

**PARTS BOOK  
AND  
INSTRUCTION MANUAL  
for  
HYSTER<sup>®</sup>  
D4N TOWING WINCH**



**EFFECTIVE WITH  
HYSTER NO. BWN-32478 AND UP**

**HYSTER COMPANY**

**PORTLAND 8, OREGON   ■   PEORIA 1, ILLINOIS   ■   DANVILLE, ILLINOIS  
U. S. A.**

FORM NO. 740G

LITHO  
IN  
U. S. A.  
**599185W**

2M-157

# INSTRUCTIONS FOR ORDERING HYSTER REPAIR PARTS

1. Always give the serial number of machine, which is found on name plate.
2. Always specify name, number and letter of part required.
3. Always specify shipping destination and definite shipping instructions such as Parcel Post, Express, Air Express, Auto Freight or Rail Freight.

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Note: The oil for the transmission shall be a straight mineral type, stable, properly refined, free from fatty acids, resins, abrasives or other non-petroleum material and shall meet the following requirements.

1. Viscosity at 210° F. ....80 - 90 Seconds  
Saybolt Universal
2. Viscosity Index, Minimum .....85
3. Pour Point, Maximum .....Minus 10° F.
4. B. S. & W., Maximum .....05%
5. Color, Maximum ..... 8

Black oils or residuum materials will NOT be considered as satisfactory for this specification.

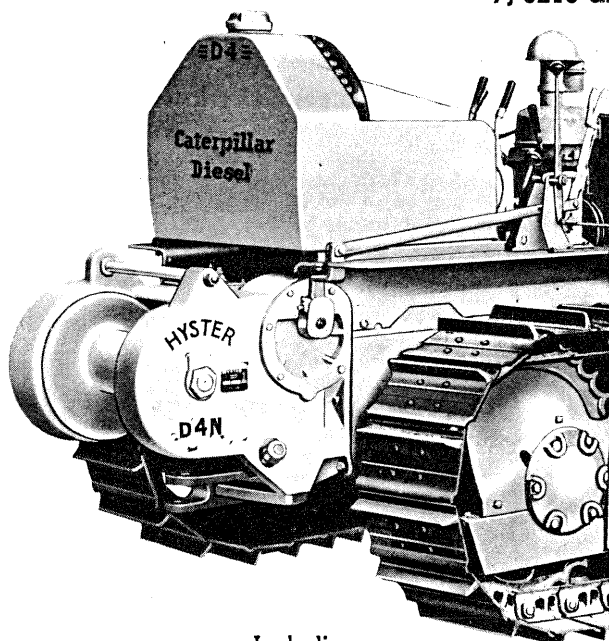
**PARTS BOOK  
AND  
INSTRUCTION MANUAL  
for**

**HYSTER**

**D4N TOWING WINCH**

**For "Caterpillar" D4 and R4 Tractors**

**TRACTOR MODEL SERIAL NUMBERS 6G-2076 and up  
7J-9215 and up**



**Including  
Installation, Lubrication and  
Servicing Instructions**

LITHO IN U.S.A.

**HYSTER COMPANY**

**PORTLAND 8, OREGON   ■   PEORIA 1, ILLINOIS   ■   DANVILLE, ILLINOIS  
U. S. A.**

## **TRACTOR OPERATOR PRECAUTIONS**

1. While the tractor is in motion, extreme care should be taken to prevent accidents and personal injuries.
2. Before stopping the engine and dismounting from the tractor
  - A. Stop the motion of the tractor.
  - B. Disengage the tractor master clutch.
  - C. Place the tractor transmission gearshift lever in neutral.
  - D. Set and lock the tractor brakes. (When parking on a hill, the tractor should be chocked.)
3. At the start of the shift, check to be sure that all steps under Instruction 2 have been carried out. If these instructions are not followed, there is danger of the tractor moving when the operator is starting the engine, and he may be dragged under the tractor or otherwise seriously injured.

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## **Section A**

# **OPERATION**

This section, in addition to instructions for operating, contains illustrations pertaining to certain simple adjustments and replacements which can readily be made.

Lubrication instructions are provided on pages 12 and 13 and should be carefully studied. The lubricant recommended should be used.

Keep all bolts and nuts tight, and check all other connections.

### **DO NOT OPERATE WINCH AND TRACTOR AT THE SAME TIME**

**BE SURE WINCH GEAR SHIFT LEVER IS IN NEUTRAL POSITION  
BEFORE MOVING THE TRACTOR**

**THE TRACTOR MASTER CLUTCH MUST BE DISENGAGED  
BEFORE CHANGING GEARS IN THE WINCH.**

The following instructions are taken from the TRACTOR parts book and are especially applicable to tractors equipped with winches, as the transmission shaft bearings receive oil only *when transmission gears are revolving*. When winch-equipped tractors remain stationary for a period of three hours or more, it is necessary to take the following steps to insure lubrication of the tractor upper transmission shaft bearings:

- A. Disengage main clutch and shift gears into high.
- B. Release both steering clutches and engage the main clutch for a minute or two, to allow oil to be well splashed about in case.
- C. Disengage main clutch, let go of steering clutch levers, and shift the tractor gears to neutral.
- D. **WARNING: DO NOT** let go of steering clutch levers until main clutch has been disengaged.

### **Brake**

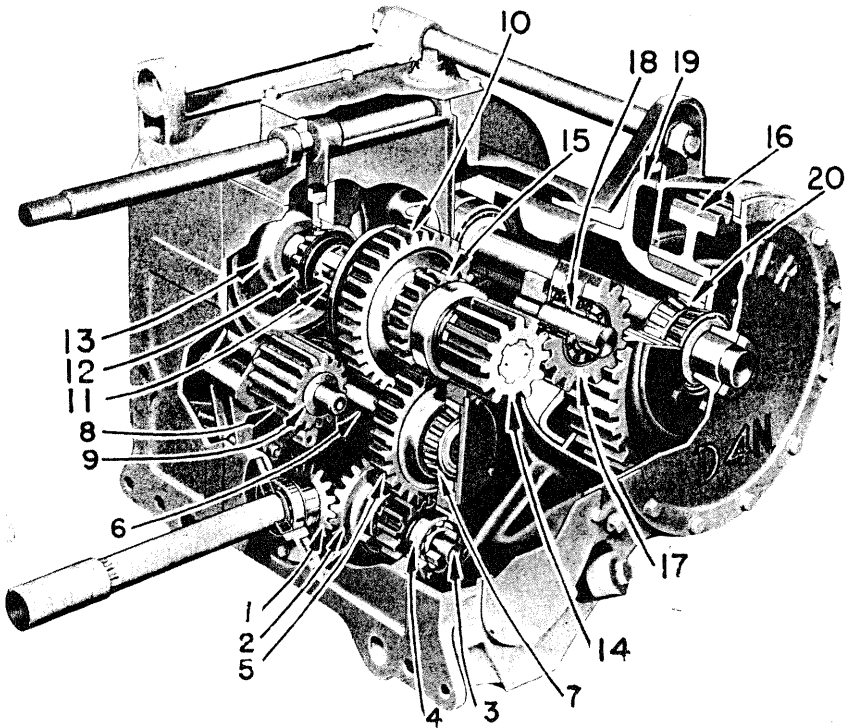
The brake lever is located on the right-hand side of the operator. A pawl and ratchet are provided to hold the brake in the applied position.

**CAUTION**—The brake should always be released before attempting to operate the winch, otherwise serious damage will result.

### **Right and Left-hand Side of Towing Winch**

The part of the towing winch on the right-hand side of the tractor, when the driver is sitting in the tractor seat, is known as the right-hand side

## CUTAWAY VIEW OF HYSTER D4N TOWING WINCH



### Working Principles

When the tractor engine is running with the master clutch engaged, the engine turns the take-off shaft (clockwise) with bevel pinion (1) which in turn rotates the bevel gear (2) assembled to pinion and shaft (3). This shaft, revolving on ball bearing (4) has a 13-tooth pinion integral with the shaft, which meshes with driving gear (5) mounted on the intermediate shaft (6). The intermediate shaft rotating on Timken roller bearings (7) has two 15-tooth pinions integral with shaft, one of which meshes with the reverse idler gear (8). The reverse idler gear runs on needle bearings (9).

With the shifter lever in the neutral position the drum would be stationary while the above mentioned gears and shafts would be constantly revolving when the engine is running with the master clutch engaged.

To operate UNDERWINDING and pull in cable (explanation given on page 7) the HYSTER winch brake must be released and the tractor clutch be disengaged while shifting gears.

Depress HYSTER shifter lever stem and push shifter lever forward into the locked position. This causes the shifter mechanism to move the sliding gear (10) to the left-hand side and mesh with the 15-tooth pinion on the intermediate shaft. This sliding gear slides on a splined shaft (11), which revolves on bearings (12). Assembled on one end of this shaft is the brake drum (13), on the other end the 12-tooth drum pinion (14).

Idler gear (15), when ordered as optional, is also located on shaft (11). It runs on bronze bushings and is in constant mesh with the driving gear (5). This idler gear is the power take-off for the auxiliary drum on "Power Control Unit," or pump, on those winches so equipped.

The 12-tooth drum pinion (14) does not mesh directly with the drum gear (16) but rather with a 15-tooth intermediate idler gear (17) that runs on bearings (18). The drum gear is assembled to the drum (19) which revolves on roller bearings (20).

After shifting gears as above, with shifter lever in the lower locked position, engage tractor master clutch, causing the drum to rotate in an underwinding direction and spool in cable. To stop drum rotation, disengage master clutch and apply winch brake.

To reverse drum rotation and pay out cable (underwinding), tractor master clutch still being disengaged, depress shifter lever stem and push shifter lever through neutral until lever locks in rear position. Release brake and engage tractor master clutch, allowing drum to rotate and pay out line.

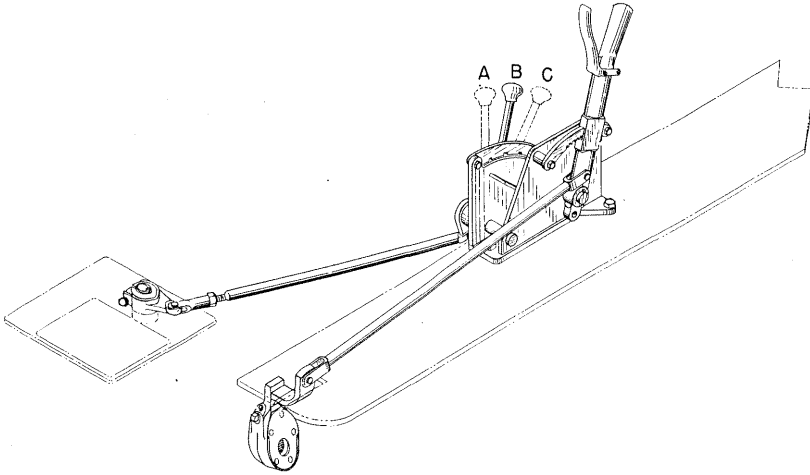
To operate OVERWINDING and pull in cable, the winch brake must be released and the tractor master clutch be disengaged while shifting gears.

With shifter lever in the backwards locked position, "A," the shifter mechanism has moved the sliding gear (10) to the right-hand side and in mesh with the reverse idler gear (8), thereby connecting to the cable drum through the same train of gears as described previously. Engage the master clutch, which will cause the drum to rotate in an overwinding direction and spool in the cable over the top of drum. To stop drum rotation, disengage tractor clutch and apply winch brake.

To reverse drum rotation and pay out cable (overwinding) tractor clutch still being disengaged, depress winch shifter lever stem, push lever through neutral and lock in the forward position. Release brake and engage tractor master clutch allowing drum to rotate and pay out line.



**NOTE:** If not otherwise specified, all winches are shipped with the brake set for drum to be pulling cable in **OVERWINDING** (over the top of the drum barrel).



*Figure 1*

## Overwinding

When the cable leads from the top of the drum, the drum is overwinding.

To pull in the cable, release the winch brake, disengage the tractor master clutch, depress shifter lever stem and pull the shifter lever back into position "A." Then engage the tractor master clutch, which will cause the drum to rotate. To stop the drum rotation, disengage the tractor clutch and apply the winch brake.

To pay out line leave the tractor master clutch disengaged, depress the shifter lever stem, push the lever through neutral "B" and into forward position "C." Release the winch brake and engage the tractor master clutch.

## Underwinding

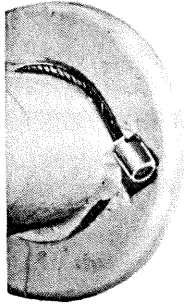
When the cable leads from the bottom of the drum, the drum is underwinding.

To pull in the cable release the winch brake, disengage the tractor master clutch, depress the shifter lever stem and push the shifter lever forward into position "C." Then engage the tractor master clutch which will cause the drum to rotate. To stop the drum rotation, disengage the tractor clutch and apply the winch brake.

To pay out line leave the tractor master clutch disengaged, depress the shifter lever stem, pull the lever through neutral position "B" and into rear position "A." Release the winch brake and engage the tractor master clutch.

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## METHOD OF ATTACHING CABLE



In the right hand drum flange there is a recess which holds the cable ferrule. To fasten the cable to the drum, place the cable ferrule in the recess and apply tension to the cable to pull the ferrule into the flange which keeps it from coming out of the recess. If cable tension will not pull it into place, tap the end of the ferrule. When removing the ferrule, it may be necessary to pry or tap it free. There are no loose parts necessary.

The illustration shows the cable in an underwind position. To change to overwind, unwind the cable from the drum and reverse the position of the ferrule so the cable will lead from the opposite side of the recess.

## Section B

# SERVICING INSTRUCTIONS

This section, in addition to instruction for service, contains illustrations and instructions pertaining to certain simple adjustments and replacements which can readily be made.

Lubrication instructions are provided and should be carefully studied. The lubricant recommended should be used.

Keep all bolts and nuts tight and check all other connections.

### Brake Linkage—Overwinding

1. The brake link "A" should be connected to the UPPER HOLE in the handlever at "C," Fig. 2, when the DRUM IS OVERWINDING.
2. Before connecting the horizontal link "A" make the following adjustments. First, shove the handlever all the way forward against the solid stop (which is the fully released position).
3. Shove the brake slack adjuster "H" all the way forward, then reverse the slack adjuster "H" all the way backward. Note that it snaps to a position midway of the two positions just tried.
4. With the horizontal link "A" connected to the hole "C" in the handlever bring the slack adjuster "H" in line with the rear hole in the fixed link "A" by resetting the slack adjuster. This is done by turning the adjustment "J" on the slack adjuster with a wrench, until the desired position of the handlever is attained.
5. Insert pin and cotter. This will give the maximum clearance of brake band to drum and keep the brake from dragging and overheating.

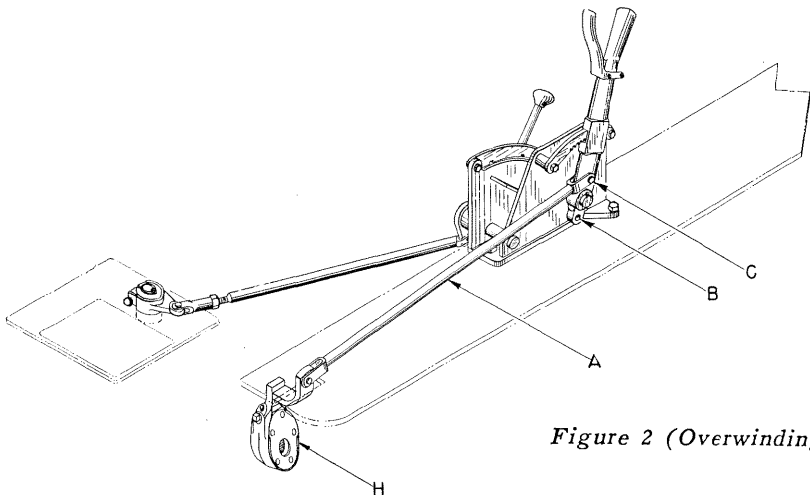


Figure 2 (Overwinding)

## Brake Linkage—Underwinding

1. The brake link "A" should be connected to the LOWER HOLE in the handlever at "B," Figure 3, when the DRUM IS UNDERWINDING.
2. Remaining instructions for connecting link "A," same as instructions for overwinding.

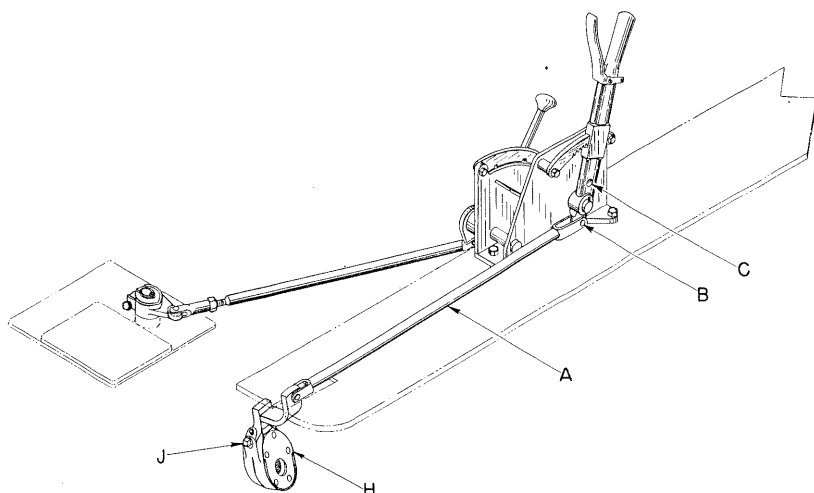


Figure 3 (Underwinding)

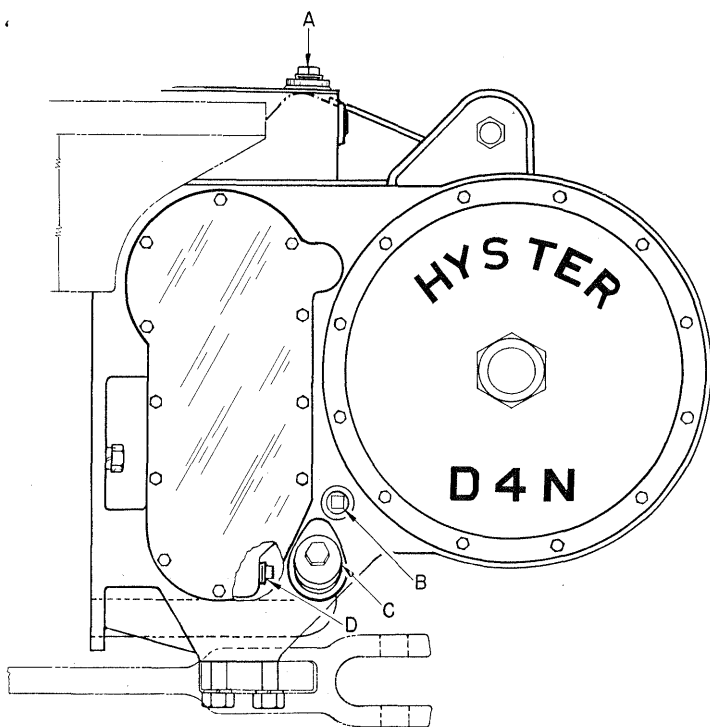
## Brake Adjustment

Care should be taken to have the brake band lining about  $1/32$ " free from the brake drum when the handlever is pushed all the way forward. As the brake band wears, it will be necessary to reset the slack adjuster (H). This can be done by turning the adjustment (J) on the slack adjuster, with a wrench until the desired position of the handlever is attained.

Brake band wear can be taken up exactly the same way with the brake link in either the overwinding or underwinding position as explained above. No pins or connections need be disturbed, just reset the slack adjuster.

**CAUTION:** Release the brake handlever after each adjustment and check to see if brake band is sufficiently free to keep the brake from "dragging" and burning up the lining.

## LUBRICATION CHART



## LUBRICATION INSTRUCTIONS

Refer to chart shown.

The lubrication chart shows the location of the filler, drain, and oil level plugs on the transmission case.

**NOTE:** When checking oil level, if the tractor motor is running, throw out the master clutch so that hoist gears are stationary; otherwise, a false reading will result.

On a new winch the oil should be drained from transmission case at the end of about 10 days, flushed out and refilled with fresh oil.

All transmission gears, bearings and drum bearings are lubricated by a splash system from the winch transmission housing. The oil level should be checked daily by removing the  $\frac{3}{4}$  pipe plug (B) located just above the "Caterpillar" final drive filler plug (C) in the left-hand side frame. If the oil level drops below this plug, the upper transmission gears and drum bearings will not receive proper lubrication. Oil may be added through the oil filler hole by removing plug (A) in the top cover of transmission case.

On a new winch, after 30 days of operation drain the oil, flush out and refill case up to the proper level with clean oil. The oil level in the transmission case should be checked weekly, keeping the case filled up to oil level plug.

Under normal operating conditions, drain the oil and flush through drain plug every 30 to 90 days, depending on operating conditions. Refill until oil comes up to level plug. In general, for refilling, use SAE 90 or the same gravity oil as is required in "Caterpillar" tractor transmission.

Approximately four gallons of oil are required. Periodic inspection should be made for condensation, particularly after long periods of idleness. Loosen drain plug and allow water to drain off. When oil begins to appear, tighten drain plug and check oil level.

Slack adjuster brake shaft (7, page 33) rotates in a hardened steel bushing and needs lubrication every two weeks. Oil brake handle lever fulcrums and pins occasionally to keep them moving freely. A few drops of oil from an ordinary oil can once a day should be sufficient.

Grease the fitting on the shifter crank every 100 hours with a high grade pressure grease (see page 20, Ref. 4).

## Section C

# INSTALLATION INSTRUCTIONS

For installing HYSTER D4N Towing Winch on "Caterpillar" D4 tractors with seat-mounted fuel tanks.

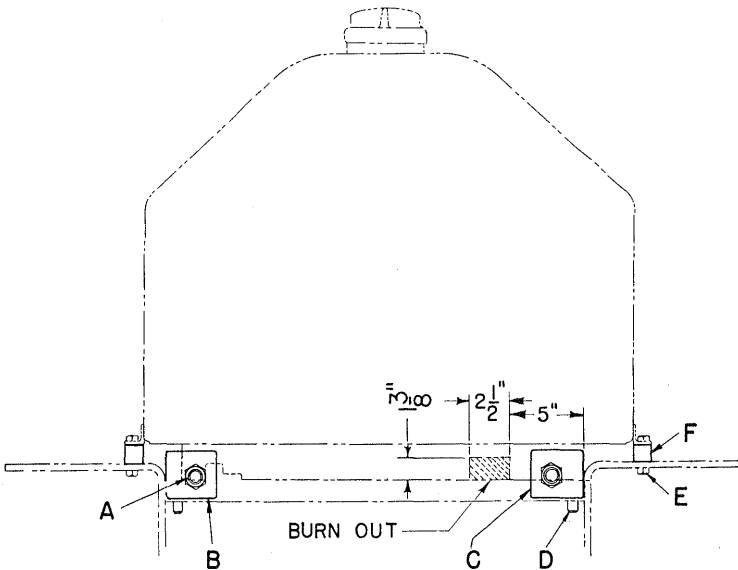
1. Block up rear end of tractor six or eight inches high. This prevents the oil from running out of the transmission case when covers are removed, and makes installation easier.
2. Remove tractor seat, transmission gear and brake inspection covers, drawbar guide plates and brackets. Also remove the final drive filler cups.
3. Burn clearance openings in both R. H. and L. H. fenders, and under seat, as indicated on pages 15 and 16.
4. Remove studs from lower face of drawbar brackets for installation later in pads on bottom of winch frames.
5. Place gasket 14, page 28, in position on rear face of tractor transmission.
6. Swing the winch into place on the rear face of the tractor. Make sure the splines on the power take-off shaft enter those of the coupling on the tractor.
7. When the winch is in place, place nuts and lockwashers on the six lower studs. Tighten all nuts so that winch is securely fastened to tractor.
8. Before mounting brackets (B and C, page 15) on top of tractor transmission cover, insert capscrews (A) in ends of brackets. Fasten brackets securely with dowel pins (D) and capscrews,  $\frac{5}{8}$  NC x  $1\frac{1}{4}$ , to tractor transmission cover.
9. Fasten the winch securely to brackets (B and C) with capscrews (A) [installed under instruction 8 above]. Fasten tractor drawbar to winch, using the studs and nuts which were removed from tractor drawbar brackets.  
(See page 18.)
10. Install lever bracket (18). Fasten securely to R. H. tractor fender with capscrews,  $\frac{1}{2}$  NF x  $1\frac{1}{2}$ . (See page 16 for location of lever bracket.)
11. Install brake handlever (25) and ratchet (21).  
For brake link installation and brake adjustment, see instructions on page 10.
12. Install quadrant (22) on bracket (18) using capscrew,  $\frac{3}{8}$  NF x 1. Install shifter lever (11) with end of shifter stem engaged in center notch of quadrant (22). Move crank (5, page 20) to the farthest point to the right and mark, then to the farthest point to the left and mark. Halfway between will be neutral position. Connect the adjustable end of link (5, page 18) to crank (5, page 20) using one rod end pin (8, page 18). Adjust rod end (6) and connect to crank which is part of the shifter lever (11) using the remaining rod end pin (8). Tighten jam nut (7) on link (5).



13. Check all bolts and connections making sure that all bolts, nuts and other connections are in place and securely tightened.
14. The final drive filler plug provided in the HYSTER unit to fill the "Caterpillar" housing is at the proper level for the required "Caterpillar" oil level. (See 15, page 29.)
15. Place bars (F, below) in place on tractor fenders, and tractor seat on top of bars. Fasten seat securely with capscrews (E), through angle on bottom of seat, bars (F) and tractor fender.
16. Remove drain cock and short nipple from bottom of fuel tank. Add  $\frac{1}{2}$ "-90° street elbow between nipple and tank so that outlet of drain cock is toward rear.

## TRACTOR SEAT ALTERATION

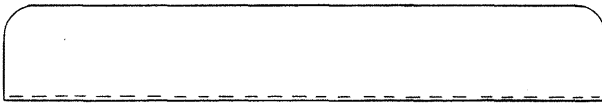
### For Tractors with Seat-mounted Fuel Tank



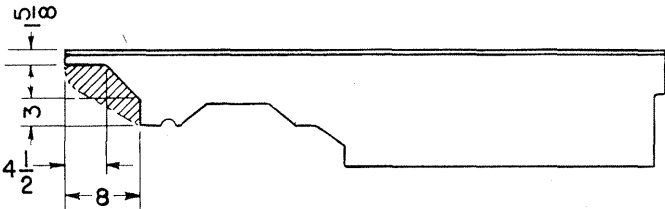
**Note:** To mount winch Serial No. 90204 and up on tractors prior to Tractor Serial No. 6U-10066 or 7U-27984, four "Caterpillar" studs No. 1A-4953 with nuts and lockwashers are required to replace drawbar studs.

To mount winches *prior* to winch Serial No. 90204 on tractors Serial No. 6U-10066 or 7U-27984 and up, four "Caterpillar" studs No. 3B-1656 with nuts and lockwashers are required to replace drawbar studs.

## For Tractors with Seat-mounted Fuel Tank



## LEFT HAND FENDER ALTERATION



## RIGHT HAND FENDER ALTERATION

NOTE: BURN OUT CROSS HATCHED AREAS OF FENDERS FOR WINCH CLEARANCE

## Section D

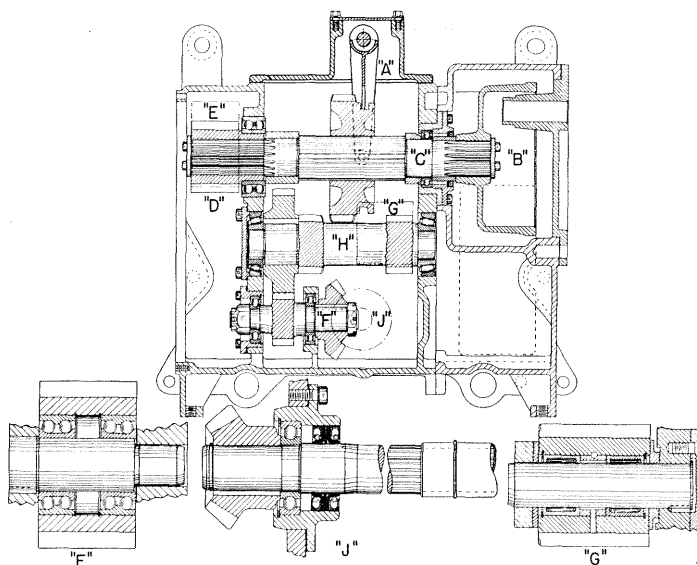
### List of Parts and Illustrations

The information consolidated into this Parts List Section includes unit assemblies and exploded views showing the part name and number.

The numerical index in the back of the book lists all parts in numerical sequence and shows the page number, on which they are illustrated.

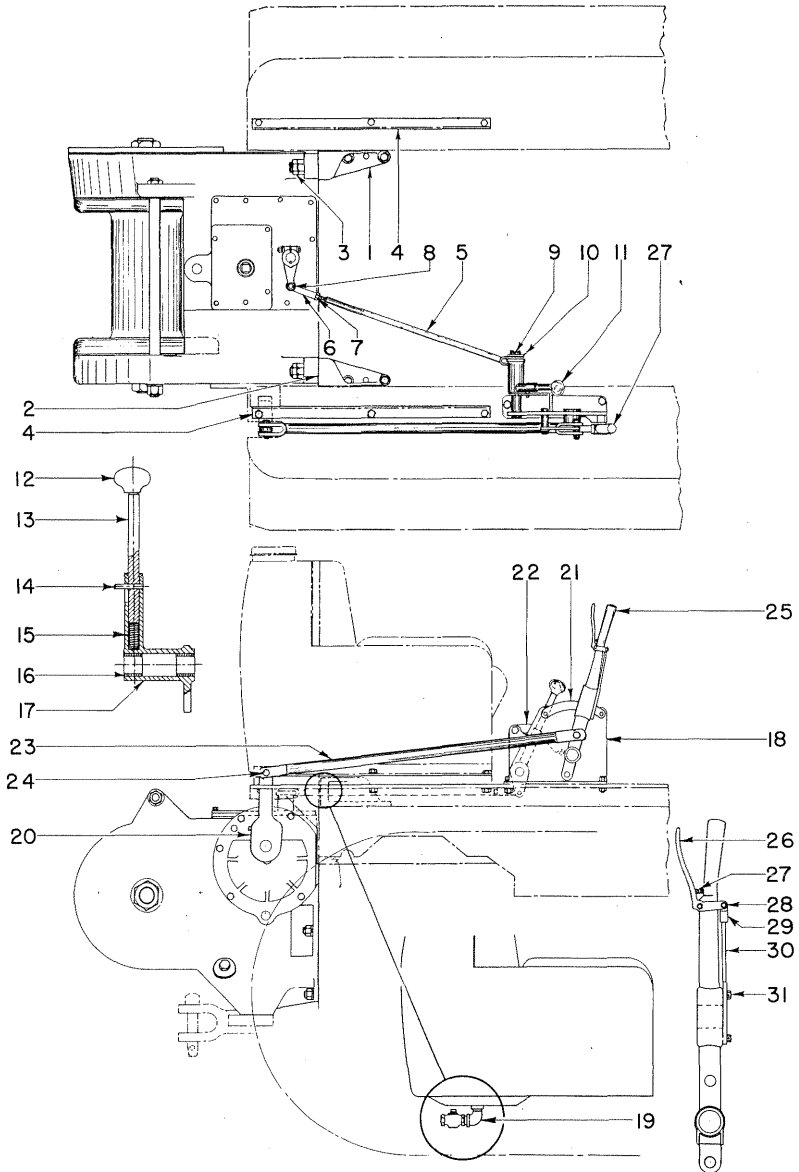
*Note:* Unnumbered parts in the illustrations are the same as corresponding parts shown with number. Particular attention should be given to the location of bolts, capscrews, washers, etc., so that they are replaced in the holes from which they were removed.

#### POWER TAKE-OFF — TRANSMISSION — BRAKE ASSEMBLY



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## GENERAL ARRANGEMENT AND HANDLING GEAR For Tractors with Seat-mounted Fuel Tank



# GENERAL ARRANGEMENT AND HANDLING GEAR

## For Tractors with Seat-mounted Fuel Tank

Ref. No.	Hyster Part No.	NAME OF PART
1	{ 90739	Bracket (L. H.)
	{ 15531	Capscrew— $\frac{5}{8}$ NC x $1\frac{1}{4}$ (2)
	{ 15160	Lockwasher— $\frac{5}{8}$ (2)
	{ 38454	Pin—Dowel
2	{ 90740	Bracket (R. H.)
	{ 15531	Capscrew— $\frac{5}{8}$ NC x $1\frac{1}{4}$ (2)
	{ 15160	Lockwasher— $\frac{5}{8}$ (2)
	{ 38454	Pin—Dowel
3	{ 15530	Capscrew—1" NF x 4 (2)
	{ 15016	Nut—Hex, 1" NF (2)
	{ 15036	Nut—Hex Jam, 1" NF (2)
4	{ 90649	Bar (2)
	{ 15510	Capscrew— $\frac{1}{2}$ NF x $2\frac{1}{4}$ (6)
	{ 15158	Lockwasher— $\frac{1}{2}$ (6)
	{ 15008	Nut—Hex, $\frac{1}{2}$ NF (6)
5	91886AB	Link Assembly
6	* 92016A	Rod End
7	* 15010	Nut—Hex, $\frac{5}{8}$ NF
8	{ * 150	Pin—Rod End (2)
	{ * 15212	Cotter— $\frac{3}{32}$ x $\frac{3}{4}$ (2)
9	15244	Cotter— $\frac{3}{16}$ x $1\frac{1}{2}$
10	59362	Washer
11	91434AB	Handlever Assembly
12	* 809	Knob
13	* 32906	Rod—Lever Stem
14	* 19909	Pin
15	* 5782	Spring 1, 3, 5
16	* 29603	Bushing (2) 2, 2, 0
17	* 91430AB	Lever
	{ 91426A	Bracket
18	{ 15509	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{2}$ (3)
	{ 15158	Lockwasher— $\frac{1}{2}$ (3)
	{ 15008	Nut—Hex, $\frac{1}{2}$ NF (3)
19	15338	Pipe Fitting—Street Elbow, $\frac{1}{2}$ x 90°
20	.....	Slack Adjuster (See Ref. 11, page 33)
21	{ 59035	Quadrant—Ratchet
	{ 15508	Capscrew— $\frac{3}{8}$ NF x 1 (2)
	{ 15156	Lockwasher— $\frac{3}{8}$
22	{ 91451	Plate—Quadrant (Shifter)
	{ 15508	Capscrew— $\frac{3}{8}$ NF x 1 (2)
	{ 15156	Lockwasher— $\frac{3}{8}$ (2)
	{ 15006	Nut—Hex, $\frac{3}{8}$ NF (2)
23	90707A	Link
24	{ 159	Pin—Rod End (2)
	{ 15223	Cotter— $\frac{1}{8}$ x 1 (2)
25	59034A	Handlever Assembly
26	* 32694	Handle
27	* 32695	Spring
28	{ * 37476	Machine Screw—Hex Head, 10-24 x $\frac{7}{8}$ (2)
	{ * 15052	Nut—Hex, 10-24 (2)
29	* 32693	Rod End
30	* 59033	Rod—Pawl
31	* 32692	Bolt—Drilled Head (2)

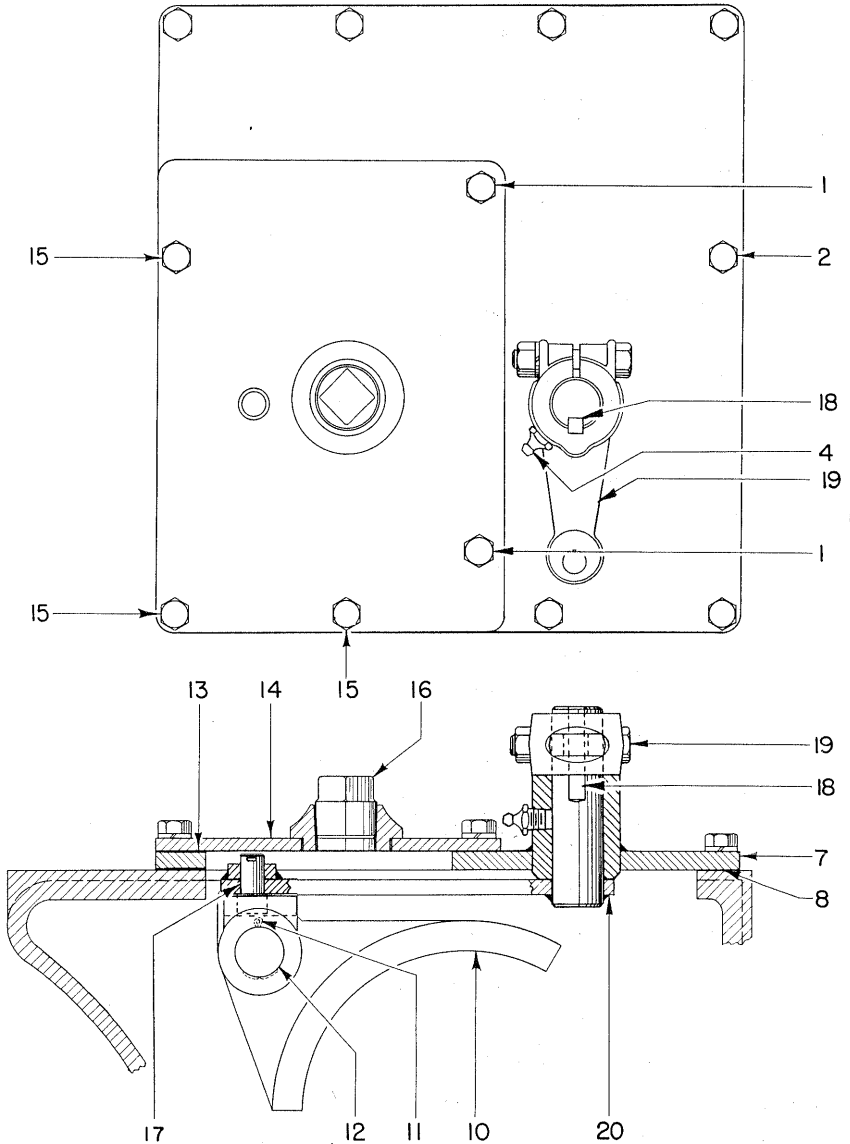
\*Included in assembly under which listed.

(Note: Only quantities more than one are listed after name of part)

For Complete Gasket Set for D4N Towing Winch, order Gasket Set 92001A NRS

Use Component on D6, R1

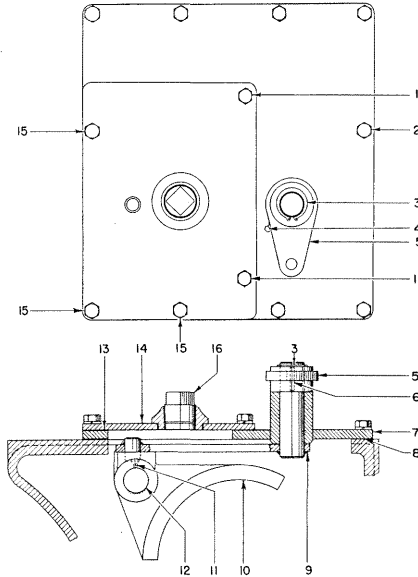
# **SHIFTER PARTS** **For Tractors with Seat-mounted Fuel Tank**



## SHIFTER PARTS

### For Tractors with Seat-mounied Fuel Tank

Ref. No.	Hyster Part No.	NAME OF PART	Ref. No.	Hyster Part No.	NAME OF PART
1	15513	Capscrew—	12	45052	Pin
		$\frac{3}{8}$ NF x $\frac{3}{4}$ (2)	13	90722	Gasket
	15156	Lockwasher— $\frac{3}{8}$ (2)	14	90720A	Cover
2	15508	Capscrew—	15	15532	Capscrew—
		$\frac{3}{8}$ NF x 1 (7)			$\frac{3}{8}$ NF x $1\frac{1}{4}$ (3)
	15156	Lockwasher— $\frac{3}{8}$ (7)		15156	Lockwasher— $\frac{3}{8}$ (3)
3	58933	Snap Ring	16	32411	Plug—Vent
4	16001	Grease Fitting	17	91893	Shoe—Shifter
5	91437A	Crank	18	15213	Cotter
6	9413	Key		9415	Key
7	91435A	Cover	19	91888A	Crank
8	32828	Gasket		*15528	Capscrew—
9	90725A	Lever			$\frac{3}{8}$ NF x 2
10	90723	Fork—Shifter		*15156	Lockwasher— $\frac{3}{8}$
11	15244	Cotter—	20	*15006	Nut—Hex, $\frac{3}{8}$ NF
				91892A	Lever
		$\frac{3}{16}$ x $1\frac{1}{2}$ (2)			

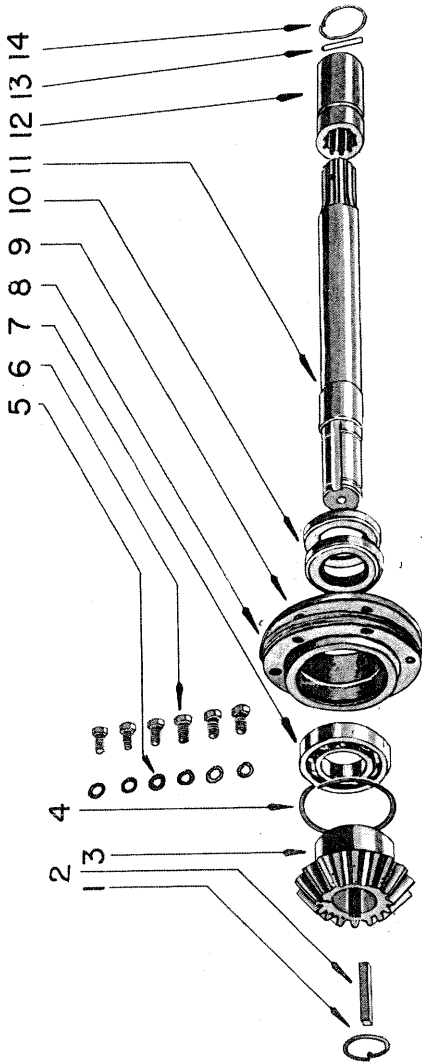


This type shifter mechanism last used on Serial No. 75221. To replace rank (5) or lever (9), order Alteration Kit No. 91899AB.

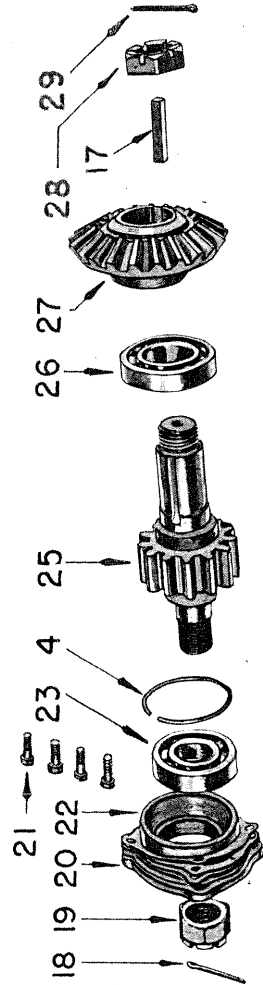
\*Included in assembly under which listed.

(Note: Only quantities more than one are listed after Part Name)

# BEVEL GEAR SHAFT AND POWER TAKE-OFF SHAFT GROUP (TRANSMISSION)



POWER TAKE-OFF SHAFT ASSEMBLY



BEVEL GEAR SHAFT ASSEMBLY



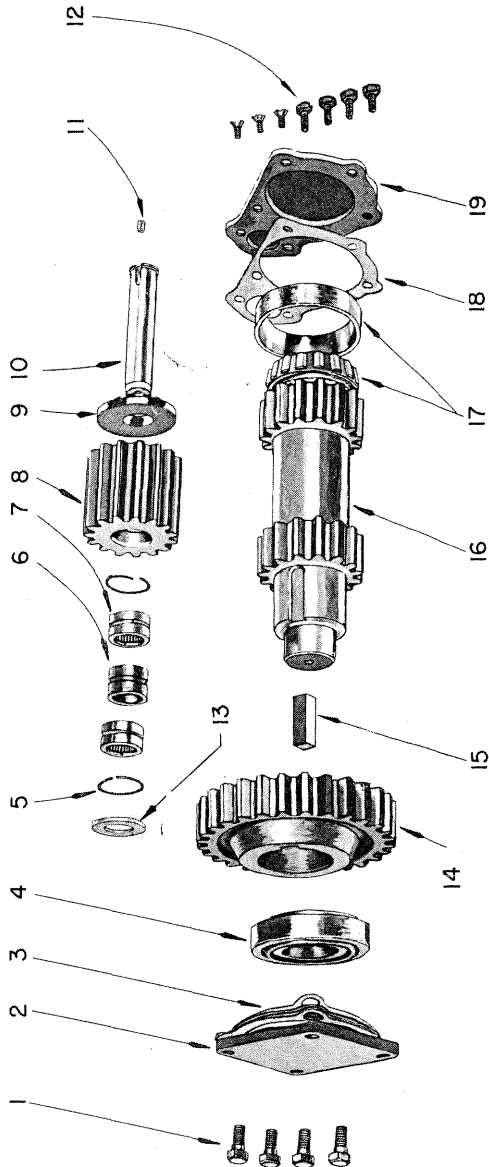
# **BEVEL GEAR SHAFT AND POWER TAKE-OFF SHAFT GROUP (TRANSMISSION)**

*(Complete Transmission No. 59002A)*

Ref. No.	Hyster Part No.	PART NAME
1	32846	Snap Ring
2	92966	Key
3	32845C	Gear—Bevel (15 teeth)
4	9109	Snap Ring (2)
5	15156	Lockwasher— $\frac{3}{8}$ (6)
6	15508	Capscrew— $\frac{3}{8}$ NF x 1 (6)
7	43208	Bearing
8	32843	Shim Set
9	32842	Carrier—Bearing
10	3362	Oil Seal (2)
11	32844B	Shaft—Power Take-off
12	6852	Coupling—Spline ("Caterpillar" 3B-1042)
13	9563	Pin ("Caterpillar" No. L-2124)
14	9554	Ring—Lock ("Caterpillar" No. 3B-1224)
17	92964	Key
18	15237	Cotter—5/32 x 2
19	2674	Nut—Castellated, 1 $\frac{1}{4}$ NF
20	32851	Shim Set
21	31414	{ Capscrew—Drilled Head (4) Lockwire, 18 Ga. x 18" long
22	59010	Carrier—Bearing
23	43307	Bearing
25	32847B	Gear Shaft
26	43209	Bearing
27	32848B	Gear—Bevel (21 teeth)
28	32849	Nut—Slotted Jam
29	15235	Cotter—5/32 x 1 $\frac{1}{2}$

*(Note: Only quantities more than one are listed after name of part)*

# INTERMEDIATE SHAFT AND REVERSE IDLER GEAR GROUP (TRANSMISSION)

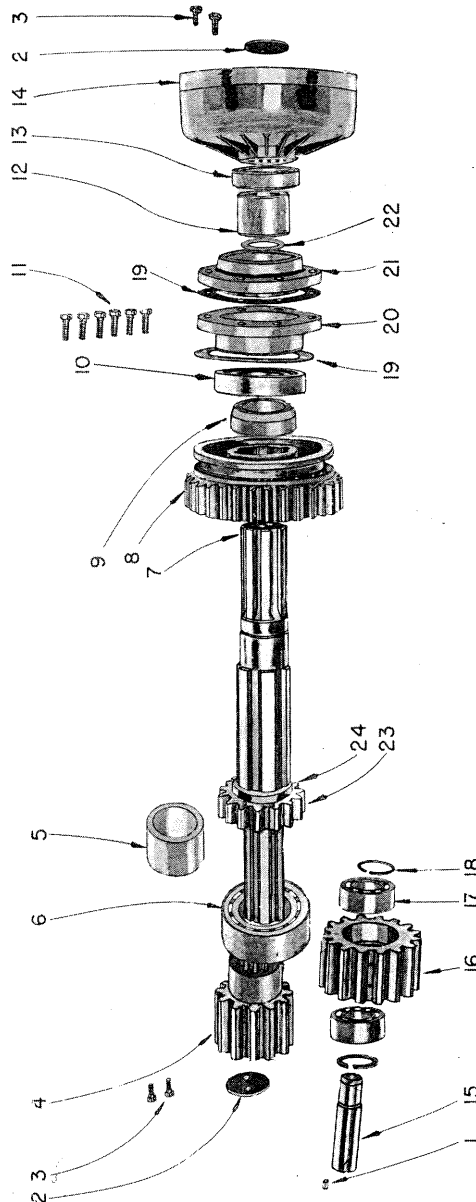


## INTERMEDIATE SHAFT AND REVERSE IDLER GEAR GROUP (TRANSMISSION)

Ref. No.	Hyster Part No.	PART NAME
1	32863	Capscrew—Drilled Head (4)
		Lockwire, 18 ga. x 21" long
2	32861	Retainer—Bearing
3	59013	Shim Set
4	32855	Bearing Cone
	32856	Bearing Cup
5	45642	Snap Ring (2)
6	59016	Spacer
7	59230	Needle Bearing (2)
8	59015	Gear—Reverse (15 teeth) ✓
9	59017	Washer—Thrust
10	59014	Shaft—Reverse Idler
11	33100	Pin—Dowel
	32687	Machine Screw—Flat Head, $\frac{3}{8}$ NF x $\frac{3}{4}$ (3)
12	15508	Capscrew— $\frac{3}{8}$ NF x 1 (4)
	15156	Lockwasher— $\frac{3}{8}$ (4)
13	59018	Washer—Thrust
14	32853B	Gear (28 teeth)
15	92965	Key
16	32852B	Gear Shaft
17	32855	Bearing Cone
	32858	Bearing Cup
18	59012	Gasket
19	59011	Cover—Bearing

*(Note: Only quantities more than one are listed after name of part)*

# **BRAKE SHAFT AND DRUM IDLER GEAR GROUP (TRANSMISSION)**

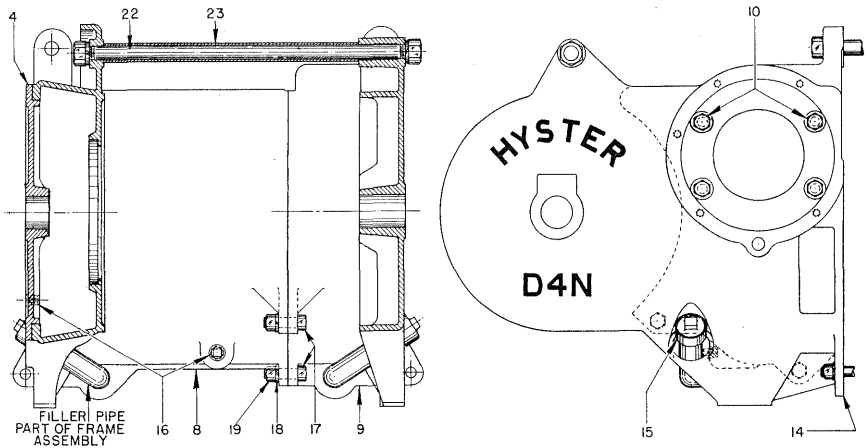
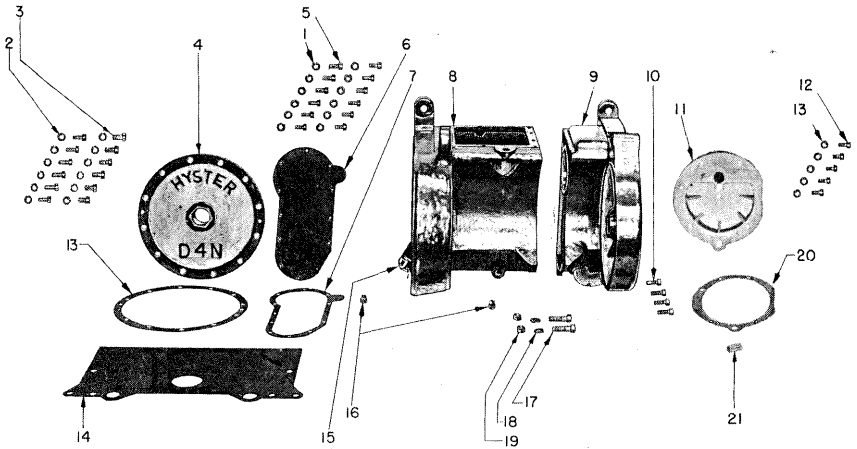


## BRAKE SHAFT AND DRUM IDLER GEAR GROUP (TRANSMISSION)

Ref. No.	Hyster Part No.	PART NAME
1 ✓	33100	Pin—Dowel
2	59028	Plate—Washer (2)
3 {	30847	Capscrew—Drilled Head (4)
	.....	Lockwire—No. 18 ga. Wire x 7" long
4 ✓	59029	Gear—Drum Pinion (12 teeth)
5	59020	Spacer (Standard—in place of gear, Ref. 23)
6 ✓	45216P	Bearing (Double row)
7 ✓	59340	Shaft—Drum Pinion
8	59021	Gear—Sliding (32 teeth)
9 ✓	59341	Spacer
10 ✓	41212	Bearing
11 {	36782	Capscrew—Drilled Head (6)
	.....	Lockwire, No. 18 ga. Wire x 23" long
12	59584	Spacer
13	41804	Oil Seal
14	59027B	Drum—Brake
15	46535B	Shaft—Idler
16	46534	Gear—Idler (15 teeth)
17	45209	Bearing (2)
18	28176	Snap Ring (2)
19	59023	Gasket (2)
20	59342	Carrier—Bearing
21	59343	Retainer—Bearing
22	59583	"O" Ring
23	.....	Gear—Idler (Optional, see Ref. 8, pp. 52-54)
24	.....	Washer (Optional, see Ref. 10, pp. 52-54)

*(Note: Only quantities more than one are listed after name of part)*

## SIDE FRAME GROUP



## SIDE FRAME GROUP

Ref. No.	Hyster Part No.	PART NAME
1	15156	Lockwasher— $\frac{3}{8}$ (20)
2	15158	Lockwasher— $\frac{1}{2}$ (17)
3	15511	Capscrew— $\frac{1}{2}$ NF x 1 (12)
4	32823B	Cover (Drum Gear)
5	15513	Capscrew— $\frac{3}{8}$ NF x $\frac{3}{4}$ (18)
6	32825B	Cover—Frame (L. H.)
7	32826B	Gasket
8	{ †92583A	Frame—Side (L. H.)
	{ *33349	Pipe—Filler
9	{ †92584A	Frame—Side (R. H.)
	{ *33349	Pipe—Filler
10	{ 9455	Capscrew—Drilled Head (4)
	{ .....	Lockwire, 18 ga. x 25 $\frac{1}{2}$ " long
11	{ 59329A	Cover (Brake Compartment)
	{ 21420	Plug—Breather (not illustrated)
12	15514	Capscrew— $\frac{1}{2}$ NF x 1 $\frac{1}{4}$ (5)
13	32824B	Gasket (Drum Gear Cover)
14	32841	Gasket (Winch to Tractor)
15	33052	Cap—Pipe (2) (Part of Assemblies 8 and 9)
16	15304	Plug—Pipe, $\frac{3}{4}$ (2)
17	15605	Capscrew— $\frac{3}{4}$ NF x 2 $\frac{1}{4}$ (2)
18	15162	Lockwasher— $\frac{3}{4}$ (2)
19	15012	Nut—Hex, $\frac{3}{4}$ NF (2)
20	59042	Gasket (Brake Compartment Cover)
21	59038	Pin—Dowel
	{ 32837	Link
22	{ 15016	Nut—Hex, 1" NF (2)
	{ 15166	Lockwasher—1" (2)
23	32838	Pipe—Spacer

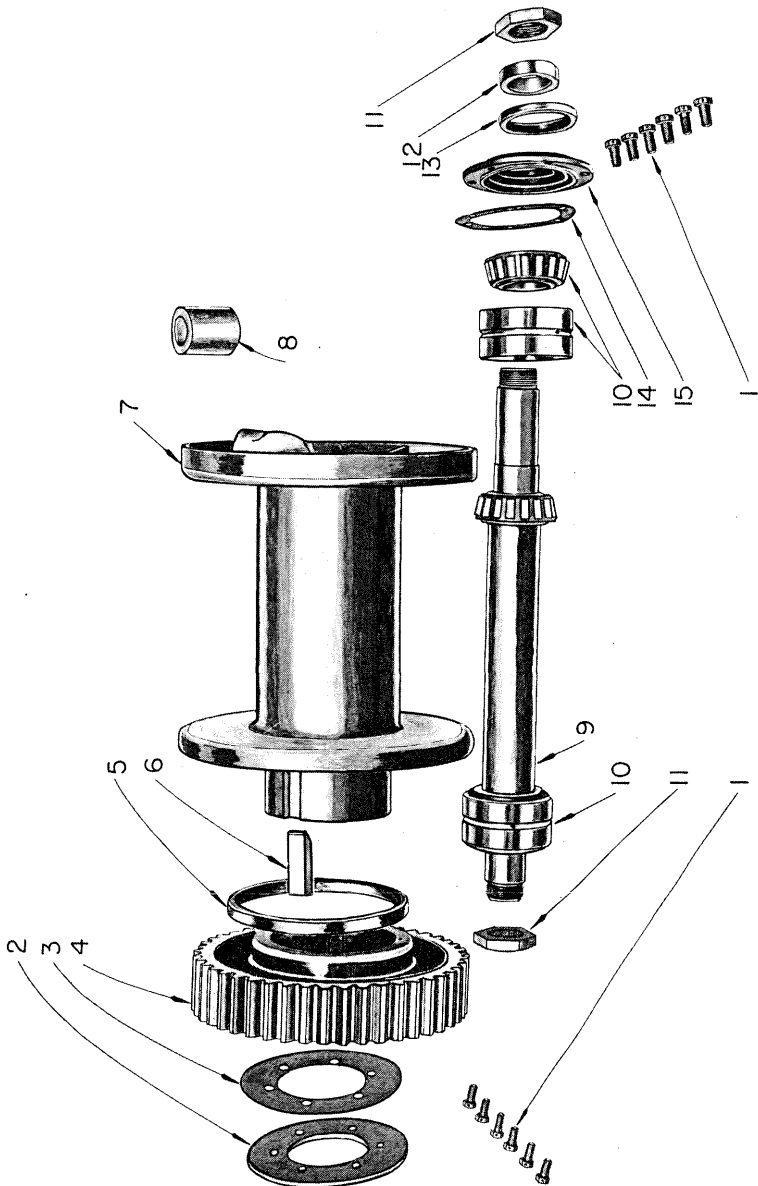
(Note: Only quantities more than one are listed after name of part)

\*Included in assembly under which listed.

†To mount winch Serial No. 90204 and up on tractors prior to Tractor Serial No. 6U-10066 or 7U-27984, four "Caterpillar" studs No. 1A-4953 with nuts and lockwashers are required to replace drawbar studs.

To mount winches prior to winch Serial No. 90204 on tractors Serial No. 6U-10066 or 7U-27984 and up, four "Caterpillar" studs No. 3B-1656 with nuts and lockwashers are required to replace drawbar studs.

## DRUM AND DRUM SHAFT GROUP



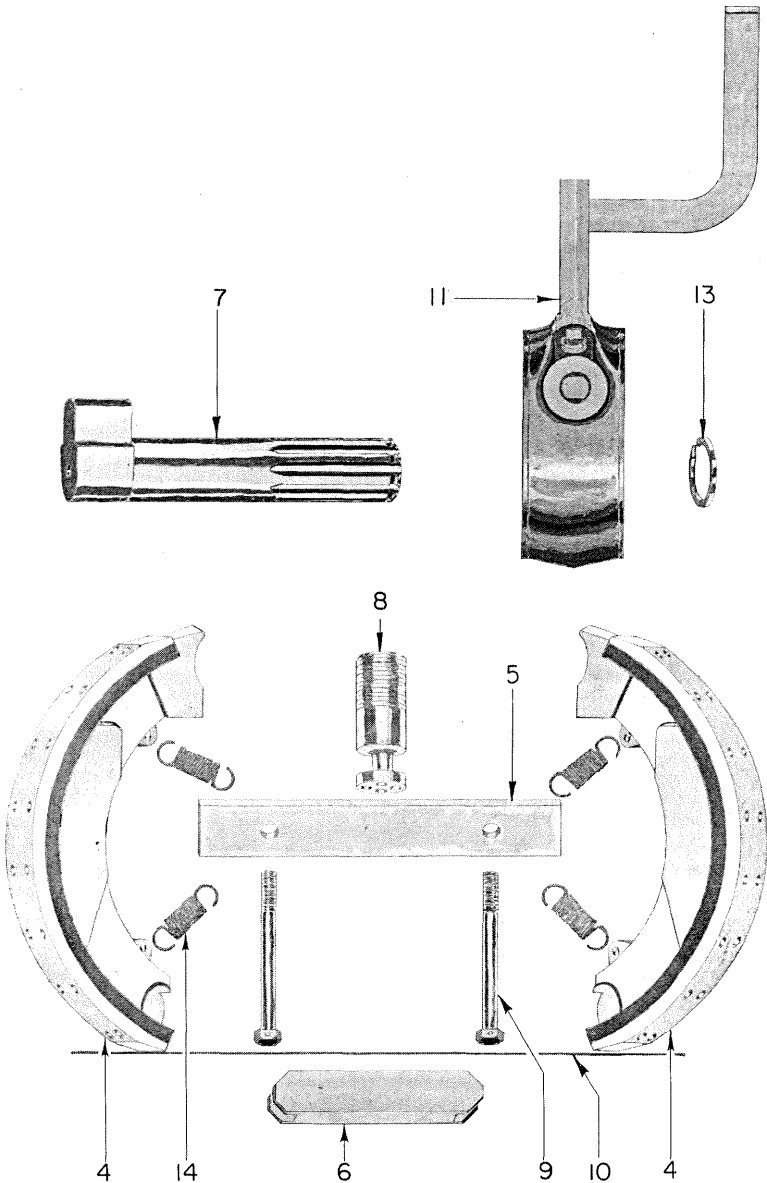


## DRUM AND DRUM SHAFT GROUP

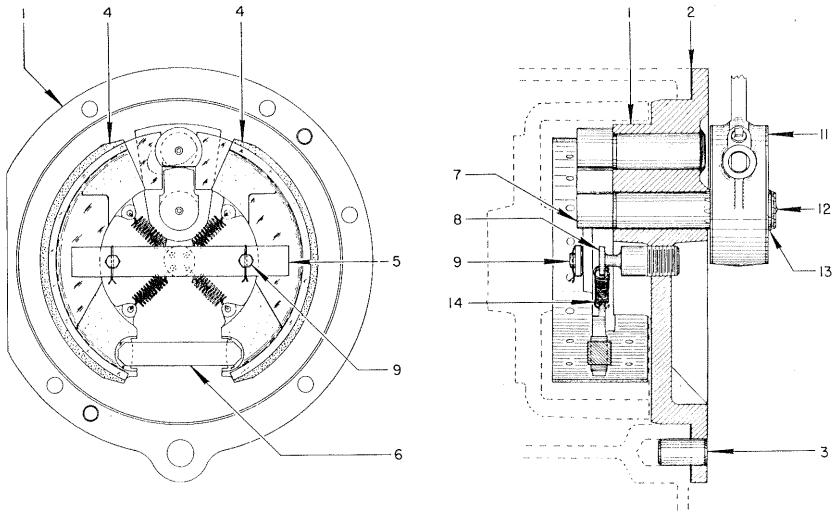
Ref. No.	Hyster Part No.	PART NAME
1	{ 32863	Capscrew—Drilled Head
	{ .....	Lock Wire, 18 ga. x 27" (2)
2	32888	Retainer—Bearing
3	33307	Gasket
4	59030	Gear—Drum (45 teeth)
5	32822B	Oil Seal
6	32887	Key
7	32885	Drum
8	{ 8126	Ferrule Plug— $\frac{5}{8}$ Cable
	{ 7622	Ferrule Plug— $\frac{3}{4}$ Cable
9	32883	Shaft—Drum
10	32884	Roller Bearing (2)
11	59058	Nut (2)
12	32889	Spacer
13	8238	Oil Seal
14	32891	Gasket
15	32890	Retainer—Bearing

*(Note: Only quantities more than one are listed after name of part)*

## BRAKE ARRANGEMENT For Seat-tank Type Tractors



## BRAKE ARRANGEMENT For Seat-tank Type Tractors



Ref. No.	Hyster Part No.	NAME OF PART
1	.....	Cover—Side (See Ref. 11, page 29)
2	.....	Gasket (See Ref. 20, page 29)
3	.....	Pin—Dowel (See Ref. 21, page 29)
4	{ 59859A	Shoe Assembly—Brake (2)
	{ *59047AB	Lining Assembly—Brake (2)
5	59338	Plate—Retainer
6	59320	Bar—Brake Shoe Spacer
7	59344	Shaft—Brake
8	59337	Bolt—Spring Support
9	59339	Capscrew—Drilled Head (2)
10	.....	Lockwire, 18 ga. x 12"
11	90704A	Slack Adjuster (Altered)
12	16001	Grease Fitting
13	34507	Snap Ring
14	59319	Spring—Shoe (4)

(Note: Only quantities more than one are listed after name of part)

\*Included in assembly under which listed.

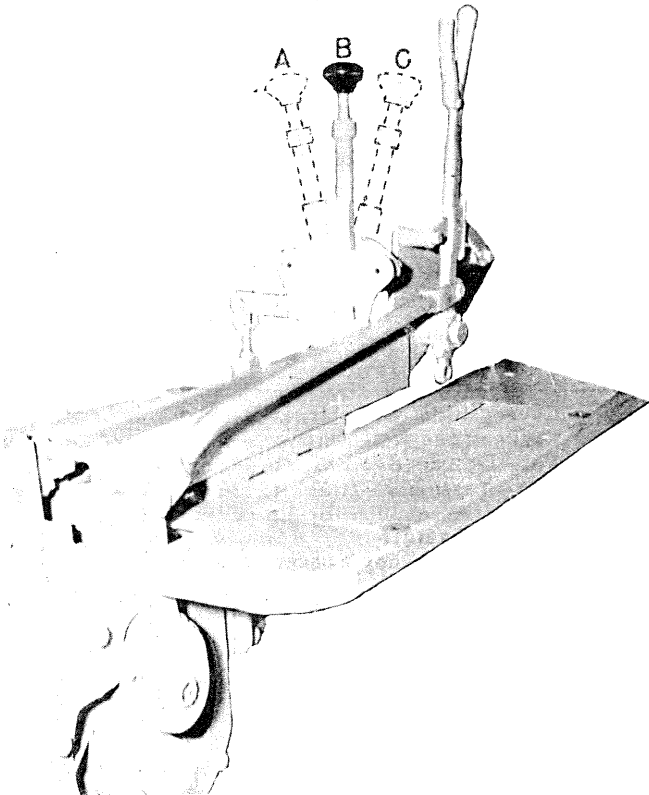
## **Section E**

# **PARTS AND INSTRUCTIONS**

**For D4N Towing Winch Mounted on a Tractor Equipped with  
Fender-mounted Fuel Tank**

### **OPERATING INSTRUCTIONS**

The D4N Towing Winch mounted on a tractor equipped with the "Fender-mounted" fuel tank is operated and maintained the same as the D4N towing winch mounted on a tractor equipped with the seat-mounted fuel tank except for the following operational differences.



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## OPERATORS INSTRUCTIONS—(Continued)

### Overwinding

When the winch is used with the cable leading from the top of the drum (overwind) move the shifter lever to the left, position "A," to pay out the cable. Move the lever through neutral position to the right to position "C" to pull the cable in.

### Underwinding

When the winch is used with the cable leading from the bottom of the drum (underwind) move the shifter lever to the left, position "A," to pull the cable in. Move the lever to the right through neutral to position "C" to pay out the cable.

## Installation Instructions

For Installing HYSTER D4N Towing Winch on "Caterpillar"  
R4, and Diesel D4 Tractors Serial 6G-2076 & Up, 7J-9215 & Up  
With Fender-mounted Fuel Tank

### INSTRUCTIONS FOR HYSTER SERIAL NO. BWN 32478 AND UP

Refer to the arrangement drawings which show the general appearance of the unit on the tractor (page 38).

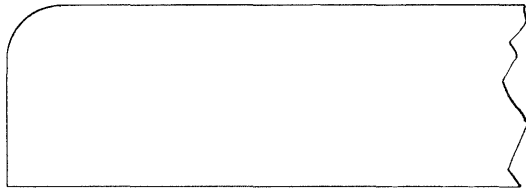
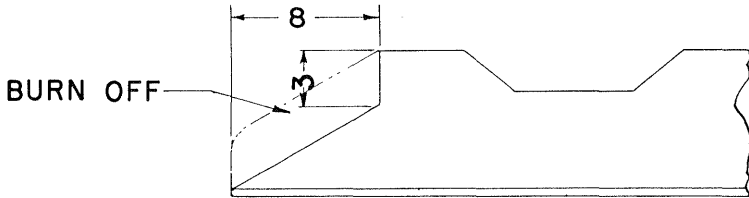
Proceed as follows:

1. Block up rear end of tractor six or eight inches high.  
This prevents the oil from running out of the transmission case when covers are removed and makes installation easier.
2. Remove tractor seat, transmission gear and brake inspection covers, drawbar guide plates and brackets. Also remove the final drive filler cups.
3. Burn clearance openings in both R. H. and L. H. fenders shown on page 37.
4. Remove studs from lower face of drawbar brackets for installation later in pads on bottom of winch frames.
5. Place gasket 14, page 28, in position on rear face of tractor transmission.
6. Swing the winch into place on the rear face of the tractor. Make sure the splines on the power take-off shaft enter those of the coupling on the tractor.
7. When the winch is in place, place nuts and lockwashers on the six lower studs. Tighten all nuts so that winch is securely fastened to tractor.
8. Before mounting brackets (7 and 10, page 44) on top of tractor transmission cover, insert capscrews (3) in end of brackets. Fasten brackets, with dowel pins (5) and capscrews (4) with lockwashers, securely to transmission cover.

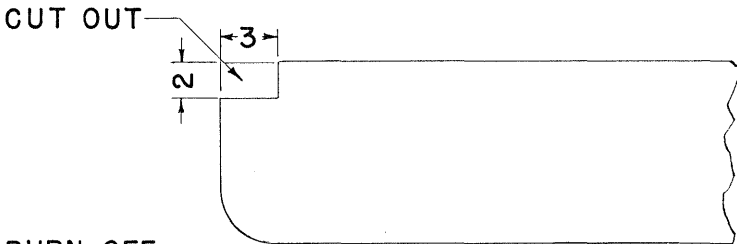
9. Fasten the winch securely to brackets with capscrews (3) (install under instruction 7 above). Fasten tractor drawbar to winch using the studs and nuts which were removed from tractor drawbar brackets. (See instruction 4.)
10. Install seat supports (6 and 8), fastening securely with capscrews (2).
11. Install lever (16, page 38) and brake ratchet (23). Install brake link (13), connecting one end to lever (16) and the other end to slack adjuster (1). Release adjusting screw in slack adjuster (1) until hand-lever (16) is in the extreme forward or released position. As brake lining wears, make further adjustments on slack adjuster.
12. Install clutch shifter lever (3) with end of shifter stem engaged in center notch of quadrant bar (11). Move lever (9) to the farthest point to the right and mark, then to the farthest point to the left and mark. Halfway between will be neutral position. Adjust rod end (15) and rod end (14) to the proper length, and, using rod end pins provided, connect one end to lever (9) and the other end to bell crank which is part of shift lever assembly (3). Tighten jam nut on rod end (14).
13. Check all bolts and connections making sure that all bolts, nuts and other connections are in place and securely tightened.
14. The final drive filler plug provided in the HYSTER unit to fill the "Caterpillar" housing is at the proper level for the required "Caterpillar" oil level. (See 15, page 29.)
15. Mount seat on Support (6, 8, page 44) with capscrews (9).

## INSTALLATION INSTRUCTIONS

### Tractor Fender Alteration when Tractor is Equipped with Fender-mounted Fuel Tank



LEFT HAND FENDER  
ALTERATION



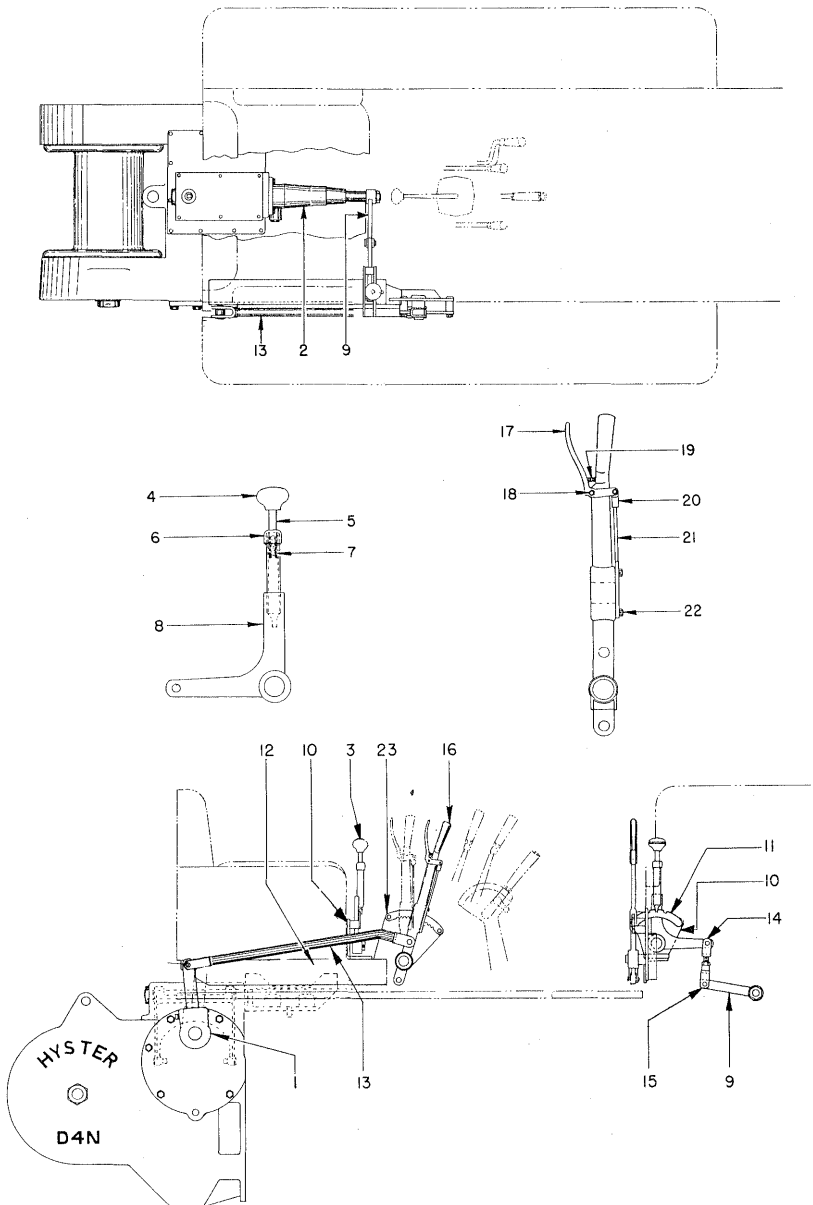
BURN OFF  
BACK  
OF FENDER



RIGHT HAND FENDER  
ALTERATION

## HANDLING GEAR

### For Tractors with Fender-mounted Fuel Tank





## HANDLING GEAR

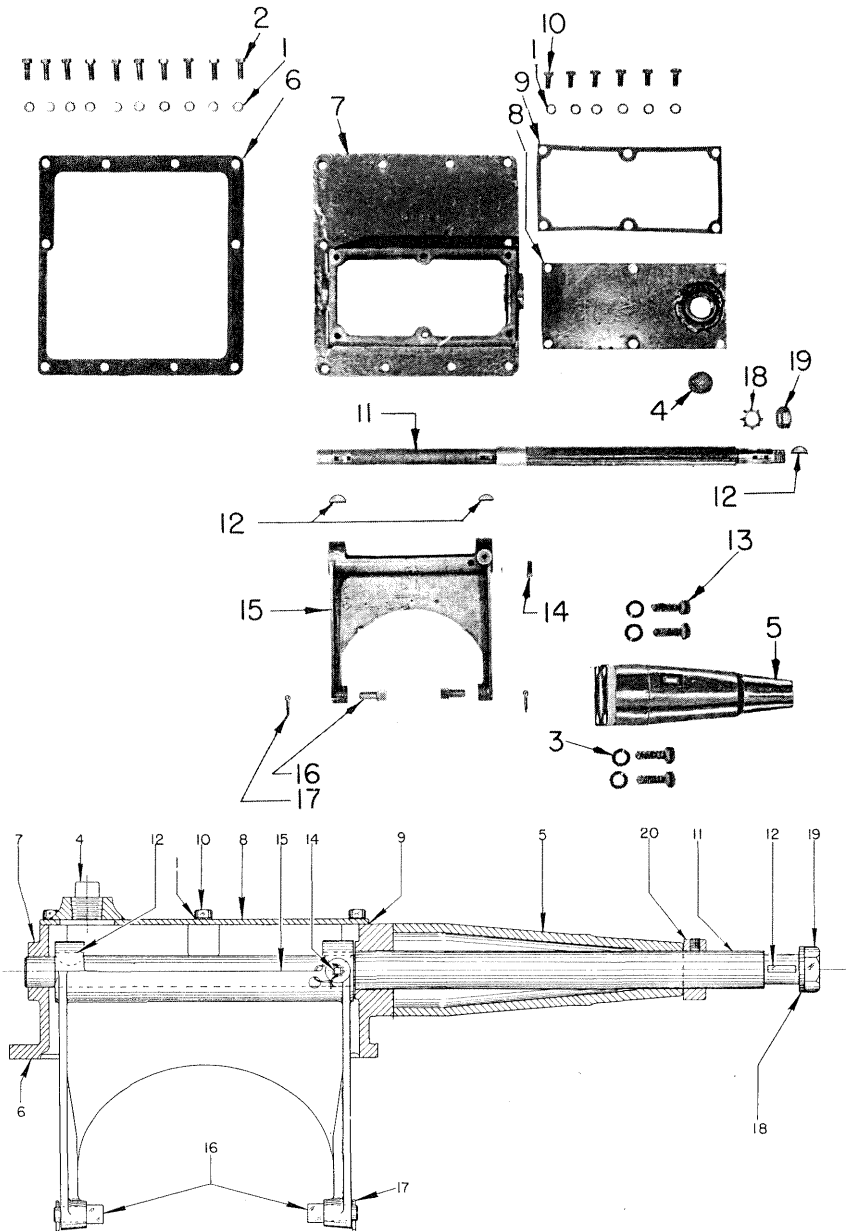
## For Tractors with Fender-mounted Fuel Tank

Ref. No.	Hyster Part No.	NAME OF PART
1	.....	Slack Adjuster (See Ref. 11, page 43)
2	.....	Bracket—Shaft Support (See Ref. 5, p. 41)
3	59597A	Handlever Assembly
4	*27991	Knob
5	*59601	Rod—Shifter
6	*59602	Cap
7	* 5782	Spring
8	*59598A	Handlever
9	59607A	Lever—Shifter
10	{ 59596A	Bracket—Quadrant
	{ 15245	Cotter— $3/16 \times 1\frac{3}{4}$
	{ 15532	Capscrew— $\frac{3}{8}$ NF x $1\frac{1}{4}$ (2)
	{ 15508	Capscrew— $\frac{3}{8}$ NF x 1
	{ 15006	Nut—Hex, $\frac{3}{8}$ NF (2)
11	{ 15156	Lockwasher— $\frac{3}{8}$ (3)
	{ 59605	Quadrant
	{ 15508	Capscrew— $\frac{3}{8}$ NF x 1 (2)
	{ 15156	Lockwasher— $\frac{3}{8}$ (2)
12	.....	Support—Seat (See Ref. 6 & 8, page 45)
13	{ 59036A	Link Assembly
	{ * 159	Pin—Rod End (2)
	{ *15223	Cotter— $\frac{1}{8} \times 1$ (2)
14	59604	Rod End
15	{ 59606	Rod End
	{ 153	Pin—Rod End (2)
	{ 15028	Nut—Jam, $\frac{1}{2}$ NF
	{ 15223	Cotter— $\frac{1}{8} \times 1$ (2)
16	59034A	Handlever Assembly—Brake
17	*32694	Handle
18	{ *37476	Machine Screw—Hex, $10-24 \times \frac{1}{2}$ (2)
	{ *15052	Nut—Hex 10-24 (2)
19	*32695	Spring—Latch
20	*32693	Rod End
21	*59033	Rod—Pawl
22	*32692	Bolt—Drilled Head (2)
23	{ 59035	Quadrant—Ratchet
	{ 15508	Capscrew— $\frac{3}{8}$ NF x 1 (2)
	{ 15156	Lockwasher— $\frac{3}{8}$ (2)
24	{ 15324	Pipe Fitting—Nipple, $\frac{1}{8}$ close (2)
	{ 15325	Pipe Fitting—Coupling, $\frac{1}{8}$

(Note: Only quantities more than one are listed after name of part)

\*Included in assembly under which listed.

# TOP COVER AND GEAR SHIFTER GROUP — TRANSMISSION For Tractors with Fender-mounted Fuel Tank



# TOP COVER AND GEAR SHIFTER GROUP — TRANSMISSION

## For Tractors with Fender-mounted Fuel Tank

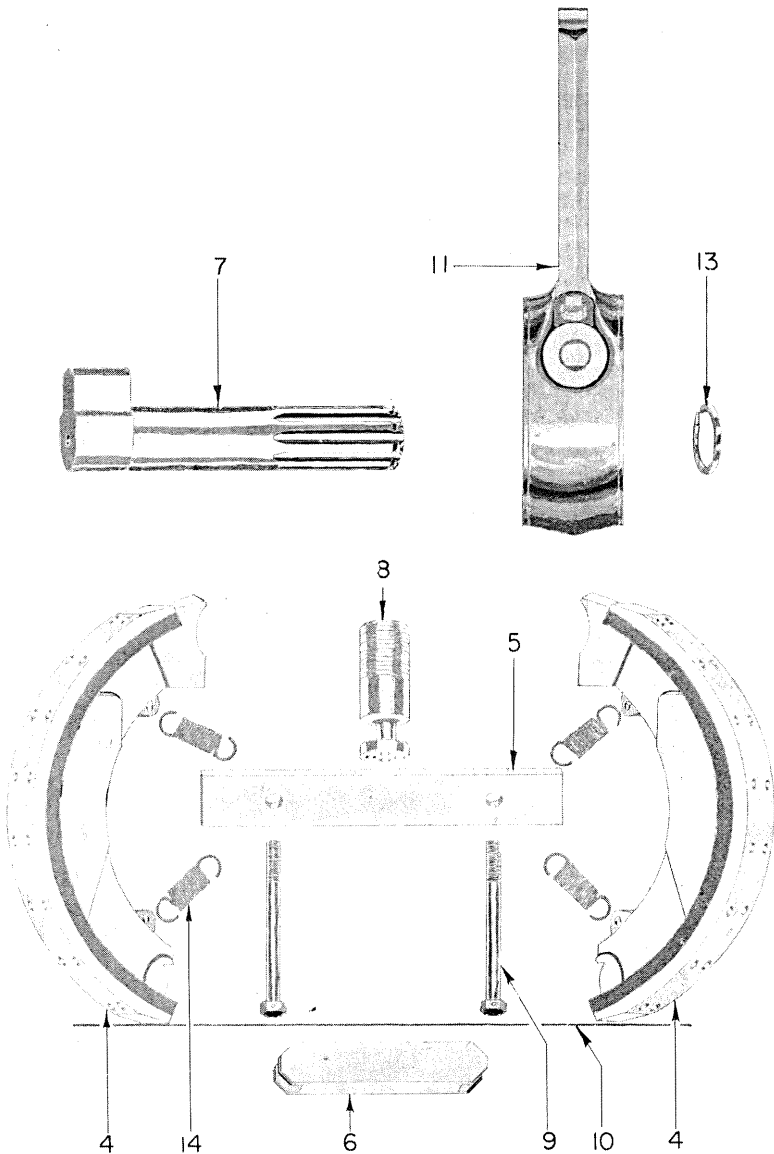
Ref. No.	Hyster Part No.	NAME OF PART
1	15156	Lockwasher— $\frac{3}{8}$ (16)
2	15508	Capscrew— $\frac{3}{8}$ NF x 1 (10)
3	15158	Lockwasher— $\frac{1}{2}$ (4)
4	32411	Plug—Vent
5	59007B	Bracket—Shaft Support
6	32828	Gasket
7	32827B	Cover—Top ✓
8	32829AB	Cover—Hand Hole
9	32830	Gasket
10	15525	Capscrew— $\frac{3}{8}$ NC x $\frac{3}{4}$ (6)
11	32831C	Shaft
12	206	Key (3)
13	15538	Capscrew— $\frac{1}{2}$ NC x $1\frac{1}{4}$ (4)
14	33302	Setscrew—Drilled Head
15	32832C	Fork—Shifter
16	32307D	Shoe—Shifter (2)
17	15213	Cotter— $\frac{3}{32}$ x 1 (2)
18	15934B	Lockwasher—Shakeproof, $\frac{7}{8}$
19	15034	Nut—Jam, $\frac{7}{8}$ NF
20	9444	Set Collar

(Note: Only quantities more than one are listed after name of part)

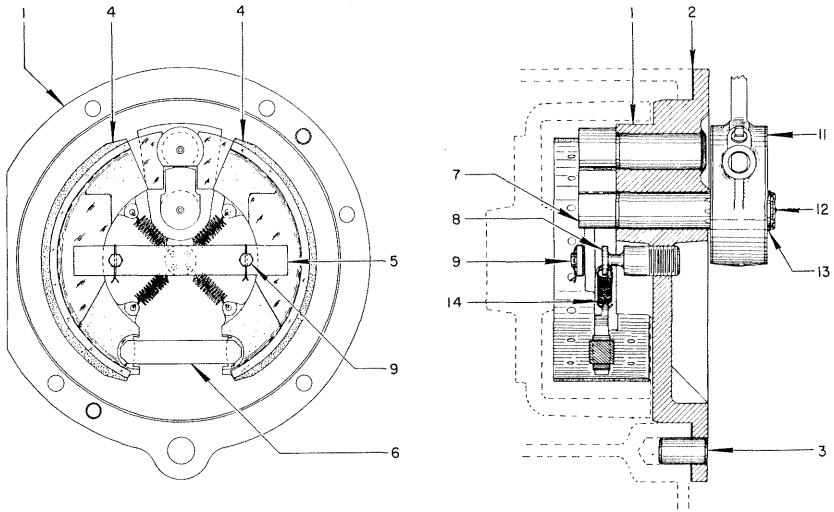
Note: A gasket set, No. 92001A is available for service. This set includes all gaskets required for D4N Towing Winch.

NRS. Use components  
See Obs. RPO's.

## BRAKE ARRANGEMENT



## BRAKE ARRANGEMENT



Ref. No.	Hyster Part No.	NAME OF PART
4	{ 59859A	Shoe Assembly—Brake (2)
	*59047AB	Lining Assembly (2)
5	59338	Plate—Retainer
6	59320	Bar—Brake Shoe Spacer
7	59344	Shaft—Brake
8	59337	Bolt—Spring Support
9	59339	Capscrew—Drilled Head (2)
10		Lockwire, 18 ga. x 12"
11	59037	Slack Adjuster
12	16001	Grease Fitting
13	34507	Snap Ring
14	59319	Spring—Shoe (4)

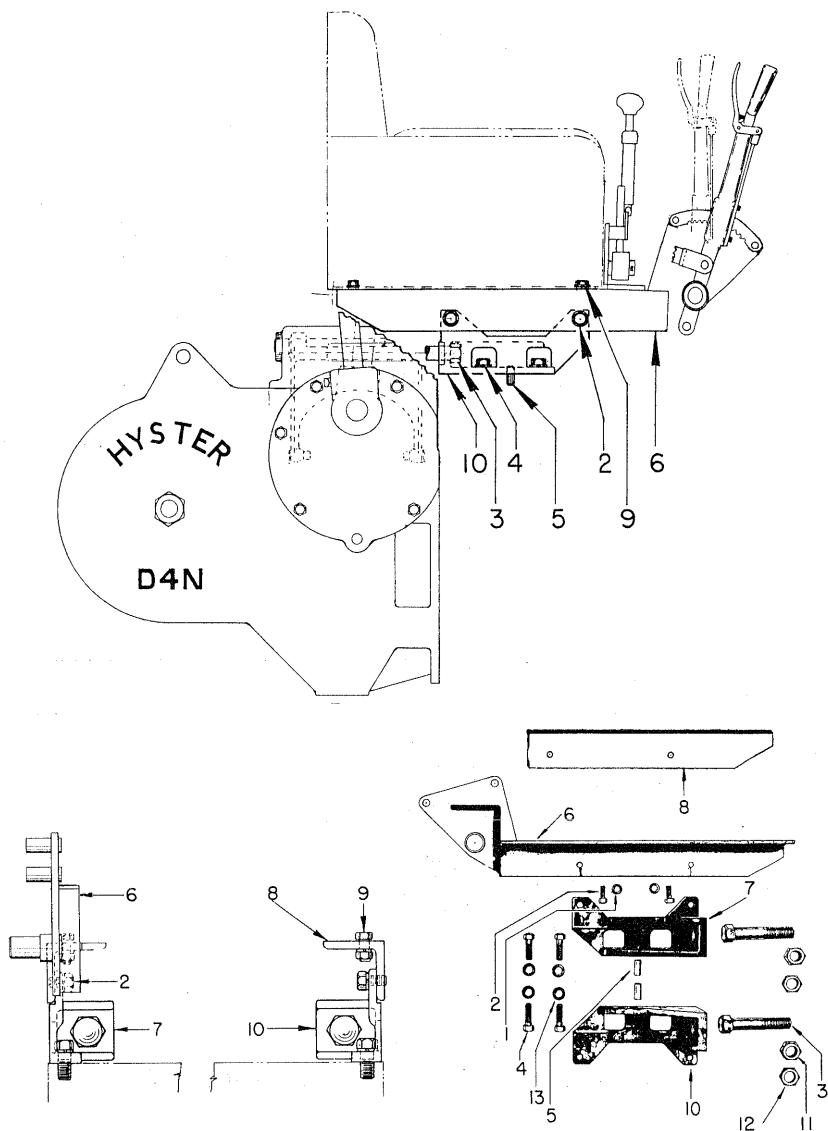
\*Included in assembly under which listed.

(Note: Only quantities more than one are listed after name of part)

## BRACKET ATTACHMENT GROUP

For Tractors with Serial No. 7J-9215 or 6G-2076 and Up  
Including Serial No. 7U1 or 6U1 and Up

(For Older Model Tractors, see page 49)



## BRACKET ATTACHMENT GROUP

Ref. No.	Hyster Part No.	NAME OF PART
1	15158	Lockwasher— $\frac{1}{2}$ (6)
2	15511	Capscrew— $\frac{1}{2}$ NF x 1 (4)
3	15530	Capscrew—1" NF x 4 (2)
4	15531	Capscrew— $\frac{5}{8}$ NC x $1\frac{1}{4}$ (4)
5	38454	Pin—Dowel (2)
6	59032A	Bracket—Seat (R. H.)
7	38450	Bracket (R. H.)
8	38453	Angle—Seat Support (L. H.)
9	{ 15532	Capscrew— $\frac{3}{8}$ NF x $1\frac{1}{4}$ (4)
	{ 15156	Lockwasher— $\frac{3}{8}$ (4)
	{ 15006	Nut—Hex, $\frac{3}{8}$ NF (4)
10	38451	Bracket (L. H.)
11	15016	Nut—Hex, 1" NF (2)
12	15036	Nut—Jam, 1" NF (2)
13	15160	Lockwasher— $\frac{5}{8}$ (4)

*(Note: Only quantities more than one are listed after name of part)*

## **Section F**

# **OPTIONAL PARTS**

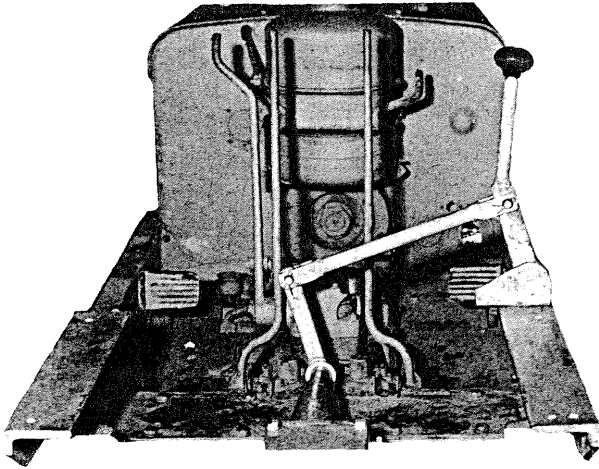
**INCLUDING ATTACHMENT PARTS  
USED WITH  
EARLIER MODEL TRACTORS**

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**NOTE:** A Gasket Set, No. 92001A is available for service. This set includes all gaskets required for D4N Towing Winch.



## EARLIER TYPE SHIFTING MECHANISM



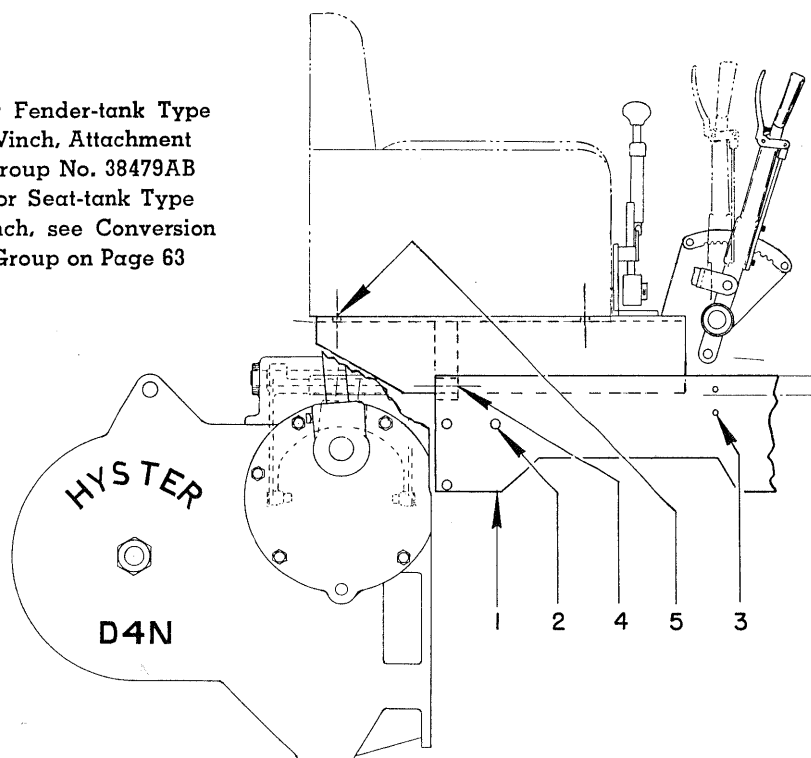
This type shifter mechanism no longer serviced. For replacement, order transmission shifting mechanism replacement Set No. 59595A.



## TIE PLATE ATTACHMENT GROUP

For Tractors prior to Serial No. 7J-9215 and 6G-2076

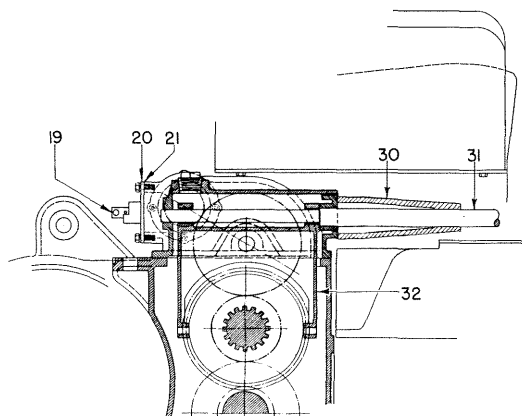
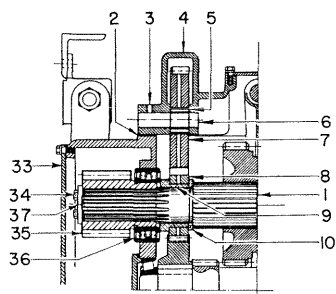
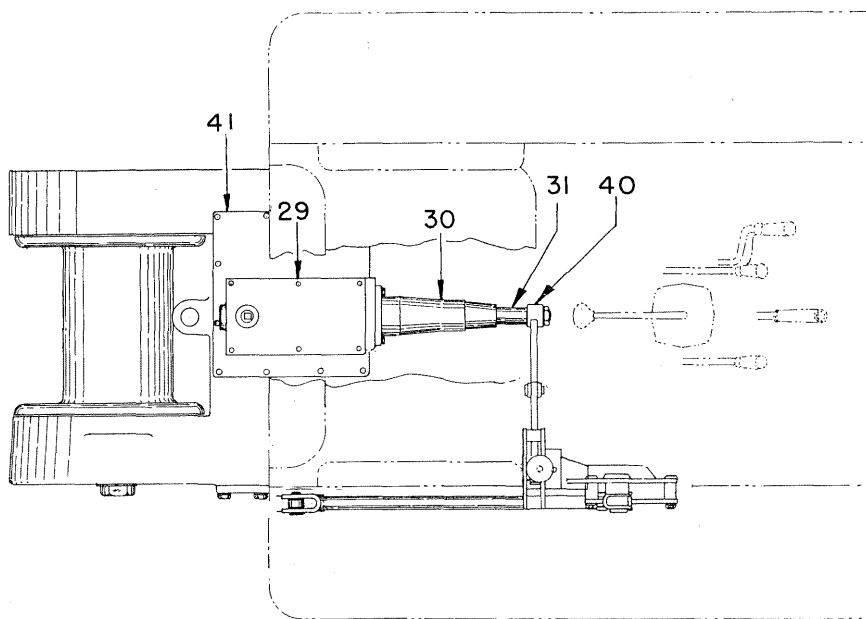
For Fender-tank Type  
Winch, Attachment  
Group No. 38479AB  
For Seat-tank Type  
Winch, see Conversion  
Group on Page 63



Ref. No.	Hyster Part No.	NAME OF PART
1	{ 32908AB	Bracket—Tie Plate (R. H.)
	{ 32909	Plate—Tie (L. H.)
2	{ 15547	Capscrew— $\frac{1}{2}$ NC x $1\frac{1}{2}$ (18)
	{ 15158	Lockwasher— $\frac{1}{2}$ (18)
3	{ 15675	Capscrew— $\frac{1}{4}$ NC x $\frac{7}{8}$ (4)
	{ 15054	Nut—Hex, $\frac{1}{4}$ NC (4)
	{ 15154	Lockwasher— $\frac{1}{4}$ (4)
4	{ 15548	Capscrew—1" NF x 5 (2)
	{ 15015	Nut—Hex, 1" NF (2)
	{ 15036	Nut—Jam, 1" NF (2)
5	{ 15508	Capscrew— $\frac{3}{8}$ NF x 1 (4)
	{ 15006	Nut—Hex, $\frac{3}{8}$ NF (4)
	{ 15156	Lockwasher— $\frac{3}{8}$ (4)

(Note: Only quantities more than one are listed after name of part)

# INSTRUCTIONS FOR MOUNTING PUMP DRIVE ADAPTER UNIT ON D4N TOWING WINCH



## INSTRUCTIONS FOR MOUNTING PUMP DRIVE ADAPTER UNIT ON D4N TOWING WINCH

### For Tractors with Fender-mounted Fuel Tank

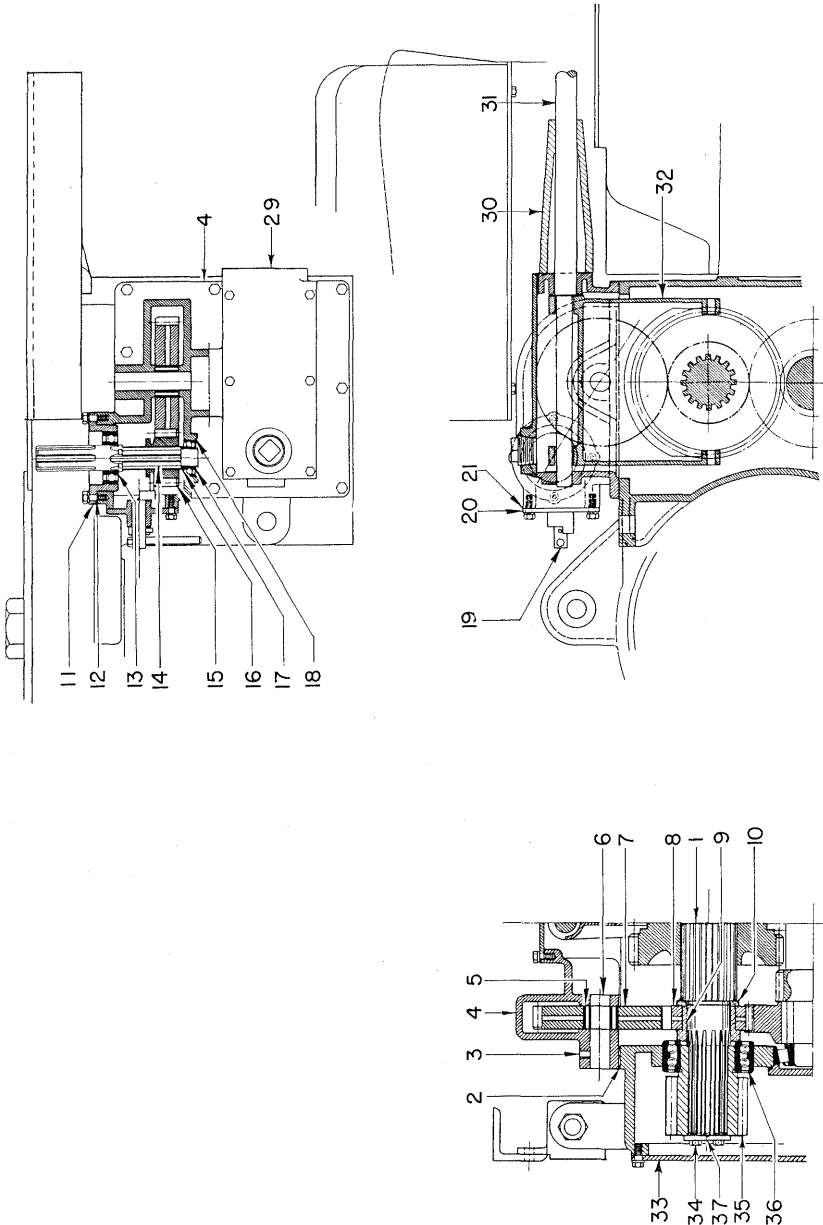
Refer to the drawings on the opposite page and on pages 52 and 54.

1. Remove "Caterpillar" seat.
2. Disconnect shifter shaft (31) from shifter link (40).
3. Remove transmission top cover (41) and check to see if winch is equipped with idler gear (8). If this gear *is* in place, proceed according to Instruction 5. If this gear is *not* in place, proceed as follows:
4. Remove side cover (33), capscrews (34), washer (37), drum pinion (35), and bearing (36). Remove spacer (in back of bearing (36) and discard.
5. Install washer (10), idler gear (8), with bushing (9), on drum pinion shaft (1) where spacer has been removed. Re-install bearing (36), drum pinion (35), washer (37), capscrews (34), and side cover (33).
6. Disconnect shifter fork (32) and remove shifter shaft (31) and support bracket (30) from transmission top cover (41). Discard transmission top cover (41) after first removing hand hole cover (29).
7. Hold shifter fork (32) in place in adapter housing (4) and install shifter shaft (31) with support bracket (30).
8. Place housing (4) with gaskets (2) on top of winch transmission. Place capscrews, without lockwashers, in holes and tighten.

**CAUTION:** The backlash (clearance between teeth in mesh) between the gears (7) and (8) is determined by the thickness of the above gaskets. This adjustment is very important. If no backlash is found, damage may result if unit is operated in this condition. The backlash, or clearance between teeth, should be about .010" to .015" on the pitch line. Too close an adjustment will cause the gears to run noisely. The gear (7) may be rocked back and forth sharply with some suitable bar or screw driver through top hand hole, and the correct backlash is that which is barely perceptible to the feel of the hand.

9. If the gears need readjustment, remove capscrews and lift adapter unit free of winch. Either remove or add another gasket (2) to obtain the proper backlash. Test again with bar or screwdriver, as directed above. After the proper adjustment is obtained, tighten capscrews with lockwashers.
10. Install hand hole cover (29).
11. Connect shifter shaft (31) to the shifter link (40).
12. Reinstall seat removed in Instruction 1.

# **PUMP DRIVE ADAPTER ASSEMBLY FOR D4N TOWING WINCH** **For LaPlant Choate or Kay-Brunner Pump**



**PUMP DRIVE ADAPTER ASSEMBLY NO. 35204AF**  
**(LaPlant Choate Pump)**  
**FOR D4N TOWING WINCH**

Ref. No.	Hyster Part No.	NAME OF PART
1	.....	Shaft (Winch Transmission) (See Ref. 7, page 27)
2	.....	Gasket (See Ref. 6, page 41)
3	16205	Setscrew— $\frac{3}{8}$ NC x $\frac{3}{4}$
4	32914B	Housing—Pump Drive
5	32917	Bearing
6	32916	Pin Shaft
7	32915B	Gear—Idler (28 teeth)
8	32913B	Gear—Idler (19 teeth)
9	59055	Bushing
10	59056	Washer
11	{ 32920	Carrier—Bearing
	{ 15529	Capscrew— $\frac{3}{8}$ NC x 1 (4)
	{ 15156	Lockwasher— $\frac{3}{8}$ (4)
12	32921	Gasket
13	{ 49507	Bearing
	{ 31868	Snap Ring
14	32918B	Shaft—Drive
15	32919	Gear—Sliding
16	32623	Spacer
17	49505	Bearing
18	32622	Snap Ring
19	{ 32923A	Handlelever—Shifter
	{ *46098	Handle
	{ *15004	Nut—Hex, $\frac{1}{4}$ NF
20	{ 32922	Hub—Shifter
	{ 15529	Capscrew— $\frac{3}{8}$ NC x 1 (3)
	{ 15156	Lockwasher— $\frac{3}{8}$ (3)
21	33306	Gasket
29		} Numbers 29 and up are for instructions only. } (For part numbers see page 26 and 28)
36		

\*Included in assembly under which listed.

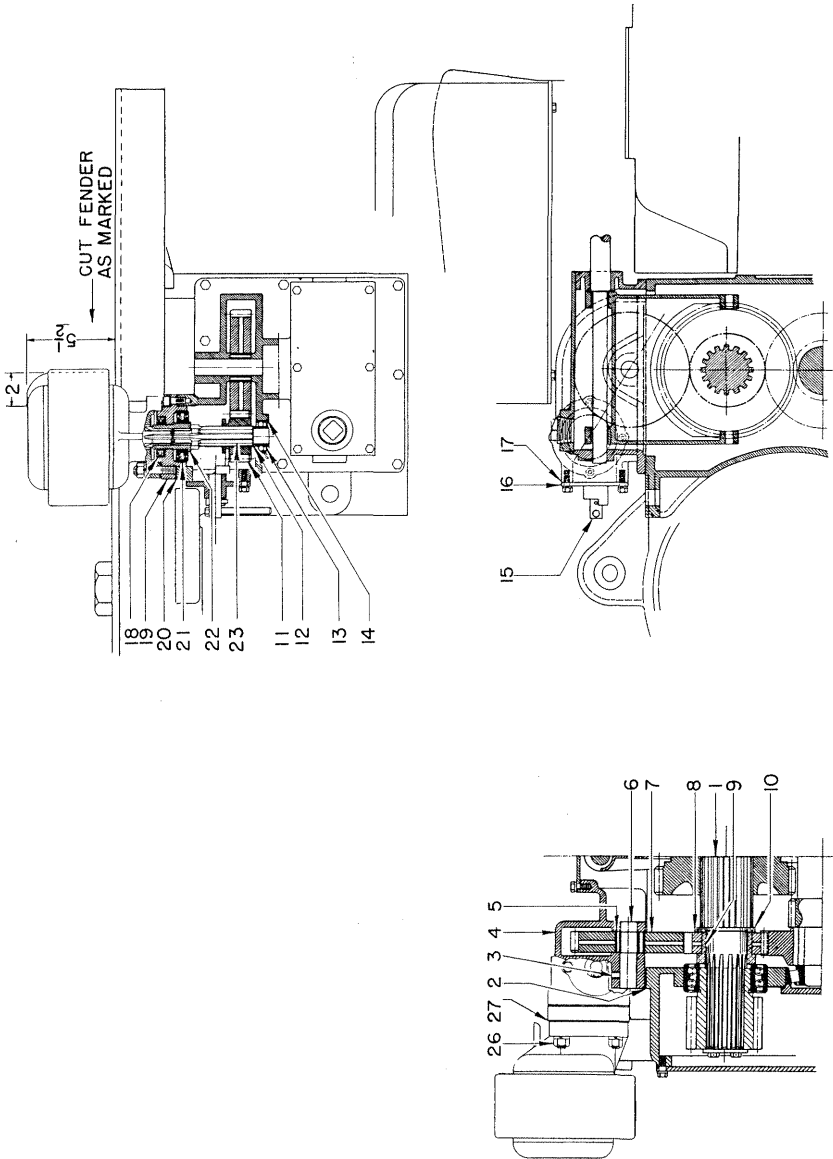
(Note: Only quantities more than one are listed after name of part)

**PUMP DRIVE ASSEMBLY NO. 35204AE**  
**(Kay-Brunner Pump)**  
**FOR D4N TOWING WINCH**

Parts are the same as above, except as follows:

Ref. No.	Hyster Part No.	NAME OF PART
14	32918	Shaft—Drive

**PUMP DRIVE ADAPTER ASSEMBLY NO. 46100AC**  
**(Isaacson 'Dozer Pump)**  
**FOR D4N TOWING WINCH**





**PUMP DRIVE ADAPTER ASSEMBLY NO. 46100AC**  
**(Isaacson 'Dozer Pump)**  
**FOR D4N TOWING WINCH**

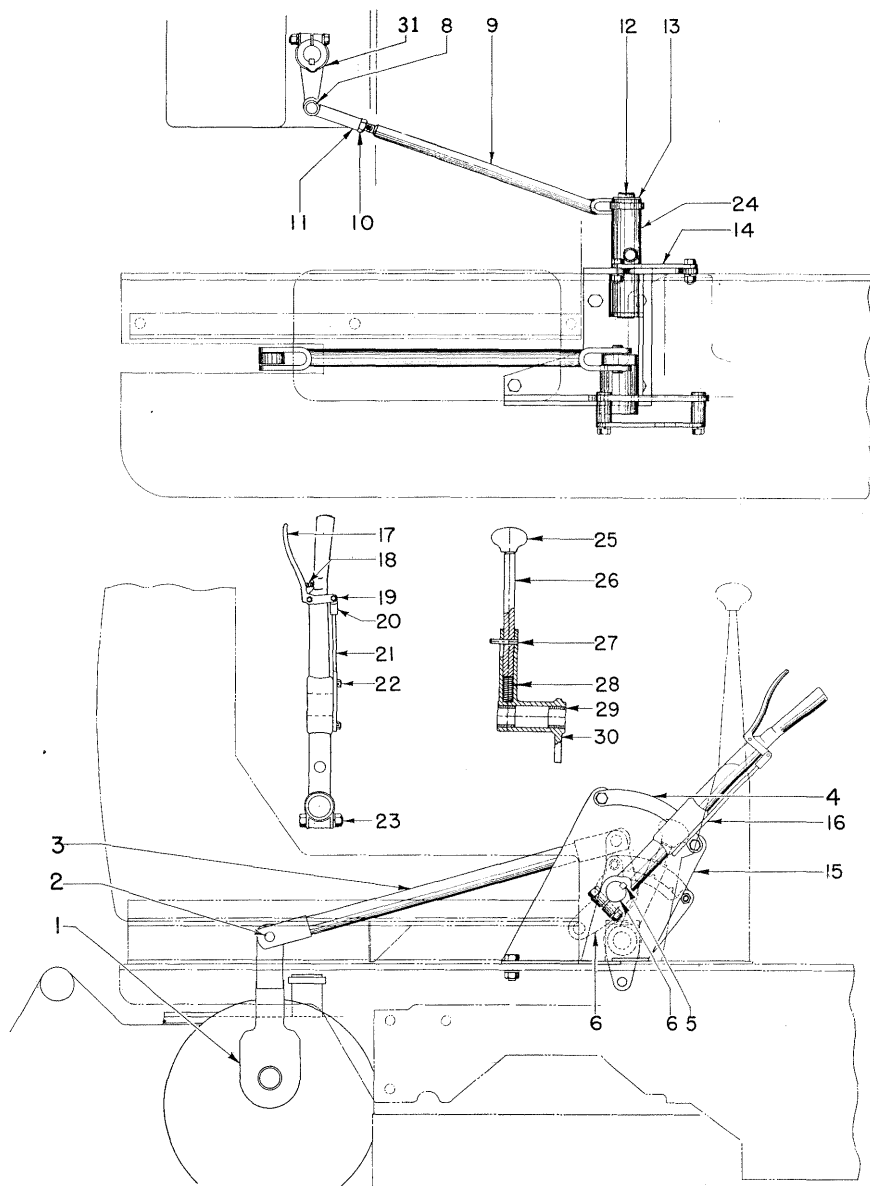
Ref. No.	Hyster Part No.	NAME OF PART
1	.....	Shaft (Winch Transmission) (See Ref. 7, page 27)
2	.....	Gasket (See Ref. 6, page 41)
3	16205	Setscrew— $\frac{3}{8}$ NC x $\frac{3}{4}$
4	32914B	Housing—Pump Drive
5	32917	Bearing
6	32916	Pin Shaft
7	32915B	Gear—Idler (28 teeth)
8	32913B	Gear—Idler (19 teeth)
9	59055	Bushing
10	59056	Washer
11	32919	Gear—Sliding
12	32623	Spacer
13	49505	Bearing
14	32622	Snap Ring
15	{ 32923A	Handlever—Shifter
	{ *46098	Handle
	{ *15004	Nut—Hex, $\frac{1}{4}$ NF
16	{ 32922	Hub—Shifter
	{ 15529	Capscrew— $\frac{3}{8}$ NC x 1 (3)
	{ 15156	Lockwasher— $\frac{3}{8}$ (3)
17	33306	Gasket
18	5579	Oil Seal
19	{ 46087	Retainer—Bearing
	{ 34811	Capscrew—Hex Socket, $\frac{3}{8}$ NC x 1 (4)
	{ 15156B	Lockwasher— $\frac{3}{8}$ (4)
20	46096	Shim Set
21	43208	Bearing
22	46088	Coupling
23	32918C	Shaft—Drive
26	{ Special Stud (Isaacson B1906) (4)	} Parts to be supplied by Isaacson Iron Works for connecting pump to adapter unit.
	{ Hex Nut, $\frac{1}{2}$ NF (4)	
	{ Lockwasher, $\frac{1}{2}$ (4)	
27	.....	Pump Gasket (Isaacson 356-A5)
29		{ Numbers 29 and up are for
36		{ instructions only
		{ For part numbers see pages 26 and 28.

(Note: Only quantities more than one are listed after name of part)

\*Included in assembly under which listed.

## TRAXCAVATOR ADAPTER GROUP

*To adapt a seat-tank type winch to a tractor with seat-type fuel and HT4 or IT4 traxcavator attachment*



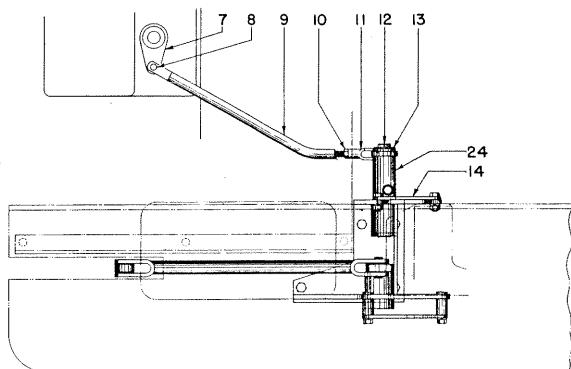
## TRAXCAVATOR ADAPTER GROUP

*To adapt a seat-tank type winch to tractor with seat-type fuel tank and HT4 or IT4 traxcavator attachment, order adapter group No. 91255A which consists of the parts listed below.*

Ref. No.	Hyster Part No.	NAME OF PART	Ref. No.	Hyster Part No.	NAME OF PART
1	{ 91257A	Slack Adjuster		{ 91259A	Bracket Assembly
	{ 34507	Snap Ring		{ *35668	Bushing (2)
2	{ 159	Pin—Rod End (2)	15	{ 15514	Capscrew— 1/2 NF x 1 1/4 (4)
	{ 15223	Cotter—1/8 x 1 (2)		{ 15008	Nut—Hex, 1/2 NF (4)
3	91227A	Link—Brake		{ 15158	Lockwasher—1/2 (4)
			16	59997A	Handlever Assy.— Brake
4	{ 59035	Quadrant—	17	*32694	Handle
	{ 15156	Ratchet (Brake)	18	*32695	Spring
	{ 15508	Lockwasher—3/8 (2)		{ *37476	Mach. Screw—Hex Hd., 10-24 x 7/8 (2)
		3/8 NF x 1 (2)	19	{ *15052	Nut—Hex, 10-24 (2)
5	2208	Key	20	*32693	Rod End
6	91226A	Crank—Bell	21	*59033	Rod—Pawl
7	90728A	Crank	22	*32692	Bolt—Drill. Hd.(2)
8	{ 150	Pin—Rod End (2)		{ *15528	Capscrew—3/8 NFx2
	{ 15212	Cotter—3/32x3/4 (2)	23	{ *15156	Lockwasher—3/8
9	91228AC	Link—Shifter		{ *15006	Nut—Hex, 3/8 NF
10	15010	Nut—Hex, 5/8 NF	24	91262AB	Handlever Assy.
11	92016A	Rod End	25	* 809	Knob
12	15244	Cotter—3/16 x 1 1/2	26	*91193	Rod
13	59362	Washer	27	*19909	Pin
	{ 90899	Quadrant—Shifter	28	* 5782	Spring
	{ 15532	Capscrew—	29	*29603	Bushing (2)
14		3/8 NF x 1 1/4 (2)	30	*90734AB	Lever
	{ 15006	Nut—Hex, 3/8 NF (2)		{ 91909A	Crank Assembly
	{ 15156	Lockwasher—3/8 (2)	31	{ *15528	Capscrew—3/8 NFx2
				{ *15156	Lockwasher—3/8
				{ *15006	Nut—Hex, 3/8 NF

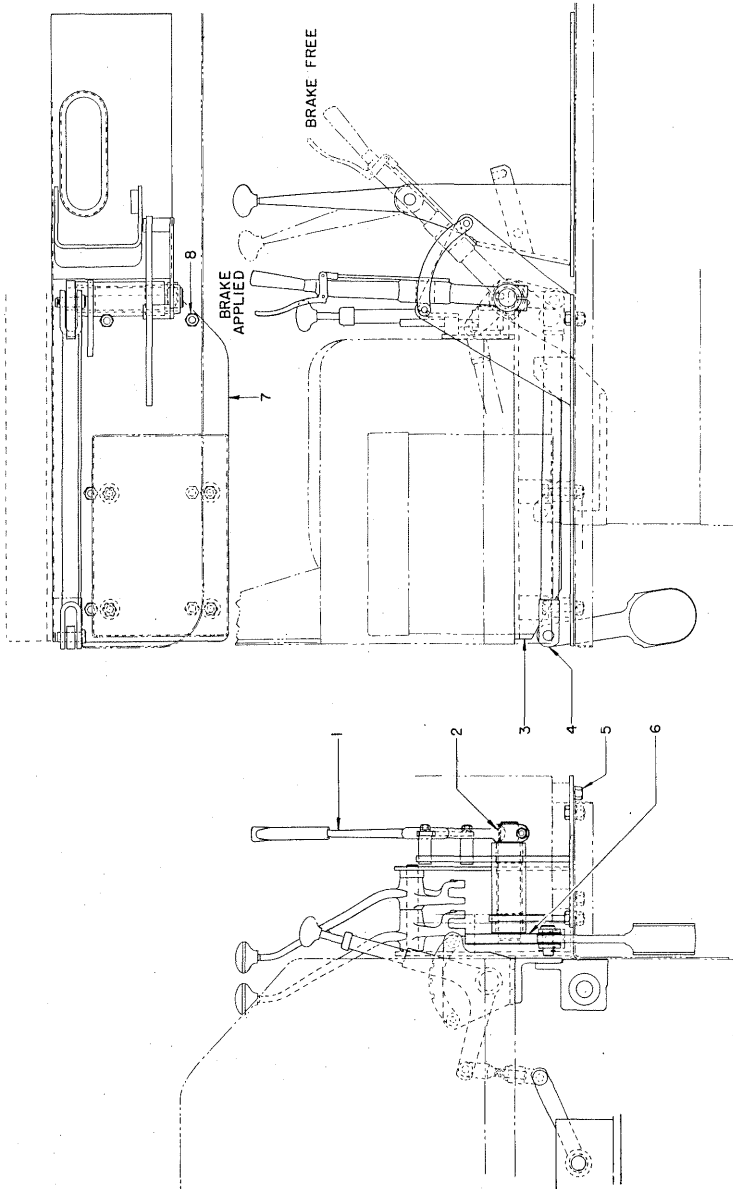
\*Included in assembly under which listed.

(Note: Only quantities more than one are listed after name of part).



This type crank (7) last used on Serial No. 75221. To replace, order (31) crank 91909A, lever (page 21, Ref. 20) 91892A, and shifter shoe (page 21, Ref. 17) 91893, and key (page 21, Ref. 18) 9415.

**FENDER-TANK TYPE WINCH HANDLING GEAR ALTERATION  
FOR D4 TRACTOR EQUIPPED WITH TRAXCAVATOR  
(For Tractors with Fender-mounted Fuel Tanks)**



## TRAXCAVATOR ADAPTER GROUP

*To adapt a fender-tank type winch to tractor with fender-type fuel tank and HT4 or IT4 traxcavator attachment, order adapter group No. 59998A which consists of the parts listed below:*

Ref. No.	Hyster Part No.	NAME OF PART
1	.....	Handlever Assembly—Brake (See Ref. 16, page 57)
2	2208	Key
3	59996	Bracket—Seat Support (R. H.)
4	{ 59995A	Connecting Link
	{ * 159	Pin—Rod End (2)
	{ *15223	Cotter— $\frac{1}{8}$ x 1 (2)
5	{ 15510	Capscrew— $\frac{1}{2}$ NF x $2\frac{1}{4}$ (4)
	{ 15008	Nut—Hex, $\frac{1}{2}$ NF (4)
	{ 15158	Lockwasher— $\frac{1}{2}$ (4)
6	59993A	Crank Assembly—Brake
7	{ 59992A	Bracket—Lever
	{ *33999	Bushing (2)
	{ *16001	Grease Fitting
8	{ 15511	Capscrew— $\frac{1}{2}$ NF x 1 (6)
	{ 15008	Nut—Hex, $\frac{1}{2}$ NF (6)
	{ 15158	Lockwasher— $\frac{1}{2}$ (6)

} Battery  
Box to Deck  
Plate

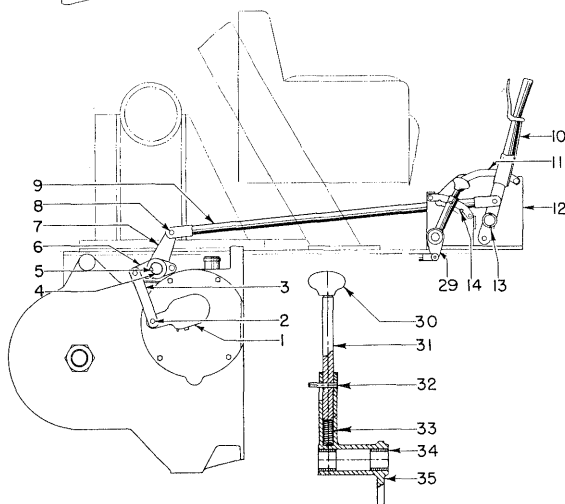
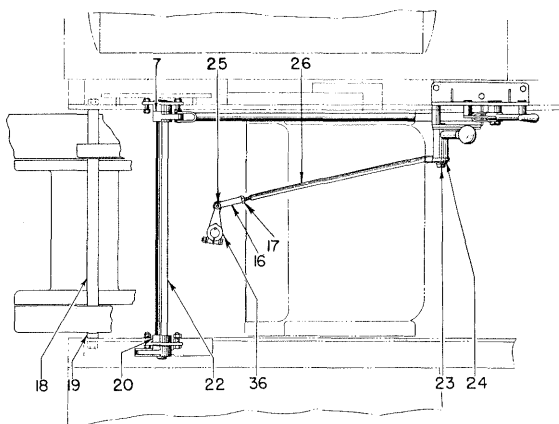
} Deck Plate to Fender

*\*Included in assembly under which listed.*

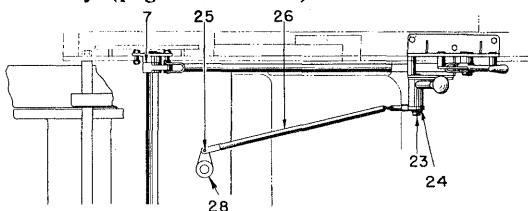
*(Note: Only quantities more than one are listed after name of part)*

## ATHEY MOBILOADER ADAPTER GROUP

*To mount seat-tank type winch on seat-tank type tractor with  
Athey Mobiloader*

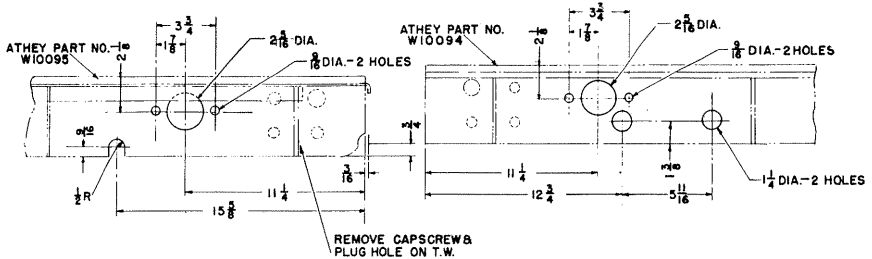


This type crank (28) last used on Serial No. 75221. To replace, order (36) crank 91915A, lever (page 21, Ref. 20) 91892A and shifter shoe (page 21, Ref. 17) 91893, and key (page 21, Ref. 18) 9415.



## ATHEY MOBILOADER ADAPTER GROUP

To mount seat-tank type winch on seat-tank type tractor with Athey Mobiloader, order Adapter Group No. 90909AB consisting of parts listed below.

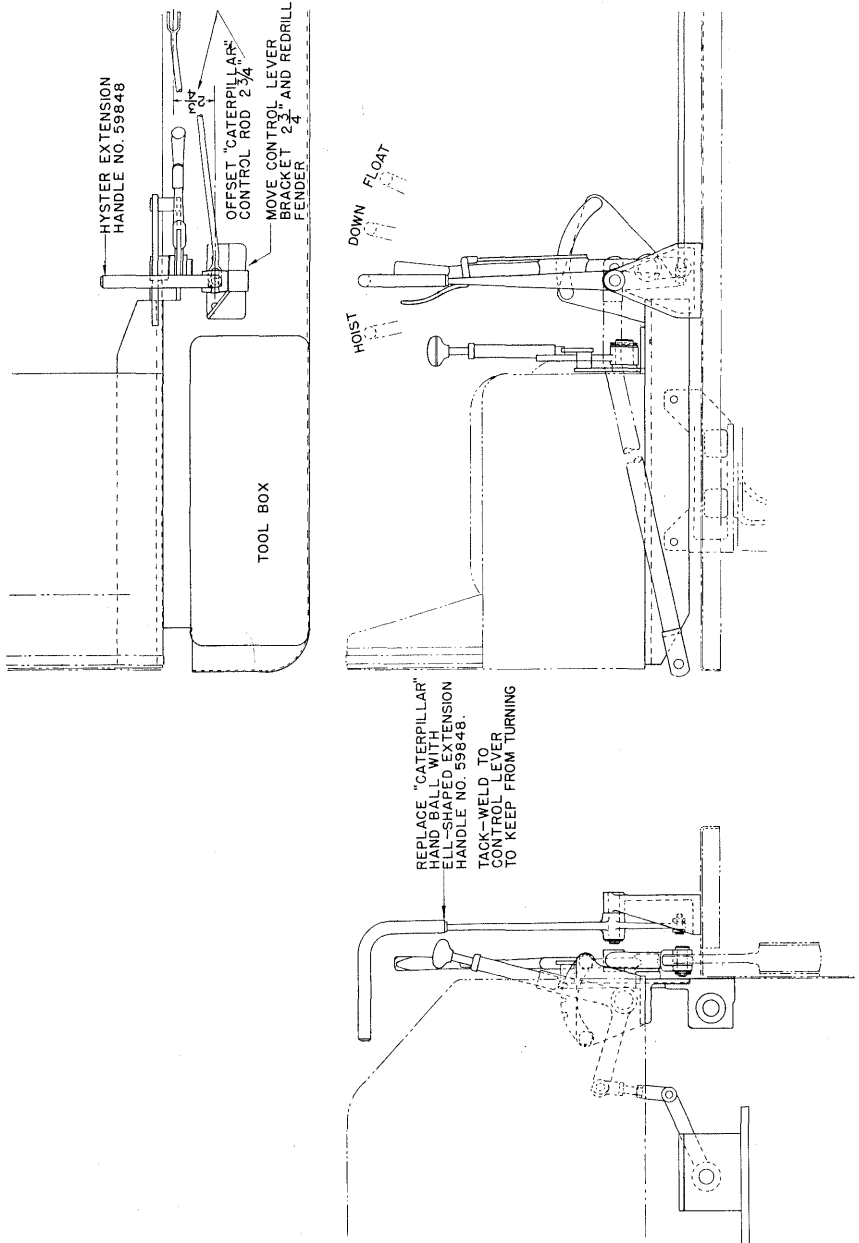


Ref. No.	Hyster Part No.	NAME OF PART	Ref. No.	Hyster Part No.	NAME OF PART
1	46249B	Slack Adjuster	16	92016A	Rod End
2	34507	Snap Ring	17	15027	Nut—Jam, 7/16 NF
	91188	Pin—Rod End (2)	18	91189	Pipe—Spacer
	15223	Cotter— $\frac{1}{8}$ x 1 (2)	19	10208	Pipe—Spacer
3	91169	Plate—Link (2)			
4	58907	Snap Ring			
5	9167	Key (2)			
6	91170	Crank	20	91168	Carrier—Shaft (2)
7	91171	Crank		15509	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{2}$ (4)
8	159	Pin—Rod End (2)		15008	Nut—Hex, $\frac{1}{2}$ NF (4)
	15223	Cotter— $\frac{1}{8}$ x 1 (2)		15158	Lockwasher— $\frac{1}{2}$ (4)
9	91173A	Link	22	91172	Shaft
10		Handlever Assy. (See page 19, Ref. 25)	23	15244	Cotter— $3/16$ x $1\frac{1}{2}$
11		Quadrant—Ratchet (See p. 19, Ref. 21)	24	59362	Washer
	91181A	Bracket	25	150	Pin—Rod End (2)
12	15509	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{2}$ (3)		15212	Cotter— $3/32$ x $3/4$ (2)
	15008	Nut—Hex, $\frac{1}{2}$ NF (3)	26	91467AC	Link—Shifter
	15158	Lockwasher— $\frac{1}{2}$ (3)	28	91450A	Crank (See cut, bo
13	15245	Cotter— $3/16$ x $1\frac{3}{4}$		58933	Snap Ring (of page 60
	90899	Quadrant—Shifter	29	91179AB	Handlever Assy.
	15508	Capscrew— $\frac{3}{8}$ NF x 1 (4)	30	* 809	Knob
14	15006	Nut—Hex, $\frac{3}{8}$ NF (2)	31	* 91193	Rod
	15156	Lockwasher— $\frac{3}{8}$ (4)	32	* 19909	Pin
			33	* 5782	Spring
			34	* 29603	Bushing (2)
			35	* 91180AB	Lever
				91915A	Crank
			36	15528	Capscrew— $\frac{3}{8}$ NF x 2
				15006	Nut—Hex, $\frac{3}{8}$ NF
				15156	Lockwasher— $\frac{3}{8}$

(Note: Only quantities more than one are listed after name of part.)

\*Included in assembly under which listed.

# ALTERATION TO D4S 'DOZER HANDLING GEAR WHEN INSTALLING HYSTER D4N TOWING WINCH





### **Conversion—Fender-tank Type Winch to Seat-tank Type Tractor**

*Conversion Group No. 91061A*—This list contains the items necessary to adapt a Hyster D4N towing winch built for a fender-tank type tractor for mounting on a seat-tank type tractor.

### **Conversion—Seat-tank Type Winch to Fender-tank Type Tractor**

*Conversion Group No. 90769A*—This group contains the items necessary to adapt a Hyster D4N Towing Winch built for a seat-tank type tractor for mounting on a fender-tank type tractor.

### **Conversion Group for Older Model Tractors**

*Conversion Group No. 91263A*—This group contains the items necessary to mount the Hyster seat-tank type winch on the D4 and R4 tractors prior to tractor Serial Nos. 6G2076 and 7J9215.

### **Conversion Group for Tractors with HT4 or IT4 Traxcavators**

To convert seat-tank type winch to mount on fender-tank type tractor, use conversion group No. 90769A plus adapter group No. 59998A.

### **Conversion Group for Tractors with HT4 or IT4 Traxcavators**

Conversion—fender-tank type winch to mount on seat-tank type tractor use conversion group No. 91061A plus adapter group No. 91255A.

### **Conversion Group for Athey Mobiloader**

Conversion—fender-tank type winch to mount on seat-tank type tractor with an Athey Mobiloader, use conversion group No. 91061A plus adapter group No. 90909AB.

*Note:* This group changes a fender-tank type winch to a seat-tank type winch so that it can be used with group No. 90909AB.

(See page 61 for list of parts for group No. 90909AB.)

### **Conversion—Seat-tank Type Winch with Auxiliary Drum Unit**

To mount on fender-tank type tractor, use conversion group No. 91407A. For list of parts for Auxiliary Drum Unit, see page 82.

### **Conversion—Fender-tank Type Winch with Auxiliary Drum Unit**

To mount on seat-tank type tractor, use conversion group No. 91199AB. For list of parts for Auxiliary Drum Unit, see page 82.

### **Conversion Group**

To mount auxiliary drum unit on seat-tank type winch, for use with fender-tank type tractor Serial No. 6G2076 and up or 7J9215 and up, order conversion group No. 90769A.

### **Conversion Group**

To mount auxiliary drum unit on seat-tank type winch, for use with fender-tank type tractor prior to Serial No. 6G2076 or 7J9215, order conversion group No. 91263A.



## ADAPTER ASSEMBLY — 41844AE

To Adapt a D4N Towing Winch (Seat-tank Type) to D6 Tractors

Prior to Serial No. 4R1 and 5R1

### GENERAL ARRANGEMENT

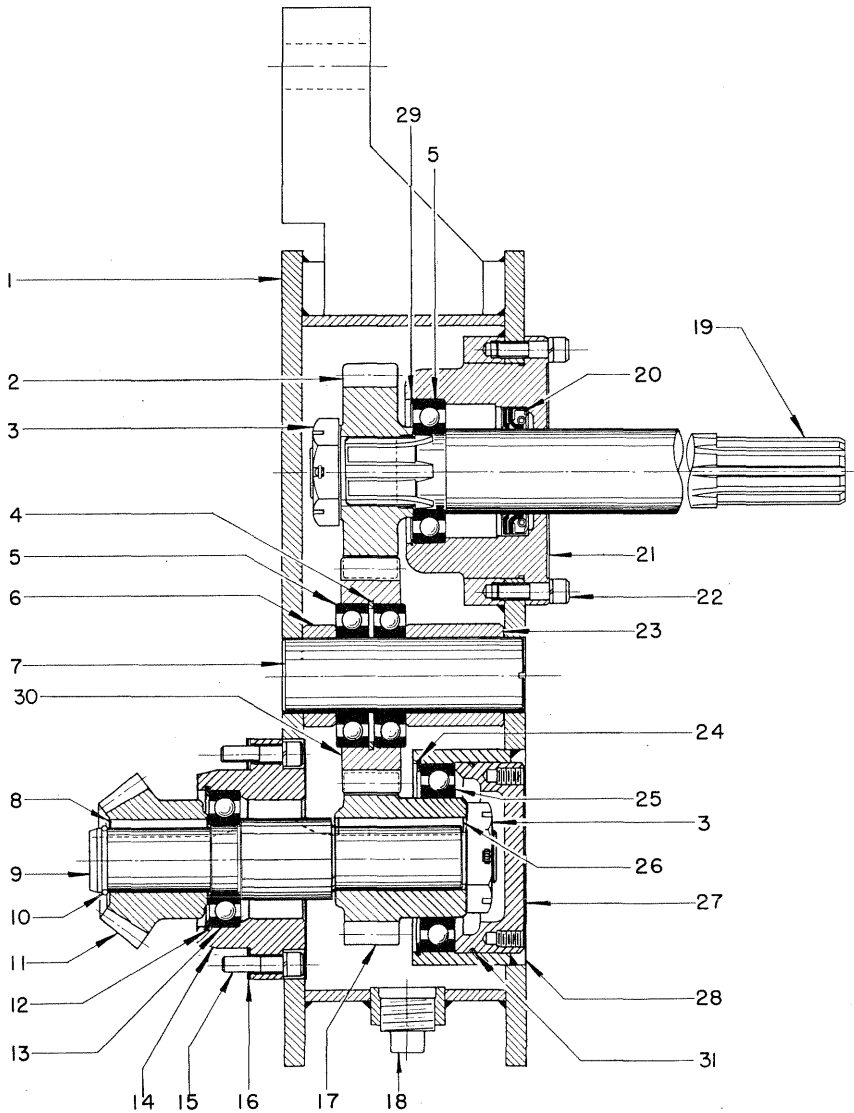
Ref. No.	Hyster Part No.	NAME OF PART	Ref. No.	Hyster Part No.	NAME OF PART
2	{ 41859	Shaft	15	59059A	Bracket—Brake
	{ 206	Key (2)	16	59612A	Bracket—Shift
3	41855A	Bearing Assembly		15513	Capscrew—
4	{ 15514	Capscrew—	17	{ 15006	$\frac{3}{8}$ NF x $\frac{3}{4}$ (4)
	{ 15008	$\frac{1}{2}$ NF x $1\frac{1}{4}$ (2)		{ 15156	Nut—Hex, $\frac{3}{8}$ NF (4)
	{ 15158	Nut—Hex, $\frac{1}{2}$ NF (2)		{ 9359A	Lockwasher— $\frac{3}{8}$ (4)
	{ 15548	Lockwasher— $\frac{1}{2}$ (2)		{ 15223	Link Assembly
5	{ 15016	Capscrew—	18	{ * 152	Rod End (2)
	{ 15166	$1\frac{1}{2}$ NF x 5 (2)		{ * 15008	Nut—Hex, $\frac{1}{2}$ NF (2)
	{ 9227	Nut—Hex, $1\frac{1}{2}$ NF (2)		{ * 153	Pin—Rod End (2)
6	{ 15012	Lockwasher— $1\frac{1}{2}$ (2)		{ * 15223	Cotter— $\frac{1}{8}$ x 1 (2)
	{ 15162	Stud (4)		{ 1512A	Crank (2)
	{ 30758	Nut—Hex, $\frac{3}{4}$ NF (4)		{ * 15528	Capscrew—
7	{ 15014	Lockwasher— $\frac{3}{4}$ (4)	19	{ 15006	$\frac{3}{8}$ NF x 2 (2)
	{ 15164	Stud (4)		{ * 15156	Nut—Hex, $\frac{3}{8}$ NF (2)
	{ 31585	Nut—Hex, $\frac{7}{8}$ NF (4)		{ 15511	Lockwasher— $\frac{3}{8}$ (2)
8	{ 15012	Lockwasher— $\frac{7}{8}$ (4)	20	{ 15008	Capscrew—
	{ 15162	Stud (6)		{ 15158	$\frac{1}{2}$ NF x 1 (2)
9	41860	Nut—Hex, $\frac{3}{4}$ NF (6)		{ 32904A	Nut—Hex, $\frac{1}{2}$ NF (2)
10	{ .....	Lockwasher— $\frac{3}{4}$ (6)		{ * 15012	Link Assembly
	{ 15014	Plate—Spacer (2)	21	{ * 159	Nut—Hex, $\frac{3}{4}$ NF
	{ 15164	Studs (furnished with Tractor) (4)		{ * 15223	Pin—Rod End (2)
11	41864	Nut—Hex, $\frac{7}{8}$ NF (4)	22	{ 41858	Cotter— $\frac{1}{8}$ x 1 (2)
		Lockwasher— $\frac{7}{8}$ (4)		{ 206	Shaft—Shifter
12	.....	Gasket (Winch to Adapter)	23	32905A	Key
13	.....	Adapter (see p. 67)			Handlelever Assy. (Shift)
	{ 6702	Gasket (see p. 67, Ref. 28)	24	* 809	Knob
14	{ 7704	Coupling ("Caterpillar" #1B-3183)	25	* 32906	Rod—Lever
	{ 7703	Lock Ring ("Caterpillar" #1B-3184)	26	* 91526	Roll Pin
		Lock Pin ("Caterpillar" #1B-3185)	27	* 32353A	Lever
			28	* 5782	Spring
			29	{ * 15528	Capscrew—
				{ 15006	$\frac{3}{8}$ NF x 2
				{ * 15156	Nut—Hex, $\frac{3}{8}$ NF
					Lockwasher— $\frac{3}{8}$

\*Included in assembly under which listed.

(Note: Only quantities more than one are listed after name of part)

## ADAPTER ASSEMBLY

To Adapt a D4N Towing Winch (Seat-tank Type) to D6 Tractors  
Prior to Serial No. 4R1 and 5R1



## ADAPTER ASSEMBLY

**To Adapt a D4N Towing Winch (Seat-tank Type) to D6 Tractors  
Prior to Serial No. 4R1 and 5R1**

Ref. No.	Hyster Part No.	NAME OF PART
1	90210A	Housing—Adapter
2	41834	Gear—Drive (18 teeth)
3	6373	Nut—Slotted (2)
	15240	Cotter—5/32 x 2½ (2)
4	46093	Snap Ring
5	43209	Bearing (3)
6	41837	Spacer
7	41838	Pin (Idler Shaft)
8	92966	Key
9	41840B	Shaft
10	32846	Snap Ring
11	32845C	Gear—Bevel (15 teeth)
12	41531	Snap Ring
13	43208	Bearing
14	41842B	Carrier—Bearing
15	38123	Capscrew—Hex Socket Head, 3/8 NF x 1½ (6)
	15156B	Lockwasher—3/8 (6)
6	32843	Shim Set
17	41841B	Gear (14 teeth)
18	35504	Pipe Plug—1" Magnetic
19	41832	Shaft—Drive
20	41833C	Oil Seal
21	41835	Carrier—Bearing
22	46698	Capscrew—Hex Socket Head, 3/8 NC x 1¼ (6)
	15156B	Lockwasher—3/8 (6)
23	41836	Spacer
24	33655	Snap Ring
25	44314	Bearing
26	19321	Key
27	90208	Retainer—Bearing
28	41845	Gasket (Adapter to Tractor)
29	28176	Snap Ring
30	41839	Gear—Idler (20 teeth)
31	90849	"O" Ring

*(Note: Only quantities more than one are listed after name of part)*

**PARTS BOOK  
AND  
INSTRUCTION MANUAL  
*for*  
HYSTER  
D4N Auxiliary Drum Unit**



EFFECTIVE WITH  
HYSTER NO. BAN-36450 Up

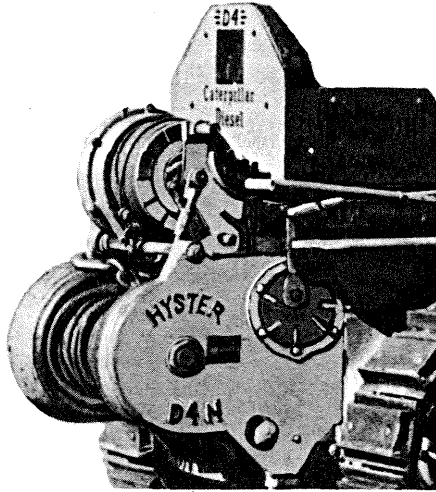
**HYSTER COMPANY**

PORTLAND 8, OREGON   ■   PEORIA 1, ILLINOIS   ■   DANVILLE, ILLINOIS  
U. S. A.

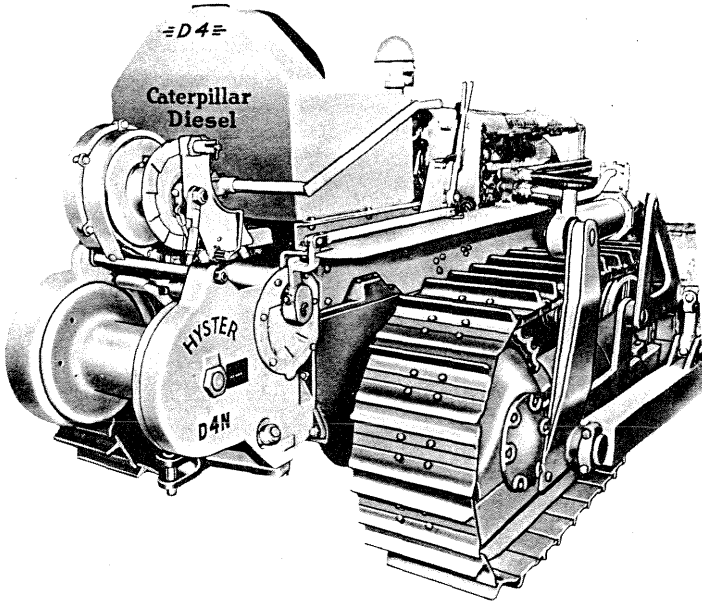
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## D4N AUXILIARY DRUM UNIT (Power Control Unit)



Auxiliary Drum Unit for Use with  
Fender-tank Type Winch with Fender-tank Type Tractor  
Complete Unit — No. 40823AD



Auxiliary Drum Unit for Use with  
Seat-tank Type Winch with Seat-tank Type Tractor  
Complete Unit (No. 40823AD and 91224A Conversion Group)  
For Other Applications, see Page 63



## **SECTION A**

# **OPERATING INSTRUCTIONS**

### **Operating Principles**

A. With the auxiliary drum unit in place on the Hyster winch, the idler gear (7), page 83, is in mesh with the winch auxiliary idler pinion (9) installed in winch on drum pinion shaft (13) at the time of the installation of the auxiliary unit. Thus, when tractor engine is running with master clutch engaged, this idler gear is constantly turning.

B. The clutch is the cone-type, sufficiently large to transmit the required power with little effort on the part of the operator. The clutch is activated by the turning of the sleeve, on the thread cut into the drum shaft. The sleeve is operated by the clutch operating crank (2), page 86, by means of the handlever (14).

To engage the drum clutch, pull up on the control handlever (14). This causes the crank (2) to turn the sleeve (21, page 84) on the threaded section of the drum shaft (11). This movement brings the clutch cone in contact with the drum causing it to rotate.

C. To disengage the clutch and stop the cable, the operations and movements described in the previous paragraph (B) take place in the reverse order. The cable is kept from unspooling by the drum brake (1, page 86).

D. To release the brake and allow the line to reel off the drum, the control lever is pushed down by the operator. The continued movement of the handlever will cause the clutch operating crank (2) to apply tension on the link assembly (11), causing the crank (9) to rotate the brake shaft, and thus fully release the brake, allowing the brake wheel to turn free of the brake band.

## OPERATING INSTRUCTIONS—Continued

E. To stop the unreeling of the line, pull the control handlever back to the neutral position which allows the spring-loaded brake to take hold and prevent any further movement of the brake drum.

F. *Note:* With mechanism in position as described in pargraph (D), and with no tension on the rope, one should be able to turn the drum in either direction by hand.

### Control Lever

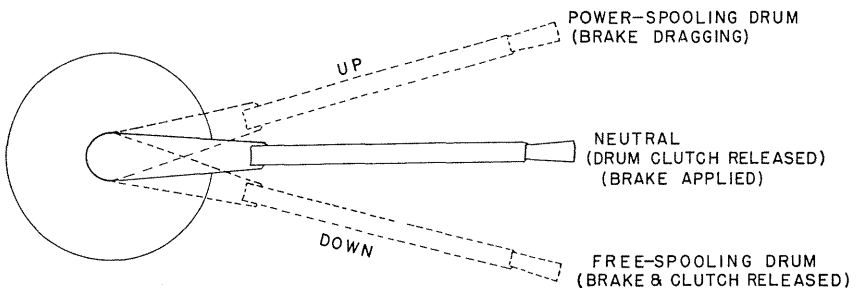
Operation of the auxiliary unit by the single handlever (2, page 88), located on the right-hand side of the tractor seat.

A. To engage the clutch, pull the handlever up, spooling the cable onto the drum.

B. To declutch the drum, push the control handlever down to the neutral position, and stop the spooling of the line.

C. To release the brake, continue to move the handlever down from the neutral position, releasing the brake band and allowing the line to free spool off the drum.

D. To stop the free spooling of the line, move the handlever back to the neutral position, which allows the spring-loaded brake to engage.



---

## OPERATING INSTRUCTIONS—Continued

### Brake Application

The brake band is held against the brake drum by a spring load. When the handlever (2, page 89) is pulled up, engaging the clutch, the brake band remains applied, the line is spooled in against the brake drag. When the handlever is returned to the neutral position, disengaging the clutch, the brake remains applied, causing the drum and load to be held by the brake band. When the handlever is pushed all the way down, the brake is released, allowing the line to free-spool.

### Drum Lock

A positive drum lock (pawl assembly 1, page 89) is provided at the top of the side plate (right-hand side). This includes a spring-loaded pawl, sleeve and locking pin. To lock drum, rotate locking pin 90° allowing locking pin to pass into the slots in the sleeve.

### Pile-Driving

For pile-driving applications an optional handlever (15, page 86) is available. This lever permits the hammer to be raised with no brake lining drag on the drum.

---

## **SECTION B**

# **SERVICING INSTRUCTIONS**

### **Safety Caution**

When servicing or lubricating the auxiliary unit, always check to be sure that no load is attached, and that the line is slack.

If the auxiliary unit is with a "DOZER," allow the blade to drop until the line is slack before working on unit.

Do not secure cable to drum or work around the machine when the tractor engine is running unless you are positive that the tractor master clutch is disengaged.

The auxiliary unit must be kept in correct adjustment to give satisfactory results. Proper clutch and brake adjustments have been made at the factory for average conditions. Any of these adjustments, however, may be varied to suit the individual job or operator. See the adjustments and instructions given on the following pages.

Lubrication instructions are provided and should be carefully studied. The lubricant recommended should be used.

Keep all bolts and nuts tight and check all other connections.

### **Brake Adjustment**

Adjustment for brake lining wear is made on the brake band end, page 86. The locknuts on adjustable rod end are loosened or tightened to give the proper adjustment. Band should be tightened just enough to hold load with handlever (2) in neutral position.

### **To Reline Brake**

When the brake lining is worn down to the rivet heads, it should be replaced. The steps outlined below should be followed:

- A. Remove guard (5, page 82) from auxiliary unit side frame.
- B. Push down on lever (9, page 52) to the free-spooling position, and hold in this position.

## SERVICING INSTRUCTIONS—Continued

C. Remove brake adjusting rod end pin (5, page 86) by pulling cotter and pushing the pin clear of the brake rod end.

D. Remove from the brake anchor pin (8), the cotter pin located just inside of the side plate assembly on right-hand side of the unit.

E. Remove the anchor pin (8), leaving the band free. Move the brake band (1) off the brake flange into the drum barrel space. From this position the brake band can easily be removed for relining.

F. To replace, reverse procedure outlined above, making sure all pins and cotters are in place. Replace capscrews and lockwashers holding guard in proper position.

### To Adjust Clutch

A. Adjustment of the clutch can be made by loosening the clamping capscrew on clutch operating crank (2, page 86).

B. Push down on the handlever (14) until the desired adjustment is attained. Tighten the clamping capscrew which locks the clutch operating crank (2) onto the sleeve (21, page 84). Be sure that clutch lining (3) does not drag when handlever is in neutral.

C. Brake link assembly (4, page 89) will have to be readjusted to bring the lever (2) into the neutral position.

### To Reline Clutch

A. Follow steps given on page 74 for removing brake band.

B. Remove drum R. H. nut (10, page 84, and take off R. H. nut from winch link (22, page 28). Loosen adjustment on anchor bolt (6, page 89) to allow the link to slide freely to the left through the winch frame. This will leave the anchor bolt free to be removed from the drum shaft.

C. Remove four  $\frac{1}{2}$  NF x  $1\frac{1}{4}$  capscrews from the R. H. side frame (1, page 82). Pull side frame free of drum unit. If unit is equipped with optional auxiliary brake release handle (15, page 86), it must first be removed before removing side frame.

D. Loosen clamping capscrew until clutch operating crank (2) is free of sleeve. Remove pin from upper end of brake link assembly (11) allowing link to drop.

## SERVICING INSTRUCTIONS—Continued

E. Drum and bearings may be taken off as a unit by rotating sleeve (21, page 85) in clockwise direction until nut is free of shaft threads. Then pull drum assembly from drum shaft.

*CAUTION: Keep drum centered on shaft while removing to keep the oil seal from fouling on shaft threads, otherwise seal will be damaged and must be replaced.*

F. With the cable drum removed, remove eight wired capscrews. Pull clutch disk (16, page 84) free of gear hub and remove from unit, being careful not to damage oil seal. Clutch can now be relined.

*NOTE: Relined clutches may be secured on an exchange basis. See your dealer for prices.*

G. To reassemble, reverse the procedure outlined above, being sure to rewire the capscrews in the clutch. Inspect oil seals in drum and clutch, making sure that they are in perfect condition. If in doubt, replace them with new oil seals.

*Be very careful to guide the clutch disc and the drum assembly oil seals over the threaded portion of shaft, making sure that the lip does not catch on the shaft threads and become damaged.*

## CABLE INSTALLATION

The Auxiliary Unit is designed for use with  $\frac{1}{2}$ " diameter 6 x 19 wire rope Tru Lay preformed plow steel (or cable of other equivalent construction).

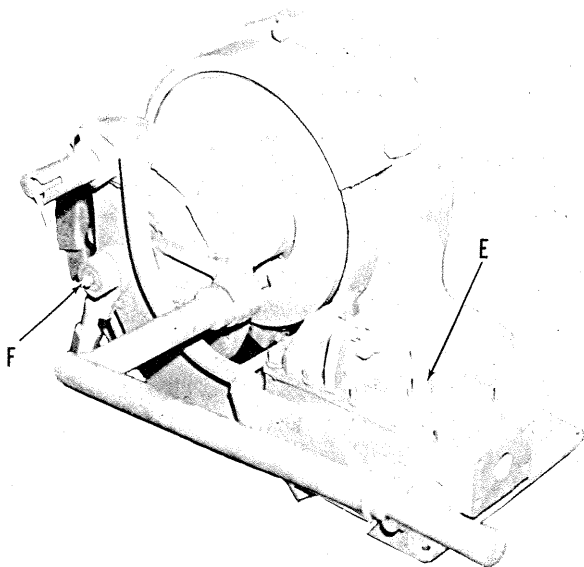
Roll the line out on the round to remove the kinks before installing. Some "Caterpillar" Manuals recommend that the rope be untwisted about one turn for every 20 feet in length before dead ending the new cable. This will eliminate the reverse twisting tendency (which causes cable kinks) of a new cable when put to use.

If used with a "Bulldozer," thread the cable first through the 'dozer frame. After making sure that the tractor master clutch is in a disengaged position, anchor one end of the line to drum.

Place end of cable under clamp (17, page 84) and tighten capscrew (18) securely.

Spool the slack cable evenly onto the drum slowly. Idle the tractor at a slow speed in order that the cable drum will rotate slowly. Be sure that other end of rope is fastened to 'dozer (or other unit) as this spooling operation is continued.

## LUBRICATION INSTRUCTIONS



Refer to illustration above which shows the location of the various lubrication fittings and pipe plugs on the Transmission Case, Drum Shaft, etc.

*Note:* When checking oil level, if the Tractor Engine is running, throw out master clutch so that hoist gears are stationary; otherwise, a false reading will result.

A new hoist, after about one weeks' operation, should have the oil changed in all the cases.

### Winch Transmission Case Lubrication

The oil level in the case should be checked weekly, keeping the case filled up to the oil level plug in the winch. Since this auxiliary unit is installed in combination with the winch, additional oil is added to the winch transmission through the oil filler plug "E" on the center gear case containing winch shifter shaft.

(See page 13 for winch lubrication.)

## AUXILIARY TRANSMISSION CASE LUBRICATION (Lower Gear Train)

Idler gears and bearings in lower transmission compartment of gear housing receive lubrication by the splash system from the oil in the lower part of the D4N Hyster Winch. The oil is carried up from the winch compartment into the auxiliary unit gear case by the gears. The churning action of the lower submerged gears of winch causes a constant spray of oil to be thrown up into the gear compartment which provides ample lubrication of these parts.

### Drum Unit Lubrication

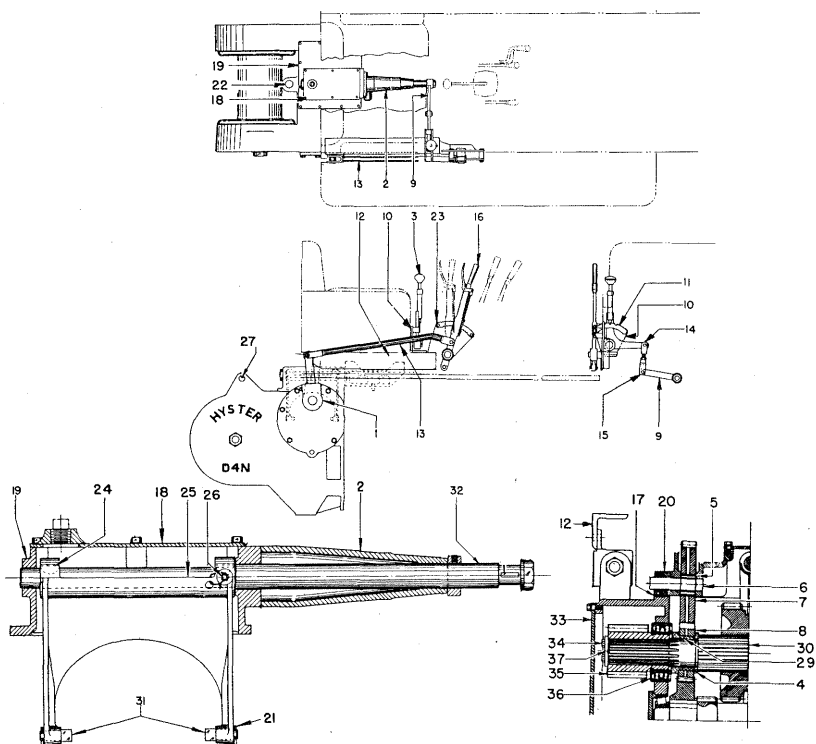
Grease Drum Bearings at "F" once every 30 days with a high grade grease. Take care not to use too much grease, as the resulting pressure developed may force the grease through the seal.

### Handling Gear Lubrication

All pin fulcrums should be kept working freely by oiling with oil can about twice weekly.

## MOUNTING INSTRUCTIONS

For Installing D4N Auxiliary Drum on D4N Towing Winch  
(For Tractors with Fender-mounted Fuel Tank)





## SECTION C

# MOUNTING INSTRUCTIONS

### FOR

## INSTALLING D4N AUXILIARY DRUM ON D4N TOWING WINCH

### (For Tractors with Fender-mounted Fuel Tank)

*Proceed as follows:*

1. Assuming that the D4N Hyster Winch is mounted on the tractor, it will be necessary to remove the driver's seat from the tractor to gain access to the winch transmission case. Remove link (27), and spacer. Discard spacer, but retain link for later use. Remove the winch hand hole cover (18) and discard.

2. Disconnect horizontal brake link (13) from handlever (16) and rod end (14) from shifter lever (3). Remove capscrews which fasten seat supports (12) to tie brackets. Seat with support angles and handlever may then be lifted clear of the winch and tractor.

3. Remove capscrews fastening standard transmission top cover (19), after which the cover and shifter assembly may be lifted off.

4. Remove four capscrews which fasten the support bracket (2) to the transmission cover (19). This will leave the support bracket (2) free to be removed with the shifter shaft.

5. Turn cover and shifter assembly upside down and remove wire from setscrew (26), then back out setscrew.

6. Pull or tap shifter shaft (32) out of shifter fork (25), and transmission cover (19). Remove keys (24) from shaft as it moves out of fork. Discard transmission cover (19) after shifter fork and shaft have been removed.

**CAUTION:** *Do not strike, spring, or drop the fork.*

Clean case openings thoroughly and with a large file remove burrs from each opening. Place a cloth in the openings of cases so that the filings will not fall in them.

7. Make sure the shifter shoes (31) are in the fork and locked in place with cotter pins (21).

8. Proceed now to assemble shifter fork in auxiliary drum unit. To install shifter assembly, hold shifter fork (25) in position in case (20) with setscrew (26) toward the front of unit. Push shaft (32) through hole in front of lower case compartment of auxiliary unit and through fork. Put keys (24) place in key-ways in shaft during this operation. Continue pushing shaft through fork until shoulder on shaft comes against fork.

9. Tighten setscrew (26), then insert wire through hole in head of set-screw, and wire setscrew to shifter fork to prevent screw from backing out and dropping into gear case.

10. Replace four capscrews (removed in Instruction 4) in support bracket (2), locating support bracket in the same position as it originally was on the winch.

11. Check through opening to see if gear (8) is in place in your unit. If not, proceed as follows: Remove capscrews which hold cover plate (33) to left-hand side frame of winch. Remove the two capscrews (34) and retainer plate (37) from the end of the drum pinion shaft (30). By reaching in from the top through opening of transmission case, push the sliding gear to the right side out of the way. With the use of a soft hammer or suitable punch, drive the ball bearing (36) and gear (35), out to the left and off the shaft. After this has been done, the spacer may be slipped free of the brake shaft and discarded.

To reassemble, first slip washer (4) onto drum pinion shaft (30) insert bushing (29) into bore of gear (8) and slide this assembly on drum pinion shaft to take the place of the discarded spacer, making sure they are up snug against the shoulder on the shaft. Replace gear (35) and bearing (36) in their original position and hold in place by retainer plate (37) and capscrews (34).

12. Place gasket (17) which replaces gasket removed with top cover (19) in Instruction 6, on winch transmission case.

**CAUTION:** The backlash between the idler gear (8), which is now part of the winch transmission, and the auxiliary drum unit first idler gear (7) is determined by the thickness of the above gaskets. (See Instruction 16.)

13. Lift the auxiliary drum assembled with the shifter fork, by use of crane or hoist, and swing over until directly above the winch.

14. Lower unit slowly into position on top of winch, lining up shoes (31) on shifter fork with groove in sliding gear. It may be necessary to turn over the tractor engine slightly to permit the winch idler gear (8) to mesh properly with the auxiliary drum first idler gear (7), thus allowing the auxiliary assembly to drop into the correct position.

15. Insert enough capscrews, without lockwashers, in holes around edge of mounting flange of auxiliary unit to line up all the holes, but do not tighten securely until after link (27), large anchor bolt (22), and adjusting bolt (6, page 89) have been installed at rear of unit. See Instructions 18 and 19).

16. Tighten the four capscrews (without lockwashers) near the center axis of the idler gear (7) as a preliminary to checking the backlash. Remove the cover plate (2, page 82) and through this opening, check to see that the proper backlash (clearance between teeth in mesh) has been obtained between the winch idler gear (8) and auxiliary first idler gear (7).

This adjustment is very important and is accomplished by use of the proper amount of gaskets (17) between the auxiliary drum unit and the top of winch transmission case. (See Instruction 12.) If no backlash is found, damage may result if unit is operated in this condition. The backlash or clearance between teeth, should be about .010" to .015" on the pitch line. Too close an adjustment will cause the gears to run noisely. If no feeler gauge is available, the idler gear may be rocked back and forth sharply with some suitable bar, and the correct backlash is that which is barely perceptible to the feel of the hand.

17. If the gear mesh needs readjustment, remove capscrews and lift auxiliary unit free of winch. Either remove or add another gasket (17) on winch transmission top, as required, to obtain the proper backlash. Then repeat operations given in Instructions 14, 15 and 16.

18. With the assembly progressed to this point, the next item will be the installation of the winch link (27). As the link is pushed through from one side, assemble with new frame spacer (5, page 89) and adjustable bolt assembly (6), tightening the unit down securely.

19. Add lockwashers to capscrews temporarily tightened, and insert remaining capscrews with lockwashers, in mounting flange holes. These are the 10 new capscrews,  $\frac{3}{8}$  NF x  $1\frac{1}{4}$ , and all should have washers when in place. Insert the large 1" NF x  $2\frac{1}{2}$  capscrew into the hole located at 22, page 78, in the winch transmission case, and through the hole in the auxiliary unit and tighten with nut and lockwasher.

20. Slide support bracket (2) up against auxiliary unit and fasten securely with four capscrews provided, making sure it is in its original position. Shaft (32) should turn easily and not bind in bracket hole.

21. After final inspection of backlash, replace cover plate (18) with its gasket in place and fasten securely with the capscrews previously removed.

22. With all fastenings drawn down securely, make final adjustment on adjustable bolt assembly (6, page 89) and lock with jam nut.

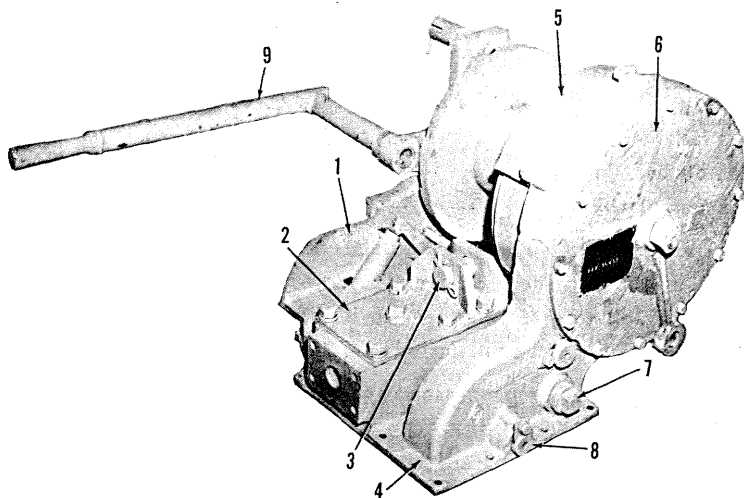
23. Reinstall tractor seat and fasten to tie brackets with capscrews previously removed. Connect horizontal brake link (13), to handlever (16) and connect rod end (14) to shifter lever (3).

24. Check all bolts and connections and be sure that all nuts and lockwashers are in place and drawn up securely.

## SECTION D

# LIST OF PARTS and ILLUSTRATIONS

### FRAMES, CASE AND COVERS

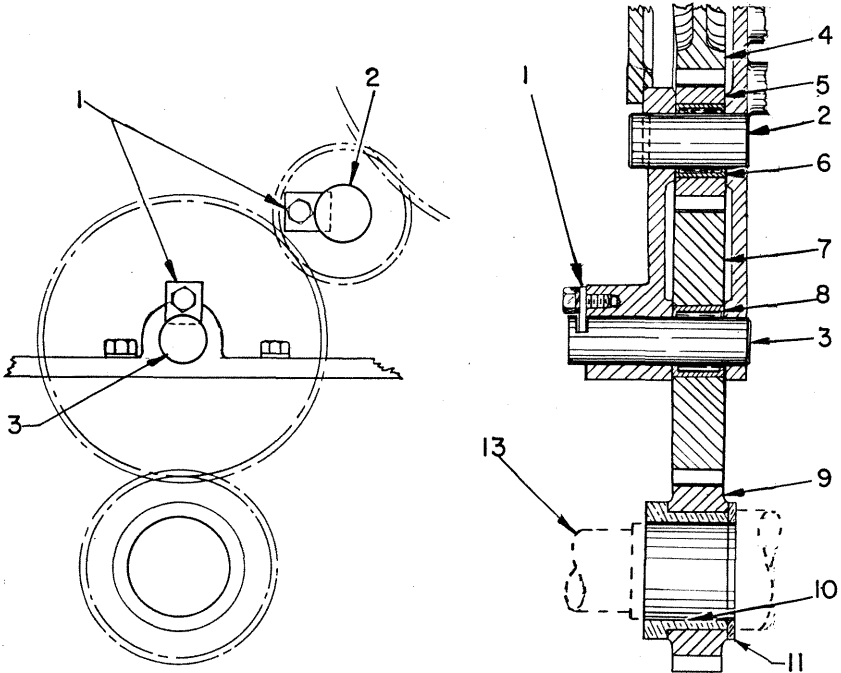


Ref. No.	Hyster Part No.	NAME OF PART
	37555AC	Plate Assembly—Side
1	*46861	Bushing
	15514	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{4}$ (4)
	15158	Lockwasher— $\frac{1}{2}$ (4)
	37568	Cover
	37569	Gasket
2	15504	Capscrew— $\frac{5}{8}$ NF x $1\frac{1}{4}$
	15160	Lockwasher— $\frac{5}{8}$
	15775	Capscrew—Flathead, $\frac{5}{8}$ NC x $1\frac{1}{4}$ (2)
3	37538	Pin
	15265	Cotter— $\frac{5}{16}$ x 2 (2)
	37534AC	Housing Assembly
	37558	Pin—Dowel (2)
4	37565	Gasket (4)
	15532	Capscrew— $\frac{3}{8}$ NF x $1\frac{1}{4}$ (10)
	15156	Lockwasher— $\frac{3}{8}$ (10)
	15598	Capscrew—1" NF x $2\frac{1}{2}$ with Nut and Lockwasher
	15016	Nut—Hex, 1" NF
	15166	Lockwasher—1"
	37907B	Guard—Drum
5	15511	Capscrew— $\frac{1}{2}$ NF x 1" (5)
	15158	Lockwasher— $\frac{1}{2}$ (5)
6	37525	Cover—Gear
7	5308	$\frac{1}{4}$ Std. Pipe Plug (for inspection)
8	.....	Shaft—Idler Gear (see page 83, Ref. 3)
9	.....	Handlever (see page 89, Ref. 2)

\*Included in assembly under which listed.

(Note: Only quantities more than one are listed after name of part)

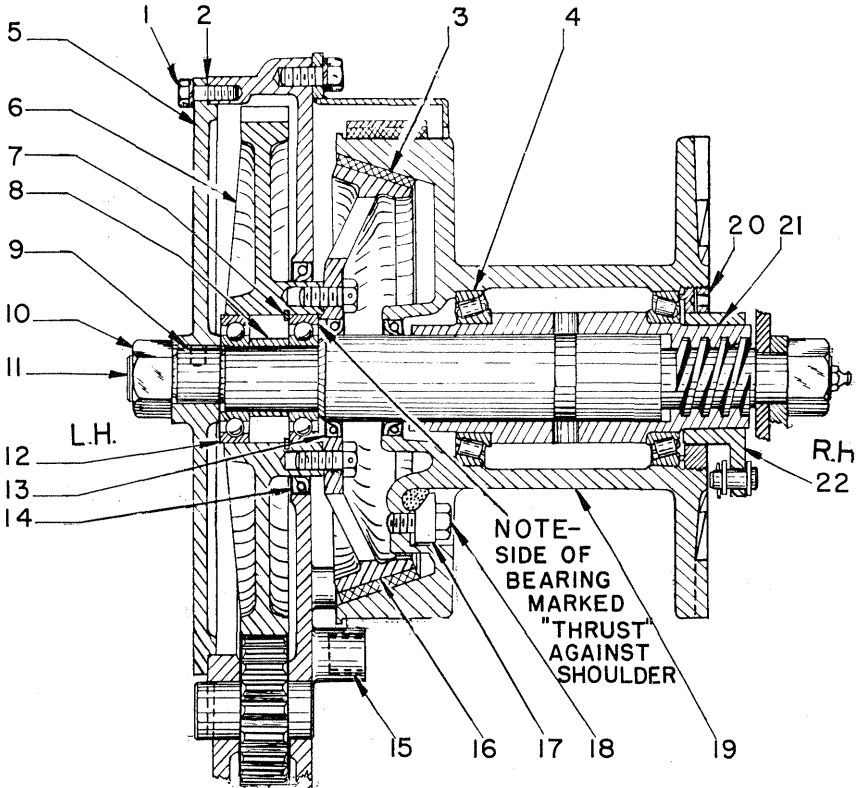
## TRANSMISSION GEAR TRAIN



Ref. No.	Hyster Part No.	NAME OF PART
1	37537	Keeper (2)
	15508	Capscrew— $\frac{3}{8}$ NF x 1" (2)
	15156	Lockwasher— $\frac{3}{8}$ (2)
2	37536	Pin—Second Idler
3	37535	Pin—First Idler
4	37522	Gear—Friction (53 teeth)
5	37564	Gear—Second Idler (13 teeth)
6	37557	Needle Bearing
7	32915B	Gear—First Idler (28 teeth)
8	9354	Needle Bearing
9	32913B	Gear—Idler (19 teeth)
10	59055	Bushing
11	59056	Washer
12	37565	Gasket (Auxiliary Drum Unit to Winch (not illustrated)
3	.....	Shaft—Drum Pinion (page 27, Ref. 7)

*(Note: Only quantities more than one are listed after name of part)*

# DRUM UNIT



## DRUM UNIT

Ref. No.	Hyster Part No.	NAME OF PART
1	{ 15508	Capscrew— $\frac{3}{8}$ NF x 1 (12)
	{ 15156	Lockwasher— $\frac{3}{8}$ (12)
2	37556	Gasket
3	{ 37526AD	Ling Set-Clutch (Std.) (Part of Ref. No. 16)
	{ 37526AB	Lining Set—Clutch, Velvetouch (optional)
4	{ 30178	Bearing Cup (2)
	{ 30177	Bearing Cone (2)
5	.....	Cover—Gear (see page 82, Ref. 6)
6	.....	Gear (see page 83, Ref. 4)
7	9109	Snap Ring
8	37549	Pipe—Spacer
9	33100	Pin (Part of 37528AB Drum Shaft)
10	{ 15017	Nut—Hex, $1\frac{1}{8}$ NF (2)
	{ 16001	Grease Fitting
11	37528AB	Shaft—Drum
12	37559	Bearing (2)
13	37561	Oil Seal (2)
14	37560	Oil Seal
15	32232	Bushing
16	{ 37523AD	Clutch Assembly (Includes Reference No. 3)
	{ 9718	Capscrew—Drilled Head (8)
17	37566	Clamp (Cable)
18	37562	Capscrew (Heat Treated)
19	37521B	Drum
20	{ 37529	Retainer
	{ 16202	Setscrew—Sockethead, 5/16 NC x $\frac{3}{8}$ , Cup Point
21	37520B	Sleeve—Drum Shaft
	{ 37524B	Crank—Clutch Operating
22	{ 15536	Capscrew— $\frac{1}{2}$ NF x $3\frac{1}{4}$
	{ 15008	Nut—Hex, $\frac{1}{2}$ NF
	{ 15158	Lockwasher— $\frac{1}{2}$





## BRAKE ASSEMBLY

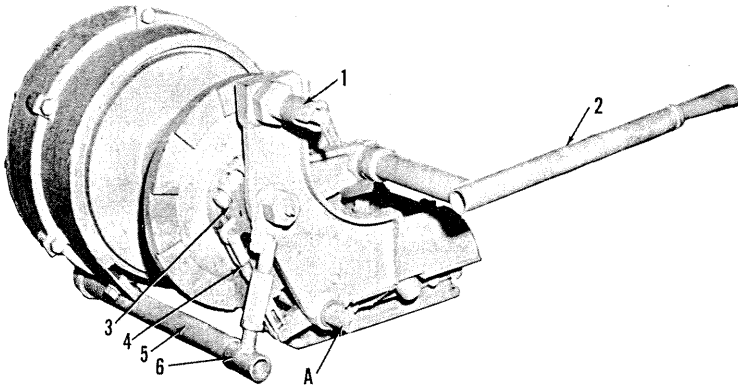
Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	37532AB	Band Assembly—Brake	
	*37533A	Lining Set	
	*37531B	Rod End—Adjusting	
	*15008	Nut—Hex, $\frac{1}{2}$ NF	
	*15028	Nut—Hex Jam, $\frac{1}{2}$ NF	
2	.....	Crank—Clutch Operating (See page 85, Ref. 22)	
3	.....	Housing (see page 82, Ref. 4)	
4	.....	Bushing (see page 85, Ref. 15)	
5	59618	Pin	
	15223	Cotter— $\frac{1}{8}$ x 1 (2)	
6	37551B	Crank—Brake	
7	46222	Snap Ring	
8	37550B	Pin—Brake Anchor	
	15223	Cotter— $\frac{1}{8}$ x 1 (2)	
9	37554AC	Shaft—Brake	
10	.....	Plate Assembly—Side (see page 82, Ref. 1)	
11	.....	Link Assembly (see page 89, Ref. 4)	
12	37552	Seat—Spring	
13	37567	Spring	
14	.....	Lever Assembly (see page 89, Ref. 2)	
15	46496AB	Handlever Aux. Brake Release (Optional)	
	46222	Snap Ring	

\*Included in assembly under which listed.

(Note: Only quantities more than one are listed after name of part)



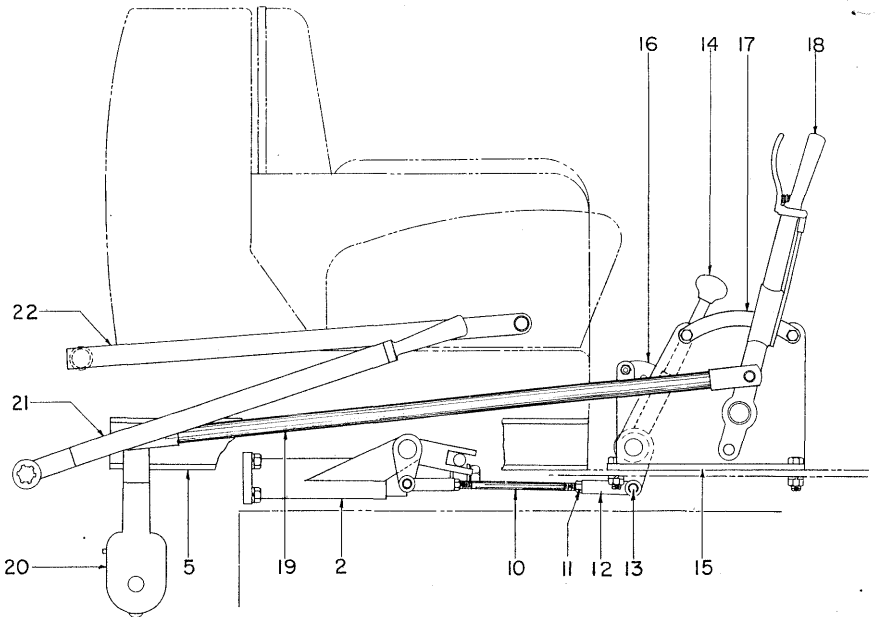
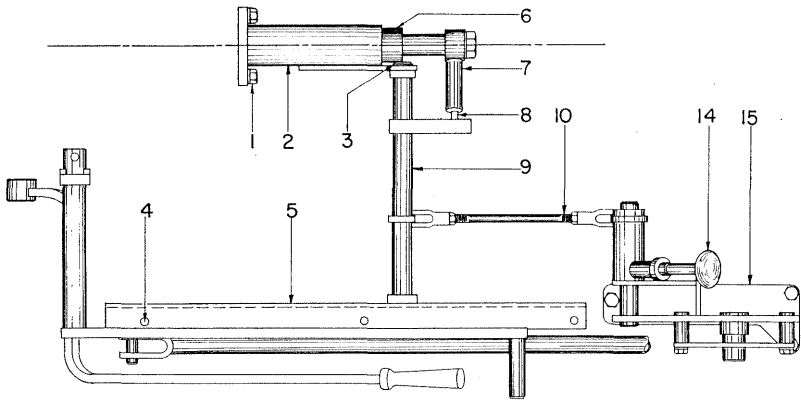
## HANDLING GEAR



Ref. No.	Hyster Part No.	NAME OF PART
1	41699A	Pawl Assembly
	*41698A	Sleeve—Spring
	*41693	Pawl
	*41694	Rod
	*41695	Spring
	*41697	Pin—Dowel
2	*32745	Nut—Hex Jam, 1 $\frac{3}{8}$ NF
	37553AC	Handlever
	15519	Capscrew— $\frac{3}{8}$ NF x 2 $\frac{1}{2}$
	15006	Nut—Hex, $\frac{3}{8}$ NF
3	15156	Lockwasher— $\frac{3}{8}$
	.....	Crank—Clutch Operating (see page 85, Ref. 22)
4	37548AB	Link Assembly—Brake
	*37548B	Rod End—Slotted
	* 141	Rod End (Standard)
	* 142	Pin—Rod End (2)
	15006	Nut—Hex, $\frac{3}{8}$ NF
5	15212	Cotter— $\frac{3}{32}$ x $\frac{3}{4}$ (2)
	37539B	Pipe—Frame Spacer
	41692A	Link Assembly—Adjusting
	*41689	Bolt—Anchor
	*41690	Bolt—Eye
	*41691	Nut—Adjusting
	*15032	Nut—Jam, $\frac{3}{4}$ NF

## HANDLING GEAR

For Use with Seat-tank Type Tractor when Mounting D4N Auxiliary Drum  
on D4N Towing Winch



## HANDLING GEAR

For Use with Seat-tank Type Tractor when Mounting D4N Auxiliary Drum  
on D4N Towing Winch

Ref. No.	Hyster Part No.	NAME OF PART
1	{ 15538	Capscrew— $\frac{1}{2}$ NC x $1\frac{1}{4}$ (4)
	{ 15158	Lockwasher— $\frac{1}{2}$ (4)
2	91442	Bracket—Shifter Shaft
3	58902	Snap Ring
4	{ 15514	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{4}$ (12)
	{ 15008	Nut—Hex, $\frac{1}{2}$ NF (12)
	{ 15158	Lockwasher— $\frac{1}{2}$ (12)
5	{ 91448	Channel—Seat Support, R. H. (illustrated)
	{ 91203	Channel—Seat Support, L. H.
	{ .....	Bracket (Seat Support Channel to Winch; see page 19, Ref. 1 and 2)
6	9444	Set Collar
7	91443A	Lever
8	91208	Bolt—Ball Head
9	91446A	Crank
10	91209	Link
11	15007	Nut—Hex, 7/16 NF (2)
12	149	Rod End—7/16 SAE (2)
13	{ 150	Pin—Rod End, 7/16 SAE (2)
	{ 15212	Cotter—3/32 x $\frac{3}{4}$ (2)
14	.....	Handlever (see page 19, Ref. 11)
15	.....	Bracket (see page 19, Ref. 18)
16	.....	Plate—Quadrant (see page 19, Ref. 22)
17	.....	Quadrant—Ratchet (see page 19, Ref. 21)
18	.....	Handlever (see page 19, Ref. 25)
19	.....	Link (see page 19, Ref. 23)
20	.....	Slack Adjuster (see page 33, Ref. 11)
21	.....	Handlever (Optional, see page 87, Ref. 15)
22	.....	Handlever (see page 89, Ref. 2)

## D4N AUXILIARY DRUM UNIT—Continued

### SPECIFICATIONS

HYSTER MODEL ..... D4N Auxiliary Drum Unit

**Drum size:**

Barrel Diameter ..... 5½"

Flange Diameter ..... 12 "

Barrel Length ..... 5½"

Cable Capacity, Maximum Line ..... 165 ft. ½", 290 ft. ⅜"

Allowance should be made for loose or  
unevenly spooled line in towing service.

**Available Line Pulls:**

Bare Drum ..... 5,970 lbs.

Full Drum ..... 3,120 lbs.

**Line Speeds:**

Bare Drum ..... 265 f.p.m.

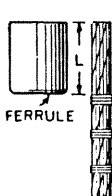
Full Drum ..... 507 f.p.m.

Above figures are based on 48 H.P. at 962 R.P.M.,  
using ½" line. Line pulls, however, are limited  
by clutch capacity which allows approximate  
bare drum pull of 3,700 lbs. This is sufficient to  
handle maximum 'dozer loads.

Net Weight (without cable) ..... 290 lbs.

Domestic Shipping Weight, approx. .... 325 lbs.

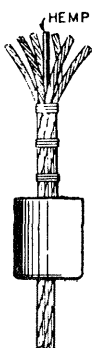
## METHOD OF ATTACHING FERRULES



- 1** MEASURE FROM END OF CABLE A LENGTH EQUAL TO LENGTH OF FERRULE. SERVE WITH NOT LESS THAN THREE SEIZINGS.



- 2** SLIP FERRULE OVER CABLE AND PUSH DOWN OVER SEIZINGS.



- 3** CUT OUT HEMP CENTER.  
IF CABLE HAS A WIRE ROPE OR STEEL STRAND CENTER, DO NOT CUT OUT.

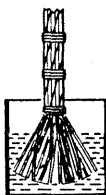


- 4** SEPARATE WIRES OF STRANDS AND STRAIGHTEN TO FORM A BRUSH.



- IF WIRES ARE VERY GREASY, CLEAN WITH SOLVENT. A CHEAP PAINT BRUSH DIPPED IN THE SOLVENT CAN BE USED TO REMOVE THE SURPLUS GREASE.

DRY THOROLY.



- 6** DIP WIRES FOR  $\frac{3}{4}$  OF THE DISTANCE TO FIRST SERVING INTO ACID BATH CONSISTING OF NOT OVER ONE PART OF MURIATIC AND ONE PART WATER. TAKE CARE THAT ACID DOES NOT GET ON ANY OTHER PART OF CABLE. KEEP IN LONG ENOUGH TO BE THOROLY CLEANED. DRY THOROLY.



- 7** SLIP FERRULE UP. DISTRIBUTE WIRES EVENLY IN RECESS AND FLUSH WITH TOP OF FERRULE. DO NOT CRIMP OVER ENDS OF WIRES. PLACE MUD SEAL AROUND BOTTOM OF FERRULE AS AT "A".

- 8** HEAT THE ZINC TO THE POINT WHERE A SMALL STICK OF SOFT WOOD DIPPED INTO THE ZINC AND QUICKLY WITHDRAWN WILL BE SCORCHED BUT NOT IGNITED.



- 9** BE SURE FERRULE IS IN LINE WITH AXIS OF CABLE. POUR IN MOLTEN ZINC. DO NOT USE BABBITT OR OTHER ANTI-FRICTION METAL.



- 10** REMOVE SEIZINGS EXCEPT THE ONE UNDER THE FERRULE. COOL SLOWLY.

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# **INSTRUCTIONS FOR ORDERING HYSTER REPAIR PARTS**

1. Always give the serial number of machine, which is found on name plate.
2. Always specify name, number and letter of part required.
3. Always specify shipping destination and definite shipping instructions such as Parcel Post, Express, Air Express, Auto Freight or Rail Freight.

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Note: The oil for the transmission shall be a straight mineral type, stable, properly refined, free from fatty acids, resins, abrasives or other non-petroleum material and shall meet the following requirements.

1. Viscosity at 210° F. ....80 - 90 Seconds  
Saybolt Universal
2. Viscosity Index, Minimum .....85
3. Pour Point, Maximum .....Minus 10° F.
4. B. S. & W., Maximum .....0.5%
5. Color, Maximum ..... 8

Black oils or residuum materials will NOT be considered as satisfactory for this specification.

**PARTS BOOK  
AND  
INSTRUCTION MANUAL  
for  
HYSTER<sup>®</sup>  
D4N TOWING WINCH**



**EFFECTIVE WITH  
HYSTER NO. BWN-32478 AND UP**

**HYSTER COMPANY**

**PORTLAND 8, OREGON   ■   PEORIA 1, ILLINOIS   ■   DANVILLE, ILLINOIS  
U. S. A.**



