OPERATING AND MAINTAINING THE PENNSYLVANIA PANZER TRACTOR - MODELS 1107 and 1110

The Panzer Tractor is built for years of fun and service. Time spent learning to properly operate and care for it will yield big dividends in satisfaction. This instruction covers the operation and care of the tractor. A separate manual is provided for the engine.

The Parts Diagram and List is on a separate sheet and should be referred to if needed to find location of parts not shown in the figures here and to get the sizes of the various parts. Figure numbers in parenthesis refer to the parts diagram. If any problems come up you can't find answers to here, please ask your dealer or write us.

PUTTING THE PANZER TRACTOR IN SERVICE

The Panzer was shipped from the factory in one carton, completely assembled. Before packing it was driven under its own power.

Your dealer has probably unpacked, serviced and checked your Panzer, but in case he hasn't, proceed as follows: (Some information about operation is included in this section also.)

- 1. Cut strapping and remove the top half of box. Fold out and down the sides of the lower half. Lift off the sleeve or inner tube.
- 2. If an electric start model, cut the strapping holding the carton of battery acid to the rear lift and set the acid aside.
- 3. Take out the lag screw in the bottom of the rear hitch which holds the rear of tractor to skid. Cut the strapping holding the tractor to the skid.
- 4. Release parking brake, if it is on. Figure 1 shows how to work it. Don't use fingers to release unless pressure is relieved by stepping on brake arm simultaneously.

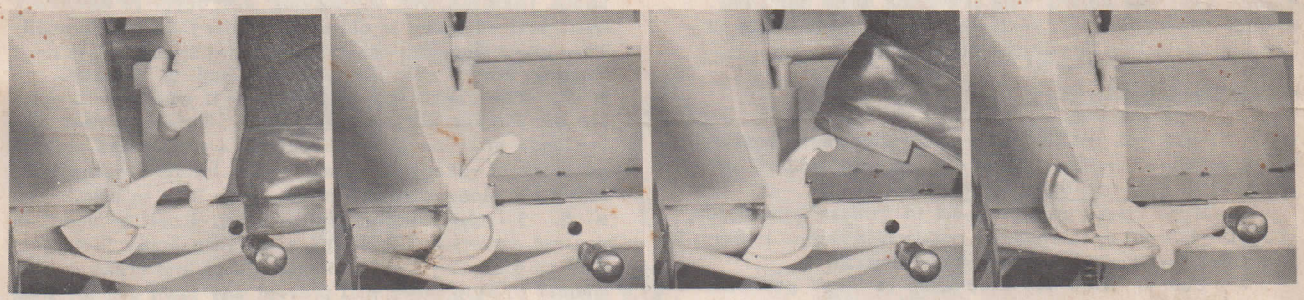


FIG. 1 Applying Parking Brake Parking Brake On Releasing Parking Brake Parking Brake Off

- 5. Turn front wheels straight ahead and push the tractor off the skid and carton.
- 6. Lift the tractor hood as shown in Figure 2 after rotating the steering wheel ½ turn either way. Raise the hood completely over the grill and let it down gently until the hood hits against the grill front. CAUTION: Don't throw the hood over and let it slam as this will bend it. Lift rear seat to expose battery and gas tank on electric start models.
- 7. If the tractor is an electric start model the battery should next be activated. To do this:
  - Remove battery from tractor.
  - Fill with acid following instructions on acid box.
  - Give battery a topping charge.
  - Wipe off and reinstall battery.

It is possible to simply add acid to the battery in place, but this is bad practice as acid will almost certainly be spilled and the battery will start out ½ charged which will shorten its life to possibly a few months.

- 8. Check oil and greasing. Oil was put in at the factory but must be checked and additions made, if required.

– ENGINE OIL – Check with dip stick (or by removing filler plug on Briggs engine). See engine manual for oil type and filling instructions. Don't overfill.

– DIFFERENTIAL – Check oil level as discussed in maintenance section.

– ALL GREASE FITTINGS AND OIL HOLES – Check for evidence of having been greased or oiled and lubricate if required.

- 9. Check the tire pressure, 10 PSI front and 8 PSI rear, and fill tank with regular gasoline. Check that gasoline valve on bottom of tank is open.
- 10. Close the hood, put on the parking brake, and put the glidamatic control in neutral position, as shown in Figure 3.

FIG. 2 Opening Hood

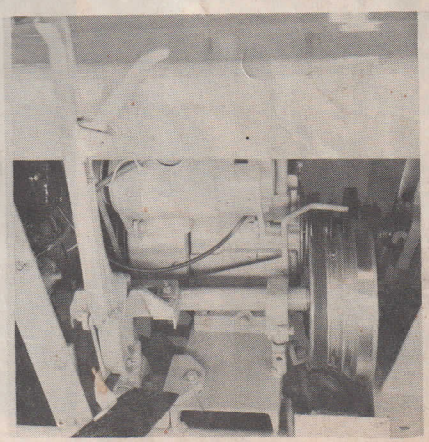


Fig. 3 Drive Control

DRIVING THE PANZER

The Panzer Tractor's combination of clutchless instantaneous forward and reverse action plus wide wheel base plus short turning radius plus individual wheel brakes make it the most maneuverable and safe 4 wheel garden tractor in the field. As you become skilled in its operation you will take real pleasure in driving it, particularly with the foot drive control.

SAFETY FIRST

While the Panzer has a lot of potential for play, as well as work, it is not a toy and must be handled with the respect due any 700 pound bundle of power and traction.

- 1. Don't leave the ignition key in the tractor.
- 2. Don't let anyone drive it without a little instruction and checking out of their ability.
- 3. Don't let children use it for a plaything.
- 4. Always stop any power driven attachment when a by-stander approaches the tractor.
- 5. Don't leave the tractor unattended with the engine running. The tractor may creep off or a child might pull the drive control. The parking brake works on one wheel only and the tractor will move itself, when the drive is engaged even with the parking brake on.
- 6. Be sure tractor is in neutral before starting engine and keep your right foot off of the trip release except when using the foot pedal drive control.
- 7. The drive control makes your tractor very safe to handle as slowing it down is so easy and automatic. Make a practice of slowing down and keeping your hand on the drive control, on turns, rough spots, and in all "tight" places.
- 8. Slopes and hills require special care—see section on "Hillside Technique."
- 9. When towing anything, keep the hitch point low. A high hitch point will make the tractor front liable to lift and could flip the tractor on its back.

STARTING ENGINE

- 1. First put tractor in neutral and apply parking brake as shown before. Have you checked engine oil?
- 2. <u>For Electric Start Model</u>

— Move choke control down to "choke" position if engine is cold or to opposite position if engine is hot, Move throttle control down to fast position.

— Turn ignition key clockwise to "on" position. Turn key hard clockwise to engage starter, just as on an automobile.

— When engine starts, push choke slowly to "off" position and adjust throttle to proper engine speed.

— To stop engine turn key to "off" position.

- 3. <u>For Rope Start Engine</u>

— Push throttle control to full choke position, if engine is cold. To fast position if engine is hot.

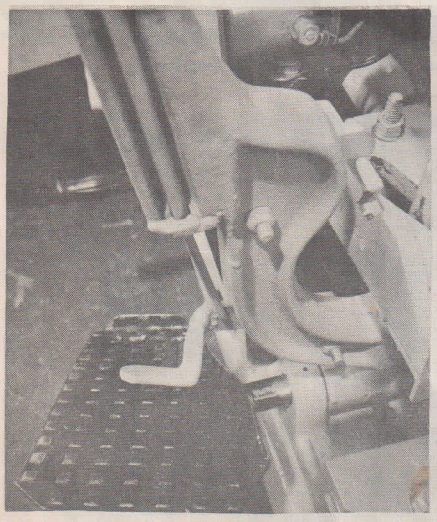
— Pull starter rope until engine starts.

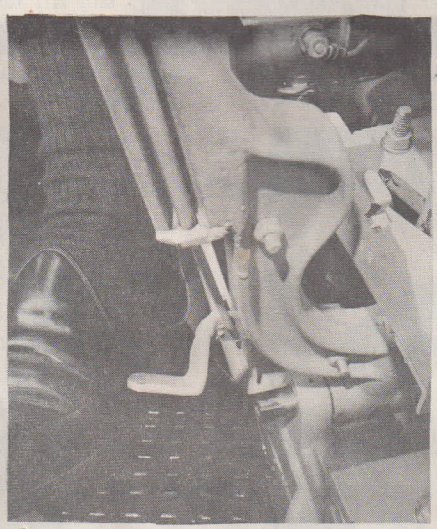
— Move throttle control slowly away from choke position.

— To stop engine push throttle to full off position.

DRIVING WITH GLIDAMATIC DRIVE

- 1. Before driving the tractor, study how the Glidamatic shift lever works and where the neutral position is. Use only hand control in driving until you are thoroughly familiar and comfortable with the tractor. Only then can the foot pedal be safely used. In putting foot on right pedal be careful not to release trip control.
- 2. After engine is running smoothly get on tractor and release parking brake.
- 3. Grasp the shift lever and squeeze the grip lever to lift the latch out of the neutral notch . Move the lever slowly forward to move the tractor forward or backward to move the tractor backward.
- 4. Releasing the grip while the shift lever is pushed full forward will allow the lever to lock in forward position. To release it from this position squeeze the grip.
- 5. The shift lever for safety reasons cannot be locked in reverse, but must be held back. Lock is provided for neutral position, and lever should be in notch when starting or standing with engine running.
- 6. It is a good idea, while in close quarters with the tractor, or going up steep grades to not release the shift lever but rather keep to it in hand for instant stopping or change of direction. The forward speed can be reduced and controlled closely for working in tight spots, trimming, etc., by moving shift lever forward only until desired speed is obtained, rather than full forward. This gives fingertip control of forward speed. This controlling action can also be obtained in reverse.
- 7. The glidamatic drive makes it possible to operate the Panzer without being on it. This is a real convenience at times as when pulling a trailer and picking up piles of raked up leaves. Just let the engine idle, and walk along with the tractor from pile to pile.
- 8. To turn tractor sharply, turn steering wheel in desired direction and at the same time apply foot pressure to brake on inside wheel. Using the brake in this manner to help steer will prevent any lawn damage from sliding wheels. When a rear wheel spins, traction can be regained by applying brake on the spinning wheel.
- 9. Varying engine speed with the throttle control gives some change in tractor speed. Additional speed change is obtained by shifting the drive belt. To change





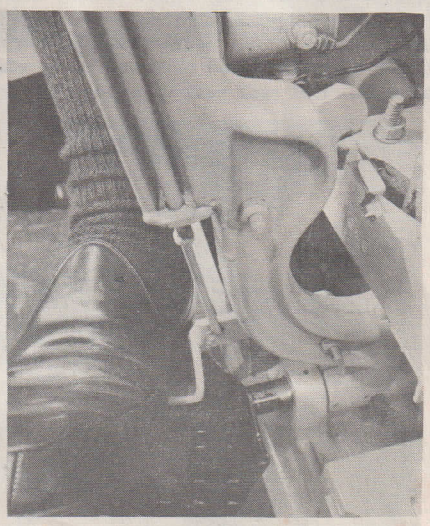


FIG. 4 **Right Hand Pedal and Trip** for Foot Control

Foot on Pedal When Using Hand Control — Trip not Depressed

Foot on Pedal With Trip Depressed for Foot Drive Control

forward speed from low range to intermediate or high first stop the engine. No attempt should be made to change the belt with the engine running. Pull shift lever to reverse position and move belt to the desired pulley grooves. Do this by taking belt out of groove in large pulley first, moving belt to desired groove on small pulley, and then returning belt to proper groove in large pulley. When the belt is in the largest groove on engine pulley, tractor will be operating at highest speed. Mowing and other lawn work will be done in medium or low. Plowing or garden work will be done mostly in low. High is mostly for fun--pulling trailers, etc. After moving belt make sure belt is between arms of belt pucker and that belt just misses the arms when engaged in forward position. See Figure 5.

● 10. Use of Foot Pedal Drive Control — When the right foot is put on the pedal in such a way that the trip lever is depressed, the shift lever can be moved freely by tilting the pedal with the foot - See Figure 4. Since the action is rather fast it takes practice to develop smooth control. Have plenty of space around tractor when learning. In a tight spot it is still best to move the hand to the shift control. With experience you will find that foot pedal drive control is ideal for bull dozing and other operations requiring frequent use of the lift handle.

USING BRAKES

● 1. The individual wheel brakes are not used in normal driving to stop or hold the tractor — this can be done with the drive lever.

● 2. They are used individually to help make sharp turns (brake wheel on inside of turn) or to stop a wheel which is spinning — most often on side slopes (high side wheel spins) or in sand, mud, or snow — or when plowing to counteract side pull of plow.

HILLSIDE TECHNIQUE

The Panzer will safely climb astoundingly steep grades. Because it is such a mountain goat, you must use some care on steep slopes to avoid tipping or flipping the machine. Keep your hand on drive control while on steep slopes.

● 1. The Panzer like a "Jeep" will climb a steeper hill than it can run along, so don't try to turn around on too steep a hillside — go over the top or back down.

● 2. Going up steep hills, go slowly and avoid jerking the drive as the great power and traction can lift the front wheels.

● 3. If you drive up a steep hill and want to back down instead of going over the top, shift the control back slowly to just out of neutral and the slippage in the transmission will ease the tractor down very slowly.

● 4. Running lengthwise on fairly steep banks and side slopes is easily possible. Sit to the high side and apply the high side brake lightly.

ATTACHMENTS

Separate instructions are supplied with the various Pennsylvania Panzer attachments. The power take-off clutch, the lift handle, and rear hitch are used in various combinations with the attachments.

● 1. Lift Handle

To operate the lift handle grip the handle and latch and move the handle as required. Releasing the latch will hold the handle where desired. Note that the latch is positive against forward and reverse movement, i.e., it permits no float in a rigidly connected attachment.

● 2. Rear Hitch

When towing or pulling or jerking anything with a Panzer keep the hitch point low and be sure the hitch connec-

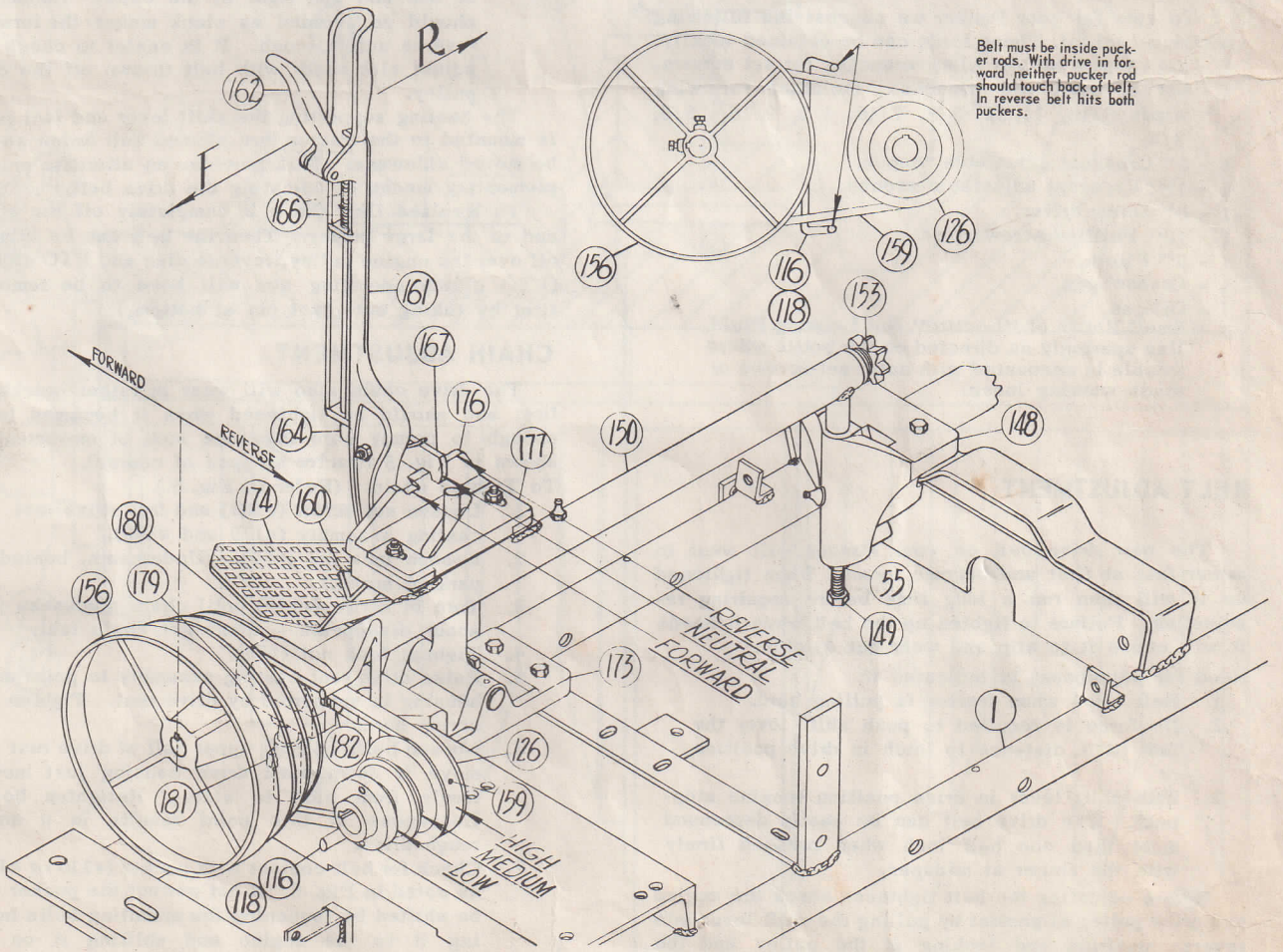


FIG. 5 Drive Control

tion has freedom to allow sharp turns and movement over hills and depressions without binding or locking.

- 3. PTO Clutch Control

Engage the PTO Clutch (only with the engine running) by pulling out the control knob slowly and firmly until the ball locks snap over center and the clutch will stay in. To disengage the clutch push the knob in quickly. The engine does not have to be running to disengage clutch. Always stop attachments before getting off tractor.

ADJUSTING AND MAINTAINING THE PANZERTRACTOR

The Panzer tractor requires a minimum of maintenance. The routine care and minor adjustments can be easily handled by mechanically inclined owners. Major problems with the engine or rear end can usually best be handled by qualified Pennsylvania Servicing Dealers.

- The secrets of trouble free operation are:
  1. Keep the tractor clean.
  2. Keep the tractor oiled and greased.
  3. Keep things tightened up by an occasional going over with wrenches and screw driver.
  4. Change the engine oil and replace the engine air cleaner regularly.
  5. Keep engine cooling air screen in flywheel clean
  6. Be on lookout for anything not working right and correct at once.
- Because of initial wearing in, it is particularly important to give your Panzer a good checking over after the first few hours of operation. In particular, the drive train should be inspected for loose set screws, and the entire assembly for loose nuts and bolts.
- Operation and maintenance of the engine are well covered in the Engine Manufacture's Manual furnished with your tractor.

TOOL KIT

To care for your Panzer we suggest the following minimum tool kit. These tools can be obtained locally.

1 - Set (3/32" to ¼") Allen wrenches for set screws.
1 - Set of open end wrenches, including following sizes: 5/16, 11/32, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4.
1 - 6" Crescent adjustable wrench.
1 - 12" Crescent adjustable wrench.
1 - 6" Screw driver.
1 - 10" Phillips screwdriver.
1 - 6" Pliers.
1 - Grease gun.
1 - Oil can.
1 - Small Bottle of "Loctite" Nut Locking Fluid. Use sparingly as directed on the bottle where trouble is encounted with nuts, set-screws or studs working loose.

BELT ADJUSTMENT

The new drive belt on your Panzer will wear in rather fast at first and become loose. When tightened up it will then run a long time before requiring re-adjusting. Failure to tighten up the belt when it needs it will cause it to slip and wear out quickly.

Need for adjustment is indicated if:

1. Belt slips when tractor is pulling hard.
2. No force is required to push shift lever the last little distance to latch in drive position or
3. With shift lever in drive position (engine stopped). The drive belt can be easily depressed more than one half inch when pressed firmly with the finger at midspan.

Before adjusting the belt tightness check the engine and drive pulley alignment by pulling the shift lever into reverse position and looking at the pulley and the reverse tire where they come together.

The tire should run approximately in the middle of the flat rim of the drive pulley. With the drive in the forward position the grooves in the pulleys will be out of line (large pulley forward of small). This is normal and required to keep belt from climbing up a groove when tractor is reversed. No adjustment of pulley positions should ever be required, but if needed is accomplished by adding or removing spacer washers at rear of large pulley. To tighten belt (See Fig. 5):

- 1. Place shift lever in neutral position.
- 2. Loosen the two bolts holding the two drive control castings (#176 and #177) to the drive housing (#155).
- 3. Slip the two castings as a pair a little toward the drive shaft (try about 1/16" of movement). Move both ends about the same amount.
- 4. Tighten the bolts firmly and check the belt for tightness in the engaged position. Readjust as required.
- 5. Width of control slot – Note that the two castings can also move in and out with respect to each other and thus fit snugly or loosely on the pin rising from the shift lever casting. Keep them snugged on pin when adjusting belt as discussed above. The idea is to let the pin move freely in the slot from end to end and still not have any slack. Because the castings can move independently at each end the slot can be loose at one end and tight at the other. Looseness should be avoided as slack makes the forward-reverse action rough. It is easier to check and adjust slot width with belt thrown off the drive pulley.

The casting supporting the shift lever and foot pedal is mounted to the tractor thru slotted bolt holes so can be moved sideways. This provides an alternate or supplementary means of adjusting the drive belt.

To Replace Belt throw it completely off the small end of the large pulley. Then the belt can be slipped off over the engine pulley, reverse disc and PTO clutch. (PTO clutch operating arm will have to be removed first by taking out pivot pin at bottom.)

CHAIN ADJUSTMENT

The drive chain also will wear in rather quickly at first and should be tightened when it becomes loose enough to permit more than one inch of movement as shown in Fig. 5 (tractor stopped of course).

To Tighten chain: (Refer to Fig. 5.)

1. Loosen set screw (#181) and free drive rest casting assembly (#179 and #180).
2. Loosen lock nut (#55). (Underneath, behind parking brake.)
3. Turn in screw (#149) until chain slackness just about disappears -- don't get chain taut.
4. Tighten lock nut (#55).
5. Raise drive rest casting assembly to point drive housing is supported by drive rest. Tighten set screw hard.
6. Loosen bolts holding upper half of drive rest and move it down until drive housing just moves freely from side to side. Retighten bolts. Looseness at this point results in a noisy rough drive.
7. Check for belt contact with pucker (#116 or #118) as noted in Fig. 5. If not correct the pucker can be shifted by loosening the mounting bolts holding it to the engine and shifting it on its slotted holes.

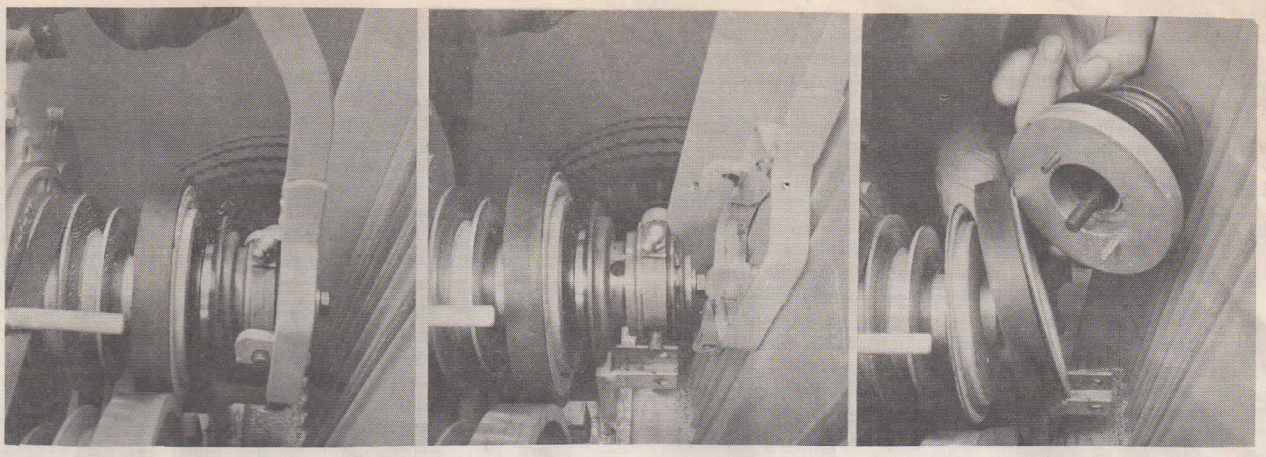


FIG. 6 **Reverse Tire Replacement**

REVERSE TIRE REPLACEMENT

The reverse tire is an expendable item which will wear out and require replacement.

The stop screw in the back of the drive rest support is set to stop the drive pulley from moving in far enough to strike the metal discs holding the reverse tire (which would damage the drive pulley). Thus when the drive **housing begins to hit the stop screw it is time to re-**place the reverse tire.

Cracks and checks normally appear in the reverse tire and do no harm. Only in case large pieces come out, the tire tears completely in two, or it wears down to the limit should the tire be replaced.

To replace the tire: See Figure 6 and Figure 7.

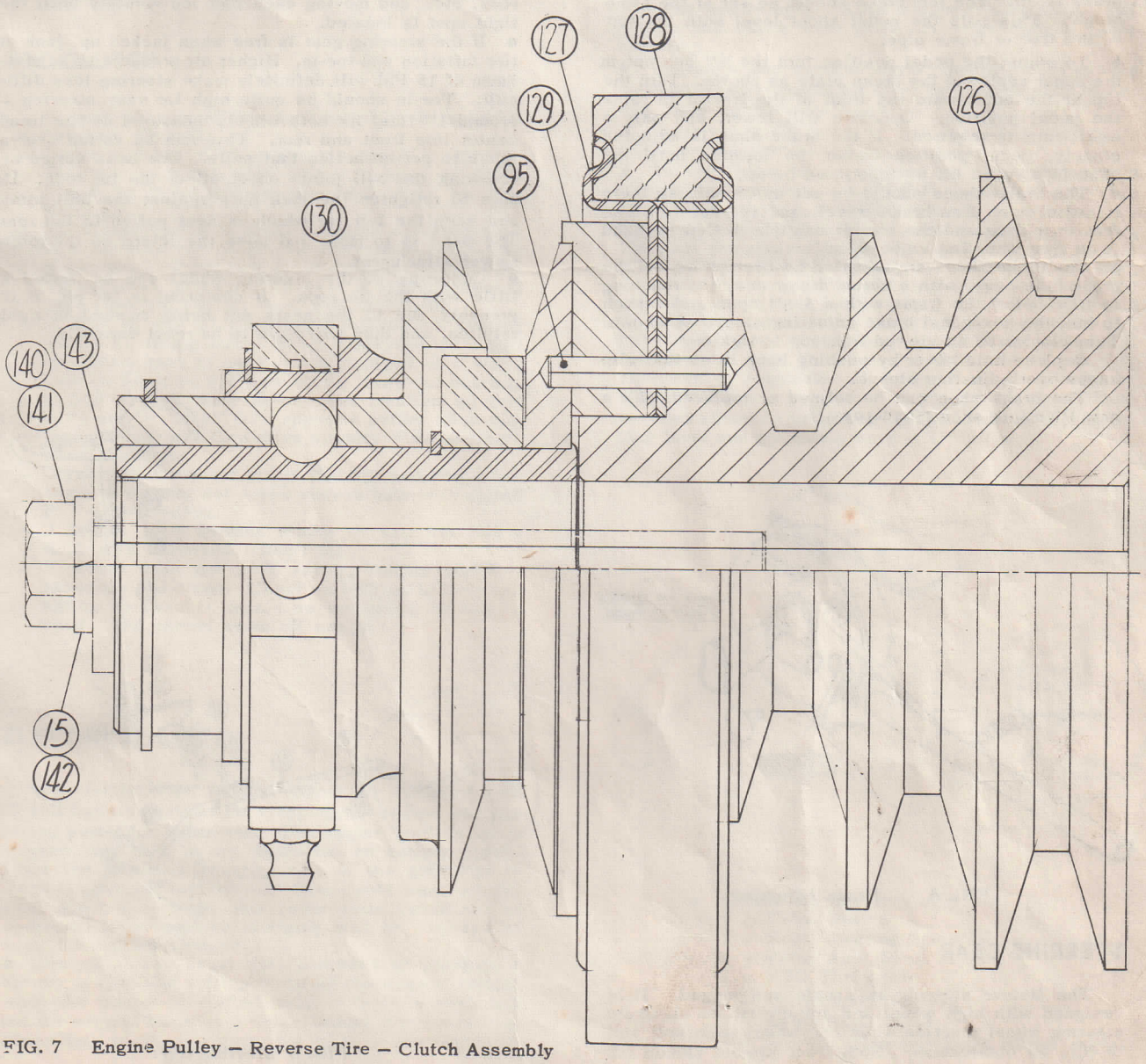


FIG. 7 **Engine Pulley – Reverse Tire – Clutch Assembly**

1. Get the clutch throw-out lever out of the way by pulling out the bottom pivot pin and lifting the lever to disengage it from the clutch throw-out ring.
2. Screw out the hex. cap screw projecting from the end of the PTO clutch.
3. Jar or pull the clutch free from the engine pulley and slip the front tire retaining disc and the worn out tire off.
4. Put on a new reverse tire and replace the parts in order. Note the metal parts must be aligned with the pins so that the pins extend thru from holes in engine pulley to holes in face of PTO, and the face of PTO must nest down into the recess of the clutch support spacer.
5. After the clutch is remounted and bolted up tight, turn the engine over slowly and check that the entire reverse tire and clutch is rotating without wobble. If it is wobbling, correct by checking pin alignment as noted above.

BRAKE ADJUSTMENT

Brake pedal position and brake shoe position are individually adjustable on each wheel. See Figure 8.

- Pedal position should be adjusted so that the right brake arm is against the parking brake cam when the brake is off. The left brake should be set at the same height. This puts the pedal about level with the top of the tractor frame pipe.
- To adjust the pedal position turn the ¾" hex nut in the upper center of the brake plate as shown. Turn the top of the nut toward the front of the tractor to raise the pedal position. Opposite will lower, and only a small turn is required. If the brake shoe is adjusted closely, pedal position cannot be lowered until the shoe is slacked off as instructed below.
- The brake shoes should be set up closely so there is little or no free brake travel, and yet not so close that they drag and the tractor can't be rolled by hand (with free wheeling valve open).
- The brake shoes are adjusted by first prying off the brake hole cover with a screw driver and then reaching in from below the frame with a 5/8" open end wrench to turn the hexagonal brake adjusting sleeve as shown. Turn clockwise as viewed from top to tighten.

Replace hole cover by pushing back in so that clip snaps over adjusting sleeve.

The brake shoe can be relined or replaced with a new Plymouth shoe (1949-1956).

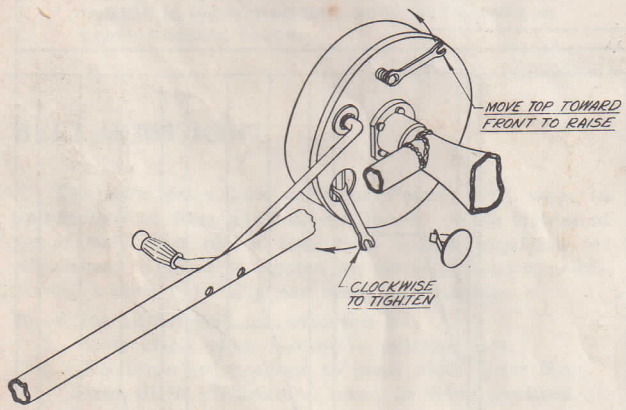


FIG. 8 Brake Adjusting

STEERING GEAR

The Meteor steering is simple and rugged. It is designed with high wheel and spindle tilt to eliminate steering wheel reaction when one wheel is in soft soil or hits an obstruction. Both front wheels should tilt out 5° to 6° . (It is not impossible, if the tractor is dropped off of a truck or the like, for the spindles to be bent up and the tilt lessened. If steering is not right this should be checked.)

- Adjustments to correct slack movement, hardness of steering, and centering of steering wheel may be required. See Figure 9.
- Source of slack in steering can quickly be located by working the wheel and seeing where looseness is. Unless a ball joint or bolt is simply loose, the slack will normally be in the gear mesh between the steering quadrant gear and the steering pinion gear. Check first to see that the shaft collars on the steering shaft are tight and firm against the pillow blocks so that there is no end play in the shaft. Bring mesh of gears together by either moving pinion down on shaft or by moving pillow block forward (bolt holes are slotted). Normally move pillow block first. If gears get tight, but slack still exist, move pinion down instead. If ball joints, pillow blocks, or bushings are worn and loose fitting, replacement will be required.
- The Panzer tractor wheel will normally be fairly hard to turn if the tractor is standing still or moving very slowly and a full turn is attempted quickly. When under way it should steer relatively easily and not require 'fighting the wheel' on soft or rough ground.
- Hardness of steering can be due to plain mechanical binding or to incorrect tire-ground contact. Check the former by jacking front of tractor off of the ground. Steering action should be quite free. If it isn't, isolate and correct the cause by disconnecting the tie rods, etc., and moving each part individually until the tight spot is located.
- If the steering gear is free when jacked up, look at tire inflation and toe-in. Higher air pressure up to maximum of 15 PSI will definitely make steering less difficult. Toe-in should be quite high for easy steering — around 1" total for both wheels measured at tire tread center line front and rear. This can be varied over a range to get an action that suits. Toe-in is varied by screwing the ball joints on or off of the tie rods. Be sure to retighten the lock nuts against the ball joints and keep the left tie which is bent pulled to the rear. The bend is to make rod miss the idlers on the rotary mower attachment.
- Centering of the steering wheel can be varied a little with the tie rods. If centering is far off, it is probably due to the gears not being meshed in right relation, and they will have to be reset correctly.

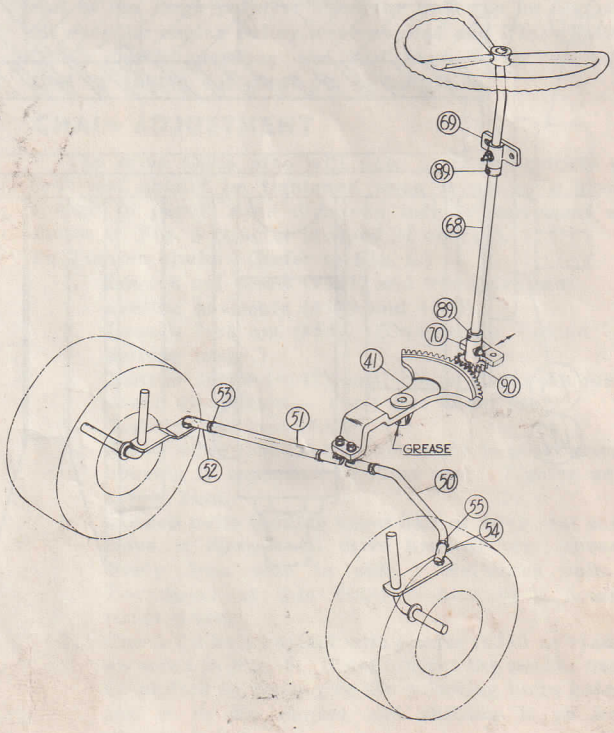


FIG. 9 Steering Gear

REAR END

The rear end in the Meteor Tractor is a reconstructed Plymouth rear end, and if any trouble is encountered, its repair is handled just as it would be in an automobile. Standard auto repair parts can be used in case of gaskets, seals, bearings and brake shoes. Axles and complete differential gear trains should be obtained from Pennsylvania Lawn Products. Don't rebuild a gear train except to replace the pinion shaft seal and front bearing; rather get an entire replacement from Pennsylvania – see parts list.

- Checking and adding differential oil is discussed in the lubrication section. Oil leaking from a tractor rear end is usually caused by too much oil in the rear end. If it is not caused by too much oil, and occurs at either rear wheel, the inner seals should be replaced. If leaking at the forward end of the differential, the differential seal should be replaced. Such replacement should be done by an automobile mechanic as he has the pulling equipment to remove the old seals. Wheel and outer pinion shaft roller bearings should be repacked with grease, if dismantling is done to replace a seal. Leaking can also occur around the gasket or bolts where the gear carrier bolts into the banjo housing. If leakage is here, tightening the nuts holding the differential in the housing will usually correct. In case a leak persists (in some cases there might even be a pinhole in the housing) carefully cleaning off the spot and applying "plastic steel" or other epoxy resin two component patching material will be the easiest way to stop.

PTO CLUTCH

A cross section of this ball lock clutch is shown on the parts diagram.

- Clutch will not close unless the clutch is rotating.
- The belt is loose when clutch is open or disen-
- gaged, as it is relaxed and drops down on idler bearing.
- To engage clutch – apply constant pressure until belt rises to top of groove and clutch locks into engagement. Don't jerk it. It remains locked without continual pressure, but even a slight continual push from the control lever will unlock it.
- In both on and off positions the throw-out bearing should be riding free. Never exert continual pull on control knob to keep clutch engaged, if it won't lock in. To do so will burn up the throw-out bearing.
- If belt creeps when de-clutched, realign so that belts are "in line" with opposite pulley when disengaged-belt will then drive slightly, "out of line" when engaged.
- Grease the throw-out collar (fitting) and add a few drops of oil thru set screw access hole with clutch in "out" position.
- If bronze idler bearing sticks or will not turn - flush with Kerosene. Don't oil.
- If clutch does not work easily, remove and disassemble and clean. Clutch is held on by bolt and spring lockwasher only. - no set screw should be used - and should come off easily.

ELECTRICAL SYSTEM

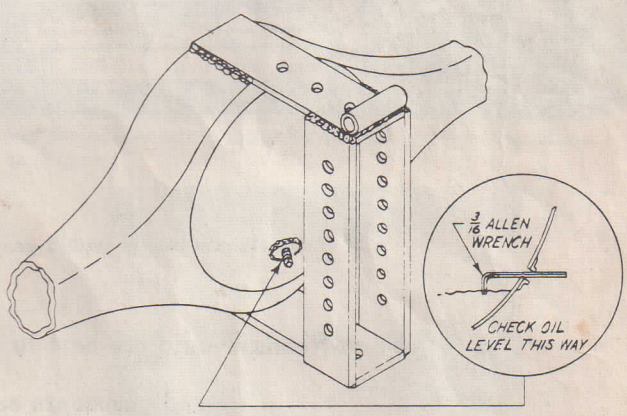
The electric start model Panzers are equipped with 12 volt battery systems for cranking the engine and supplying power for lights etc. The engine ignition is by magneto and thus is not dependent on battery power. Since the maximum charging rate of the generator is about 6 amperes, battery load from lights must not exceed about 4 amperes, and under some conditions of operation supplementary charging will be required to keep the battery charged.

- Battery – The usual care accorded an automobile battery is normally sufficient during the summer season when the tractor is started once or twice a week and run for several hours at a time. During the winter supplementary trickle charging is a must, if the tractor is expected to be started for snow removal chores and if the battery is expected to last more than one season. A discharged battery deteriorates rapidly on standing and is also liable to freeze during cold weather. Keep the acid level over the plates and keep the battery tight in the box and the terminals clean and tight.
- Always note to see that the generator is charging properly and that the battery cranks the engine briskly. Charge the battery if it gets weak; don't let it get dead. A slow charge is best, but a fast booster charge is better than nothing. You can, of course, use jumper cables in a pinch.
- Wires loose from terminals are the most frequent cause of electrical trouble.
- Lack of ground connection is the 2nd most likely trouble. Battery is grounded with cable; ignition switch is grounded to frame thru dash. Paint sometimes prevents proper grounding at these points.
- Serious damage to the engine magneto, points, and condenser will result if battery voltage is ever applied to the magneto grounding terminal. Inadvertant substitution of an ignition switch and solenoid made for use with a battery ignition engine will do just this.

LUBRICATION AND OTHER ROUTINE CHECKS

A tractor with a rotary mower or earth working attachments gets as much exposure to dirt and wear in a few hours as a car might in a month. So assume 1 hour of tractor operation equals 50 miles of auto operation on a dusty road, and govern your washing, oiling and greasing accordingly. As a minimum, plan to oil and grease and check over generally after each 8 hours operation.

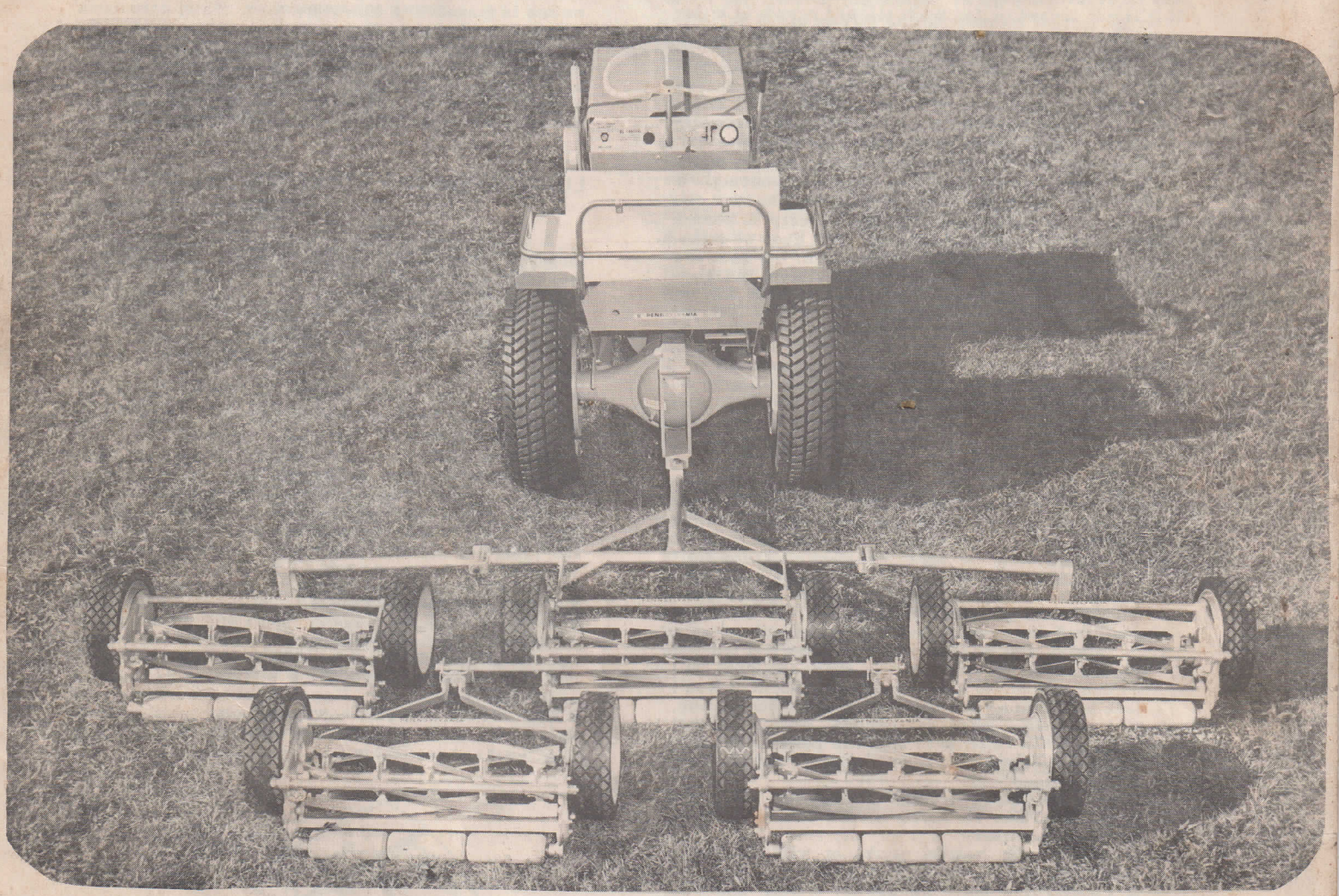
- Engine – See manufacturer's manual for oil change, combustion and cooling air filter care, spark plug change and other engine care items.
- Battery – Like an auto, but see section on electrical system for special instructions.
- Differential – When shipped the differential was charged with 3 pints of #90 E.P. transmission grease or oil. This fills it to within about ¾ of an inch of the fill plug. Check this level occasionally by removing the plug and measuring the oil level with a 3/16 inch allen wrench as shown. Normally, if no leaks develop, you should never have to add or change the differential oil. In case the oil lever is low, #90 E.P. oil should be added. Since all top openings on the differential have been welded shut to prevent overfilling, adding oil had best be done at a service station where pumping equipment is available. However, it can be added with a large oil can or a piece of tubing or a syringe. Under no circumstances bring the oil level above the filling plug level and preferably keep it ¾" below.



- Grease fittings with gun.
  - 2 – Front Wheels
  - 2 – Front Steering Spindles
  - 1 – Front Axle Pivot
  - 1 – PTO Throw-Out
  - 1 – Drive Shaft Housing
  - 1 – Drive Shaft Pivot
  - 1 – Steering Quadrant Pivot (under engine)

1 – Lift Handle Pivot Casting
2 – Steering Shaft Pillow Blocks (behind dash)

- Wipe grease on –
  - Steering Gears
  - Drive Control Casting Slot
- With oil can (engine oil) place few drops on –
  - PTO Clutch and Linkage
  - 2 Oil Holes in Shift Lever Pivot Casting
  - Hood Pivots
  - Lift Lever Linkages and Pivot Points
  - Shift Lever Linkages and Pivot Points
  - Engine Throttle and Choke Controls (both ends)
  - Parking Brake Pivot
  - Brake Pedal Arms (where they go into brake plate)
  - Roller chain (unless tractor used continually under dusty conditions)
- Tighten it up – Keep an eye on your Panzer for loose nuts, bolts, set screws, unusual play, etc. When detected correct at once. Periodically check over all fasteners, paying particular attention to the set screws in the drive train and in the steering gear.
- Wash it off – Washing your Panzer and its attachments with a hose after each use is the best way to keep it looking new. Don't squirt water on the engine, especially if hot, but the rest of the tractor can take it o.k. Occasional waxing will help preserve the finish.



Pennsylvania tractor with 5 gang Pennsylvania reel mower attachment.

We at Pennsylvania are here to serve and will welcome your questions and comments on Pennsylvania products.

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