

PARTS BOOK AND INSTRUCTION MANUAL for HYSTER

D6N TOWING WINCH



EFFECTIVE WITH
HYSTER NO. TRN 4729

A 34 2

HYSTER COMPANY

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

FORM NO. 207H

Lithographed in U.S.A.

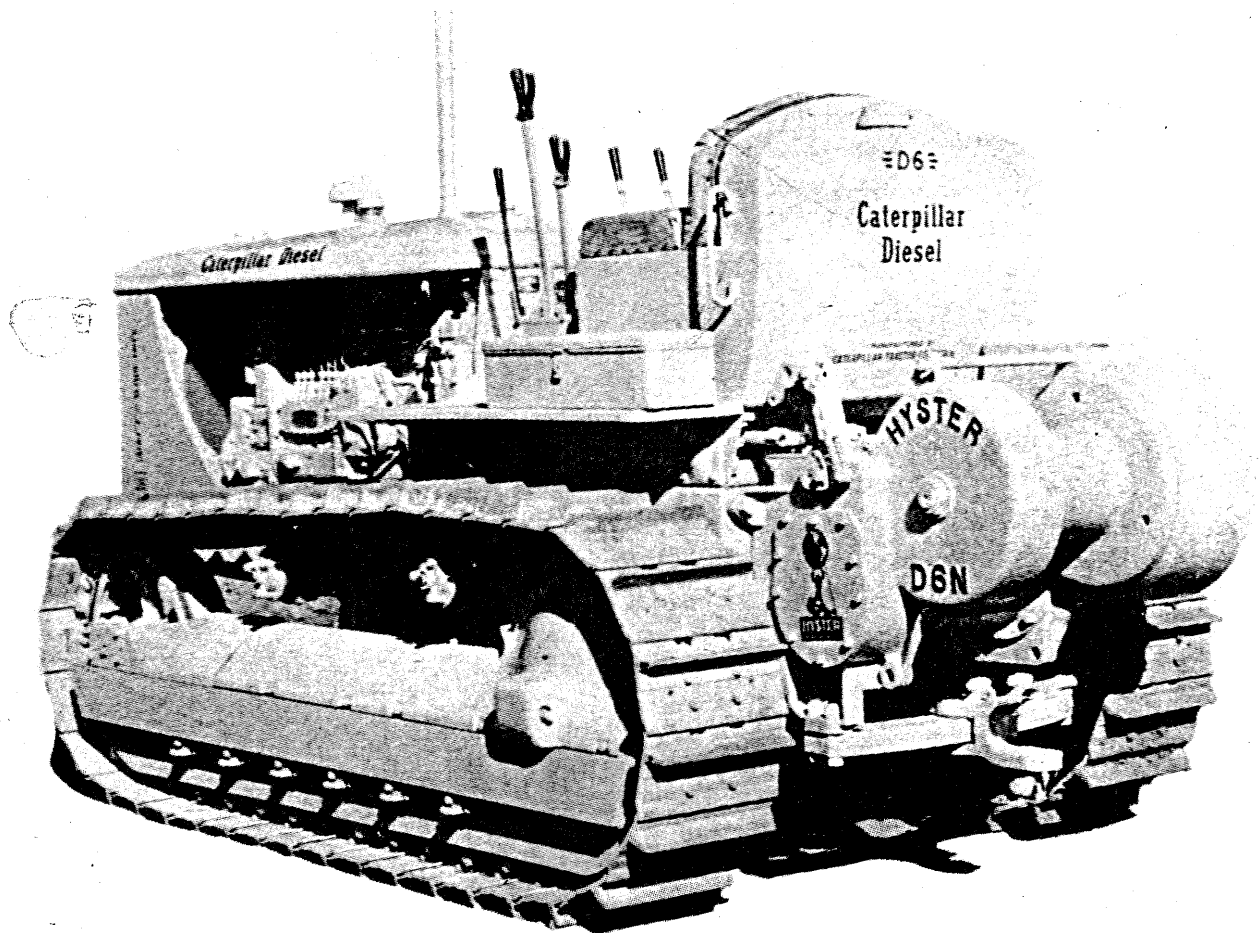
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599190W

**PARTS BOOK
AND
INSTRUCTION MANUAL
FOR
HYSTER
D6N TOWING WINCH**

For "Caterpillar" D6 Tractor

New Model, beginning with
Tractor Serial No. 5R1 or Serial No. 4R1



Including
Installation, Lubrication and
Servicing Instructions

HYSTER COMPANY

PORTLAND 8, OREGON ■ PEORIA 1, ILLINOIS ■ DANVILLE, ILLINOIS
599190W U. S. A.

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.

The illustrations shown in this parts book may not accurately show all the details of your machine. If the picture does not correspond exactly to the machine, please give a **COMPLETE DESCRIPTION** of the part required and the reference number of the part nearest to its location including also the page number. Then, by reference to the **SERIAL NUMBER** of your machine, we can send you the correct part.

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.

SPECIFICATIONS

HYSTER MODEL D6N Towing Winch

Drum size:

Barrel Diameter 10"
Flange Diameter 20"
Barrel Length 12"

Cable Capacity, Maximum Line { 420 ft. 3/4"
Allowance should be made for loose or or 305 ft. 7/8"
unevenly spooled line in towing service. or 235 ft. 1"

Available Line Pulls:

Bare Drum 26,800 lbs.
Full Drum 15,200 lbs.

Line Speeds:

Bare Drum 92 f.p.m.
Full Drum 162 f.p.m.
(Line Speeds and Pulls are the same when overwinding
or underwinding.)

Above figures are based on 75 H. P.
at 1,400 R.P.M. using 7/8" line.

NOTE: IMPORTANT

Available line pulls may be greater than the breaking point of cable used. Line pulls should be limited by winch owner to comply with all safety laws applicable where the equipment is being used. A multi-part line should be employed for loads beyond the safe limit of a single cable.

Net Weight (without cable) 1635 lbs.
Domestic Shipping Weight, Approx. 1710 lbs.
Code Word SXNTW

Net Weight (without cable) 1635 lbs.
Domestic Shipping Weight, Approx. 1710 lbs.
Code Word SXNTW

SEALS

2-9141

1-31970

1-35608

1-35645 (Natl 55300)

W/AUTO BRAKE

A00 2-59395

(Natl 455001)

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 master clutch.
 - C. Place the tractor transmission gear shift lever in neutral.
 - D. Set and lock the 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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MASTER PARTS CATALOG NOTICE

Supplement No. 1 — July 1, 1957

D6N TOWING WINCH

Form No. 207H

PAGE 13—Add the following:

Note: Although equipped with grease fittings at each end, control cables should not be lubricated unless they become stiff and inoperative.

Use Lubriplate 105V or Aero or equivalent *only* if grease is required. If this is not available, do not lubricate at all. Too much lubricant will blow out seals of cables and permit foreign matter to enter.

PAGE 33—Ref. 4, Revise as follows:

{	93511	Bar—Quadrant (first used on S. N. 90681)	1
{	32657	Bar—Quadrant (last used on S. N. 90680)	1

Ref. 5, first line, change 35674 to 91321A.

PAGE 42—Ref. 4, revise as follows:

‡{	27259	Capscrew—Drilled Head	6
{	67355	Lockwire—18 ga. x 28" long	4

Ref. 6, revise as follows:

{	94599	Link	3
†{	12430	Nut—Slotted	6
{	15201	Cotter—1/16 x 3/4 } First used on Brake S. N. 84836	6

At bottom of page, add:

‡Replace place bolts with set of drilled head capscrews and lockwire.

PAGE 47—Ref. 5, change 41212T to 43212T.

Important: Please make these changes promptly

HYSTER COMPANY

PORTLAND 8, OREGON

PEORIA 1, ILLINOIS

DANVILLE, ILLINOIS

U. S. A.

LITHO
IN
U.S.A.

2M-757

PAGE 49—Revise as follows:

HANDLING GEAR GROUPS

For DW10 Tractors — No. 90945A

For DW15 Tractors — No. 94662A

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	92559A	Handlever Assembly—Brake	1
	* 32694	Latch—Grip	1
	* 32695	Spring—Grip Latch	1
	* 37476	Screw—Grip Latch	2
	* 15052	Nut—Hex, No. 10 NC	2
	* 32693	Rod End	1
	* 92572	Rod—Pawl	1
2	90946A	Bracket—Quadrant (For DW10)	1
	94656W	Bracket—Quadrant (For DW15)	1
3	15128	Washer—1¼ (For DW10 only)	2
4	92683	Rod End	4
5	15026	Nut—Jam, 3/8 UNF	4
	17008	Bolt—Machine, 1/2 NC x 1¼ } For	4
	15158	Lockwasher—1/2 } DW10	4
	15580	Capscrew—3/8 UNC x 1½ } For	2
6	15156	Lockwasher—3/8 } DW15	2
	15538	Capscrew—1/2 UNC x 1¼ } Not illustrated	1
	15158	Lockwasher—1/2 } For DW15 only	1
7	35678A	Handlever—Clutch } Includes parts listed under ...	1
	* 33273	Rod—Pawl } item 1, except Rod—Pawl	1
8	92564	Bar—Quadrant	1
9	15518	Capscrew—3/8 UNF x 7/8	4
	15156	Lockwasher—3/8	4
10	32657	Bar—Quadrant	1
11	15245	Cotter—3/16 x 13/4 (DW10 only)	2
13	15223	Cotter—1/8 x 1	4
14	90954	Cable—Push Pull, Brake, 93" long	1
	90953	Cable—Push Pull, Clutch, 85" long	1
15	* 16040	Grease Fitting	4
	* 15934	Lockwasher—7/8	8
		(Four included with Cables) } Note: Quantities are	
	* 15034	Nut—Jam, 7/8 UNF } for two cables	8
	* 94381	Grommet—Large	4
	* 94380	Grommet—Small	4
16	159	Pin—Rod End	4

*Included in assembly under which listed.

PAGE 55—Ref. 16, revise as follows:

16	95298W	Support—Tool Box	1
	95302W	Cover	1
	15525	Capscrew—3/8 UNC x 3/4	4
	15156	Lockwasher—3/8	4

Ref. 21, change Qty. Req. to 6.

SECTION A

Operation

This section, in addition to instructions for operating, contains illustrations and instructions pertaining to certain simple adjustments.

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.

Do not operate tractor while the winch is being operated under load as damage to winch or tractor may result from accidentally pulling rigging around winch drum.

**Be sure winch gear shift lever is in neutral position
BEFORE MOVING THE TRACTOR**

**THE TRACTOR MASTER CLUTCH SHOULD BE DISENGAGED
BEFORE SHIFTING GEARS IN THE WINCH.**

TRACTOR LUBRICATION FOR STATIONARY WORK CAUTION

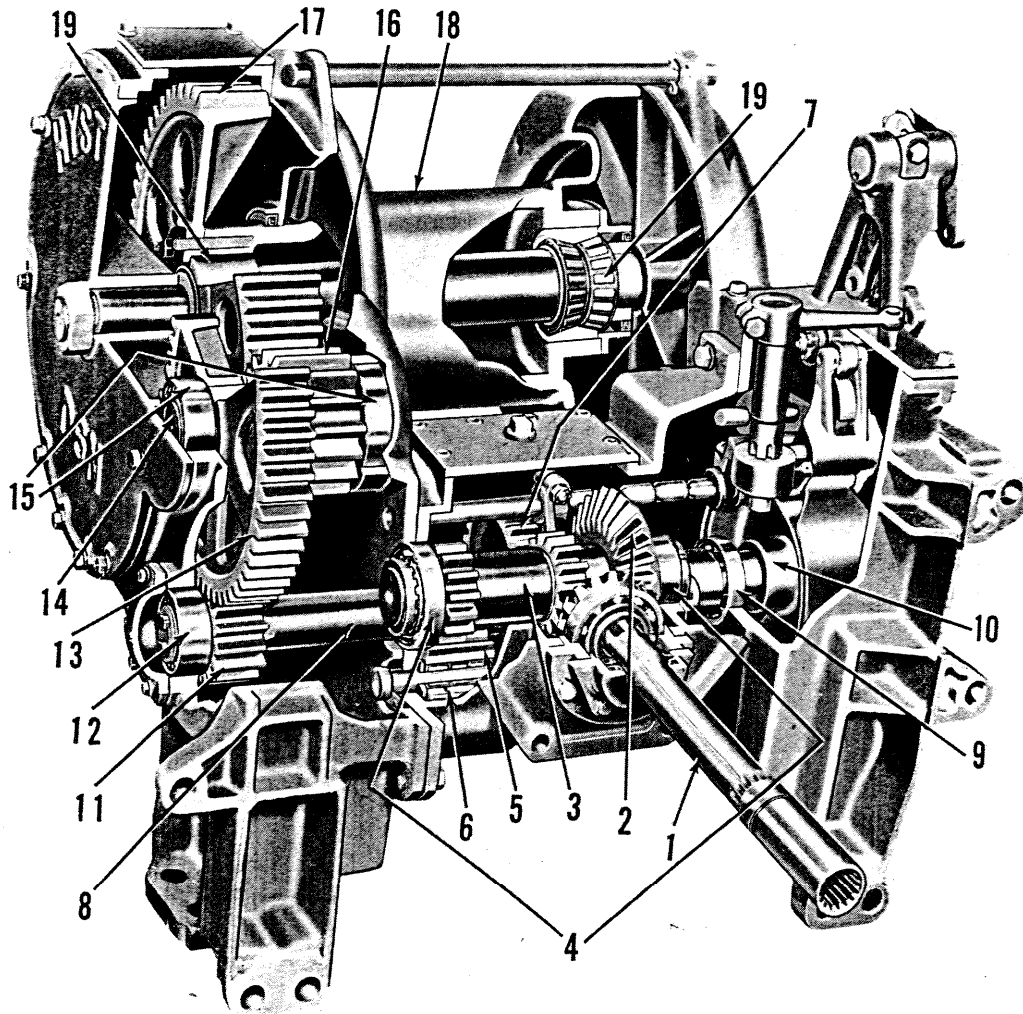
In order to provide adequate lubrication for the D6 tractor upper transmission shaft bearings, always engage flywheel clutch, leave forward-reverse lever in gear, and speed selector lever in neutral, when operating winch or other rear-mounted attachments.

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.

OPERATING INSTRUCTIONS — Continued

CUT-AWAY SHOWING ARRANGEMENT OF WINCH GEARING



PRINCIPLE OF WINCH OPERATION

When the "Caterpillar" tractor engine is running with the master clutch engaged, the engine turns the take-off shaft with bevel pinion (1) which in turn rotates bevel gear (2) assembled to pinion and shaft (3). This pinion and shaft, revolving on ball bearings (4), has two 15-tooth pinions integral with shaft, one of which meshes with the reverse idler gear (5). The reverse idler gear rotates on needle bearings (6).

With the shifter lever in the neutral position the above mentioned gears are constantly revolving when the engine is running with master clutch engaged; the drum, however, remaining stationary.

To operate UNDERWINDING drum and pull in cable (explanation given on page 7) the Hyster winch brake must be released and the "Caterpillar" master clutch be disengaged while shifting gears.

OPERATING INSTRUCTIONS—Continued

With shifter lever in position L3, page 7, the shifter mechanism has moved sliding intermediate gear (7) to the left-hand side and in mesh with the 15-tooth pinion on the bevel gear shaft. This sliding gear slides on a spline shaft (8), which revolves on ball bearings (9). Assembled on one end of this shaft is the brake drum (10), on the other end the 16-tooth intermediate pinion (11), and the outboard bearing (12). The intermediate pinion (11) meshes with the intermediate gear (13) assembled on short shaft (14) which revolves on ball bearings (15). Also assembled on this shaft is drum pinion (16) which meshes with drum gear (17). The drum gear is assembled to the drum (18) which rotates on Timken non-adjustable roller bearings (19).

After shifting gears as above with shifter lever in position L3, page 7, engage tractor master clutch causing the drum to rotate in an underwinding direction and spool in the 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, push lever through neutral to position L2, page 7. Release brake and engage tractor master clutch.

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

With shifter lever in position L2, page 7, the shifter mechanism has moved sliding intermediate gear (7) to the right-hand side and in mesh with the reverse idler gear (5). From here the power is carried through the same train of gears as described above and delivered to the drum. Engage the master clutch which will cause the drum to rotate in an overwinding direction and spool in the cable. To stop drum rotation disengage master clutch and apply winch brake.

To reverse drum rotation and pay out cable (Overwinding) tractor clutch still being disengaged, pull lever through neutral to position L3, page 7. Release brake and engage tractor master clutch.

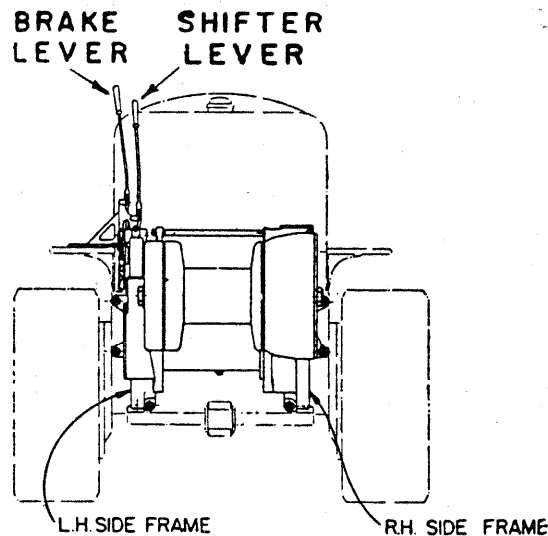
OPERATING INSTRUCTIONS—Continued

LOCATION OF LEVERS

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

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

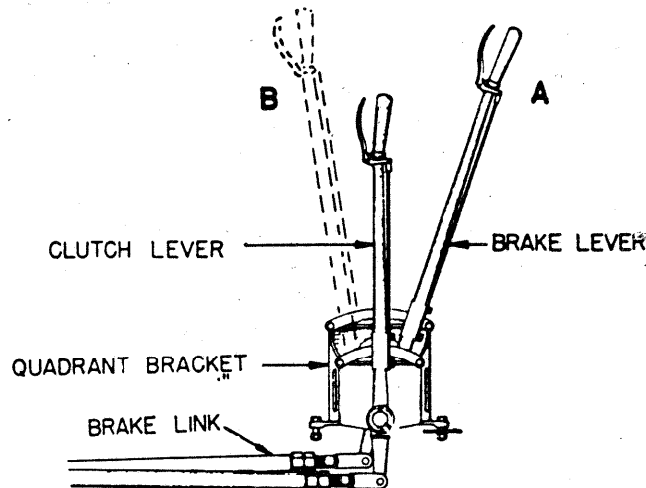
NOTE: When optional automatic brake is used, brake may be applied when pulling in a load, and must be released to pay out line.



BRAKE LEVER

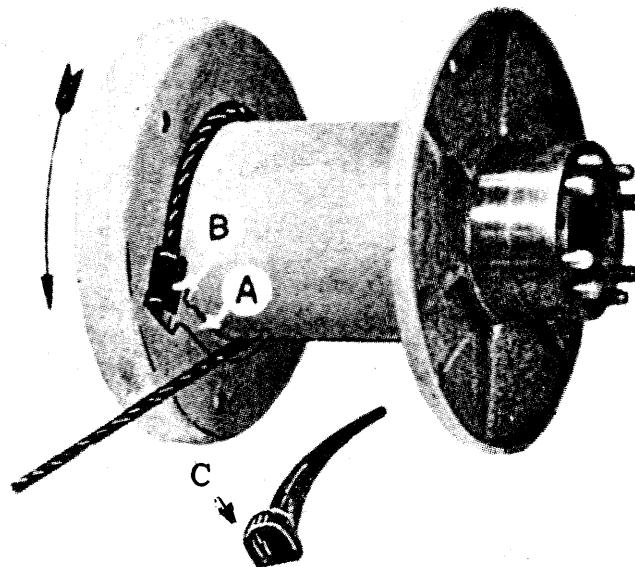
The brake handlever is the longer lever. When in position "A" the brake is released. When in position "B" the brake is applied.

The brake is an external contracting band type which is cam operated. Care should be exercised in applying the brake **ONLY** when tractor master clutch is disengaged, otherwise the tractor motor will be stalled and damage could result to the winch mechanism.



METHOD OF ATTACHING CABLE FOR OVERWINDING OR UNDERWINDING DRUM

For underwinding, place the cable ferrule plug "C" in position at "A," insert ferrule at "B" and turn drum in direction indicated by arrow.



OPERATING INSTRUCTIONS—Continued

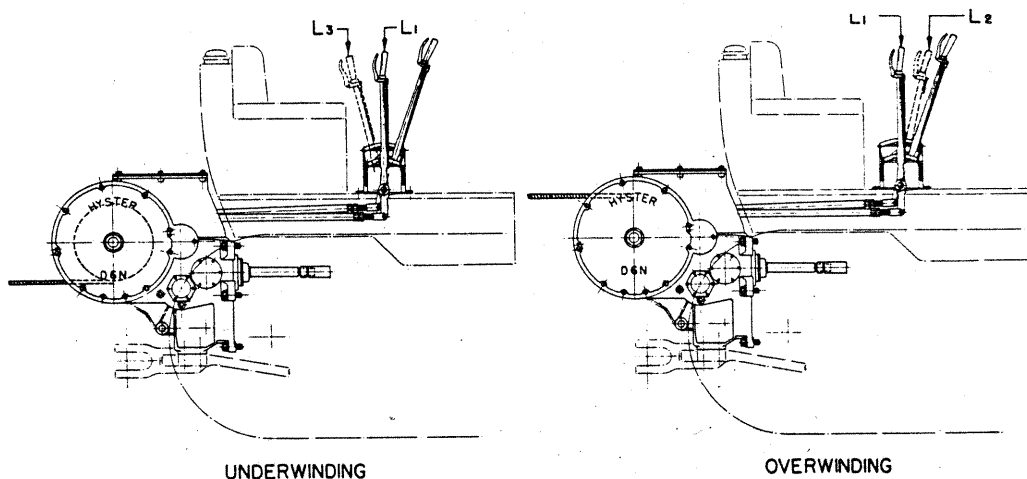
For overwinding, a different cable ferrule plug is provided. Place this plug in position at "B" and insert ferrule at "A."

OVERWINDING

When the winch is used with the cable leading from the top of the drum, the drum is **OVERWINDING**. To wrap the cable around the drum or pull in a load the shifter lever should be in position "L2". Position "L1" is neutral. To pay out line, shift lever to position opposite of "L2".

NOTE—

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



UNDERWINDING

When the winch is used with the cable leading from the bottom of the drum, it is said to be **UNDERWINDING**. To wrap the cable around the drum, or pull in a load, the shifter lever should be in position "L3". Position "L1" is neutral. To pay out line, shift lever to position opposite of "L3".

SECTION B

SERVICING INSTRUCTIONS

BRAKE ADJUSTMENT

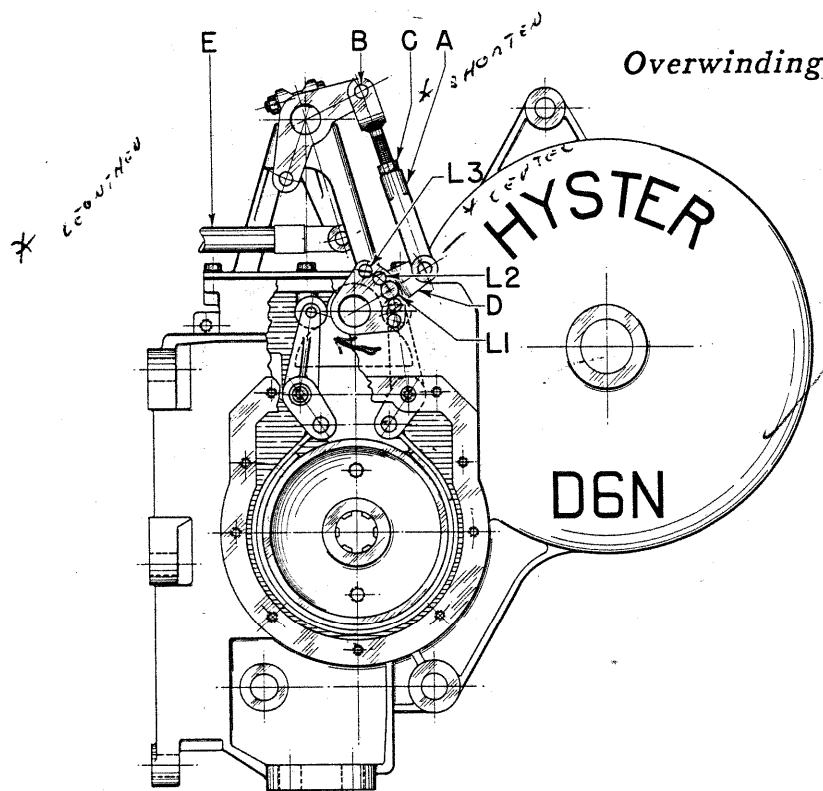
BRAKE LINKAGE

For overwinding cable, connect link "A" as shown below.

For underwinding cable, connect link "A" as shown on page 9.

If brake is used with incorrect setting, it will be much harder to apply and the load will be difficult to hold.

TO LOOSEN FEED BAND



OVERWINDING 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 and brake handlever comes too far back on quadrant to hold load, adjust brake by lengthening link "A." This can be done by removing rod end pin "B," loosening nut "C" and taking one or two turns on the threaded rod end. Replace rod end pin "B," continue to adjust until lever is in convenient position when applied, then release brake lever and check to see if brake band is sufficiently free to keep from "Dragging" and burning up the lining. After link is adjusted tighten nut "C."

When this adjustment ability has been exhausted, the link "A" should be returned to its original length. Then remove bolt holding brake crank to fan-shaped segment on brake shaft at "L1" and relocate crank "D" at hole "L2." Further wear can again be taken up as explained in first paragraph, and again the crank can be relocated at "L3" and the process continued.

SERVICING INSTRUCTIONS—Continued

Overwinding Brake Adjustment—Continued

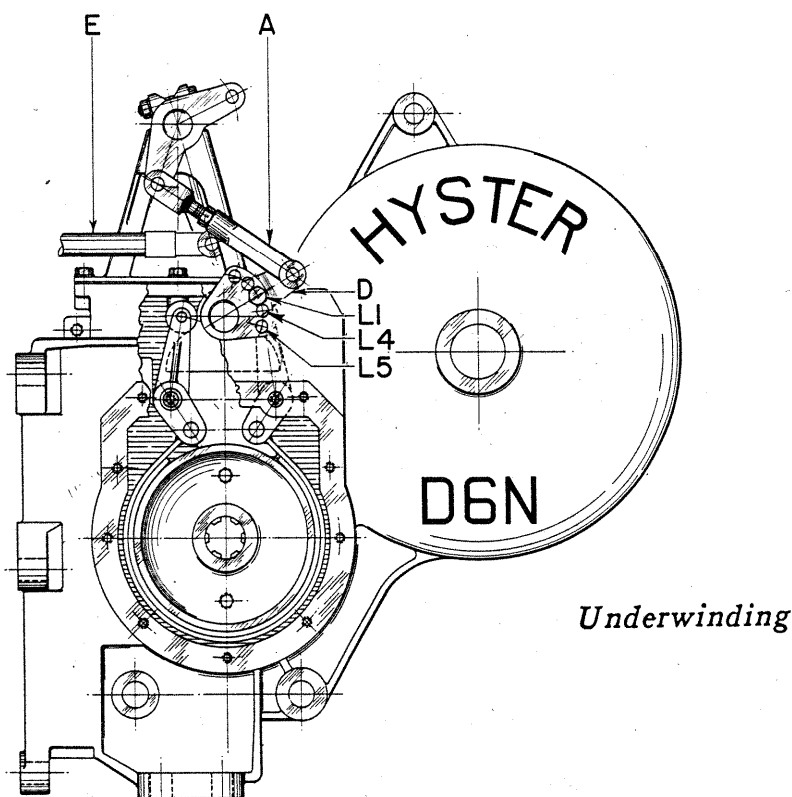
When this adjustment has been exhausted, it will then be necessary to install new brake lining. When new lining is installed, return crank "D" to position "L1" and adjust link "A" to its original length to be ready for further repeated adjustments as needed.

ADDITIONAL brake adjustment is provided in the link "E," the forward end of which is attached to the brake handlever where the adjustment can be made.

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

See that brake links and cranks are always as near right angles as possible when applied to insure maximum travel and easy operation.

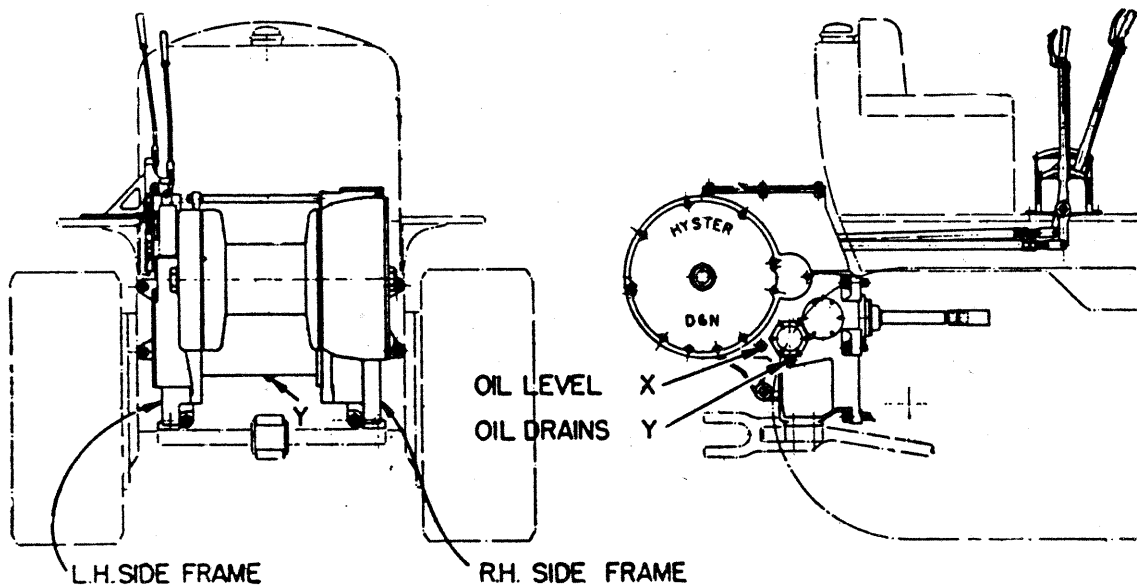
UNDERWINDING BRAKE ADJUSTMENT



Brake wear is taken up in the same manner as explained on page 8, except that the link "A" should be SHORTENED and crank "D" relocated successively in the holes "L4" and "L5." "L1" is the INITIAL location for both overwinding and underwinding drum action.

SERVICING INSTRUCTIONS—Continued

LUBRICATION



All bearings and gears in the hoist unit, including the drum bearings, are lubricated from the oil in the transmission case and final drive compartment. One oil level check plug for both compartments is located on the right-hand side frame at "X" (see drawing above).

The oil should be drained from both the transmission and final drive compartments of a new hoist after about one week's service, and each compartment flushed and refilled with fresh oil.

The oil level in transmission case should be checked weekly, keeping case filled up to the oil level plug "X." The two drain plugs are located at "Y."

Drain oil and flush through drain plugs at "Y" every 60 days (or whenever oil is changed in the tractor transmission case). Refill through filler plug in transmission top cover until oil comes up to level plug. In general, for refilling, use S.A.E. 90 or the same gravity oil as is required in "Caterpillar's" transmission. Approximately $3\frac{1}{2}$ gallons of oil are required for refilling when changing oil.

DRUM SHAFT

The drum shaft bearings are also lubricated from the oil in the gear case. Whenever a new drum is installed in the winch, it is advisable to add about a quart of oil (S.A.E. 90) in the drum barrel in order that the end bearing secures ample lubrication at the beginning of operation.

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

SERVICING INSTRUCTIONS—Continued

The brake and gear shift control shafts (1, page 25) (2 & 6, page 31) turn in special "Oil-lite" bronze bushings requiring only a few drops of oil occasionally.

Handling gear link connections and control lever fulcrum should be oiled once every day with a few drops of oil from an ordinary oil can.

Optional fairlead fittings on roller shafts should be serviced daily.

OPTIONAL AUTOMATIC BRAKE

(Prior to Brake S. N. 84836)

Every 1000 hours of service the brake should be cleaned and repacked with a high melting point (HMP) grease. To prepare the wheel for inspection and servicing, follow the steps given below.

1. The cover plate on the left-hand side frame brake compartment must be removed to gain access to the brake.

2. Pull pins in ends of brake band and remove brake band assembly from winch to provide ample clearance in removing brake wheel. This also makes the installation of wheel assembly after servicing much easier.

3. Remove cotter and flange nut from end of brake shaft.

4. Assembled wheel can then be pulled from shaft. If wheel is tight, an appropriate puller may have to be used.

5. Remove capscrews and lockwashers (4). Brake may now be opened by tapping hub from opposite side. Center (9), assembled with pawl (2) and drag rings (11), will come out with cover (5).

6. Clean all parts thoroughly and repack brake with about $\frac{1}{2}$ pound of grease of a high melting point. Apply carefully to bearings and all rubbing surfaces.

CAUTION: Do not fill brake completely with grease. **NOTE:** Fitting (7) is a vent fitting and is not to be used as a grease fitting.

7. After servicing brake, reassemble carefully as follows; take one of the two drag rings (11) and lay it with flat, finished face up, turn until hole with letter "P" is on top. Insert studs (6) in five holes, one at "P" and two on each side, leaving bottom hole open, tighten studs in drag ring slightly with nuts. Drop pawl (2) over stud in hole with letter "P." Insert center (9) and complete with the other drag ring (11) matching the holes with studs. (The hole with letter "P," face down, will match hole without stud.) Install nuts with lockwashers and tighten all. The pawl is now in the correct position and will match ratchet teeth when assembled in brake wheel. If pawl holes in rings become worn, rings (11) may be reversed, placing the ring that was formerly on top, on the bottom.

Check to see that seal (8) and gasket (3) are in good condition, and carefully assemble cover (5) onto case, fastening securely with capscrews (4).

CAUTION: When replacing oil seals (8), be sure that lips on seals point in, as shown in illustration.

8. Install assembled brake wheel on shaft in winch and lock in place with flange nut and cotter, removed in Instruction 3.

9. Release brake handlever and install brake band over brake wheel, anchoring to pins, removed in Instruction 2.

10. Replace cover removed in Instruction 1.

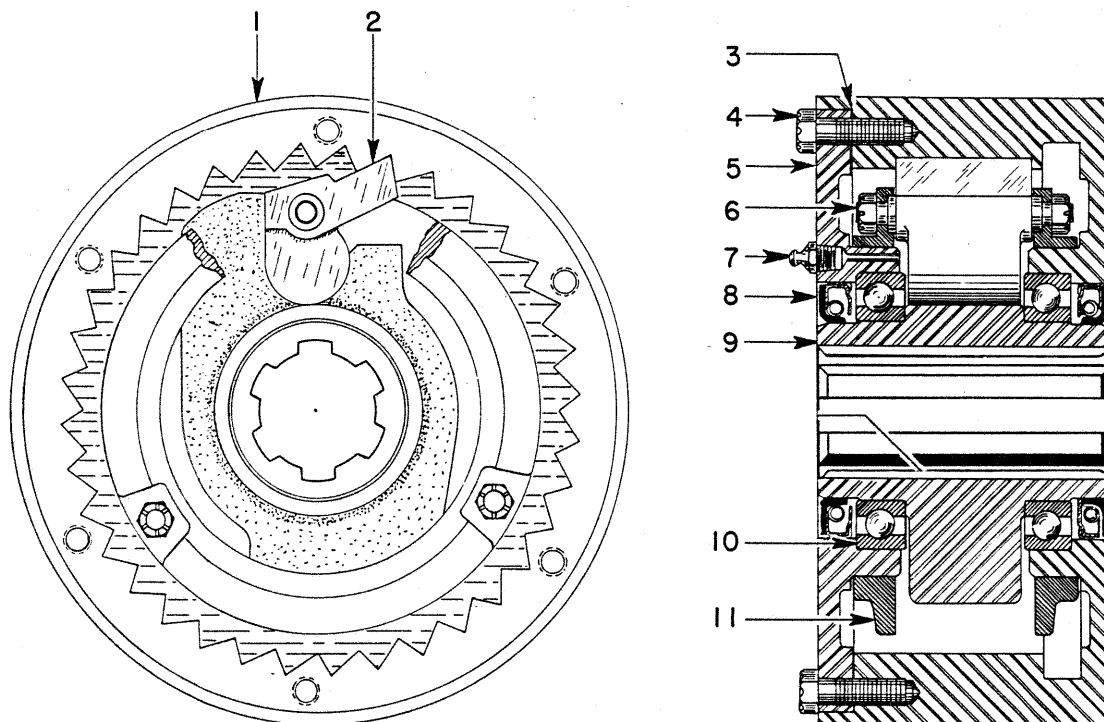
Note: If new drag rings (11) are installed, use instructions on pages 12 and 13.

SERVICING INSTRUCTIONS—Continued

LUBRICATION INSTRUCTIONS

AUTOMATIC BRAKE (Optional Equipment)

Brake S. N. 84836 & up)



Every 1000 hours of service the brake should be cleaned and repacked with a high melting point (HMP) grease. To prepare the wheel for inspection and servicing, follow the steps given below.

1. The large cover plate on the left-hand side frame brake compartment must be removed to gain access to the brake.

2. Pull pins in ends of brake band and remove brake band assembly from winch to provide ample clearance in removing brake wheel. This also makes the installation of wheel assembly after servicing much easier.

3. Remove cotter and flange nut from end of brake shaft.

4. Assembled wheel can then be pulled from shaft. If wheel is tight, an appropriate puller may have to be used.

5. Remove six place bolts (4). Brake may now be opened by tapping hub from opposite side. Hub (9), assembled with pawl (2) and drag rings (11) will come out with cover (5).

6. Clean all parts thoroughly and repack brake with about $\frac{1}{2}$ pound of grease of a high melting point. Apply carefully to bearings and all rubbing surfaces.

CAUTION: Do not fill brake completely with grease. *Note:* Fitting (7) is a vent fitting and is not to be used as a grease fitting.

7. After servicing brake, replace hub (9) assembled with pawl (2) and drag rings (11). Check to see that seal (8) is in good condition.

8. **NOTE:** Install oil seals so that lips of both are pointing in as shown.

9. Clean gasket surfaces making certain that no grease remains. Use new gasket (3). Coat both sides of the gasket with Permatex Gasket cement. Carefully assemble cover (5) onto case. With side cover in place, squeeze a liberal amount of Permatex No. 1 gasket cement into each bolt hole. (Use enough so that when the bolt is tightened the cement will squeeze out all around the head). Fasten securely with six place bolts (4) provided.

10. Install assembled brake wheel on shaft in winch and lock in place with flange nut and cotter removed in Instruction 3.

11. Release brake handlever and install brake band over brake wheel, anchoring with pins removed in Instruction 2.

12. Replace cover removed in Instruction 1.

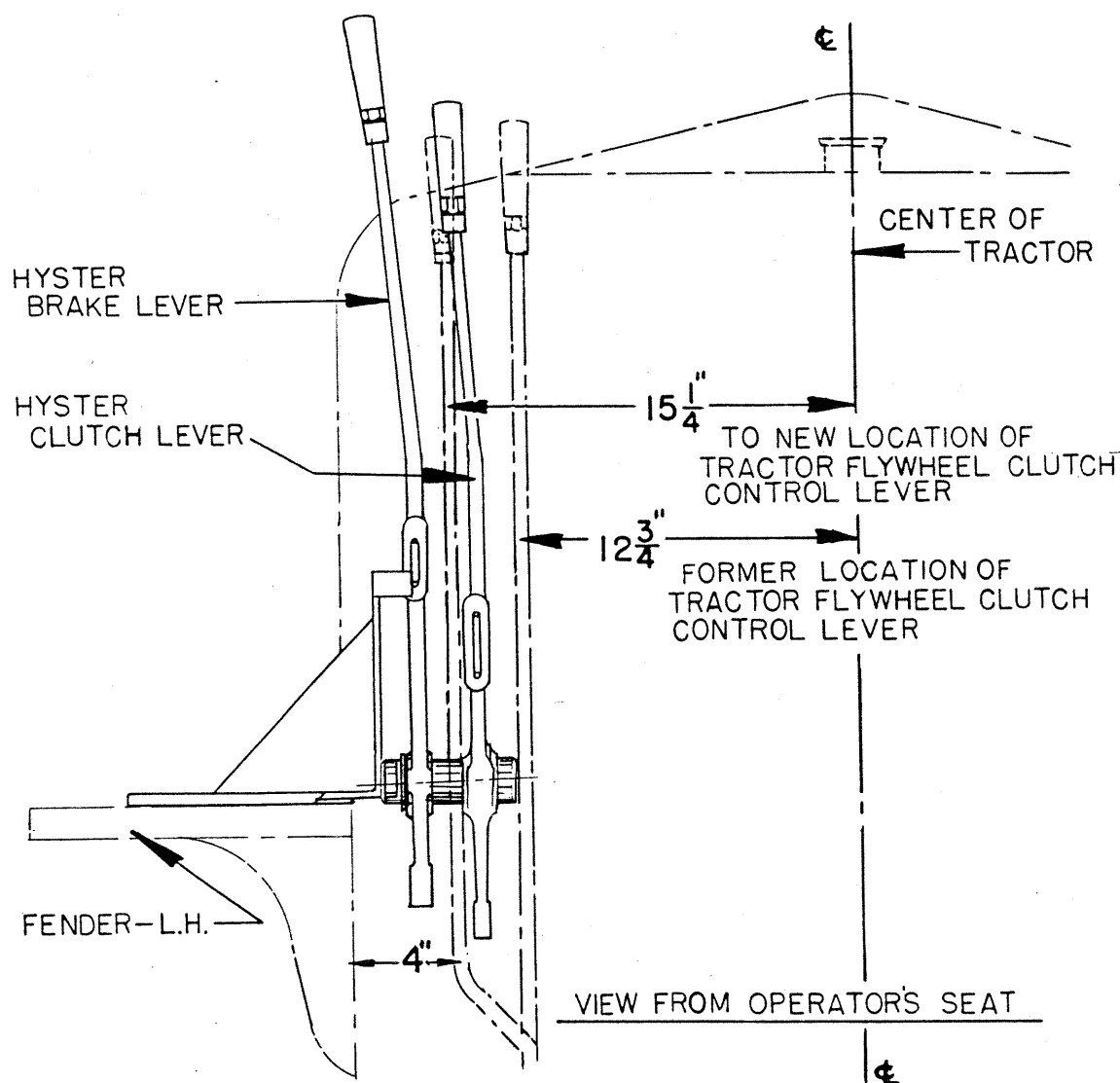
SECTION C

INSTALLATION INSTRUCTIONS

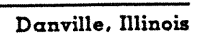
TRACTOR ALTERATIONS

Flywheel Clutch Lever Alteration

Required on "Caterpillar" Tractors; Serial Number 8U2830 and up, and 9U4413 and up



NOTE: If installing Hyster D6N Towing Winch on Caterpillar Tractor with flywheel clutch control lever in new location (15 $\frac{1}{4}$ " from center of tractor or 4" from L. H. fender) shown in phantom lines, heat bend of lever and bend back to former position. Burn new clearance slot in deck plate, 2 $\frac{1}{2}$ " towards tractor center.



INSTALLATION INSTRUCTIONS—Continued

D6N TOWING WINCH INSTALLATION INSTRUCTIONS

There are several steps necessary to PREPARE THE TRACTOR for installing the Hyster D6N Winch on the "Caterpillar" D6 Diesel Tractor.

Refer to page 15.

1. Remove left-hand rear floor plate (Caterpillar No. 7B-9074) and fender rear cross plate (Caterpillar No. 8B-940) from tractor.

Cut out floor plate (Caterpillar No. 7B-9074) 7" x 10" as shown in plan view (upper L. H. corner of illustration) and also cut as shown in elevation.

Cut out rear left-hand fender support brace according to dimensions shown at upper left of rear view (R. H. side of illustration). Cut should be 1" radius and $\frac{1}{2}$ " deep, to clear brake link. Burn piece 5" long out of fender rear cross plate (Caterpillar No. 8B-940) as shown at lower R. H. side of illustration.

2. Reassemble left-hand floor plate and fender rear cross plate on tractor.

3. Remove tool box—lay out and drill $\frac{9}{16}$ " holes in left-hand fender as shown on drawing for control lever support.

4. Install two 1" studs in rear face of tractor transmission case at position marked "A."

5. Remove drawbar brackets from tractor.

6. Check rear face of tractor transmission case for high spots, particularly welds near the mounting studs where the winch pads are to make contact, grind or file level to insure proper fit.

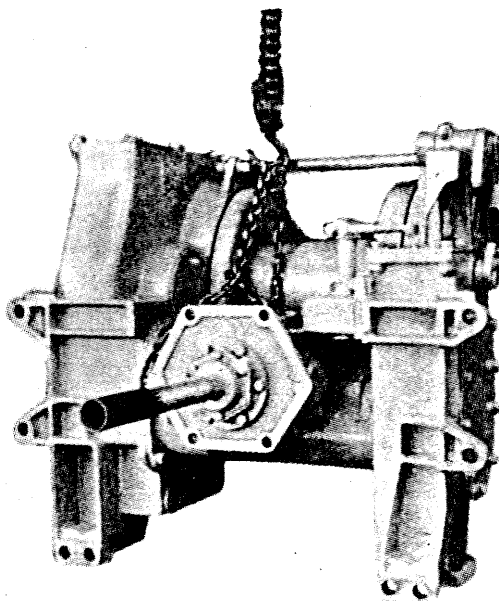
7. Remove power take-off cover from transmission case and remove two studs at "B." Replace stud "D" with Hyster stud No. 91878 ($\frac{3}{4}$ x $2\frac{1}{4}$).

8. See that spline coupling (1, page 23) is properly mounted on hoist power take-off shaft and securely locked with snap rings.

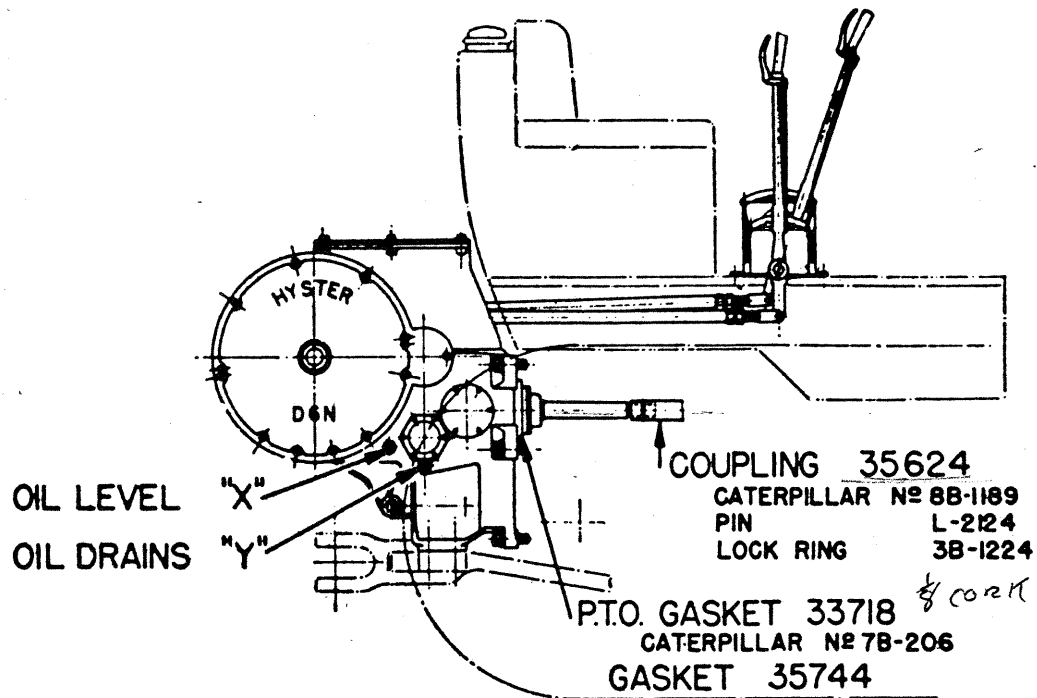
9. Swing Hyster winch unit into place back of tractor by means of one-ton block and take special care that it hangs square with tractor face.

10. Wipe all winch-to-tractor contact surfaces clean of dirt.

11. Each Hyster winch is supplied with $\frac{1}{8}$ " cork gasket and a $\frac{1}{16}$ " Garlock gasket (6, page 21) to be mounted over studs at tractor power take-off opening. Ordinarily the $\frac{1}{8}$ " cork gasket is all that is required. Add $\frac{1}{16}$ " Garlock gasket only if required to make joint oil-tight.



INSTALLATION INSTRUCTIONS—Continued



12. Swing winch towards tractor. Turn tractor power take-off shaft to line up splines on power take-off coupling with winch power take-off shaft splines. Be careful to see that shaft does not injure gasket.

13. When splines have entered, line up holes in winch side frames to match studs, place lockwashers and nuts on studs holding side frames and power take-off flange against tractor, and draw up tightly.

14. Place brake and gear shift rods under seat through openings burned, as explained in item 1, and connect with their respective cranks on the winch.

15. Mount control unit on left-hand fender, and connect brake link (1, page 33) to brake crank (1, page 31). Note: Offset part of link is connected to handlever.

16. Connect clutch link (2, page 33) to crank (12, page 25).

17. Set the clutch handlever (shorter) in slot of quadrant bar (4, page 32) and check to see that the sliding gear (33, page 25) is in neutral position when the ball (15) is in the center groove of the shifter rod (18). Adjust length of link (2, page 32), attach to clutch handlever and tighten jam nut on link.

18. Put brake handlever (longer) in fully released position and check brake crank movement on winch—forward and back—and set halfway between the extremes. Adjust length of brake link (1). Connect to handlever and tighten jam nut on link. Try brake in the applied position, when brake handlever should be a little past center on the quadrant. Care should be taken to keep the brake band free of the drum when in the release position to prevent "drag" and excessive heating. About $1/32$ " clearance is required.

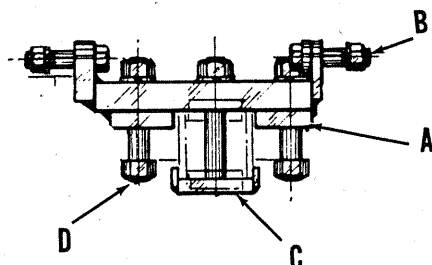
19. Check all connections and see that all nuts, lockwashers and cotters are in place.

INSTALLATION INSTRUCTIONS—Continued

20. Check oil level, and refill if needed.
21. Secure tractor drawbar plate to machined pads on winch side frames with bolts taken from the discarded tractor drawbar braces.
22. Check brake link connection for overwinding or underwinding.
(See pages 8 and 9.)
23. Check to see that clutch and brake levers operate properly.

OPTIONAL DRAWBAR CLAMP FOR ARCH SERVICE

(See page 40 for list of parts.)



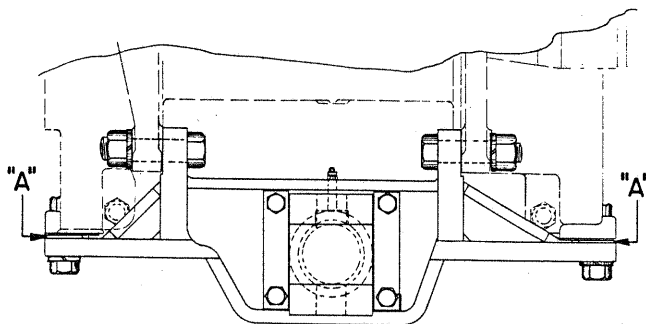
If winch is to be used with a logging arch, install drawbar clamp to give the needed support to the "Caterpillar" drawbar plate. The clamp attaches to the side frames with four bolts and nuts and to the tractor drawbar plate with two heavy bolts.

INSTALLATION

1. Burn off latch supports for "Caterpillar" drawbar locking pin; if necessary, grind or chip off high spots.
2. If winch is not on tractor, it will be advantageous to assemble upper drawbar clamp "A" before mounting winch on tractor.
3. If winch is on tractor, remove four bolts that hold drawbar plate to winch, and let drawbar with drawbar plate hang down to give clearance so that upper clamp "A" can be twisted into position. Slip four bolts "B" through clamp holes into corresponding holes in frame; use lockwashers under nuts and tighten.
4. Replace previously removed drawbar bolts. Install lower clamp "C" and two bolts "D" and tighten all bolts securely.

OPTIONAL BUILT-IN DRAWBAR FOR ARCH SERVICE

(See page 41 for list of parts.)

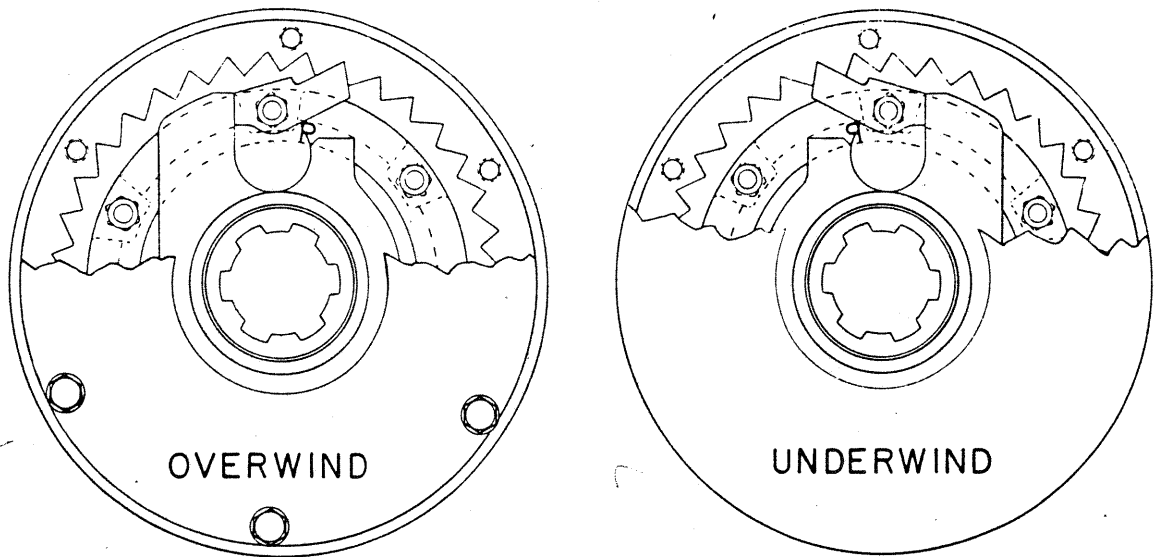


INSTALLATION INSTRUCTIONS—Continued

1. To install Hyster built-in drawbar, "Caterpillar" drawbar and drawbar plate must be removed and discarded.
2. Fasten built-in drawbar as shown. If necessary, shim at "A" as required.

OPTIONAL AUTOMATIC BRAKE

(See page 42 for list of parts)



AUTOMATIC BRAKE (Optional Equipment)

If the winch is equipped with an automatic brake, it will be noted that one side is marked "overwinding" and the other side marked "underwinding."

When cable is to be used "overwinding" the side of brake which is marked overwinding should face outwardly. When cable is to be used "underwinding" the automatic brake should be removed and re-installed in the reverse position with the side marked "underwinding" face outward.

Instructions covering brake linkage and adjustments on regular brake apply also to the special automatic brake.

OPTIONAL FAIRLEAD

(See page 34 for installation.)

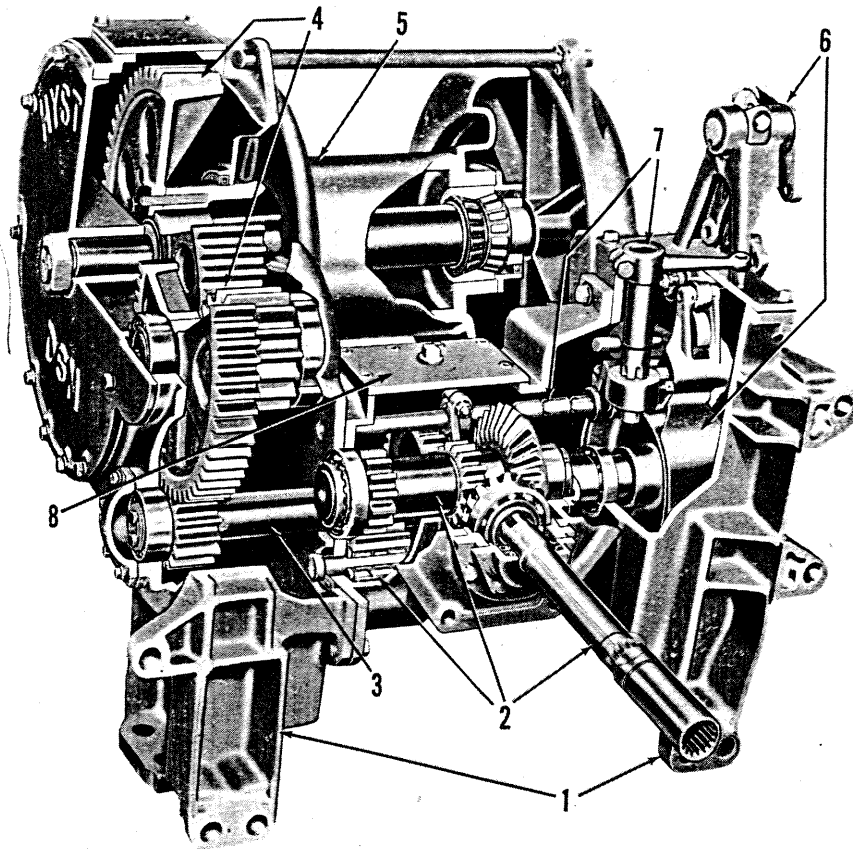
SECTION D

LIST OF PARTS AND ILLUSTRATIONS

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

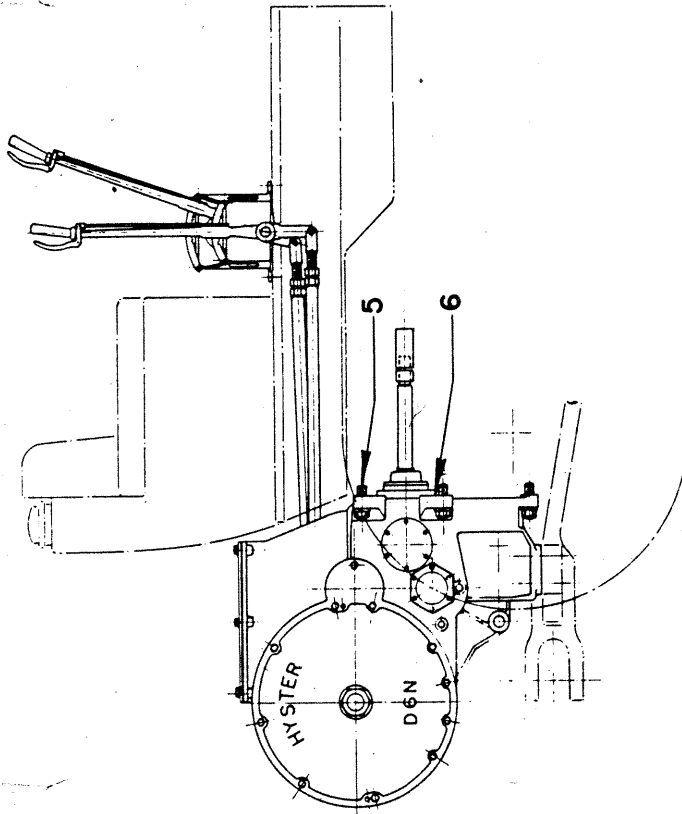
The numerical index in the back of the book lists all parts in numerical sequence and shows the page number, on which they are illustrated.

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.



- | | | |
|---|-------|--|
| 1 | ..... | Side Frames (see page 21) |
| 2 | ..... | Power Take-off and Idler Group (see page 22) |
| 3 | ..... | Brake Shaft Group (see page 24) |
| 4 | ..... | Gear Drive Group (see page 26) |
| 5 | ..... | Drum Unit (see page 29) |
| 6 | ..... | Brake and Linkage (see page 30) |
| 7 | ..... | Shifter Group (see page 24) |
| 8 | ..... | Transmission Case and Cover (see page 24) |

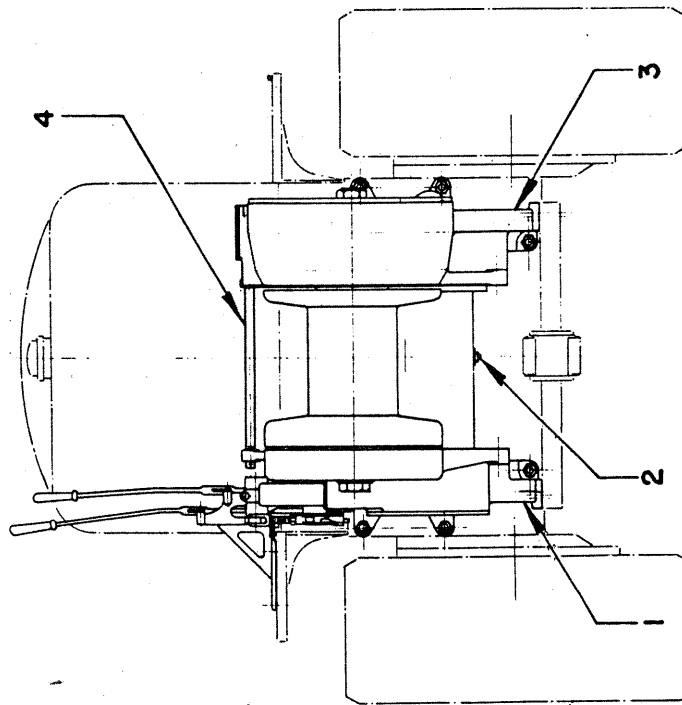
GENERAL ARRANGEMENT



Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
5	35680	Stud	2
	15016	Nut—Hex, 1" NF	2
	15166	Lockwasher—1"	2
6	35744	Gasket (4 holes)	1
	33718	Gasket (6 holes)	1

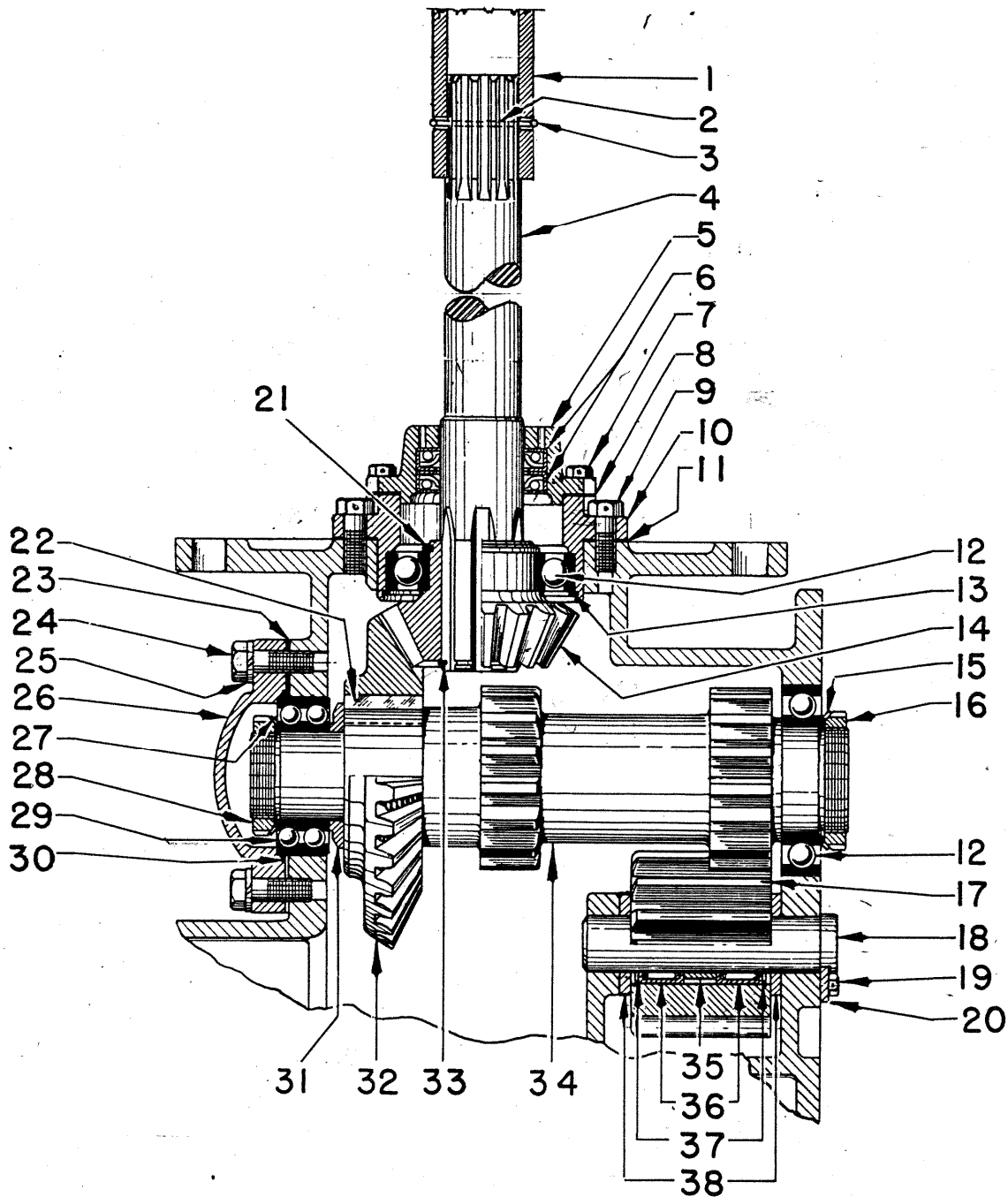
Not illustrated:

91878	Stud ($\frac{3}{4}$ x $2\frac{1}{4}$) See Instruction 7, page 16	1
92002A	Gasket Set (Complete Set of Gaskets)	1
94369	Pin—Drawbar	1
15273	Cotter— $\frac{3}{8}$ x $2\frac{1}{2}$	1



Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	35582	Frame—L. H. side	1
	16823	Capscrew— $\frac{5}{8}$ NF x $1\frac{1}{2}$	8
	15160	Lockwasher— $\frac{5}{8}$	8
	15302	Pipe Plug— $\frac{3}{8}$ (Brake Compartment Drain)	1
		Plug—Drain	1
2	35503	Frame—R. H. side	1
3	35583	Gasket (Transmission to Frame)	1
	16804	Capscrew— $\frac{5}{8}$ NF x $1\frac{1}{4}$	9
	15160	Lockwasher— $\frac{5}{8}$	9
	35662	Link—Tie Rod	1
	15265	Cotter— $\frac{5}{16}$ x 2	2

POWER TAKE-OFF



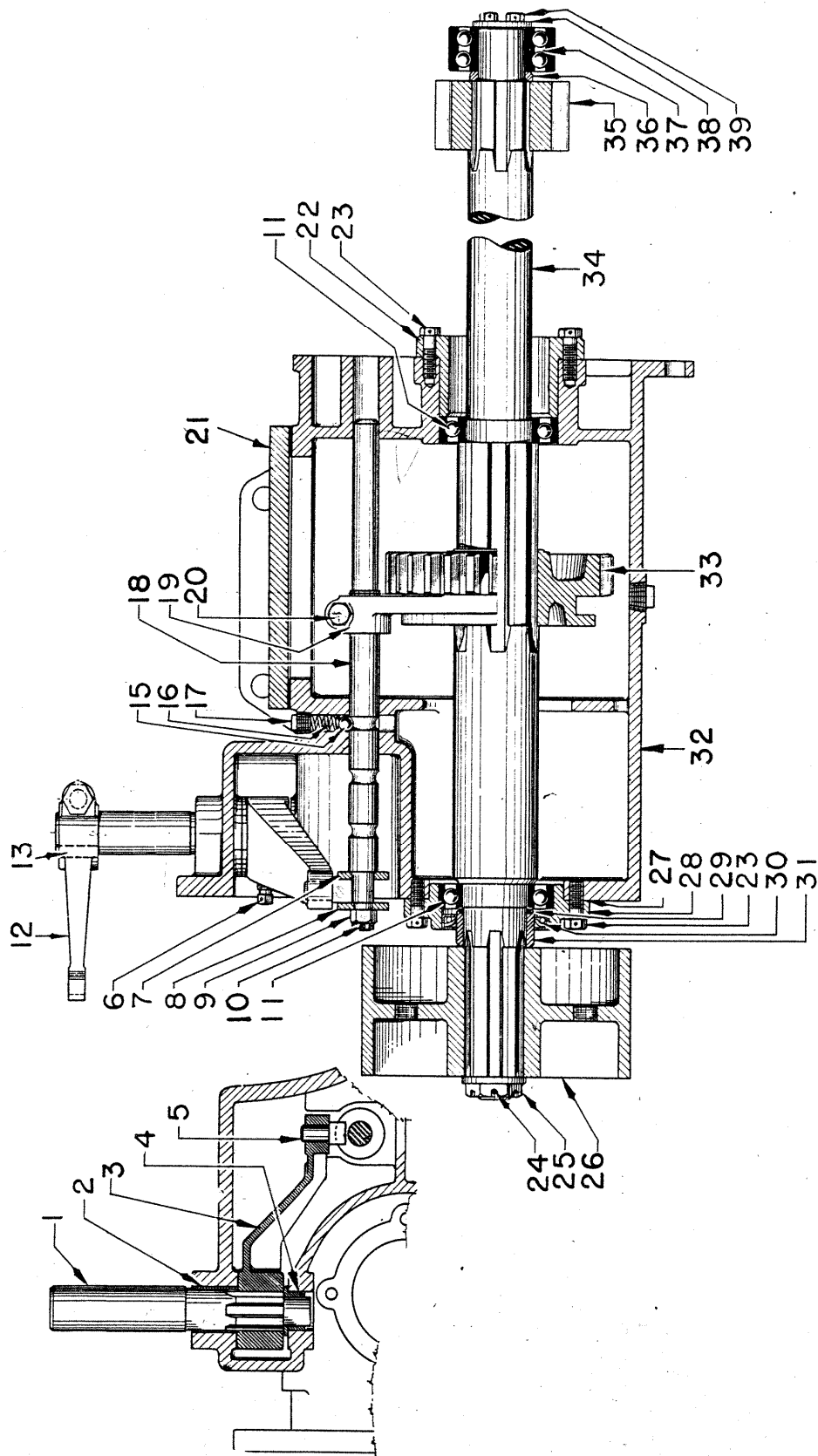
POWER TAKE-OFF

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	35624	Coupling (Caterpillar 8B-1189)	1
2	9563	Pin (Caterpillar L-2124)	1
3	9554	Lockring (Caterpillar 3B-1224)	1
4	35572	Shaft—P.T.O.	1
5	35570	Carrier	1
6	9141	Oil Seal	2
7	30836	Capscrew	6
8	35576	Gasket	1
9	9718	Capscrew—Drilled Head	6
10	35571-B	Retainer	1
11	9843	Shims	1
12	43212	Bearing	2
13	35573	Snap Ring	1
*14	35572	Gear—Bevel (17 teeth)	1
15	32966	Lockwasher	1
16	32967	Locknut	1
17	35618	Gear—Reverse Idler (15 teeth)	1
18	35621	Shaft <i>NLA</i>	1
9	798	Capscrew	2
20	35622	Keeper	1
21	35574	Snap Ring	1
22	35625	Key	1
23	35602	Shims	1
24	16807	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{2}$	4
25	15158	Lockwasher— $\frac{1}{2}$	4
26	35601	Retainer	1
27	6036	Lockwasher	1
28	6037	Locknut	1
29	45210MG	Bearing <i>use 124699</i>	1
30	A21049	Snap Ring	1
31	35593	Washer	1
32	35592	Gear—Bevel (30 teeth)	1
33	35575	Snap Ring	1
34	35594	Gear Shaft	1
35	35619	Spacer	1
36	(30956)	Bearing <i>59633</i>	2
37	33990	Snap Ring <i>46102</i>	2
38	35620	Washer <i>NLA</i>	2

*Included in assembly under which listed.

*MIP AMERICA BOUGHT ALL STOCK (7) 10/3/80

BRAKE SHAFT GROUP



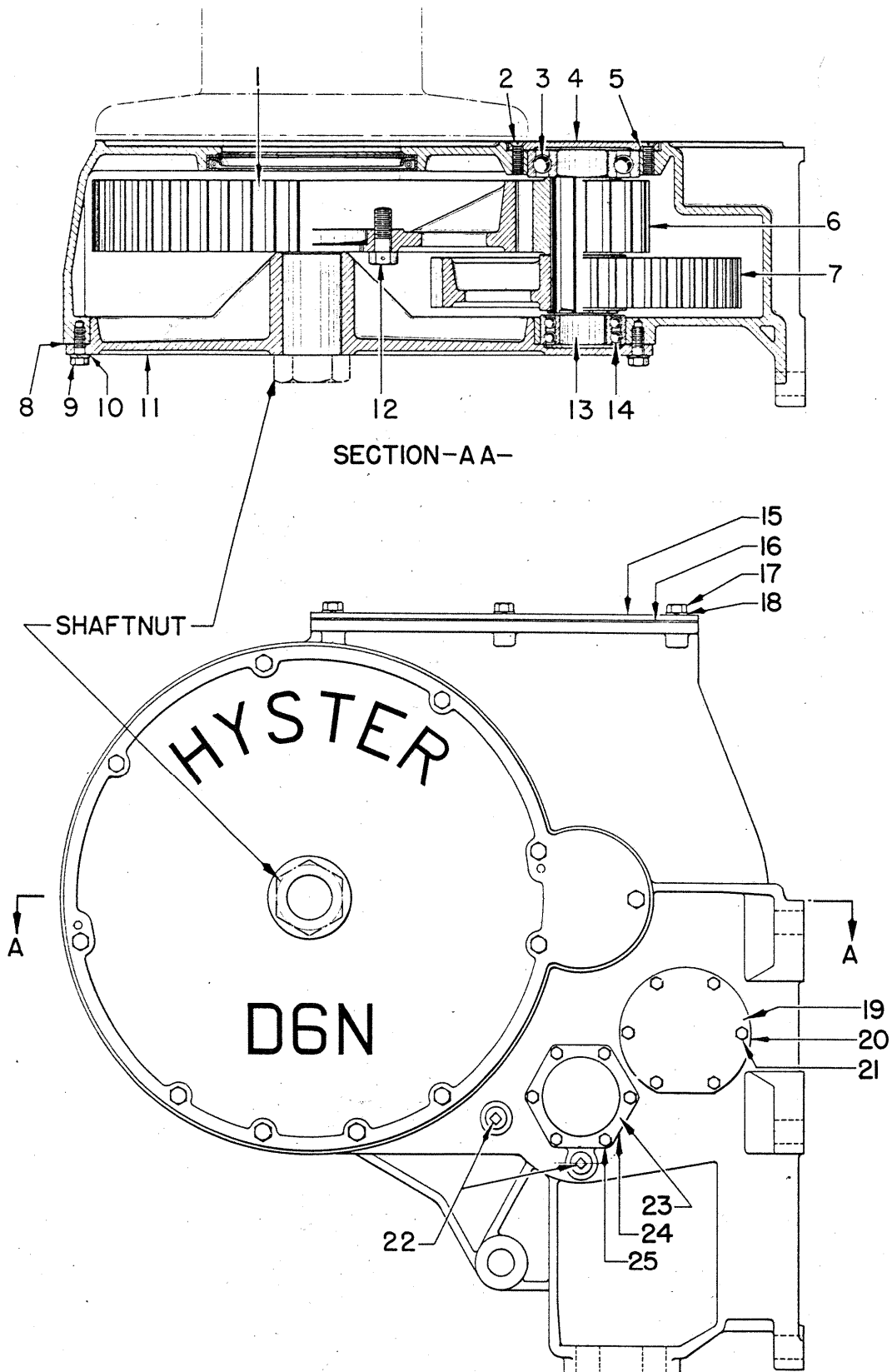
BRAKE SHAFT GROUP

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	35600	Shaft	1
2	35641	Bushing	1
3	35597	Crank	1
4	35640	Bushing	1
5	35599	Shoe	1
6	35598	Screw	1
7	35590	Washer	1
8	35591	Washer	1
9	37474	Nut	1
10	15224	Cotter— $\frac{1}{8} \times 1\frac{1}{4}$	1
11	43244L	Bearing 1.246.5	2
12	6646AC	Crank Assembly	1
13	*16821	Capscrew— $\frac{1}{2}$ NF x $2\frac{1}{4}$	1
15	*15008	Nut—Hex, $\frac{1}{2}$ NF	1
16	*15158	Lockwasher— $\frac{1}{2}$	1
17	9418	Key	1
18	6348	Ball	1
19	59820	Spring	1
20	15314	Plug—Pipe, $\frac{3}{8}$ (countersunk)	1
21	35589	Rod—Shifter	1
22	35588A	Fork—Shifter	1
23	*35885	Screw	1
24	*21340	Nut	1
25	*15213	Cotter— $3/32 \times 1$	1
26	35595B	Cover—Top (last used on 4729)	1
27	35595	Cover—Top (first used on Serial No. 5003)	1
28	32411	Plug	1
29	35596B	Gasket (last used on Serial No. 4729)	1
30	35596	Gasket (first used on Serial No. 5003)	1
31	34795	Capscrew	12
32	34796	Wrench	1
22	35613	Retainer	1
23	33794	Capscrew	12
24	15229	Cotter— $\frac{1}{8} \times 2\frac{1}{2}$	1
25	7021	Nut	1
26	35609B	Wheel—Brake	1
27	35605	Gasket	1
28	35604	Retainer	1
29	35607	Ring—Packing	1
30	35608	Oil Seal	1
31	35606	Spacer	1
32	35581B	Housing—Transmission (last used on Ser. No. 4729)	1
33	35581AC	Housing—Transmission (first used on Ser. No. 5003)	1
34	35612	Gear—Siding	1
35	35603	Shaft—Brake	1
36	35614	Gear (16 teeth) Standard	1
37	35614B	Gear (13 teeth) Optional	1
38	35614C	Gear (18 teeth) Optional	1
39	35615	Washer	1
40	45308M	Bearing	1
41	35616	Retainer	1
42	36101	Capscrew	2

*Included in assembly under which listed.

†Optional Gear Sets (includes Item 7, page 27) available to increase speed or increase power, as desired.

GEAR DRIVE

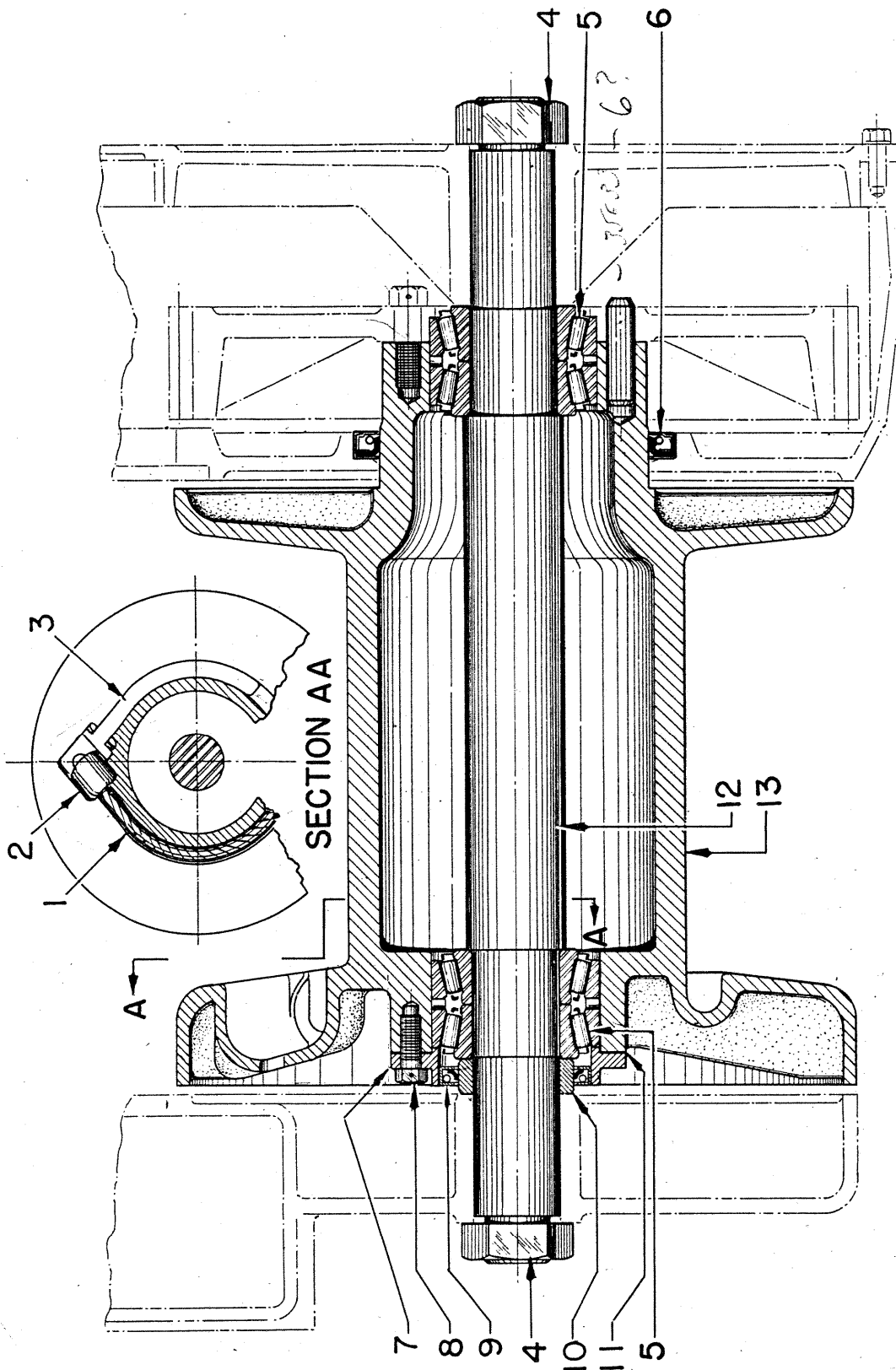


GEAR DRIVE

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	35584	Gear—Drum (59 teeth)	1
2	35644	Screws—Flat Head	6
3	41312L	Bearing	1
4	35628	Retainer	1
4	35628	Retainer	1
5	35629	Gasket	1
6	35610	Gear—Drum (16 teeth)	1
7	{ 35587	Gear (55 teeth) Standard	1
	{ 35587B	Gear (58 teeth) Optional	1
	{ 35587C	Gear (53 teeth) Optional	1
8	35635	Gasket	1
9	37562	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{4}$	11
10	15515	Lockwasher— $\frac{1}{2}$	11
11	35586	Cover—Drum Gear	1
12	21159	Capscrew	4
13	35627	Shaft—Gear	1
14	45211M	Bearing	1
15	35636	Cover—Top	1
15	35637	Gasket	1
17	15512	Capscrew— $\frac{1}{2}$ NC x $\frac{3}{4}$	6
18	15158	Lockwasher— $\frac{1}{2}$	6
19	35650	Cover	1
20	35651	Gasket	1
21	{ 16811	Capscrew— $\frac{3}{8}$ NF x $\frac{3}{4}$	6
	{ 15156	Lockwasher— $\frac{3}{8}$	6
22	15304	Pipe Plug, $\frac{3}{4}$ Standard (Square Head)	2
23	35652	Cover—Bearing	1
24	35653	Gasket	1
25	{ 15508	Capscrew— $\frac{3}{8}$ NF x 1	6
	{ 15156	Lockwasher— $\frac{3}{8}$	6

†Optional Gear Sets (includes item 35, page 25) available to increase speed or increase power, as desired.

DRUM UNIT

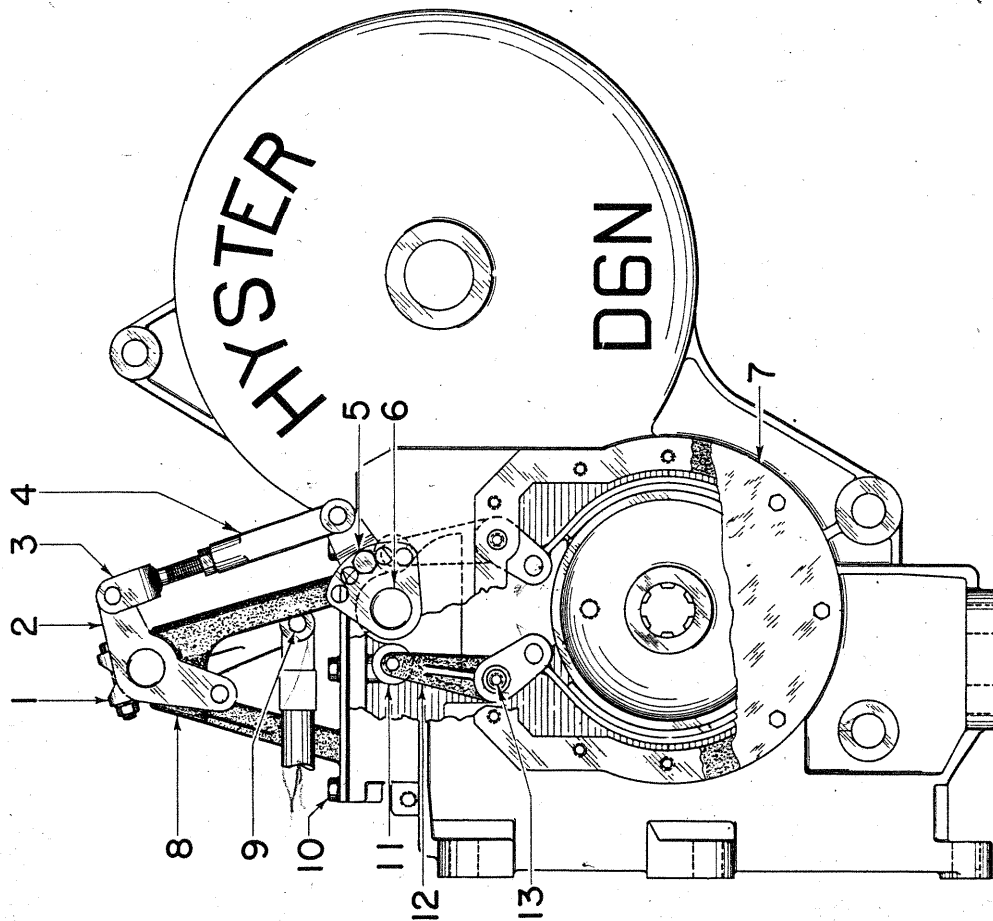
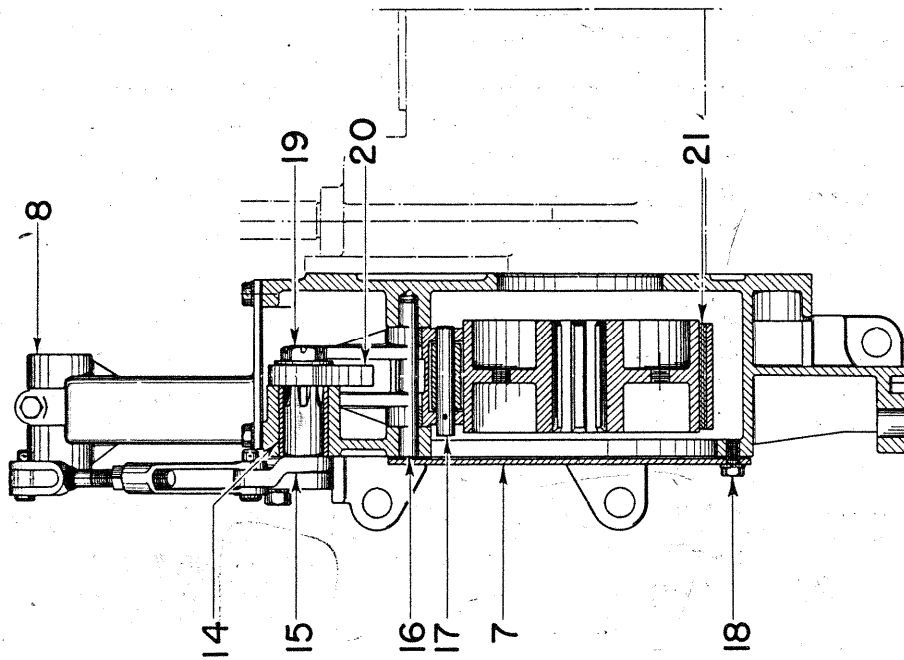


DRUM UNIT

No. Ref.	Part No. Hyster	NAME OF PART	Reqd. Qty.
1	36781	Plug—Cable Ferrule (Underwind)	1
2	7323	Ferrule—Cable <i>7/8"</i>	1
3	36780	Plug—Cable Ferrule (Overwind)	1
4	35639	Nut	2
5	35638	Bearing	2
6	35645	Seal	1
7	35630	Retainer	1
8	33728	Capscrew	6
9	31970	Seal	1
10	35632	Spacer	1
11	35631	Gasket	1
12	35634	Shaft	1
13	35585A	Drum	1

35 *30712* for 1"
7622 for 3/4"

BRAKE AND LINKAGE

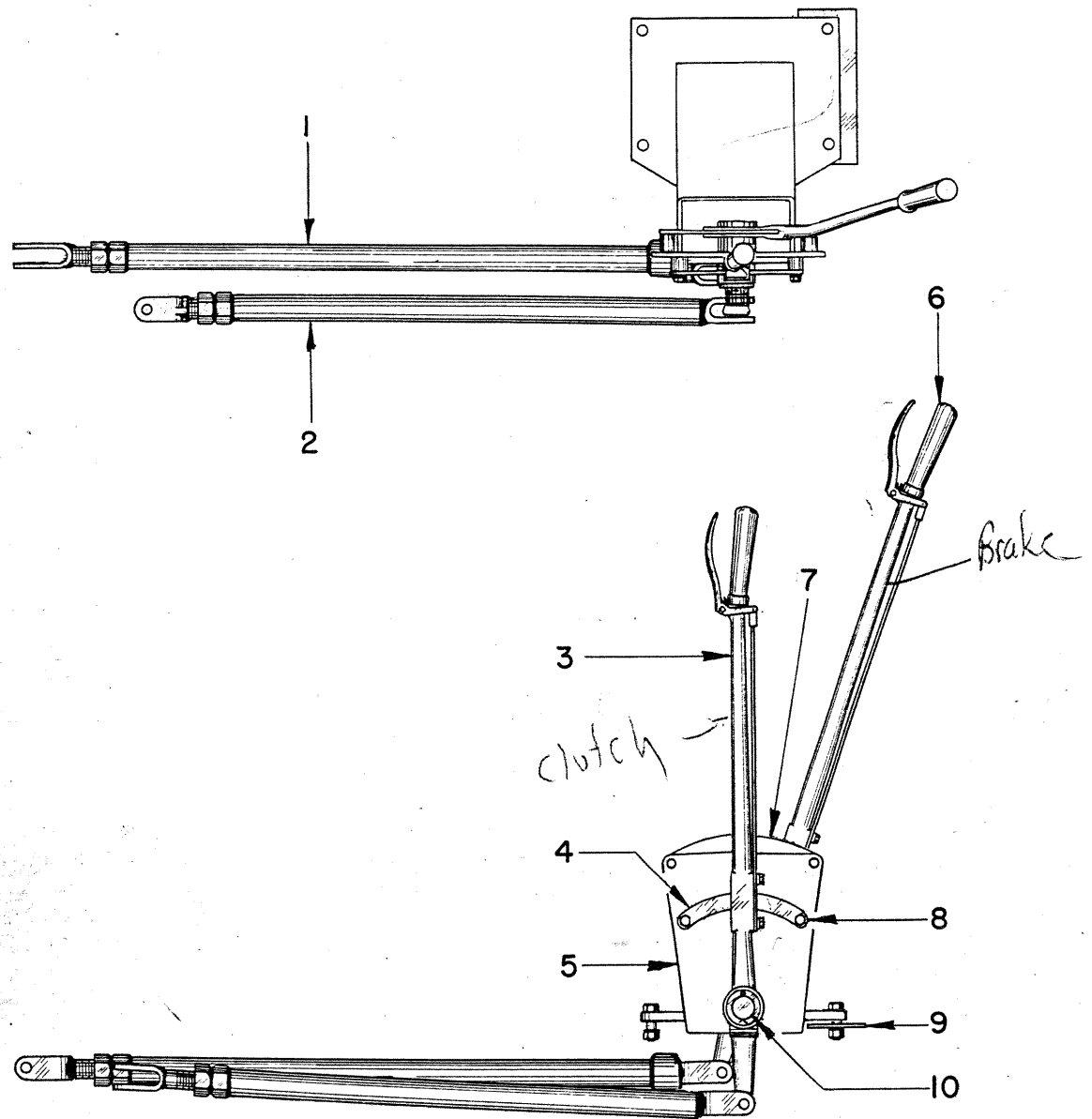


BRAKE AND LINKAGE

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	35670A	Crank Assembly	1
	*15503	Capscrew— $\frac{1}{2}$ NF x $2\frac{3}{4}$	1
	*15008	Nut—Hex, $\frac{1}{2}$ NF	6
	*15158	Lockwasher— $\frac{1}{2}$	1
2	35669A	Crank Assembly—Brake	1
	35671A	Link Assembly	1
3	*41562A	Rod End (Male End)	1
	*15030	Nut—Hex Jam, $\frac{5}{8}$ NF	1
	* 158	Rod End	1
4	* 159	Pin—Rod End	2
	*15223	Cotter— $\frac{1}{8}$ x 1	2
5	16804	Capscrew— $\frac{5}{8}$ NF x $1\frac{1}{4}$	1
	15160	Lockwasher— $\frac{5}{8}$	1
6	35659A	Shaft	1
7	35648	Cover	1
	35649	Gasket	1
	35654A	Bracket	1
8	21420	Plug—Breather (not illustrated)	1
	35668	Bushing	2
	35665	Gasket	1
9	.....	Pin and Brake Link (see page 32)	1
10	16829	Capscrew— $\frac{1}{2}$ NC x 1	6
	15158	Lockwasher— $\frac{1}{2}$	6
	33753	Roller	2
11	32230	Pin	2
	15225	Cotter— $\frac{1}{8}$ x $1\frac{1}{2}$	2
12	32895A	Crank Assembly	2
13	*40577	Bushing	4
14	35664	Bushing	1
15	35661	Crank	1
16	35658	Shaft	2
17	32894	Pin	2
	15227	Cotter— $\frac{1}{8}$ x 2	2
18	16829	Capscrew— $\frac{1}{2}$ NC x 1	10
	15158	Lockwasher— $\frac{1}{2}$	10
	9130	Nut	1
19	15237	Cotter— $\frac{5}{32}$ x 2	1
	33758	Washer	1
20	33756	Cam	1
21	35656AC	Brake Band complete— No longer Avail.	1
	*59808AB	Lining and Rivet Set (for Non-current Winches,	
	96300-A	owner to redrill band if required)	1

*Included in assembly under which listed.

HANDLEVERS AND LINKS

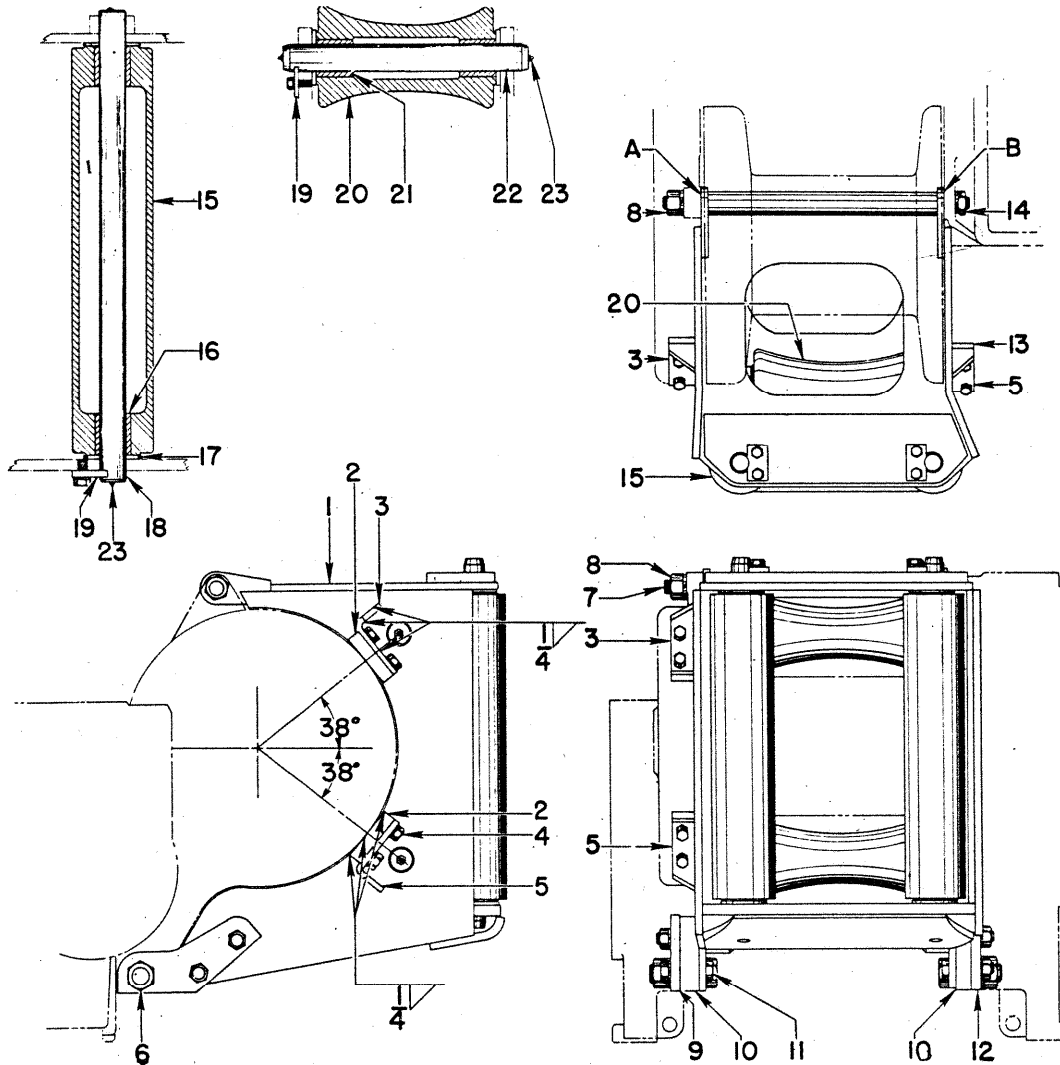


HANDLEVERS AND LINKS GROUP — No. 46568AB

No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	35672AB	Link Assembly—Brake	1
	*33771A	Rod End	1
	* 159	Pin—Rod End	2
	*15016	Nut—Hex, 1" NF	1
	*15223	Cotter— $\frac{1}{8}$ x 1	2
2	92399A	Link Assembly—Clutch (first used on Serial No. 90681) ..	1
	35673AB	Link Assembly—Clutch (last used on Serial No. 90680) ..	1
	*33771A	Rod End	1
	* 159	Pin—Rod End	2
	*15016	Nut—Hex, 1" NF	1
3	*15223	Cotter— $\frac{1}{8}$ x 1	2
	92396A	Handlever—Clutch (first used on Serial No. 90681) ..	1
	35678A	Handlever—Clutch (last used on Serial No. 90680) ..	1
	*33273	Pawl and Rod	1
	*32693	Rod End	1
4	*32694	Latch—Grip	1
	*32695	Spring—Grip Latch	1
	*37476	Screw—Grip Latch	2
	*15052	Nut—Hex, No. 10 NC	2
	32657	Bar—Quadrant	1
5	35674	Quadrant Bracket—Quadrant	1
	16807	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{2}$	4
	15008	Nut—Hex, $\frac{1}{2}$ NF	4
	15158	Lockwasher— $\frac{1}{2}$	4
6	92559A	Handlever—Brake (Prior to S. N. 90681 include one Ratchet Bar No. 92564)	1
	*92572	Pawl and Rod (first used on Serial No. 90681)	1
	*32691	Pawl and Rod (last used on Serial No. 90680)	1
	*32693	Rod End	1
	*32694	Latch—Grip	1
	*32695	Spring—Grip Latch	1
	*37476	Screw—Grip Latch	2
	*15052	Nut—Hex, No. 10 NC	2
7	*32692	Screw—Pawl	2
	92564	Bar—Ratchet ($\frac{3}{8}$ " thick)	1
8	35675	Bar—Ratchet ($\frac{1}{4}$ " thick)	1
	15518	Capscrew— $\frac{3}{8}$ NF x $\frac{7}{8}$	4
9	15156	Lockwasher— $\frac{3}{8}$	4
	35679	Plate—Brace (required for lightweight fenders only) ..	1
10	36092	Pin } First used on	1
	15246	Cotter } Serial No. 65283	1
	35676	Pin }	1
	30988	Washer } Last used on Serial No. 65282	1
	15227	Cotter— $\frac{1}{8}$ x 2 }	1

included in assembly under which listed.

FAIRLEAD ASSEMBLY — 91762AC



Installation Instructions

Fairlead frame should be considered as part of the winch unit to which it was attached. It can easily be removed and reassembled on the same winch, but without additional alteration, cannot be mounted on a different winch.

1. Install fairlead on towing winch, holding it in place with link (7).
2. Bolt tie plate (9) to L. H. and tie plate (12) to R. H. side frames of winch, using capscrews (6) provided.
3. Place spacers (10) between tie plates (9 and 12) and fairlead side, insert capscrews (11) and bolt tightly.
4. Bolt angles (3 and 5) to their matching tie plates (2 and 13), place in approximate positions as shown, and weld. *Note:* angles are welded to the fairlead frame only and matching tie plates (2 and 13) are welded to the winch only. Weld angles on three sides with $\frac{1}{4}$ " fillet weld. Weld tie plates (2 and 13) on three sides as shown, 38° above and 38° below centerline of winch drum shaft.

Note 1: When mounting fairlead on winch equipped with either built-in drawbar or reinforcer, mount tie plates (9 and 12) on $1\frac{1}{4}$ x 5 bolts used by both units.

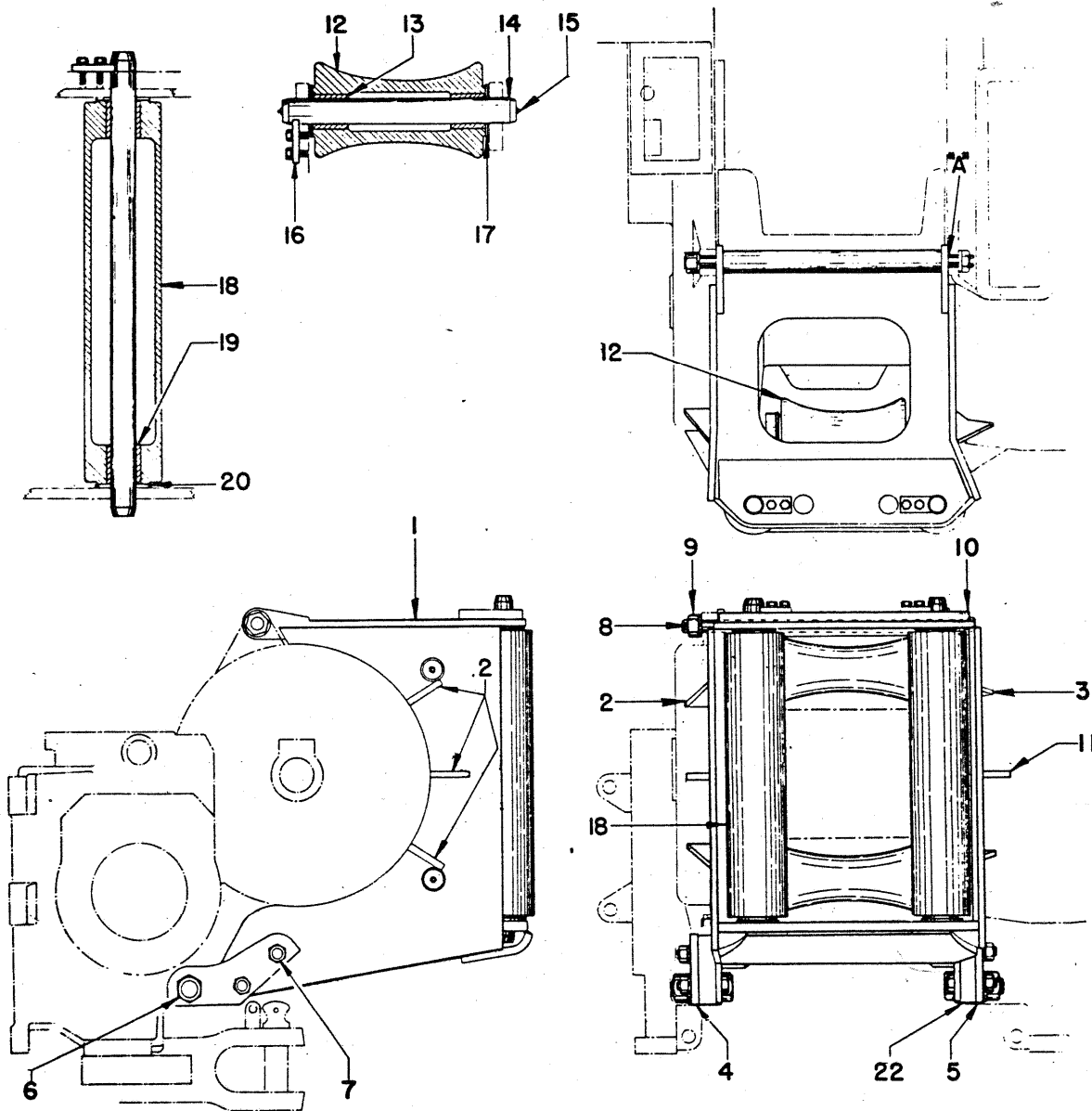
Note 2: If necessary, grind at "A" and "B" to fit fairlead between winch side frames.

FAIRLEAD ASSEMBLY — 91762AC

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	92200A	Frame—Fairlead	1
2	93188	Plate—Tie	2
3	93186	Angle	2
4	{ 12447	Capscrew— $\frac{5}{8}$ UNF x 1"	8
	{ 15160	Lockwasher— $\frac{5}{8}$	8
5	93187	Angle	2
	{ 18207	Capscrew— $1\frac{1}{4}$ NF x 4	2
6	{ 15168	Lockwasher— $1\frac{1}{4}$	2
	{ 15018	Nut—Hex, $1\frac{1}{4}$ NF	2
7	91782	Link	1
8	{ 15016	Nut—Hex, 1" NF	1
	{ 15166	Lockwasher—1" NF	1
9	92424	Plate—Tie, L. H.	1
10	92426	Plate—Spacer	2
	{ 15609	Capscrew— $\frac{3}{4}$ NF x $3\frac{1}{4}$	4
11	{ 15162	Lockwasher— $\frac{3}{4}$	4
	{ 15012	Nut—Hex, $\frac{3}{4}$ NF	4
12	92425	Plate—Tie, R. H.	1
3	93181A	Plate—Tie	2
	{ 15036	Nut—Jam, 1" NF	1
	{ 15166	Lockwasher—1"	1
15	59576A	Roller Assembly—Vertical	2
16	*35726	Bushing	4
17	35843	Wearing Washer	2
18	91775	Shaft—Vertical	2
	{ 93166	Keeper	4
19	{ 16820	Capscrew— $\frac{1}{2}$ NF x 1	8
	{ 15158	Lockwasher— $\frac{1}{2}$	8
20	92212A	Roller Assembly—Horizontal	2
21	*59419	Bushing	4
22	92213	Shaft Horizontal	2
23	16001	Grease Fitting— $\frac{1}{8}$ PT	8

*Included in assembly under which listed.

FAIRLEAD ASSEMBLY



Installation

1. Install fairlead assembly on towing winch (between frames at "A"), holding it in place with link (8).
2. Bolt tie plate (4) to the L. H. side and tie plate (5) to the R. H. side with capscrews (6).
3. Install spacers (22) between fairlead frame and tie plates (4) and (5) as shown.
4. Fit gussets (2 and 3) tightly against towing winch in positions shown, and weld to fairlead frame (1) only.

Note 1: Without additional fitting, fairlead frame (after welding gussets 2 and 3) is not interchangeable with other D6N towing winches.

Note 2: Rolls (18) may be mounted in either set of holes, giving 2" or 9½" space between rolls, as desired.

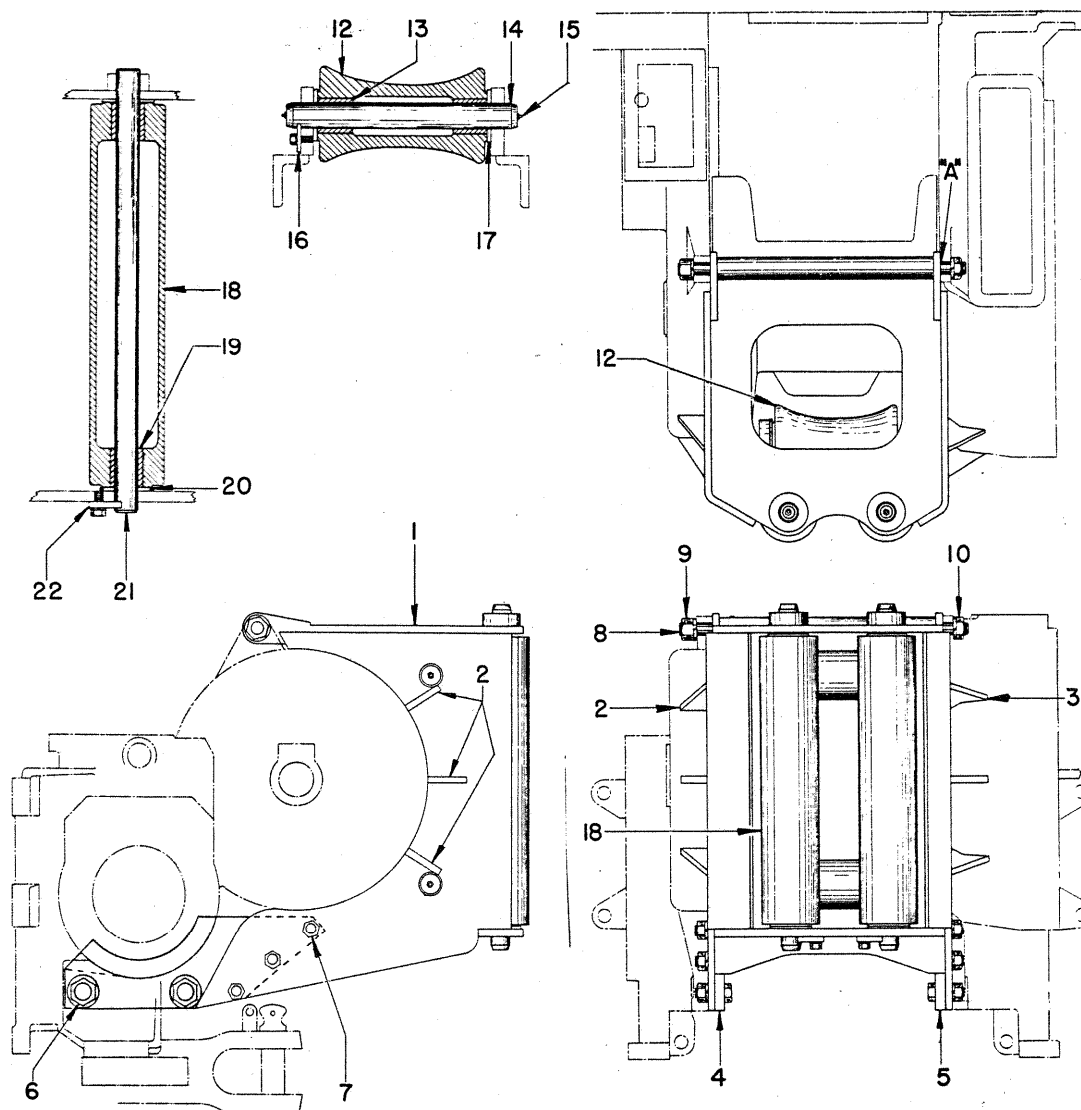
Note 3: When mounting fairlead on winch equipped with either built-in drawbar or reinforcer, mount tie plates (4) and (5) on 1¼ x 5 bolts used by both units.

FAIRLEAD ASSEMBLY — 91762AB

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	92200A	Frame—Fairlead	1
2	91783	Plate—Gusset	3
3	91784	Plate—Gusset	2
4	92424	Plate—Tie, L. H.	1
5	92425	Plate—Tie, R. H.	1
6	{ 18207	Capscrew— $1\frac{1}{4}$ NF x4	2
	{ 15018	Nut—Hex, $1\frac{1}{4}$ NF	2
	{ 15168	Lockwasher— $1\frac{1}{4}$	2
7	{ 15609	Capscrew— $\frac{3}{4}$ NF x $3\frac{1}{4}$	4
	{ 15012	Nut—Hex, $\frac{3}{4}$ NF	4
	{ 15162	Lockwasher— $\frac{1}{2}$	4
8	91782	Link	1
9	{ 15016	Nut—Hex, 1" NF	1
	{ 15166	Lockwasher—1"	1
10	{ 15036	Nut—Hex Jam, 1" NF	1
	{ 15166	Lockwasher—1"	1
11	92171	Plate—Gusset	1
12	92212A	Roller Assembly—Horizontal	2
13	*59419	Bushing	4
14	92213	Shaft—Horizontal	2
15	16001	Grease Fitting	8
16	{ 92214	Keeper	4
	{ 31414	Capscrew— $\frac{3}{8}$ NF x 1, Drilled Head	8
	{ 15156	Lockwasher— $\frac{3}{8}$	8
17	92720	Washer	4
18	59576A	Roller Assembly—Vertical	2
19	*35726	Bushing	4
20	35843	Washer	4
21	91775	Shaft—Vertical	2
22	92426	Plate—Spacer	2

*Included in assembly under which listed.

FAIRLEAD ASSEMBLY



INSTALLATION

1. If necessary, grind at "A," to fit fairlead frame (1) between winch side frames.

2. Install fairlead assembly on towing winch, holding it in place with link (8).

3. Bolt tie plate (4) to the L. H. side and tie plate (5) to the R. H. side with capscrews (6).

4. With fairlead frame as a template, drill $25/32$ dia. holes in tie plates (4 and 5).

5. Install capscrews (7) and draw up tightly.

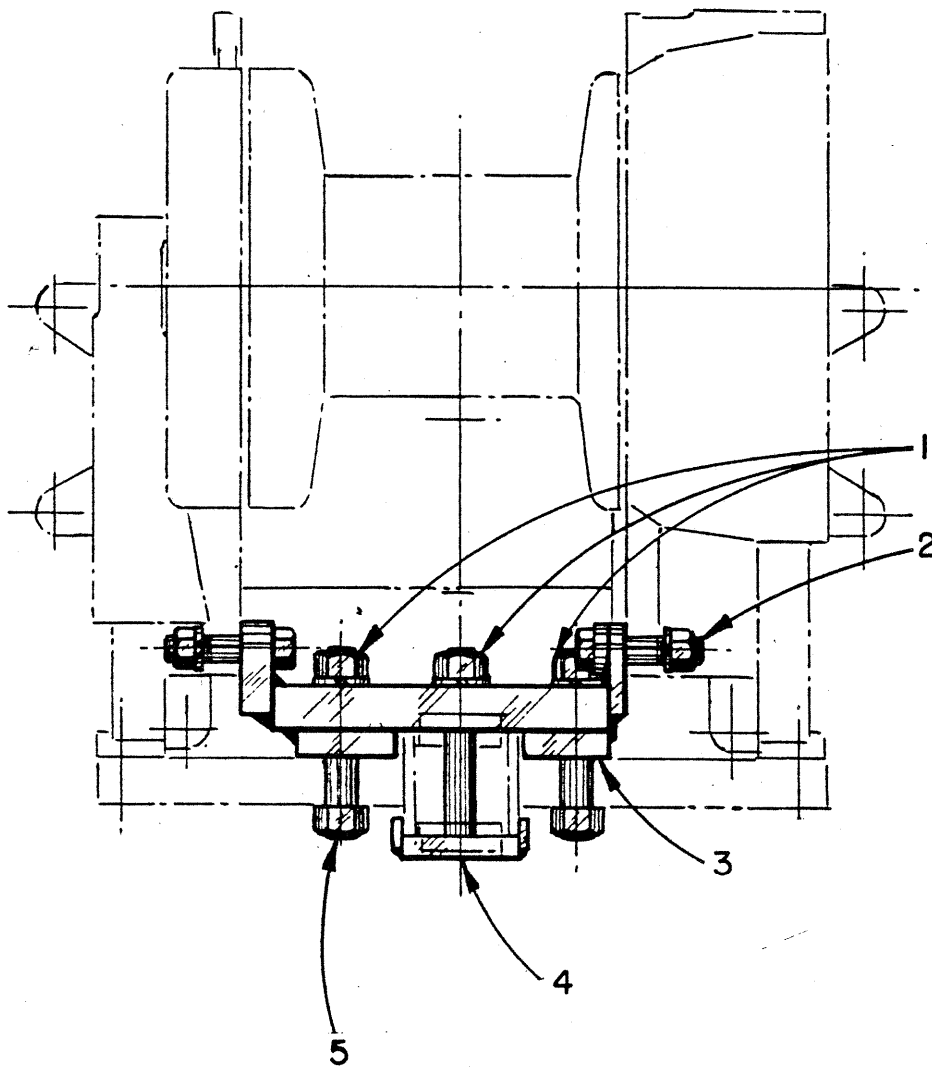
6. Fit gussets (2 and 3) tightly against towing winch in positions shown and weld to fairlead frame (1) only.

Note: Without additional fitting, fairlead frame (after welding gussets 2 and 3) is not interchangeable with other D6N towing winches.

NON-CURRENT FAIRLEAD ASSEMBLY — No. 91762A
7" Space Between Vertical Rolls
(Optional)

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	91763A	Frame—Fairlead	1
2	91783	Plate—Gusset	3
3	91784	Plate—Gusset	3
4	91780	Plate—Tie, L. H.	1
5	91781	Plate—Tie, R. H.	1
6	{ 15615	Capscrew— $1\frac{1}{4}$ NF x $3\frac{1}{2}$	4
	{ 15018	Nut—Hex, $1\frac{1}{4}$ NF	4
	{ 15168	Lockwasher— $1\frac{1}{4}$	4
7	{ 12482	Capscrew— $\frac{3}{4}$ NF x $2\frac{1}{4}$	6
	{ 15012	Nut—Hex, $\frac{3}{4}$ NF	6
	{ 15162	Lockwasher— $\frac{1}{2}$	6
8	91782	Link	1
9	{ 15016	Nut—Hex, 1" NF	1
	{ 15166	Lockwasher—1"	1
10	{ 15036	Nut—Hex Jam, 1" NF	1
	{ 15166	Lockwasher—1"	1
12	91776A	Roller Assembly—Horizontal	2
13	*59419	Bushing	4
14	91778	haft—Horizontal	2
15	16001	Grease Fitting	8
16	{ 91779	Keeper	2
	{ 15508	Capscrew— $\frac{3}{8}$ NF x 1	2
	{ 15156	Lockwasher— $\frac{3}{8}$	2
17	15186	Washer— $1\frac{3}{8}$ Heavy	4
18	59576A	Roller Assembly—Vertical	2
19	*35726	Bushing	4
20	35843	Washer	2
21	91775	Shaft—Vertical	2
22	{ 34687	Keeper	2
	{ 16820	Capscrew— $\frac{1}{2}$ NF x 1	2
	{ 15158	Lockwasher— $\frac{1}{2}$	2

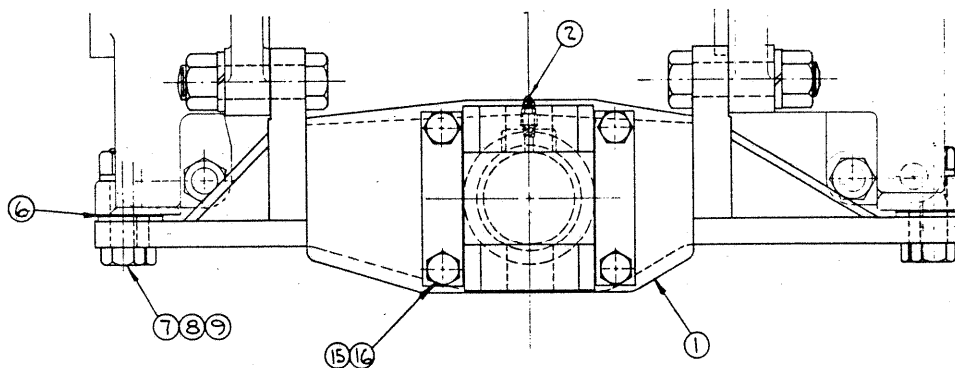
DRAWBAR CLAMP — No. 35866A (Optional)



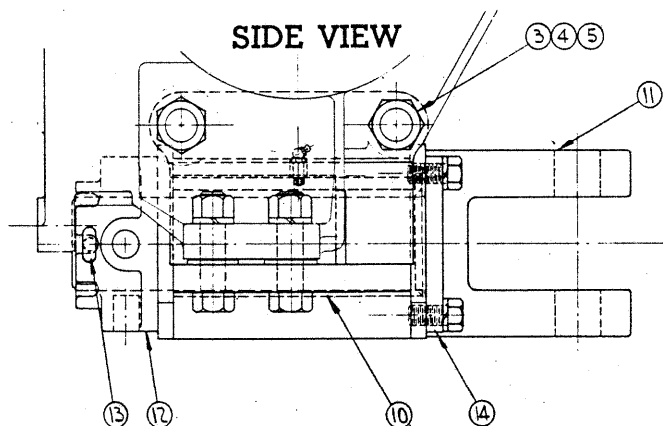
Ref. No.	Hyster Part No.	NAME OF PART	Qty. Req'd.
1	{ 5792B	Nut—Hex, 1½ NF	3
	{ 15170	Lockwasher—1½	3
	{ 37445	Capscrew	4
2	{ 15018	Nut—Hex, 1¼	4
	{ 15168	Lockwasher—1¼	4
3	35864A	Clamp—Upper	1
4	35865A	Clamp—Lower	1
	{ 35868A	Capscrew	2
5	{ 5792B	Nut—Hex, 1½ NF	2
	{ 15170	Lockwasher—1½	2

BUILT-IN DRAWBAR — No. 91563AB (Optional)

REAR VIEW

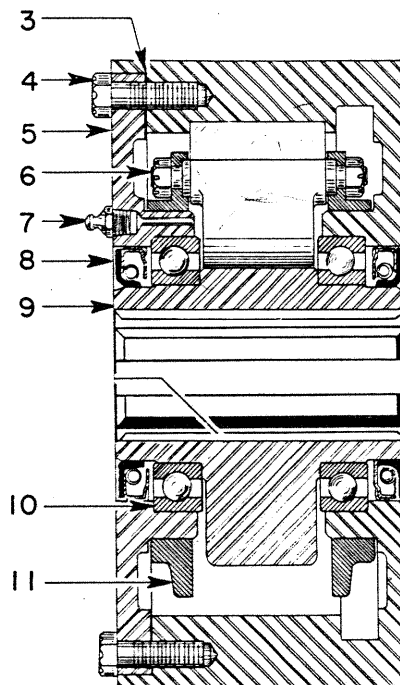
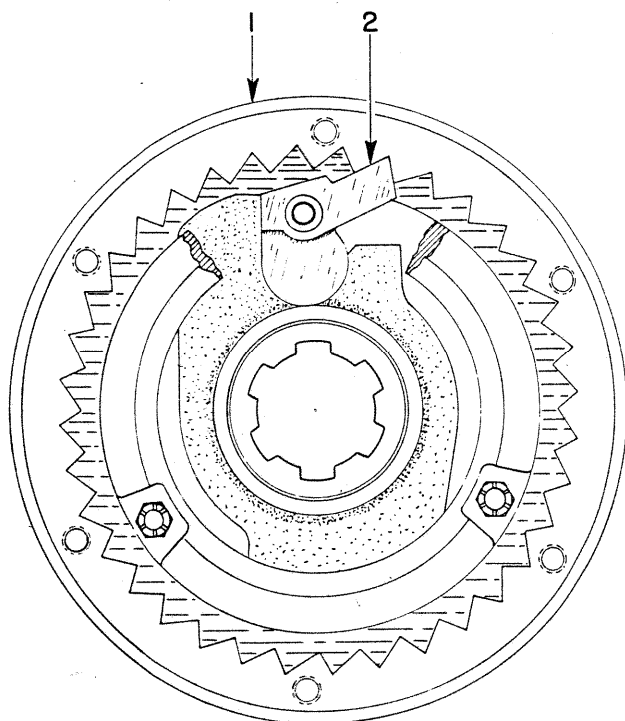


SIDE VIEW



Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	91550AB	Bracket—Drawbar	1
2	16018	Grease Fitting ($\frac{1}{8}$ x $67\frac{1}{2}^\circ$)	1
3	12478	Capscrew— $1\frac{1}{4}$ NF x 5	4
4	15018	Nut—Hex, $1\frac{1}{4}$ NF	4
5	15168	Lockwasher— $1\frac{1}{4}$	4
6	91562	Shim Set	1
7	15655	Capscrew—1" NF x $3\frac{3}{4}$	4
8	15016	Nut—Hex, 1" NF	4
9	15166	Lockwasher—1"	4
10	91191A	Bushing—Drawbar	1
11	33787	Drawbar	1
12	33618	Nut—Drawbar	1
13	15295	Cotter— $\frac{1}{2}$ x 5	1
14	46462	Plate—Link	2
5	15521	Capscrew— $\frac{3}{4}$ NF x $1\frac{1}{2}$	4
16	15162	Lockwasher— $\frac{3}{4}$	4

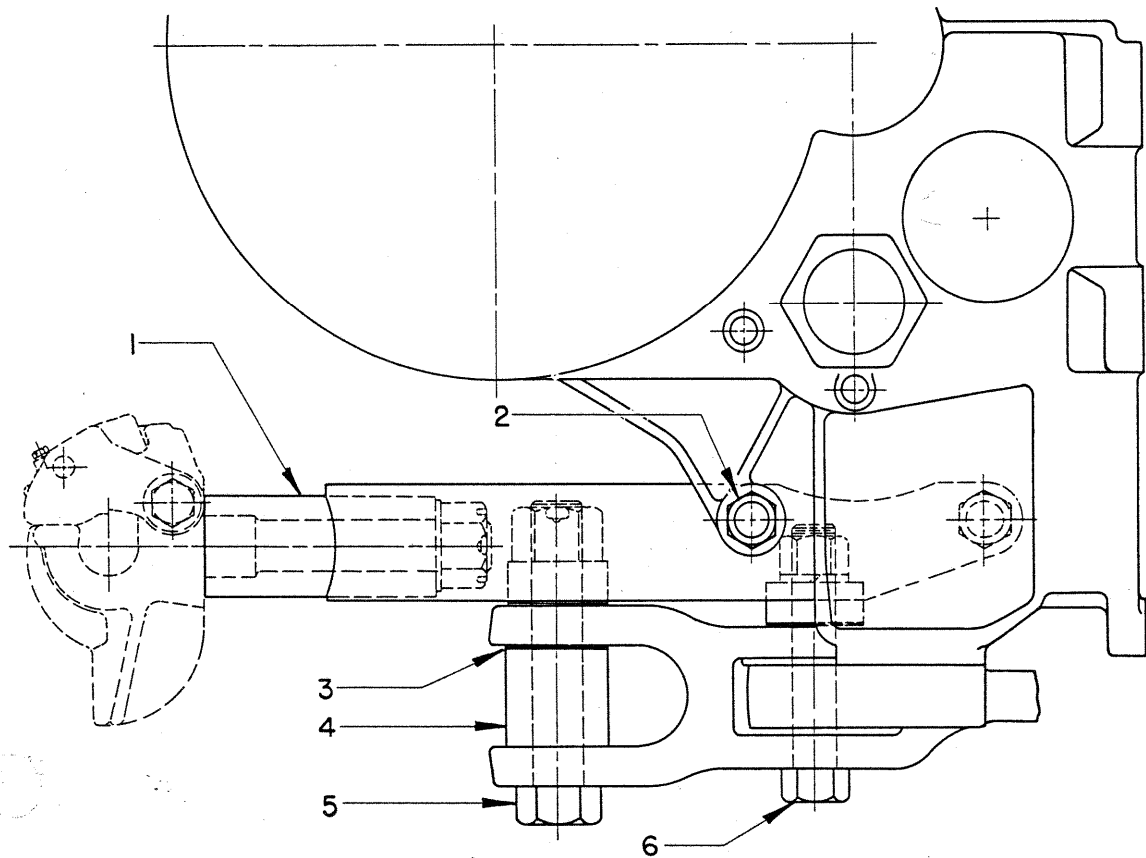
AUTOMATIC BRAKE — No. 59385AC (Optional)



Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	✓ 59389A	Wheel—Brake	1
2	✓ 59393	Pawl	1
3	✓ 59396	Gasket	1
4	✓ 92048	Place Bolt— $\frac{3}{8}$ NF x $1\frac{1}{4}$	6
5	- 59387	Cover	1
6	✓ 92946	Link (First used on Brake	3
	✓ 92947	Locknut (Serial No. 84836	6
7	✓ 46187	Plug—Vent, Special (Do not use as Grease Fitting) ..	1
8	✓ 59395	Oil Seal	2
9	✓ 59390	Hub	1
10	✓ 44313	Bearing	2
11	✓ 92945	Ring—Drag (First used on Brake Serial No. 84836) ..	2
	58700	Grease—5 lb. can (High Melting Point)	1

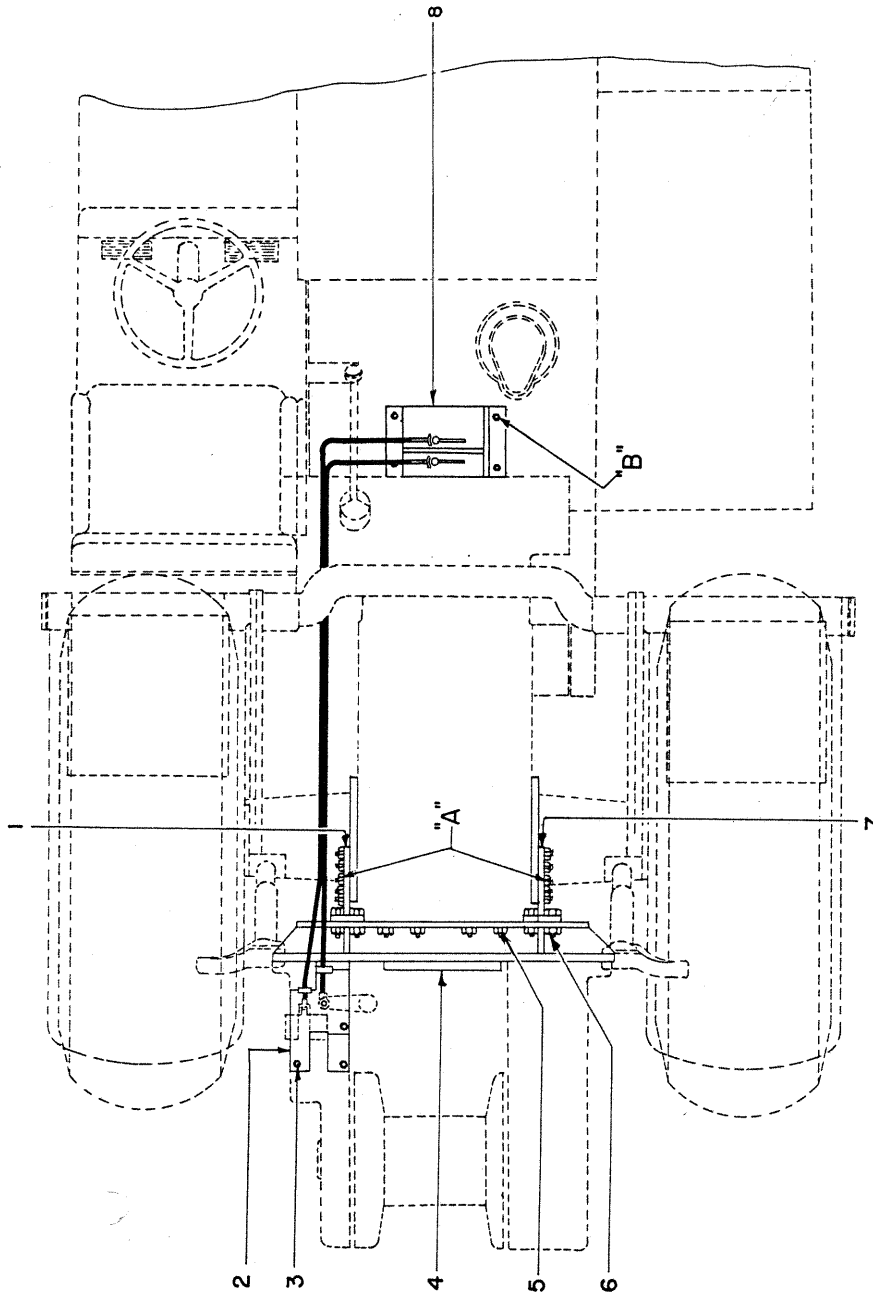
†Prior to Brake Serial No. 84836, replace Drag Rings or Links with two 92945 Drag Rings, three 92946 Links and six 92947 Locknuts.

PINTLE HOOK BRACKET — No. 36847A (Optional)



Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	36848	Bracket—Pintle Hook	1
2	{ 12478	Capscrew—1 $\frac{1}{4}$ NF x 5	4
	{ 15018	Nut—Hex, 1 $\frac{1}{4}$ NF	4
	{ 15168	Lockwasher—1 $\frac{1}{4}$	4
3	36244	Shim Set	3
4	36246	Spacer	1
5	{ 36265A	Bolt	1
	{ 2618	Nut—Slotted	1
	{ 15275	Cotter— $\frac{3}{8}$ x 4	1
6	{ 36479A	Bolt	1
	{ 15072	Nut—Hex, 1 $\frac{1}{2}$ NC	1
	{ 15170	Lockwasher—1 $\frac{1}{2}$	1

ADAPTER ASSEMBLY
To Adapt a D6N Towing Winch to DW10 or DW15 Tractor
GENERAL ARRANGEMENT



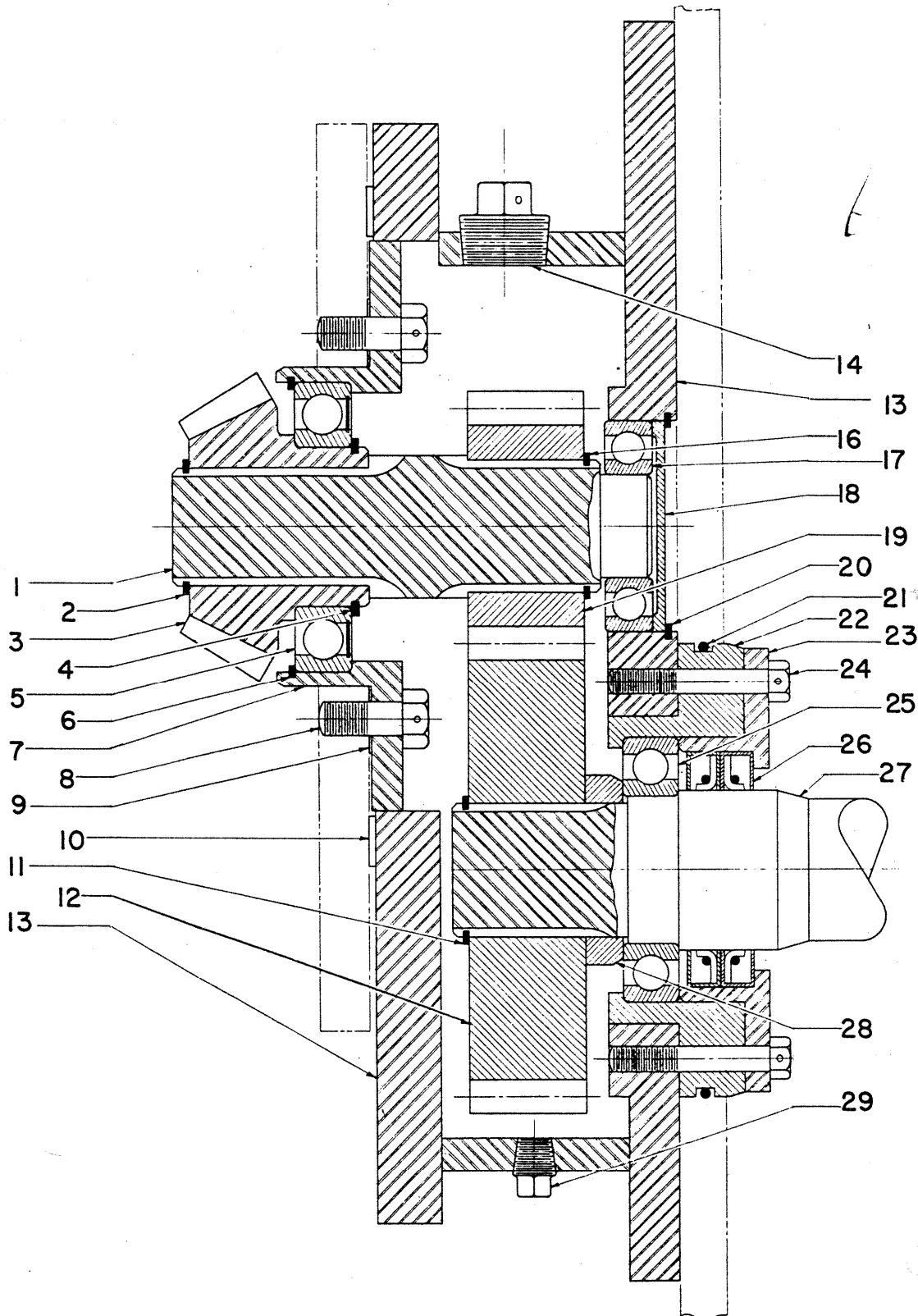
ADAPTER ASSEMBLY — No. 90907A
To Adapt a D6N Towing Winch to DW10 or DW15 Tractor
GENERAL ARRANGEMENT

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	92960A	Bracket—Lower (L. H.)	1
	92957A	Bracket—Upper (L. H.)	1
	90959	Stud	11
	15010	Nut—Hex, $\frac{5}{8}$ NF	11
	15160	Lockwasher— $\frac{5}{8}$	1
2	90956A	Bracket	1
3	16829	Capscrew— $\frac{1}{2}$ NC x 1	4
4	90913	Housing	1
5	90960	Stud	2
	15012	Nut—Hex, $\frac{3}{4}$ NF	8
	15162	Lockwasher— $\frac{3}{4}$	8
6	15571	Capscrew—1" NF x $2\frac{3}{4}$	8
	15016	Nut—Hex, 1" NF	8
	15166	Lockwasher—1" ("Caterpillar" No. 7B204)	8
7	92957A	Bracket—Upper (R. H.)	1
	92959A	Bracket—Lower (R. H.)	1
	90959	Stud	11
	15010	Nut—Hex, $\frac{5}{8}$ NF	11
	15160	Lockwasher— $\frac{5}{8}$	11
8	.....	Bracket—Quadrant (see page 49, Ref. 2)	1

Not illustrated:

15530	Capscrew—1" NF x 4	} Winch	6
15598	Capscrew—1" NF x $2\frac{1}{2}$		2
15016	Nut—Hex, 1" NF		6

ADAPTER ASSEMBLY—Continued
To Adapt a D6N Towing Winch to DW10 or DW15 Tractor
TRANSMISSION



ADAPTER ASSEMBLY—Continued
To Adapt a D6N Towing Winch to DW10 or DW15 Tractor
TRANSMISSION ASSEMBLY

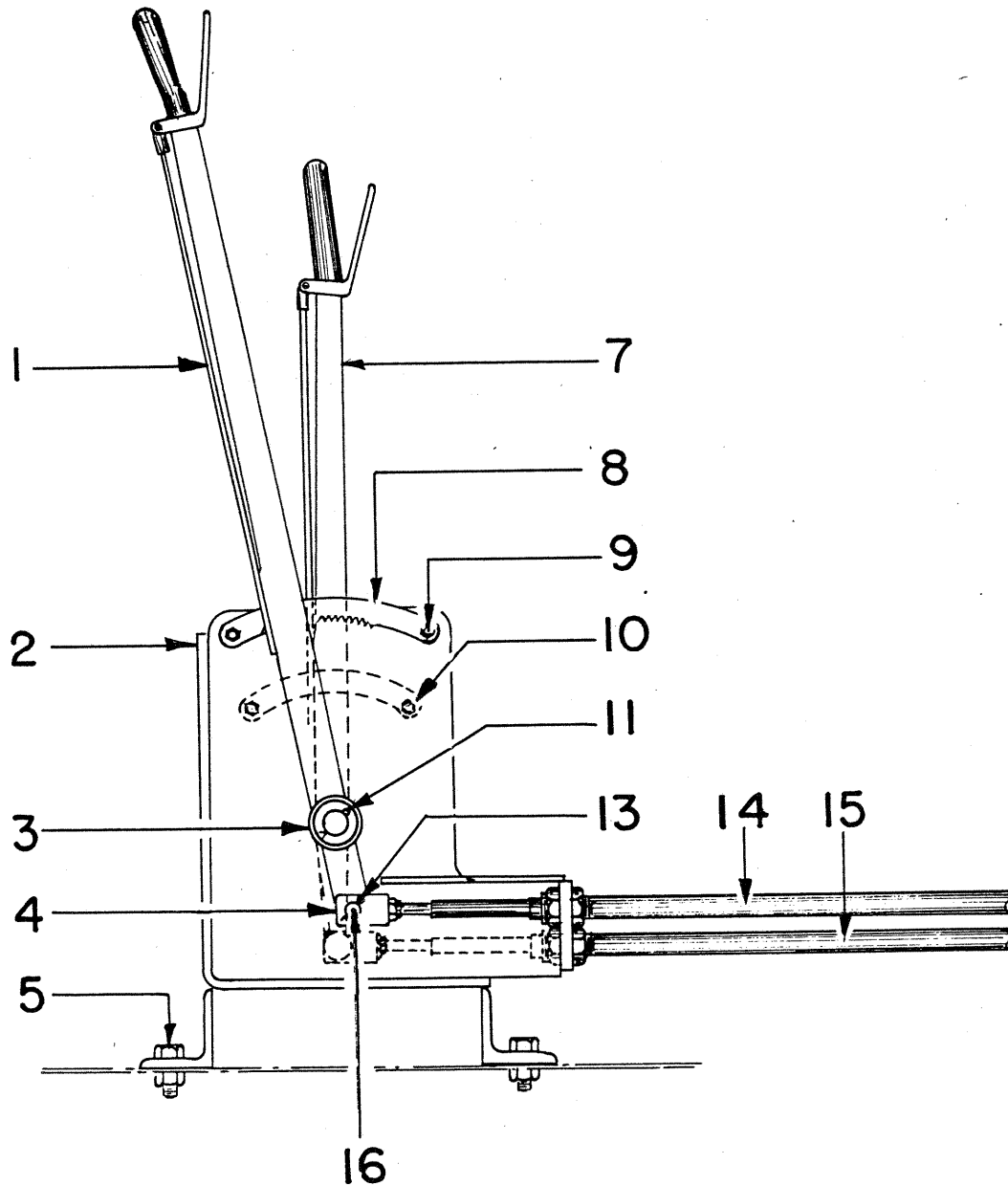
Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	90933	Shaft	1
2	35575	Snap Ring	1
3	.....	Gear—Bevel (see page 23, Ref. 14)	1
4	35574	Snap Ring	1
5	41212T	Bearing	1
6	35573	Snap Ring	1
7	90931	Retainer—Bearing	1
8	.....	Capscrew—Drilled Head (see page 23, Ref. 9)	6
9	9843	Shim Set	1
10	33718	Gasket—P.T.O. ("Caterpillar" No. 7B-206)	1
11	58948	Snap Ring	1
12	†90962	Gear (37 teeth)	1
13	90913	Housing—Adapter	1
14	32411	Plug—Vent	1
16	36150	Snap Ring	1
17	41208	Bearing	1
18	90934	Retainer—Bearing	1
19	†90961	Gear (14 teeth)	1
20	58947	Snap Ring—Internal	1
21	90937	"O" Ring	1
22	90938	Carrier—Bearing	1
23	90939	Carrier—Oil Seal	1
24	90940	Capscrew—Drilled Head	6
25	41211	Bearing	1
26	8219	Oil Seal	2
27	90941A	Shaft—PTO	1
28	59685	Spacer	1
29	35503	Plug—Pipe (3/4 Magnetic)	1

†If more power and less speed is desired, an optional gear set is available.

(Gears must be interchanged in sets only) Optional Gears:

12	90932	Gear (27 teeth)	1
19	90935	Gear (13 teeth)	1

ADAPTER ASSEMBLY—Continued
To Adapt a D6N Towing Winch to DW10 or DW15 Tractor
HANDLING GEAR



ADAPTER ASSEMBLY—Continued
To Adapt a D6N Towing Winch to DW10 or DW15 Tractor
HANDLING GEAR

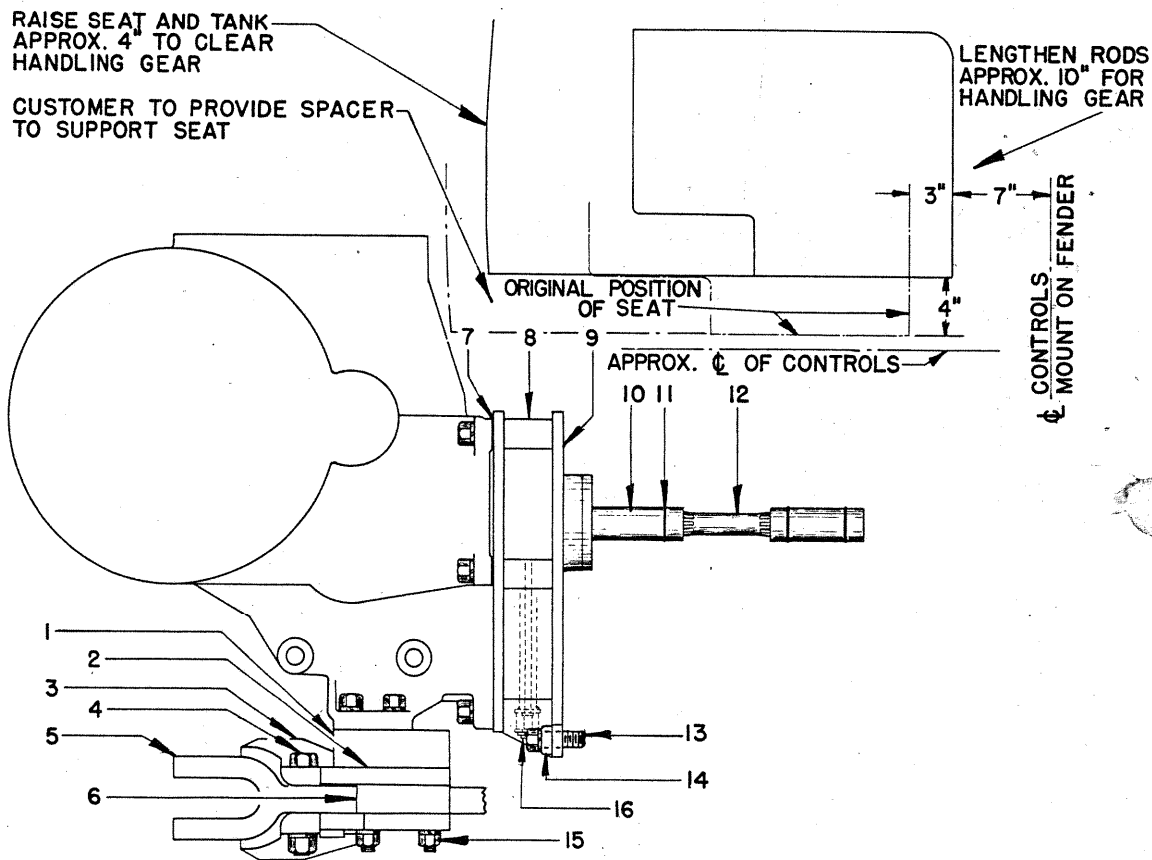
Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	.....	Handlever—Brake (see page 33, Ref. 6)	1
2	90946A	Bracket—Quadrant	1
3	15128	Washer—1 $\frac{1}{4}$	2
4	92683	Rod End	4
5	{ 17008	Bolt—Machine ($\frac{1}{2}$ NC x 1 $\frac{1}{4}$)	4
	{ 15158	Lockwasher— $\frac{1}{2}$	4
7	.....	Handlever—Clutch (see page 33, Ref. 3)	1
8	.....	Bar—Quadrant (see page 33, Ref. 7)	1
	{ 15518	Capscrew— $\frac{3}{8}$ NF x 1	8
9	{ 15156	Lockwasher— $\frac{3}{8}$	4
	{ 15026	Nut—Jam, $\frac{3}{8}$ NF	4
10	.....	Bar—Quadrant (see page 33, Ref. 4)	1
11	15245	Cotter— $\frac{3}{16}$ x 1 $\frac{3}{4}$	2
13	15223	Cotter— $\frac{1}{8}$ x 1	8
14	90954	Cable—Push Pull	1
15	90953	Cable—Push Pull	1
16	38924	Pin	4

ADAPTER ASSEMBLY

To Adapt a D6N Towing Winch to a D7 Tractor

(Prior to Tractor S. N. 7M1)

GENERAL ARRANGEMENT



ADAPTER ASSEMBLY — No. 41807A
To Adapt a D6N Towing Winch to a D7 Tractor
(Prior to Tractor S. N. 7M1)

GENERAL ARRANGEMENT

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	41802	Plate—Drawbar Mounting	2
2	.....	Plate—Drawbar ("Caterpillar" No. 1B-4474 furnished with Tractor)	1
3	† { 41803A	Clamp Assembly—Drawbar	1
	{ *41803	Clamp	2
	† { 15659	Capscrew—1¼ NF x 6	2
4	{ *15168	Lockwasher—1¼	2
	{ *15018	Nut—Hex, 1¼ NF	2
5	.....	Drawbar ("Caterpillar" No. 1B-4478 furnished with Tractor)	1
7	33718	Gasket ("Caterpillar" No. 7B-206)	1
8	.....	Housing—Adapter (see page 52, Ref. 1)	1
9	41892	Gasket	1
10	7322	Coupling ("Caterpillar" No. 1A-5801)	2
11	{ 9528	Lock Ring ("Caterpillar" No. 1A-5803)	1
	{ 9527	Pin ("Caterpillar" No. 1A-5802)	1
12	7115	Shaft	1
	{ 35680	Stud ("Caterpillar" No. 7B-9672)	18
13	{ 15166	Lockwasher—1"	18
	{ 15016	Nut—Hex, 1" NF	18
14	41810	Spacer	4
	{ 41806	Stud ("Caterpillar" No. 1B-4472)	4
15	{ 15166	Lockwasher—1"	4
	{ 15016	Nut—Hex, 1" NF	4
16	{ 15305	Plug—Pipe, 1" Square Head (Drain)	1
	{ 15307	Plug—Pipe, ¼" Square Head (Oil Level)	1

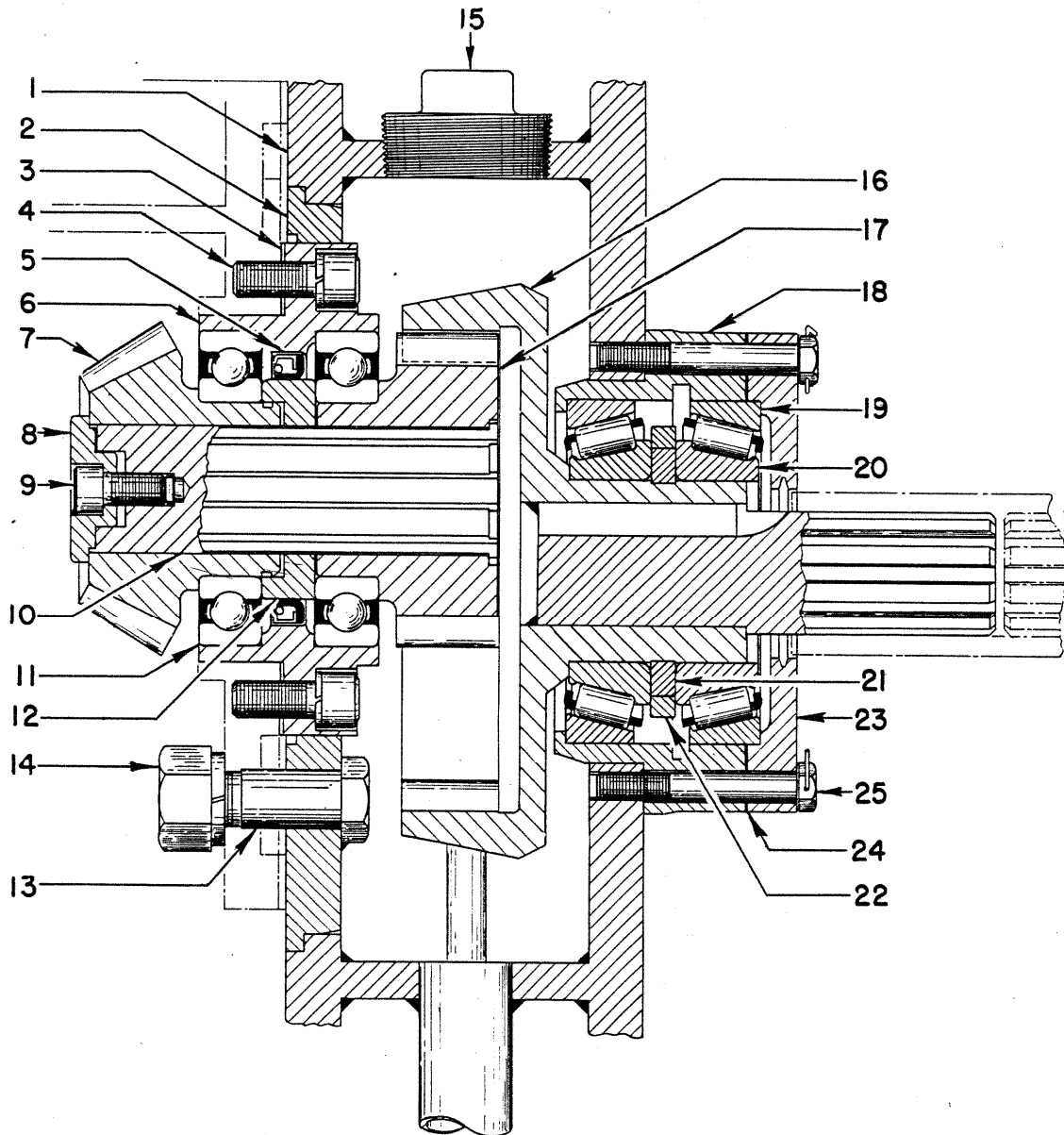
*Included in assembly under which listed.

†Optional Parts—furnished only when D7 "A" frame arch is to be used with D6N towing winch.

NOTE: When filling case with oil, remove smaller plug (16) and fill until oil runs out of tube; then replace plug.

ADAPTER ASSEMBLY—Continued
To Adapt a D6N Towing Winch to a D7 Tractor
(Prior to Tractor S. N. 7M1)

TRANSMISSION



ADAPTER ASSEMBLY—Continued
To Adapt a D6N Towing Winch to a D7 Tractor
(Prior to Tractor S.N. 7M1)

TRANSMISSION

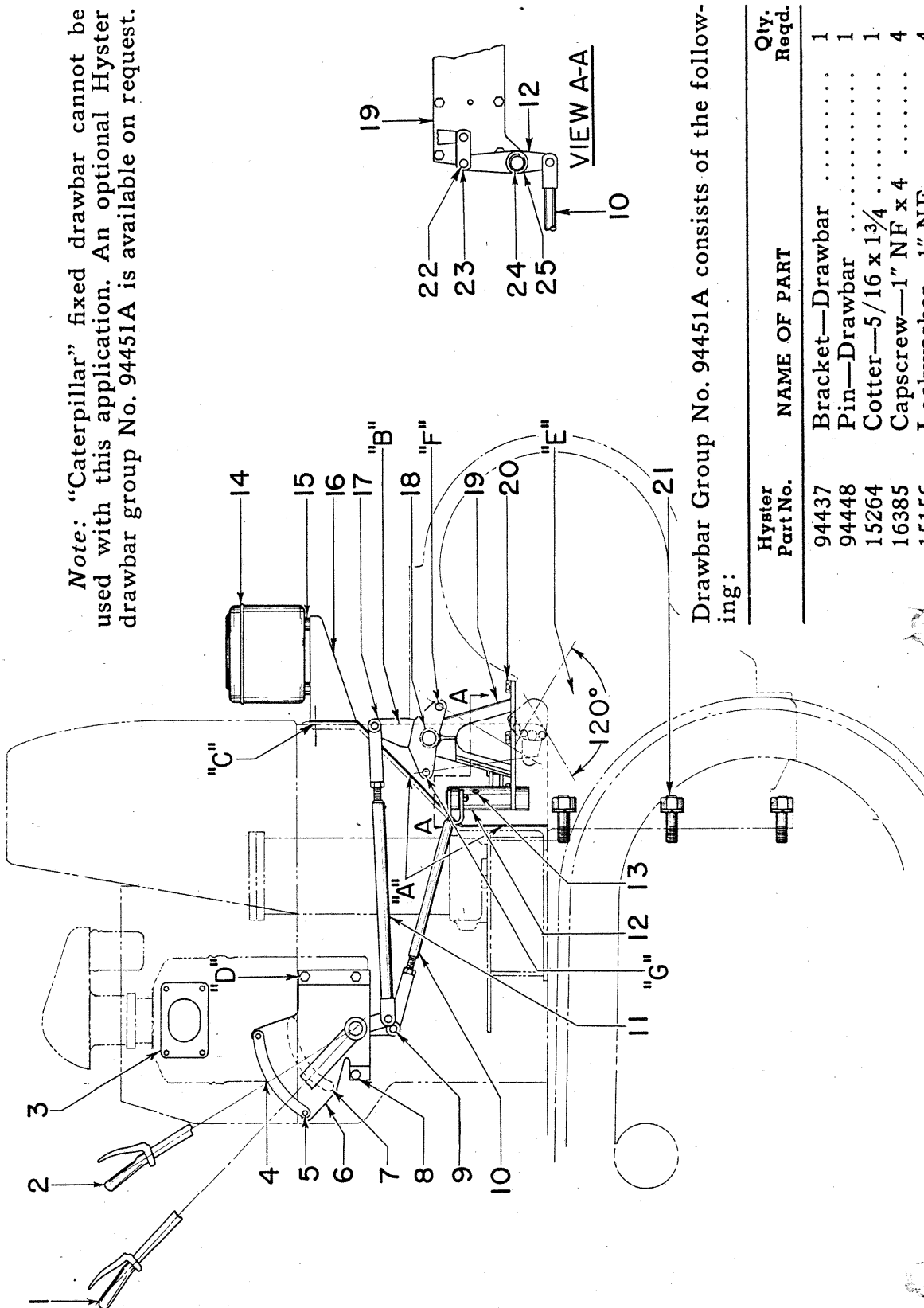
Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	41786A	Housing—Adapter	1
2	41805	Cover Plate—Cover	1
3	9843	Shim Set	1
4	{ 28055	Capscrew—Socket Head ($\frac{1}{2}$ NF x $1\frac{1}{4}$)	6
	{ 15158B	Lockwasher— $\frac{1}{2}$	6
5	41804	Oil Seal	1
6	41787	Carrier—Bearing	1
* 7	35577	Gear—Bevel (17 teeth)	1
8	41791	Retainer—Gear	1
9	16301	Capscrew—Socket Head ($\frac{7}{16}$ NF x $\frac{7}{8}$)	1
10	41789	Shaft	1
11	43212	Bearing	2
12	41788	Spacer	1
13	41800	Bolt—Shoulder	2
14	{ 15162	Lockwasher— $\frac{3}{4}$	2
	{ 15012	Nut—Hex ($\frac{3}{4}$ NF)	2
15	15310	Plug—Pipe (2")	1
16	41794A	Gear Assembly—Internal Drive	1
17	41790	Gear (19 teeth)	1
18	41792	Carrier—Bearing	1
19	30079	Bearing Cup	2
20	30083	Bearing Cone	2
21	41797	Pipe—Spacer (Split)	1
22	41798	Pipe—Spacer	1
23	41793	Retainer—Bearing	1
24	41799	Shim Set	1
25	41801	Capscrew—Drilled Head	6

* MIDAMERICA BOUGHT ALL STOCK (7) 10/3/80

HANDLING GEAR ARRANGEMENT — 94276A

For Mounting D6N Towing Winch on 977 Traxcavator

Note: "Caterpillar" fixed drawbar cannot be used with this application. An optional Hyster drawbar group No. 94451A is available on request.



Drawbar Group No. 94451A consists of the following:

Hyster Part No.	NAME OF PART	Qty. Reqd.
94437	Bracket—Drawbar	1
94448	Pin—Drawbar	1
15264	Cotter—5/16 x 13/4	1
16385	Capscrew—1" NF x 4	4
15156	Lockwasher—1" NF	4

HANDLING GEAR ARRANGEMENT — 94276A

For Mounting D6N Towing Winch on 977 Traxcavator

Ref. No.	Hyster Part No.	Name of Part	Qty. Reqd.	Ref. No.	Hyster Part No.	Name of Part	Qty. Reqd.
1	93527A	Handlever Assy.—		10	94280A	Link Assy.—Clutch..	1
		Brake	1		* 158	Rod End	1
	*32694	Handle	1		*15030	Nut—Hex, Jam, 5/8 NF	1
	*37476	Mach. Screw—Special	2		* 159	Pin—Rod End	1
	*15052	Nut—Hex, No. 10-24	2	11	*15223	Cotter—1/8 x 1	1
	*32695	Spring	1		94283A	Link Assy.—Brake..	1
	*32691	Rod—Pawl (bend as required)	1		* 158	Rod End	1
	*32693	Rod End	1		*15030	Nut—Hex, Jam, 5/8 NF	1
	*32692	Capscrew—Pawl	2		* 159	Pin—Rod End	1
					*15223	Cotter—1/8 x 1	1
2	93526AB	Handlever Assy.—		12	94384W	Crank	1
		Clutch	1	13	16001	Grease Fitting	1
	*32694	Handle	1	14	94293	Tool Box	1
	*37476	Mach. Screw—Special	2	15	94294	Spacer	4
	*15052	Nut—Hex, No. 10-24..	2		18202	Capscrew—3/8 NFx1 1/4	4
	*32695	Spring	1		15134	Washer	8
	*33273	Rod—Pawl (17" long)	1		15006	Nut—Hex, 3/8 NF....	4
	*93892	Rod—Pawl (21" long)	1	16	15156	Lockwasher—3/8	4
	*32693	Rod End	1		94290W	Support	1
	*32692	Capscrew—Pawl	2		94286W	Crank	1
3	92058	Spacer	1	17	9490	Set Collar	1
	92059	Gasket	1	18	94299A	Bracket	1
	16807	Capscrew—1/2 NFx1 1/2	4		*35668	Bushing	2
	15158	Lockwasher—1/2	4	20	16820	Capscrew—1/2 UNFx1	6
	15008	Nut—Hex, 1/2 NF ...	4		15158	Lockwasher—1/2	6
4	35675	Quadrant	1		35680	Stud	8
5	15623	Capscrew—3/8 NF x 5/8	4		15016	Nut—Hex, 1" NF ...	8
	15156	Lockwasher—3/8	1	21	15166	Lockwasher, 1"	8
6	94278W	Bracket	1		93515	Link	2
7	32657	Quadrant	1	22	159	Pin	2
8	16820	Capscrew—			15223	Cotter—1/8 x 1	2
		1/2 UNF x 1	3	23	58907	Snap Ring	1
9	15158	Lockwasher—1/2	3		90267	Washer	1
	93490	Pin	2				
	15229	Cotter—1/8 x 2 1/2	2				

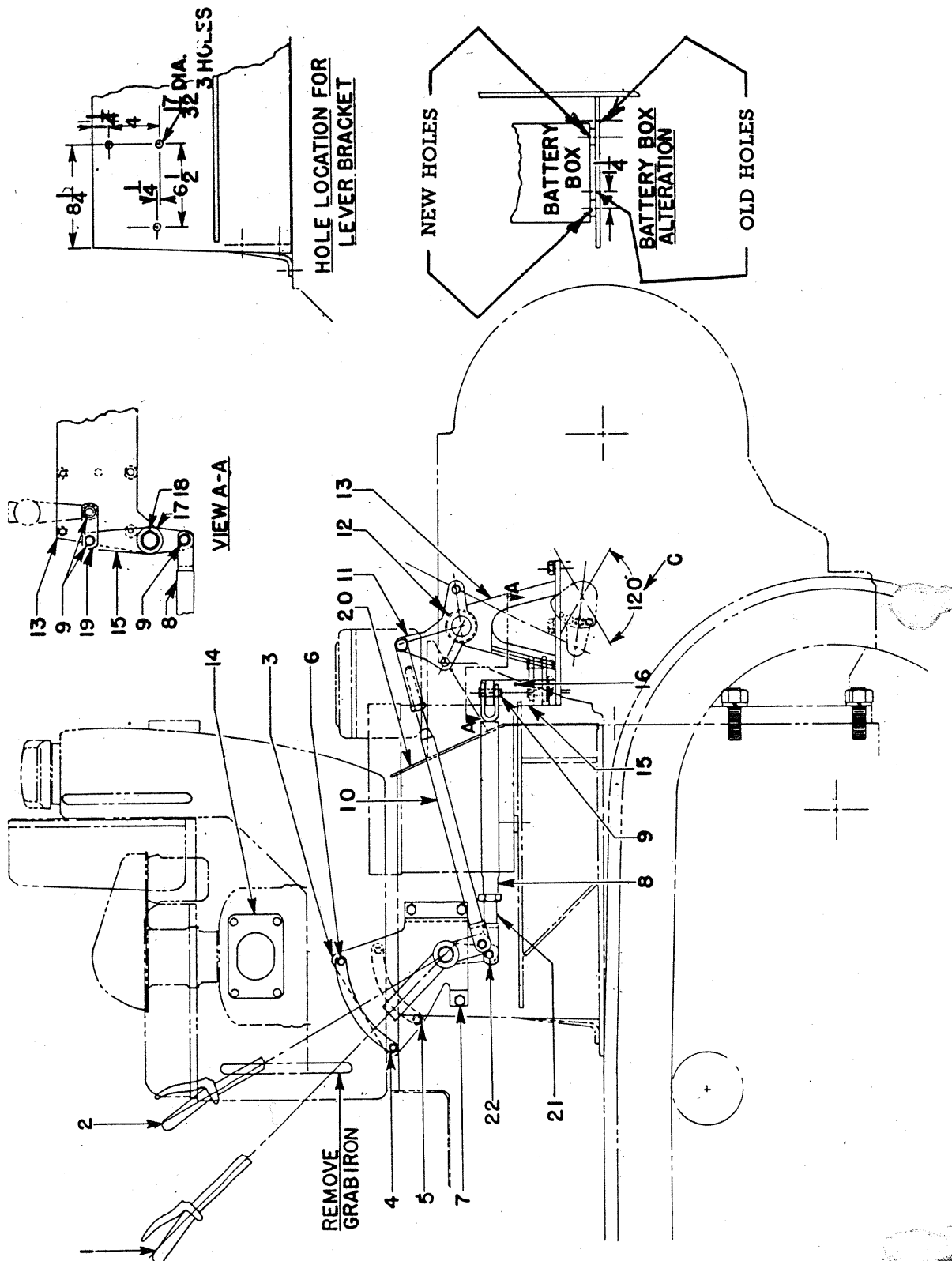
*Included in assembly under which listed

INSTALLATION INSTRUCTIONS

- Detach tool box "Caterpillar" No. 6H3886.
- Burn off left-hand side flush with gusset, as shown at "A."
- Burn gusset "B" off of inside of right-hand seat side.
- Locate Hyster tool box support (16) with middle hole in top row of holes at "C."
- Use support (16) as template and drill and tap twelve 3/8 UNC holes in rear of tractor.
- Bolt tool box support (16) to tractor, using "Caterpillar" capscrews and lockwashers which were used to hold old tool box together.
- Remove three "Caterpillar" capscrews from location "D" and install handlever bracket (6), using Hyster capscrews furnished.
- If this has not been done previously, remove breather plug from standard winch bracket, install in new bracket (19) and install new bracket on winch. Move quadrant and lever 120° from normal position to position shown at "E."
- Install towing winch as instructed on page 14.
- Connect new links (10 and 11) to handlever and to cranks on bracket (19).
Note: For overwind, connect brake adjustment link to rear hole "F," for underwind, to front hole "G."

HANDLING GEAR ARRANGEMENT — 92068AB

For D6N Towing Winch on No. 6 Traxcavator S.N. 10A-823 & Up



HANDLING GEAR ARRANGEMENT — 92068AB

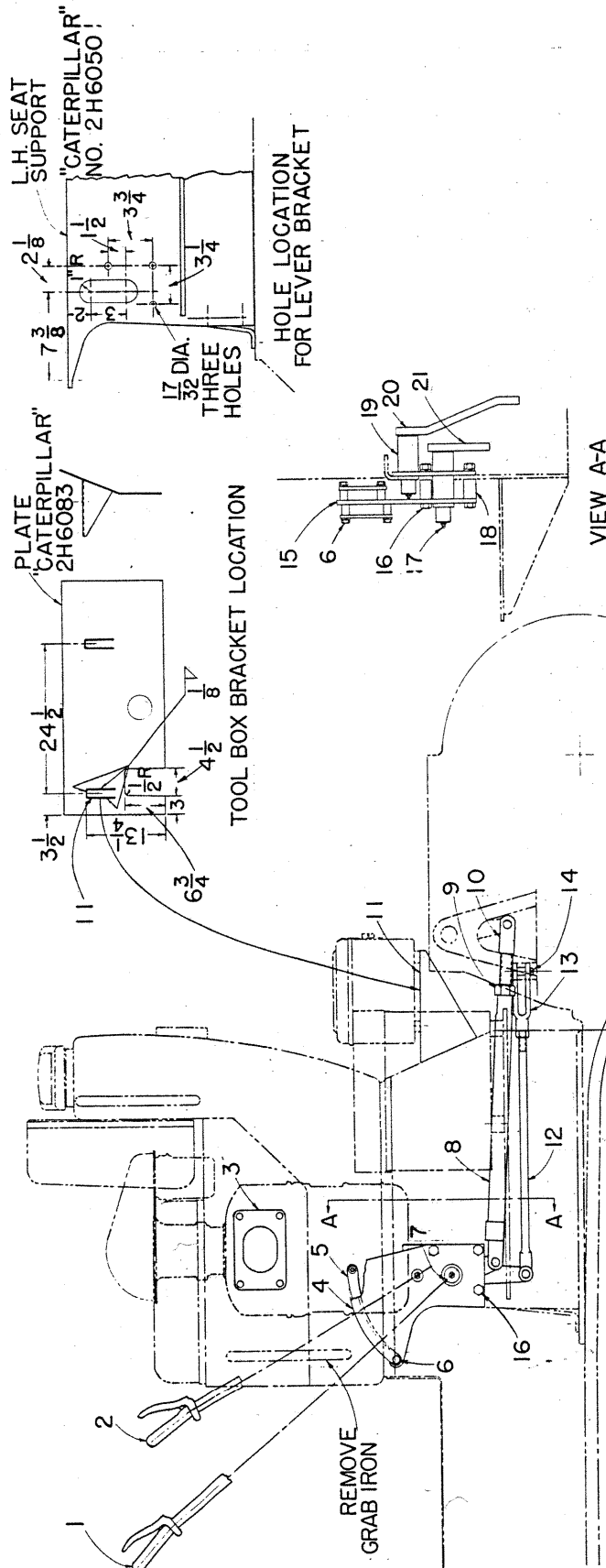
For D6N Towing Winch on No. 6 Traxcavator S. N. 10A-823 & Up

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	93527A	Handlever Assembly	1
	*32694	Handle	1
	*37476	Machine Screw—Special	2
	*32695	Spring	1
	*32691	Rod—Pawl (bend as required)	1
	*32693	Rod End	1
	*32692	Capscrew—Pawl	2
2	93526AB	Handlever Assembly	1
	*32694	Handle	1
	*37476	Machine Screw—Special	2
	*15052	Nut—Hex, No. 10-24	2
	*32695	Spring	1
	*33273	Rod—Pawl (17" long)	1
	*93892	Rod—Pawl (21" long)	1
	*32693	Rod End	1
	*32692	Capscrew—Pawl	2
3	93531A	Bracket	1
4	35675	Quadrant—Ratchet	1
5	32657	Quadrant	1
6	15623	Capscrew— $\frac{3}{8}$ NF x $\frac{5}{8}$	4
	15156	Lockwasher— $\frac{3}{8}$	4
7	37562	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{4}$	3
	15158	Lockwasher— $\frac{1}{2}$	3
	15008	Nut—Hex, $\frac{1}{2}$ NF	3
9	47548A	Link Rod	1
	159	Pin—Rod End	3
	15223	Cotter— $\frac{1}{8}$ x 1	3
10	93514A	Link Assembly	1
	* 158	Rod End	1
	*15030	Nut—Jam, $\frac{5}{8}$ NF	1
	* 159	Pin—Rod End	1
	*15223	Cotter— $\frac{1}{8}$ x 1	1
11	93522A	Crank	1
12	9490	Set Collar	1
13	93820A	Bracket	1
14	92058	Spacer	1
	92059	Gasket	1
	16807	Capscrew— $\frac{1}{2}$ NF x $1\frac{1}{2}$	4
	15158	Lockwasher— $\frac{1}{2}$	4
15	15008	Nut—Hex, $\frac{1}{2}$ NF	4
	93519A	Crank	1
16	16001	Grease Fitting	1
17	90267	Washer	1
18	58907	Snap Ring	1
19	93515	Link	1
20	92293A	Support—Tool Box	1
21	33771A	Rod End	1
	15036	Nut—Jam, 1" NF	1
22	93490	Pin	2
	15229	Cotter— $\frac{1}{8}$ x $2\frac{1}{2}$	2
Not illustrated:			
	35680	Stud	6
	15016	Nut—Hex, 1" NF	6
	15166	Lockwasher—1"	6

*Included in assembly under which listed.

HANDLING GEAR ARRANGEMENT — 92068A

For D6N Towing Winch on No. 6 Traxcavator prior to Tractor S. N. 10A-82



HANDLING GEAR ARRANGEMENT — 92068A

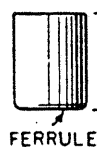
for D6N Towing Winch on No. 6 Traxcavator prior to Tractor S. N. 10A-823

Ref. No.	Hyster Part No.	NAME OF PART	Qty.
1	92060A	Handlever—Brake (36" long)	1
2	92061A	Handlever—Clutch (28" long)	1
3	92058	Spacer	1
	92059	Gasket ("Caterpillar" No. 4F-7818)	1
	15574	Capscrew— $\frac{1}{2}$ NF x $1\frac{3}{4}$	4
	15008	Nut—Hex, $\frac{1}{2}$ NF	4
	15158	Lockwasher— $\frac{1}{2}$	4
4	35675	Quadrant	1
5	32657	Quadrant	1
6	15518	Capscrew— $\frac{3}{8}$ NF x $\frac{7}{8}$	4
	15156	Lockwasher— $\frac{3}{8}$	4
7	952	Key	2
8	92037A	Link	1
9	15016	Nut—Hex, 1" NF	1
10	33771A	Rod End	1
	92041	Bracket	2
12	92039A	Link	1
13	158	Rod End	1
	15010	Nut—Hex, $\frac{5}{8}$ NF	1
14	159	Pin—Rod End	4
	15223	Cotter	4
15	92042A	Plate—Quadrant Mount	1
16	15573	Capscrew— $\frac{1}{2}$ NF x $3\frac{1}{2}$	3
	15008	Nut—Hex, $\frac{1}{2}$ NF	3
	15158	Lockwasher— $\frac{1}{2}$	3
17	16001	Grease Fitting	2
18	92044	Spacer	3
19	92045A	Plate	1
20	92065A	Crank—Clutch	1
21	92062A	Crank—Brake	1

Not illustrated:

{	35680	Stud	6
	15016	Nut—Hex, 1" NF	6
	15166	Lockwasher—1"	6

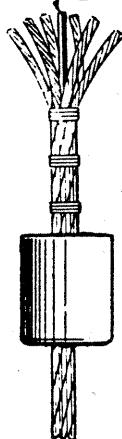
METHOD OF ATTACHING FERRULES



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



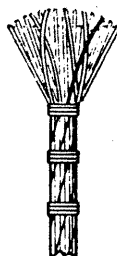
HEMP CENTER



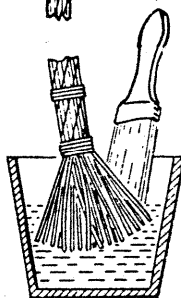
- 3** CUT OUT HEMP CENTER.
IF CABLE HAS A WIRE ROPE OR STEEL STRAND CENTER, DO NOT CUT OUT.



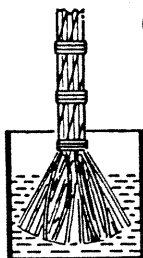
- 2** SLIP FERRULE OVER CABLE AND PUSH DOWN OVER SEIZINGS.



- 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.

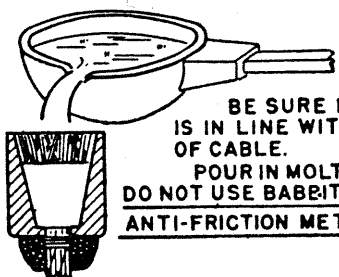


- 6** DIP WIRES FOR $\frac{3}{4}$ OF THE DISTANCE TO FIRST SERVING INTO ACID BATH CONSISTING OF NOT OVER ONE PART OF MURIATIC AND ONE PART WATER. TAKE CARE THAT ACID DOES NOT GET ON ANY OTHER PART OF CABLE. KEEP IN LONG ENOUGH TO BE THOROLY CLEANED.
DRY THOROLY.



- 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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