OPERATING INSTRUCTIONS
AND
REPAIR PARTS ILLUSTRATIONS

ALLIS-CHALMERS
MODEL "WD" TRACTOR

ALLIS-CHALMERS MFG. CO.

TRACTOR DIVISION

MILWAUKEE, WISCONSIN, U.S.A.

LITHO. IN U. S. A. FORM TM-9B

FOREWORD

The instructions given in this book cover the operation of the Allis-Chalmers Model "WD" Tractor. A close adherence to these instructions will result in many hours of trouble-free operation and a longer operating life for the unit.

This book is written for the purpose of giving the operator essential information regarding the day-to-day care, lubrication and adjustment of the machine. Economical operation will be insured if these instructions are followed.

Many Allis-Chalmers owners employ the dealer's Service Department for any work other than routine care and adjustments. This practice is encouraged as our dealers are kept well informed by the factory regarding advanced methods of servicing Allis-Chalmers products and are equipped to render satisfactory service.

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INDEX

GENERAL SPECIFICATIONS

ENGINE :

Number of Cylinders . . . . , , . . . 4
Bore . . . . 4”
Stroke . . . . 4”
R.P.M. 1400
Firing Order . . . . , 1-2-4-3
Piston Displacement . . . . 201 Cu. In.
Compression Ratio (Gasoline) 5-1/2 to 1
(Low Octane Fuel). . . 4-1/2 to 1

MAGNETO:

Impulse Coupling . , ... Automatic
Lag Angle . . . . 30 degrees
Timing Advance . . . . 30 degrees
Point Gap . . . . .020”
Spark Plug Size 14mm
Spark Plug Point Gap. , . .030” to .040”
Spark Plug Heat Range
Gasoline . . . . Autolite AN 7
or equivilent
Spark Flug Heat Range
Low Octane . . . . Autolite A9
or equivilent

TRANSMISSION: (Selective Sliding Gear)

First . . . . 2-1/2 MPH
Second, ... 3-1/2 MPH
Third . . . . 4-3/4 MPH
Fourth . . . . .9 MPH
Reverse . . . , ... 2 MPH

ENGINE CLUTCH: (Spring Loaded)

Single Plate - Dry Disc
Diameter . . , ... 10”

TRANSMISSION CLUTCH: (Over Center)
Optional
Double Plate - Wet
Diameter . . . . , ... 7”

BELT PULLEY: (Optional)

Diameter . . . . , ... 9”
Face . . . . 6-1/2”
RPM at 1400 Engine Speed 1260

BRAKES:

Enclosed Contracting Type,
Foot Operated

RADIATOR:

Capacity. . . . . 3-1/2 Gal.

OIL SUMP:

Capacity . . . . 6 Quarts

TRANSMISSION, DIFFERENTIAL AND CLUTCH
Capacity . . . . , . , . . 17 Quarts
(18 quarts with P.T.O. Installed)

FINAL DRIVE GEARS:

Capacity - Each . . . . 1 Quart

F UEI. TANK:

Capacity . . . , ...15 Gal.
Auxiliary Tank . . . . 1 Gal.

WHEEL TREAD:

Rear . . . . , ... , 56” to 90”

TIRE SIZE:

Front . . . . 5.50 x 16”
Rear... . . . . 11x28

TIRE PRESSURE:

Front. . . . . .28 lbs.
Rear . . . . 12 lbs.

BATTERY:

6 Volt -- 15 Plate -- 95 Ampere Hour

HYDRAULIC PUMP (Optional)

Capacity . . . . 5 Quarts
Lift Rams . . . . Diameter 1-1/4”
Remote Ram . . . . . Diameter 1-3/4”

POWER TAKE-OFF

RPM at 1400 of Engine 548

STEERING: (Semi-Reversible)

Ratio.. . . . . 12 to 1

HEIGHT

Overall . . . . 81-1/2”
Height of top of Steering Wheel . . , 68”
Wheel Base . . . . 88”
Overall Length . . . . 128”
Turning radius - With Brake . . . , 8’

The Allis-Chalmers Manufacturing Company reserves the right to make changes in the above specifications or to add improvements at any time without notice or obligation.

GENERAL INFORMATION

LUBRICATION

IT PAYS TO PAY A LITTLE MORE FOR QUALITY LUBRICANTS

It has long been recognized that the life of a tractor is largely determined by the kind of lubrication it receives. Therefore always use oil and grease of high quality, manufactured by a dependable oil company who has established a reputation for quality products and whose success depends on maintaining such quality.

In addition to using high quality oils it is also necessary to use oils of proper viscosity. Oil that is too heavy cannot reach all points to be lubricated, therefore, it will cause undue wear and engine sluggishness. Oil that is too light will not form a protective film between moving parts. For best results and to assure lubrication between snug fitting parts refer to lubricants recommended in Lubrication Guide.

Some parts need more frequent lubrication than other parts. Lubrication intervals outlined in LUBRICATION GUIDE pages 8 and 9 should be followed closely.

FUELS

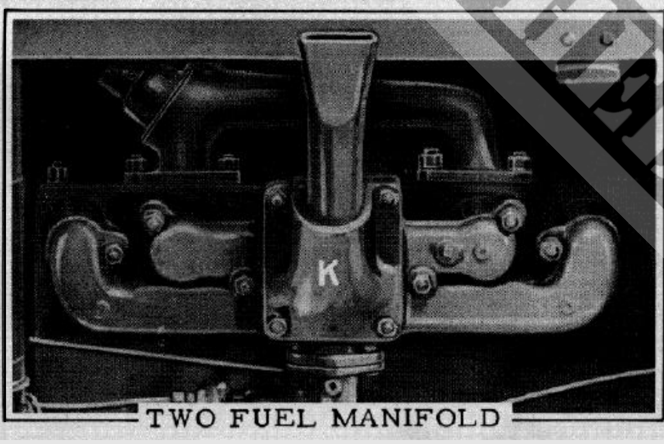
FOR ECONOMY AND PERFORMANCE USE FUELS SPECIFIED FOR YOUR ENGINE

Engines for Model "WD" Tractors may be secured with either a high or low compression ratio. Each is designed to efficiently burn a particular class of fuel. For best performance use the class of fuel for which the engine was designed.

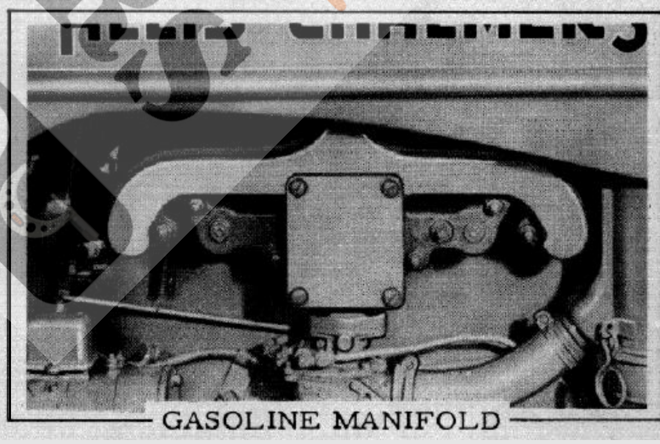
Standard compression engines are equipped to burn distillate, tractor fuel or low octane gasoline. These fuels should have the following specifications: Gravity -- 38 or higher; End Point -- 525° or less; Octane Rating -- 30 or more; Gasoline -- 60 octane or higher. Engines equipped to burn the above fuels are designated by the letter "K" following the engine serial number located on the left rear of engine block. (Example: WD110650 KA)

High compression engines are equipped to burn gasoline only. For average loads use 60 octane gasoline or higher. For continued heavy loads use 70 octane gasoline or higher. These engines are designated by the letter "G" following the engine serial number, (Example: WD110650 GA)

MANIFOLD



TWO FUEL MANIFOLD

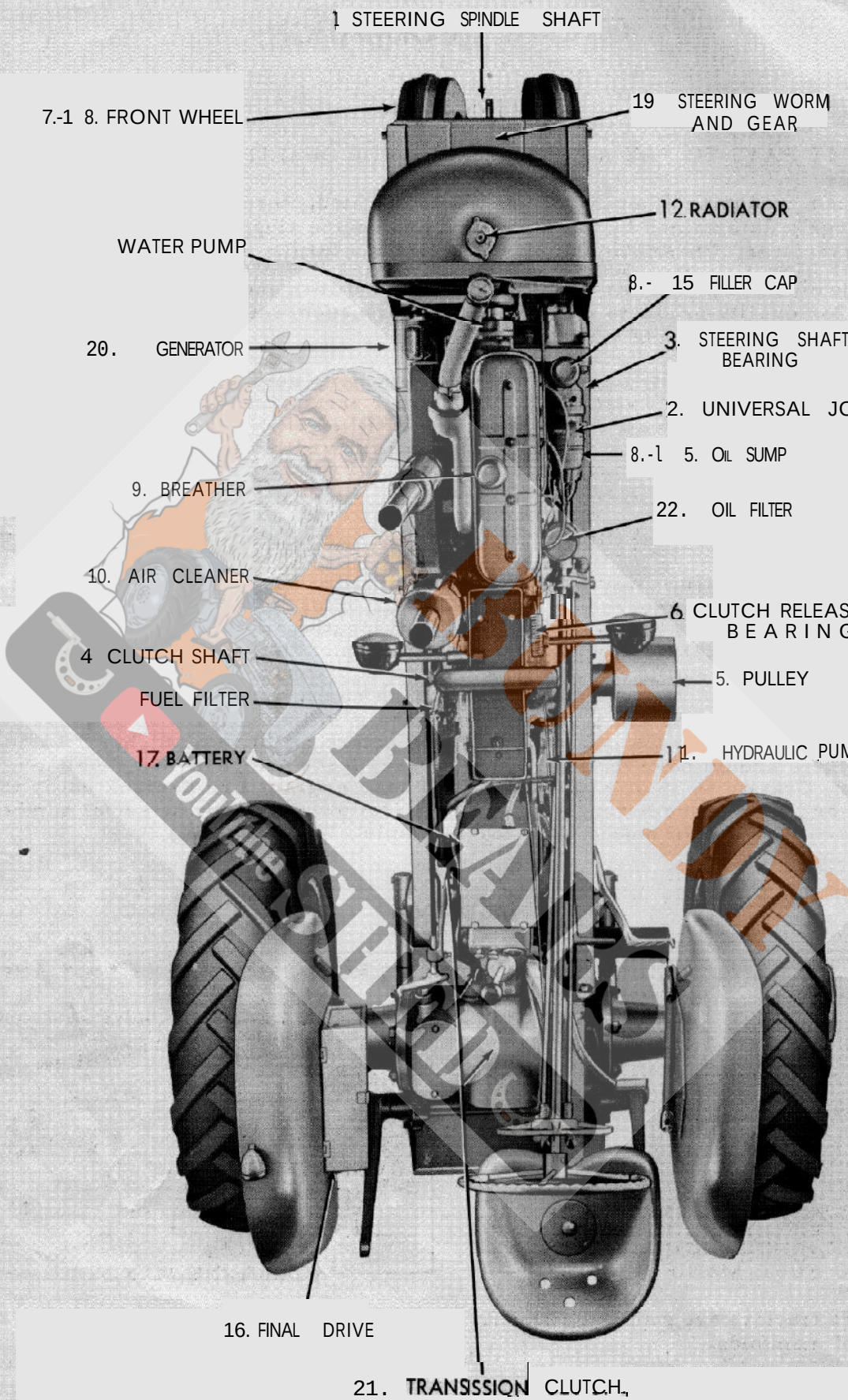


GASOLINE MANIFOLD

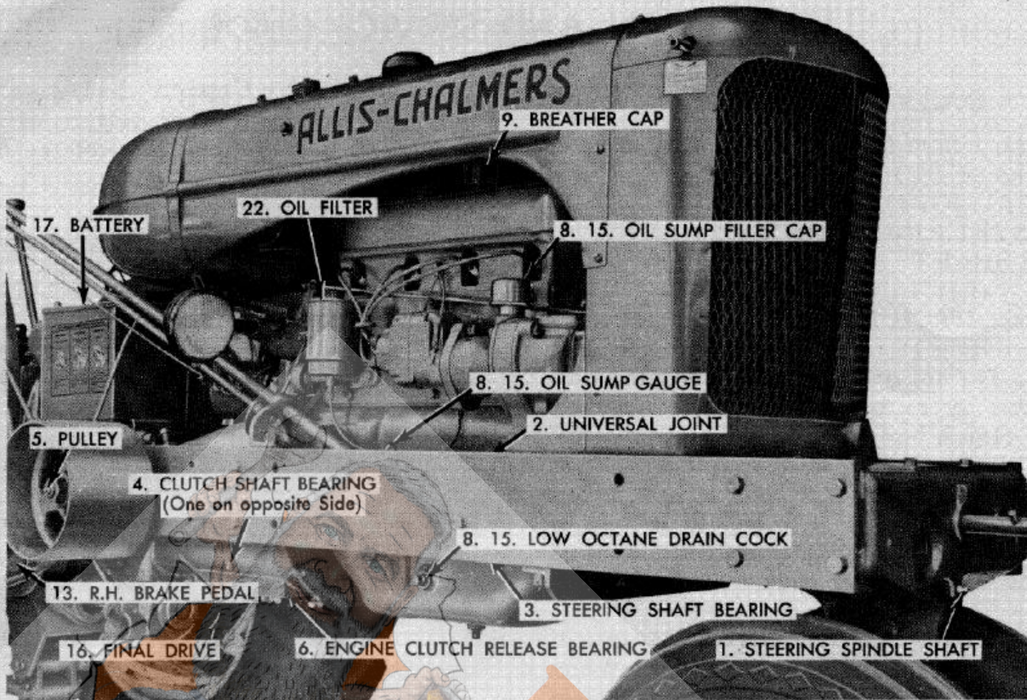
Allis-Chalmers tractors are supplied with one of two styles of manifolds.

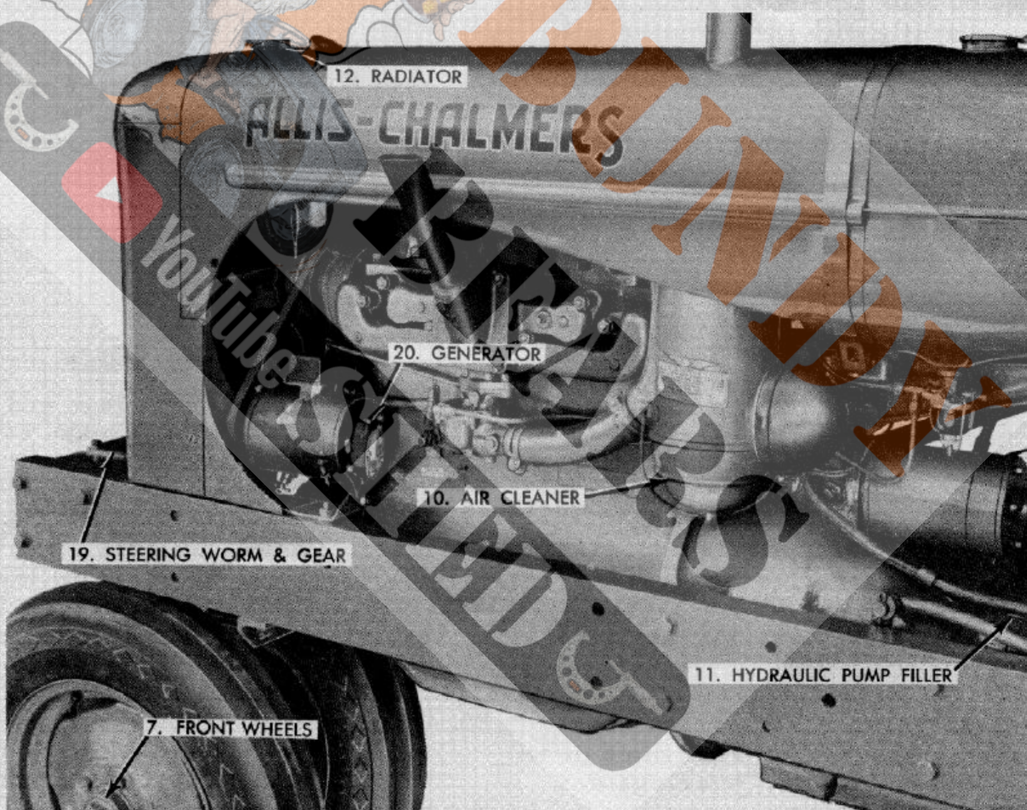
The two fuel manifold is used with standard compression engines and can be used for tractor fuel or gasoline. The gasoline manifold is supplied on high compression engines and uses gasoline only.

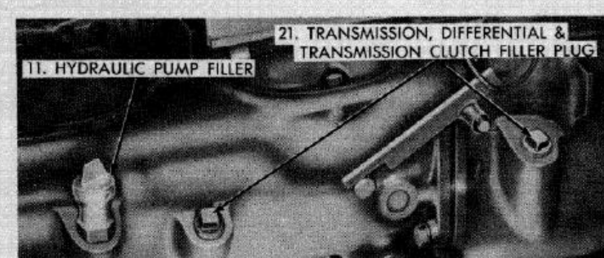
When using the two fuel manifold install the cover marked "K" when burning tractor fuel or distillate. Install the cover marked 'G" when using gasoline.



LUBRICATION AND SERVICE CHART.'







LUBRICATION AND SERVICE CHART (Cont'd.)

LUBRICATION AND SERVICE GUIDE

DAILY CHECK

Lubricate items 1 thru 6 with Chassis Lubricant.

1. **STEERING SPINDLE SHAFT**
2. **UNIVERSAL JOINT**
3. **LOWER STEERING SHAFT BEARING.**
4. **CLUTCH SHAFT**
5. **PULLEY (when in use)**
6. **ENGINE CLUTCH RELEASE BEARING - Lubricate every 10 to 20 hours with chassis lubricant. Do not over grease. Fitting can be reached by removing small cover at bottom of clutch housing. Lock clutch pedal forward to locate fitting so it may be reached by gun.**

7. **FRONT WHEELS - If wide front axle is used lubricate four king pins. (See 30 Day Check.)**

8. **OIL SUMP - Capacity 6 quarts. Maintain oil level to full mark on oil gauge rod. When using low octane fuel drain to level of drain cock located on right side of oil sump, every 10 hours and refill with fresh motor oil.**

   Above 90°F. use SAE 40
   Above 32°F. use SAE 30
   Above 10°F. use SAE 20W
   Below 10°F. use SAE 10W

9. **BREATHER CAP - Wash in gasoline and dip in motor oil - throw off excess oil before replacing. Under extremely dusty conditions, service the breather cap twice daily.**

10. **AIR CLEANER - Clean and refill oil cup. Fill to level mark using motor oil of the same viscosity as used in oil sump. Under extreme dusty conditions service air cleaner twice daily. Each season remove the entire air cleaner and clean main body and element thoroughly. Keep all connections air tight.**

11. **HYDRAULIC PUMP - Oil used in hydraulic pump must not foam. Check daily and keep filled to high mark on bayonet gauge or to top of filler neck on tractor not equipped with bayonet gauge. Filler plug is upper front plug on torque tube. NOTE: This same oil also lubricates belt pulley bearings and gears. Change oil twice a year.**

    A magnetic drain plug is located at the bottom of the housing. This plug should be cleaned periodically. To completely drain pump the pump control housing must also be drained.

    Above 45°F. use SAE 20W
    Below 45°F. use SAE 10W

12. **RADIATOR - Capacity 3-1/2 gallons. Drain cocks are located at bottom of radiator and engine block ahead of carburetor.**

WEEKLY CHECK

13. **RIGHT HAND BRAKE PEDAL - Lubricate with chassis lubricant.**

14. **ENGINE CLUTCH PEDAL - Lubricate with chassis lubricant (not shown).**

15. **OIL SUMP - Drain and refill with fresh oil every 60 hours when using gasoline. When using low octane fuel drain completely and refill every 40 hours. Drain plug is located at bottom of oil sump. Keep filled to full mark on bayonet gauge.**

    Above 90°F use SAE 40
    Above 32°F use SAE 30
    Above 10°F use SAE 20W
    Below 10°F use SAE 10W

16. **FINAL DRIVES - Capacity 1-3/4 quarts each. Keep filled to level plug, For temperatures above 32°F. use SAE 140 gear lubricant; for temperatures below 32°F. use SAE 90. Drain and refill twice a year.**

17. **BATTERY - Electrolyte solution should be 1/4 inch above separators.**

30 DAY CHECK

18. **FRONT WHEELS - Clean and repack with No. 2 wheel bearing grease every 30 to 60 days. (Applies to all types of front wheels)**

19. **STEERING WORM AND GEAR - Check every 30 to 60 days. Remove cover from top of front support, maintain oil level so worm gear is one-third submerged. Use SAE 140 gear lubricant. NOTE: With wide front axle and single front wheel use SAE #250.**

20. **GENERATOR - Lubricate with motor oil of same viscosity as used in oil sump at prevailing temperature. Two or three drops is sufficient.**

21. **TRANSMISSION, DIFFERENTIAL AND TRANSMISSION CLUTCH - Capacity 17 quarts. Keep filled to level plugs. Use *SAE 80EP all year. Drain plugs are located on bottom of transmission, bottom of differential and bottom of clutch housing. Drain and refill twice a year. When power take-off is installed on transmission add one**

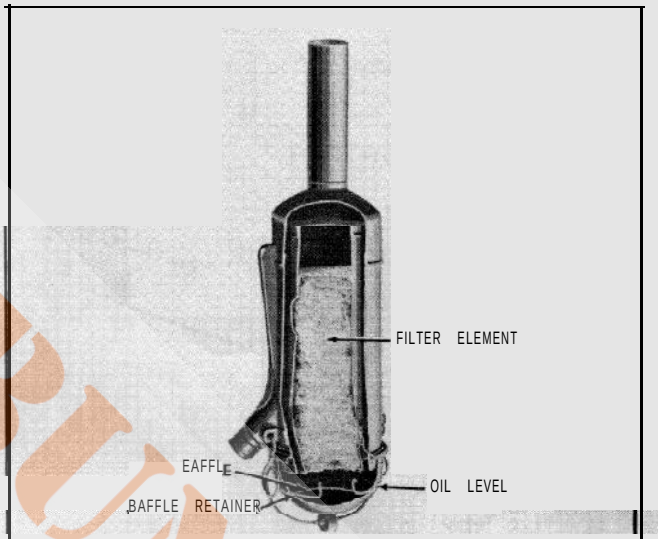
extra quart. Fill all three compartments through transmission filler plug.

*This oil is sold under varied listings. Any oil following U.S. Army specifications of 2-105B 80 viscosity transmission oil is satisfactory.

22. OIL FILTER - Replace when oil begins to darken. Replacement is usually necessary after 200 hours when operating on gasoline and after 100 hours when operating on low octane fuel.

AIR CLEANER

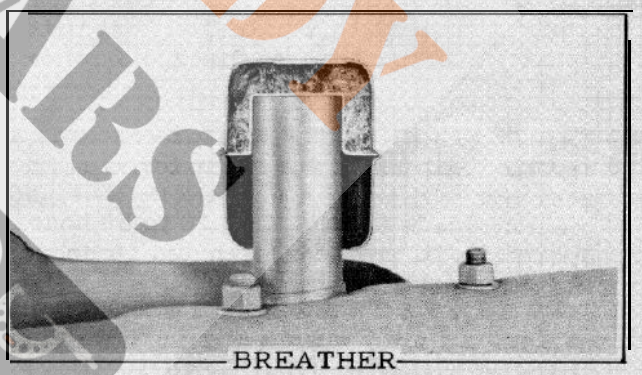
A clean air cleaner adds life to your engine. Service the air cleaner as mentioned in Item number 10, Use the same viscosity oil as used in the engine oil sump according to the prevailing temperature. Keep the oil cup filled to the proper level at all times. Do not dilute oil or use used crankcase oil. The efficiency of cleaner depends on the proper viscosity oil.



AIR CLEANER

BREATHER

Service the breather cap daily as mentioned in Item Number 9. If breather should become clogged with dirt, pressure will be created in the crankcase, causing oil leaks.


BREATHER

OIL FILTER

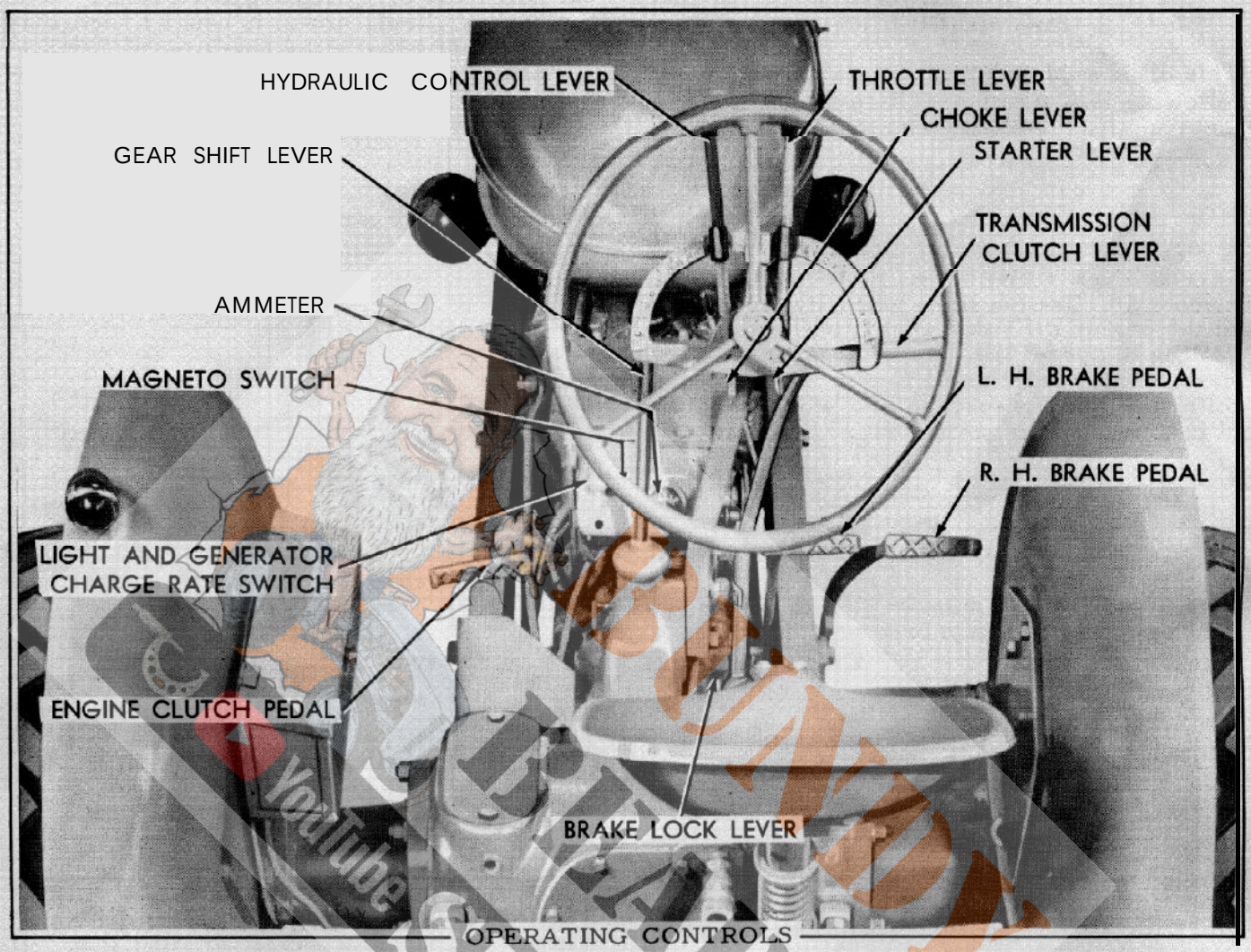
Insure your engine life by regular replacement of filter. The oil filter is a highly efficient unit for the purpose of filtering abrasive particles from the crankcase oil.

The filter element consists of a metal container packed with a special long thread filtering yarn.

CAUTION: Install only a new element which is machine packed, to a specific density and supplied by the Allis-Chalmers Mfg. Co. for the protection of your engine.

NOTE: A slight decrease in oil pressure is generally noted when a filter element is installed, until the element is thoroughly saturated with oil.

OPERATING INSTRUCTIONS



OPERATING CONTROLS

BREAK IN PERIOD – The tractor engine is assembled and tested and ready for work, however for best results operate tractor under medium loads for the first 10 to 20 hours of operation.. If possible it should be operated at full governed r.p.m. of engine. If necessary use a lower gear to keep from overloading engine. In cold weather the oil should be changed after the first 20 to 30 hours of operation. However if the proper temperature is maintained at all times the lubricating interval outlined in lubrication guide may be followed.

STARTING ENGINE

1. Before starting tractor make certain that all points of care and lubrication outlined under daily, weekly or 30 day check have been serviced as specified.

2. Close radiator shutter by turning screw crank located on right hand side of tractor.

3. If gasoline is to be used open valve under large tank. If low octane fuel is used open valve under small tank. Move throttle control lever down about one fourth of quadrant. Place gear shift in neutral position. In cold weather hold clutch pedal down until engine starts to relieve starter load.

4. Pull out magneto switch on instrument panel.

5. Pull carburetor choke rod located at right side of steering column.

6. Pull out on starter pull rod located on left side of steering column. Engage starter firmly to insure good switch contact. Release immediately when engine starts, When engine has turned one complete turn, push choke rod forward, If weather is extremely cold more choking may be necessary.

AFTER ENGINE HAS STARTED - CHECK

1. **OIL PRESSURE GAUGE.** When operating engine look at oil gauge at frequent intervals to make certain oil is being circulated by pump. The indicator needle should always remain near the O.R. or M. in the word NORMAL when the engine is hot and running at its normal speed. A slight decrease will be noted when engine idles. Do not operate unless gauge registers,
2. **THE TEMPERATURE GAUGE** needle should operate in the green portion of gauge, and temperature should be maintained by shutter adjustment.
3. **THE LIGHT SWITCH & GENERATOR CONTROL** is located on the instrument panel, To turn on lights pull switch to first notch. The generator has two charging rates, with switch pushed all the way in the lights are off and rate of charge about 3 amperes as indicated on ammeter, when pulled to first notch lights are on and charging rate remains about 3 amperes. When switch is pulled all the way out about 10 to 13 amps. The high rate of change should be used only when the battery is in a partially discharged condition. In most tractor operation the trend will be to overcharge the battery.

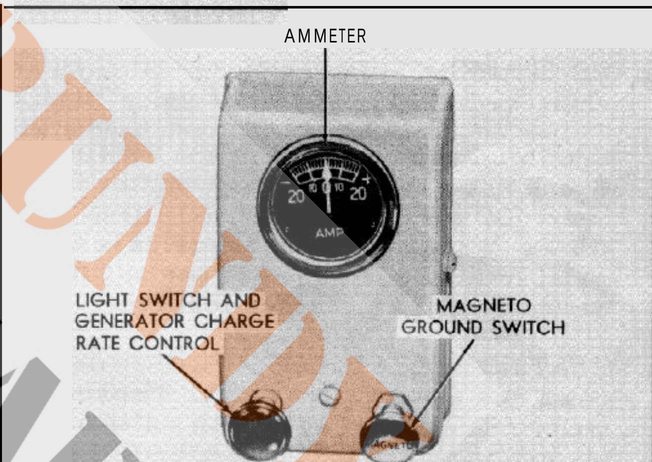
STOPPING ENGINE - Place throttle in idling position and allow engine to idle a few moments. Shut off by pushing in on magneto switch. If using low octane fuel close valve under fuel tank and allow engine to run until it stops from lack of fuel. This will drain the carburetor so gasoline may be used for starting.

OPERATING TRACTOR - The clutch is provided for engaging or disengaging the power of engine from the tractor. When using clutch depress pedal fully and allow tractor and clutch to come to a full stop before attempting to shift gears. Reducing engine speed to low idle before depressing clutch will help prevent clashing gears. With the engine running, push the clutch pedal forward to release clutch, Hold in this position until the clutch stops revolving. Move the gear shift lever to the desired position as indicated on top of transmission cover. Open throttle far enough to avoid stalling. Release clutch pedal slowly to avoid jerking. The transmission clutch is provided to disengage the engine power from the transmission and rear wheels, leaving the power applied only to the P.T.O., hydraulic pump and belt pulley, if used.

The transmission clutch is hand operated and the lever is mounted to the right of the steering shaft support. Pushing lever forward disengages clutch.

OIL PRESSURE GAUGE

TEMPERATURE GAUGE



INSTRUMENT PANEL

When'using the belt pulley, the transmission clutch should be engaged and the transmission shifter lever placed in neutral position,

Easy turns may be made by simply turning steering wheel to right or left as desired. Foot brakes are provided for making extremely short turns. Turn steering wheel in direction desired and then apply brake on side towards which the tractor is being turned. Do not attempt short turns when traveling at high speeds. When using the brakes for stopping, apply pressure to both brakes so that the brakes are engaged evenly. This will bring the tractor to an even stop without skidding. The latch on brake lever is conveniently located for locking the brake in the engaged position to hold the tractor on an incline, or for belt work.

Operate engine at full throttle or nearly full throttle and select the desired transmission

gear to suit the work being done. To shift to low or first gear with the gear shift lever in neutral position, disengage clutch, move gear shift lever to left and forward. Second from neutral, left and back, third gear right and forward, fourth gear to right and back. To shift to reverse, push lever to extreme right and back, always stop tractor before changing gears. Severe overloads may be thrown on engine if tractor is operated at reduced engine speeds on heavy loads.

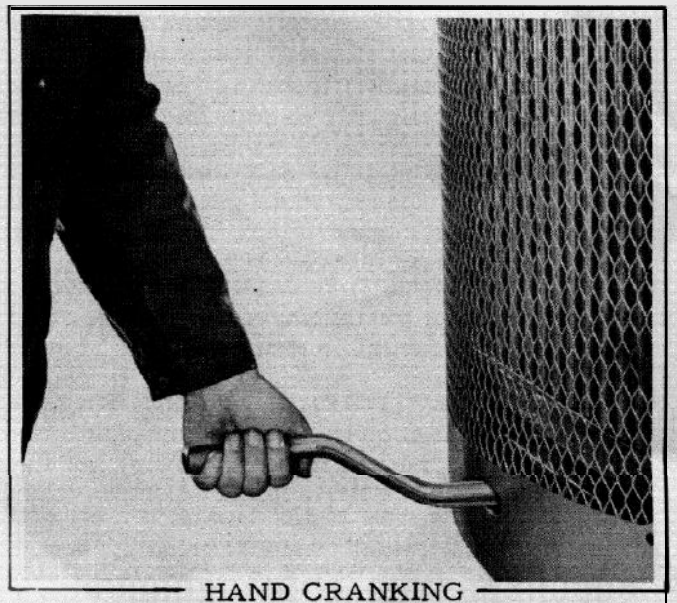
Adjust the drawbar height to recommended height for the implement being drawn. The drawbar should be placed as near in the centerline of draft as possible. Rear wheel weights are available for securing extra traction on heavy loads.

STOPPING TRACTOR – Push clutch pedal forward, allow tractor to stop or if necessary apply brakes. Place gear shift in neutral position, release clutch pedal.

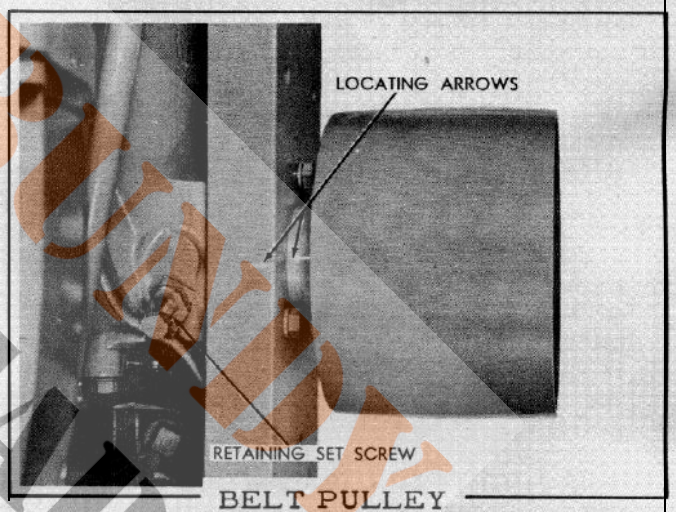
HAND CRANKING - Push clutch pedal down and engage pedal lock. Proceed as under "Starting Engine. Engage crank grasping handle with thumb on same side of crank as fingers. Crank in quarter turns only, pulling up and over. DO NOT ATTEMPT TO "SPIN' ENGINE. When engine starts release clutch pedal lock. Do not operate engine for long periods with pedal locked forward.

OPERATING BELT PULLEY - Push clutch pedal down and engage pedal lock. Loosen belt pulley retaining screw and push pulley assembly into the tractor. The dealer will stamp an arrow on tractor frame and on pulley tube. These arrows must be aligned to obtain proper gear mesh. Tighten lock screw and jam nut. Release clutch pedal, The clutch pedal lock may be engaged when pulley is stopped, however the engine should be stopped if any work is to be done on the driven machine.

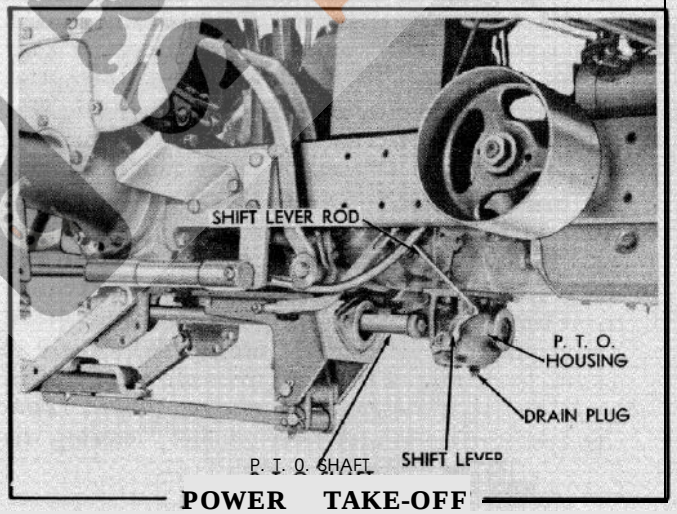
OPERATING POWER TAKE-OFF - The power take-off is used to furnish power to P.T.O. driven machines and operates at a speed of 548 r.p.m. at 1400 r.p.m. of engine. The speed of the P.T.O. remains at 548 regardless of what gear the tractor is operated in. The P.T.O. is provided with a shift lever for engaging or disengaging. To engage the P.T.O., push the clutch pedal forward the same as for shifting gears in the transmission. Allow the clutch to stop and, if the tractor is in motion, allow it to stop. Pull up on the P.T.O. shift rod located near the steering rod support. If the P.T.O. is engaged, do not attempt to shift transmission gears until driven machine stops. This P.T.O. will keep on running when the transmission clutch is disengaged.



HAND CRANKING



BELT PULLEY



POWER TAKE-OFF

SAFETY SUGGESTIONS

Many hours of lost time and much suffering is caused by the failure to practice simple safety rules.

IT IS TOO LATE TO REMEMBER WHAT SHOULD HAVE BEEN DONE AFTER THE ACCIDENT HAS HAPPENED.

1. Do not fill fuel tanks when engine is hot or while using a lantern or when smoking.
2. Do not attempt to spin engine when hand cranking.
3. Do not attempt to oil or grease a machine or tractor while it is in operation.
4. Do not wear loose fitting clothing that may be blown into moving parts.
5. Keep all shields and guards in place.
6. Place gear shift lever in neutral position when starting engine.
7. Machinery should only be operated by those who are responsible and delegated to do so.
8. Only one person -- the operator -- should be permitted on tractor when tractor is in motion.
9. The rate of travel on hillsides or curves should be regulated so there is no danger of tipping.
10. Do not remove radiator cap when engine temperature is above 212 F.
11. Brakes should be properly adjusted.
12. Do not drive too close to the edge of a ditch or creek.
13. Never operate your tractor in a closed garage or shed.
14. When tractor is hitched to a stump or other heavy load, always hitch to drawbar and never take up slack in chain with a jerk.
15. Always keep tractor in gear when going down steep grades.
16. Do not leave the engine running unattended when any one is adjusting or repairing a driven machine.
17. Do not attempt to operate tractor unless you are in the driver's seat.
18. Provide a first aid kit. Treat all scratches, cuts, etc. with the proper antiseptic immediately.
19. Always stop power take-off before leaving driver's seat.
20. Never stand between tractor and drawn implement when hitching. Use an iron hook to handle drawbar.
21. Do not put on or remove belt from belt pulley while pulley is in operation.
22. Do not dismount from tractor while it is in motion.

RADIATOR AND COOLING SYSTEM

RADIATOR CAPACITY 3-1/2 gallons. Drain cocks are located at bottom of radiator and on engine block ahead of carburetor. Be sure to remove cap when draining radiator.

TEMPERATURE GAUGE - The temperature gauge is provided for a visual check on operating temperature.

The gauge is marked in green indicating normal with a range of 170°F. to 220°F.

RADIATOR SHUTTER - The shutter is provided for controlling the operating temperature of engine. Turning the screw crank, located on right hand side of radiator to the right, opens the shutter.

Always close shutter before starting engine.

OPERATING TEMPERATURE - LOW ENGINE TEMPERATURES CAUSE CONDENSATION--SLUDGE AND CORROSION. KEEP ENGINE HOT. Always close radiator shutter completely when engine is started and keep it closed until engines reach operating temperature (170°F. when using gasoline, 190°F. when using low octane fuel). Then open shutter amount necessary to maintain this temperature,

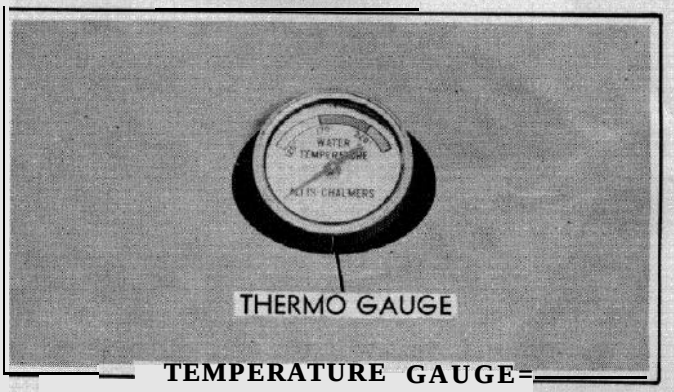
If burning low octane fuels, operate engine on gasoline until temperature reaches 190 F. to 200 F. before switching to low octane fuel. This is readily done by shutting valve under small tank and opening valve under large tank. Never open valve under larger tank before shutting valve under small tank as this will mix the two fuels.

The minimum operating temperatures are 170°F. for gasoline and 190°F. for low octane fuel. Strict adherence to these recommendations will guard against excessive dilution of lubricating oil, condensation and corrosion

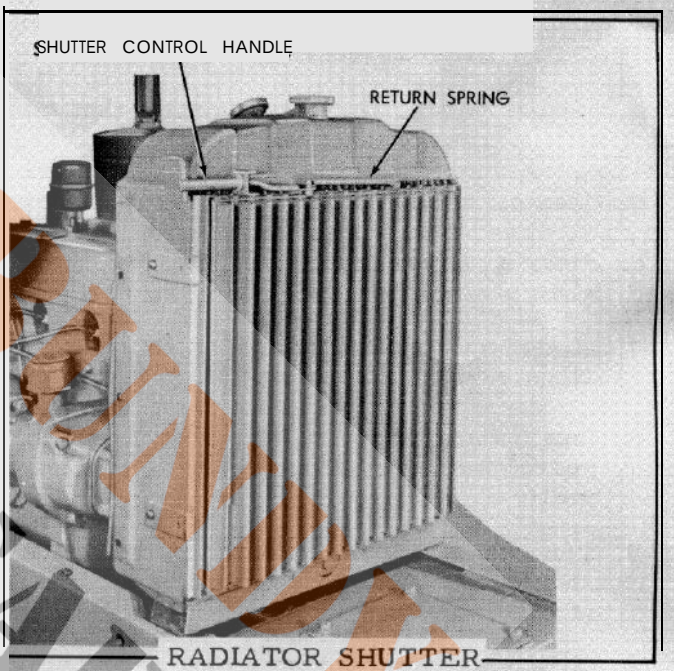
PRESSURE RADIATOR - The pressure radiator permits the use of a higher operating temperature. The cooling solution (pure water) will not boil in the pressure radiator until a temperature of 230°F. is reached.

To remove the radiator cap, turn to the left until it stops. Push down and continue to turn to the left until the cap is released.

Do not remove the cap when the temperature is above 212°F. as the cooling solution will break into a violent boil which may splash onto person removing cap.



TEMPERATURE GAUGE



RADIATOR SHUTTER

RADIATOR CAPS

Never pour cold water in a hot engine. Clean rain or soft water should be used in the cooling system if available. Hard or alkaline water will form a scale which will impair radiation if allowed to build up in the cooling system. The use of washing soda will help dissolve this scale. Where only hard water is available, washing soda should be used at intervals, and before the accumulation of scale becomes heavy enough to scale off and stop up radiator passages.

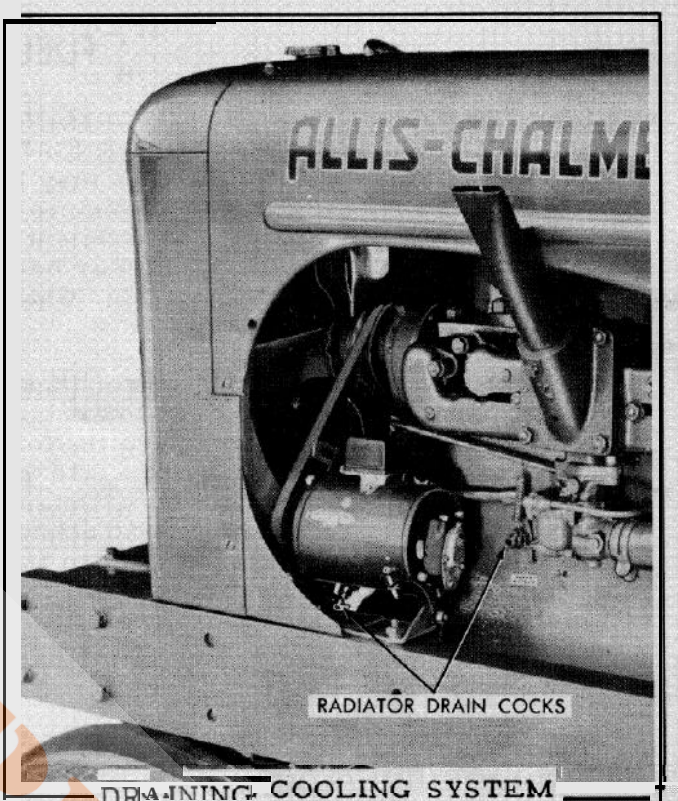
If soda is used', mix with water thoroughly before placing in radiator. Operate engine about 2 hours. Drain and flush thoroughly with clean water. Soluble oil is beneficial to the cooling system. It will not prevent the accumulation of lime but will retard such formation. This water soluble oil may be secured from your Allis-Chalmers dealer.

TO DRAIN COOLING SYSTEM - Open the drain cock located on lower radiator outlet and the drain cock on motor block ahead of carburetor.

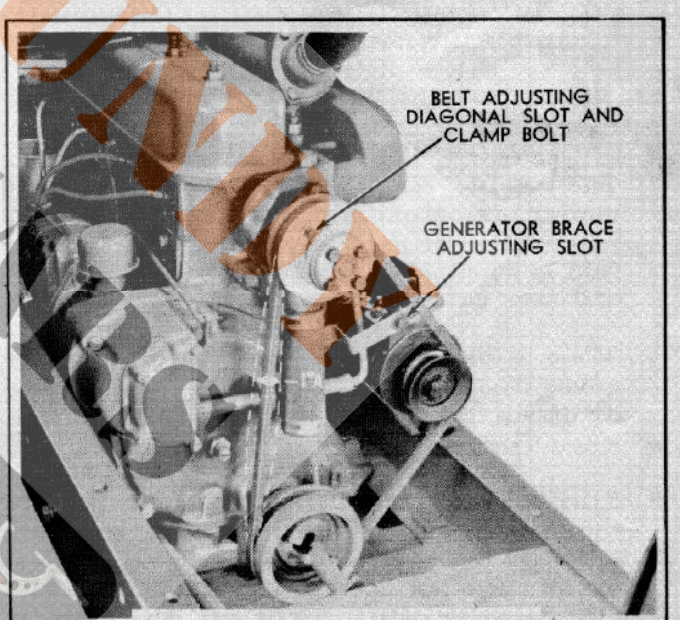
CAUTION: In freezing weather be sure to drain both places. Loosen radiator cap to prevent system from air locking, which will retard draining. Stay near tractor and make sure system is completely drained.

ANTI-FREEZE SOLUTION - If tractor is used during freezing weather it is advisable to fill the cooling system with anti-freeze solution. If low octane fuel is used, alcohol should not be used in the cooling system, because of its low boiling point. When low octane fuel is used, a good grade of permanent anti-freeze with a higher boiling point is recommended because of the higher operating temperature with this type of fuel.

FAN BELT ADJUSTMENT - To adjust loosen the generator adjusting screw and move the generator away from cylinder block until about 1" free movement at "A" is obtained. Extreme tightness will reduce the life of the belt, generator bearings and fan shaft bearing. If fan belt bottoms in the sheaves indicating belt wear the belt should be replaced.



DRAINING COOLING SYSTEM



FAN BELT ADJUSTMENT

FUELS FOR ECONOMY AND PERFORMANCE
USE FUELS SPECIFIED FOR YOUR ENGINE.

Engines for Model "WD "Tractors may be secured with either a high or low compression ratio. Each is designed to efficiently burn a particular class of fuel. For best performance use the class of fuel for which the engine was designed.

Standard compression engines are equipped to burn distillate, tractor fuel or low octane gasoline. These fuels should have the following specifications: Gravity -- 38 or higher: End Point - 525° or less; Octane Rating -- 30 or more; Gasoline --60 octane or higher. Engines equipped to burn the above fuels are designated by the letter "K" following the engine serial number located on the left rear of engine block (Example WD-1106 50 KX.)

High compression engines are equipped to burn gasoline only. For average loads use 60 octane gasoline or higher. For continued heavy loads use 70 octane gasoline or higher. These engines are designated by the letter "G" following the engine serial number. (Example: WD-110650 GA.)

MANIFOLDS - The WD Tractor is supplied with two types of manifolds.

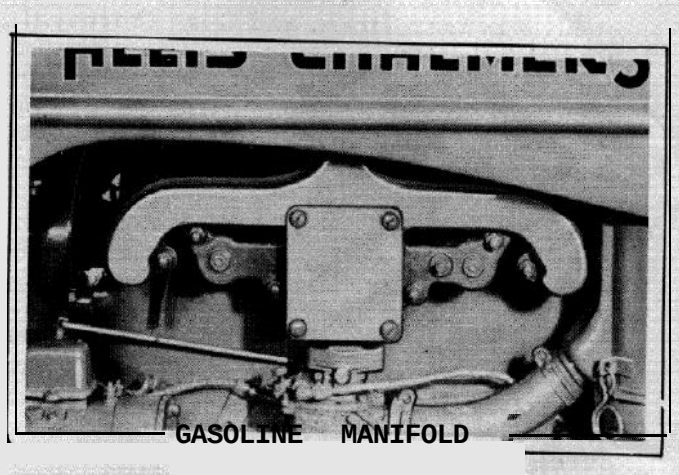
The two fuel manifold is used with standard compression engines and can be used for tractor fuel or gasoline. The gasoline manifold is supplied on high compression engines and uses gasoline only.

When using the two fuel manifold install the cover marked "K " when burning tractor fuel or distillate. Install the cover marked "G" when using gasoline.

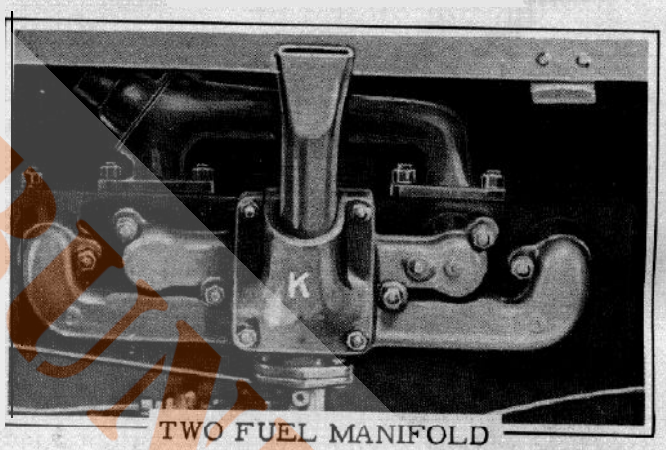
FUEL FILTER - The fuel filter is provided for the purpose of keeping dirt and water from entering the carburetor. However the best results are obtained by using adequate fuel storage and handling facilties. If the fuel is kept free of dirt and water by use of clean containers and proper handling, the filter will have little work to perform.

To clean the filter, shut off the fuel supply. Loosen the bowl retaining nut and move bail to one side.

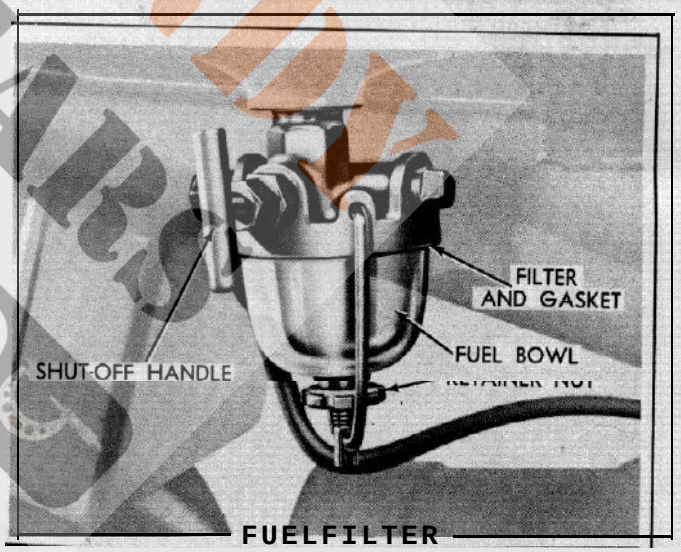
Remove bowl, gasket and felt element. Note which side of the element is up and be sure to re-install with the same side up.



GASOLINE MANIFOLD



TWO FUEL MANIFOLD



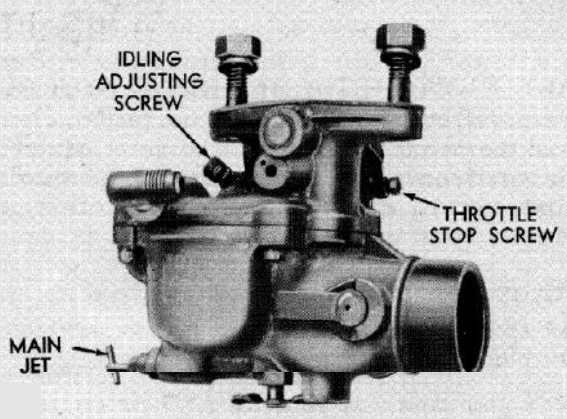
FUELFILTER

The element can be cleaned with ordinary soap and water and a small stiff brush. The element must be thoroughly dried before re-installing.

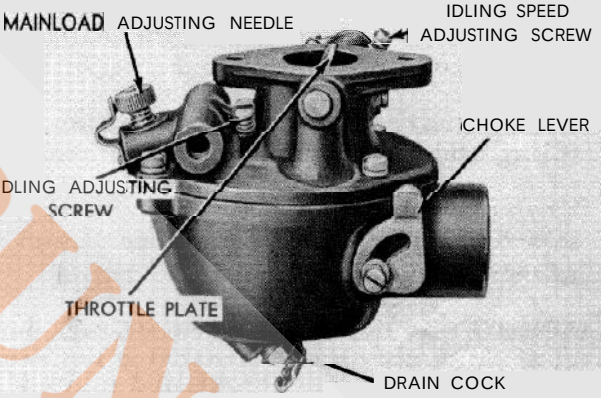
It is well to carry an extra element on hand. This will avoid delay in the drying operation.

CARBURETOR - The Zenith Model 161 Series has three adjustments, one for controlling the idling speed of the engine and two for correcting changes in fuel and atmospheric conditions. To regulate idling speed of the engine adjust the throttle stop screw on inner side of the carburetor. For correct fuel mixture at idling speeds of engine adjust needle valve on front top of the carburetor. Turn needle in for richer mixture. Normal setting is approximately one and one-half turns out. The main jet adjusting needle located on the lower front of the carburetor body regulates the fuel mixture at working speeds. Turn this needle out for richer mixture. Normal setting is two or three turns out depending on fuel and atmospheric conditions. Always make carburetor adjustment at normal operating temperature.

The adjustments of the Marvel Schebler Carburetor Model TS159 are the same as the Zenith, except for the main jet adjusting needle located on the front upper portion of bowl. The normal operating adjustment is approximately one and three eighths turns out.



ZENITH CARBURETOR



-MARVEL SCHEBLER CARBURETOR

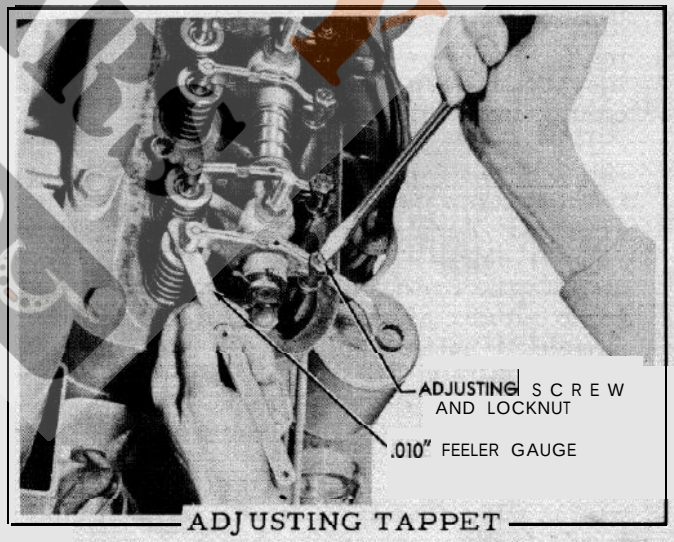
VALVE TAPPET CLEARANCE

Correct clearance between valve stems and rocker arms should be maintained at all times.

To adjust clearance, turn engine with crank until valvecloses and push rod is at its lowest position.

Loosen valve adjusting screw lock nut and turn screw until there is .010" clearance between valve stem and rocker arm. Tighten lock nut and recheck. The engine must be heated to its normal operating temperature when making this adjustment.

Lack of compression because of leaky valves may be caused by either insufficient clearance between rocker arms and valve stems or by the collection of carbon on the valve stems or seats.



ADJUSTING TAPPET

GOVERNOR

The engine speed is adjustable by throttle only. The governor, of the variable speed type, will control the engine speed within the range of low idle and 1725 r.p.m.

To ensure good governor action it is important to have all linkage from governor to carburetor, work freely.

IGNITION SYSTEM

SPARK PLUGS - The spark plugs should be removed every 200 hours of operation, cleaned and the points respaced. The point gap should be set from .030" to .040". Make this adjustment by bending the outside electrode. Never bend center electrode.

CAUTION: Failure to service spark plugs as recommended, causes a severe bverload to be placed on magneto.

For gasoline use autolite AN7 or equivalent. For low grade fuel use autolite A-9 or equivalent. Incorrect plugs are shorter lived and cause poor engine performance.

Spark plug gap should be set properly; gap too wide will cause missing on heavy loads and lack of power.

Gap too narrow will cause missing, poor idling and engine to die at slow speed.

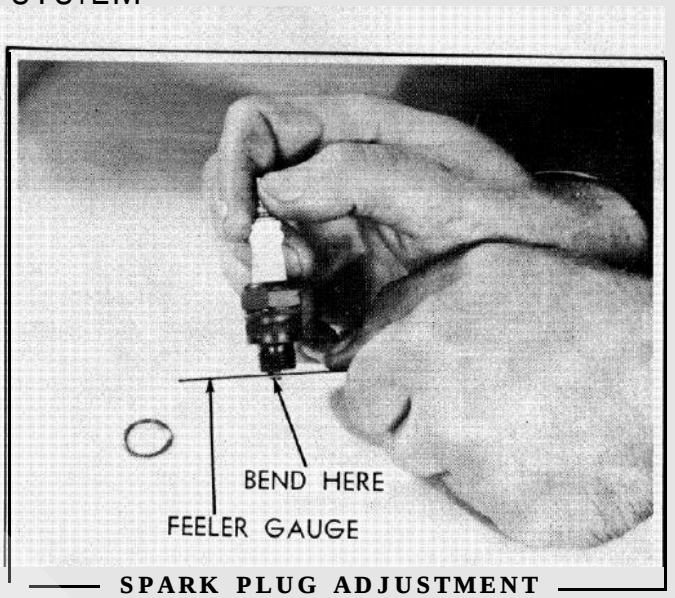
The spark plugs and cables should be maintained in good condition and free of dirt and grease.

MAGNET0 - To time the magneto - Crank engine until No. 1 piston is approaching top center on its compression stroke and mark F or firing mark appears in center of inspection opening in bottom of clutch housing.

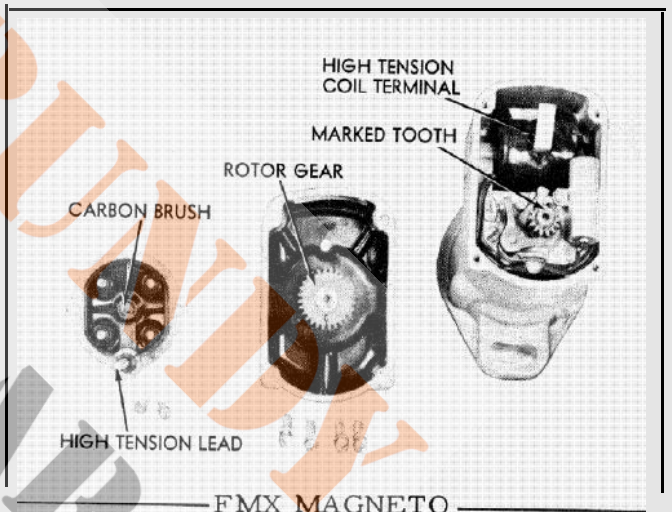
The compression stroke of No. 1 piston can be determined by removing the spark plug placing thumb in spark plug hole. Crank slowly until air is forced past thumb. The mark F on flywheel will be very near the inspection opening at this time. Turn until centered.

Remove the distributor compartment cover from the magneto that is retained by two screws. Turn magneto impulse coupling counter-clockwise until the rotor contact lines up with the timing lug, located in upper left hand corner of distributor compartment. Couple magneto to engine. If rotor does not exactly line up with lug, turn magneto on engine until it does. The slotted holes in mounting bracket are provided for this purpose.

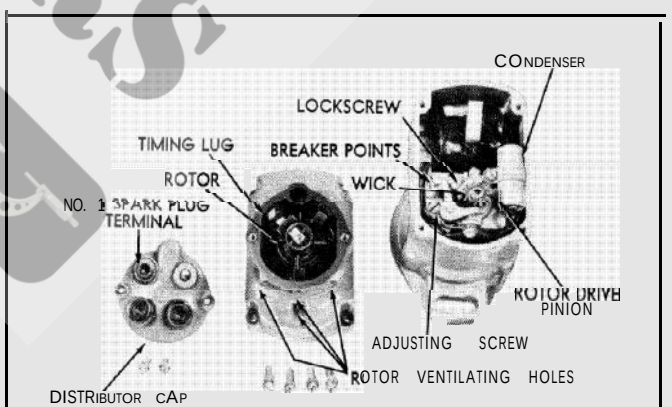
Attach number one spark plug wire to upper terminal nearest cylender block. number two to upper terminal farthest from block, number four to lower terminal farthest from block, and number three in remaining terminal. In event of difficulty in the ignition system, plugs, wires having been checked, remove the distributor compartment cover held in place by four screws. If contact points are pitted or pyramided, file smooth with a fine cut file. If points are worn or badly pitted they should be replaced. Points should have .010" separation when breaker points rest on high side of



SPARK PLUG ADJUSTMENT



FMX MAGNETO



FMX MAGNETO

cam. Points may be adjusted by loosening lockscrews and turning adjusting screw. Reassembling distributor cap to magneto involves meshing of rotor pinion with distributor gear as follows: The marked tooth of rotor drive gear (beveled tooth) must mesh with tooth marked "C" on rotor gear, If gaskets are broken they must be replaced. Make sure the vent holes are open in rotor compartment. If these holes become plugged, the magneto will not be ventilated. The magneto was permanently oiled at factory and needs no further lubrication.

For difficulties other than above mentioned remove the magneto and take it to the nearest authorized service station for check up and repair.

ELECTRICAL SYSTEM

AMMETER - The ammeter indicates the charging or discharging rate of battery. If ammeter should register discharge ,with lights off, disconnect the battery cable, to prevent the discharge of battery, until the difficulty is located and corrected. Such a condition is usually caused by a worn or frayed wire making a short circuit or by cut-off relay points being stuck together.

If ammeter fails to show a charging rate one of the following may be the cause:

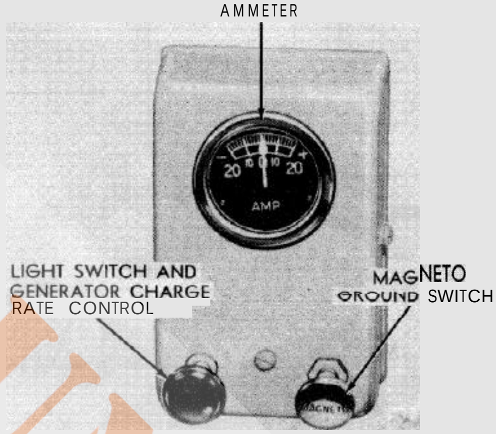
1. Loose or corroded wire connections.
2. Broken wires
3. Faulty ammeter.
4. Oily or gummy generator brushes or commutator.
5. Worn generator brushes.

Commutator and brushes can be cleaned with grade "00" sandpaper. (Do not use emery cloth.)

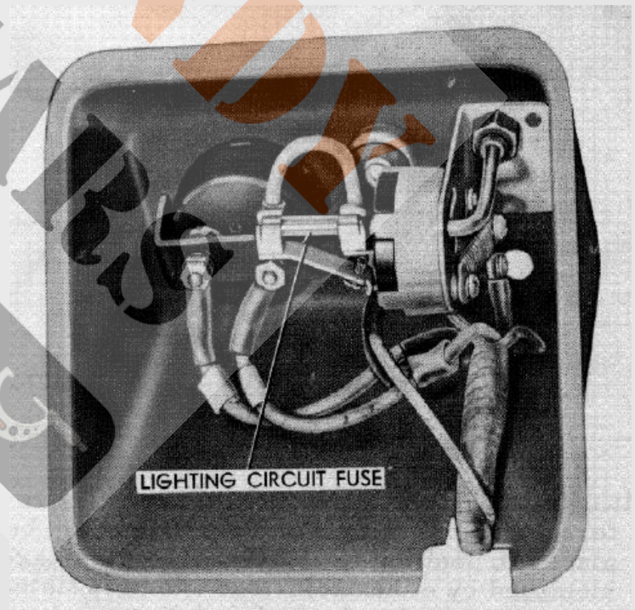
LIGHT SWITCH & GENERATOR CONTROL - The generator has two charging rates. These are controlled by the light switch.

When the light switch is pushed all the way in, the lights are off and the charging rate is about 3 amperes. When the switch is pulled out to first notch the lights are on and the charging rate remains about 3 amperes. When the light switch is pulled all the way out the lights are off and the charging rate is increased to about 10 to 13 amperes. The high rate of charge should only be used when the battery is in a partially discharged condition. In most tractor operations the trend will be to overcharge the battery.

FUSE - The light circuit is provided with a 20 ampere fuse. This fuse is located on the inside-of the instrument box.



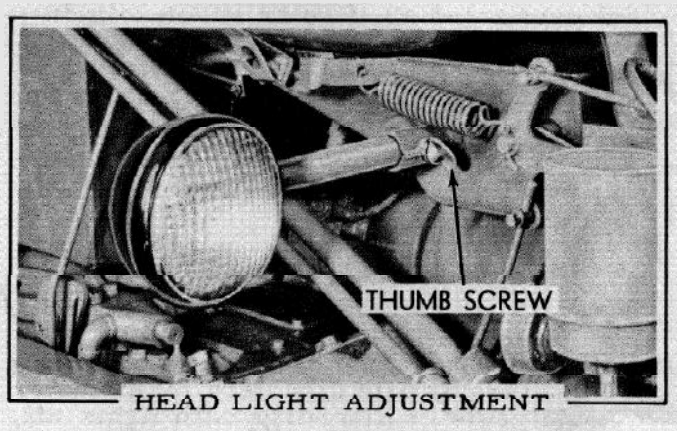
INSTRUMENT PANEL



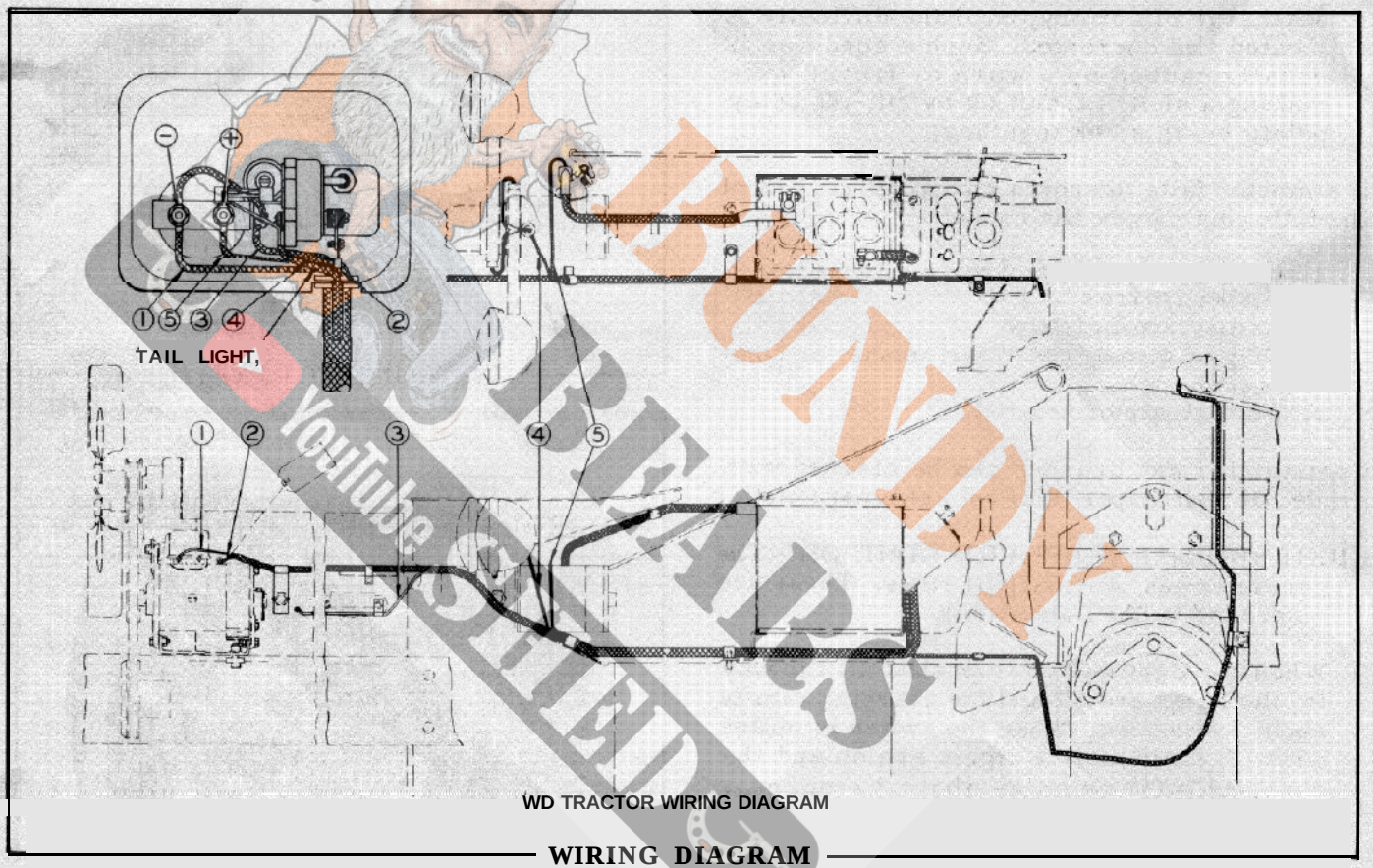
REAR VIEW OF INSTRUMENT BOX

ELECTRICAL SYSTEM (Cont'd.)

LIGHTS - The head lights are adjustable in or out and may be adjusted up or down, by loosening the retaining thumb screw and adjusting the lights to the desired position.



HEAD LIGHT ADJUSTMENT



WD TRACTOR WIRING DIAGRAM

WIRING DIAGRAM

WIRING DIAGRAM & INFORMATION - By referring to the diagram the wires may be placed in position correctly. The wires are identified by either colors or numbers listed below and may be checked as follows:

#l - Discharge side of ammeter to cutout terminal (Black with white tracer).
#2 - Resistor to generator field terminal. (Green with white tracer).
#3 - Magneto ground switch to ground. (White with black tracer)
#4 - Light switch to headlight. (Red with white tracer to junction; black to light)
#5 - Charge side of ammeter to starter (black). Short natural color with red tracer wire goes from discharge side of ammeter to fuse at terminal "B" Tail light wire, black is connected to light switch on terminal marked 'S".

STARTER - The starter very seldom causes difficulty, however, if it fails to turn the engine properly with a fully charged battery, check all connections making sure they are clean and tight.

If difficulty is experienced with the starting motor, any one of the following may be the cause:

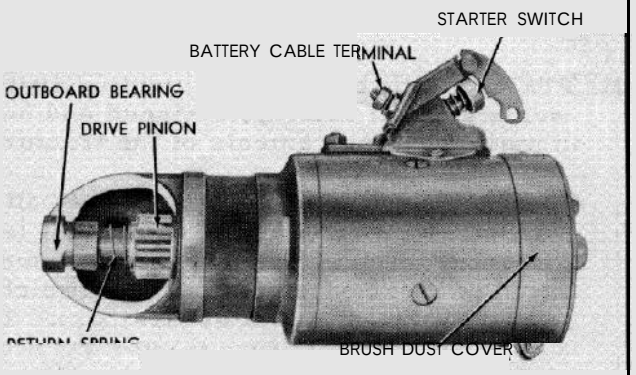
1. Exhausted battery.
2. Broken or loose wires.
3. Loose or corroded battery terminals.
4. Starter switch making poor contact.

GENERATOR - The generator charging rate is controlled by a resistance unit built into the light switch. This resistance unit limits the amount of current allowed to flow through the field coils of the generator.

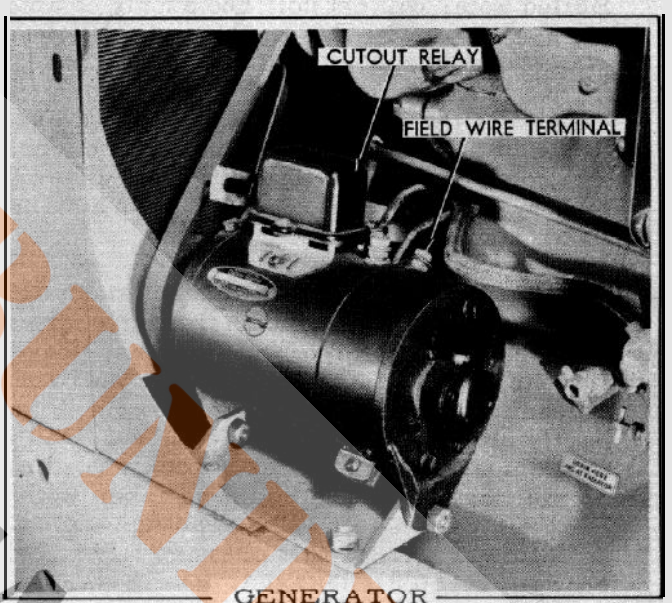
The tractor is shipped with the field wire on the generator disconnected. This wire must be connected in order to complete the circuit. If the battery is removed and the engine must be operated without the battery in place, disconnect the field wire to prevent damage to the generator.

The generator very seldom causes any difficulty, however, if it does it is usually caused by a dirty or oily commutator. To clean remove the band over the brushes. Use grade "00" sandpaper, With engine running hold the sandpaper against the commutator. Do not use emery cloth as emery will cause short circuiting,

CUTOUT RELAY - The cutout relay is mounted on the top of the generator and provides an 'automatic switch for closing the generator circuit. If the points in the cutout fail to close, the ammeter will remain at zero. Do , not operate the tractor in this condition as damage to the generator will result.



STARTER



GENERATOR

If the points' fail to open when the engine is stopped, the ammeter will show "discharge". Disconnect the ,battery ground cable until the difficulty is, corrected.

For best results, remove the generator and have it checked by an authorized service station.

BATTERY – The starting and lighting system uses a six volt battery, designed and built to meet the requirements of the tractor.

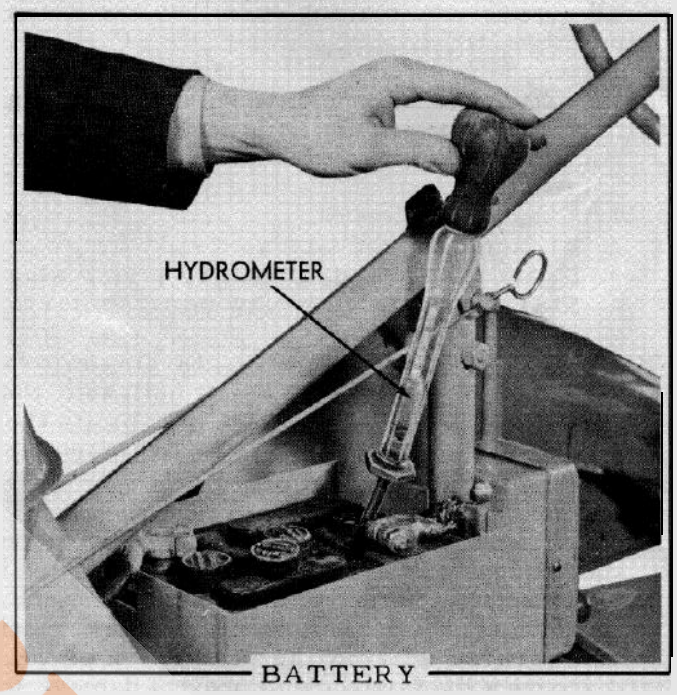
Check the electrolyte (solution) in the battery at least once each week to see that it is at the proper level. This level should be maintained to lower edge of filler tube (which is about 1/4" above top of separators). The battery supplied with your tractor has a lead washer type valve in the filler tube to prevent over filling. Never add anything to the solution except DISTILLED or RAIN water. Boiled water will not do. The supply of water should be kept in clean, covered vessels of glass, china, rubber or lead.

Do not allow lighted matches or an open flame of any kind near battery cell covers. The need for frequent addition of water to battery, indicates the charging rate maintained is too high.

In cold weather, add water only immediately before running the engine so that the charging will mix the electrolyte and water and prevent freezing. A fully charged battery will not freeze in very cold temperatures, but if only partly charged, will freeze and be ruined at much higher temperatures. Weekly readings of each battery cell should be taken with a battery hydrometer. The readings indicate as follows: 1.280, full charge; 1.225, half charge; 1.150 discharged.

By taking frequent readings with the hydrometer, it is possible to keep generator charging rate so adjusted as to have battery fully charged, but not over charged. When taking the readings, return the electrolyte to the cell from which it was taken.

Due to the infrequent use of tractor in cold weather and the extra amount of electrical energy required by starting motor, it is usually necessary to use a higher charging rate than in summer, to keep battery fully charged. Refer to instructions on ammeter for charging information.



BATTERY

Keep the battery clean by using a stiff bristle brush -- not metal. If terminals are corroded or if the battery is acid soaked, wash with soda solution (1/4 lb. of soda to one quart of water). Vent plug must be kept in place when cleaning battery. After washing battery check gas escape holes in vent caps making sure they are open. If the battery is removed from tractor, disconnect the grounded positive terminal first. When re-installing be sure the ground cable is installed last and connected to the positive post. Battery box cover should be in place and tightened snugly to prevent battery from being damaged by vibration. (Be sure that wood spacer is between top of battery and cover.)

In event the tractor is not to be used for some time, it is advisable to remove the battery, have it fully charged and stored in a dry basement or some similar place where the temperature is to be as low as possible, but above freezing.

REAR WHEELS

TIRES - Size 11 x 28 - Air Pressure 12 pounds.

HYDROMATIC TRACTOR TIRES -As water alone will freeze in cold weather, Allis-Chalmers Tractor tires are filled with the proper quantity of 15% calcium chloride solution. Calcium chloride will in no way harm the casing, tubes or valves. A mixture of 15% calcium chloride and 85% water has a specific gravity of 1.140 and may be tested by the use of an ordinary battery hydrometer. This mixture will form a slush at+10 F, but will not freeze at -20 F. If tractor is to be operated at temperatures below 20°F, below zero additional calcium chloride should be added.

The rear tires are filled about 3/4 full of the solution and then inflated to the standard recommended air pressure. To check level turn valve about 45° from verticle as shown in sketch. This amount of solution will give the same weight as two cast iron wheel weights on each wheel. If more weight is needed for difficult traction conditions, wheel weights may be added. Tire companies have instructed their service stations concerning liquid ballast for tractor tires and they have the necessary facilities for mixing and injecting this fluid into the tires.

If the valve core is to be removed for any cause, it will be necessary to jack up tractor and turn the wheel, until the valve stem is on top, otherwise the solution will be lost.

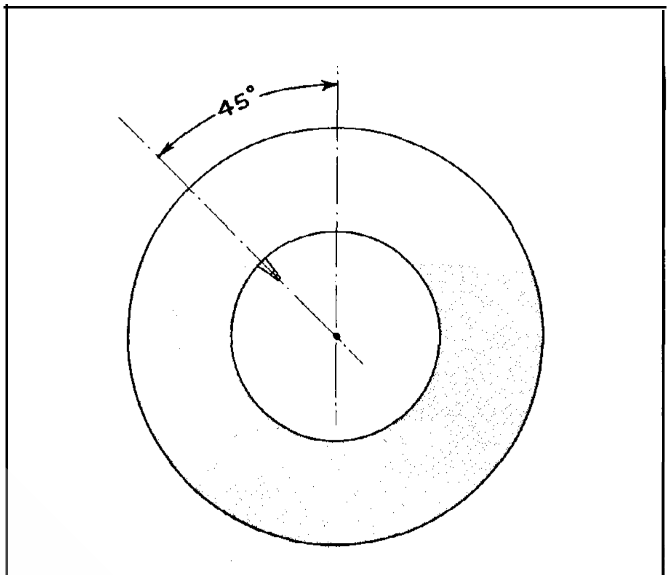
Calcium chloride and water solution as supplied in tractor tires is not dangerous, but because it may attack clothing or cause skin irritations on some persons, especially if it comes in contact with open cuts or sores, we urge every one to avoid coming in direct contact with it.

A remedy after having contacted this solution, is to simply wash the skin with plenty of clean water.

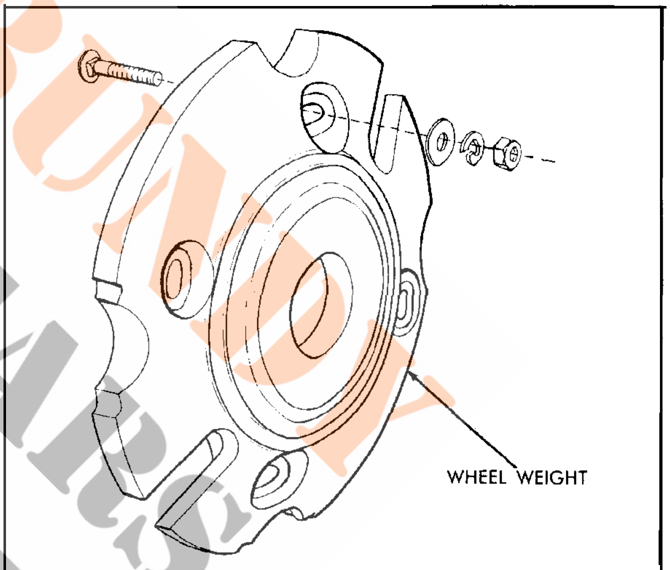
When plowing, the furrow wheel has greater traction than the land wheel; do not decrease pressure to equalize, instead increase the pressure in the furrow wheel to 16 lbs.

High pressure will cause no damage to tires unless slippage is excessive. Watch the tread wear and correct tire pressure if it is excessive or uneven.

When mounted implements are used, additional pressure should be used. Use about 1 lb. additional air pressure for each 800 lbs. of weight added.



FLUID LEVEL



REAR WHEEL WEIGHT

Do not inflate tube when removed from tire more than enough to make it fill out round. Tubes inflated beyond their elastic limit may not return to their original shape and size.

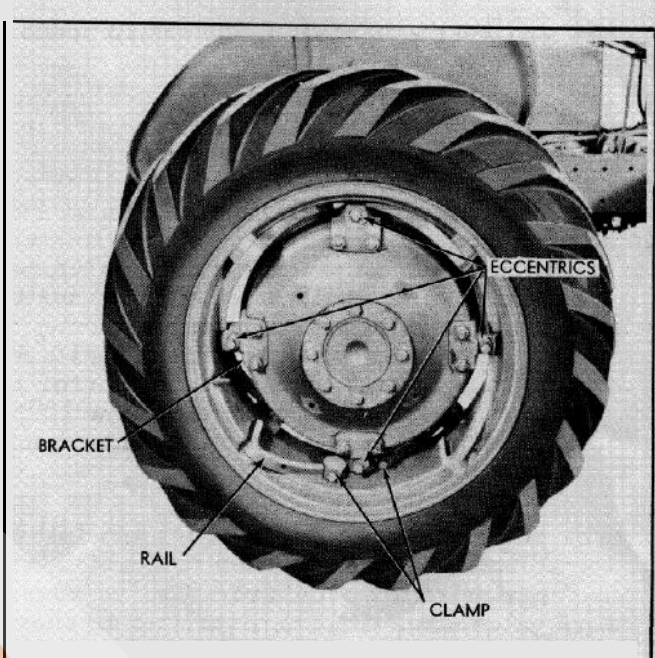
To repair tubes, bevel sides of cut and slightly increase length and width. Buff tube lengthwise of grain or mold marks. Place patch on inside of tube at least 1/2" larger than opening on each side. Knead or roll in place, fill cut with pure gum rubber and place second patch on outside, cutting it larger than patch on inside. Vulcanize at least 10 minutes.

REAR WHEELS (Cont'd.)

Place tube in tire and apply a good grade of vegetable oil soap to base of tube and inside of tire. Place on rim and adjust tube and tire evenly all around. Inflate to seat tire on rim then deflate. Tire may then be filled with calcium chloride in usual manner or inflated to recommended pressure.

REAR WHEEL TREAD ADJUSTMENT - The power of the tractor may be applied to the wheel to increase or decrease tread width.

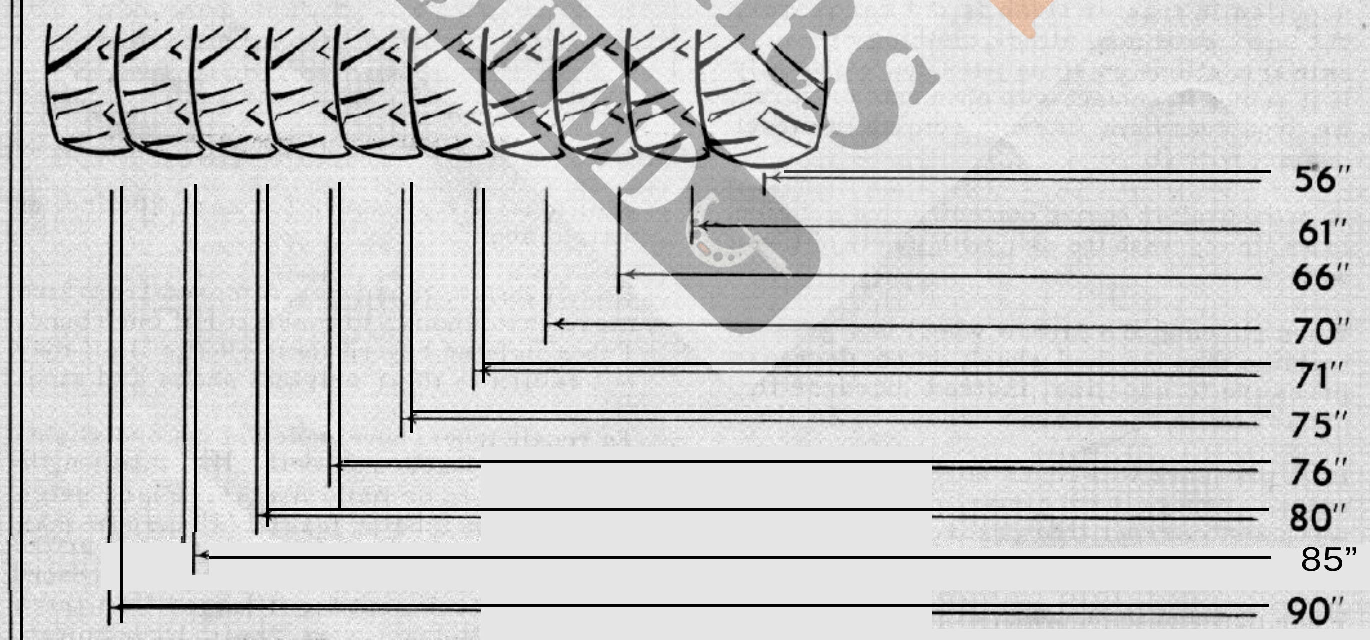
Remove the clamps from the guide. Turn the four eccentrics counter-clockwise as far as possible. Place the tractor in reverse or low, depending on whether spacing is to be made wider or narrower. Hold brake on opposite wheel and engage clutch. It sometimes helps to engage clutch suddenly to start movement in the wheel. If intermediate positions are needed install the clamp in the desired hole in guide rail and use it as a stop for locating position of the rim. Install second clamp on opposite side. Tighten the eccentric in a clockwise direction. Turn eccentric over against its stop. If the remaining eccentrics cannot be turned fully against the stop, return to stop' in counter-clockwise direction. The eccentric must be turned against stop to be self locking. Additional spacing of 70"to 90"may be secured by turning the dished wheel out". To make this change raise tractor from ground and block securely. Place the wheel on opposite side of tractor. This will keep direction of tire tread correct.



REAR WHEEL

The direction of travel should be with the open end of "V"towards the rear, (when viewing top of tire).

TO REMOVE RIM FROM WHEEL - Loosen eccentrics and remove clamps. Remove three of the four wheel brackets. To remove wheel brackets, remove the two bolts and slide bracket out along rail. Do not lose the eccentric block.



REAR WHEEL TREAD SPACING

FRONT WHEELS

LUBRICATION - Clean and repack with #2 wheel bearing grease every 30 to 60 days (applies to all types of front wheels). If wide front axle is used lubricate four king pins daily with chassis lubricant.

TIRES - 5.50 x 16 - Air pressure 28 pounds. The front tires on the "WD " tractor are filled with solution to the valve level when valve is at top. Enough air is added to cause a pressure of 28 lbs. See rear wheels for solution information.

MAINTAINANCE - The front wheels are mounted on taper roller bearings. At frequent intervals remove weight from wheels and check for side play. If side play exists it will be necessary to adjust bearings.

ADJUSTMENT - To adjust bearings: Remove the hub cap and tighten nut on end of spindle until all play is removed and bearings have a free rolling fit; The inside of the wheel hub is provided with a felt washer to protect bearings from dirt and to retain grease in hub. This felt washer should be replaced each season, or oftener if necessary. The metal cupped washer is placed with the cupped side towards the bearings.

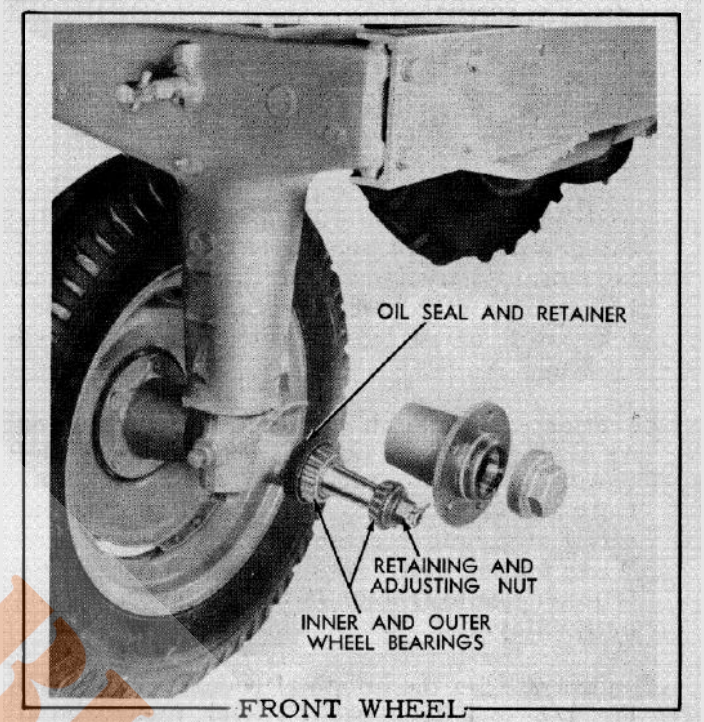
SINGLE FRONT - To adjust the bearings of the single front wheel raise the front wheel from the ground and block tractor solidly.

Remove wheel assembly from fork. Remove shims from between bearing retainer and wheel hub. Adjust the bearings to a free rolling fit without end play or binding.

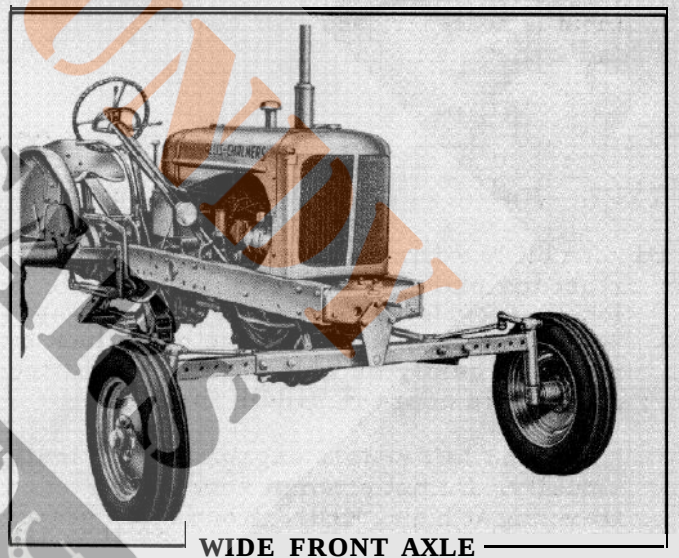
SPACING - "WD " tractors are equipped with reversible front wheels, and may be turned out to fit certain row conditions such as following lister ridges.

WIDE FRONT AXLE - Each time the wheel tread is changed the "toe in" of front wheels must be adjusted to 1/8 ". To adjust "toe in" have tractor on level ground with wheels straight ahead. Measure distance between tires at front and at rear at hub height. They should measure 1/8" less at front than at rear. Have steering wheel in straight ahead position and tighten clamps on drag links. To determine center or straight ahead position, count number of turns of steering wheel from .right to left and then turn back half this number of turns.

To adjust wheel tread width, loosen drag link clamps, remove bolts from axle center bar.



FRONT WHEEL



WIDE FRONT AXLE

Slide stub axles out or in to desired width.

The second range of wheel treads given may be secured by turning the dished front wheel with dish out.

ADJUSTABLE WIDE FRONT AXLE

Specifications:

Tread	52"to 77"
Spacing	5" increments
Wheels turned in	.52-57-62-67-72-77
Wheels turned out	.59-64-69-74-79-84
Crop Clearance	21-1/4
Turning Radius	20 ' w/brakes

CLUTCHES

ENGINE CLUTCH - Spring loaded - Single plate - Dry disc - Diameter 10".

Lubrication

Clutch Shaft - Chassis lubricant daily.

Clutch Release bearing - lubricate approximately every 10 to 20 hours with chassis lubricant. Do not over grease. Fitting can be reached by removing small cover at bottom of clutch housing. Lock clutch pedal forward to locate fitting so it may be reached by gun.

Operation - The clutch is provided for engaging or disengaging the power of engine from the tractor. When using clutch depress pedal fully and allow tractor and clutch to come to a full stop before attempting to shift gears. When engine clutch is disengaged all power from engine to tractor is disengaged including belt pulley.

Adjustment - Set the length of pedal rod so pedal has 1/2"to 1"free pedal travel, measured at the frame channel top side. If further adjustment is necessary see your dealer.

TRANSMISSION CLUTCH - Over center - Double plate, in oil, diameter 8".

Lubrication - From transmission and differential filler plug. SAE 8OE.P.

Operation - The transmission clutch is provided to disengage the power from the transmission and rear wheels, leaving the power applied to the P.T.O., hydraulic pump and power pulley,

The clutch is hand operated and the lever is mounted to the right of the steering shaft support.

When using the pulley, the transmission clutch should be engaged and the transmission placed in neutral.

Adjustment - See your dealer for clutch adjustment - the hand lever may be adjusted closer to or further from steering wheel at turnbuckle for convenience of operator.

BRAKES

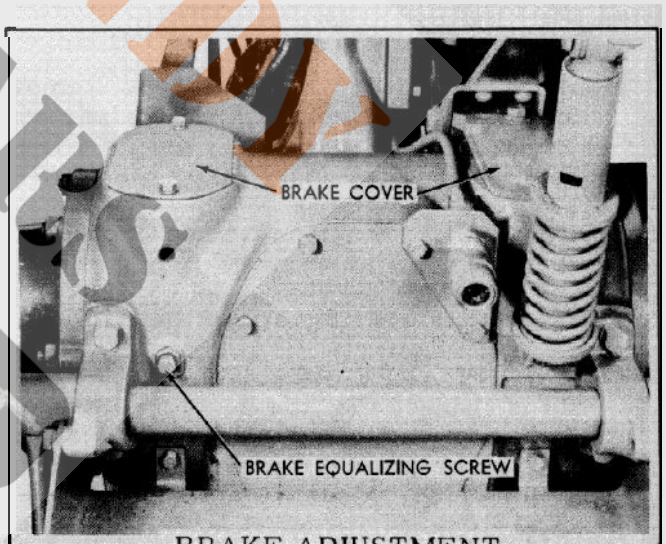
TYPE - Enclosed contracting, foot operated.

OPERATION - Brake pedals located near the right toe plate for engaging the brakes. A lock is provided to hold brake in the engaged position if required. Release pedal lock by pressing gently on relehse rod and at the same time depress pedals further.

Right and left pedals engage brakes individually. Do not attempt short turns when traveling at high speeds. When using brakes for stopping, apply pressure so that the brakes are engaged evenly.

ADJUSTMENT - Brake pedals should be adjusted to obtain equal pedal height when brake is applied.

To adjust the brakes; remove the cover over the brake housing. Turn the brake equalizing screw in tight. Depress brake pedal two inches. Adjust brake adjusting nut until lining contacts drum. Release pedal. Adjust equalizing screw until front and rear lining has equal clearance on brake drum. With this adjustment any drag will be eliminated. Do not adjust brakes at pedal rod.



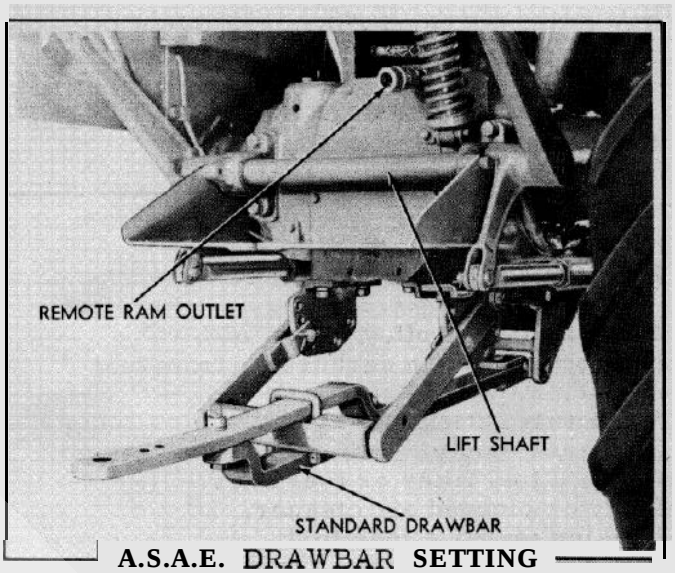
BRAKE ADJUSTMENT

DRAWBAR

The drawbar of drawn implement should be adjusted to meet the requirements of the load. (Refer to hitching height, implement instruction book.) The line of draft effects steering and traction. It can also cause the drawn implement to put excessive load on the tractor.

The pins may be removed from the sides of the tractor drawbar and the drawbar allowed to swing. This will allow easier steering on sharp turns with heavy loads. The tractor drawbar may be raised or lowered, by removing the pins in the bail support and reinstalling in the desired position.

The drawbar is adjustable in length and should be set to extend 14" beyond the end of the P.T.O. shaft when used with the P.T.O. Use short position for all drawbar work when P.T.O. is not used. Drawbar must be perfectly free to,slide when using drawbar control. When drawbar control is not used keep drawbar clamp tightened to eliminate wear on drawbar and keep universal joints in alignment.



A.S.A.E. DRAWBAR SETTING

SEAT

The seat is adjustable. There are three positions 1 - l/2 " anart. Select the position most convenient for operator.

DIAGNOSING ENGINE DIFFICULTY

The following suggestions are listed for your assistance. You can make simple adjustments on your tractor that will improve its operation and save you the time and expense of engaging a serviceman.

Always make one adjustment at a time and if the adjustment made does not improve the condition, return to the original setting before proceeding to the next adjustment.

ENGINE FAILS TO START

Fuel valve shut off.
Low octane fuel in carburetor from last operation,
Float valve sticking.
Fuel tank empty.
Clogged fuel filter or fuel lines.
Dirty or clogged air cleaner.
Leaking or loose manifold.
Engine flooded.
Broken wires from magneto to engine.
Wires not in proper position.
Switch not turned on or defective.
Spark plugs wet, dirty or broken.
Magneto weak or out of time.
Spark plug points not properly spaced.
Magneto points pitted, dirty or improperly spaced.

ENGINE OVERHEATED

Low water level in cooling system.
Radiator clogged.
Fan belt slipping.
Collapsed radiator hose.
Thermostat stuck.
Tractor overloaded.
Ignition timed late.
Fuel mixture too lean.
Weak spark.
Diluted lubricating oil.
Pulling heavy load at reduced R.P.M.
Water pump impellor vanes broken.

GENERATORFAILSTOCHARGE

The cut-out relay, attached to generator case, prevents the battery from discharging through the generator when generator is idle.

If ammeter fails to show a charging rate one of the following may be the cause:

1. **Loose or corroded wire connections.**
2. **Broken wires.**
3. **Faulty ammeter.**
4. **Oily or gummy generator brushes or commutator.**
5. **Worn generator brushes.**

Commutator and brushes can be cleaned with grade "00" sandpaper. (Do not use emery cloth).

STARTER FAILS

The starting motor seldom causes any difficulty, but if it should, any one of the following mayh the cause:

1. **Exhausted battery.**
2. **Broken or loose wires.**
3. **Loose or corroded battery terminals.**
4. **Starter switch making poor contact.**

STORAGE OF TRACTOR

TRACTOR PROTECTION IS POCKET-BOOK PROTECTION

If tractor is stored for any length of time, a few precautionary measures are helpful in preserving various parts, also in avoiding future difficulty.

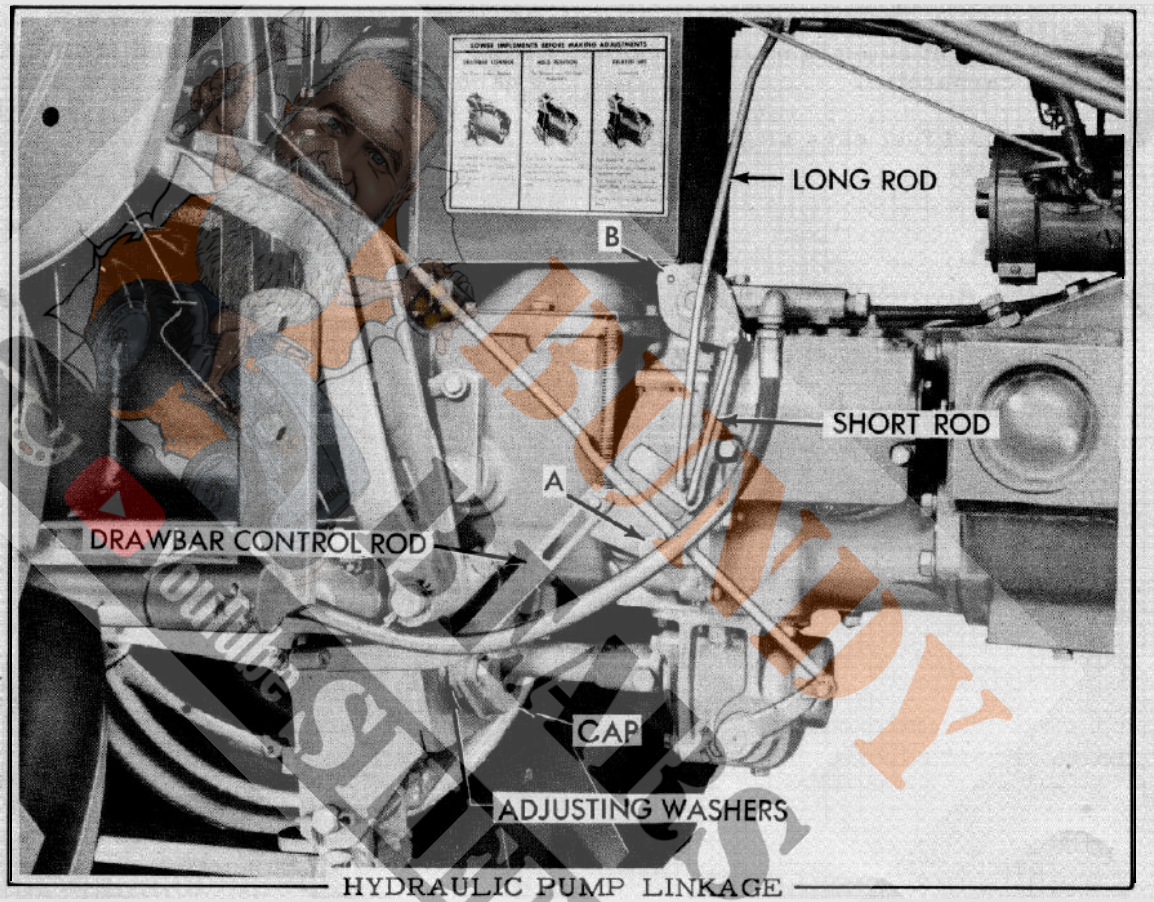
1. Store tractor under cover. If impossible to place tractor under cover, be sure to cover air stack and exhaust pipe.
2. Drain radiator and engine block.
3. To avoid gum content collections, drain both fuel tanks and carburetor.
4. Leave radiator and fuel caps slightly loose to protect gaskets.
5. Block tractor up to remove weight from tires and to keep tires from contact with moist floor.
6. Remove battery and store as recommended under 'Battery'.
7. Remove spark plugs and pour a small quantity of light motor oil on piston tops. Crank engine over a few times and replace spark plugs.
8. When tractor is removed from storage it should be serviced throughout, including draining and refilling the oil sump with fresh oil.

HYDRAULIC SYSTEM

WHEN PUMP IS NOT IN USE KEEP HAND CONTROL LEVER AT BOTTOM OF QUADRANT

LUBRICATION - Check daily and keep filled to high mark on bayonet gauge or to top of filler neck on tractors not equipped with bayonet gauge. The filler plug for the hydraulic system and belt pulley compartment is located on the left side of tractor and is the upper forward of the three filler plugs. (Refer to lubrication guide,)

Use S.A.E. 20W for lowest expected temperature of 45°F. Use S.A.E. 10W for temperatures below 45°F. A magnetic drain plug is located at the bottom of the housing. This plug should be cleaned periodically. When completely draining,the pump drive housing, the pump control housing must also be drained, as oil trapped in pump control housing cannot be drained by removal of the magnetic plug.



HYDRAULIC PUMP LINKAGE

ADJUSTMENTS - HYDRAULIC PUMP LINKAGE

NOTE: It is extremely important that this linkage be correctly adjusted - otherwise satisfactory operation cannot be obtained. (Once correctly set this linkage needs no further adjustment unless disturbed.)

1. **Turn drawbar control screw "A" into pump body.**
2. **Turn screw "B" into pump body, separating plates .**
3. **Turn volume screw "D" out against stop.**
4. **Set hand lever at top of quadrant.**
5. **Loosen set screw at top of long rod.**
6. **Push down on rod to take out slack and tighten set screw. (Added rod length can be gained by reducing bend in rod.)**
7. **Start tractor and extend rams.**
8. **Shut off tractor.**
9. **Push down on ram arms while lowering the hand lever slowly.**
10. **Stop lever on quadrant at point where rams unload freely.**
11. **Adjust with 1/32" clearance between capscrew head and link rod. See drawbars page 70 "A" and "B".**

12. Loosen set screw in short rod.

13. Turn plates and lock together with screw "B", being careful not to move hand lever,

14. Rotate plates to detent position.

15. Lock set screw in short rod securely.

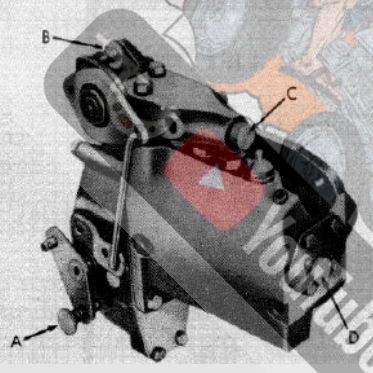
16. Check drawbar control linkage by first loosening both capscrew at front of drawbar spring and noting distance between cap and adjusting washers with spring at free length. This distance should be 1/8" to 3/16" to put correct preload on spring when cap is tight. Adjust link rod to pump so it has 1/32" clearance between pin and end of slot when screw "A" is turned into pump body. (If link rod is too long it will decrease maximum load. If it is too short, it may break control linkage.)

NOTE: Misadjustment of these linkages will effect the operation of system. If unit will not lift, lifts slowly or maximum load cannot be obtained, recheck linkage adjustment. Be sure drawbar is free to move forward and back without binding.

LOWER IMPLEMENTS BEFORE MAKING ADJUSTMENTS

DRAWBAR CONTROL

For Plows, Listers, Bedders



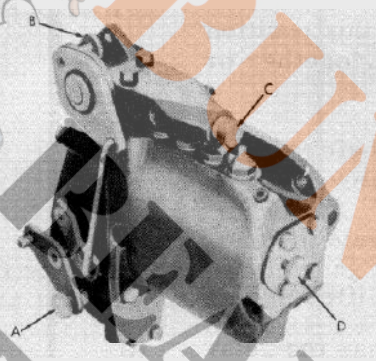
Turn Screw "A" out of body.

Turn Screw "B" into body separating plates.

Turn Screw "D" out as far as possible.

HOLD POSITION

For Mowers and Pull Type Implements



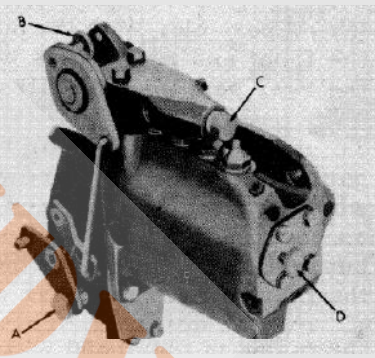
Turn Screw "A" into body.

Turn Screw "B" out of body locking the plates together.

Turn Screw "D" out as far as possible.

DELAYED LIFT

Cultivators



Turn Screw "A" into body.

Turn Screw "B" out of body locking plates together.

Turn Screw "C" in to secure delayed lifting of rear cultivator bar.

Turn Screw "D" in to get further delay.

PUMP ADJUSTMENT CHART

The chart above outlines the pump adjustments to obtain either drawbar control, hold position or delayed lift. Select the setting most suited to job. This chart is also on the side of the battery box.

CAUTION: Never attempt to set pump adjustments with implement in the raised position. To do so may drop implement and cause injury to person making adjustments or nearby persons.

TO ADTUST PUMP TO LIFT AND LOWER

Lift-and lower may be obtained with any setting as long as volume control screw "D" is turned out far enough to allow pump to deliver oil to rams. However, to adjust, turn screw "A" into housing, turn screw "B" into housing separating plates, turn screw "C" out against stop and turn "D" out as far as possible.

To Operate Lift and Lower:

Set pump for lift position. Raise hand lever to top of quadrant to lift. Pull hand lever to bottom of quadrant to lower.

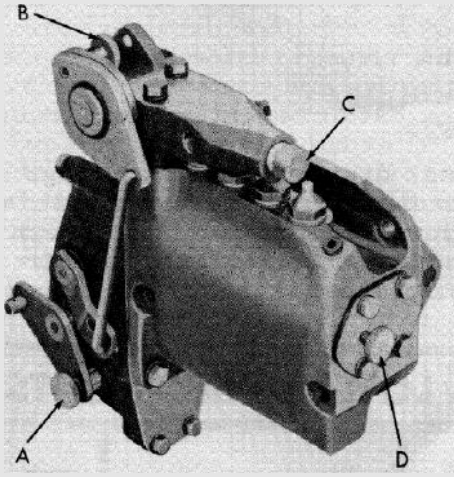
TO ADJUST FOR DELAYED LIFT

To adjust for delayed lift, turn screw "A" in to lock seat in housing. This screw locks out drawbar regulation. Turn screw "B" until the two plates are locked together and screw is free of housing. These plates operate against a detent ball and spring which can be felt on the hand control lever. Turn screw "C" out against stop. Turn screw "D" out as far as possible. With the pump in this position the front and rear gangs will lift together or the rear gang may lift first.

To cause the front gang to lift before rear gang, slowly turn screw "C" inward. If when screw "C" has been turned in as far as possible there is still uncultivated ground between the place where the front gangs lifted the place where the rear gangs lifted screw "D" may be adjusted. This screw cuts down the output of pump and will increase the delay between the front and rear gangs. It is possible to turn this screw too far or far enough to prevent pump from delivering oil.

To Operate Delayed Lift

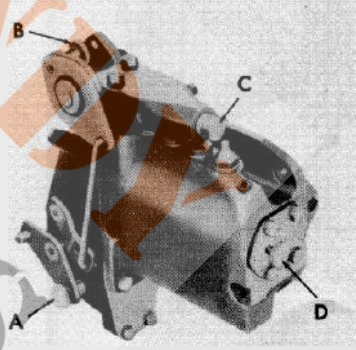
Raise hand control lever to top of quadrant to raise both front and rear gangs. To lower, move hand control lever down until detent ball is felt on hand control lever. This drops the front gang only. When the tractor moves forward until the rear gang is above the spot where front gang was lowered the hand control lever may be pushed to bottom of quadrant, lowering rear gang.



-LIFT & LOWER ADJUSTMENT

DELAYED LIFT

Cultivators



Turn Screw "A" into body.

Turn Screw "B" out of body locking plates together.

Turn Screw "C" in to secure delayed lifting of rear cultivator bar.

Turn Screw "D" in to get further delay.

TO ADJUST FOR HOLD POSITION

To adjust for hold position turn screw "A" in locking to housing, turn "B" out locking plates together, turn screw "C" in to about mid-position and "D" out as far as possible. If the rate of lift is too fast, screw "D" may be turned inward to slow lift.

To Operate Under Hold Position

Set pump for hold position, To lower implement, move hand control lever down past the hold or detent position (a catch on quadrant will be noted at hold position), With the lever in the detent position the pump is actually in the lowering position and the load on the ram is held by the check valve in the hold position valve assembly. To lower, move the lever down until desired depth is reached and then return lever to detent position to hold ram at required setting. To raise, move lever up until desired lift has been secured and then return lever to detent position to hold ram in desired position.

The hold position valve enables the operator to control the remote ram and hold it in any position or partial extension.

TO ADJUST PUMP FOR DRAWBAR CONTROL

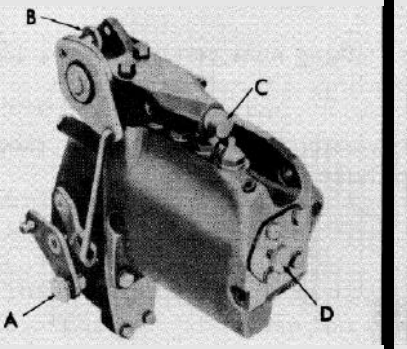
Turn screw "A" out until it is free from body, turn screw "B" until screw enters housing separating plates, screw "C" may be in any position, however, it is best to turn it out against stop and screw "D" must be out to permit maximum output.

To Obtain Drawbar Control

Set the pump for drawbar control to regulate depth and gain weight transfer. For an example on the pickup plow move the hand control lever to the bottom of quadrant and set the plow through the beaming and winging screw to plow the desired depth and to do the job of plowing you want it to do (Refer to Plow Instruction Book). Then slowly, while plowing, move the hand control lever up on quadrant until the slack is just taken out of the lift links. If the pull becomes greater, the plow, through the hydraulic system, has a tendency to raise; the weight of ground plus the weight of plow through the linkage is transferred to rear wheels providing more traction to get through this tough spot which created the additional drawbar load.

HOLD POSITION

For Mowers and Pull Type Implements



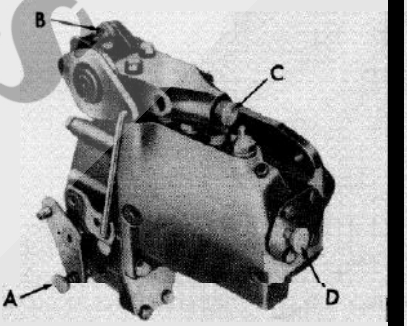
Turn Screw "A" into body.

Turn Screw "B" out of body locking the plotes together.

Turn Screw "D" out as for os possible.

DRAWBAR CONTROL

For Plows, Listers, Bedders



Turn Screw "A" out of body.

Turn Screw "B" into body separating plates.

Turn Screw "D" out as for as possible.

RAMS - The two lift rams are connected to the rear lift shaft assembly. The left hand ram may be installed with the ram mounted forward so that both front and rear tools can be lifted. When a ram is used in connection with hold position the ram hose must be attached to one of the forward holes closest to screw "C".

Ram packing nuts require only a light pressure for sealing. Do not over-tighten.

A ramanchor bolt of special material is used. Keep these bolts tight.

REMOTE RAM - The remote ram for pull type implements is equipped with quick coupling hose connector. To disconnect pull ring on coupler towards center of coupler and detach hose. To install, depress ring and move hose into place. Releasing ring will fasten hose. The hose is equipped with check valves to close end of hoses when uncoupled preventing loss of oil. Hose removal should only be made when the ram is collapsed and line is without pressure.

When the hose is removed, keep the protector caps in place. When reinstalling hose be sure the parts are perfectly clean and that dirt does not enter system.

REPAIR PARTS

Order all repair parts for this machine from your local Allis-Chalmers dealer.

To guide you in ordering repair parts, we have prepared the following illustrations which identify the various assemblies and the basic parts of your tractor.

HOW TO ORDER REPAIR PARTS

When ordering repair parts for your tractor, supply the following information:

1. The tractor and engine serial numbers.

   The serial number of your tractor is located at the left brake cover or the left rear of axle housing. Give the complete number and prefix letter. Example: WD-4004.

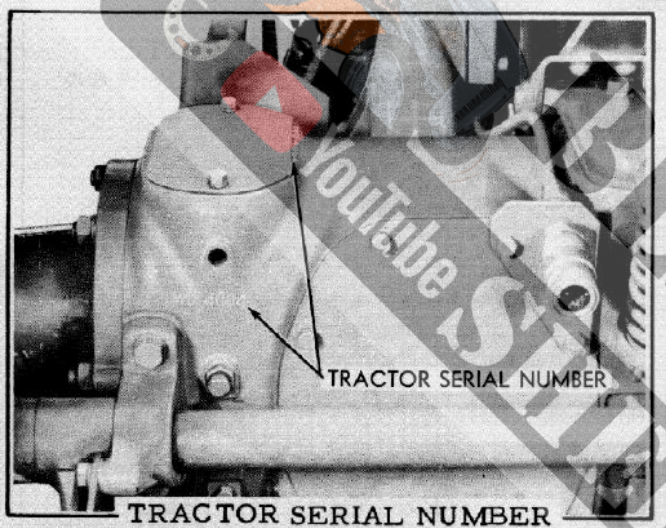
   The engine serial number is located on left hand side of the engine as shown below.

   Give complete number and all the letters. Example: WD.185607GA

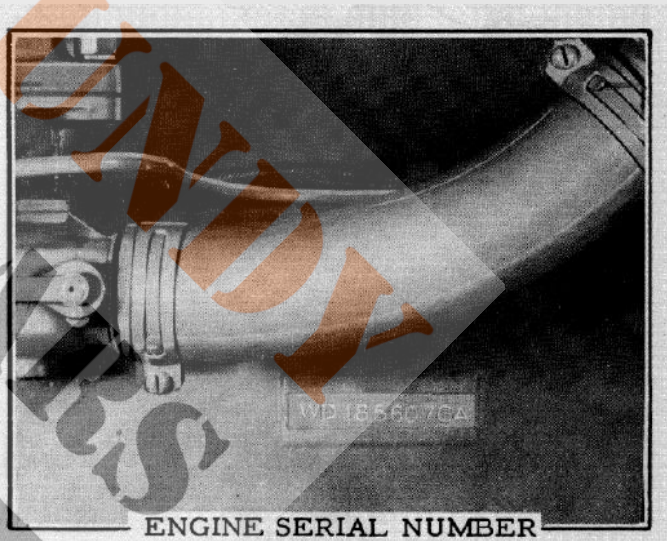
2. Mention if tractor is a standard or wide front axle model.

3. State the common name of the part you wish to order, or a description of the part and its location on the tractor.

4. Always print your name and post office address, where parts are to be shipped; also specify whether material is to be shipped by freight, express or parcel post.



TRACTOR SERIAL NUMBER

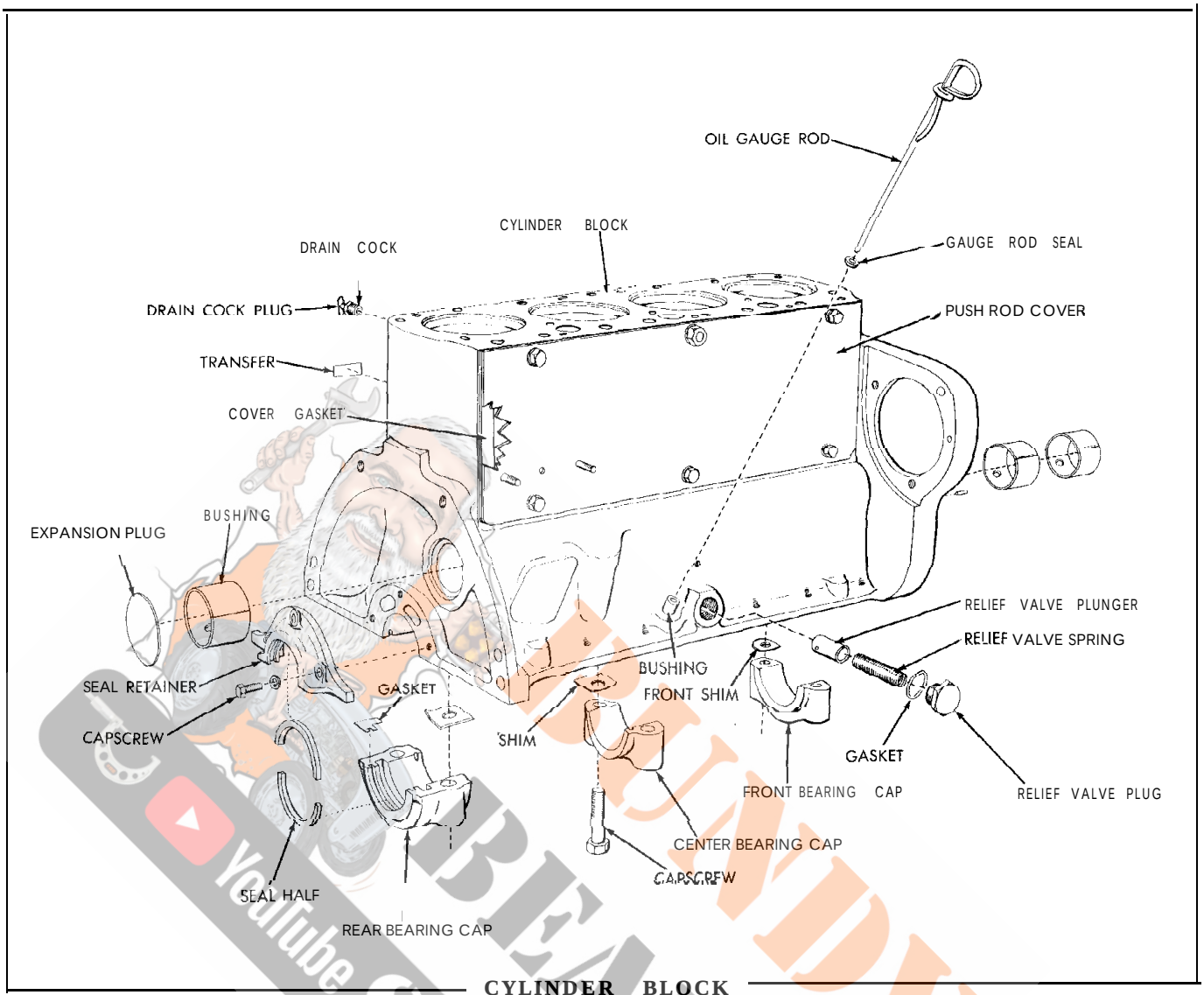

ENGINE SERIAL NUMBER

IMPORTANT

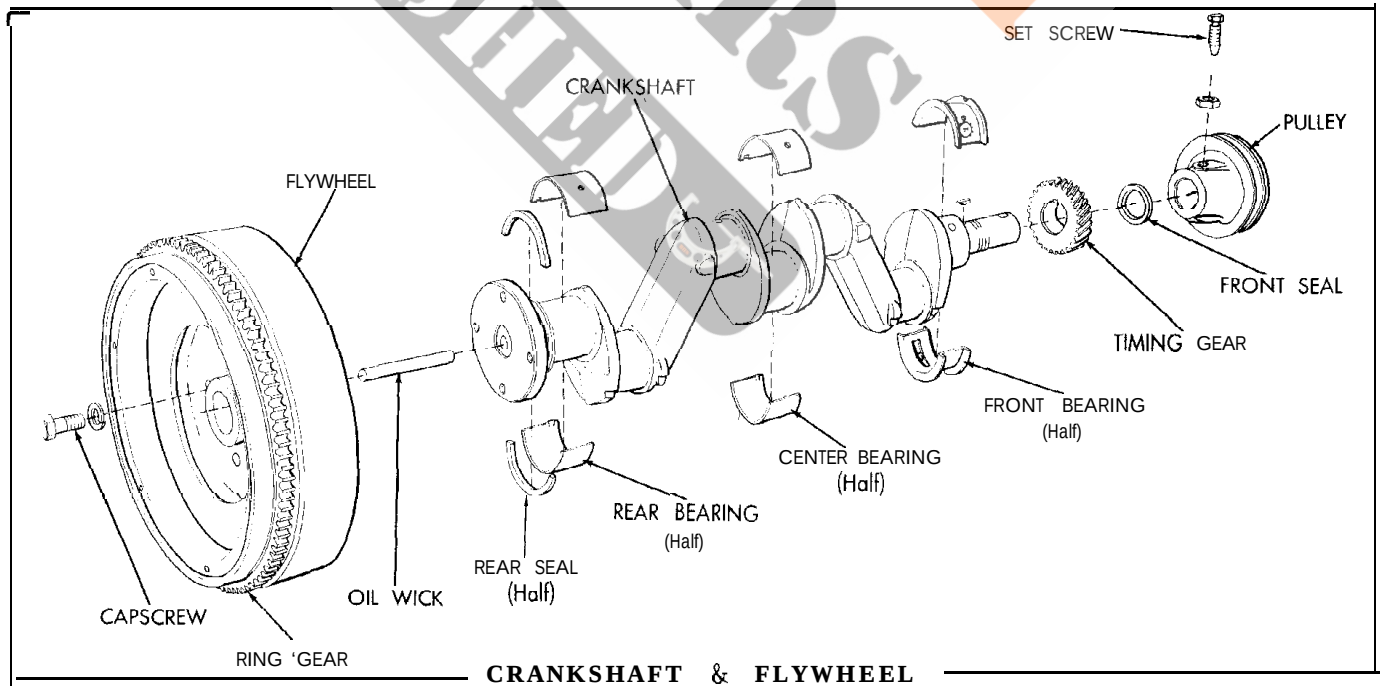
Unless claims for shortages or errors are made immediately upon receipt of goods, they will not be considered.

When broken goods are received, a full description of the damage should be made by the carrier agent on the freight bill. If this description is insisted upon full damage can always be collected from the transportation company.

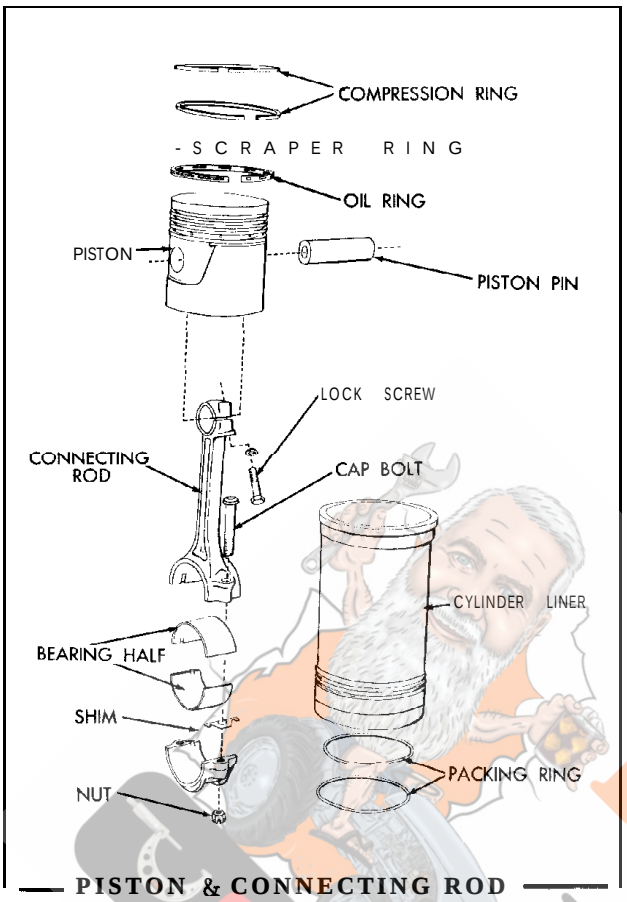
No responsibility is assumed for delay or damage to merchandise while in transit. Our responsibility ceases upon delivery of shipment to the transportation company, from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with Allis-Chalmers Manufacturing Company. The right is reserved to change the construction or material of any parts where it seems desirable to do so, without incurring the obligation of installing such changes on units already delivered.



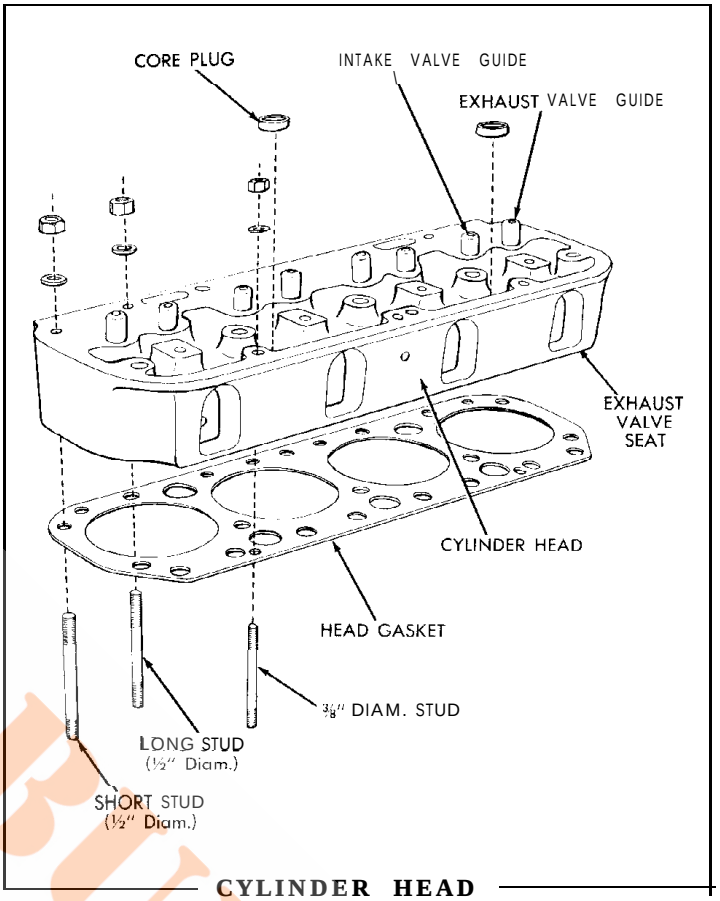
CYLINDER BLOCK



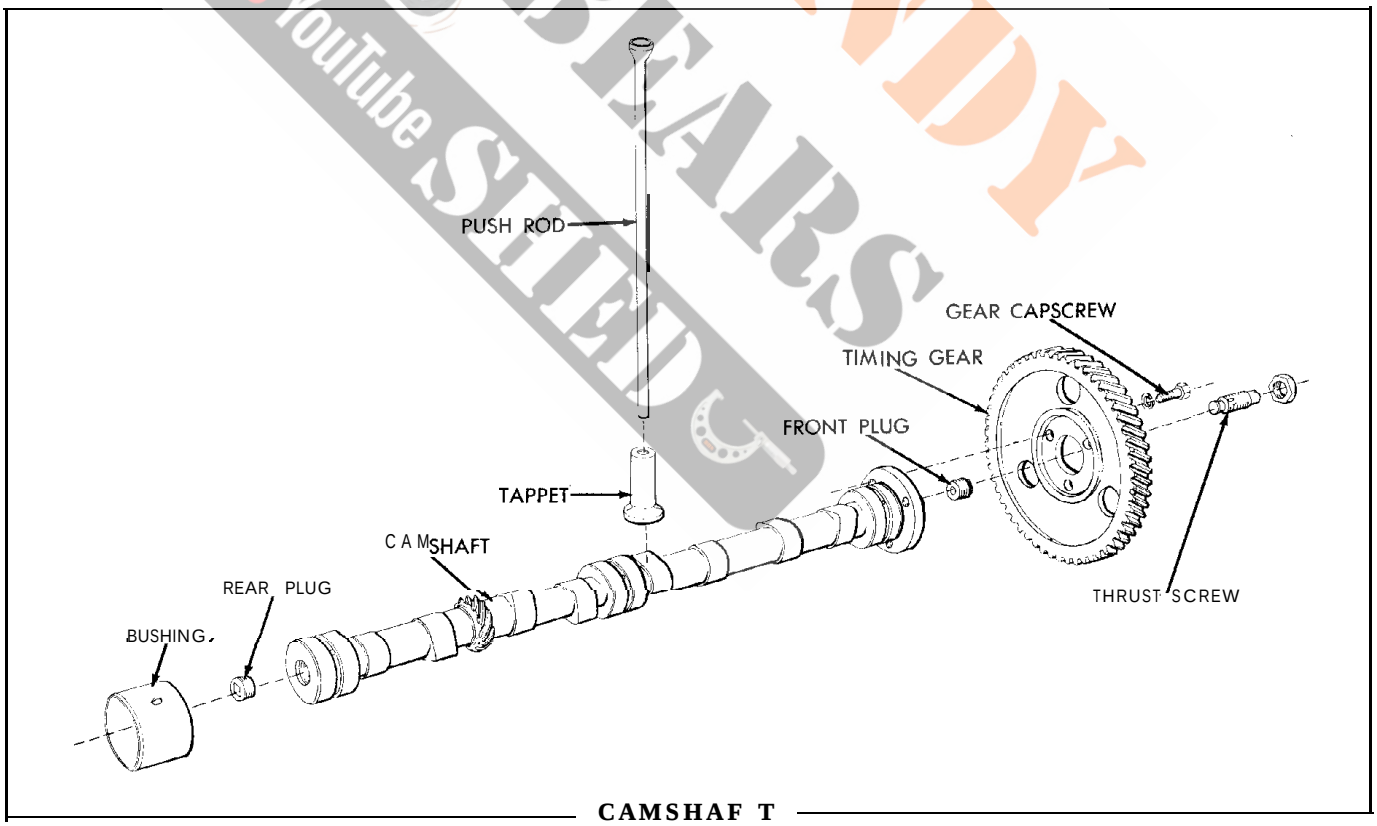
CRANKSHAFT & FLYWHEEL



PISTON & CONNECTING ROD

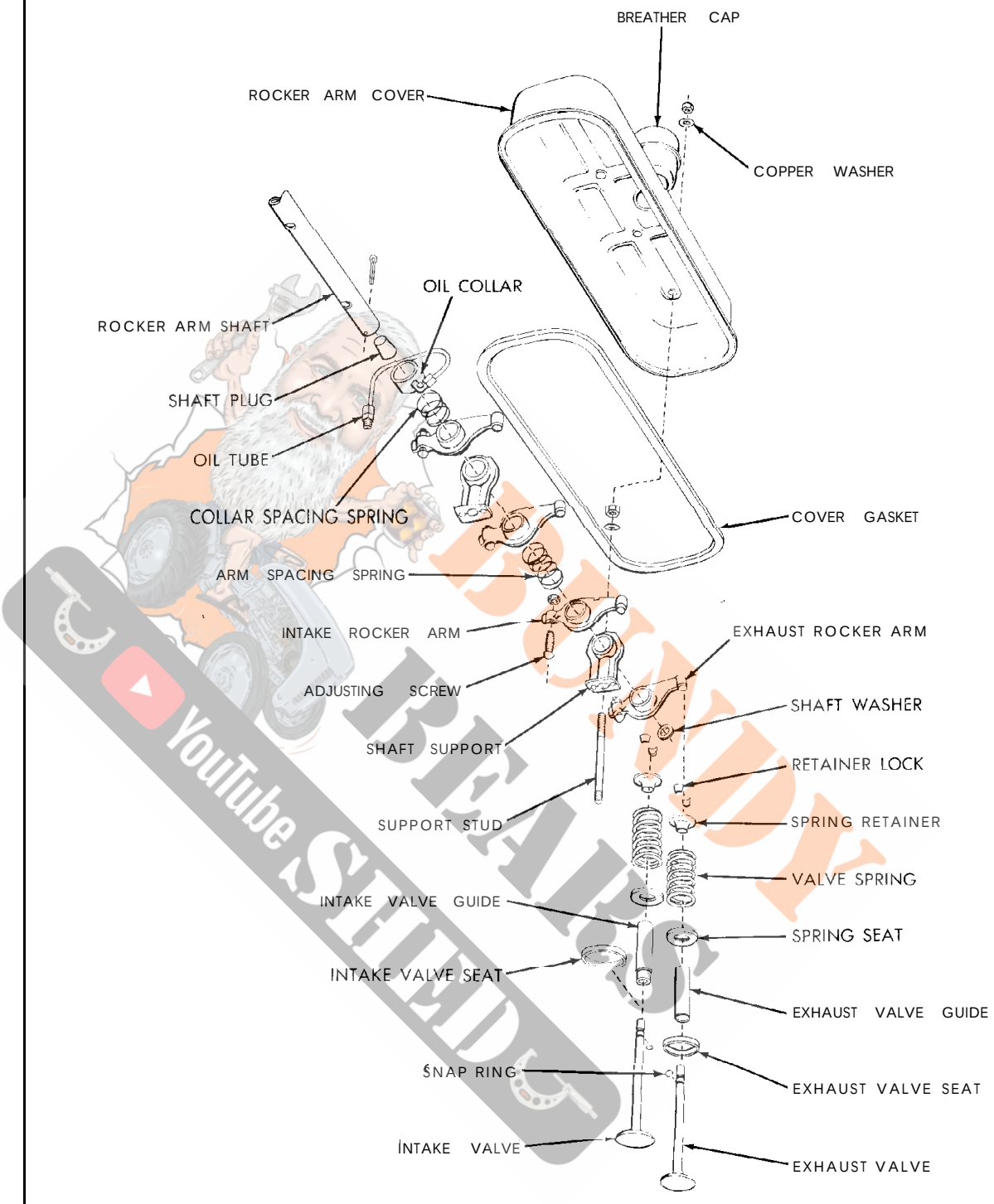


CYLINDER HEAD

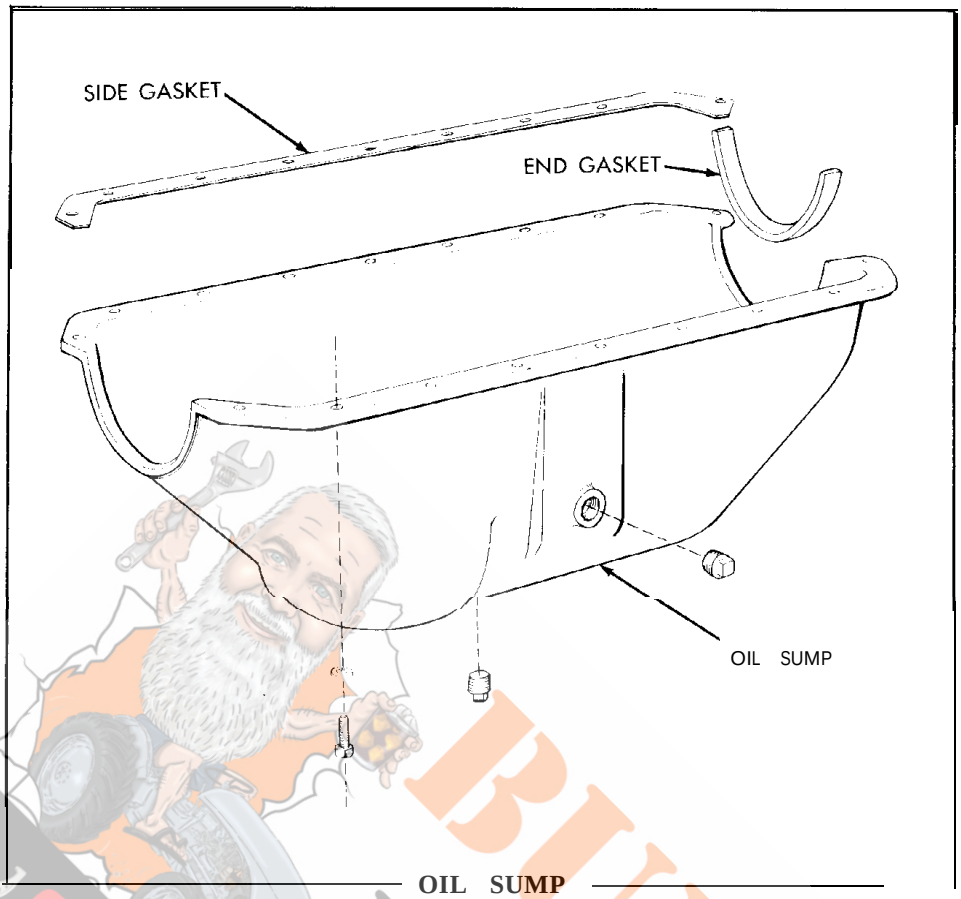


CAMSHAF T

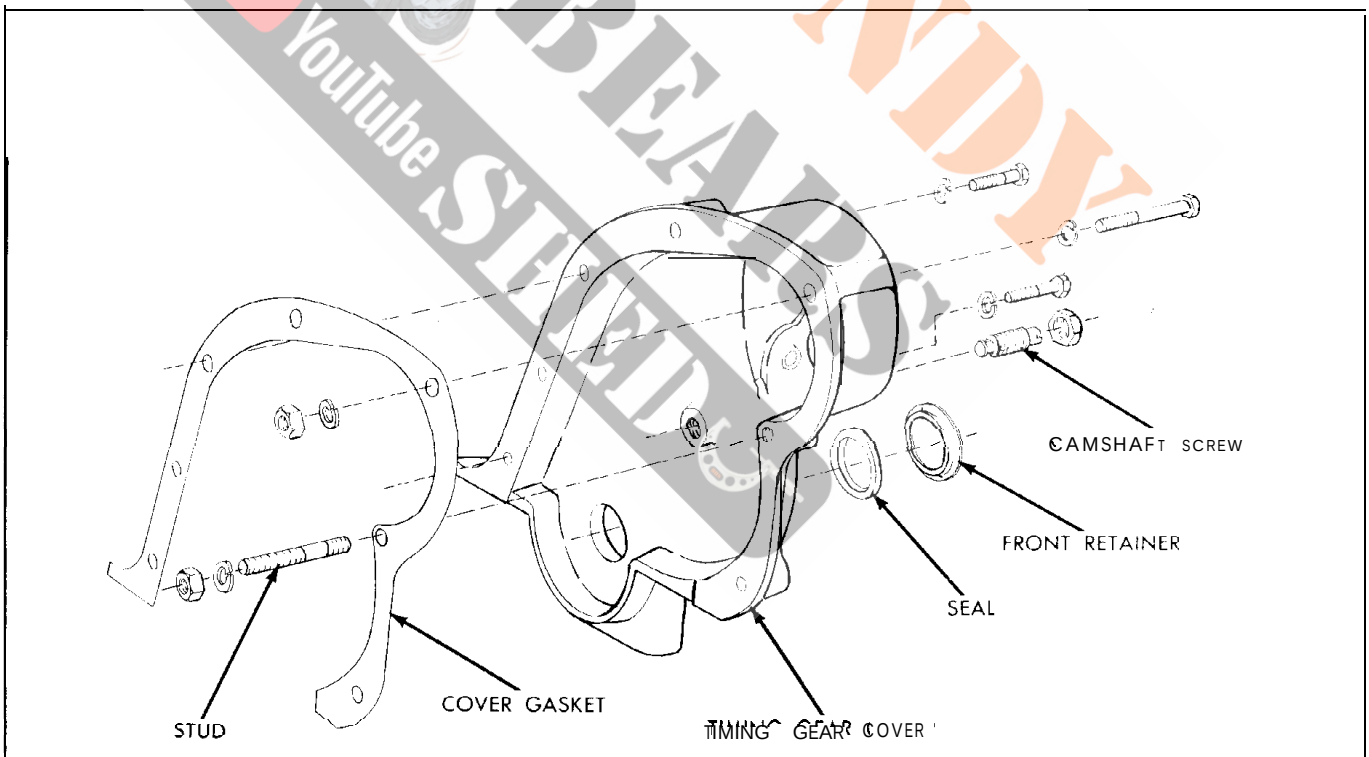
Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.



VALVES & ROCKER ARMS

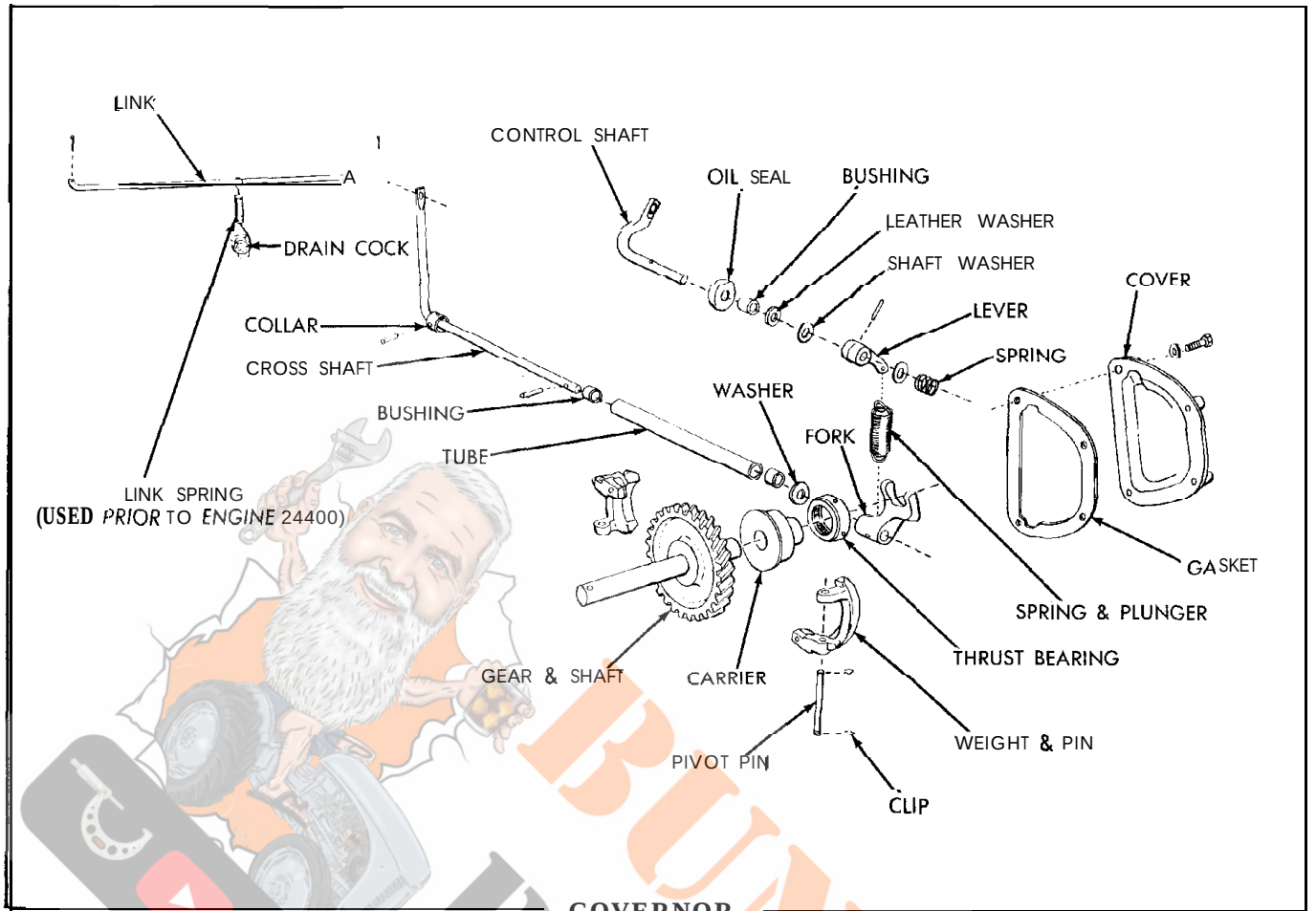


OIL SUMP

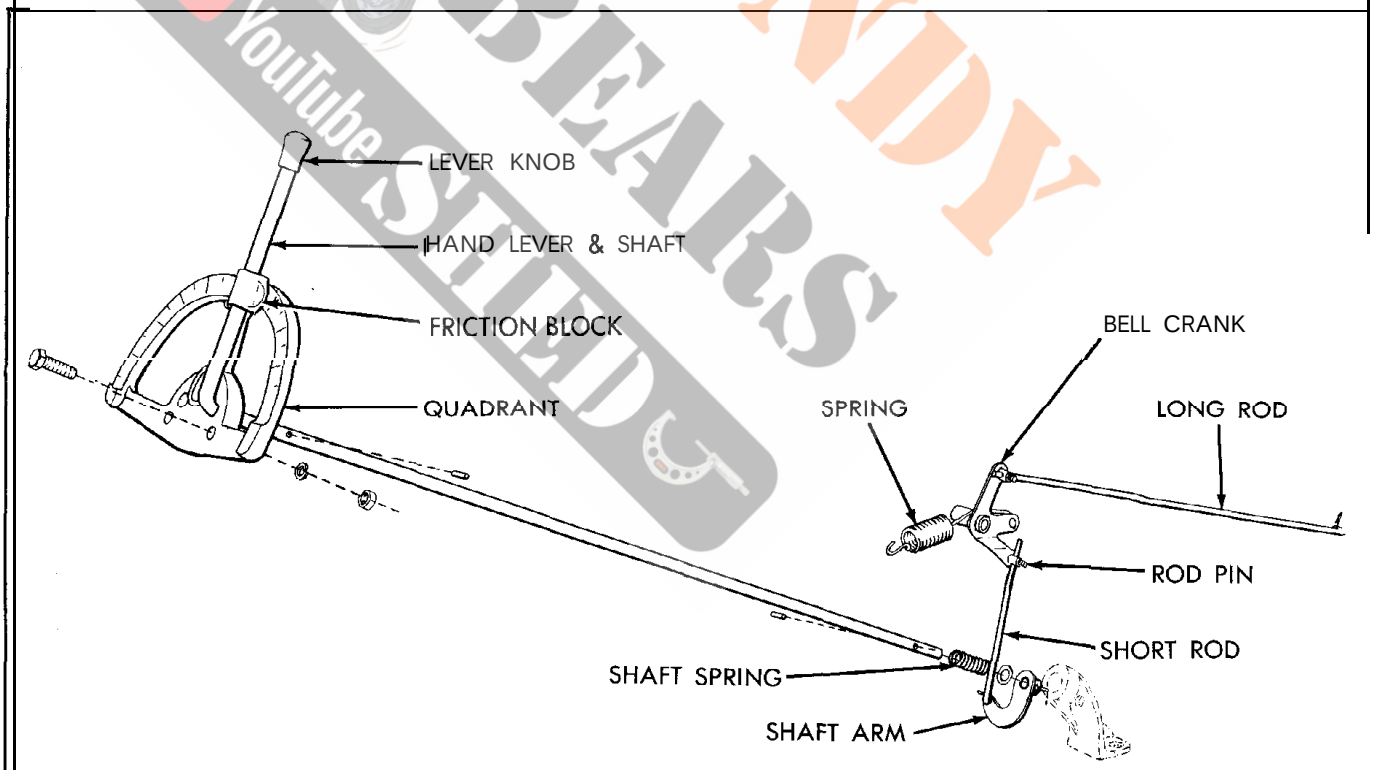


TIMING GEAR COVER

Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.

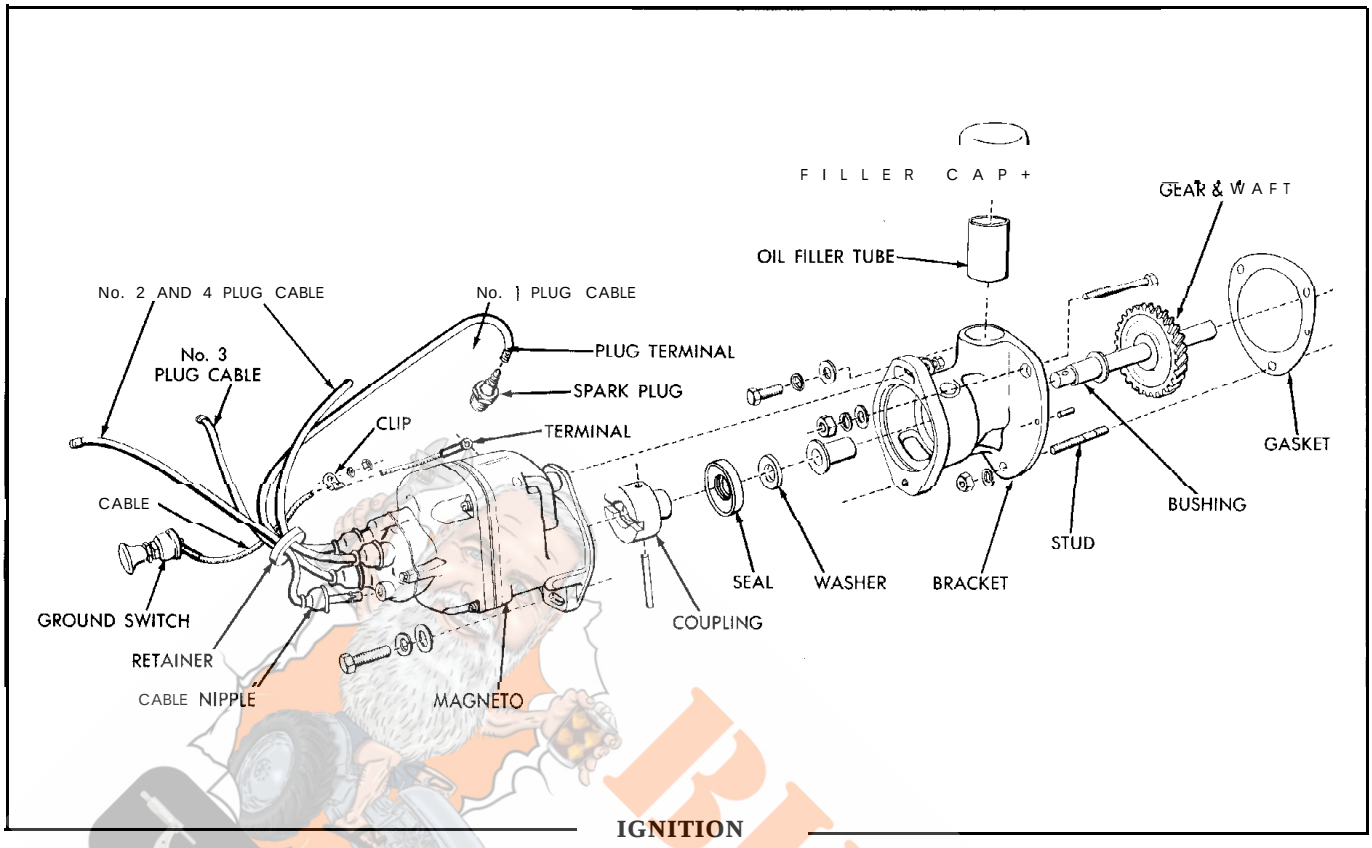


GOVERNOR

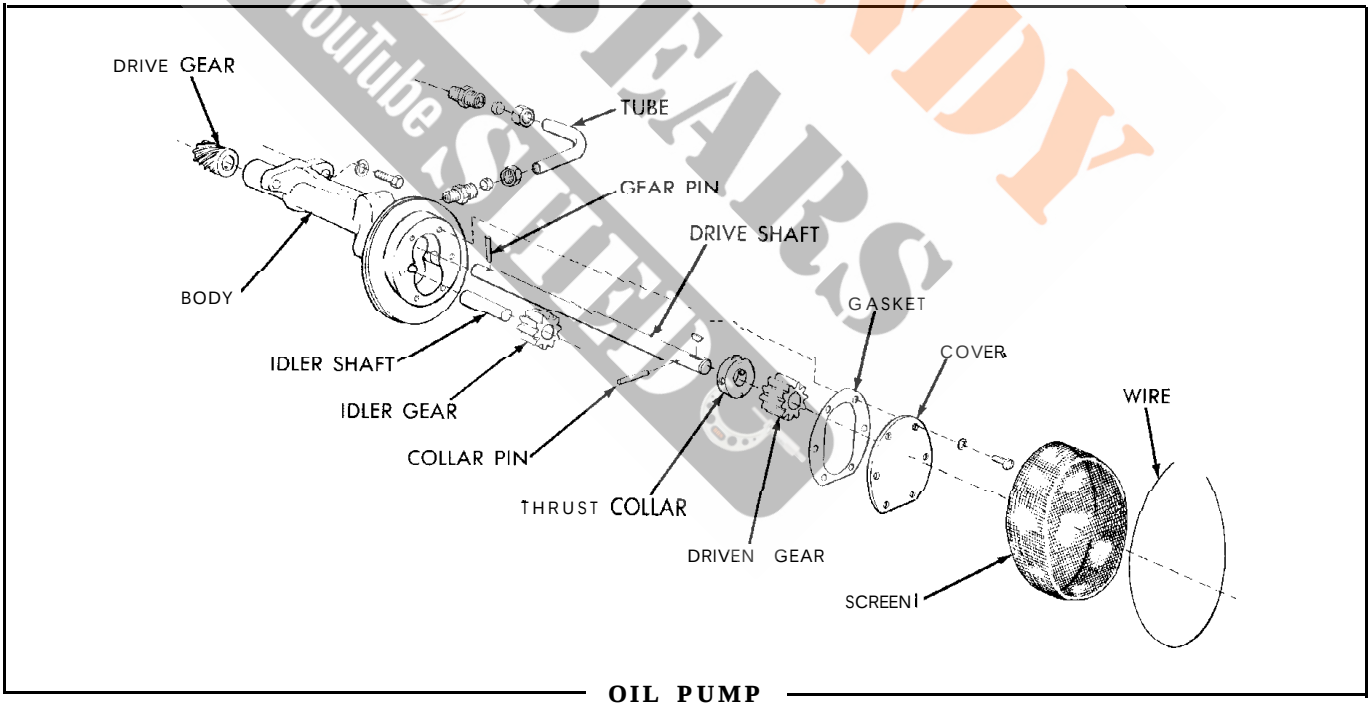


GOVERNORCONTROL

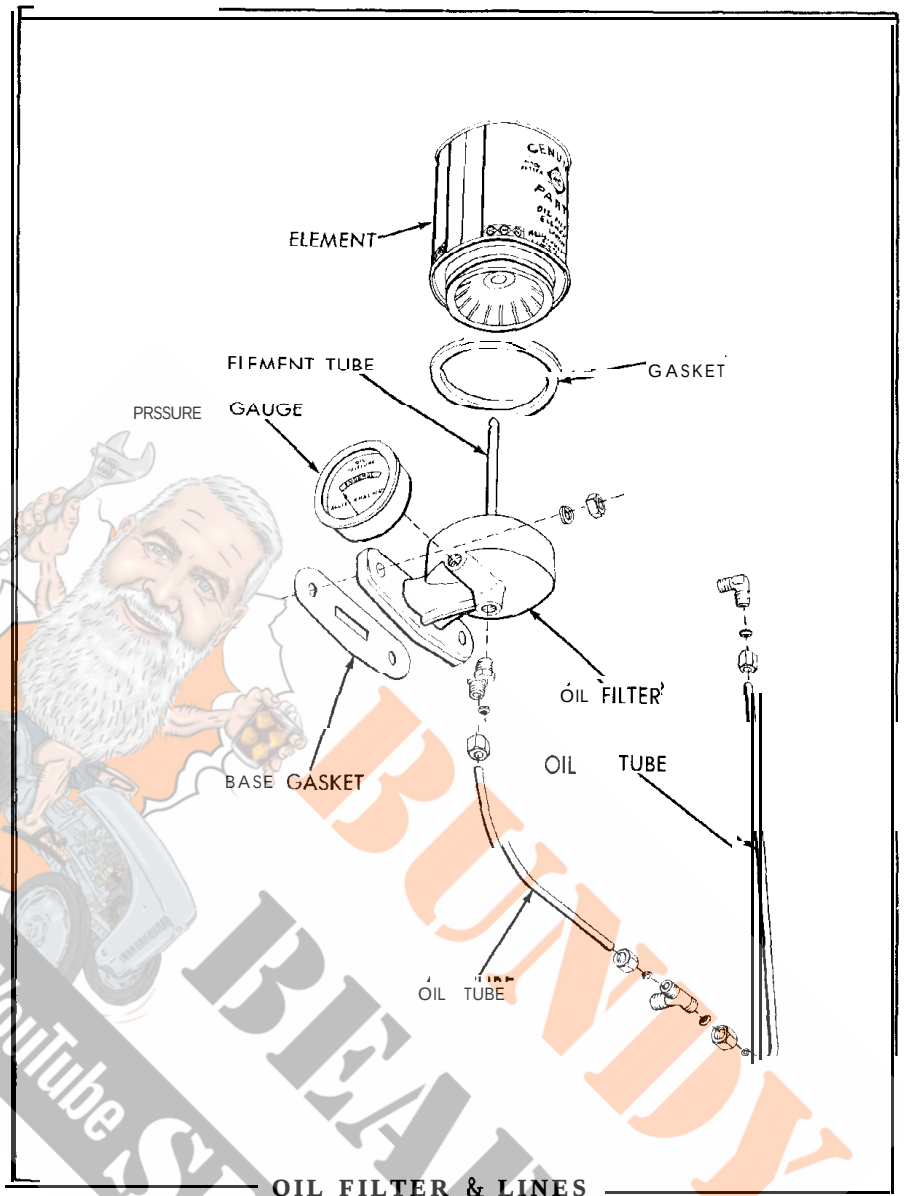
Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.



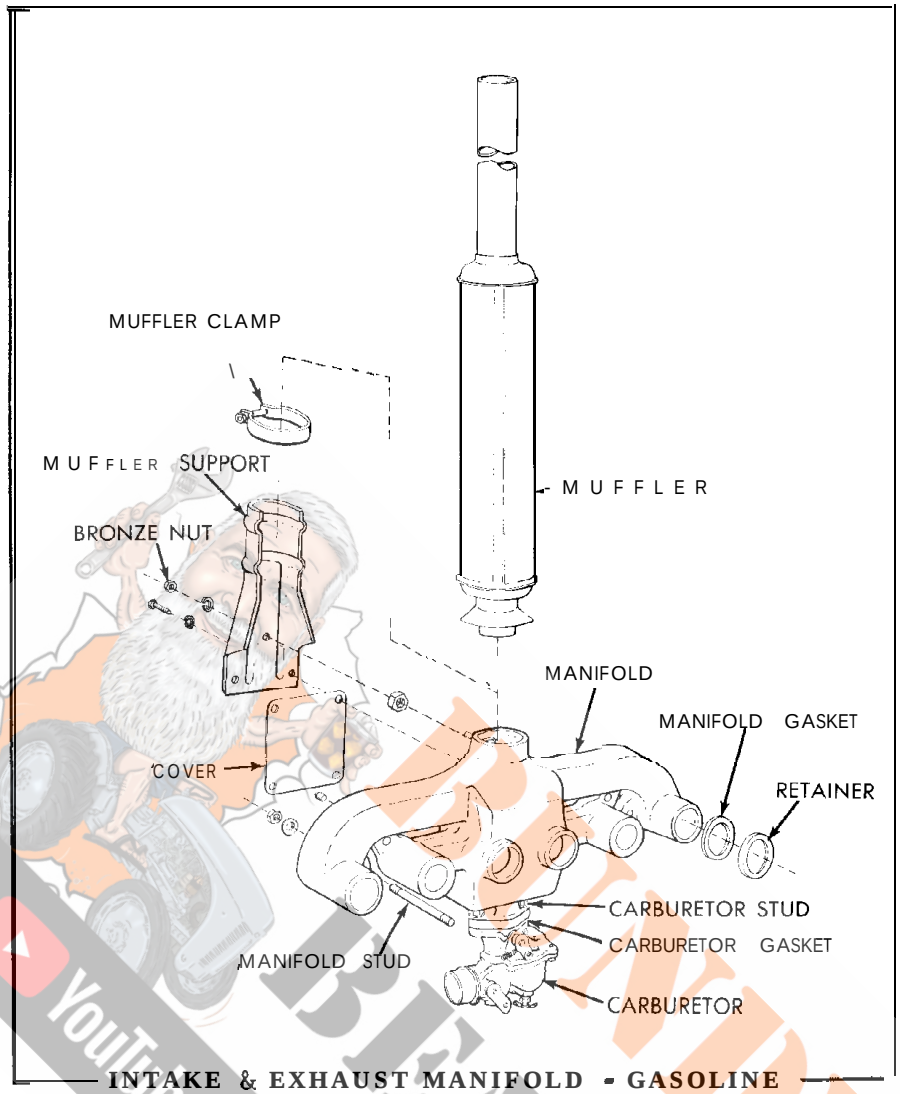
IGNITION



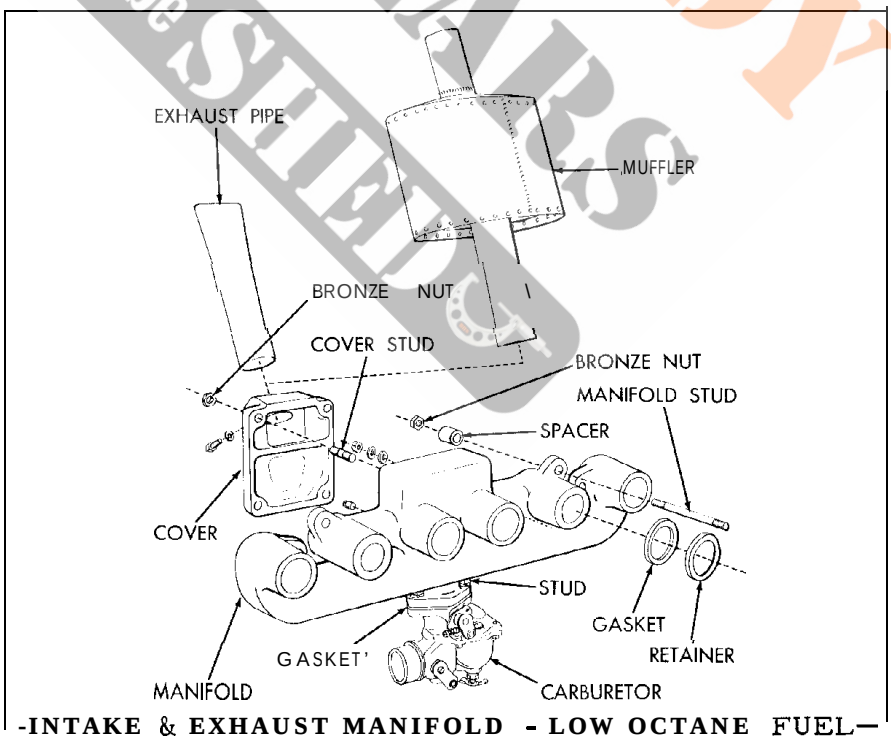
OIL PUMP



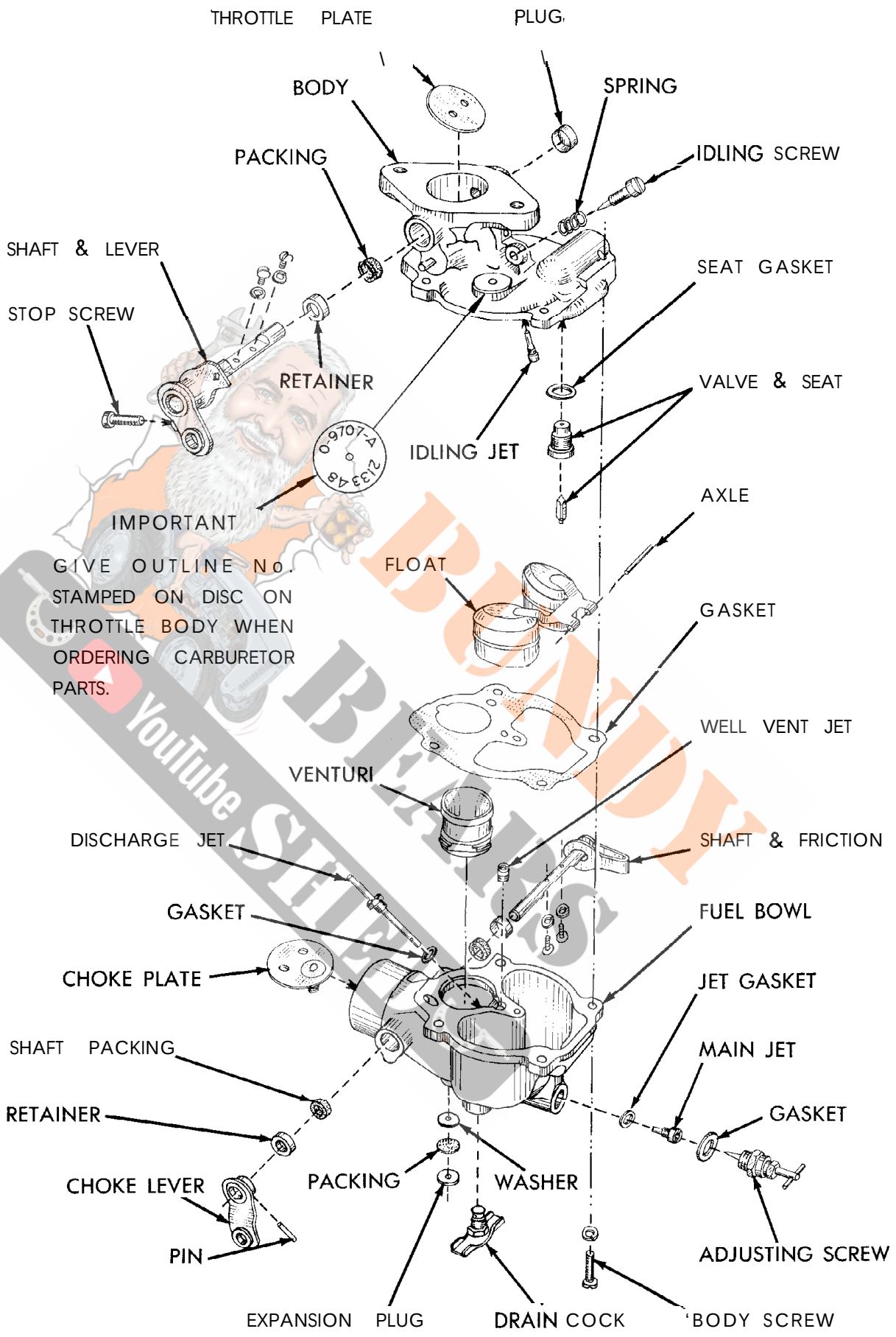
OIL FILTER & LINES

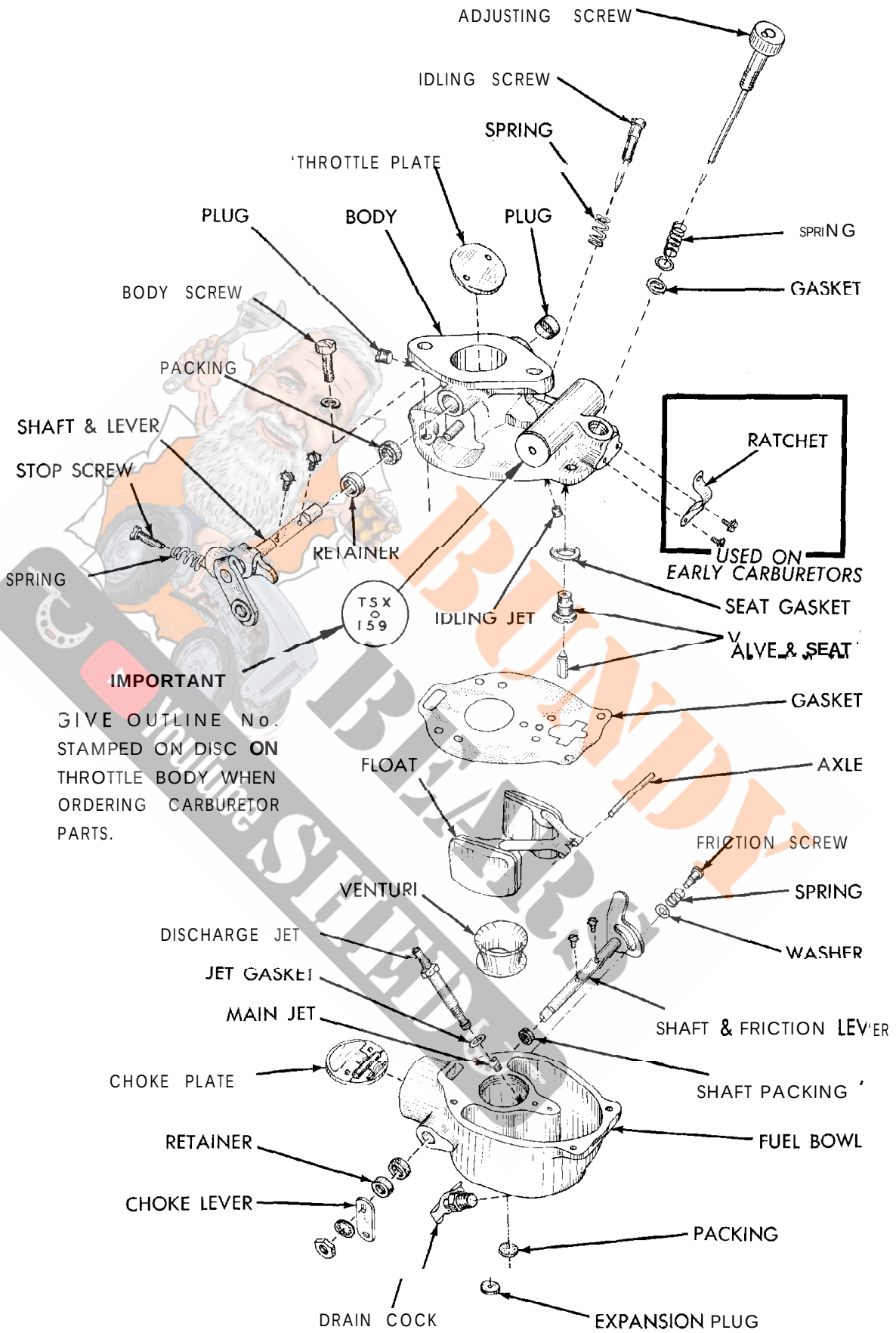


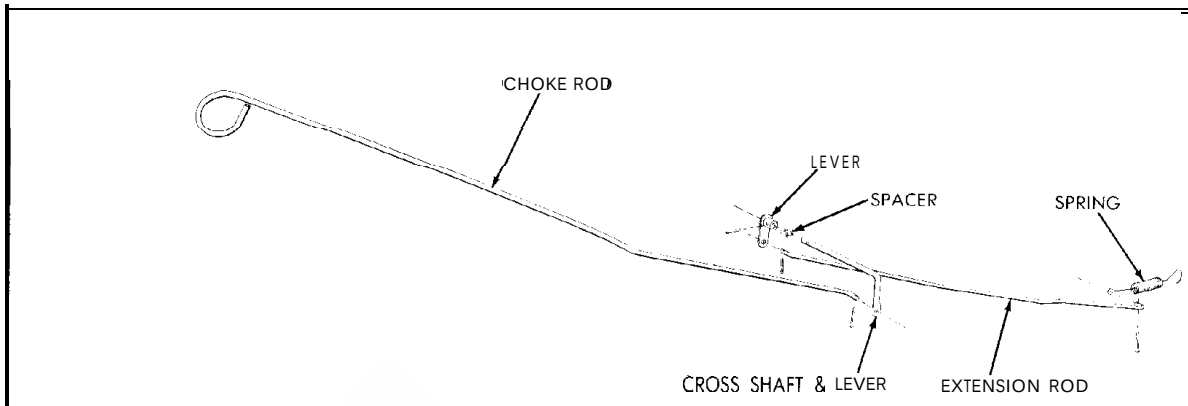
INTAKE & EXHAUST MANIFOLD - GASOLINE



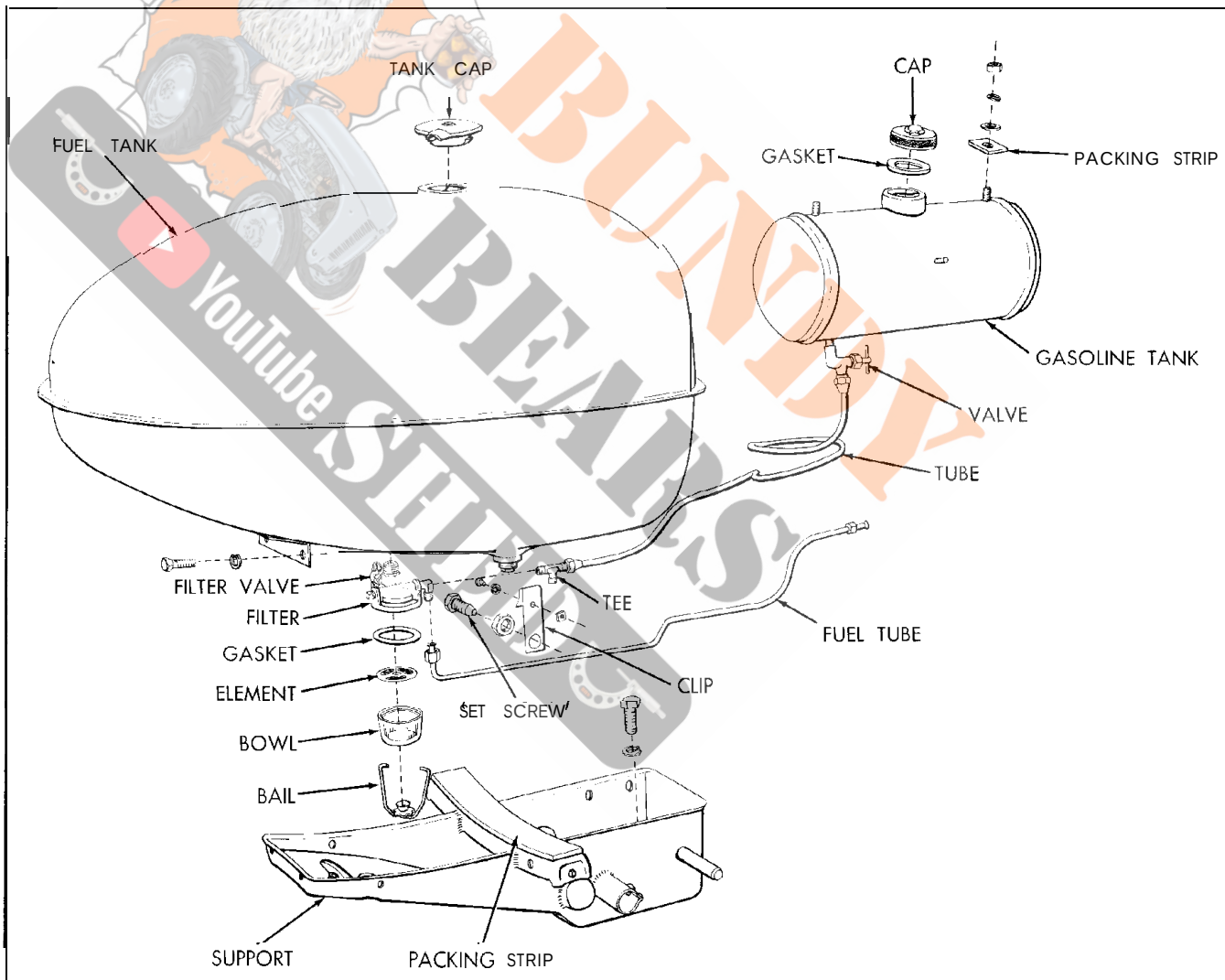
-INTAKE & EXHAUST MANIFOLD - LOW OCTANE FUEL-



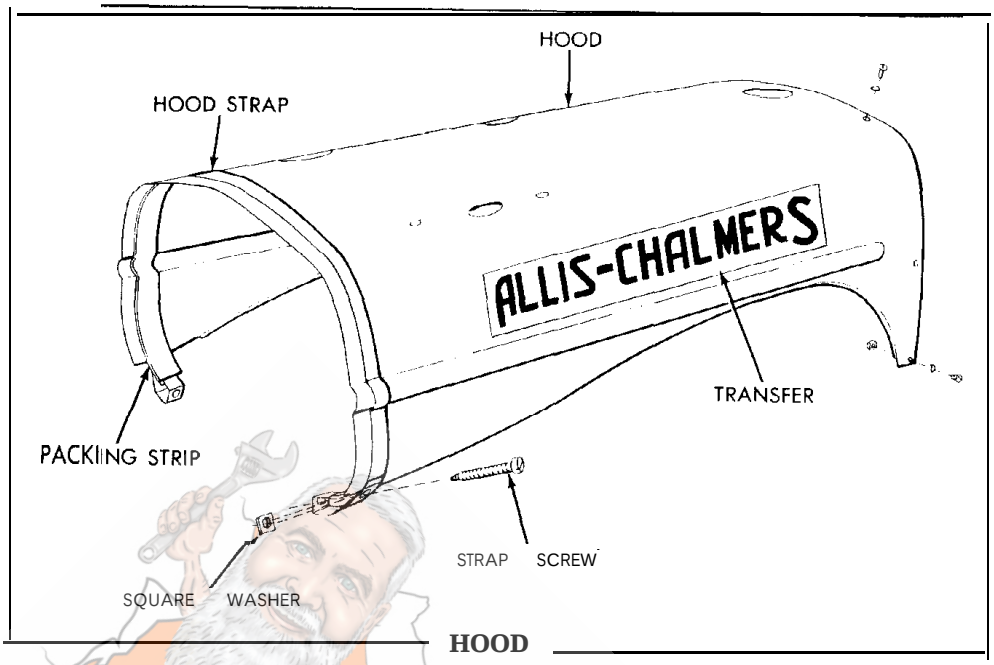




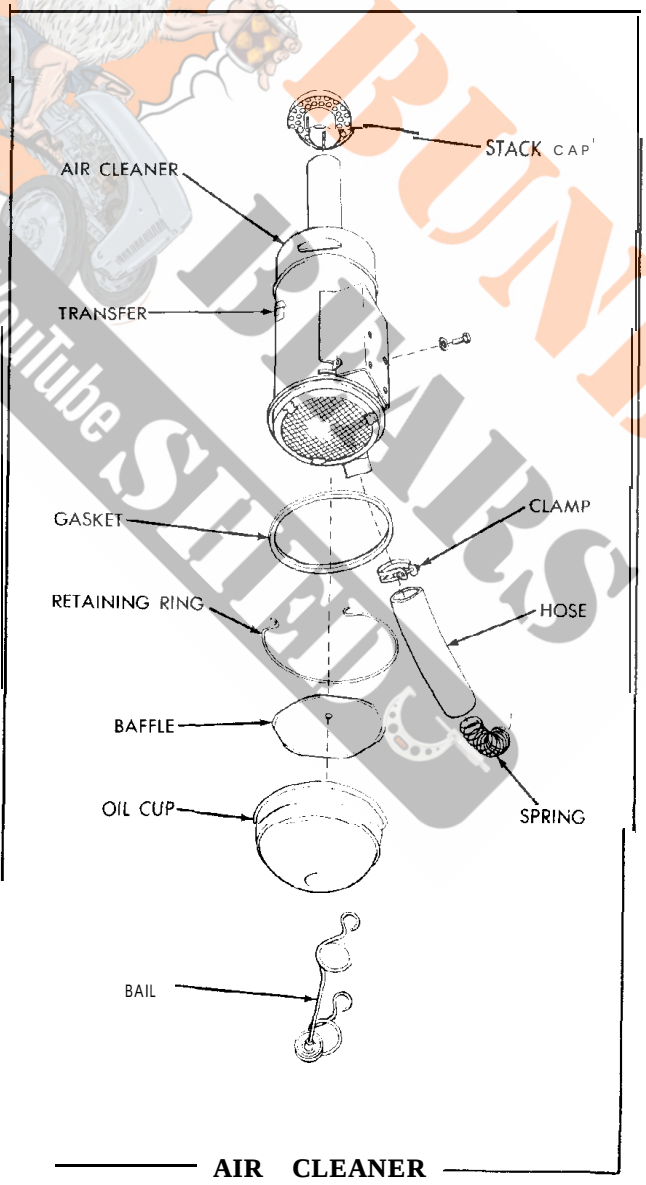
CHOKECONTROL



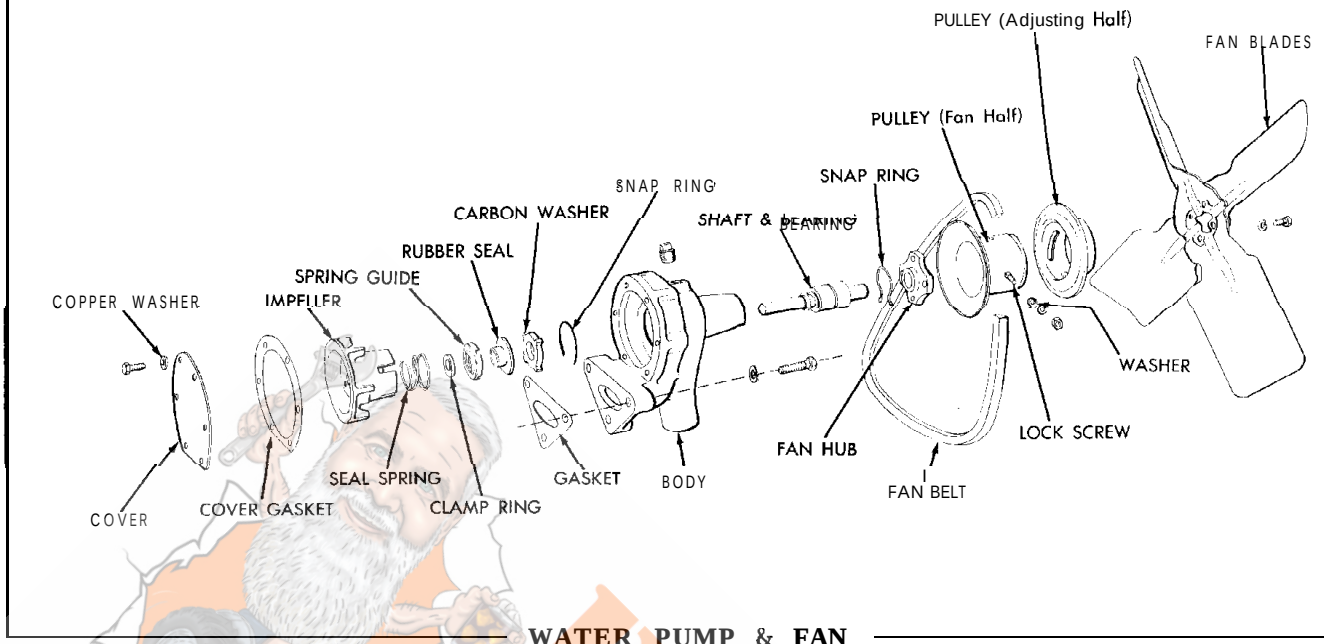
FUEL TANK, FILTER & LINES



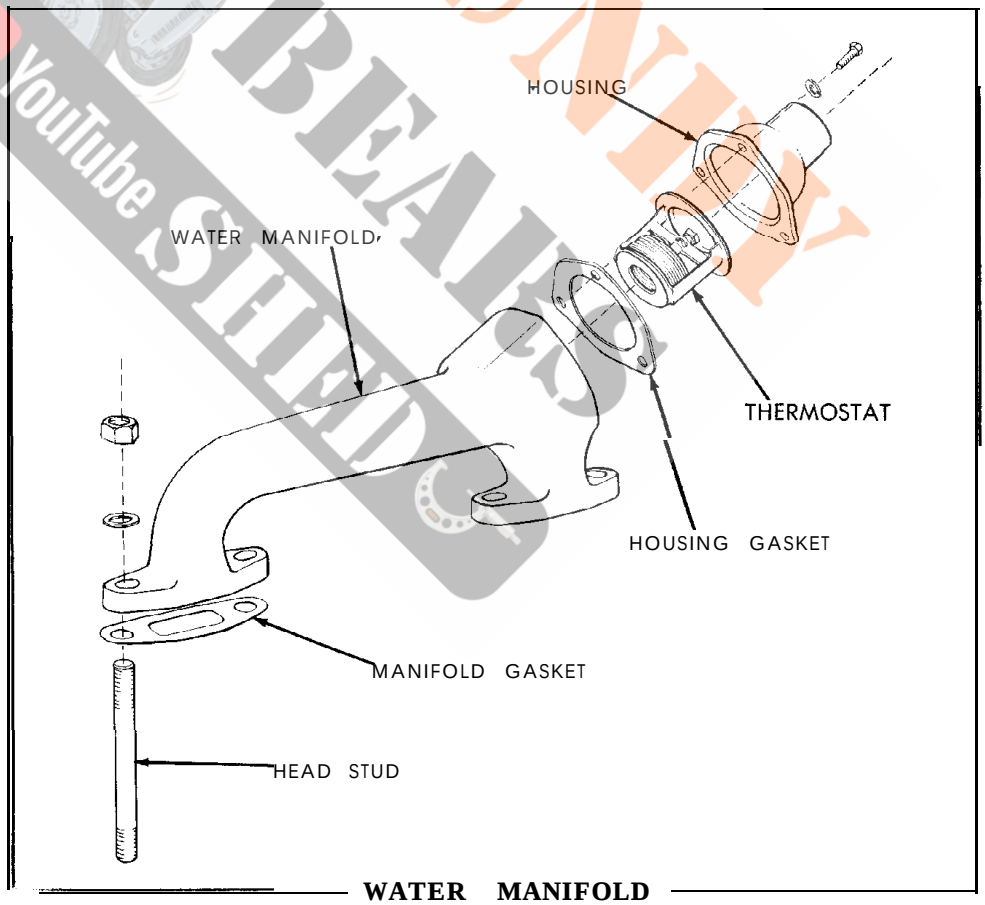
HOOD



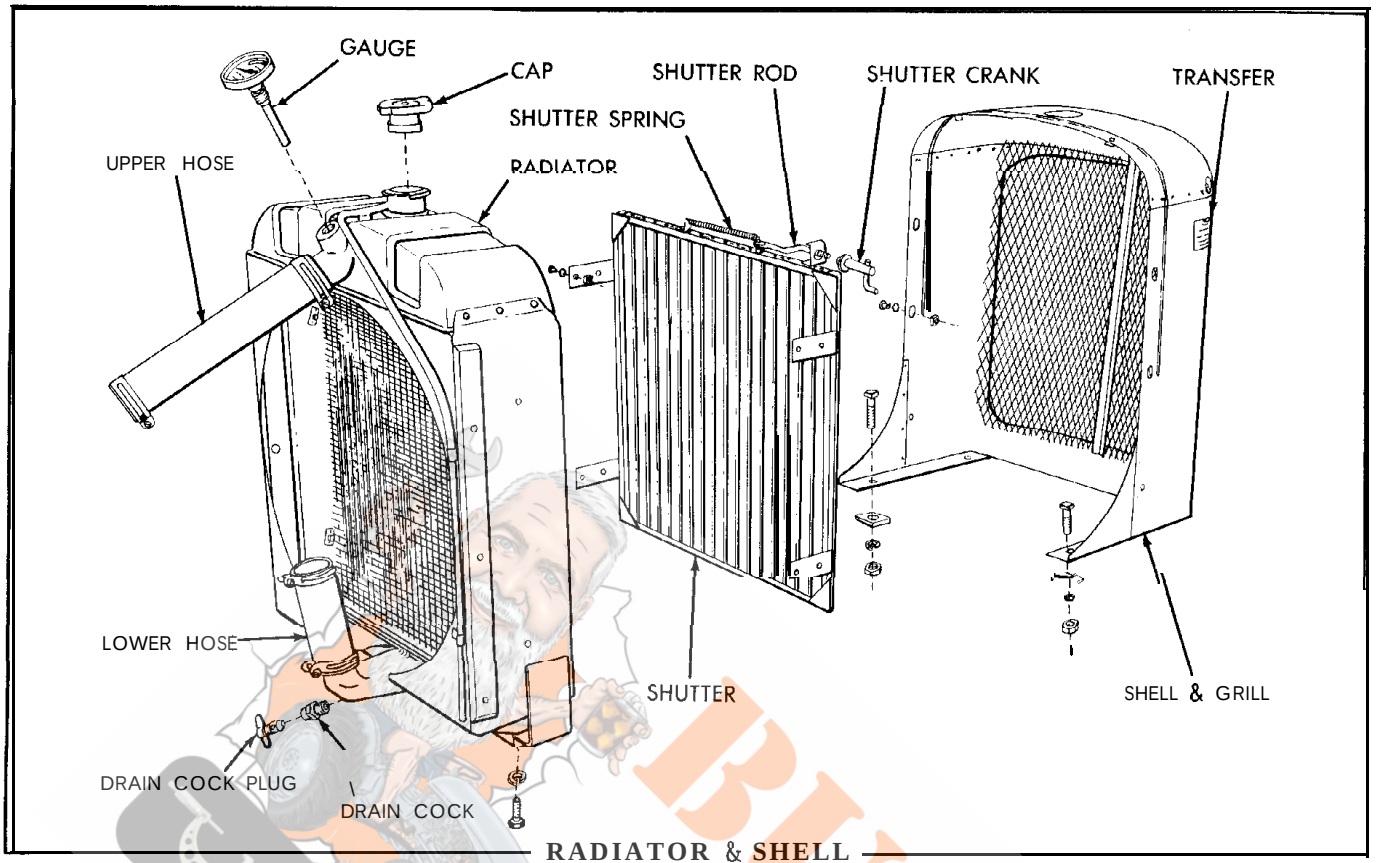
AIR CLEANER



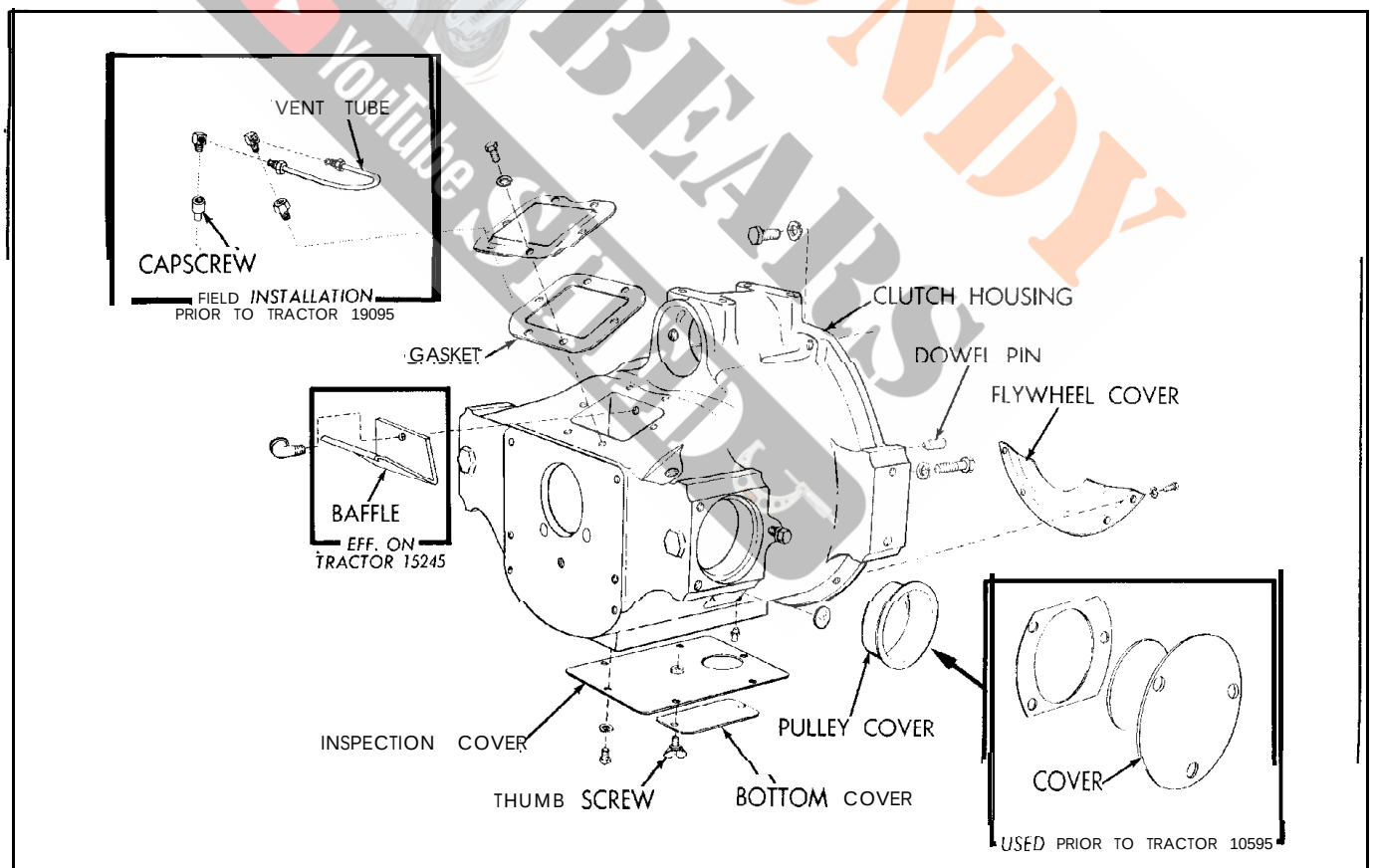
WATER PUMP & FAN



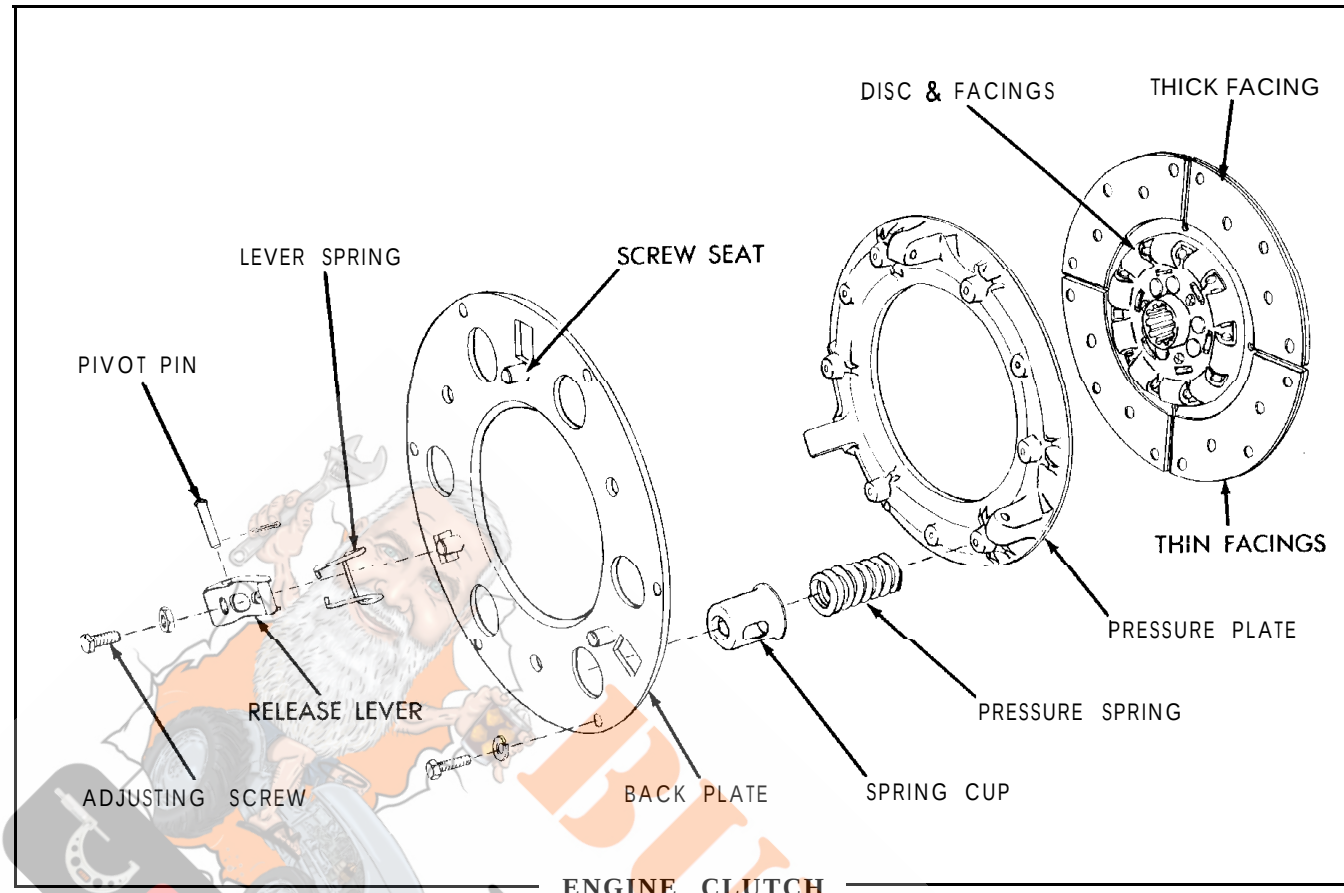
WATER MANIFOLD



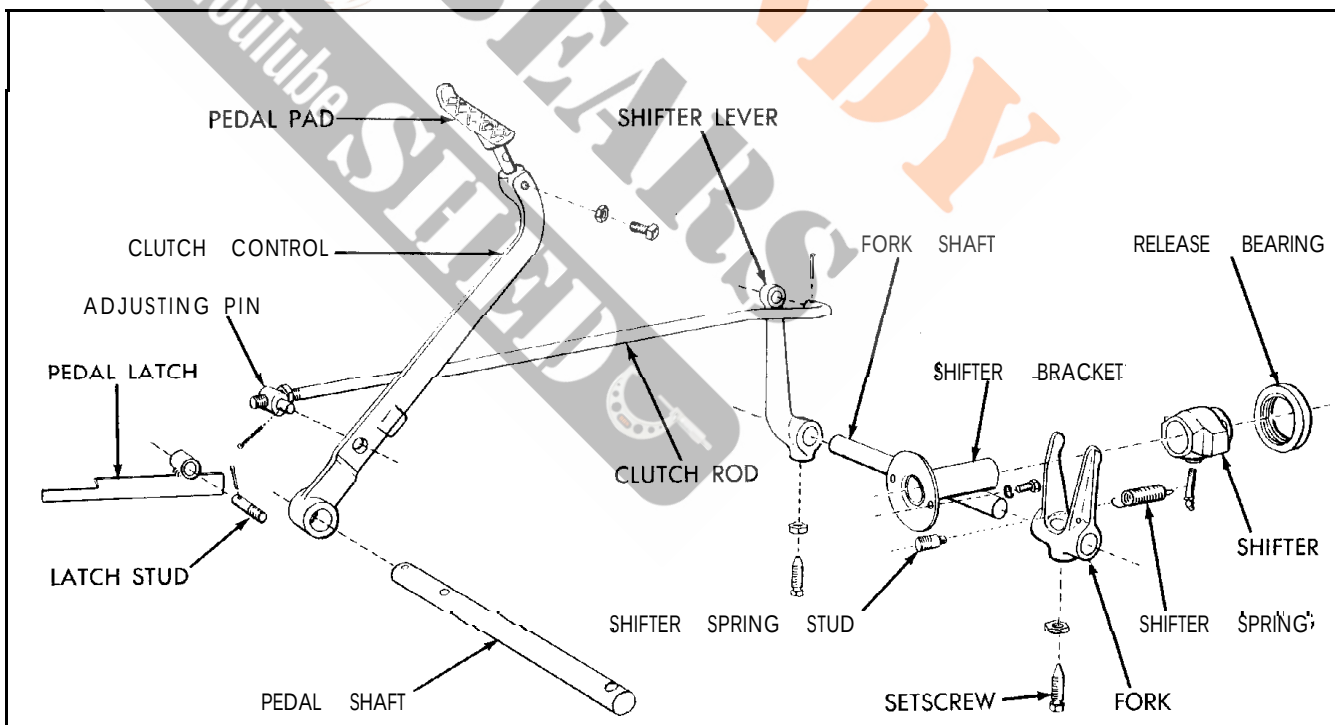
RADIATOR & SHELL



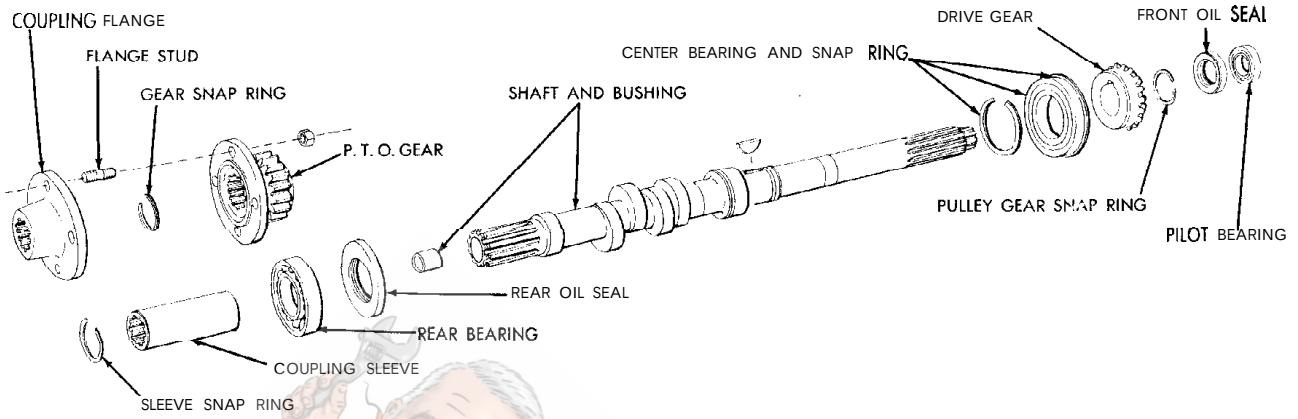
ENGINE CLUTCH HOUSING



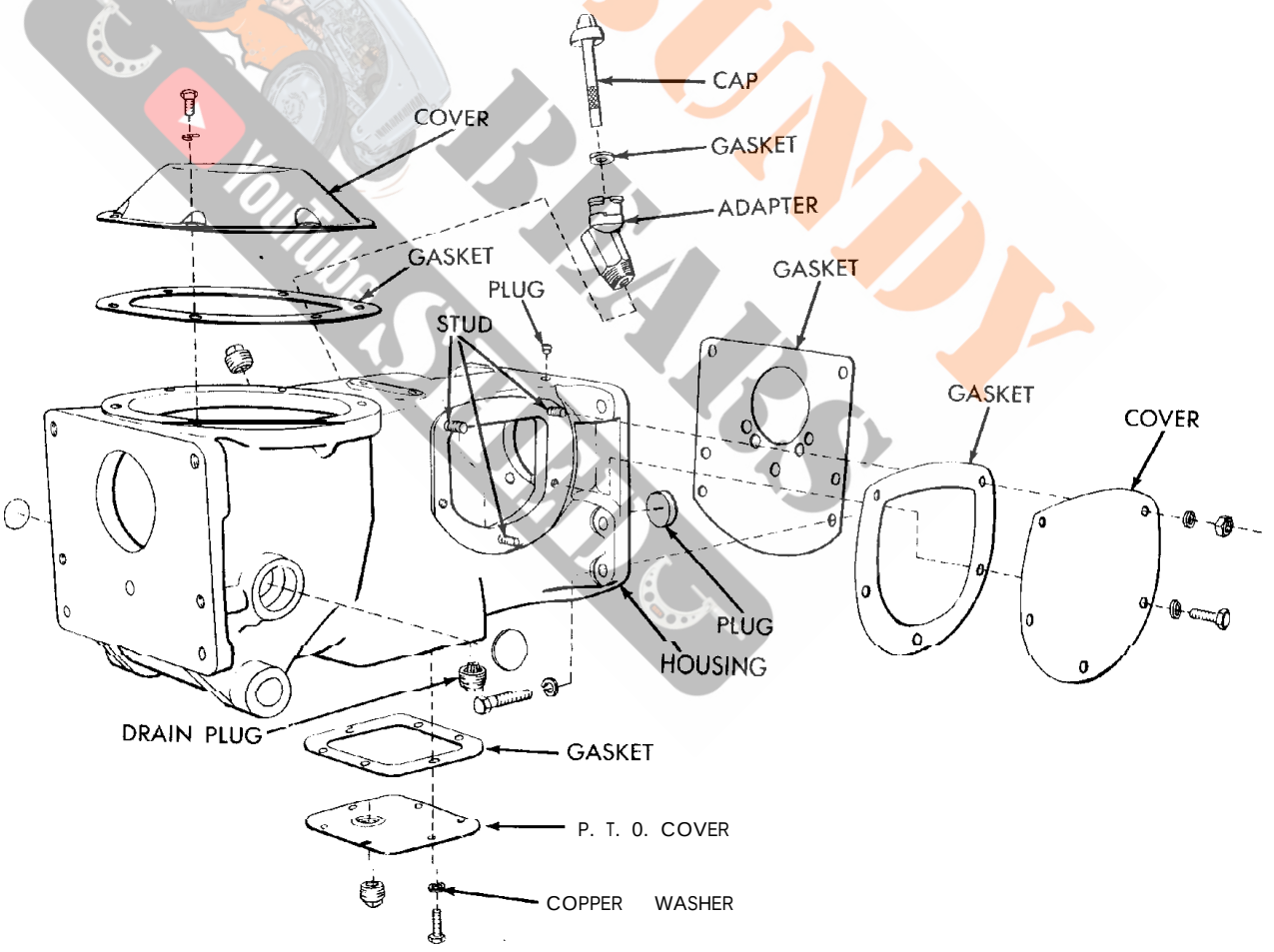
ENGINE CLUTCH



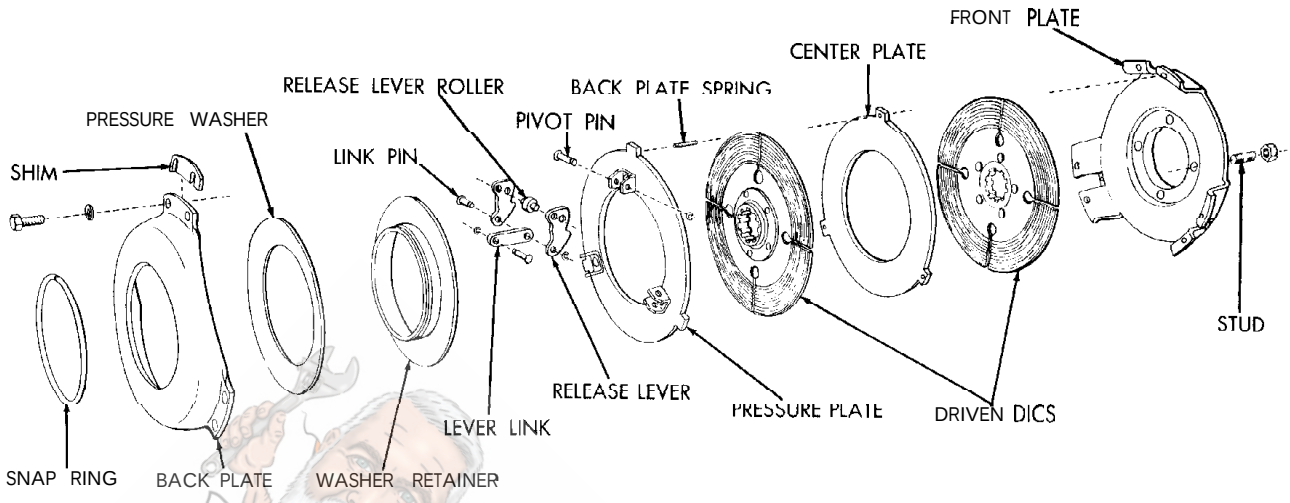
ENGINE CLUTCH CONTROL



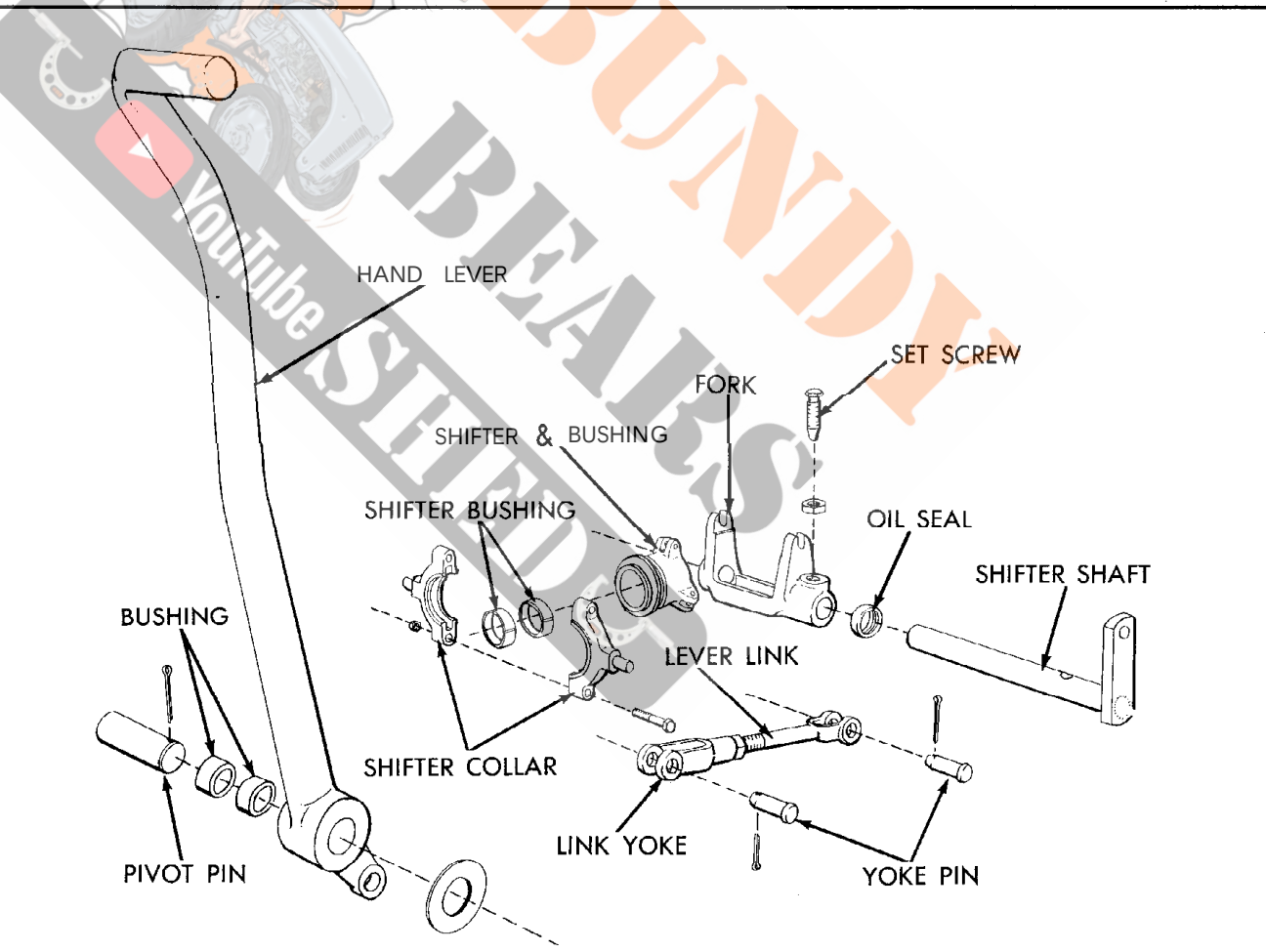
ENGINE CLUTCH SHAFT



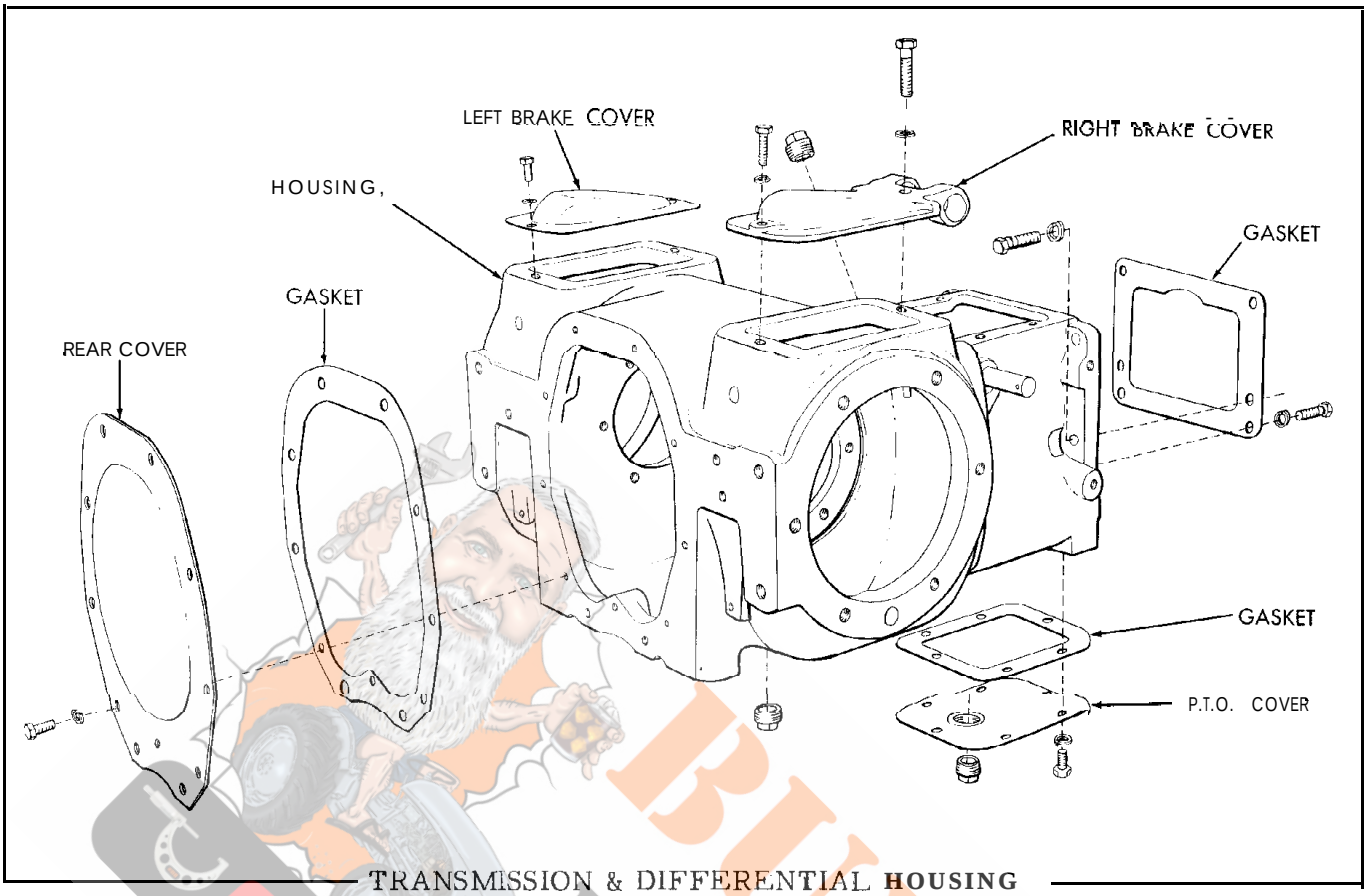
TRANSMISSION CLUTCH HOUSING



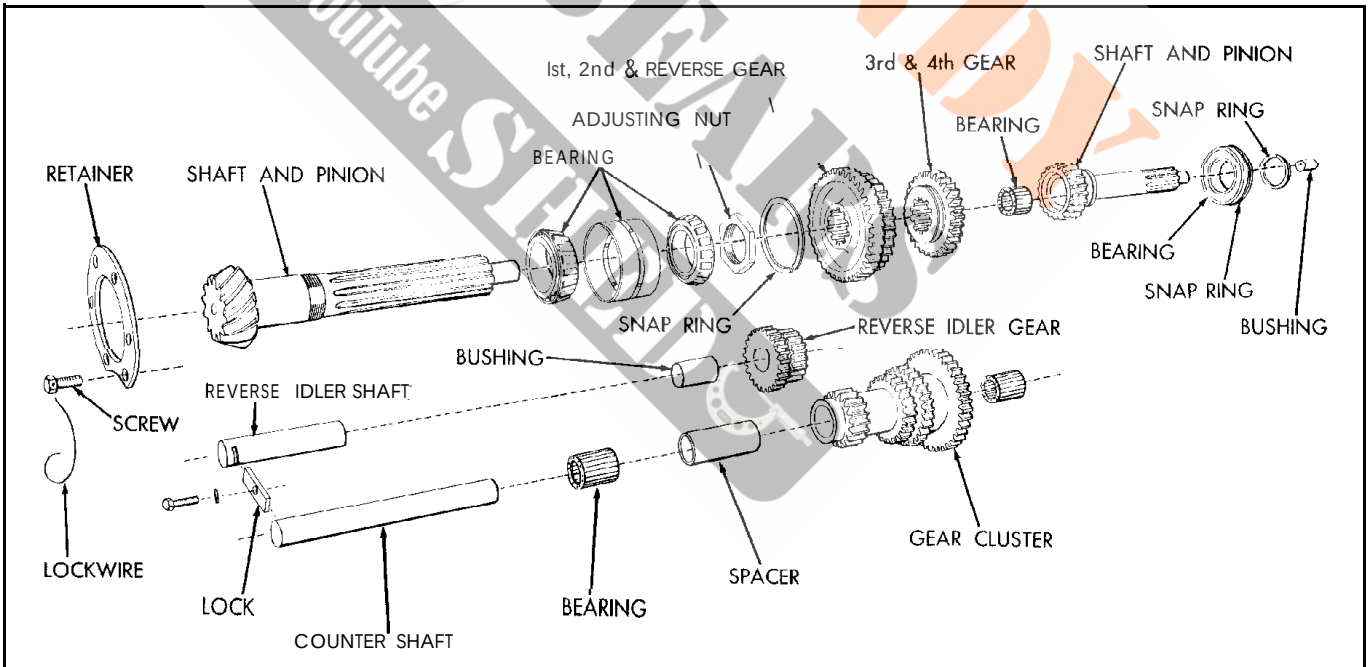
TRANSMISSION CLUTCH



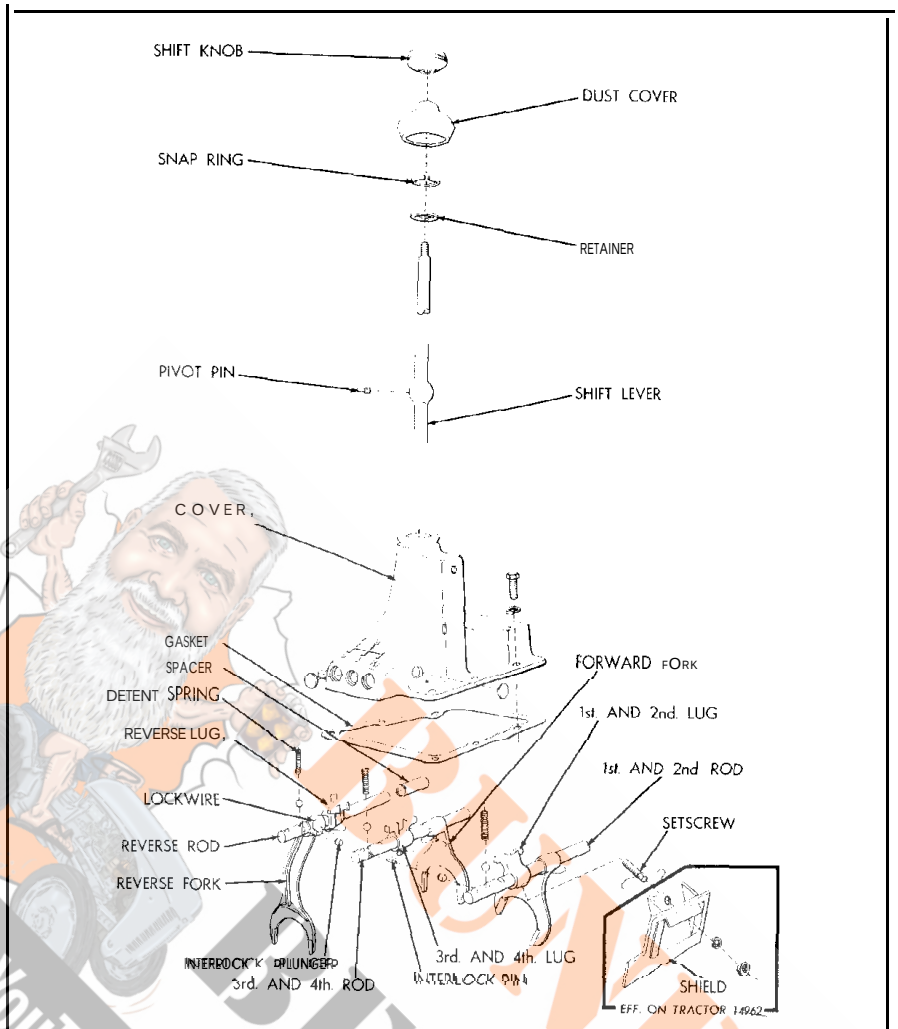
TRANSMISSION CLUTCH CONTROL



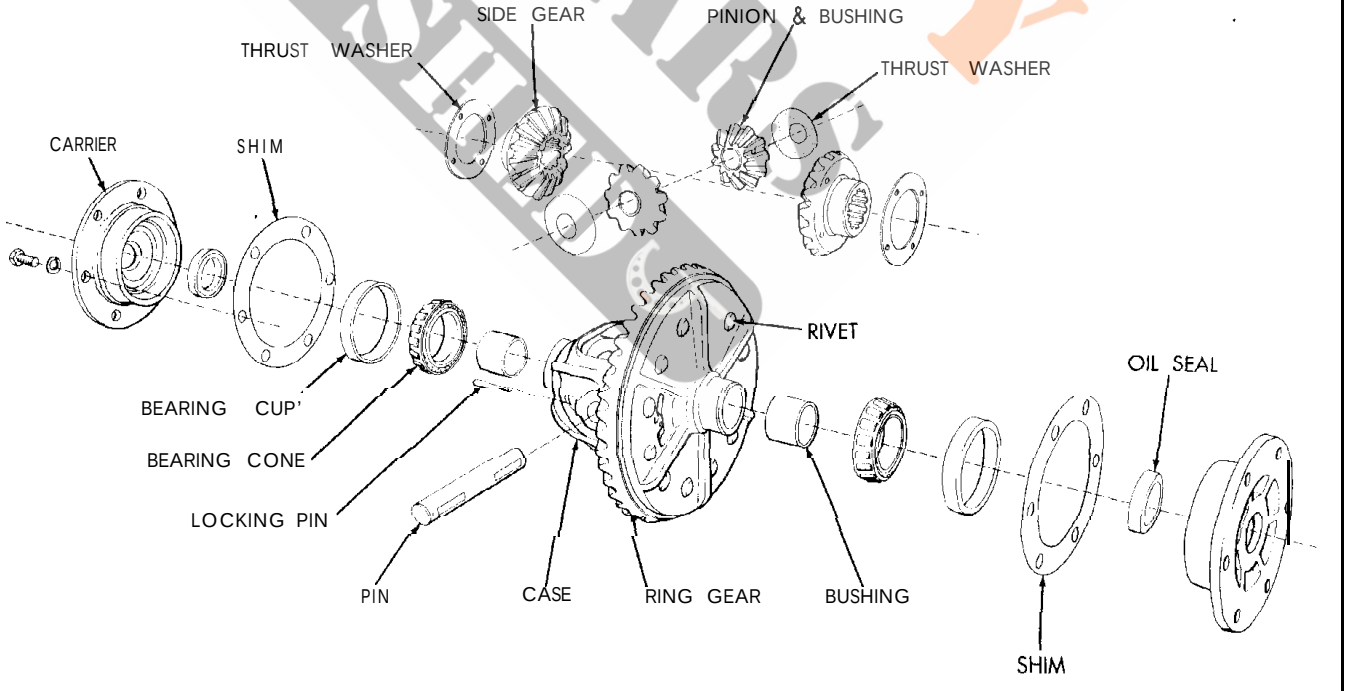
TRANSMISSION & DIFFERENTIAL **HOUSING**



TRANSMISSION GEARS & SHAFTS

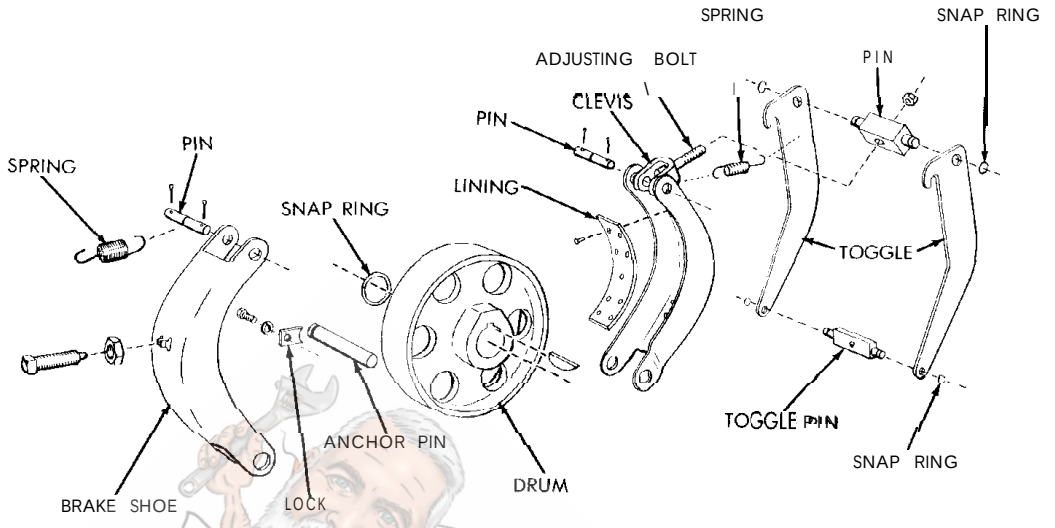


TRANSMISSION CONTROL

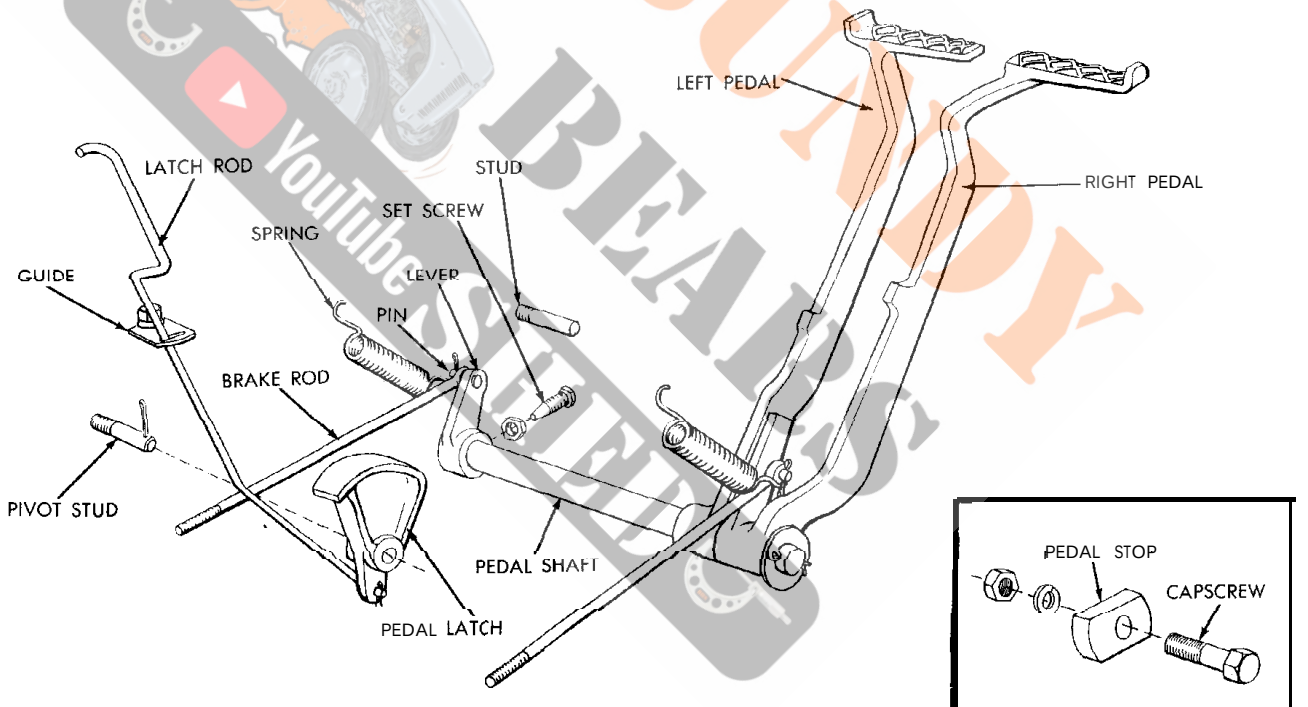


DIFFERENTIAL

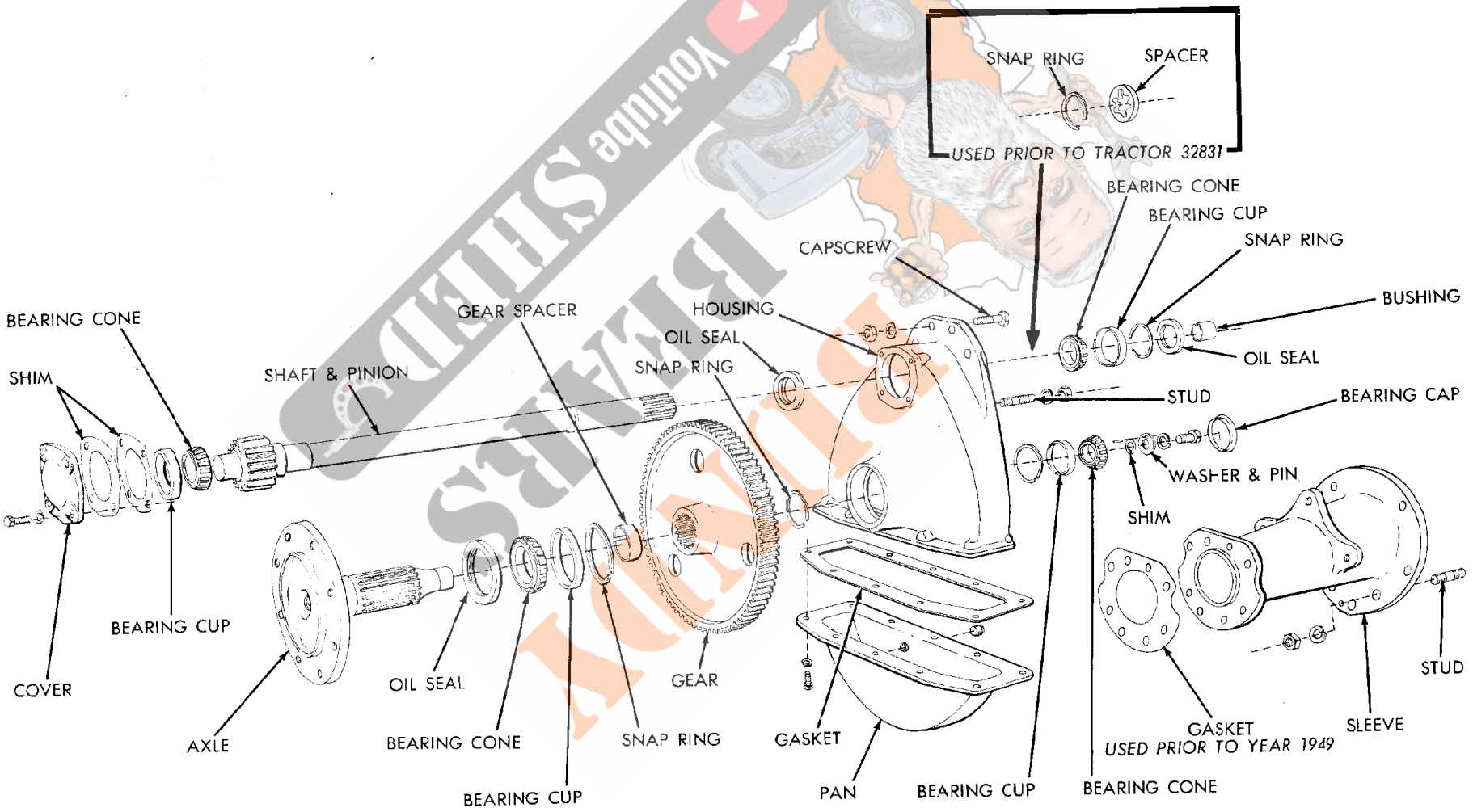
Order Repair Parts By Description. Always ***Give the Tractor and*** Engine ***Serial Numbers.***

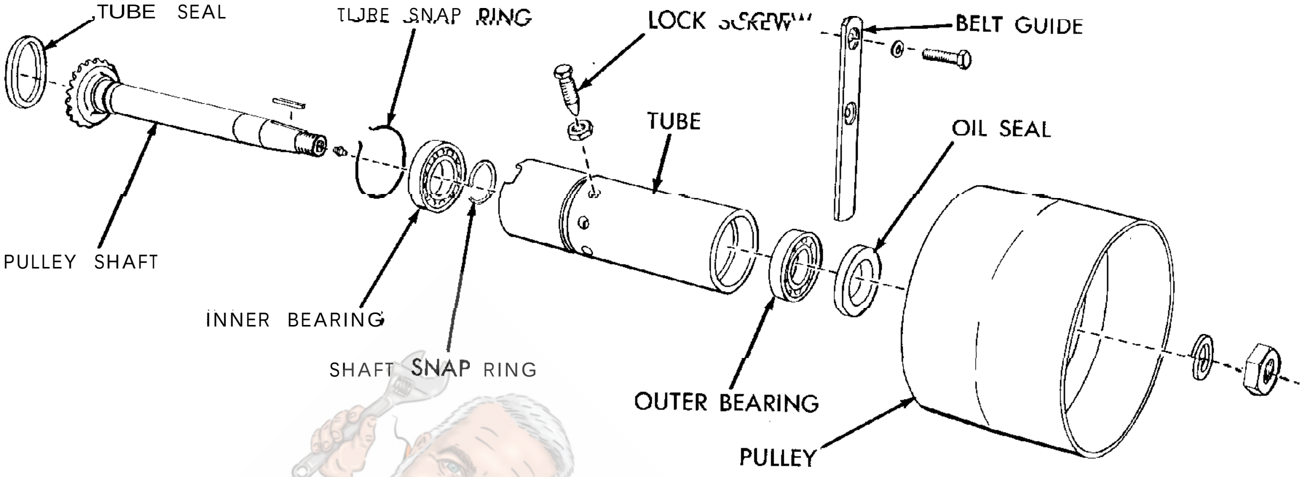


BRAKE

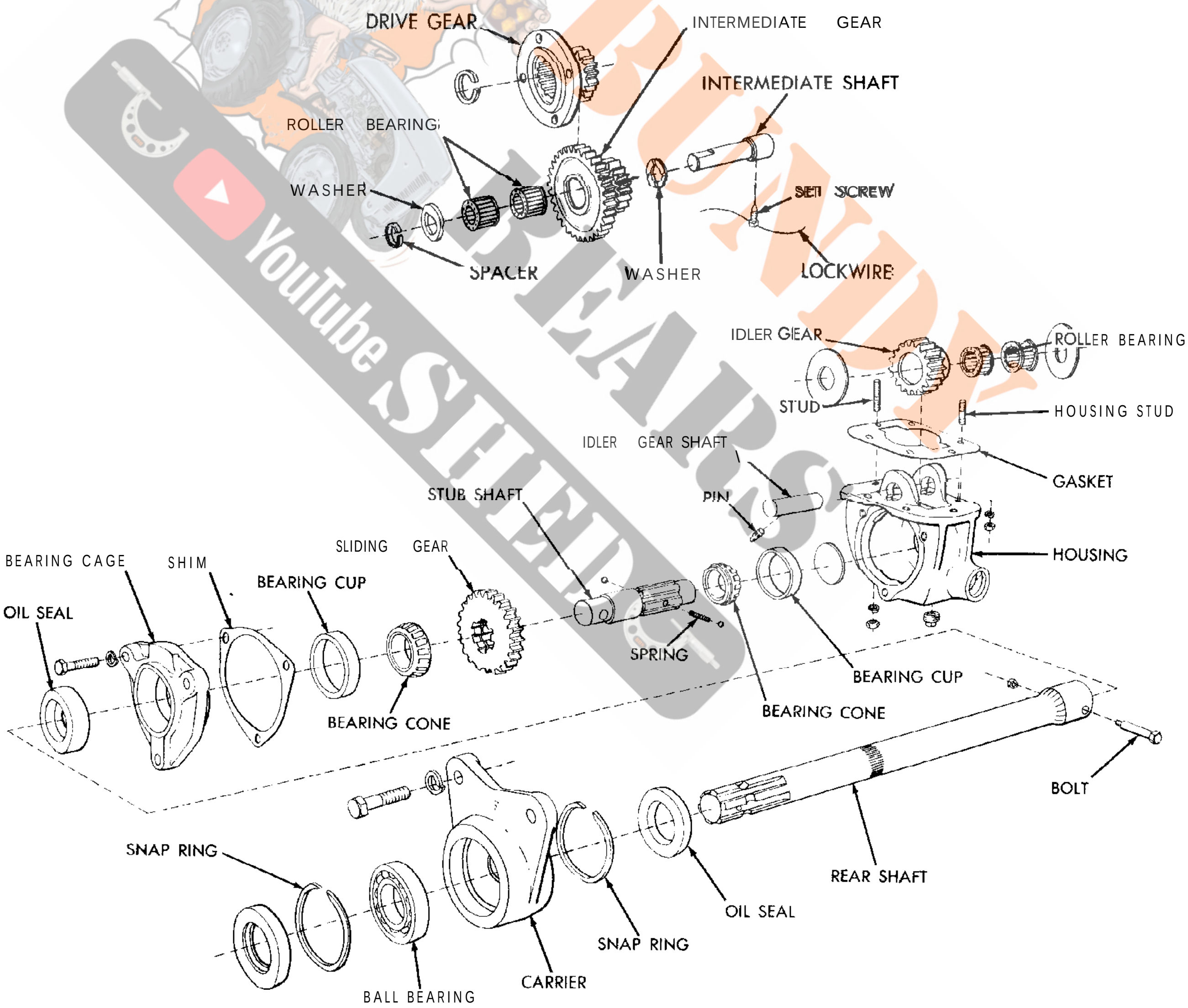


BRAKECONTROL


SNAP RING
SPACER
USED PRIOR TO TRACTOR 32831
BEARING CONE
BEARING CUP
SNAP RING
BUSHING
CAPSCREW
OIL SEAL
STUD
BEARING CAP
WASHER & PIN
SHIM
STUD
GASKET
USED PRIOR TO YEAR 1949
SLEEVE
BEARING CONE
BEARING CUP
PAN
GASKET
SNAP RING
BEARING CONE
BEARING CUP
OIL SEAL
GEAR
AXLE
COVER
BEARING CUP
BEARING CONE
SHIM
SHAFT & PINION
GEAR SPACER
HOUSING
OIL SEAL
SNAP RING

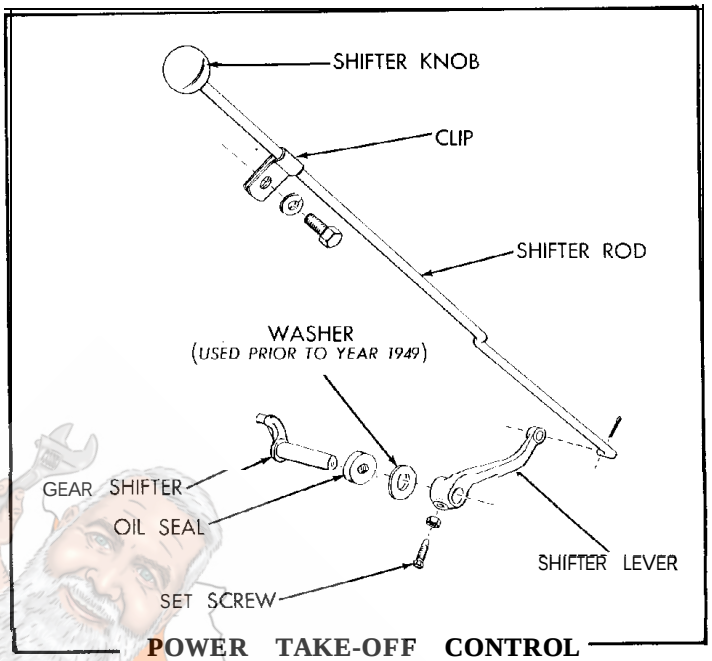


BELT PULLEY

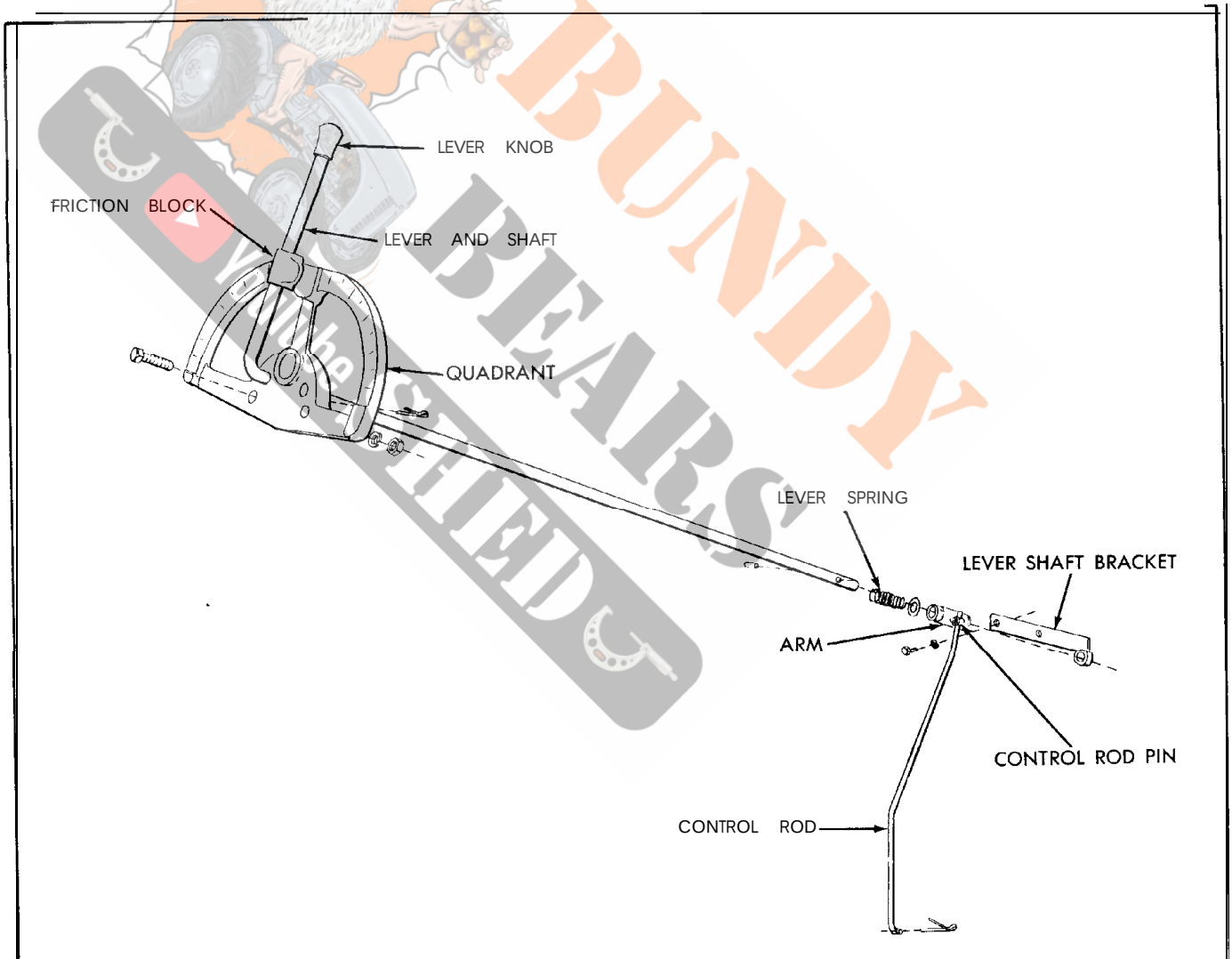


POWER TAKE-OFF

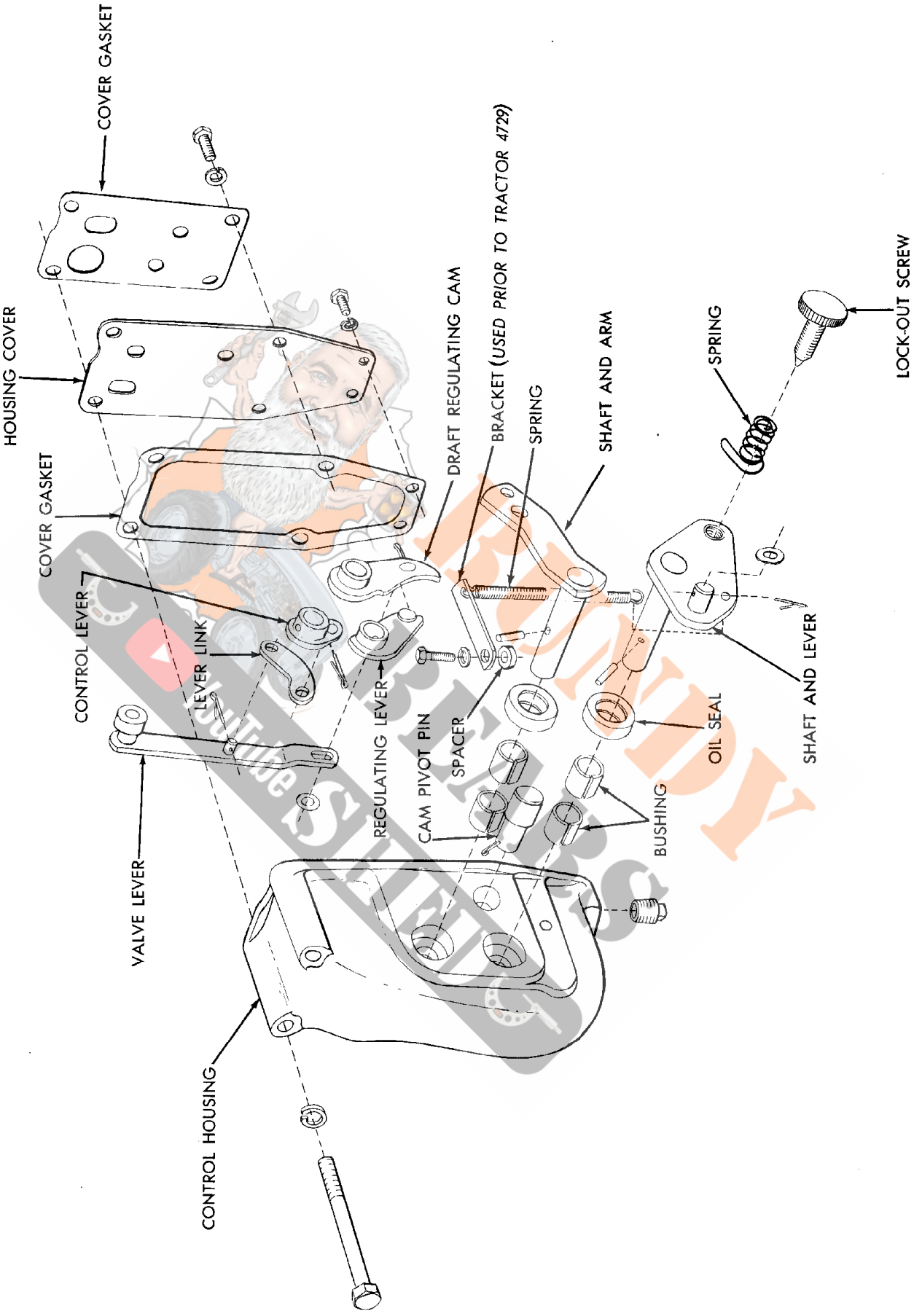
Order Repair ***Parts*** By Description. Always Give the Tractor and Engine Serial Numbers.



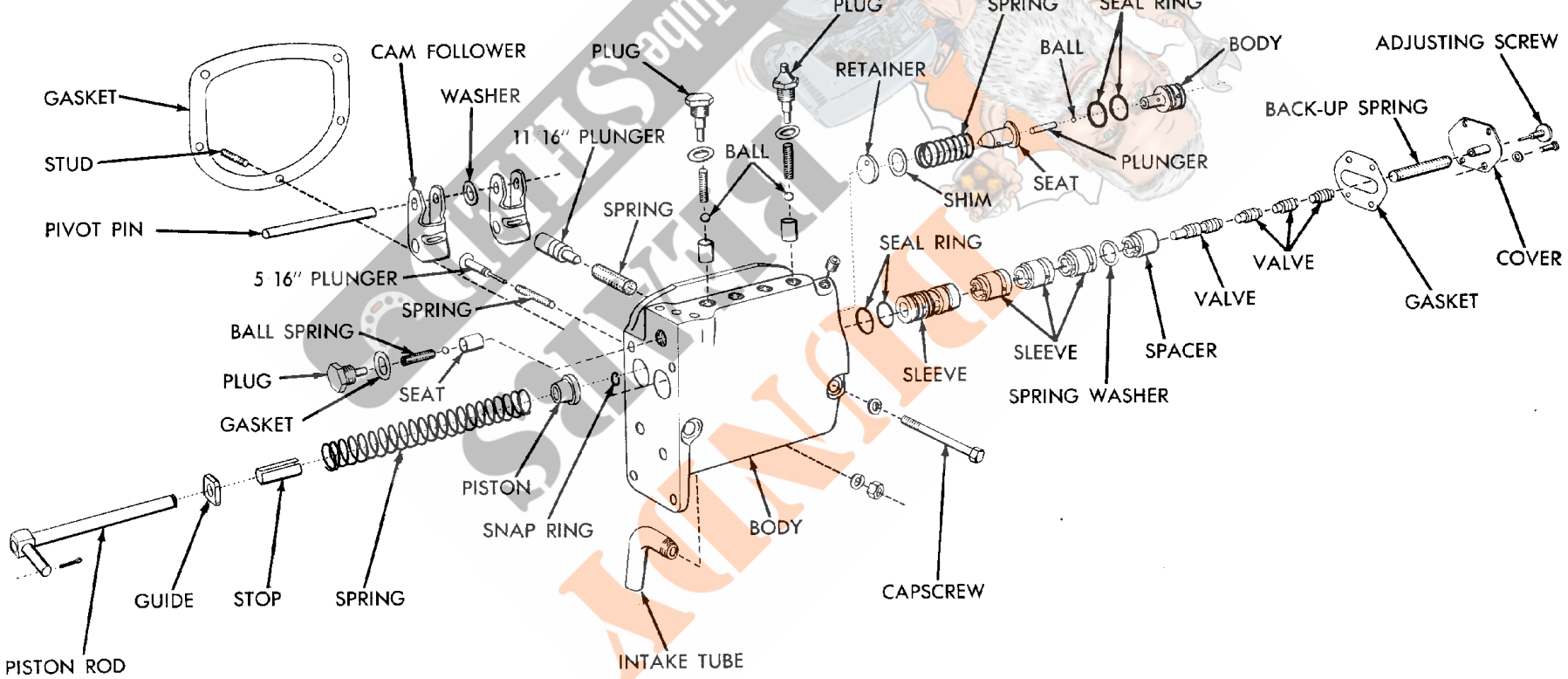
POWER TAKE-OFF CONTROL

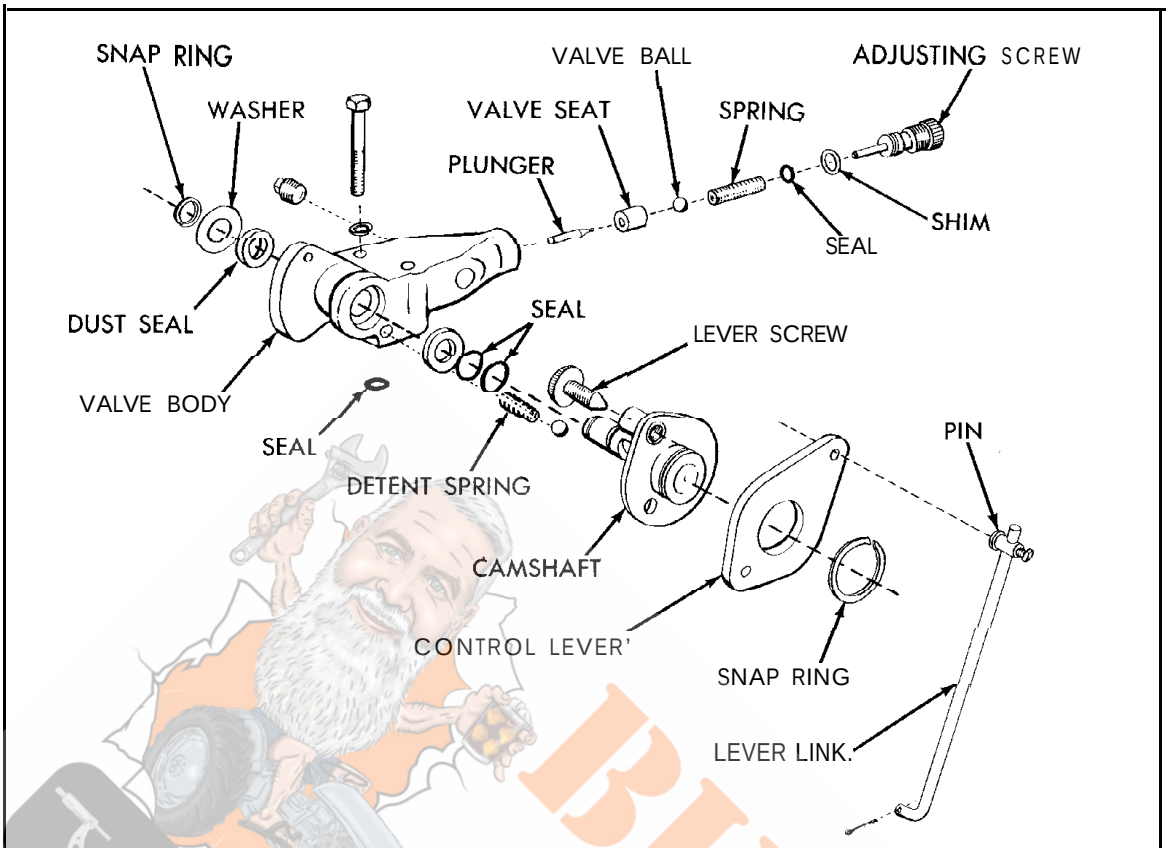


HYDRAULIC PUMP CONTROL

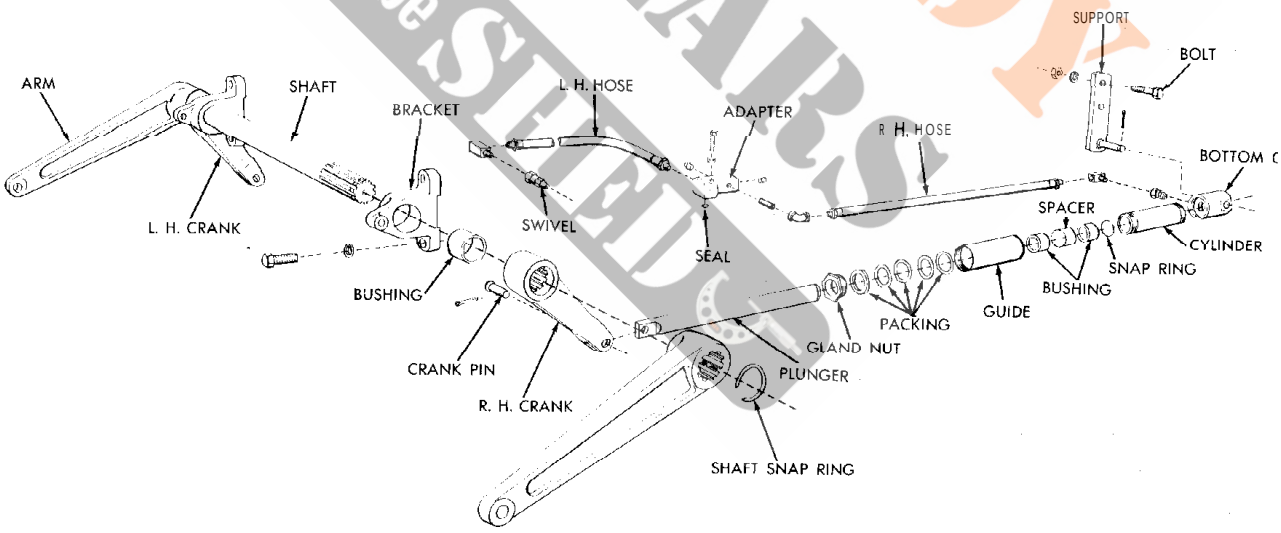


HYDRAULIC PUMP CONTROLS (Cont'd)

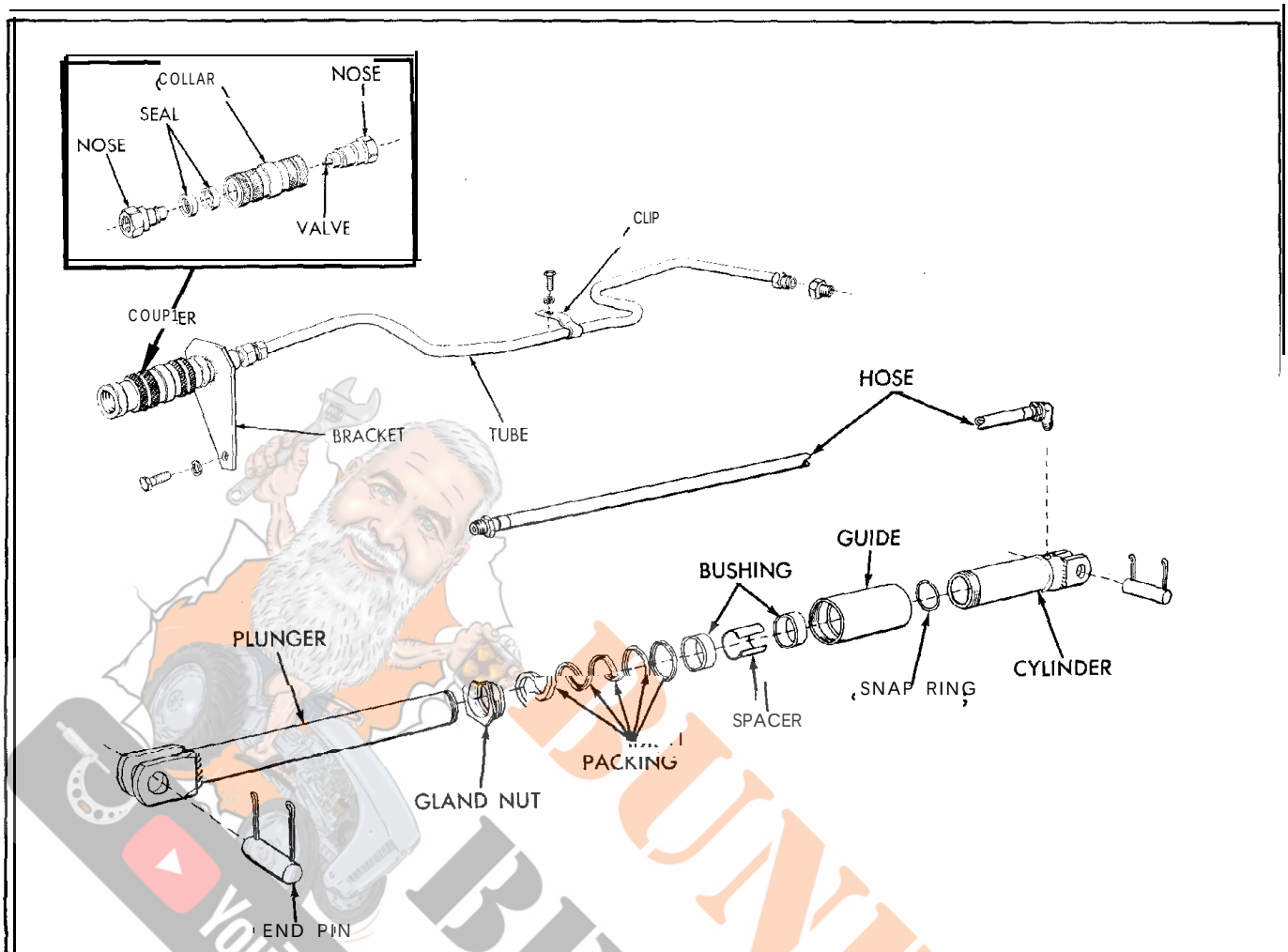

GASKET
STUD
PIVOT PIN
CAM FOLLOWER
WASHER
11 16" PLUNGER
5 16" PLUNGER
SPRING
BALL SPRING
PLUG
GASKET
SEAT
PISTON
SNAP RING
PISTON ROD
GUIDE
STOP
SPRING
PLUG
BALL
SPRING
RETAINER
SHIM
SEAL RING
SLEEVE
SPRING WASHER
SPACER
VALVE
VALVE
BALL
SEAT
PLUNGER
BODY
BACK-UP SPRING
GASKET
ADJUSTING SCREW
COVER
BODY
CAPSCREW
INTAKE TUBE



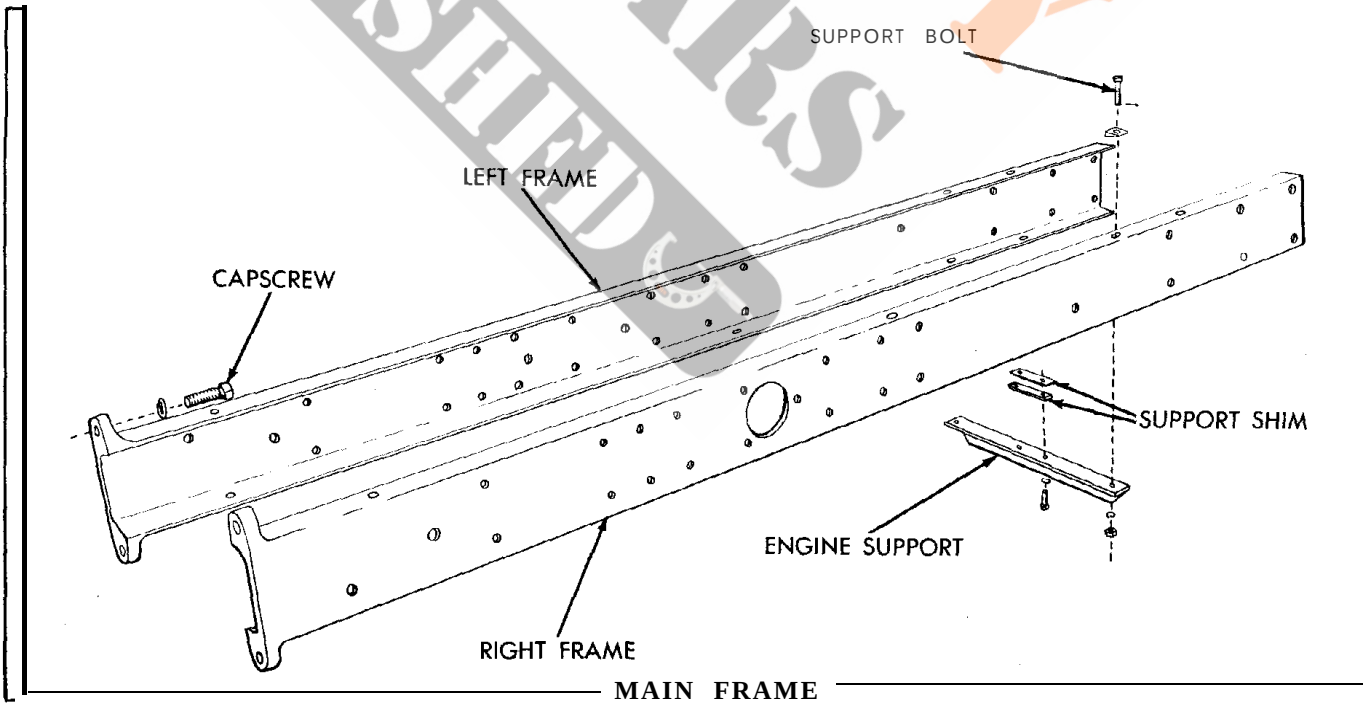
HYDRAULIC PUMP - HOLD POSITIONING VALVE



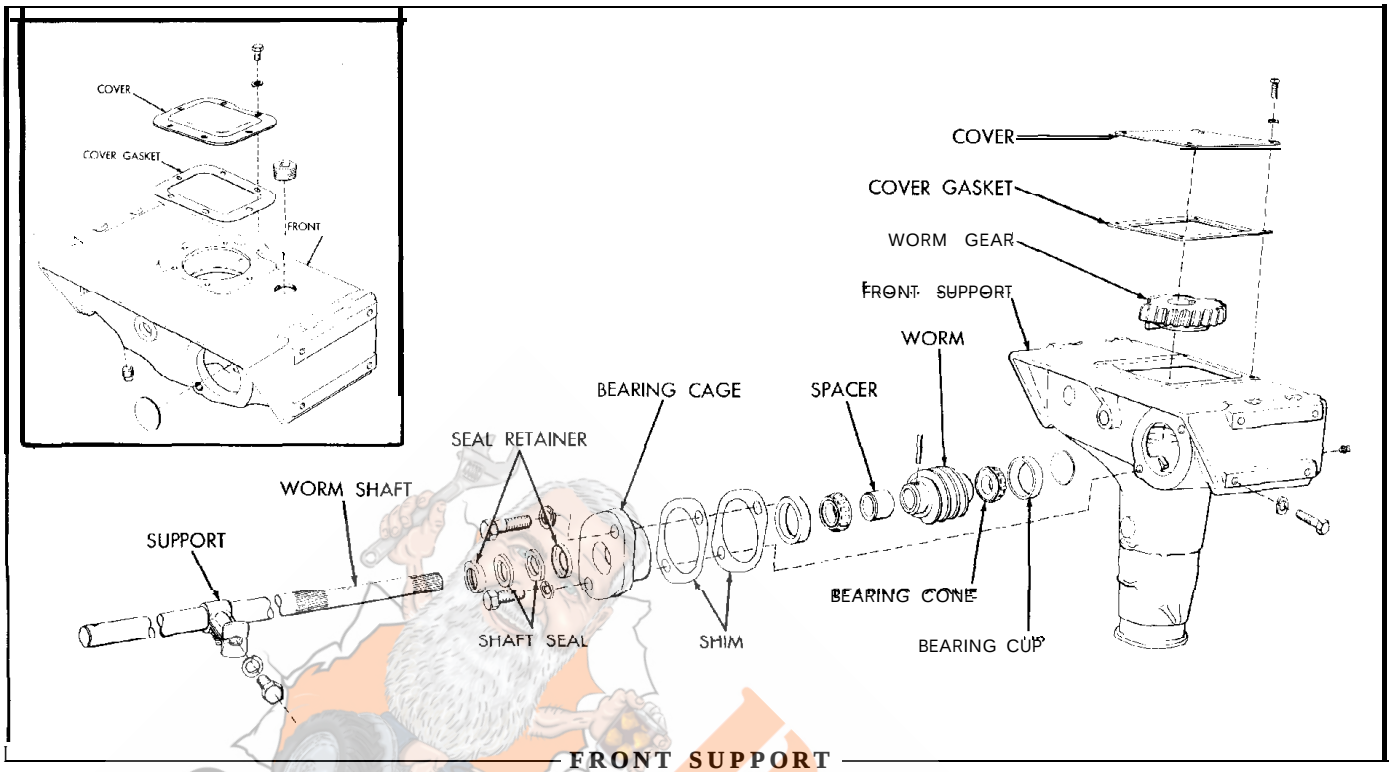
HYDRAULIC RAM, LINES & LIFT



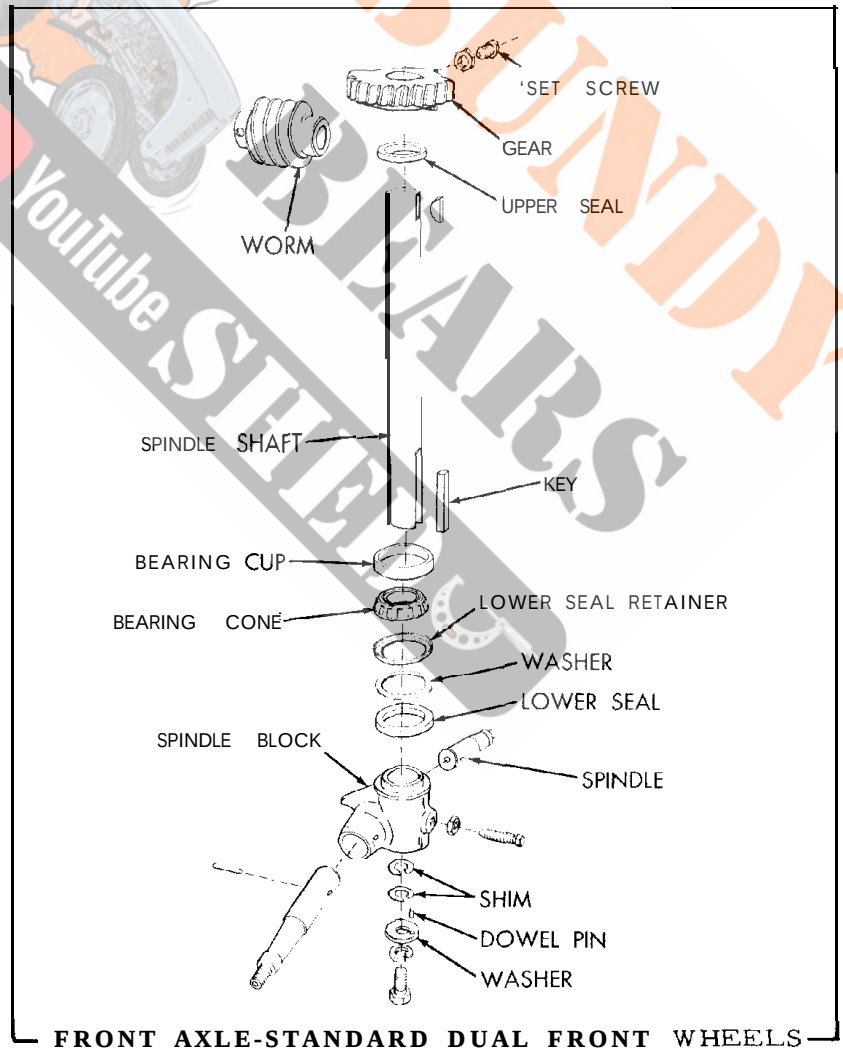
HYDRAULIC REMOTE RAM & LINES



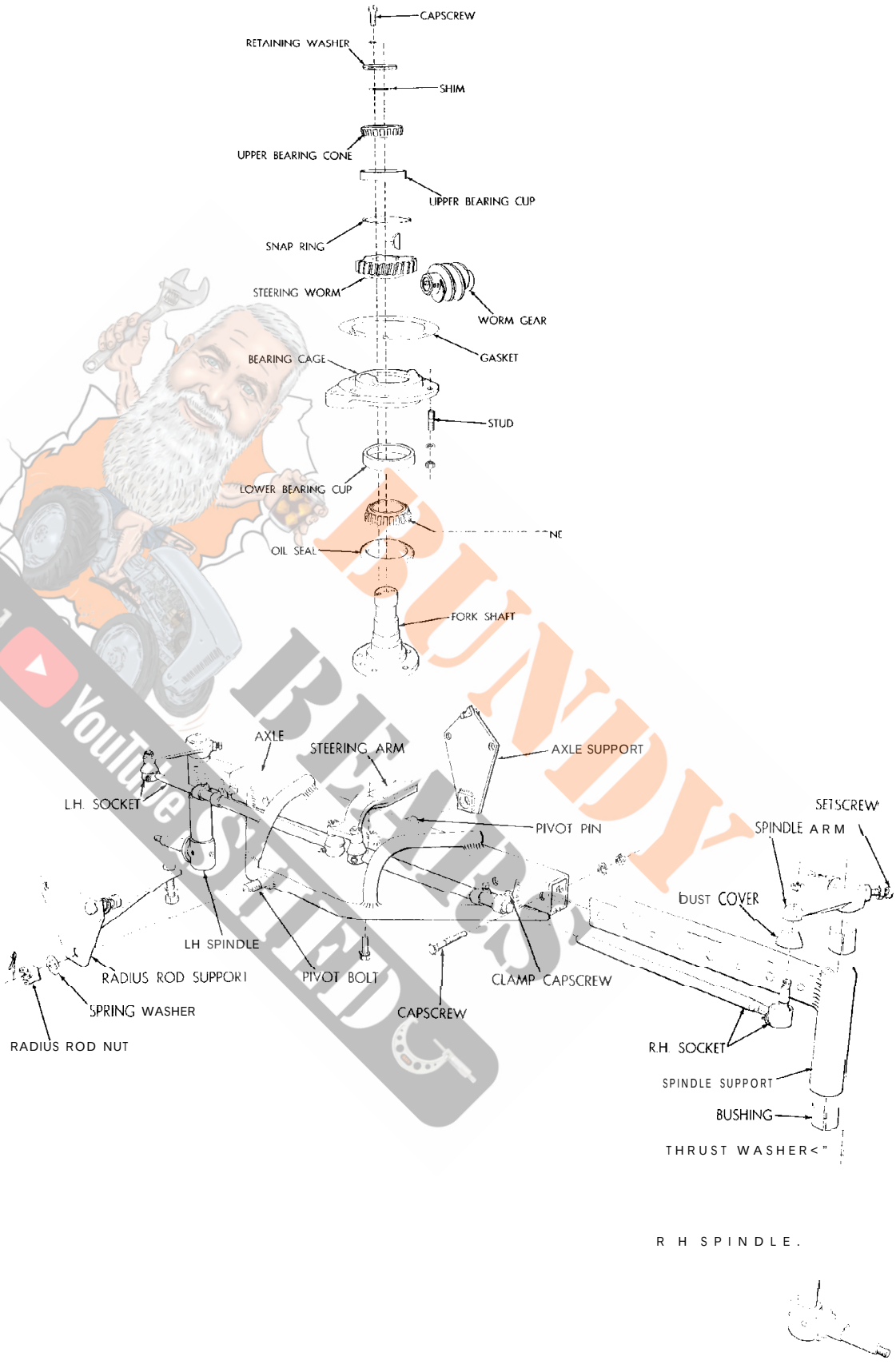
MAIN FRAME

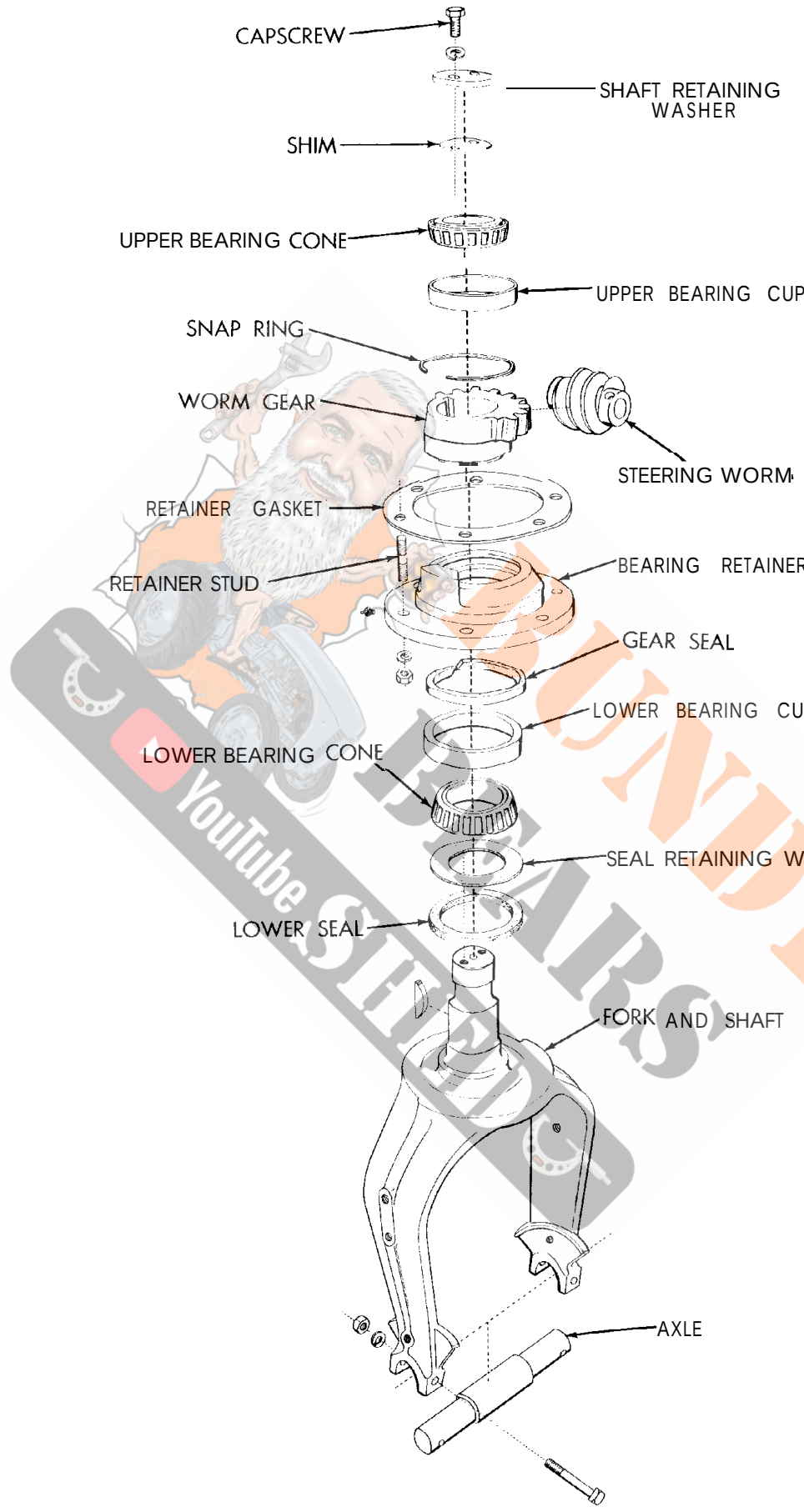


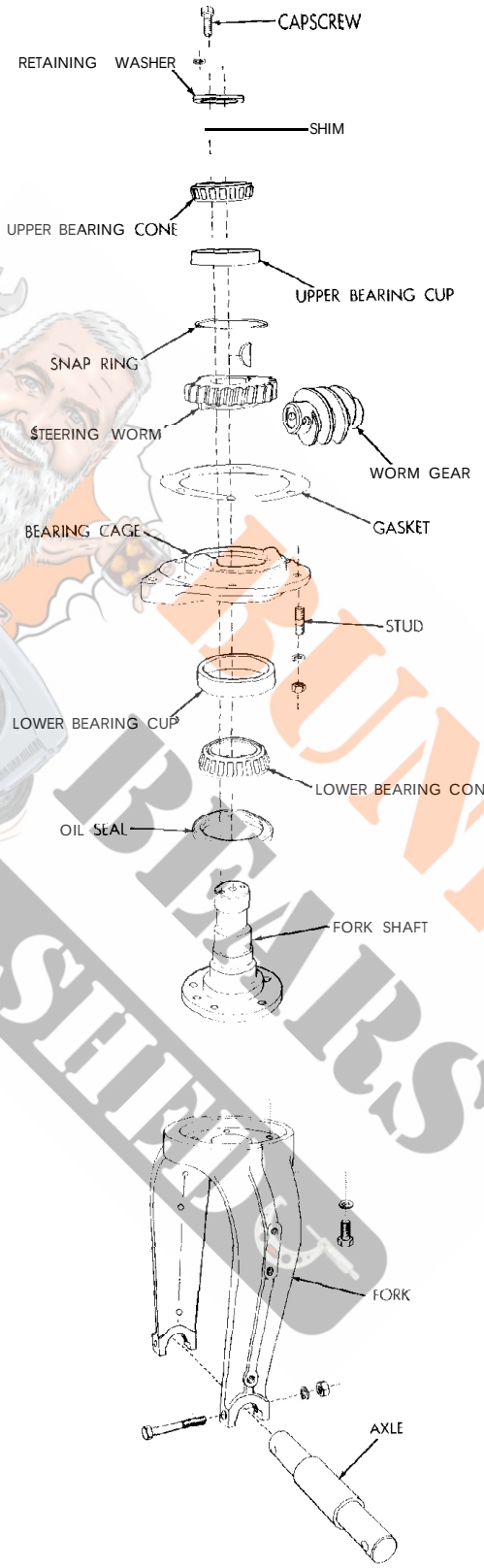
FRONT SUPPORT

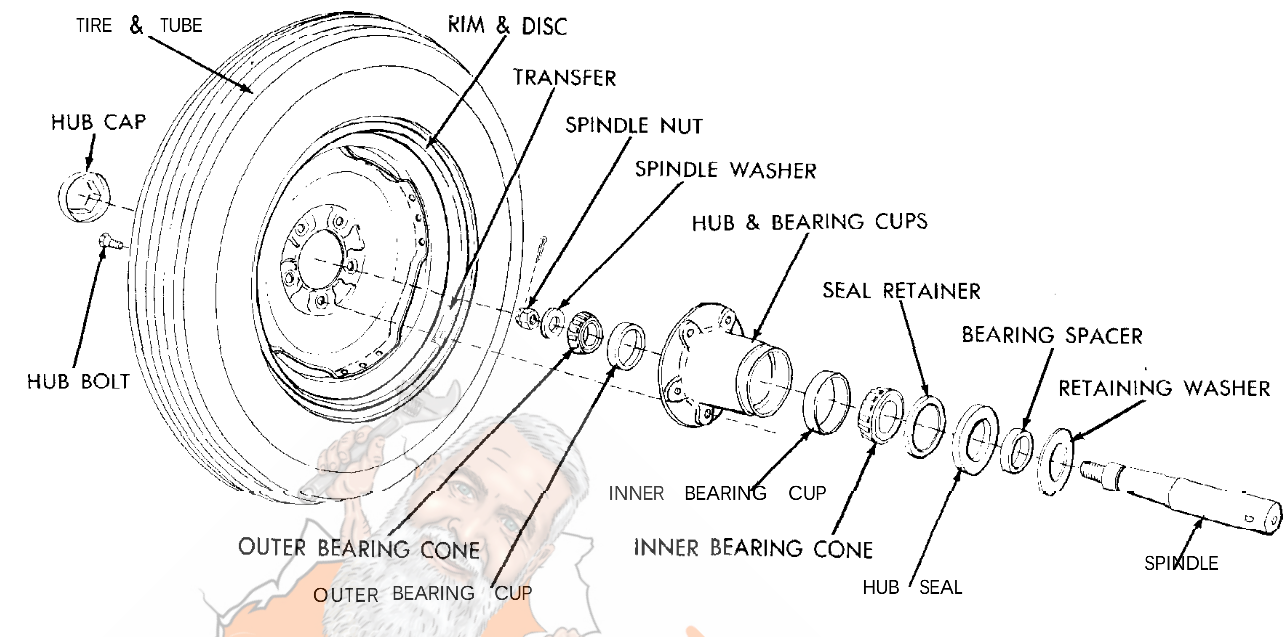


FRONT AXLE-STANDARD DUAL FRONT WHEELS

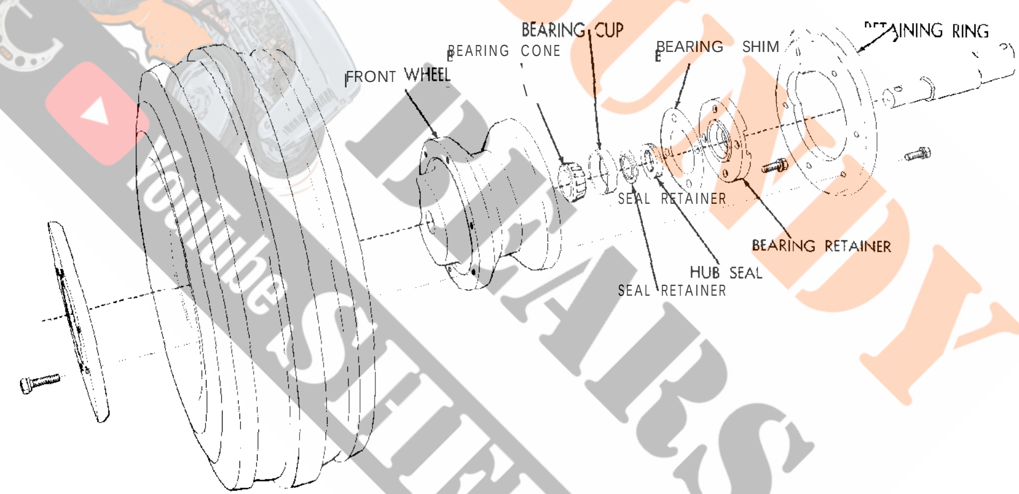

CAPSCREW
RETAINING WASHER
SHIM
UPPER BEARING CONE
UPPER BEARING CUP
SNAP RING
STEERING WORM
WORM GEAR
GASKET
BEARING CAGE
STUD
LOWER BEARING CUP
OIL SEAL
FORK SHAFT
AXLE
STEERING ARM
AXLE SUPPORT
L.H. SOCKET
PIVOT PIN
SETSCREW
SPINDLE ARM
DUST COVER
LH SPINDLE
RADIUS ROD SUPPORT
PIVOT BOLT
CLAMP CAPSCREW
SPRING WASHER
CAPSCREW
RADIUS ROD NUT
R.H. SOCKET
SPINDLE SUPPORT
BUSHING
THRUST WASHER
R H SPINDLE.



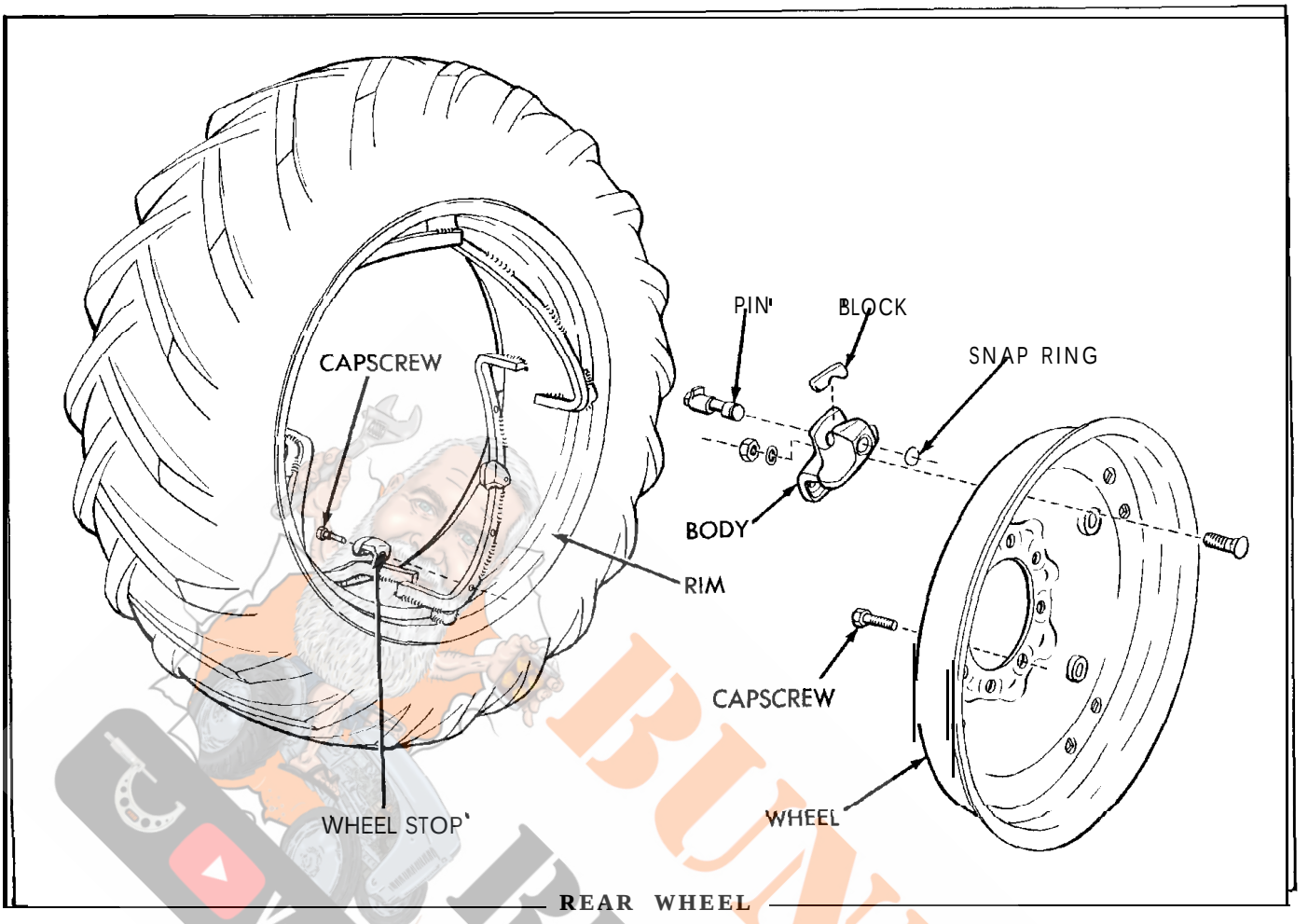




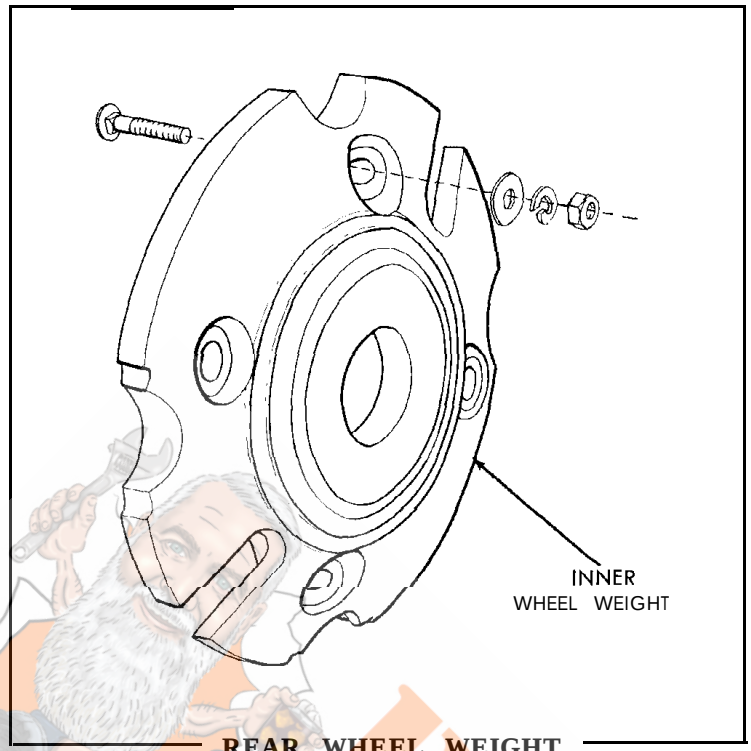
FRONT WHEEL-STANDARD AND ADJUSTABLE AXLES



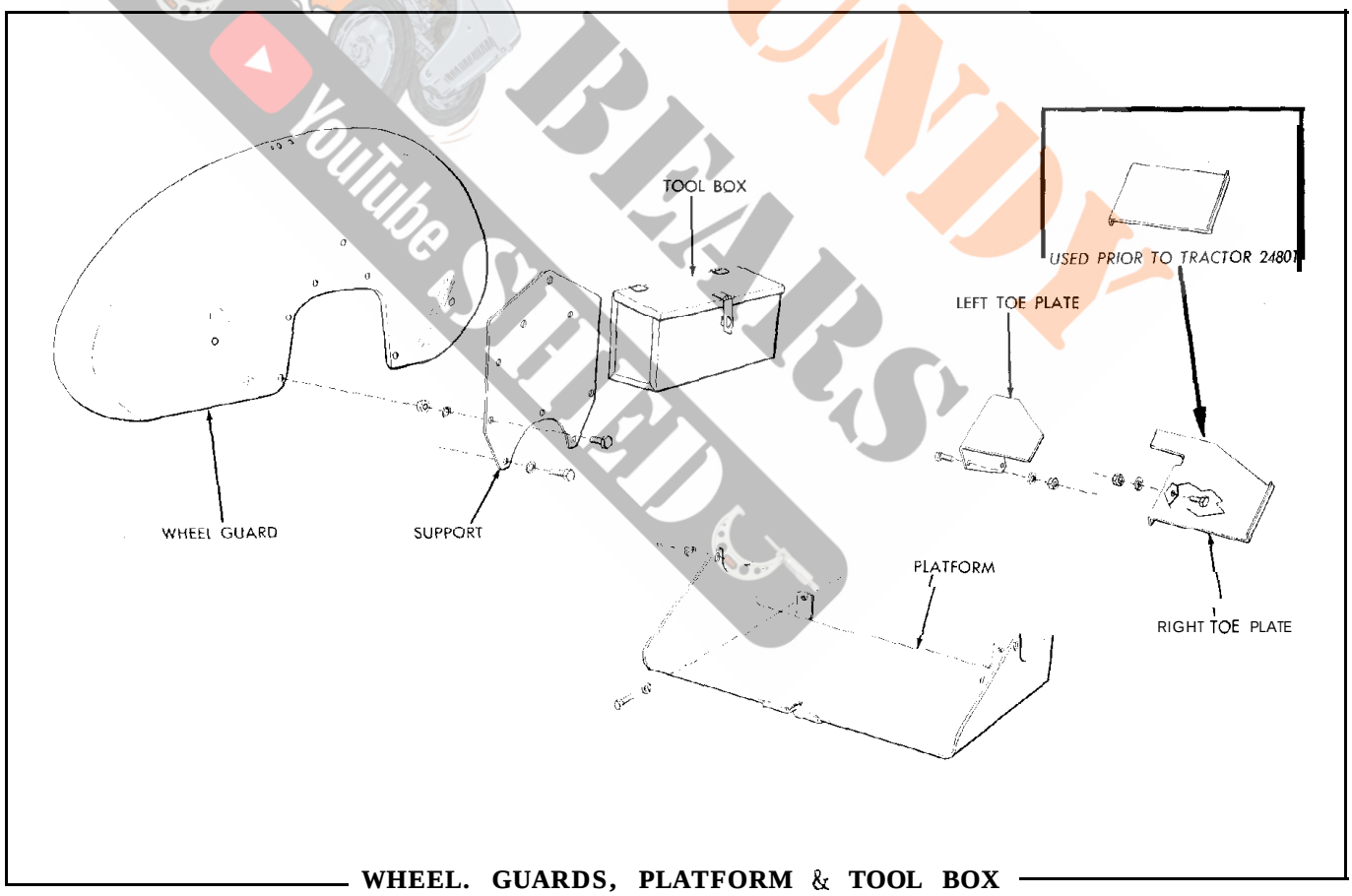
FRONT WHEEL-SINGLE FRONT WHEEL AXLE



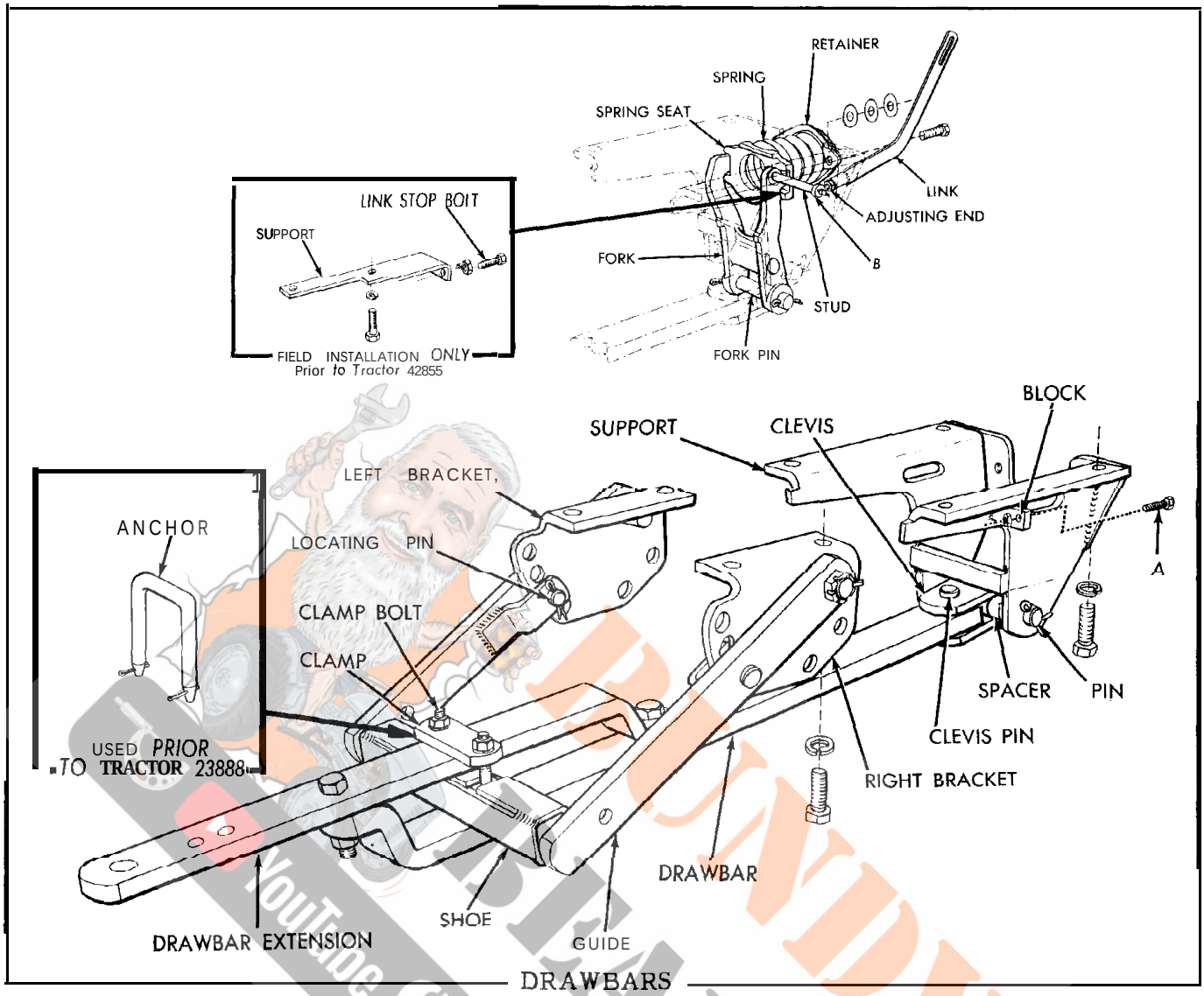
REAR WHEEL



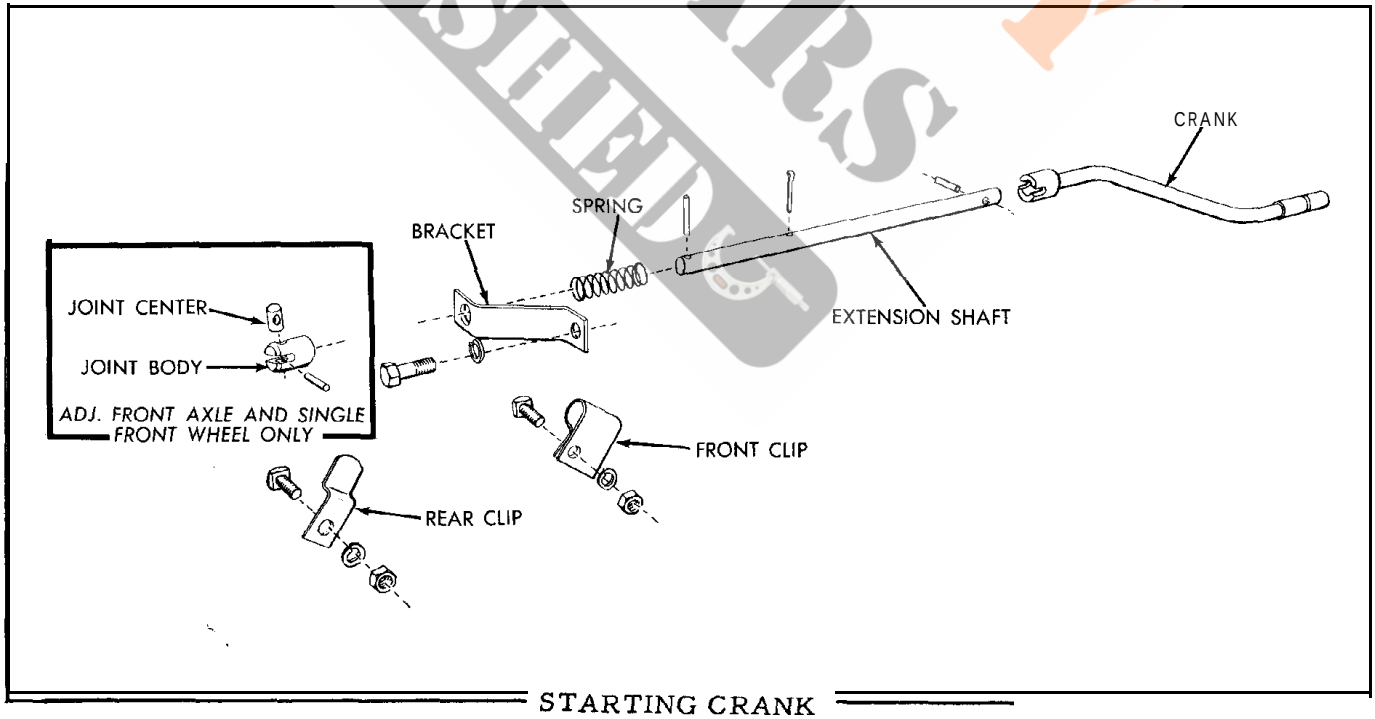
REAR WHEEL WEIGHT



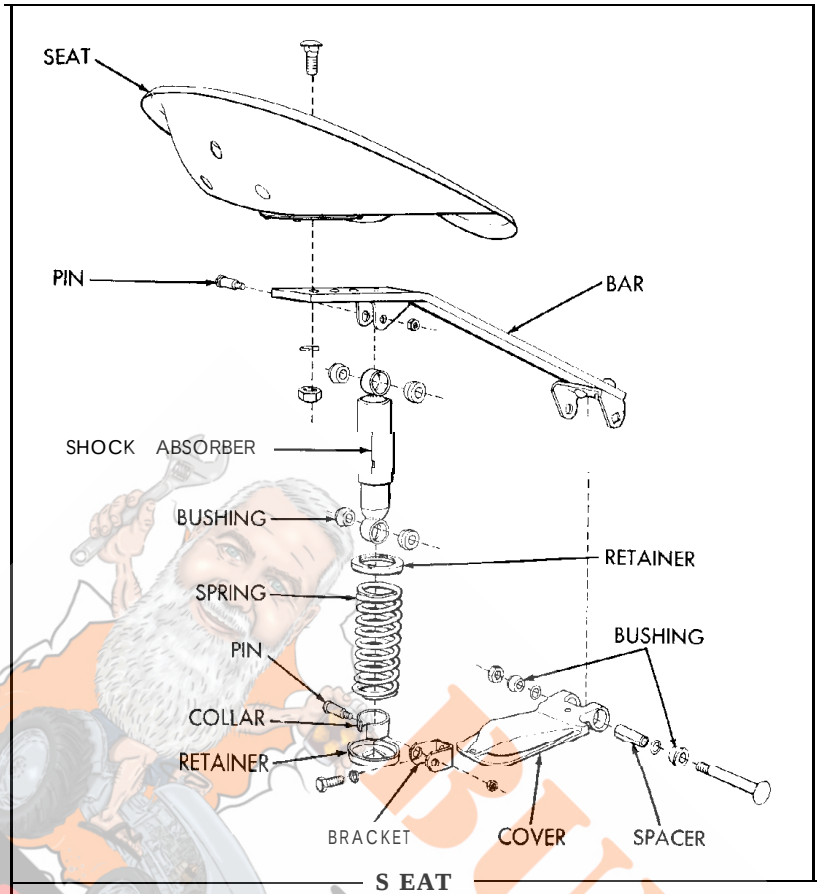
WHEEL. GUARDS, PLATFORM & TOOL BOX



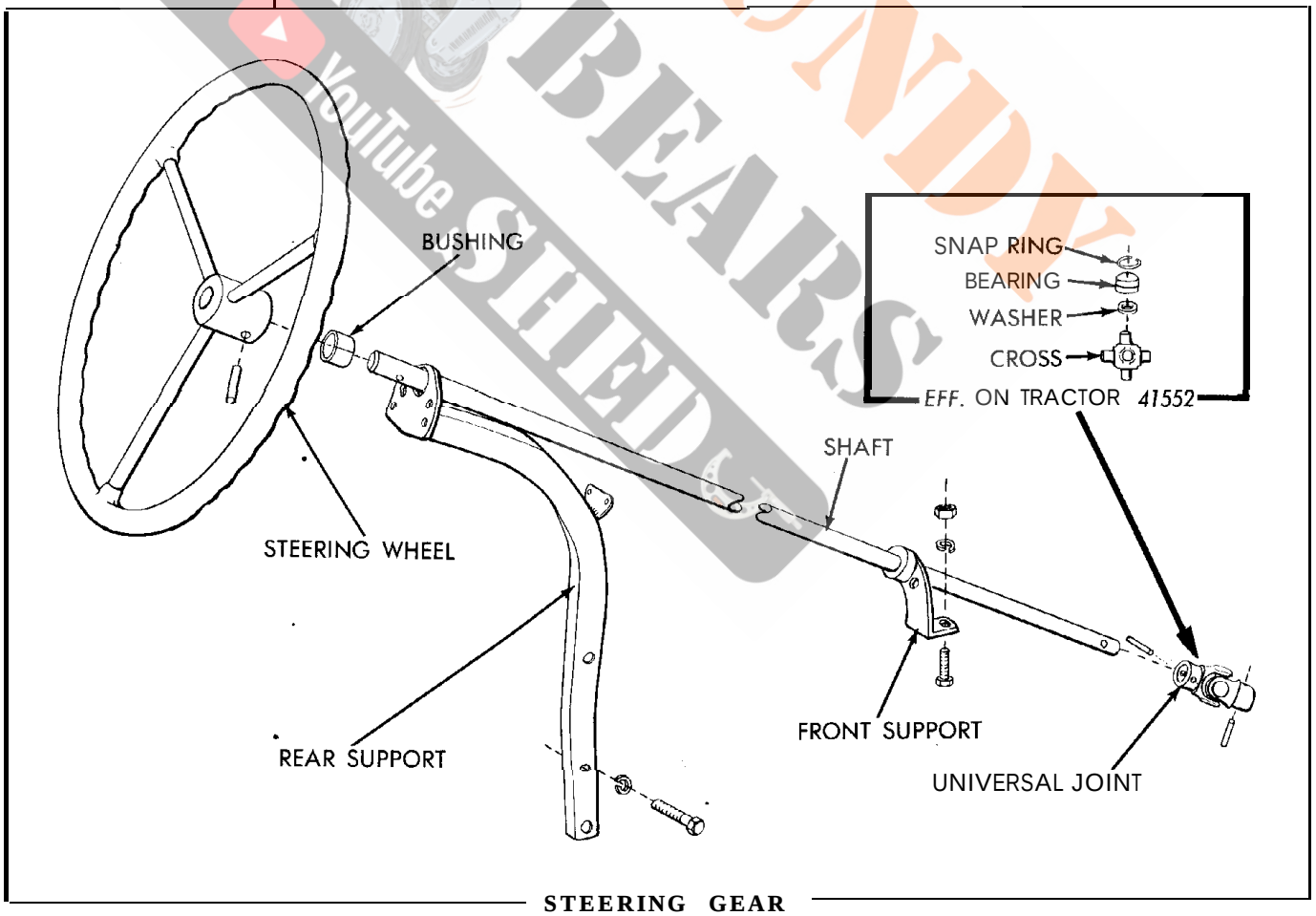
DRAWBARS



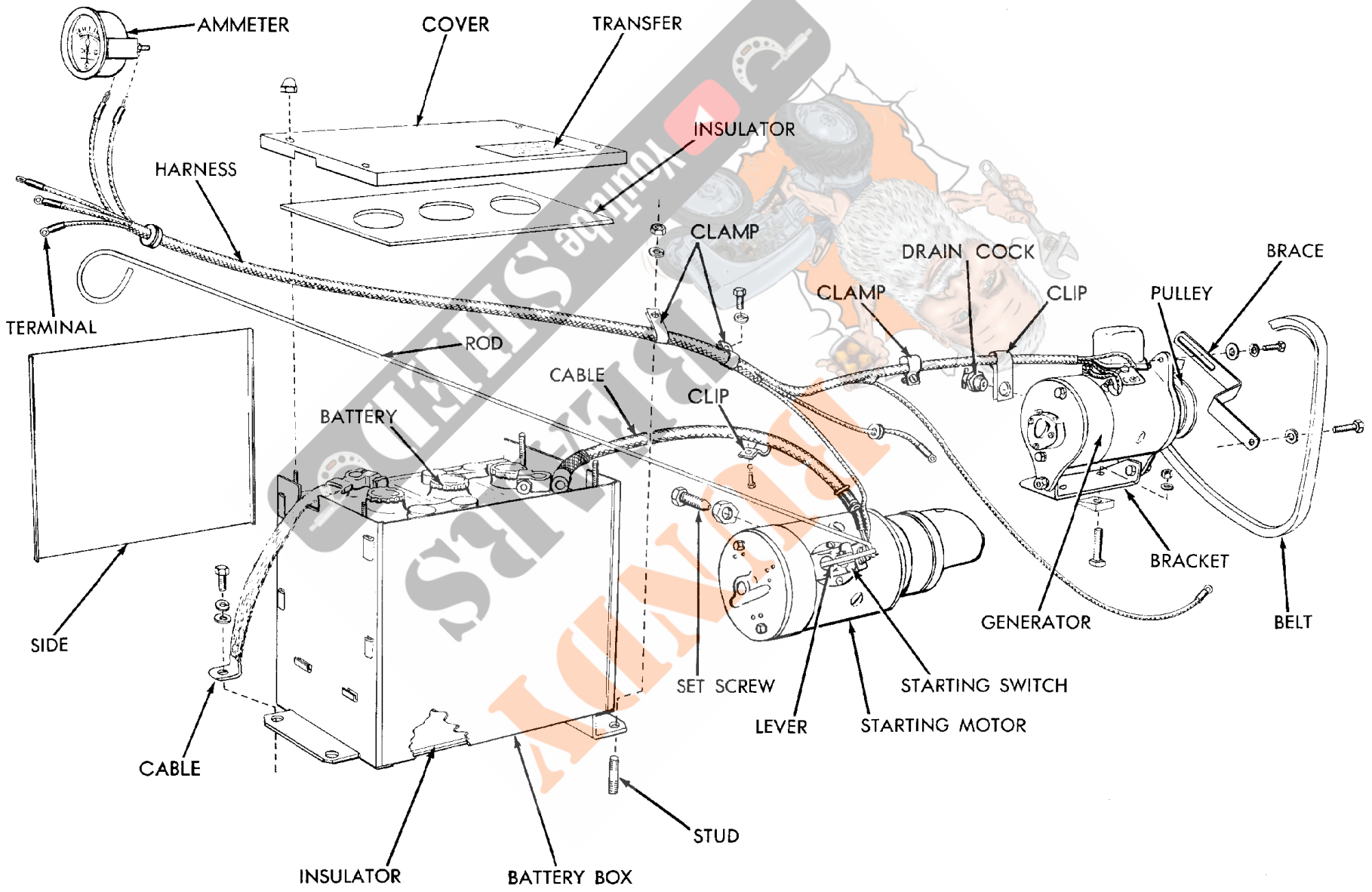
STARTING CRANK

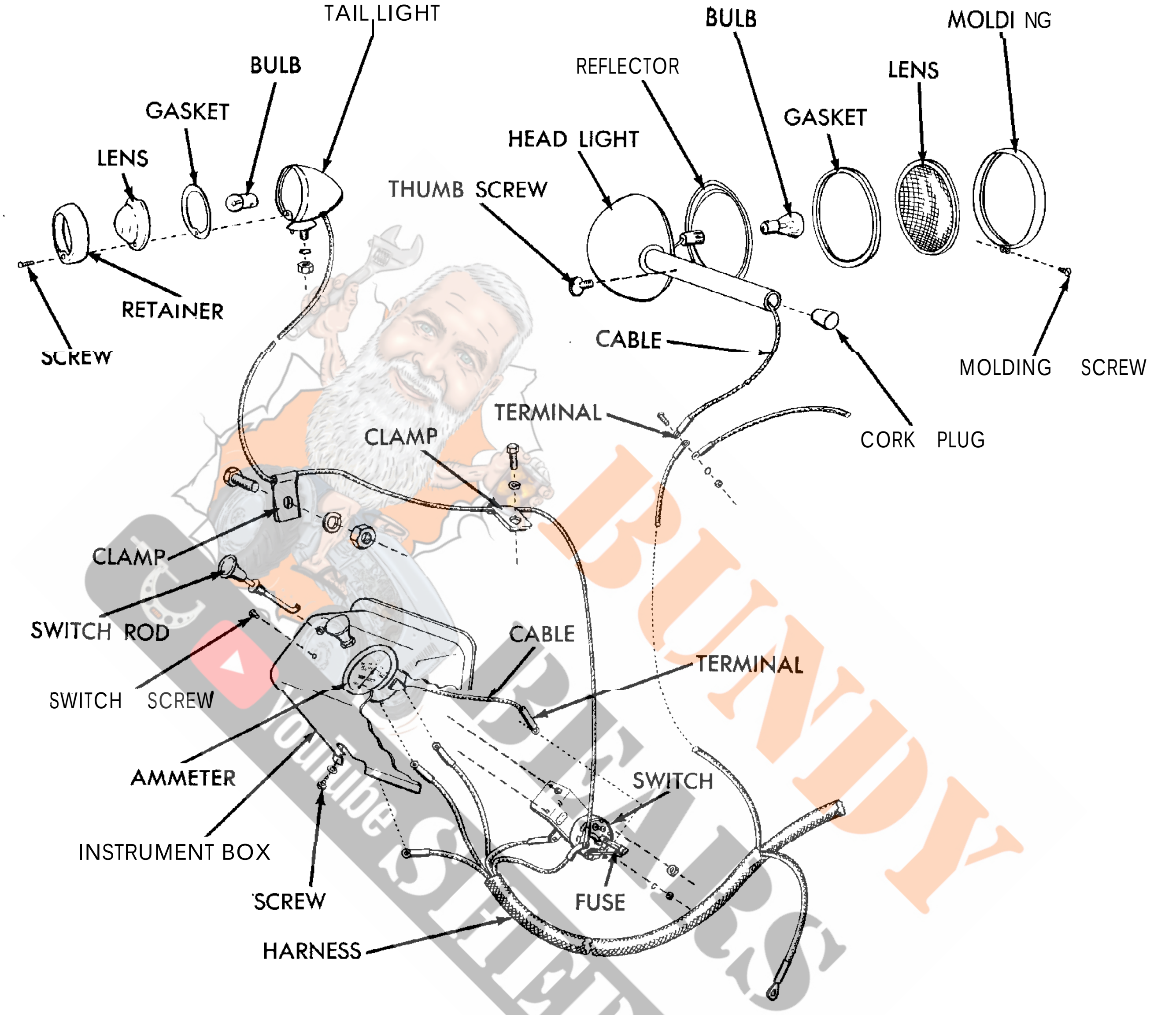


S EAT



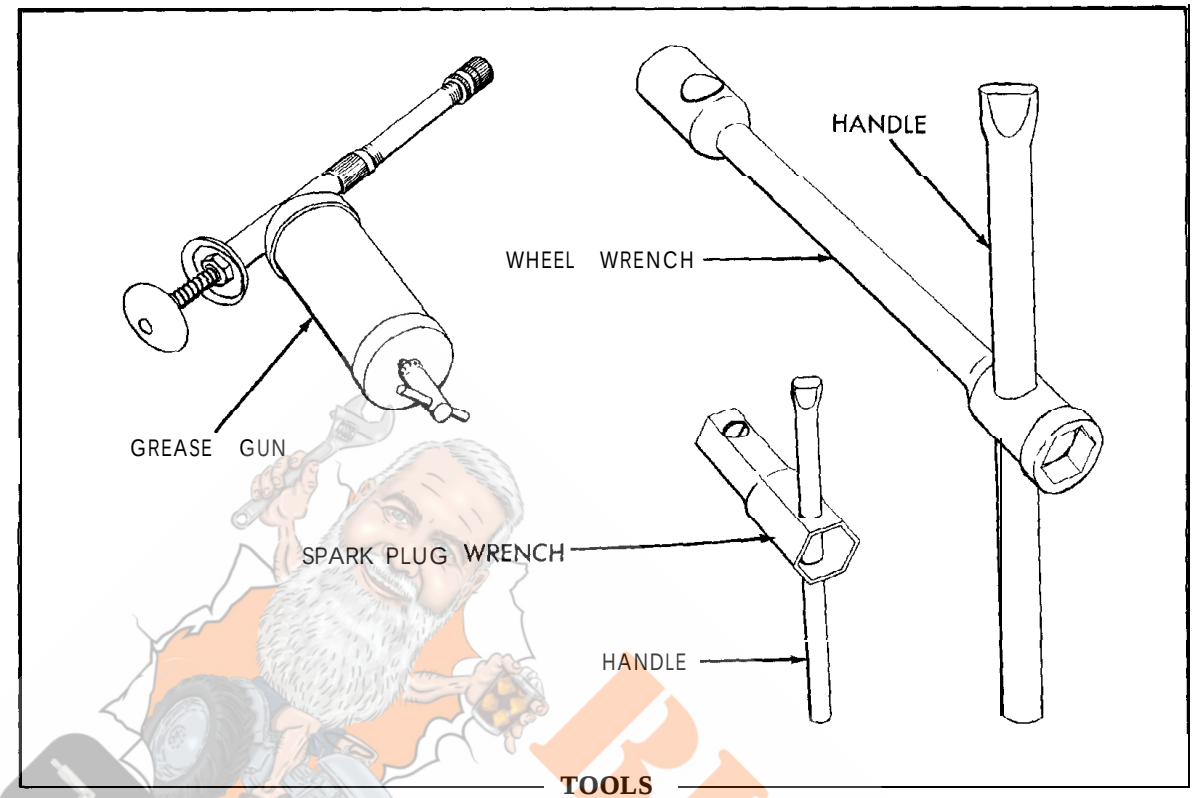
STEERING GEAR


AMMETER
COVER
TRANSFER
INSULATOR
HARNESS
CLAMP
DRAIN COCK
BRACE
CLAMP
CLIP
PULLEY
TERMINAL
ROD
CABLE
CLIP
BATTERY
BRACKET
SIDE
GENERATOR
BELT
SET SCREW
STARTING SWITCH
LEVER
STARTING MOTOR
CABLE
STUD
INSULATOR
BATTERY BOX

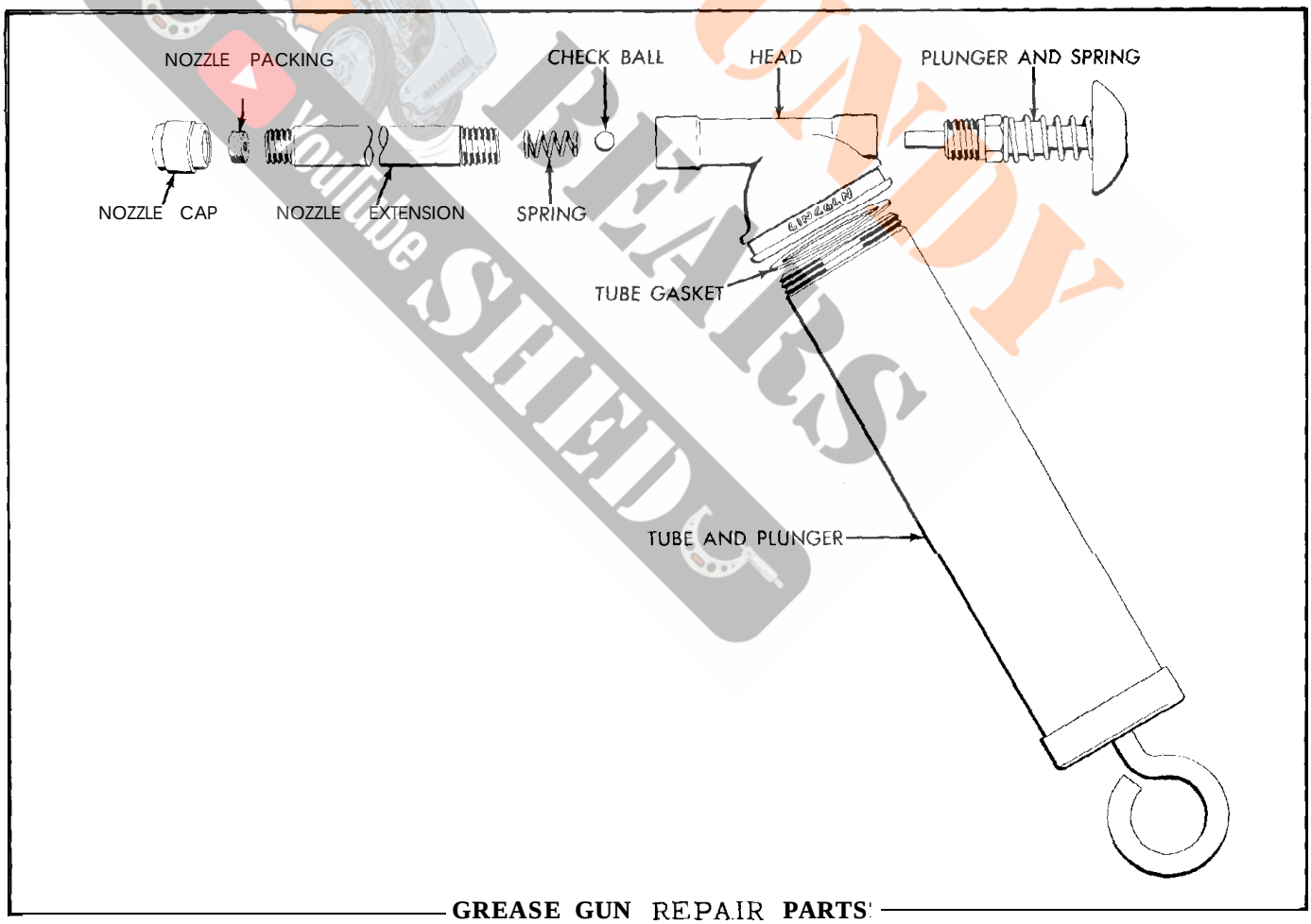


ELECTRIC LIGHTING

Order Repair Parts By Description. Always Give the Tractor ***and*** Engine ***Serial*** Numbers.



TOOLS



GREASE GUN REPAIR PARTS

AVOID ACCIDENTS

MOST ACCIDENTS, WHETHER THEY OCCUR IN INDUSTRY, ON THE FARM, AT HOME OR ON THE HIGHWAY, ARE CAUSED BY THE FAILURE OF SOME INDIVIDUAL TO FOLLOW SIMPLE AND FUNDAMENTAL SAFETY RULES OR PRECAUTIONS. FOR THIS REASON MOST ACCIDENTS CAN BE PREVENTED BY RECOGNIZING THE REAL CAUSE AND DOING SOMETHING ABOUT IT BEFORE THE ACCIDENT OCCURS.

REGARDLESS OF THE CARE USED IN THE DESIGN AND CONSTRUCTION OF ANY TYPE OF EQUIPMENT THERE ARE MANY CONDITIONS THAT CANNOT BE COMPLETELY SAFEGUARDED AGAINST WITHOUT INTERFERING WITH REASONABLE ACCESSIBILITY AND EFFICIENT OPERATION.

A careful operator is the best insurance against an accident, The complete observance of one simple rule would prevent many thousand serious injuries each year. That rule is:
Never attempt to clean, oil or adjust a machine while it is in motion,

NATIONAL SAFETY COUNCIL