PARTS BOOK
AND
INSTRUCTION MANUAL
for
HYSTER®
D2N Towing Winch

EFFECTIVE WITH
HYSTER No. KRN-37433

A 26-L

HYSTER COMPANY

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

FORM NO. 763C LITHO IN U. S. A. 12M-856

599228W

INSTRUCTIONS FOR ORDERING
HYSTER
REPAIR PARTS

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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.

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. Saybolt Universal	80 - 90 Seconds
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.

MASTER PARTS CATALOG NOTICE

Supplement No. 1 December, 1957

To
Parts Book Form No. 763C
For
D2N Towing Winch

Page 24, under ELEVATION, revise note as follows:
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Page 25, In front of the following reference numbers add +.
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Page 27, Ref. 9, Add: 21420 Plug-Breather.

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Page 35, At bottom of page add:
NOTE: Add two quarts SAE 90 Oil at assembly.

Pages 50, 51, 52, 53 and 54 are superseded by cuts and copy in this supplement.

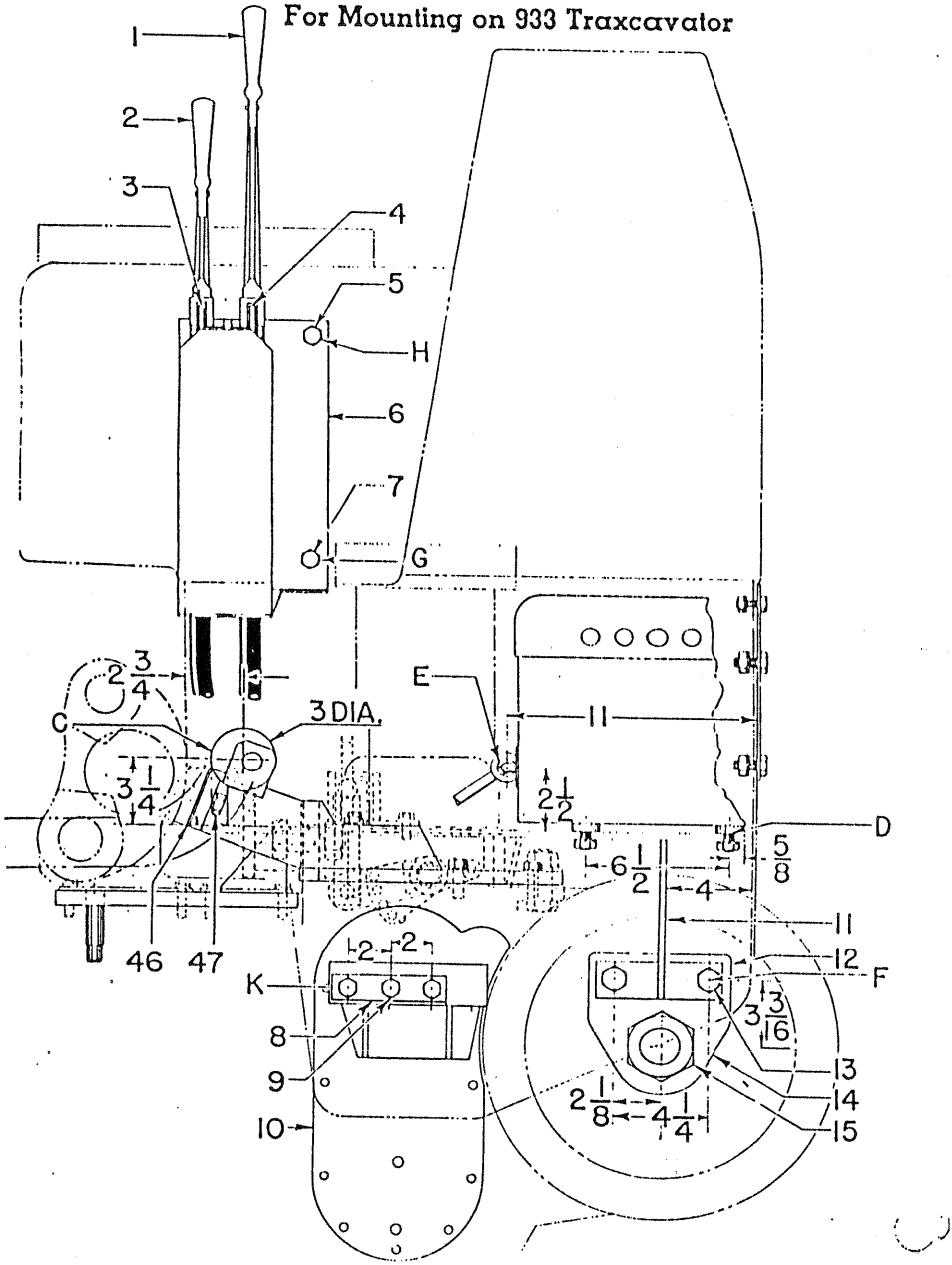
Important: Please make these changes promptly

HYSTER COMPANY

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

Litho in U.S.A. 2 M - 158

LEFT HAND SIDE
HANDLING GEAR ARRANGEMENT
For Mounting on 933 Traxcavator

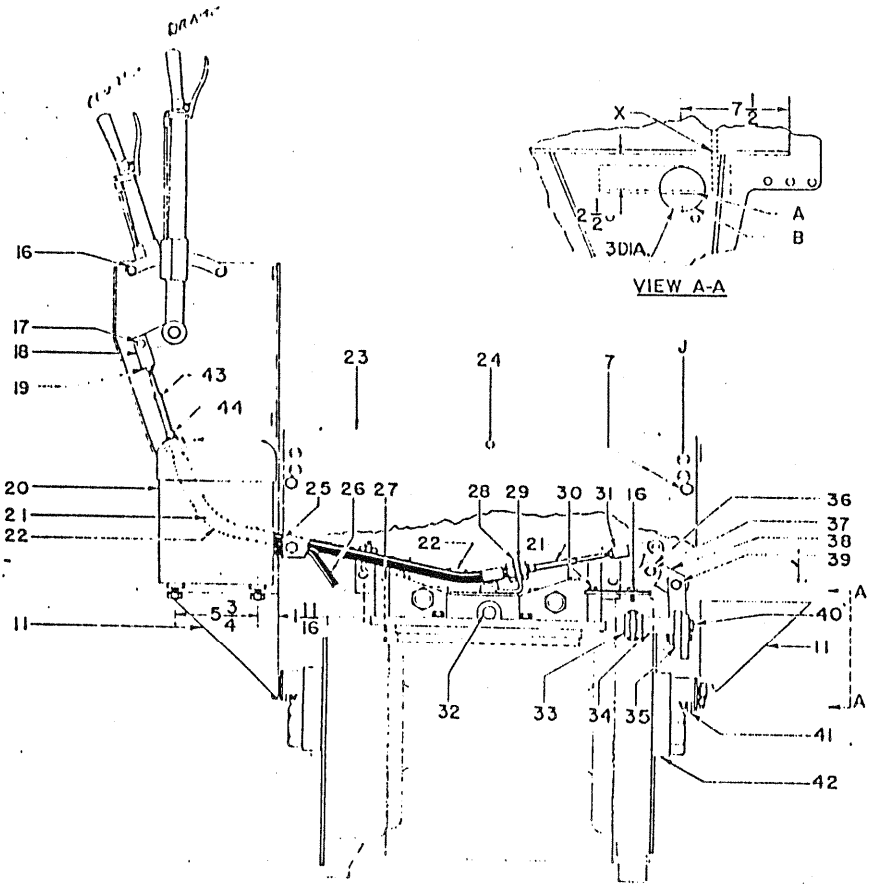


LEFT HAND SIDE
HANDLING GEAR ARRANGEMENT — 94224A B
For Mounting on 933 Traxcavator

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
	94262A	Handlever—Brake	1
	*32694	Handle	1
	*37476	Machine Screw—Special	1
1	*15052	Nut—Hex, No. 10-24	2
	*32695	Spring	2
	*32693	Rod End	1
	*92918	Rod—Pawl	1
	94264A	Handlever—Clutch	1
	*32694	Handle	1
	*37476	Machine Screw—Special	1
2	*15052	Nut—Hex, No. 10-24	2
	*32695	Spring	2
	*32693	Rod End	1
	*92922	Rod—Pawl	1
3	94271	Quadrant—Clutch	1
4	59035	Quadrant—Brake	1
	16820	Capscrew—Hardened, ½ UNF x 1	2
5	15008	Nut—Hex, ½ UNF	2
	15158	Lockwasher—½	2
6	94365W	Bracket—Handlever	1
	37562	Capscrew—Hardened, ½ UNF x 1¼	6
7	15008	Nut—Hex, ½ UNF	6
	15158	Lockwasher—½	6
8	94361	Spacer—¼" thick	2
	94360	Spacer—⅛" thick (approx.)	2
	16807	Capscrew—½ UNF x 1½	14
9	15008	Nut—Hex, ½ UNF	14
	15158	Lockwasher—½	14
10	94230W	Cover—L. H. side	1
11	94273	Gusset	2
12	94362	Spacer	2
13	15148	Capscrew—Hardened, ¾ UNF x 1½	4
	15162	Lockwasher—¾	4
14	94235W	Bracket—L. H. Support	1
15	91396	Nut—Drum Shaft	2
46	94679	Shim Set	2
47	(15642	Capscrew-5/8 UNC x 2	4
	(15160	Lockwasher - 5/8	4

**Included in Assembly under which listed.*

REAR VIEW
HANDLING GEAR ARRANGEMENT
For Mounting D2N Towing Winch on 933 Traxcavator

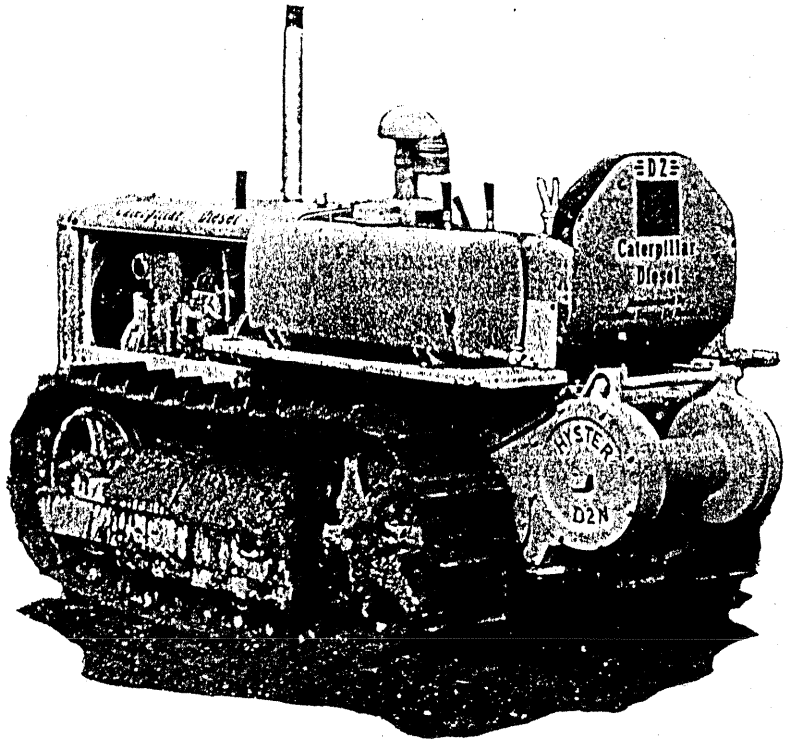


Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
16	15508	Capscrew—3/8 UNF x 1	6
	15156	Lockwasher—3/8	6
17	153	Pin—Rod End	4
	15222	Cotter—1/8 x 3/4	4

INSTRUCTION MANUAL
for
HYSTER D2N
TOWING WINCH

For Model D2 "Caterpillar" Tractor

SERIAL No. 4U, 5U



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Installation, Lubrication and
Servicing Instructions

HYSTER COMPANY

PORTLAND 8, OREGON ▪ PEORIA 1, ILLINOIS ▪ DANVILLE, ILLINOIS

U. S. A.

LITHO IN 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 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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SECTION A

Operating Instructions

Lubrication instructions are provided on pages 10 and 11 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.

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Right and Left Hand Side of Towing Winch

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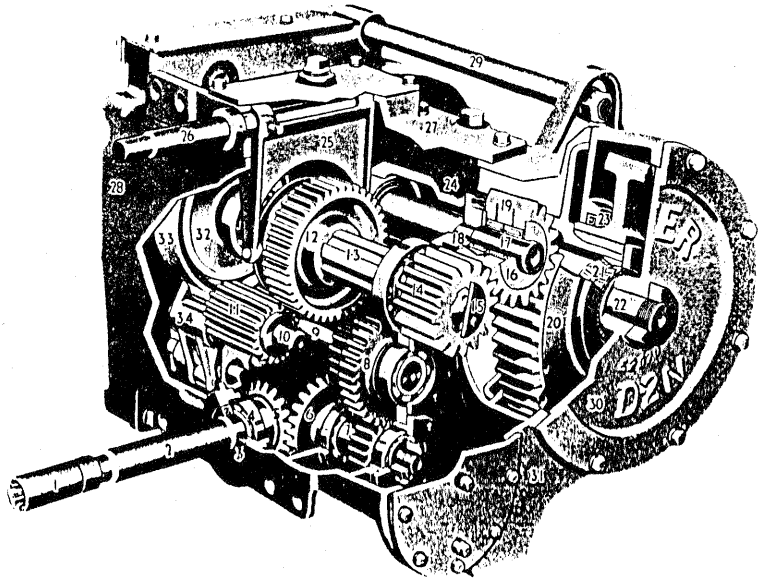
CUTAWAY VIEW OF HYSTER D2N TOWING WINCH



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When the tractor engine is running with the master clutch engaged, the engine turns the take-off coupling (1) and shaft (2) (clockwise) mounted with oil seal (3) and bearing (4). On the shaft (2) is a bevel pinion (5) which rotates the bevel gear (6), assembled to pinion and shaft (7). This shaft has a pinion integral with the shaft, which meshes with driving gear (8) mounted on the intermediate shaft (9). On the shaft (10) is mounted the reverse idler gear (11) which meshes with one of the pinions integral with shaft (9).

With the shifter lever in 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 shift gears in winch, tractor master clutch must be disengaged.

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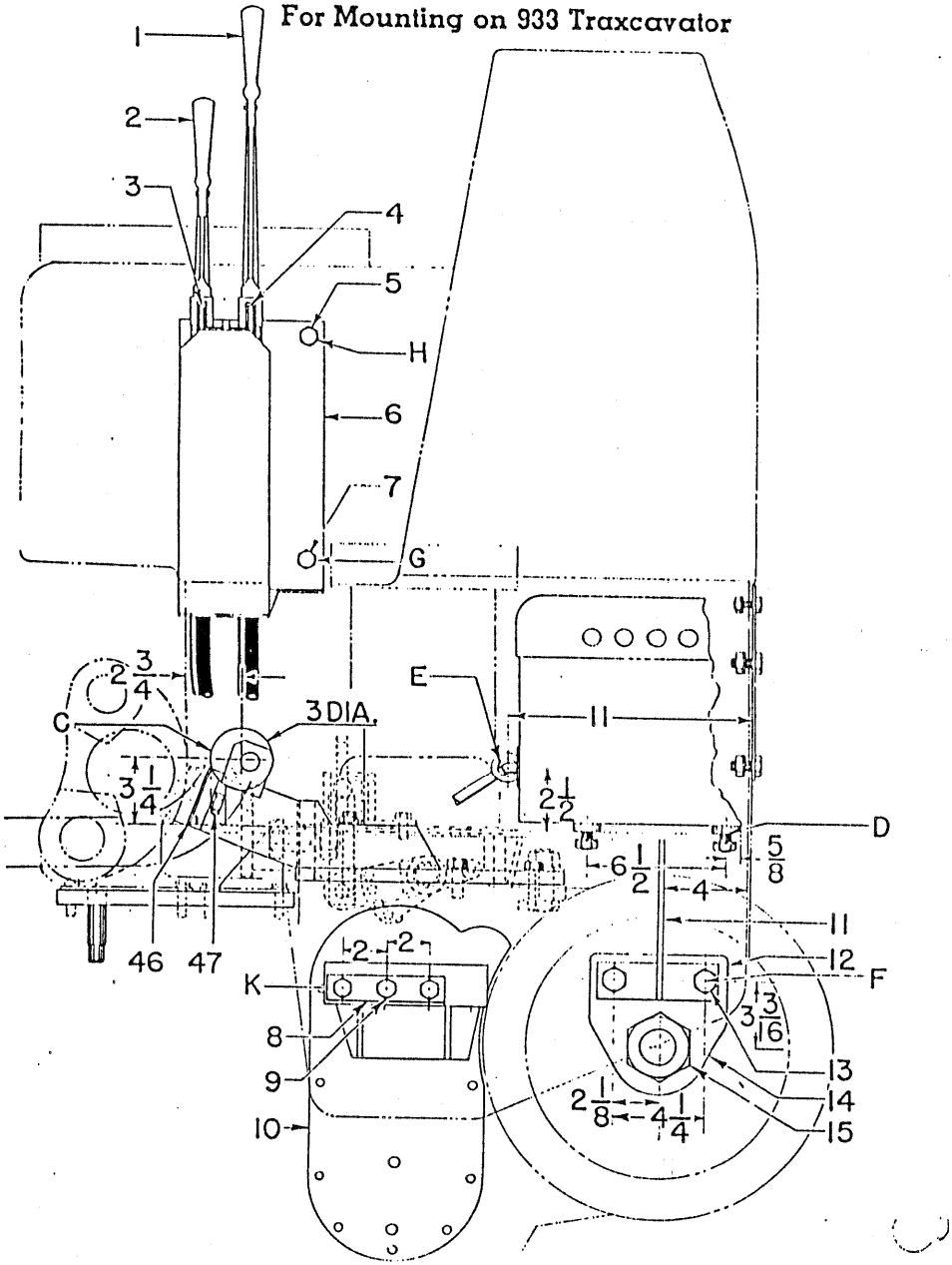

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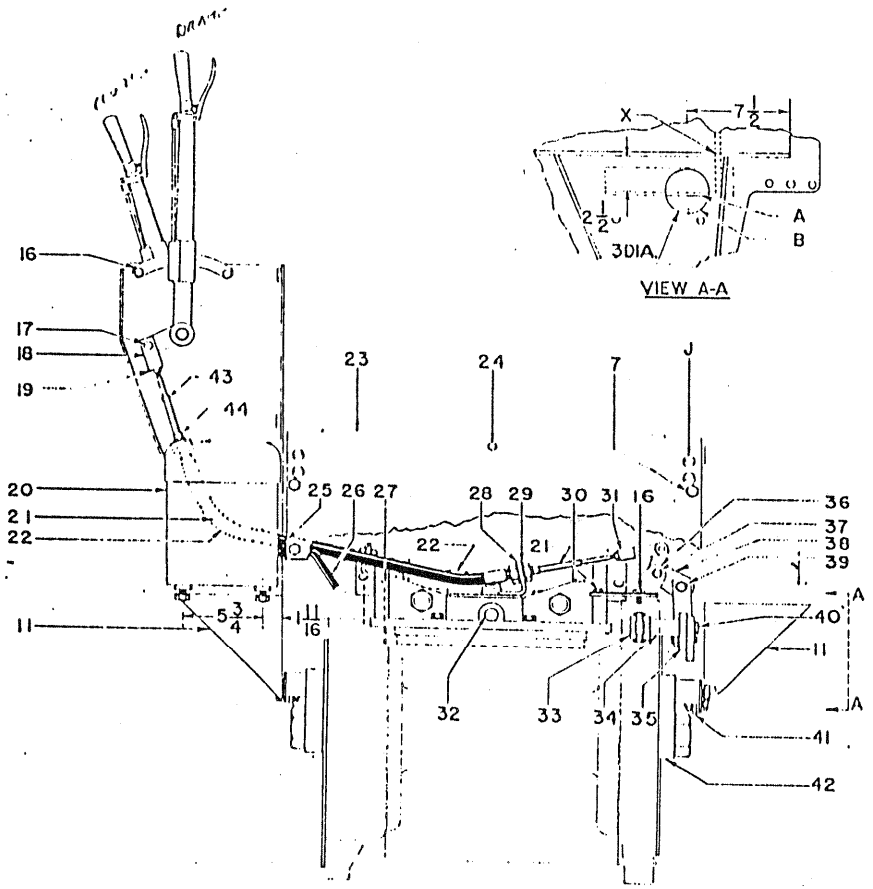

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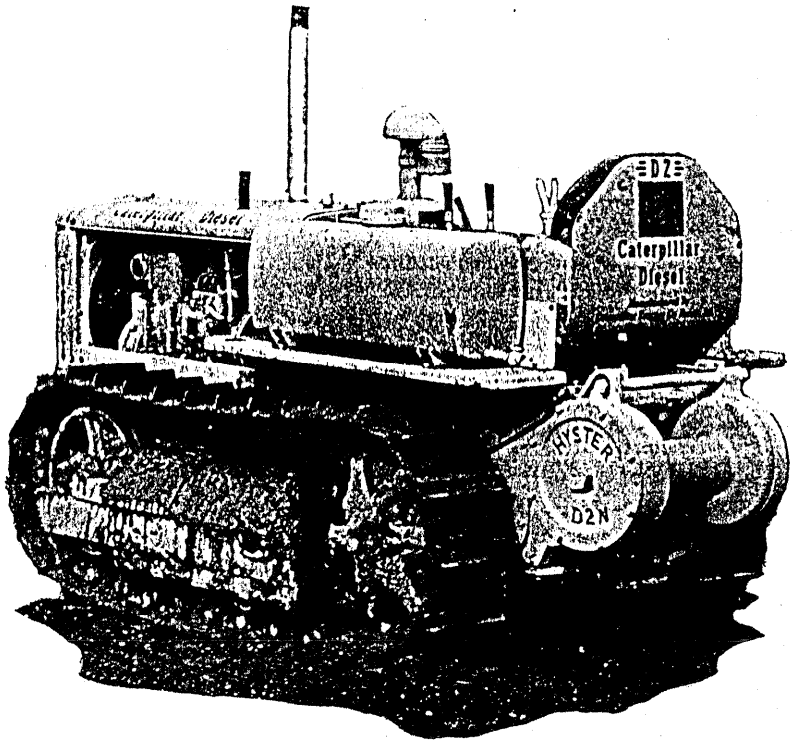

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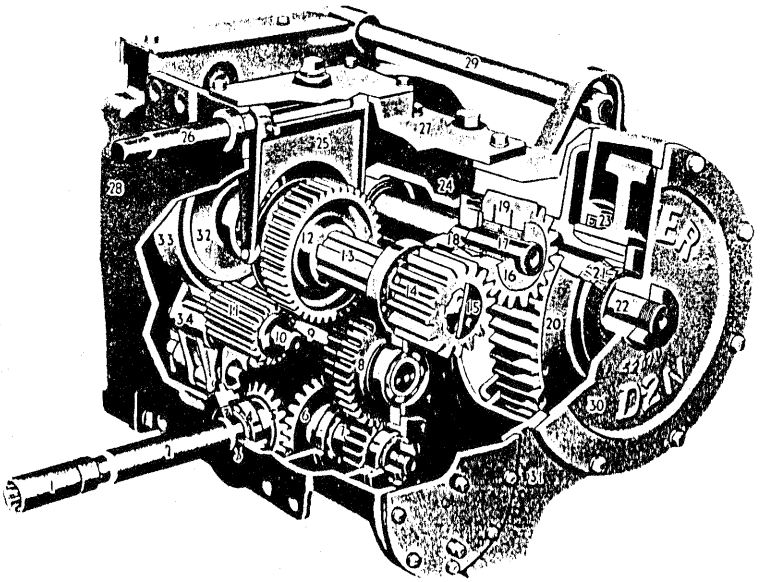

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With the shifter lever in neutral position, the drum would be stationary while the above-mentioned gears and shafts would be constantly revolving when the engine is running with the master clutch engaged.

To shift gears in winch, tractor master clutch must be disengaged.

WORKING PRINCIPLE—Continued

To pull in cable underwinding (with cable under the drum), depress Hyster shifter lever stem (10, page 14), and push shifter lever to the right into locked position. This causes the shifter mechanism to move the sliding gear (12) to the left hand side and in mesh with the pinion on the intermediate shaft (9). This sliding gear slides on a splined shaft (13). Assembled on one end of this shaft is the drum pinion (14) which is held in place by keeper (15).

The pinion (14) does not mesh directly with the drum gear (20) but rather with an intermediate idler gear (19) rotating on needle bearings (18) mounted on shaft (17). The thrust washers (16) should be replaced when worn to prevent gear (19) from rubbing against side frame.

The drum gear (20) is assembled to the drum (24) which revolves on taper roller bearings (21), and this assembly is mounted on drum shaft (22). Oil seal (23) prevents oil leakage from drum gear case.

The sliding gear (12) is moved along shaft (13) by means of shifter fork (25) which is mounted on shifter shaft (26). Cover (27) mounted on top of left hand side frame (31) may be removed for inspection of gears.

The tie rod (29) secures frame (31) to right hand side frame (28).

The cover (30) may be removed for servicing drum gear (20) and oil seal (23).

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 tractor master clutch and apply winch brake. Rotation of brake drum (32) is stopped by the brake band (33) which is contracted and expanded by means of a cam and cranks (34), which in turn are connected by adjustable links to the winch brake lever at operator's seat.

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 L. H. 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 L. H. locked position, the shifter mechanism has moved the sliding gear (12) to the right-hand side and in mesh with the reverse idler gear (11), 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 R. H. position. Release brake and engage tractor master clutch allowing drum to rotate and pay out line.

OPERATING INSTRUCTIONS—Continued

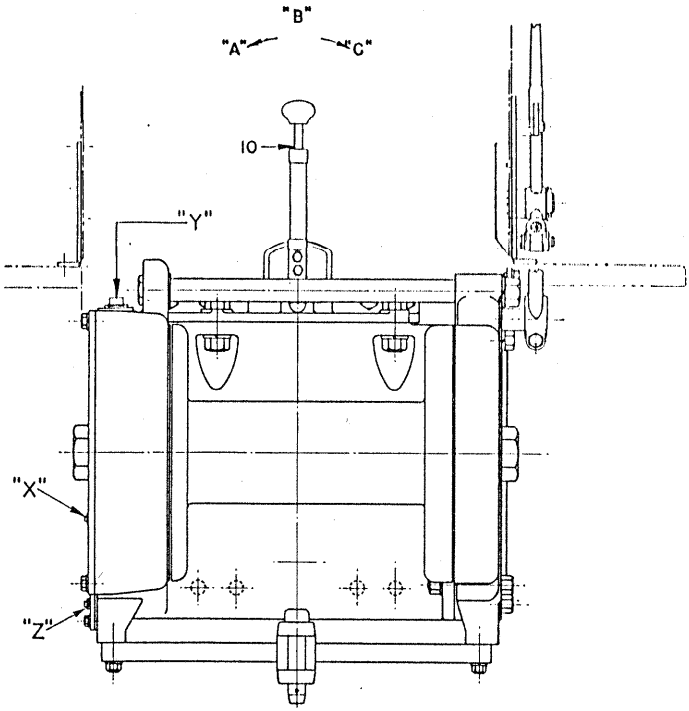
Overwinding

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 (10) should be in position "A"; to pay out line the shifter lever should be in position "C." Position "B" is the neutral position.

To operate OVERWINDING and pull in cable the HYSTER winch brake (34), page 7, must be released and the tractor master clutch be disengaged while shifting gears.

With shifter lever in L. H. position "A," the shifter mechanism has moved the sliding gear to the right-hand side and in mesh with the reverse idler gear. Engage the tractor 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 master clutch still being disengaged, push lever through neutral and into position "C." Release brake and engage tractor master clutch allowing drum to rotate and pay out line.



OPERATING INSTRUCTIONS—Continued

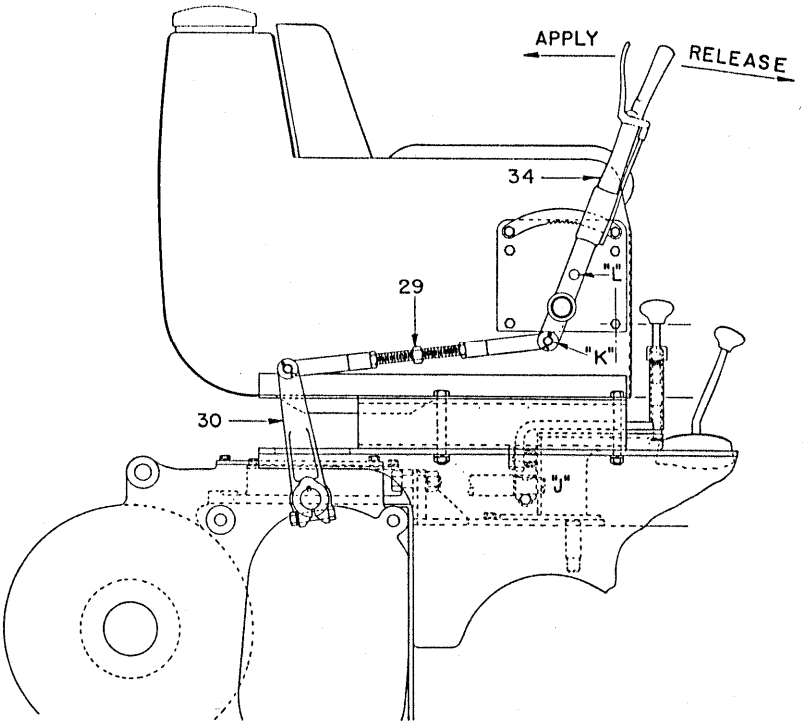
Underwinding

When the winch is used with the cable leading from the bottom of the drum, the drum is underwinding, To wrap the cable around the drum or pull in a load, the gear shift lever (10), page 6, should be in position "C;" to pay out the line, in position "A." Position "B" is neutral.

To operate UNDERWINDING and pull in cable the HYSTER winch brake (34) must be released and the tractor clutch be disengaged while shifting gears.

With the shifter lever in the right-hand position "C," the shifter mechanism has moved the sliding gear to the left-hand side and in mesh with the 15-tooth pinion on the short intermediate shaft. Engaging the tractor master clutch will cause the drum to rotate in an underwinding direction and spool in the cable on the underside of the drum. To stop drum rotation, disengage master clutch and apply winch brake (34).

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



When link (29) is connected to the lower hole "K," winch is set for underwinding. When link is connected to the upper hole "L," winch is

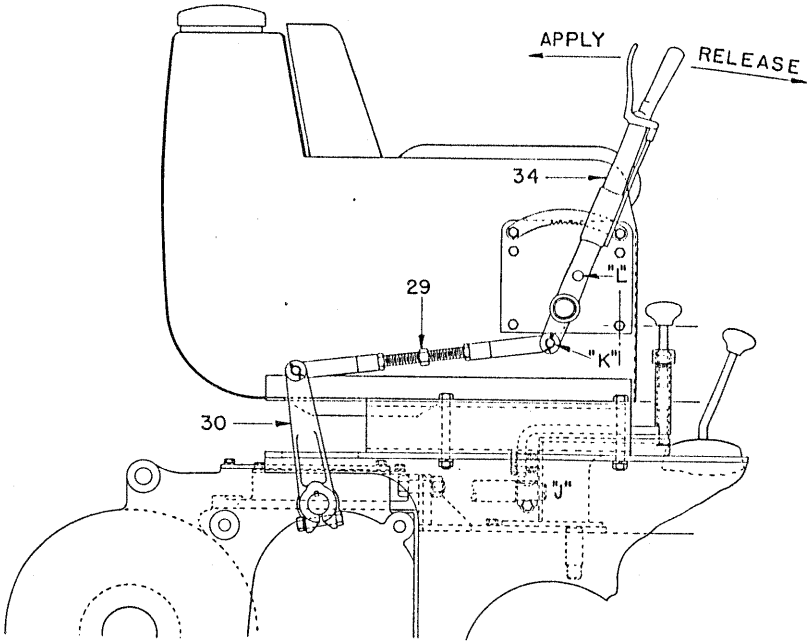
SECTION B
Servicing Instructions

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 (29) should be connected to the UPPER HOLE in the handlever as at "L," when the DRUM IS OVERWINDING.
2. Before connecting the horizontal link (29) make the following adjustments. First, shove the handlever all the way forward against solid stop (which is the fully released position).
3. Next, shove the brake crank (30) on winch all the way forward, then reverse the action and shove the crank (30) all the way backward. Note the two positions and then move the crank (30) FORWARD AGAIN TO A POINT MIDWAY OF THE TWO POSITIONS just tried.
4. Adjust the length of the brake link (29) with the adjusting screw to meet the brake crank (30) in the midway position with the handlever still in the forward position.
5. Insert pin and cotter, and tighten jam nuts on link. This will give the maximum clearance of brake band to drum and keep the brake from dragging and becoming over-heated.



SERVICING INSTRUCTIONS—Continued

Brake Linkage—Underwinding

1. The brake link (29) should be connected to the LOWER HOLE "K" in the handlever when the DRUM IS UNDERWINDING.
2. Remaining instructions for connecting link (29) same as instructions for overwinding.

Brake Adjustment

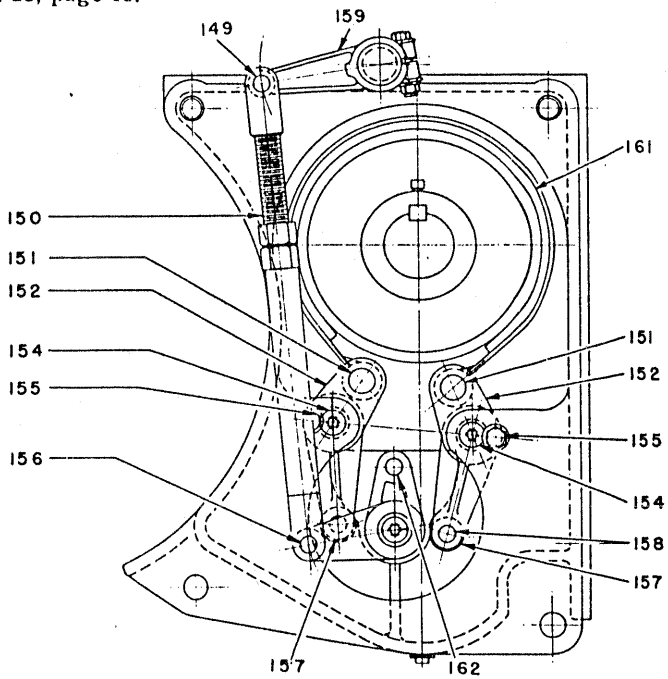
When brake lining is new, brake adjustment should be made as described in Instruction No. 23 of Mounting Instructions. After band wears, take up on horizontal link by loosening jam nuts and turning adjusting screw (with right and left hand threads) until handlever comes to proper position on quadrant, then tighten jam nuts. Additional adjustment is provided on the vertical link (150) enclosed in right hand hoist side frame which can easily be reached by taking off brake side cover (36), page 24.

The brake is operated by a two-way cam and must be relined when cam slips over rollers (157) on brake operating cranks.

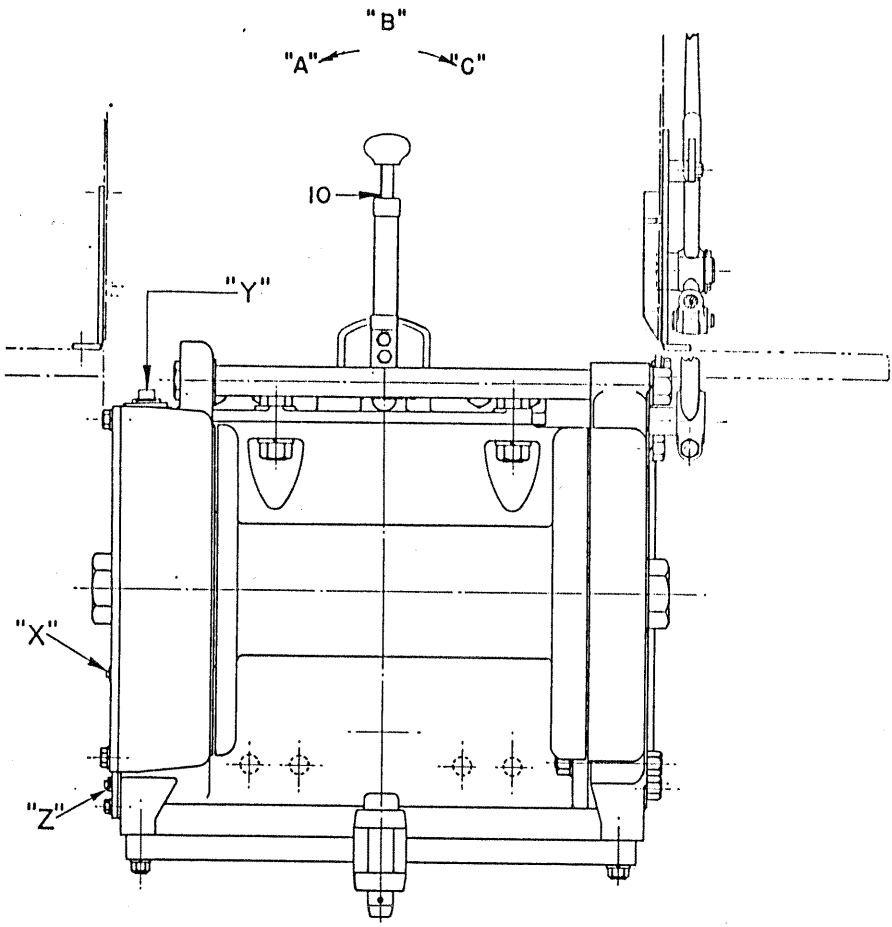
Relining Brake

Remove brake side cover (36), page 24, remove cotter pins, pull pins (151) below, holding brake ends to operating cranks (152), and pin (149) holding link (150), then open up brake band to clear cranks and frame and pull out.

When relining, use lining not over ¼" thick, and when mounting brake band with new lining, be sure to follow instructions as described in Instruction No. 23, page 15.



LUBRICATION CHART



LUBRICATION

All gears and bearings (including drum) are lubricated by splash from the oil in the winch transmission case. Oil level should be checked once a week by removing upper pipe plug "X," in left-hand side cover. Add oil through oil filler hole by removing 1" vent filler plug "Y." (Winch transmission case has a capacity of 2¼ gallons). For normal service and weather conditions use S.A.E. 90 oil. In general use the same gravity oil as is used in the "Caterpillar" transmission.

The oil should be drained from a new winch at the end of 30 days and the compartment flushed through pipe plug hole "Z" and refilled to oil level with fresh oil.

Drain, flush, and refill up to oil level plug every 60 days.

Brake rigging and brake shafts in winch are equipped with "Oilite" graphite-bronze bushings and need no lubrication, but it is advisable to oil these lightly if brake side cover is taken off for relining of brake. (Whenever the brake parts are dismantled for servicing, it is advisable to remove the brake cranks from the unit and submerge them in a pan of oil which will allow the oilite bushings to replenish a portion of its lubricating element).

Oil brake hand lever fulcrum and pins occasionally to keep them moving freely.

To refill tractor final drive case, remove seat cushion and plugs in tractor case and insert a rubber hose two or three feet long into filler holes. Pour oil through hose with small spout can or funnel to desired level. Replace filler plugs and seat cushion.

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.

SECTION C

Installation Instructions

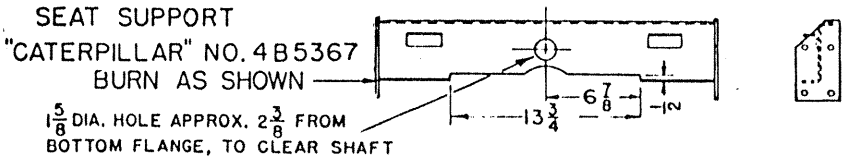
FOR INSTALLING HYSTER D2N TOWING WINCH ON "CATERPILLAR" DIESEL D2 TRACTOR (or R2)

Tractor Serial No. 4U-6373, 5U-13237 and up

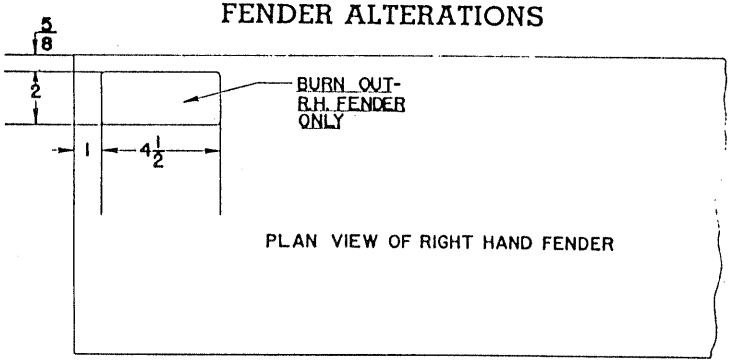
1. Remove tractor tank seat, top and rear transmission covers, drawbar guide plate and brackets.
2. CAUTION: Keep openings on top of tractor covered as much as possible to avoid dropping of articles into tractor case.
3. Remove two upper studs that hold upper ends of drawbar braces to tractor transmission rear face.

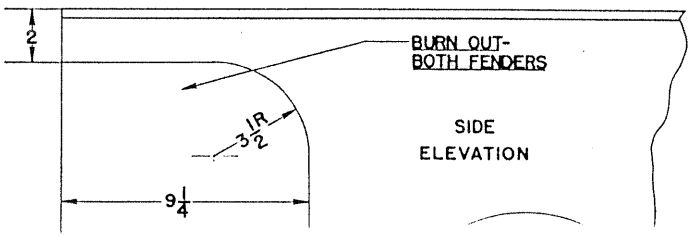
TRACTOR ALTERATIONS

Tractor Serial No. 4U-6373, 5U-13237 and up



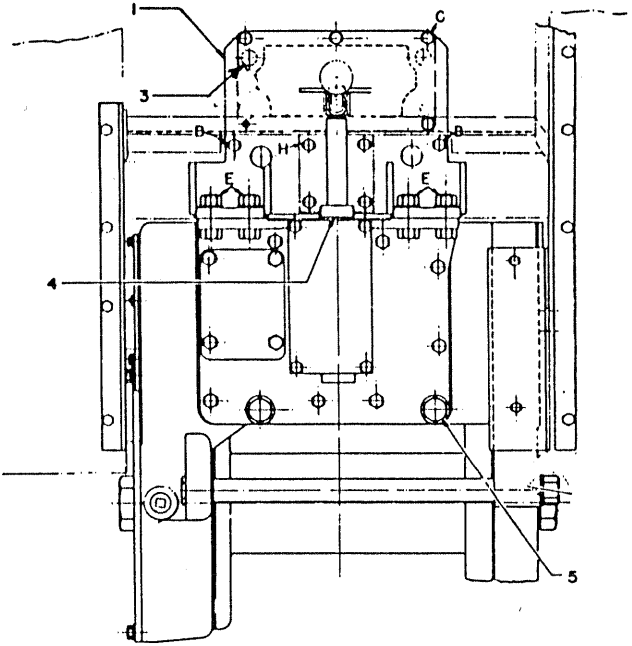
FENDER ALTERATIONS

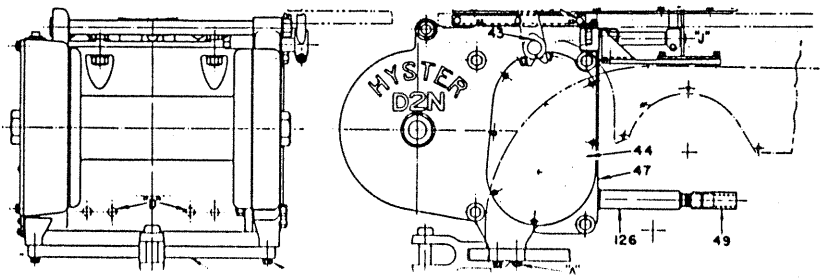




INSTALLATION INSTRUCTIONS—Continued

5. The right-hand fender top and skirt are to be burned as shown.
6. The tie plate (1) fastens to top of tractor transmission case. After top of tractor transmission case has been cleaned, place gasket between tie plate and top of tractor.
7. Remove "Caterpillar" pins and replace with two Hyster shear pins (3, page 13). Apply white lead or other lubricant on pins before inserting. Each pin is to be driven in place through tie plate into tractor until top of pin is flush with top of tie plate. A tapped hole is provided in top of pin to permit its removal when necessary.





INSTALLATION INSTRUCTIONS—Continued

(See illustration on page 13.)

8. Insert two capscrews, 3/8" NC x 1¼" "B," with one plain and one lockwasher (one on each side nearest to fenders) through tie plate into tractor.

9. The "Caterpillar" inspection cover over round hole, removed in Instruction No. 1, is now placed in position and fastened with four 3/8 NC x 1¼ capscrews at "H."

10. Install gasket (47) over four studs on back of tractor.

11. Swing winch unit into place back of tractor. Take special care to swing unit so that it will hang level and square with tractor face.

12. See that coupling (49) is in position on hoist power take-off shaft (126). Swing hoist toward tractor, seeing that coupling enters properly on tractor power take-off shaft. This may be facilitated by turning the power take-off shaft to line up spline coupling with shaft.

13. When hoist is approximately two inches from tractor rear face, line up four holes in bottom, with studs "D" on tractor, and slide hoist over them at the same time putting on four lockwashers and four nuts, and tighten same. Insert four bolts, ¾ x 2½, "E" through tie plate and top of hoist. Install one plain and one lockwasher under each nut and tighten to insure good oil-tight fit on gasket between hoist and tractor transmission.

14. If cover plate (9, page 15) is not in place, install on winch as shown.

15. (See page 13.)
Replace drawbar guide plate "G."

16. Fasten tightly with hardened capscrews and lockwashers "A" (5/8 UNF x 2¼).

17. (See illustration on page 15.)
Install transmission shifter lever assembly (19) on operating shaft as shown at "J," and with key in place, clamp securely to shaft.

18. Install gear shift bracket (25) over the shear pins (11) in tie plate as shown. Temporarily fasten with two capscrews, 3/8 NC x 1½ lg. Engage lever in center slot on bracket. Move shifter lever from neutral slot until sliding gear starts to engage. Move lever in opposite direction until sliding gear again starts to engage. Mark these spots on each side of center slot. (This might best be done by revolving drum.)
Check from each mark to center slot, and if not exactly the same distance, loosen capscrews holding bracket (25) and shift to side necessary so that slot is in exact center (slot bolt holes if required), and then clamp down securely. This will bring sliding gear (4, page 28) in the correct neutral position.

FAILURE TO DO THIS MIGHT RESULT IN SERIOUS DAMAGE TO THE WINCH OR TRACTOR, ESPECIALLY WHEN WORKING ON SIDE HILLS.

INSTALLATION INSTRUCTIONS—Continued

(See lubrication chart on page 10.)

19. Check oil level in transmission case by removing upper level pipe plug, "Y," on top of L. H. side frame over drum gear. (Capacity of case, 2¼ gallons of SAE 90 oil.)
(See illustration below.)

20. Fasten R. H. and L. H. seat support channels (7) and tractor seat to fenders, using original holes.

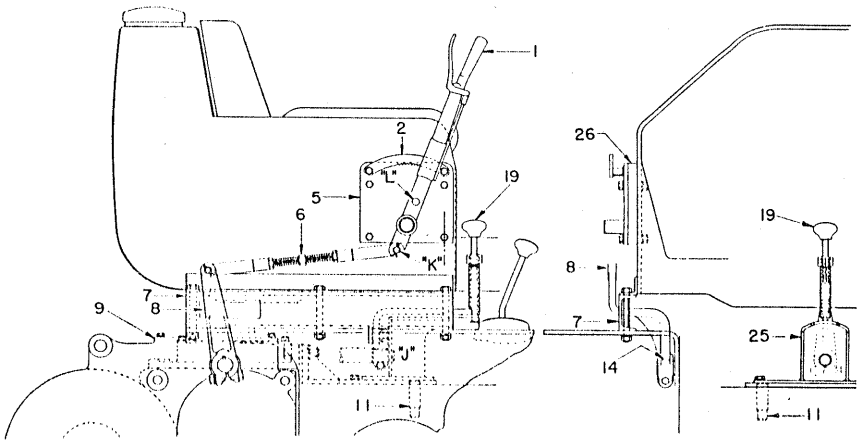
21. Install quadrant bracket (5) with quadrant (2) and handlever (1) to side of seat as shown, with two ¾" spacers between seat and bracket.

22. Install brake crank (8) on brake shaft protruding from top right-hand side of hoist. Insert crank through hole burned in top of fender and right-hand channel, and with key (14) in place, clamp securely to shaft.

23. Install horizontal adjustable brake link as follows:
Connect link (6) to handlever (1) with pin in lower hole "K," for UNDERWINDING DRUM (IN UPPER HOLE "L" FOR OVER-WINDING DRUM) AND INSERT COTTER PIN. Push handlever all the way forward against solid stop; (fully released position). Push brake crank (8) all the way forward, then reverse the action and pull it all the way back. Push it FORWARD AGAIN TO MIDWAY OF THE TWO POSITIONS, and adjust brake link (6) to meet the brake crank in the midway position. Insert pin and cotter, and tighten jam nuts on link. This will give the maximum clearance of brake band to drum and keep the brake from dragging and overheating.

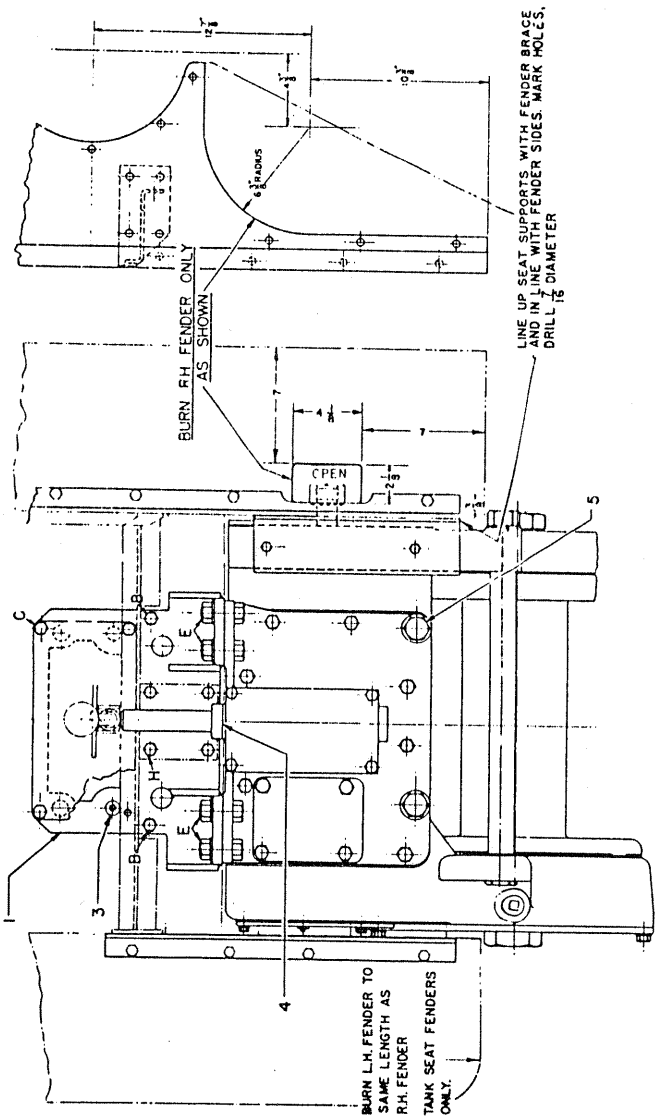
24. Check all bolts and connections, and be sure that all nuts and lock-washers are in place and drawn up tightly.

25. For standard seat-tank equipped tractors, an extension for the fuel line, consisting of one ½" standard pipe nipple 5" long with ½" coupling is furnished. For the drain line extension, one ½" standard pipe nipple 2" long with ½" x 90° elbow is furnished.



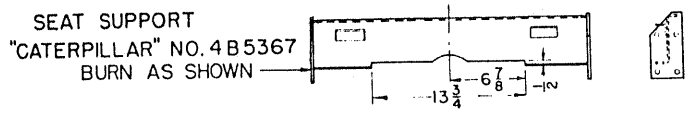
TRACTOR ALTERATIONS

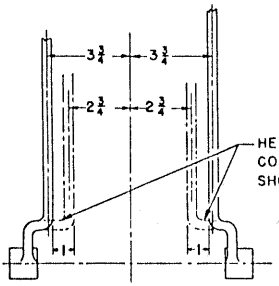
Prior to Tractor Serial Nos. 4U-6373, 5U-13237



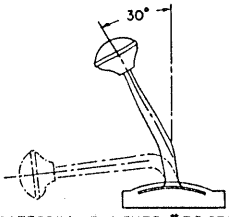
TRACTOR ALTERATIONS

Prior to Tractor Serial Nos. 4U-6373, 5U-13237



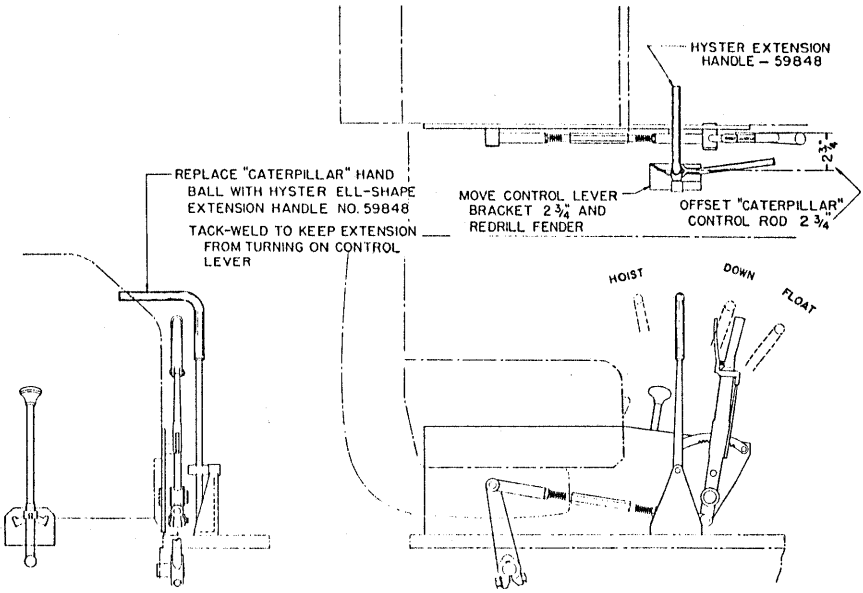


ALTERATION TO R.H. AND L.H. STEERING CLUTCH CONTROL LEVERS



CATERPILLAR LEVER # 7B6356
HEAT, BEND AND STRAIGHTEN DOT AND DASH OUTLINE OF LEVER INTO POSITION SHOWN BY FULL LINE SHAPE

ALTERATION TO GEAR SHIFT LEVER



Alteration to D2 "Dozer" Handling Gear When Installed with D2N Towing Winch

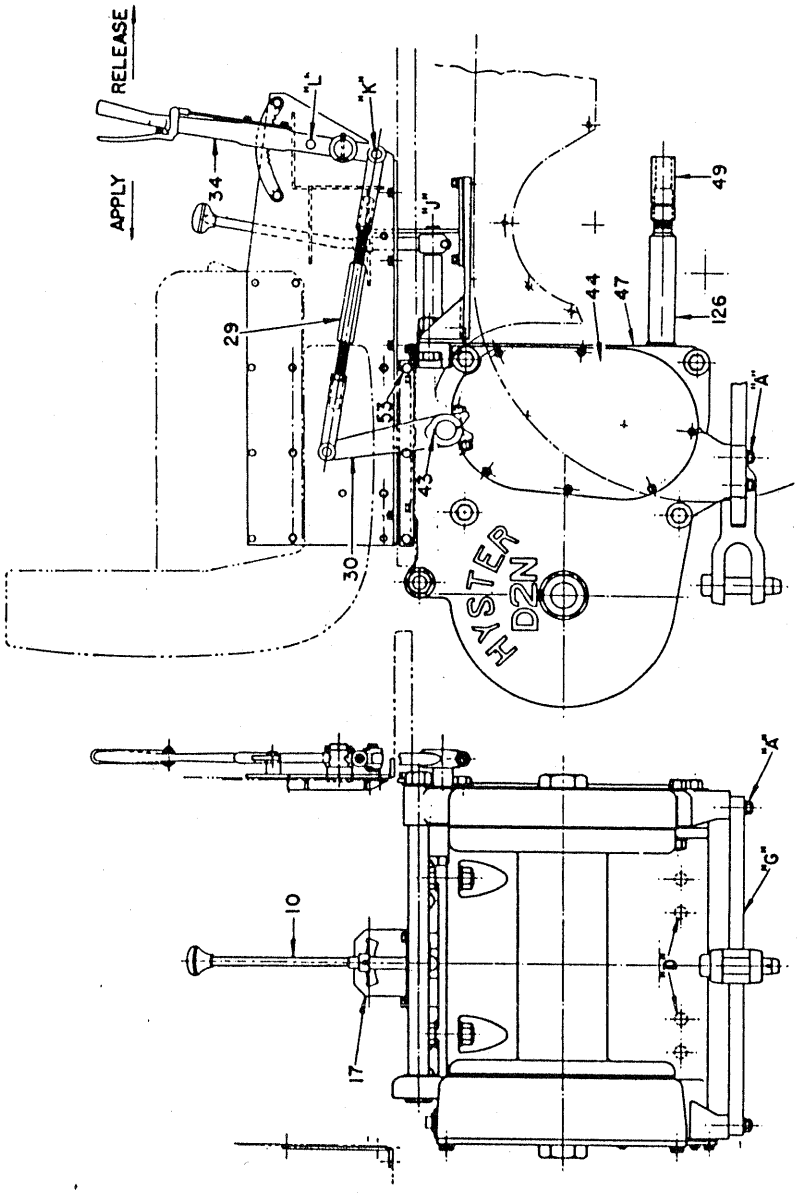
Installation Instructions

FOR INSTALLING HYSTER D2N TOWING WINCH ON "CATERPILLAR" DIESEL D2 TRACTOR (or R2)

Prior to Tractor Serial Nos. 4U-6373, 5U-13237

1. Remove tractor tank seat, support assembly between fenders, top and rear transmission covers, drawbar guide plate and brackets.
2. CAUTION: Keep openings on top of tractor covered as much as possible to avoid dropping of articles into tractor case.
3. Remove two upper studs that hold upper ends of drawbar braces to tractor transmission rear face.
5. The right-hand fender top and skirt are to be burned as shown on drawing, page 16.
6. The tie plate (1), page 16, fastens to top of tractor transmission case. After top of tractor transmission case has been cleaned, place gasket between tie plate and top of tractor.
7. Insert shear pins (3), page 16, in two rear pin holes which are open on standard tractors. Apply white lead or other lubricant on pins before inserting. Each pin is to be driven in place through tie plate into tractor until top of pin is flush with top of tie plate. A tapped hole is provided in top of pin to permit its removal when necessary.
8. Insert two capscrews, 3/8" NC x 1¼" "B," page 16, with one plain and one lockwasher (one on each side nearest to fenders) through tie plate into tractor.
9. The "Caterpillar" inspection cover over round hole, removed in Instruction No. 1, is now placed in position and fastened with four 3/8" NC x 1¼ capscrews at "H," page 16.
(See illustration on page 19.)
10. Install gasket (47) over four studs on back of tractor.
11. Swing winch unit into place back of tractor. Take special care to swing unit so that it will hang level and square with tractor face.
12. See that coupling (49) is in position on hoist power take-off shaft (126). Swing hoist toward tractor, seeing that coupling enters properly on tractor power take-off shaft. This may be facilitated by turning the power take-off shaft to line up spline coupling with shaft.
13. When hoist is approximately two inches from tractor rear face, line up four holes in bottom, with studs "D" on tractor, and slide hoist over studs. Fasten with four nuts, and lockwashers and tighten securely. Insert four bolts, ¾ x 2½, "E" (page 16) through tie plate and top of hoist. Install one plain and one lockwasher under each nut and tighten to insure good oil-tight fit on gasket between hoist and tractor transmission.
14. Fasten right-hand fender brace with three capscrews and lockwashers
15. Replace drawbar guide plate "G."
16. Fasten tightly with hardened capscrews "A" and lockwashers (5/8 UNF x 2¼).

INSTALLATION INSTRUCTIONS—Continued



INSTALLATION INSTRUCTIONS—Continued

17. Install transmission shifter lever assembly on operating shaft as shown at "J," and with key in place, clamp securely to shaft.

18. Install gear shift bracket (17) over the shear pins in tie plate (1), page 16. Check for correct height of shifter shaft support hole, using gaskets for shimming. Temporarily fasten with two capscrews, 3/8 NC x 1½ long. Engage lever in center slot on bracket (17, page 19). Move shifter lever (10) from neutral slot until sliding gear starts to engage, then move lever in opposite direction until sliding gear again starts to engage. Mark these spots on each side of center slot. (This might best be done by revolving drum.)
Check from each mark to center slot, and if not exactly the same distance, loosen capscrews holding bracket (17) and shift to side necessary so that slot is in exact center (slot bolt holes if required), and then clamp down securely. This will bring sliding gear (4), page 28, in the correct neutral position.
FAILURE TO DO THIS MIGHT RESULT IN SERIOUS DAMAGE TO THE WINCH OR TRACTOR, ESPECIALLY WHEN WORKING ON SIDE HILLS.

19. Alter support assembly, "Caterpillar" No. 4B5367. Mark as per drawing, page 17, burn as shown, and replace in its original place.

20. (See lubrication chart on page 10.) Check oil level in transmission case by removing upper level pipe plug, "Y," on top of L. H. side frame over drum gear. (Capacity of case, 2¼ gallons of SAE 90 oil.)

21. Locate right-hand seat support (17), page 24 (with brake quadrant) and left-hand seat support (7), on their respective fenders; ends of seat supports to come flush with end of fender brace as shown on page 16. Mark and drill holes in top of fender.

22. Fasten seat supports to fenders with 3/8 x 1" bolts and lockwashers.

23. Install brake crank (30), page 19, on brake shaft protruding from top right-hand side of hoist. Insert crank through hole burned in top of fender and with key (43) in place, clamp securely to shaft.

24. Install horizontal adjustable brake link as follows:
Connect link (29) to handlever (34) with pin in lower hole "K," for UNDERWINDING DRUM (IN UPPER HOLE "L" FOR OVERWINDING DRUM) AND INSERT COTTER PIN. Push handlever all the way forward against solid stop; (fully released position). Push brake crank (30) all the way forward, then reverse the action and pull it all the way back. Push it FORWARD AGAIN TO MIDWAY OF THE TWO POSITIONS, and adjust brake link (29) to meet the brake crank in the midway position. Insert pin and cotter, and tighten jam nuts on link. This will give the maximum clearance of brake band to drum and keep the brake from dragging and overheating.

25. Check all bolts and connections, and be sure that all nuts and lockwashers are in place and drawn up tightly.

INSTALLATION INSTRUCTIONS—Continued

26. Install seat, and bolt to seat supports (7 and 17), page 24, with cap-screws (15) using lower set of holes as shown. Upper set of holes in (17) are to be used for tank seat and pump drive. In latter case, L. H. seat support (7) is discarded and replaced by special seat and pump support. (See pages 37 to 47.)
NOTE: This L. H. seat and pump support will vary according to pump. The same R. H. support is used in all cases.

27. For standard seat-tank equipped tractors, an extension for the fuel line, consisting of one ½" standard pipe nipple 5" long with ½" coupling is furnished. For the drain line extension, one ½" standard pipe nipple 2" long with ½" x 90° elbow is furnished.

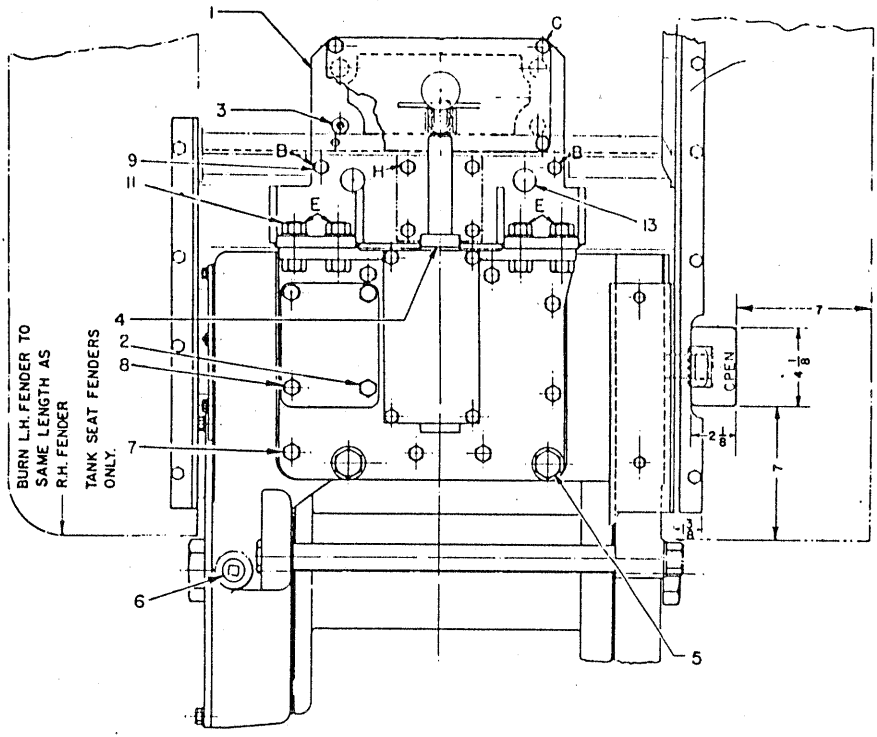
28. If tractor is equipped with fender fuel tank, and winch with pump drive, tank must be moved to R. H. fender and requires fender plate, Hyster Part No. 59471. This part is optional and is furnished only on request.

29. To operate "Caterpillar" tractor equipment with Hyster winch, "Caterpillar" transmission shift lever must be heated and bent to approximate shape shown on page 17.

SECTION D
List of Parts and Illustrations

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.

PLAN VIEW



PLAN VIEW

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	92145A	Plate—Tie	1
	31301	Gasket	1
2	15515	Capscrew—½ NF x ¾	2
	15158	Lockwasher—½.	2
3	30970	Pin	2
4	9444	Set Collar—1¼	1
5	34798	Capscrew	2
	15164	Lockwasher—⅞.	2
	15014	Nut—Hex, ⅞ NF	2
6	32411	Plug—Vent	1
7	15511	Capscrew—½ NF x 1	7
	15158	Lockwasher—½.	7
8	15509	Capscrew—½ NF x 1½	2
	15158	Lockwasher—½.	2
9	25062	Capscrew—⅜ NC x 1¼	6
	15176	Washer—⅜	2
	15156	Lockwasher—⅜.	6
11	15576	Capscrew—¾ NF x 2½	4
	15162	Lockwasher—¾.	4
	15181	Washer—¾	4
	15012	Nut—Hex, ¾ NF	4
13	15325	Pipe Fitting—Coupling, ⅛	2
	15324	Pipe Fitting—Close Nipple, ⅛	2

92005A Complete Gasket Set for D2N Towing Winch

ADDITIONAL PARTS REQUIRED (NOT ILLUSTRATED) FOR TRACTOR WITH SEAT-MOUNTED FUEL TANK

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
	15352	Pipe Fitting—Nipple, ½ x 2	1
	15327	Pipe Fitting—Coupling, ½	1
		Fuel Line Extension	
	15352	Pipe Fitting—Nipple, ½ x 2	1
	15375	Pipe Fitting—Elbow, ½ x 90°	1
		Drain Extension	

CONVERSION GROUPS

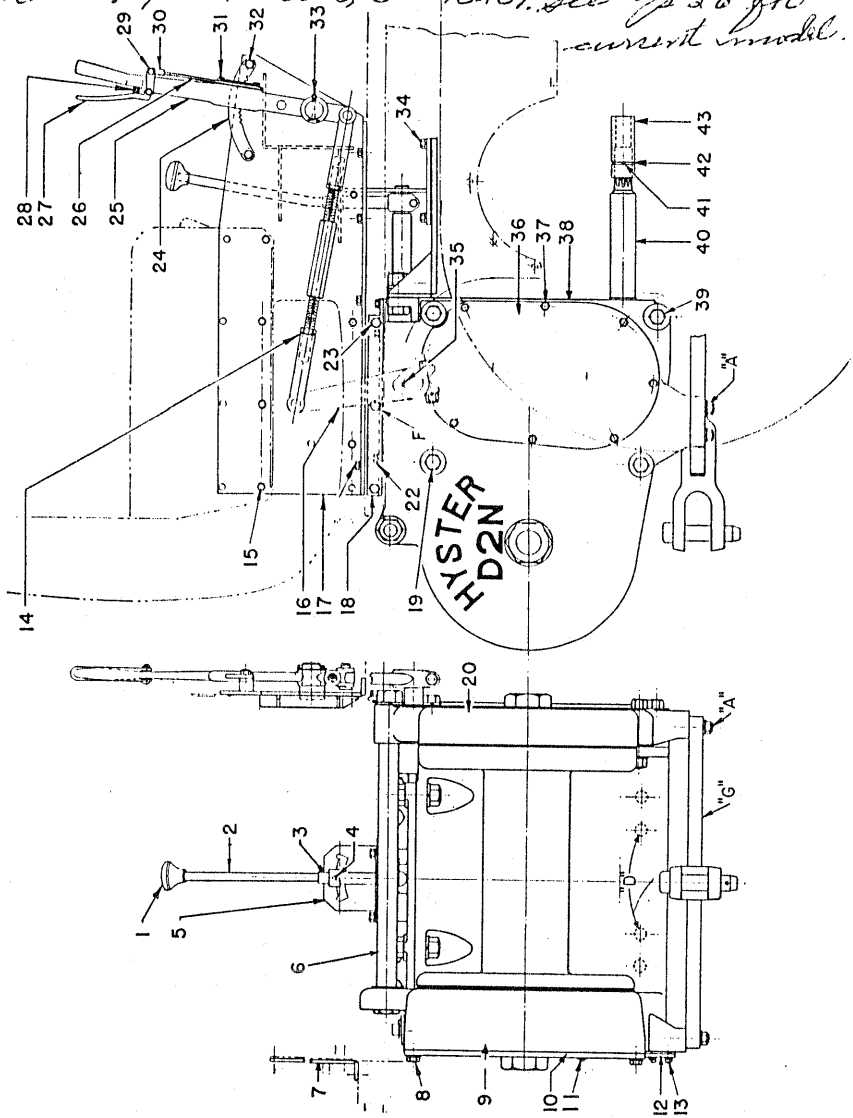
To convert towing winch made for tractors prior to Serial No. 4U-6373, 5U-13237 for use with tractors Serial No. 4U-6373, 5U-13237 and up, order conversion group No. 92382A.

To convert towing winch made for tractors Serial No. 4U-6373, 5U-13237 and up, for use with tractors prior to Serial No. 4U-6373, 5U-13237, order conversion group No. 92383A.

ELEVATION

For Tractors prior to Tractor Serial No.s 4U-6373, 5U-13237)

† Items marked † are for tractors prior to tractor s/n 4U-6373, 5U-13237. See p 36 for current model.



ELEVATION

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
†1	59437A	Handlever	1
	*809	Knob	1
†2	*59298	Rod	1
	*5782	Spring	1
†3	32353A	Lever	1
	*15528	Capscrew—⅜ NF x 2.	1
	*15006	Nut—Hex, ⅜ NF	1
	*15156	Lockwasher—⅜	1
†4	*91526	Pin—Dowel	1
†5	59264	Plate	1
6	32182	Pipe—Spacer	1
†7	59273	Bracket—Seat Support (L. H.)	1
8	15511	Capscrew—½ NF x 1.	8
	15158	Lockwasher—½	8
9	59205A	Frame—Assembly, Side (L. H.)	1
10	59265	Cover—Gear	1
	32168	Gasket	1
11	15302	Plug—Pipe, ¾ Std.	2
12	32169	Cover—Side (L. H.).	1
	32170	Gasket	1
13	15513	Capscrew—⅜NFx¾	10
	15156	Lockwasher—⅜	10
†14	59433A	Link Assembly	1
	*158	Rod End (R. H. Thread)	1
	*32448	Rod End (L. H. Thread)	1
	*15030	Nut—Jam (⅝ NF) (R. H. thread)	1
	*32414	Nut—Jam (⅝) (L. H. thread)	1
	*159	Pin—Rod End	2
	*15223	Cotter—⅛ x 1	2
†15	15508	Capscrew—⅜ NF x 1.	8
	15156	Lockwasher—⅜	8
	15006	Nut—Hex, ⅜ NF	8
†16	37431A	Crank Assembly	1
	*15517	Capscrew—½NFx2¼	1
	*15158	Lockwasher—½	1
	*15008	Nut—Hex, ½ NF	1
†17	59272A	Bracket—Seat Support (R. H.)	1
†18	33322	Plate—Fender Brace (R. H.)	1
	21420	Plug—Breather (not illustrated)	1
19	34794	Capscrew	2
	15162	Lockwasher—¾	2

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
20	59282	Frame—Side (R. H.)	1
†21	15513	Capscrew—⅜ NF x ¾	12
	15156	Lockwasher—⅜	12
	15006	Nut—Hex, ⅜ NF	12
22	15513	Capscrew—⅜ NF x ¾	2
	15156	Lockwasher—⅜	2
†23	15565	Capscrew—⅜ NC x ½	3
	15156	Lockwasher—⅜	3
24	59035	Quadrant—Ratchet	1
25	59034A	Handlever Assembly.	1
26	*59033	Rod—Pawl	1
27	*32694	Handle	1
28	*32695	Spring	1
29	*37476	Capscrew—Special	2
	*15052	Nut—Hex (10-24)	2
30	*32693	Rod End	1
31	*32692	Bolt—Shoulder (Drilled Head)	2
32	15508	Capscrew—⅜ NF x 1.	2
	15156	Lockwasher—⅜	2
33	15185	Washer—1¼	1
	15245	Cotter—3/16 x 1¾	1
34	15580	Capscrew—⅜ NC x 1½	6
	15156	Lockwasher—⅜	6
35	206	Key—Woodruff	1
36	32180	Cover—Side (R. H.).	1
	32181	Gasket	1
37	15513	Capscrew—⅜ NF x ¾	8
	15156	Lockwasher—⅜	8
38	32165	Gasket	1
39	15567	Capscrew—¾ NF x 4½	2
	15162	Lockwasher—¾	2
40	59206	P.T.O. Shaft	1
41	9556	Pin ("Caterpillar" No. 1A-4596)	1
42	9557	Ring—Lock ("Caterpillar 1A-4591)	1
43	5602	Coupling—Spline "Caterpillar" V-484.	1

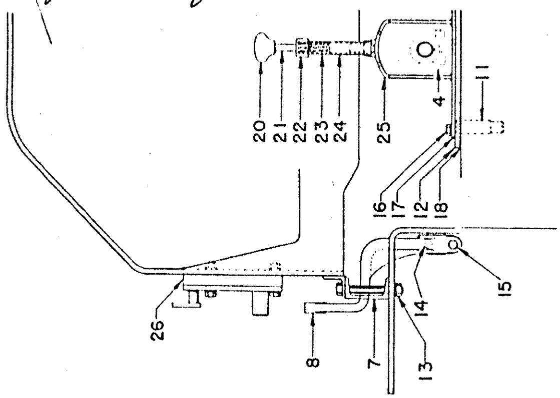
*Included in assembly under which listed.

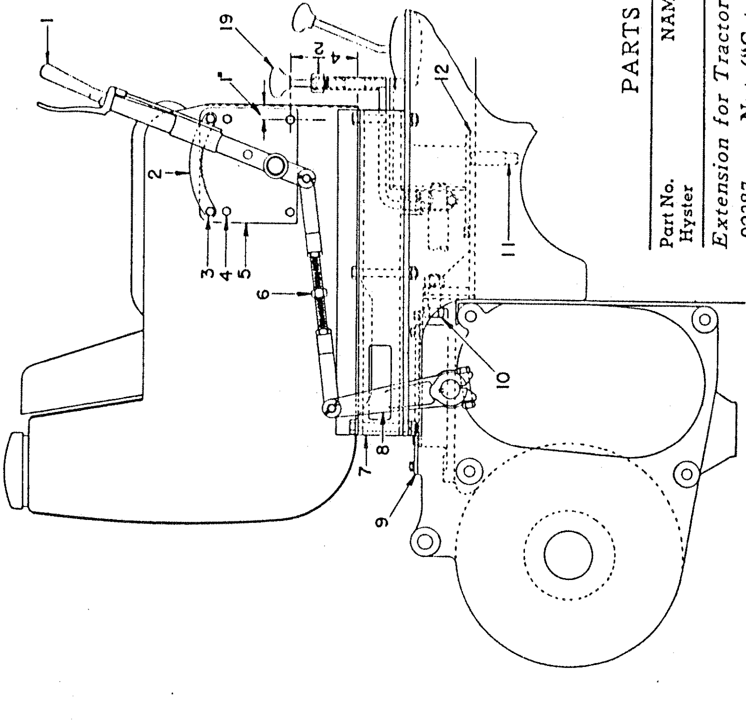
ELEVATION

For Tractor Serial Nos. 4U-6373, 5U-13237 and up

~~Parts listed are for tractors s/n 4U-6373~~

See p. 25 for parts not listed.





PARTS NOT ILLUSTRATED

Part No. Hyster	NAME OF PART	Reqd. Qty.
	Extension for Tractor Gear Shift Lever	
92387	Nut ("Caterpillar" No. 1B-4431)	1
92388	Stud ("Caterpillar" No. 2F-5934)	1
	Winch to Drawbar Fastenings	
16645	Capscrew—5/8 UNF x 2 1/4 (Hardened)	4
15160	Lockwasher—5/8	4

ELEVATION

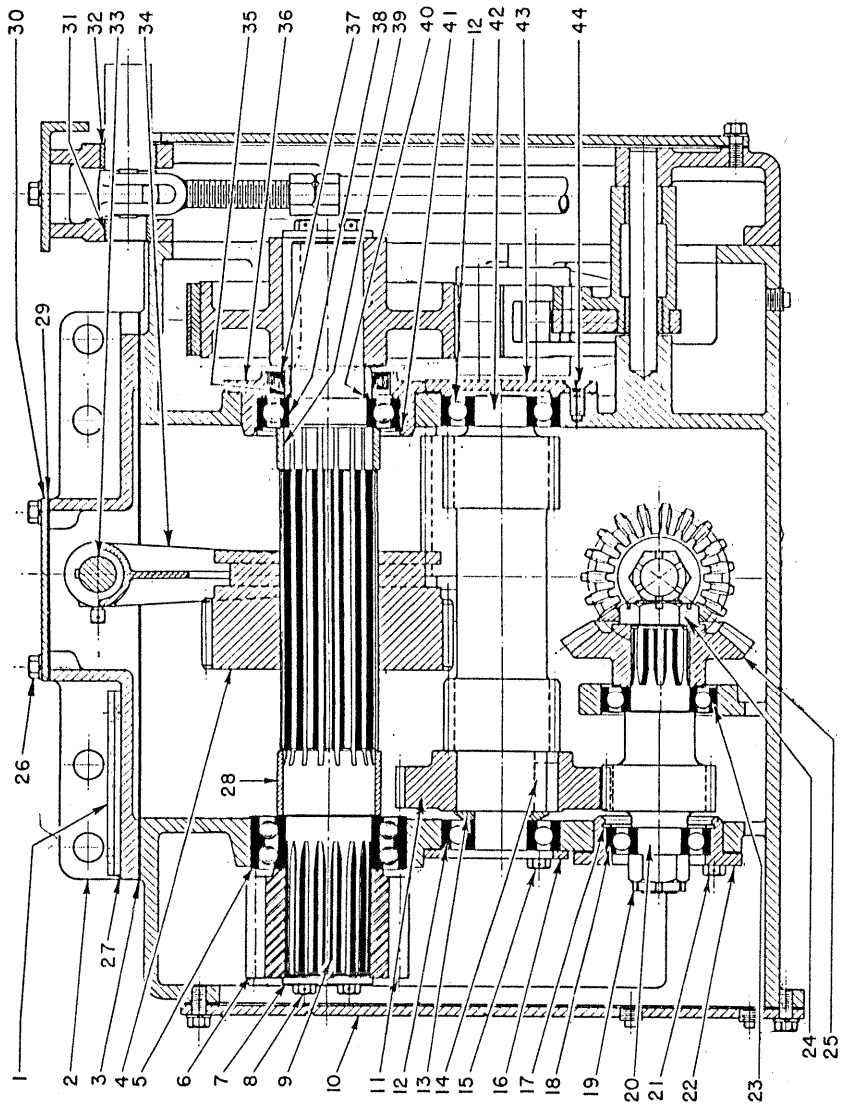
For Tractor Serial Nos. 4U-6373, 5U-13237 and up

See p 25 for parts not listed

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	.....	Handlever (see page 25, Ref. 25)	
2	.....	Quadrant (see page 25, Ref .24)	
3	15513	Capscrew—3/8 NF x 3/4	2
	15156	Lockwasher—3/8	2
4	15581	Capscrew—3/8 NF x 2 1/4	5
	15006	Nut—Hex, 3/8 NF	5
	15156	Lockwasher—3/8	5
5	92148A	Bracket—Quadrant	1
6	93148A	Link Assembly	1
	* 158	Rod End (R. H. thread)	1
	*32448	Rod End (L. H. thread)	1
	*15030	Nut—Jam, 5/8 NF (R. H. thread)	1
	*32414	Nut—Jam (5/8 L. H. thread)	1
	* 159	Pin—Rod End	1
	*15223	Cotter—1/8 x 1	2
7	92146	Channel—Seat Support (L. H.)	1
	92147	Channel—Seat Support (R. H.)	1
8	93960	Crank	1
9	92143	Cover—Brake Vent	1
10	15576	Capscrew—3/4 NF x 1 1/4	4
	15181	Washer—3/4	4
	15162	Lockwasher—3/4	4
	15012	Nut—Hex, 3/4 NF	4
11	92144	Pin—Shear	2
12	.....	Plate—Tie (see page 23, Ref. 1)	1
13	15592	Capscrew—1/2 NF x 4 1/2	6
	15008	Nut—Hex, 1/2 NF	6
	15158	Lockwasher—1/2	6
14	206	Key	2
15	15517	Capscrew—1/2 NF x 2 1/2	1
	15008	Nut—Hex, 1/2 NF	1
	15158	Lockwasher—1/2	1
16	15580	Capscrew—3/8 NC x 1 1/2	6
	15156	Lockwasher—3/8	6
17	59436	Gasket	1
18	31301	Gasket	1
19	92153A	Handlever Assembly	1
20	*27991	Knob	1
21	*92135	Rod—Shifter	1
22	*59602	Cap	1
23	* 5782	Spring	1
24	*92136A	Handlever	1
25	92139A	Bracket—Shifter	1
26	94633	Spacer	2

**Included in assembly under which listed.*

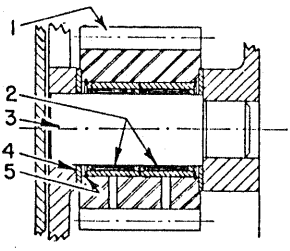
TRANSMISSION



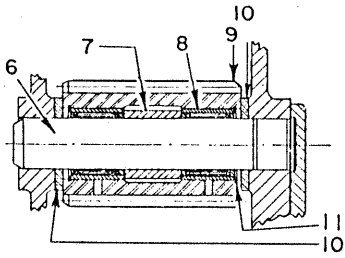
TRANSMISSION

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	33662	Cover—Hand Hole	1
2	32171B	Cover—Top	1
3	32172	Gasket	1
4	59283	Gear Sliding (40 teeth)	1
5	45212	Bearing	1
6	59215	Gear—Drum (16 teeth)	1
7	32201	Plate	1
8	798	Capscrew—Drilled Head	2
9	59214	Shaft—Drum Pinion	1
10	32169	Cover	1
	32170	Gasket	1
11	59210	Gear (33 teeth)	1
12	41307	Bearing	2
13	32192	Washer	1
14	32191	Key	1
15	30836	Capscrew—Drilled Head	4
16	59216	Plate—Retainer	1
17	31868	Snap Ring	1
18	43306	Bearing	1
19	54	Nut—Castel., 1" NF	1
	15227	Cotter—⅛ x 2	1
20	59208	Gear Shaft	1
21	31414	Capscrew—Drilled Head	4
22	59267	Carrier—Bearing	1
	31873	Shim Set	1
23	41208	Bearing	1
24	9732	Nut	1
25	59209	Gear—Bevel (25 teeth)	1
26	15525	Capscrew—⅜ NC x ¾	4
	15156	Lockwasher—⅜	4
27	32617	Gasket	1
28	59259	Pipe	1
29	32174	Gasket	1
30	59281	Cover—Hand Hole	1
31	32178	Bushing	1
32	32179	Bushing	1
33	59263	Shaft—Shifter	1
	206	Key	1
34	32175	Fork—Shifter	1
	59262	Shoe—Shifter	2
	206	Key	2
	~~23302~~ 33302	Setscrew	1
35	59219	Spacer	1
36	59217	Carrier—Bearing	1
	59218	Gasket	1
	30836	Capscrew—Drilled Head	4
37	24676	Oil Seal	1
38	41211	Bearing	1
39	32538	Pipe	1
40	59229	"O" Ring	1
41	37591	Snap Ring	1
42	32189	Gear Shaft	1
43	59268	Retainer—Brg.	1
	59269	Gasket	1
44	32687	Mach. Screw	3

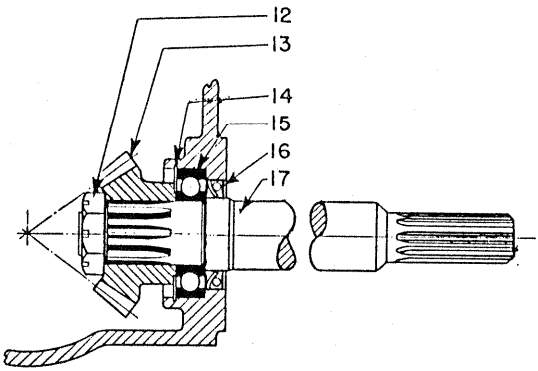
TRANSMISSION—Continued



DRUM IDLER GEAR



REVERSE IDLER GEAR

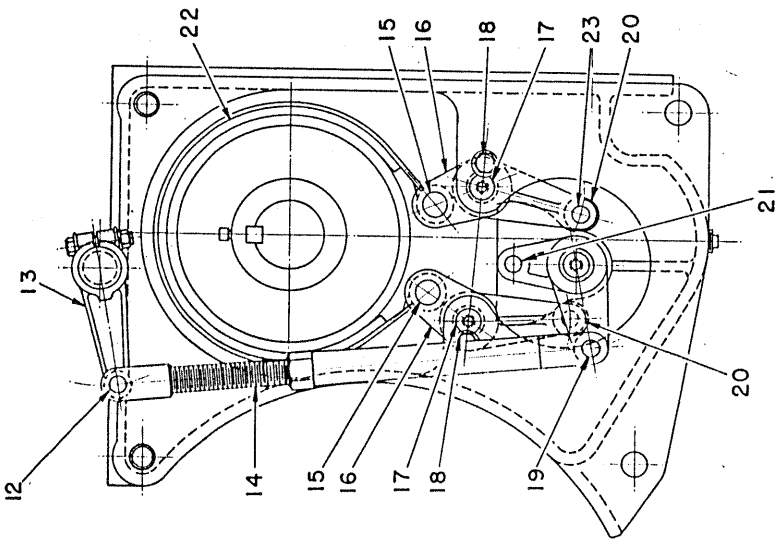


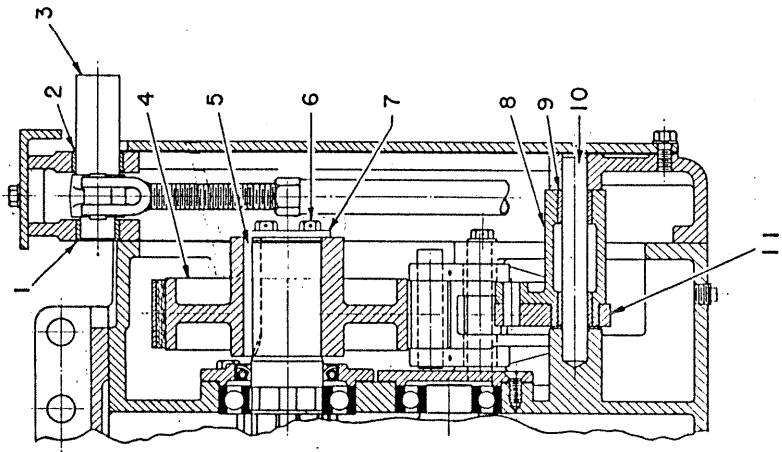
POWER TAKE-OFF SHAFT

TRANSMISSION—Continued

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	59222	Gear—Idler (18 teeth)	1
2	59275	Needle Bearing	2
3	59221	Shaft	1
4	59212	Washer	2
5	33799-13	Snap Ring	2
6	59266	Shaft	1
7	59213	Pipe	1
8	59274	Needle Bearing	2
9	59211	Gear—Reverse Idler (17 teeth)	1
10	33352	Washer—Thrust	2
11	33990	Snap Ring	2
12	9732	Nut—Slotted	1
	15227	Cotter—⅛ x 2	1
13	59207	Gear/Bevel (19 teeth)	1
14	9109	Snap Ring	1
15	43208	Bearing	1
16	32185	Oil Seal	1
	59206	Shaft—P. T. O.	1

BRAKE ASSEMBLY



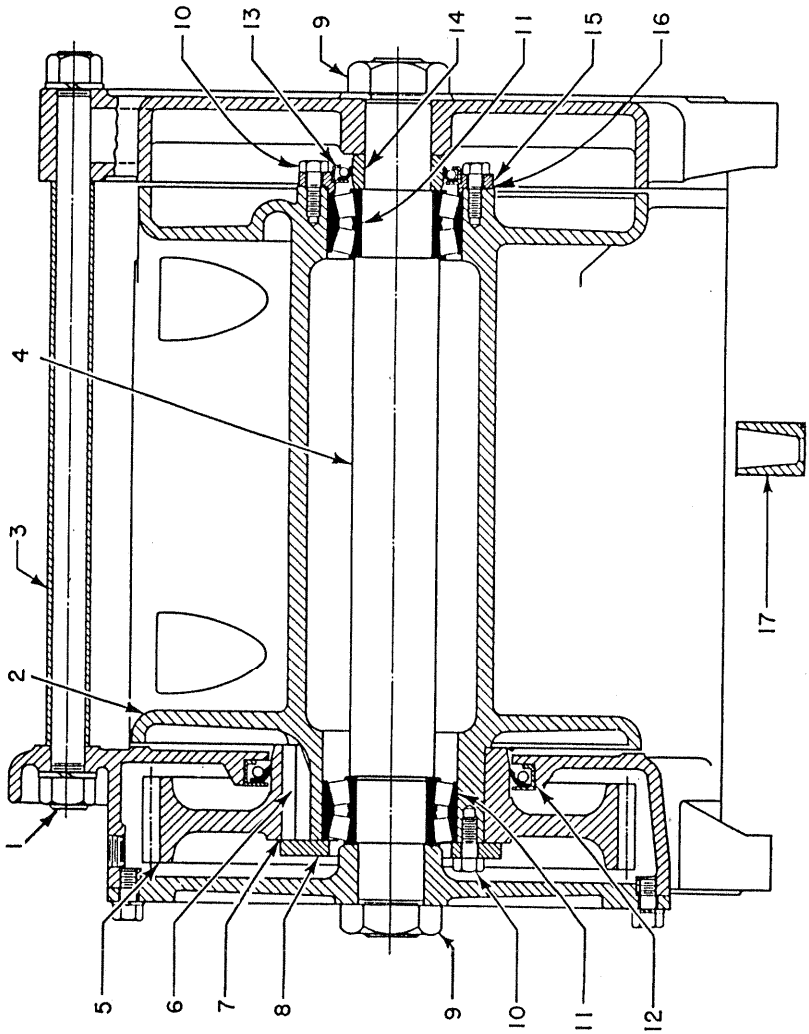


BRAKE ASSEMBLY

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	32178	Bushing	1
2	32179	Bushing	1
3	32237	Pin	1
4	59220	Wheel—Brake	1
5	32208	Key	1
6	798	Capscrew—Drilled Head	2
7	32201	Plate	2
8	32231A	Crank—Bell	1
9	*32232	Bushing	1
10	32228	Pin	1
11	32233	Cam—Brake	1
12	32235	Pin	1
	15225	Cotter—1/8 x 1 1/2	1
	32236A	Crank Assembly	1
	*15527	Capscrew—3/8 NF x 1 3/4	1
	*15006	Nut—Hex, 3/8 NF	1
	*15156	Lockwasher—3/8	1
	206	Key	2
	32234A	Link—Assembly	1
	*41649A	Link	1
14	*41037A	Rod End	1
	*15012	Nut—Hex, 3/4 NF	1
	* 153	Pin—Rod End	1
	*15300	Cotter—1/8 x 7/8	1
15	32225	Pin	2
	15227	Cotter—1/8 x 2	2
16	32226A	Crank Assembly—Brake	2
	*40577	Bushing	4
17	32159	Pin	2
18	32608	Capscrew—Drilled Head	2
	15176	Washer—3/8"	2
19	.....	Pin—Rod End (Part of Ref. 14)	
20	32229	Spacer	2
21	30931	Pin (Part of Assembly 8)	1
22	32223AB	Brake Band Assembly	1
	*32224A	Lining Set—Brake	1
	32230	Pin	2
	15225	Cotter—1/8 x 1 1/2	2

.cluded in assembly under which listed.

DRUM ASSEMBLY



DRUM ASSEMBLY

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	91782	Link	1
	15016	Nut—1" NF	2
	15166	Lockwasher—1"	2
2	32216	Drum	1
3	32182	Pipe—Spacer	1
4	32214B	Shaft—Drum	1
5	32217B	Gear—Drum (56 teeth)	1
6	32218	Key	1
7	32220	Gasket	1
8	32219B	Plate—Retainer	1
9	4338	Nut	2
10	9983	Capscrew—Drilled Head	12
11	31782	Roller Bearing { 2- 30247 1- 30242	2
12	32166	Oil Seal	1
13	6464	Oil Seal	1
14	32215	Spacer	1
15	32221	Retainer	1
16	32222	Gasket	1
17	9008	Ferrule	1

Note Add 2 qts. SAE 90 Oil at assy. Pages 50, 51, 52, 53 & 54 are superseded by insert

OPTIONAL EQUIPMENT

Traxcavator Installation Group, See Page 50

Pump Adapters for D2 Tractors with Fender-mounted Fuel Tanks
See Pages 36-37

Pump Adapters for D2 Tractors with Seat-mounted Fuel Tanks
See Pages 38-49

For complete pump adapter assemblies for tractors with fender-mounted fuel tanks, order by the following numbers:

59506A For La Plant-Choate Pumps

59507A For Kay-Brunner Pumps

59508A For Isaacson Pumps

For fender-mounted fuel tanks, these parts are required in addition to parts listed on pages 40, 45, and 48.

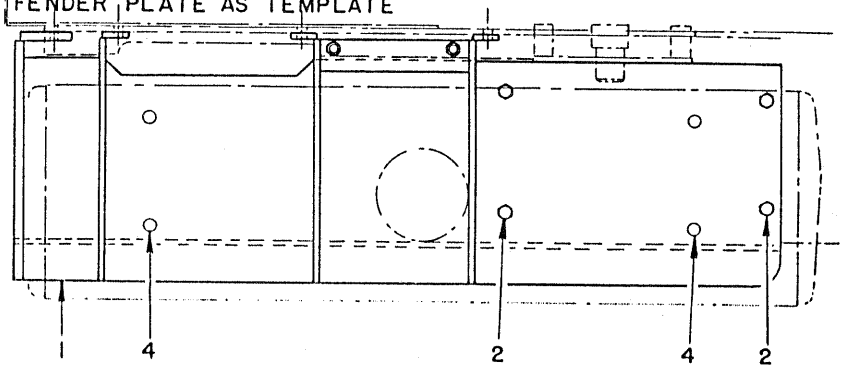
(See illustration on page 37.)

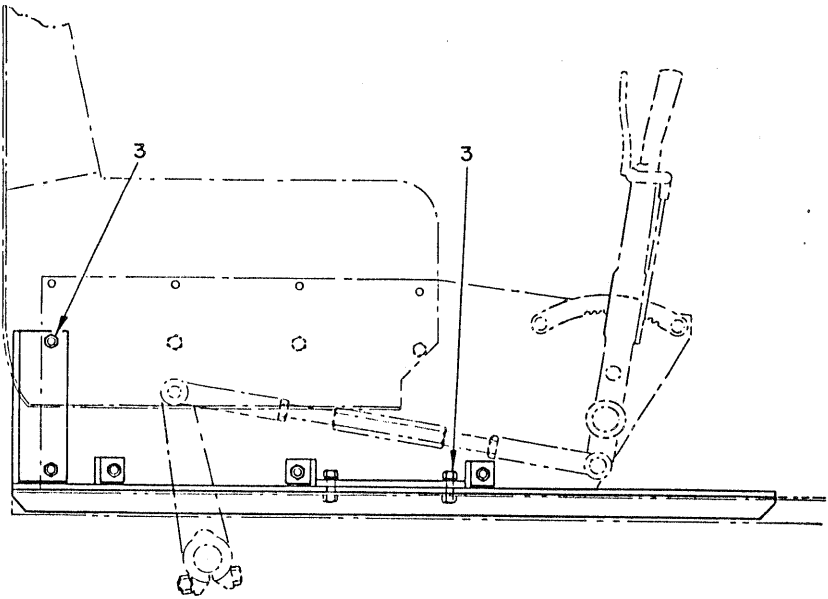
No. Ref.	Part No. Hyster	NAME OF PART	Req Qty.
1	59471	Plate—Fender	1
2	15508	Capscrew—3/8 NF x 1	4
	15156	Lockwasher—3/8	4
	15006	Nut—Hex, 3/8 NF	4
3	15532	Capscrew—3/8 NF x 1 1/4	9
	15006	Nut—Hex, 3/8 NF	9
4	33605	Capscrew—Special	1
	15547	Capscrew—1/2 NC x 1 1/2	3
	15158	Lockwasher—1/2	4
	15058	Nut—Hex, 1/2 NC	4
	33596A	Tube Assembly—Extension (for fuel line—not illust.)	1

PUMP DRIVE ADAPTERS
FENDER PLATE FOR FENDER-MOUNTED FUEL TANKS

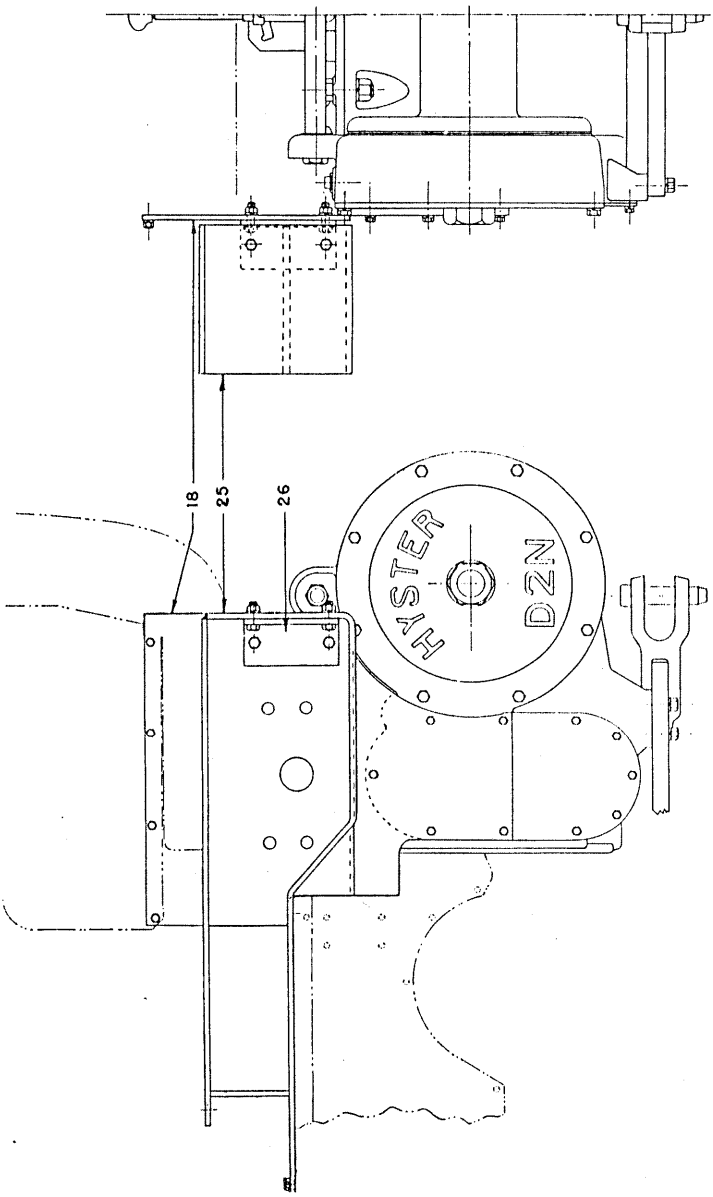
BOLT FENDER PLATE TO R.H. SEAT SUPPORT

DRILL FOUR $\frac{9}{16}$ HOLES (4) AND FOUR $\frac{7}{16}$ HOLES (2), USING FENDER PLATE AS TEMPLATE

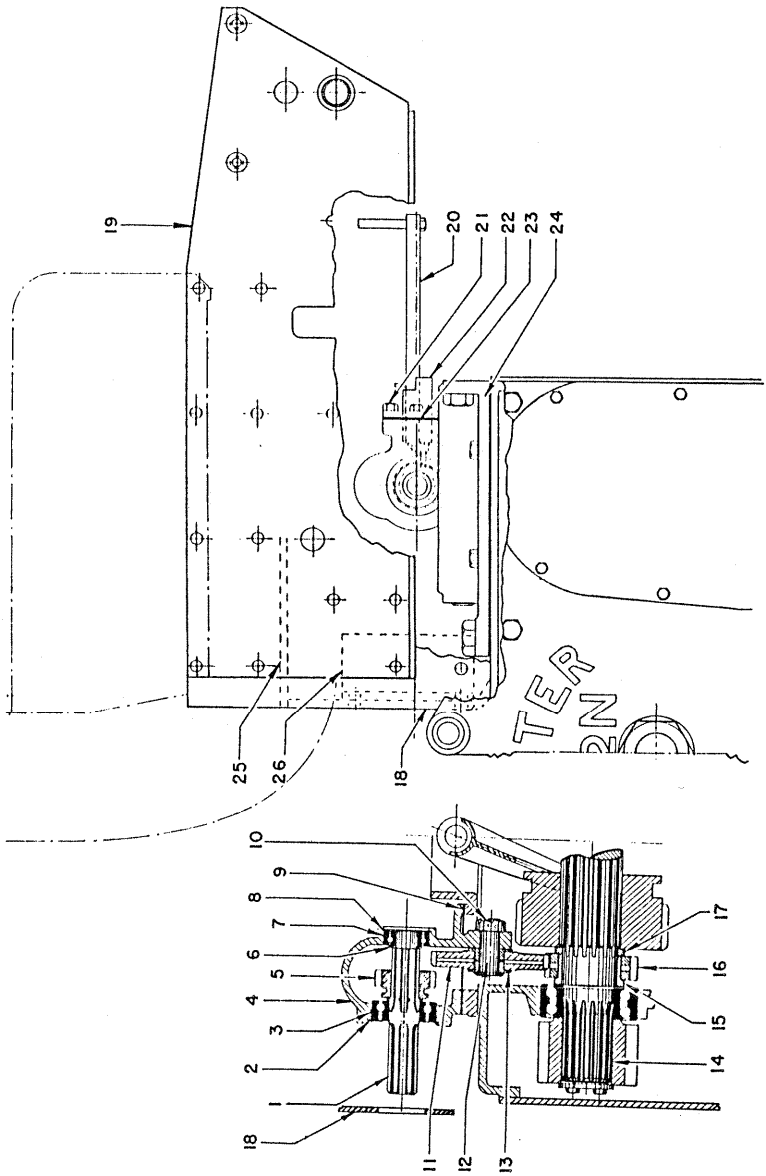




PUMP BRACKET AND SEAT SUPPORTS FOR LaPLANT-CHOATE PUMP



PUMP DRIVE FOR LaPLANT-CHOATE PUMP



D2N TOWING WINCH PUMP DRIVE AND SEAT SUPPORTS FOR LaPLANT-CHOATE PUMP

(On D2 Tractor with Seat-mounted Fuel Tank)
Complete Asembly No. 59226A

No. Ref.	Part No. Hyster	NAME OF PART	Reqd. Qty.
1	59258	Shaft—Drive	1
2	31868	Snap Ring	1
3	49507	Bearing	1
4	32616B	Housing—Pump Drive	1
5	32624	Gear—Sliding (15 teeth)	1
6	32623	Spacer	1
7	49505	Bearing	1
8	32622	Snap Ring	1
9	32617	Gasket	1
10	781	Nut—Slotted Jam	1
	15225	Cotter—⅛ x 1½	1
11	32620	Gear—Idler (31 teeth)	1
12	32618	Bolt—Shoulder	2
13	32619	Bushing	2
14	.....	Shaft (see page 28, Ref. 9)	1
15	59223	Bushing	1
16	59304	Gear (24 teeth)	1
17	59224	Washer	1
	59296	Plate—Seat Support (L. H.)	1
18	15532	Capscrew—⅜ NF x 1¼ (Support thru Cover to Frame)	5
	15508	Capscrew—⅜ NF x 1 (Support to Seat)	3
	15156	Lockwasher—⅜	8
19	.....	Bracket—Seat Support (R. H.) (See page 25, Ref. 17)	
20	32627A	Shaft Assembly—Shifter	1
21	15508	Capscrew—⅜ NF x 1	1
	15156	Lockwasher—⅜	1
22	32625	Sleeve	1
23	32626	Gasket	1
24	.....	Cover—Top (Transmission) (see page 29, Ref. 2)	
25	33556	Bracket—Pump	1
	15547	Capscrew—½ NC x 1½	2
	59297	Angle	1
26	15547	Capscrew—½ NC x 1½	4
	15158	Lockwasher—½	4
	15058	Nut—Hex, ½ NC	4
	32652	Stud—½ NF x 2¼ (Not illustrated. Through case and cover to frame)	1
30	15159	Lockwasher—½	1
	15008	Nut—Hex, ½ NF	1
	15574	Capscrew—½ NF x 1¾ (Through Case and Cover to Frame) (Not illustrated)	1
31			1
	15511	Capscrew—½ NF x 1 (Case to Cover)	2
	15158	Lockwasher—½	3
32	15302	Plug—Pipe, ⅜ Std.	1

INSTRUCTIONS FOR MOUNTING PUMP DRIVE FOR LaPLANT-CHOATE OR KAY-BRUNNER PUMP ON D2N TOWING WINCH

Refer to the arrangement drawings which show the general appearance of the unit on the tractor.

Proceed as follows:

1. Remove "Caterpillar" Fuel-tank seat and tool box.

2. Remove L. H. seat support supplied with winch, and discard.

3. (See Transmission, page 28.) Remove five upper capscrews from winch L. H. side cover (10) and discard.

4. Remove hand-hole cover (1) and discard. Remove top hand-hole cover (30).

5. You can now look into winch transmission case and see if pump drive gear is in place. If there is a gear in place of spacer (28), proceed as directed in Instruction (9, page 42). If this gear is *not* in place, proceed as follows:

6. Remove L. H. side cover (10, page 28), plate (7, page 28), drum pinion (6, page 28), shaft (3, page 30), drum gear idler (1, page 30), bearing (5, page 28) and spacer (28, page 28).

7. (See page 39 showing sectional view of pump drive.)
Install washer (17) and gear (16) with bushing (15). Replace bearing (5, page 28), shaft (3, page 30), drum gear idler, drum pinion, plate, and L. H. side cover (10). (Do not replace five upper capscrews.)

8. Attach L. H. seat support, using five capscrews, $\frac{3}{8}$ NF x $1\frac{1}{4}$, to replace capscrews removed in Instruction 2.
For La Plant-Choate only, attach pump bracket support (26), page 38, and pump bracket (25).

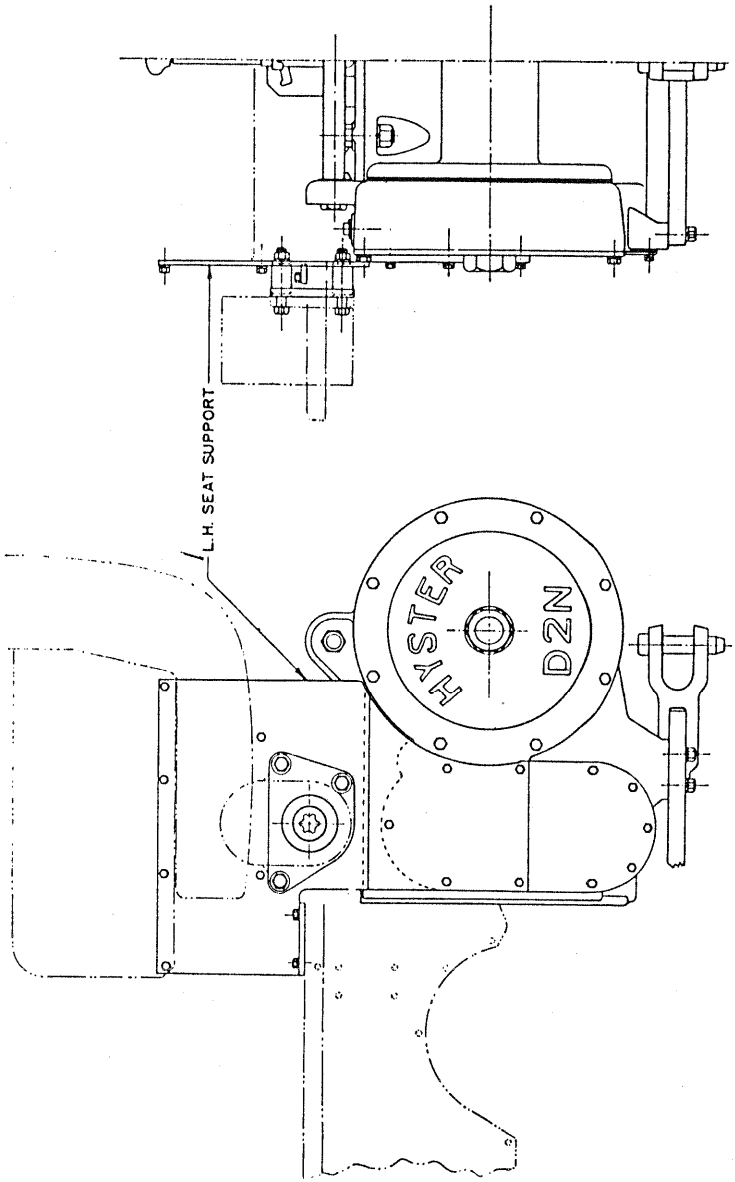
INSTRUCTIONS FOR MOUNTING PUMP DRIVE FOR LaPLANT-CHOATE OR KAY-BRUNNER PUMP—Continued

9. Place gasket (9), page 39, and case (4) over hand-hole from which cover (1), page 28, was removed in Instruction (4). Place capscrews, without lockwashers in holes and tighten.
(See page 39.)
Caution: The backlash (clearance between teeth in mesh) between the gears (11) and (16) 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" and .015" on the pitch line. Too close an adjustment will cause the gears to run noisely. The gear (11) may be rocked back and forth sharply with some suitable bar or screwdriver through top hand-hole, and the correct backlash is that which is barely perceptible to the feel of the hand.

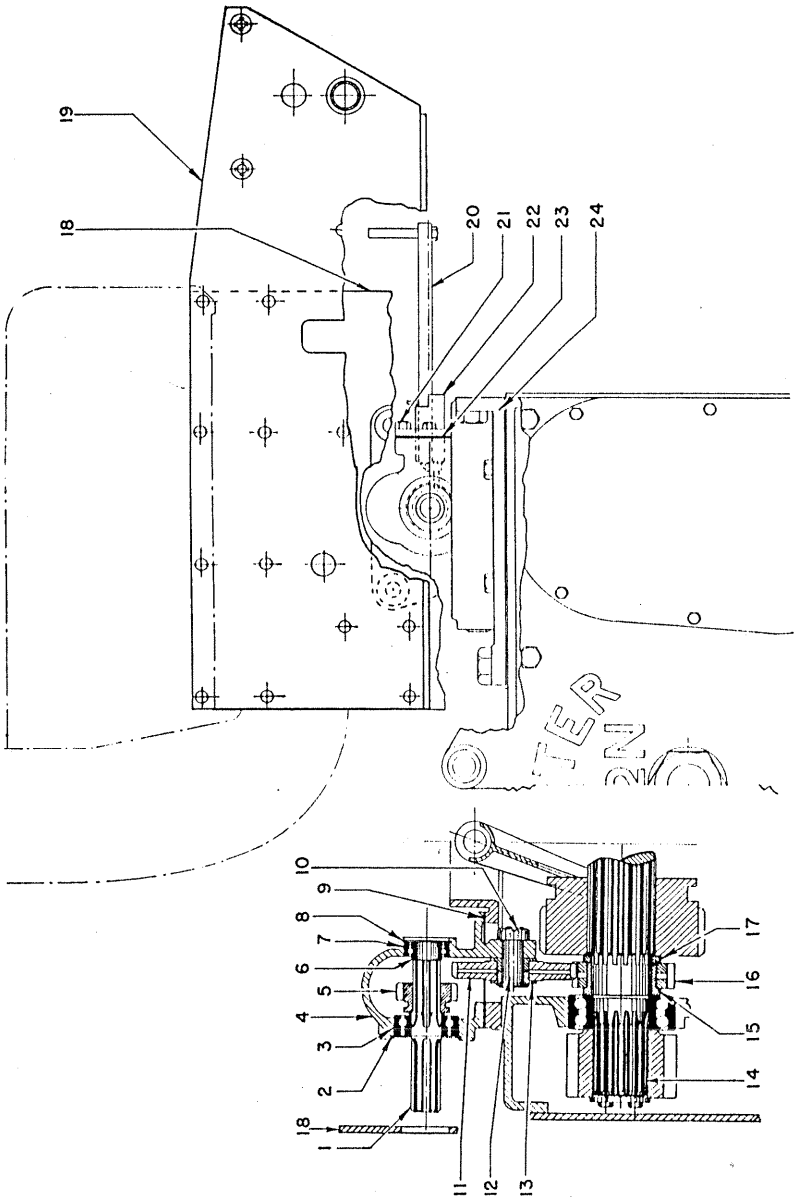
10. If the gear mesh needs readjustment, remove capscrews and lift pump unit free of winch. Either remove or add another gasket (9) to obtain the proper backlash. Test again with bar or screw driver, as directed above. After the proper adjustment is obtained, tighten capscrews, with lockwashers.

11. Replace top hand-hole cover (30), page 28, removed in Instruction (4).

PUMP BRACKET AND SEAT SUPPORTS FOR KAY-BRUNNER PUMP



PUMP DRIVE FOR KAY-BRUNNER PUMP

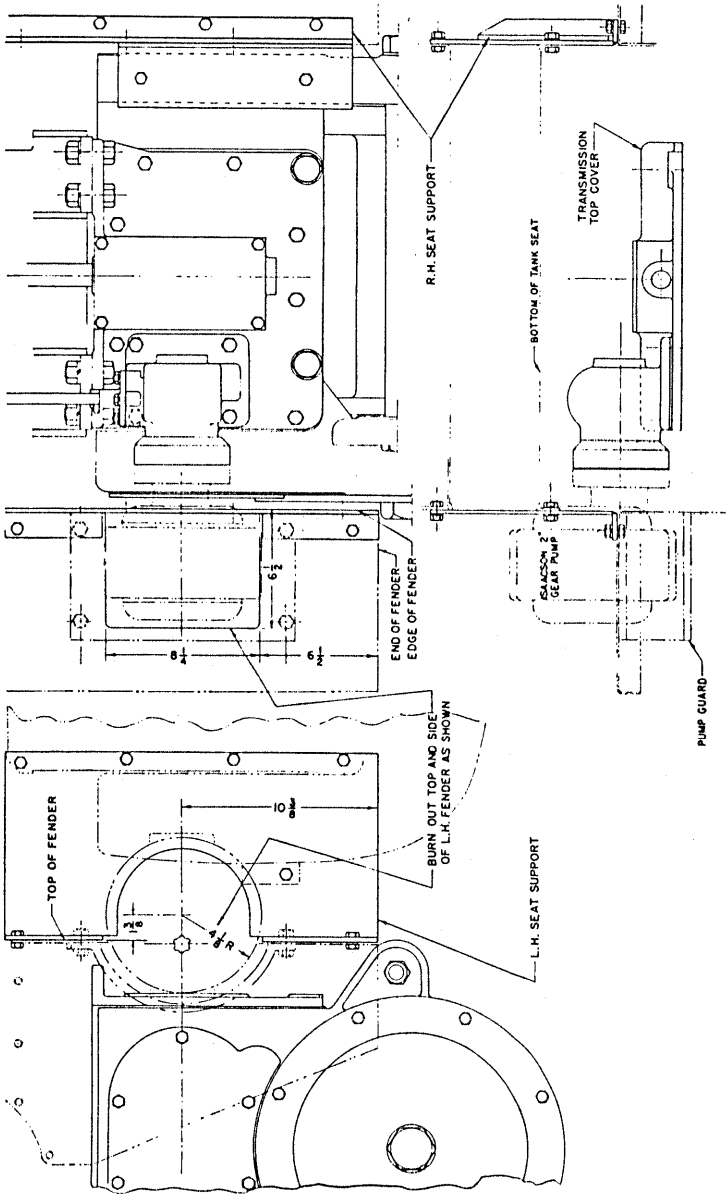


D2N TOWING WINCH PUMP DRIVE AND SEAT SUPPORTS FOR KAY-BRUNNER PUMP ON D2 TRACTOR WITH SEAT-MOUNTED FUEL TANK

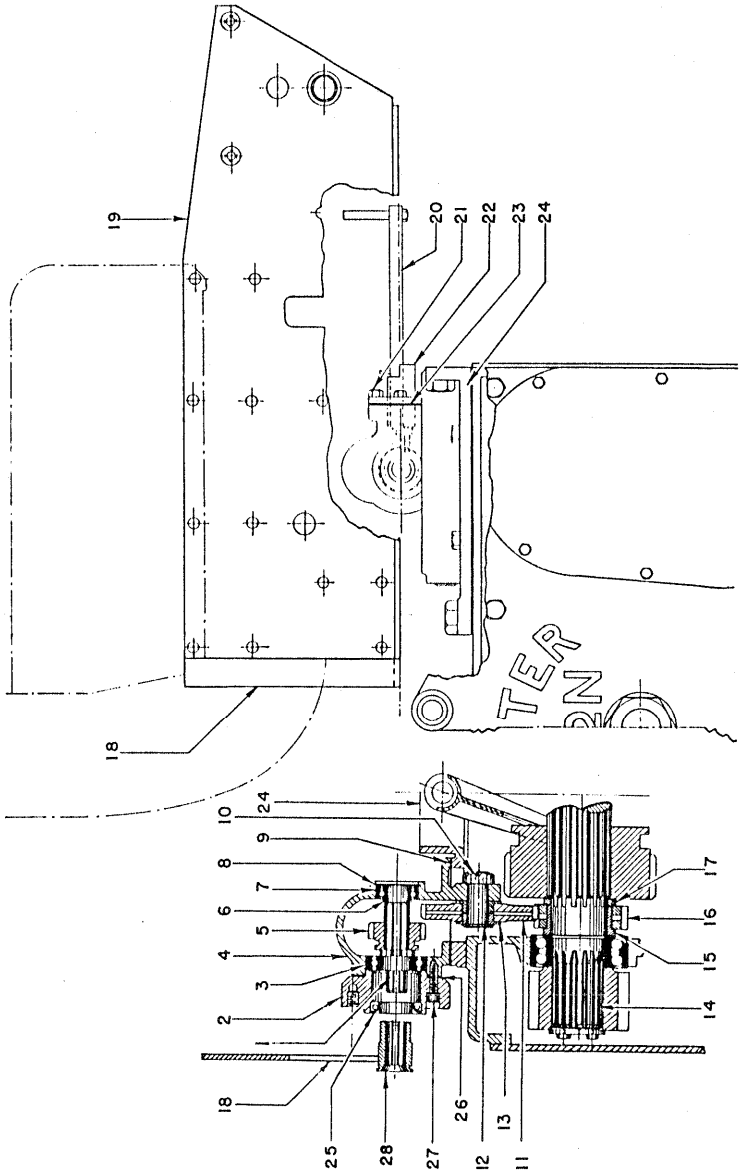
Complete Assembly No. 59227A

No. Ref.	Part No. Hyster	NAME OF PART	Reqd. Qty.
1	32621	Shaft—Drive	1
2	31868	Snap Ring	1
3	49507	Bearing	1
4	32616B	Housing—Pump Drive	1
5	32624	Gear—Sliding (15 teeth)	1
6	32623	Spacer	1
7	49505	Bearing	1
8	32622	Snap Ring	1
9	32617	Gasket	1
10	781	Nut—Slotted Jam	1
	15225	Cotter—⅛ x 1½	1
11	32620	Gear—Idler (31 teeth)	1
12	32618	Bolt—Shoulder	2
13	32619	Bushing	2
14	.....	Shaft (see page 29, Ref. 9)	
15	59223	Bushing	1
16	59304	Gear (24 teeth)	1
17	59224	Washer	1
18	59300	Bracket—Seat Support (L. H.)	1
	15532	Capscrew—⅜ NF x 1¼, Support thru Cover to Frame	5
	15508	Capscrew—⅜ NF x 1" Support to Seat and Fender	8
	15156	Lockwasher—⅜	2
	15006	Nut—Hex, ⅜ NF	2
	15631	Capscrew—⅝ NF x 3¾ (Pump to Support)	3
	15160	Lockwasher—⅝	3
	15010	Nut—Hex, ⅝ NF	3
19	.....	Bracket—Seat Support (R. H.) (see page 25, Ref. 17)	
20	32627A	Shaft Assembly—Shifter	1
21	15508	Capscrew—⅜ x 1	1
	15156	Lockwasher—⅜	1
22	32625	Sleeve	1
23	32626	Gasket	1
24	.....	Cover—Top (Transmission) (see page 29, Ref. 2)	
30	32652	Stud (Not illustrated)	1
	15159	Lockwasher—½ (Through Case and)	1
	15008	Nut—Hex, ½ NF (Cover to Frame)	1
31	15574	Capscrew—½ NF x 1¾ (Through Case and Cover to Frame) Not illust.	1
	15511	Capscrew—½ NF x 1 (Case to Cover) Not illust.	2
	15158	Lockwasher—½ Not illust.	3
32	15302	Plug—Pipe, ⅜ Std.	1

PUMP BRACKET AND SEAT SUPPORTS FOR ISAACSON 'DOZER PUMP



PUMP DRIVE FOR ISAACSON 'DOZER PUMP



D2N TOWING WINCH PUMP DRIVE AND SEAT SUPPORTS FOR ISAACSON PUMP ON D2 TRACTORS WITH SEAT-MOUNTED FUEL TANKS

Complete Assembly No. 59228A

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	59257	Shaft—Pump Drive	1
2	46086	Adapter—Pump	1
3	43207	Bearing	1
4	59261	Housing—Pump Drive	1
5	32624	Gear—Sliding (15 teeth)	1
6	32623	Spacer	1
7	49505	Bearing	1
8	32622	Snap Ring	1
9	32617	Gasket	1
10	781	Nut—Slotted Jam	1
	15225	Cotter—⅛ x 1½	1
11	32620	Gear—Idler (31 teeth)	1
12	32618	Bolt—Shoulder	2
13	32619	Bushing	2
14	.....	Shaft (see p. 29, Ref. 9)	
15	59223	Bushing	1
16	59304	Gear (24 teeth)	1
17	59224	Washer	1
18	59302	Bracket—Seat Support (L. H.)	1
19	.....	Bracket—Seat Support (R. H.) (See p. 25, Ref. 17)	
20	32627A	Shaft Assembly—Shifter	1
21	15508	Capscrew—⅜ NF x 1	1
	15156	Lockwasher—⅜	1
22	32625	Sleeve	1
23	32626	Gasket	1
24	.....	Cover—Transmission Top (see p. 29, Ref. 2)	
25	31960	Oil Seal	1
26	46089	Shim Set	1
27	46698	Capscrew—Hex Socket, ⅜NCx1¼	6
	15156B	Lockwasher—⅜	6

28 ..... The following parts for connecting pump to unit to be supplied by Isaacson Iron Works:

Sleeve—Pump (Isaacson No. B-1698)	1
Gasket—Pump (Isaacson No. 356A5)	1
Stud—Special (Isaacson No. B-1906)	6
Nut—Hex, ½ NF	6
Lockwasher—½	6
Guard—Pump (Isaacson No. 143A10)	1
Capscrew—½ NC x 1¼	4
Nut—Hex, ½ NC	4
Lockwasher—½	4

30	32652	Stud	Not illustrated	1
	15159	Lockwasher—½	Through Case and	1
	15008	Nut—Hex, ½ NF	Cover to Frame	1
31	15574	Capscrew—½ NF x 1¾ (Through Case and Cover to Frame)	Not illust.	1
	15511	Capscrew—½ NF x 1 (Case to Cover)		2
	15158	Lockwasher—½		3
32	15302	Plug—Pipe, ⅜ Std.		1

INSTRUCTIONS FOR MOUNTING ISAACSON PUMP ON D2N TOWING WINCH

Refer to the arrangement drawings (pages 46-47) which show the general appearance of the unit on the tractor.

Proceed as follows:

1. Remove "Caterpillar" fuel-tank seat and tool box.

2. Burn L. H. tractor fender, top and side, as shown.

3. Remove L. H. seat support supplied with winch, and replace with seat support supplied with pump adapter.

4. Remove hand-hole cover (1), page 28, and discard. Remove top hand-hole cover (30).

5. Refer to page 47, showing sectional view of pump adapter. You can now look into winch transmission case and see if gear (16) is in place. If this gear is in place you may proceed as directed in Instruction (8).

If this gear is *not* in place, proceed as follows:

6. Remove L. H. side cover (10, page 28), plate (7, page 28), drum pinion (6, page 28), shaft (3, page 30), drum gear idler (1, page 30), bearing (5, page 28), and spacer (28, page 28).

(See page 47.)

7. Install washer (17), gear (16) with bushing (15). Replace bearing (5), page 28, drum gear idler (1), page 30, shaft (3, page 30) drum pinion (6), page 28, plate (7), and L. H. side cover (10).

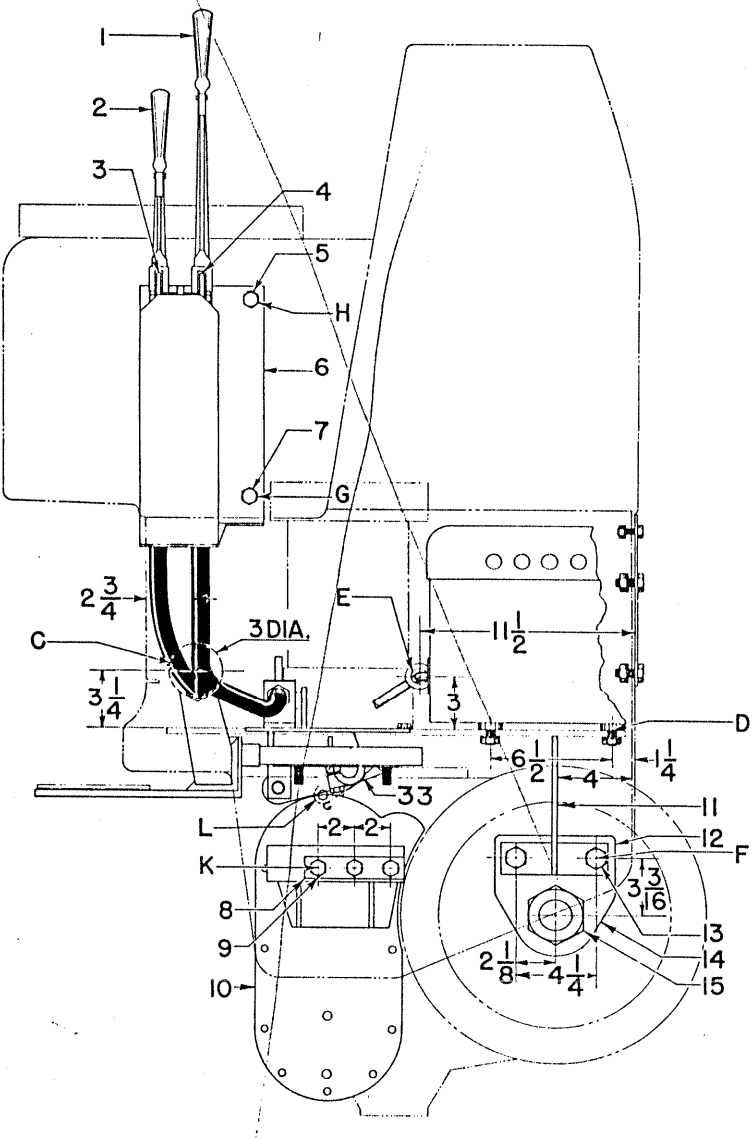
8. Place gasket (9), page 47, and case (4) over hand-hole from which cover (1), page 28, was removed in Instruction 4. Place capscrews, without lockwashers, in holes and tighten.

   Caution: The backlash (clearance between teeth in mesh) between the gears (11), page 47, and (16) 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 (11) 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 gear mesh needs readjustment, remove capscrews and lift pump unit free of winch. Either remove or add another gasket (9) to obtain the proper backlash. Test again with bar or screw driver, as directed above. After the proper adjustment is obtained, tighten capscrews, with lockwashers.

10. Replace top hand-hole cover (30) removed in Instruction 4.

LEFT HAND SIDE
HANDLING GEAR ARRANGEMENT — 94224A
For Mounting on 933 Traxcavator

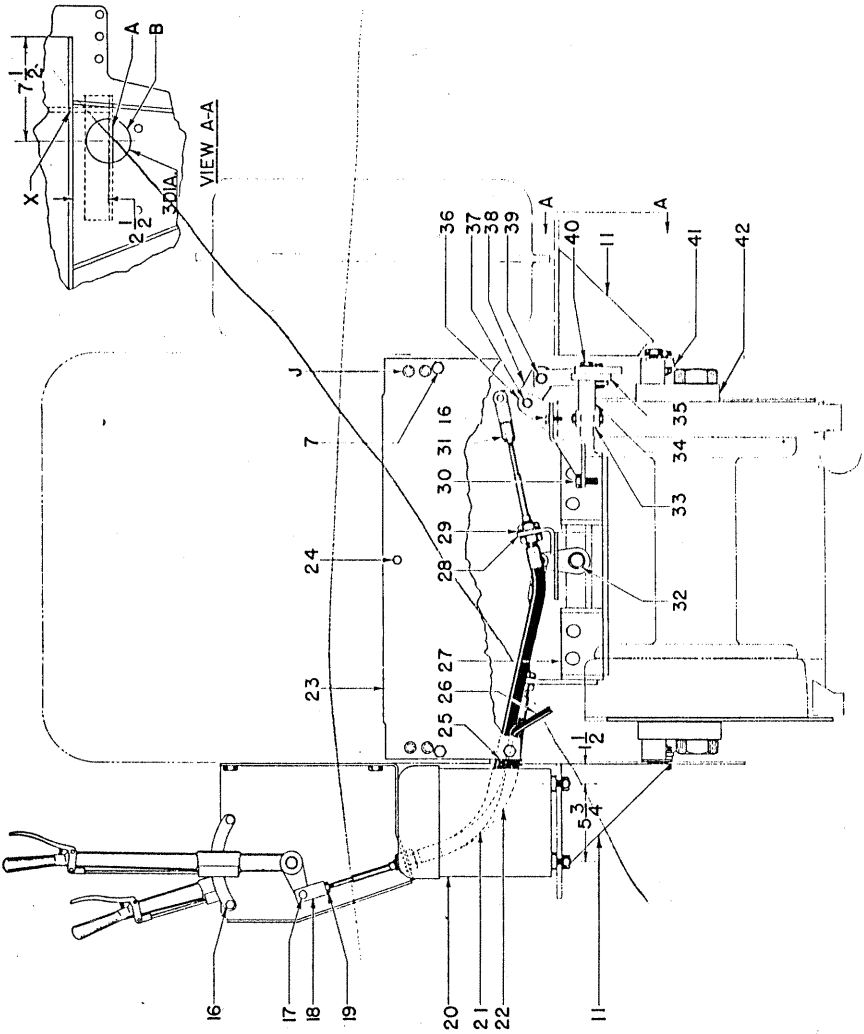


LEFT HAND SIDE
HANDLING GEAR ARRANGEMENT — 94224A
For Mounting on 933 Traxcavator

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
	94262A	Handlever—Brake	1
	*32694	Handle	1
	*37476	Machine Screw—Special	2
1	*15052	Nut—Hex, No. 10-24	2
	*32695	Spring	1
	*32693	Rod End	1
	*92918	Rod—Pawl	1
	94264A	Handlever—Clutch	1
	*32694	Handle	1
	*37476	Machine Screw—Special	2
2	*15052	Nut—Hex, No. 10-24	2
	*32695	Spring	1
	*32693	Rod End	1
	*92922	Rod—Pawl	1
3	94271	Quadrant—Clutch	1
4	59035	Quadrant—Brake	1
	16820	Capscrew—Hardened, ½ UNF x 1	2
5	15008	Nut—Hex, ½ UNF	2
	15158	Lockwasher—½	2
6	94365W	Bracket—Handlever	1
	37562	Capscrew—Hardened, ½ UNF x 1¼	6
7	15008	Nut—Hex, ½ UNF	6
	15158	Lockwasher—½	6
8	94361	Spacer—¼" thick	2
	94360	Spacer—⅛" thick (approx.)	2
	16807	Capscrew—½ UNF x 1½	6
9	15008	Nut—Hex, ½ UNF	6
	15158	Lockwasher—½	6
10	94230W	Cover—L. H. side	1
11	94273	Gusset	2
12	94362	Spacer	2
13	15148	Capscrew—Hardened, ¾ UNF x 1½	4
	15162	Lockwasher—¾	4
14	94235W	Bracket—L. H. Support	1
15	91396	Nut—Drum Shaft	2
16	15508	Capscrew—⅜ UNF x 1	6
	15156	Lockwasher—⅜	6
17	153	Pin—Rod End	4
	15222	Cotter—⅛ x ¾	4

**Included in Assembly under which listed.*

REAR VIEW
HANDLING GEAR ARRANGEMENT
For Mounting D2N Towing Winch on 933 Traxcavator



REAR VIEW
HANDLING GEAR ARRANGEMENT
For Mounting D2N Towing Winch on 933 Traxcavator

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
18	92909	Rod End	2
19	15026	Nut—Jam, 3/8 UNF	4
20	93937	Box—Battery	1
21	94363	Cable—Brake (47" long)	1
22	94242	Cable—Clutch (33¾" long)	1
23	94364	Plate—Cross	1
24	15508	Capscrew—3/8 UNF x 1	1
	15006	Nut—Hex, 3/8 UNF	1
	15156	Lockwasher—3/8	1
25	94351	Grommet	1
26	93942	Cable—Battery	1
27	94240W	Plate—Tie	1
28	94259W	Cover—Cable Support	1
29	15934	Washer—Shakeproof	4
30	15514	Capscrew—½ UNF x 1½	2
	15158	Lockwasher—½	2
31	92925	Rod End	2
32	94237W	Shaft—Shifter	1
33	94243A	Crank Assembly	1
	*15528	Capscrew—3/8 UNF x 2	1
	*15006	Nut—Hex, 3/8 UNF	1
	*15156	Lockwasher	1
34	94245W	Crank	1
35	94248A	Lever Assembly	1
	*91728A	Bearing Assembly	1
	*91727	Bushing	1
36	94255W	Bracket—Lever	1
37	94253	Pin—Lever Fulcrum	1
	94254	Spacer	1
	15244	Cotter—3/16 x 1½	1
38	94251A	Lever Assembly	1
	*91728A	Bearing Asesmbly	1
	*91727	Bushing	1
39	159	Pin—Rod End	2
	15223	Cotter—⅛ x 1	2
40	94250	Link	1
41	94226W	Cover—R. H. Side	1
42	94232W	Bracket—R. H. Support	1

Included in Assembly under which listed.

INSTALLATION INSTRUCTIONS
For Installing D2N Towing Winch on No. 933 Traxcavator Six Volt (One Battery) Electrical System Only

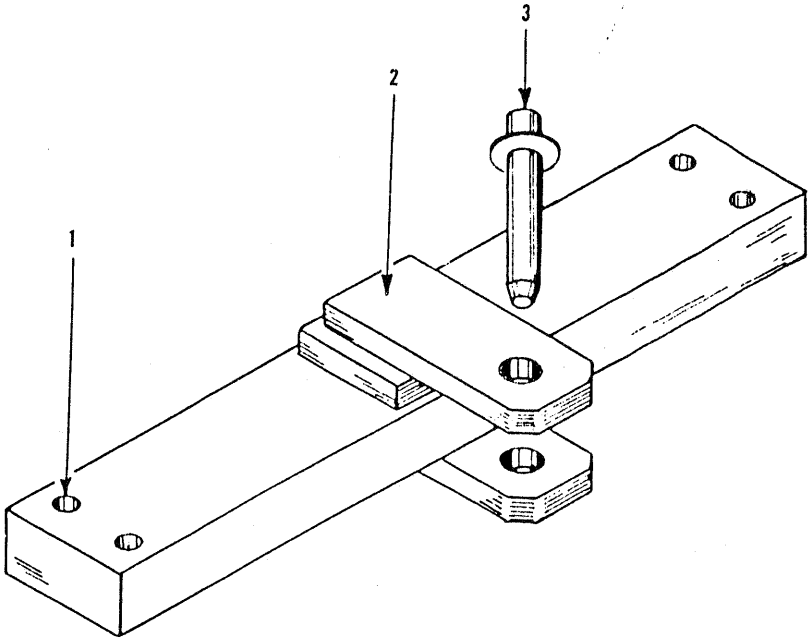
1. Remove grab iron from L. H. seat side.
2. Weld gussets (11) to each side as shown, using 3/16 fillet weld, both sides.
3. Disconnect battery from cables and remove from battery box along with Pad, Mat, Plate, and Wing Bolts. Detach battery base ("Caterpillar" No. 6H2903) rear door ("Caterpiller" No. 6H2868) and angle ("Caterpillar" No. 6H2905).
4. Temporarily support Fenders, Seat, Fuel Tank, Hydraulic Tank, Etc., so that drawbar and mounting brackets can be removed from rear face of tractor, and so that there is no interference with installation of winch. If additional accessibility is required, seat and fuel tank assembly should be removed.
5. Remove drawbar and mounting brackets.
6. On R. H. Side, burn out gusset approximately up to point "X". See view A-A. Burn out angle "A" completely from inside, and burn 3" dia. hole as shown at "B". On L. H. side, burn 3" dia. hole as shown at "C". Grind sharp edges from holes.
7. Drill four 9/16 Dia. holes in L. H. Fender as shown at "D", to locate Hyster battery box (20).
8. Drill 1¼ dia. hole in L. H. side at "E" and insert grommet (25).
9. Replace "Caterpiller" battery cable No. 6I13573 with Hyster cable No. 93942, passing it through grommet (25).
10. Bolt and dowel tie plate (27) to top of tractor transmission case, with clutch cable attached. Run cable through hole in L. H. side at "C".
11. If this has not been done previously, winch must be altered by attaching brackets (8) and (13), tie plate (15) etc.
12. Install altered winch as directed in parts book.
13. Drill two 13/16 dia. holes in each side of tractor as shown at "F" and bolt tractor sides to support brackets (14 and 42) on the winch.
14. Drill three 9/16 dia. holes in tractor sides, through R. H. and L. H. side covers (10 and 41), as shown at "K". Use spacer (8) as template. Bolt together, using capscrews (9) with nuts and lockwashers.
15. Attach clutch cable (22) to shifter crank on winch.
16. Locate handlever bracket (6) with two lower holes "G" and mark and drill two upper 9/16 dia. holes "H". Bolt bracket to seat side and attach control cables to bracket and to handlevers.
17. Locate cross plate (23) over capscrews "J" and drill four 9/16 dia. holes in rear of tractor, using cross plate as template. Attach cross plate as shown.
18. Bolt Hyster battery box (20) to L. H. fender and install battery, using Hyster Battery Cable (26) and original ground strap.

NOTE 1: 933 Traxcavator fixed Drawbar and D2N T. W. cannot be attached simultaneously. Hyster optional fixed Drawbar available on request.

NOTE 2: As shown in solid lines, the Crank (33) is set for overwind As shown with dotted lines at "L", the Crank is set for underwind.

DRAWBAR BRACKET

(For Use with 933 Traxcavator)



Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
1	16832	Capscrew—5/8 UNF x 2½	4
	15160	Lockwasher—5/8	4
2	94441W	Bracket—Drawbar	1
3	94448	Pin	1
	15264	Cotter—5/16 x 1¾	1

Section E

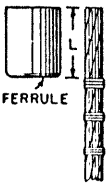
MISCELLANEOUS INFORMATION

NUMERICAL INDEX

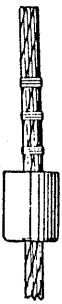
NUMERICAL INDEX—Continued

NUMERICAL INDEX—Continued

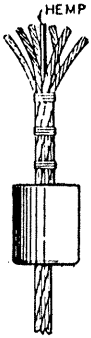
METHOD OF ATTACHING FERRULES



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



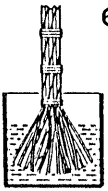
2 SLIP FERRULE OVER CABLE AND PUSH DOWN OVER SEIZINGS.



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.

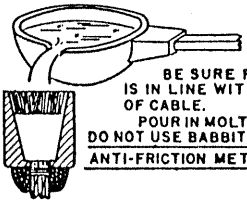
5 IF WIRES ARE VERY GREASY, CLEAN WITH SOLVENT
A CHEAP PAINT BRUSH DIPPED IN THE SOLVENT CAN BE USED TO REMOVE THE SURPLUS GREASE.
DRY THOROLY.



6 DIP WIRES FOR 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.



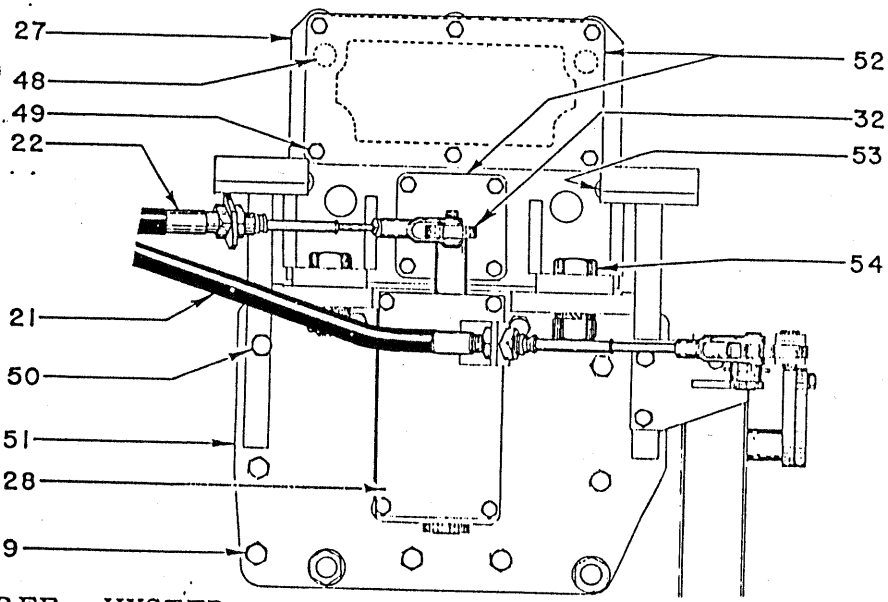
9 BE SURE FERRULE IS IN LINE WITH AXIS OF CABLE.
POUR IN MOLTEN ZINC.
DO NOT USE BABBITT OR OTHER ANTI-FRICTION METAL.

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

REAR VIEW
HANDLING GEAR ARRANGEMENT
For Mounting D2N Towing Winch on 933 Traxcavator

Ref. No.	Hyster Part No.	NAME OF PART	Qty. Reqd.
18	92909	Rod End	2
19	15026	Nut—Jam, 3/8 UNF	4
20	93937	Box—Battery	1
21	94363	Cable—Brake (47" long)	1
22	94242	Cable—Clutch (33¾" long)	1
23	94364	Plate—Cross	1
24	15508	Capscrew—3/8 UNF x 1	1
	15006	Nut—Hex, 3/8 UNF	1
	15156	Lockwasher—3/8	1
25	94351	Grommet	1
26	93942	Cable—Battery	1
27	94743W	Plate—Tie	1
28	94259W	Cover—Cable Support	1
29	15934	Washer—Shakeproof	4
30	15513	Capscrew—3/8 UNF x 3/4	2
	15156	Lockwasher—3/8	2
31	92925	Rod End	2
32	94237W	Shaft—Shifter	1
33	94243A	Crank Assembly	1
	*15528	Capscrew—3/8 UNF x 2	1
	*15006	Nut—Hex, 3/8 UNF	1
	*15156	Lockwasher	1
34	94245W	Crank	1
35	94248A	Lever Assembly	1
	*91728A	Bearing Assembly	1
	*91727	Bushing	1
36	94745W	Bracket—Lever	1
37	94253	Pin—Lever Fulcrum	1
	94254	Spacer	1
	15244	Cotter—3/16 x 1½	1
38	94251A	Lever Assembly	1
	*91728A	Bearing Asesmbly	1
	*91727	Bushing	1
39	159	Pin—Rod End	2
	15223	Cotter—1/8 x 1	2
40	94250	Link	1
41	94226W	Cover—R. H. Side	1
42	94232W	Bracket—R. H. Support	1
43	94380	Grommet-Small) Included	4
44	94381	Grommet-Large) With Cables	4

PLAN VIEW



REF. NO.	HYSTER PART NO.	NAME OF PART	QTY. REQ.
48	94678	Dowel	2
49	(16816	Capscrew-3/8UNC x 1-3/4 (H. T.)	10
	(15156	Lockwasher - 3/8	10
50	(15573	Capscrew-1/2 UNF x 3-1/2	1
	(15158	Lockwasher - 1/2	1
51	94742W	Cover-Top	1
52	-----	Covers (Furnished With Tractor)	
53	(16815	Capscrew-3/8 UNC x 1-1/2 (H. T.)	2
	(15176	Washer - 3/8	2
	(15156	Lockwasher - 3/8	2
54	(15571	Capscrew 1" 14NF x 2-3/4	2
	(15016	Nut-Hex 1" 14 NF	2
	(15166	Lockwasher - 1"	2

INSTALLATION INSTRUCTIONS

For Installing D2N Towing Winch on No. 933 Traxcavator Six Volt (One Battery) Electrical System Only

1. Remove grab iron from L. H. seat side.
2. Weld gussets (11) to each side as shown, using 3/16 fillet weld, both sides.

INSTALLATION INSTRUCTIONS

3. Disconnect battery from cables and remove from battery box along with Pad, Mat, Plate, and Wing Bolts. Detach battery base ("Caterpillar" No. 6H2903) rear door ("Caterpiller" No. 6H2868) and angle ("Caterpillar" No. 6H2905).
4. Temporarily support Fenders, Seat, Fuel Tank, Hydraulic Tank, Etc., so that drawbar and mounting brackets can be removed from rear face of tractor, and so that there is no interference with installation of winch. If additional accessibility is required, seat and fuel tank assembly should be removed.
5. Remove drawbar and mounting brackets.
6. On R. H. Side, burn out gusset approximately up to point "X". See view A-A. Burn out angle "A" completely from inside, and burn 3" dia. hole as shown at "B". On L. H. side, burn 3" dia. hole as shown at "C". Grind sharp edges from holes.
7. Drill four 9/16 Dia. holes in L. H. Fender as shown at "D", to locate Hyster battery box (20).
8. Drill 1¼ dia. hole in L. H. side at "E" and insert grommet (25).
9. Replace "Caterpiller" battery cable No. 6H3573 with Hyster cable No. 93942, passing it through grommet (25).
10. Bolt and dowel tie plate (27) to top of tractor transmission case, with clutch cable attached. Run cable through hole in L. H. side at "C".
11. If this has not been done previously, winch must be altered by installing Cranks 33 and 34, Cover 41, Brackets (42) and (14), Rear View Cover (10), L. H. Side View, Shifter Shaft (4) and Covers (10) and (11) Plan View.
12. Install altered winch as directed in parts book.
13. Drill two 13/16 dia. holes in each side of tractor as shown at "F" and bolt tractor sides to support brackets (14 and 42) on the winch.
14. Drill three 9/16 dia. holes in tractor sides, through R. H. and L. H. side covers (10 and 41), as shown at "K". Use spacer (8) as template. Bolt together, using capscrews (9) with nuts and lockwashers.
15. Thread Cables through Hole "C". Attach Clutch Cable (22) to Shifter Shaft (32).
16. Locate handlever bracket (6) with two lower holes "G" and mark and drill two upper 9/16 dia holes "H". Bolt bracket to seat side and attach control cables to bracket and to handlevers.
17. Locate cross plate (23) over capscrews "J" and drill four 9 16 dia. holes in rear of tractor, using cross plate as template. Attach cross plate as shown.
18. Bolt Hyster battery box (20) to L. H. fender and install battery, using Hyster Battery Cable (26) and original ground strap.

NOTE 1: 933 Traxcavator fixed Drawbar and D2N T. W. cannot be attached simultaneously. Hyster optional fixed Drawbar available on request.

NOTE 2: (See Page 9). As shown, the Crank (159) is set for overwinding. To set for underwinding, remove Crank (159), turn it over and install it so that Link (150) crosses in front of Brake Drum (161).

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SPECIFICATIONS

HYSTER Model ..... D2N Towing Winch

Drum Size:

Barrel Diameter	6"
Flange Diameter	15"
Barrel Length	14"

Cable Capacity, Maximum Line	300 ft.	3/4"
Allowance should be made for loose or unevenly spooled line in towing service.	or 440 ft.	5/8"

Available Line Pulls:

Bare Drum	14,050
Full Drum	6,650

Line Speeds:

Bare Drum	101 f.p.m.
Full Drum	213 f.p.m.

(Line Speeds and Pulls are the same when overwinding or underwinding.)

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, including Transmission and Controls	1,120
Domestic Shipping Weight, approximately	1,250
Export Shipping Weight, approximately	1,275

OIL SEALS
6464
24676
32166
32185

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