Installation and Operation Instructions

for

CATERPILLAR
Reg. U. S. Pat. Off.

NO. 25 AND 23 CABLE CONTROLS

Serial Numbers

No. 25
Rear Double Drum * 9D 501 - up

No. 23
Rear Double Drum - 1E 2501 - up

CATERPILLAR TRACTOR CO.
PEORIA, ILLINOIS, U.S.A.
Diesel Engines . . Tractors . . Motor Graders
. . . . . Earthmoving Equipment .....
THERE IS A "CATERPILLAR" DEALER NEAR YOU

Foreword

"Caterpillar" products are a combination of advanced engineering, skilled manufacturing, and the finest materials metallurgical science can select. Thousands of satisfying, economical working hours are built into each machine.

Whether or not the owner derives the maximum of service from his machine depends largely on the care exercised in its operation and maintenance. This book is written to give the operator essential information regarding the day-to-day operation, lubrication and adjustment of the machine. Careful adherence to these instructions will result in assured economy.

A great many "Caterpillar" owners depend upon their dealer for service other than the care and adjustments described in this book. This practice is recommended because "Caterpillar" Dealers have stocks of genuine "Caterpillar" parts and are equipped with tools designed and built by "Caterpillar". Their servicemen are factory-trained and are kept closely informed by the factory regarding advanced methods of servicing "Caterpillar" products — thus, in all ways they are equipped to render the best of service.

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Installation Instructions

1. GENERAL.

A. "Caterpillar" No. 25 and 23 Rear Cable Control Arrangements consist of adapter groups and cable control groups.

(1) Each adapter group consists of the various parts necessary to connect the cable control to the tractor.

(2) Each cable control group consists of a completely assembled cable control.

2. ADAPTER GROUP.

A. D8 Tractor Adapter Group Installation for No. 25 Cable Control only. (See figure 2.)

(1) Remove the cover and install coupling **(2)** on the transmission upper shaft.

(a) Before installing the coupling, try it on the cable control drive shaft to make sure it fits freely on the splines.

(2) Remove the corks from the holes and install studs **(1).**

(3) Install studs **(3) in** the proper holes as illustrated.

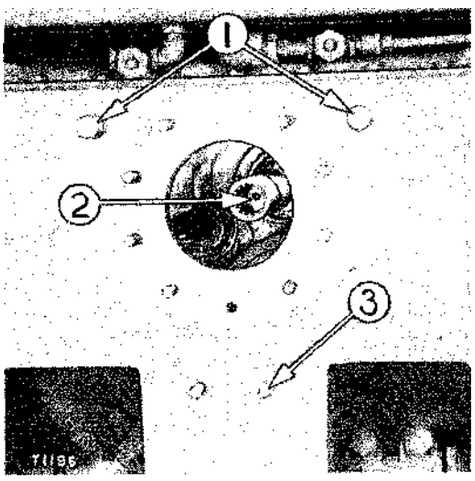


FIGURE 2—INSTALLING COUPLING AND STUDS

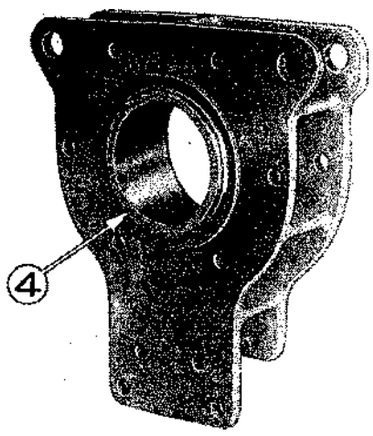


FIGURE 3—ADAPTER FOR D6 TRACTOR

B. D7 Tractor Adapter Group Installation, Nos. 25 and 23 Cable Controls, (See figure 2.)

(1) Install coupling (2) as described in paragraph 2A (1).

(2) Remove the corks from the holes and install studs (1).

(3) The studs which fasten the steering clutch case rear cover will be used to hold the cable control and studs **(3)** will not be used.

C. D6 Tractor Adapter Group Installation, Nos. 25 and 23 Cable Controls. (See figures 2 and 3)

A gear and pinion, which are part of the adapter group, are installed in cable controls at the factory when cable controls are ordered for use on D6 Tractors. These cable controls, so equipped, are stamped "D6" on the gear case above the serial number plate.

(1) Install coupling (2) as described in paragraph 2A(1).

(2) Remove the corks from the holes and install studs (1).

(3) Remove the corks and install the studs in the lowest two holes at the rear of the steering clutch case.

(4) Place the cork seal (4) in the groove in the adapter.

(5) Install the adapter on the steering clutch case and fasten it securely.

(6) The new draw bar pin is supplied for convenience in hitching and unhitching.

3. CABLE CONTROL GROUP.

A. Installing No. 25 Cable Control on D6, D7 and D8 Tractors and No. 23 Cable Control on D6 and D7 Tractors. (See figure 4.)

(1) Hook a chain in the place provided on the sheave support bracket as illustrated and lift the unit to the required height.

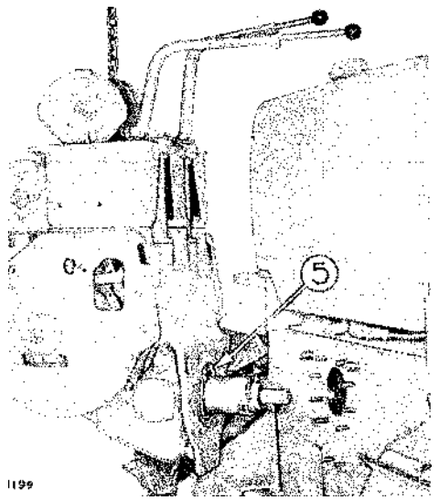


FIGURE 4— INSTALLING CABLE CONTROL

(2) Place the cork seal (5) in the groove.

(3) Bring the unit into position and start the splined shaft into the splined coupling.

(a) If the splines on the shaft and coupling are not in line, they may be aligned by turning the transmission upper shaft with the Diesel or starting engine.

(4) On the D7 and D8 tractors, fasten the cable control onto the studs and tighten the nuts securely.

(5) On the D6 tractor, fasten the cable control to the adapter with the bolts and nuts supplied with the group and tighten them securely.

Lubrication Instructions

4. LUBRICATING INFORMATION.

A. General.

(1) Detailed instructions regarding the lubrication of this cable control are given in the lubrication chart and lubrication illustrations. The lubrication chart specifies the points to be serviced, the hourly intervals, and the lubricants to be used.

(2) The key numbers on the chart are used as reference numbers on the detailed lubrication illustrations and copy on the following pages of the lubrication section. The key with the lubrication chart gives the symbols of the lubricants used and the hourly intervals. Careful attention to these instructions and the proper selection of the lubricants to be used will add much to performance, reliability, economy and long life of the cable control.

(3) It is important to use the correct lubricant for each application in the equipment—taking into account the current outside temperature and the temperature range which is likely to be encountered before refilling again.

(4) Lubricate only the right side sheaves, sheave brackets and brake and clutch mechanism when the cable control is used to operate a bulldozer.

(5) When the cable control is used to operate a ripper, lubricate only the sheaves, sheave brackets and brake and clutch mechanism that are in operation.

(6) Clean fittings before applying the hydraulic lubricant compressor.

(7) The hours indicated are for normal service. For operating conditions of extreme water, dust and mud lubricate more frequently.

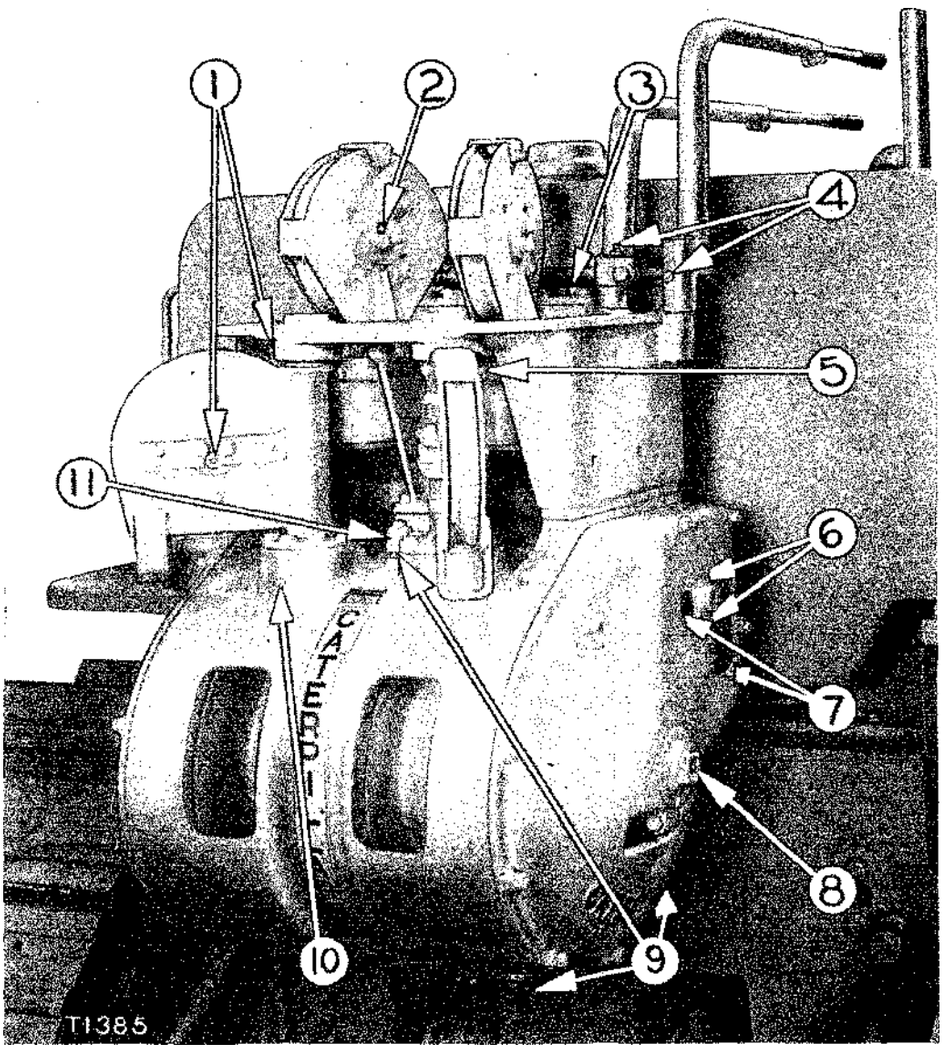
B. Lubricants.

(1) CRANKCASE LUBRICATING OIL (CO)—S.A.E. No. 20 straight mineral crankcase lubricating oil is suitable for use on the breather element and on connections lubricated with an oil can.

(2) TRANSMISSION OIL (TO)—Use a pure mineral transmission oil that will flow freely and will not channel at existing operating temperatures. For temperatures above 32°F. (0°C.) use either S.A.E. Nos. 90 or 140 oil, Below freezing, 32°F. (0°C.) an oil of lower viscosity (S.A.E. No. 80) will be required. In extremely cold weather the oil should be diluted with sufficient kerosene to provide fluidity.

(3) CHASSIS LUBRICANT (CL)—These lubricants should be just fluid enough so they can be handled in a standard hydraulic compressor at the prevailing atmospheric temperature. If they are too light, they may leak out of the bearings too rapidly.

LUBRICATION CHART
"CATERPILLAR"
NOS. 25 AND 23 CABLE CONTROLS



Intervals of Lubrication

10 HOURS— CL (1) (2)
20 HOURS— CL (8)
120 HOURS— TO (9) CL (3) (4) (5) (6) (7) (10)
240 HOURS— CO (11)
900 HOURS—TO (9)

CL (1) FAIR-LEAD SHEAVE SHROUD UPPER BEARINGS AND FAIR-LEAD SHEAVES

CL (2) SWIVEL SHEAVES

CL (3) SWIVEL SHEAVE SUPPORT BRACKETS

CL (4) CONTROL LEVER SHAFT UPPER BEARINGS

CL (5) SWIVEL SHEAVE PIVOT SHAFTS

CL (6) CONTROL LEVER SHAFT LOWER BEARINGS AND BRAKE LEVERS

CL (7) CLUTCH LEVER ROLLERS AND ANCHOR LINK ROLLER

CL (8) CLUTCH ENGAGEMENT SCREW AND BEARING

TO (9) GEAR CASE

CL (10) FAIR-LEAD SHEAVE SHROUD LOWER BEARINGS

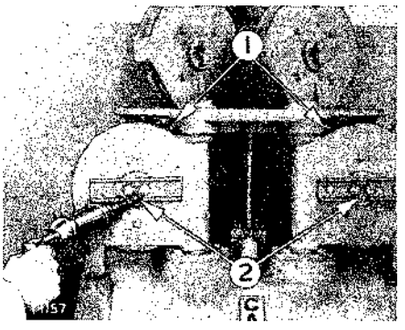
CO (11) GEAR CASE BREATHER

KEY TO LUBRICANTS

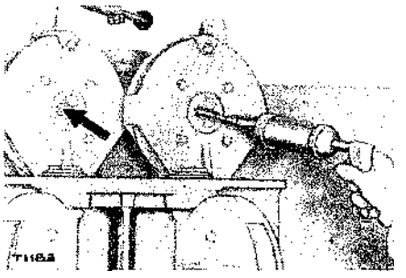
CO Straight Mineral Crankcase Lubricating Oil.

TO Transmission Oil.

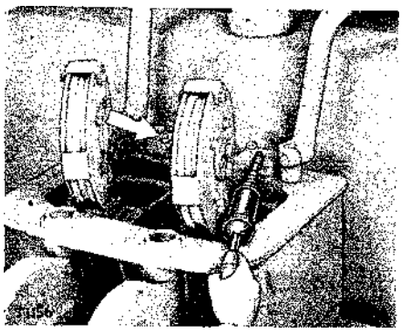
CL Chassis Lubricant.



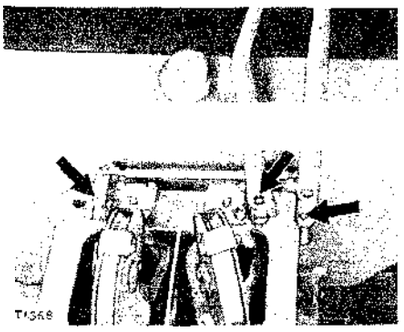
CL FAIR-LEAD SHEAVE SHROUD UPPER BEARINGS AND FAIR-LEAD SHEAVES—Lubricate bearings through fittings (1) and (2) every 10 hours.



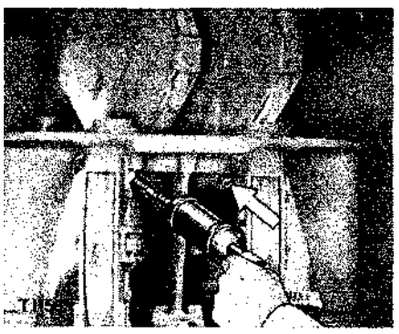
CL SWIVEL SHEAVES—Lubricate bearings every 10 hours.



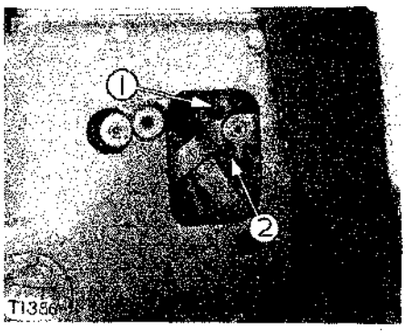
CL SWIVEL SHEAVE SUPPORT BRACKETS—Lubricate both upper and lower bearings through fittings on top every 120 hours.



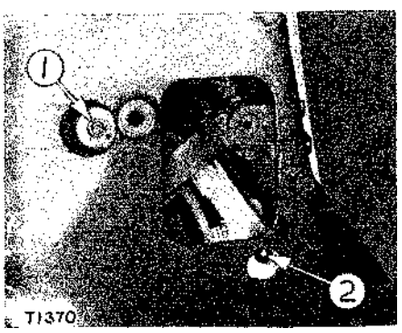
CL CONTROL LEVER SHAFT UPPER BEARINGS (each side)—Lubricate bearings sparingly every 120 hours.



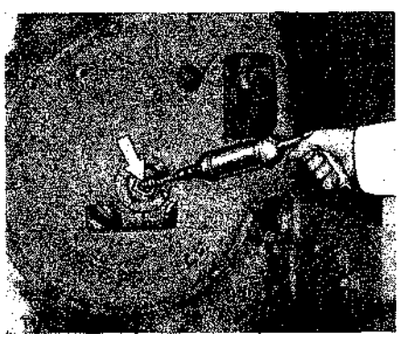
CL SWIVEL SHEAVE PIVOT SHAFTS — Lubricate bearings every 120 hours.



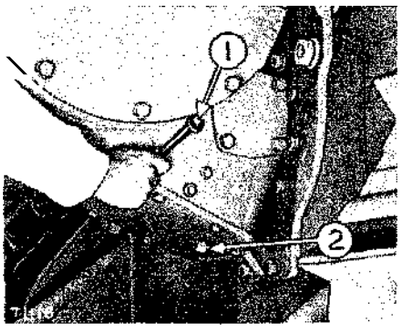
CL ⑥ CONTROL LEVER SHAFT LOWER BEARINGS AND BRAKE LEVERS (each side)—Lubricate bearings (1) and (2) sparingly every 120 hours.



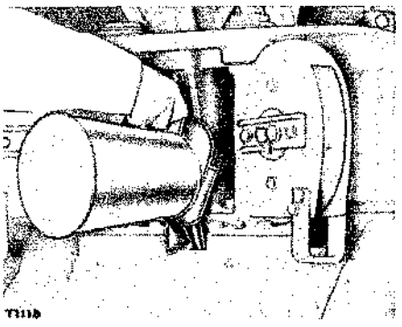
CL CLUTCH LEVER ROLLER AND ANCHOR LINK ROLLER (each side)—Lubricate roller (1) and (2) sparingly every 120 hours.



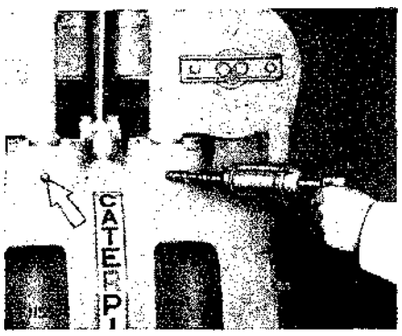
CL CLUTCH ENGAGEMENT side) — Lubricate sparingly with 2 or 3 shots every 20 hours.



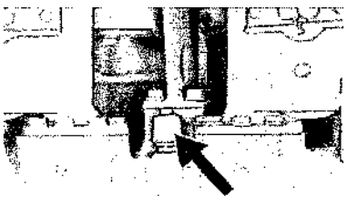
TO **GEAR** CASE LEVEL AND **DRAIN—Check** oil level every 120 hours at (1). Oil should be up to level plug **hole.** Every 900 hours, drain at (2), wash and refill.



TO ⑨ **GEAR CASE—Every** 120 hours, fill, **if needed.** to level plug hole.



⑩ FAIR-LEAD SHEAVE **SHROUD** LOWER **BEARINGS—Lubricate** every 120 **hours.**



CO **GEAR CASE BREATHER— Re**move the breather every 240 hours and wash thoroughly. **Saturate** element with oil and reinstall.

Operation Instructions

5. OPERATING THE CABLE CONTROL.

A. Description. (See figure 5.)

(1) The No. 25 Rear Cable Control may be mounted on the D6, D7 and D8 tractors. The No. 23 Rear Cable Control may be mounted on D6 and D7 tractors.

(2) The cable control is driven by the tractor engine through the adapter coupling which is connected to the transmission upper shaft.

(3) When the engine is running and the flywheel clutch is engaged, all of the cable control gears and the clutch driving discs are turning.

(4) The cable is spooled onto the drum when the control lever is moved to the "clutch engaged" position. In this position, the engagement mechanism causes the driven discs to contact the driving discs thereby turning the cable drum.

(5) The cable drum is held by the self energizing brake when the control lever is in the "neutral" position.

(6) The cable is unspooled from the drum when the control lever is moved to the "brake released" position.

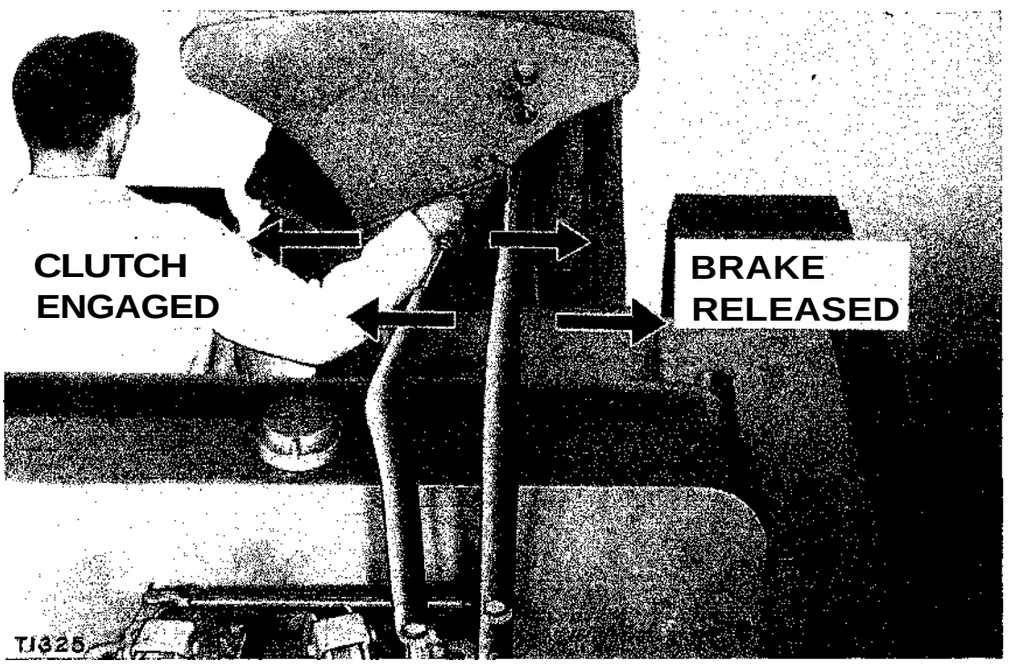


FIGURE 5—CONTROL LEVERS IN "NEUTRAL" POSITION

(7) The control lever may be moved to the extreme "brake released" position where it is held in the "lockout" position permitting the drum to be turned by hand.

B. Application, (See figures 6 and 7.)

(1) When the cable control is used for operating a bulldozer, the cable is spooled onto the right drum.

(2) When the cable control is used for operating a ripper, the left drum should be used. The right drum may then be used to operate a bulldozer, if necessary.

(3) When operating a scraper, the right drum controls the bowl, and the left drum controls the apron and ejector.

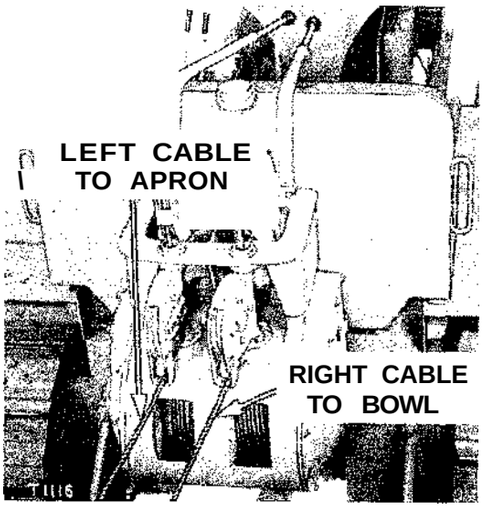


FIGURE 6—CABLE CONTROL FOR SCRAPER USE

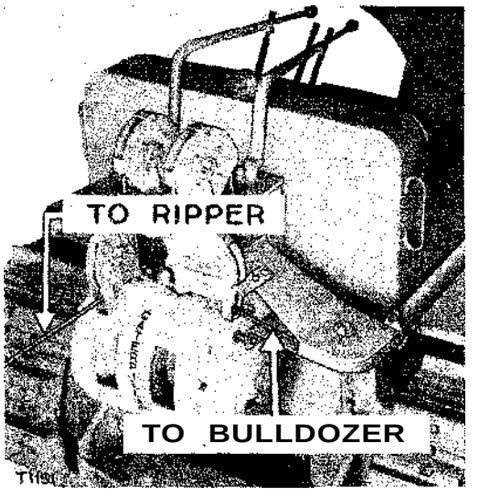


FIGURE 7—CABLE CONTROL FOR HIPPER AND BULLDOZER USE

C. Operation. (See figure 8.)

(1) Engage the clutch with a quick full movement of the control lever in order to avoid clutch slippage and overheating.

(2) Release the brake with a short movement of the lever. Let the lever return to the "neutral" position at the instant the equipment being used is in the desired position in order to avoid excess slack and fouling of the cable.

(3) When the cable control is used for bulldozer or ripper work only the control lever for the unused clutch should remain in the "neutral" position. Occasionally engaging the unused clutch will drive out dirt from between the clutch discs. If this dirt is allowed to pack between the discs it may cause unsatisfactory operation.

(4) When operating a scraper, after unloading, operate with the bowl and the apron partially lowered. Turning the tractor and scraper with

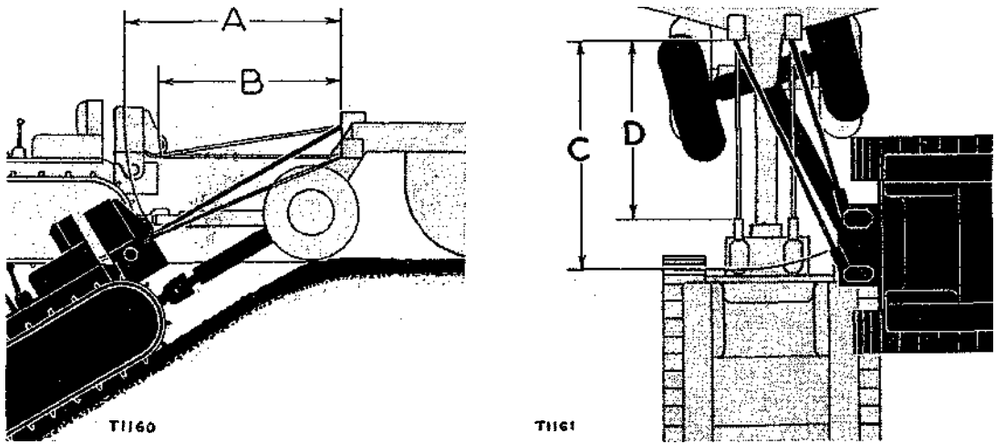


FIGURE 8—CHANGE IN DISTANCE BETWEEN CABLE CONTROL SHEAVES AND SHEAVES ON DRAWN EQUIPMENT

the bowl raised to its extreme limit, and the apron and ejector to the extreme unloading position may cause breakage because no provision exists for extra cable movement.

(a) The amount of extra cable movement necessary when turning the tractor is shown by the differences between the dimensions C and D.

(b) A similar condition exists when operating the tractor over uneven ground as shown by dimensions A and B.

6. OPERATING ADJUSTMENTS.

A. General.

(1) The clutch and brake are operated by the control rod which is connected to the clutch engagement lever. A roller on the clutch lever contacts a ramp on the brake lever which actuates the brake.

(2) Any wear in the brake mechanism causes the roller on the clutch lever to move from its original position on the brake lever ramp and in turn changes the amount of free movement in the clutch mechanism. Therefore, it is necessary to make the brake adjustment before making the clutch adjustment.

B. Brake Adjustment. (See figure 9.)

(1) Adjust the brake by aligning the center of the roller (2) on the clutch lever with the "V" mark (1) on the brake lever.

(a) Loosen the locknut (4) and tighten the adjusting nut (3) to move the brake lever downward. This allows the clutch return spring to pull the center of the roller to the "V" mark.

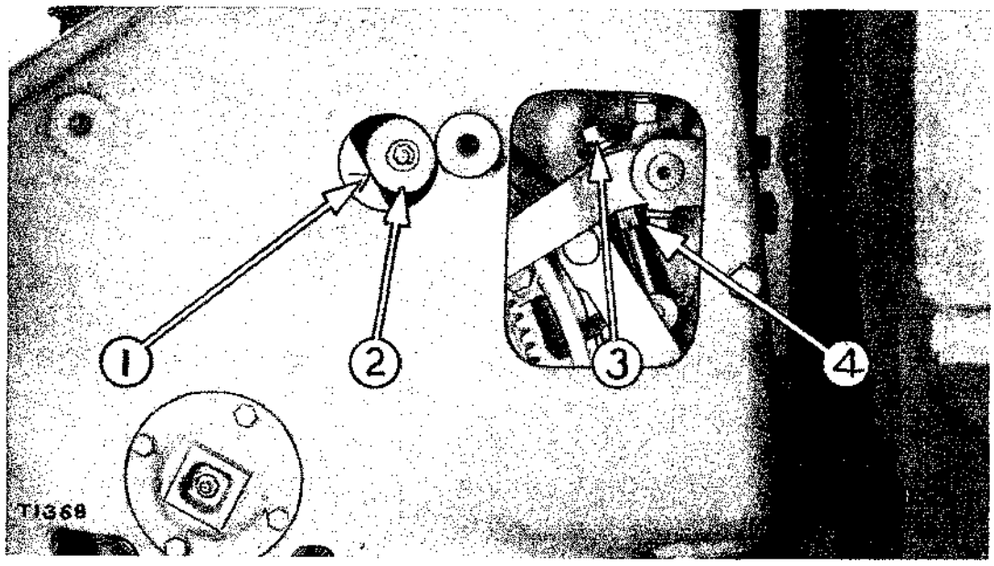


FIGURE 9—BRAKE ADJUSTMENT

C. Clutch Adjustment. (See figures 10 and 11.)

(1) Adjust the brake as instructed in paragraph 6,B.

(2) Loosen the clamp **(6).**

(3) Turn the adjusting screw (5) counter clockwise to tighten the clutch until there is a free movement between the "neutral" and "clutch engaged" position on the control lever of 5", more if desired, but never less than 5".

(3) Tighten the clamp bolt securely after making the adjustment.

D. Control Lever Adjustments. (See figure 12.)

(1) LATERAL ADJUSTMENT.

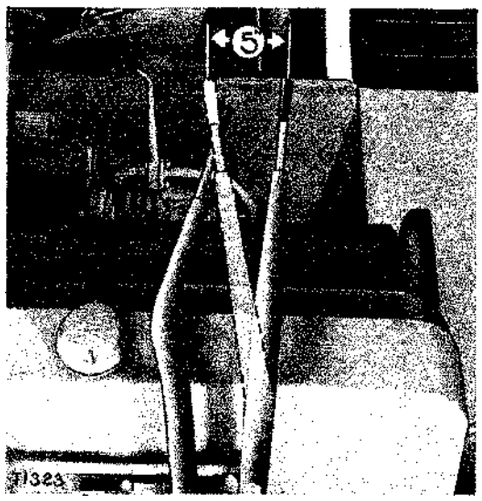


FIGURE 10—FREE MOVEMENT

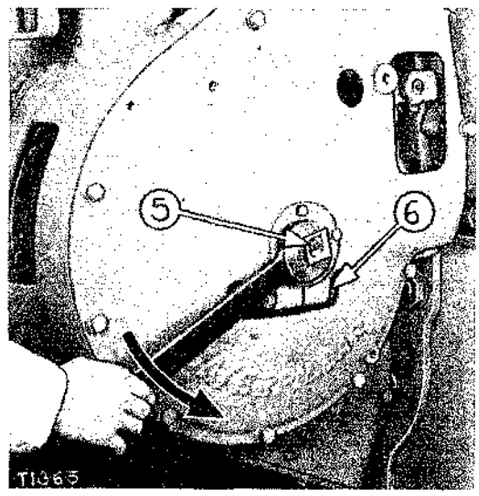


FIGURE 11—CLUTCH ADJUSTMENT

(a) Loosen the clamping capscrew **(3)** and remove lever (4) from the serrated shaft.

(b) Replace the lever in the desired position and tighten the capscrew.

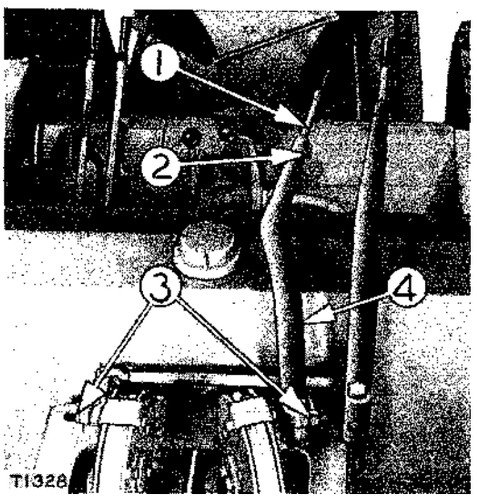


FIGURE 12—
CONTROL LEVER
ADJUSTMENT

(2) LENGTH ADJUSTMENT,

(a) Loosen capscrew **(2)** and slide the extension **(1)** in or out to the desired position.

(b) Tighten the capscrew after locating the extension.

7. CABLE.

A. General.

(1) There should be approximately 2 wraps of cable on the drum when the equipment is operated at its deepest penetration. This will provide enough cable to prevent unreeving it to the end and causing it to kink or pull out of the clamp. However, an excess amount of cable on the drum only tends to become frayed and worn. Also a greater amount of line pull is required to operate the equipment when excess cable is used.

(2) For normal bulldozer operation, approximately 4 wraps of cable should be on the right drum when the blade is at ground level. But when a bulldozer is used in rocks or clearing timber one or two more wraps of cable will be required.

(3) For scraper operation, 2 wraps of cable should be on the left drum when the scraper ejector is at the extreme rear position and the apron is down. Approximately 5 to 6 wraps of cable should be on the right drum when the bowl is at ground level.

(4) For ripper operation, the left drum should have approximately 6 to 8 wraps of cable on it when the teeth are at ground level.

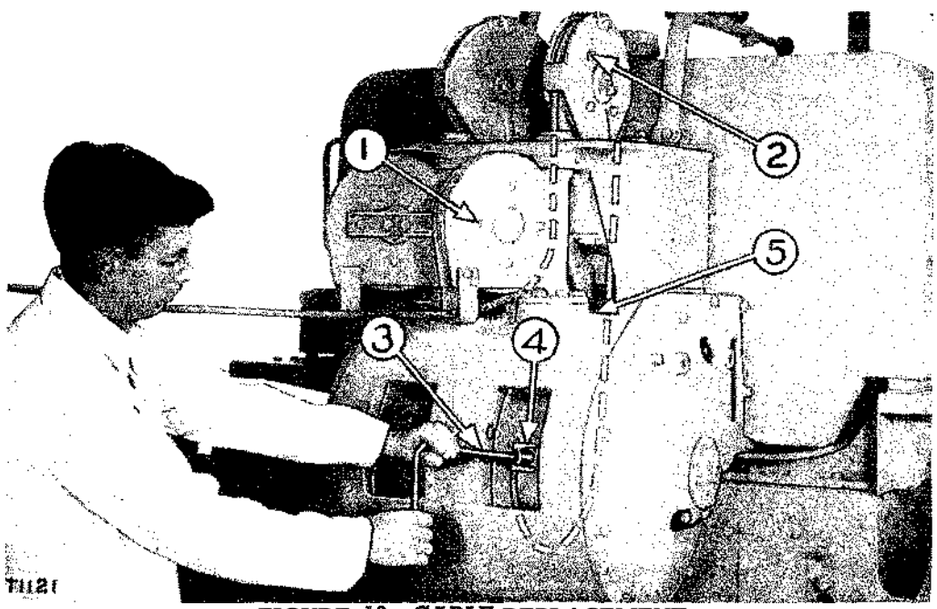


FIGURE 13—CABLE REPLACEMENT

B. Cable Replacement. (See figure 13.)

(1) As a safety precaution, do not attempt cable replacement with the engine running and the flywheel clutch engaged.

(2) Loosen the cable clamp **(4),** using the wrench **(3)** as shown in the illustration.

(3) Remove the old cable.

(4) Weld the new cable on each end to eliminate fraying and permit easier threading.

(5) Begin threading the cable through the sheave shroud assembly **(1),** around the swivel sheave **(2),** down through opening **(5),** and up around the drum to clamp **(4).**

(6) Install the cable with the end close to the clamp as illustrated.

(7) Tighten the clamp securely.

8. CLUTCH DISC REPLACEMENT.

A. Disassembly. (See figures 14 and 15.)

(1) Remove the capscrews holding the clutch and brake cover to the control case.

(2) Loosen the clamp bolt **(3).**

(3) On early models remove the cover by using the puller screws **(I)** which are ½" N.C., 2" long, full threaded capscrews.

(4) Remove the capscrews and pull bearing retainer **(2)** from the engagement screw.

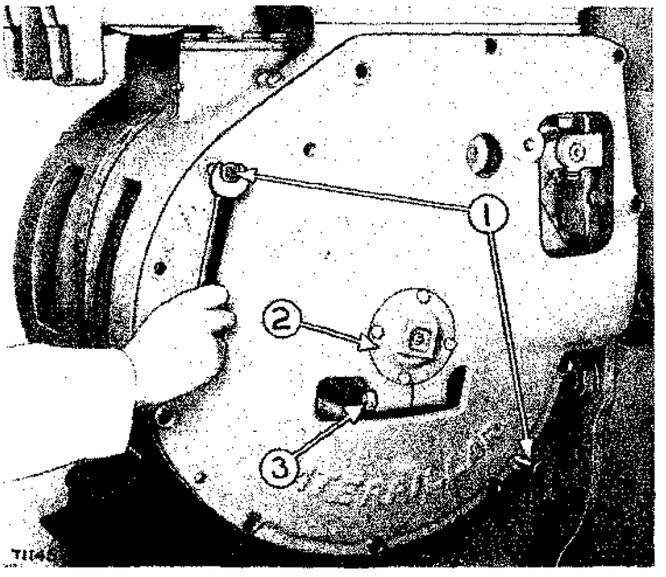


FIGURE 14— CLUTCH AND BRAKE COVER REMOVAL

(5) Install a nail or pin **(4)** through the hole in the spring assembly in order to hold the spring compressed.

(a) To do this, place the operator's control lever in the "lockout" position and, if necessary, pull down on the brake lever to compress the spring until the pin goes through the hole in the yoke and the rod.

(6) Remove nut **(5)** and pull the control rod end out of the lever.

(7) Remove lever **(6)** by taking out the two capscrews.

(8) Decompress the brake spring by pulling down on the lever and removing pin **(4).**

(9) Remove the capscrews and retainer **(7)**.

(10) Pull the engagement mechanism **(8)** from the shaft to gain access to the clutch discs.

(11) For convenience in removing the clutch discs, remove the inner clutch drum **(12)** from the shaft.

B. Assembly. (See figure 16.)

(1) Push the inner clutch drum **(12)** on the shaft as far as it will go.

(2) Install the discs by beginning with a lined disc **(9)** against the cable drum and alternating with an unlined disc **(10)** until 7 lined and 6 unlined discs are installed.

(3) Place the retainer **(11)** on the shaft with the chamfer and ridge facing outward.

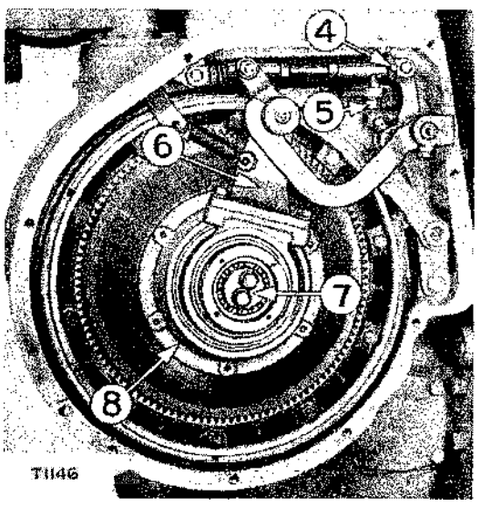


FIGURE 15—CLUTCH DISC REMOVAL

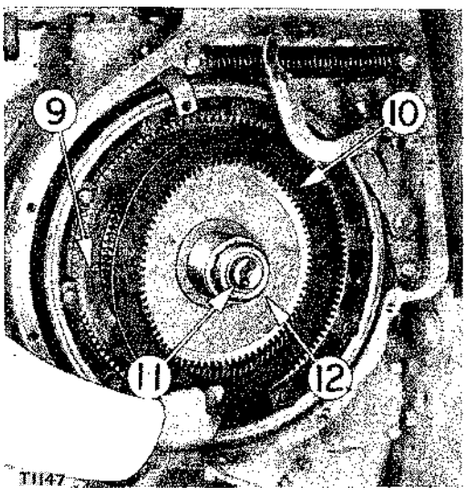


FIGURE 16—INSTALLING CLUTCH DISCS

(4) Assemble the clutch engagement mechanism and release the brake spring in the reverse order of disassembly.

(5) Replace the clutch and brake drum cover, making sure to remove the pin holding the brake spring in compression before doing so.

(6) Adjust the brake and clutch as outlined in paragraph 6.

9. BRAKE LINING REPLACEMENT.

A. Disassembly. (See figures 17 and 18.)

(1) Remove the clutch and brake cover as illustrated in figure 14 but do not remove retainer **(2)**.

(2) Place the control lever in the "lockout" position and install a pin in the hole **(4)** to hold the brake spring compressed as outlined in paragraph 8A(5).

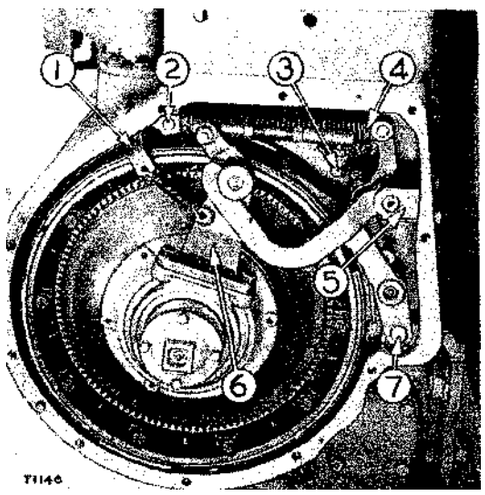


FIGURE 17—REMOVING BRAKE BAND

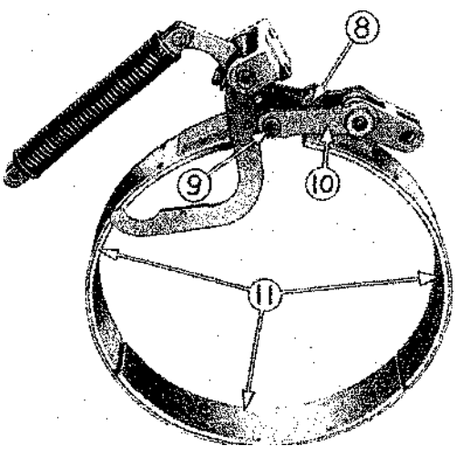


FIGURE 18—BRAKE BAND ASSEMBLY REMOVED

(3) Remove spring anchor **(1).**

(4) Remove the nut holding link **(3)** to the control lever.

(5) Take out the capscrews and remove lever **(6).**

(6) Take out pins **(2)** and **(7)** which are secured without cotter pins but are held in place by bosses on the clutch and brake cover.

(7) Remove the brake lever pin from the anchor **(5)**, the brake adjusting nut and the capscrews on the outside of the housing which hold the anchor (5) in place. Remove the brake band, control mechanism and anchor.

(8) Remove pins **(8)** and **(9)** to remove the lever and links from the band assembly.

B. Brake Lining. (See figure 18.)

(1) The brake linings **(11)** are of the moulded type.

(2) Carefully install the linings to avoid distortion of the band.

C. Assembly. (See figures 17 and 18.)

(1) Assemble the brake band in the reverse order of disassembly making sure to install link **(10)** with the cut out portion facing downward.

(2) Install brake lever anchor **(5)** using the shortest of the three capscrews at the top to eliminate interference with the lever.

(3) Install the cover and adjust the brake and clutch as outlined in paragraph 15.