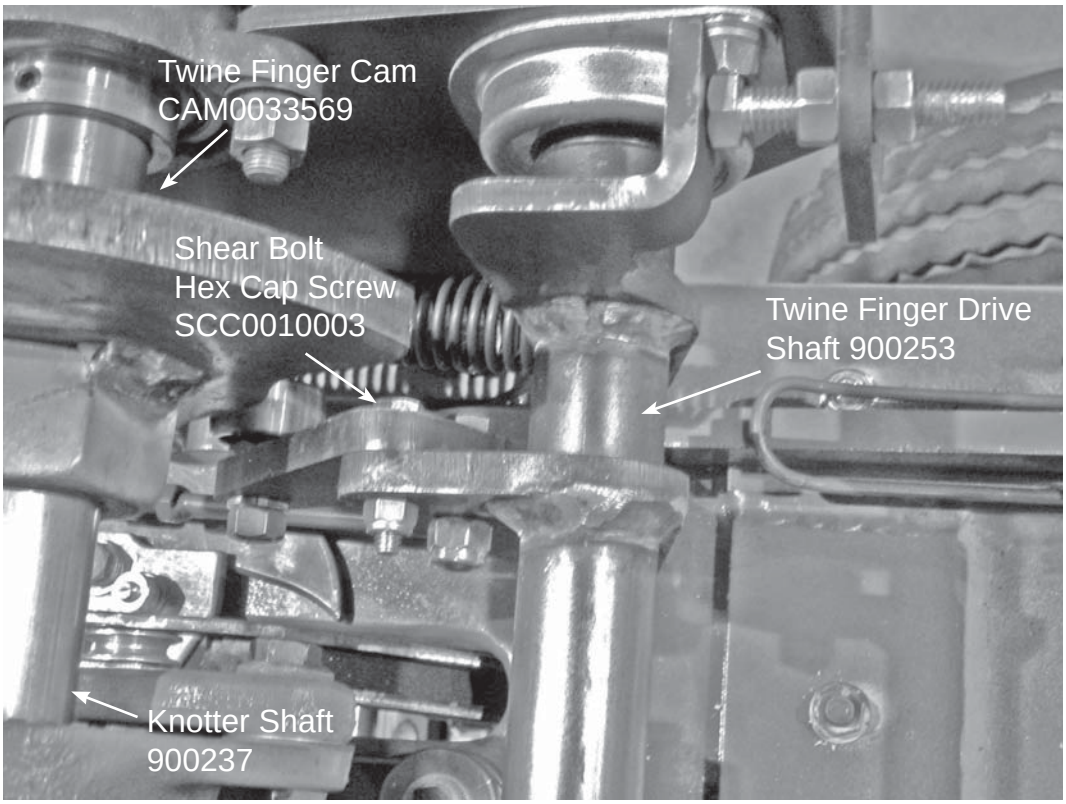


Figure 37 - Twine Finger Drive Shaft

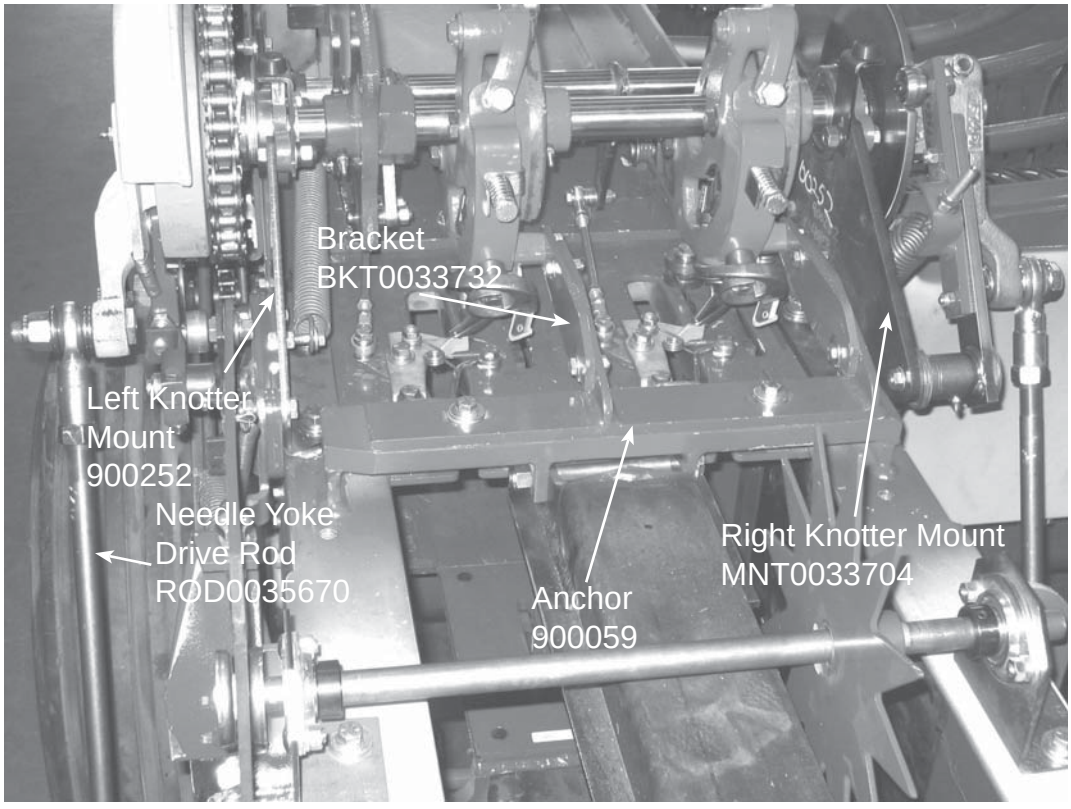


Figure 38 - Needle Yoke Drive Rods

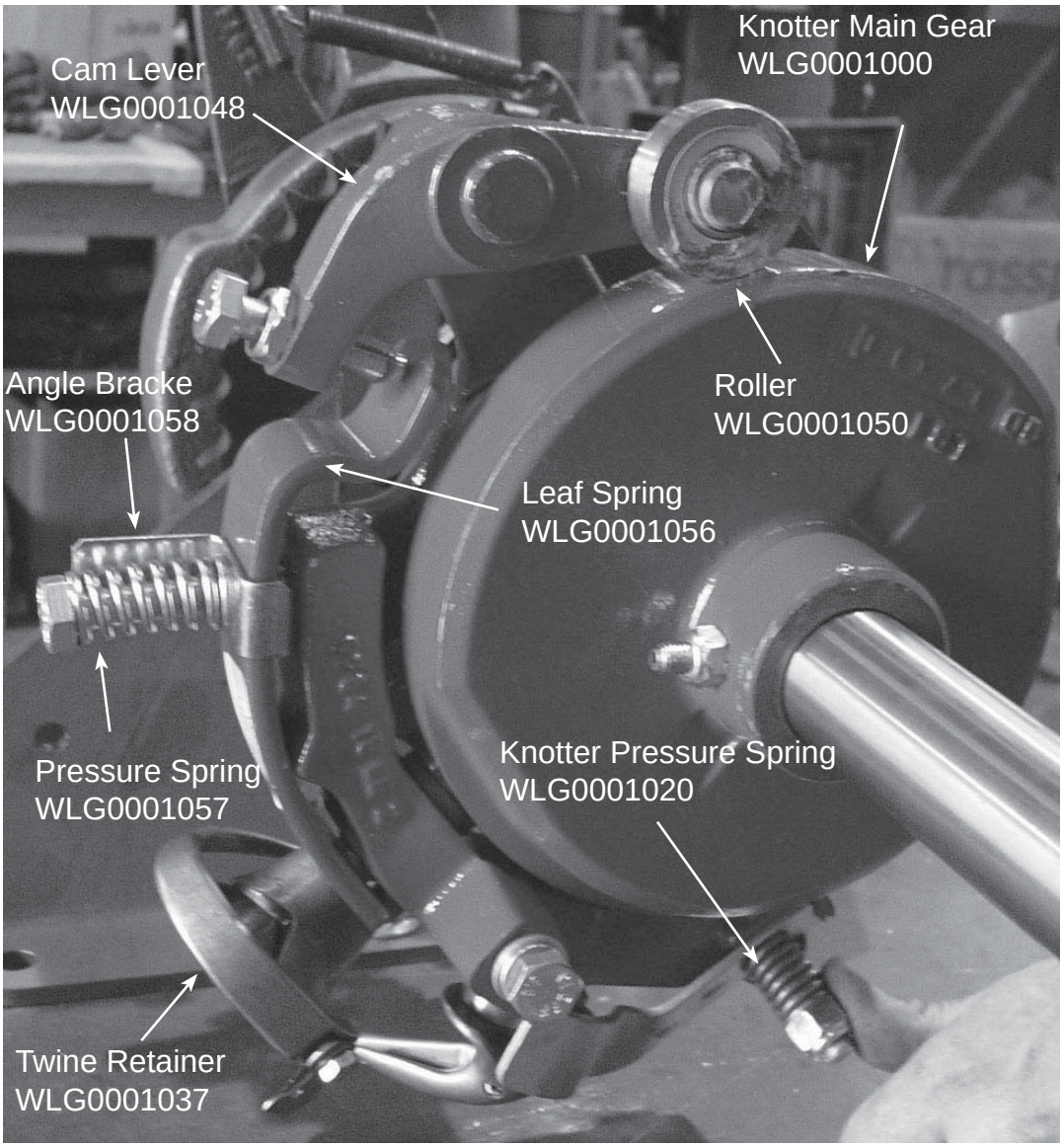


Figure 39 - McCormick Style Knotter

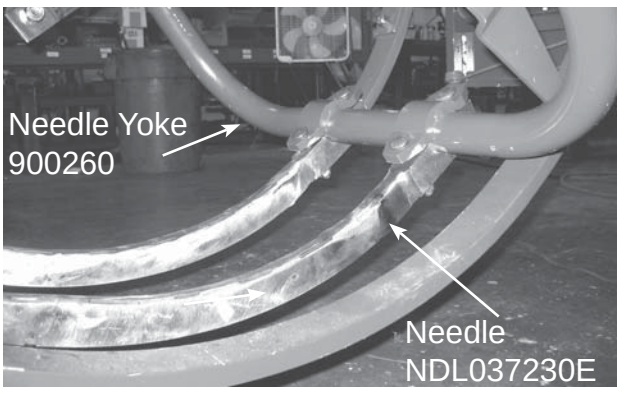
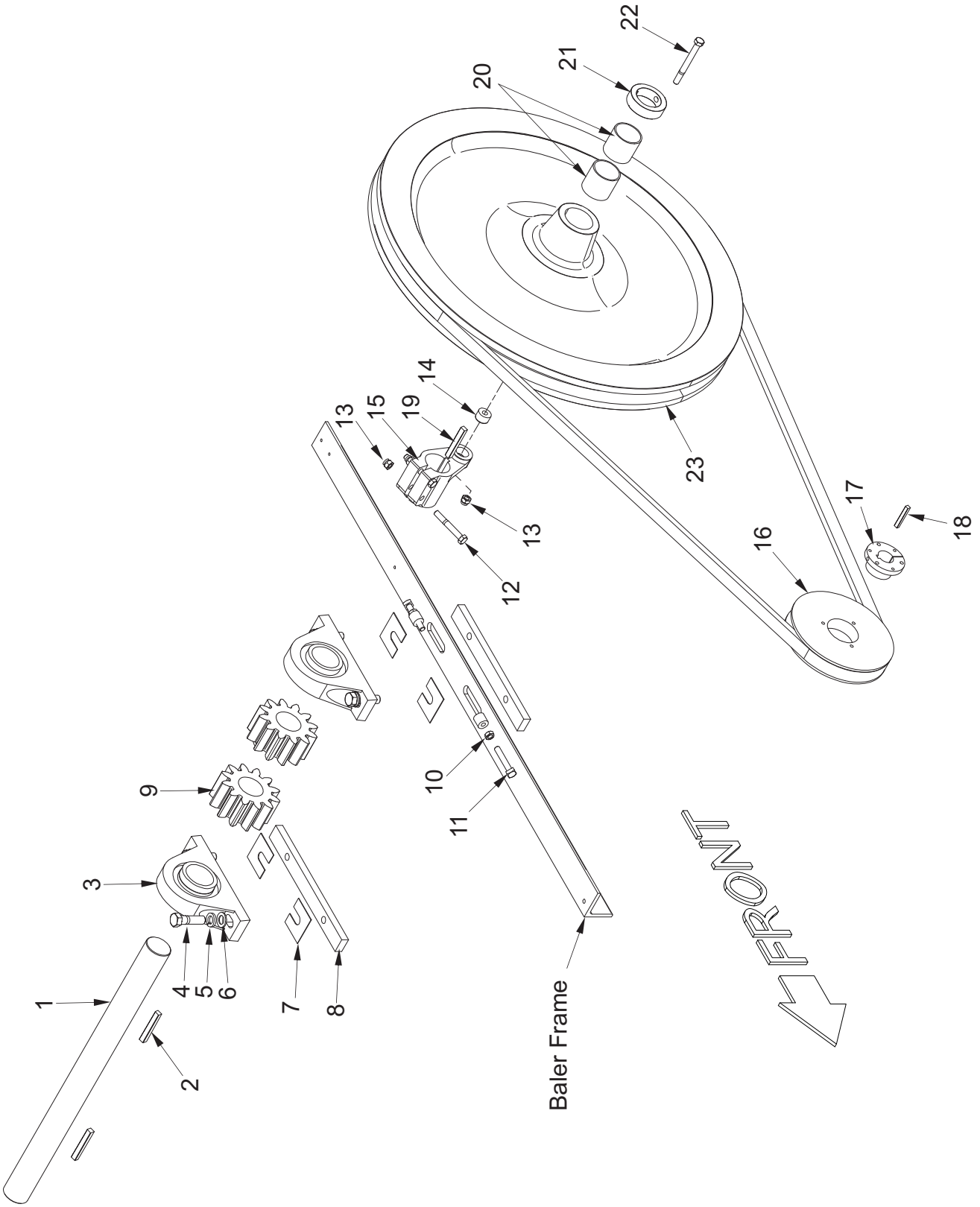


Figure 40 - Twine Needles and Needle Yoke

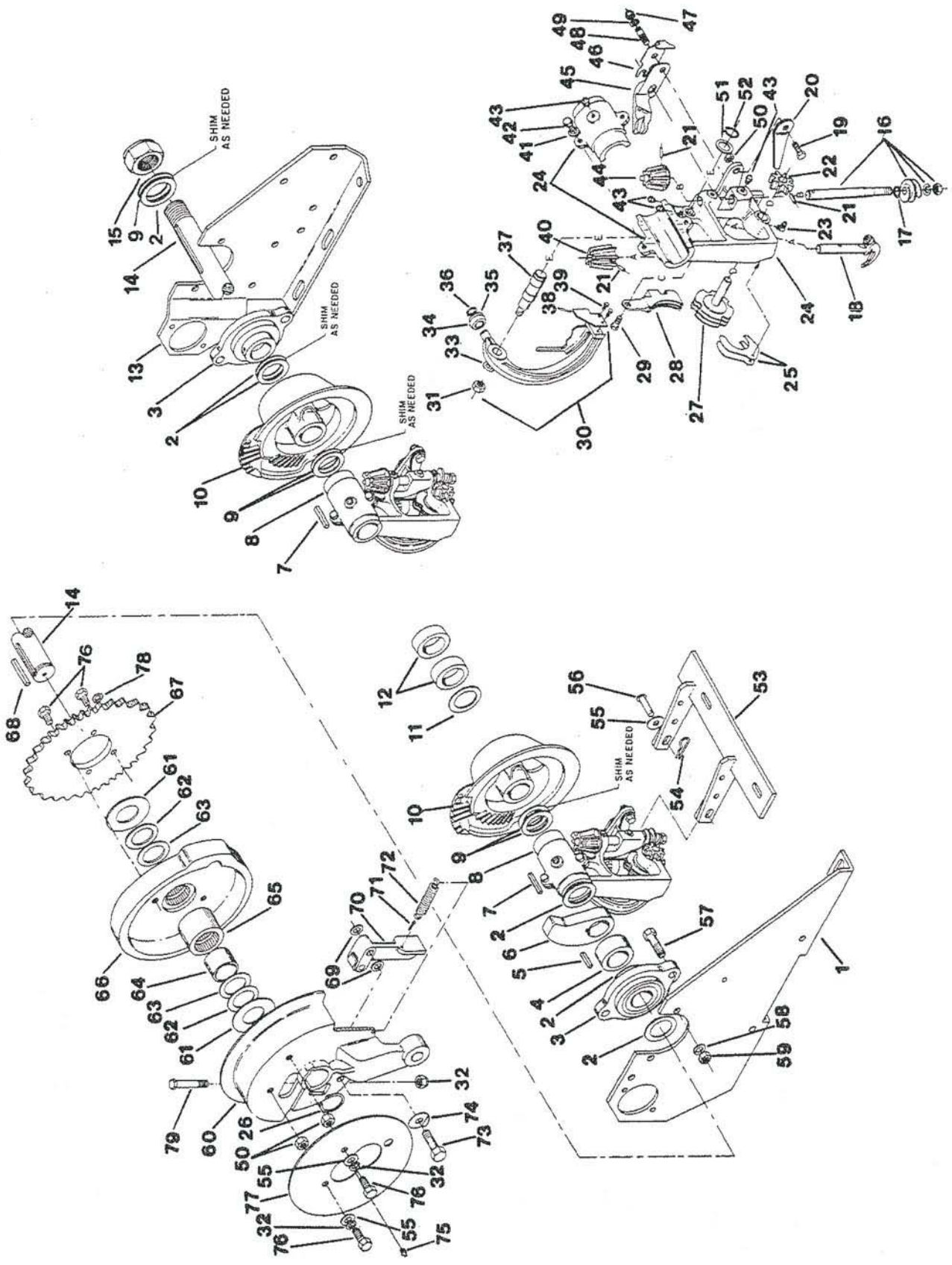
FLYWHEEL AND PINION SHAFT ASSEMBLY



FLYWHEEL AND PINION SHAFT ASSEMBLY

REF NO.	PART NO.	DESCRIPTION	QTY. USED
1	SHF0013300	SHAFT,PINION	1
2	F000007488	KEY	2
3	BRG0076523	PINION BRG & HOUSING COMPLETE	1
4	15784W	CAPSCREW	4
5	R13812518	WASHER, LOCK	4
6	254014	WASHER, FLAT	4
7	901883	PL,LH LINER	4
8	BAR0007975	BAR,ANCHOR	2
9	GER0007128	GEAR, PINION	2
10	00114505	NUT, JAM	4
11	SQS5003000	SQ HEAD SET SCREW-CUP POINT	4
12	R13811083	CAPSCREW	2
13	223587	NUT, ESNA	3
14	F000001132	SHEAR BUSHING-F/FLYWHEEL HUB	1
15	HUB0007157	SHEAR HUB ASSY INCLUDING F1132	1
16	901998	SHEAVE,PULLEY	1
17	245382	BUSHING, TAPERED	1
18	ZZ000000459	KEY	1
19	F000000072	KEY,SHEAR HUB	1
20	BSH0007127	MP2 2-7/16” FLYWHEEL BUSHING-PAIR	1
21	ZZ00002008	SET COLLAR W/(2) SET SCREWS	1
22	SCC0000516	HEX HD CS NC 1/2 X 5 W/NUT	1
23	FLW0007127	FLYWHEEL COMP W/SHEAR BUSHING	1
	F000001614	. FLYWHEEL SHEAR BUSHING	1

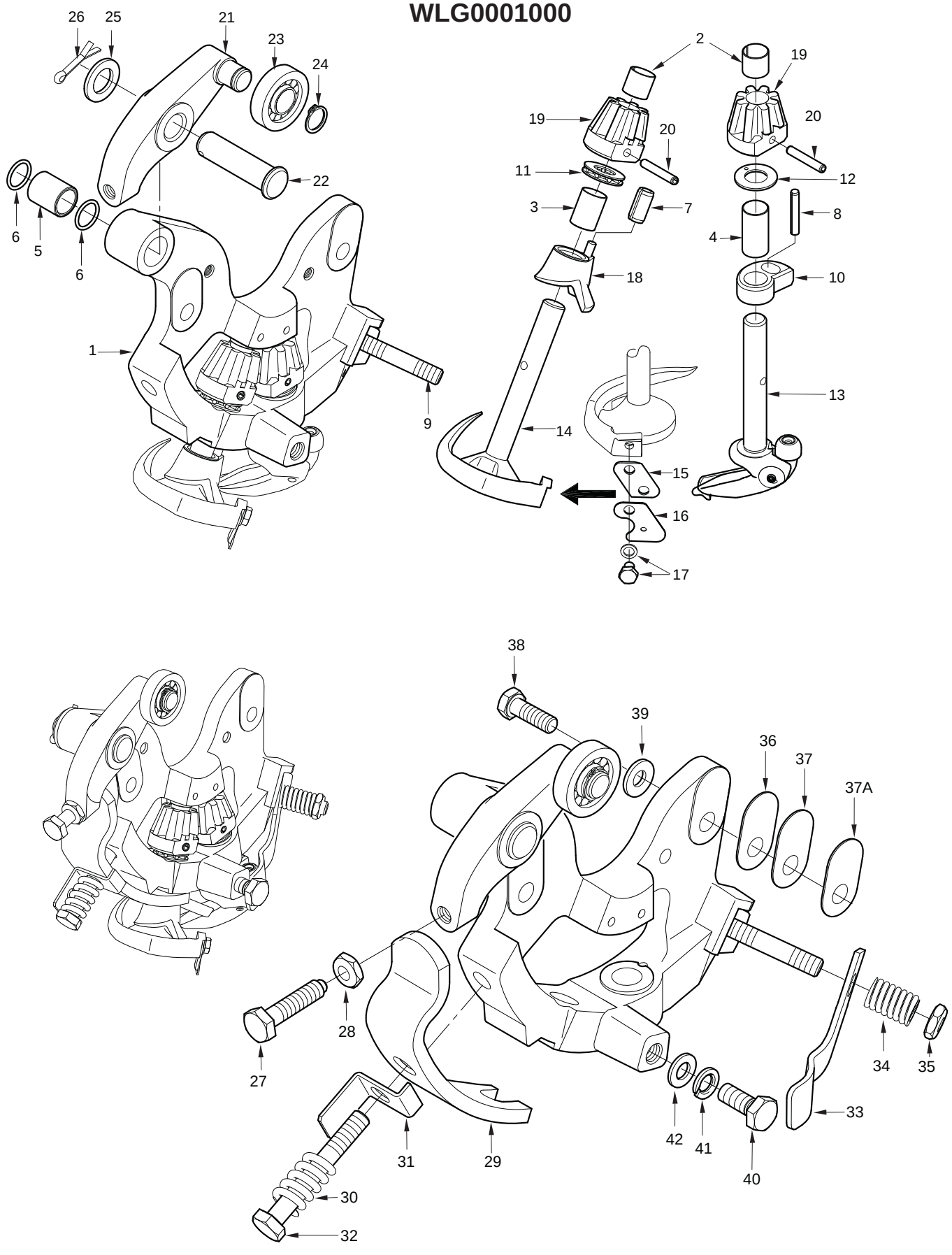
280 KNOTTER AND CLUTCH ASSEMBLY



280 KNOTTER AND CLUTCH ASSEMBLY

REF NO.	PART NO.	DESCRIPTION	QTY. USED
1	F000008369	LH MOUNT F/ 1-3/8" TWN KNOTTER	1
2	F000004160	1-3/8" X 14 GA MACHINE BUSHING	A/R
3	F000007063	1-3/8" KNOTTER SHAFT BEARING	2
4	F000000099	1-3/8" SET COLLAR	1
5	F000008054	3/8 X 3/8 X 3/4 Key	1
6	CAM0007180	CAM FORTWINE FINGER	1
7	F000004104	KEY;A; .375 SQ BAR X 1.5	2
8	KNT006006A	SPLIT KNOTTER COMP	2
9	R616841	1-3/8 X 10 GA MACHINE BUSHING	1
10	GER0006068	KNODULAR CAM GEAR	2
11	F000007977	1-3/8 X1-7/8 X. 010 SPACER WASHER	1
	F000007978	1-3/8X1-7/8X.005 SPACER WASHER	A/R
12	F000008066	SPACER; 2 SCH 80 X 1	1
13	F000008368	PL,RH MTG;C; .25PL X 9.563 X 16.75	1
14	F000008387	KNOTTER SHAFT-2TIE	1
15	NFE0013750	ESNA NUT NF 1-3/8	1
16	F000007876	KNOTTER WORM & SHAFT ASS PLTD	1
17	F000001680	28 GA. KNOTTER WORM WASHER	1
	F000000657	KNOTTER WORM WASHER	A/R
	F000000658	14 GA. KNOTTER WORM WASHER	A/R
	F000000659	18 GA. KNOTTER WORM WASHER	A/R
18	RS00006015	BILL HOOK COMPLETE REPL F7861	2
	F000008068	SPACER F/BILL HOOK PIN - .020	2
	F000008069	SPACER F/BILL HOOK PIN - .032	2
	RS00003786	TRIGGER F/KNOTTER BILL HOOK	2
	RS00001514	PIN FOR BILL HOOK TRIGGER-4X16	2
19	00114672	HEX HEAD CS,3/8-16 X 1"GRD 5	1
20	F000008052	TWINE HOLDER SPRING - PLATED	2
21	RS05227344	SPIRAL PIN F/KNOTTER GEARS	A/R
22	F000007871	TWINE HOLDER DISC WORM PINION	1
23	F000007882	1/8 NPT 90* 5/16 HEX ZERK	1
24	KNT0060060	KNOTTER ROLL PIN 5 X 16mm	1
25	F000007870	TWINE DISC CLEANER	2
26	F000007988	SNAP RING	1
27	RS00006085	TWINE DISC RETAINER - PLATED	1
28	F000007868	TWINE HOLDER - PLATED	1
29	F000007867	TWINE HOLDER BOLT	1
30	F000008050	KNIFE ARM COMPLETE -PLATED	1
31	F000007893	NUT F/KNIFE ARM PIN	1
32	223587	ESNA NUT NC 1/2	1
33	RS20661120	SPACER WASHER F/KNIFE ARM PIN	1
34	F000008274	ROLLER SNAP RING	1
35	F000008280	1 MM WASHER-WORM SHF & KNF ARM	1
36	F000008275	SNAP RING F/KNIFE ARM ROLLER	1
37	RS206377212	PIN FOR KNIFE ARM COMPLETE	1
38	F000008049	TWINE KNIFE	1
39	F000007859	TWINE KNIFE SCREW	1
40	253270	BILL HOOK PINION	1
41	201566	5/16" MEDIUM LOCKWASHER	1
42	201599	HEX HEAD CS 5/16-18 X 1"GR5	1
43	ZZ00000105	1/8 NPT STR 5/16 HEX ZERK	1
44	GER0007873	WORM PINION	1
45	F000008051	KNOTTER HOOK CAM	1
46	F000007947	KNOTTER HOOK CAM ADJUST SPRING	1
47	F000007949	KNOTTER HOOK CAM ADJ SCREW-NUT	1
48	F000007948	KNOT HOOK CAM ADJUSTING SCREW	1
49	223428	FLAT WASHER 5/16	1
50	231106	HEX NUT,3/8-16 GRADE 5	1
51	F000007860	KNIFE ARM WASHER 25 X 20 X .5M	1
52	F000007976	SNAP RING F/KNIFE ARM SHAFT	1
53	F000008388	ANCHOR WLDMT,KNTR	1
54	F000001019	PIN, HAIRPIN COTTER	2
55	223427	WASHER, FLAT; 3/8	1
56	F000001020	PIN, CLEVIS; 3/8 X 1	2
57	R13810879	HEX HEAD CS 7/16-20 X 1-1/2" GR 5	4
58	200603	7/16" MEDIUM LOCKWASHER-PLAIN	4
59	221398	HEX NUT 7/16-20	4
60	F000007519	HOUSING ASSY; KNOTTER CLUTCH	1
61	F000004136	WASHER;A; .062 X 1.375 ID X 25 OD	2
62	R616841	1-3/8 X 10 GA MACHINE BUSHING	2
63	R616841	MACH BUSH; (1 3/8 X 2 1/8 X 18GA)	2
64	F000004135	INNER RACE F/F4133	1
65	F000004134	BEARING	1
66	900249	DISC & BRG ASSY;*B; 1.375 SHAFT	1
67	F000000755	SPROCKET, CLUTCH	1
68	F000007904	KEY;A; .375 SQ BAR X 1.875	1
69	F000001623	CLUTCH PAWL WASHER	2
70	CLH0020799	PAWL WLDMT,KNOTTER CLUTCH	1
71	COT0000401	7/64 COTTER PIN	1
72	F000004115	SPRING	1
73	PIN0020767	CLUTCH PAWL PIN	1
74	F000001620	18 GA CLUTCH PAWL PIN LOCK	1
75	ZZ00000109	ZERK 3/16 DRIVE STR 5/16 HEX	1
76	00114672	CAPSCREW; 3/8 NC X 1 GR5	1
77	F000007987	SHIELD F/KNOTTER CLUTCH	1
78	236655	3/8" EXT STAR WASHER-PLATED	2
79	234887	HEX HEAD CAP 1/2-13 X 2-1/4"GR5	1
80	223587	ESNA NUT NC 1/2	1
81	F000007988	SNAP RING	1

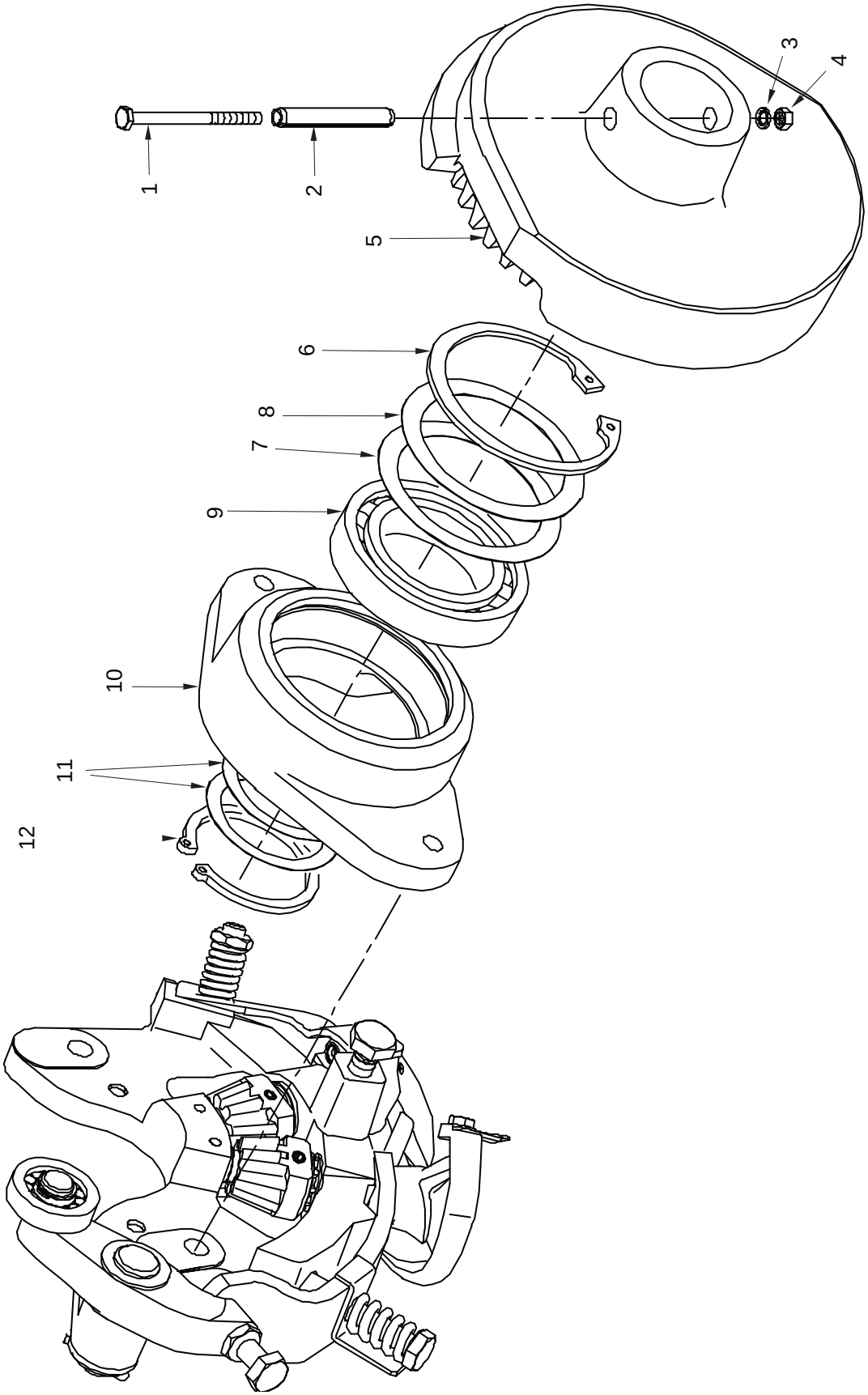
KNOTTER ASSEMBLY
WLG0001000



KNOTTER ASSEMBLY
WLG0001000

REF NO.	PART NO.	DESCRIPTION	QTY. USED
1	WLG0001010	KNOTTER FRAME, INCLUDES 2-10	1
2	WLG0001011	SLEEVE	2
3	WLG0001012	SLEEVE	1
4	WLG0001013	SLEEVE	1
5	WLG0001014	SLEEVE	1
6	WLG0001015	SEALING WASHER	2
7	WLG0001016	EXPANDING PIN	1
8	WLG0001017	CYLINDRICAL PIN 5 X 32mm	1
9	WLG0001018	SET SCREW 10 X 45mm	1
10	WLG0001022	KNOTTER BUSHING	11
11	WLG0001016	KNOTTER ROLL PIN	1
12	WLG0001017	TAKE-OFF DISK	1
13	902755	BILL HOOK	1
14	WLG0001038	TWINE RET W/KNIFE & ALLEN BOLT	1
	255309	TWINE RET	1
15	WLG0001039	KNIFE	1
16	WLG0001040	COVER	1
17	902962	SCREW AND WASHER	1
	AC307924	WASHER; M6 GR10.9 ZY	
	WLG0001041	ALLEN HEAD BOLT M6 x 6	
18	WLG0001042	RETAINER SHOE	1
19	WLG0001034	BEVEL GEAR	2
20	254811	SPRING TYPE STRAIGHT PIN	2
21	WLG0001046	TENS LEVER CPL. INLCUDES 22-26	1
	WLG0001047	CAM LEVER CPL. 21 + 22	
	WLG0001048	CAM LEVER ONLY	
22	WLG0001049	BOLT	1
23	WLG0001050	ROLLER	1
24	WLG0001051	CIRCLIP	1
25	WLG0001054	WASHER	1
26	WLG0001055	SPLIT PIN	1
27	WLG0001052	HEX.BOLT 10 X 45mm	1
28	WLG0001053	SAFETY NUT 10mm	1
29	WLG0001056	LEAF SPRING	1
30	WLG0001057	SPRING	1
31	WLG0001058	ANGLE BRACKET	1
32	WLG0001059	BOLT 10x75mm	1
33	WLG0001019	LEAF SPRING	1
34	WLG0001020	PRESSURE SPRING	1
35	WLG0001021	SAFETY NUT 10mm	1
36	WLG0001027	EQUALIZER DISC .3mm	1
37	255311	EQUALIZER DISC .5mm	1
37A	255312	EQUALIZER DISC .2mm	1
38	WLG0001025	TIGHT-FIT BOLT 10X30mm	1
39	WLG0001026	SPRING WASHER 12mm	1
40	SCCM010025	HEX BOLT 10X25mm	1
41	Y01E-M10	WASHER M10 LOCK SPLIT	1
42	R1938872	WASHER 10.mm	1

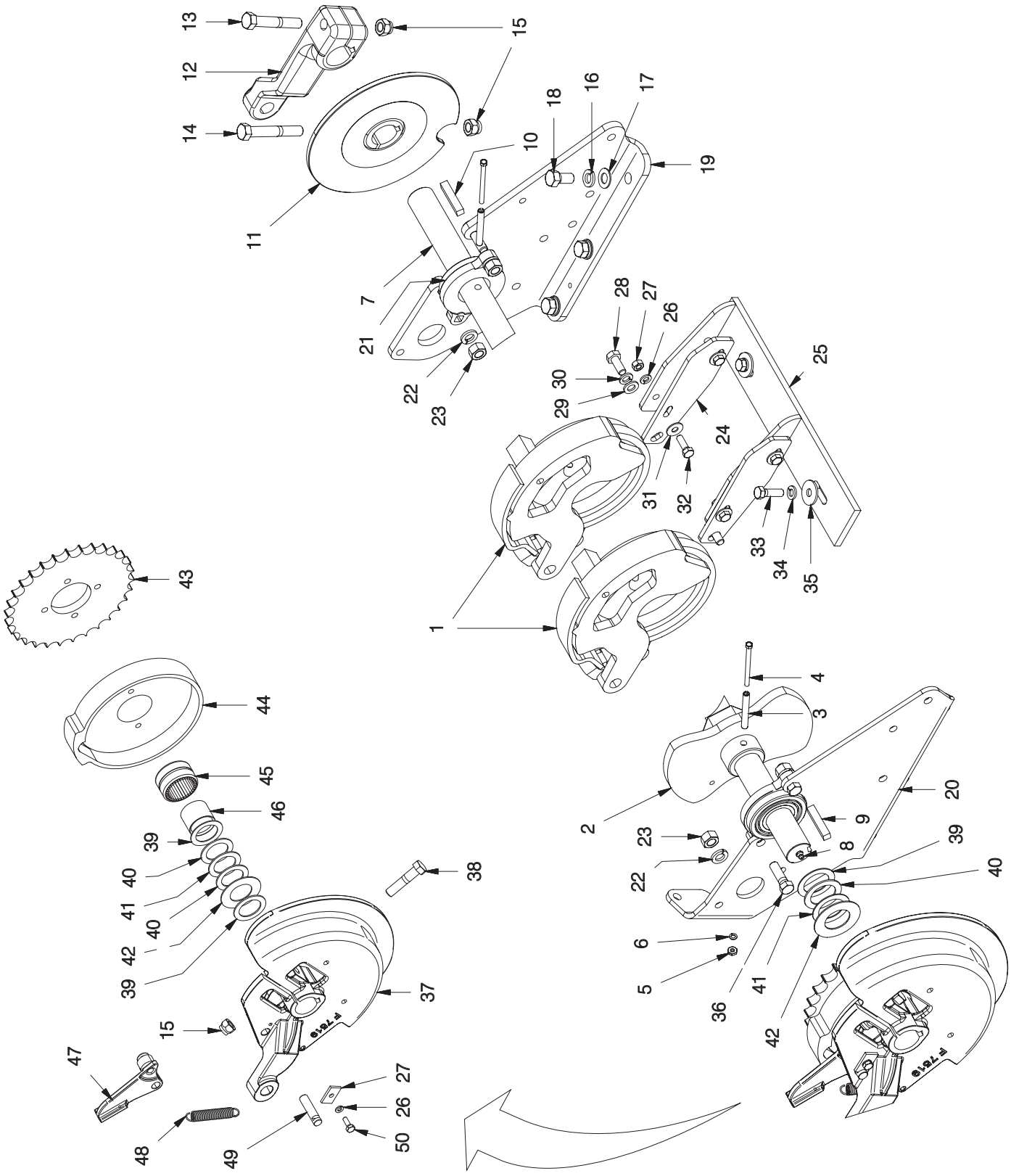
KNOTTER ASSEMBLY CONTINUED
WLG0001000



KNOTTER ASSEMBLY CONTINUED
WLG0001000

REF NO.	PART NO.	DESCRIPTION	QTY. USED
1	WLG0001064	HEX BOLT M5 x 75	1
2	WLG0001063	PIN, EXPANDING	1
3	WLG0001062	LOCKWASHER, #5	1
4	R13811421	HEX NUT M5	1
5	WLG0001001	CROWN WHEEL INCLUDES 5-12	1
	WLG0001002	CROWN WHEEL	1
6	WLG0001006	CIRCLIP	1
7	255315	SHIM .1	A/R
8	255316	SHIM .2	A/R
9	WLG0001005	BEARING	1
10	WLG0001004	BEARING FLANGE	1
11	WLG0001008	SHIM .2 mm	A/R
	WLG0001009	SHIM .3 mm	A/R
	255314	SHIM 1. mm	A/R
	255313	SHIM .1 mm	A/R
12	WLG0001006	CIRCLIP	1

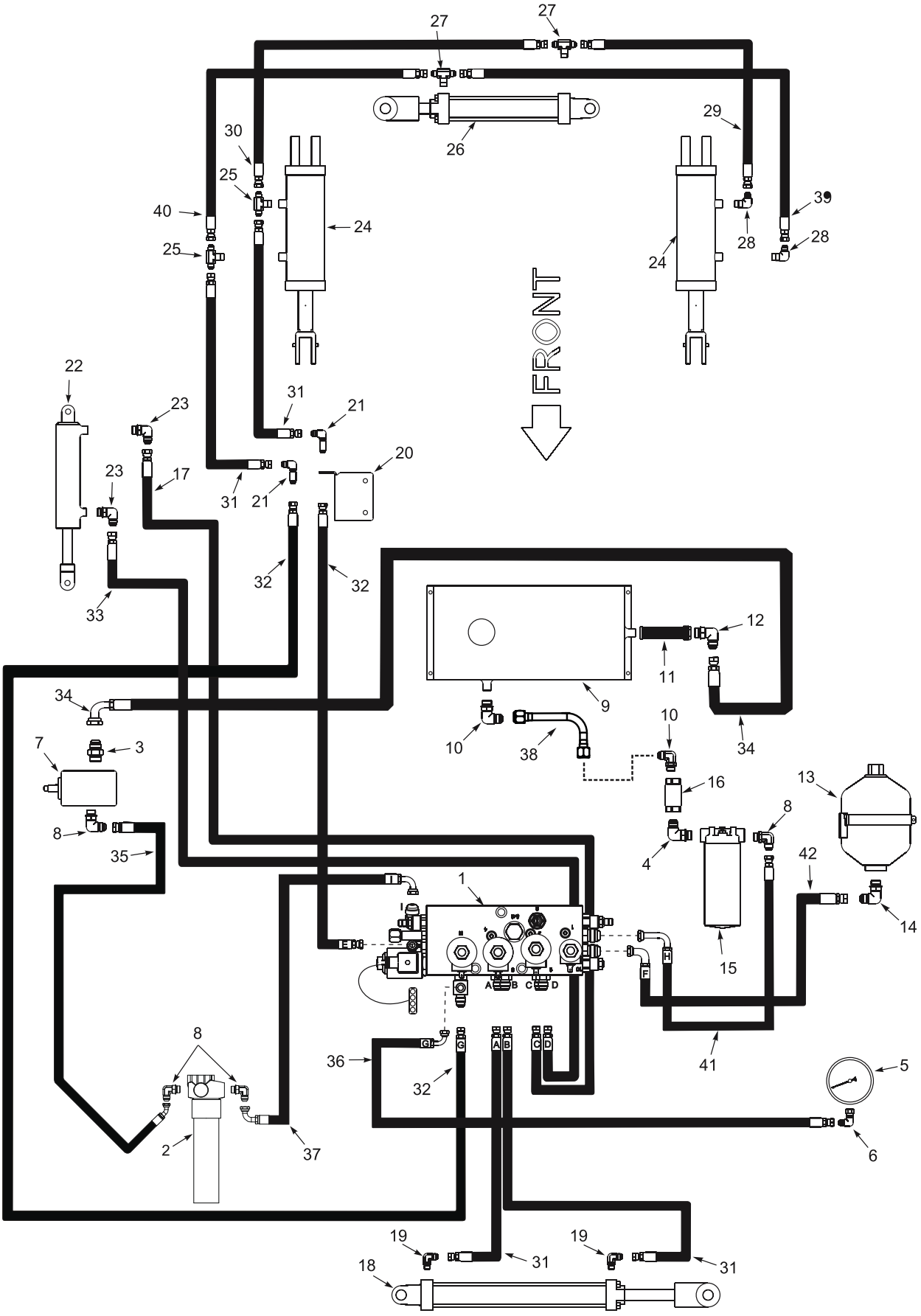
285 KNOTTER ASSEMBLY



285 KNOTTER ASSEMBLY

REF NO.	PART NO.	DEESCRIPTION	QTY USED
1	WLG0001000	KNOTTER HEAD COMPLETE	2
2	CAM0033569	CAM WLDMT;*B; TWINE FINGER	1
3	WLG0001063	PIN, EXPANDING	3
4	WLG0001064	HEX BOLT M5 x 75	3
5	WLG0001065	HEX NUT M5 - WELGER KNOTTER	3
6	WLG0001066	SPRING WASHER A5	3
7	900237	SHAFT 2 TIE KNOTTER	1
8	F000004089	ZERK 3/16 DRIVE STR 5/16 HEX	1
9	F000007904	3/8 X 3/8 X 2 KEY	1
10	ZZ00000419	3/8 X 3/8 X 3-1/2 KEY	1
11	F000007528	BRAKE DISC ASSY	1
12	F000007461	NEEDLE YOKE DRIVE ARM	1
13	239517	HEX HD CS NC 1/2 X 3 - PLATED	1
14	SCC0000511	HEX HD CS NC 1/2 X 3-1/4	1
15	223587	ESNA NUT NC 1/2 - PLATED	3
16	234665	WASHER, LOCK; 1/2 REG HEL SPR ZC	6
17	239519	FLAT WASHER 1/2 USS	6
18	234885	1/2-13 X 1” HEX CAP SCREW	6
19	WLG0001024	KNOTTER TAKE-OFF DISK	1
20	WLG0001025	KNOTTER BOLT	2
21	F000007063	BEARING, SHAFT	2
22	223595	7/16” LOCKWASHER	4
23	R13803713	HEX NUT NC 7/16	4
24	BKT0033732	BRACKET,KNOTTER ANCHOR,	3
25	ANC0033729	ANCHOR, KNOTTER	1
26	R13812513	5/16” MEDIUM LOCKWASHER	4
27	R13811512	HEX NUT NC 5/16	4
28	R970875	HEX HD CS 10M X 25MM MC	2
29	R1938872	FLATWASHER 10 MM	4
30	WLKM000100	10 MM LOCKWASHER	4
31	223428	FLAT WASHER 5/16	1
32	223655	HEX HEAD CAP SCREW 5/16-18 X 1	4
33	233878	HEX HD CS 3/8-16 X 1-1/4	2
34	234135	3/8” MEDIUM LOCKWASHER	2
35	223427	FLAT WASHER 3/8	2
36	R13810879	CAPSCREW; 7/16 NF X 1 1/2 GR8 HX	4
37	F000007519	HOUSING ASSY;*C; KNOTTER CLUTCH	1
38	234887	CAPSCREW; 1/2 NC X 2 1/4 GR8	1
39	F000004161	MACH BUSH	A/R
40	F000004160	MACH BUSH	A/R
41	F000004159	MACH BUSH	A/R
42	F000004136	WASHER	2
43	F000000755	SPROCKET-KNOTTER CLUTCH	1
44	F000004133	CLUTCH DISC	1
45	F000004134	BEARING	1
46	F000004135	INNER RACE F/F4133	1
47	CLH0020799	PAWL ASSY,KNOTTER CLUTCH	1
48	F000004115	SPRING	1
49	PIN0020739	PIN;CLUTCH PAWL	1
50	133469W	CAPSCREW;ASC-508; 1/4 UNC X 1/2	1
51	223871	LOCKWASHER 1/4”	1
52	KPR0020740	PL,KEEPER	1

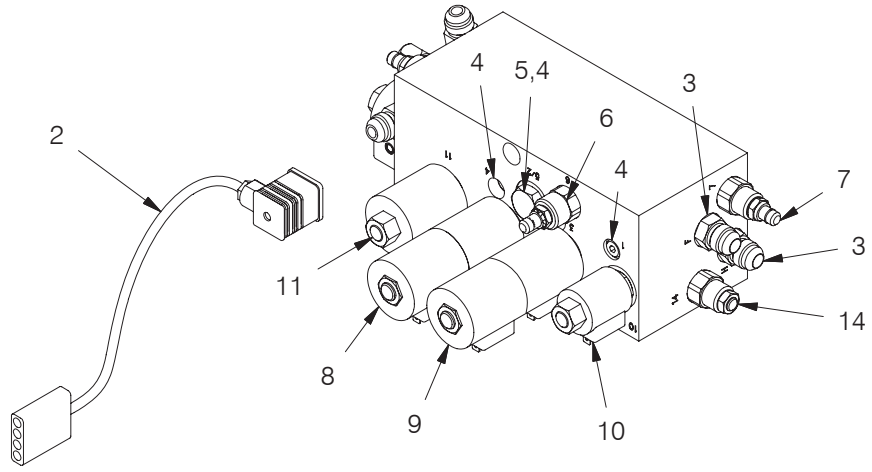
280/285 HYDRAULIC COMPONENTS AND HOSES

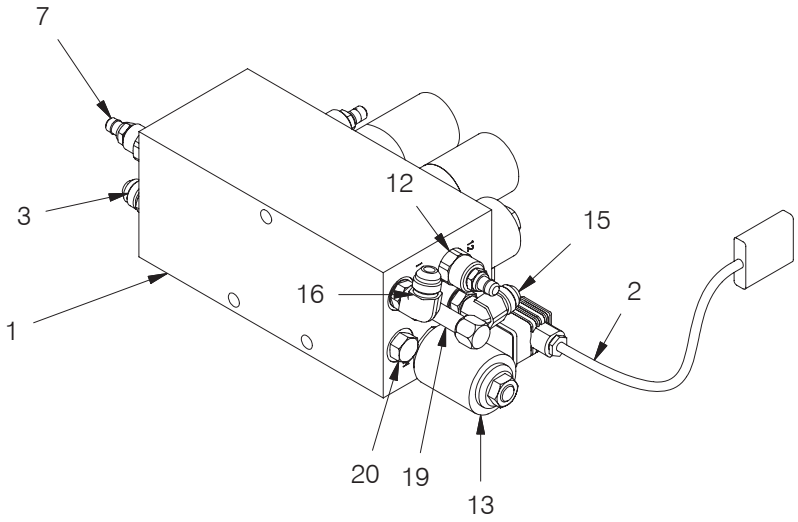


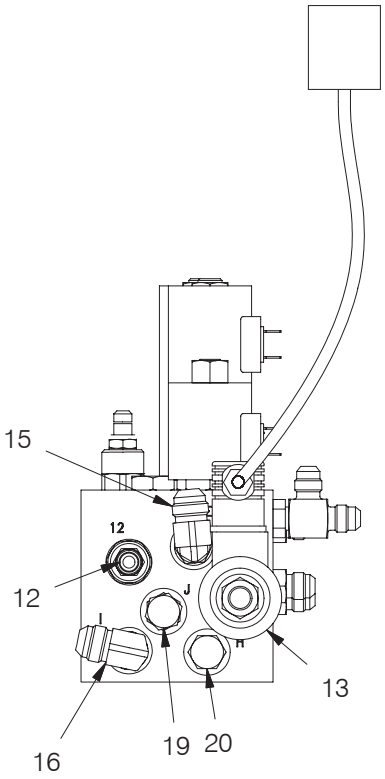
280/285 HYDRAULIC COMPONENTS AND HOSES

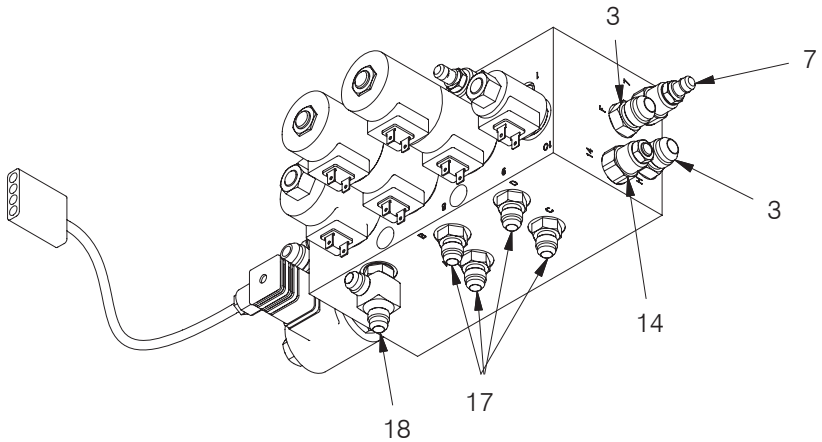
REF NO.	PART NO.	DESCRIPTION	QTY. USED
1	MNF037316E	280,380 SIDE FEED MANIFOLD ASSY	1
2	252800	FILTER ASSY, INLINE PRESSURE	1
2	52801	ELEMENT, FILTER	1
2	52958	FILTER HEAD	1
3	209215	FITTING; ST	1
4	22308	3/4”O’RING X 3/4M 90*PIPE	1
5	GAG0000001	4” TENSION GUAGE-LIQUID FILLED	1
6	HYD5455640	1/4 FML NPT X 3/8 JIC 90*ELB	1
7	PMP12S8XG2	HYDRAULIC GEAR PUMP	1
	SEL2000003	SEAL KIT F/PMP12S8XG2 PMP	1
	DTZ0270606	DRIVE PARTS F/HYDRAULIC PUMP	1
8	208713	FITTING; EL	3
	209806	FITTING; ST, BEFORE S/N ASC-385-027	2
9	TNK004Z980	HYDRAULIC RES W/FILLER NECK-5GAL	1
	CAP0001390	CAP ONLY	1
10	209417	FITTING; EL	2
11	FILS1510V3	HYDRAULIC TANK FILTER-	1
12	12663	FITTING; EL	1
13	ACMSBO2102	HYDAC HYDRAULIC ACCUMULATOR	1
14	19920	FITTING; EL	1
15	FIL0HH6935	HYDRAULIC FILTER HEAD	1
	FIL0HF6613	FILTER ELEMENT-SYNTHETIC	1
16	R11873	CHECK VALVE 3/4” NPT FEM BRONZE	1
17	251612	HOSE ASSY	1
18	CYL0009014	CYLINDER- HYD SWINGBAR	1
19	23945	FITTING; EL	2
20	BKT037356B	TNS HYD HOSE BULKHEAD BRACKET	1
21	HYD5525030	3/8 JIC X 90* BLKHD UNION ELB	2
22	F000006724	HYDRAULIC CYL-P/U LIFT SP	1
23	F000006638	3/8 JIC X 1/4 NPT 90* MALE ELBOW	2
24	CYL0033749	VERTICAL TENSION CYLINDER	2
25	HYD5605035	3/8 JIC X 3/8 NPT MALE BRANCH TEE	2
26	F000006519	HYDRAULIC CYLINDER	1
27	R14293	FITTING; TE	2
28	HYD5405045	FITTING; EL	2
29	23955 HOSE	ASSY	1
30	245285 HOSE	ASSY	1
31	R12565833	HOSE ASSY	4
32	HOS036659A	HOSE ASSY	2
33	251611	HOSE ASSY	1
34	225140	HOSE ASSY	1
35	252867	HOSE ASSY	1
36	254198	HOSE ASSY	1
37	27626	HOSE ASSY	1
38	902222	PIPE	1
39	25363	HOSE ASSY	1
40	245873	HOSE ASSY	1
41	225571	HOSE ASSY	1
42	244497	HOSE ASSY	1

280/285 MAIN HYDRAULIC VALVE ASSEMBLY





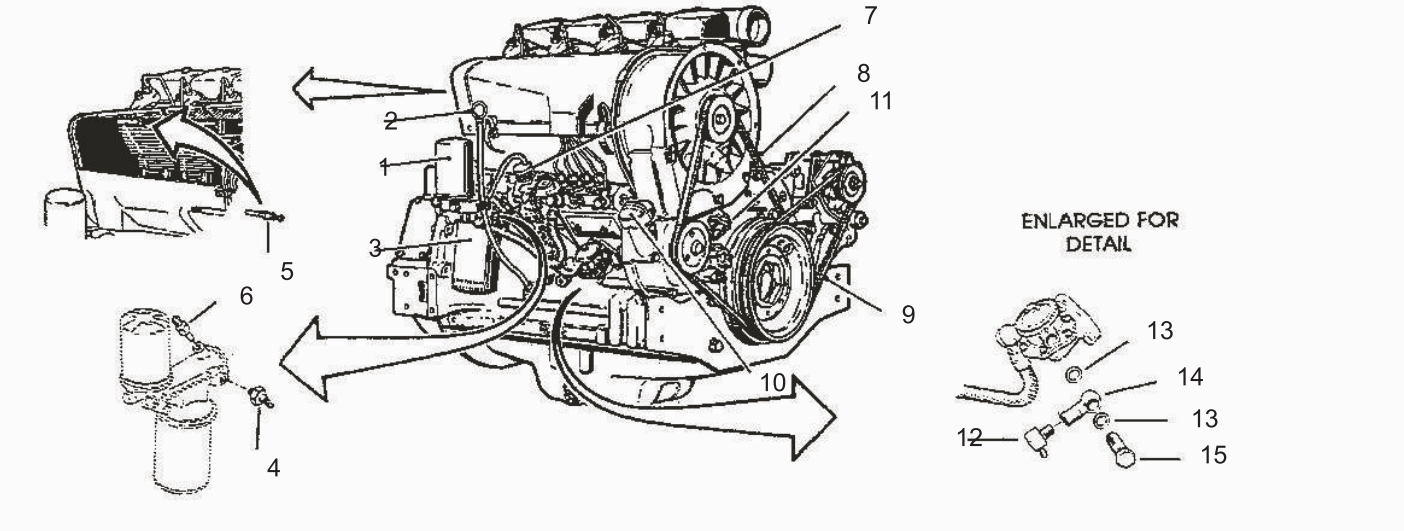


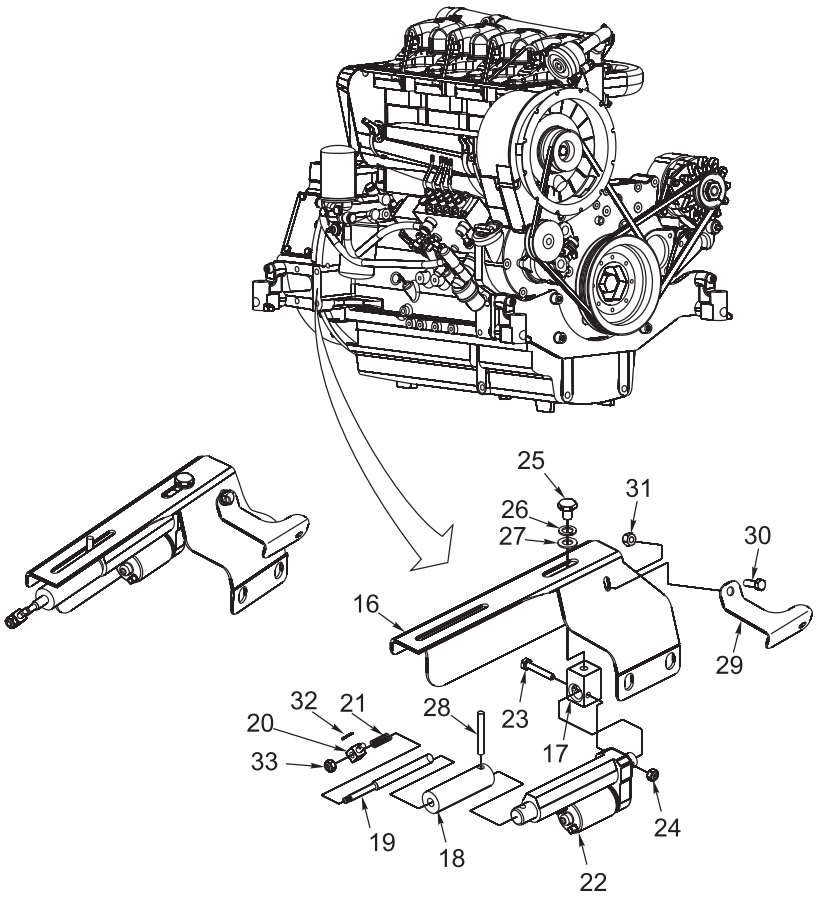


380/385 MAIN HYDRAULIC VALVE ASSEMBLY

REF NO.	PART NO.	DESCRIPTION	QTY. USED
1	MNF037316E	280,380 SIDE FEED MANIFOLD ASSY	1
	252543	MANIFOLD ONLY	
2	VLV035796B	PROPORTIONAL CONTROLLER/AMP	1
3	211550	FITTING; ST	2
4	HYD3169005	1/16 SOCKET HD STEEL PIPE PLUG	4
5	YL-402-C2	CARTRIDGE, CHECK VALVE	1
	2500282	KIT, SEAL	1
6	VLVQCDALAN	DIFFERENTIAL UNLOAD PILOT	1
	252566	KIT, SEAL	1
7	VLVRVCALAN	PILOTED RELIEF CARTRIDGE	1
	242101	KIT, SEAL	1
8	VLV0000004	VALVE, SOLENOID ASSY	1
	252530	CARTRIDGE, VALVE	1
	252532	COIL	1
	252563	KIT, SEAL	1
9	252495	VALVE, SOLENOID ASSY	1
	252562	CARTRIDGE	1
	252532	COIL	1
	252563	KIT, SEAL	1
10	VLVCP5082B	POPPET SOLENOID VALVE.NO	1
	252534	CARTRIDGE, VALVE	1
	252532	COIL	1
	2500282	KIT, SEAL	1
11	252535	VALVE, SOLENOID	1
	252536	CARTRIDGE, VALVE	1
	252532	COIL	1
	252567	KIT, SEAL	1
12	VLVPVDALEN	PILOTED PRESS REDUCING VALVE	1
	252566	KIT, SEAL	1
13	VLVCP55820	PROPORTIONAL RELIEF VALVE ASSY	1
	252556	CARTRIDGE, VALVE	1
	244004	COIL	1
	252568	KIT, SEAL	1
14	2502101	CARTRIDGE, C/BALANCE	1
	242101	KIT, SEAL	1
15	R13801972	FITTING; EL	1
16	224298	FITTING; EL	1
17	211560	FITTING; ST	4
18	223436	FITTING; TE	1
19	236824	FITTING; ST	1
	R13804188	FITTING; CAP	1
20	252544	CONSTRUCTION PLUG	1

ENGINE FILTERS AND ANCILLARY PARTS

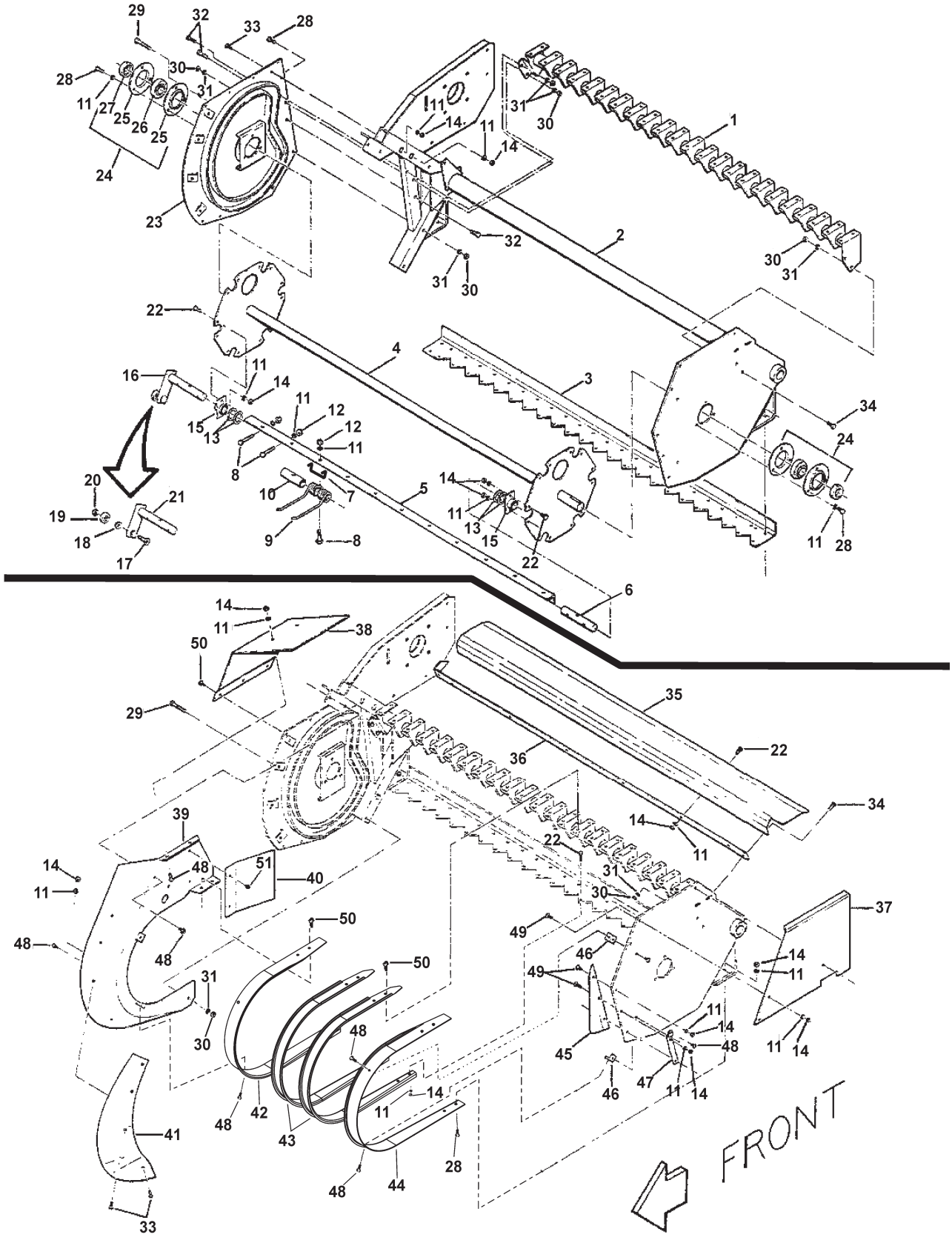




ENGINE FILTERS AND ANCILLARY PARTS

REF NO.	PART NO.	DESCRIPTION	QTY. USED
1	FIL1160243	FUEL FILTER F/DEUTS & CUMMINS	1
2	KIT0031910	DIPSTICK KIT	1
2	DTZ1171394	DIPSTICK ONLY	1
2	DTZ2168855	BRACKET ONLY	1
2	DTZ2169403	TUBE ONLY F/DIP STICK	1
3	FIL1160024	OIL FILTER	1
4	DTZ1176023	OIL PRESSURE SENDER	1
5	DTZ1173470	TEMPERATURE SENSOR	1
6	DTZ0271160	OIL TEMPERATURE SWITCH	1
7	DTZ9990172	SHUTDOWN SOLENOID KIT	1
8	DTZ2235175	COOLING FAN BELT	1
9	DTZ0035178	ALTERNATOR BELT	1
10	DTZ1236291	OIL FILTER CAP	1
11	DTZ0272326	BROKEN BELT STOP SWITCH	1
12	HYD0001571	3/8" HOS X 1/4" NPT 90° MALE ELB	1
13	DTZ1118688	WASHER	2
14	DTZ1290579	BANJO FITTING	1
15	DTZ1119246	BANJO BOLT	1
16	900277	THROTTLE ACCELERATOR SUP F/914	
	SUP0035652	THROTTLE ACCELERATOR SUP F/912	1
17	MNT0035653	THROTTLE ACTUATOR MOUNT	1
18	LNK0035654	THROTTLE ACCELERATOR LINK	1
19	ROD0035655	THROTTLE ACCELERATOR ROD	1
20	LEV0032159	LEVER ADAPTOR,ACCEL THROTTLE	1
21	F000000169	BALE COUNTER ROD SPRING	1
22	ACTS121728	ELEC ACTUATOR W/INTERNAL SWITCH	1
23	SCC0000104	HEX HD CS NC 1/4 X 1-1/2	1
24	NCE0000250	ESNA NUT NC 1/4”	2
25	SCC0030001	HEX HD CS NC 3/8 X 3/4	1
26	WLK0000375	3/8” MEDIUM LOCKWASHER	1
27	WAS0000138	FLAT WASHER SAE 3/8”	1
28	ZZ00000705	1/4 X 2 EXPANSION PIN(ROLL PIN)	1
29	900275	THROTTLE ACTUATOR BRACE F/914	
	BRC037318B	THROTTLE ACTUATOR BRACE F/912	1
30	SMS0000307	WHIZ BOLT 1/4 X 3/4 NC	1
31	NMS0000250	WHIZ NUT 1/4-20	1
32	COT0000301	3/32 X 3/4 COTTER PIN	1
33	235620	ESNA NUT	1

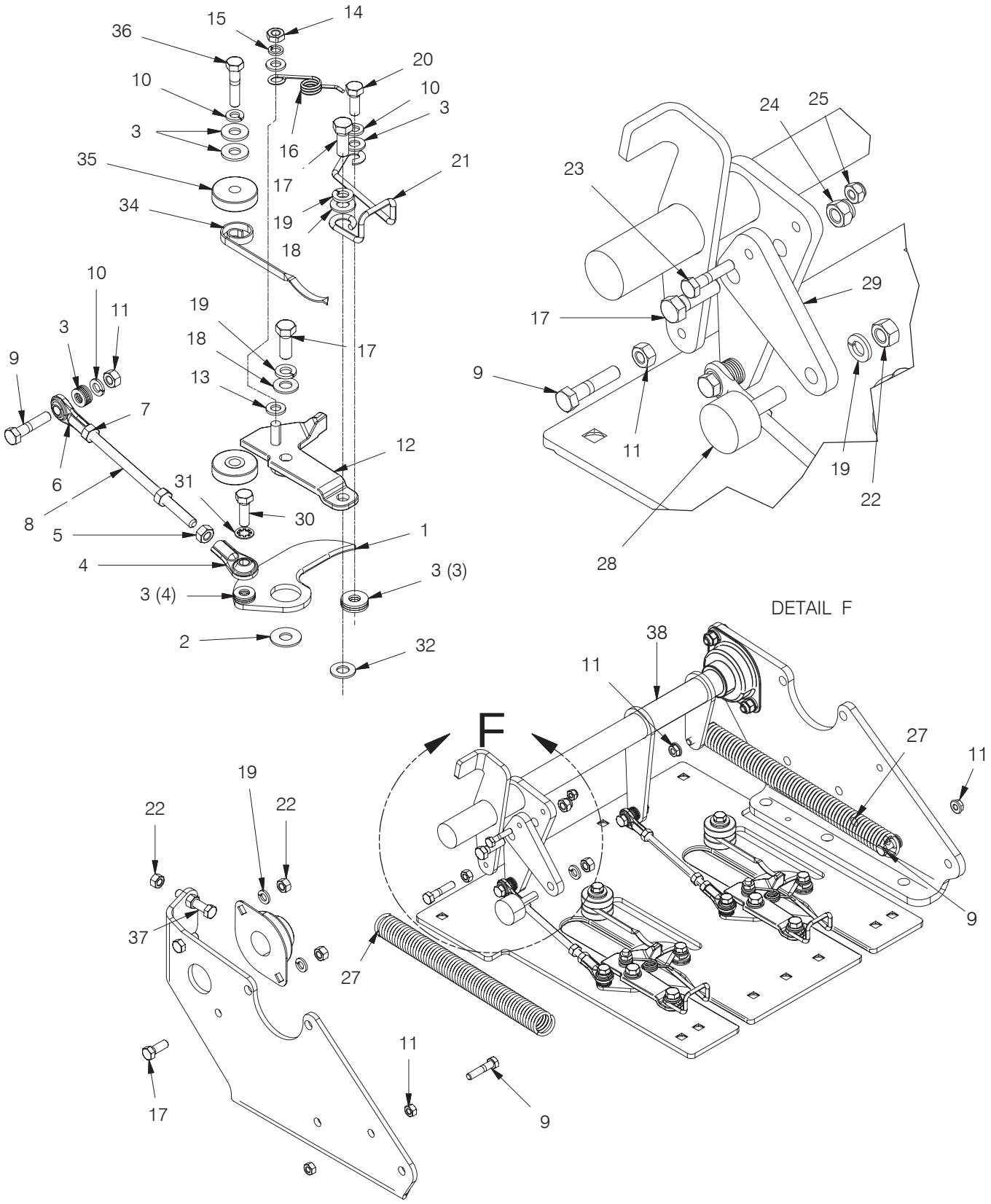
PICKUP ASSEMBLY



PICKUP ASSEMBLY

REF NO.	PART NO.	DESCRIPTION	QTY. USED
1	MNT0033557	330/370 MNT,STRIPPER,P/UP TOP	1
2	FRM0025578	70" WIDE PICKUP FRAME	1
3	MNT0033556	330/370 MNT,STRIPPER,P/UP, LOWER	1
4	SHF0018480	70" PICKUP REEL SHAFT ASSY	1
5	BAR0033189	PICKUP TOOTH BAR	6
6	SHF0033356	370 TOOTH BAR PIVOT SHAFT	6
7	PCY0033352	WIDE PICKUP FINGER GUIDE	76
8	SFC0000206	5/16" X 2" NF HT CAP SCREW	84
9	TTH0033171	SUPER SWEEP P/UP TEETH	78
10	F 0000101	PICKUP FINGER GUIDE PIPE-SHORT	48
11	WLK0000313	5/16" LOCKWASHER - PLATED	177
12	NFX0000313	5/16" NF FLEX-LOCK NUT	84
13	WAS0011459	TOOTH BAR BRG WASHER	24
14	NCH0000313	5/16" NC HEX NUT - PLATED	90
15	BRG0006219	TOOTH BAR BEARING	12
16	CAM0033355	CAM LEVER COMPLETE	6
17	SCO0000504	1/2" X 1-1/2" NC FH SOCKET CS	6
18	BSH0006231	CAM LVR ROLLER BUSHING	6
19	BRG0002029	CAM FOLLOWER BEARING	6
20	NCX0005000	1/2" NC FLEXLOCK JAM NUT	6
21	LEV0033355	P/UP TOOTH BAR LEVER	6
22	SCC0020001	5/16" X 3/4" NC HT CS - PLATED	30
23	PCY0020483	PICKUP CAM PLATE ASSEMBLY	1
24	F 0008102	BEARING ASSY F/PICKUP SHAFT	2
25	F 0008383	FLANGETTE-NO ZERK F/F8102	4
26	F 0008380	BEARING ONLY F/F8102	2
27	F 0008381	LOCKING COLLAR F/F8102	2
28	SCC0020002	5/16" X 1" NC HT CS -PLATED	54
29	SCC0030009	3/8" X 2-3/4" NC HT CS - PLATED	2
30	SCC0030001	HEX HD CS NC 3/8 X 3/4 - PLATED	6
31	WLK0000375	3/8" LOCKWASHER - PLATED	6
32	SCC0030005	3/8" X 1-3/4" NC HT CS - PLATED	1
33	SMT0002002	5/16" X 1" TH MACH SCREW-PLT	5
34	SCC0030002	3/8" X 1" NC HT CS - PLATED	3
35	SHD0020829	70" WIDE P/U EXTENTION SHEET	1
36	MNT0023007	EXT SHEET MOUNT	1
37	SHD0011309	L.H. DEFLECTOR	1
38	SHD0020832	R.H. DEFLECTOR	1
39	PCY0020861	R.H FENDER FLARE	1
40	DEF0022860	AUGER DEFLECTOR	1
41	SHD0006253	R.H. FENDER FLARE	1
42	STR0033500	OUTSIDE STRIPPER	1
43	STR0033502	370 STRIPPER CENTER	25
44	STR0033501	INSIDER STRIPPER F/70" PICKUP	1
45	F 0007151	L.H. INSIDE FENDER FLARE	1
46	MNT0011313	STRIPPER MOUNT ANGLE	2
47	F 0007194	PICKUP LIFT BRACKET	1
48	SMT0001000	1/4" X 1/2" TH MACH SCREW -PLT	6
49	SMT0002001	5/16" X 3/4" TH MACH SCREW-PLT	6
50	SMS0000198	5/16" X 1/2" NC WHIZ BOLT-PLATED	56
51	SMS0000173	1/4" X 1/2" NC WHIZ BOLT-PLATED	2

285 TWINE FINGER DRIVE ASSEMBLY



285 TWINE FINGER DRIVE ASSEMBLY

REF NO.	PART NO.	DESCRIPTION	QTY. USED
1	KNT0035620	TWINE FINGER	3
2	WAS3751500	TWINE FINGER WASHER .060	3
3	223428	FLAT WASHER 5/16	AR
4	BRG0001301	ROD END BEARING RH	3
5	R13803725	HEX NUT NF 5/16 RH	3
6	BRG0001300	ROD END BEARING LH	3
7	NFL0003125	LH JAM NUT NF 5/16	3
8	ROD037256B	TWINE FINGER DRIVE ROD	3
9	R13811016	HEX HD CS NC 5/16 X 1-1/2	3
10	R13812513	5/16 MEDIUM LOCKWASHER	6
11	R13811512	5/16 NC HEX NUT - PLATED	7
12	WLG0000001	KNOTTER TWINE GUIDE PLATE	3
13	WCTM000080	FLATWASHER 8 MM	6
14	NCHM008125	GR 8.8 HEX NUT 8M X 1.25 MC	3
15	WLKM000080	8 MM LOCKWASHER	3
16	WLG0000005	KNOTTER ANGLE SPRING	3
17	00180122	HEX HEAD CAP SCREW 3/8 X 1	3
18	223427	FLAT WASHER 3/8	3
19	234135	3/8 MEDIUM LOCKWASHER	3
20	201598	CAPSCREW; 5/16 NC X 7/8 GR5 HX BLK	3
21	WLG0000002	KNOTTER STOP SPRING	3
22	R13811512;	HEX NUT NC 5/16	4
23	R13801782	HEX CAP SCREW 1/4-20 X 1-1/4	1
24	237567	ESNA NUT 3/8-16	1
25	NCE0002500	ESNA NUT NC 1/4	1
26	SHF0033685	TWINE FINGER DRIVE SHAFT	1
27	F000001517	TRIP SPRING	1
28	F000001572	CAM FOLLOWER	1
29	LEV0035616	TWINE FINGER SHEAR LEVER-385	1
30	00181339	CAPSCREW; 5/16 NF X 1 GR5 HX BLK	3
31	WIS0003125	5/16 INTERNAL STAR WASHER-PLT	3
32	223427	FLAT WASHER 3/8	1
33	BRG51FLMX8	BEARING,2 BOLT FLANGE	2
34	WLG0000003	SPRING, STOP	3
35	WLG0000004	KNOTTER WASHER	6
36	179822	CAPSCREW; 5/16 NC X 1 1/2	2
37	037X020C8	3/8X2NC PLN GR8 CAP SCREW	1
38	900253	TWINE FINGER DRIVE ROD SHAFT 285	1

285 SPARE PARTS LIST

BRG0001300	ROD END BEARING 5/16 BORE LH FEMALE THD	1
BRG0001301	ROD END BEARING 5/16 BORE RH FEMALE THD	1
BRG0002029	CAM FOLLOWER BEARING 1/2" BORE	2
BRG0006219	TOOTH BAR BEARING	2
F 0000100	PICK-UP FINGER GUIDE	2
F 0000101	PICK-UP FINGER GUIDE PIPE-SHORT	2
F 0000188	HAY DOG SPRING	2
F 0000227	PLUNGER KNIFE BOLT	3
F 0000278	KNOTTER TRIP ARM RETURN SPRING	1
F 0000822	CAM FOLLOWER	2
F 0000856	TWINE & WIRE GUIDE BUSHING	5
F 0000857	SNAP RING FOR TWINE GUIDE BUSHING	5
F 0001189	LEADING TINE 11"	1
F 0001193	FEED FORK TINE BUSHING & STOP	5
F 0001195	FEED FORK CLIP	2
F 0001226	PICK-UP FINGER	20
F 0001517	RETURN SPRING	1
F 0001572	CAM FOLLOWER-RESET-SADDLE LEVER	2
F 0001603	SHORT LEADING TINE 14"/15"/16"	1
F 0001609	STATIONARY KNIFE	1
F 0001629	1/2" x 1-1/2"#3 PIOW BOLT FOR STATIONARY KNF	4
F 0004115	EXTENSION SPRING=CLUTCH PAWL	1
F 0007970	INSIDE STRIP FOR FEED FORK TINE	2
F 0007971	OUTSIDE STRIP FOR FEED FORK TINE	2
F000007609	FREEMAN BULLGEAR GREASE 1-GAL	4
FIL0000004	PRIMARY ELEMENT FOR ACL2	1
FIL1160024	OIL FILTER DEUTZ DIESEL	2
FIL1160243	FUEL FILTER FOR DEUTZ & CUMMINS	2
FILCF90081	INLINE HYD PRESSURE FILTER	1
FILS1510V3	HYD TANK FILTER	1
KNT0035620	TWINE FINGER	1
PIN0007831	PLUNGER ROLLER PIN (int lube)	4
ROD037256B	ROD ASSEMBLY (B) WELGER TWINE DRIVER	1
SEL0460974	SEAL KIT FOR FT547 PUMP	1
SHF0018483	PICK-UP TOOTH BAR PIN 270/370	2
WLG0001000	385 KNOTTER ASSEMBLY	1
WLG0001029	KNOTTER BILL HOOK WITH TRIGGER (23-24)	1
WLG0001030	KNOTTER TRIGGER	1
WLG0001031	KNOTTER BILL HOOK	1
WLG0001032	KNOTTER ROLL PIN 5 x 16mm	5
WLG0001033	KNOTTER ROLL PIN 3 x 16mm	5
WLG0001061	MAIN GEAR ROLL PIN	5
WLG0001062	ROLL PIN BOLT 5mm x 75mm	5
WLG0001063	ROLL PIN NUT 5mm	5

PERIODIC MAINTENANCE OR LUBRICATION

TYPE OF MAINTENANCE OR LUBRICATION	FREQUENCY
Grease Bullgears	Refer to Bullgear Luber page 36 of your Freeman Operators Manual.
Grease Unsealed Bearings	4 hrs.
Check Engine Oil Level	5 hrs.
Change Engine Oil	50 hrs.
Change Engine Fuel Filter	100 hrs.
Clean Engine Air Cleaner	5 hrs.
Check for Loose Bolts	Daily
Check Needle Timing	Daily
Grease Sealed Bearings	10,000 bales
Check Engine Clutch for Lubrication	15,000 bales
Check Bullgear and Pinion Gear Adjustment	10,000 bales
Check Plunger Adjustment	10,000 bales
Check Knife Adjustment	10,000 bales
Check Knives for Sharpness	10,000 bales
Grease Feedfork Pivot Shaft Bearing	Annually
Grease Bullgear Bearings	Annually
Change Oil and Filters	Annually

Note: For baler engines, refer to their respective manufacturer's owner's manual for maintenance and lubrication instructions.

SPECIFIC FLUIDS, OILS AND GREASES:

Bullgear Lubricant: F 0007626 BULLGEAR GREASE
Hydraulic Oil: Standard Oil Co. AW46 or equivalent.
Tension Control Oil: Standard Oil Co AW46 or equivalent.
Automatic Knotter Lubricant: SAE 30 SE, SF, or CD motor oil.
Grease for Bearings, etc.: Multi-purpose grease.

STORING THE BALER

At the end of the season, remove all material from the bale chamber and clean with compressed air. Pressure washing or steam cleaning is not advised. Moisture can create problems with electrical components by promoting corrosion. Any hay, chaff or dust on the baler will collect moisture during the winter and cause unnecessary rusting.

Check the baler for any worn or damaged parts. Replace and order parts from the dealer as needed.

Coat the bale chamber lightly with grease to prevent rusting.

Fill the fuel tank to the top.

Provide adequate protection from the weather.

To increase tire life during storage, place the baler on blocks to remove the load from the wheels.

Disconnect the battery.

It is good practice to have the baler inspected and reconditioned at the end of the season.

To find a dealer in your area,
Call: 503-625-2560,
Fax: 503-625-7269, or

Visit our website: http//www.alliedsystems.com

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