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Gravely
Operator's Manual
6.6 Horse Power

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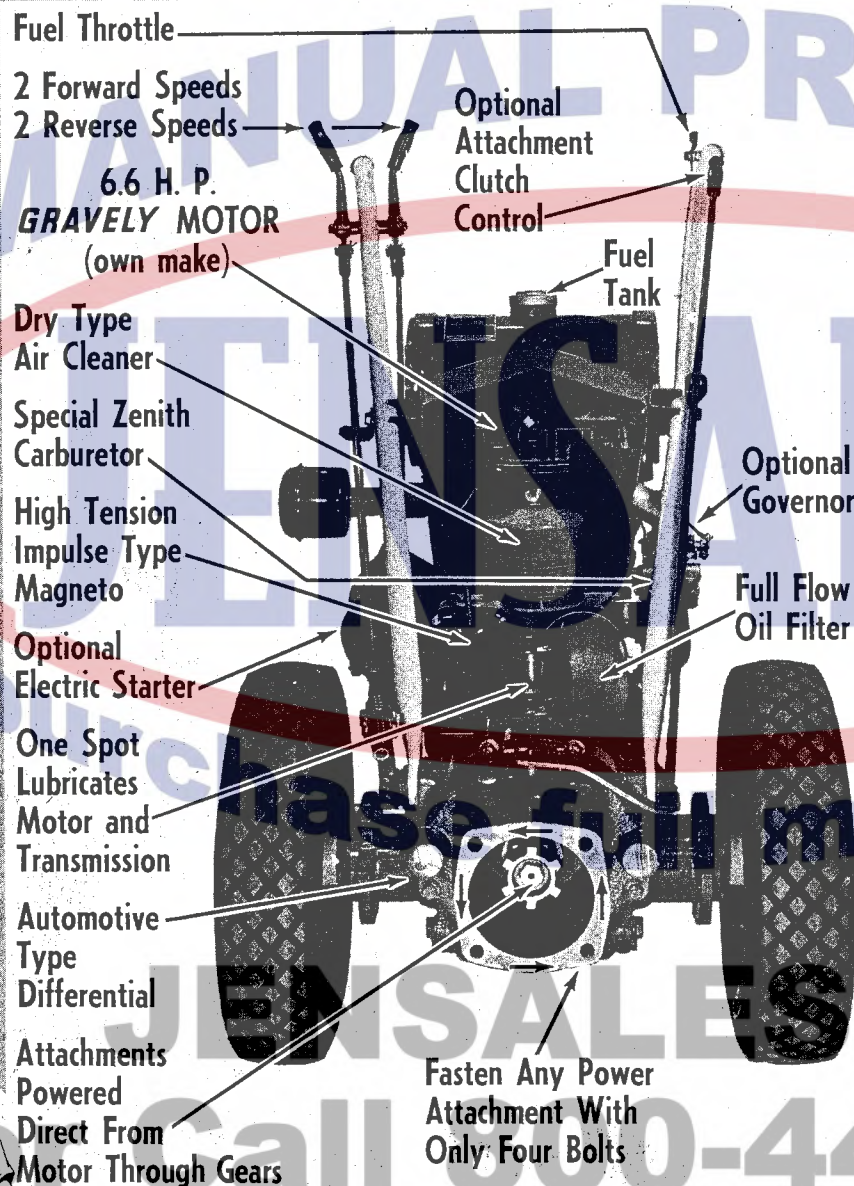
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GR-O-6.6HP

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GRAVELY

USER MANUAL



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THE **GRAVELLY** TRACTOR

LUBRICATION

ENGINE - CHASSIS - CAPACITY 5 U.S. PINTS
USE ONLY HIGH GRADE LUBRICANTS SUCH AS -
ABOVE 32°F. **MOBIL OIL A** (SAE 30)
BELOW 32°F. **MOBIL OIL ARCTIC** (SAE 20W)
WITH MACHINE LEVEL - FILL TO OIL LEVEL PLUG
LOCATED ON SIDE OF CHASSIS

FUEL TANK CAPACITY - 2 U.S. GALLONS
FUEL - USE GOOD GASOLINE SUCH AS -
MOBIL GAS (REGULAR GRADE)

ATTACHMENTS - USE GEAR OILS SUCH AS -
SUMMER - **MOBILUBE GX 140** (SAE 140)
WINTER - **MOBILUBE GX 90** (SAE 90)

READ INSTRUCTION MANUAL CAREFULLY

MODEL NUMBER TRACTOR SERIAL NUMBER

L

MANUFACTURING NUMBER

E

MANUFACTURED BY
GRAVELLY TRACTORS
DIVISION OF STUDEBAKER-PACKARD CORPORATION
DUNBAR, WEST VIRGINIA, U.S.A.

PL

R-O

GR-O-6.6HP

THE **GRAVELY** TRACTOR . . .

The Gravelly Tractor is a 6.6 Horsepower, air-cooled, 4-cycle, one-cylinder Tractor. It is designed and built for the tough jobs . . . powers 30 different tools and attachments.

Your Gravelly equipment will serve you long and faithfully—if you take reasonable care. It is to YOUR advantage to spend a few moments now, reading these instructions and operating hints. You will be rewarded by greater satisfaction, fewer repair bills, easier operation.

MANUFACTURER

The Gravelly Tractor and its attachments are manufactured by Gravelly Tractors, Division of Studebaker-Packard Corporation, Dunbar, W. Va. A subsidiary factory is located at Albany, Georgia.

More than 50 Sales and Service Stations distribute the Gravelly Tractor and its attachments. Working with them is an organization of independent Dealers. Each is equipped to give prompt and efficient service, with parts in stock, and mechanics trained in factory method service, if required.

GUARANTEE

The Gravelly Guarantee is shown on the opposite page. To qualify for this guarantee, it is necessary for you to return the card bound into this booklet to the factory at Dunbar, W. Va. A postage-free envelope is furnished. Fill out and mail immediately, for your own protection.

FUEL

Use a good **regular** gasoline. We recommend Mobilgas (A Socony-Mobil Product). Tank capacity is about 1¾ gallons. **DO NOT USE HIGH-TEST GASOLINE.**

LUBRICATION

CHECKING OIL LEVEL

Your tractor is usually filled with fuel and the proper amount of oil added when it is delivered. However, you should routinely check the oil before starting the engine.

Be sure the Tractor is setting level.

Oil is checked by removing the Oil Level Plug (In some models, a Bronze Try Cock Valve). See Plate 2, Number 2. If oil runs out, the Tractor has sufficient. If not, add oil (See lubrication table). Remove the Oil Filler Cap (Plate 2, Number 6). A small funnel is helpful. Add oil **UNTIL IT BEGINS TO RUN OUT** Oil Level Hole. Stop. Too much oil is as bad as not enough. Replace Oil Level Plug and Oil Filler Cap.

CAPACITY AND RECOMMENDED OILS

The Capacity of the Chassis is **FIVE PINTS** (5 Pints) of **motor oil**. Filling the Chassis lubricates both Engine and Transmission. **WARNING:** Do NOT use Transmission Greases or Oils. Only Motor Oil.

We recommend:

SUMMER: Mobiloil A (SAE 30) or Mobiloil Special (10W-30)

WINTER: Temperature range from 32° F. and below,
Mobiloil Arctic (SAE 20) or
Mobiloil Special (SAE 10W-30)

BREAKING-IN LUBRICATION — OIL CHANGES

The break-in period is critical for any engine. We recommend that for the first 40 hours of work the Gravelly Tractor be used for jobs that do not require the full power of the engine for extended periods of time. Short periods that require full power will not harm the engine. Do not "race" the engine wide-open when not under load. Let the engine "warm up" for about two minutes at a fast idle before starting to work.

Change the oil after the first 20 hours of work, completely draining out the old oil and refilling with new. Change again at the end of the second 20 hours of work. After that, a good practice is to change oil every 40 hours of work if the equipment is operated under dusty and dirty conditions, 60 hours if under normal mowing conditions.

INDUSTRIAL USERS: For extended operation, as in industrial mowing, we recommend an oil change every week (40 hours).

Oil Changes are probably the most important single item of care to insure long life of your Gravelly Equipment. Neg-



PLATE 2

- | | |
|---------------------------------------|--|
| 1. Attachment Bolts | 5. Clutch Adjusting Nuts (Forward & Reverse) |
| 2. Oil Level Plug | 6. Oil Filler Cap |
| 3. Magneto Stop Button | 7. Attachment Clutch |
| 4. Clutch Adjusting Nuts (High & Low) | |

lect of this essential procedure will surely result in excessive maintenance and unnecessary repair bills.

OIL DRAIN PLUG

Tractors with **SERIAL** Numbers M 15476 and higher: The Oil Drain Plug is the **bottom bolt** of the Axle Housing, on the left side of the Tractor as you stand behind the handles.

Care should be taken any time the Axle Housing Bottom Bolt is removed and replaced to be sure the Nylon Plugged Drain Bolt is always reinserted in the Bottom Bolt Hole, and the special sealing washer is in place.

Tractors with **SERIAL** Numbers lower than M 15476, the Oil Drain Plug is located on the Bottom of the Chassis.

OIL FILTER

Changing the Oil Filter often is most important for the life of the engine, and your satisfaction with Gravelly Equipment. Gravelly uses a replaceable Oil Filter. The Oil Filter should be changed every 150 hours (MAXIMUM) of use, or once a Season, whichever is sooner.

CAUTION: Do NOT change connections in any way.

AIR CLEANER

Next to proper lubrication, the care of the Air Cleaner is most important. This is the protection of the engine against dust and abrasive particles of all kinds. Proper care will insure longer life for the engine, less maintenance cost.

Two types of Air Cleaner are used on the Gravelly Tractor. The Oil Bath Air Cleaner is quickly distinguished by its Black color. The Dry Type Air Cleaner is Orange, in the same location.

CARE OF DRY TYPE AIR CLEANER

The dry type air cleaner filters the intake air through a throw-away element. It should be inspected at intervals to determine when it needs changing. Plugging of the filter will starve the engine of air and will thus reduce its power output. This will also cause hard starting. The frequency of need to change the element will depend upon the amount of dirt and dust in the area of operation.

In handling of the element, care must be taken to not puncture or damage the element in any way. Its construction is such that it will remove dirt as small as 10 microns or 4/10,000 inches in diameter, thus any small hole will make it ineffective, and result in worn engine parts.

CARE OF OIL BATH AIR CLEANER

The Air Cleaner should be inspected **daily** during operation. Empty the Cleaner, clean out the bowl, and refill with Mobiloil A (SAE 30) or Mobiloil Special (10W-30) as required, according to directions on the Air Cleaner.

ATTACHING TOOLS

All Power Attachments and all others, except a few tools which may be hitched on the rear of the Tractor, are attached by four bolts to the front of the Tractor. (See Plate 2, Number 1.)

The Attachment Clutch Lever must be in the OUT position when attaching any tool to the front of the Tractor. **Gravely Tractor Stand.** This portable, inexpensive stand allows you to quickly adjust height of Advance Casting, holds Tractor firmly for easy attachment of tools.

PREPARING TO START THE TRACTOR

1. Gear Levers in Neutral Position
2. Attachment Clutch Lever in OUT position
3. An Attachment, or the Attachment Boss Cover and Gasket (Part Numbers L-228 & L-229) must be in place on the front of the Tractor before starting the motor.
4. Be sure the Valve on the bottom of the Sediment Bowl under the Fuel Tank is in the OPEN position.
5. Open Throttle About Half-Way.
6. IF YOU HAVE A MAGNETO HANDLE STOP SWITCH, BE SURE IT IS SWITCHED TO "ON"!!

STARTING THE TRACTOR

The Gravely is equipped with a strap starter. The small hole in the end of the leather Starting Strap slips over a pin in the pulley at the rear of the Tractor. Wind the strap in the **direction of the embossed arrow.** Put the Throttle down about halfway: (If you have a Governor, Throttle halfway OUT.) Give a strong, steady pull. Choke as needed.

See Plate 9 for the proper way to wind the strap.



PLATE 9

COLD WEATHER STARTING

RECOMMENDED PROCEDURE

1. Store Gravely in a heated building. If not possible, pre-heat engine by any safe method. An Engine Heater, produced especially for the Gravely Tractor, is available at low cost. Inquire from your Dealer or the Factory. **DO NOT USE A BLOW-TORCH. DO NOT USE OPEN FLAME.** Be sure to check for gasoline leaks before attempting to pre-heat the engine.
2. **BE SURE PROPER WEIGHT OIL IS USED.** Mobil-oil Arctic or Mobiloil Special (SAE 10W-30) will give your engine proper lubrication protection, and are still fluid at low temperatures. Other oils of heavier weight will "stiffen" and contribute to hard starting.
3. Choke as required. Usual procedure is to open choke and leave open until engine starts, then close gradually as engine warms up.
4. If engine floods, rotate engine by hand with Choke closed and Throttle Open, then try again.

5. If you are starting with the Strap, spin engine hard and fast. The Gravely will start on the first pull in warm weather, but in cold weather, the temperature in the combustion chamber is so low often the engine will fire once, but does not have enough momentum to run through the firing cycle twice and then run on power. So pull **hard** and **fast**.

6. If engine does not start, take Spark Plug out and check: It should be an Autolite TT-10. If fouling or moisture is present, clean, reset points to .033; warm until all moisture is evaporated. Replace and try again.

7. Check to see if water, snow or ice has shorted out Magneto Shorting Button, or if the Spark Plug is contacting a bent or damaged hood through a worn cover. (If you have had a Dealer install the Magneto Handle Stop Button . . . Is the switch on? Is it shorted out? To check, remove wire from Magneto Connection to the Switch and try again.)

8. Check for ice in the Sediment Bowl and lines, or in or on Carburetor. Heating with a Heat Lamp at a reasonable distance (TAKE SAFETY PRECAUTIONS) will melt ice so formed, as will the use of ice-preventive additives in the gasoline, used according to manufacturer's directions.

9. Is the vent hole in the Gasoline Cap open? Sometimes ice or snow seals the hole, which gives a vapor lock.

10. If these suggestions fail, check the "Trouble-Shooting" section for mechanical problems and their remedies. Or, call your Gravely Service Man.



PLATE 10

OPTIONAL ELECTRIC STARTER

Now you start your Tractor as easily as you start your car! Gravely Electric Self-Starter means push-button starting . . . new ease and convenience. Especially useful in cold-weather starting.

ATTACHING

Installation Instructions are packed with Starter Kit. Uses any standard 6 Volt Automobile or Tractor Battery.

STOPPING THE TRACTOR ENGINE

On the Magneto (Plate 2, Number 3) there is a small clip, or button. To stop the engine, depress this button and hold it depressed until the engine stops.

HANDLE STOP SWITCH

Your Dealer can furnish an inexpensive Magneto Handle Stop Switch, attached to the handle, for more convenient stopping of the engine.

TIRES

The recommended pressure for the Tractor tire is 20 pounds. Sulky tires take the same. Transportation Cart tire pressure should be 30 to 35 pounds.

Semi-Pneumatic Puncture-proof tires are available on special order.

ADJUSTMENTS YOU SHOULD KNOW

SPARK PLUGS

Spark Plug (Autolite TT-10) points should be cleaned and adjusted for clearance occasionally. The recommended gap is .033.

VALVES

Valves can be set in the field if necessary. The clearance between Valve Stem and Valve Plunger is .012.

TRACTORS WITH MANUFACTURING NUMBER B-7619 AND BELOW:

To adjust Valves, rotate engine by hand until the end of compression stroke. (Both valves seated, piston top dead center.) Raise the Spring Sleeves. You will need two wrenches, a 9/16" open end, and a 1/2" open end. The 9/16" nut is the lock nut... hold it with your wrench and operate the 1/2" bolt with the other, adjusting until the clearance is correct. Lock in place with 9/16" nut.

Note: The clearance is .012 WHEN THE ENGINE IS COLD. DO NOT ADJUST VALVES WHEN ENGINE IS WARM OR HOT.

TRACTORS WITH MANUFACTURING NUMBER B-7620 AND ABOVE:

Remove Valve Cover Cap and use 7/16" open end wrench to adjust Tappet clearance. This is a self locking Tappet. Clearance is the same—.012 engine COLD.

CLUTCHES

The Gravely uses a double-acting, cone-type Clutch. To take up for wear, tighten the nuts on the ends of the Clutch Rods. If adjustment is needed, your Clutch will "slip" even when locked in position. Unless the Clutch is slipping, let the adjustment alone. (See Plate 2 Numbers 4 and 5.)

The Gravely Clutch may have a tendency to "creep" a little occasionally, even when in neutral. This is of no consequence and does not mean that there is anything wrong with the Tractor or the Clutches.

SAFETY REVERSE

Nuts (Plate 2, Number 5) adjust the Reverse Clutch. To adjust so the Reverse will automatically return to Neutral when the lever is released, Put Clutch Lever in Reverse, in the locked down position. You will see the Lock nut and Adjusting nut that operate the Clutch Actuating Lever. Then release, and run Adjusting Nut toward the Actuating Lever three full turns. Then operate the Clutch Lever. It should be just tight enough until you cannot force it into the break-over position. If not, continue until this condition exists. Lock with lock Nut.

SAFETY CLUTCH

Each Gravely Model L Attachment has a Gravely Safety Clutch, which prevents sudden shocks from harming the attachment or tractor.

It is very important that these Clutches be adjusted correctly. If they are too loose, the Tractor will not drive the attachment efficiently. If too tight, it is possible that a sudden shock may injure the transmission or the attachment.

The proper method of field adjustment is as follows: Place a flat bar in the driving slots of the Slip Clutch. Hook a pair of spring scales on the bar 12" from the CENTER of the Clutch. Then adjust the spring tension by tightening or loosening the 6 bolts EVENLY so that it takes 40 to 45 pounds of pressure to make the clutch slip.

CARBURETOR ADJUSTMENT

If it is absolutely necessary to adjust the Carburetor yourself, here is the proper way:

Find the main jet (needle valve). It is identified by having a brass T on it. Screw the T in until it is snug—be very careful not to force it or screw it tightly.

On the cast-iron carburetor (Model No. 9995), back it out 2 1/2 full turns.

On the aluminum die-cast carburetor (Model No. 0-12108), back it out 2 3/4 full turns. Start the tractor. Open the throttle about half-way, or to a fast idle. Let the tractor warm up. Then begin screwing the jet in slowly. As soon

as you hear the Motor slow down, STOP, and back the jet out 1/4 turn.

The Air Jet is a screw with a slotted head and a spring wound around the screw surface. Screw it all the way in, until it is snug.

On the cast-iron carburetor, back out two full turns.

On the aluminum die-cast carburetor, back out 1 1/2 full turns. Start the Tractor. Then begin screwing the Air Jet in until the Motor begins to "Buck", spit or backfire. Back out 1/8 turn. If motor is still rough, back out another 1/8.

Write for special Carburetor instructions. Be sure to give Make and Model Number of Carburetor.

FAN BELT ADJUSTMENT

At some time or another you will need to adjust the Fan Belt. A thin wrench (1 1/2" opening) is helpful but not necessary.

Between the Fan Belt Pulley and the Fan Housing there is a thin, large nut. This nut locks the Fan Pulley Shaft to the Fan Housing. The shaft is in an elongated slot in the Fan Housing. When the nut is loosened, this will allow you to move the Fan Pulley up or down, to tighten or loosen the belt as needed. After the proper belt tension is obtained, simply tighten the nut down firmly.

If you do not have a thin wrench, remove the nut that holds the Fan Pulley in place. Then unscrew the Fan Pulley until you have sufficient room to get an ordinary wrench in to the nut. After adjustment, screw the Fan Pulley back in place and replace the nut.

TIMING THE MODEL L ENGINE

Magneto should be set to fire 30 Degrees ahead of top dead center on the compression stroke (which is when both valves are closed).

To accomplish the 30 degree ahead of top dead center firing, proceed as follows:

1. Loosen Magneto Coupling bolt until the coupling moves on the Camshaft. It may be necessary to tap gently.
2. Crank Starter Pulley until you feel the beginning of the Compression Stroke. Remove Spark Plug, observe by eye or, more accurately, measure to piston surface until Piston is exactly at Top Dead Center.
3. Hold the Magneto Shaft Extension with Vise-Grip Pliers so it will not move after taking up gear backlash by moving pliers up gently. Rotate the Magneto Impulse (inoperative) until timing marks (line on Coupling flange and dot on Magneto face) line up.



PLATE 11

4. Reassemble Magneto Coupling, inserting 1/64th (.015) Feeler between Fiber Block and the Coupling Flange before tightening Magneto Coupling so you will not cramp the impulse. Be sure timing marks are together while tightening bolt.

STORING YOUR GRAVELY

Although the Gravely now has Attachments that make it a year-round tool, many of our Users do not use the equipment in the winter.

It is important, if you are not going to use the equipment for a time, to know how to store it properly.

1. Clean the Tractor thoroughly with kerosene and a stiff brush.

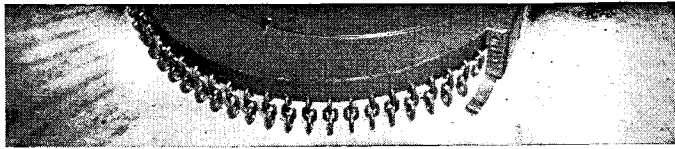


PLATE 21

OPTIONAL CHAIN GUARD

Under certain special conditions, a Gravelly Chain Guard may be desirable. Completely encloses front of Mower, with a chain curtain to reduce the velocity of materials that may be thrown out.

LEAF MULCHER

ATTACHING

Attach the Rotary Knife Mower to the Tractor in the same manner as previous instructions designate.

Remove the Front and Rear Fenders. Put the Rear Fender on the front of the Rotary Knife Mower.

Put the Leaf Guard on the Rear of the Rotary Knife Mower.

OPERATING

To operate the Leaf Mulcher, proceed as though you were mowing. Ordinarily, normal walking speed will be sufficient to do a good job. If using on wet, concentrated leaves, it may be necessary to go over them twice to get all the leaves.

CAUTION

Keep hands and feet away from the attachment while in gear and for an interval after being shut off. Be sure knife has stopped revolving before putting hands or feet under the hood!

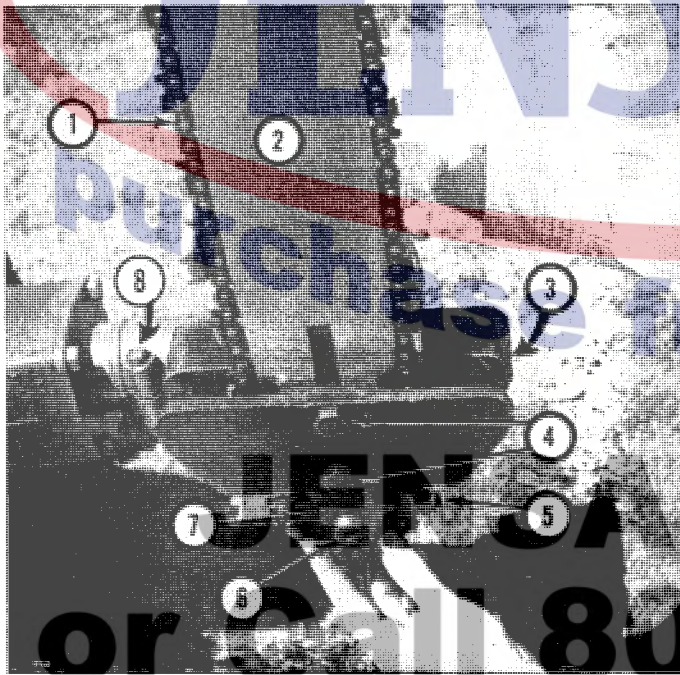


PLATE 22

(1) Chain, (2) Chain Blade, (3) Bracket, (4) Guide Bar Clamp Bolts. (5) Bracket Clamp Screw, (6) Attachment Drive Shaft, (7) Sprocket, (8) Angle Adjustment Bolt.

CHAIN SAW

ATTACHING

To attach Chain Saw Assembly to the drive, remove the large nut on the bottom of the Attachment Drive Shaft, and remove the three Collars.

Loosen the Bracket Clamp Bolt on the split end of the Bracket until it slip onto the Housing from which the Attachment Drive Shaft projects. (It is sometimes necessary to wedge the split ends apart slightly.)

On Chain Saw Drives, Models 52 through 58, the Diameter of the housing is 2 $\frac{3}{4}$ ". These models take the Part Number CS-101 Chain Saw Bracket. On Models 58-A and 185, the Chain Saw Bracket part number is CS-101-1, and the diameter of the housing is 3 $\frac{1}{4}$ ". The bigger diameter chain saw bracket (CS-101-1) can be covered for use with the Models 52 through 58 of Rotary Mower Drive by the purchase of a Converting Collar, part number CS-331.

The lower edge of the Bracket should be lined up even with the lower edge of the Housing. (Not the fixed collar!) Then clamp the Bracket in place by tightening the Bracket Clamp Screw. (See Plate 22.)

Rotate the Bracket until the Guide Bar is pointing straight up. Tighten the Bracket Clamp Bolt until the Bracket stays in place.

Loosen the Guide Bar Adjusting Screw and Clamp bolts that hold the two sides of the Bracket together. The latter should be loosened only enough to allow the Guide Bar to slip back and forth easily.

Put the Chain on the Guide Bar, bring it through the Bracket.

Now, insert the $\frac{1}{2}$ inch collar on the Shaft, with the COUNTER-BORED SIDE toward the BOTTOM of the shaft. Slip the Sprocket on the Shaft, put the Chain around it. (NOTE: The Sprocket revolves in a counter-clockwise direction when viewed from the end of the shaft on Models 58, 58-A, 185. On Models 52 through 57, the shaft revolves in the clockwise direction . . . the cutting edge of the Chain Teeth must move in the same direction.)

Then follow with the $\frac{1}{4}$ inch Collar and the $\frac{7}{8}$ inch Collar, with the COUNTER-BORED SIDES OF BOTH COLLARS TOWARD THE SPROCKET. Put on the flat washer, then the nut and tighten down firmly.

After adjusting and tensioning the Chain (See Adjusting and tightening the Chain), Rotate Clamp to proper working position and tighten the bolt to hold it in place.

ADJUSTING AND TIGHTENING THE CHAIN

After you have the Chain in place, tighten up the Chain by means of the Chain Adjusting Screw. The proper tension of the Chain is very important. When properly tensioned, the Chain will be slightly loose on the Guide Bar, but not loose enough for the Driving Links to come out of the slots when the Chain is grasped firmly and pulled strongly away from the Guide Bar.

Care must be taken not to get the tension too tight, or you will "burn" the Guide Bar. (See Plate 20.)

ANGLE ADJUSTMENTS

To change the position of the Chain Saw in relation to the Housing on which the Bracket is mounted, loosen the Bracket Clamp Nut at the split part of the BRACKET. Then turn the Bracket and Chain Blade to the position desired, tighten the Clamp Nut to hold it in position.

To rotate the Drive Assembly, loosen the nut on the Boss on the Swivel Casting. This will loosen the Swivel. Rotate the Saw Assembly to the position desired, then tighten the nut tightly to hold the Saw in the desired position.

CHAIN SAW OPERATING INSTRUCTIONS

HOW TO SAW

Always swing the Saw SIDEWAYS into the tree if you are felling or notching.

IMPORTANT: Never feed the Saw into the wood by any method except light hand pressure at the handles. DO NOT lean against the handles, or brace your body in any way to feed the Saw into the work fast.

It is so easy to feed the Gravelly Chain Saw that the tendency is to force the Saw into the wood. If you do force the Saw, it will cause excessive wear of the Chain and Guide Bar, resulting in unsatisfactory operation and excessive maintenance cost. Therefore, ease the Saw into the tree slowly, letting it "feed itself" without forcing. A properly sharpened and gauged Saw will feed itself into the work with almost no effort on your part.

DEPTH GAUGE SETTING

One of the two "secrets" of successful Chain Saw operation is the proper setting of the "Depth Gauges." The Depth Gauges are projections that control the depth of bite of the