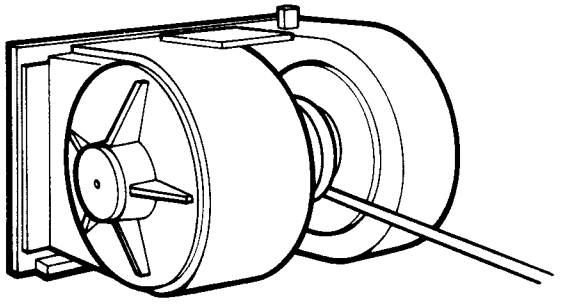
TUGMASTER "30" WINCH



Parts Manual

BARAGA WINCH COMPANY
P.O. BOX 477
BARAGA, MI 49908
(906) 353-6724

WARRANTY STATEMENT

This "TUGMASTER 30", manufactured by Baraga Winch Company, is warranteed to be free from defects in workmanship or materials for a period of ninety days from date put into service or one year from date of original purchase.

Any parts found defective within the period above will be replaced free of charge, f.o.b. factory, Baraga Winch Company other than stated herein.

PARTS AVAILABILITY

Order parts from your nearest authorized distributor or directly from Baraga Winch Company, P.O. Box 477, Baraga, Michigan 49908 - Phone: 906-353-6724. Order by part number only and state serial number of the winch. The serial number is stamped on the manufacturer's name plate attached to the top of the main housing.

TABLE OF CONTENTS

SERVICE BULLETIN REFERENCE

NUMBER	DATE	SUBJECT	CHANGES

"TUGMASTER 30" DESCRIPTION"

The "TUGMASTER 30" is a uniquely designed winch affording maximum capacity for a given physical size. The brake and clutch incorporate features of mechanical advantage, which permit heavy loads to be handled with minimum effort by the operator at the control.

Gears, pinions and shafts are of high grade alloy steel. The gear and pinion teeth are precision cut, thus providing for excellent tooth contact and maximum capacity, as well as quiet operation.

All shafts are mounted on anti-friction ball bearings. The drum shaft, while being mounted on ball bearings, is also supported on two sets of angular roller bearings used principally to withstand end thrust created by the spiral right angle gears.

The brake and clutch are actuated hydraulically. Both the brake and clutch linings are preground to a true diameter providing 80 to 90 percent initial contact. This practically nullifies the time for the so-called "breaking in" of the winch.

The "TUGMASTER 30" has been properly adjusted and given a preliminary test at the factory to insure top performance immediately upon installation.

"TUGMASTER 30" OPERATING INSTRUCTIONS

By carefully following the instructions below in mounting the winch, etc., ideal operations and performance will prevail.

Mounting of the Winch

Mount the winch with the brake cylinder hose connection in the top position. To prevent distortion of the internal mechanism of the winch, it is essential that the mating surface of the winch be in direct contact with the supporting brackets. If necessary, provide shims or washers to make up any differences for a good firm contact before tightening the foundation bolts. **Do not force the two surfaces together to compensate for irregularities.**

Mounting of the Control

The control may be mounted in a suitable operating location with the control body marked "clutch" toward the operator. This will enable the operator to pull on the operating lever for inhaul and push the lever for brake release. Use 1/8" pipe thread fittings on the hose to connect the clutch control cylinder to the drum shaft rotating head. Also connect, similarly, the brake control cylinder to brake cylinder at the top of the winch.

Lubrication

It has been mentioned heretofore that the gears and bearings are precision made and, therefore, require a good grade of lubricant. Use Citco Premium M.P. Gear Oil #90GL5 level or equivalent. (Do not substitute quality.) Fill both the main gear case and the auxiliary gear case to their respective oil level plugs. Change oil approximately every two months depending upon the use of the winch.

Grease Fitting

There is but one grease fitting on the winch lubricating the angular roller bearings supporting the spiral pinion shaft. These bearings were greased at the factory and need be replenished at approximately every 200 hours of operation.

Control Fluid

To maintain control fluid, remove the filler cap on the control and fill the reservoir with automotive hydraulic brake fluid. (Do not substitute.) Oils of any other type will cause the piston seals and boots to deteriorate almost at once. The cap should be replaced with the lever in the upright central position with the cap in its original position as installed. For identification, see the match marks.

Bleeding of the Control System

To bleed the clutch line, loosen the hose fitting at the drum shaft rotating head and pump the control lever to clutch engagement. Upon being assured that all air is filtered out of the line, retighten the fitting. Bleed the brake line by loosening the fitting at the brake cylinder and pump the control lever to brake engagement until all the air is filtered out and retighten the fitting. It may be necessary to refill the control reservoir with fluid druing the bleeding operation. Should there be a spongy feeling in the clutch or the brake and the line does not hold pressure at the control lever, it is necessary to check again for air in the lines. **Free spooling will be affected if air is permitted to remain in the lines.**

Power Connection

The high speed input shaft has a 1-3/8'' diameter 6C SAE standard spline. This shaft may be connected by means of a universal joint or a suitable flexible coupling to the power source.

Wire Rope and Spooling

A 9/16'' diameter 6 x 37 fibre core rope is recommended to work in conjunction with this winch. By lubricating the rope with a water repellant grease, the life of the rope will be extended considerably. Thread the 9/16'' rope through one 5/8'' hole in the drum and then back through the second hole to dead end the rope. Screw the capscrew with the washer over the rope and tighten. During the winching operation there should always be a minimum of three (3) dead wraps on the drum.

Note: Maximum size wire rope to be used with this unit is 9/16''.

Operation

The single hand lever provides for three (3) operations. The brake is set and the clutch is disengaged when the control lever is centered. To release the drum for free spooling, push the hand lever forward to its maximum. This will cause the linkage system to over toggle and lock into position permitting the operator to leave the machine, pull out the necessary rope and hook up the load. To inhaul the rope, pull back on the hand lever with sufficient force to prevent slipping of the clutch. To allow the clutch or brake to slip will not only cause excessive heat to the bands but will also cause excessive lining wear.

SERVICE INSTRUCTIONS

Brake Adjustment

Under normal operating conditions, no brake adjustment is required. However, if the bands are worn to a point where more spring compression is required, the spring cap may be turned over so that the counter bore is away from the spring. This will give an additional 3/8'' compression on the spring. If the winch is new and the brake does not hold the required load, the brake may need to be ''run-in''. See Item 2, first cause, in the ''Trouble-shooting'' section.

Ring Gear and Pinion Adjustment

If the ring gear and pinion setting has been disturbed due to disassembly of the winch or replacement of the pinion shaft components, remove barrel plug and use this hole for inspecting the tooth contact. Check that the nut on the pinion shaft is tightened prior to checking of tooth contact.

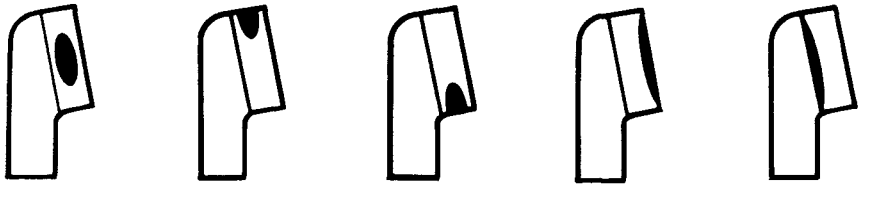
Backlash - the ring gear and pinion must be adjusted to give the correct tooth contact with a backlash of .005'' to .009'' at the heel of the ring gear tooth.

Correct Tooth Contact

Paint the face of each ring gear tooth with a light coating of marking paint. Red lead oxide mixed with a light grease will make an ideal paint for this purpose. To check the tooth contact, rotate the pinion shaft in a clockwise direction when viewed from the back of the winch.

The correct tooth contact is illustrated in A below. Illustrations B, C, D and E show incorrect tooth markings which must be corrected as follows:

1. Condition B illustrates a heavy heel mark. To correct this condition the pinion must be moved slightly out of mesh and the ring gear further into mesh. Remove socket head capscrews (86) and pull out bearing housing (13) add one .0075 shim (70) between the housing and base. Reassemble and tighten capscrews. Remove capscrews (87) and bearing retainer (15), shims (71), capscrews (88), cover (7) and remove the suitable shims (37) to allow the .005'' to .009'' backlash.
2. Condition C illustrates a heavy toe mark. To correct this condition follow procedure B, except remove one .0075 shim under bearing housing (13) and add the suitable shims (37) to allow the .005'' to .009'' backlash.
3. Condition D can be corrected by following the procedure under Condition C.
4. Condition E can be corrected by following the procedure under Condition B.



A B C D E

SERVICE BULLETIN REFERENCE

NUMBER	DATE	SUBJECT	CHANGES

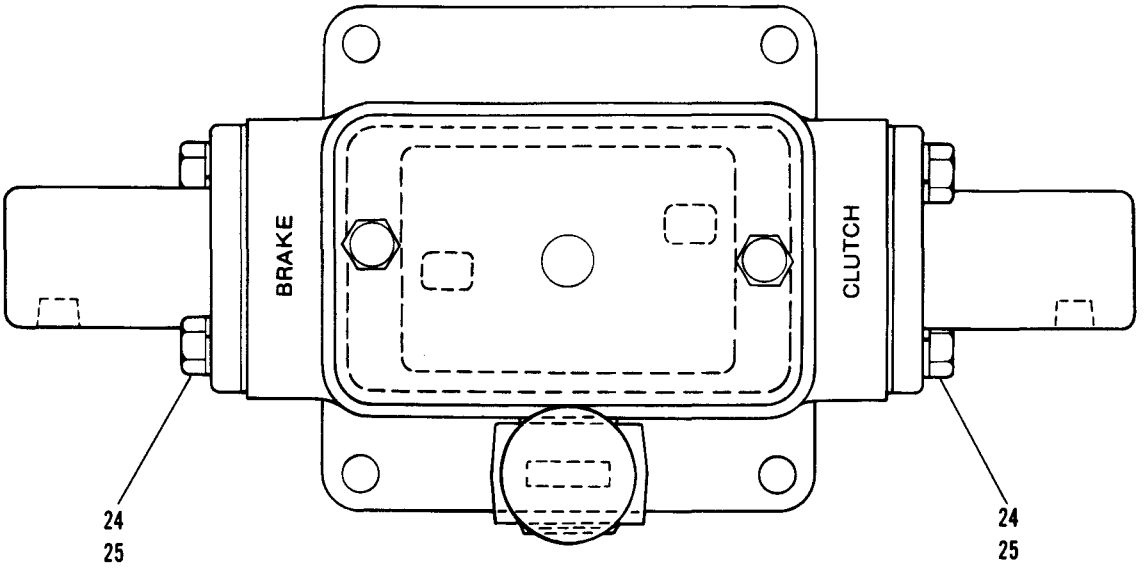
TUGMASTER 30 TROUBLESHOOTING GUIDE

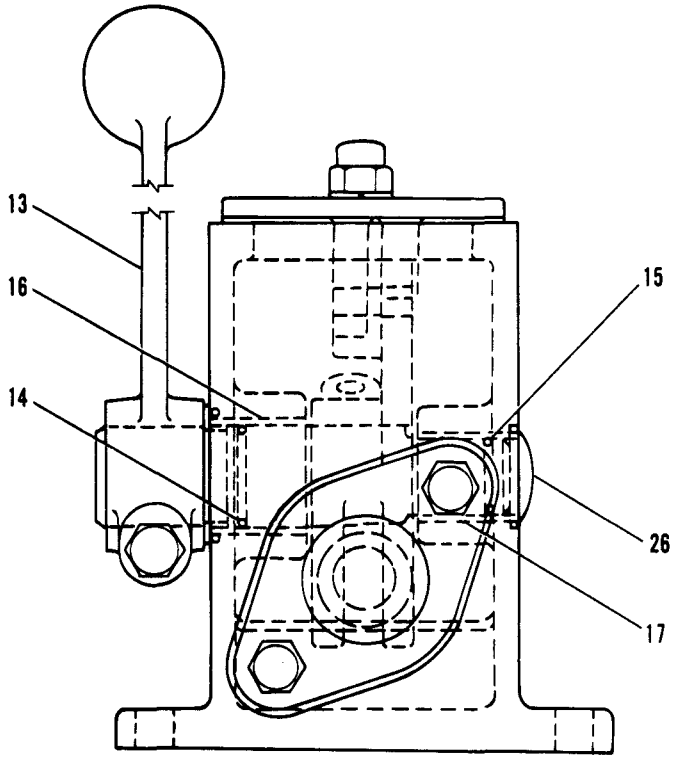
DIFFICULTY	PROBABLE CAUSE	CORRECTIVE ACTION
Item 1- Clutch slipping	If the winch or master control has recently been installed, there may be air in the clutch line.	See "Bleeding Hydraulic System" on Page 2.
	If the master control handle continues to move gradually when a constant force is applied to engage the clutch, there may be a leak in the clutch line, clutch cylinder in the winch or master control cylinder.	Check all fittings for escaping fluid. If no leak is visible remove the fitting in the end of the master control clutch cylinder and install a 1/8" NPT pipe plug. If the control handle still moves when a constant load is applied, the cup in the master control cylinder is leaking. If the leak is not found by the above tests, remove the clutch cover from the winch and inspect all clutch line connections and the clutch cylinder.
	The clutch may require adjusting. If the clearance between the clutch drum and the clutch bands has become excessive due to wear, the master control handle will have greater than normal travel when moved for clutch engagement.	Remove the clutch cover from the winch and adjust the clutch bands. See Section and Assembly Drawing #315774. With the clutch control lever in the released position, place a .020 shim between the lining and drum. Loosen capscrew (125) and with a screwdriver rotate guide bar (123) snug against band and retighten capscrew (125). Draw up the three setscrews (90) so the lining is snug against the drum. Then back off the setscrews approximately 1/4 to 1/2 turn which will provide .010" to .020" clearance between the lining and the drum. Remove the shim at the guide bar. Loosen locknut (98) and draw up the slack in the linkage by turning the adjusting nut (39). Retighten locknut (98).
	The clutch band may have become soaked by brake fluid.	Remove the clutch band and replace it.
	The clutch may have become hot from excessive slippage under heavy pulls.	Allow the winch to cool for ten to fifteen minutes.
	The clutch bands may be worn and require replacement.	Remove clutch bands and replace them with new parts.
Item 2- Brake will not hold a load	If the winch is new, the brake may need to be run in.	Attach the winch cable to a stump and drive tractor away from the stump using low gear. Allow the brake to slip just far enough to let the tractor move forward until all the cable has been run out. Repeat until tractor has traveled a total of 300 ft. Allow winch to cool, check, and repeat if necessary.
	The brake drum may have become overheated due to the clutch slipping under heavy loads.	Allow winch to cool for ten to fifteen minutes.
	The brake bands may have become soaked by brake fluid.	Remove the brake bands and replace them with new parts.
	The brake bands may be worn.	Place brake control lever in neutral position (brake set) loosen jam nuts (100) and draw up on setscrew (99) until brake band is snug against the band. Back off setscrew 1/2 to 1 turn and retighten jam nut. Release brake at control lever and check free pull of the rope. If brake continues to slip, remove spring retainer, invert cap and reinstall. This will afford more pressure by the spring for setting the brake. Should brake continue to slip, replace brake band.

TUGMASTER 30 TROUBLESHOOTING GUIDE

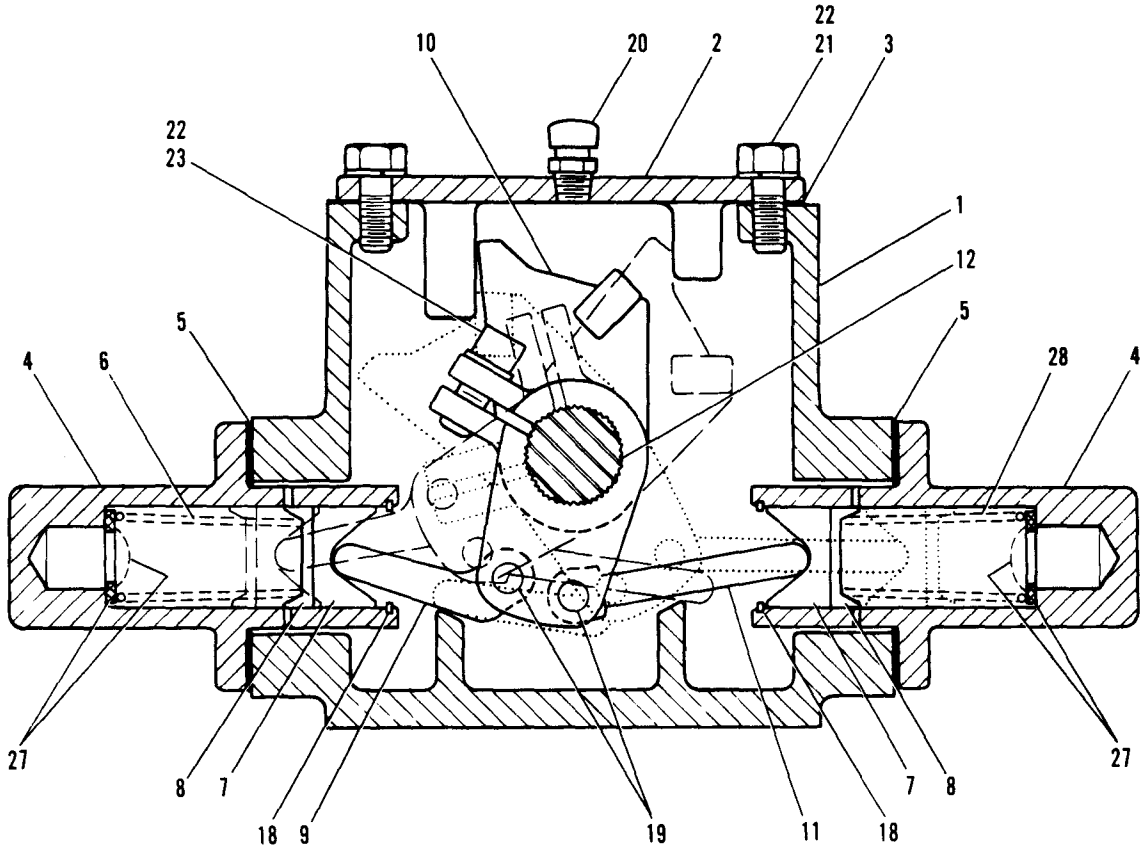
DIFFICULTY	PROBABLE CAUSE	CORRECTIVE ACTION
Item 3- Clutch slipping and brake will not hold	Water or brake fluid may have leaked into the clutch and brake compartment.	Remove the clutch cover and inspect. If brake fluid is present, find leak and make necessary repairs. If water is present, inspect the clutch cover gasket and all seals for possible damage.
Item 4- Brake will not release or stay released	The cup in the master control cylinder which is connected to the winch brake cylinder may be leaking.	Remove the fittings from the end of the master control brake cylinder and install a 1/8'' NPT pipe plug. If the master control handle can be moved gradually until it reaches the end of its stroke, the cup in the master control cylinder is damaged. Replace this cup and remove and inspect the parts in the winch brake cylinder. If the cup in the master control cylinder needs to be replaced, clean the pistons in the winch brake cylinder and install a new cup in this cylinder also.
	The cup in the winch brake cylinder may be leaking.	Remove the brake cylinder and inspect. If brake fluid has been leaking from this cylinder replace the cup and clean the pistons in this assembly. Also remove the clutch cover and inspect the brake bands. Clean all excess fluid from the clutch and brake compartment and replace the brake bands if they are soaked with brake fluid.
Item 5- Drum will not rotate when clutch is engaged with no load on the cable	The tractor P.T.O. may not be engaged.	Check P.T.O. engagement.
	The master control unit may need to be filled with fluid.	Fill with automotive brake fluid.

CONTROL VALVE ASSEMBLY (Tugmaster 30 Winch), 33043





CONTROL VALVE ASSEMBLY (Tugmaster 30 Winch), 33043



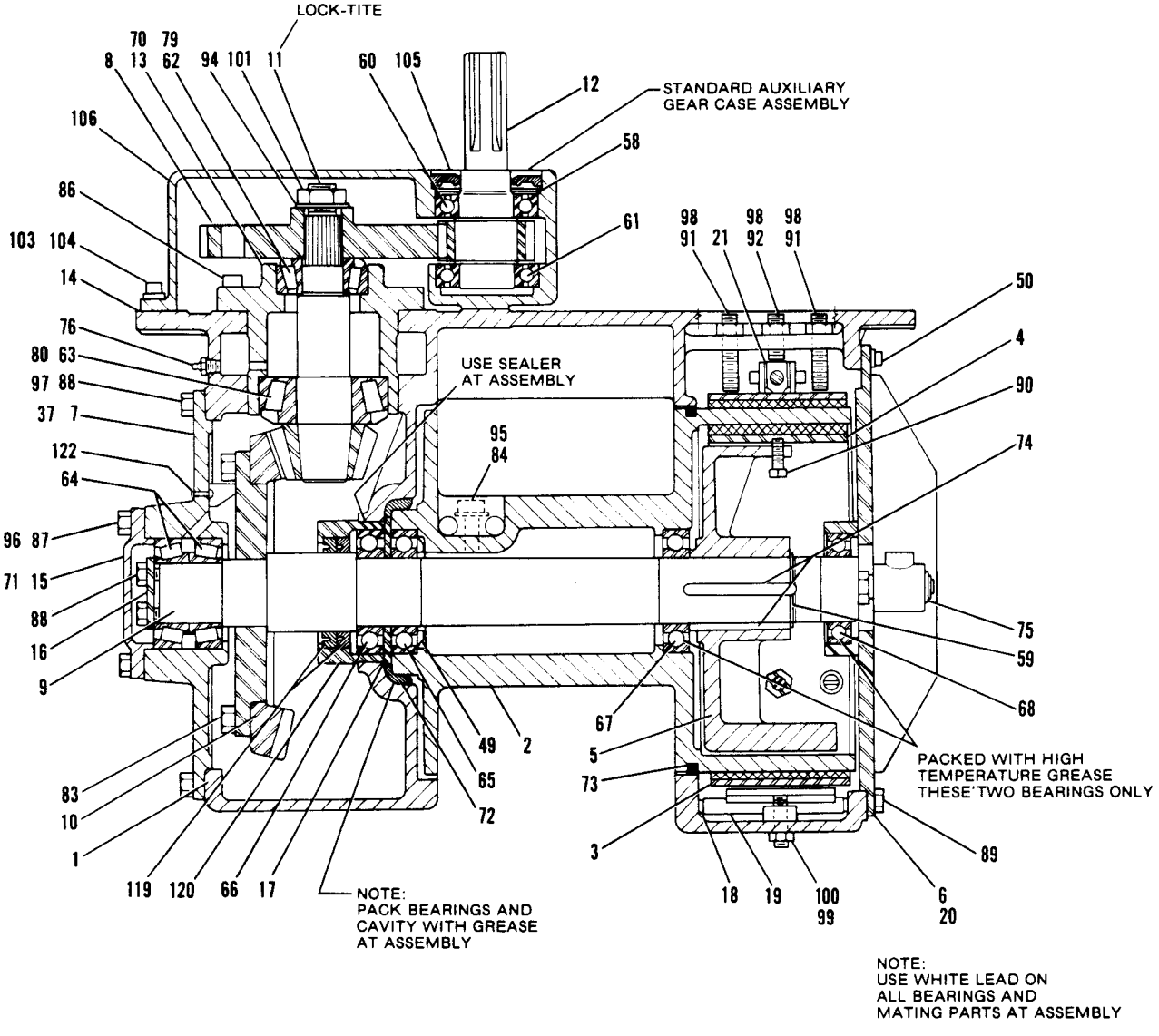
CONTROL VALVE ASSEMBLY (Tugmaster 30 Winch), 33043

REF.	PART NO.	DESCRIPTION	REQ'D.
1	111873	BODY, Valve	Ref.
2	1152462	COVER	1
3	1152472	GASKET	1
4	1152482	CYLINDER	2
5	1151282	GASKET	2
6	11744	SPRING	2
7	1147292	PISTON	2
8	1147312	CUP	2
9	1152492	ROD, Push	1
10	1152502	CRANK, Operating	1
11	1152512	ROD, Push	1
12	1152522	SHAFT	1
13	1159932	LEVER, Hand	1
14		O-RING	2
15		O-RING	1
16	1158282	BUSHING, Flanged	1
17		BUSHING	1
18		RING, Internal Retaining	2
19		PIN, Roll	2
20		VENT, Air	1
21		CAPSCREW, Hex Head	2
22		LOCKWASHER	3
23		CAPSCREW, Socket Head	1
24		CAPSCREW, Hex Head	4
25		LOCKWASHER	4
26		PLUG, Welch	1
27		VALVE & SEAT	2
28	1148052	SPRING	1

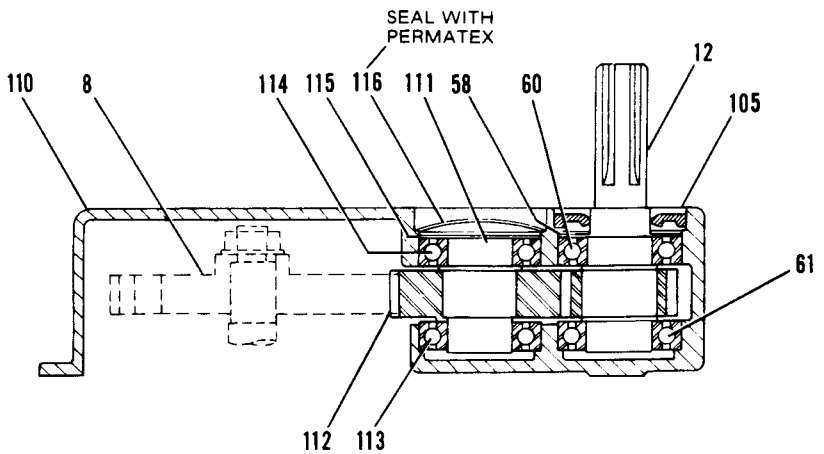
SERVICE BULLETIN REFERENCE

NUMBER	DATE	SUBJECT	CHANGES

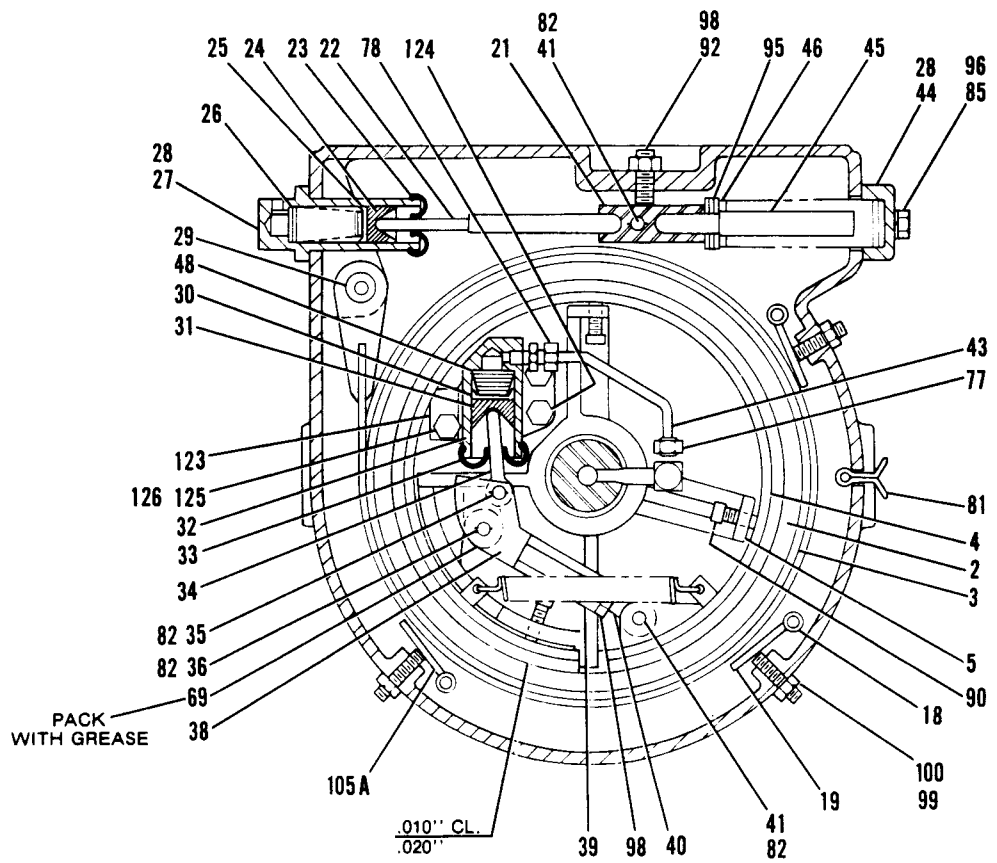
SECTION & ASSEMBLY (Tugmaster 30 Winch), 315774



SECTION A-A
SHAFTS ASSEMBLY



AUXILIARY GEAR CASE ASSEMBLY WITH REVERSING GEAR



SECTION B-B
BRAKE AND CLUTCH ASSEMBLY

REPAIR PARTS (Tugmaster 30 Winch), 315774

REF.	PART NO.	DESCRIPTION	REQ'D.
1	124374	BASE	1
2	124344	DRUM	1
3	124384	BAND, Brake	1
4	111663	CLUTCH, Drum	1
5	111643	HUB, Clutch	1
6	111633	COVER, End	1
7	111613	RETAINER, Bearing	1
8	111133	GEAR, Spur	1
9	111653	SHAFT, Drum	1
10	111203	GEAR, Hypoid Drive	1
11	111193	PINION, Hypoid Drive	1
12	1151202	PINION & SHAFT	1
13	1150902	HOUSING, Bearing	1
14	1151252	GASKET	1
15	1150912	RETAINER, Bearing	1
16	1147682	CAP, End	1
17	1151242	SPACER	1
18	1151922	PIN, Drive	3
19	1151932	GUIDE, Brake Band	2
20	1151162	GASKET	1
21	1151222	CONNECTOR	1
22	1151292	PUSH ROD	1
23	1147282	BOOT	1
24	1147292	PISTON	1
25	1147312	SEAL	1
26	1148052	SPRING	1
27	1151262	CYLINDER, Brake, 1''	1
28	1151282	GASKET	2
29	1151232	PIN, Anchor	1
30	1147352	SEAL	1
31	1147332	PISTON	1
32	1151312	CYLINDER, Clutch, 1¼''	1
33	1147322	BOOT	1
34	1151322	ROD, Connecting	1
35	1147412	PIN	1
36	1147402	PIN	1
37	1147092	SET, Shim	1
38	1151302	BRACKET, Roller	1
39	1151332	NUT, Adjusting	1
40	1151912	ROD END	1
41	1147392	PIN	2
42	1147472	SPRING	1
43	1151842	TUBE, Hydraulic	1
44	1151272	RETAINER, Spring	1
45	1151212	GUIDE, Spring	1
46	1147692	SPRING	1
47	115171	PLATE, Serial No.	1
48	1147342	SPRING	1
49	315774-49	SEAL	1
50	315774-50	CAPSCREW	2
51	315774-51	VENT, Air	2
52	315774-52	BUSHING, Pipe	1
53	315774-53	PLUG, Pipe, Sq. Hd	1
54	315774-54	PLUG, Pipe, sq. Hd	1
55	315774-55	PLUG, Pipe, Sq. Hd	2
56	315774-56	PLUG, Drum	1
57	315774-57	DOWEL	2
58	315774-58	RING, Retaining	1
59	315774-59	RING, Retaining	1

REPAIR PARTS (Tugmaster 30 Winch), 315774

REF.	PART NO.	DESCRIPTION	REQ'D.
60	315774-60	BEARING	1
61	315774-61	BEARING	1
62	315774-62	BEARING	1
63	315774-63	BEARING	1
64	315774-64	BEARING	2
65	315774-65	BEARING	1
66	315774-66	BEARING	1
67	315774-67	BEARING	1
68	315774-68	BEARING	1
69	315774-69	BEARING, Guiderol	1
70	315774-70	SET, Shim	1
71	315774-71	SET, Shim	1
72	315774-72	SEAL, Oil	1
73	315774-73	O-RING	1
74	315774-74	KEY	2
75	315774-75	UNION, Rotating	1
76	315774-76	FITTING, Grease	1
77	315774-77	ELBOW, Extra Long Male	1
78	315774-78	CONNECTOR, Male	1
79	315774-79	SEAL	1
80	315774-80	SEAL	1
81	315774-81	PIN, Cotter	1
82	315774-82	PIN, Cotter	7
83	315774-83	CAPSCREW	12
84	315774-84	CAPSCREW	1
85	315774-85	CAPSCREW	2
86	315774-86	CAPSCREW	6
87	315774-87	CAPSCREW	4
88	315774-88	CAPSCREW	10
89	315774-89	CAPSCREW	9
90	315774-90	SETSCREW	3
91	315774-91	SETSCREW	2
92	315774-92	SETSCREW	1
93	315774-93	SCREW, Machine	2
94	315774-94	WASHER, Flat	1
95	315774-95	WASHER, Flat	4
96	315774-96	LOCKWASHER	6
97	315774-97	WASHER	8
98	315774-98	NUT, Jam	4
99	315774-99	NUT, Jam	6
100	315774-100	SETSCREW	3
101	315774-101	NUT, Hex Jam	1
103	315774-103	CAPSCREW	4
104	315774-104	GASKET	4
105	315774-105	SEAL, Oil	1
105A	1158342	GUIDE, Brake Band	1
119	315774-119	SEAL	2
120	1162082	RETAINER, Seal	1
121	116661	WIPER	1
122	315774-122	RIVETS	2
123	116851	BAR, Guide	1
124	315774-124	CAPSCREW	2
125	315774-125	CAPSCREW	1
126	315774-126	WASHER, Flat	1

The items listed up to this point are common to both winches with standard and reversing gear case assemblies.

REPAIR PARTS (Tugmaster 30 Winch), 315774

REF.	PART NO.	DESCRIPTION	REQ'D.
		The item listed below is for the standard auxiliary gear case assembly only:	
106	124364	CASE, Auxiliary Gear	1
		The items listed below are for auxiliary gear case assemblies with reversing gear only:	
110	124444	CASE, Auxiliary Gear	1
111	1151942	SHAFT	1
112	1151952	GEAR	1
113	315774-113	BEARING	1
114	315774-114	BEARING	1
115	315774-115	RING, Retaining	1
116	315774-116	PLUG	1

SERVICE BULLETIN REFERENCE

NUMBER	DATE	SUBJECT	CHANGES