

GRAVELY[®]

COMMERCIAL 8

OWNERS

MANUAL





THANK YOU for your investment in Gravelly equipment. It is a good investment, for the Gravelly will save you work and worry for many years.

You will gain still greater satisfaction from your powerful Gravelly if you add the tools you need for your other jobs. From time to time we suggest you consult your dealer for the many Gravelly attachments that will help you save time and effort.

Numerous independent dealers and factory branches distribute Gravelly equipment. All are ready to give prompt and efficient service, with parts in stock and personnel trained in factory-service methods.

Gravelly Tractors and Attachments are manufactured by Gravelly Corporation, a Subsidiary of Studebaker-Worthington, Inc., Clemmons, North Carolina.

Your Gravelly Tractor and Attachments are warranted under terms shown herein. To qualify for this Warranty, you must register your equipment by completing the attached Registration Card and returning it. For your own protection, please do this right away.

SAFETY PRECAUTIONS

**READ THE OWNER'S MANUAL.
IT IS TOO LATE TO REMEMBER
WHAT SHOULD HAVE BEEN DONE
AFTER THE ACCIDENT HAS HAPPENED.**

Recommended by Outdoor Power Equipment Institute

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

1. Do not allow children to operate machine or adults to operate it without proper instructions.
2. Clear work area of objects which might be picked up and thrown.
3. Know the controls and how to stop quickly — READ THE OWNER'S MANUAL.
4. Disengage all Clutches before starting the engine.
5. Don't direct the discharge of material toward bystanders.
6. Always stop the engine and remove key when you leave your machine.
7. Handle gasoline with care! It is highly inflammable! Use approved gasoline container.
8. Do not add fuel when the engine is running, while the engine is hot or while you're smoking.
9. Never run the engine in a closed garage or shed. Exhaust gases are dangerous.
10. Watch out for traffic when near roadways.
11. Stay alert for holes and other hidden hazards.
12. Keep all shields and safety devices in place, as instructed in Owner's Manual.
13. Watch where you're driving! Pay attention!
14. Disengage power to any attachment and stop engine before leaving operator's position or making repairs or adjustments.
15. Beware of steep slopes.
16. Reduce speed on all side slopes and sharp turns to prevent tipping or losing control.
17. Do not attempt to operate machine when not in normal operator's position.
18. Don't wear loose fitting clothing that might get caught in moving parts. Keep your hands and feet away from moving parts.
19. Do not carry passengers! Keep children and pets at a safe distance.
20. Disengage power to attachments when transporting or not in use.

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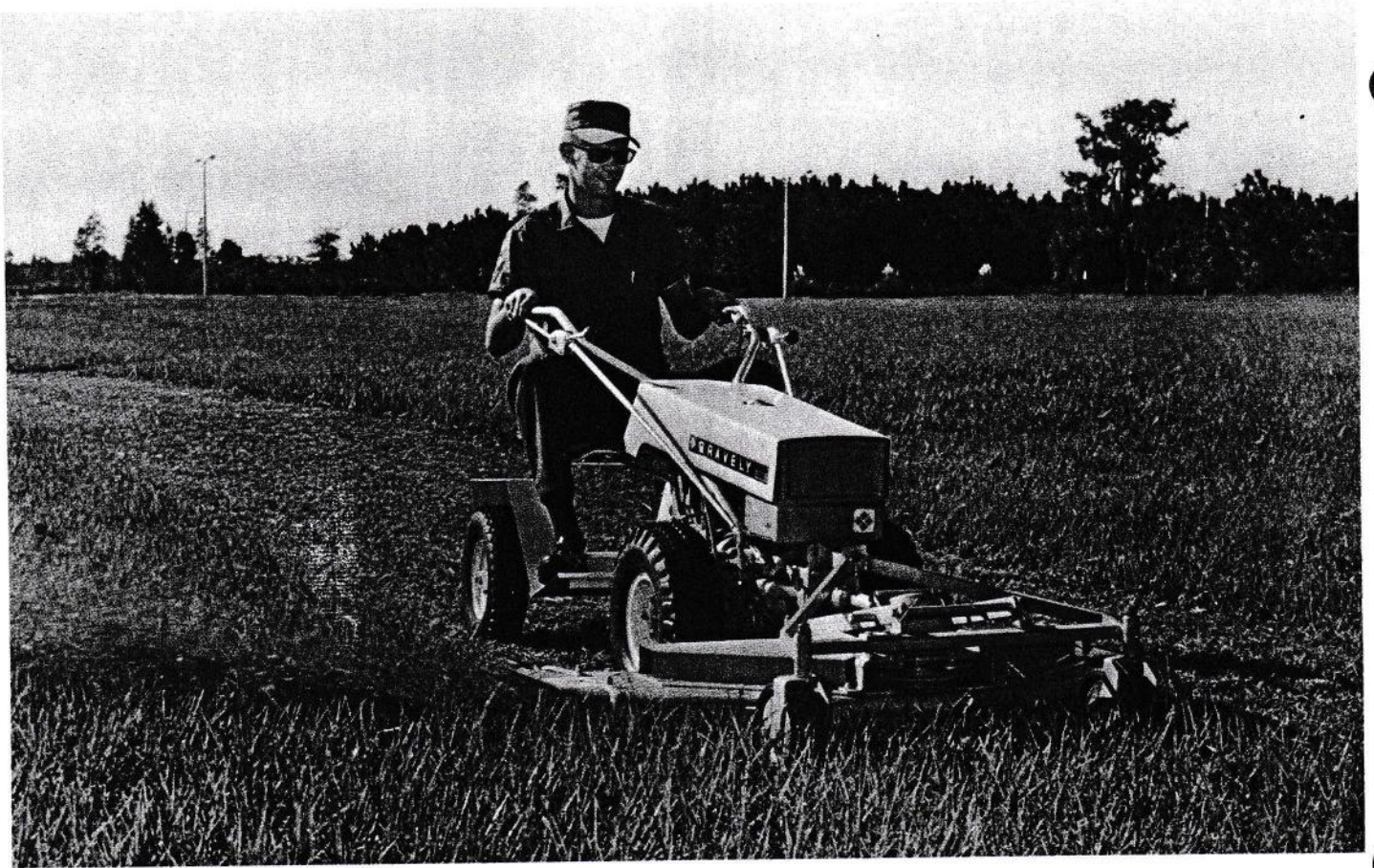


FIGURE 1

INTRODUCTION

You are giving your lawn and grounds professional care with the Gravelly Commercial tractors used by the professional groundsmen in industry, government and private contracting.

Enjoy these features — All-gear drive; instant control with safety designed controls, (including a safety reverse you have to hold in place). A smooth, practically vibrationless engine that purrs along effortlessly at the toughest jobs.

Heavy-duty all the way through, with the famous Gravelly Swiftamatic-8 Transmission — four forward, four reverse speeds.

Gravelly Commercial tractors are convertible too — ride for the mowing, hauling, lawn care jobs. But when you hit the terraces, the slopes . . . when you want to work the ground or take the tractor into the brush and the rough, just pull a pin and you have a powerful, balanced, obedient walker that you can handle in the roughest areas.

Out-front tools for safety and visibility . . . and a choice of many standard Gravelly attachments, plus some specially designed ones to use the full power and performance of the Commercial tractors.

Your Gravelly tractor will give long years of highly satisfactory performance if maintained and operated as outlined in this manual.

SERIAL AND SPECIFICATION NUMBERS

It is important that you know the serial number of the tractor. It is located on the left side of the advance casting. Engine numbers are also important. They are located on the nameplate on the blower housing. For your future reference, please fill in the numbers as soon as possible.

Tractor Serial Number _____

Engine Model Number _____

Engine Specification Number _____

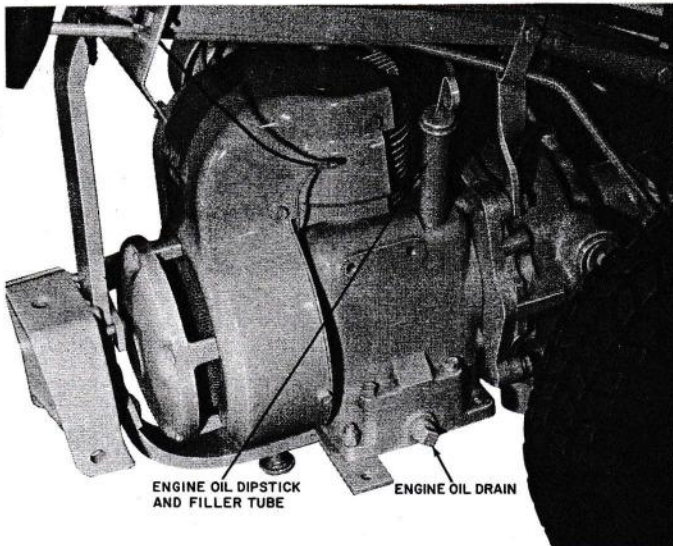


FIGURE 2

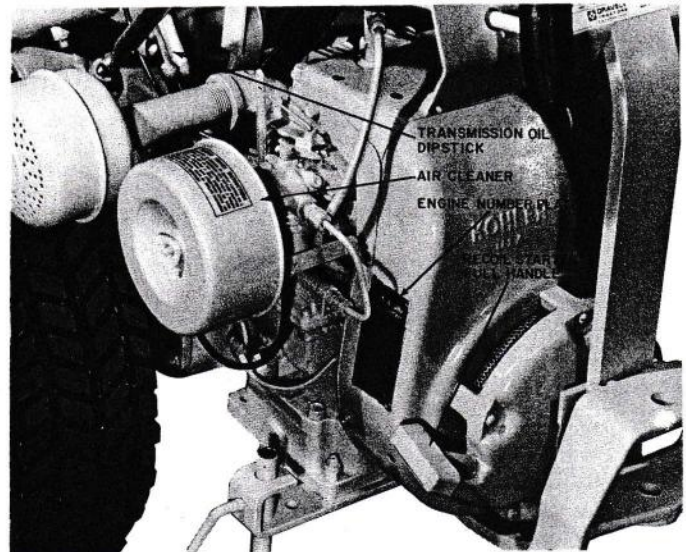


FIGURE 3

LUBRICATION & MAINTENANCE

LUBRICATION

Transmission capacity: 5 U.S. quarts. Use API classification MS oil SAE 30.

Regular draining of the oil in the transmission is not necessary. The Transmission Drain is the bottom Bolt in the Left Hand Axle Housing.

Engine capacity: 2.5 U.S. PINTS. Use API classification MS oil SAE 30 or SAE 10W-30 for temperatures above 0°F. and SAE 5W-20 for temperatures below 0°F.

Regularly check oil level in both engine and transmission. Maintain oil levels at full marks on both dip sticks. Do not overfill.

Change engine oil after the first 5 hours of operation and then change engine oil every 25 hours of operation or oftener under dusty conditions. Drain plug is on the right hand side of the engine base.

MAINTENANCE

Air Filter—The Gravelly Commercial Tractor is equipped with a heavy duty air cleaner. This cleaner has a paper filler and is so constructed that it must be serviced when required because when the filter is dirty, it will starve the engine for air which makes a noticeable difference in performance.

If your Gravelly Commercial Tractor appears to be losing power and performance, the first thing to check is the Air Filter. To service, simply remove the cover, remove the filter element and clean by gently tapping the element on a flat surface, or replace the element. Do *not* use compressed air or wash the element.

Since Gravelly Commercial Tractors are used in many different applications, it is almost impossible to set a given time for servicing the Air Filter. In very dusty and dirty conditions, it is possible that it will be necessary to service the filter daily.

CAUTION: Be sure the brass washer is in place under the wing nut of the air cleaner.

Do not attempt to bypass the filter element by punching holes in it, or otherwise disturbing the surface of the air filter filler. Any break in the air filter surface will allow dust and dirt to enter the engine which will cause excessive repairs.

WARNING: Gravelly warranty on the Commercial Tractor is automatically voided if the air cleaner has not been properly serviced, or the filter surface broken.

Tire Pressure—Regularly check and maintain tire pressure at 18 psi.

Cooling System—Clean the tractor regularly. Pay particular attention to the cooling system, blower, shrouding, etc., where a debris build-up can cause engine over-heating. Clean yearly or oftener.

Clutch Adjustment—As the Commercial Tractor is used over a period of time, clutch wear can be expected. When clutch slippage occurs, adjust the Forward-Reverse clutch and the High-Low clutch so that as the control lever goes over the center, the spring on the actuating shaft lever is nearly compressed. Adjustment is made by moving the jam nuts on the control rods closer to the actuating shaft lever.

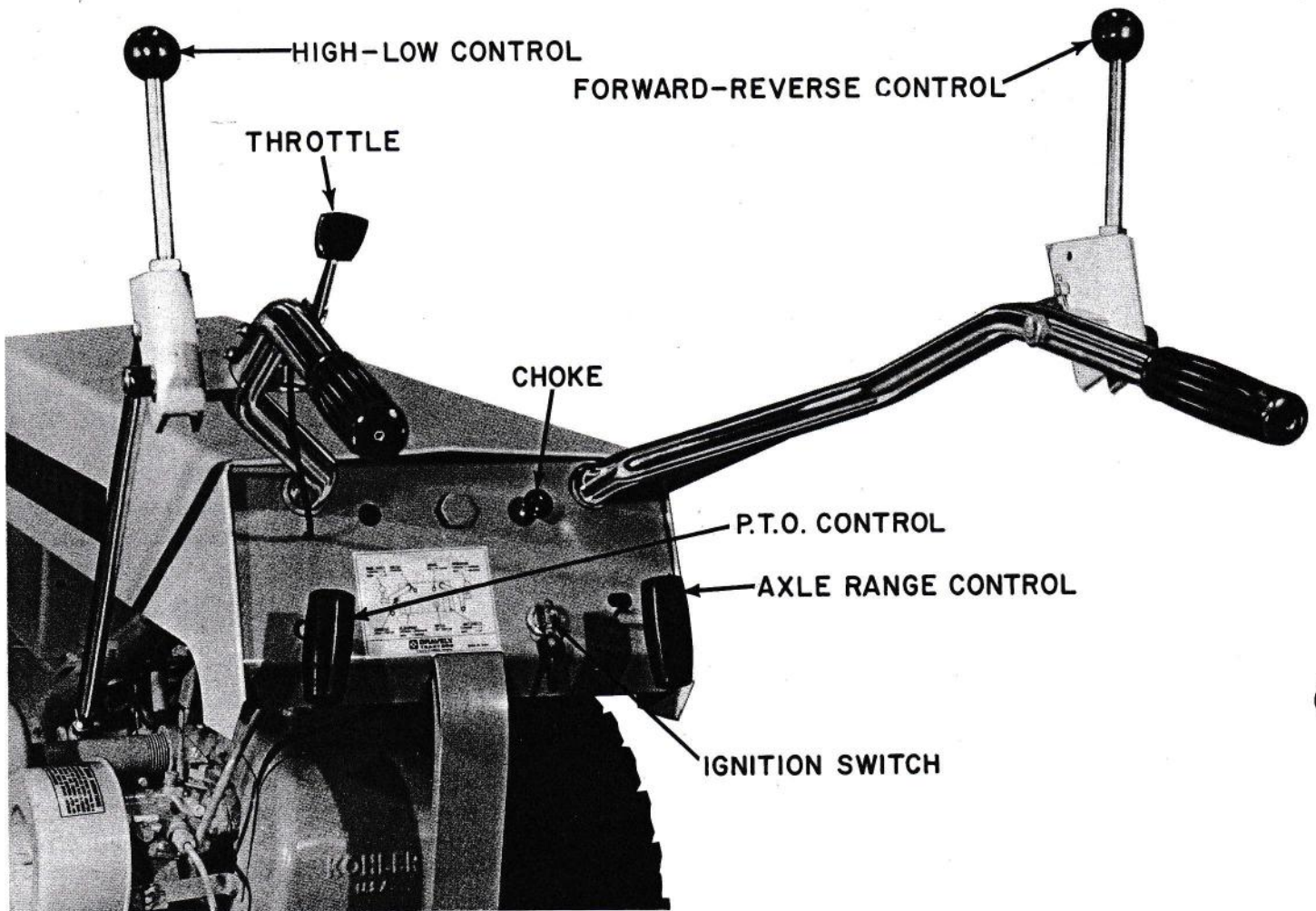


FIGURE 4

Spark Plug—Champion H-10 is recommended (gap, .025). If tractor is hard-starting, check spark plug. Clean or replace if fouled or wet.

Fuel Strainer—Periodically remove strainer from bottom of tank and clean.

Carburetor—Carburetor adjustment is set at the factory. If carburetor adjustment has been altered, to reset, turn main fuel needle and idle fuel needle in (clockwise) until they just bottom, then back out main fuel needle 2 turns and idle fuel screw $1\frac{1}{4}$ turns. Start engine, while running at full throttle further adjust main fuel needle till engine runs best. Then idle engine and adjust idle fuel needle further if necessary. Engine should idle at about 1000 rpm.

NOTE: Main Fuel Needle is the screw on top of the carburetor. The Idle Fuel Needle is the screw on carburetor side next to engine.

OPERATION

INITIAL OPERATION

For the first hour of operation, work under a light to moderate load. (Example: Taking a partial swath while mowing.)

BEFORE STARTING:

- check oil levels in transmission and engine.
- check fuel level. Use regular grade gasoline, and adjusted to the climatic condition.
- check to see that Forward-Reverse, PTO and High-Low controls are in neutral position

Starting—Turn key to ON (approximately $\frac{1}{8}$ turn clockwise). Pull out choke if engine is cold and depress throttle about $\frac{1}{2}$ way.

Grasp starter rope handle and pull using a fast steady motion. Guide the rope back in. DO NOT let the rope loose and fly in.

Push in choke gradually as engine warms up.

Throttle—Engine rpm is controlled by the internal governor at any throttle setting. Engine performance is best at full throttle.

High and Low Gear—The large lever on the outside of the left handle operates the high and low gears. When in a near-upright position the High and Low Gear Lever is in the neutral position. To put the Tractor in high gear, push it forward until it locks. Pulling this lever back (towards the operator) and locking it puts the transmission in low gear. This lever may be operated independently from the forward and reverse gear lever. It may be moved from either position to the other at any time during operation of the equipment, but it must be in one gear or the other.

Swiftamatic-8 Transmission—The Gravelly Commercial Tractor is equipped with the Swiftamatic-8 Transmission. This is an all-gear-drive transmission which allows the operator to select one of 4 forward or 4 reverse speeds.

This is accomplished by selecting either high or low gear by means of the high-low control lever and also an optional selection of speed ranges by operating the Swiftamatic Control. The Swiftamatic transmission, when in the low range, reduces the ground speed by 1/2 without affecting attachment speed.

The speed range is always selected before controls are operated to move the equipment. Selection is made by moving the Swiftamatic Control in or out. IN is low range, OUT (towards the operator) is high range.

To change axle ranges, stop the tractor and reduce engine speed to an idle. Keep the High-Low Control in high or low, but keep the Forward-Reverse Control in neutral. Move the Swiftamatic control to high

or low range. Move the Forward-Reverse Control back and forth slightly until control is fully engaged.

CAUTION: Never shift the Swiftamatic control while the tractor is moving. Always come to a complete stop prior to shifting.

Never shift the Swiftamatic control while stopped on a hill. If you must shift on an incline, stop the tractor so that it points across the hill rather than up or down it.

Individual jobs will dictate the combination of axle range and gear to be used. In general, low axle range should be used for plowing, cultivating, snow blowing, heavy mowing where a slower ground speed is needed to give the attachment longer to do its job. High axle range is generally satisfactory for mowing and other lawn jobs.

Forward and Reverse—The Gravelly Commercial Tractor has a unique instant forward and reverse planetary clutch that gives you instant control of the tractor, under all conditions.

After the High and Low Lever has been put in the proper gear and the attachment has been put in operation, operation of the Forward-Reverse Control Lever is the next step. This control is located on the right handle of the Gravelly Commercial Tractor.

To go forward, grasp the ball on the control and move it forward until it locks in forward position.

To put the tractor in reverse simply grasp the round handle and pull it back or towards the operator. This is a safety reverse, and requires pressure on this handle to keep the tractor moving in reverse. Releasing the handle permits it to return to neutral instantly.

P.T.O. Control Handle—Power attachments must be placed in gear with the High-Low Control in neutral and engine speed reduced to a fast idle. To put the attachment in gear, grasp the P.T.O. Control Handle, and pull back until it locks in the proper position. Now put High-Low Control in gear.

MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS

ENGINE

C-8

Type	4-cycle, air cooled
Horsepower	8 @ 3600 RPM
Bore	2 15/16 inches
Stroke	2 3/4 inches
Piston Displacement	18.6 cubic inches
Oil Sump Capacity	2.5 Pints
Oil Specification	API, Service MS
Oil Recommendations	See Chart

FUEL SYSTEM

Fuel Tank Capacity	2.0 U.S. Gallons
Filter	Mesh Type located in tank
Fuel Grade	Regular, 90 octane or higher
Air Cleaner	Dry, single element
Choke	Manual
Fuel Pump	Automotive Diaphragm type

TRANSMISSION

Type	All Gear Planetary
Transmission Oil Capacity	5 U.S. Quarts
Speeds Forward	4 Gears — 0 to 4 MPH
Speeds Reverse	4 Gears — 0 to 3 1/2 MPH
Oil Recommendations	See Chart

GENERAL DATA

Tire Size	5:00-5:70 x 8
Tire Pressure	18 psi
Tread Width	25 inches
Length	56 7/8 inches
Width	25 1/4 inches
Height	36 3/4 inches
Ground Clearance	4 3/8 inches
Net Weight	460 lbs.
Operating Weight	480 lbs.
Shipping Weight	480 lbs.

Gravely Tractors and Attachments are warranted to be free from defective material and workmanship for a period of one year from purchase date under normal use by a homeowner; and for a period of ninety days from date of purchase when used for commercial purposes. All defective parts will be replaced without charge provided such parts are certified as defective by the manufacturer, and provided the parts have not been damaged through neglect, accident or misuse.

IMPORTANT

This warranty is not subject to change or modification by field representatives or Gravely Dealers. Any warranty other than the warranty listed above will not be binding upon the manufacturer. This warranty is not valid unless within fourteen (14) days after date of purchase the "Warranty Registration Card" is mailed to:



GRAVELY LANE — CLEMMONS — NORTH CAROLINA 27012

GRAVELY

ATTACHMENTS FOR COMMERCIAL TRACTORS OPERATING INSTRUCTIONS



FIGURE 5

Gravely Commercial Tractors are available in 3 versions: 8, 10 & 12 horsepower. Most attachments fit all tractors; however, attachments designed for particular tractors are noted in text.

From lawn mowers to snowblowers, from seeder-spreaders to utility scoops, there is a Gravely attachment to suit your every need.

Power attachments have direct drives for positive operation.

Above is the front mounted 50" rotary mower for the C-10A and C-12. This team gets the big jobs done in a hurry. Direct drive to the single horizontal drive belt.

Requires the Front Mount Kit and the Quick Hitch Kit.

Attaches and detaches in seconds without tools.



FIGURE 6

30" ROTARY MOWER

This is the mower that taught the others how to handle the tough jobs. There is not one single belt or chain . . . All Gear-and-Steel-Shaft Drive, powered directly from the Tractor engine.

Tackles the toughest mowing jobs — and gets them done. Designed for rough work, a heavy steel-plate Deck, rugged Skids, a Blade that is designed to slice, not beat the grass, that wades through anything up to small trees.

Follows ground contour with swivel action, does a good job on the lawn as well as in the weeds.

Recommended for:

Commercial 8
Commercial 10A
Commercial 12

LUBRICATION

Use SAE 140 in the Gear Housing. Use General Purpose Grease occasionally in the Grease Fittings of the Swivel Casting.

Check the Gear Housing oil level every four hours of operation by removing the Oil Level Plug, (1 in Figure 7). If oil runs out, the oil level is all right, if not, oil must be added.

To add oil, remove the Oil Filler Plug, (2 in Figure 7), and pour through the Oil Filter Hole until oil begins to run out the Oil Level Hole. Replace both Plugs before operating.

ATTACHING:

The 30" Rotary Mower is attached to the Tractor using two Nuts and two Bolts. Use of the auxiliary weight (10944A1) is recommended with the Commercial 10A and Commercial 12 Tractors.

SAFETY PRECAUTIONS

1. Do not let anyone operate the machine until he has had proper instructions.
2. Be sure the work area is clear of objects which might be picked up and thrown.

3. Do not direct the discharge of material toward bystanders.
4. Keep all shields in place.
5. Disengage power to attachment and stop motor before making adjustments.
6. Do not wear loose fitting clothing that might get caught in moving parts and keep your hands and feet away from moving parts.
7. Never operate the Mower unless the Front Fender or optional Chain Guard is on the front of the Mower, and the Rear Fender is on the rear.
8. When using the 30-inch Rotary Mower, never shift the Inside Operating Lever directly from high to low. Always pause momentarily in neutral, giving the Blade a chance to slow down naturally, thus avoiding the severe braking action from a sudden shift into low gear.

ADJUSTMENTS:

Swivel Action Adjustment

Swivel action of the Drive Assembly is regulated by the Swivel Adjustment Bolt and Nut, (3 in Figure 7). Loosening the Adjustment Nut increases swivel action; tightening it decreases swivel action.

Cutting Height Adjustment

Cutting height is adjusted by the Collars on the Rotor Shaft. The closer the Blade is to the Gear Housing, the higher the cut, and vice versa. Vary the combination of Collars as you desire, always making sure the counter-bored sides of the Collars face the Blades.

Blade Sharpening

Use a file or grindstone to sharpen the Blade. Try to follow the same bevel as the originally-sharpened cutting edge, although the precise degree of bevel is not critical.

Fender Adjustment

When mowing short weeds and lawns, the Front Fender (the smaller Fender) should be on front of the Mower Hood, and the Rear Fender (the larger Fender) on the rear.

However, when mowing high, heavy brush, or thick, tough grass of considerable height, better mowing results will be obtained by removing the Front Fender, and replacing it with the optional Chain Guard.

30" ROTARY MOWER ATTACHMENTS

CHAIN GUARD

When the Front Fender is removed, it must always be replaced with the optional Chain Guard. It is attached to the Mower by Bolts in place of the Front

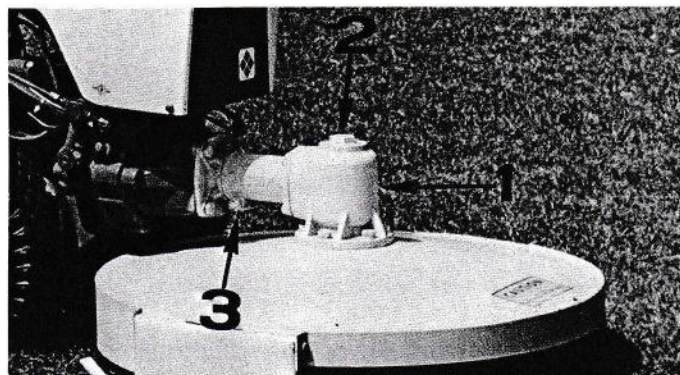


FIGURE 7

Fender. The Chains reduce the velocity of materials that may be thrown out. It is available from your Gravely dealer.

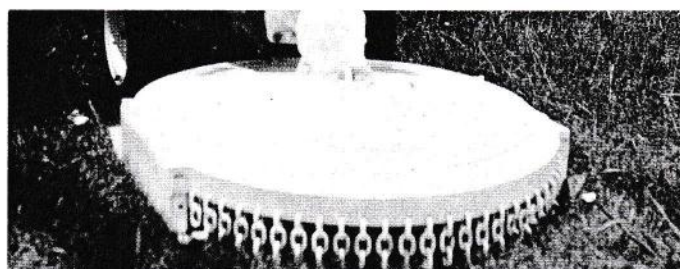


FIGURE 8

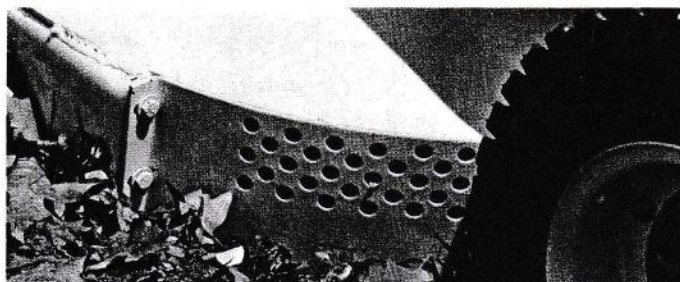


FIGURE 9

LEAF MULCHER

Attach the Leaf Mulcher to the 30-inch Rotary Mower as follows:

1. Remove both the Front and Rear Fenders. Bolt the Rear Fender to the front of the Mower Hood.
2. Attach the Leaf Mulcher to the rear of the Mower Hood, in the position normally occupied by the Rear Fender.

To operate the Leaf Mulcher, proceed the same as you would in mowing. Normal walking speed is usually adequate to do a good job, although when leaves are wet or packed down, you may have to go over the area twice.

LEAF-AWAY

Instructions for assembling and attaching are packed with the Leaf-Away.

EMPTYING POUCH

To empty the Pouch, simply unsnap the Pouch from

the Chute, unhook it from the Pouch Support, and unzip. Contents are easily shaken out.

OPERATING HINTS

Operate the Leaf-Away with the Tractor in high gear at all times. Stoppage caused by leaves and debris blocking the Chute is detected by collapse of the Pouch. To correct, keep the Blowers operating at high speed and work the Chute Cleaner Poker with a vertical motion into the Chute.

Although the Leaf-Away will function effectively in most cases with only one Mower Blade Blower, we recommend use of the two blades packed with the Leaf-Away, especially where leaves and debris have a high moisture content. Also, we recommend you clean your lawn often enough to prevent leaves from becoming packed down by heavy rain or snow, as leaves in this condition increase the chance of Chute clogging.

CIRCULAR SAW AND GUARD KIT

Attach the 18-inch Circular Saw to the Drive Assembly as follows:

1. Remove the Collars and Nut from the Rotor Shaft.
2. Place all collars but two onto the Shaft with the counter-bored sides facing the end of the Shaft. Put the Circular Saw on the Shaft, and then the remaining collars with the counter-bored side fac-

ing the Saw. Tighten the Nut securely. Note: Cutting edges of the Saw teeth must face in the direction of Shaft rotation.

OPERATING HINTS

Feed the Circular Saw by exerting slight pressure on the Tractor Handles. Do not force the Saw.

... The Circular Saw is most effective for clearing land of saplings, sprouts, and other small growth. We do not recommend the Circular Saw for felling large trees.

... Be careful not to run the Saw into the ground or against rocks.

OPTIONAL SAW GUARD

The Circular Saw Guard is attached to the Gear Housing by a Split Ring. We strongly urge the use of this Guard for safety's sake.

SHARPENING THE SAW

We do not recommend field sharpening. Have this done by someone specializing in circular saw sharpening, or by your Gravely dealer.

STORAGE

When the Circular Saw is to be stored for several days or longer, we recommend you coat it heavily with general purpose grease.

COMMERCIAL 40" MOWER

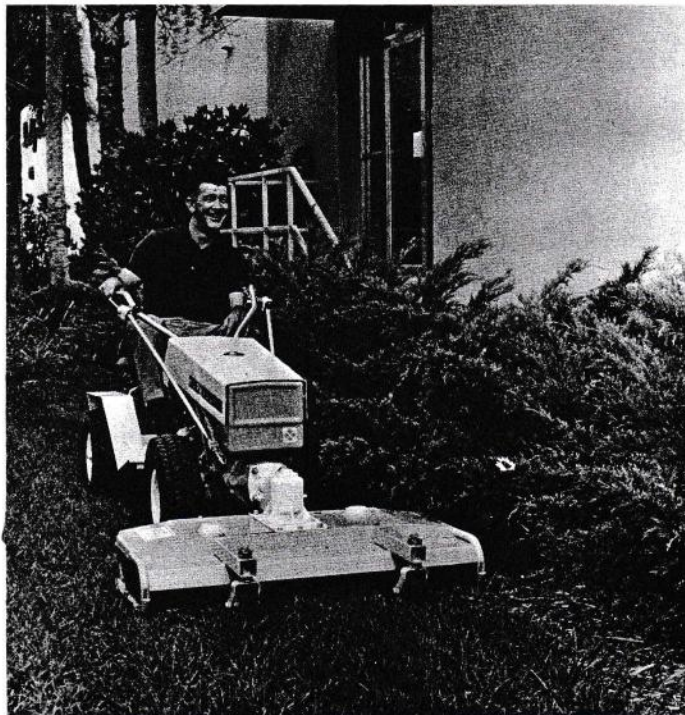


FIGURE 10

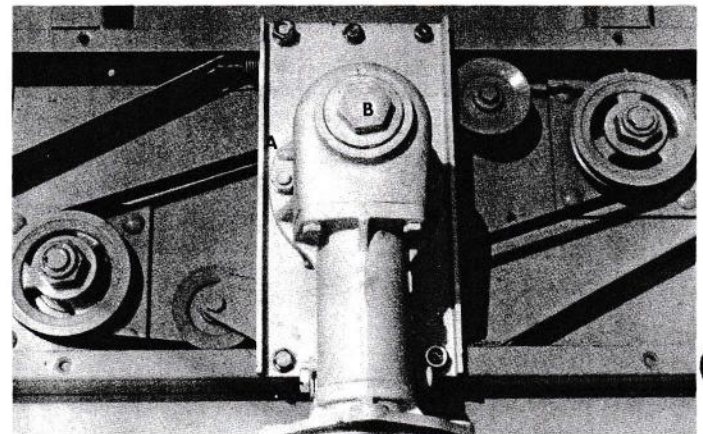


FIGURE 11

A tough, no nonsense, full 40-inch width Rotary Mower that is as rugged as they come . . . yet manicures the finest lawn with a deft and gentle touch. One that can take the day-in and day-out abuse a commercial mower gets.

Recommended for :

Commercial 8
Commercial 10A
Commercial 12

LUBRICATION

Check the Gear Housing oil level every four hours of operation by removing the Oil Level Plug shown at A. If oil runs out, the oil level is all right, if not, oil must be added until the proper oil level is obtained.

To add oil, remove the Oil Filler Plug shown at B, and pour through the hole until oil begins to run out the oil level hole. Replace both Plugs before operating the Mower. Use SAE 140 lubricant. Use a good grade of general purpose grease occasionally in the grease fitting of the Swivel Casting.

Blade Spindles should be lubricated every 10 hours of service with general purpose grease. Apply lubricant through the grease fitting until lubricant starts to come out the vent hole on the opposite side of the Spindle.

No lubrication is required for the two Belt-Tightening Idler Pulleys.

ATTACHING:

The Mower is attached to the front of the Tractor by two Bolts and two Nuts. When attaching, tighten securely one of the top Nuts before tightening the other two Bolts and Nut. When detaching the Mower from the Tractor, remove completely both bottom Bolts and one of the top Nuts before removing the other top Nut.

CAUTION:

When attaching, be sure the Engine is stopped, and Ignition Key is turned off, the Attachment Clutch Lever is at the "OUT" position and the operating levers are in the neutral position.

SAFETY PRECAUTIONS

1. Do not let anyone operate the machine until he has had proper instructions.
2. Be sure the work area is clear of objects which might be picked up and thrown.
3. Do not direct the discharge of material toward bystanders.
4. Keep all Shields in place.
5. Disengage power to attachment and stop engine before making adjustments.
6. Do not wear loose fitting clothing that might get caught in moving parts and keep your hands and feet away from moving parts.

ADJUSTMENTS:

Swivel Action Adjustment

The swivel action of the Mower is regulated by

the Bolt and Nut on the Swivel Casting (C). The Nut should be tightened until there is no swivel at all to the Mower. The Nut should then be loosened just enough to allow the Mower sufficient swivel action to follow the ground contour under its own weight.

Belt Adjustment

None required. Belts are tensioned automatically by spring-loaded Idlers.

Belt Replacement

Remove both Belt Covers.

Detach one end of each Idler Tension Spring (D).

Remove Belts from around Blade Spindle and Idler pulleys.

Remove the two Nuts and three Bolts holding the Drive Mounting Plate to the Deck. Remove the Drive and Belts.

Replace Belts by reversing the above procedure.

Put new Belts on Drive Pulley before re-attaching Drive Plate to Mower.

Cutting Height Adjustment

The cutting height of the Mower is adjusted by the Collars on the Rotor Shaft. The closer the Blades are to the bottom of the Deck, the higher the cut, and vice versa. Vary the combination of the Collars as you desire.

Caster Wheel Adjustment

Caster Wheels keep the Mower parallel to the ground. If the Mower cuts closer on one side than it does on the other, or if the Skids mark the ground, the Caster Wheels should be adjusted. Adjustment is accomplished by removing "Hairpin" Cotter from the top of the fork, and rearranging the spacing Washers as required.

To replace Wheels, remove Elastic Stop Nut and remove the Axle Bolt, replace with new Wheel by reversing the procedure.

Removable Deck Side

The Mower is equipped with a removable side which can be removed when mowing high, heavy weeds, or thick tough grass of considerable height. This will give better mowing results.

Blade Sharpening

Use a file or grindstone to sharpen the blade. Try to follow the same bevel as the originally sharpened cutting edge, although the precise degree of the bevel is not critical.

Removing the Blades

Use a standard 3/8 Socket Drive in the square hole in the bottom of the Rotor Shaft to hold the Shaft while removing the Blade Nut.

MA 605 50" ROTARY MOWER

Gets the big jobs done in a hurry. Your choice of a 40" or 50" deep-belled Mower that gives a fine lawn a fine cut — velvety smooth.

Heavy-duty die-formed Steel Deck, Hi-Lift Blades; Universal Shaft and Right Angle Gear Drive right down to the Single Horizontal Belt that drives three Spindles for a no-gap cut, even on sharp turns.

Heavy-duty Casters, special Anti-Scalping Skids.

Height adjustable from 1-1/2 to 3-3/4 inches.

Attaches or detaches in seconds with no tools.

Recommended for:

Commercial 10A

Commercial 12

Required Equipment:

MA 609 Front Mount Kit

11896 A1 Quick Hitch Kit

LUBRICATION

Every 25 hours — Grease with general purpose grease:

- A. Mower Spindles — 3 fittings (1 each)
- B. Caster Wheel Spindles — 2 fittings (1 each)
- C. PTO Shaft — 1 fitting

Twice a season or more often check the grease supply in the Drive Gear Box. Capacity is 1 pound of general purpose grease. Check by removing gear box cover.

ATTACHING:

1. Place the Mower Pivot Arm Support Brackets on the Pivot Arms. Attach the Brackets to the Caster Wheel Frame Weldment with 4 Bolts and 4 Locknuts.
2. Insert the Caster Spindles up through the Spindle Bushings. Secure in place with Clip Pins.
3. Mount the Quick Hitch to the Tractor using the 2 Nuts and 2 Bolts.
4. Mount the Frame Weldment to the Quick Hitch Kit. Secure in place with Flatwasher and "Klik Pin."
5. Connect Drive Shaft to P.T.O. Shaft.

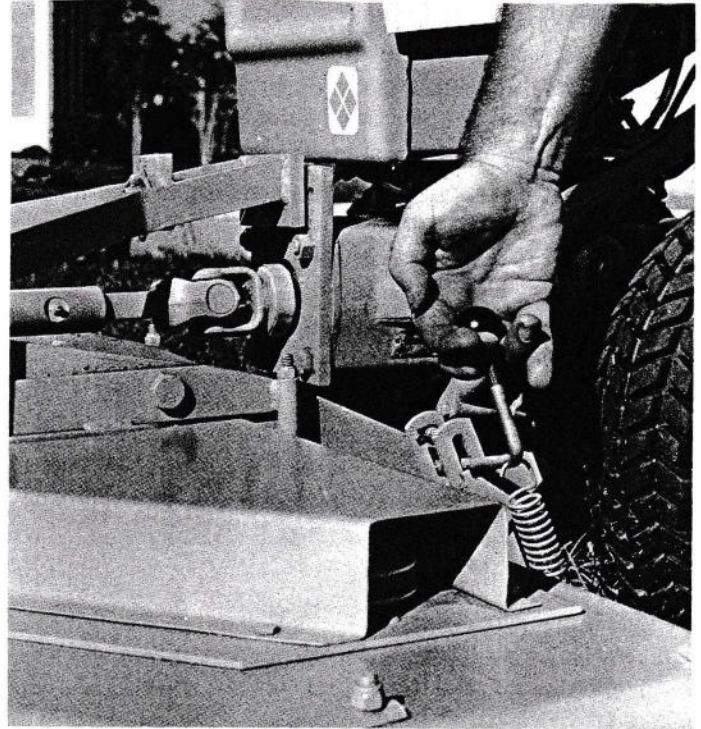


FIGURE 12

SAFETY PRECAUTIONS

1. Do not let anyone operate the machine until he has had proper instructions.
2. Be sure the work area is clear of any objects which might be picked up and thrown.
3. Do not direct the discharge of material toward bystanders.
4. Keep all Shields in place.
5. Disengage power to attachment and stop engine before making adjustments.
6. Do not wear loose fitting clothing that might get caught in moving parts and keep your hands and feet away from moving parts.

ADJUSTMENTS:

Cutting height is adjusted by moving the lever on the quadrant at the rear of the Mower. Moving it forward lowers the cutting height, back raises it. Height range — 1-1/2 inches to 3-3/4 inches. Do not adjust unless mower blades have stopped rotating.

SICKLE MOWER

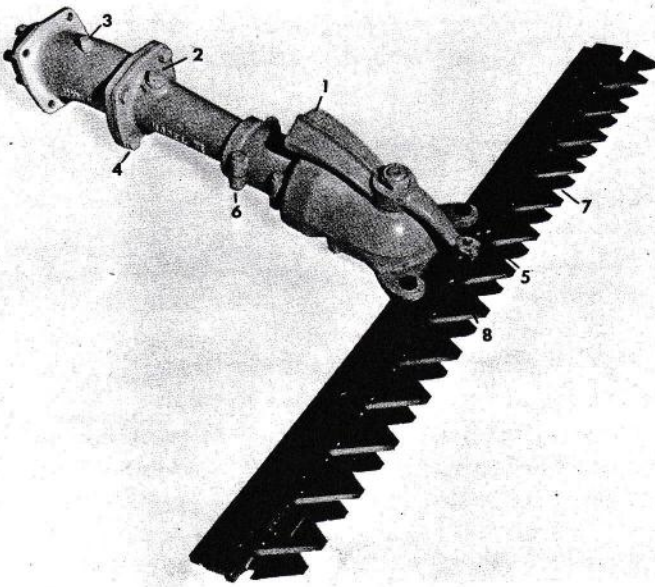


FIGURE 13

The Sickle Mower is a rugged, dependable Mower that makes the toughest weed and brush cutting easy. Swivel action allows the Blade to follow the ground contour to insure a clean cut.

Recommended for:

- Commercial 8
- Commercial 10A
- Commercial 12

LUBRICATION

Check the Drive Assembly oil level every four hours of operation by removing the Oil Level Plug, (8 in Figure 13). If oil runs out, the oil level is all right; if not, oil must be added.

To add oil, remove the Oil Filler Plug, (2 in Figure 13), and pour through the Oil Filter Hole until oil begins to run out the Oil Level Hole. Replace both Plugs before mowing.

Use SAE 140 in the Drive Assembly.

To lubricate the Universal Joint, remove the Grease Plug, (3 in Figure 13), and fill about half-full with general purpose grease.

Because the Universal Joint needs lubrication only occasionally, you may prefer this method: with the Mower detached from the Tractor, remove the Safety Clutch and four Bolts, (4 in Figure 13), which hold the lower column to the Universal Housing and slip the Housing partly off. Then apply general purpose grease generously to the Universal Joint (coat it all over with one to 1-1/2 inches of general purpose grease).

Reassemble all parts, making sure you tighten firmly the large Nut which holds the Safety Clutch.

ATTACHING:

The Sickle Mower attaches to the Tractor using 2 Nuts and 2 Bolts.

SAFETY PRECAUTIONS

Never attempt to clear the Mower, or make any adjustment whatsoever, unless the attachment is out of gear and stopped, and the Tractor Engine is stopped.

Never handle the attachment by any cutting surface. Keep hands away from Knife Sections. Grasp the Mower by its Drive Column and other non-cutting surfaces to carry it.

Try to keep clear of rocks and debris, as these will damage the cutting surfaces.

ADJUSTMENTS

To insure satisfactory performance, perform the following adjustments as required:

Bolts

Although the Sickle Mower is built and balanced carefully, it is still subject to vibration. Periodically tighten all Nuts and Bolts, doing this at more frequent intervals when doing heavy cutting. Note: The Gravely Triple-Purpose Wrench, available from your Gravely dealer, is required for the Actuating Lever Nut.

Clips

The Clips which hold the Knife to the Guide Bar should be adjusted frequently to prevent cut matter from "bunching" and causing improper feed-off. When in proper adjustment, the Clips should allow the Knife to slide back and forth easily (with the pressure of a finger and thumb). The Clips should hold the Knife in firm contact with the Shear Plates, but should not cause binding. To adjust, knock the Clips down gradually with gentle taps from a light hammer.

Swivel Action

To increase swivel action (allowing the Mower to follow the contour of the ground), loosen the Bolts, (6 in Figure 13).

When these Bolts are tightened firmly, the Mower is held in a rigid position. The Bolts should be tight enough so the Guide Bar will hold its position until lowered, but loose enough for the Guide Bar to follow the contour of the ground.

Guards

Always keep the Guards, (7 in Figure 13), in alignment. Tap with a light hammer until the Knife Sections lie flat on the Shear Plates of the Guards. Keep the Guard Bolts tightened securely.

CARE OF THE KNIFE

For best performance, keep the Knife Sections sharp. To remove the Knife for sharpening, remove the Knife Bracket Screws, (5 in Figure 13), and slip the Knife out either side. Grind the Knife Sections along the same bevel as ground originally. When replacing the Knife, make sure the Knife Bracket Screws are tightened firmly.

Note: It is good practice always to have an extra Knife, already sharpened, which you can put on the Mower when needed. This way you can always have a sharpened Knife in reserve.

No lubrication is required for the Knife while in operation, as juices from weeds and grass will furnish sufficient lubrication. However, to prevent rust, oil the Knife and Guide Bar with a thin coat of light oil after operating. Use a paint brush or similar type of applicator. When the Mower is to be stored for any period of time, clean it thoroughly and apply general purpose grease to all unpainted parts.

OPERATING HINTS

Always mow at a normal walking speed with the Tractor in *low gear*. Excessive speed will exaggerate the Mower vibration, causing Nuts and Bolts to become loose.

If excessive vibration is encountered, check to see if the Wearing Tip (on the end of the Actuating Lever) is worn or missing, or if the Bracket is worn badly; if so, your Gravely dealer can replace these parts for you.

If cut grass or weeds begin collecting on the Mower instead of feeding-off properly, check the alignment of the Guards and Knife Sections, as well as sharpness of the Knife Sections.

If this does not correct the improper feed-off, make sure one end of the Mower is not dragging up already cut material. This is the result of taking too small a "bite." Another cause of improper feed-off is a rusty or gummy Mower. Always keep it clean.

Finally, the improper feed-off may be caused by improper adjustment of the Safety Clutch. If this is the case, tighten Slip Clutch Bolts to proper tightness.

SKIDS

Skids which fit under the Guard Bar are available from your Gravely dealer. For most mowing, these Skids are not necessary; however, you may want these for certain jobs, such as mowing pastures in which you wish the grass to grow and only the tall weeds to be cut.

Your Gravely dealer will provide you with instructions for installing the Skids on your Sickle Mower.

SAF-T MOWER



FIGURE 14

Gravely's new Saf-T Mower is recognized as one of the safest Mowers made today that will handle the rough and the lawn with equal ease. Centrifugal force does the mowing with 88 free swinging knives. It was designed to reduce the possibility of foreign material being thrown from the front of the Mower.

The Saf-T Mower won't scalp under ordinary conditions. The Mower rides on Gauge Wheels in front,

has a Skid Bar the width of the Mower to ride it over bumps and rough terrain.

Universal Shaft and Right Angle Gear Drive to a Single Self-Tensioning Short Drive Belt, fully enclosed for safety.

Recommended for:

- Commercial 10A
- Commercial 12

LUBRICATION

- A. Gear Box capacity — 1 pound general purpose grease. Check at least twice a season.
- B. Cutter Shaft Bearings — Requires a *channeling grease*, such as:
 - Sinclair Litholene
 - Standard Standolith #57
 - Shell Alvania #2
 - Texaco Multi-Fak #2
 - Mobil Grease BRB

General purpose grease cannot be used.

Grease every 8 hours of use.

Attaching (Requires 11898A1 Quick Hitch Kit)

Mount Quick Hitch Kit on Tractor. Mount Saf-T Mower on Quick Hitch Kit and secure with Flat Washer and "Klik" Pin. Attach Double Universal Joint to P.T.O. Shaft of Quick Hitch Kit.

SAFETY PRECAUTIONS

1. Do not let anyone who isn't familiar with the unit operate it without proper instructions.
2. Don't drive too close to a ditch or creek.
3. Watch for traffic when near roadway.
4. Stay alert for holes or other hidden hazards.
5. Keel all shields and safety devices in place.
6. Watch where you're driving.
7. Beware of steep slopes.
8. Don't wear loose clothing that might get caught in moving parts; keep hands and feet away.

ADJUSTMENTS

Adjust the cutting height by raising or lowering the Gauge Wheels.

OPERATING HINTS

A. Excessive Vibration

Vibration is a MONSTER and if allowed to continue unchecked, can cause the complete break up of a machine in as little as 1/2 hours' time.

Very little vibration will be noticed on a Saf-T Mower which is operating properly. If vibration does occur, the Mower should be stopped and the trouble corrected, *as warranty does not cover failures resulting from continued operation after something happens to cause the Mower to vibrate excessively.*

Vibration comes, on the Saf-T Mowers, from some rotating part which is out of balance.

The Cutter Shaft will run out of balance if:

1. Wire, rope, string, rags, etc. are wound around the Cutter Shaft, holding the Knives in a folded

position. Remove such foreign objects and be sure all Knives are free to swing to the extended position.

2. Knives are missing or broken. Replace missing or broken Knives.
3. Knife Hanger Lugs are broken off Shaft. This condition usually results from continued operation in contact with large hard objects where the Knife Hanger Lugs themselves are hitting the hard objects. Lugs should be replaced.
4. Cutter Shaft Ball Bearings are worn enough to have radial "play" in them. Replace Ball Bearing and other worn parts to eliminate "play."
5. Shaft is bent. The Shafts are straight within a couple of thousandths of an inch when they are made. It is possible that they may become bent in use, such as if the Shaft is hooked on a stump while the Tractor is moving forward at good speed. Straightness can be roughly checked by anchoring a stick against something solid with the end of the stick just clearing the Shaft. The Shaft is then rotated by hand and the gap between the stick and the Shaft noted. If the gap varies, the Shaft is bent. The Shaft should be straightened or replaced.

Shafts which have Knife Hanger Lugs re-welded on them or which are straightened, should be checked when reinstalled in the Mower to be sure they are operating smoothly, Shafts which aren't should be rebalanced.

B. Wrapping — Cause and Effects:

Wrapping is a condition where the grass or other growth being mowed will wrap around the Cutter Shaft instead of being cut and mulched. This condition is caused by too low a Cutter Shaft speed.

LAWN CARE

Steel Cart

Recommended for:

- Commercial 8
- Commercial 10A
- Commercial 12

Lawn Roller

Roll out lawn problems with Gravely's Lawn Roller attachment.

Water-filled Lawn Roller follows ground contour to level your lawn, take out unsightly humps.

Compacting the soil gives you a more closeknit, firmly rooted lawn, more resistant to weeds, disease, and drought.

Particularly useful for rolling down frost and freeze damage.

Seeder-Spreader

Cart

All-Steel Cart has about a 1/2 ton capacity. Sturdy, reinforced, with a latch-release.

Seeder-Spreader

Ride in comfort as you seed or fertilize your lawn. Easy controls for even, accurate coverage of seed, lime or fertilizer . . . spreader is five feet wide for fast coverage. Hopper has 300 lb. capacity.

LUBRICATION

Steel Cart and Seeder Spreader—use General Purpose Grease occasionally in the grease fitting on each Wheel.

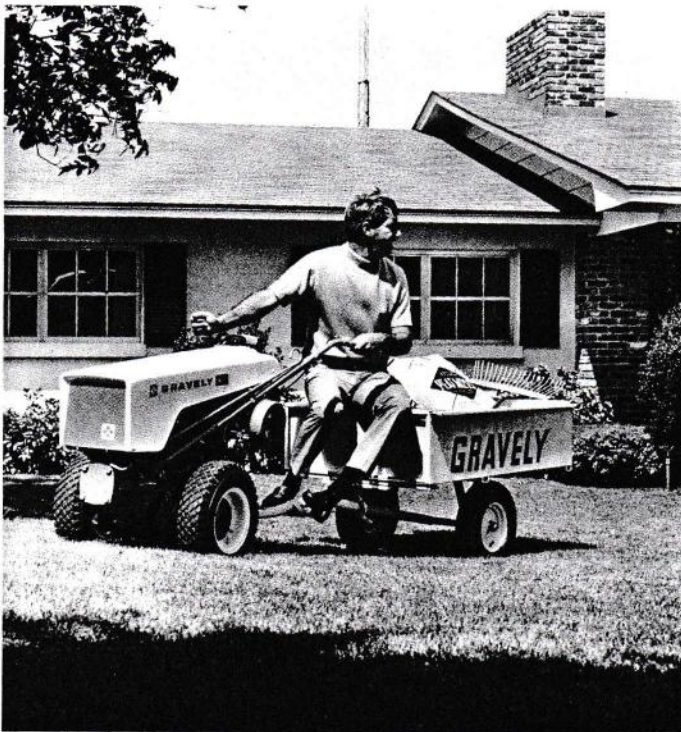


FIGURE 15

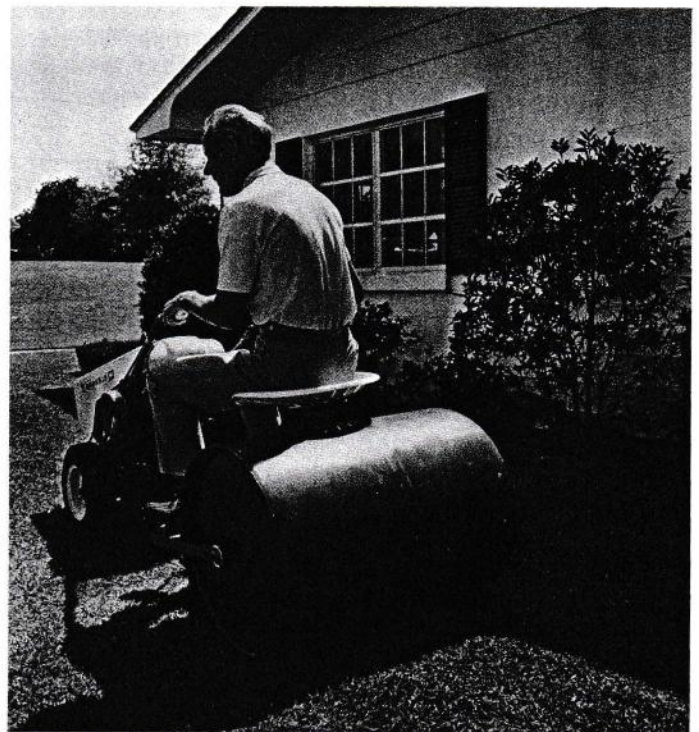


FIGURE 17



FIGURE 16

Lawn Roller — an occasional greasing of the Axles with General Purpose Grease is the only lubrication required. To lubricate, remove the Cotter Pin and slip off the large Washer. Make sure both are replaced.

ATTACHING:

- Commercial 8
- Commercial 10A
- Commercial 12

(Requires the 11627A1 Trailing Hitch Kit and 11980A1 Coupler Strut Weldment Kit.)

SAFETY PRECAUTIONS

1. Do not let anyone operate this machine without proper instructions.
2. Do not drive too close to a creek or ditch.
3. Watch out for traffic when near roadway.
4. Stay alert for holes and other hidden hazards.
5. Watch where you are driving. Pay attention.
6. Beware of steep slopes.
7. Reduce speed on all side slopes and sharp turns to prevent tipping or losing control.
8. Do not attempt to operate the machine when not in the operator's position.
9. Don't carry passengers.

OPERATING HINTS

Filling the Roller. Move the Roller until the Filler Plug (a large plug on the right side of the Roller) is at its highest point. Simply remove the Plug to fill the Roller; be sure it is replaced after filling. Water generally is used.

Dumping Cart. The Cart is dumped by releasing the Latch which holds the Cart to the Frame and tilting the Cart to the rear.

Seeder-Spreader

Distribution Controls: To determine the proper distribution of seed or fertilizer, refer to the self-explanatory plate attached to the Hopper. Simply set the Port Lever to the indicated opening to distribute seed or fertilizer properly.

Care of Hopper Assembly: Many materials used in the Seeder-Spreader, especially certain fertilizers, are corrosive. Abrasives also are present. This means the protective paint soon will wear off the Port Assembly and Agitator. To protect these surfaces, wash the

Seeder-Spreader thoroughly with water after using and let it dry, preferably in the sun. If you do not intend to use it again within a few days, pour a small quantity of oil along the Port Openings and work the Port Lever back and forth to distribute the oil.

TWIN-TOOL GARDENING

ROTARY PLOW AND ROTARY CULTIVATOR

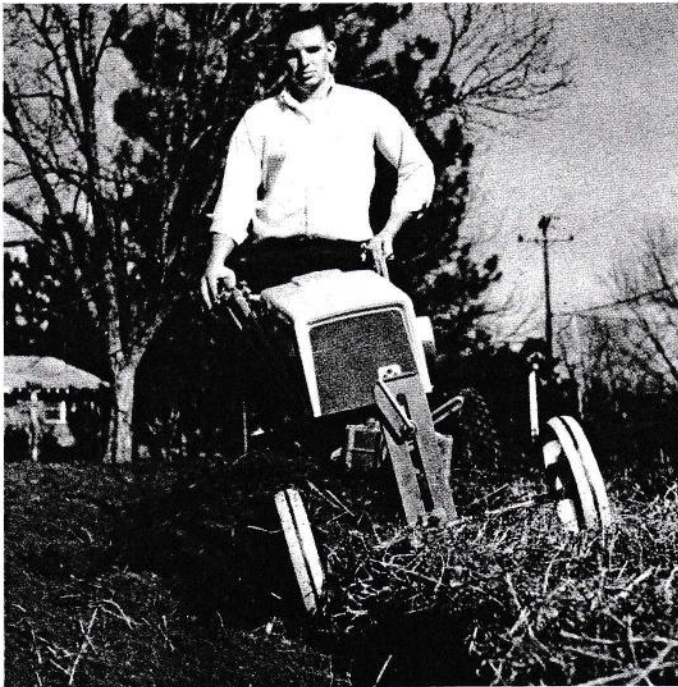


FIGURE 18



FIGURE 19

Twin Tool Gardening

Only Gravely offers you unique twin-tool power gardening . . . the Rotary Plow that prepares a seedbed ready for immediate planting, and the Rotary Cultivator that keeps your garden weed-free and thoroughly aerated all season long.

Rotary Cultivator — Tiller for a Productive Garden

Gravely's Rotary Cultivator takes the drudgery out of garden care . . . gives you a productive garden that's free of weeds and properly aerated all season long.

Durable, high-carbon steel tines cut to recommended 3" depth, stirring and aerating the soil completely. The Cultivator tills 26" wide.

Detachable sides permit the Cultivator to be used for every type of garden crop. When used with bushy row crops, the sides are left on to protect the plants.

With the sides removed, the Cultivator moves a ridge of soil into the plant row — the same effect, but without the drudgery, that you would get from tedious hard-hoeing.

Rotary Plow — Perfect Seedbed — one easy operation

Gravely's exclusive Rotary Plow prepares a seedbed that's ready for planting when you finish plowing. Just one easy operation does it . . . without raking, discing, or other preparation.

The Rotary Plow employs a totally different — and unique — principle to give you a deep, mellow, even seedbed. The plow's four high-carbon steel blades cut into the sides and bottom of the furrow 800 times a minute at normal working speed . . . actually turns the soil as it plows, with one of the four blades biting into the soil every half-inch.

Recommended for :

- Commercial 8
- Commercial 10A
- Commercial 12

The Rotary Plow is attached to the Tractor by two Nuts and two Bolts. One Bolt and one Nut must be used to attach the Angle Adjusting Bracket, upper left in Figure 20.

ROTARY PLOW

LUBRICATION

Check the Gear Housing oil level every eight hours of operation. Gear Housing oil capacity is 1-1/2 pints. Use SAE 140.

Add oil by removing the Oil Filter Plug, (1 in Figure 20).

Use an occasional shot of General Purpose Grease in the swivel casting grease fitting, (2 in Figure 20).

SAFETY PRECAUTIONS:

1. Do not let anyone operate the unit without proper instructions.
2. Keep all shields and safety devices in place.
3. Disengage power to any attachment and stop engine prior to making adjustments.
4. Pay attention to what you are doing.
5. Don't wear loose fitting clothing that might get caught in moving parts. Keep hands and feet away from moving parts.

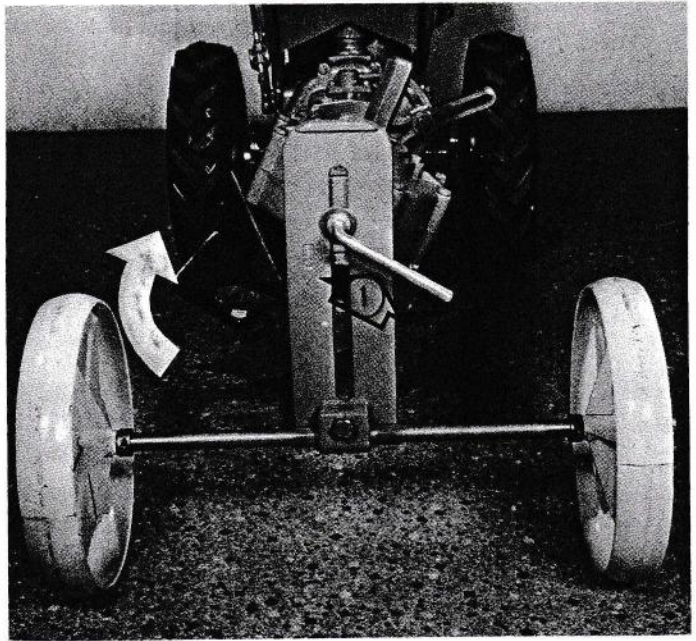


FIGURE 21

Plowing Angle Adjustment

When plowing for the first time, set the Plow at the approximate angle to the ground as shown in Figure 21. The Nut which secures the Angle Adjustment Lever must be loosened to do this; be sure it is tightened firmly after the proper angle is set.

If there is excessive drag to the left (left, as you stand at the Handles) move the Plow in the direction of the arrow in Figure 21. If there is excessive drag to the right, move the Plow opposite the direction of the arrow.

A few trials may be required before the Plow is adjusted properly to soil conditions.

Width of Cut Adjustment

The width of cut is governed by the position of the Wheel Bracket in relation to the Depth Wheel in the furrow. The closer the Wheel Bracket is to the Depth Wheel in the furrow, the narrower the cut, and vice versa.

DIRT SHIELD

The Dirt Shield is attached to the top of the Gear Housing by removing the bolts, (4 in Figure 20), inserting them through the Shield, and replacing in the Gear Housing. You can use the Dirt Shield to direct the throw of the dirt, by bending it up or down.

OPERATING INSTRUCTIONS

To plow your land, first run a furrow down the center of the land to be plowed. Then pivot the Tractor at the end of the furrow so the Right Depth Wheel is in the furrow just made. Continue this way so the dirt is always thrown toward the center (see Figure 22).

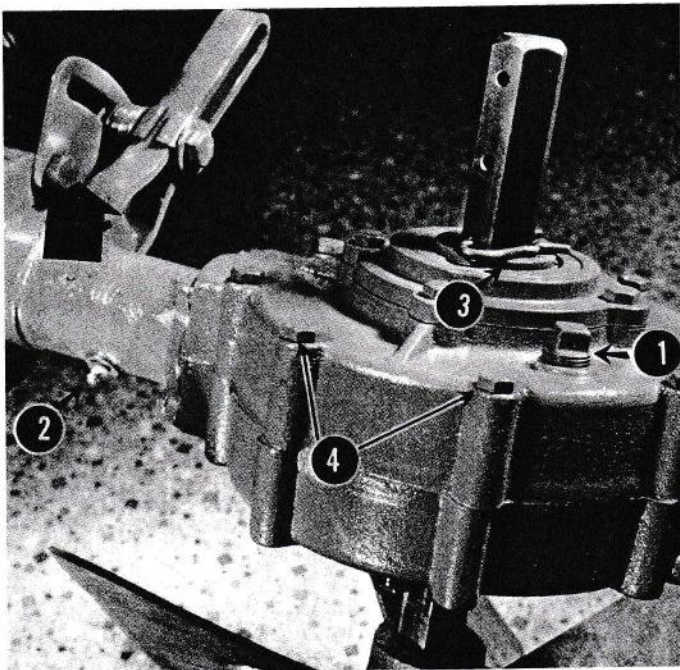


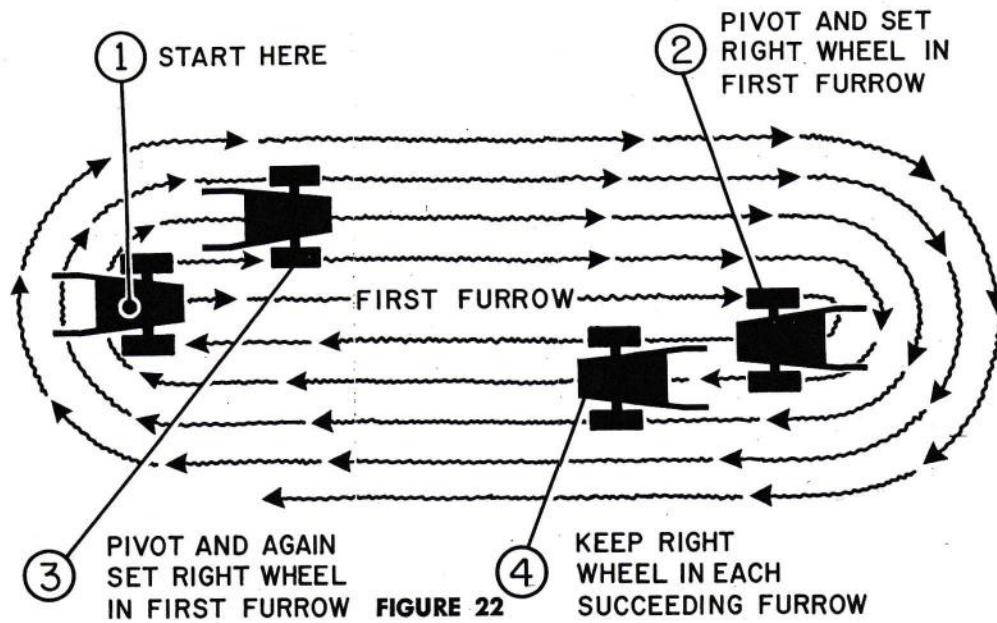
FIGURE 20

ADJUSTMENTS

Depth of Cut Adjustment

Use the pin or clip, (3 in Figure 20), in the Hex Shaft for initial Cutting depth adjustment. The higher on the Shaft the Pin is inserted, the lower the depth of cut and vice versa. Ordinarily, the Pin is inserted in one of the top holes for plowing and in the bottom hole for transporting.

A final cutting depth adjustment, if required, is made by sliding the Wheel Bracket Clamp, (1 in Figure 21), up or down in the slotted Wheel Bracket. The lower the Clamp is set, the lower depth of cut.



If you are plowing a large area, you will be able to "pull" the Tractor around corners without pivoting. However, in small areas it is necessary to pivot the Tractor each time.

When you are ready to pivot, bear down on the Handles until the Tractor is balanced. "Slip" the Clutch gently, holding back on the Right Handle, allowing the Engine to pivot the Tractor with little effort on your part.

Plowing is much easier if the Gear Housing is kept level with the ground when the Plow is in the furrow and plowing. To do this, try to obtain all depth adjustment by the holes in the Hex Shaft, and the horizontal adjustment by moving the Wheel Bracket laterally.

If you have the eight-speed Transmission, we recommend plowing with the Tractor in low range, which slows ground speed to a virtual crawl without affecting attachment RPM. In effect, this lets the Rotary Plow strike the soil twice as often per foot traveled by the Tractor.

OTHER ROTARY PLOW USES

In addition to routine plowing, the Rotary Plow can be used for:

DITCHING

Best results are obtained by using a special long Hex Shaft, which is available from your Gravely dealer. Use the Adjusting Handle to turn the Plow at a fairly large angle from the vertical, so the dirt will be thrown from the ditch. Straddle the cut you are making with the Wheels. Make the first pass fairly shallow; on succeeding passes, drop the depth of cut lower each time until the desired depth is reached.

PLANTING TREES AND SHRUBS

Remove the Depth Wheels and Wheel Bracket from the front of the Rotary Plow. Take the Adjusting Handle loose from the Angle Adjustment Bracket until Hex Shaft is vertical. Spot the Plow where you want the hole, engage the Plow, and let it eat its way down. It prepares a hole suitable for evergreens and other small trees and shrubs.

MAKING HILLS

Use the Rotary Plow as follows to make hills for sweet potatoes and other crops: With the Dirt Shield bent downward so the dirt cannot be thrown farther than a foot, make a furrow at the exact location where you want the center of the hill. At the end of this furrow, pivot the Tractor and make a second furrow (the Plow will throw the dirt to the right, forming one side of the hill). At the end of the second furrow, again pivot the Tractor and make another furrow to the right of the first furrow (the Plow will throw the dirt to the right, forming the other side of the hill).

ROTARY CULTIVATOR

The Rotary Cultivator is attached to the Rotary Plow Drive Assembly as follows:

1. Leave the Plow Angle Adjusting Assembly (upper left in Figure 20) attached.
2. Remove the Hex Shaft (and Plow Blades) from the Gear Housing.

The Depth Wheels, Wheel Bracket, and Column Assembly (which connects the Wheel Bracket to the Gear Housing) may be removed, as these serve no useful purpose unless you wish to operate the Cultivator with the Tines cutting against the motion of the Tractor (see "Operating Hints").

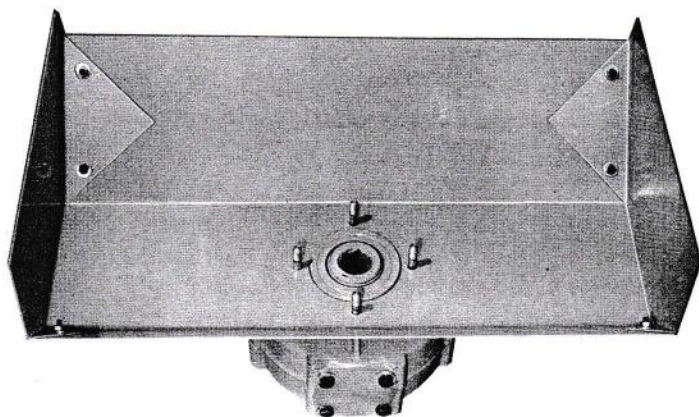


FIGURE 23

Note: After the Column Assembly has been removed, Bolts must be inserted into the Gear Housing to prevent oil leakage. We recommend short Bolts for this purpose; if the original Bolts are tightened, the Gears inside the Gear Housing will be fouled. If, however, you use the original Bolts, place sufficient Washers on them to prevent Gear fouling.

3. Rotate the Gear Housing 180° so the Oil Filler Plug is on the bottom. Remove the four Bolts from the bottom of the Gear Housing and insert the Studs furnished (If you do not have a Stud Driver, two Nuts may be locked together on the threads and used to seat the Studs; remove the Nuts after seating the Studs).

4. Fit the Hood as shown in Figure 23. Insert the Cultivator Drive Shaft into the Gear Housing.

5. Use the Elastic Stop Nuts to fasten the Cultivator Drive securely to the Gear Housing.

6. Rotate the Cultivator to the position shown in Figure 24. In this position the Tines will cut in the same direction (clockwise) as the forward movement of the Tractor.

7. Install the Dust Shield and Fastener on the top of the Hex Shaft.

8. Use the Adjusting Bracket to lock the Cultivator in place with the long axis of the Cultivator parallel to the Tractor Axles.

Note: The Gravely Triple-Purpose Wrench, available from your Gravely dealer, is required for the Cultivator Tine Shaft Nut.

LUBRICATION

Check the Cultivator Drive Assembly oil level every eight hours of operation by removing the Oil Level Plug, (1 in Figure 24). If oil runs out of the Oil Level Hole, the oil level is all right; if not, oil must be added.

To add oil, remove the Oil Filler Plug, (2 in Figure 24), and pour through the Oil Filler Hole until oil be-

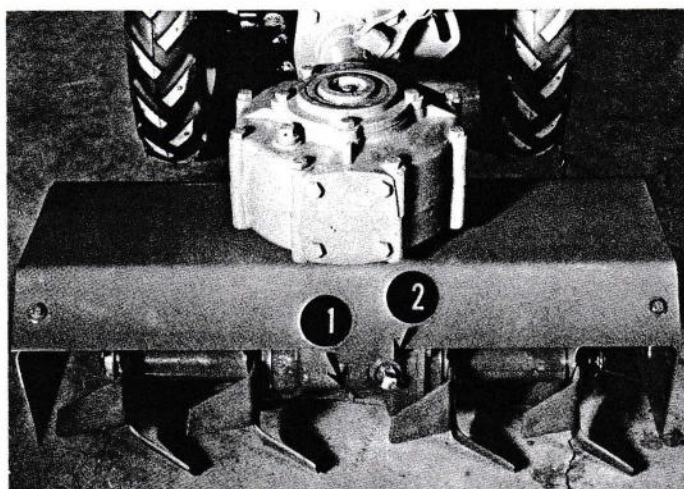


FIGURE 24

gins to run out of the Oil Level Hole. Replace both Plugs when proper oil level is reached.

Use SAE 140. Be sure the Cultivator is level when checking or adding oil.

STORAGE

When the Cultivator is detached from the Drive Assembly, place the small Spacers (cylinders) over the Studs and secure in place with the Stud Nuts.

OPERATING HINTS

The Rotary Cultivator is designed for cultivating soil which has been broken previously. It is not recommended for use as a Plow. Use the Gravely Rotary Plow to prepare a perfect seedbed in one operation and the Rotary Cultivator for perfect cultivation throughout the season.

... Cultivating depth is controlled by light pressure on the Handles. When the Tines are set to move clockwise — as they usually are — depth is controlled generally by the design of the Cultivator itself, about three inches.

... To cultivate slightly deeper than this, raise the Handles; conversely, to cultivate shallower than three inches, place slight pressure on the Handles.

... Direction of Tine rotation also controls the depth of cultivation. As a general rule, to obtain greater depth, when attaching the Cultivator to the Gear Housing, rotate it 180° so the Tines revolve counterclockwise, rather than clockwise, when the Tractor moves forward. When used in this manner, we recommend use of the Rotary Plow Depth Wheel Assembly to keep the Cultivator from "digging in" and stalling the Tractor.

... When cultivating crops such as corn, which usually require some dirt thrown around the plants, remove the End Plates. In other instances, such as cultivation of bushy crops, keep the End Plates attached to the Hood.

MA 709 22 GALLON SPRAYER

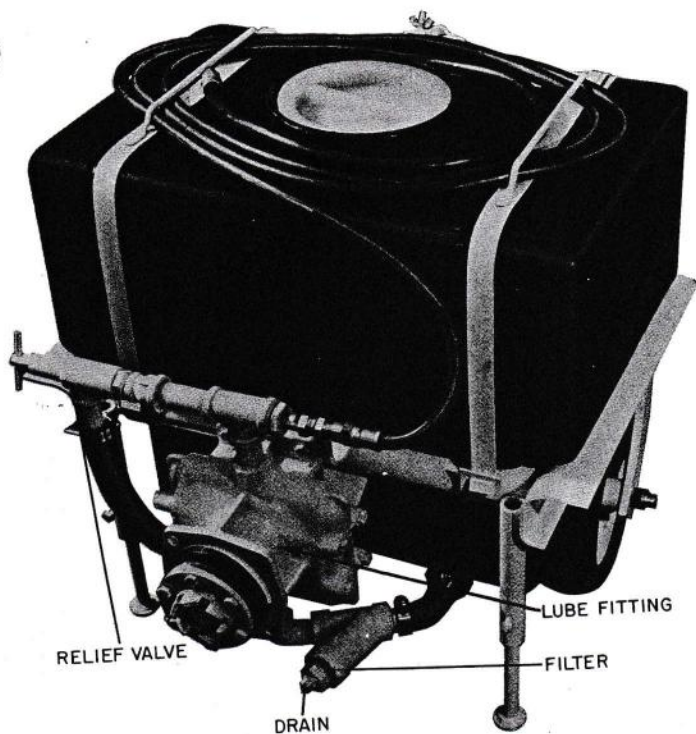


FIGURE 25

The Gravely MA 709, 22-Gallon Sprayer may be used with most wettable spray materials: herbicides, pesticides, fungicides, and soluble fertilizers.

The polyethylene tank provides the advantages of easy cleaning and reduction of residue retention.

Mounting

The Sprayer is attached to the Convertible Tractors by two Nuts and two Bolts. After attaching the Sprayer to the Tractor, raise the Stands fully and secure in the raised position.

Changing Orifices

The Gun Jet is shipped with one of the three Orifices installed. To change Orifices, unscrew the Cap, remove the Tip Gasket and Orifice from Cap. Replace with desired Orifice.

The Tee Jet (See Figure 26) produces a spray pattern similar to a Boom Sprayer. When using the Tee Jet, the gun should be attached to the tank by means of the Gun Clamp on the tank. The two openings should be parallel to the ground. The higher the Gun Jet is positioned on the tank, the wider the spread.

OPERATION

Filling Tank & Preparing to Spray

1. Read carefully the manufacturers instructions on spray material package. Follow those instructions carefully.

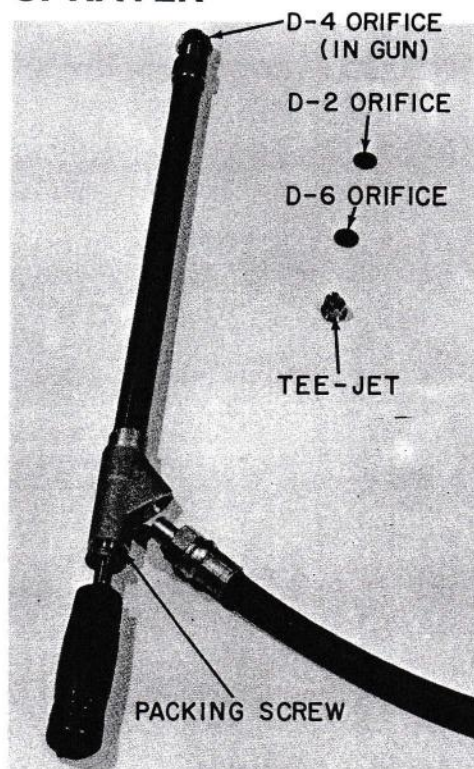


FIGURE 26

2. Pour pre-mixed spray material into tank, taking all recommended precautions suggested by spray material instructions.

3. Insert proper Orifice, to suit job, into Spray Gun. Generally the larger the Orifice, the larger the stream diameter and the farther the spray will carry.

OPERATING SPRAYER

4. To engage Sprayer, start Tractor, move P.T.O. Lever to "In." Then move Hi-Lo Gear Selector Lever from neutral to LO. Sprayer is now operating. Be sure Gun Jet is OFF. DO NOT operate Sprayer at more than 1/2 Tractor Throttle.

5. To spray, turn handle of Gun Jet, opening Valve sufficiently to produce desired spray pattern. Direct spray as required. If the Gun Jet Handle does not keep its position as set — tighten Packing Nut (Figure 25) gradually until handle turns easily, but stays in position.

6. The force (pressure) of the spray is adjusted by the Relief Valve (Figure 25). Screwing the Valve in (clockwise) increases the pressure, screwing the Valve out (counterclockwise), decreases the pressure.

Draining

Always clean and drain Sprayer Tank and Pump after each use. For cleaning instructions, follow the spray material manufacturer's recommendations. Sprayer Tank is drained by removing the Drain Plug. The Pump is drained by loosening the Pump Cap Bolts slightly. Remove and clean Strainer.

MA 210 SNOW BLOWER

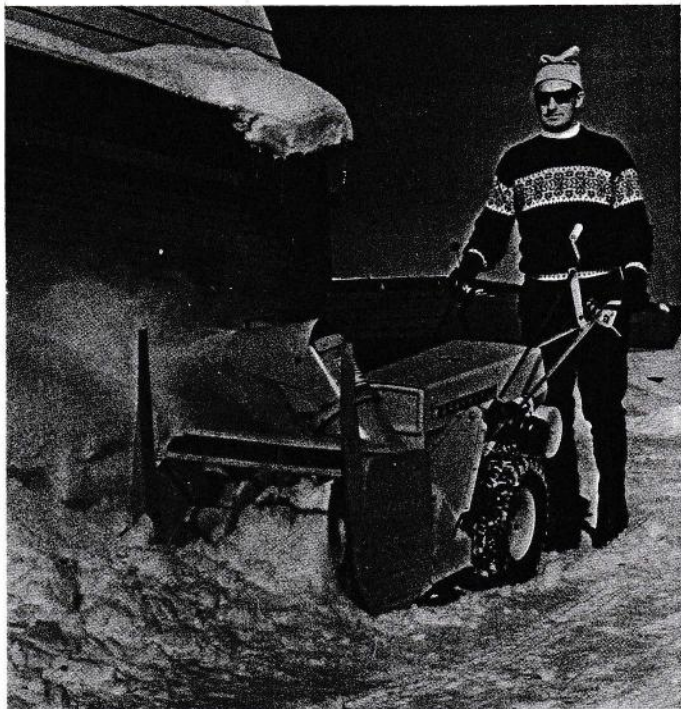


FIGURE 27

The Gravelly Snowblower will have you out and gone while your neighbor is still snowbound!

BLOWS the snow clear away. Most snow-throwers are simply mechanical shovels. But the Gravelly Snowblower literally uses safety-controlled hurricane-force winds to blow the snow clear away.

PERFECT CONTROL . . . with its convenient Directional control and Deflection Hood, you put the snow exactly where you want it—from one foot away to 50 feet away! Controlled from operator's position.

MOST EFFICIENT because it is a two-stage Snowblower. Heavy-duty, Safety Clutch-protected Reels bring the snow into the Hurricane-blower fan.

NO CLOG open throat design, plus special, time-tested reel-to-fan speed ratio moves deep or successive snows fast!

RUGGED — ALMOST INDESTRUCTIBLE . . . the heavy-duty all-welded steel construction, plus the All-Gear-and-Steel-Shaft Drive means year after year of dependable service. Protected by Double-Safety Clutches . . . one at the Reels, one at the Attachment Power Control.

SAFETY — Designed in, both for the unit and the operator. Protective Rod in front of Reel, Deflector Safety Shield, ends and top fully enclosed . . . operator is a tractor length away!

LUBRICATION

All major Bearings of the MA-210 Snowblower

that require lubricant are permanently lubricated, or are lubricated from the Tractor Transmission. However, the operator should check the oil level in the Gear Box by removing the upper Plug. Oil should come up to the bottom of this hole. If the oil level should ever be low, add worm type lubricant as recommended for truck Worm-Gear Axles in your area.

ATTACHING:

The Snowblower Drive Housing mounts to the front of the Tractor, the same as other Gravelly power Attachments. When attaching to the Tractor, the Chute Control Crank should be attached to the top Sprocket Housing Shaft of the Snowblower with the Rubber Connector and two (2) Clamps which are provided. See Figure 29.

The Crank should then be mounted to the Tractor left Driving Handle with the Crank Support and Crank Support Clamp.

Note: If the Snowblower is uneven with the ground after mounting on the Tractor, adjust the air pressure in the Tractor Tires.

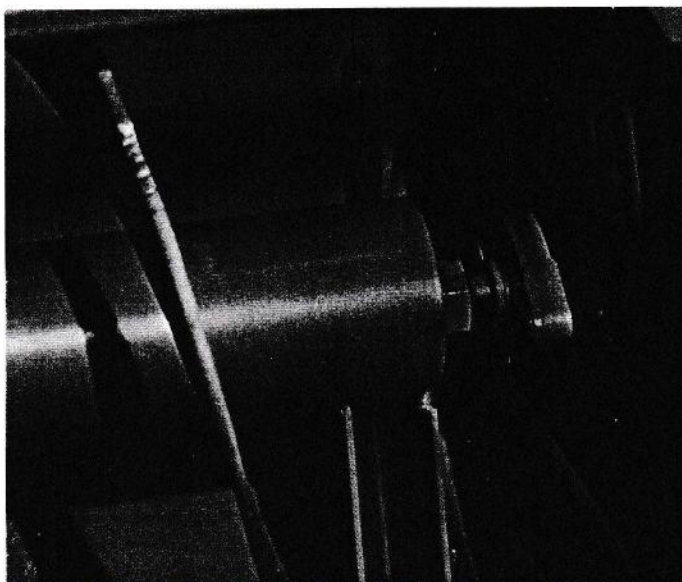


FIGURE 28

Safe Snow Removal Is No Accident

Improper use of snow removal equipment on the part of the operator can result in injury. To reduce this possibility, give complete and undivided attention to the job at hand.

Protect yourself and others by following these safety tips:

1. Stop Engine before removing obstacles, making adjustments (except with the Control Crank), or when leaving the operating position.

2. Disengage the Power Take-Off and wait until the Fan stops before adjusting the Deflector. Never direct discharge at bystanders, or allow anyone in front of machine — debris may be hidden in the snow.
3. Keep children and pets a safe distance away.
4. Do not allow children to operate machine, nor allow adults to operate it without proper instruction.
5. Adjust height to clear gravel or crushed rock surface.
6. Exercise caution to avoid slipping or falling, especially when operating in reverse.
7. Know the controls and how to stop quickly.

ADJUSTMENTS

Discharge Chute. To position the Discharge Chute, turn the Control Crank. The Discharge Chute will rotate approximately 165 degrees from extreme left, through the vertical position, to the extreme right. As the Crank is turned, the Deflector opening is also rotated from the extreme left position through a forward position approximately 180 degrees to the extreme right position.

Deflector. to provide accurate placement of the blown snow near the Blower on either side or forward throw, loosen the large Wing Nut on the Deflector and adjust the Deflector position.

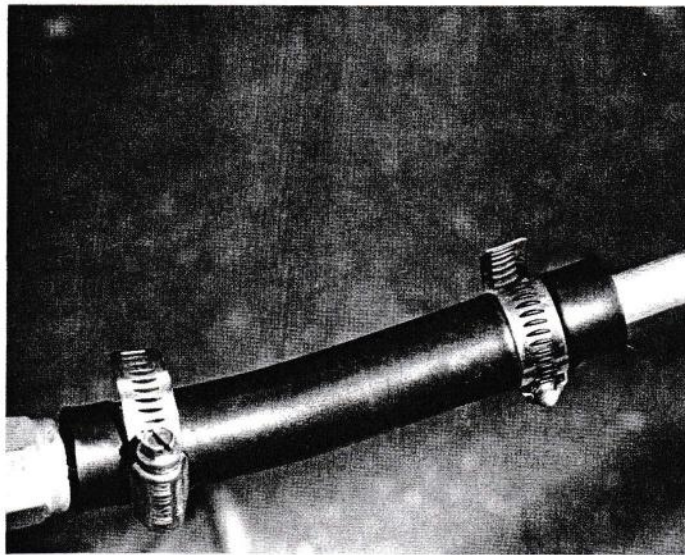


FIGURE 29

CAUTION: be sure Engine is stopped and Attachment out of gear and stopped.

Skids. To raise or lower the Snowblower cutting edge, first disengage the Power Take-Off and stop the Tractor Engine. Then loosen the Skid Mounting Bolts and slide the Skids up or down as desired, and retighten the Skid Mounting Bolts securely. This adjustment can be made more accurately if the cutting edge is placed on blocks while the adjustment is made.

Reel Clutch. The Reel Clutch is properly adjusted at the factory. If it should become necessary to tighten the protective Friction Clutch in the Reels, turn off the Tractor Engine, disengage the Power Take-Off, and after all movement has stopped, block the rotation of the Fan. Now tighten the large Nut on the left end of the Reel Shaft (as viewed from the rear of the Snowblower). See Figure 28.

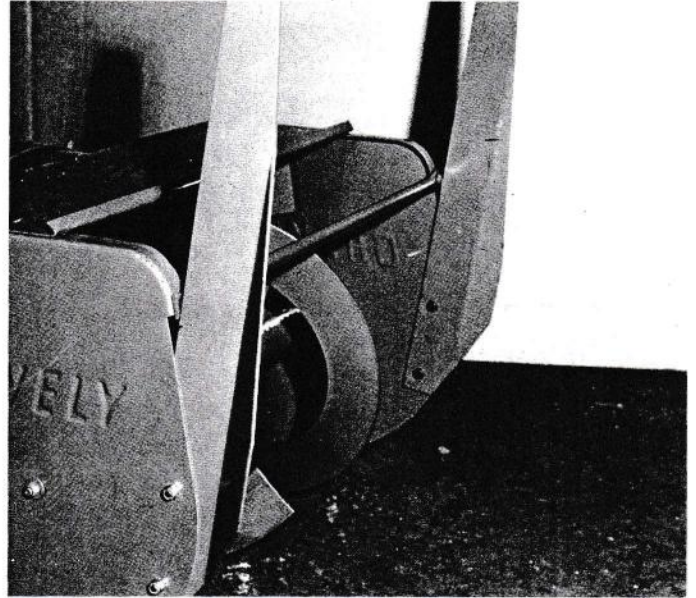


FIGURE 30

The Nut should be tightened to 85 to 95 lb. feet of torque. Over-tightening can cause damage to the Snowblower.

Control Shaft Clutch. The Fan Housing is prevented from rotating by a small Friction Clutch on the Top Sprocket Housing Shaft, except when the Control Crank is turned by the operator. The resistance of the Clutch may be varied by adjusting the Nut on the top Sprocket Housing Shaft. Adjust the Nut so that it is just tight enough to prevent the Fan Housing from rotating during operation of the Snowblower except when the Fan Housing is rotated by the Control Crank.

ACCESSORIES

A special Accessory Kit is available which includes:

Drift Cutters. Two Drift Cutters are provided. These mount inside the Reel Housing ends and extend upward to slice through snow up to 30-inches deep. The Drift Cutters are flared to assist turning in deep snows. No adjustment is necessary.

Casters. Two Caster Weldments and Mounting Brackets are included. These bolt to the inner sides of the Frame and may be used in place of the Skids.

The Caster Bracket Holes are slotted, and three (3) pairs of holes are provided in the Frame for height adjustment.

OPERATING HINTS

Keep the Engine at full throttle when using the Snowblower. With the Swiftamatic Transmission, use low axle range.

If you have Standard Transmission, shift between high and low in keeping with snow depth and density.

If the Tractor stops suddenly while operating the Snowblower, check the vent in the Fuel Tank Cap for clogging. We recommend use of anti-ice fuel additives, and keeping the Fuel Tank as full as possible.

POWER BRUSH

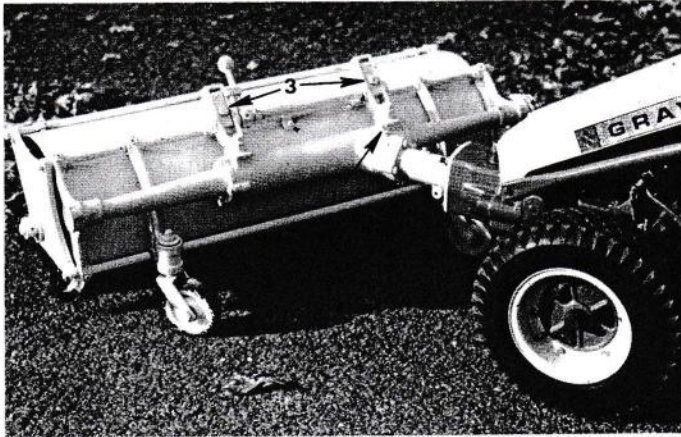


FIGURE 31

The Power Brush is a useful tool for cleaning parking lots, drives, sidewalks, and other areas where power sweeping is necessary. The Brush can be used for sweeping light snows — up to six inches in depth — clean to the pavement unless there is an ice skim under the snow.

Recommended for:

- Commercial 8
- Commercial 10A
- Commercial 12

LUBRICATION

Check the Drive Assembly oil level every eight hours of operation by removing the Oil Filler Plug, (1 in Figure 31), and observing whether the Gears dip halfway in the oil.

Add oil, if necessary, through the Oil Filler Hole Use SAE 140.

Be sure the Tractor and Brush are level when checking or adding oil.

Use General Purpose Grease in the grease fitting on the Drive Assembly.

ATTACHING:

The Power Brush is attached to the Tractor using 2 Bolts and 2 Nuts.

SAFETY PRECAUTIONS:

1. Do not let anyone operate the machine without proper instructions.

2. Watch where you are going.
3. Keep all shields in place.
4. Do not wear loose fitting clothing that might get caught in moving parts; keep hands and feet away.

ADJUSTMENTS

To adjust the Chains, simply remove a half link when the Chain has been driving long enough to "stretch." This usually occurs after several months of use.

To adjust Brush contact, put the Brush in contact with the ground by lifting up on the Brush Contact Lever, (2 in Figure 31). Then turn the Brush Tension Adjusting Bolts, (3 in Figure 31) until proper tension is reached.

Proper Brush tension must be learned by experience. The Brush, of course, must be placed under sufficient pressure to enable it to sweep clean. Always adjust Brush tension downward until correct tension is obtained. Note: Too much pressure will cause the Brush Strips to wear out prematurely.

OPERATING HINTS

Reversing or Changing Brush Strips

When it appears the Brush Strips have worn more on one side than on the other, it is time to reverse the Strips in the Brush Spiders. To do this, loosen the bolts which hold the Strips in the Spiders and remove the Strips. Then reverse the Strips (or replace, when necessary, with new Strips obtained from your Gravely dealer) and tighten the Bolts. Adjust the proper tension following procedures outlined above.

TRANSPORTING THE BRUSH

To save unnecessary wear on the Brush Strips when going to or from a job, push down on the Brush Contact Lever to raise the Brush off the ground.

Brush life will be increased greatly by wetting the Brush Strips before use, and keeping them wet during prolonged use.

48" SNOWDOZER

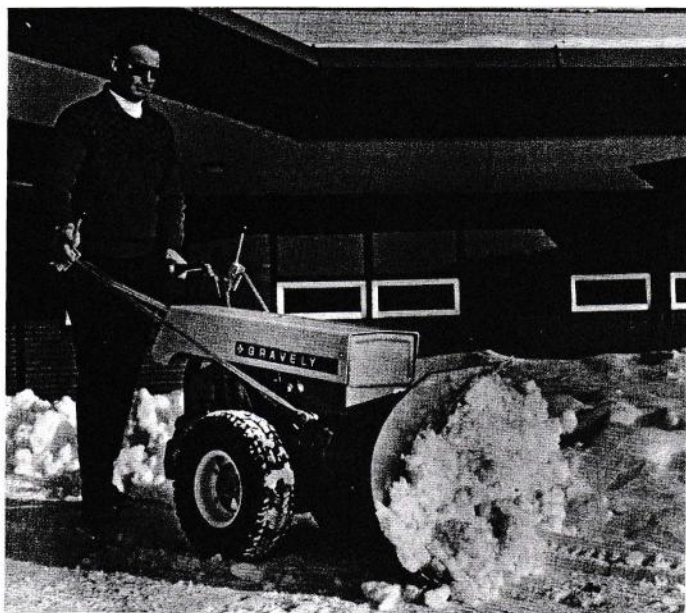


FIGURE 32

The 48-inch SnowDozer clears the average walk in one pass and the average driveway in two. It moves snow as deep as 18 inches. Key to its efficiency is its unique design — instead of pushing the snow, the SnowDozer rolls it out of the way. The SnowDozer has many uses in addition to removing snow.

Recommended for:

- Commercial 8
- Commercial 10A
- Commercial 12

ATTACHING:

The SnowDozer mounts to the Tractor using the two Bolts and two Nuts. Use of the SnowDozer Counterweight Kit (11710A1) is recommended for the Commercial 10A and Commercial 12.

SAFETY PRECAUTIONS:

1. Do not let anyone who is not familiar with the unit operate it before receiving proper instructions.

2. Do not operate too close to ditch or creek.
3. Watch for traffic when near a roadway.
4. Stay alert for holes and other hidden hazards.
5. Watch where you are driving. Pay attention.

ADJUSTMENTS

The SnowDozer has a Casting (the Casting is the part which is attached to the front of the Tractor) which has three holes in it.

To set the SnowDozer to roll straight ahead, line up the center hole in the Bracket with the center hole in the Casting and insert the T-shaped Adjusting Pin.

To roll snow to the left, line up the right (right, as you stand at the Handles) hole in the Bracket with the center hole in the Casting and insert the Pin.

To roll snow to the right, line up the left (left, as you stand at the Handles) hole in the Bracket with the center hole in the Casting and insert the Pin.

Wearing Strip. The Wearing Strip on the bottom of the Blade eventually may have to be replaced. To replace, simply remove the Screws, take off the old Strip, put the new Strip on, and tighten the Screws firmly.

SKIDS

Skids, available from your Gravely dealer, are useful when working on concrete drives where one side is higher than the other (thus forming an edge which would catch the Blade) and on gravel drives to keep the Blade high enough to remove the snow without removing the gravel.

To attach the Skids, remove the End Screws from the Wearing Strip and insert the long Bolts provided with the Skids. Slip the Skids onto the Bolts from the rear of the Blade, with the long sides down and parallel to the ground. Fasten the Nuts securely on the Bolts.

CULTIVATOR TOOLHOLDER

CULTIVATOR TOOLHOLDER

The Cultivator Toolholder, shown in Figure 33, can be used to hold a variety of cultivating tools. The most common set-up of cultivating tools in the Toolholder is shown.

In addition, the Cultivator Toolholder is used to hold the 36-inch Scraper Blade.

LUBRICATION

No lubrication is required.

Attaching to Tractor: the Toolholder is attached to the front of the Tractor the same as power attachments. The Attachment Clutch Lever (or Attachment Clutch Control) should be at the OUT position.

Attaching Tools to Toolholder: the individual cultivating tool. (1 in Figure 33), is attached to a Shank, (2 in Figure 33), which in turn is attached to the Toolholder by a Shank Holder (3 in Figure 33).

The Toolholder is equipped with five Shank Hold-

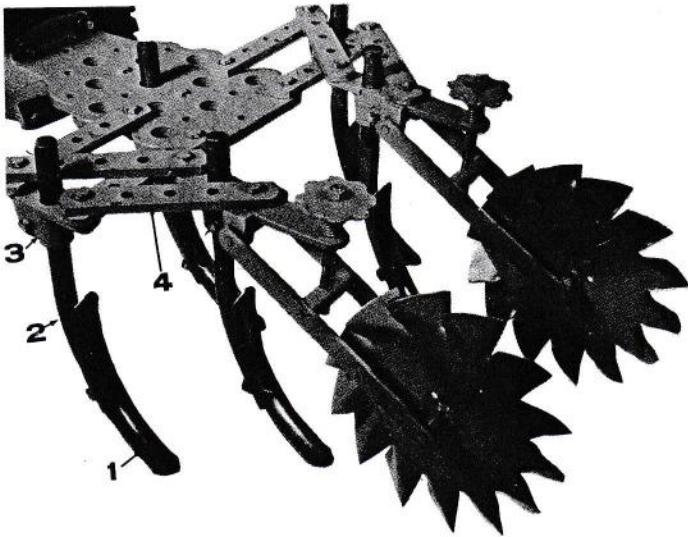


FIGURE 33

ers. These may be moved to different positions on the Toolholder, if desired, although this is seldom necessary. Additional Shank Holders may be purchased from your Gravelly dealer.

Cultivating tools are divided into two classes — those requiring the one-hole Shank and those requiring the two-hole Shank. With the exception of the Furrowers, Hillers, Shovel Steel, and Turning Shovel, cultivating tools require the one-hole Shank.

To attach a tool to its Shank, simply bolt it in place with the Nuts and Bolts provided.

To attach the Shank to the Shank Holder, loosen the Hexagon-Head Cap Screw in the side of the Shank Holder, slip the Shank into the Shank Holder from the bottom, and lock the Shank in place at the desired position by tightening the Cap Screw.

Changing Tools: after the Shanks have been attached to the Toolholder, changing cultivating tools requires only the unbolting of the old tool from its Shank and bolting the new tool on. However, if the new tool requires a two-hole Shank in place of a one-hole Shank, the Shank also must be changed.

Parallel Bars: the Parallel Bars, (4 in Figure 33), can be adjusted in several ways, depending on the task. Usually it is necessary to detach the Bars from the Depth Wheels to make these different set-ups.

Usually the Depth Wheels provide all the adjustments required. However, if required, the Shanks can be moved up or down in the Shank Holders for additional adjustment.

Five-Steel Set-Up is the standard arrangement; 1-1/4-inch wide Steels are used. (Figure 33)

Steels are available in 1-1/4, 1-3/4, and 2-1/4 inch widths; standard length of the Steels is eight inches.

Six-inch Hiller Set-Up uses right and left Hillers; these can be used for closing rows as well as for the

hilling. Hillers can be used to throw dirt away from or around the plants as desired. A furrower, available in 10 or 12-inch depths, can be used with the Hillers, which in turn throw dirt around the plants.

Sweep and Hoe Set-Up uses an improved Sweep in the center and a right and left Hoe on the sides. The Sweep comes in 8, 10, 12, and 18-inch sizes. The Sweep clears the center of weeds and trash, while the Hoes eliminate the majority of hand work close to the plants.

Furrowers can be used to lay off rows for planting. Also, many users find the Furrowers good tools for digging potatoes. For smaller furrows, seven-inch Shovel Steels are available; these can be used to lay off small seed crops and for center row cultivation.

Adjustments: the Depth Wheels are used to set the depth the cultivating tools penetrate the ground. Facing the Depth Wheels, turn the Handwheels clockwise for deeper cultivation and counterclockwise for shallower cultivation.

OPERATING HINT

... Rows should be planted enough apart to accommodate the Tractor and Tool Holder. Normal distance between rows is 32 to 36 inches. Rows should be planted farther apart for plants which spread widely, unless you intend to shield the Tool Holder so plants will not be damaged.



FIGURE 34



FIGURE 35

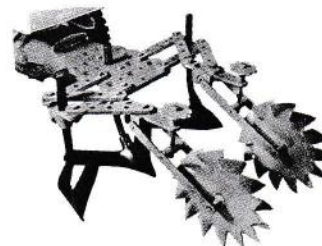


FIGURE 36

Maintenance Check List

COMMERCIAL—8 TRACTOR

RECOMMENDED ENGINE OILS (API Service MS)

AIR TEMPERATURE	SINGLE VISCOSITY OIL	MULTIPLE VISCOSITY OIL
0° F and Above Below 0° F.	SAE 30	SAE 10W-30 SAE 5W-20

RECOMMENDED TRANSMISSION OIL (API SERVICE MS) SAE 30.

OIL LEVELS. Check oil levels daily before starting Engine. Fill to FULL mark on engine dipstick and on transmission dipstick.

OIL CHANGES. Change engine oil at least every 25 hours.

AIR CLEANER. Clean as required according to directions on air cleaner decal.

TIRES. Check tire pressure regularly. Maintain at 18 P.S.I.

GREASE FITTINGS. Use General Purpose Grease occasionally on all grease fittings as needed. Once a season minimum.

To continue its program of quality and design improvement, the manufacturer reserves the right to change specifications, design or prices without notice and without incurring obligation.