

Bolens[®]

DIESEL TRACTORS

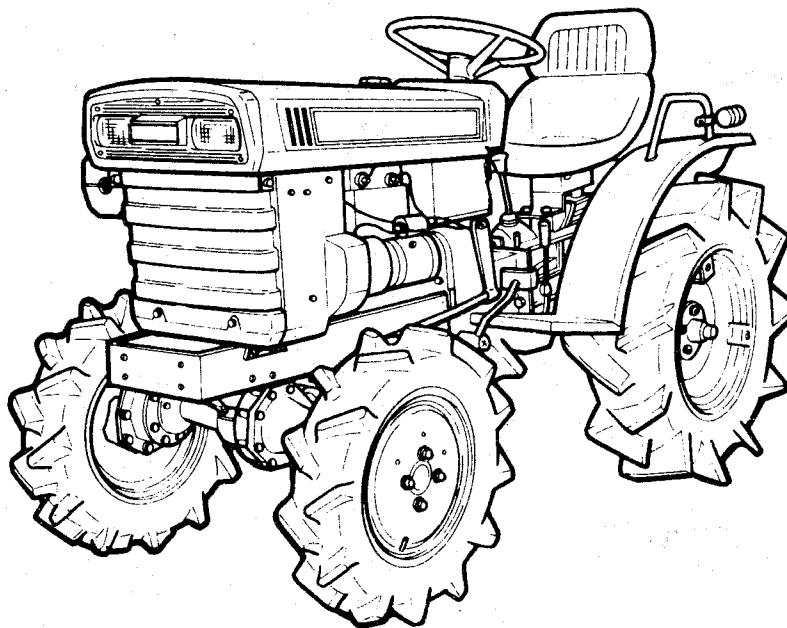
from ISEKI

Tractor

TX1502 (G152)

TX1504 (G154)

TX1704 (G174)



Safety and Operation Instructions



for turf, commercial and agricultural chores

FORM 553214-4 (7/89)
Supersedes 553214-3

Thank you for purchasing this piece of Bolens equipment. We feel you now own one of the finest pieces of equipment available.

This is a safety, operation and general maintenance manual which does not attempt to cover major repairs. Bolens equipment is carefully designed, engineered, and manufactured to give good performance if properly operated and maintained. Review this manual to familiarize yourself with the unit, its features and its operation.

This equipment is a product of Bolens Corporation, 215 South Park Street, Port Washington, Wisconsin 53074, telephone 414-284-5521. If you should have any questions or encounter any problems, which you feel only the factory can solve, write to the above address or phone, attention the Service Department.

Your Warranty Statement is included, under separate cover with this manual. Please read it carefully. Also, please return the completed postpaid owner registration card which is included with this manual. The purpose of this card is to register each unit and owner at the factory for safety purposes.

BE A SAFE OPERATOR

AVOID ACCIDENTS

Included with this manual is a Safety Poster which we ask that you place in the area where your equipment is stored. This is intended to serve as a constant reminder to be safety conscious.

To read reports from all over the country is to be convinced that a large number of accidents can be prevented only by the operator anticipating the result before the accident is caused and doing something about it. No power equipment can be safer than the person who is at the controls. If accidents are to be prevented and they most certainly can be prevented - operators must accept their full measure of responsibility.

It is true that the designer, the manufacturer and the safety engineer can help, but their combined efforts can be wiped out by a single careless act.

It is said "the best kind of safety device is a careful operator." We ask you to be that kind of person.

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GENERAL SAFETY PRECAUTIONS



CAUTION

Preventing accidents is the responsibility of every equipment operator. The following general safety precautions must be fully understood and followed by every operator of this tractor and its attachments. Review them frequently and **NEVER TAKE CHANCES. BE CAREFUL BEFORE, DURING AND RIGHT AFTER USE OF ANY POWERED EQUIPMENT. ACCIDENTS CAN BE PREVENTED.**

1. Know the controls and how to stop quickly. **READ THE SAFETY AND OPERATION INSTRUCTIONS.**
2. Do not allow children to operate the vehicle. Do not allow adults to operate it without proper instructions.
3. Do not carry passengers. Keep children and pets a safe distance away.
4. Clear the work area of objects which might be picked up and thrown.
5. Disengage all attachment clutches and shift into start position before attempting to start the engine (motor).
6. Disengage power to attachment(s) and stop the engine (motor) before leaving the operator's position.
7. Disengage power to attachment(s) and stop the engine (motor) before making any repairs or adjustments.
8. Disengage power to attachment(s) when transporting or not in use.
9. Take all possible precautions when leaving the vehicle unattended, such as disengaging the power-take-off, lowering the attachment(s), shifting into neutral, setting the parking brake, stopping the engine, and removing the key.
10. Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes; never across the face.
11. Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Exercise extreme caution when changing direction on slopes.
12. Stay alert for holes in the terrain and other hidden hazards.
13. Use care when pulling loads or using heavy equipment.
 - a. Use only approved drawbar hitch points.
 - b. Limit loads to those you can safely control.
 - c. Do not turn sharply. Use care when backing.
 - d. Use counterweight(s) or wheel weights when suggested in the owner's manual.
14. Watch out for traffic when crossing or near roadways.
15. When using any attachments, never direct discharge or material toward bystanders nor allow anyone near the vehicle while in operation.
16. Handle diesel fuel with care - it is highly flammable.
 - a. Use approved diesel fuel container.
 - b. Never remove the cap of the fuel tank or add fuel to a running or hot engine, or fill the fuel tank indoors. Wipe up spilled fuel.
 - c. Open doors if the engine is run in the garage - exhaust fumes are dangerous. Do not run the engine (motor) indoors.
17. Keep the vehicle and attachments in good operating condition, and keep safety devices in place.
18. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
19. Never store the equipment with fuel in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.
20. To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease.
21. The vehicle and attachments should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.
22. Do not change the engine governor settings or overspeed the engine.
23. When using the vehicle with mower, proceed as follows:
 1. Mow only in daylight or in good artificial light.
 2. Never make a cutting height adjustment while the engine (motor) is running if the operator must dismount to do so.
 3. Shut the engine (motor) off when unclogging chute.
 4. Check the blade mounting bolts for proper tightness at frequent intervals.
24. Study all attachment manuals thoroughly before using attachments with tractor. By doing so you will be aware of both the tractor and attachment capabilities when used as a unit and also the safest manner in which to operate them.
25. Always follow manufacturer's operational suggestions.
26. Never wear loose clothing when operating unit. Loose clothing can get caught in moving parts and cause severe injuries.
27. Do not tow vehicle. Personal injury or damage to the vehicle could occur.
28. Always disconnect negative (-) battery cable from battery before doing any work on the electrical system. Reconnect it **LAST** when work is done. This is to prevent shorting of electrical system and accidental burns.
29. Do not drive this unit on a public thoroughfare at any time. The operator is risking injury from passing vehicles. Most local ordinances prohibit operating a unit such as this on a public thoroughfare.
30. Do not operate attachments when transporting vehicle.
31. Always wear substantial footwear to provide as much protection as possible.

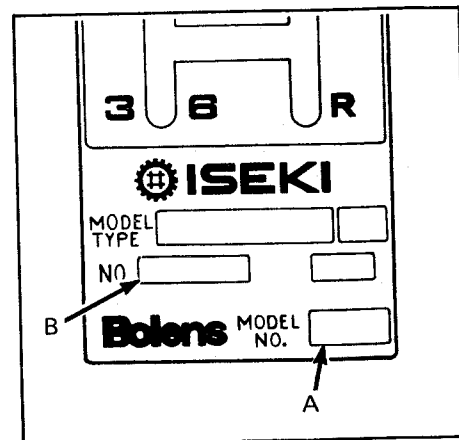
IDENTIFICATION NUMBERS

To ensure prompt service when repairs or adjustments are required, your Bolens dealer must have the following information. For your own personal reference, fill in the spaces provided below.

Tractor Model
Type Number (A) _____

Tractor
Serial Number (B) _____

Engine
Model/Serial Number
(Located on L.H. side of engine, behind side shield)



Date of Purchase _____

SPECIFICATIONS

SPECIFICATIONS	MODELS		
	G-154 TX 1504 4 WHEEL DRIVE	G-152 TX 1502 2 WHEEL DRIVE	G-174 TX 1704 4 WHEEL DRIVE
Weight Lbs./Kgs	1177/535	1078/490	1200/545
Engine			
Model	K3A		
Type	Water-cooled, 4-cycle, 3-cylinder Diesel Engine		
Displacement in./cm	47.2/776		51.7/849
Bore x stroke in./mm	2.56 x 3.07/65 x 78		2.67 x 3.07/68 x 78
Type of combustion chamber	Swirl chamber		
Method of lubrication	Forced circulation		
Method of cooling	Forced water-circulation		
Air cleaner	Dry		
Fuel: Type	Diesel Fuel		
Tank capacity Gal./L	3.17/12		
Starting method	Starter motor with glow plug		
Battery	NS60 (12V x 45A)		
Tractor			
Clutch	Dry, single disc		
Method of gear shifting	Selectable, sliding gear		
Differential gear	Bevel gear type, with dif-lock		
Brake	Mechanical, internal expanding type		
Steering gears	Ball screw type		

SPECIFICATIONS (continued)

SPECIFICATIONS	MODELS	G-154 TX 1504 4 WHEEL DRIVE	G-152 TX 1502 2 WHEEL DRIVE	G-174 TX 1704 4 WHEEL DRIVE
Tire: Front		5.00-12	4.50 x 10	5.00-12
Rear		8-16		8-16
Implement lift		Hydraulic controlled		
Traveling speed	mph/km/hr	Approx. Speeds		
Forward	1	.63/1.01		.68/1.10
	2	.99/1.59		1.06/1.71
	3	1.63/2.63		1.75/2.82
	4	2.89/4.65		3.09/4.98
	5	4.50/7.23		4.81/7.75
	6	8.0/12.87		8.57/13.80
Reverse	1	.83/1.34		.89/1.44
	2	3.78/6.09		4.06/6.53
PTO shaft speed (rpm) @ 2700				
Engine RPM	1		454	
	2		724	
	3		1185	

PRE-OPERATIONAL CHECKS

Perform the checks listed below before initial operation.

- ___ 1. Bleed air from fuel system. See page 12.
- ___ 2. Check air cleaner for proper assembly and air intake connections. See page 13.
- ___ 3. Check engine oil level. See page 13.
- ___ 4. Check fan belt tension.
- ___ 5. Check clutch pedal adjustment. See page 9.
- ___ 6. Check brake pedal adjustment and balance pedals. See page 9.
- ___ 7. Check transmission oil level. See page 12.
- ___ 8. Check 4 WD front drive lubricant level. See page 12.
- ___ 9. Lubricate all grease fittings. See page 14.
- ___ 10. Inspect all controls and linkage for free movement.
- ___ 11. Check operation of safety switch. See page 10.
- ___ 12. Check operation of oil pressure and charge indicator lights.
- ___ 13. Start engine and check the following:
 - ___ A. Tachometer operation
 - ___ B. Control panel instruments.
 - ___ C. Clutch for proper engagement and disengagement. See page 9 for adjustment.
 - ___ D. Transmission shifting in all speeds.
 - ___ E. PTO shifting.
 - ___ F. Operation of hydraulic controls and 3 pt. hitch.
 - ___ G. Check wheel mounting bolts for proper torque.
 - ___ H. Insure proper operation of brake lock lever. See page 9 for adjustment.
 - ___ I. Check for oil, fuel and water levels.

CONTROLS

A. COOLANT TEMPERATURE LIGHT

Indicates excessive coolant temperature. If lamp glows, slow engine to idle to allow engine to cool. See Troubleshooting Chart.

B. OIL PRESSURE WARNING LIGHT

Indicates low engine oil pressure. Light will glow when oil pressure falls below minimum level. Stop engine immediately and refer to Troubleshooting Chart.

C. CHARGE INDICATOR LIGHT

Monitors battery charge rate. Light glows red when alternator is not charging sufficiently. Stop tractor to correct problem. When operating engine at low speed, adjust engine speed so indicator lights remains off.

D. TACH/HOURMETER

Registers engine RPM on upper scale and ground speed in 6th gear on lower scale. Red dot at 2700 RPM on upper scale indicates correct PTO speed. Engine hours are registered on meter in center of dial.

E. THROTTLE CONTROL LEVER SHUTOFF

Pushing lever forward increases speed, pulling lever to the rear decreases speed. Moving lever to the rear beyond idle notch stops engine by cutting off fuel supply.

F. KEY SWITCH

Controls electrical current for all lights, instruments, etc.

1. "OFF" stops all current. Allows removal of key.
2. "ON" routes current to instruments and starting.
3. High beam headlights.
4. Low beam headlights.

G. START/PREHEAT SWITCH

Activates glow plugs when turned counterclockwise, and starter when turned clockwise. Glow light glows red when glow plugs reach sufficient temperature for starting.

H. BRAKE PEDALS

Depress to activate brakes. Brakes may be applied separately at low speeds to aid in turning.

J. FOUR WHEEL DRIVE SHIFT LEVER

Is used to engage or disengage front axle drive system.

K. PARKING BRAKE LEVER

Locks brakes in engaged position.

L. FOOT PEDAL

Is used for foot control of engine speed.

M. TRANSMISSION GEAR SELECTOR

Is used to select ground speeds of 3 forward, reverse and neutral.

N. TRANSMISSION HI-LO RANGE SELECTOR

Provides 6 forward and 2 reverse speeds by doubling each of the speeds in the main transmission.

O. CLUTCH PEDAL

Controls clutch operation.

P. HORN BUTTON

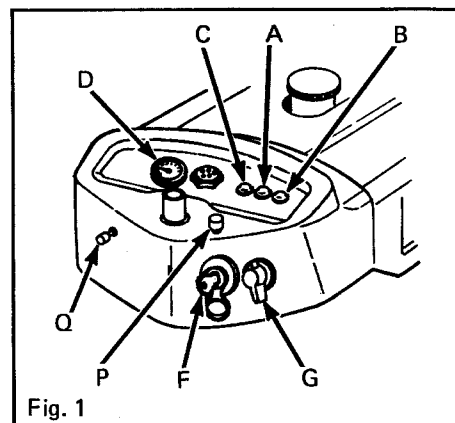
Activates horn when depressed by operator.

Q. TRANSPORT WARNING LIGHT SWITCH

Pulling switch out activates both flashers for highway travel.

R. HYDRAULIC CONTROL LEVER

Controls raising and lowering of 3-point hitch.



S. DIFFERENTIAL LOCK PEDAL

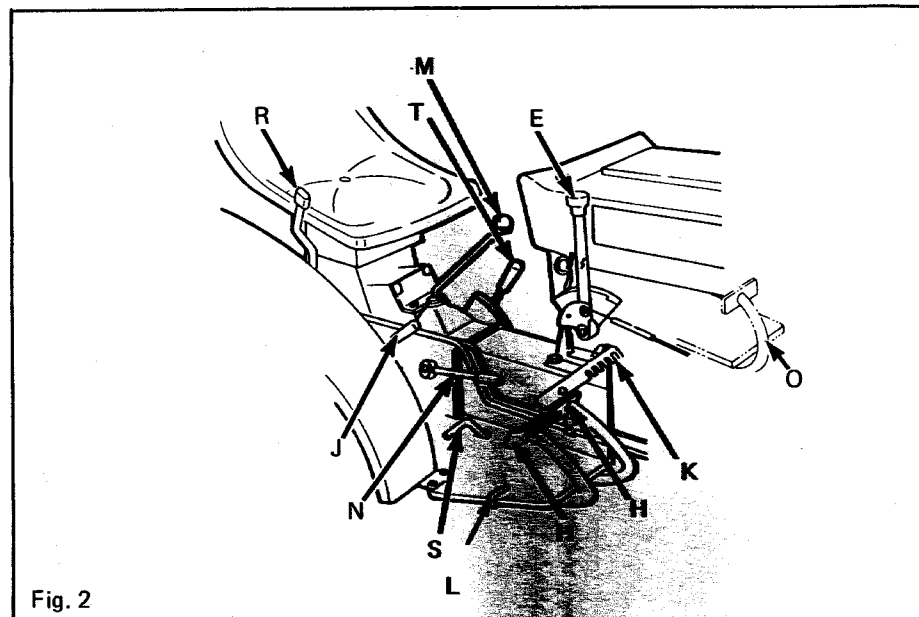
Is used to overcome rear wheel slippage by locking the rear axles so they must rotate.

T. PTO CONTROL LEVER

Controls 3 speed PTO.

U. HITCH LOWERING SPEED ADJUSTMENT (Under seat)

Allows the operator to select hitch lowering speed and lock hitch in position.



OPERATION

Before operating this tractor, perform the following:

- A. Check engine oil level.
- B. Check fuel tank. Use a high quality No. 2 Diesel fuel. If fuel tank is low or empty, it may be necessary to bleed the fuel line. See page 12.
- C. Check battery level.

NORMAL STARTING



CAUTION

DO NOT PUSH THIS TRACTOR TO START. DO NOT USE ETHER OR STARTING FLUID.

1. Position the main speed change lever and PTO speed change lever to Neutral position.

2. Depress the clutch pedal to disengage the clutch.

AS A SAFETY MEASURE, THE ENGINE WILL NOT START UNLESS THE CLUTCH PEDAL IS DEPRESSED.

4. Insert the key in the switch, and turn it to the ON position. At this time, check that the oil charge lights are on.

5. Start the engine by turning the starter switch to the right. Immediately after starting the engine, release the starter switch.



CAUTION

DO NOT OPERATE THE STARTER MOTOR MORE THAN 10 SECONDS AT ONE TIME. IF THE ENGINE FAILS TO START, WAIT APPROX. 30 SEC. TO ALLOW STARTER TO COOL. IF OUTSIDE TEMP. IS 15°F (-10°C) CONTINUE CRANKING A MAXIMUM OF 20 SECONDS. IF ENGINE DOES NOT START, ALLOW STARTER TO COOL 30 SECONDS BEFORE RECRANKING.

6. After the engine starts, warm it up 5 to 10 minutes at idling speed.

7. When operating engine at low speeds, adjust throttle control lever so that the generator indicator light remains OFF. Never operate engine at speed which allows indicator light to flash intermittently, as voltage regulator may be damaged.

8. Shift the speed lever to the desired speed.

9. Release the parking brake.

10. Slowly release the clutch pedal. This will start the tractor in motion.

11. Increase or decrease throttle setting as needed.

COLD WEATHER STARTING

1. Turn key switch to ON position.

2. Preheat the engine by turning the starter switch to the left. After the heater signal turns red, release the switch to return it to its original position. The heater signal turns red in approx. 25 seconds. This operation is not necessary in hot weather or when the engine is already warm.

TIME REQUIRED FOR PREHEATING:

OUTSIDE TEMP. MORE THAN 40°F / +5°C, Approx. 20 sec.

OUTSIDE TEMP. 25°-40°F / 5°-+5°C, Approx. 30 sec.

OUTSIDE TEMP. LESS THAN 25°F / -5°C, Approx. 60 sec.

3. Start engine as described in Normal Starting.

4. In cold weather, operate tractor several minutes without load to ensure that all parts are properly lubricated before work is started. Select transmission speed which will satisfactorily pull load with engine operating at rated speed.

5. To aid in winter starting where temperatures normally are below freezing Bolens offers an engine block heater that can be installed by your dealer.

STOPPING THE ENGINE

1. Pull throttle lever to the rear past idle position notch to stop engine.

2. Turn the key switch to the OFF position.



CAUTION

AFTER LONG CONTINUOUS OPERATION, IDLE THE ENGINE FOR APPROXIMATELY 5 MINUTES BEFORE TURNING IT OFF.

IF THE KEY IS LEFT IN THE "ON" POSITION, THE BATTERY MAY BE DISCHARGED.

MAKE IT A PRACTICE TO REMOVE THE KEY, AFTER STOPPING THE ENGINE.

4. After engine has stopped, move gear shift lever to neutral and lock brakes.

TRANSMISSION GEAR SHIFT (M)

Figure 2 - is used to select ground speeds of 3 forward, reverse and neutral. A gear pattern diagram is located on the transmission cover. Tractor must be stopped to make gear selection.

TRANSMISSION HI-LO RANGE (N)

Figure 2 - provides 6 forward and 2 reverse speeds by doubling each of the speeds in the main transmission. Stop tractor motion, move lever forward for high range and rearward for low range.

CLUTCH PEDAL

Clutch pedal (O) Figure 2 - controls clutch. Depress pedal to end of travel to disengage clutch.



CAUTION

NEVER REST YOUR FOOT ON CLUTCH PEDAL DURING OPERATION.

OPERATION (continued)

BRAKE PEDALS

Brake pedals (A) Figure 3. Depress to activate brakes. Brakes may be applied separately at low speed to aid in turning.



CAUTION

IF BRAKES ARE APPLIED DURING HIGH SPEED OPERATION, LOCK PEDALS TOGETHER WITH LOCK PLATE "B" SO BOTH BRAKES WILL BE APPLIED SIMULTANEOUSLY.

PARKING BRAKE LEVER

Parking brake lever (C) Figure 3. Lock brakes in engaged position by depressing brake pedals and pulling locking lever rearward. To hold tractor in stationary position, brake lock plate "B" must be engaged across pedals.



CAUTION

PARK TRACTOR WITH BRAKES LOCKED. DO NOT DEPEND ON TRANSMISSION ALONE TO HOLD TRACTOR IN PARKED POSITION.

FOUR WHEEL DRIVE

Four wheel drive (D) Figure 3 - is used to engage or disengage front axle drive system. Stop tractor, depress clutch to make selection. If lever cannot be moved into "Engage" position, move tractor forward or backward until shifter moves with minimum effort. If shifter does not move freely to "disengage", move tractor in direction opposite to previous motion to relieve "wind up" of gear train.



CAUTION

USE FOUR-WHEEL DRIVE WHEN PERFORMING HEAVY OPERATIONS. DISENGAGE FOR OPERATION ON HARD SURFACE.

DIFFERENTIAL LOCK

Differential lock (E) Figure 3, is used to overcome rear wheel slippage by locking the rear axles so they must rotate.

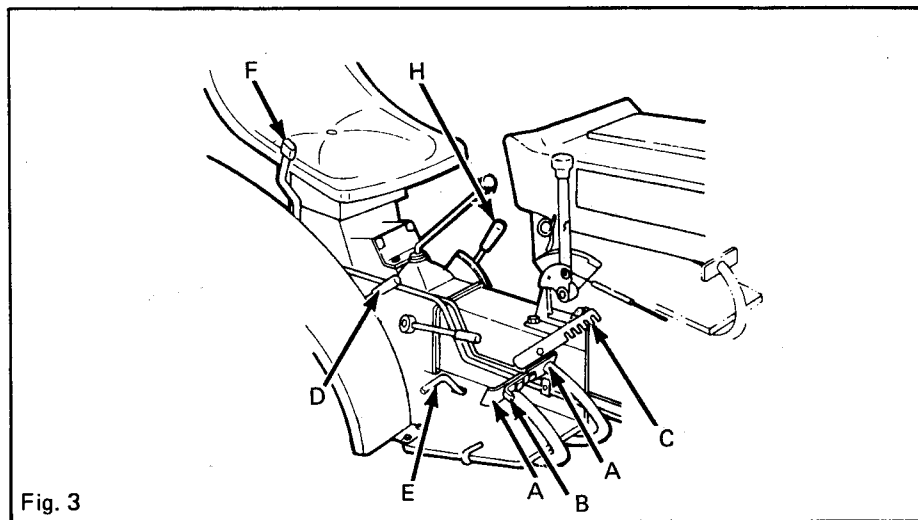


Fig. 3

NOTE

Tractor must not be in motion when applying differential lock. To engage, depress clutch and hold differential lock pedal down. Differential lock automatically disengages when pedal is released. If unit fails to disengage, alternately apply brakes until pedal returns to up position.



CAUTION

DO NOT ATTEMPT TO USE DIFFERENTIAL LOCK WHEN TURNING.

THREE POINT HITCH

A. POSITION CONTROL LEVER (F) Figure 3 and 4 - Controls raising and lowering of 3-point hitch. To lower hitch move lever forward to desired height. An adjustable lever stop may be positioned against front of lever so implements can be returned to same height each time it is lowered. Moving lever completely forward allows implement to float independent of the tractor.

NOTE

Position Control Lever has an adjustable stop at the rear of its travel. Stop must be adjusted down to the point that relief valve is not opening. If lever is against stop and a squealing sound is heard, re-adjust stop till squealing discontinues.

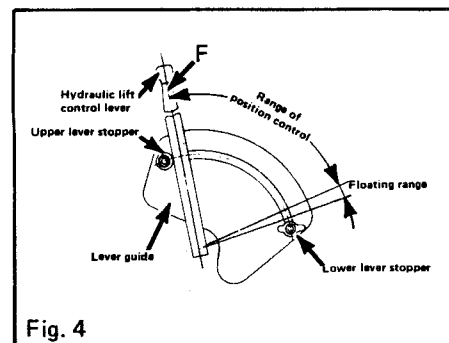


Fig. 4

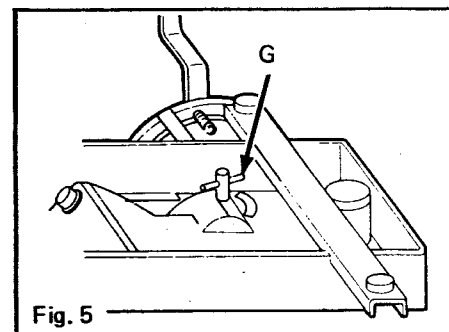


Fig. 5



CAUTION

FAILURE TO READJUST WILL CAUSE DAMAGE TO HYDRAULIC PUMP.

B. HITCH LOWERING SPEED ADJUSTMENT (G) Figure 5 - Allows the operator to select hitch lowering speed. Turning lever counterclockwise increases lowering speed and turning lever clockwise decreases lowering speed. Tightening lever in clockwise direction locks hitch position.



DANGER

NEVER ADJUST, REPAIR OR UN-PLUG HITCH MOUNTED EQUIPMENT IN RAISED POSITION UNLESS ADEQUATE SAFETY STANDS ARE USED TO SECURE IMPLEMENT. A SUDDEN INTERNAL OIL LEAK COULD ALLOW THE IMPLEMENT TO DROP, CAUSING POSSIBLE PERSONAL INJURY.

C. UPPER LINK (A) Figure 6 - Connect link to attachment and adjust turn buckle on upper link till the (2) lower links are parallel to upper link. Tighten lock nut to

secure in place. If lower links are not even adjust crank (B).

D. SWAY CHAINS (C) Figure 6 - When implements are to be transported on three-point high, limiting chains should be adjusted so they are under tension when hitch is in a raised position.

PTO CONTROL LEVER (H)

Figure 3 - Controls 3 speed PTO. Depress clutch fully and let tractor movement stop before shifting. Speeds at 2700 engine RPM are:
1st 454 RPM
2nd 724 RPM
3rd 1185 RPM
Lock brakes when using PTO in stationary applications.

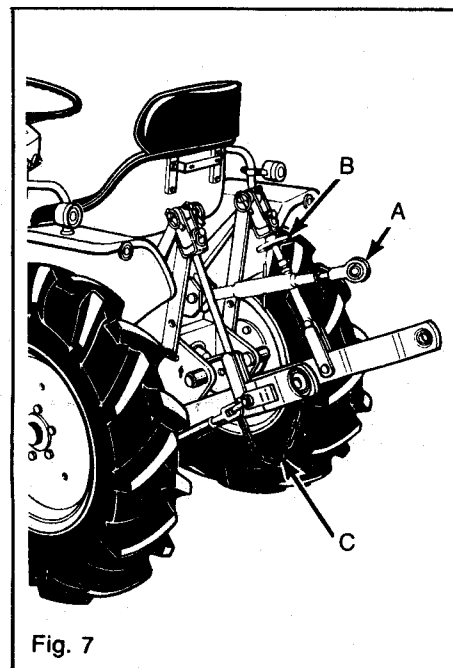


Fig. 7

ADJUSTMENTS

Before making any adjustments be sure tractor engine is off and tractor is securely blocked and/or parking brake is set.

BRAKE PEDAL

Each brake pedal (A) Figure 8 should have free play of 1-3/16" - 1-9/16" (30-40 mm). Also check for equal braking action when brakes are connected.

To adjust brakes, loosen two nuts (B) Figure 8, and turn adjusting rod until proper free play is obtained. Tighten both nuts.

CLUTCH PEDAL

Free play of pedal (C) Figure 9 should be 1-3/16" - 1-9/16" (30 - 40 mm).

To adjust clutch pedal, loosen two nuts (E) Figure 9 and turn turnbuckle to obtain proper free play. Tighten both nuts. Check operation of safety switch after adjusting clutch pedal. Adjust bolt "D" to obtain 1/4" switch travel when pedal is depressed.

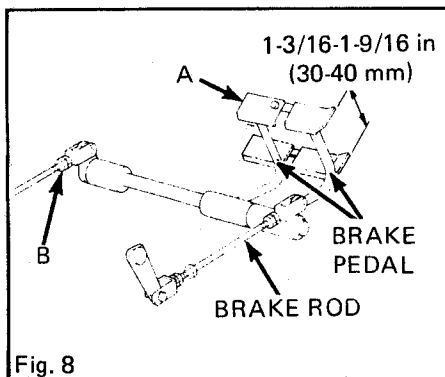


Fig. 8

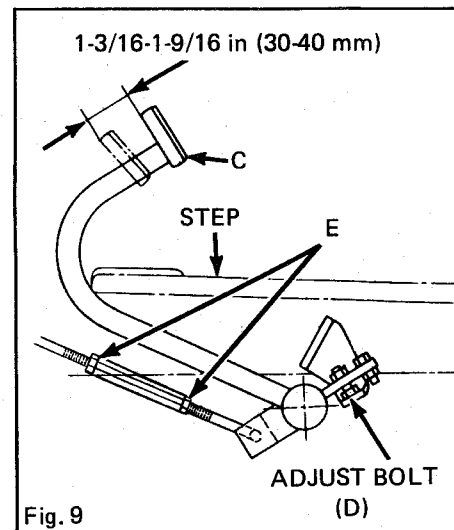


Fig. 9

ADJUSTMENTS (continued)

THROTTLE LEVER

Adjust throttle lever (G) Figure 10 tension whenever lever movement becomes loose.

Remove cotter pin (E) at inner end of throttle lever and tighten nut (F) against spring washers until lever friction is correct.

Align slot in nut with hole in lever and install cotter pin. Bend ends of pin around nut.

FRONT WHEEL WIDTH ADJUSTMENT

Front wheels are not adjustable. Do not reverse rims. See Figure 13 for width.

REAR WHEEL WIDTH ADJUSTMENT

Rear tread width can be adjusted by reversing the wheels on the axles as illustrated in Figure 13.

ADJUSTING OPERATOR'S SEAT

The operator's seat can be adjusted for two positions front to rear. Adjust the seat by removing the pin under the seat and install in other hole.

FRONT WHEEL TOE-IN (Figure 12)

Check toe-in periodically and each time wheel tread is changed. Inflate tire to recommended pressure. Turn wheels straight ahead. Measure distance as shown in Figure 12. Distance between front and rear should be 3/32 - 5/32" (2-4 mm) greater in rear than in front. To adjust, loosen lock nuts on tie rod and rotate to desired position. Tighten lock nuts and recheck toe-in dimension.

STEERING ADJUSTMENT

Every 100 hrs. check steering wheel free play. Free play should not exceed 1-3/16" (30 mm). If play is excessive, check tie rod ends for looseness. If play remains after securing tie rod ends, adjust screw Figure 14, inward to obtain correct free play.

FAN BELT (Figure 11)

Belt should deflect approximately 7/16" (11 mm).

Adjust fan tension by loosening alternator mounting bolt and adjusting bolt and moving alternator in to reduce belt tension or out to increase tension.

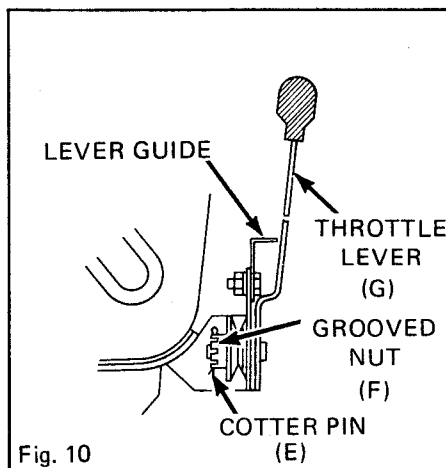


Fig. 10

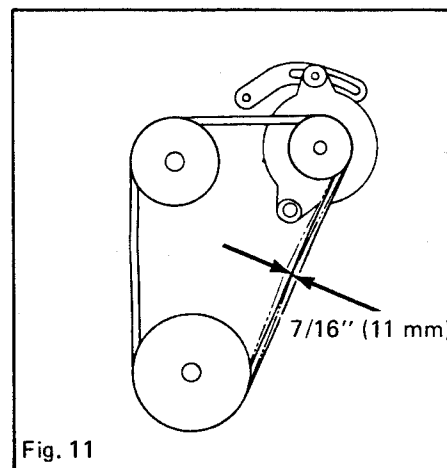


Fig. 11

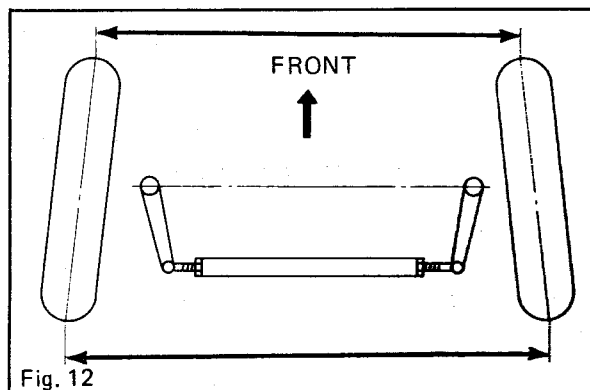


Fig. 12

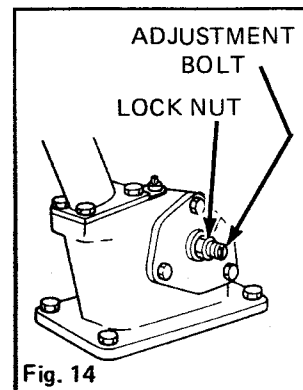


Fig. 14

TIRE WIDTHS in/cm	2 WD		4 WD	
	A	27.5/70	30.1/76.5	
	B	29.5/75	30.7/78	
	C	36.2/92	35/89	

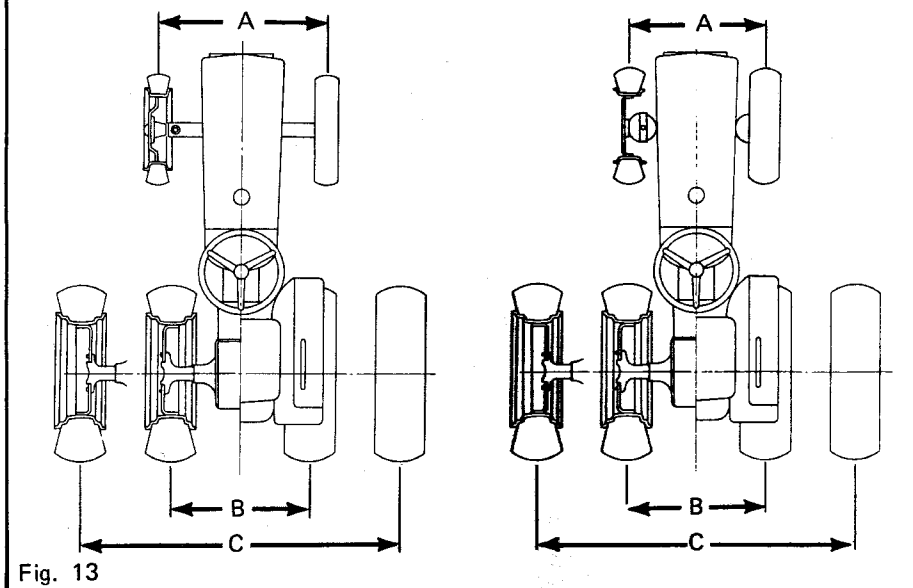


Fig. 13

MAINTENANCE

Review the following Maintenance checks and refer to Maintenance and Lubrication Charts for time and type of maintenance required.

ENGINE COOLANT (RADIATOR)

Remove the radiator cap, check the coolant level. If the level is lower than the neck bottom, refill radiator with clean water and anti-freeze solution.

CAUTION

WAIT 10 OR MORE MINUTES AFTER ENGINE IS TURNED OFF TO CHECK WATER LEVEL.

Clean in front of the radiator daily to remove any grass, insects or other matter that may clog normal air passage.

ANTI-FREEZE

When preparing anti-freeze solution, follow the instructions on the label.

Properly mix the anti-freeze solution with water, before adding to the cooling system.

ENGINE OIL

Check engine oil level prior to operation with the level gauge at left side of the engine. See (A) Figure 15.

Change oil after the first 50 hrs. and every 100 hrs. thereafter.

Recommended Oil: Use Diesel engine oil of CC Class or better;

More than 86°F/25°C SAE 30
32-86°F/0-25°C SAE 20
SAE 10W/30
or SAE 10W/40
Less than 32°F/0°C. SAE 10W

The drain plug is at the bottom of the oil pan. Drain when oil is warm.

ENGINE OIL FILTER

Change oil filter every other oil change. Lubricate gasket on new filter prior to installing.

TRANSMISSION OIL

The transmission oil also serves as hydraulic fluid. Check transmission fluid level at dipstick (A) Figure 16, with hitch in lowered position. Add fluid through filler hole (B) Figure 16, below seat. Use a high quality low viscosity gear-hydraulic oil such as Bolens 1738157 or equivalent.

Change the transmission oil after the first 50 hrs. and every 300 hrs. thereafter. Clean suction strainer at each oil change.

AIR CLEANER (Figure 17)

Check or clean element every 100 hours.

NOTE

Service air cleaner more often under dusty conditions.

Disassemble cleaner body from clamp. Remove the dust pan and clean out the inside.

Remove element from tractor and clean by either tapping the element on a flat surface or by blowing compressed air through the element from the inside out. (Maximum pressure 100 PSI).

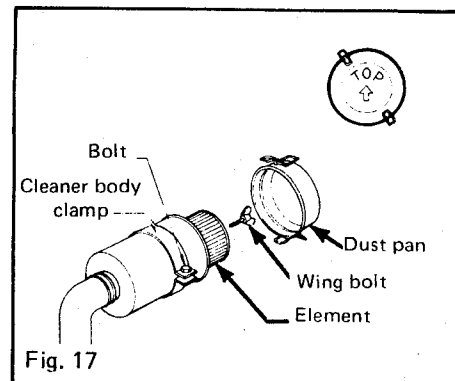
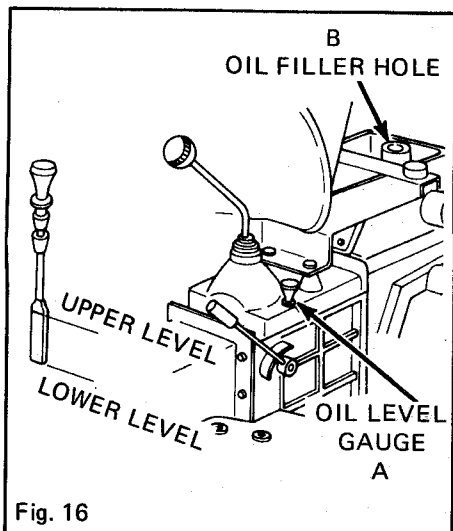
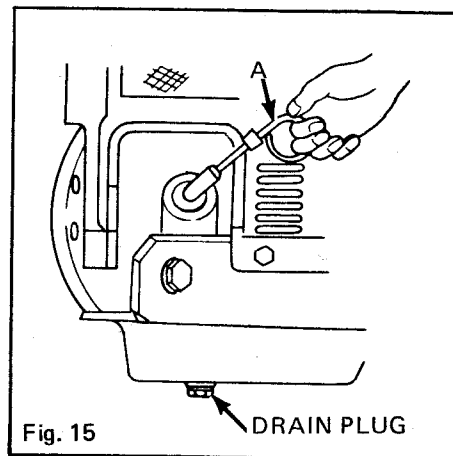
After cleaning check for damage. Replace annually or if element is damaged.

Reinstall element. Make sure the sealing surface is clean.

When installing dust pan make sure the arrow is pointed up.

BATTERY INSPECTION

Check electrolyte level in battery cells weekly or every 100 hrs. To check, open hood and remove battery cover. Remove cell caps and add distilled water to indicated level.



CAUTION

IF ELECTRICAL ENERGY IN THE BATTERY IS DISCHARGED BEYOND A CERTAIN POINT, THE BATTERY CANNOT START THE ENGINE.

MAINTENANCE (continued)

WHEN THE BATTERY IS IN THIS CONDITION, IT MAY BE IMPOSSIBLE TO RECOVER THE BATTERY PERFORMANCE EVEN BY RECHARGING IT.

ALWAYS MAINTAIN THE BATTERY IN A FULLY CHARGED CONDITION.

BATTERY ELECTROLYTE WILL EVAPORATE NATURALLY OR DURING RECHARGING. IF THE BATTERY ELECTROLYTE IS INSUFFICIENT, THE BATTERY MAY BE DAMAGED. IF THE ELECTROLYTE LEVEL IS TOO HIGH, IT WILL SPILL OUT FROM THE BATTERY RESULTING IN CORROSION OF THE MACHINE BODY. IT IS VERY IMPORTANT TO MAINTAIN THE SPECIFIED ELECTROLYTE LEVEL.

When the battery is fully charged, specific gravity of the electrolyte should be 1.26 at 70°F/20°C.

AIR BLEEDING FROM THE FUEL SYSTEM (Figure 18)

When screws or bolts of the fuel system are loosened, or fuel is exhausted during operation, air enters into the fuel system. This causes power loss or hard starting of the engine. Air bleeding should be performed as follows:

Loosen the two air bleeding screws on the fuel filter and let the fuel flow out until the air bubbles are completely removed from the fuel. Retighten screws.

Loosen the air bleeding screw on the injection pump and bleed air inside the injection pump in the same way as instructed above.

Bleed the air inside the injection pipes and the injection nozzles by cranking the engine for a few seconds with the throttle lever moved to wide open (forward) position.

FUEL FILTER

Clean fuel filter every 100 hrs. To clean, shut off valve and remove nut. Remove filter and clean in solvent.

Replace filter every 300 hrs. Bleed air from fuel system after each service procedure.

FUEL

Fuel has a great effect on engine performance. Therefore high quality fuel should be used. No. 2 Diesel fuel or better is recommended.



CAUTION

IF AIR ENTERS THE FUEL SYSTEM POWER LOSS OR HARD STARTING MAY OCCUR. AIR BLEEDING THE FUEL SYSTEM WILL CORRECT THIS PROBLEM.

BEVEL CASE AND FRONT GEAR CASE OIL (4 Wheel Drive Models) Figure 19.

Add oil to the bevel case from the oil filler hole located at the front part of the bevel case.

FUEL TANK

Drain fuel tank yearly or every 500 hrs. Remove drain plug at rear of tank and allow fuel to drain out. Flush tank with clean fuel.



CAUTION

USE RECOMMENDED GEAR OIL SAE 80W OR 90. HOWEVER, NEVER MIX SAE 80W WITH SAE 90 OIL.

Add oil to the front gear case from the oil filler holes located on both sides of the front gear case.

TIRES

Tire air pressure greatly affects tractor performance and tire service life. It is very important to maintain air pressure in the tires at the specified pressure. See "Air Pressure Chart".

SPECIFIED AIR PRESSURE-PSI/kPa

4-wheel drive		2-wheel drive	
Front	Rear	Front	Rear
17/117	17/117	19/131	17/117

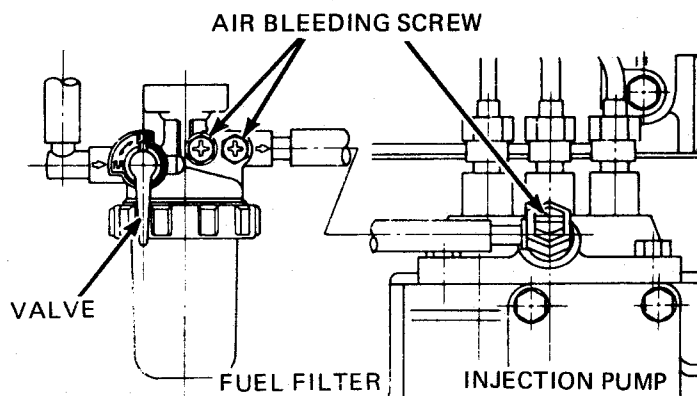


Fig. 18

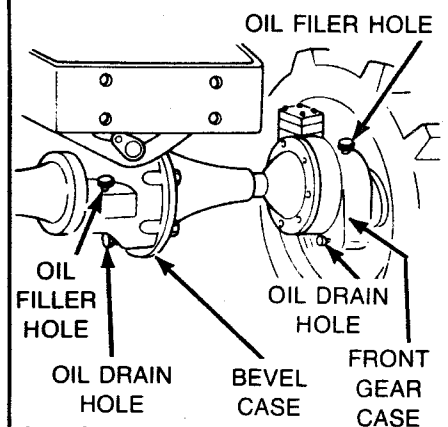


Fig. 19

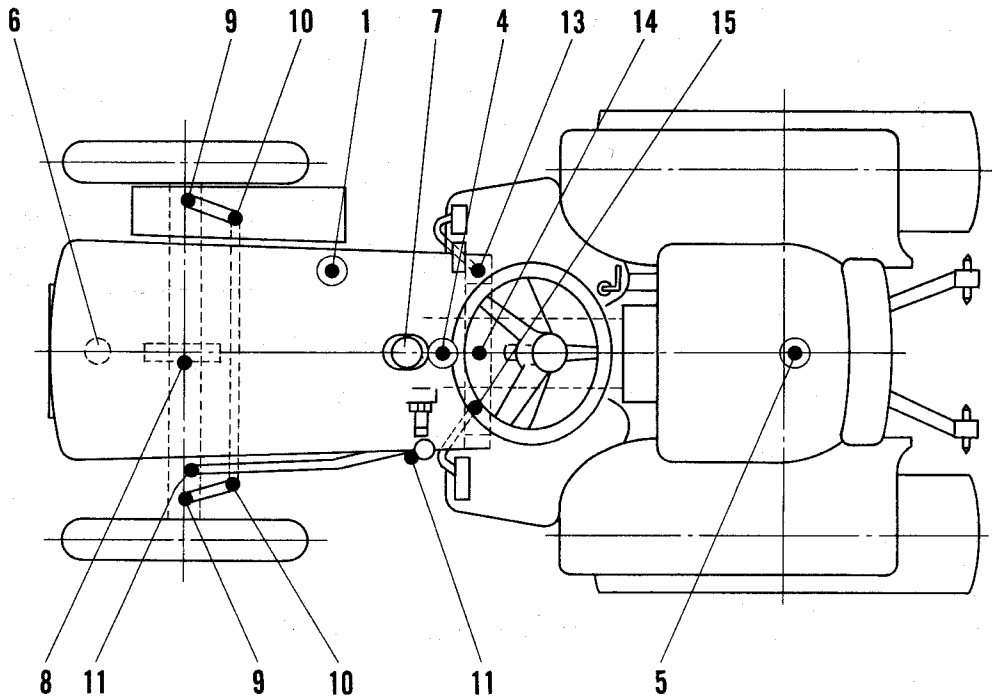
MAINTENANCE CHART

△ Cleaning and washing
★ Repair at service shop

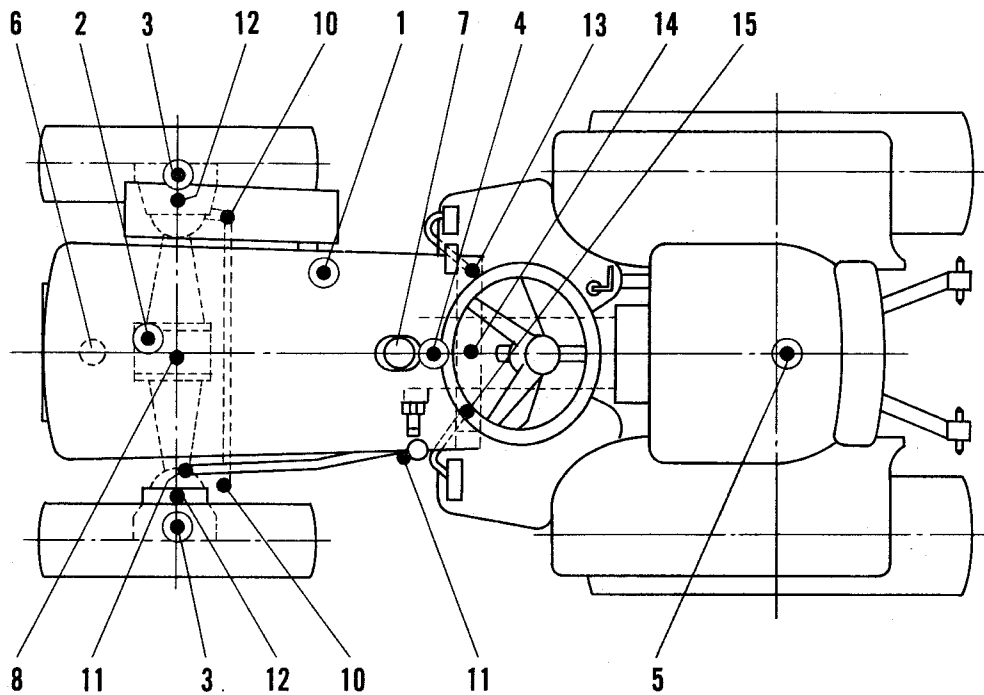
○ Inspection, replenishment and adjustment
● Replacement

Items	Preliminary check	Periodical inspection and Operation hour (hour meter counter)												Inspection thereafter	Check standard at preliminary check
		50	100	150	200	250	300	350	400	450	500	550	600		
Engine	Engine oil	●		●		●		●		●		●		Replace every 100 hours	Within level gauge
	Air cleaner	○	△		△		△		●		△		△	Clean every 100 hrs or more often in dusty conditions. Replace after 4 cleanings or every year.	
	Radiator coolant	○												Replace every year	Filled up to pressure cap (not clogged)
	Fuel	○													Full level
	Fuel filter		○	△	○	△	●	○	△	○	△	○	●	Clean every 100 hours Replace element every 300 hours Do every year	
	Cleaning inside the fuel tank													Check every 200 hours	7/16" (11 mm) can be pressed down with finger.
	Fan belt	○				○				○					
	Electrolyte level		○		○		○		○		○		○	Inspect every 100 hours Replace every 100 hours	
	Oil filter	○	●	●	●	●	●	●	●	●	●	●	●		Tightened securely
	Tightening of bolts and nuts	○	★											Change part	No damage or leaks
	Damage and leaks	○												Adjust every 400 hours	.013 in. (0.35mm cooled)
	Valve clearance adjustment		★							★					
	Engine idling adjustment		★												
	Nozzle				★				★				★	Check every 200 hours Adjust every 400 hours Check every 400 hours Check every 800 hours	Check broken wiring
	Starter, alternator & regulator								★						
	Glow plug								★						
	Compression pressures														
	Transmission gear oil		●		○		○		○		○		○	Inspect every 100 hours. Replace every 300 hours.	1-3/16"-1-9/16" (30-40mm)
	Play of clutch pedal	○													1-3/16"-1-9/16" (30-40mm)
	Play of brake pedal	○													Both brakes work equally.
	Efficiency of brake	○													
	Working of levers	○												Clean each 300 hours.	Work securely.
	Suction filter	△						△							
	Play of steering wheel	○													
	Tire pressure TX 1504 4-wheel	○													
	TX 1704 drive	○													
	TX 1702 2-wheel drive	○													
	TX 1702 drive	○													
	Toe-in						○						○		3/32-5/32 (2~4 m/m)
	Greasing front wheel hub (2-wheel drive)													★ Do each 900 hours	
	Retightening front wheel bearing (2-wheel drive)													★ Do each 900 hours	
	Bevel case lubrication (4-wheel drive)						●						●		
	Gear case lubrication (4-wheel drive)						●						●		
	Retightening steering ball joint						○						○	Adjust each 300 hours.	
	Wheel clamping bolt	○													Tightened securely
	Electric apparatus	○													Proper working
	Adjustment of throttle						○						○	Adjust each 300 hours	
	Clamping of bolts and nuts	○													Tightened securely
	Oil leakage of clutch													Inspect every year by removing plug on the bottom clutch chamber.	
	Grease		○	○	○	○	○	○	○	○	○	○	○	Each 50 hours	

TWO WHEEL DRIVE TRACTORS



FOUR WHEEL DRIVE TRACTORS



LUBRICATION CHART

No.	Supplying points	Kinds of oil or water	Quantity Qts./L.			Remarks
			TX1300F G154	TX1300 G152	TX1500F G174	
1	Engine	Engine Oil (Class CC or better)	2.7/2.6			
2	Bevel case	Gear oil SAE 80W or 90	.73/.7	—	.73/.7	
3	Front gear case		.26/.25 2 Places	—	.26/.25 2 Places	
4	Steering gear box	Hydraulic/Transmission Bolens 1738157*	Replenishment		(SAE 140)	
5	Transmission gear case	Gear oil SAE 80W or Bolens No. 1738157*	13.7/13.0			
6	Radiator	Coolant	4.4/4.2			
7	Fuel tank	Diesel light oil No.2 or better	12.7/12			
8	Center pivot	Grease	—	As req'd	—	
9	Knuckle spindle	} Grease	} As required			
10	Tie rod end					
11	Drag rod end					
12	King pin					
13	Brake pedal					
14	Brake shaft					
15	Clutch pedal					

* 1 U.S. Gallon Container

PROBLEM SOLVING

	Problem	Possible Causes	Corrective Action
E N G I N E	Starter motor fails to run.	- Clutch pedal not depressed - Discharged battery - Loose wire connections - Defective starter switch - Defective starter motor	- Depress clutch pedal. - Recharge battery. - Correct. - Apply grease. - Repair or replace the switch. - Repair or replace starter motor.
	Starter motor runs slowly.	- Discharged battery - Improper grounding - Improper viscosity engine oil used - Hydraulic Controls not in neutral	- Recharge battery - Clean and tighten grounding terminal. - Use oil of correct viscosity. - Return Control to neutral
	Starter runs. Engine does not start.	- Air trapped in fuel system - Fuel filter clogged - No fuel injection - Engine trouble - Throttle lever in "Off" position	- Bleed air. - Clean or replace the filter. - Open fuel cock to inject fuel. - Repair at service station. - Move lever forward to increase fuel
	Engine runs irregularly	- Air trapped in fuel system - Clogged injection nozzle - Fuel leaks from fuel piping - Uneven fuel injections	- Bleed air. - Clean or replace. - Tighten clamps. Replace pipes. Polish and tighten copper washer. - Repair at service station.
	Engine stops at low speed.	- Defective injection pump - Improper valve clearance - Defective injection nozzle	Repair at service station.
	Engine over-runs.	- Dust in the governor - Oil burnt in combustion chamber	Repair at service station.
	Engine stops suddenly.	- Insufficient fuel - Clogged fuel filter - Defective injection nozzle - Engine seizure due to poor lub. or cooling	- Add fuel. Bleed air. - Replace fuel filter. - Repair at service station. - Repair at service station.
	Engine overheats.	- Lack of engine coolant - Loosened or damaged fan belt - Clogged radiator cores - Lack of engine oil	- Add coolant. Check for coolant leaks. - Adjust or replace the belt. - Clean. - Check and replenish oil.
	High fuel consumption	- Clogged air cleaner - Improper valve clearance - Coolant temperature too low - Improper fuel	- Clean air cleaner element. - Correct - Apply cover on radiator. - Change to correct fuel.
	High oil consumption	- Low oil viscosity - High oil level - Oil leakage	- Use oil to suit surrounding temperature. - Adjust to specified level. - Check and repair.
	Low engine power	- Clogged or burnt injection nozzle. - Carbon deposit on the nozzle - Low compression pressure. - Gas leakage from valve seat - Improper valve clearance - Improper injection timing - Lack of fuel - Clogged air cleaner	- Repair at service station. - Check and correct fuel system. - Clean air cleaner element.
	Oil lamp flashes during operation.	- Lack of engine oil - Low viscosity of engine oil - Defective oil pressure switch or wiring - Defective oil pump - Clogged oil filter element	- Add oil. - Use specified viscosity oil. - Replace the switch. - Repair at service station. - Replace the element.
	Charge lamp flashes during operation.	- Defective wiring - Defective alternator - Defective regulator - Defective battery - Lack of battery electrolyte - Loosened or damaged fan belt	- Check and correct loose terminals, shorts, etc. - Repair at service station. - Repair at service station. - Change battery. - Add electrolyte. - Adjust or replace the belt.
C L U T C H	Clutch slips.	- Improper pedal adjustment - Worn or burnt clutch lining	- Adjust free play of pedal. - Repair at service station.
	Clutch does not disengage.	- Seized clutch lining - Improper clutch pedal adjustment	- Repair at service station. - Adjust free play of pedal.
B R A K E S Y S T E M	Poor braking Uneven braking	- Excessive brake pedal free play - Oil leaks in brake chamber - Worn or burnt brake lining - Different brake distances in left and right pedals	- Adjust. - Repair at service station. - Relining at service station. - Adjust.
	Slow return of brake pedal	- Damaged brake return spring - Lack of grease on sliding parts	- Replace the spring. - Apply grease after removing rust.

PROBLEM SOLVING (continued)

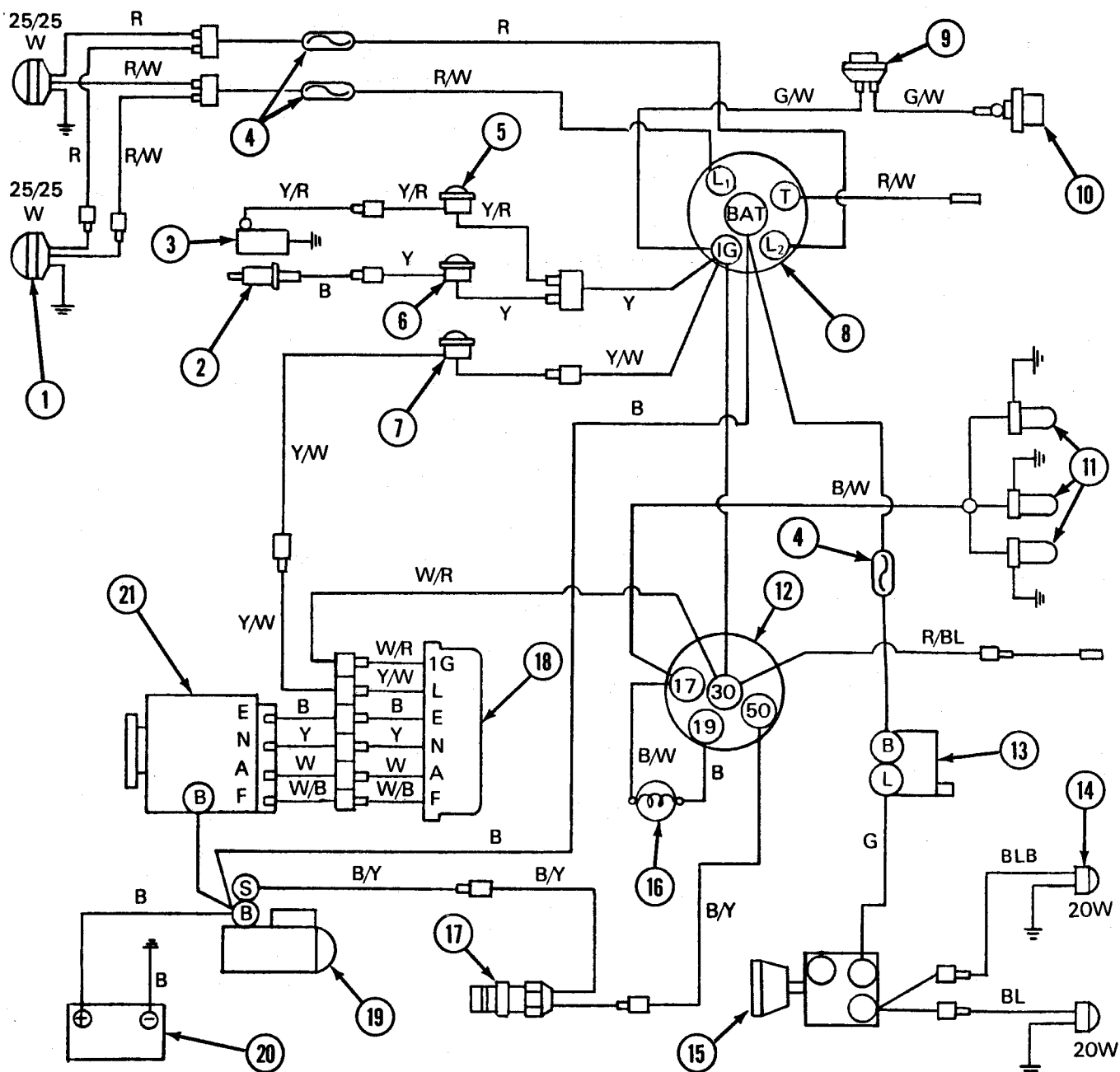
	Problems	Possible Causes	Corrective Actions
HYDRAULIC SYSTEM	Hydraulic system does not raise.	• Lack of hydraulic oil • Air taken in from intake pipings • Clogged suction filter • Defective hydraulic pump • Defective control valve • Damaged cylinder	• Add to specified level. • Retighten joints. • Replace cracked pipe. • Replace damaged O-ring. • Clean the filter. • Repair at service station. • Repair at service station. • Replace at service station.
	Oil leakage from piping	• Loosened pipe joints • Cracked pipe	• Retighten joints. • Replace pipe at service station.
	Buzzer-sound is heard at relief valve when placing hydraulic lever to 'raise'.	• Dislocated stopper • Excessive hitch lead	• Adjust the position. • Decrease load.
	Hydraulic system does not lower.	• Lowering speed adjustment lever is locked. • Defective control valve • Damaged cylinder • Insufficient load on hitch	• Set to "lower" position. • Repair at service station. • Replace at service station. • Apply down pressure to hitch arms.
STEERING SYSTEM	Heavy steering Difficult steering	• Improper toe-in • Improper tire inflation • Deflected rod ends	• Adjust toe-in. • Inflate tires evenly. • Retighten or replace parts.
	Excessive steering wheel free play	• Worn steering shaft • Worn metal • Deflected rod ends	• Adjust by adjustment bolt. • Correct at service station. • Retighten.
ELECTRICAL SYSTEM	Battery does not charge	• Defective wiring • Defective alternator • Defective regulator • Loose or damaged fan belt • Poor maintenance of battery	• Check and correct loosened or dirty terminal, shorts, etc. • Repair at service station. • Repair or replace at service station. • Adjust or replace belt. • Correct loose or rusted terminals. • Correct electrolyte level.
	Weak head light	• Discharged battery • Improper wiring	• Recharge battery. • Check and correct.
	Head light does not go on.	• Broken bulb • Melted fuse • Defective connection • Switch defective	• Replace bulb. • Correct the wiring, and replace fuse. • Check and correct. • Replace switch.
	Horn does not sound.	• Defective horn button • Defective wiring • Defective horn	• Replace button. • Repair. • Repair or correct.
	Hazard does not flash.	• Broken bulb • Defective flasher unit • Defective connection	• Replace bulb. • Replace the unit. • Check and correct terminal connection.
	Tachourmeter does not work.	• Broken meter cable • Loose connections • Defective meter	• Replace. • Retighten. • Replace.

ELECTRICAL WIRING DIAGRAM

- | | |
|------------------------|------------------------|
| 1. Headlights | 12. Starter switch |
| 2. Oil pressure switch | 13. Flashing unit |
| 3. Water temp. switch | 14. Turn indicators |
| 4. Fuses | 15. Turn signal switch |
| 5. Water temp. | 16. Heater signal |
| 6. Oil light | 17. Safety switch |
| 7. Charging light | 18. Voltage regulator |
| 8. Key switch | 19. Starter motor |
| 9. Horn | 20. Battery |
| 10. Horn button | 21. Alternator |
| 11. Glow plugs | |

ABBREVIATIONS OF WIRE COLORS

R = RED
Y = YELLOW
BL = BLUE
B = BLACK
G = GREEN
W = WHITE



THREE POINT HITCH ASSEMBLY

1. Except for Ref. letters A thru E, preassemble the three-point hitch as shown in Figure 1.

2. To fasten the hitch to the tractor first slide lower link shaft A, Figures 1 and 2, through the hole in the wheel rim and route through both lugs E, of the rear axle.

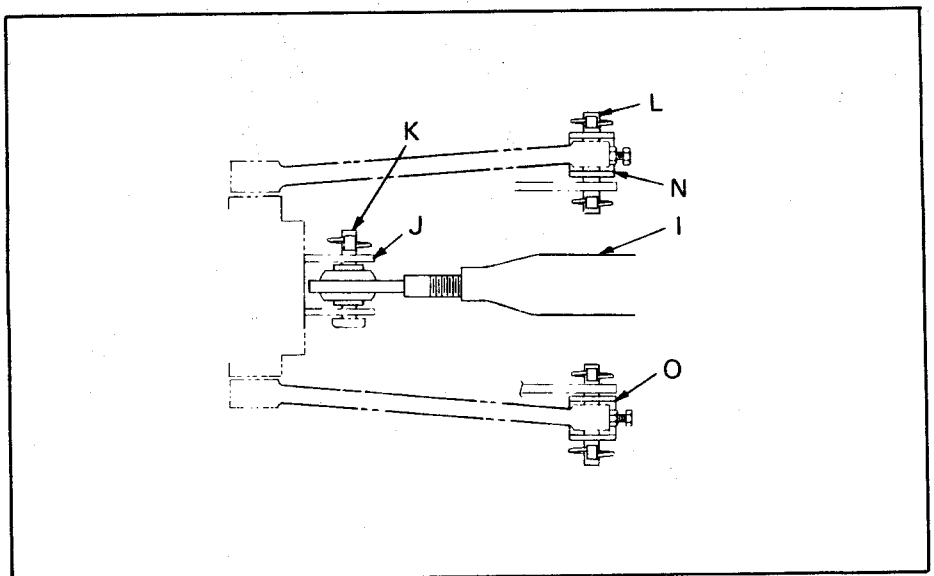
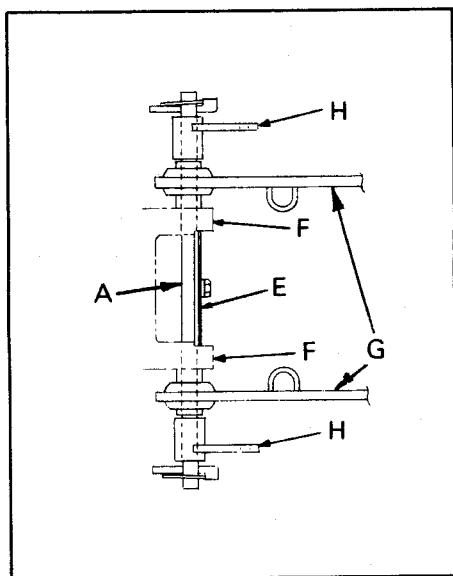
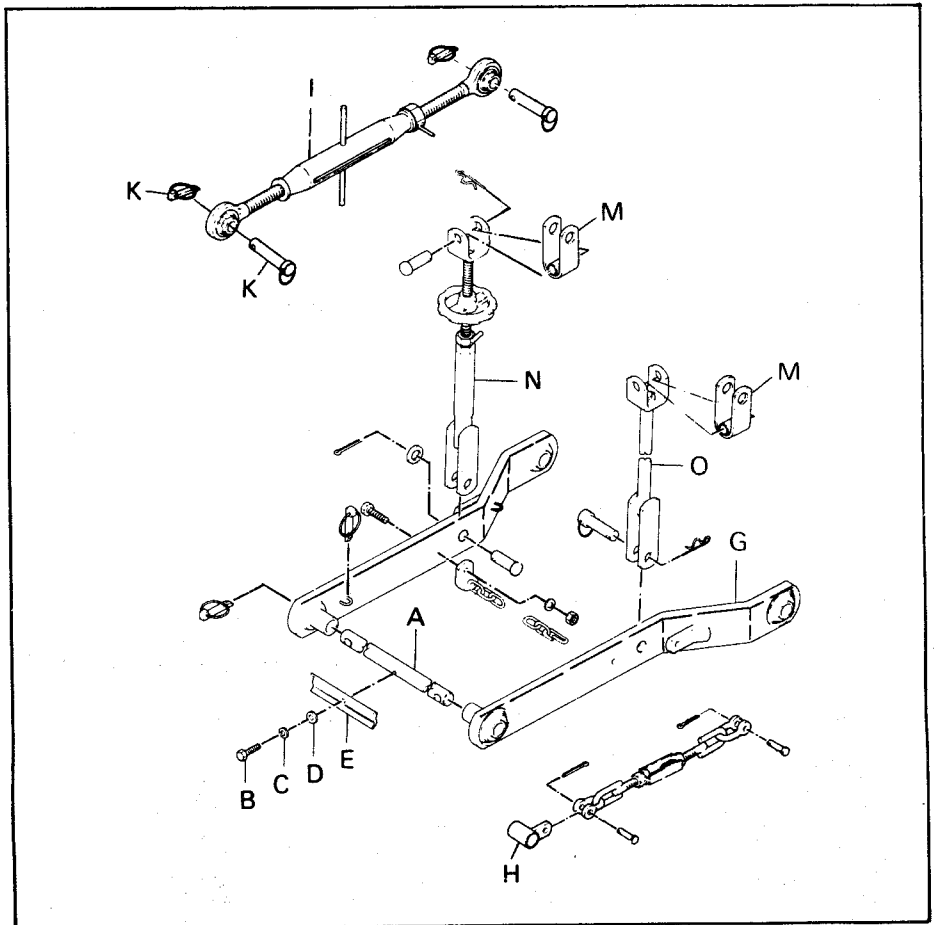
3. Position plate E between the lugs and fasten it to the link shaft with a flat washer, lockwasher and bolt. See Figure 2.

4. Slide on both lower link assemblies G and both chain holders H onto the end of the link shaft. Secure with two click pins. See Figure 2.

5. Position top link assembly I between support J, Figure 3, and secure with pin and click pin K.

6. Loosen both lift pins L, Figure 3, in the lift arms on the tractor and remove. Position both brackets M, previously assembled to lift rod assemblies N and O on the tractor lift arms.

Slide pin L through and retighten the screw in the tractor lift arms.



STORAGE

DAILY STORAGE

After each day's work is done, follow this procedure:

Clean the tractor.



WHEN WASHING THE MACHINE, DO NOT WASH ELECTRICAL PARTS.

Fill the fuel tank to maximum level.

Lower the attachment to the ground.

Store the machine indoors as much as possible. When storing the machine in an open space, cover it for protection.

In cold weather, remove the battery and keep it in a warm place.

Handle the engine coolant as follows:



IF SURROUNDING TEMPERATURE IS EXPECTED TO GO BELOW 0°C (32°F) DRAIN THE COOLANT OR ADD AN ANTI-FREEZE SOLUTION. THIS WILL PREVENT A BROKEN ENGINE BLOCK.

LONG-TERM STORAGE

Prior to storing the machine for more than a few months, thoroughly clean it. Then carry out the following maintenance routine:

The engine coolant from the radiator must be drained. Remove the drain cock at the left side of the radiator. Remove the radiator cap and drain. Fill with a new solution of anti-freeze.

Drain the engine oil and fill with new clean oil. Warm up the engine for 5 minutes to circulate the oil to every part of the engine.

Inflate the tires a little more than the normally specified air pressure. See page 13.

Do not forget to lubricate all necessary parts. Apply grease or oil on all parts subject to rust.

Check for loose bolts and nuts. Retighten, if necessary.

Lower the attachment to the ground.

Select a dry place for storage. Cover the machine with a plastic sheet or canvas.

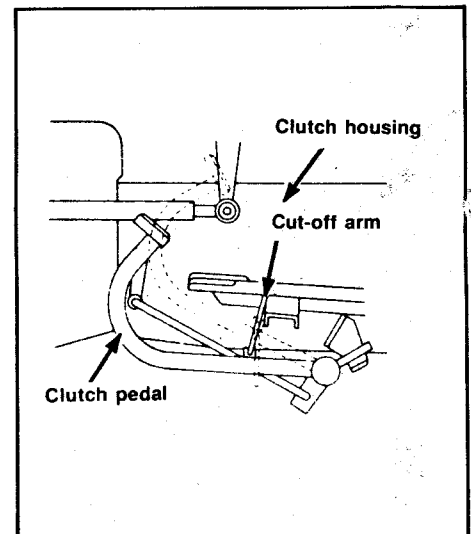
Remove the battery from the tractor. Recharge the battery. After adjusting the

electrolyte level correctly, store it in a dry place out of direct sun light.

To protect the engine from rusting, run the engine at 1000 to 1500 rpm for 5 to 10 minutes, once each month.

Clutch should be disengaged as follows:

Depress the clutch pedal and lock in place. See Figure 23.



Bolens reserves the right to change specification, add improvements or discontinue the manufacture of any of its equipment without notice or obligation to purchasers of its equipment.

Bolens' approval of the use of attachments manufactured by allied manufacturers is limited to assurance that such

use will not void Bolens warranty on the Bolens equipment to which the allied manufactured attachments are adapted. The responsibility for the design, performance, durability, safety in operation, service repair availability, and warranty obligation remain with the allied manufacturer.

Bolens specifically excludes from its warranty obligation all such allied manufactured attachments.

Bolens warranty will be voided if unapproved attachments are adapted to use with Bolens equipment and are so used.