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Allis Chalmers

Operator's Manual

UC

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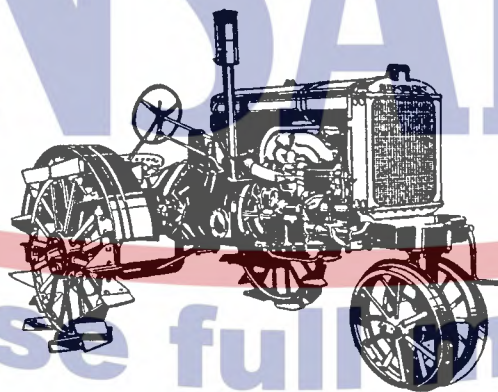
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AC-O-UC

PARTS & OPERATOR MANUAL

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ALLIS-CHALMERS MODEL UC TRACTOR



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Allis-Chalmers Mfg. Co.

TRACTOR DIVISION

MILWAUKEE, WISCONSIN

U. S. A.

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CARE AND OPERATION OF MODEL "UC" TRACTOR

WHEN TRACTOR IS DELIVERED

Before starting a new tractor, inspect it thoroughly and see that no parts have been removed from it, or any adjustments tampered with since the tractor left the factory.

BEFORE STARTING THE ENGINE

Inspect oil level in engine oil sump. For correct level and viscosity see heading, "Engine", under "Lubrication."

Inspect oil in air cleaner cup. Refer to air cleaner instructions.

Fill cooling system with clean water.

Check all points of lubrication and grease those equipped with grease gun fittings.

If gasoline is being used for fuel, fill the large tank with it. If low grade fuel, such as distillate or tractor fuel is to be used, fill the large tank with the low-grade fuel and the small tank with gasoline.

STARTING THE ENGINE

Place the gear shift lever in neutral position. If gasoline is to be used, open valve under large tank. If low-grade fuel is to be used, be sure the valve under large tank is closed and open the valve under the small tank. Open throttle one-third way. Turn ignition switch to the "ON" position. Pull the choke rod forward and crank engine over two compression strokes by lifting the crank. Release the choke rod. Engine should now start readily when cranked. However, if the weather is cool, more choking may be necessary. CAUTION: Do not spin motor. To do so may disengage the automatic impulse coupling and allow motor to kick.

When the engine is started, see that the oil gauge is registering pressure. Do not operate the engine unless oil gauge registers.

NOTE: After the first few hours of operation, tighten all nuts, bolts and cap-screws that hold together parts having asbestos-lined copper gaskets between them. This applies especially to cylinder head stud nuts. When cylinder head stud nuts are tightened, the cylinder head gasket is compressed and causes the valve clearance to be taken up. After the cylinder head stud nuts are tightened, be sure to adjust the valve clearance.

STARTING THE TRACTOR

With the engine running, press down on the clutch pedal. Allow a few seconds for the gears to stop then move gear shift lever to the desired speed position, which is cast in the gear shift, lever guide. If the

lever will not move into this position easily, allow the clutch pedal to come up slowly until you feel the gears move into position. Press down on clutch pedal again and move gear shift lever as far as it will go. Release the clutch pedal slowly to avoid a sudden jerk in starting but have throttle far enough open to avoid stalling the motor.

LUBRICATION

ENGINE. Maintain oil level in oil sump to the full mark on oil gauge rod.

Use only pure mineral oils of the following S.A.E. viscosity numbers:

Summer - No. 40
Winter - No. 30

For extremely cold temperatures, a mineral oil that will flow freely at prevailing temperatures should be used.

If gasoline or other fuels of similar qualities are being used, drain oil sump and refill with fresh oil of the proper quality and viscosity after each 60 hours of operation.

If low grade fuel such as distillate or tractor fuel is being used, drain the oil down to the drain cock, located on side of oil sump, after each 10 hours of operation, and refill to the full mark on gauge rod with fresh oil. After each 30 hours of operation, drain oil sump completely and refill with fresh oil.

Use only oil of high quality of the proper viscosity. The best assurance of securing such oil is to purchase the better grade manufactured by a dependable oil company who has established a reputation for quality products and whose success depends upon maintaining such quality.

Look at the oil pressure gauge at regular intervals to make sure oil is being circulated by the oil pump. The gauge should register from 5 to 15 pounds when engine is running at normal governed speed and is heated to running temperature.

The governor, timing gears, clutch pilot bearing and rocker arm assembly are lubricated from the oil sump supply and need no outside attention.

WATER PUMP AND FAN. Fill oil reservoir, located on top of water pump body daily with a light motor oil. The reservoir holds approximately one-fourth pint. Also lubricate through grease gun fitting on side of water pump body with two or three strokes of the grease gun for each 30 hours of operation.

CLUTCH. Lubricate throwout bearing each 30 hours of operation with two or three strokes of the grease gun. The grease fitting is accessible through an opening in left side of clutch housing. Do not over lubricate this

point as the excess grease may work into the clutch plate and cause clutch to slip or become sluggish in action.

The clutch fork shaft bearings are also equipped with grease gun fittings and should be lubricated daily.

Lubricate clutch pedal bearing daily through fitting on front of pedal.

TRANSMISSION AND DIFFERENTIAL. These two units are lubricated from the oil supply carried in the transmission case and filled through the opening covered by the breather cap located on the transmission case cover. Keep filled to the level of the top pipe plug located on the left hand side of transmission case. The capacity is approximately 12 gallons and only oils of the proper body to meet prevailing temperatures should ever be used.

For Summer use S.A.E. 160

For Winter use S.A.E. 90

When operating in extremely cold weather, light motor oil should be added to the transmission oil supply to thin the heavy oil and insure proper circulation and lubrication.

NOTE: Keep transmission case breather cap clean by washing in gasoline and saturating with lubricating oil before replacing.

FRONT WHEELS AND STEERING GEAR. Lubricate front wheels daily with grease gun until grease is forced out at inner ends of hubs.

Lubricate steering spindle shaft through two pressure gun fittings, located on front of support, daily with three or four strokes of grease gun.

Lubricate universal joint daily with two or three strokes of grease gun.

The front support which houses the steering gears should be filled with transmission oil to a point where the worm gear is about 1/3 submerged. This is made accessible by removing pipe plug from top of support.

REAR WHEELS. Lubricate daily with three or four strokes of grease gun through fittings in hubcaps.

FINAL DRIVE GEARS. The drive gear cases have a capacity of two quarts and should be filled to the level of the filler plug with a heavy duty transmission oil. Add a small amount of motor oil in extremely low temperatures.

POWER LIFT. Lubricate daily with two or three strokes of the grease gun through fitting in cam.

FUEL

Engines of model "UC" tractors are built in two combinations of compressions, carburetors and manifolds. Each combination

is designed to efficiently burn a particular class of fuel. For best results, the class of fuel for which the engine was designed must be used.

For engines equipped to operate strictly on gasoline. (These engines are designated by the letter "G", following the engine number. Example: UMA6081G) Use gasoline, having Octane rating of not less than 70.

For engines equipped with low grade fuel attachments. (These engines are designated by the letter "K" following the engine number. Example: UMA6018K) Any fuel having following specifications: Gravity - 38 to 44 End Point - 525° or less Octane rating - 30 or more.

Engine numbers are located on the right hand side of engine block, below crankcase filler elbow.

When burning low grade fuels certain precautions are necessary to prevent excessive dilution of the lubricating oil.

Always select a fuel to meet the specifications outlined in a preceding paragraph. Cover radiator to let engine warm up thoroughly on gasoline. Never turn on the low grade fuel until the temperature of the cooling system is near the boiling point, and when operating in cold weather, keep sufficient cover on the radiator front to maintain this temperature.

Always turn off the low grade fuel and switch to gasoline before engine is stopped so that carburetor will contain gasoline when engine is again started.

When tractor leaves the factory, unless ordered otherwise, the manifold heat control cover is installed with the letter "K" on top, which is the correct position for burning low grade fuel. If gasoline is to be used this cover should be installed with the letter "G" on top.

FUEL FILTER

A fuel filter is located just below the fuel tank and should be cleaned at regular intervals. Remove the glass bowl and screen, and wash out any sediment or water that may have accumulated.

AIR CLEANER

Instructions as to care of the air cleaner are given on the air cleaner body. Follow these instructions carefully. Be sure the oil cup is filled to the level of the bead stamped on the side of the cup. Used crank case oil is satisfactory if thin and clean. The use of heavy oil in the cup will result in a restriction of air to the carburetor resulting in an over rich mixture and excessive dilution of the lubricating oil. Inspect after each 10 hours of operation, and if the oil is heavy with dirt, or if the cup contains a layer of sediment, drain and refill with fresh oil.

Inspect the hose connection on air inlet frequently and keep it tight and in good condition.

BREATHER

The crankcase breather cap, located on top of the cylinder head cover, should be inspected daily. It must not be allowed to become clogged with dirt as pressure will be created in crankcase, causing oil leaks at main bearings, magneto shaft and other points. Wash breather cap in gasoline, dip in lubricating oil and replace after throwing off excess oil.

OIL FILTER

The oil filter is a highly efficient unit for the purpose of filtering abrasive particles from the engine crankcase oil supply. This naturally adds life to the many moving parts that are dependent upon this supply for lubrication.

The filtering element consists of a metal can packed with a special long thread filtering yarn. The oil is forced through a tube to the top of the oil filter element and is filtered as it passes down through the filtering yarn.

When gasoline is being used for fuel it is necessary to replace the filtering element and its container, after each 200 to 400 hours of operation, but if low grade fuel is being used, it is necessary to replace this element after each 100 to 200 hours of operation.

The replacement container is supplied, packed with the necessary quantity of filtering yarn and has a wood stick in the center to keep the hole in filtering yarn open so that the oil tube which extends up in the element can enter freely. This wood stick should be removed with a twisting motion before attempting to install the element.

A new element can be purchased from any Allis-Chalmers dealer for a few cents.

It is very important to replace the above element as directed as this unit will aid in keeping the crankcase oil clean and add many hours of carefree service to the life of the motor.

CAUTION: Do not attempt to remove and wash the filtering yarn or use any material in container except that as furnished as regular equipment.

Install only new container, packed, as is supplied by the Allis-Chalmers Mfg. Co. for the protection of the motor.

OIL PUMP

The oil pump requires very little attention. It is of the geared type driven by a gear which meshes with the crankshaft timing

gear. It is considered good practice to clean the oil pump screen each season. This can be done by removing the oil sump bottom cover.

GOVERNOR

The governor is of the variable speed fly weight type, mounted on the magneto shaft and is completely sealed from dust and dirt.

To adjust engine governed speed, remove cylinder block side cover, located on right hand side of engine block, loosen lock nut and turn adjusting nut on governor rod to right to increase and left to decrease speed. The normal governed full load engine speed is 1200 R.P.M.

MAIN BEARING ADJUSTMENT

The main bearings are of the bronze back type, and due to the large size of the bearings and to the type of lubrication used, they seldom need adjusting. However, shims are provided so that adjustment can be made if it becomes necessary.

Never adjust a bearing too tight. They must have .002 inch diametrical clearance. The maximum end play for crankshaft is 1/32 inch. When adjusting the bearings, always remove the same number of shims from each side. Always replace the bearing cap in its original position so that crank shaft will not be forced out of alignment.

CONNECTING ROD ADJUSTMENT

Shims are provided in the connecting rods for bearing adjustment. The connecting rod bearings should have not less than .002 inch diametrical clearance. End play should not exceed .010 inch.

When adjusting rod bearings, remove the same number of shims from each side and replace the cap on its original rod and in its original position.

When coupling up the rods, be sure the nuts are drawn tight and are locked with the proper size cotter keys.

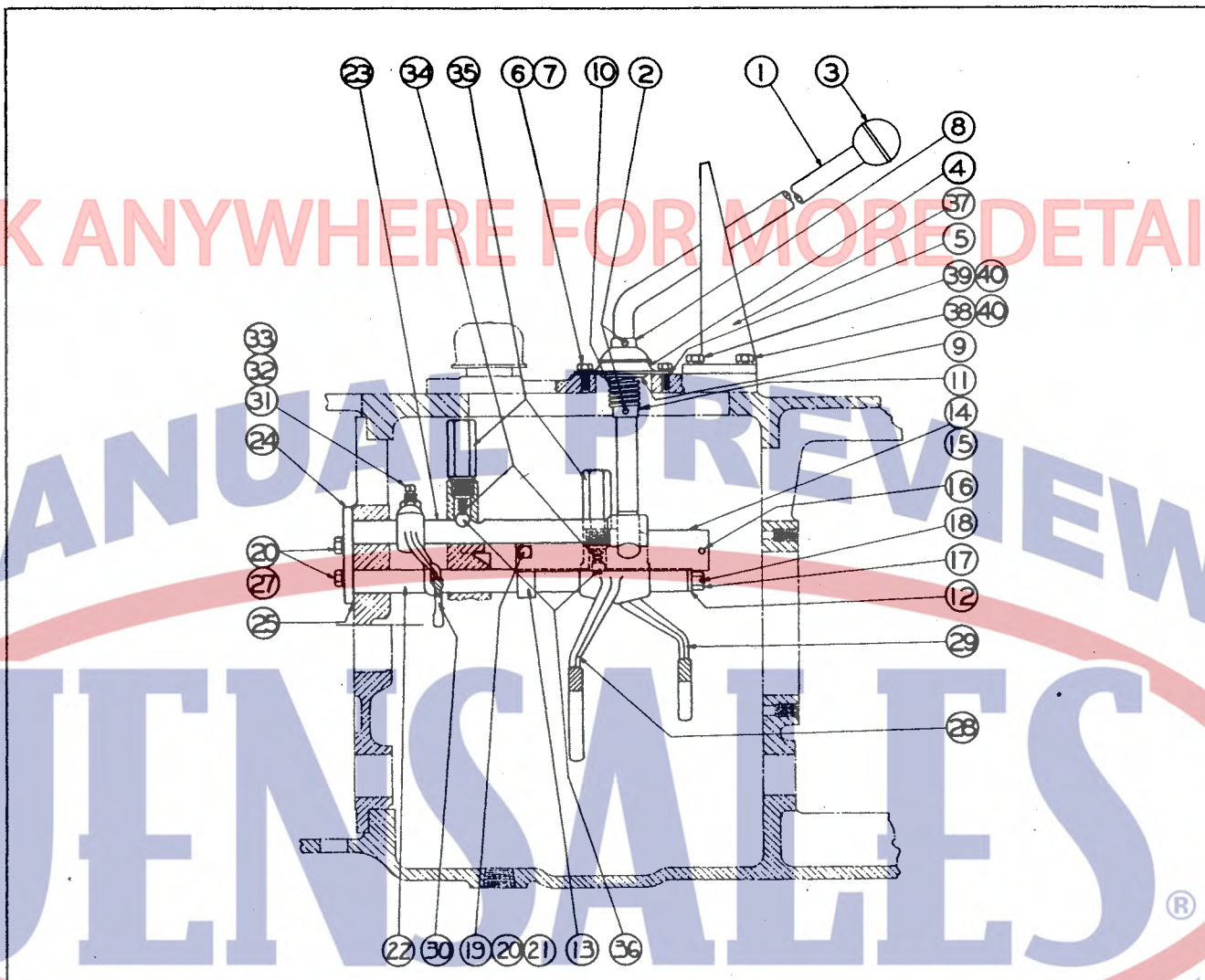
CYLINDER LINERS, PISTONS AND RINGS

The engine has renewable cylinder liners which makes reboring unnecessary.

Oversize pistons and rings are not supplied. If wear on the cylinder liners is sufficient to require oversize pistons and rings, a new motor assembly, consisting of liners, pistons, rings, etc. should be installed.

The old liners can be readily removed from the top of the engine block by the use of a suitable puller.

When installing new liners, they should be forced straight down in the bore of the



GEAR SHIFT
(Group 280675)

The gear shift hand lever (1) is installed in the transmission case cover, and held in position by gear shift socket (4), capscrews (6) and spring (10).

Gear shifter fork shafts (22) are held stationary in transmission case by setscrews located in the rear of front transmission case head. Gear shifter forks (28) and (29) work on shifter shafts and are held in position by retainers (35), springs (34) and balls (36) which engages in grooves in shafts.

Fourth speed shifter fork (30) is held to fourth speed shifter shaft (23) by setscrew (31). When shifting into or out of fourth gear, both fork and shaft move and the ball retainer which is held in transmission

head engages with a groove in shaft to hold it in correct position.

To remove shifter shafts or forks, refer to section IV, Group 280182.

On steel wheel tractors, fourth gear is locked out, and it should not be unlocked unless rubber tires are installed.

To unlock fourth speed gear, remove transmission case cover. Loosen lock nut and back out setscrew (31) about one-fourth inch, then turn shaft (23) one-half turn and tighten setscrew (31). Reset the setscrew being sure it enters hole in shaft.

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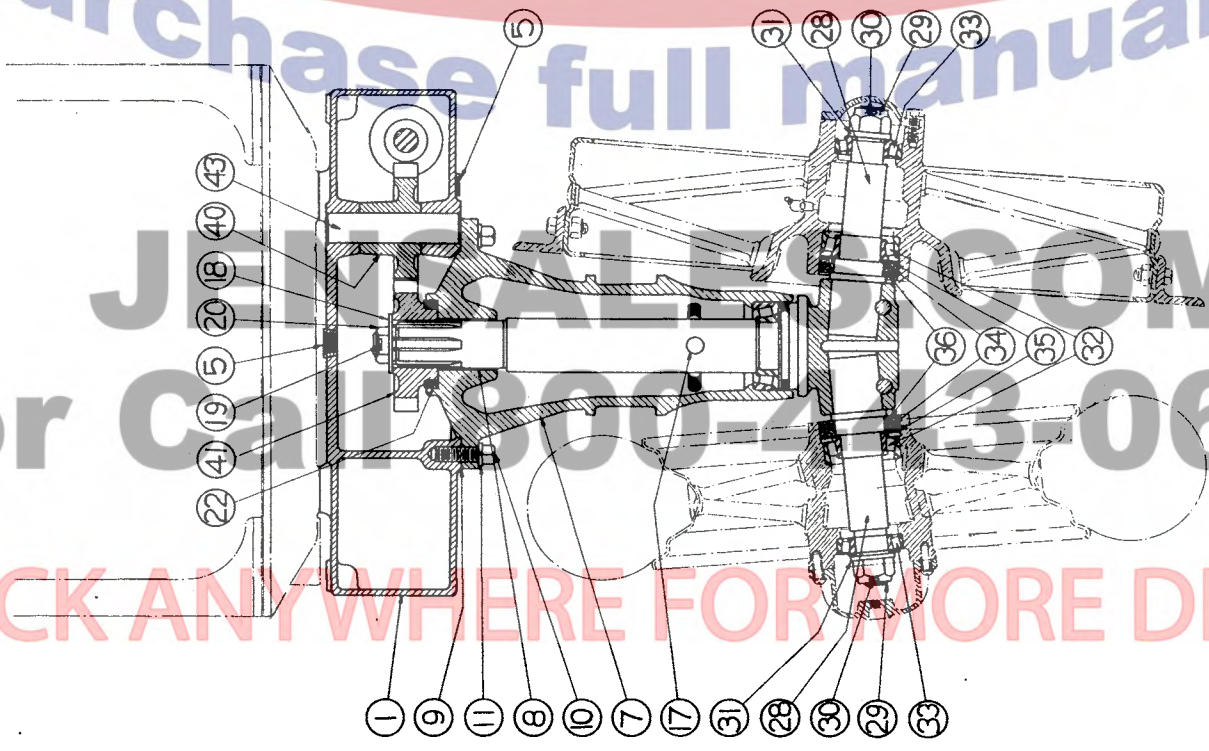
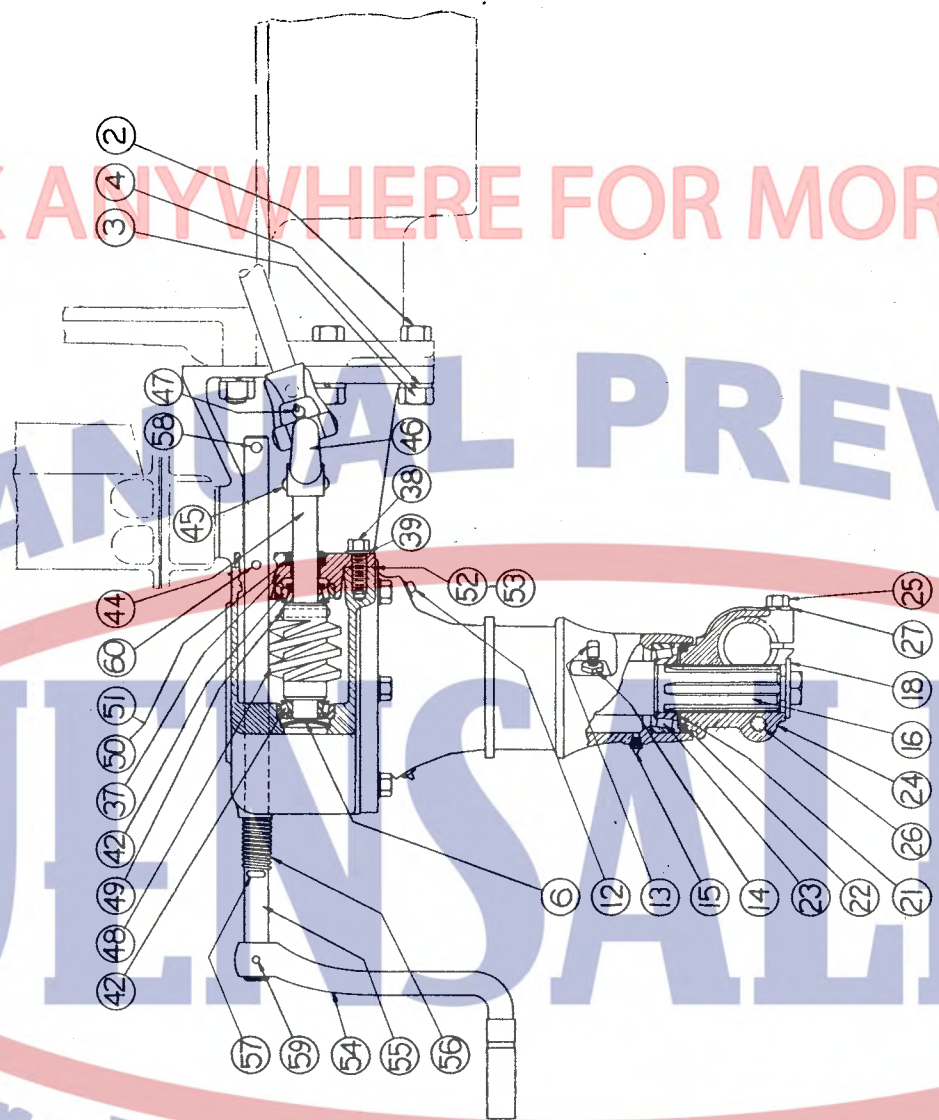
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FRONT SUPPORT AND SPINDLE

(Group 280665)

The front support (1) with spindle sleeve (7) forms the housing for steering mechanism and also supports the front end of tractor.

Steering spindle shaft (16) has splines and threads at each end. Caster block (24) is held to the lower end by nut and washer (20 and 18) and clamp bolt (26). Cork ring (22) is installed in the spindle sleeve above the caster block to prevent dirt entering and grease leaking from taper roller bearing (23) which carries the weight of front end of tractor.

Stop pin (17) is a drive fit in spindle shaft (16). Its purpose is to strike against set screws (13) that extend from the outside through spindle sleeve and prevent the front wheels from turning too far in either direction.

Spindle gear (41) is held on splines at top end of spindle shaft by washer and nut (18 and 20). Cork ring (22) is installed in spindle sleeve below gear (41) to prevent the escape of grease from the front support. Bushing (8) in top of spindle sleeve forms the bearing for top end of spindle shaft. Grease connections are installed at top and bottom of spindle sleeve (7) for lubrication of bearings.

To adjust bearing (23) on spindle shaft (16), loosen clamp bolt (26) in caster block and tighten or loosen capscrew in bottom of shaft, as the need may be, to provide for free rolling of shaft with no binding. If the adjustment is too tight it will tend to make hard steering and if too loose the bearing will be damaged.

For replacement of shaft (16), bearings or oil seals, block up front end of tractor, remove capscrews (10), sleeve (7), nut (20), washer (18), and gear (41). The shaft can then be removed from sleeve (7) and the various parts made accessible. Caster block (24) can be removed by loosening clamp bolt (26) and removing capscrew from bottom of spindle shaft.

Worm gear (40) on shaft (43) is an idler gear between steering worm (48) and spindle gear (41). To replace, remove spindle sleeve (7) and drive out pin (43). If excessive wear should occur on worm gear (40), remove spindle sleeve assembly (7), turn gear one fourth turn and reassemble. This will provide for a different point of contact between worm and gear.

The steering worm (48) is attached to shaft (44) by pin (49) and the assembly is carried on taper roller bearings (42). The assembly is installed from the rear of front support and held in position by bearing bracket (37). Shims are placed between the bearing bracket and support to provide for

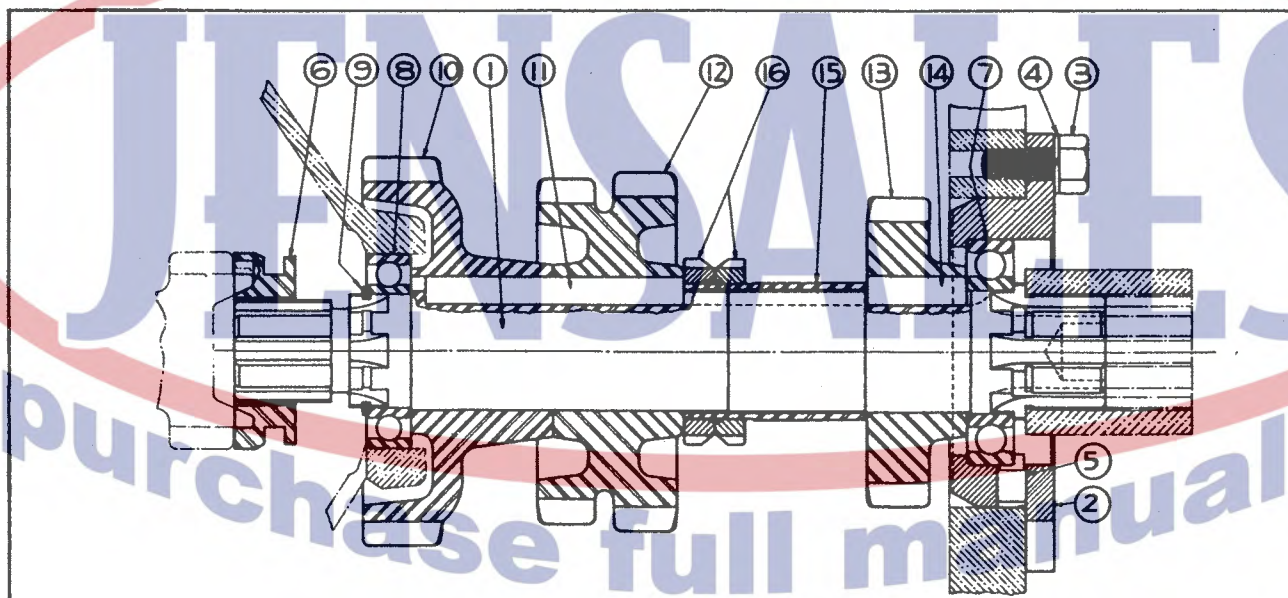
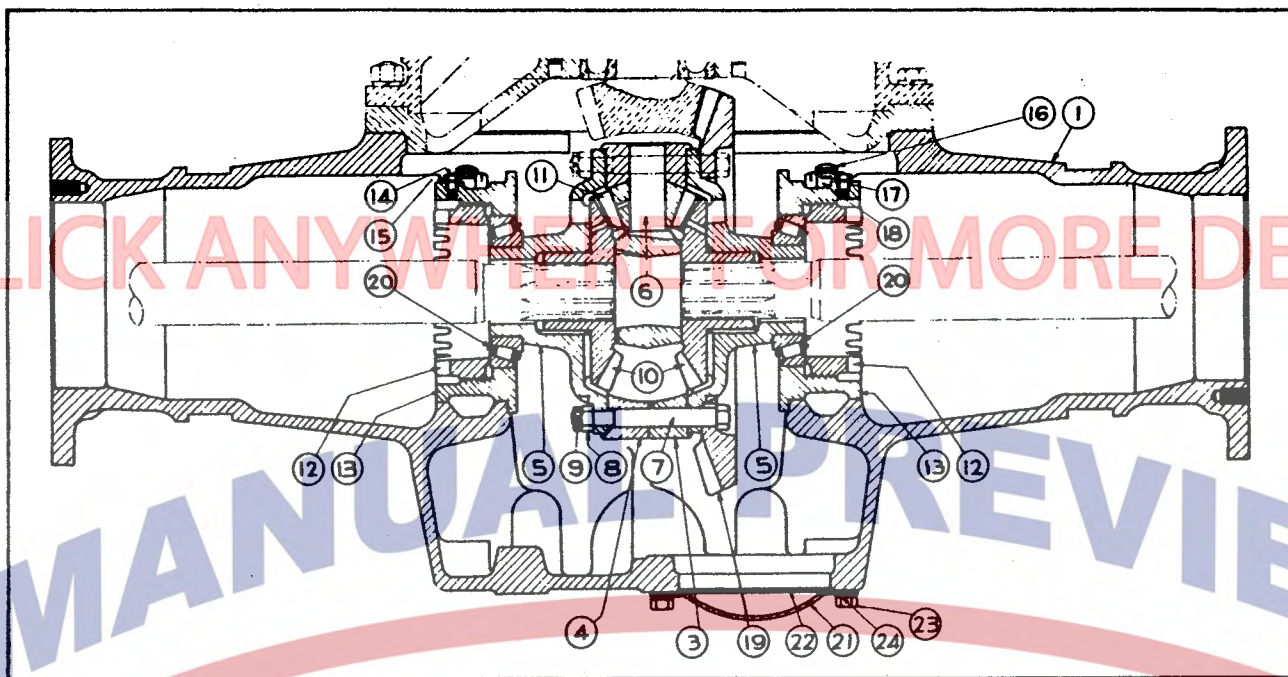
bearing adjustment. The bearings should be adjusted to provide free rolling for the shaft without end play. Two cork rings (51) are fitted into bearing bracket and held in place by retainer (50) to prevent grease leakage.

For lubrication of steering worm and gears, fill front support with SAE 160 transmission oil until steering worm (48) is one-third submerged.

Front spindles (28) are fitted in to spindle block (24) and held in position by capscrews (25). In event of being damaged, old spindles can be removed and new ones installed.

Retaining washer (36), felt washer (34), retainer washer (35), and bearing assembly (32) are installed on spindle next to caster block with castle nut (29), spindle washer (31), and bearing assembly on the outer end. When necessary to change the cone and roller assemblies of the bearings, change the cups also. Otherwise the new cone and roller will wear rapidly. The old cups can be easily driven out by entering a punch from opposite end of hub and driving against the back of cup. Use a piece of brass, when driving in new cups, to prevent damage.

The proper care and lubrication of front wheels cannot be over emphasized. For each 60 days of operation new felts should be installed to prevent the loss of the lubricant and dirt from entering the bearings. Test bearings for end play after each two weeks of operation, and adjust them by tightening nut (29) if play has developed. Tighten enough to remove end play but not enough to bind bearings. After adjusting be sure to install cotter pin in end of spindle to prevent nut from backing off. Lubricate the bearings daily when working under average conditions and twice daily if in very dusty or sandy conditions with grease gun until grease shows up at inside of hub.

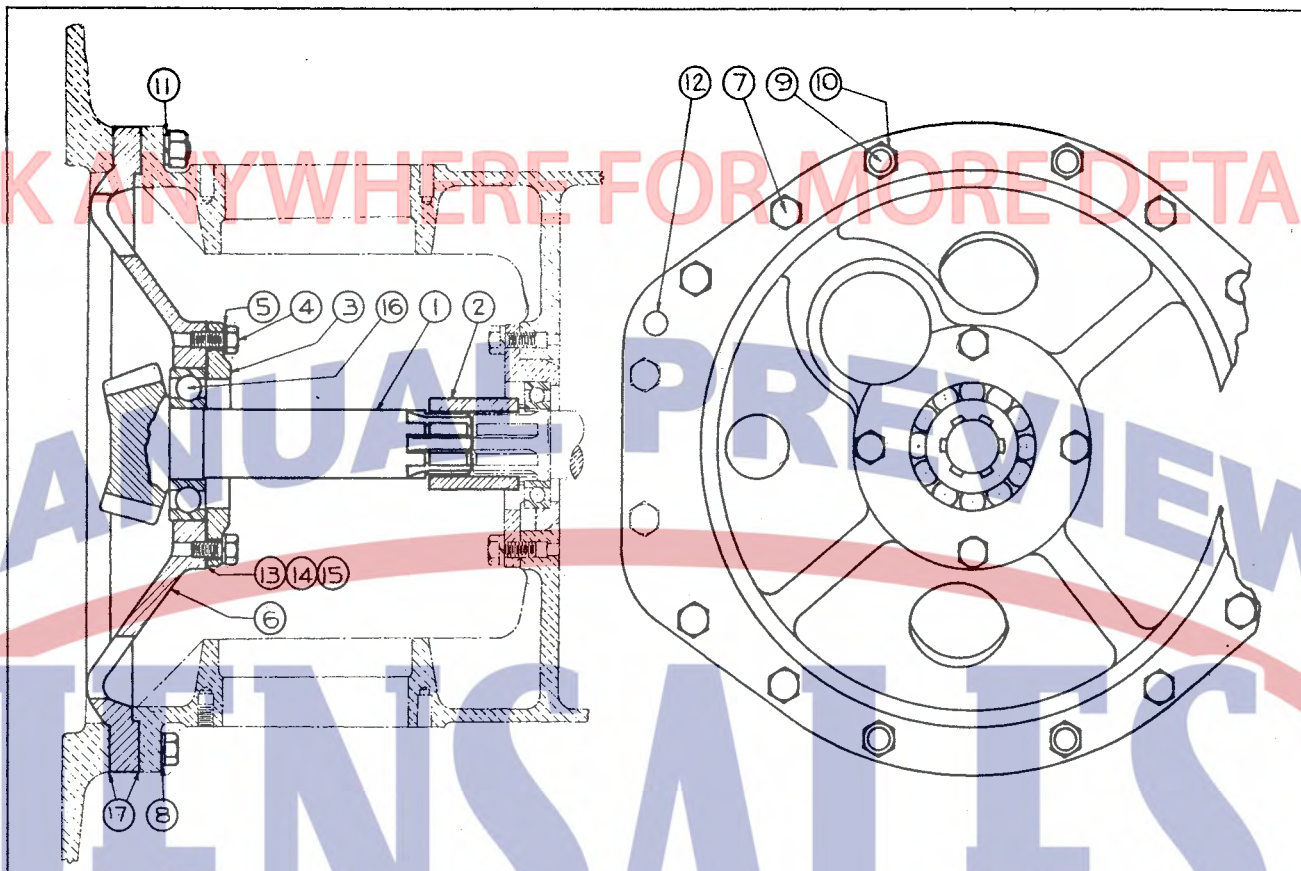


BEVEL PINION AND SHAFT

(Group 280336)

To remove pinion and shaft, separate differential housing from the transmission case as explained under Differential Group 280339. The bevel pinion support (6) is attached between the differential housing and transmission case. Support (6) carries ball bearing (16) and shaft (1). Bearing (16) is held in position from the rear by the forward

pressure of the ring gear and pinion, from the front by bearing cover (3). Under bearing cover (3) are shims (13), (14), (15) which can be removed or added to get the proper pinion contact on the ring gear. Pinion shaft (1) is splined in front and is driven by coupling (2) which fits on the rear end of the intermediate shaft.



DIFFERENTIAL (Group 280339)

To remove the differential, separate rear axle housing from transmission case. Remove rear wheels and axles as explained under Group 280674. Remove stud nuts (18) and differential bearing cases (13). The assembly can now be removed from the housing.

The two differential pinions (11) are carried on spider (6) with a differential bevel gear on either side.

The entire differential assembly is held together by eight bolts that pass through the case ends and differential center. The nuts on these bolts must be tightened securely and locked with cotter pins.

Taper roller bearings (20) are installed on the case ends and carry the differential assembly. These bearings must be adjusted approximately .005" tighter than a free rolling fit. To adjust the bearings remove adjusting ring lock capscrew (14) and turn adjusting rings (12) in to tighten bearings. (Each bearing has an adjusting ring). After the bearings are adjusted the ring gear must

be set to mesh correctly with the drive pinion. There should be .008" to .012" back lash. This is also done by the adjusting rings (12). By turning one ring out and the other in the same amount, the correct mesh may be obtained without disturbing the bearing adjustment.

If necessary to change the position of pinion to obtain uniform pinion bearing on ring gear teeth, it can be accomplished by the removal or addition of shims (13), (14), (15), Group 280336.

INTERMEDIATE SHAFT (Group 280676)

To remove intermediate shaft (1) and gears, it is necessary to remove the spline shaft as explained in Group 280182, section 4. To remove intermediate shaft from transmission case refer to Group 280183, section 4. The necessary information will all be found under this group except for the bearing case (2), which is slightly different. The bearing case has a thrust pin (5) to hold bearing (7) in position. To remove this thrust pin (5) remove capscrews (3) and pull bearing case (2) out of transmission case far enough so thrust pin (5) can be driven out from the top.