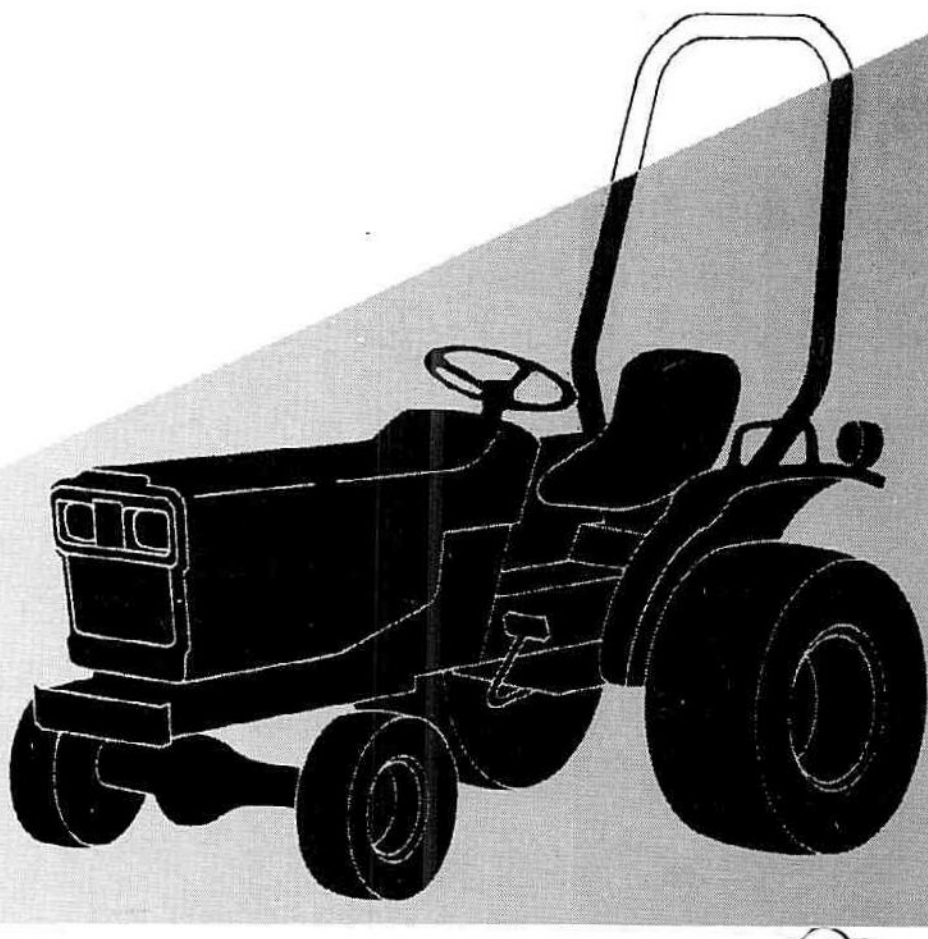
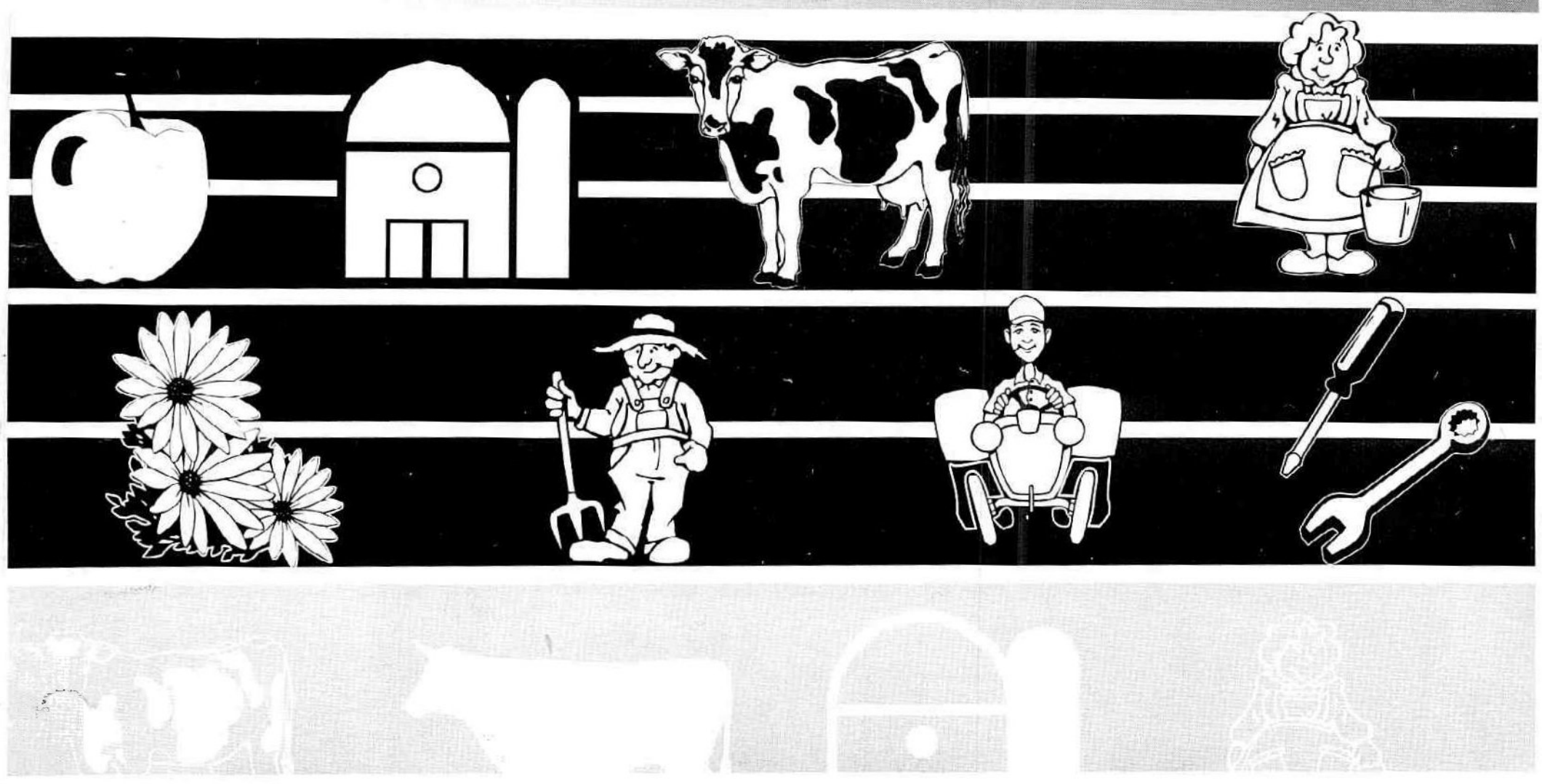
YANMAR
DIESEL TRACTOR
OPERATION MANUAL

MODEL
YM195
YM195D
YM240
YM240D





This new tractor was carefully designed and manufactured to give years of dependable service. To keep it running efficiently, read the instructions in this operator's manual.

Each section is clearly identified so you can easily find the information you need. Use the alphabetical index for fast reference.

The warranty on this tractor appears on the "YANMAR DIESEL TRACTOR LIMITED WARRANTY" which you should have received from your YANMAR dealer when you purchased the tractor.

Note: All data subject to alteration without notice

Illustrations may show optional accessories.

This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

STOP This stop symbol indicates important proper operation messages in this manual. When you see this symbol, be carefully read the message that follows.

"Right-hand" and the "Left-hand" sides of this tractor are determined by facing in the direction of tractor forward travel.

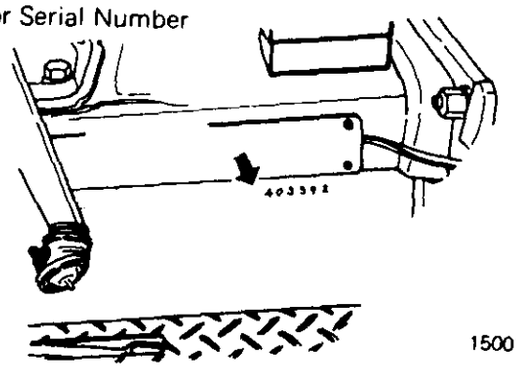
ISO This tractor is of metric design. All hardware is therefore metric (ISO). Make sure you use the specified metric hardware when replacement becomes necessary.

For your convenience most specifications are given in customary U.S. measurement with the metric measurement following.

Record your tractor serial numbers below. Provide this information to your dealer when ordering parts.

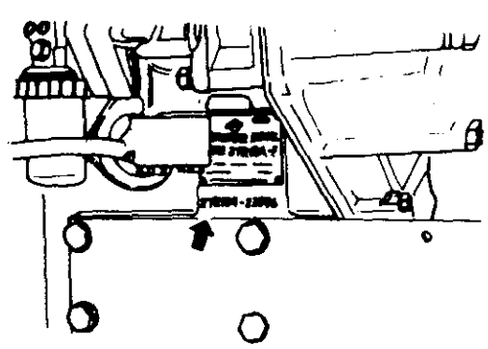
Whenever serial numbers are required on all warranty claims, it is extremely important that the complete number groups together with all letters be furnished.

Tractor Serial Number



15001

Engine Serial Number



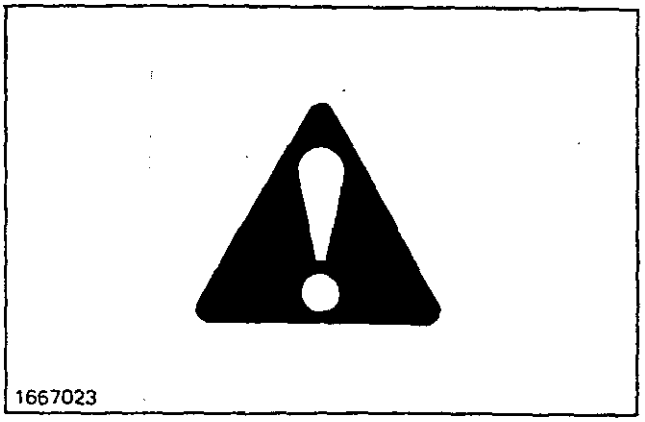
15002

YANMAR DIESEL TRACTOR

SAFETY INSTRUCTIONS

READ SAFETY SIGNS

1. This is the safety-alert symbol. When you see the symbol on your machine or in this manual, be alert to the possibility of personal injury and carefully read the messages that follow.



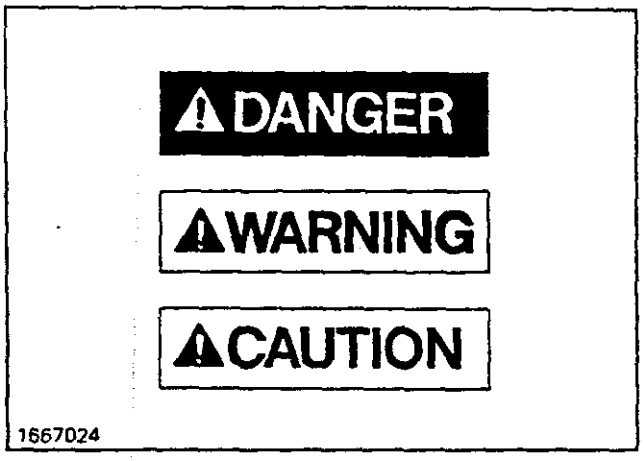
1667023

2. The signal words **"DANGER" "WARNING" "CAUTION"** are used with the safety-alert symbol.

   1) **"DANGER"** denotes the extreme hazard which would result in high probability of irreparable injury if proper precautions are not taken.

   2) **"WARNING"** denotes the hazard which would result in injury if proper precautions are not taken.

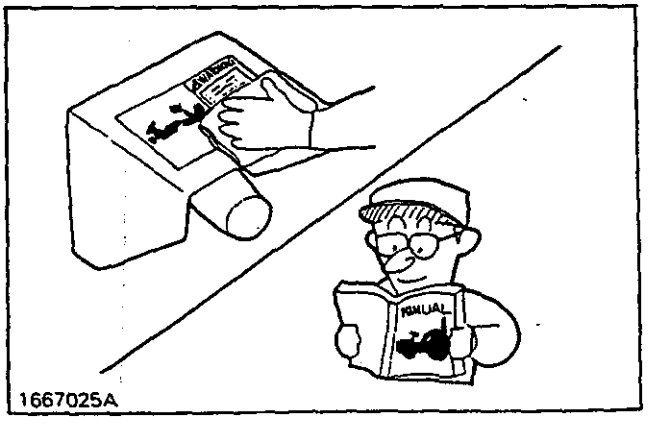
   3) ***"CAUTION"*** *denotes the general precautions.*



1667024

3. Carefully read all safety messages in this manual and safety signs on your machine. Follow recommended precautions to operate machine safely.

   Keep safety signs in good readable condition. Replace any missing or damaged safety signs with new safety signs which you can purchase at your YANMAR dealer.

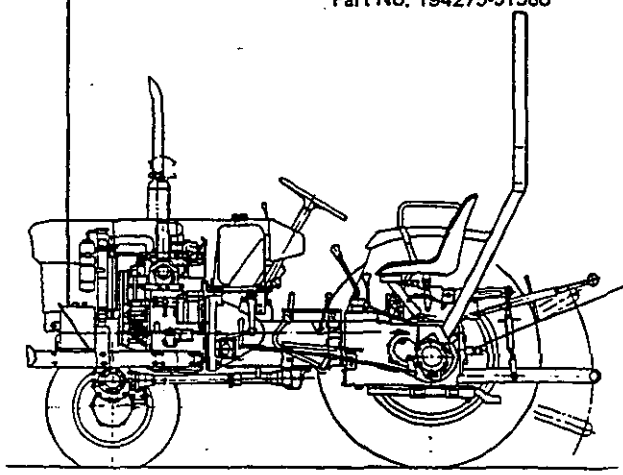


1667025A

SAFETY SIGN LOCATION

⚠ DANGER EXPLOSIVE GASES
Cigarettes, flames or sparks could cause battery to explode. Always shield eyes and face from battery. Do not charge or use booster cables or adjust post connections without proper instruction and training.
KEEP VENT CAPS TIGHT AND LEVEL
☠ POISON CAUSES SEVERE BURNS
Contains sulfuric acid. Avoid contact with skin, eyes or clothing. In event of accident flush with water and call a physician immediately.
KEEP OUT OF REACH OF CHILDREN

Part No. 194275-51580



24007A

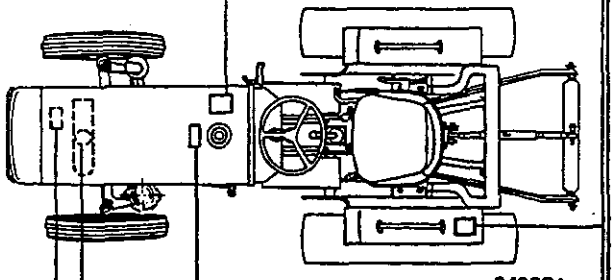
MOUNT PTO COVER
FOR SAFETY

Part No. 194240-65710

⚠ CAUTION

When you start the Engine, please confirm that the position of gear shift lever is in "NEUTRAL"

Part No. 194240-65620



24003A

▶ CAUTION ◀

1. Check tightness of all bolts and nuts.
2. Check fuel oil, lub oil and cooling water.
3. Air pressure of left and right tires should be made equal.
   Front wheel: 28 lb/in²(2.0kg/㎠)
   Rear wheel: 14 lb/in²(1.0kg/㎠)
4. Always allow the engine a 5-minute warming up period after starting.
5. Do not use the top link for traction.
6. Read through the instruction book before operation.

▶ BATTERY MAINTENANCE ◀

DAILY CHECK
1. Keep upper surface dry.
2. Keep water level 0.6 to 0.8in above pole add distilled water if necessary.
3. Check condition of battery charge and recharge if necessary.

MAINTENANCE WHEN YOUR TRACTOR IS NOT TO BE OPERATED FOR LONG TIME
1. Remove and store battery in a cool and dry place.
2. Recharge fully surely a month.

Part No. 194240-65660

CAUTION
1. Adding of water is done through the sub-tank.
2. Before starting, make sure that water level is up to the "Full" mark.
3. If water level is low, remove the cap of the sub-tank and add water until the "Full" mark is reached.

Part No. 124764-44810

(Radiator) **CAUTION:**
1. Under normal circumstances this cap should not be opened.
2. Check the water level in the sub-tank. If it is below the lower mark, add water to sub-tank. (Engine should be cool.)
3. See sub-tank caution plate.

Part No. 124764-44800

⚠ INFLAMMABLE

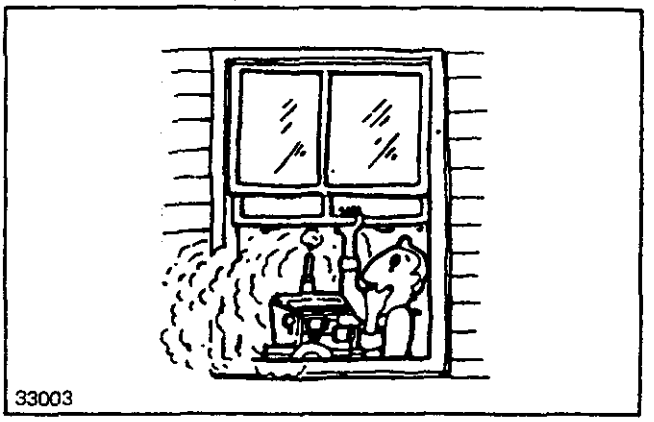
Fuel
light diesel oil
#1 or #2

Part No. 194240-65670

⚠ OPERATING

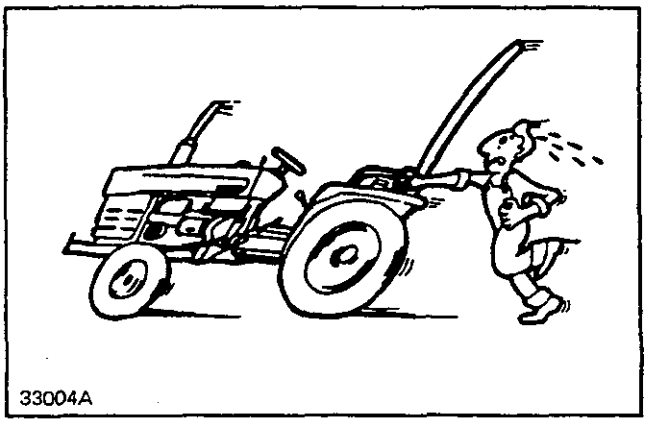
1. If you operate the engine inside a closed building, be sure there is plenty of ventilation before starting the engine. Exhaust fumes are poisonous. Especially carbon monoxide which is odorless and colorless. You can easily be overcome without realizing it.

   While warming up the tractor, always attend the tractor and set the parking brake securely.



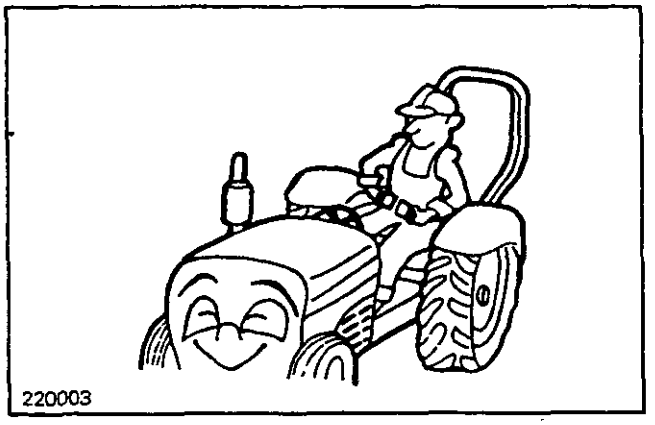
2. Start engine only from operator's seat. Do not start engine while standing on ground.

3. Do not start engine by shorting across starter terminals. Tractor will start in gear and move if normal starting circuit is bypassed.



4. Use approved rollover protective structure (ROPS) and seat belt. Overturning a tractor without ROPS can result in death or injury. Always adjust seat belt length to operator's physique and tighten seat belt securely when ROPS is installed. Not using the seat belt on a tractor equipped with ROPS may result in death or injury when tractor overturns.

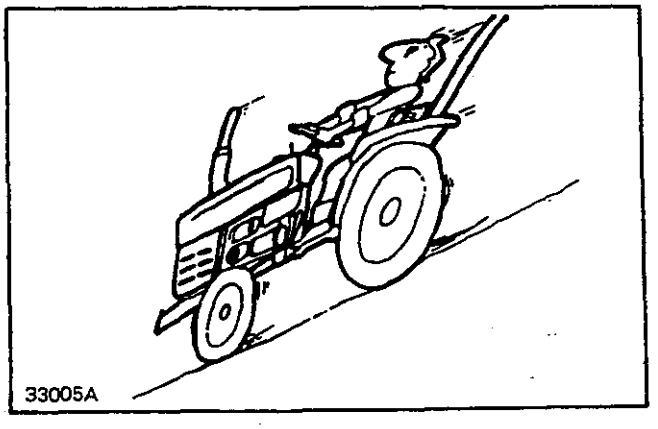
   Do not use seat belt if ROPS is removed from the tractor.



5. Do not allow tractor to coast downhill with clutch disengaged, or with gear in neutral.

6. When operating the tractor on slopes, set wheel tread as wide as possible for maximum stability, reduce engine speed and avoid hard application of brakes and sharp turns.

   Stay off hills and slopes which are too steep.



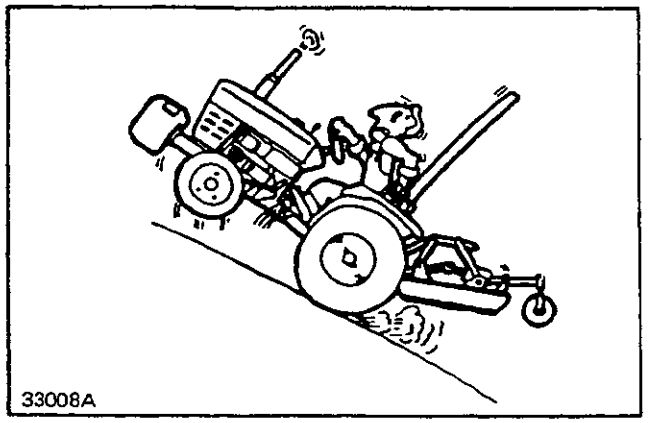
⚠ OPERATING(Continued)


33006A

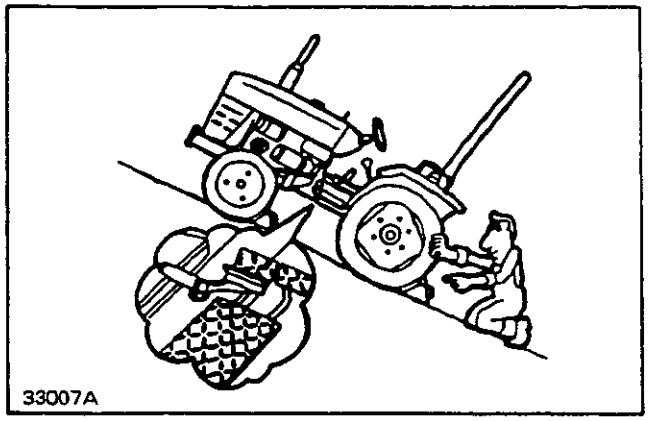
7. Slow down tractor over rough ground and in tall grass and weeds. Rocks, holes, stumps may be hidden in the brush.

   Do not let your tractor bounce. You may lose steering control.

   Never use the tractor to round up farm animals.

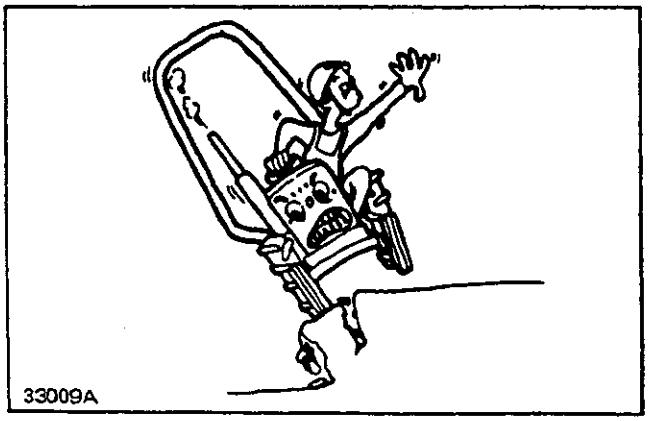

33008A

8. When starting tractor on uphill slopes, shift to as low a gear as possible and reduce engine speed to prevent rear overturn.


33007A

9. Keep tractor on a firm level surface when parking.

   When parking the tractor, couple brake pedals together and set parking brake securely. When parking unavoidably on a slope, position it at right angles to the slope and set parking brake securely and block both front and rear wheels.


33009A

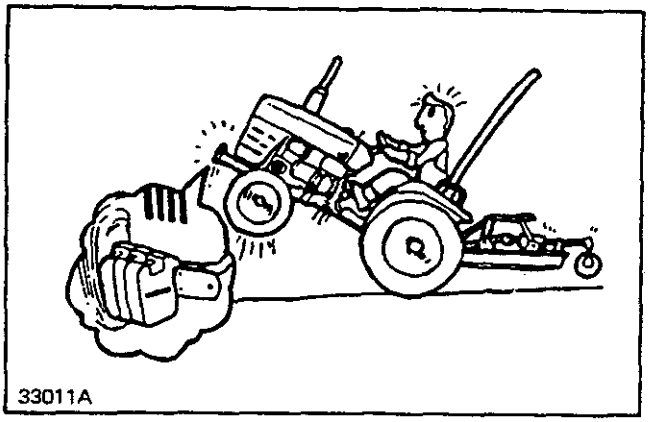
10. Do not drive near the edge of a gully or steep embankment — it might cave in.

11. Avoid holes, ditches, etc. which may cause the tractor to tip, especially on hillsides or steep slopes.

12. Driving forward out of ditch or mired conditions or up a steep slope could cause tractor to tip over rearward. If the mud is deep enough it keeps the wheels from turning. The tractor will rotate up and backwards around the axle very quickly. When caught in mired conditions, do not remove implement or ballast weight and always back out.

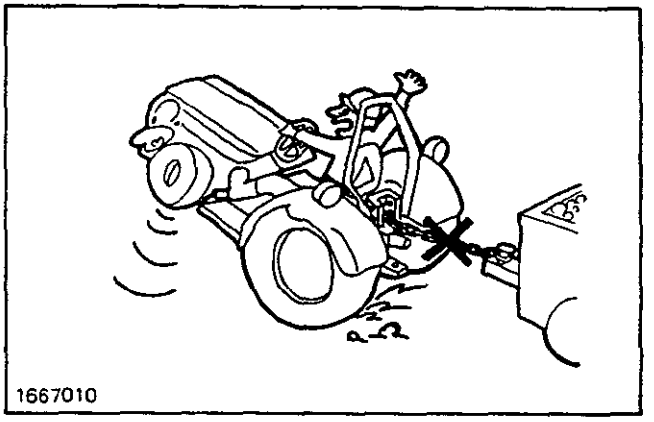
13. When using a heavy implement on 3-point hitch, always install front ballast for stability and steering control.

14. Too large an implement is dangerous for tractor operation. Refer to your implement operator's manual for minimum and maximum horsepower requirement.


33011A

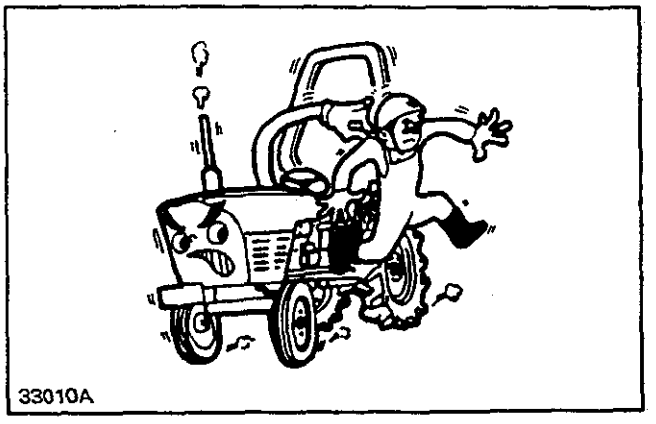
15. Do not pull carts etc. from the top link or top link hinge, the rear axle or any point above the drawbar. Doing so could cause the tractor tip over rearward. For pulling, attach carts etc. to the drawbar only.

    Use care when pulling loads or using heavy implement.
    1) Use only approved hitch points.
    2) Limit loads to those you can safely control.
    3) Don't turn too sharp, and care when backing.
    4) Use counterweight or wheel weights when suggested in operator's manual.


1667010

16. Take all possible precautions as follows when leaving tractor unattended:
    a) Disengage PTO.
    b) Lower implement to ground.
    c) Shift all shift levers to neutral.
    d) Latch power shift lock lever. (Power shift transmission only)
    e) Couple brake pedals together and set parking brake lever.
    f) Run engine to cool for 2 to 3 minutes at one-third throttle speed and no load.
    g) Stop engine.
    h) Cycle hydraulic controls to eliminate residual pressure.
    i) Remove key.

    When you leave operator's seat, wait for engine and implement parts to stop moving.

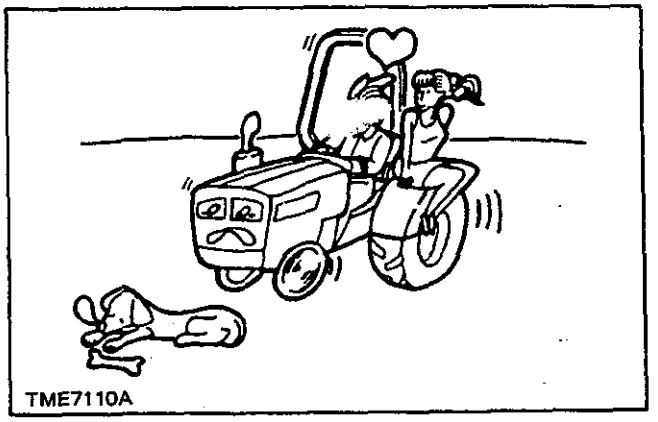

33010A

17. Do not permit any person other than operator to ride or board on tractor or implements including wagons.

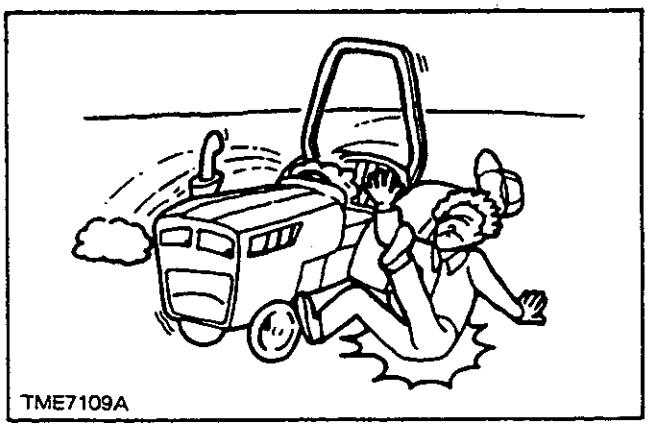
    Never allow children in the tractor cab or allow them to ride on your lap.

    Never allow anyone to stand on the overhead guard or fenders.

    Do not "cowboy" or play games with a tractor.


TME7110A

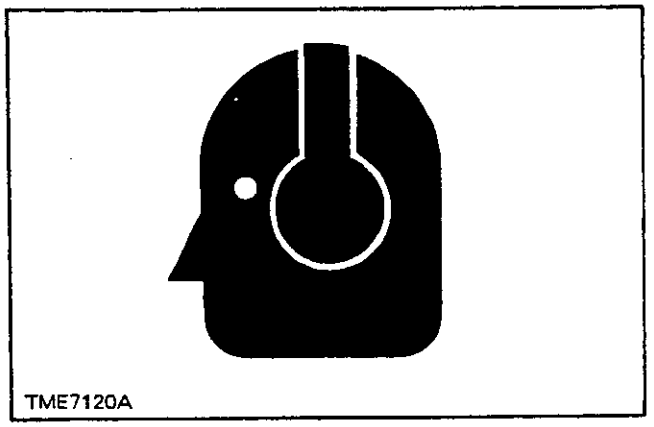
⚠ OPERATING(Continued


TME7109A

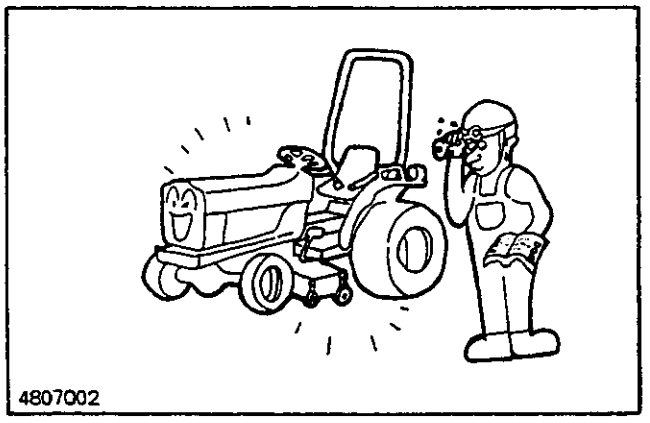
18. Do not try to get on or off a moving tractor or implements. Always use hand rails and steps and face tractor when mounting and dismounting. Never use control levers as a hand hold and never step on foot controls when mounting or dismounting.

    Do not get on tractor with wet or greasy hands or muddy shoes.

    Do not jump off tractor and be aware of slippery conditions on the ground.


TME7120A

19. Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable and uncomfortable noises.


4807002

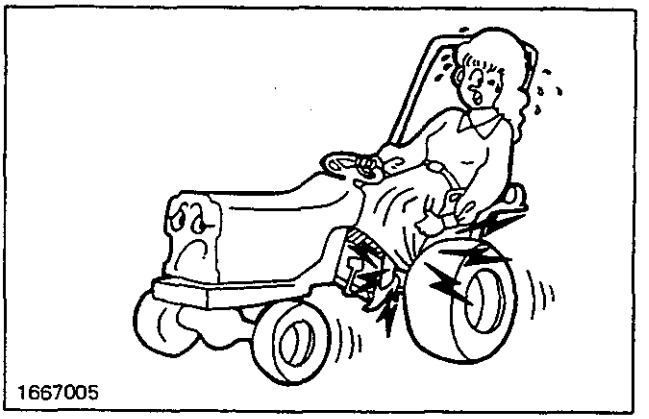
20. Make sure
    a) Tractor and implement are in good condition and properly adjusted.
    b) Check for bolts loosening, lubricants, damage or inflation pressure of tires, safety shields and devices, steering and braking linkages, hydraulic leaks, etc.. Refer to operator's manuals for more detailed information.
    c) Implements are properly attached and hooked up. Check that the PTO U-joint yoke end locking devices are securely latched on shafts.
    d) Implement PTO RPM ratings match tractor's.
    e) To adjust seat positioning and seat belt length to operator's physique.

OPERATING(Continued)

21. Avoid loose fitting or baggy clothing with tears, bulging pockets, frayed edges or heavy cuffs. Loose frayed and bulky clothing can easily become wrapped in revolving parts. Wear working clothing and working shoes or boots.

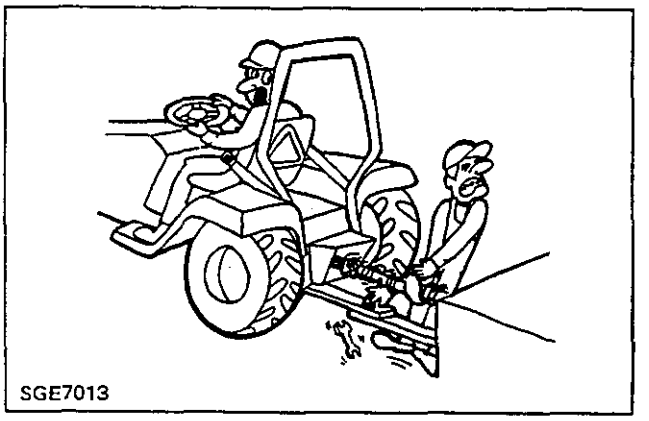
    Also you may need:
    * Safety helmet
    * Safety shoes
    * Safety eye protection
    * Heavy duty gloves
    * Hearing protection
    * Reflective clothing
    * Respirator or filter mask

    Wear whatever safety gear and clothing is necessary for the job.

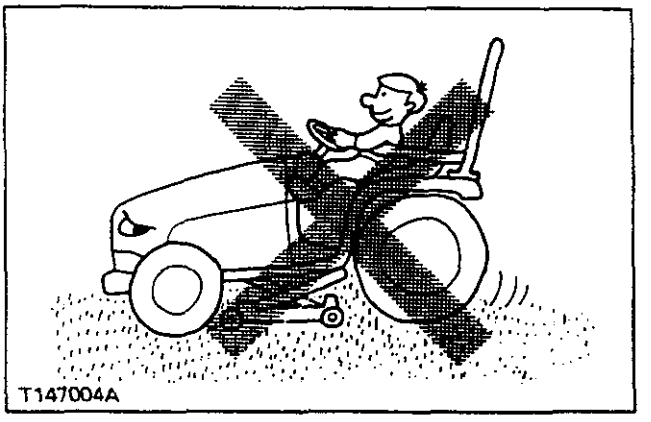

1667005

22. Keep hands, feet and clothing away from power-driven parts. Know the pinch and wrap points on your equipment. Keep others away from articulation joints, hitches, drawbar, lift arms, PTO drives, cylinders, etc..

    Never stand, or allow anyone else to stand, between the tractor and implement unless the engine is turned off and parking brake is engaged securely.

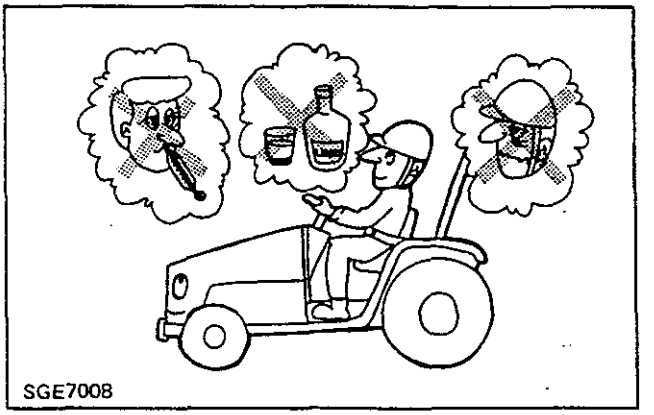

SGE7013

23. Do not permit anyone unfamiliar with tractor and implement operation to operate the tractor.

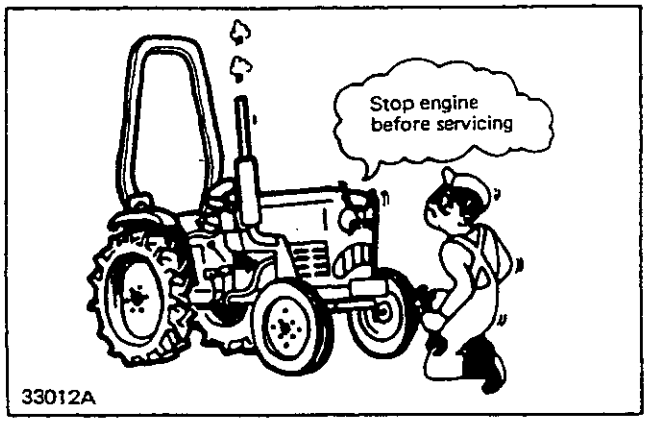

T147004A

24. Do not operate the tractor when tired, ill, sleepy, drunk, feeling overworked, taking medicines, pregnant, suffering mental disease or other improper conditions.

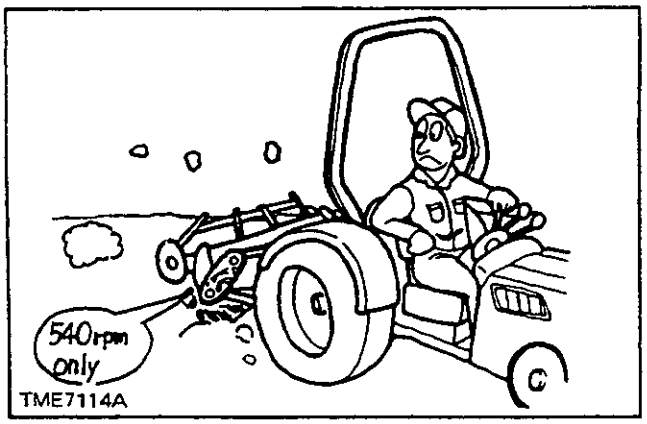
    These conditions impair a person's skill and judgment. When you begin feeling tired during operation, take a 10-minute break to stretch, walk about, lie down or snack. Do not continue if you still feel tired after taking a break.


SGE7008

⚠ STAY CLEAR OF REAR PTO

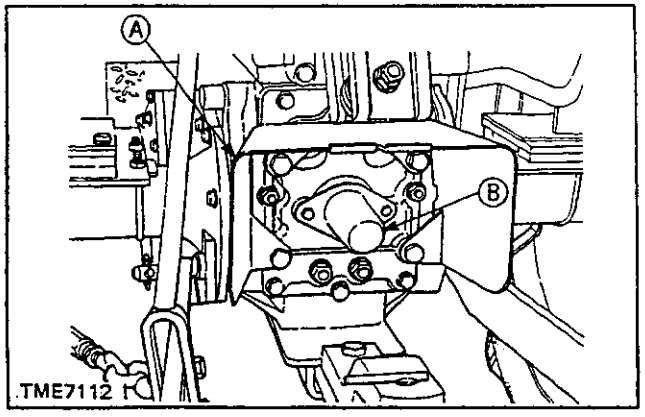


1. Stop engine and be sure PTO has stopped before:
   a) Connecting or disconnecting PTO shaft.
   b) Making any adjustment to PTO drive train and 3 point hitch.
   c) Adjusting, cleaning, and servicing PTO driven implements.



2. Make sure the tractor PTO RPM is matched to the implement's required RPM.

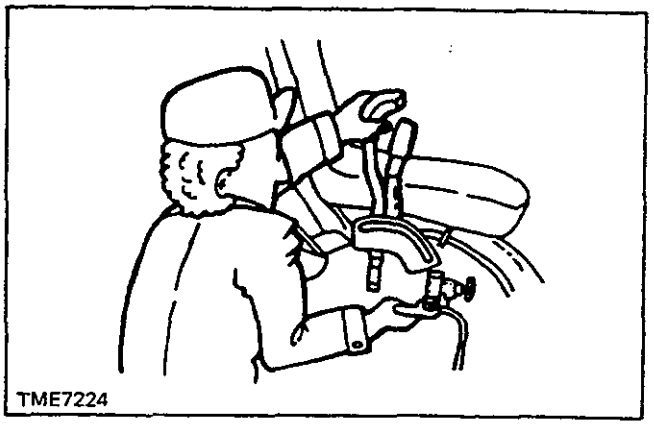
   Do not drive or operate implement beyond recommended PTO RPM.



3. PTO master shield (A) should be in place at all times. PTO shaft safety guard (B) should be installed when PTO system is not in use.

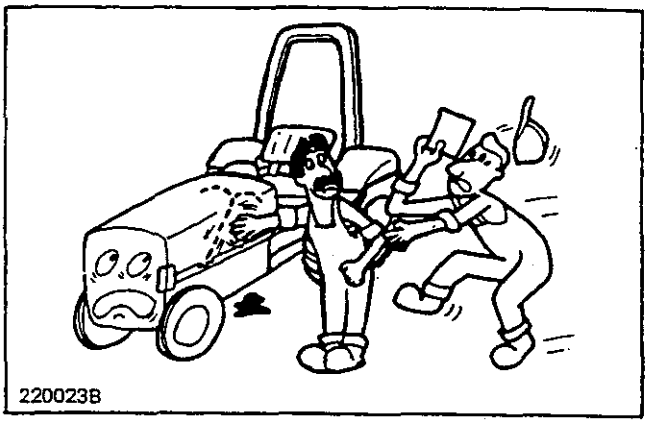
HIGH PRESSURE FLUIDS

1. Hydraulic oil or diesel fuel escaping under pressure can penetrate skin, causing serious injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure, be sure all connections are tight and all components are in good condition.


TME7224

2. Fluid escaping from very small hole can be almost invisible. Wear safety goggles for eye protection and use a piece of cardboard to check for suspected leaks. Do not use your hands.

   If injured by escaping fluid, see doctor at once. Serious infection or other problems can develop if proper medical treatment is not administered immediately.

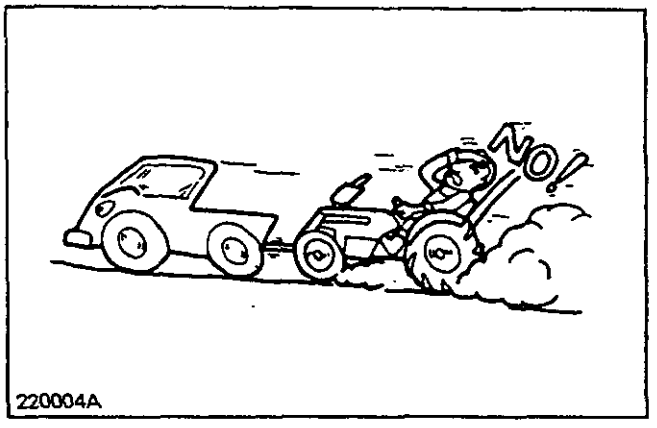

220023B

TRANSPORT

1. Do not tow tractor faster than its maximum travel speed in the highest gear and not more than 25 km/h (16 mph).

   Before going down a steep hill, shift to a low gear to control the tractor with little braking. Never coast downhill.

   Check local regulations for towing. Towing is illegal in some states.



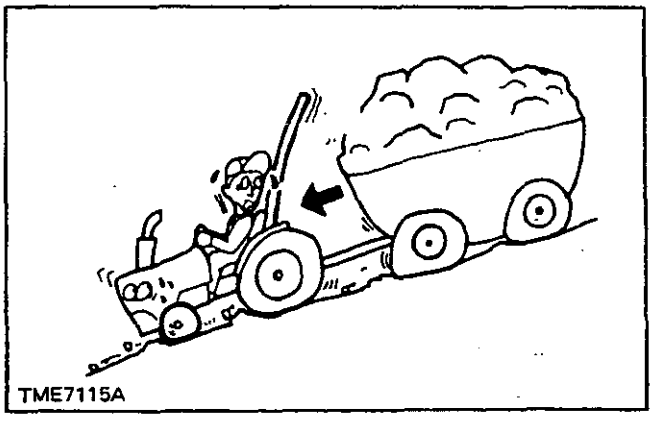
220004A

2. A towed load of more than the weight of the tractor should have it's own brakes. If it does not, drive slowly and avoid hills and hard applications of brake. It could run away on the down slope and braking could cause the tractor to jackknife around a towed load.

3. Couple brake pedals together and use slow moving vehicle (SMV) emblem and flashing lights for road travel unless prohibited by law.

4. Always dim headlights before meeting another vehicle. Keep light adjusted so they will not blind another vehicle.

5. Be sure lighting conforms to local regulations.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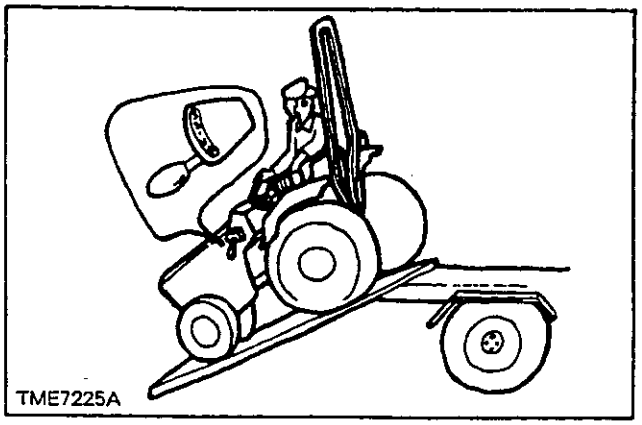
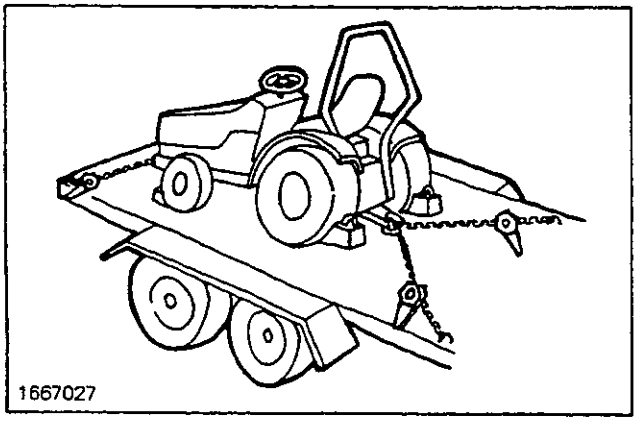
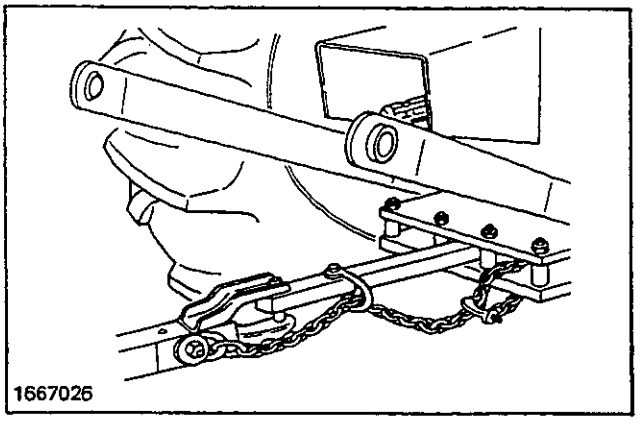
⚠ TRANSPORT (Continued


TME7225A

6. When loading (or unloading) tractor onto vehicle, use care as follows:
   a) Use adequate loading ramp on loading dock.
   b) Use lowest reverse gear when driving up loading ramp.
   c) Set parking brake and wheel blocks firmly under vehicle wheels.
   d) Do not try to drive onto trailer from ditch bank.


1667027

7. Secure the load with chain binders and be sure they are tight. If chain binders are not available, use rope, wire, blocks, or winch cable. Check load after traveling a few kilometers and every 100km thereafter to make sure ties are not coming loose. Also, check after rough road bumps.


1667026

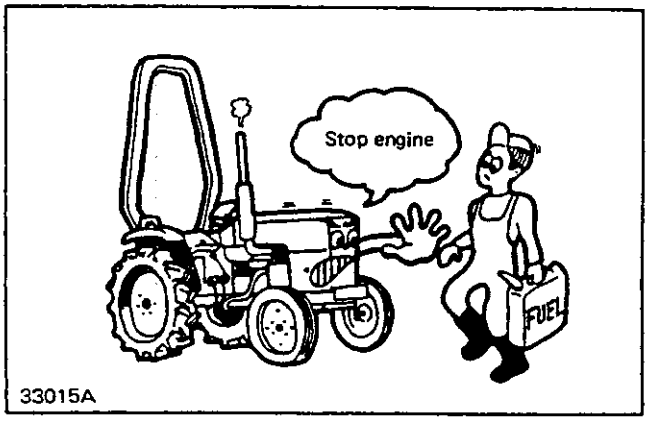
8. A safety chain will help control a drawn implement should it accidentally separate from drawbar while transporting. Using appropriate adapter parts, attach chain to tractor drawbar support or other specified anchor location. Provide only enough slack in chain to permit turning.

⚠ EXPLOSION OR FIRE

1. Refuel tractor when engine is cool and in well-ventilated area, preferably outside.

   Never fill the fuel tank with the engine running.

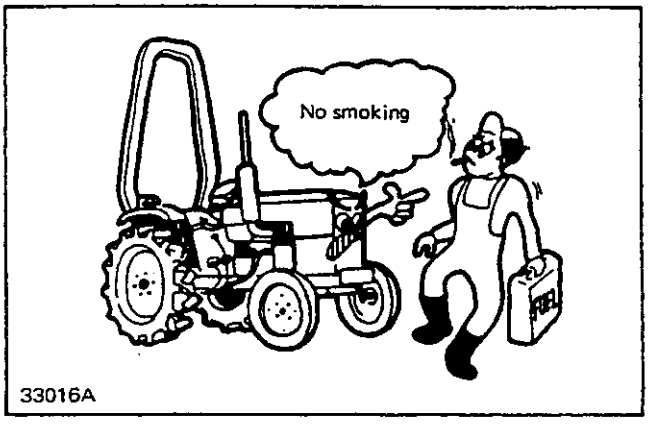
   Keep engine free of grass, leaves, or excessive grease.



2. Be sure to use the correct type and grade of fuel.

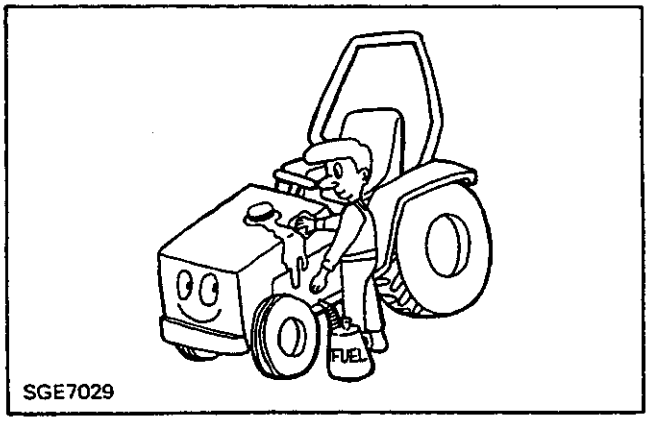
   Keep all sparks, flames and smoking materials away while handling fuel.

   Ground the fuel funnel or nozzle against the filler neck to prevent sparks and be sure to replace the fuel tank cap.



3. Do not overfill the tank or spill fuel. If fuel is spilled, wipe off immediately.

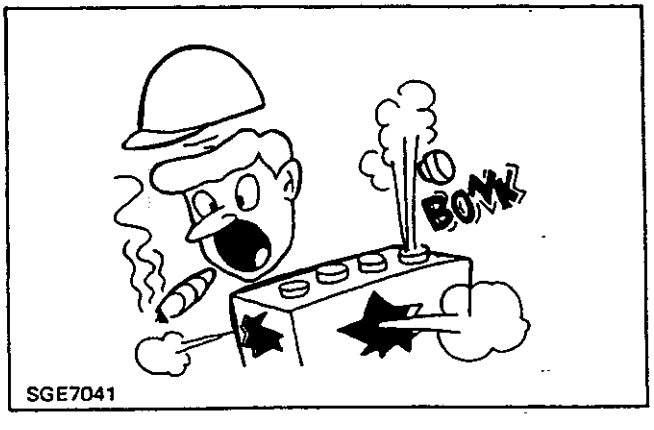
   Install fuel cap securely after refilling.



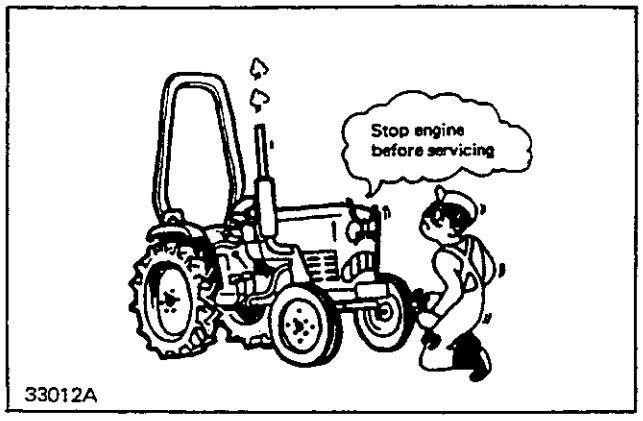
4. Be sure there is a plenty of ventilation before charging battery. Gas of battery is explosive.

   Keep all sparks, flames and smoking materials away from battery. Hydrogen gas from battery-concentration as low as 7 per cent- can explode in presence of spark or open flame and spatter acid.

   Use flashlight to check battery electrolyte level and never use open flame.

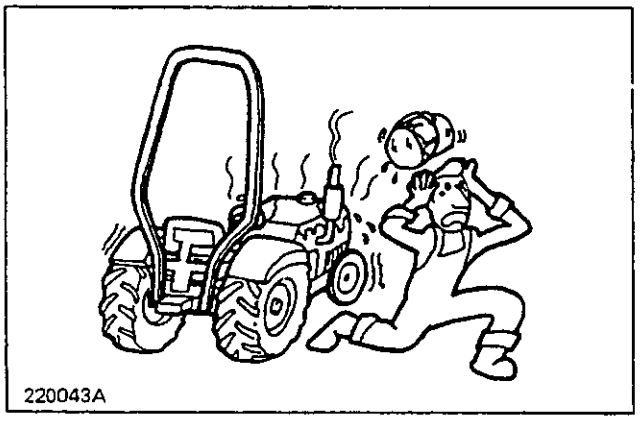


⚠ SAFETY IN SERVICE (GENERAL)



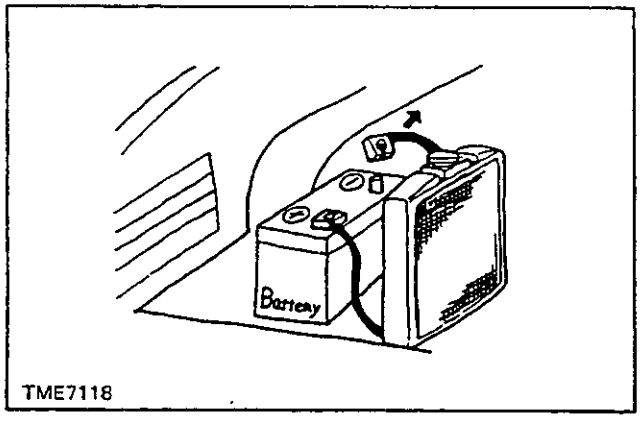
33012A

1. Do not service the tractor and implement while it is in motion or while the engine is running.


220043A

2. Remove radiator cap only when coolant temperature is cool. Wait at least one hour to allow coolant to cool down.

   Cover radiator cap with a cloth before opening and gradually release pressure before completely removing cap.

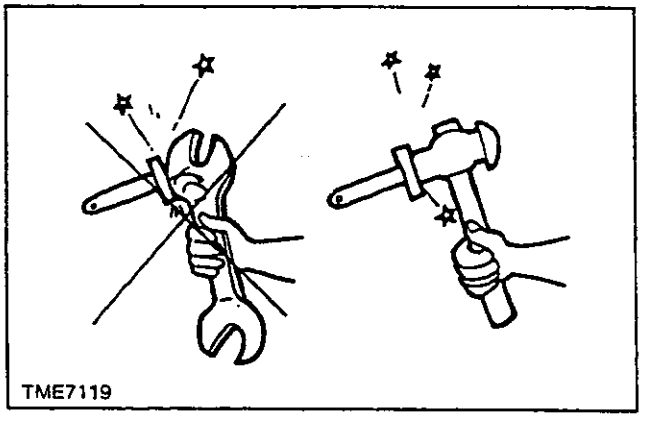


TME7118

3. Disconnect battery ground cable before working on electrical system or working in any area where you might come in contact with electrical components. Disconnect ground cable first and replace at last.

4. Sulfuric acid in battery electrolyte is poisonous. It can destroy clothing and burn skin. Wear eye protection and rubber gloves when filling battery. If you spill acid on yourself, flush skin with water and apply baking soda or lime to neutralize acid. Get medical attention immediately. If acid is swallowed, drink large amounts of water or milk, then drink milk of magnesia, beaten eggs, or vegetable oil. Get medical attention immediately.

5. Use correct tools and equipment.


TME7119

6. Unauthorized modification to the machine may impair the function and/or safety and effect machine life.

7. Do not use substitute parts that may not meet strength and design requirements or may not fit correctly in original machine.

   Do not use repair parts not approved by tractor or implement manufacturer.

8. Always display caution tag to the steering wheel and remove the ignition key until it is completely repaired.

YANMAR DIESEL TRACTOR

CONTENTS

YANMAR DIESEL TRACTOR

1. SPECIFICATIONS

MODEL	195 TRACTOR	195D TRACTOR
DIMENSIONS		
Overall length		
with 3-point hitch	2825 mm (111.2 in.)	2820 mm (111.0 in.)
without 3-point hitch	2485 mm (97.8 in.)*	2485 mm (97.8 in.)*
Overall width	1210 mm (47.6 in.)*	1210 mm (47.6 in.)*
Overall height		
to muffler end	1810 mm (71.3 in.)*	1835 mm (72.2 in.)*
to steering wheel	1340 mm (52.7 in.)*	1335 mm (52.6 in.)*
Wheelbase	1490 mm (58.7 in.)*	1557 mm (61.3 in.)*
Standard tread		
front	840 mm (33.1 in.)*	860 mm (33.9 in.)*
rear	1000 mm (39.4 in.)*	1000 mm (39.4 in.)*
Turning radius without brake	2700 mm (106.3 in.)	2700 mm (106.3 in.)
GROUND CLEARANCE		
drawbar	250 mm (9.8 in.)*	250 mm (9.8 in.)*
transmission case	325 mm (12.8 in.)*	325 mm (12.8 in.)*

Note: Figures marked * shows dimensions with 4.00–12 front tires (YM1
5–14 front tires (YM195D) and 8.3/8–24 rear tires.

SHIPPING WEIGHT Tire front	rear		
4.00–12	8.3/8–24	735 kg (1620 lbs.)	X
5–14	8.3/8–24	X	830 kg (1830 lbs.)
5–14	9.5/9–24	X	835 kg (1840 lbs.)
20x8.00–10	13.6–16	760 kg (1676 lbs.)	X
23x8.50–12	13.6–16	X	850 kg (1874 lbs.)
4.00–15	9.5/9–24	750 kg (1654 lbs.)	X

ENGINE		
Type	2-cylinder, in-line diesel	2-cylinder, in-line diesel
Model	2T84A	2T84A
Slow idle speed	800 rpm	800 rpm
Working speed range	1800 to 2400 rpm	1800 to 2400 rpm
Bore and stroke	84 x 90 mm (3.31 x 3.54 in.)	84 x 90 mm (3.31 x 3.54 in.)
Displacement	997 cc (60.83 cu. in.)	997 cc (60.83 cu. in.)
Compression ratio	20.5 : 1	20.5 : 1
Firing order (No.1 in. rear)	1–2	1–2
Valve clearance		
intake	0.15 mm (0.006 in.)	0.15 mm (0.006 in.)
exhaust	0.15 mm (0.006 in.)	0.15 mm (0.006 in.)
Injection timing	22°BTDC	22°BTDC
Lubrication system	Force-feed, pressurized with full-flow filter	force-feed, pressurized with full-flow filter
Max. gross horsepower (factory-observed)	14.17 KW (19 HP) at 2400 rpm	14.17 KW (19 HP) at 2400 rpm

FUEL SYSTEM		
Type	swirl-precombustion chamber	swirl-precombustion chamber
Injection pump type	plunger/bosch type	plunger/bosch type
Air cleaner	dry type with pre-cleaner	dry type with pre-cleaner

COOLING SYSTEM		
Type	pressurized with centrifugal pump	pressurized with centrifugal pump

MODEL	195 TRACTOR	195D TRACTOR
CAPACITIES		
Fuel tank	22 ℓ (5.8 U.S. gallons)	22 ℓ (5.8 U.S. gallons)
Cooling system (without subtank)	4.2 ℓ (4.4 U.S. quarts)	4.2 ℓ (4.4 U.S. quarts)
Crankcase (with filter)	5 ℓ (5.3 U.S. quarts)	5 ℓ (5.3 U.S. quarts)
Transmission hydraulic system	15 ℓ (16 U.S. quarts)	15 ℓ (16 U.S. quarts)
Front drive gear case	X	5 ℓ (5.3 U.S. quarts)
TRANSMISSION		
Type	sliding gear and constantmesh 2-speed range shift and 4-speed gear shift	sliding gear and constantmesh 2-speed range shift and 4-speed gear shift
Gear selection	8 forward and 2 reverse	8 forward and 2 reverse
Clutch	single-disk, dry	single-disk, dry
POWER TAKE-OFF		
Type	2-speed, transmission driven with overrunning clutch	2-speed, transmission driven with overrunning clutch
Speeds	540 rpm (2200 engine rpm) 1000 rpm (2200 engine rpm)	540 rpm (2200 engine rpm) 1000 rpm (2200 engine rpm)
Size	35 mm (1-3/8 inch)	35 mm (1-3/8 inch)
Clutch	uses transmission clutch	uses transmission clutch
HYDRAULIC SYSTEM		
Type	open center, constant flow	open center, constant flow
Relief pressure	155 kg/cm² (2204 psi.)	155 kg/cm² (2204 psi.)
Pump	gear pump, driven by engine	gear pump, driven by engine
BRAKES		
Type	mechanical dry, internal expanding shoe	mechanical dry, internal expanding shoe
ELECTRICAL SYSTEM		
Type	12-volt, negative ground	12-volt, negative ground
Battery	one, 12-volt, 75 Ah	one, 12-volt, 75 Ah
Alternator	15-amp	15-amp
TIRE AND TREAD	See page 45.	See page 45.

TRAVEL SPEEDS

8.3/8–24 rear tire

Gear	Rated Engine Speed (2400 rpm)		Standard PTO Speed (2200 rpm)	
	mph	km/h	mph	km/h
1	0.51	0.8	0.46	0.7
2	0.90	1.4	0.82	1.3
3	1.37	2.2	1.26	2.0
4	1.91	3.1	1.75	2.8
5	2.17	3.5	1.99	3.2
6	3.37	5.4	3.09	5.0
7	5.13	8.3	4.70	7.6
8	8.14	13.1	7.46	12.0
Max.	8.73	14.1 (at 2550 rpm)		
1R	0.90	1.4	0.82	1.3
2R	3.37	5.4	3.09	5.0

MODEL	240 TRACTOR	240D TRACTOR
DIMENSIONS		
Overall length		
with 3-point hitch	2825 mm (111.2 in.)	2822 mm (111.1 in.)
without 3-point hitch	2515 mm (99.0 in.)*	2528 mm (99.5 in.)*
Overall width	1240 mm (48.8 in.)*	1240 mm (48.8 in.)*
Overall height		
to muffler end	1840 mm (72.4 in.)*	1861 mm (73.3 in.)*
to steering wheel	1370 mm (53.9 in.)*	1380 mm (54.3 in.)
Wheelbase	1490 mm (58.7 in.)*	1565 mm (61.6 in.)
Standard tread		
front	840 mm (33.1 in.)*	922 mm (36.3 in.)*
rear	1000 mm (39.4 in.)*	1000 mm (39.4 in.)*
Turning radius without brake	2700 mm (106.3 in.)	2900 mm (114.2 in.)
GROUND CLEARANCE		
drawbar	280 mm (11.0 in.)*	280 mm (11.0 in.)*
transmission case	373 mm (14.7 in.)*	370 mm (14.6 in.)*
front differential case	X	370 mm (14.6 in.)*

Note: Figures marked * shows dimensions with 4.00-15 front tires (YM240), 6-14 front tires (YM240D) and 9.5/9–24 rear tires.

SHIPPING WEIGHT			
Tire			
front	rear		
4.00–15	9.5/9–24	770 kg (1698 lbs.)	X
5.00–15	11.2/10–24	810 kg (1786 lbs.)	X
6–14	9.5/9–24	X	876 kg (1931 lbs.)
6–14	11.2/10–24	X	891 kg (1960 lbs.)
20x8.00–10	13.6–16	820 kg (1808 lbs.)	X
27x8.50–15	11.2/10–24	X	1882 kg (1945 lbs.)

ENGINE		
Type	2-cylinder, in-line diesel	2-cylinder, in-line diesel
Model	2TR20AX	2TR20AX
Slow idle speed	800 rpm	800 rpm
Working speed range	1800 to 2400 rpm	1800 to 2400 rpm
Bore and stroke	90 x 90 mm (3.54 x 3.54 in.)	90 x 90 mm (3.54 x 3.54 in.)
Displacement	1145 cc (69.87 cu. in.)	1145 cc (69.87 cu. in.)
Compression ratio	20 : 1	20 : 1
Firing order (No.1 in. rear)	1–2	1–2
Valve clearance		
intake	0.15 mm (0.006 in.)	0.15 mm (0.006 in.)
exhaust	0.15 mm (0.006 in.)	0.15 mm (0.006 in.)
Injection timing	22°BTDC	22°BTDC
Lubrication system	Force-feed, pressurized with full-flow filter	force-feed, pressurized with full-flow filter
Max. gross horsepower (factory-observed)	17.90 KW (24 HP) at 2400 rpm	17.90 KW (24 HP) at 2400 rpm

FUEL SYSTEM		
Type	swirl-precombustion chamber	swirl-precombustion chamber
Injection pump type	plunger/bosch type	plunger/bosch type
Air cleaner	dry type with pre-cleaner	dry type with pre-cleaner

COOLING SYSTEM		
Type	pressurized with centrifugal pump	pressurized with centrifugal pump

MODEL	240 TRACTOR	240D TRACTOR
CAPACITIES		
Fuel tank	22 ℓ (5.8 U.S. gallons)	22 ℓ (5.8 U.S. gallons)
Cooling system (without subtank)	4.2 ℓ (4.4 U.S. quarts)	4.2 ℓ (4.4 U.S. quarts)
Crankcase (with filter)	5 ℓ (5.3 U.S. quarts)	5 ℓ (5.3 U.S. quarts)
Transmission hydraulic system	15 ℓ (16 U.S. quarts)	17 ℓ (18 U.S. quarts)
Front drive gear case	X	6 ℓ (6.3 U.S. quarts)
TRANSMISSION		
Type	sliding gear and constantmesh 2-speed range shift and 4-speed gear shift	sliding gear and constantmesh 2-speed range shift and 4-speed gear shift
Gear selection	8 forward and 2 reverse	8 forward and 2 reverse
Clutch	single-disk, dry	single-disk, dry
POWER TAKE-OFF		
Type	2-speed, transmission driven with overrunning clutch	2-speed, transmission driven with overrunning clutch
Speeds	540 rpm (2200 engine rpm) 1000 rpm (2200 engine rpm)	540 rpm (2200 engine rpm) 1000 rpm (2200 engine rpm)
Size	35 mm (1-3/8 inch)	35 mm (1-3/8 inch)
Clutch	uses transmission clutch	uses transmission clutch
HYDRAULIC SYSTEM		
Type	open center, constant flow	open center, constant flow
Relief pressure	155 kg/cm² (2204 psi.)	155 kg/cm² (2204 psi.)
Pump	gear pump, driven by engine	gear pump, driven by engine
BRAKES		
Type	mechanical dry, internal expanding shoe	mechanical dry, internal expanding shoe
ELECTRICAL SYSTEM		
Type	12-volt, negative ground	12-volt, negative ground
Battery	one, 12-volt, 75 Ah	one, 12-volt, 75 Ah
Alternator	15-amp	15-amp
TIRE AND TREAD	See page 45.	See page 45.

TRAVEL SPEEDS

9.5/9–24 rear tire

Gear	Rated Engine Speed (2400 rpm)		Standard PTO Speed (2200 rpm)	
	mph	km/h	mph	km/h
1	0.54	0.9	0.49	0.8
2	1.01	1.5	0.93	1.4
3	1.44	2.3	1.32	2.1
4	2.01	3.2	1.84	3.0
5	2.28	3.7	2.09	3.4
6	3.55	5.7	3.25	5.2
7	5.41	8.7	4.96	8.0
8	8.58	13.8	7.86	12.6
Max.	9.11	14.7 (at 2600 rpm)		
1R	1.01	1.5	0.93	1.4
2R	3.55	5.7	3.25	5.2

11.2/10–24 rear tire

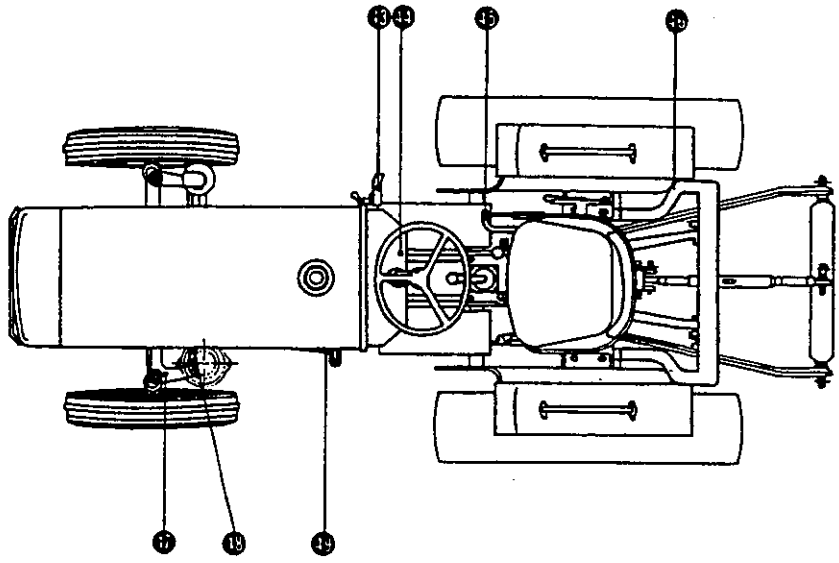
Gear	Rated Engine Speed (2400 rpm)		Standard PTO Speed (2200 rpm)	
	mph	km/h	mph	km/h
1	0.56	0.9	0.51	0.8
2	0.98	1.6	0.90	1.4
3	1.50	2.4	1.37	2.2
4	2.09	3.4	1.92	3.1
5	2.38	...8	2.18	3.5
6	3.69	6.0	3.38	5.5
7	5.63	9.1	5.16	8.3
8	8.92	14.4	8.18	13.2
Max.	9.66	15.6 (at 2600 rpm)		
1R	0.98	1.6	0.90	1.4
2R	3.69	6.0	3.38	5.5

YANMAR DIESEL TRACTOR

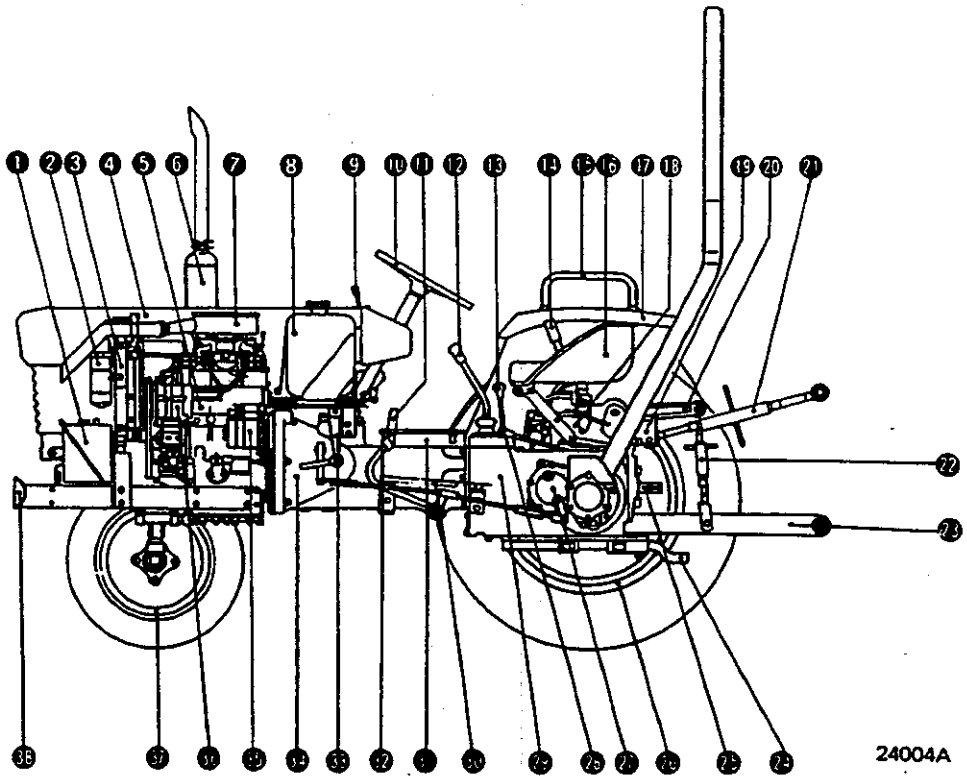
2. COMPONENTS

(1) Battery
(2) Radiator sub-tank
(3) Radiator
(4) Hood
(5) Engine
(6) Muffler
(7) Air cleaner
(8) Fuel tank
(9) Throttle lever
(10) Steering wheel
(11) Parking brake lever
(12) Gear shift lever
(13) Range shift lever
(14) Hydraulic control lever
(15) Assist bar
(16) Operator's seat
(17) Fender
(18) Hydraulic cylinder case
(19) Upper link hinge
(20) Lift arm
(21) Upper link
(22) Lift link
(23) Lower link
(24) Drawbar
(25) P.T.O. shaft
(26) Rear wheel
(27) Brake
(28) P.T.O. shift lever
(29) Transmission case
(30) Step
(31) Tool box
(32) Clutch pedal
(33) Pitman arm
(34) Clutch housing
(35) Starter motor
(36) Alternator
(37) Front wheel
(38) Bumper
(39) Headlight
(40) Front axle center-pin
(41) Front axle
(42) King-pin
(43) Brake pedal
(44) Instrument panel
(45) Differential lock pedal
(46) Check chain
(47) Nuckle arm
(48) Tie-rod
(49) Drag rod
(50) Front axle
(51) Front differential gear case
(52) Propeller shaft
(53) Front drive shift lever
(54) Rollover protective structure (ROPS)

Model
YM195/YM240

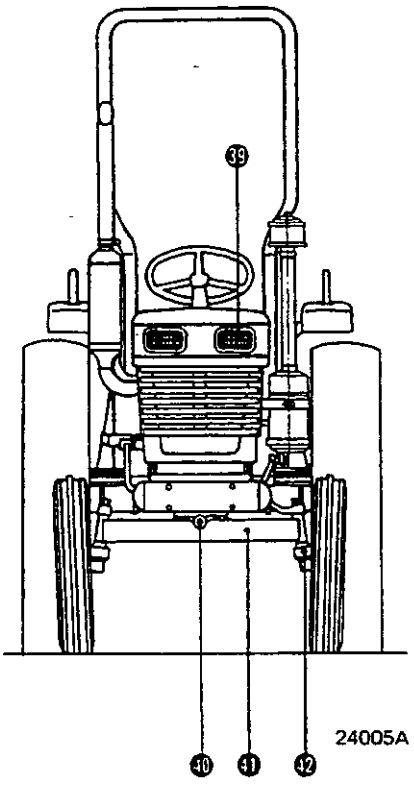


24003A

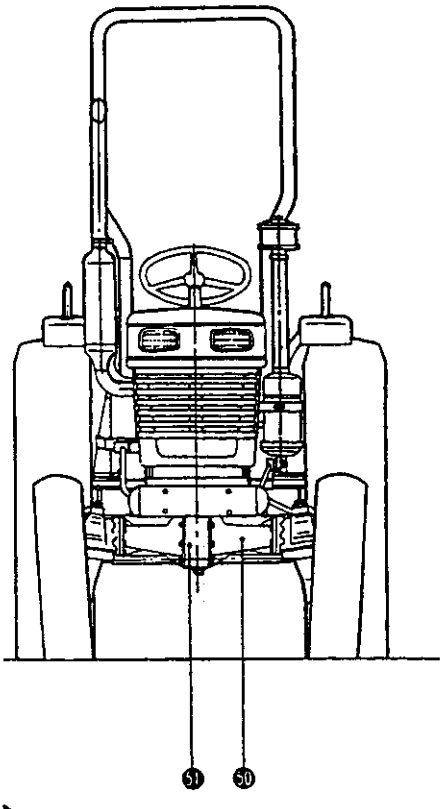


24004A

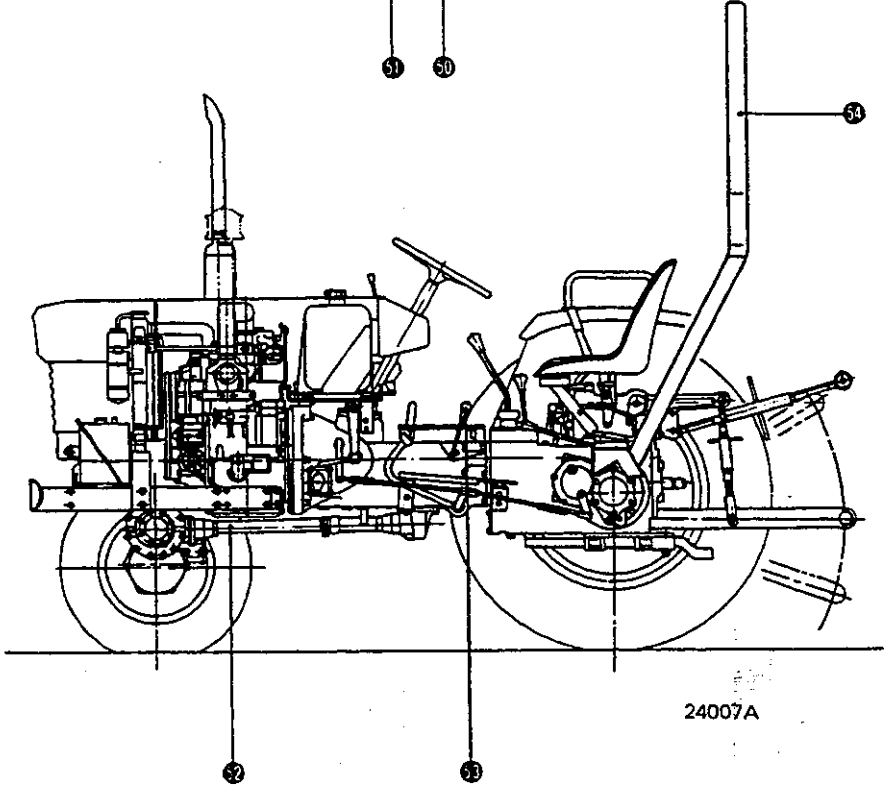
Model
YM195D/YM240D



24005A



24006A

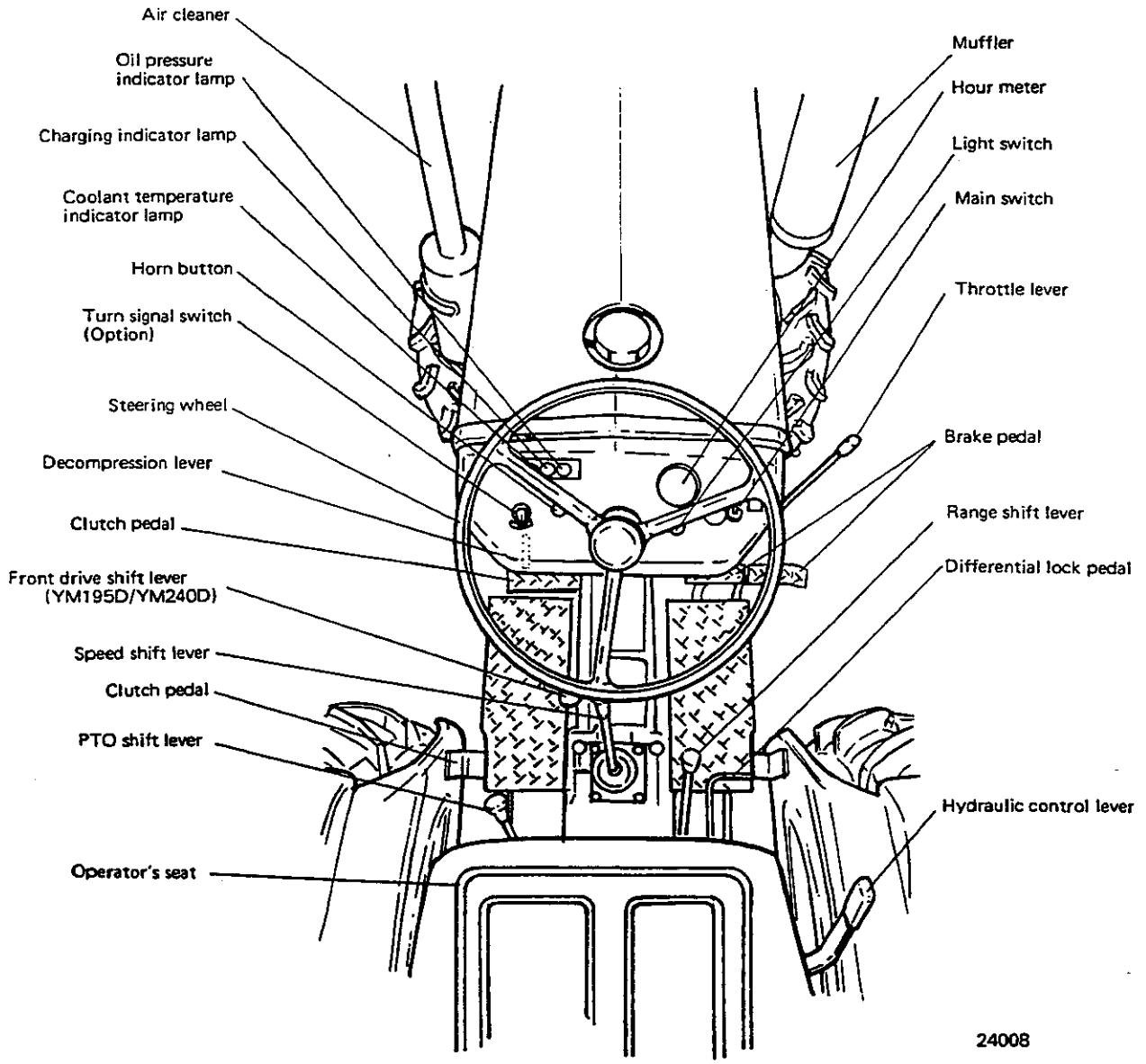


24007A

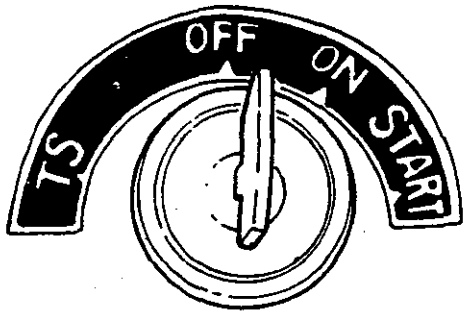
YANMAR DIESEL TRACTOR

3. CONTROLS AND INSTRUMENTS

Study the controls and instruments of the tractor so you understand them fully, and learn how to handle them correctly.



(1) Main switch

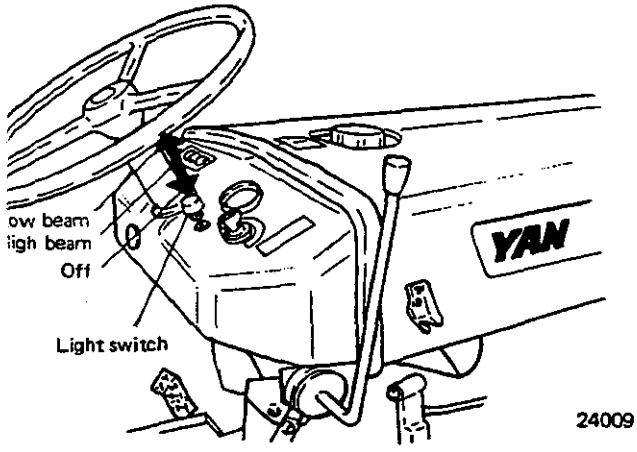


33024

OFF = Electric circuit is open.
ON = Electric circuit is closed.
START = Starter motor runs.
TS = Thermostart plug ignites.

(2) Light switch

The light switch has two positions. The first pulled position gives High-beam of headlights and the second pulled position gives Low-beam of headlights. Low-beam lights in case of on coming traffic or when driving through populated areas.



24009

(3) Turn signal switch

The turn signals indicate the direction in which the tractor turns. When operating tractor on a road, use turn signals as you would in a car or truck.

(4) Horn button

Press this button to sound the horn.

(5) Throttle lever

The throttle lever controls engine speed and stops engine.

(6) Decompression lever

The decompression lever is used to assist the capacity of battery and stater motor when starting engine.

(7) Hourmeter

The hourmeter indicates the operating time of engine and engine speed.

(8) Charging indicator lamp

The charging indicator lamp should go on when the main switch is turned on. After the engine has started, this lamp should go out. If it does not, stop engine immediately and determine the cause.

(9) Oil pressure indicator lamp

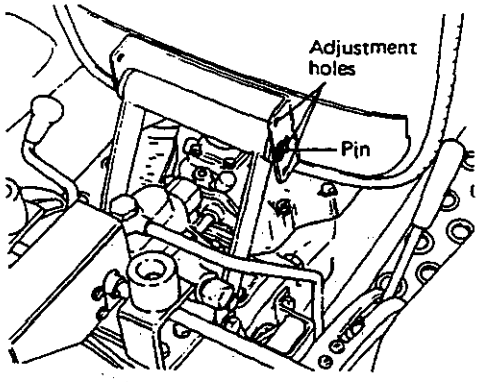
The oil pressure indicator lamp should go on when the main switch is turned on. After the engine has started, this lamp should go out. If it does not, stop engine immediately and determine the cause.

(10) Coolant temperature indicator lamp

The coolant temperature indicator lamp goes on when the engine is overheating. If this lamp goes on during engine operation, stop engine immediately and determine the cause.

(11) Operator's seat

The seat can be moved forward or backward depending upon the operator's physique.



33026

To move seat, remove pin and reinstall through desired adjustment holes.

(12) Front PTO switch (Optional)

Pull and lift up the switch to engage front PTO.

YANMAR DIESEL TRACTOR

4. BREAK-IN PERIOD

(4-1) ENGINE BREAK-IN

The engine is ready for normal operation. However, you should be extra cautious during the first 100 hours.

1) Avoid unnecessary engine idling. If tractor will be idle longer than five minutes, stop the engine.

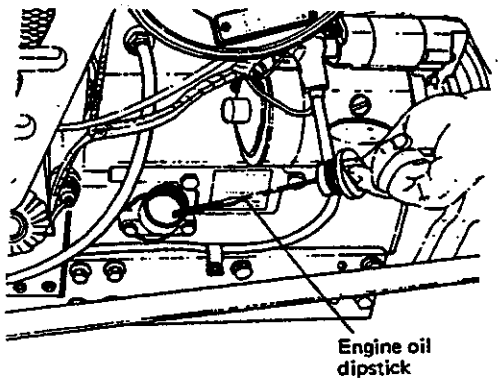
2) Watch coolant temperature indicator closely. If lamp glows, shift to a lower gear or reduce load. Unless temperature quickly drops, stop the engine and determine the cause.

3) Check engine oil and coolant levels more frequently. Watch for any signs of leaks.

4) Follow break-in lubrication instructions on page 56.

5) Until you become thoroughly familiar with the sound and feel of your new tractor, stay extra attentive and alert.

6) Be sure to change the engine crankcase oil after the first 20 hours operation. After the first 50 hours, replace the engine oil and filter element.



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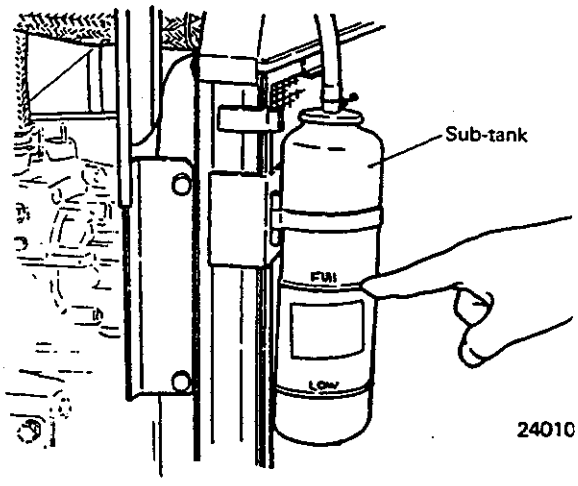
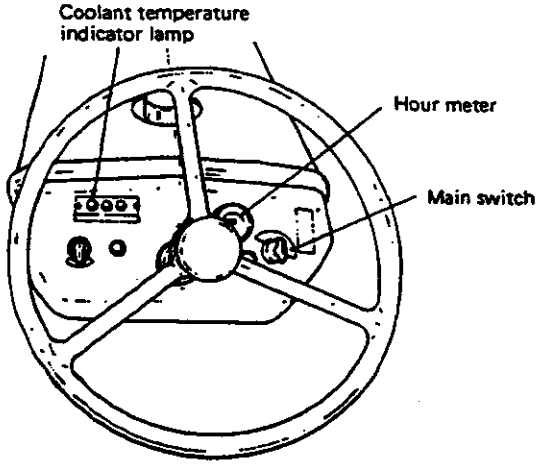


24010



Ideal conditions for breaking in a tractor engine would require operating the tractor at full engine speed under 75% of full load for approximately the first 100 hours.

[4-2] TRACTOR BREAK-IN

CAUTION

Never operate tractor with a loose rim, wheel, or axle.

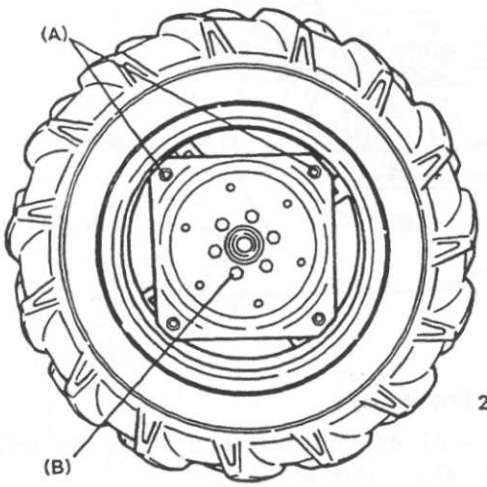
After the first 10 hours of operation, retighten all wheel bolts and front axle bolts. Check tightness of wheel bolts and axle bolts frequently during the first 100 hours of operation.

(1) Rear wheels

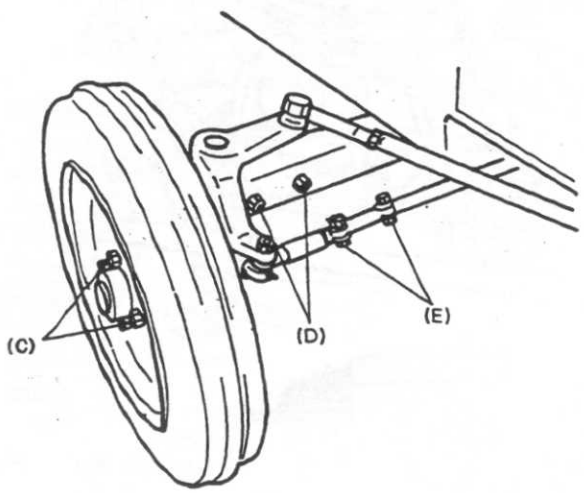
(A) Rim-to-wheel disk
(B) Wheel disk-to-axle flange

(2) 2WD Front wheels and Axle

(C) Wheel-to-front axle flange
(D) Adjustable front axle bolts (2WD)
(E) Tie-rod clamp bolts (2WD)

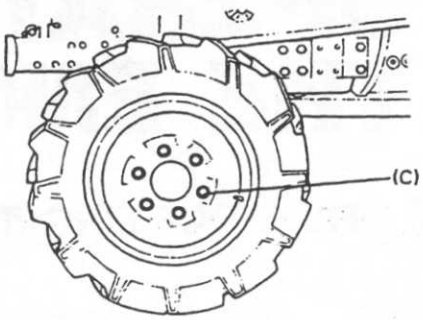


24011



24012

(3) 4WD Front wheels and Axle



220013

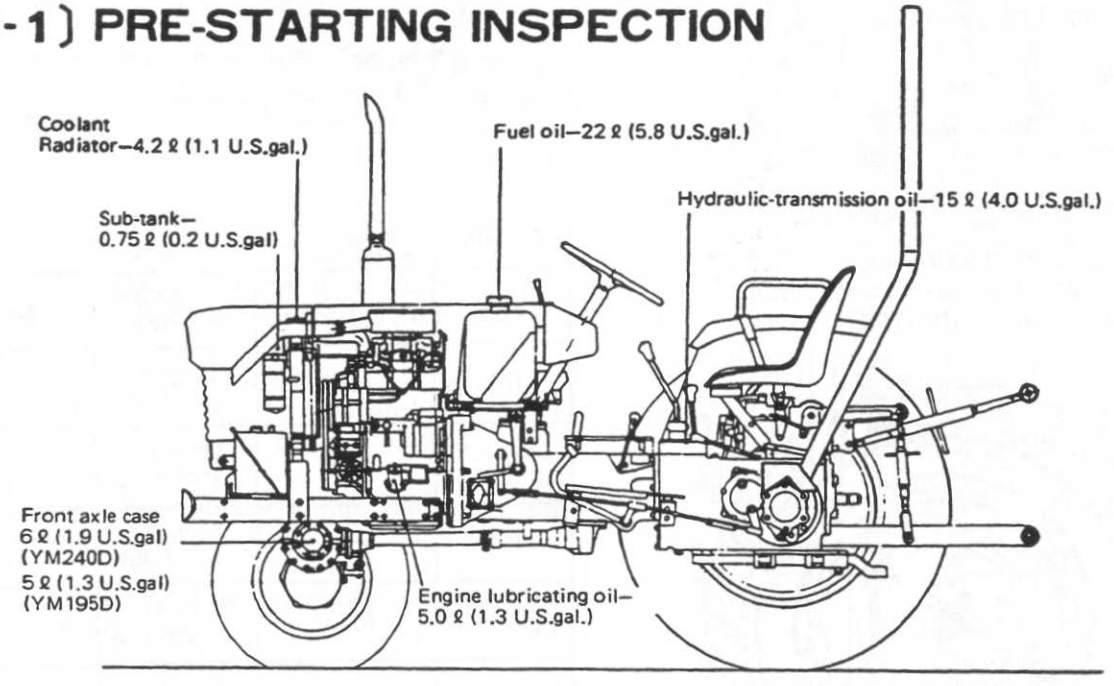
Tightening torque:

Item	Bolt size	Specified torque	Remarks
(A)	M16	20kg-m (147ft-lbs)	
(B)	M16	20kg-m (147ft-lbs)	
(C)	M14	14kg-m (103ft-lbs)	
(D)	M16	20kg-m (147ft-lbs)	
(E)	M10	5kg-m (36ft-lbs)	

YANMAR DIESEL TRACTOR

5. OPERATING THE ENGINE

(5-1) PRE-STARTING INSPECTION

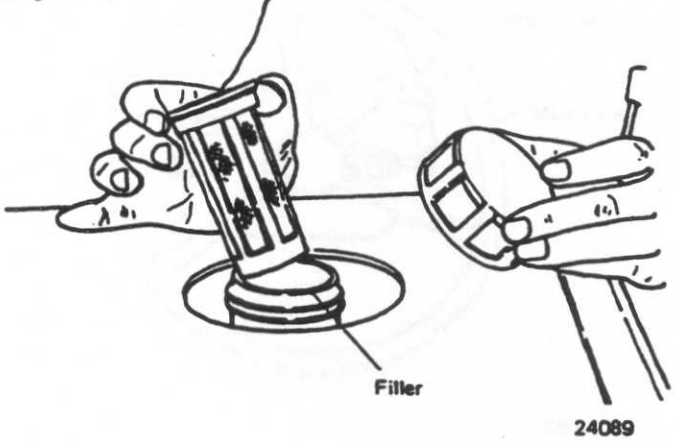


24007A

(1) Fuels

Suitable fuels must be clean, completely distilled, well-refined, and non-corrosive to the fuel system parts.

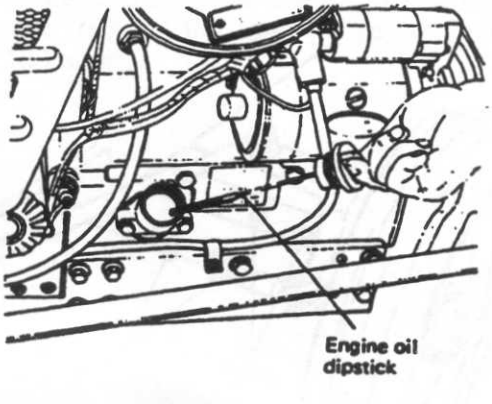
Use either Grade No. 1-D or No. 2-D fuel. (See page 54.)



24089

(2) Engine oils

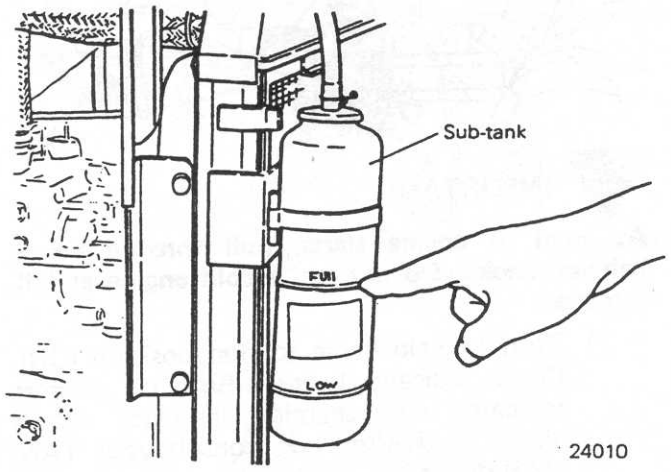
Fill crankcase with specified oil to the upper mark on dipstick. (See page 54.)



33028

(3) Coolant (capacity of radiator is 4.2 ℓ/4.4 U.S. quarts; capacity of sub-tank is 0.75 ℓ/0.8 U.S. quarts)

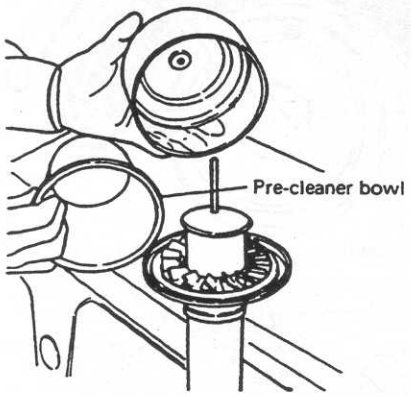
Check for adequate coolant in the sub-tank. If low, add to the "FULL" level, and if empty, removing the pressurized type radiator filler cap, add coolant to the rim of the filler opening, and fill it to the "FULL" level in the sub-tank as well.



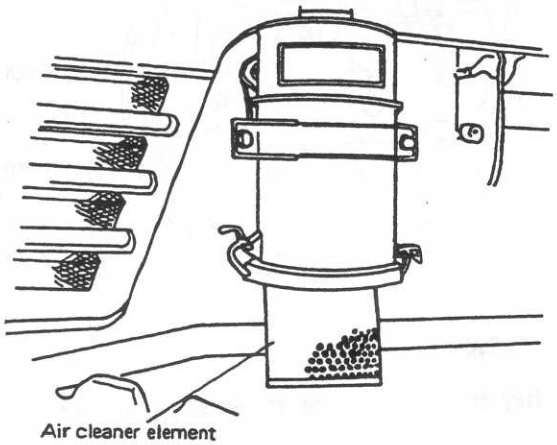
24010

(4) Air cleaner element

Inspect the air cleaner for contamination.



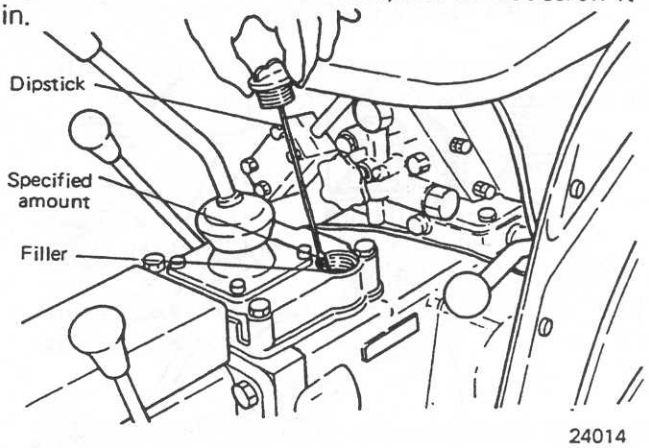
33033



33034

(5) Transmission-Hydraulic oil

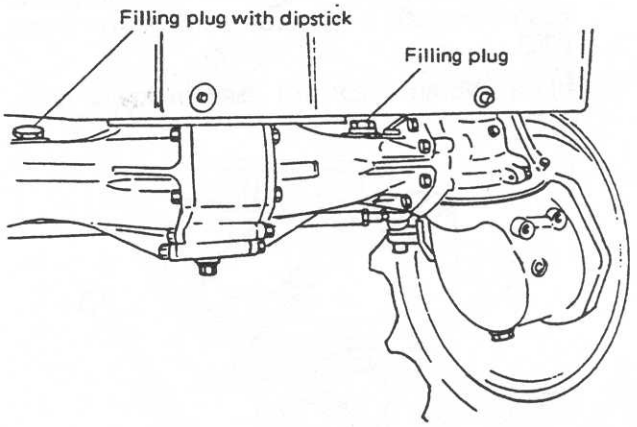
Confirm that the transmission oil is up to the required level by using the dipstick. If insufficient, replenish oil to the specified level. When inserting dipstick, rest it on the threads, but do not screw it in.



24014

(6) Front axle oil (YM195D/YM240D)

Capacity of front axle oil is 5 ℓ (5.3 U.S. quarts) for YM195D, and 6 ℓ (6.3 U.S. quarts) for YM240D. When inserting dipstick, rest it on the threads, but do not screw it in.



24015

(7) Important bolts and nuts

Check the engine and the hub bolts/nuts of the front and rear wheels to ascertain that they are securely tightened. (See pae 62.)

(8) Tire inflation pressures

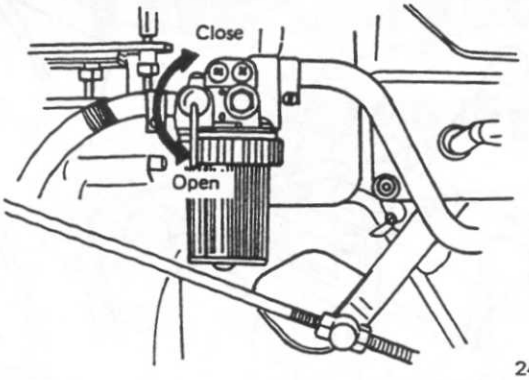
Check the front and rear tires pressures, making sure they are properly inflated. If the front wheels are carrying an extra-heavy load consisting of the front weights, and front loader, be sure to increase the front wheel tire pressure. (See page 48.)

[5-2]STARTING THE ENGINE

WARNING

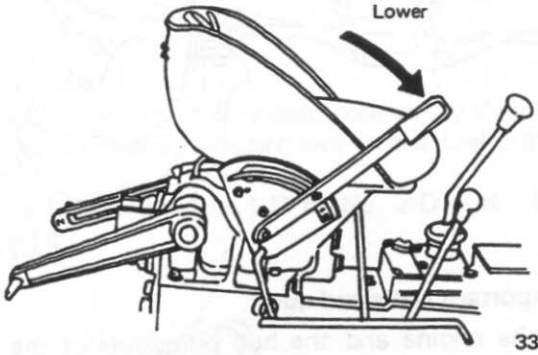
Start engine only from operator's seat. NEVER start engine while standing on ground.

1) Open fuel shut-off valve.



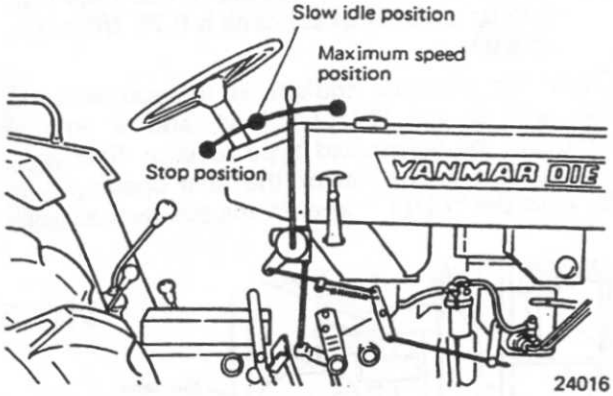
24124

2) Place power shift lever and range shift lever in neutral position by depressing clutch pedal.
3) Place PTO shift lever in neutral position to close start safety switch.
4) Turn off front PTO switch if it is equipped. Push down the switch to disengage the front PTO.
5) Place hydraulic control lever in lower position.



33038

6) Push throttle lever to the maximum speed position.



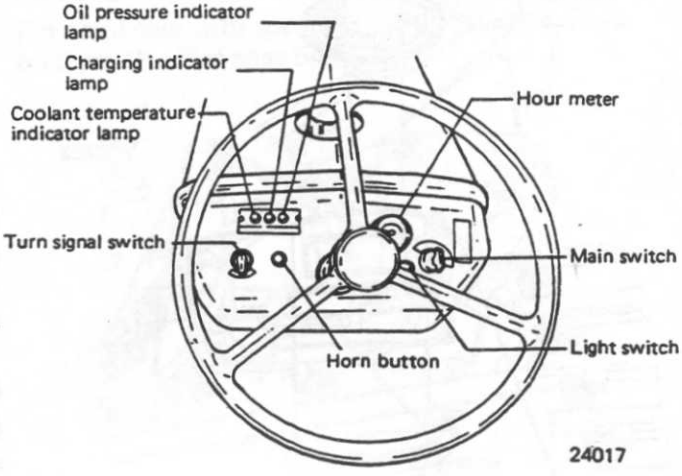
24016

IMPORTANT

As soon as engine starts, pull throttle about halfway back. Do not run a cold engine at full throttle.

7) Turn key clockwise to first position (ON). Check indicator lamps. Both oil pressure indicator and charging indicator should glow. If they do not, consult your YANMAR dealer.

33183

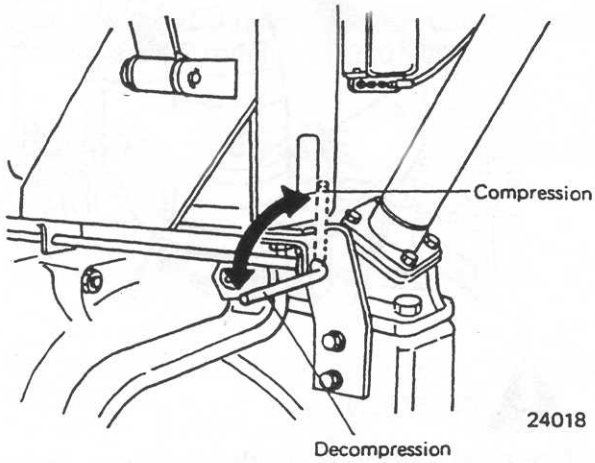


24017

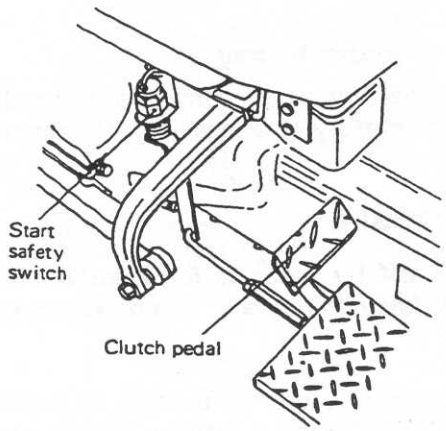
CAUTION

Before starting engine, be sure there is plenty of ventilation.

8) Turn decompression lever as shown below and depress clutch pedal to close starter safety switch.



24018



24019

9) Turn key clockwise against spring pressure to engage starter. When starter gives enough rotation to start engine, release decompression lever.
Release key immediately when engine starts.

IMPORTANT

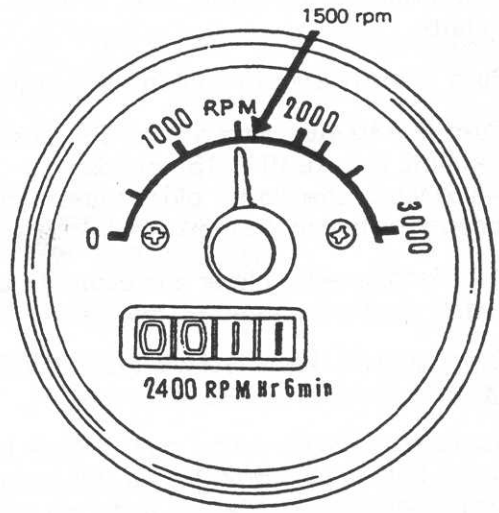
Do not operate starter more than 10 seconds at a time. If engine does not start, wait at least one minite before trying again.

10) Check indicator lamps as soon as engine starts. If lamps do not go out, stop the engine and determin the cause.

IMPORTANT

Always leave key turned on, in position "ON", while engine running.

11) Operate engine at approximately 1500 rpm for five minutes. Do not accelerate or apply a load until engine warms up.



24020

[5-3] COLD WEATHER STARTING AID

CAUTION

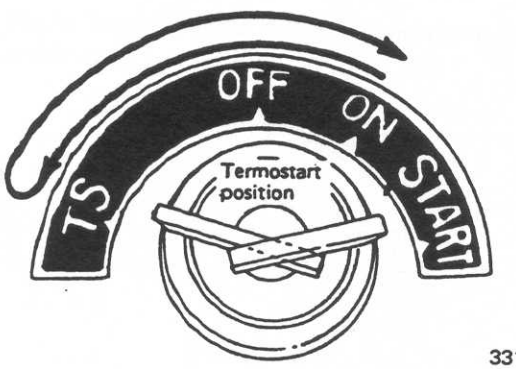
Do not use starting fluid ether in the engine.

(1) Thermostart device (factory option)

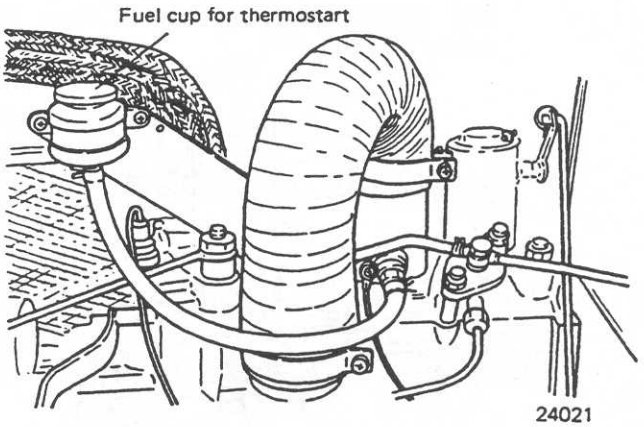
With a cold engine and at ambient temperatures below 0°C (32°F), operate the thermostart device as follows:

1) Pull throttle lever fully rearward.
2) Pull decompression lever for easy engine cranking.
3) Turning key to "START" position, crank engine 5 to 10 seconds until oil pressure indicator lamp stops glowing.
   If the lamp does not stop glowing for the first attempt, try again after waiting one minute.
4) Push throttle lever in fully forward position.
5) Turn key counterclockwise to "TS" position and hold it there 10 to 15 seconds.
   An electric thermostat plug ignites a small amount of fuel in the intake manifold.
6) Pull decompression lever and depress clutch pedal.
7) Quickly turn key clockwise to "START" position and start engine.
8) As soon as engine starts, pull throttle lever about half back. Hold key in this position until engine runs smoothly and then releasing the key, it turns to "ON" position automatically.

   If engine does not start within 10 seconds, turn key to "OFF" position and wait at least one minute before trying again.



33184



24021

CAUTION

Never put gasoline in the fuel cup instead of diesel fuel.

(2) Using booster battery

A 12-volt battery can be connected in parallel with the tractor battery. Use heavy duty jumper cables.

DANGER

Gas given off by batteries is explosive. To avoid injury or battery damage, avoid sparks near the batteries.

1) Attach one end of a cable to positive terminal of booster battery and the other end of the cable to starter terminal where positive battery cable is attached.
2) Attach one end of another cable to negative terminal of booster battery and the other end of the cable to a good ground on tractor frame.

(3) Electric coolant heater

With a cold engine, and at ambient temperatures below −12°C (+10°F), use an electric coolant heater.

1) Remove a plug from the left side of cylinder block.
2) Install the coolant heater to the cylinder block.
3) Connect coolant heater to 115-volt electric outlet.
   In extremely cold weather, it may take five to eight hours to heat engine.
   Coolant heater has a 400-watt heating element.

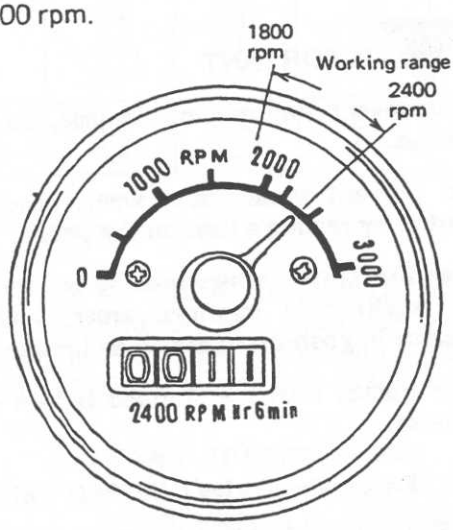
[5-4] ENGINE SPEEDS AND HOURMETER

Slow idle speed should be 800 rpm.
Fast idle speed should be 2550 rpm for YM195/195D and 2600 rpm for YM240/240D.

Full throttle speed at full load should be 2400 rpm.

Normal working speed is 1800 to 2400 rpm.

For standard PTO speed (540 rpm), run engine at 2200 rpm.



24022

The needle of hourmeter indicates engine revolution per minute (rpm) whenever engine is running.

The meter reading below needle indicates the total hours the engine has been running at engine speed 2400 rpm. If engine is running at less than 2400 rpm, the meter indicates total running hours less than actual total running hours.

Periodic service should be performed by using the time indicated on the hourmeter.

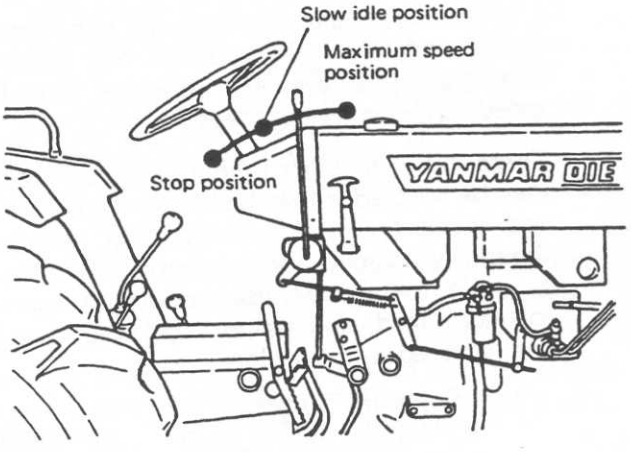
[5-5] STOPPING THE ENGINE

1) Pull throttle lever back to slow idle position.
2) Place speed shift lever in neutral.
3) Depress both brake pedals.
4) After tractor is stopped, place range shift lever in neutral position by depressing clutch pedal.
5) If implement is attached on three point hitch, move hydraulic control lever forward to lower implement.
6) Pull parking brake lever back and firmly depress brake pedals.
7) Allow engine to idle one or two minutes to stabilize engine temperature.
8) Pull throttle lever fully rearward to stop engine.
9) Turn key switch off and remove key.

STOP **IMPORTANT**

1. Do not use decompression lever to stop engine.

2. Stopping a hot engine suddenly could cause damage to certain engine parts by overheating.



24016

YANMAR DIESEL TRACTOR

6. OPERATING THE TRACTOR

(6-1) DRIVING THE TRACTOR

220003

WARNING

Use an approved rollover protective structure (ROPS) and seat belt for safe operation. Overturning a tractor without ROPS can result in death or injury.

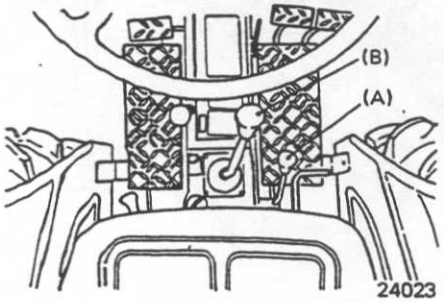
Always use the seat belt when ROPS is installed. Unfastening the seat belt on a tractor equipped with ROPS may result in death or injury when the tractor turn over.

Do not use the seat belt if ROPS is removed from the tractor.

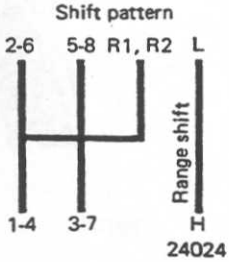
(1) Transmission and shifting

The tractor has eight forward and two reverse gear. Range shift lever (A) provides two speed ranges and gear shift lever (B) provides four forward speeds and one reverse speed.

These gears, together with the engine speeds that may be selected, allow the operator to balance load and speed for maximum economy, and give you flexibility to meet various work conditions. For example, use a higher gear and lower engine speed for light load, and use a lower gear and higher engine speed for heavy load.



24023



24024

Depress clutch pedal and stop tractor before shifting either range shift lever or gear shift lever. Release clutch pedal gradually to take up load smoothly.

IMPORTANT

To prevent transmission damage, do not shift on-the-go.

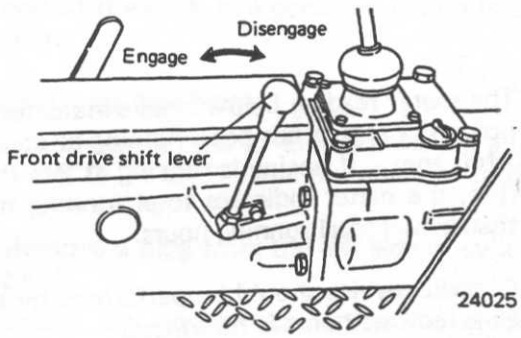
To prevent unnecessary wear, never "ride" the clutch by resting a foot on the pedal.

Use the clutch when making an emergency stop or working in confined areas, such as getting tractor in position to attach an implement.

The tractor must be stopped before shifting into reverse.

(2) Front wheel drive (YM195D/YM240D)

Push the lever forward to engage front wheel drive and pull the lever back to disengage. Usually operate tractor without front wheel drive. When operating the tractor with heavy drawn implements or operating on slope and/or muddy field, engage the front wheel drive.



24025

IMPORTANT

Depress clutch pedal and stop tractor before engaging front wheel drive. If it is hard to engage, use inching clutch.

(3) Travel speeds

Travel speeds for YM195 tractor are shown below. Speeds for tractor with 8.3/8–24 rear tires. Speeds would be 5.4% faster with 9.5/9–24 tires and 1% slower with 13.6–16 turf tires.

YM195/195D TRACTOR SPEEDS

	At rated engine speed (2400rpm)		At standard PTO speed (2200rpm)	
Gear	km/h	mph	km/h	mph
1	0.8	0.51	0.7	0.46
2	1.4	0.90	1.3	0.82
3	2.2	1.37	2.0	1.26
4	3.1	1.91	2.8	1.75
5	3.5	2.17	3.2	1.99
6	5.4	3.37	5.0	3.09
7	8.3	5.13	7.6	4.70
8	13.1	8.14	12.0	7.46
R1	1.4	0.90	1.3	0.82
R2	5.4	3.37	5.0	3.09
With 8.3/8–24 rear tires				

Travel speeds for YM240 tractor are shown below. Speeds for a tractor with 9.5/9–24 rear tires. Speeds would be 4.3% faster with 11.2/10–24 tires and 9.2% slower with 13.6–16 turf tires.

YM240/240D TRACTOR SPEEDS

	At rated engine speed (2400rpm)		At standard PTO speed (2200rpm)	
Gear	km/h	mph	km/h	mph
1	0.9	0.54	0.8	0.49
2	1.5	1.01	1.4	0.93
3	2.3	1.44	2.1	1.32
4	3.2	2.01	3.0	1.84
5	3.7	2.28	3.4	2.09
6	5.7	3.55	5.2	3.25
7	8.7	5.41	8.0	4.96
8	13.8	8.58	12.6	7.86
R1	1.5	1.01	1.4	0.93
R2	5.7	3.55	5.2	3.25
With 9.5/9–24 rear tires				

(4) Clutch

A clutch is used to connect or disconnect engine power to the transmission and drive wheels. The clutch is used to facilitate the shifting of gears. It is also used to allow the engine to operate, when the tractor is stopped, without placing the shift levers in neutral (out of gear).

When disengaging, depress the clutch quickly, and when engaging, release it slowly.

IMPORTANT

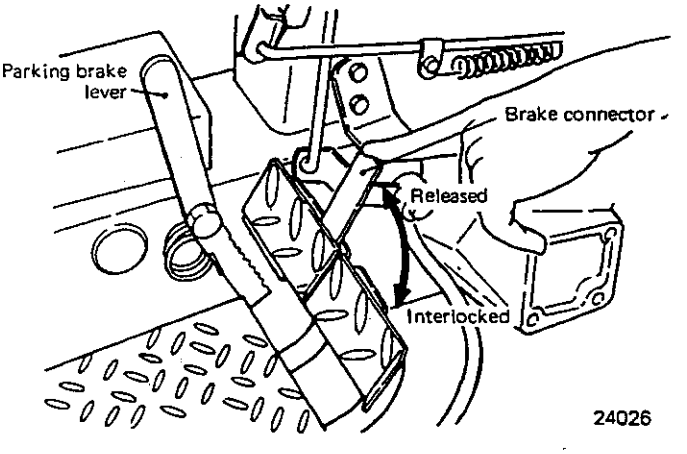
Do not rest your foot on the clutch pedal. Especially, when using tractor with front loader, dozer, rear blade or box scraper, check pedal free travel often. (See page 60.)

(5) Brakes

WARNING

Brake pedals must be connected together by means of connector when driving on public roads.

Keep brake pedals adjusted evenly, to prevent tractor from swerving to one side when both brakes are applied. See page 61.



The tractor is equipped with individual operating brakes. To stop tractor, depress both brake pedals connected by brake connector.

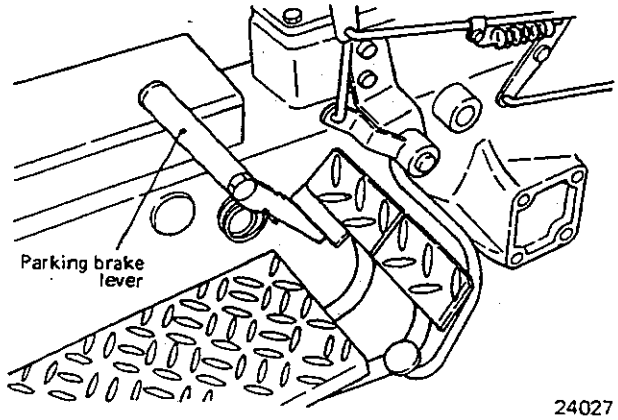
Use individual brakes to assist in making sharp turns. Disconnect connector and depress only one brake pedal.

IMPORTANT

To prevent unnecessary wear, never ride the brakes by resting a foot on the pedals.

To set parking brake, pull lever back and firmly depress brake pedals.

To release parking brake, push lever forward while depressing brake pedals.



24027

(6) Starting the tractor

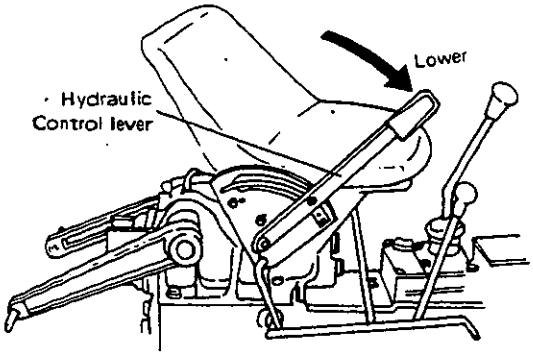
WARNING

Release clutch pedal slowly to prevent front wheel lifting when starting the tractor. It is particularly important for transporting heavy implement.

1) Make sure both brake pedals are connected together.

2) Set engine speed about 1500rpm.

3) Raise implement by using hydraulic control lever if it is equipped.



33038

4) Depress the clutch pedal fully.

5) Place gear shift lever and range shift lever in the desired positions.

6) Release clutch pedal slowly to engage the clutch.

7) Adjust travel speed by throttle lever.

(7) Stopping the tractor

WARNING

When parking unavoidably on slopes, chock both rear and front wheels.

1) Pull throttle lever back to slow idle position.

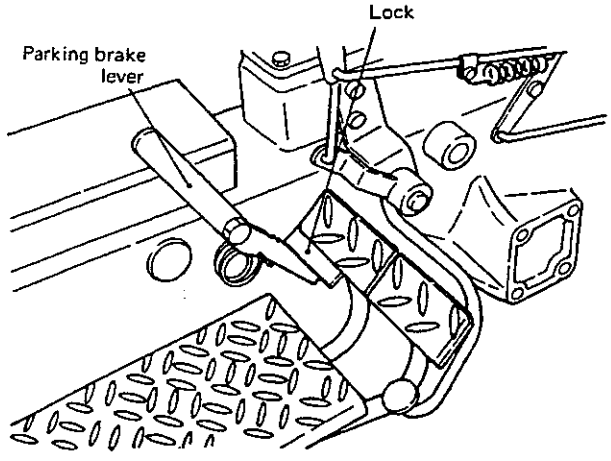
2) Depress clutch pedal quickly.

3) Depress both brake pedals.

4) Place gear shift lever and range shift lever in "NEUTRAL" position.

5) Ground all attachments.

6) Pull parking brake lever back and firmly depress brake pedals.



24027

7) Pull throttle lever to stop position.

8) Turn key switch off and remove key before leaving the tractor.

(8) Turning the tractor

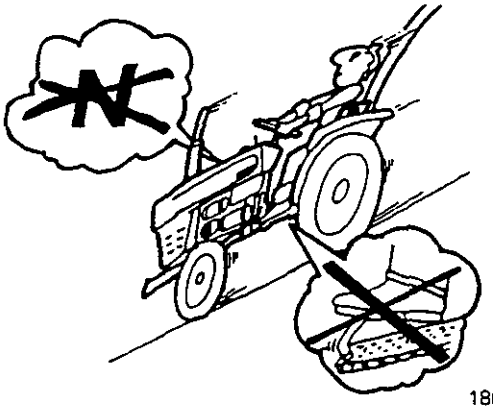
Reduce engine speed and apply brakes before turning to avoid tip-overs.

(9) Operating on slopes

WARNING

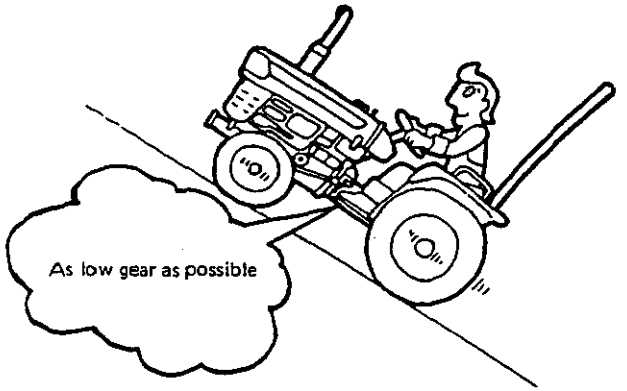
When operating tractor on slopes, Reduce engine speed, avoid hard application of the brake, keep brakes properly adjusted, and never attempt sharp turns.

1) Driving down hill
   Do not coast downhill with clutch disengaged. Do not coast downhill with shift in neutral. This could result in loss of control, in over-speeding and damage to the clutch.



186033A

2) Starting on an uphill
   When starting tractor uphill, shift in as low gear as possible and reduce engine speed to prevent front wheel from lifting. Shift in the desired gear only after reaching the summit of the slope.



186117A

3) Stopping on a downhill
   Do not depress the clutch pedal while the tractor's speed is still fast. Before the tractor comes to a full stop, depress the clutch pedal and brake pedals at the same time.

   When stopping tractor downhill, it is best to allow the engine to assist brake to coast downhill.

   When leaving the tractor, depress brake pedals firmly and pull parking brake lever back.

(10) Operating differential lock

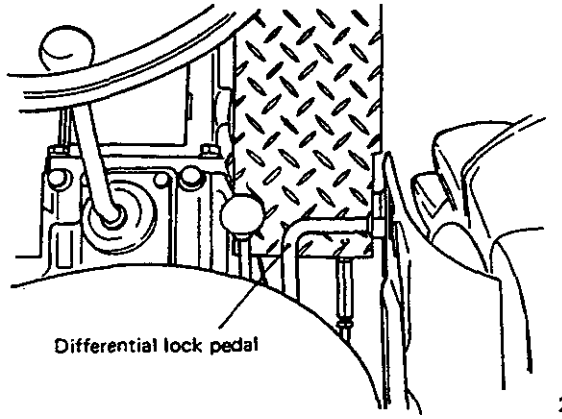
WARNING

Do not operate tractor at high speeds or attempt to turn with differential lock engaged.

When one wheel starts to spin, engage differential lock by depressing pedal.

Unequal traction will keep the lock engaged. When traction equalizes, lock will disengage itself by spring action. If lock does not disengage, depress one brake pedal and then the other.

If tires repeatedly slip, then get traction, then slip again, hold pedal in engaged position.



24028

IMPORTANT

To prevent damage to power train, do not engage differential lock when one wheel is spinning and the other is completely stopped.

If differential lock pedal is not smoothly engaged, keep foot lightly on the pedal until lock pedal is engaged. Never depress the pedal forcibly to avoid damage.

(11) Observing points during operation

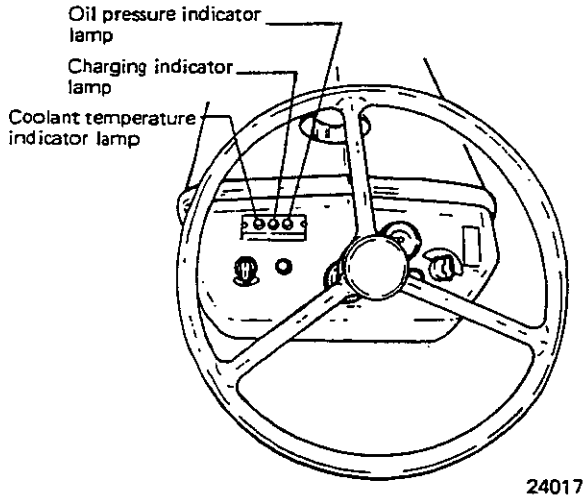
CAUTION

When abnormal noise and small are detected during operation, stop the engine immediately and determine the cause.

When operating the tractor, frequently check the gauges and indicator lamps on instrument panel.

1) Charging indicator lamp
   If charging indicator lamp goes on during operation, the alternator is not charging. Check for loose alternator connections, slackness of V-belt or defective alternator and regulator.

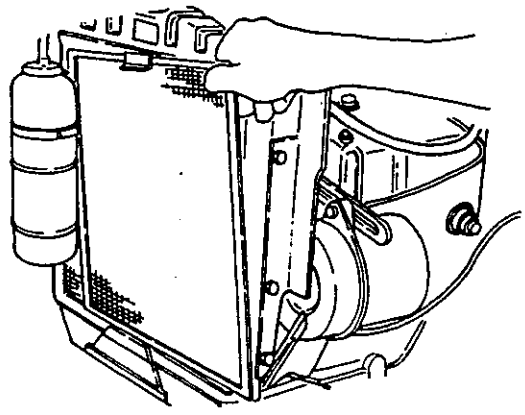
2) Oil pressure indicator lamp
   If oil pressure indicator lamp goes on during engine operation, check oil level and condition of engine oil filter.



24017

3) Coolant temperature indicator lamp
   If coolant temperature indicator lamp goes on during engine operation, engine is overheating and must be stopped at once. Check coolant level in sub-tank and check cooling system for leaks.

   Also check whether the front lower grill, radiator screen and core are clogged up. Check slackness of V-belt.



24029

4) Abnormal noise and smell

220021A

If abnormal noise and/or a burning smell are detected from the transmission, brakes, clutch and hydraulic system, stop the engine immediately and determine the cause.

5) Amount of fuel in the fuel tank
   Always check the amount of fuel remaining in the fuel tank, and refill it before the tank become empty.

   Whenever air gets into fuel system, bleed it out, refer to "SERVICE", page 74.

6) Color of exhaust gas
   If engine emits black or gray exhaust smoke, refer to "TROUBLE SHOOTING", page 83.

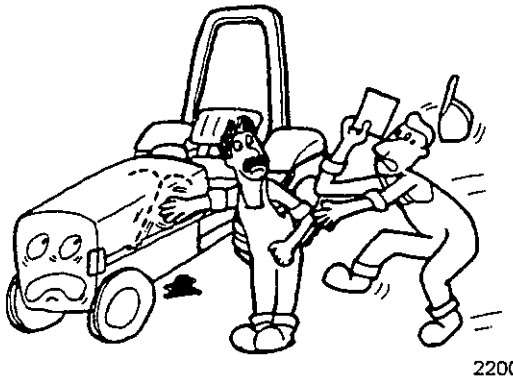
[6-2] HYDRAULIC LIFT AND 3-POINT HITCH

WARNING

Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged.

Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

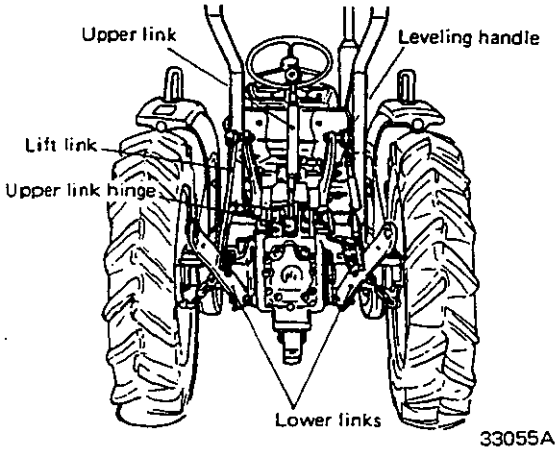
If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.



220023A

IMPORTANT

Horsepower of the tractor should be matched to the size of certain implements. Excessive horsepower can damage an implement, and too large an implement can damage the tractor. Refer to your implement operator's manual for minimum and maximum horsepower requirements before attaching an implement.



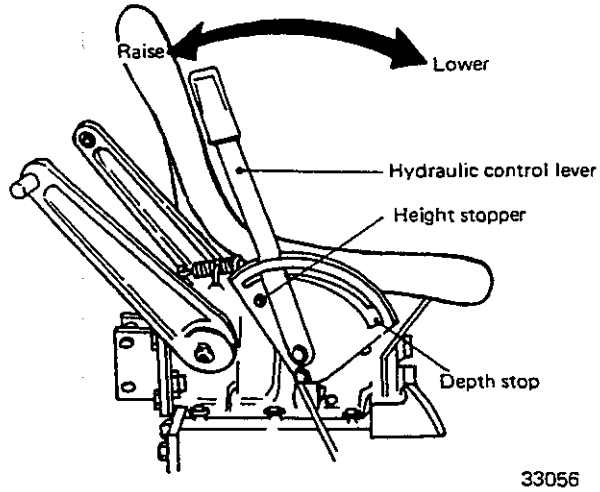
33055A

(1) Position control system

1) Hydraulic control lever

The hydraulic lift and 3-point hitch give precision control of mounted implements.

Move control lever so as to obtain required working depth. Set depth stopper against control lever and tighten. Then the lever is pushed to the stopper each time and the implement will return to the exact depth choosen.



33056

If control lever moves too easily, tighten adjusting nut of control lever shaft.

("Floating" position of lever)

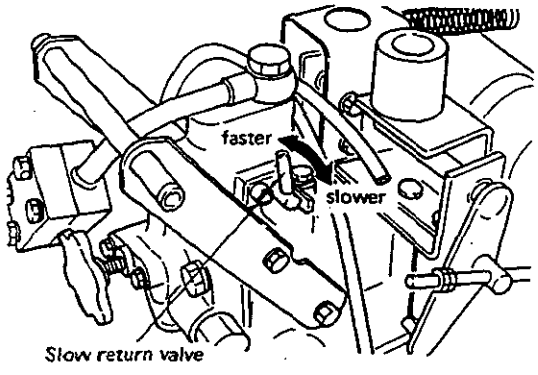
To obtain a "Floating action" for hydraulic lift controlled implements with gauge wheels. Move the hydraulic control lever all the way forward in the guide. In free float position the implement moves freely up and down, following the ground contours independent of the tractor.

2) Slow return valve

WARNING

Excessive speed of drop may cause damage or injury. Fully lowering implement should require at least two seconds.

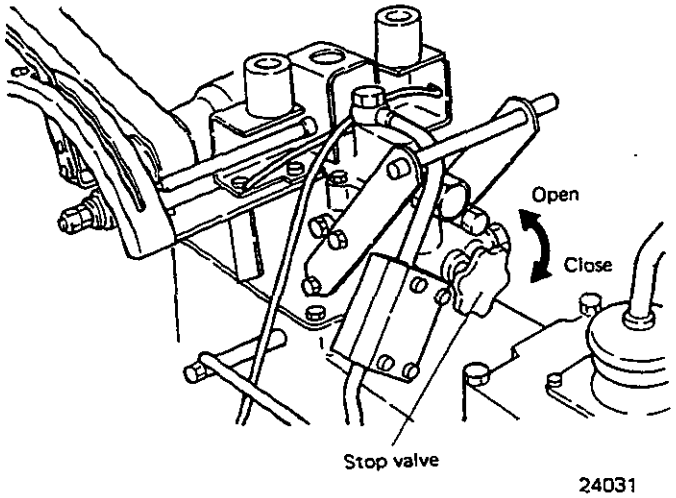
This valve controls lowering speed of hydraulic lift. Hydraulic lift drops faster when a heavy implement is attached. Adjust lowering speed so that is slow enough to be safe.



33057

3) Stop valve

You can lock hydraulic lift in position, so it can not be raised or lowered, by closing stop valve. Turn knob clockwise to stop when servicing an implement beneath it.



24031

IMPORTANT

Do not pull control lever to raise when stop valve is closed.

Open stop valve completely when it is not in use.

Do not close stop valve when transporting implement.

If you like to lock the hydraulic lift for safety, use slow return valve. The valve can be use as stop valve at the slowest position.

4) Feed back arm and rod

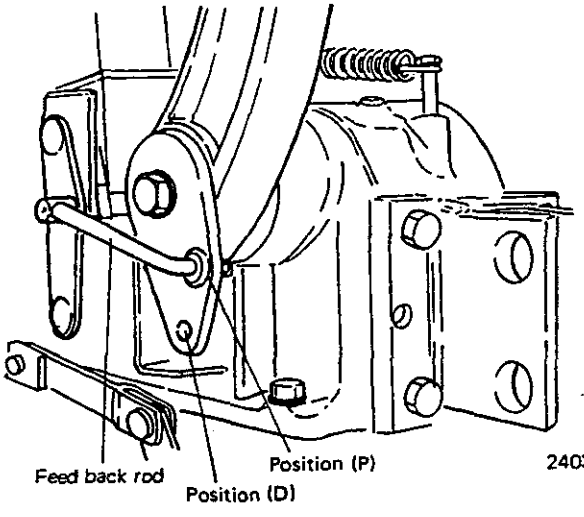
The feed back arm and rod on the left hand *side lift arm are for position control.*

The arm has two holes for connecting with feed back rod. Upper hole (P) should be used for position control.

IMPORTANT

Do not adjust the length of feed back rod.

Do not use lower hole (D).



24032

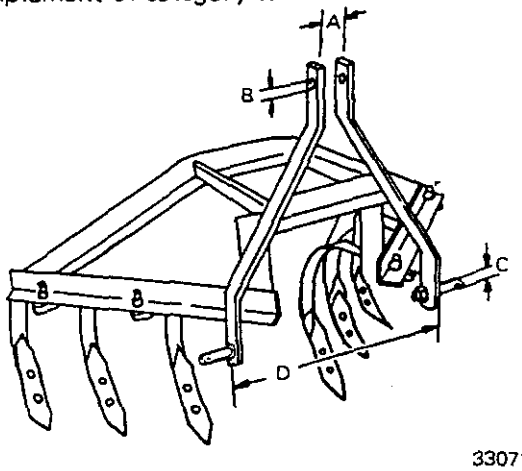
(2) Attaching implement to 3-point hitch

IMPORTANT

Do not attempt to overextend upper link or right-hand lift link. Link body could be damaged.

The tractor is equipped with a 3-point hitch which can be used for implements of category I only.

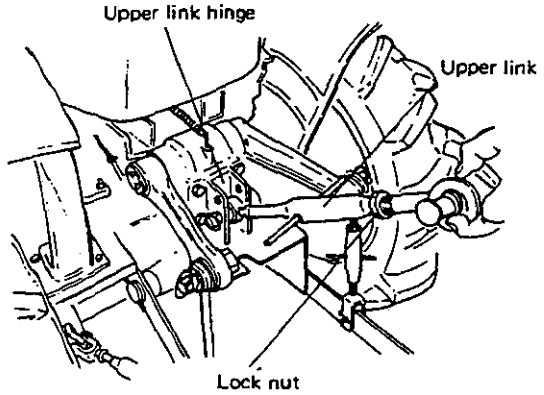
The following illustration gives the dimensions of an implement of category I.



33071

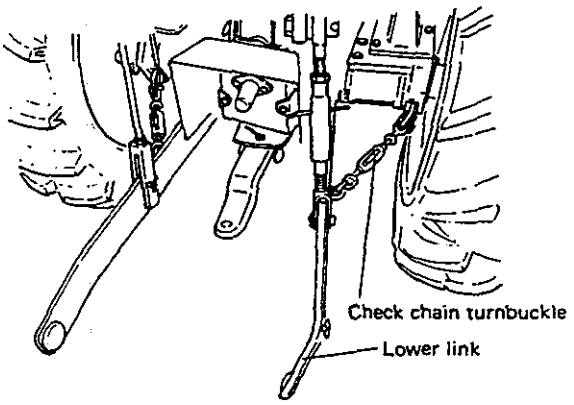
A = 44.5 mm (1.75 in.)
B = 19.6 mm (0.77 in.)
C = 22.1 mm (0.87 in.)
D = 683 mm (26.88 in.)

1) **Installation of upper link**
Install upper link on the upper link hinge of tractor. Implements should be positioned correctly by adjusting the length of upper link.



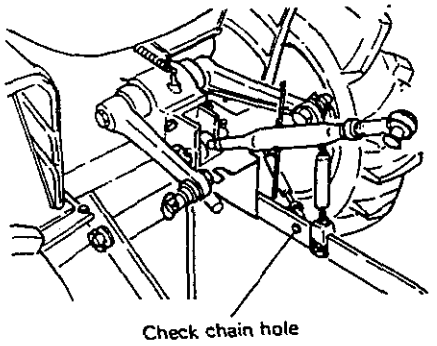
24033

2) **Installation of lower links and check chains**
Install lower links to the lower link hinge pins and check chains to the check chain brackets.



24034

3) **Installation of lift link**
Attach lift links to the rear holes of lower links. The front holes of lower links are used for the check chains.



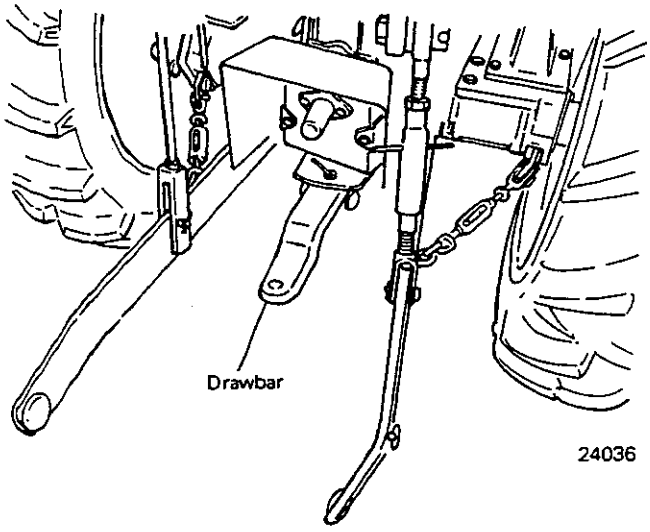
24037

4) Attaching procedures

WARNING

To avoid bodily injury or machine damage whenever 3-point hitch or other implements are attached to tractor, check full range of operation for interference, PTO separation or binding.

(a) Be sure drawbar will not interfere. If necessary, move drawbar ahead or remove it. See page 41 for drawbar adjustments. Check for any other potential interference.



24036

(b) Back tractor up to implement so that hitch points are in line. Set parking brake, and stop engine.

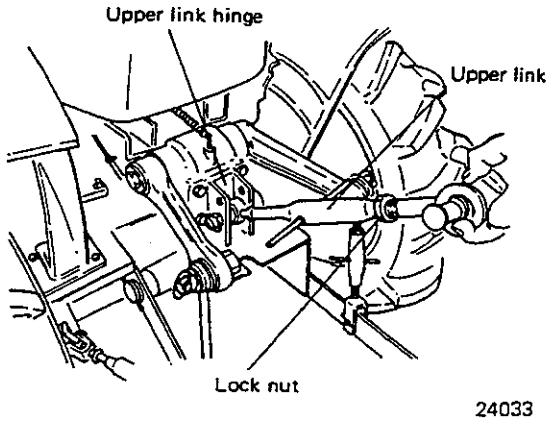
(c) Slip left hand lower link over implement hitch pin, and secure it with linch pin. Then slip right hand lower link over implement hitch pin, and secure it with linch pin. If the hole and pin are not in line, turn the turnbuckle of lift link (R) to adjust the height.

IMPORTANT

When no implement is attached to hitch, always use strings or wires to keep lower links from striking tires.

(d) Remove upper link from the transport hook, and attach it to implement top mast.

Upper link may be attached in any of the two hole positions of the hinge, but the upper position should be used for most implements. For moldboard plows, use the lower hole.



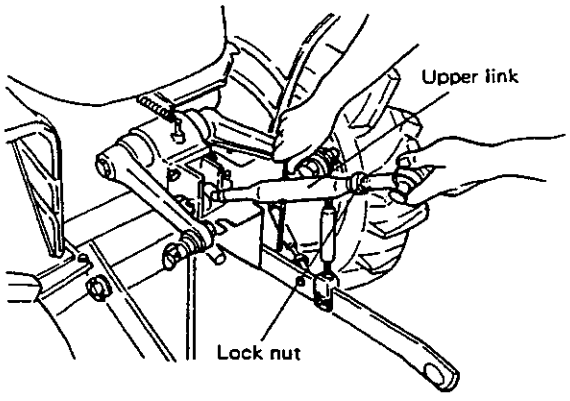
24033

(e) Make any necessary adjustments to lift link as instructed on page 39.

(f) Raise implement slowly and check for any point of interference. If necessary, set height stop on hydraulic lift control lever.

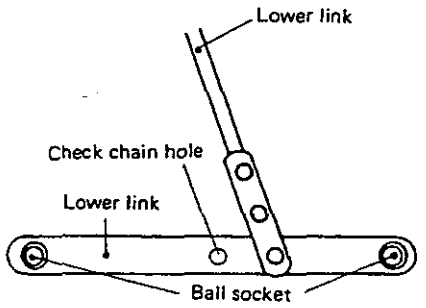
5) Adjusting hitch

(a) Adjust upper link to level implement front-to-rear. Loosen lock nut and rotate body. Tighten lock nut.



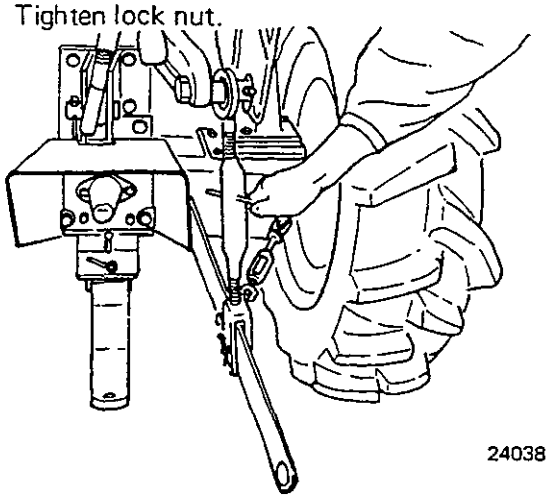
24037

(b) Left hand lift link has three positions. If needed for clearance, raise lower link to upper or middle position. Adjust right hand lift link to same length.



24035

(c) Adjust right hand lift link to level implement side-to-side. Loosen lock nut and rotate leveling handle.
Tighten lock nut.



24038

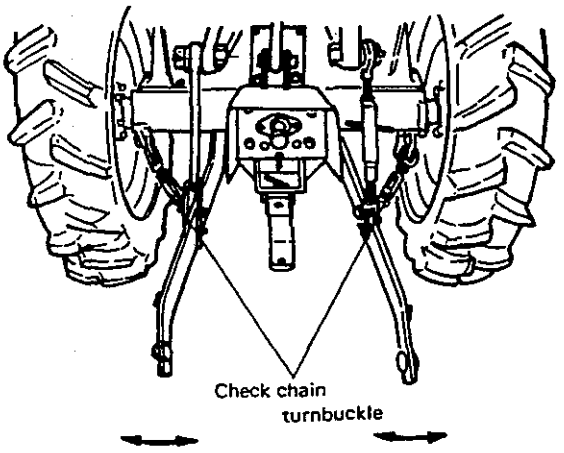
(d) Side sway of implement is controlled by check chains. Remove snap pins and rotate turnbuckles to lengthen or shorten chains as desired, and reinstall snap pins.

Check implement operator's manual for instructions on whether to allow side sway.

IMPORTANT

Be sure lower links are not permitted to strike tires.

Too much side sway may cause to break lift arm and lift arm pin.



24039

[6-3] REMOTE HYDRAULIC CYLINDER

CAUTION

Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before applying pressure to the system, be sure all conections are tight and that lines, pipes and hoses are not damaged.

Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

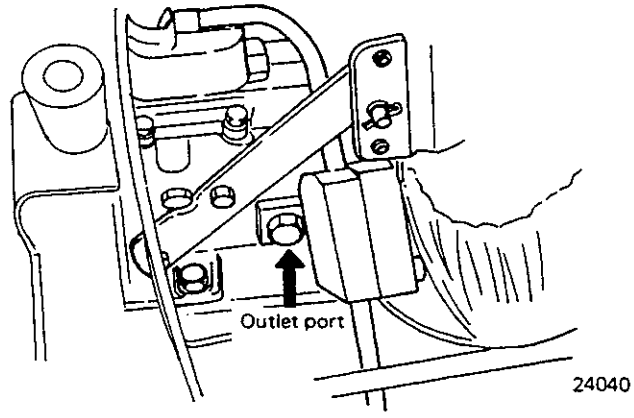
When using implement equipped with a single acting hydraulic cylinder, the hydraulic control valve of tractor is to be used for extending the remote cylinder. But you should use individual control valves for the implement which has one double acting cylinder, or two single acting cylinders or more.

(1) Use of single acting cylinder

WARNING

The hydraulic system has a maximum pressure of 155 kg/cm² (2204 psi). This may damage some single acting remote cylinders. Check manufacture's specifications before using these cylinders.

If tractor hydraulic control valve is used for the implement which has a single acting cylinder like dump trailer, connect hydraulic line of the remote cylinder with special adapter to the outlet port on the right side of the hydraulic cylinder housing. The hydraulic control lever on the right side of the operator's seat is used to operate the remote cylinder.



Hydraulic outlet
Adaptor: Metric thread M18
Pitch 1.5 mm

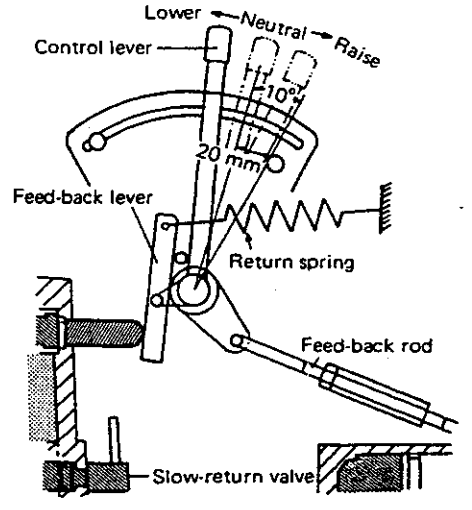
1) Setting the neutral position

(a) Place control lever in forward position.

(b) Pull the control lever slowly rearward to the about 10 degrees (20 mm) before the most rear position.

(c) Close stop valve.

(d) This is the control lever neutral position.



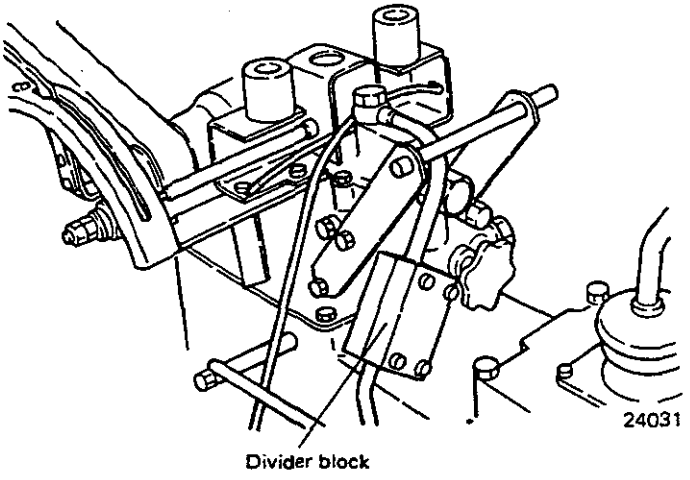
2) Extending the cylinder
Move the control lever rearward to extend the cylinder. The cylinder will continue to extend until the cylinder piston reaches the end of its stroke or the control lever is returned manually to the neutral position.

3) Retracting the cylinder
Move the lever forward to retract the cylinder. The cylinder will continue to retract until the cylinder piston reaches the end of its stroke or the control lever is returned manually to the neutral position.

When using the control lever of tractor for the remote cylinder, the 3-point hitch can not be used at the same time.

(2) Use of double acting cylinder or two or more single acting cylinders

When using the implement which has double acting cylinders or two or more single acting cylinders, own control valves of the implement should be used by connecting the hydraulic lines to divider block of high pressure hydraulic line.



IMPORTANT

When connecting hydraulic lines to the divider block, see YANMAR dealer.

Volume of oil required to extend cylinder must not lower Transmission-Hydraulic oil level below end of dipstick. Check oil level with cylinder fully extended.

(6-4) DRAWBAR AND PTO

IMPORTANT

Certain heavy equipment such as a loaded single-axle trailer can place excessive strain on drawbar. Strain is greatly increased by speed and rough ground.

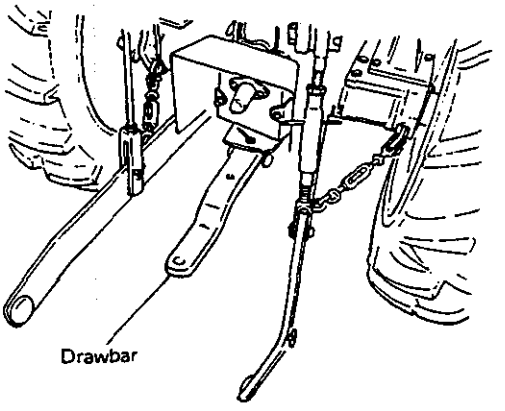
Maximum static vertical load on drawber should not exceed 200 kg (440 pounds). Drive slowly with heavy loads.

(1) Drawbar

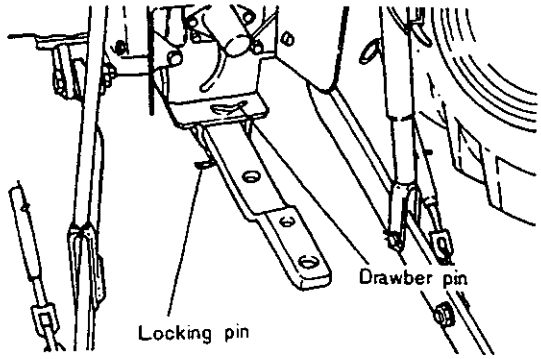
1) Drawbar position
For maximum traction and efficiency, drawbar hitch point should usually be as near as possible to line of draft between tractor and implement. This is often the short, high position, but it might be something different. Check implement operator's manual for more information.

IMPORTANT

For drawn PTO-driven implements, drawbar must be in the long, low position.



2) **Length adjustment**
Remove locking pin and drawbar pin. Slide drawbar to desired position. Install pins.



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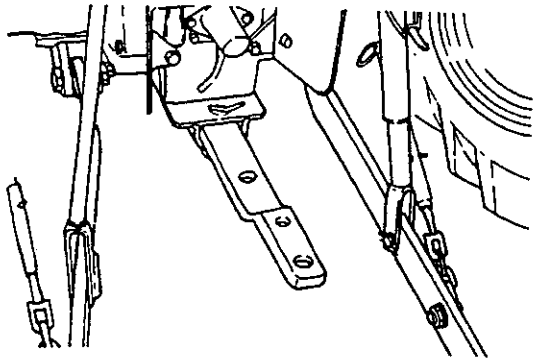
3) **Height adjustment**
Height of drawbar is adjustable only by turning offset up or down. Proceed as in length adjustment but slide drawbar all the way out and turn it over.



33084

(2) Power take-off (PTO)

WARNING

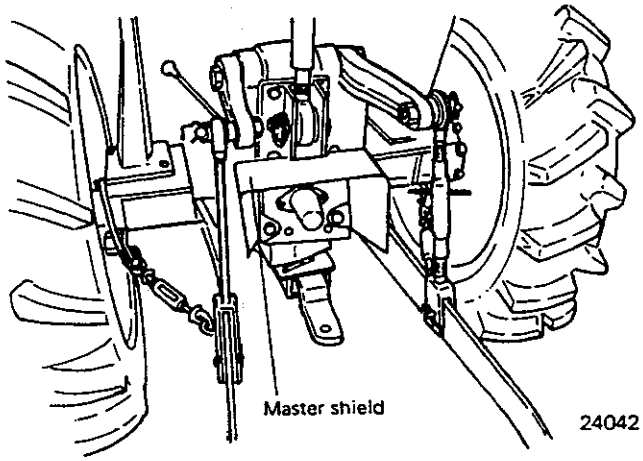
Do not use 1000 rpm PTO speed for the implement which have 540 rpm drive to avoid transmission damage and to injure the operator or bystanders.

Your tractor is equipped with a transmission driven 540—1000 rpm PTO.

1) Master shield

CAUTION

Tractor master shield should be in place at all times except for a special applications as directed in the operator's manual.

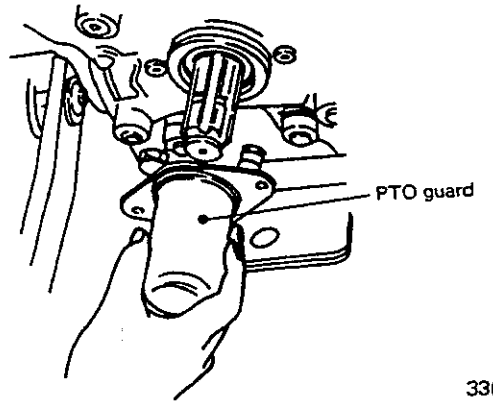


24042

2) PTO guard

WARNING

Always keep PTO guard in place when PTO is not being used. Either PTO guard or master shield should be in place at all times.



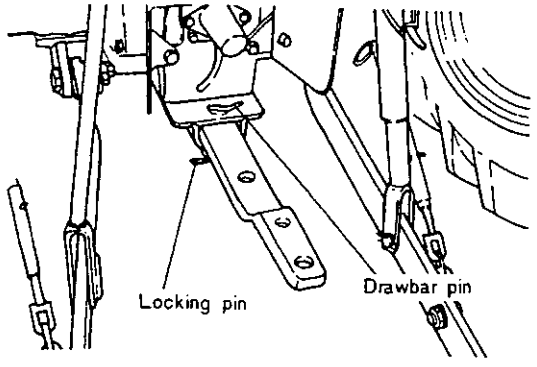
33086

3) Attaching implement

WARNING

Stop engine before working in area of implement hitch.

a) If implement will be attached to drawbar, fully extend drawbar and turn offset downward. If implement will be connected to 3-point hitch, be sure drawbar will not interfere. Remove it if necessary.



33083

b) Attach implement to tractor before connecting PTO drive shaft.

c) Connect drive shaft to PTO shaft. Turn shaft slightly by hand if necessary to line up splines. Be sure yoke is in position and firmly locked.

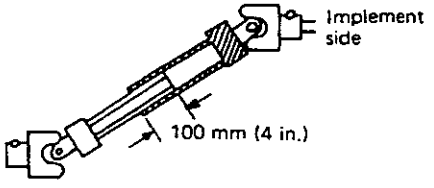
IMPORTANT

Before attaching drive shaft to tractor and implement, be sure to adjust drawbar position or length of drive shaft if necessary.

If the length of drive shaft is too long, it causes to damage PTO shaft and transmission or implement when lifting the implement.

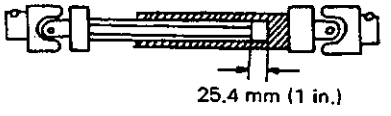
If the length of drive shaft is too short, it causes to damage PTO shaft and transmission or implement by slipping out the drive shaft when lowering the implement.

Check the length of drive shaft as shown in the following illustrations.



33088

Minimum overlap at extending fully



33089

Minimum clearance of inner shaft end at retracting fully.

If you can not obtain the correct dimensions, replace drive shaft or cut it.

WARNING

Be sure all shield are in place and in good condition. Never operate PTO unless master shield is properly installed. With engine stopped, check integral shields on drive shaft by making sure they rotate freely on shaft. Check carefully for any interference.

4) Operation of PTO

CAUTION

Stop engine and make sure all mechanisms have stopped before cleaning out machine or making any adjustment.

CAUTION

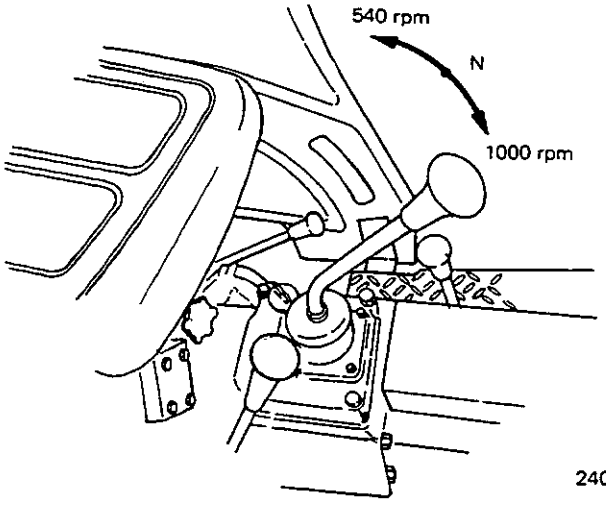
Always place PTO shift lever in neutral position when not in use.

IMPORTANT

Depress clutch pedal and stop tractor before engaging PTO.

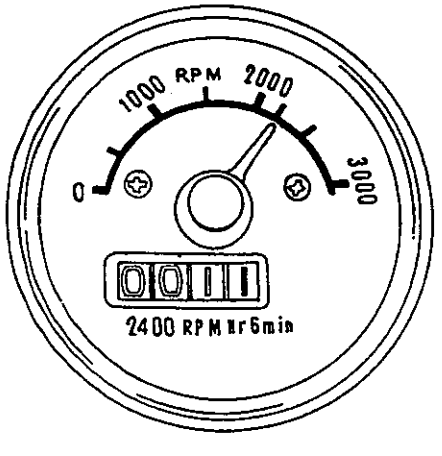
Pull control lever back to engage 540 rpm speed PTO.

Push control lever forward to engage 1000 rpm speed PTO.



24043

The 540/1000 rpm PTO speed is obtained at 2200 rpm engine speed.



24020

[6-4] WHEELS, TIRES, AND TREAD

CAUTION

Never operate tractor with a loose rim, wheel, or axle.

a) Any time bolts are loosened, retighten to specified torque.

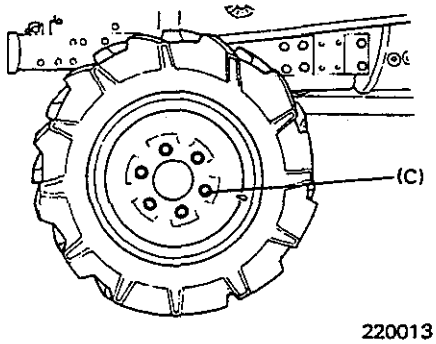
b) After driving tractor about 100 m (90 yards), and before placing it under load, retighten bolts to specified torque.

c) Check bolts after working three hours and again after 10 hours. Retighten if necessary.

d) Check all bolts frequently and keep them tight.

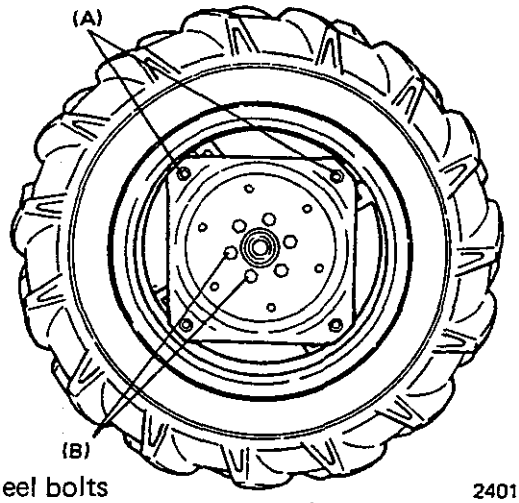
Tightening torque:

Item	Bolt size	Specified torque	Remarks
(A)	M16	20 kg-m (147 ft-lbs)	
(B)	M16	20 kg-m (147 ft-lbs)	
(C)	M14	14 kg-m (103 ft-lbs)	
(D)	M16	20 kg-m (147 ft-lbs)	
(E)	M12	10 kg-m (72 ft-lbs)	
(F)	M12	10 kg-m (72 ft-lbs)	
(G)	M10	5 kg-m (36 ft-lbs)	



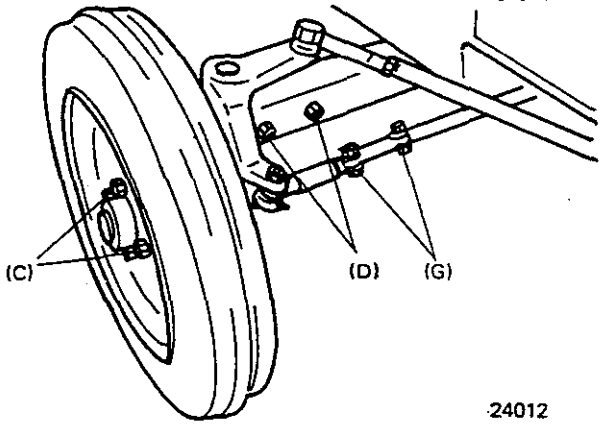
220013

4WD front wheel bolts and nuts



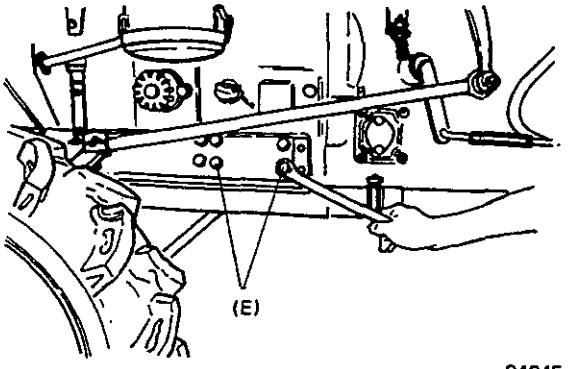
Rear wheel bolts

24011



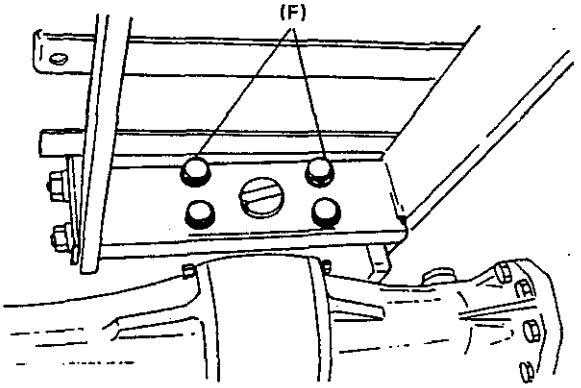
24012

2WD front wheel bolts and Adjustable axle bolts



24045

Front axle bracket bolts



Front axle center pin support bolts

24046

(1) Front tread

1) Adjusting front axle
(Adjustable front tread is factory option)

Front tread is adjustable in 88 mm (3.5 in.) steps.

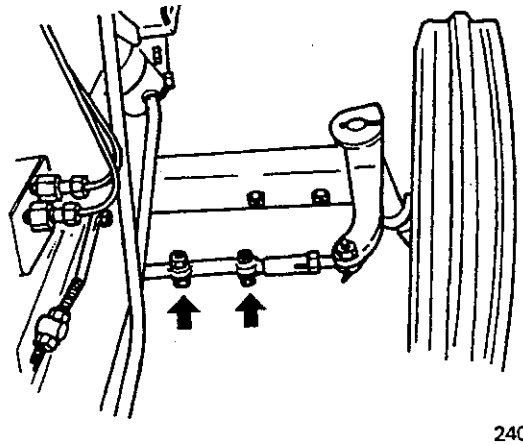
Tractor model	Tire	Tread Range	
		Fixed axle	Adjustable axle
YM195	4.00–12 (STD)	840 mm (33.1 in.)	1062 to 1414 mm (42.0 to 56 in.)
YM195D	5–14 (STD)	860 mm (33.9 in.)	———
YM240	4.00–15 (STD)	840 mm (33.1 in.)	1062 to 1414 mm (42.0 to 56 in.)
YM240D	6–14 (STD)	922 mm (36.3 in.)	———

CAUTION

Do not reverse front wheels to extend tread.

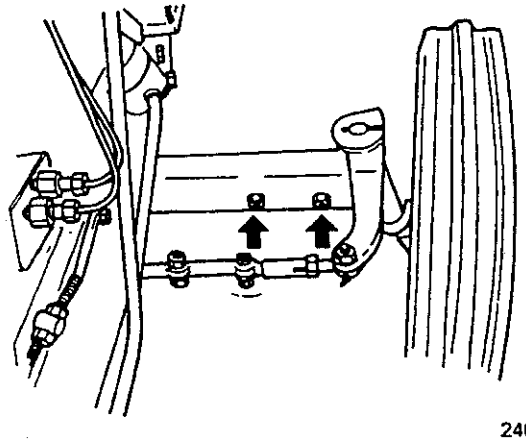
a) With jack under front weight support, jack up tractor just enough to take weight off tires.

b) Remove bolts from tie rod clamps.



24047

c) Remove bolts from front axle.



24048

d) Slide axle knee to desired position.

e) Install axle bolts. Tighten to 20 kg-m (147 ft-lbs) torque. Check and retighten as instructed on page 45.

f) Install bolts in tie-rod, making sure tie rod is changed same amount as axle.

g) Adjust other side in same manner. Both sides should be adjusted to same spacing.

h) Adjust drag rod so tractor will turn equally sharp in both directions. Chart below shows correct length of drag rod for each tread width. Measure between centers of ball joint.

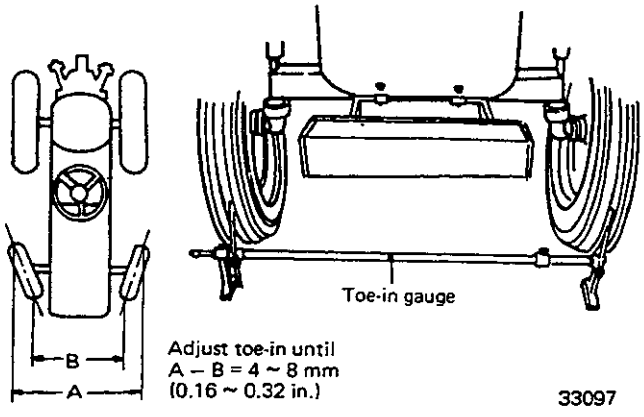
Tractor Model	Front Tread Width	Drad Rod Length
YM195 and YM240	Minimum Midium Maximum	640 mm (25.2 in.) 660 mm (26.0 in.) 685 mm (27.0 in.)

i) Check toe-in each time tread is adjusted. See instructions of "Checking toe-in".

2) Checking toe-in

a) Steer front wheels straight ahead.

b) Measure distance between tires at hub level, both in front and in back.
Proper toe-in is 4 – 8 mm (0.16 – 0.32 in.) less in front than in rear.



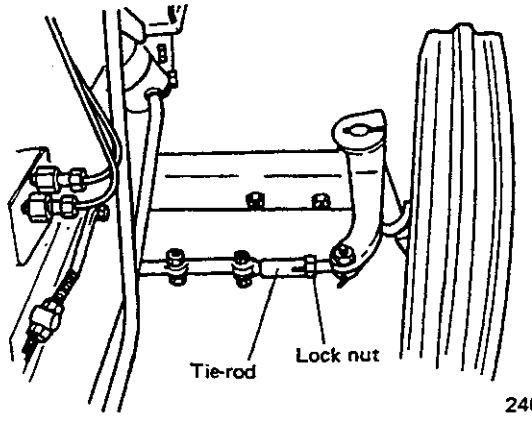
33097

3) Adjusting toe-in

a) Loosen lock nuts on each end of tie rod.

b) Rotate tie rod to lengthen or shorten it. Adjust toe-in to 6 mm (0.25 in.).

c) Tighten lock nuts to 5 kg-m (36 ft-lbs).



24047

(2) Rear tread

Rear wheel tread can be adjusted by re-positioning or reversing the rims or by reversing the wheel disks.

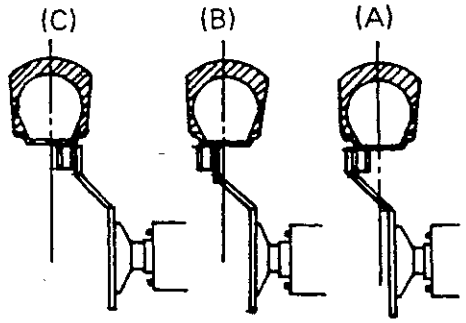
Rear wheel tread can also be adjusted by reversing the complete wheels. When reversing the wheels, they must be changed from one side to the other so that the arrow on side wall of tire points in the direction of forward rotation of tire.

STOP **IMPORTANT**

Tires must have at least 25 mm (1 in.) clearance with fenders.

Be sure tires are mounted to rotate in proper direction.

Wheel and rim can be installed in six positions, but three positions cannot be used because tires would strike fenders. Three different tread widths are available. Tread is measured between centers of tires.



24051

Wheel/Rim position	Tread Width
A	1000 mm (39.4 in.)
B	1100 mm (43.3 in.)
C	1200 mm (47.2 in.)

CAUTION

Support tractor securely on stands before removing a rim or wheel.

After adjustment of tread has been completed tighten inner attaching bolts (disk to axle) to 31 kg-m (227 ft-lbs) torque for M16-11T bolt and to 20 kg-m (147 ft-lbs) torque for M16-7T bolt.

The outer attaching bolts/nuts must be tightened to 20 kg-m (147 ft-lbs) torque.

(3) Tire inflation

Check tires daily for damage or noticeably low pressure.

At least every 50 hours of operation, check inflation pressure with a gauge. Use an accurate gauge having 0.1 kg/cm² (1 psi) graduations.

If tires contain liquid ballast, use a special air-water gauge and measure with valve stem at bottom.

Properly inflated tires are important to the operation of your tractor. The amount of air pressure to be carried in the front and rear tires depends upon the implement used with the tractor and the amount of ballast.

Keep the tires inflated according to the recommendations shown in the charts.

IMPORTANT

Minimum pressure may be used only for light loads and only if tractor has no added weight. If you install ballast or mounted implements, or if you pull heavy loads, increase pressure.

INFLATION CHART

Front Tires			
Tire Size	Ply Rating	Inflation Pressure	
		MIN kg/cm² (psi)	MAX kg/cm² (psi)
4.00–12	4	1.8 (26)	3.25 (46)
4.00–15	4	1.8 (26)	3.25 (46)
5.00–15	4	1.2 (18)	2.60 (37)
5–14	4	1.8 (26)	2.20 (31)
6–14	4	1.2 (18)	2.00 (29)
20x8.00–10	4	0.7 (10)	1.70 (24)
23x8.50–12	2	0.7 (10)	0.70 (10)
27x8.50–15	2	0.7 (10)	0.70 (10)

Rear Tires			
Tire Size	Ply Rating	Inflation Pressure	
		MIN kg/cm² (psi)	MAX kg/cm² (psi)
8.3/8–24	4	0.8 (12)	1.6 (23)
9.5/9–24	4	0.8 (12)	1.2 (18)
11.2/10–24	4	0.8 (12)	1.2 (18)
13.6–16	4	0.8 (12)	1.0 (14)
11.2/10–24	4	0.8 (12)	1.2 (18)

(6-5) BALLAST

The performance of your tractor may be improved if the correct amount of front or rear ballast is used to obtain the proper amount of rear wheel slippage.

(1) Rear ballast

The amount of rear ballast should permit operation with approximately 10 to 15 percent slip of rear wheels. Maximum drawbar horsepower is available when operating in this range. Check slippage as follows:

a) While tractor is working, count revolutions of rear wheel between two marks.

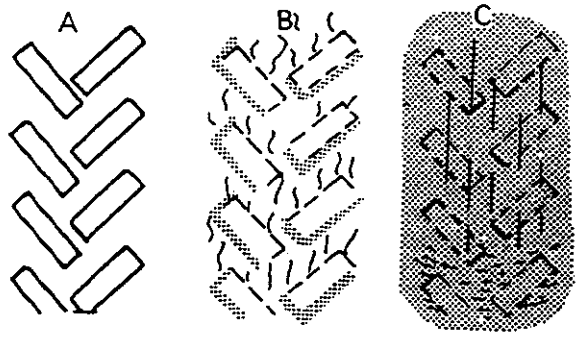
b) Go back with implement raised and count rear wheel revolutions between same two marks.

c) Compare the two counts. The first should be 10 to 15 percent larger.

d) Check tire tracks often. With too much ballast, tread marks will be clear and distinct, showing no slippage. With too little ballast, tread marks will be wiped out by slippage.

IMPORTANT

Do not use any rear ballast for turf tires.



33100

A: Too much ballast
- Increased load
- Power loss
- Tire strain
- Soil compaction

B: Correct ballast

C: Too little ballast
- Excessive spinning
- Power loss
- Tire wear
- Fuel waste

1) Maximum rear ballast

IMPORTANT

Do not overload tires. Add no more weight than indicated in the chart below.

Maximum Added Ballast		
Tire Size	Ply Rating	Capacity per a tractor
YM195/195D		
8.3/8–24	4	140 kg (310 lbs.)
9.5/9–24	4	140 kg (310 lbs.)
YM240/240D		
9.5/9–24	4	140 kg (310 lbs.)
11.2/10–24	4	140 kg (310 lbs.)

IMPORTANT

Do not ballast tractor to pull EXTREMELY heavy loads. To extend tire life and avoid excessive wear of power train components, avoid continuous full-load operation in the lower gears.

Rather than weighting tractor down to pull heavy loads, try to reduce load. Pulling a lighter load at a higher speed is cheaper and more efficient.

Use no more ballast than necessary, and remove ballast when it is no longer needed.

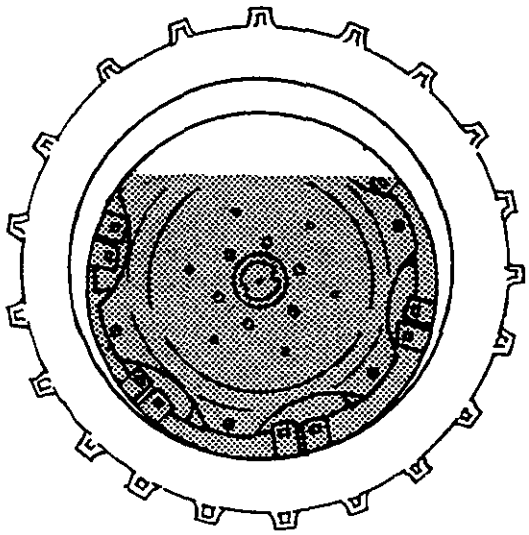
2) Liquid weight

WARNING

Installing liquid ballast requires special equipment and training. Have the job done by a qualified tire service store.

A solution of water and calcium chloride provides safe and economical ballast. Used properly, it will not damage tires, tubes, or rims.

Use calcium chloride to prevent water from freezing. A mixture of 0.4 of calcium chloride per liter (3.5 lbs. per gallon) will not freeze solid above −45°C (−50°F).



33101

Tire Size	Liquid Weight per tire (75% Fill with 0.4 kg (3.5 lbs.) per gallon (liter). $CaCl_2$)
8.3/8–24	59 kg (130 lbs.)
9.5/9–24	79 kg (175 lbs.)
11.2/10–24	106 kg (235 lbs.)

Chart shows how much each size will hold if properly filled with 0.4 kg (3.5 lbs.) per liter (gallon) $CaCl_2$. If filled with water only, the weight will lighten 21%.

IMPORTANT

Do not use liquid ballast for turf tires.

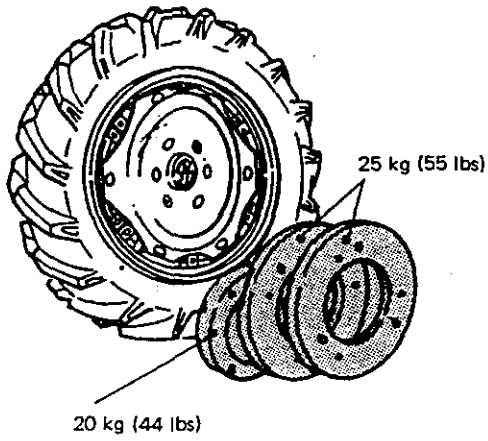
Do not use cast iron weights if a liquid ballast is used.

Fill tires slightly above valve level (75% fill). Less solution would expose part of rim, causing corrosion. More solution would leave too little air space to absorb shocks.

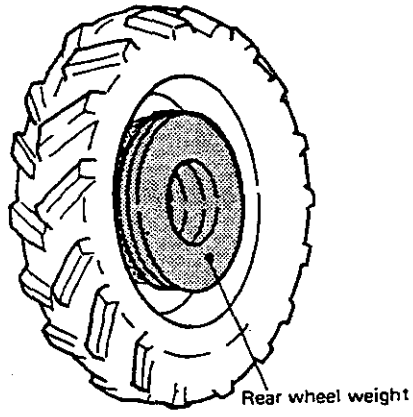
3) Cast iron weights (Rear wheel weights)
Cast iron weights are available from your YANMAR dealer.

When installing cast iron weights, install base weight 20 kg (40 lbs) to the rim. Then install additional weight 25 kg (55 lbs) up to four (two on each rear wheel).

Bolt base weight to disk, installing nuts on inner side of disk. To install second and third weights, install bolts in threaded holes in previous weights.



33102



33103

WARNING

Tighten attaching bolts securely. Retighten after a few hours, and keep them tight and check frequently.

(2) Front ballast

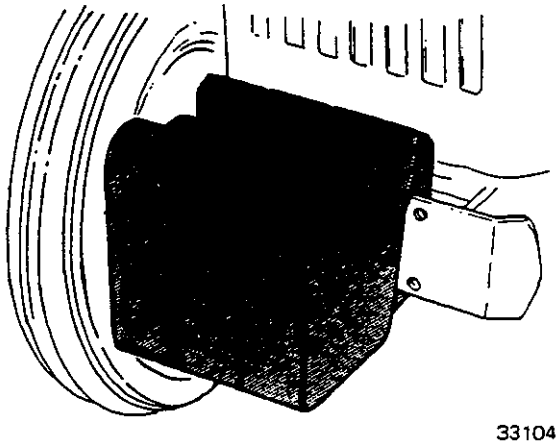
Front ballast may be required for stability and steering control when weight on the front wheels is transferred to the rear wheels by implement action through the hitch.

Maximum Added Ballast		
Tire Size	Ply Rating	Capacity per a tractor
YM195/195D		
4.00–12	4	100 kg (220 lbs.)
5–14	4	100 kg (220 lbs.)
20x8.00–10	4	100 kg (220 lbs.)
23x8.50–12	2	100 kg (220 lbs.)
YM240/240D		
4.00–15	4	100 kg (220 lbs.)
5.00–15	4	100 kg (220 lbs.)
6–14	4	100 kg (220 lbs.)
20x8.00–10	4	100 kg (220 lbs.)
27x8.50–15	2	100 kg (220 lbs.)

IMPORTANT

Do not use front ballast if the tractor is equipped with a front loader or other front mounted equipments.

2) Front bumper weights
Up to five bumber weights can be installed. Each weight approximately 20 kg (45 lbs.).



33104

IMPORTANT

Do not use liquid ballast in the front tires.

YANMAR DIESEL TRACTOR

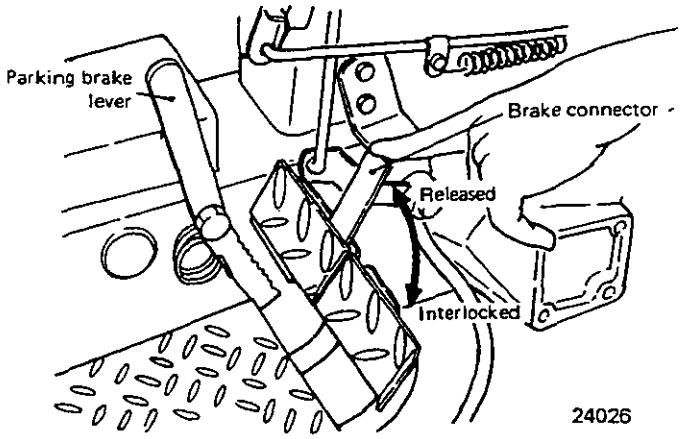
7. TRANSPORTING

[7-1] DRIVING

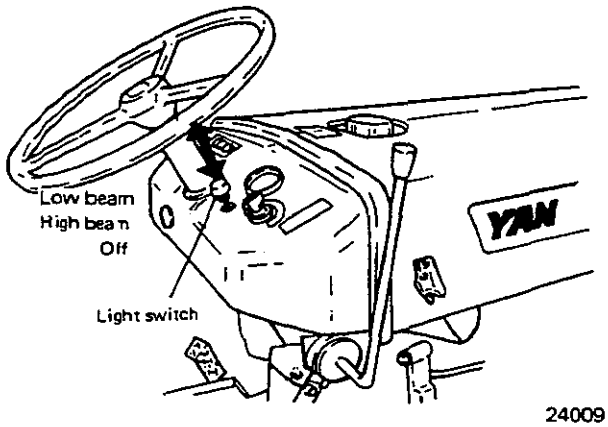
CAUTION

Observe the following precautions when operating tractor on a road.

1) Be sure brakes are evenly adjusted, and couple pedals together before driving on a road. Avoid hard applications of brakes. A towed load of more than twice the weight of the tractor should have brakes. If not, drive slowly and avoid hills.



2) When driving on a road at night, always dim lights by pulling light switch when meeting another vehicle.



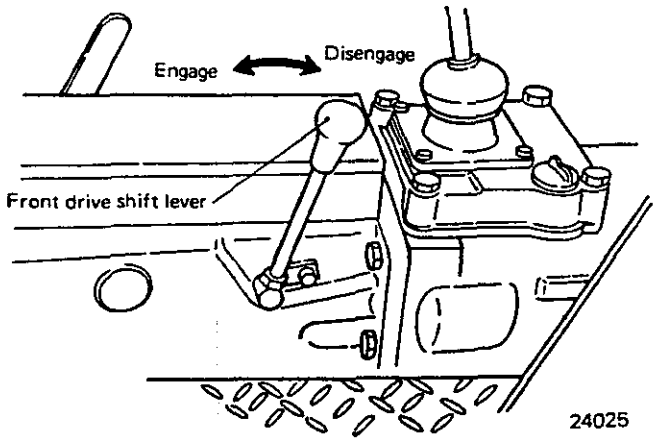
3) If equipped, use turn signals when turning. Be sure to return lever to center position after turning.

4) Drive slowly enough to maintain safe control at all times. Slow down for hillsides, rough ground, and sharp turns, especially when transporting heavy rear-mounted equipment.

5) Before descending a hill, shift to a gear low enough to control speed without using brakes.

6) Place the front wheel drive shift lever in disengaged position.

7) Confirm local governmental regulations in regard to the accessory lights and devices for adequate warning to the operators of other vehicles.



[7-2] TOWING

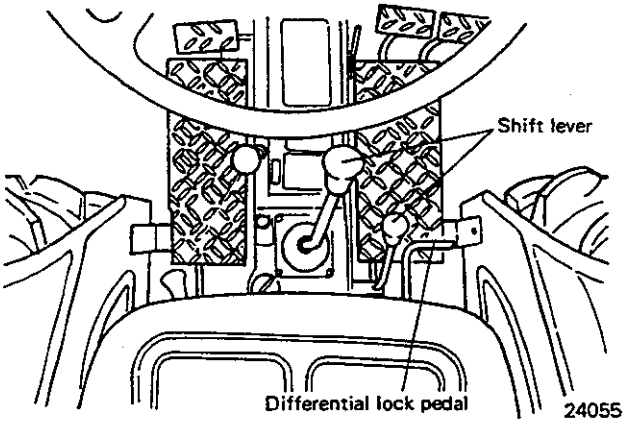
CAUTION

Never tow tractor faster than its maximum travel speed in the highest gear and not more than 25 km/h (16 mph). Check local regulations for towing. Towing is illegal in some states.

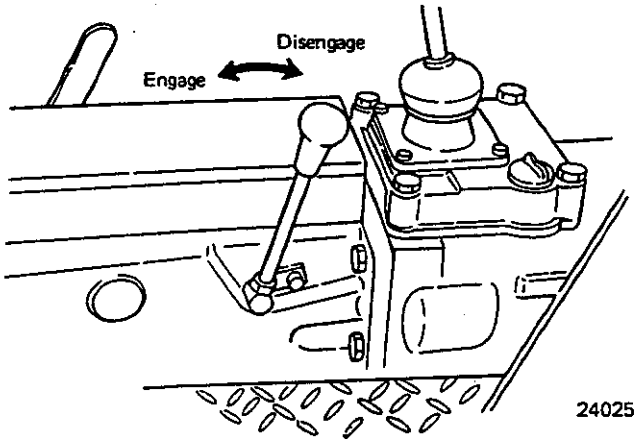
1) Be sure transmission-hydraulic system oil level is to full mark on dipstick. If tractor is to be towed with front end raised, add one quart (1 ℓ) of oil.

2) Make sure differential lock is not engaged.

3) Place both shift levers in neutral.



4) Place the front wheel drive shift lever in disengaged position.



YANMAR DIESEL TRACTOR

8. FUEL AND LUBRICANTS

[8-1] FUEL

IMPORTANT

Use diesel fuel only.

The quality of fuel used is an important factor in obtaining dependable performance and satisfactory engine life. Suitable fuels must be clean, completely distilled, well-refined, and non-corrosive to the fuel system parts. Be sure to use clean fuel of a known quality from a reputable supplier.

(1) Fuel specifications

Use either Grade No. 1-D or Grade No. 2-D fuel, as defined by ASTM Designation D975 for diesel fuels. Use the chart below to determine correct grade of fuel.

As further insurance of satisfactory operation, use fuel having less than 1.0 percent sulfur – preferably less than 0.5 percent.

For maximum filter life, sediment and water should not exceed 0.10 percent.

To maintain proper fuel delivery during cold weather operation, use Grade No. 1-D diesel fuel with a pour point at least 5.6°C (10°F) below lowest ambient air temperature.

The cetane number should be 40 minimum. Operation under low ambient temperature as well as rarefied air may require use of a fuel with a high cetane number.

DIESEL FUELS		
Type of Engine Service	Air Temperature	Diesel Fuel Grade No.
Wide variation in load and speed, considerable idling.	Below 25°C (80°F) Above 25°C (80°F)	1-D 2-D
Heavy load and high speed, minimum idling	Below 5°C (40°F) Above 5°C (40°F)	1-D 2-D

Note: At a altitudes above 1500 m (5000 ft.), use Grade 1-D for all temperatures.

(2) Storing fuel

Proper fuel storage is critically important. Keep all dirt, water, and other contaminants out of fuel. Avoid storing fuel over long periods of time.

Store fuel in a convenient place away from buildings.

(3) Filling fuel tank

Fill fuel tank at end of each day's operation. This prevents condensation in tank as moist air cools.

[8-2] ENGINE OILS

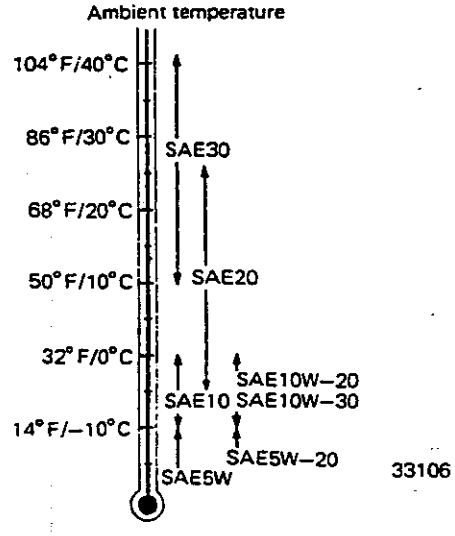
It is important to use the correct type of oil conforming to the ambient temperature and conditions under which the tractor is used.

The oil must conform to one of the following specifications:

(1) Single viscosity oils
API Service CD
MIL-L-2104C

(2) Multi-viscosity oils
API Service CC or CD
MIL-L-46152

Depending upon the expected ambient temperature for the fill period, use oil of viscosity as shown in the page 55.



IMPORTANT

Some increase in oil consumption may be expected when SAE5W-20 or SAE 5W oils are used. Check oil level more frequently.

If ambient temperature is below −12°C (10°F), use an engine block heater.

List of engine lubricating oils

Supplier	Brand name	SAE No.			
		Below 10°C (50°F)	10–20°C (50–68°F)	20–35°C (68–95°F)	Over 35°C (95°F)
SHELL	Shell Rotella Oil	10W 20/20W	20/20W	30 40	50
	Shell Talona Oil	10W	20	30 40	50
	Shell Rimula Oil	20/20W	20/20W	30 40	
CALTEX	RPM Delo Marine Oil	10W	20	30 40	50
	RPM Delo Multi-Service Oil	20/20W 10W	20	30 40	50
MOBIL	Delvac Special	10W	20	30 40	
	Delvac 20W–40	20W–40	20W–40		
	Delvac 1100 Series	10W 20–20W	20–20W	30 40	50
	Delvac 1200 Series	10W 20–20W	20–20W	30 40	50
ESSO	Estor HD	10	20	30 40	
	Esso Lube HD		20	30 40	50
	Standard Diesel Oil	10W	20	30 40	50
BP	BP Vanellus M	20W		30 40	50
	BP Vanellus C3			30 40	
MOTUL	DS	DS 0		DS 1	DS 2

[8-3] TRANSMISSION-HYDRAULIC OILS

Use only John Deere Type 303 or Hy-Grad Transmission and Hydraulic Oil or its equivalent in the transmission-hydraulic system.

[8-4] GREASE

Use SAE multipurpose-type grease for all grease fittings. Wheel bearing grease is recommended for front wheel bearings.

[8-5] STORING LUBRICANTS

CAUTION

Store fuel and lubricants out of reach of children.

Your tractor can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination.

YANMAR DIESEL TRACTOR

9. LUBRICATION AND MAINTENANCE

Effective lubrication is the most important step toward low upkeep cost, long life, and satisfactory service. Without oil and grease you can ruin important working parts of your tractor in a very short time.

The intervals at which the various working parts should be checked, lubricated, serviced, or adjusted are based on actual hours of operation as shown on the hourmeter.

1) Hourmeter
Use the hourmeter on the instrument panel to determine when periodic services are required.

2) Break-in period
During the break-in period follow the special engine procedures given on page 22. Retighten all wheel mounting bolts and axle bolts. Check tightness of the bolts frequently for the first 100 hours operation.

After the first 50 hours, replace the engine oil and filter element together.

Change the transmission-hydraulic oil and filter element (Cartridge type), and clean suction screen after the first 50 hours operation.

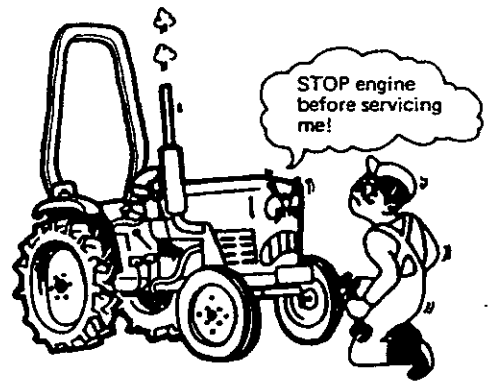
3) Lubrication and Service intervals
Service intervals for the individual components and parts vary, depending upon requirements. The service intervals are:

— As required — Daily or Every 10 hours — Every 50 hours — Every 100 hours — Every 200 hours — Every 300 hours — Every 600 hours.

When operating under unusual conditions, such as excessive heat, cold, or dust, the tractor should be checked and serviced at more frequent intervals.

CAUTION

Do not service tractor while engine is running.



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LUBRICATION AND PERIODIC SERVICE TIMETABLE

WARNING: Do not service tractor while engine is running.

AS REQUIRED

Item No.	Component	Description of service	Capacity and procedure	Description of Lubricant
AR-1	Brakes	Adjust pedal free travel.	See page 61.	
AR-2	Clutch	Adjust pedal free travel.	See page 60.	

DAILY OR EVERY 10 HOURS

10-1	Diesel fuel	Check fuel level to supply for one-day operation.		
10-2	Engine oil	Check oil level with dipstick fully inserted.	See page 67.	
10-3	Transmission-Hydraulic oil	Check oil level.	See page 68.	JD303 or Hy-Grad Transmission-Hydraulic Oil
10-4	Coolant	Check coolant level at sub-tank.	See page 70.	Use clean soft water
10-5	Bolts and nuts	Check tightness of front axle bracket bolts and wheel bolts.	See page 45.	
10-6	Tires	Check air pressure, inspect for damage.	See page 48.	
10-7	All grease fittings	Lubricate grease fittings.	Several strokes of grease gun.	Multipurpose type grease
10-8	Reflectors, horn and headlights	Make sure they are in good working condition.		
10-9	Pre-cleaner	Clean pre-cleaner.	See page 65.	
10-10	Radiator	Clean front grille and radiator screen.	See page 72.	
10-11	Filter screen in the fuel tank (Fuel strainer)	Clean screen before fill in the tank.	See page 73.	
10-12	Indicator lamps	Check indicator lamps are in good conditions.	See page 78.	
10-13	Brakes	Check pedal free travel. Adjust it if necessary.	See page 61.	
10-14	Clutch	Check pedal free travel. Adjust it if necessary.	See page 60.	

EVERY 50 HOURS

Item No.	Component	Description of service	Capacity and procedure	Description of Lubricant
50-1	Battery	Check level of electrolyte in each cell. Check for terminal corrosion. Clean exterior of battery.	See page 76.	Distilled water
50-2	Front axle gear oil (4-wheel drive model)	Check oil level.	See page 70.	

EVERY 100 HOURS

100-1	Air cleaner	Clean element.	Install new element after five cleanings or annually, whichever occurs first.	
100-2	Fuel filter	Clean element.	See page 73.	
100-3	Engine oil	Change oil.	See page 67.	See page 54 for recommended engine oil.
100-4	Steering system	Check tightness of steering system.		
100-5	Fan belt	Check fan belt tension. Replace belt if worn or damaged.	See page 72.	
100-6	Coolant temperature indicator lamp	Check the bulb by removing from the lamp holder.	See page 78.	

EVERY 200 HOURS

200-1	Engine oil filter	Replace filter element.	Replace with a YANMAR element.	
200-2	Fuel filter	Replace filter element.	Replace with a YANMAR element.	

EVERY 300 HOURS

Item No.	Component	Description of service	Capacity and procedure	Description of lubricant
300-1	Battery	Check electrolyte specific gravity. Charge battery.	See page 76.	
300-2	Fan blade and Radiator	Clean fan blade and radiator core.	See page 72.	
300-3	Transmission and Hydraulic oil	Replace oil.	See page 69.	John Deere 303 or Hy-GRAD Transmission oil
300-4	Transmission and Hydraulic oil filter	Clean filter element.	See page 69.	
300-5	Front axle gear oil (4-wheel drive model)	Replace gear oil.	See page 70.	SAE 90 gear oil

EVERY 600 HOURS

600-1	Air intake system	Check air intake system for leaks. Correct as necessary.		
600-2	Front wheel hubs	Renew front wheel hub grease.	Ask YANMAR dealer.	
600-3	Radiator	Flush radiator.		
600-4	Engine crankcase	Flush crankcase interior.	Ask YANMAR dealer.	
600-5	Engine valve clearance	Adjust valve clearance.	Ask YANMAR dealer.	
600-6	Injection nozzle	Check injection nozzle.	Ask YANMAR dealer.	
600-7	Steering wheel	Check steering wheel free travel.	See page 61.	The free travel should be within 50 mm (2 in.).
600-8	Transmission and Hydraulic filter	Replace filter element.	See page 69.	
600-9	Air cleaner	Replace element.	See page 65.	

ANNUAL

A-1	Air cleaner	Replace element annualy (or after five cleanings, whichever occurs first).	See page 65.	
A-2	Transmission and Hydraulic oil	Replace oil and filter element annually.	See page 69.	
A-3	Radiator	Flush radiator annually.	See page 71.	
A-4	Engine crankcase	Flush crankcase interior.		

YANMAR DIESEL TRACTOR

10. SERVICE

[10-1] ADJUSTMENT

(1) Clutch

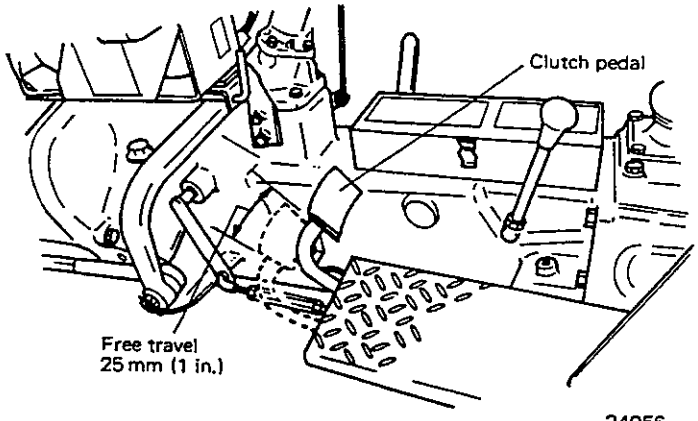
Periodically check the clutch pedal free travel. If the free travel at top of stroke is 15 mm (5/8 in.) or less, adjust linkage to obtain 25 mm (one in.) free travel.

STOP **IMPORTANT**

Do not operate tractor when clutch pedal free travel is less than 13 mm (1/2 in.).

Check clutch pedal free travel often, especially for the tractor equipped with a loader or box-scraper.

To adjust free travel, loosen lock nuts and rotate turnbuckle. Adjust free travel to 25 mm (one in.), and tighten lock nuts.



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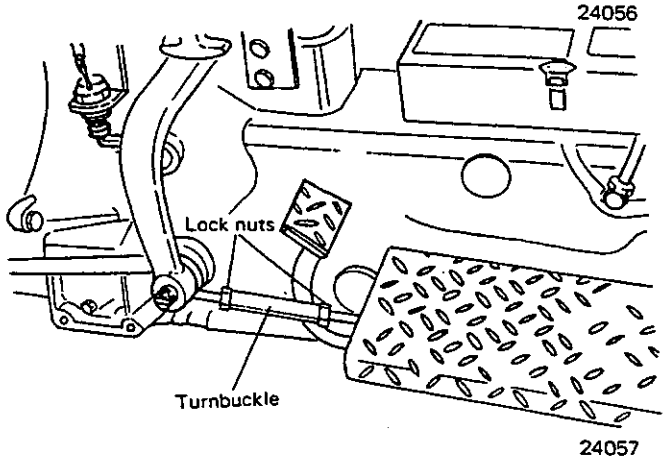

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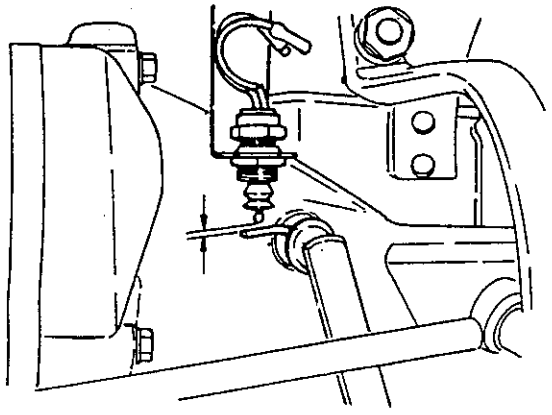
(Adjustment of start safety switch)

Adjust the clearance between the switch and plate on clutch shift lever to 2.5 ± 0.5 mm (0.1 ± 0.02 in.).



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(2) Brakes

WARNING

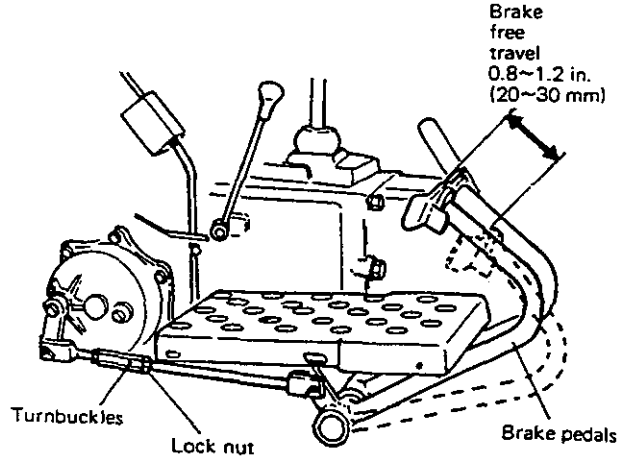
Brake pedals must be adjusted evenly to avoid tragic accidents. Uneven brake force to the wheels can force the tractor to swerve abruptly to the right or left into a rollover situation.

With pedals not latched together, depress both pedals to where they firmly engage brakes. The two pedals should be at the same height when brakes are engaged.

If pedals do not engage brakes evenly or the free travels are more than 30 mm (1.2 in.), adjust free travel as instructed below.

Measure distance pedals travel at top of stroke before engaging brakes. Free travel should not exceed 30 mm (1.2 in.).

If free travel is excessive, adjust linkage rod. Loosen lock nuts and rotate turnbuckle to shorten rod. Adjust free travel to 20 mm (0.8 in.). Tighten lock nut. Keep both pedals adjusted evenly.



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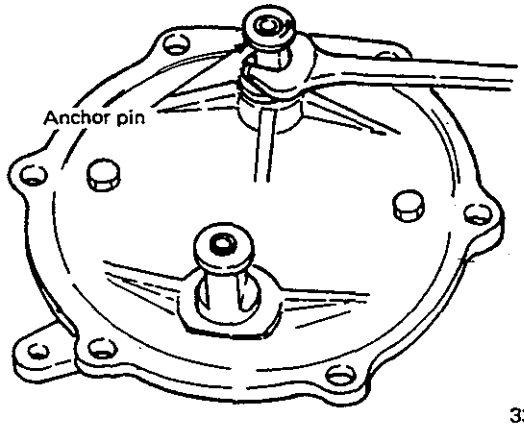
When linkage rod has no adjustment left, two other adjustments can be made before replacing brake shoes. Shoes can be reversed (front to rear and rear to front), and anchor pin can be turned 90°. These are jobs for a qualified mechanic. See your YANMAR dealer.



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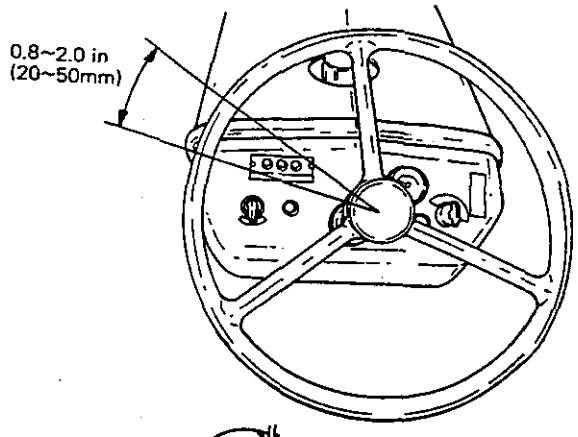
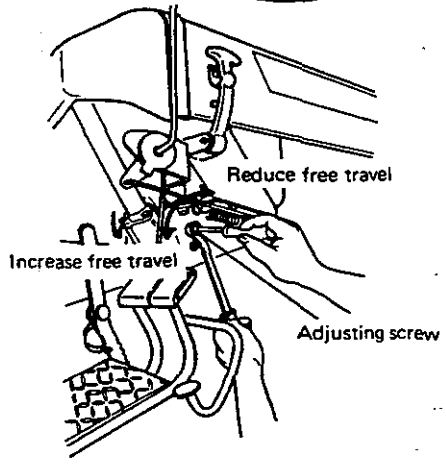
(3) Steering wheel

Check steering wheel free travel. If free travel exceeds 50 mm (2 in.) at outer rim, reduce it by adjusting screw of steering gear housing. Loosen lock nut and tighten adjusting screw. Reduce free travel to 20 mm (0.8 in.). Tighten lock nut.





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24061

(4) Toe-in (See page 47.)

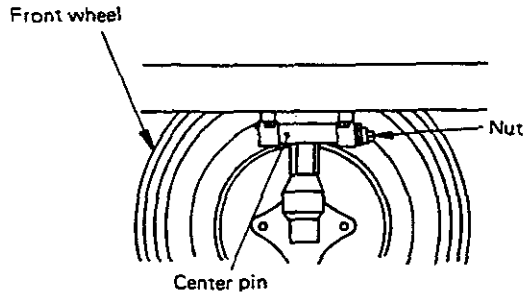
(5) Front axle center pin

If there is so much play in the front axle center pin, the front wheels vibrate and the vibrations are transmitted to steering wheel.

If the end play exceeds 0.5 mm (0.020 in.), adjust it to 0.1 mm (0.004 in.).

(For two wheel drive model)

1) Remove cotter pin.
2) Tighten slotted nut to obtain correct play.
3) Install a new cotter pin.



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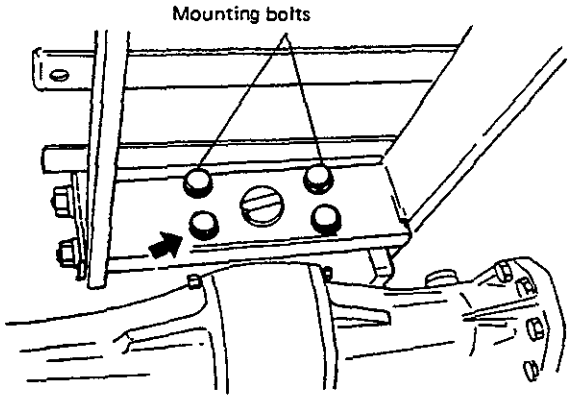
(For four wheel drive model)

1) Loosen center pin mounting bolts.
2) Insert shims to obtain correct play.
3) Tighten center pin mounting bolts.



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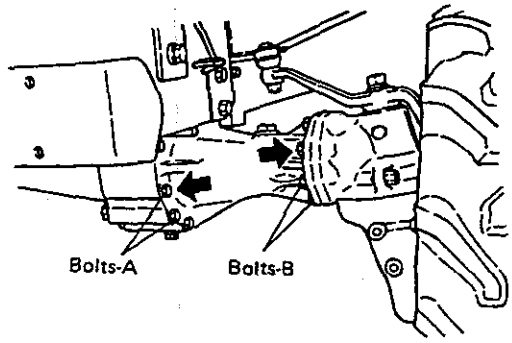
[10-2] TIGHTENING BOLTS AND NUTS

(1) Front wheels and rear wheels (See page 45.)

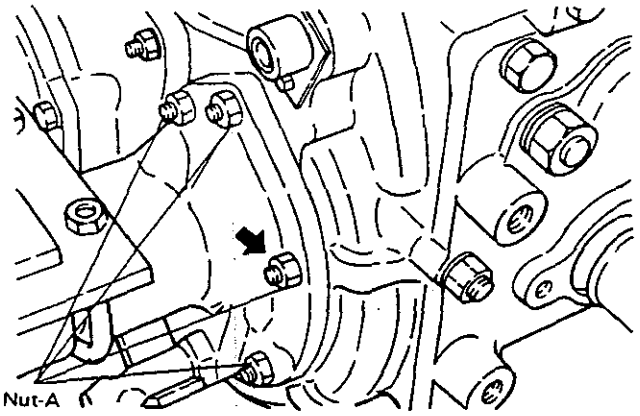
(2) Front axle housing bolts (YM195D/YM240D)



24064

Bolts A	(M8) :	3 kg-m (22 ft-lbs) tightening torque	YM195D
	(M8) :	5 kg-m (34 ft-lbs) tightening torque	YM240D
Bolts B	(M10) :	6 kg-m (43 ft-lbs) tightening torque	

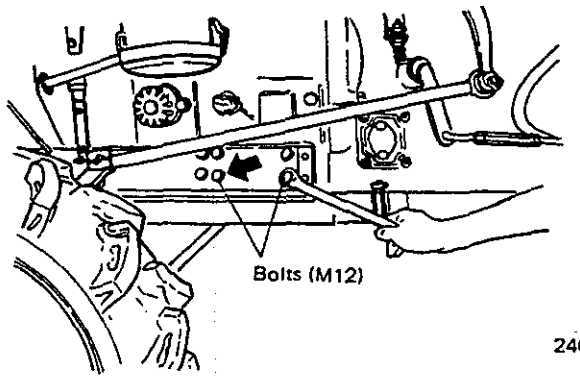
(3) Rear axle housing bolts



24065

Nut A (M10) : 6 kg-m (43 ft-lbs) tightening torque

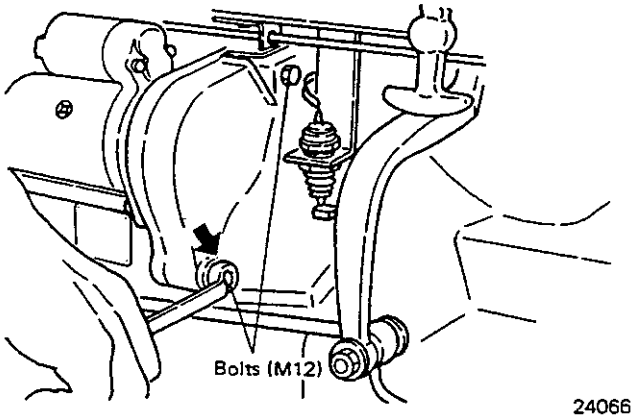
(4) Front axle bracket mounting bolts



24045

Bolts (M12) : 10 kg-m (72 ft-lbs)

(5) Clutch housing bolts to engine



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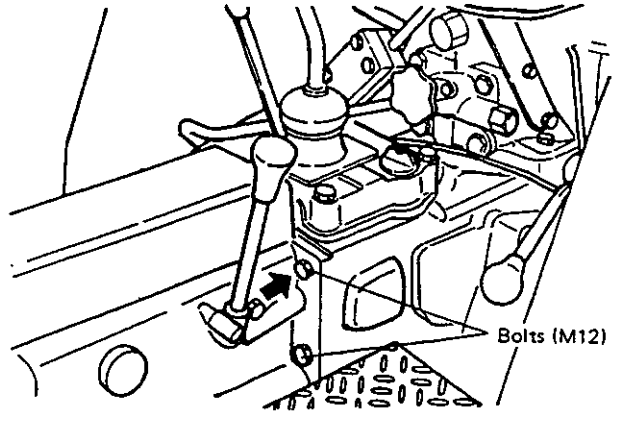
Bolts (M12) : 10 kg-m (72 ft-lbs) tightening torque

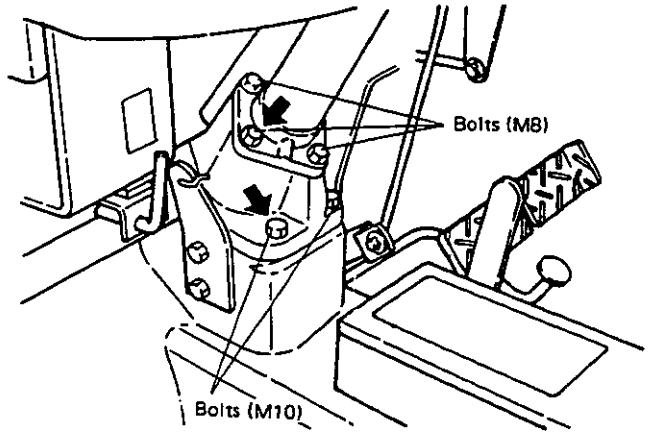
(6) Bolts between clutch housing and transmission case



Bolts (M12) : 10 kg-m (72 ft-lbs) tightening torque

24067

(7) Steering gear box mounting bolts



Bolts (M10) : 6 kg-m (43 ft-lbs) tightening torque

Bolts (M8) : 3 kg-m (22 ft-lbs) tightening torque

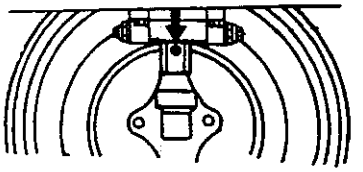
24068

(8) ROPS and seat belt mounting bolts

See ROPS installation manual for the tightening torques.

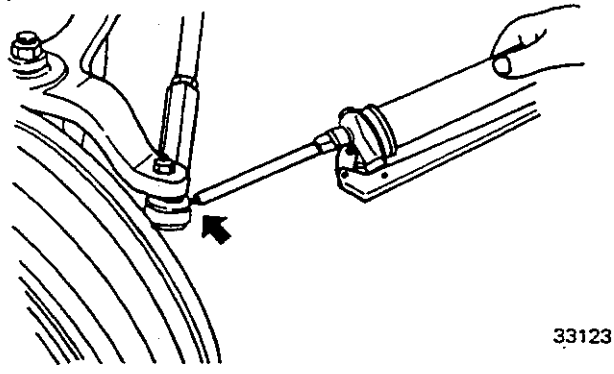
[10-3]GREASING

(1) Front axle center pin



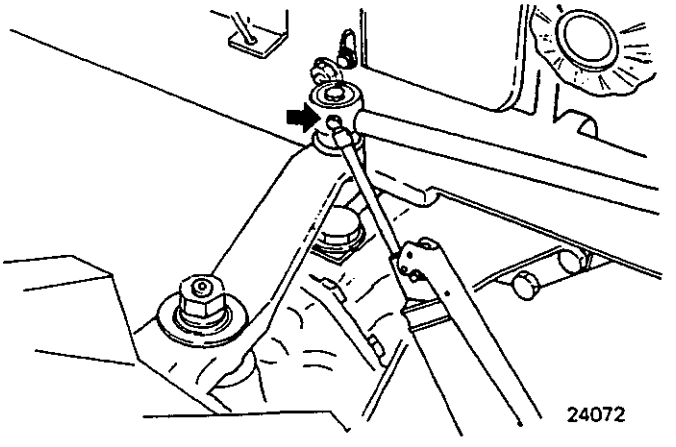
33121

(2) Tie-rod ends



33123

(3) Drag-rod ends



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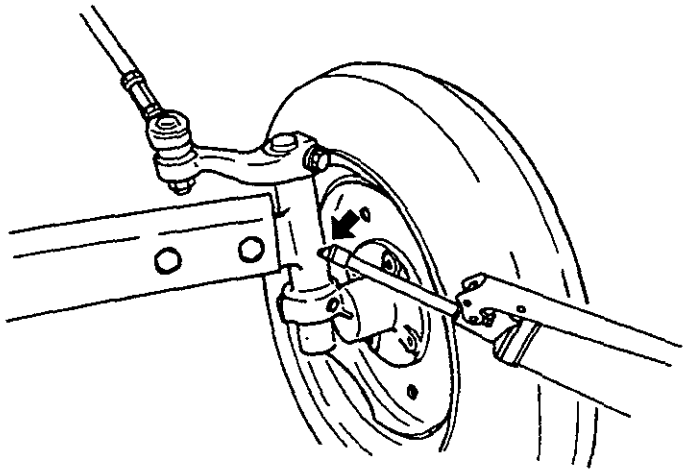
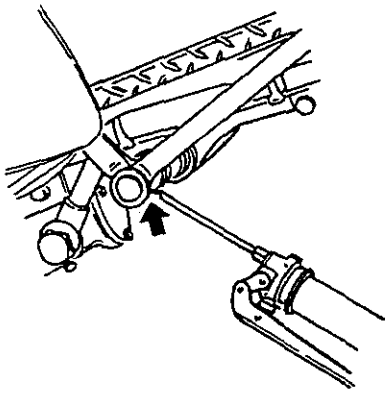
(4) King pins (2WD)

Remove drain bolt before greasing.



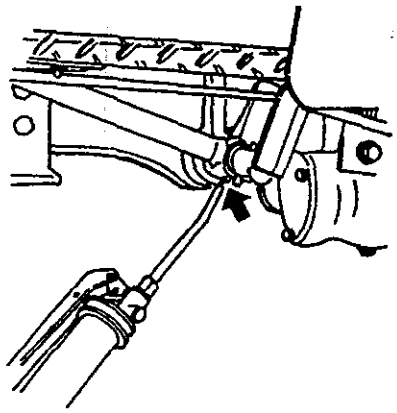
24073

(5) Brake pedal shaft



24074

(6) Clutch pedal shaft



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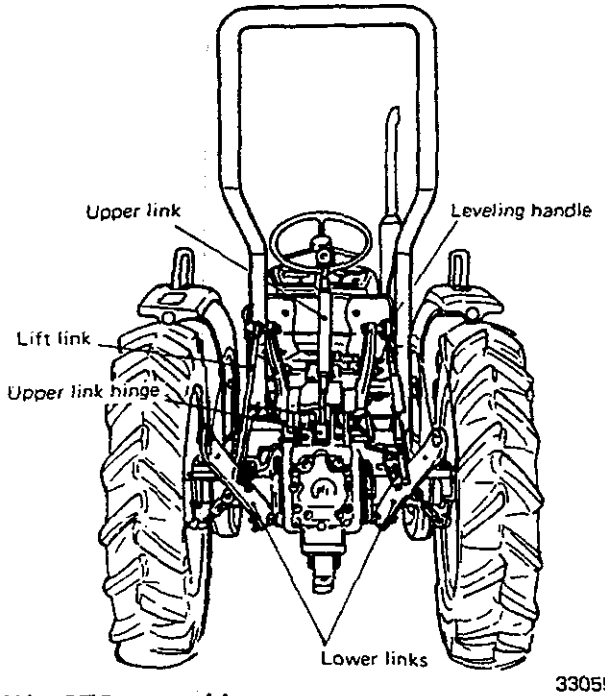
(7) 3-Point hitch



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(8) PTO control lever

(9) Foot throttle pedal

[10-4] AIR INTAKE SYSTEM

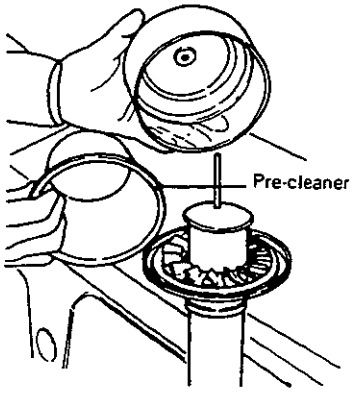
(1) Pre-cleaner

The pre-cleaner filters out large particles of dirt and dust before the air reaches the air cleaner.

The pre-cleaner relieves much of the load on the air cleaner, and allows longer intervals between air cleaner servicing.

Empty pre-cleaner bowl every day.

When operating under extremely dusty conditions, check pre-cleaner bowl several times daily.



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(2) Air cleaner

Clean air cleaner element at least every 100 hours. Clean more often if a dirty element is indicated by loss of power and excessive smoke.

Replace element at least once a year or after five cleanings.

1) Cleaning air cleaner element

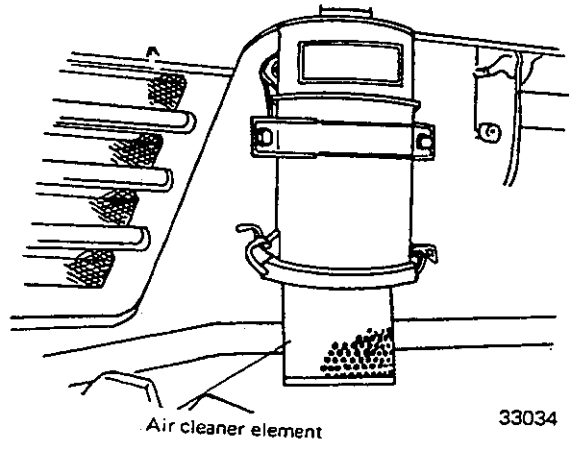
a) Unlatch clamps to remove lower cover.

b) Remove element by removing wing bolt.

c) Clean out any dirt collected in canister.

d) Pat sides of element gently to loosen dirt. Do not tap element against a hard surface. This may break element bond.

e) If patting element does not remove dust, blow out dust with compressed air (not to exceed 7 kg/cm² (100 psi) by inserting nozzle inside of element and blowing from the inside of element to outside.



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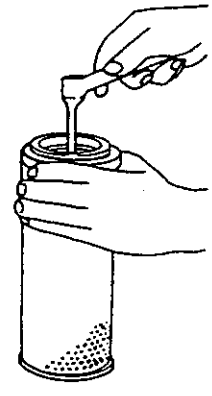


33132

IMPORTANT

Do not direct air against outside of element, as it might force dirt through to inside.

2) **Washing air cleaner element**

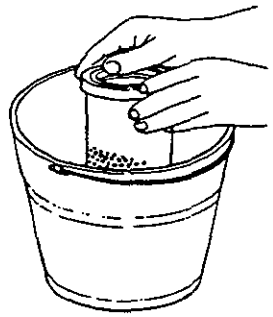
IMPORTANT

Never wash element in gasoline or any solvent. Never use compressed air on a wet element. Do not oil element.

a) If element is coated with oil or soot, wash in a solution of warm water. Let element soak at least 15 minutes, then agitate gently to flush out dirt.

b) Rinse element throughly from inside with clean water. Use element cleaning gun or a free-running hose. Keep pressure low to avoid damaging element.

c) Allow element to dry completely before using. This usually takes from one to three days. Do not oven dry or use drying agents. Protect element from freezing until dry. Inspect element before reinstalling.



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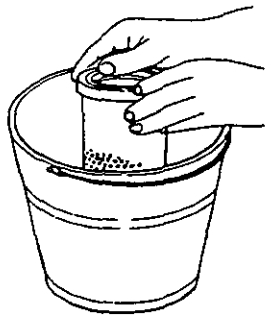

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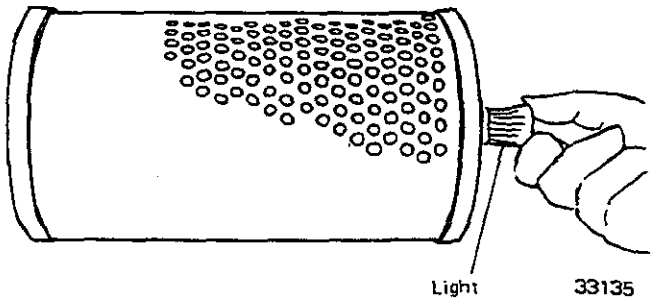
3)

3) **Inspecting element**

a) Hold a bright light inside element and check carefully for holes. Discard any element which shows the slightest hole.



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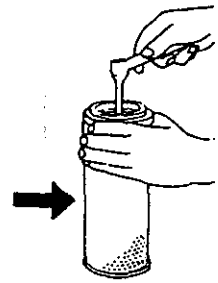
b) Be sure outer screen is not dented. Vibration would quickly wear a hole in filter.

c) Be sure filter gasket is in good condition. If gasket is damaged or missing, replace element.



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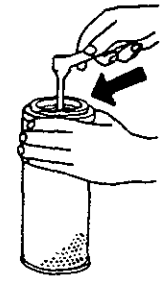
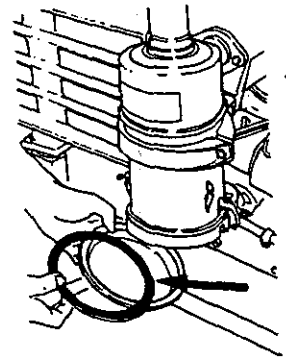


33137

d) If element is to be stored, seal it in a plastic bag and store in shipping container to protect against dust and damage.

e) Be sure rubber gasket between canister and lower cover is in good condition. If gasket is damaged or missing, replace gasket.

f) Be sure seal washer on the pre-cleaner cover is in good condition. If the washer is damaged or missing, install new seal washer.



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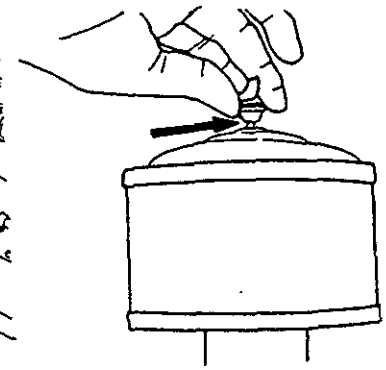

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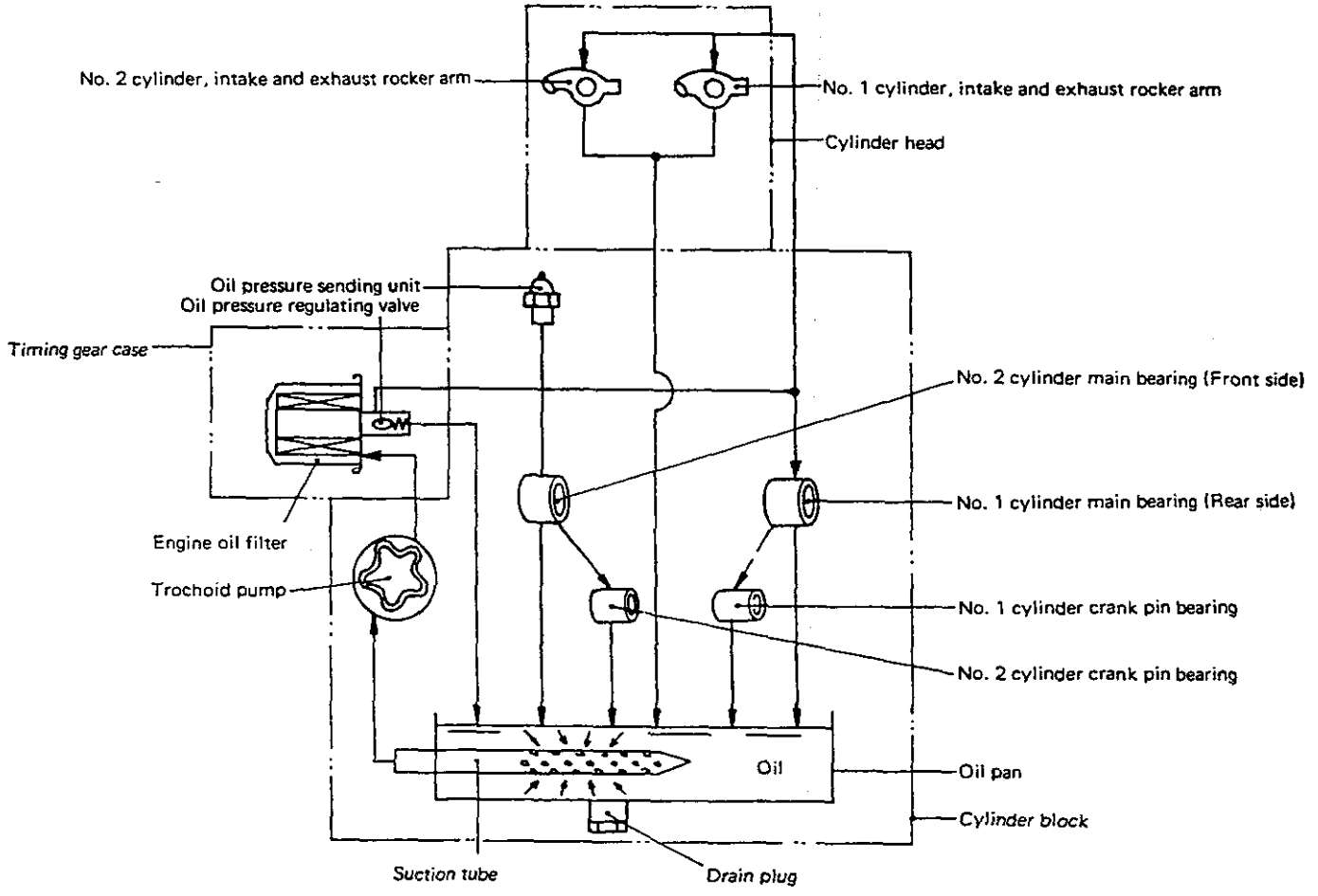
4) **Leakage check of system**
Check air intake system for leaks. Correct as necessary.

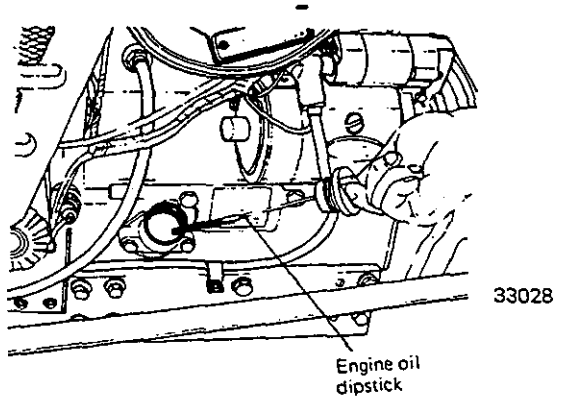
[10-5] LUBRICATING SYSTEM



(1) Engine oil

1) Checking oil level

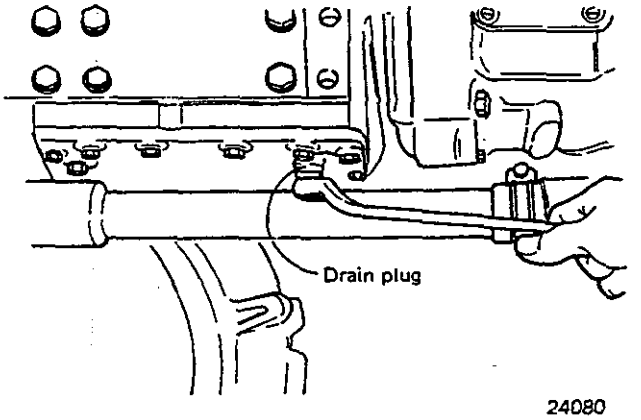
Remove dipstick and wipe it clean. Insert dipstick to rest on threads, but do not screw it in. Oil level should be between full mark (upper) and end of dipstick. If low, add oil as specified on page 54.



33028

2) Draining and filling engine crankcase

Every 100 hours of engine operation, replace oil in the engine crankcase. Drain crankcase at the end of a day's operation, at which time the oil is hot and all foreign material is in suspension.



24080

Engine crankcase drain plug is located at the left side of oil pan.

IMPORTANT

During cold weather operation with temperatures below 0°C (32°F), change oil at any seasonal change in temperature when oil of a new viscosity is required.

a) Remove engine oil drain plug, and drain out oil.

b) Install drain plug, and add engine oil as specified on page 54. Capacity is 5 liters (5.3 U.S. quarts).

Oil level on the dipstick should be at the upper mark.

c) Start engine, run a short time and check for oil leaks, especially around the filter body and drain plug.

(2) Engine oil filter

The engine oil filter is full-flow type, and should be replaced every 200 hours or once for every two oil changes.

1) Replacement of engine oil filter

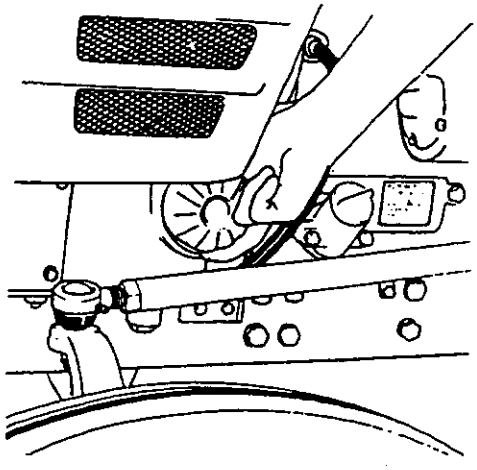
a) Screw off engine oil filter.

b) Clean filter mounting pad and make sure lock nut on filter mounting stud is tight.

c) Install new filter element, applying a thin film of oil to the sealing ring.

Screw filter element down by hand until sealing ring just touches mounting pad. Then turn down an additional 3/4 to 1-1/4 turns. Do not overtighten.

d) Start engine and check for leaks.



33143

IMPORTANT

The filter element has a special bypass valve. Replace only with a genuine YANMAR filter element.

(3) Transmission-Hydraulic oil

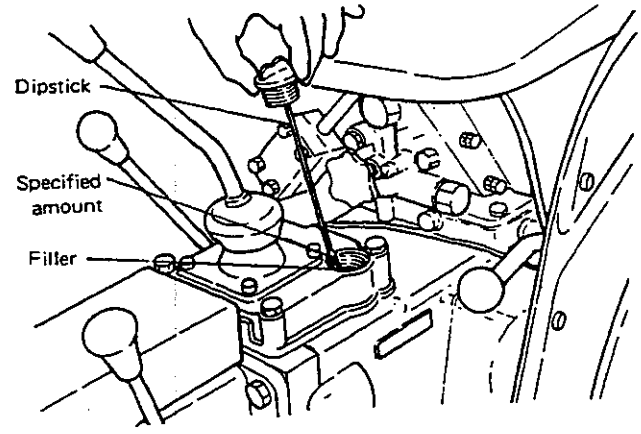
Transmission-Hydraulic oil is used for this tractor. This oil can be used as both transmission and hydraulic oil. If the oil were to contain dirt or other foreign material, the function of hydraulic system would be greatly reduced.

IMPORTANT

Be sure to use Transmission-Hydraulic oil, or its equivalent. Never use light viscosity hydraulic fluid.

1) Checking oil level

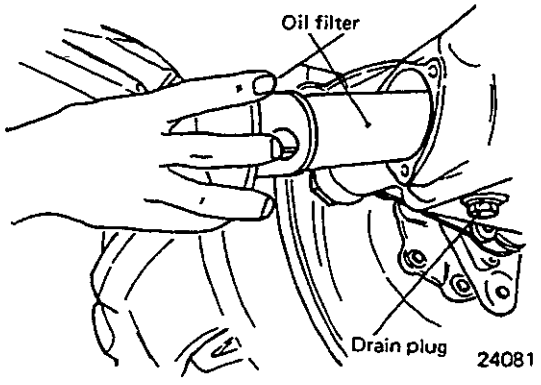
Remove dipstick and wipe it clean. Insert dipstick to rest on threads, but do not screw it in. Oil level should be between full mark (upper) and end of dipstick. If low, add oil as specified on page 55.



24014

2) Draining and filling transmission case

Every 300 hours of engine operation or annually, whichever occurs first, replace oil in the transmission case. Drain transmission case at the end of a day's operation, at which time the oil is hot and all foreign material is in suspension.



a) Remove drain plug from transmission case and drain out oil. Lower hydraulic lift to remove trapped oil.

b) Clean or replace transmission oil filter as instructed in next step (4) before adding oil.

c) After replacing filter and drain plug, refill system with Transmission-Hydraulic Oil, or its equivalent.

(4) Transmission oil filter

Transmission oil filter is located at the bottom of transmission case.

Clean filter element every 300 hours and replace every 600 hours or annually at the same time which the transmission oil is changed.

1) Replacement or cleaning of transmission oil filter

a) Remove three bolts and pry off filter cover.

b) Carefully clean filter in solvent and blow dry with compressed air.

c) Install cleaned filter element or new one and cover.

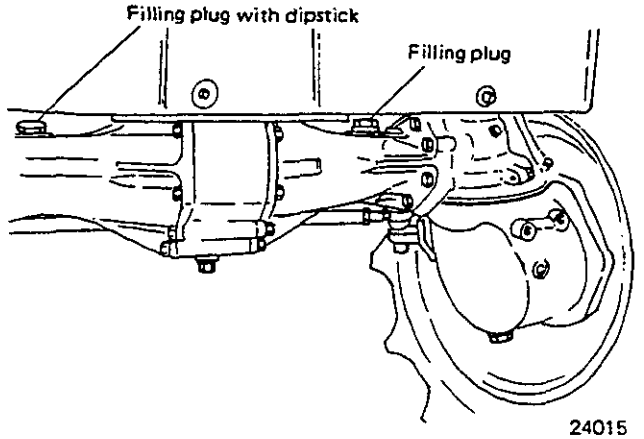
e) Fill system with oil.

(5) Front axle gear oil (YM195D/YM240D)

Check front axle gear oil level every 50 hours and change oil every 300 hours.

1) Checking oil level

Remove dipstick and wipe it clean. Insert dipstick to rest on threads, but do not screw it in. Oil level should be between full mark (upper) and end of dipstick. If low, add SAE 90# gear oil.



24015

2) Changing oil

a) Remove a drain plug on the differential housing and two drain plugs on both right and left bevel gear housings, and drain out oil.

b) Install drain plugs.

c) Remove two bleed plugs from both bevel gear housings to shorten filling time of oil.

d) Refill with specified amount of SAE 90# gear oil.

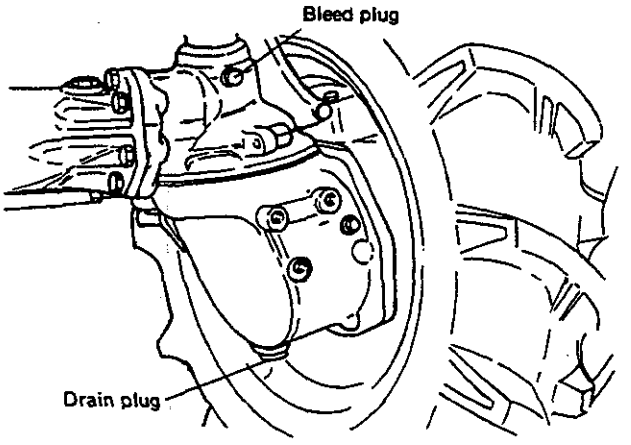
e) After changing oil, check oil level. Oil level should be level with upper mark on dipstick.

IMPORTANT

When checking oil level after refilling, wait at least one hour to obtain even level for both bevel gear housings.

f) Install the bleed plugs and dipstick.

g) Recheck oil level after a few hours operation.



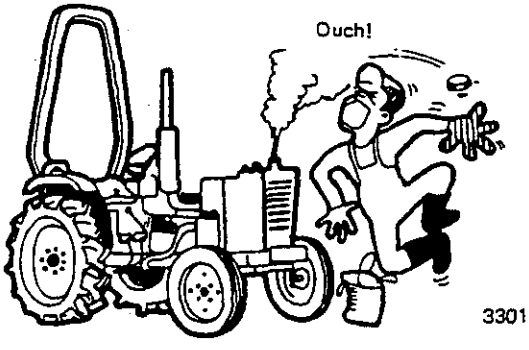
24083

[10-6]COOLING SYSTEM

(1) Radiator

CAUTION

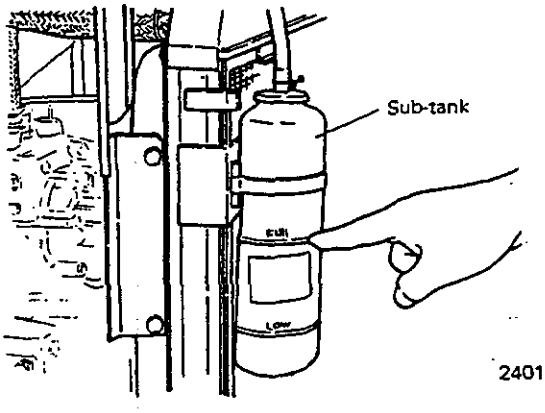
Remove radiator cap only when the coolant temperature is below the boiling point. Then loosen the cap slightly to the stop to relieve pressure before removing the cap completely.



33014A

1) Coolant

The cooling system of this engine has a radiator with sub-tank. If the coolant in the sub-tank goes down to the "LOW" position, add clean soft water to the "FULL" position. If there is no coolant in the sub-tank, the radiator should also be filled with clean soft water.



24010

IMPORTANT

Never pour cold water into a hot engine, since it could crack cylinder block or head. Never operate engine without coolant for even a few minutes.

2) Flushing cooling system

Flush radiator every 600 hours or annually, whichever occurs first.

a) Drain cooling system by opening radiator drain plug on the cylinder block.

b) Close drain plug, and fill system with clean soft water.

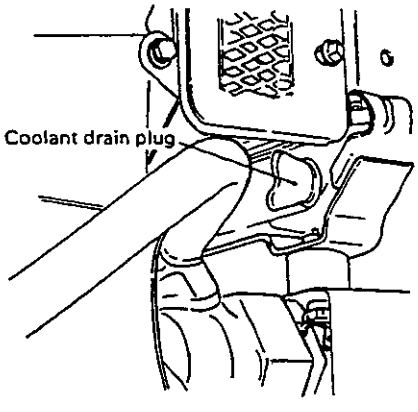
c) Run engine until it reaches operating temperature.

d) Stop engine and drain water out before rust or sediment settles.

e) Close drain plug, and fill system with a solution of clean soft water and cooling system cleaner.

f) After using cleaner, flush system with clean water.

g) Close drain plug, and fill system. Use CLEAN SOFT water and ethylene glycol anti-freeze (full season type).
For non-freezing weather, you can use Summer Coolant Conditioner.



24084

3) Preparing for cold weather

IMPORTANT

If you drain cooling system to prevent freezing, first add a suitable rust preventive. Run engine to circulate preventive and leave a protective coating throughout system.

a) Drain coolant in the radiator, sub-tank and engine block and flush system.

b) Close drain plug, and add permanent-type, ethylene glycol anti-freeze to the radiator. Fill system with CLEAN SOFT water.

c) Run engine until it reaches operating temperature. This mixes solution uniformly and circulates it through entire system.

IMPORTANT

The mixture ratio of anti-freeze must not exceed 40% to avoid overheating during the summer.

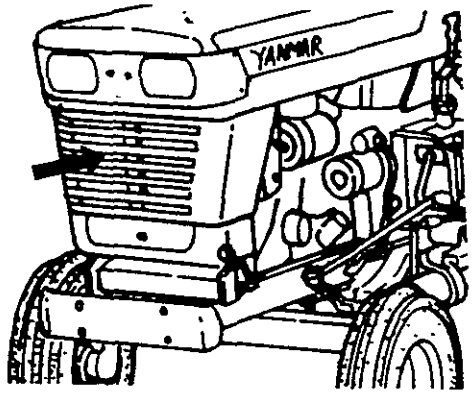
If you added anti-freeze more than 40%, drain coolant after the cold weather passes.

Determine the ratio according to the lowest expected temperature and instruction of its anti-freeze.

(2) Cleaning of front grille, radiator screen, core and fan

1) Cleaning front grille

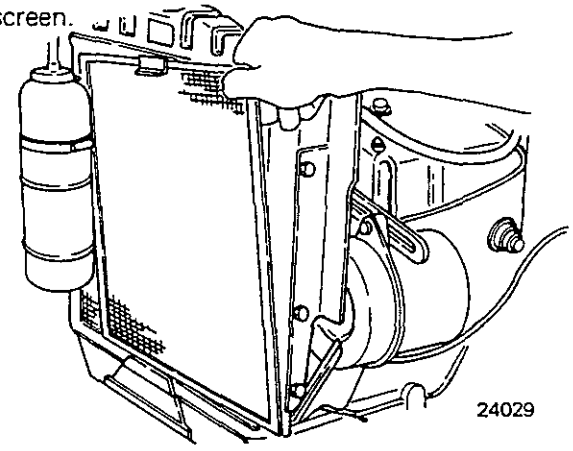
Daily or every 10 hours, clean front grille.



24085

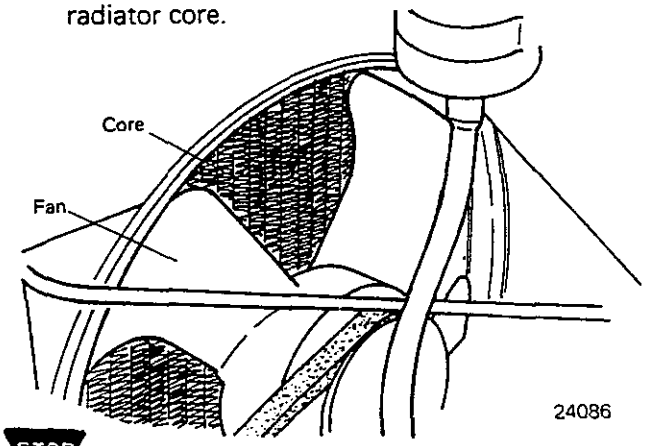
2) Cleaning radiator screen

Daily or every 10 hours, clean radiator screen.


24029

3) Cleaning radiator fan and radiator core

Daily or every 10 hours, clean fan blade and radiator core.



24086

IMPORTANT

If tractor is used under extremely dusty or muddy conditions, clean them more often.

(3) Fan belt

Improper belt tension causes to decrease charging capacity of alternator and cooling capacity of radiator, or to damage the bearings of water pump and alternator.

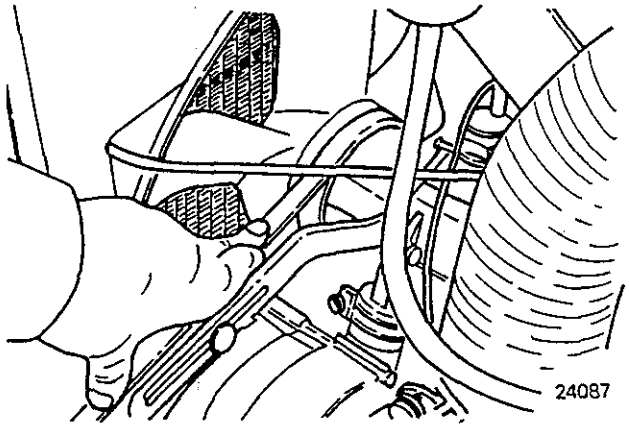
Check fan belt tension every 100 hours. The belt must be free of oil and grease.

IMPORTANT

Belt must be cool when tension is adjusted.

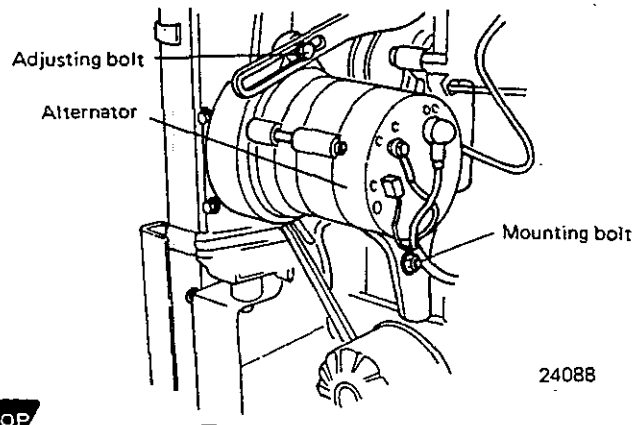
1) Checking belt tension

With engine stopped, press belt midway between pulleys and measure deflection. Belt should deflect 13 mm (0.5 in.) with around 9 kg (20 lbs.) force.


24087

2) Adjustment

If belt needs adjustment, loosen adjusting and mounting bolts. Pry only against FRONT alternator frame. Holding alternator in position, tighten adjusting and mounting bolts.



24088

IMPORTANT

After installing new belt, check its tension at the first 20 hours and again 50 hours.

[10-7]FUEL SYSTEM

CAUTION

Escaping diesel fuel under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and horses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

IMPORTANT

Modification or alternation of injection pump, the injection pump timing, or the fuel injection nozzles in ways not recommended by the manufacturer will terminate the warranty obligation to the purchaser. See warranty information inside front cover.

Do not attempt to service injection pump or fuel injection nozzles yourself. Special training and special tools are required. See your YANMAR dealer.

The fuel system includes the fuel tank, fuel strainer, fuel pump, fuel filter, injection nozzles, and the lines which connects these parts.

Proper servicing of the fuel system is important for fuel economy, smooth operation, and long engine life.

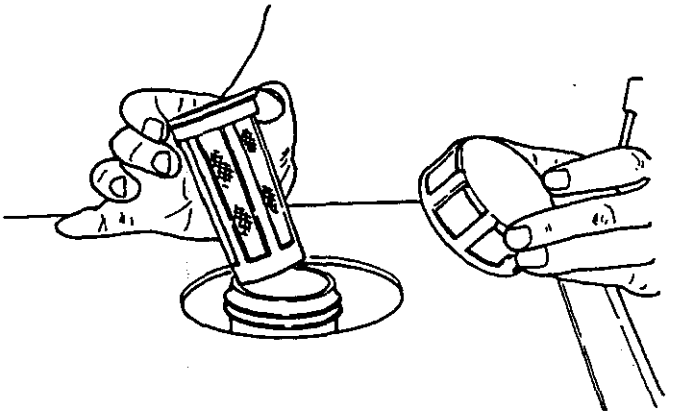
Fill the fuel tank at the end of each day's operation to prevent moisture from condensing in the fuel tank.

Improper fuel storage may cause frequent contamination of fuel system.

(1) Fuel strainer in the fuel tank

Keep fuel strainer clean every time. Never remove it to shorten pouring time.

Clean fuel strainer every time before filling fuel tank. If it is damaged, replace with a genuine YANMER strainer.



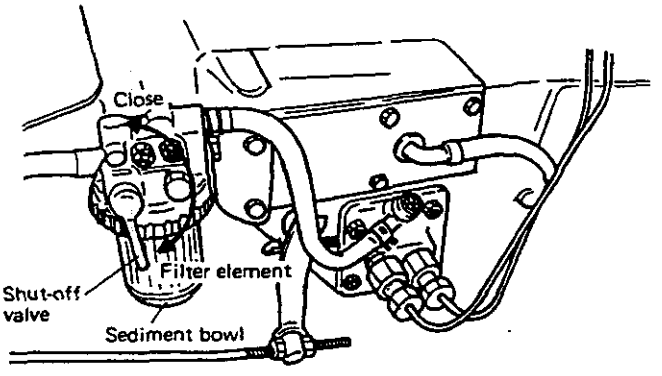
24089

(2) Fuel filter

1) Draining deposits from fuel filter sediment bowl

Every 10 hours or daily operation, check lower portion of fuel filter for water or dirt deposits.

Every 100 hours operation, clean filter element and sediment bowl.



24090

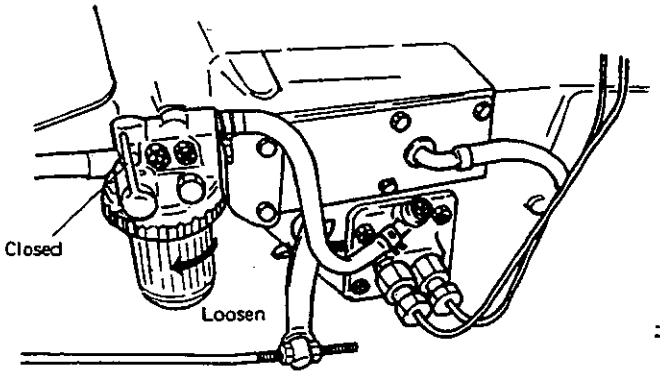
a) Close fuel shut-off valve.

b) Remove sediment bowl and fuel filter by loosening mounting screw.

c) Clean element and sediment bowl.

2) **Replacing fuel filter element**

Replace filter element every 200 hous of operation. Under severe conditions, replace element more often. No tools are required to change element.



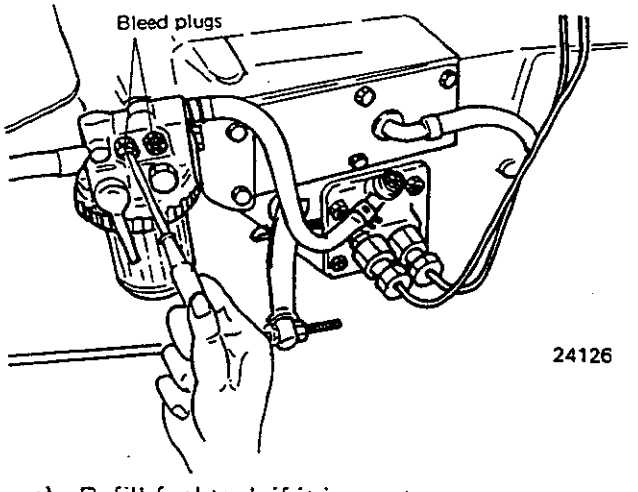
24125

IMPORTANT

Only use genuine YANMAR filter element.

(3) Bleeding fuel system

Whenever fuel tank has been run dry or air has been sucked into the system through loose connections, the entire fuel system must be bled.



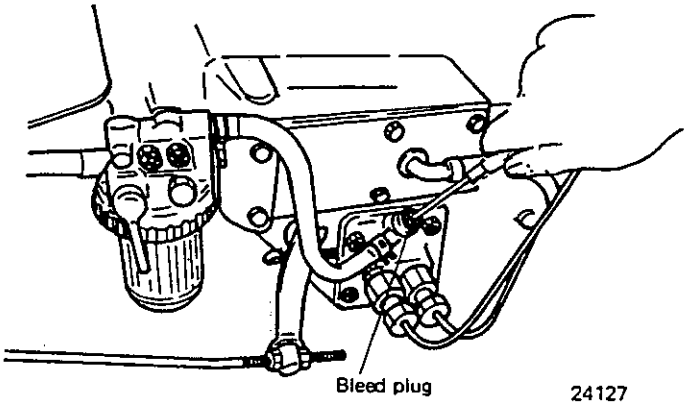
24126

a) Refill fuel tank if it is empty.

b) Open shut-off valve.

c) Loosen both bleed screws above fuel filter. When air bubble is gone and fuel flows out bleed hole, tighten screws.

d) If fuel line to injection pump is also empty, also loosen bleed screw on injection pump. When fuel flows out bleed hole, tighten screw.



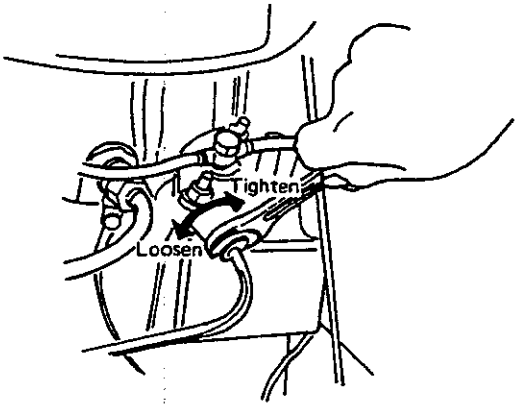
24127

e) If lines from injection pump to fuel injection nozzles are also empty, loosen lines where they connect to injection nozzles. Push throttle lever fully forward and operate starter until fuel runs from fittings. Tighten lines.

IMPORTANT

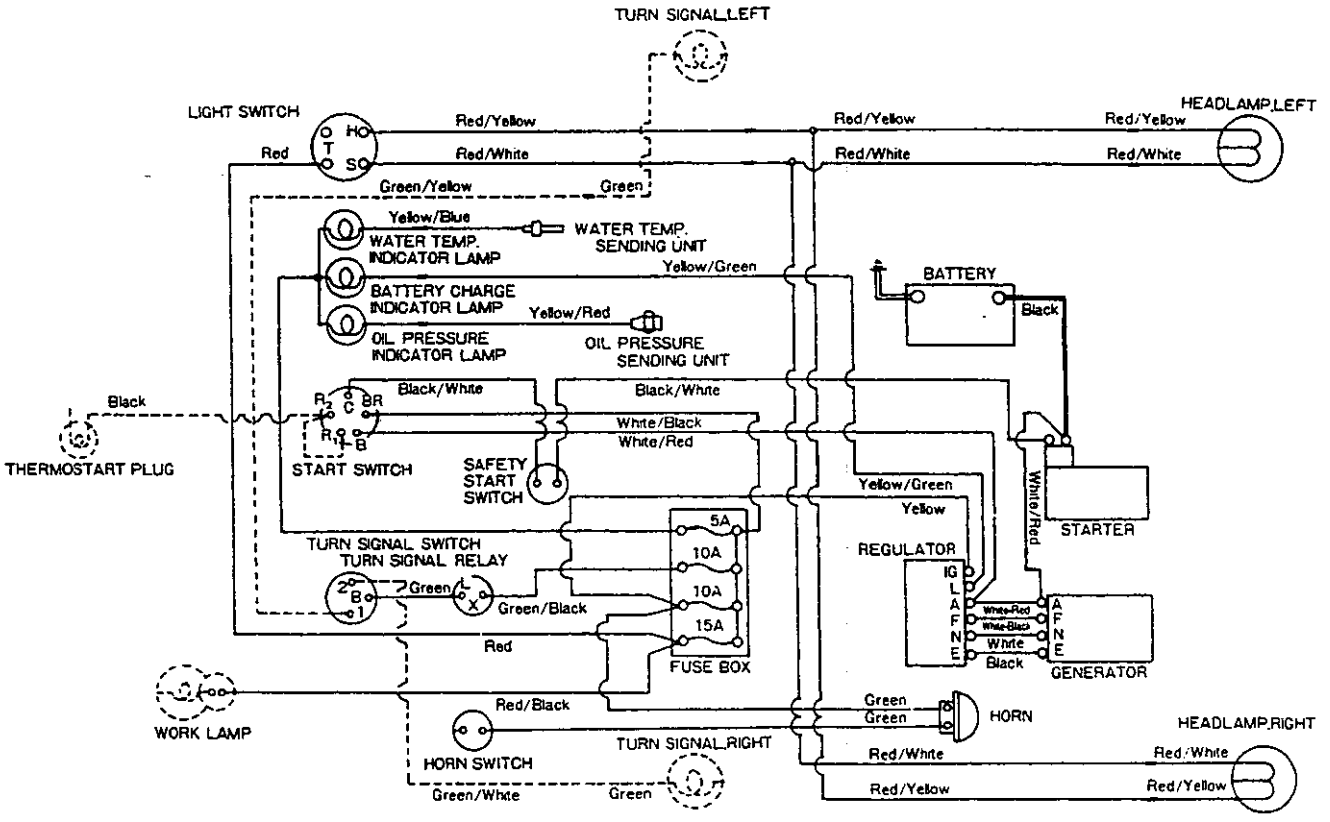
Never operate starter longer than 10 seconds at a same time.

Allow one minute to cool before reengaging starter.



33156

[10-8] ELECTRICAL SYSTEM



24091

(1) Battery

DANGER

Keep all sparks and flames away from a battery, as gas given off by electrolyte is explosive. To avoid sparks, connect ground cable last and disconnect it first.

To avoid shock and burns, disconnect battery ground cable before servicing any part of electrical system.

DANGER

Sulfuric acid in battery electrolyte is poisonous. It can destroy clothing and burn the skin. Wear eye protection and rubber gloves when filling battery. If you spill acid on yourself, flush your skin with water and apply baking soda or lime to neutrize the acid. Get medical attention immediately.

Electrical system uses a single 12-volt battery.

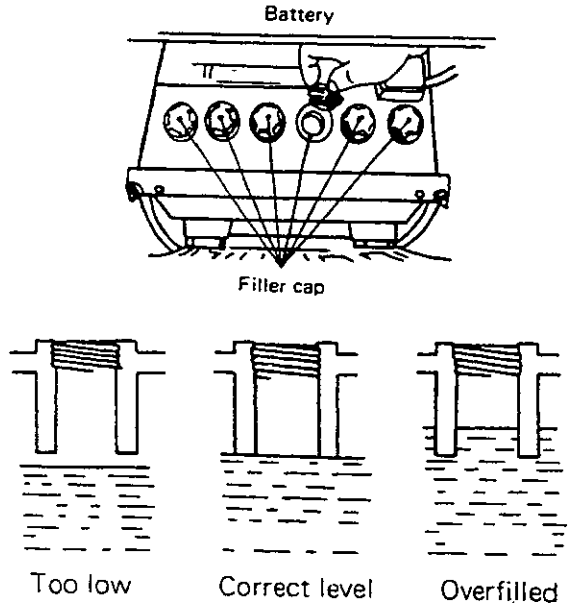
When replacing battery, use YANMAR battery or its equivalent.

1) Specifications

Model	N70Z
Voltage	12 volts
Reserve Capacity	75AH (20-hours rate)
Charging Max. Current	7.5A
Electrolyte specific gravity	1.280/20°C (68°F) at full charge

2) **Checking electrolyte level of battery cells**

Check level of electrolyte in each cell every 50 hours. If low, fill to bottom of filler necks with distilled water. Run engine for a few minutes so that the water added can mix with the electrolyte.

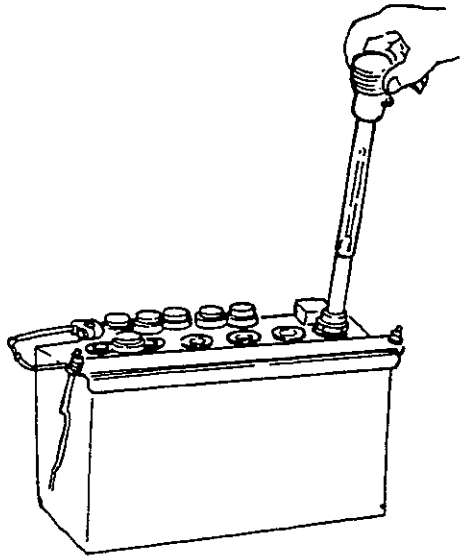


33158

3) **Checking specific gravity of battery electrolyte**

The specific gravity of electrolyte is to be checked by using an accurate hydrometer. Charge battery if reading is below 1.280 at 20°C (68°F).

Replace battery if difference between cells is more than 0.050 (Specific gravity).



33159

4) **Charging battery**

Charge battery every 300 hours of operation.

IMPORTANT

When charging battery on a tractor, disconnect positive battery cable to starter to avoid damage the diodes of alternator.

Never apply FAST CHARGE to maintain long life of battery.

a) Remove battery from tractor after disconnecting ground cable, then positive cable.

b) Place the battery at the place where there is plenty of ventilation.

c) Connect positive lead of charger to positive pole of battery.

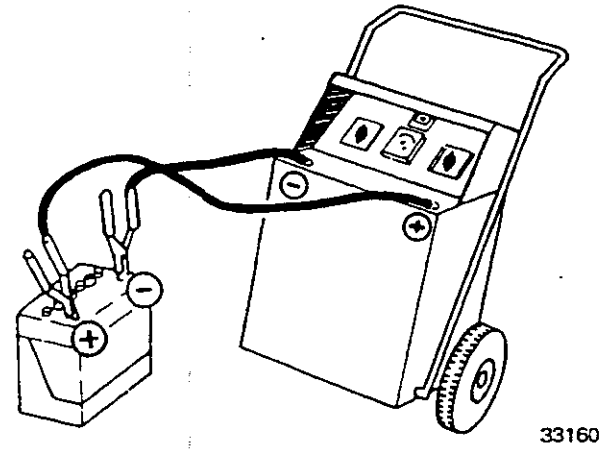
d) Connect negative lead of charger to negative pole of battery.

e) Select charging current according to specified value. It must not exceed specified Max. current.

f) Switch on charger and check the current.

g) After charging for the required time, switch off the charger.

h) Check specific gravity of electrolyte after cooling electrolyte.



33160

IMPORTANT

Charging time is determined by the state of charge (Specific gravity of electrolyte). See instructions of battery charger or YANMAR dealer.

5) **Cleaning battery**

Keep battery clean by wiping it with a clean cloth every 50 hours operation or whenever dirt appears excessive. Remove any corrosion, and wash terminals with a solution of baking soda and water.

Check vent holes in the battery caps to make sure they are open. Cable connectors must be free of dirt and well tightened.

Tighten connectors to reduce corrosion.

6) Storing battery

CAUTION

Store battery out of reach of children.

If tractor is stored for the winter or for any period of 30 days or more, remove the battery and store in a cool dry place where no freezing will occur. Check the battery every 30 days and charge them if necessary.

7) Cold weather battery service

Battery has less capacity in cold weather and carries a heavier load in starting the engine, and therefore require more attention.

A correctly filled and well charged battery is the best protection against freezing.

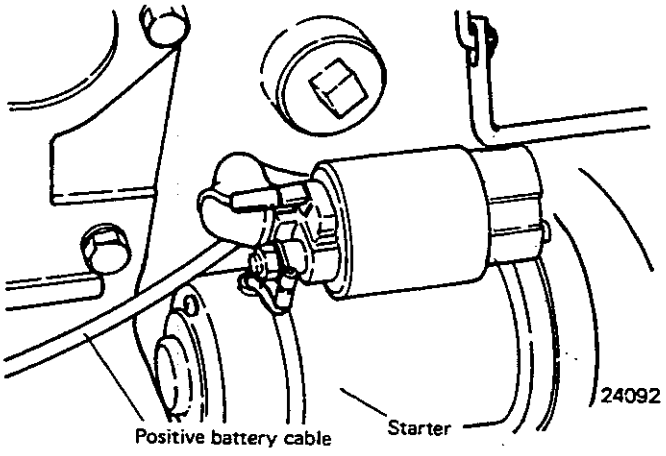
Check battery more often in winter.

(2) Starter

When starting engine, never operate starter for more than 10 seconds at the same time. If the engine does not start within this period, allow at least one minute for proper cooling of the starter.

If starter fails to operate after the key switch has been turned all the way clockwise, the whole starter system must be throughly checked. Check the specific gravity of battery and make sure that no cable is broken or worn and that no cable connection is loose or corroded.

If starter is disconnected for any reason, connect wires as shown in the following illustration.



(3) Alternator

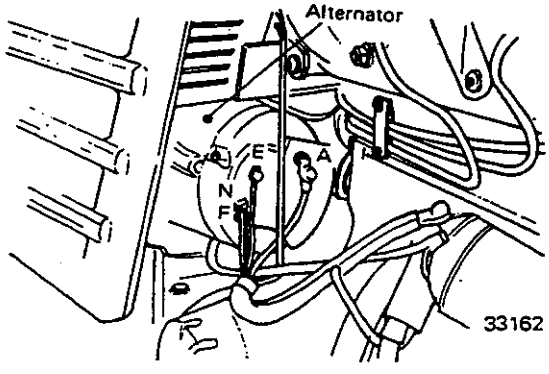
a) If tractor is to be operated without battery (using a booster battery for starting), do not interrupt the circuit by switching off the starter switch before stopping engine. Further, it is recommended to use additional current (lights) while engine is running.

b) When engine is running, do not short circuit or ground the alternator and regulator terminals.

c) Connect battery or battery charger in the proper polarity (positive to positive and negative to negative). If they are improperly connected, the rectifier diodes will be immediately destroyed.

d) Before performing electric welding jobs on the tractor, disconnect the one terminal plug (N/F) and two terminals (A and E) at alternator. Connect ground terminal of welding apparatus directly to the part being welded.

e) Before performing electrical repairs on alternator or starter, disconnect battery ground cables. This will avoid the damage from short circuiting.

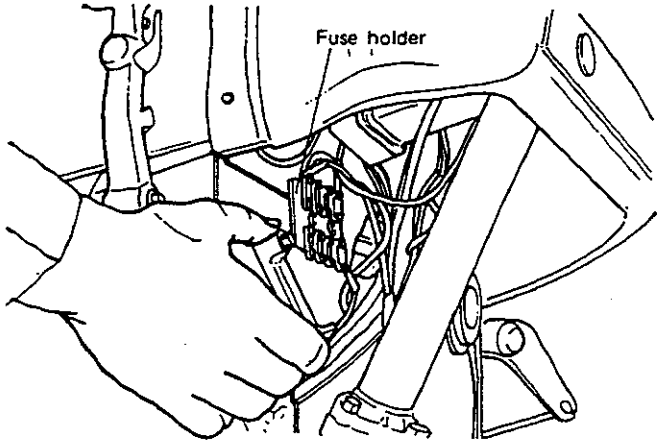


(4) Fuses

All lighting circuits are protected by fuses. Size and usage of each fuse are marked inside fuse holder cover.

WARNING

Do not install larger fuses or any substitute materials. If these sizes will not carry the loads, have your YANMAR dealer check the electric system.



24094

(5) Indicator lamps

1) Oil pressure and charging indicator lamps

   Check the lamps daily when main switch is turned on. If they are not glowing, repalce them immediately.

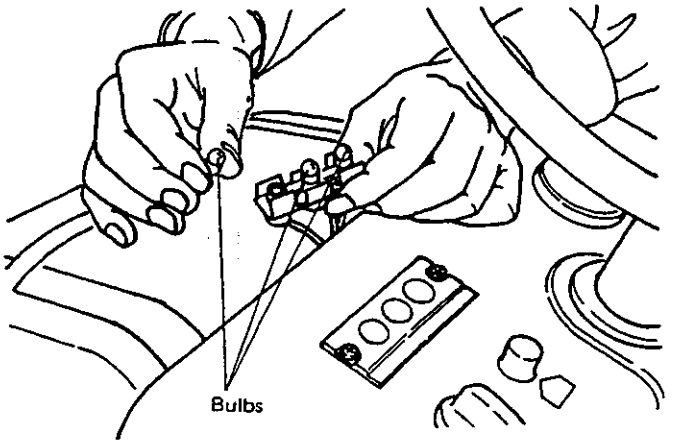
2) Coolant temperature indicator lamp

   The coolant temperature indicator lamp can not be checked same as the other indicator lamps. Because this lamp does not glow when turning main switch to the first position. The lamp glows only when engine is overheated.

   Check it by removing from the indicator lamp holder every 100 hours of operation.

IMPORTANT

When replacing bulbs, use genuine YANMAR bulbs.



24095

YANMAR DIESEL TRACTOR

11. STORAGE

[11-1] STORING TRACTOR

Whenever tractor will not be used for several months, use following procedures to properly store it. This minimizes corrosion and deterioration:

1) Service any malfunctions.

2) Change engine oil as instructed on page 67. Used oil would not give adequate protection.

3) Flush cooling system as instructed on page 71. Be sure system is full of coolant and coolant contains a rust inhibitor (in anti-freeze or summer coolant conditioner).

IMPORTANT

If you drain cooling system to prevent freezing, first add a suitable rust preventive. Run engine to circulate preventive and leave a protective coating throughout the system.

4) Add 0.25 ℓ (0.26 quart) of corrosion inhibitor to transmission-hydraulic system.

5) Drain fuel tank and add then 4 ℓ (1 gallon) of fuel. Add 0.4 ℓ (0.42 quart) of corrosion inhabitor.

6) Run engine until it reaches normal temperature.

   Raise and lower hydraulic lift several times.

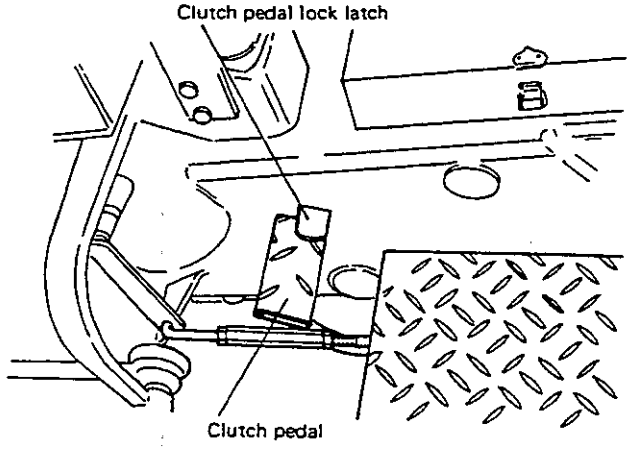
7) Add 0.5 ℓ (0.5 quart) more of inhibitor to fuel tank.

8) Add 0.5 ℓ (0.5 quart) of inhibitor to engine crankcase.

9) Seal end of air intake pipe, crankcase breather pipe, hydraulic system breather pipe, muffler, and engine oil filler with plastic bags and tape.

10) Loosen alternator belt after it has cooled.

11) Block clutch pedal down in the disengaged position as shown below.



CAUTION 24096

Store battery out of reach of children.

12) Remove and clean battery. Store it in a cool, dry place, and keep it charged every one month.

13) Remove any weight from tractor.

14) Inflate tires to the maximum pressure specified on page 48.

15) Apply grease to all fittings.

16) Coat exposed metal surfaces, such as axles, with grease or a corrosion inhibitor.

17) Raise tires off ground. Protect them from heat and sunlight.

18) Throughly clean tractor. Touch up any painted surfaces that are scratched or chipped.

19) If tractor must be stored outside, cover it with a waterproof material.

[11-2]REMOVING TRACTOR FROM STORAGE

DANGER

Before starting engine, be sure there is plenty of ventilation. Never operate engine in a closed building.

Follow these procedures for removing the tractor from storage:

1) Remove all protective coverings.

2) Remove clutch pedal block and allow clutch engage.

3) Check tire inflation pressure.

4) Install battery and connect cables. Check alternator belt tension.

5) Check the oil level of engine crankcase and transmission-hydraulic system.

6) Fill fuel tank.

7) Check coolant level in radiator.

8) Start engine as instructed on page 24.

YANMAR DIESEL TRACTOR

12. TROUBLE SHOOTING

ENGINE

WARNING: Do not service tractor while engine is running.

PROBLEM	CAUSE	REMEDY	PAGE REFERENCE
ENGINE HARD TO START OR WILL NOT START	No fuel or improper fuel.	Fill tank. If wrong fuel, drain and refill with proper fuel.	54
	Water, dirt, or air in fuel system.	Drain, flush, fill, and bleed system.	73
	Clogged fuel filter.	Replace filter element.	73
	Fuel shut-off valve closed.	Open shut-off valve.	73
	Hand throttle not pushed forward.	Push throttle forward.	26
	Decompression lever in decompression position.	Turn lever to compression position.	27
	Slow starter speed.	See "STARTER CRANKS SLOWLY"	—
	Cold weather.	Use cold weather starting aids.	28
	Engine oil too heavy.	Use oil of proper viscosity.	54
	Dirty of faulty injection nozzles.	Have YANMAR dealer check injection nozzles.	—
ENGINE KNOCKS	Insufficient oil.	Add oil.	67
	Injection pump out of timing.	See your YANMAR dealer.	—
	Low coolant temperature.	Cover radiator screen.	—
	Engine overheating.	See "ENGINE OVERHEATS"	—
	Idle speed too slow.	Check idle speed.	29
ENGINE RUNS IRREGULARLY OR STALLS FREQUENTLY	Vent in fuel tank cap obstructed.	Clean cap in solvent. Blow dry.	73
	Low coolant temperature.	Cover radiator screen.	—
	Clogged fuel filter.	Replace filter element.	73
	Water, dirt, or air in fuel system.	Drain, flush, fill, and add bleed system.	73
	Dirty or faulty injection nozzles.	Have YANMAR dealer check injection nozzles.	—

PROBLEM	CAUSE	REMEDY	PAGE REFERENCE
LACK OF ENGINE POWER	Engine overloaded.	Reduce load or shift to lower gear.	—
	Intake air restriction.	Service air cleaner.	65
	Clogged fuel filter.	Replace filter element.	74
	Improper type of fuel.	Use proper fuel.	54
	Overheated engine.	See "Engine Overheats".	82
	Low coolant temperature.	Cover radiator screen.	—
	Improper valve clearance.	See your YANMAR dealer.	—
	Dirty or faulty injection nozzles.	Have YANMAR dealer check injection nozzles.	—
	Injection pump out of timing.	See your YANMAR dealer.	—
	Implement improperly adjusted.	See implement operator's manual.	—
	Improper ballast.	Adjust ballast to load.	49
	Governor not operating properly.	See your YANMAR dealer.	—
	Clutch slipping.	Adjust clutch pedal free travel, or have YANMAR dealer replace clutch disk.	60
	Worn piston rings and cylinder sleeves.	See your YANMAR dealer.	—
ENGINE OVERHEATS	Engine overloaded.	Shift to lower gear or reduce load.	—
	Low coolant level.	Fill radiator to proper level. Check radiator and hoses for loose connections or leaks.	70
	Faulty radiator cap.	Have YANMAR dealer check.	—
	Loose or defective fan belt.	Adjust belt tension or replace belt.	72
	Dirty radiator core or grille screens.	Remove all trash.	72
	Cooling system needs flushing.	Flush cooling system.	71
	Defective coolant temperature indicator lamp or sending units.	Check water temperature with thermometer and replace if necessary.	—
	Injection pump out of timing.	See your YANMAR dealer.	—

PROBLEM	CAUSE	REMEDY	PAGE REFERENCE
LOW OIL PRESSURE	Low oil level.	Add oil.	67
	Improper type of oil.	Drain, fill crankcase with oil of proper viscosity and quality.	68
	Clogged or dirt oil filter.	Replace filter.	68
	Defective oil pressure regulating valve.	Have YANMAR dealer check or adjust valve.	—
	Worn crankshaft main bearings or crank pin bearings.	See your YANMAR dealer.	—
HIGH OIL CONSUMPTION	Crankcase oil too light.	Use proper viscosity oil.	54
	Worn piston rings and cylinder sleeves.	See your YANMAR dealer.	—
	Worn valve guides or stem seals.	See your YANMAR dealer.	—
	External oil leaks.	Eliminate leaks.	—
	Oil pressure too high.	Have YANMAR dealer adjust pressure.	—
	Restricted air intake system.	Check system and relieve restriction.	66
HIGH FUEL CONSUMPTION	Clogged or dirty air cleaner.	Clean or replace air cleaner.	66
	Improper type of fuel.	Use proper fuel.	54
	Engine overloaded.	Reduce load or shift to a lower gear.	—
	Injection nozzles dirty.	See your YANMAR dealer.	—
	Improper valve clearance.	See your YANMAR dealer.	—
	Engine out of timing.	See your YANMAR dealer.	—
	Implement improperly adjusted.	See implement operator's manual.	—
	Tire pressure too low.	Inflate tires to proper pressure.	48
	Clutch slipping.	Adjust clutch pedal free travel, or have YANMAR dealer replace clutch disk.	60
ENGINE EMITS BLACK OR GRAY SMOKE	Improper type of fuel.	Use proper fuel.	54
	Clogged or dirty air cleaner.	Clean or replace air cleaner.	66
	Engine overloaded.	Reduce load or shift to a lower gear.	—
	Injection nozzles dirty.	See your YANMAR dealer.	—

PROBLEM	CAUSE	REMEDY	PAGE REFERENCE
ENGINE EMITS BLACK OR GRAY SMOKE	Engine out of timing.	See your YANMAR dealer.	—
	Improper governor adjustment.	See your YANMAR dealer.	—
ENGINE EMITS WHITE SMOKE	Improper type of fuel.	Use proper fuel.	54
	Low engine temperature.	Warm up engine to normal operating temperature.	27
	Engine out of timing.	See your YANMAR dealer.	—
	Low compression pressure.	See your YANMAR dealer.	—
	Engine oil burned in combustion chamber.	Check oil level or see YANMAR dealer.	67
UNUSUAL NOISE	Defective component parts.	See your YANMAR dealer.	—

ELECTRICAL SYSTEM

BATTERY WILL NOT CHARGE	Loose or corroded connections.	Clean and tighten connections.	—
	Sulfated or worn-out battery.	Check electrolyte level and specific gravity.	76
	Loose or defective alternator belt.	Adjust belt tension or replace belt.	72
	Defective alternator, regulator or main switch.	See your YANMAR dealer.	—
	Excessive engine idling.	Allow engine to idle only when necessary.	22
BATTERY USES TOO MUCH WATER	Cracked battery case.	Replace battery.	76
	Overcharged battery.	Apply load to battery and have voltage regulator checked.	—
CHARGING INDICATOR LAMP GLOWS WITH ENGINE RUNNING	Low engine speed.	Increase speed.	29
	Defective battery.	Check electrolyte level and specific gravity.	76
	Defective alternator.	Have YANMAR dealer check alternator.	—
	Slipping belt.	Tighten belt.	72
	Defective regulator.	Have YANMAR dealer check regulator.	—

PROBLEM	CAUSE	REMEDY	PAGE REFERENCE
STARTER WILL NOT CRANK	Starter safety switch is not correctly adjusted or failed.	See your YANMAR dealer.	60
	Battery capacity is low.	Charge battery and check fan belt tension.	72, 76
	Battery cable connectors are loosen.	Tighten connectors.	76
	Defective starter.	See your YANMAR dealer.	—
	Defective main switch.	Replace switch.	—
STARTER CRANKS SLOWLY	Low battery output.	Check electrolyte level and specific gravity.	76
	Engine oil too heavy.	Use proper viscosity oil.	54
	Loose or corroded connections.	Clean and tighten loose connections.	77
NOISY ALTERNATOR	Defective or worn belt.	Replace belt.	72
	Alternator brushes not seated.	Seat brushes.	—
	Alternator commutator worn too much.	Have service shop or YANMAR dealer recondition.	—
	Worn or defective bearings.	Have service shop replace bearings.	—

HYDRAULIC SYSTEM

SYSTEM DOES NOT OPERATE	Low oil level.	Fill to proper level.	68
	Hydraulic stop valve closed.	Open valve.	36
	Slow return valve closed.	Adjust valve position.	36
	Hydraulic oil filter clogged.	Clean or replace filter.	69
	Excessive load on hitch.	Reduce load.	—
	Restriction in system.	See your YANMAR dealer.	—
	Oil leaks.	Tighten fittings and lines.	—
	Defective pump.	See your YANMAR dealer.	—
SYSTEM OPERATES ERRATICALLY	Air in system.	Check for leaks and tighten fittings and lines.	66

PROBLEM	CAUSE	REMEDY	PAGE REFERENCE
SYSTEM OPERATES SLOWLY	Low oil temperature.	Warm up system to normal operating temperature.	27
	Hydraylic oil too heavy.	Drain and fill system with proper viscosity oil.	55, 69
	Engine speed too slow.	Operate engine at recommended speed.	29
	Low oil level.	Fill to proper level.	68
	Air in system.	Check for leaks and tighten fittings and lines.	66
SYSTEM DROPS SLOWLY OR DOES NOT DROP	Hydraulic stop valve closed.	Open valve.	36
	Slow-return valve set too slow.	Adjust valve position.	36
SYSTEM DROPS TOO FAST	Slow-return valve set too fast.	Adjust valve position.	36
SYSTEM OVERHEATING	Operator holding control lever in power position too long.	Return controls in neutral when not in use.	41
	Incorrect oil viscosity.	Use recommended viscosity oil.	55
	Low oil level.	Fill to proper level.	68
	Dirty oil.	Drain and fill with clean oil.	69
	Relief valve always open.	See your YANMAR dealer.	—

POWER TRAIN

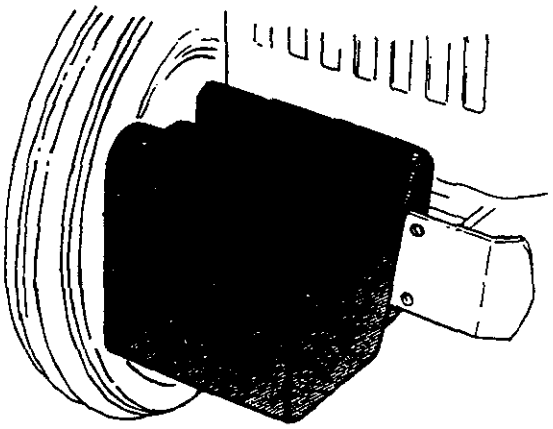
CLUTCH SLIPS	Clutch pedal free travel too little.	Adjust clutch pedal free travel.	60
	Operate riding clutch.	Do not ride clutch pedal.	30
	Worn clutch disk.	See your YANMAR dealer.	—
CLUTCH DOES NOT DISENGAGED	Clutch pedal free travel too much.	Adjust clutch pedal free travel.	60
	Clutch disk sticking to flywheel.	See your YANMAR dealer. Block clutch pedal down in disengaged position when storing for several months.	—

PROBLEM	CAUSE	REMEDY	PAGE REFERENCE
TRANSMISSION HARD TO SHIFT	Clutch not releasing.	Adjust clutch pedal free travel.	60
	Shift forks binding.	See your YANMAR dealer.	—
	Worn shift forks.	See your YANMAR dealer.	—
TRANSMISSION SLIPS OUT OF GEAR	Worn gears and forks.	See your YANMAR dealer.	—
TRANSMISSION NOISY	Transmission oil level low.	Add proper type of oil.	68
	Worn or broken gears.	See your YANMAR dealer.	—
DIFFERENTIAL LOCK IS NOT ENGAGED	Worn or broken fork/slider.	See your YANMAR dealer.	—
MACHINE PULLS TO ONE SIDE	Brakes adjusted unevenly.	Adjust brakes.	61
	Right and left tires inflated unevenly.	Inflate tires properly.	48
	Implement improperly adjusted.	See implement operator's manual.	—

YANMAR DIESEL TRACTOR

13. OPTIONAL EQUIPMENT

(1) Front weights



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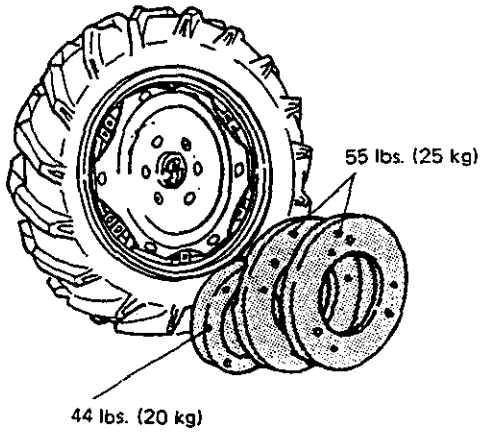
(2) Rear wheel weights



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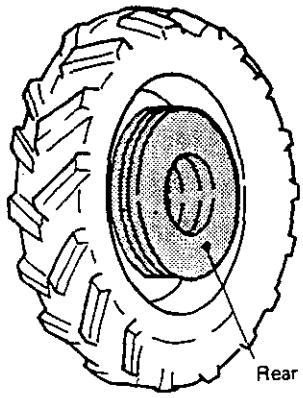
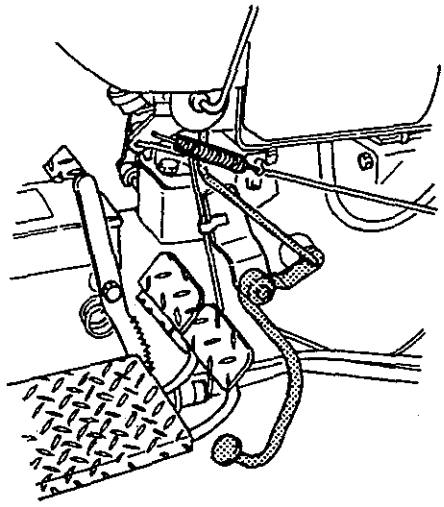


24052

(3) Foot throttle pedal



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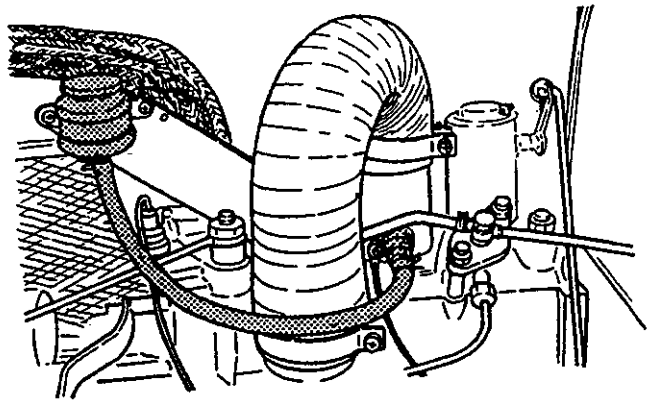
(4) Thermostart device



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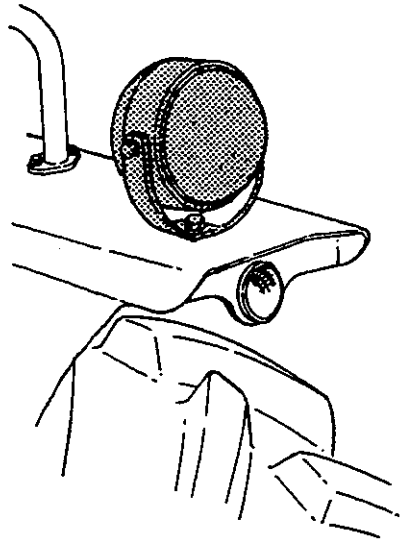
(5) Work light



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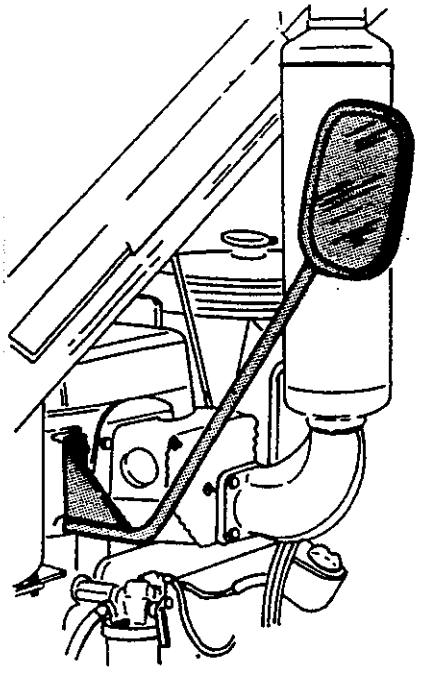
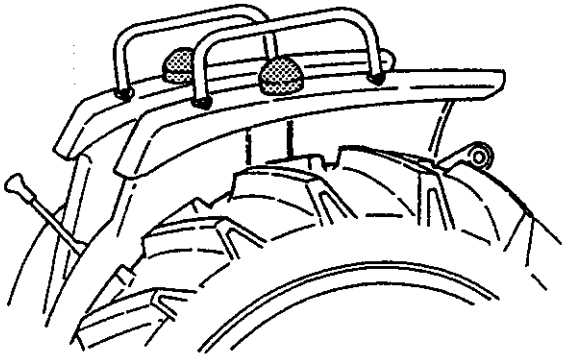
(6) Rearview mirror



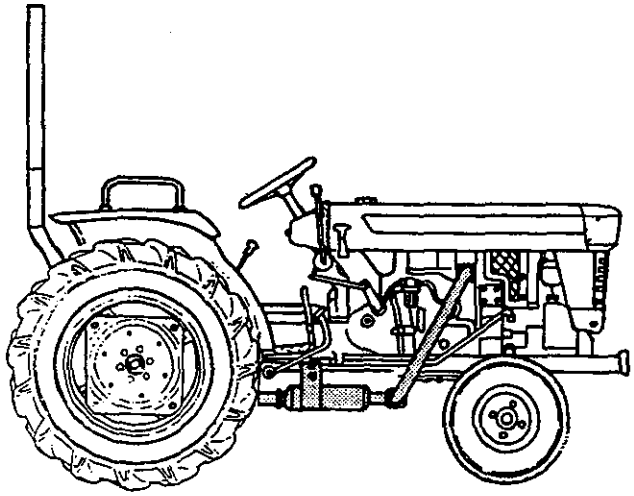
24100

(7) Turn signal lights



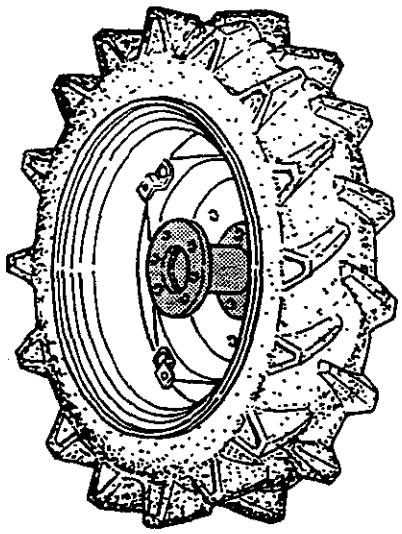
24101

(8) Underslung muffler (YM195/240 only)



24102A

(9) Dual wheel spacer

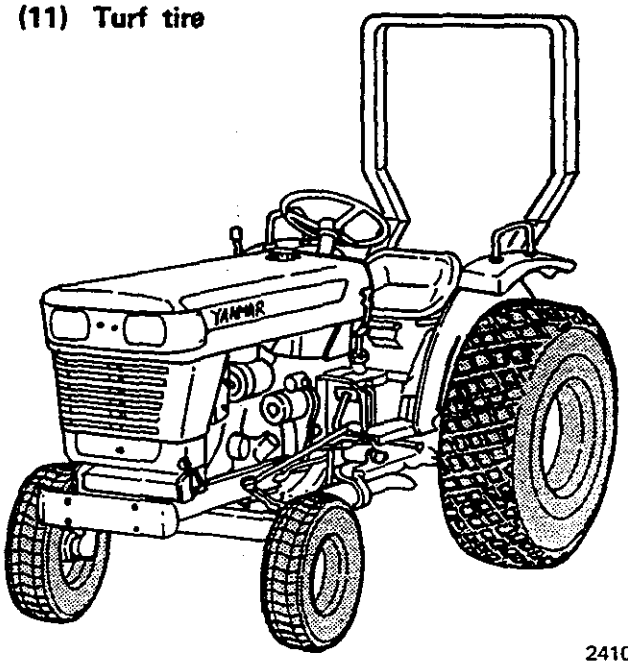


24103

(10) Large tire (Factory option)

Tractor	Front	Rear
YM195	4.00–15 (4PR)	9.5/9–24 (4PR)
YM195D	Same as STD.	9.5/9–24 (4PR)
YM240	5.00–15 (4PR)	11.2/10–24 (4PR)
YM240D	Same as STD.	11.2/10–24 (4PR)

(11) Turf tire



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Tractor	Front	Rear
YM195	20x8.00–10(4PR)	13.6–16(4PR)
YM195D	23x8.50–12(2PR)	13.6–16(4PR)
YM240	20x8.00–10(4PR)	13.6–16(4PR)
YM240D	27x8.50–15(2PR)	11.2/10–24(4PR)

(12) Adjustable tread (Factory option)

(13) Front PTO

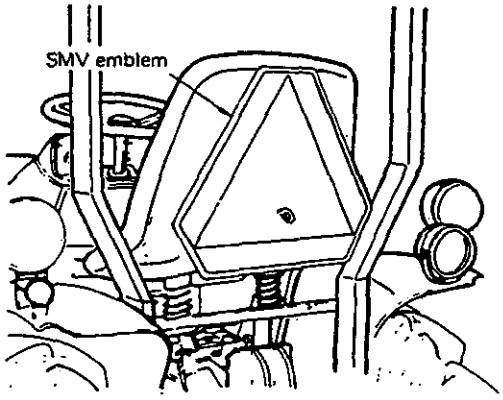
(14) 9cc Hydraulic pump (Factory option)

(15) Thermostat (Factory option)

(16) Power steering

(17) Took kit

(18) SMV emblem



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YANMAR DIESEL TRACTOR

14. LUBRICATION AND MAINTENANCE RECORD

[14-1]DAILY CHECK LIST

	No.	Item	Description	Reference
Inspections before starting engine	1	Diesel Fuel	Check fuel level and leakage.	
	2	Lubricating oil	1. Confirm each component using lubricating oil is fulled to the level indicated on the dipsticks. (Engine & Transmission) 2. Check engine oil leakage	
	3	Coolant	Confirm radiator is filled by the specified amount of coolant.	Use clean soft water
	4	Bolts and nuts	1. Check tightness of bolts and nuts for mounting between engine and front axle support, and clutch housing. 2. Check tightness of bolts and nuts for front and rear wheels and ROPS mounting bolts.	See page 62.
	5	Tires	1. Check tire inflation. 2. Check excessive weat on wheel lugs.	See page 48.
	6	Greasing	Lubricate 3 point hitch and other moving components.	See page 63.
	7	Reflectors, horn	Check conditions.	
	8	Pre-cleaner	Clean pre-cleaner	
	9	Fan belt and fan	Check fan belt tension and clean fan blade.	
	10	Radiator	Clean front lower grille, radiator screen and core.	
	11	Battery	1. Keep clean and dry the top surface of battery. 2. Check electrolyte level.	Use only distilled water to refill to the upper level.
	12	Brakes & Clutch	Check pedal free travels of brake and clutch.	See page 60, 61.

[14-1]DAILY CHECK LIST

	No.	Item	Description	Reference
Check When engine is started	13	Oil pressure lamp	Confirm that lamp glows when main switch is turned one step (ON) position.	
	14	Hour meter	Confirm that needle moves along with increase in engine speed.	
	15	Engine	1. Confirm that color of exhaust gas is not black 2. Check any unusual noises.	
	16	Oil pressure, and charging indicator lamps	Confirm that all lamps stop glowing when engine runs at more than 1000 rpm.	
Check when operating tractor	17	Clutch	1. Check clutch pedal free travel. 2. Confirm that clutch is to be disengaged competely.	See page 60.
	18	Steering wheel	1. Check steering wheel for excessive play. 2. Confirm that steering wheel is not too heavy to turn, and does not vibrate.	See page 61.
	19	Brakes	1. Confirm that both left and right brake pedals and adjusted evenly. 2. Check brake pedal free travel. 3. Check effectiveness of parking brake.	See page 61.
Re-check	20	Brakes & Clutch	Check overheat of brakes and clutch.	
Inspection after operation	21	Greasing	1. Grease 3-point hitch and other moving components. 2. Grease all components that are susceptible to corrosion.	See page 63.
	22	Fuel	Refill fuel fully.	
	23	Fuel strainer in the fuel tank	Clean strainer before filling the tank.	See page 73.

PERIODIC CHECK LIST

IMPORTANT

This chart excludes daily or every 10 hours check and service.

Use "DAILY CHECK LIST" on net page every day.

Recommended service intervals are for average conditions. Service **MORE OFTEN** if tractor is operated under severe conditions.

When servicing each item which is required at the time, note the date in each column.

(Periodically)

(● : Checking ★ : Changing)

No.	Item	Hour meter 20	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	Remarks
1	Renew front wheel hub grease							#						#												#	See YANMAR dealer.
2	Check battery electrolyte level		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	See page 76.
3	Check battery electrolyte *specific gravity & charge*							●						●						●						●	See page 76.
4	Clean air cleaner element			●		●		●		●		●		★		●		●		●		●		●		★	See page 65.
5	Change air cleaner element													●												●	See page 65
6	Check fan belt	●	●	●		●		●		●		●		●		●		●		●		●		●		●	See page 72
7	Clean fan blade and radiator core	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	See page 72.
8	Flush radiator													●												●	See page 71.
9	Wash fuel filter			★		●		★		●		★		●		★		●		★		●		★		●	See page 73
10	Change fuel filter element			●				●				●				●				●				●			See page 74
11	Change engine oil	●	●	●		●		●		●		●		●		●		●		●		●		●		●	See page 67
12	Change oil filter		●			●				●				●				●				●				●	See page 68.
13	Wash crank case interior							●						●						●						●	
14	Check valve clearance					#								#												#	See YANMAR dealer
15	Check fuel injection nozzle					#								#												#	See YANMAR dealer
16	Check transmission oil level		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	See page 69.
17	Change transmission oil					●								●						●						●	See page 69
18	Clean transmission oil filter					●								★						●						★	See page 69.
19	Change transmission oil filter													●												●	
20	Tightness of steering system			●		●		●		●		●		●		●		●		●		●		●		●	
21	Check front axle gear oil level (only 4 wheel drive)		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	See page 70
22	Change front axle gear oil (only 4 wheel drive)							●						●						●						●	See page 70
23	Check coolant temperature indicator lamp			●		●		●		●		●	●	●		●		●		●		●		●		●	See page 78
24	Check air intake system for leaks													●												●	See page 66

YANMAR DIESEL TRACTOR

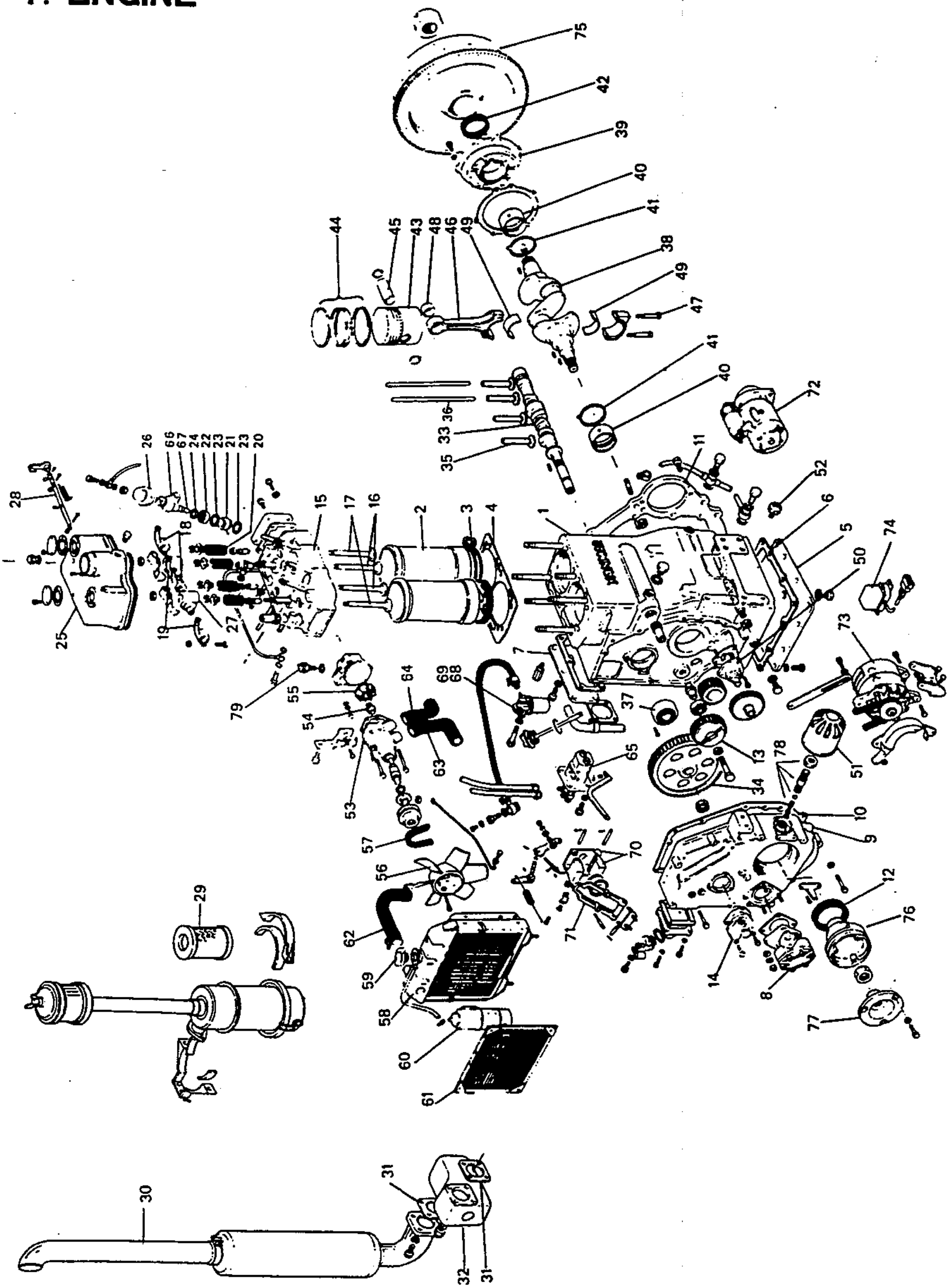
15. PARTS LIST

* We hope that the following illustrations and parts lists will be helpful when you are ordering parts from your Yanmar dealer.
* Each illustration is followed by the appropriate parts list.
* When ordering parts and/or accessories, clearly indicate the (1) tractor model and serial number, (2) engine model and serial number, and (3) transmission number, as well as the name and number of each part. This will insure that you always receive the parts you ordered.
* Once again, we urge you to carefully read the operation manual.

Thank you.

CONTENTS

1. ENGINE



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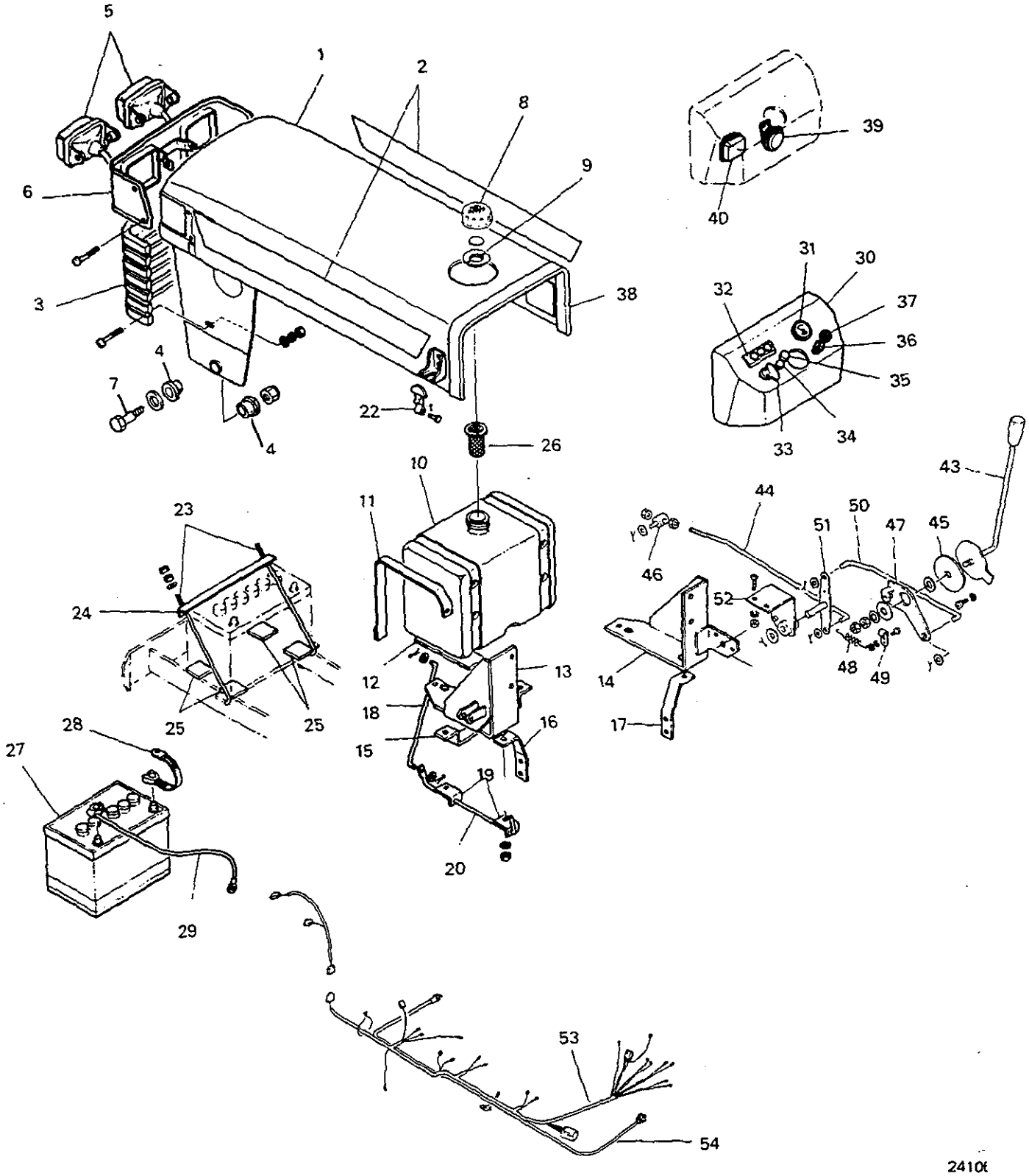
1. ENGINE

No.	Name of part	Q'ty/unit
1-1	Cylinder block	1
1-2	Cylinder liner	2
1-3	Rubber packing	4
1-4	Gasket, cylinder head	1
1-5	Oil pan, cylinder lower	1
1-6	Packing, oil pan	1
1-7	Cover, fuel pump box	1
1-8	Pump assy, hydraulic	1
1-9	Case, timing gear	1
1-10	*Packing, timing gear case*	1
1-11	Flange, mounting	1
1-12	Oil seal (gear case side)	1
1-13	Gear, hydraulic oil pump	1
1-14	Gear unit, tachometer	1
1-15	Cylinder head	1
1-16	Valve (INT)	2
1-17	Valve (EXH.)	2
1-18	Rocker arm	2
1-19	Rocker arm	2
1-20	*Spring, intake & exhaust*	4
1-21	Pre-combustion chamber, front	2
1-22	Pre-combustion chamber, rear	2
1-23	Packing, pre-combustion chamber	4
1-24	Insulator, fuel injection valve	2
1-25	Bonnet	1
1-26	Flange, fuel injection nozzle	2
1-27	Support, valve rocker arm	2
1-28	Shaft, decompression	1
1-29	Element, air cleaner	1
1-30	Extension pipe, muffler	1
1-31	Gasket, muffler	2
1-32	Exhaust manifold	1
1-33	Camshaft	1
1-34	Gear, camshaft	1
1-35	Tappet	4
1-36	Push rod	4
1-37	Ball bearing, camshaft	1
1-38	Crankshaft	1
1-39	Housing, main bearing	1
1-40	Main bearing	2
1-41	Thrust bearing	2
1-42	Oil seal, crankshaft	1
1-43	Piston	2
1-44	Piston ring set	2
1-45	Pin, piston	2

No.	Name of part	Q'ty/unit
1-46	Connecting rod	2
1-47	Bolt, connecting rod	4
1-48	Bush, piston pin	2
1-49	Crank pin bearing	2
1-50	Pump, lub. oil	1
1-51	Filter, lub. oil	1
1-52	Sender, oil pressure	1
1-53	Pump, cooling water	1
1-54	Seal, pump shaft	1
1-55	*Impeller, cooling water pump*	1
1-56	Fan	1
1-57	V-belt	1
1-58	Radiator	1
1-59	Cap, radiator	1
1-60	Sub-tank, radiator	1
1-61	Screen, radiator	1
1-62	Pipe (A), cylinder-radiator	1
1-63	Pipe (B), radiator-pump	1
1-64	Pipe (C), pump-cylinder	1
1-65	*Pump, fuel injection*	1
1-66	Valve Ass'y, fuel injection	2
1-67	Valve with case	2
1-68	Strainer Ass'y, fuel	1
1-69	Element,fuel strainer	1
1-70	Support assy, governor weight	1
1-71	Lever, governor	1
1-72	Starting motor	1
1-73	Generator	1
1-74	Regulator	1
1-75	Flywheel	1
1-76	V-pulley	1
1-77	Adaptor, front PTO	1
1-78	Control valve Ass'y, lub. oil	1
1-79	SENDER, c.w. temp.	1

2. HOOD & THROTTLE

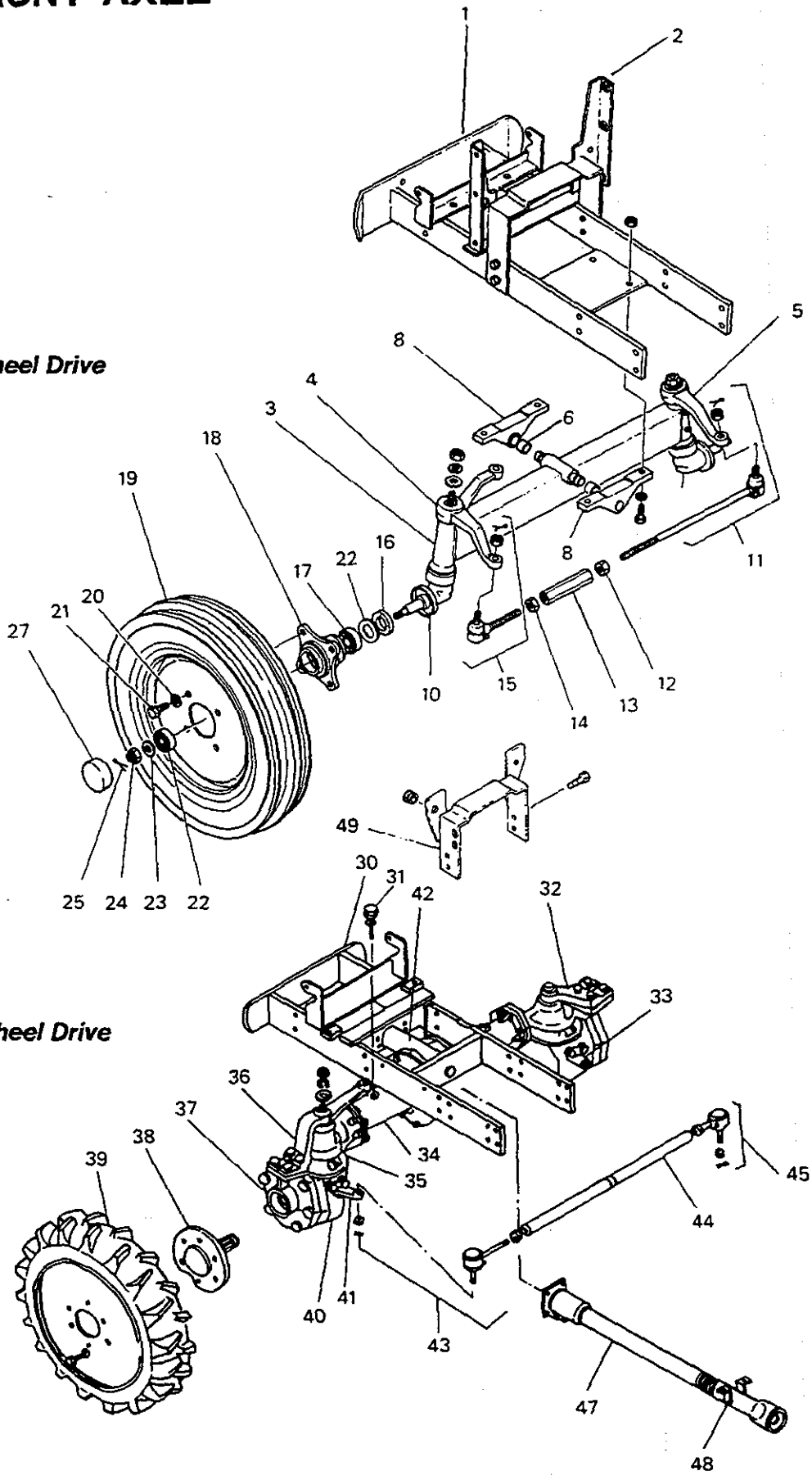


2. HOOD & THROTTLE

No.	Name of part	Q'ty/unit
2-1	Hood	1
2-2	Decal, hood	2
2-3	Grille, front	1
2-4	Bush, food hinge	4
2-5	Headlight	2
2-6	Panel, hood front	1
2-7	Bolt, food hinge	2
2-8	Cap, fuel oil tank	1
2-9	Packing, cap	1
2-10	Fuel tank	1
2-11	Clamp, fuel tank	2
2-12	Packing, fuel tank	2
2-13	Bracket (L), panel box	1
2-14	Bracket (R), panel box	1
2-15	Bracket, fuel oil tank front	1
2-16	Bracket, tank BL	1
2-17	Bracket, tank BR	1
2-18	Rod, decompression connector	1
2-19	Bracket, decompression lever	2
2-20	Lever, decompression	1
2-21		
2-22	Lock, hood	2
2-23	Rod, battery clamp	2
2-24	Clamp, battery	1
2-25	Cushion rubber	4
2-26	Strainer, fuel tank	1
2-27	Battery	1
2-28	Negative cable, battery	1
2-29	Positive cable battery	1
2-30	Panel box	1
2-31	Hourmeter	1
2-32	Light ass'y, indicator	1
2-33	Switch, turn signal	1
2-34	Button, horn	1
2-35	Cap, horn button	1
2-36	Switch, light	1
2-37	Key switch	1
2-38	Packing, hood	1
2-39	Horn	1
2-40	Fuse box	1
2-41		
2-42		
2-43	Lever, throttle	1
2-44	Rod (A), throttle	1
2-45	Friction disc	1

No.	Name of part	Q'ty/unit
2-46	Adjuster, throttle	1
2-47	Lever (A), throttle link	1
2-48	Spring, throttle	1
2-49	Hook, spring	1
2-50	Rod (B), throttle link	1
2-51	Lever (B), throttle link	1
2-52	Bracket, link cover	1
2-53	Wire harness (A)	1
2-54	Cable, hourmeter	1

3. FRONT AXLE


2-Wheel Drive
4-Wheel Drive
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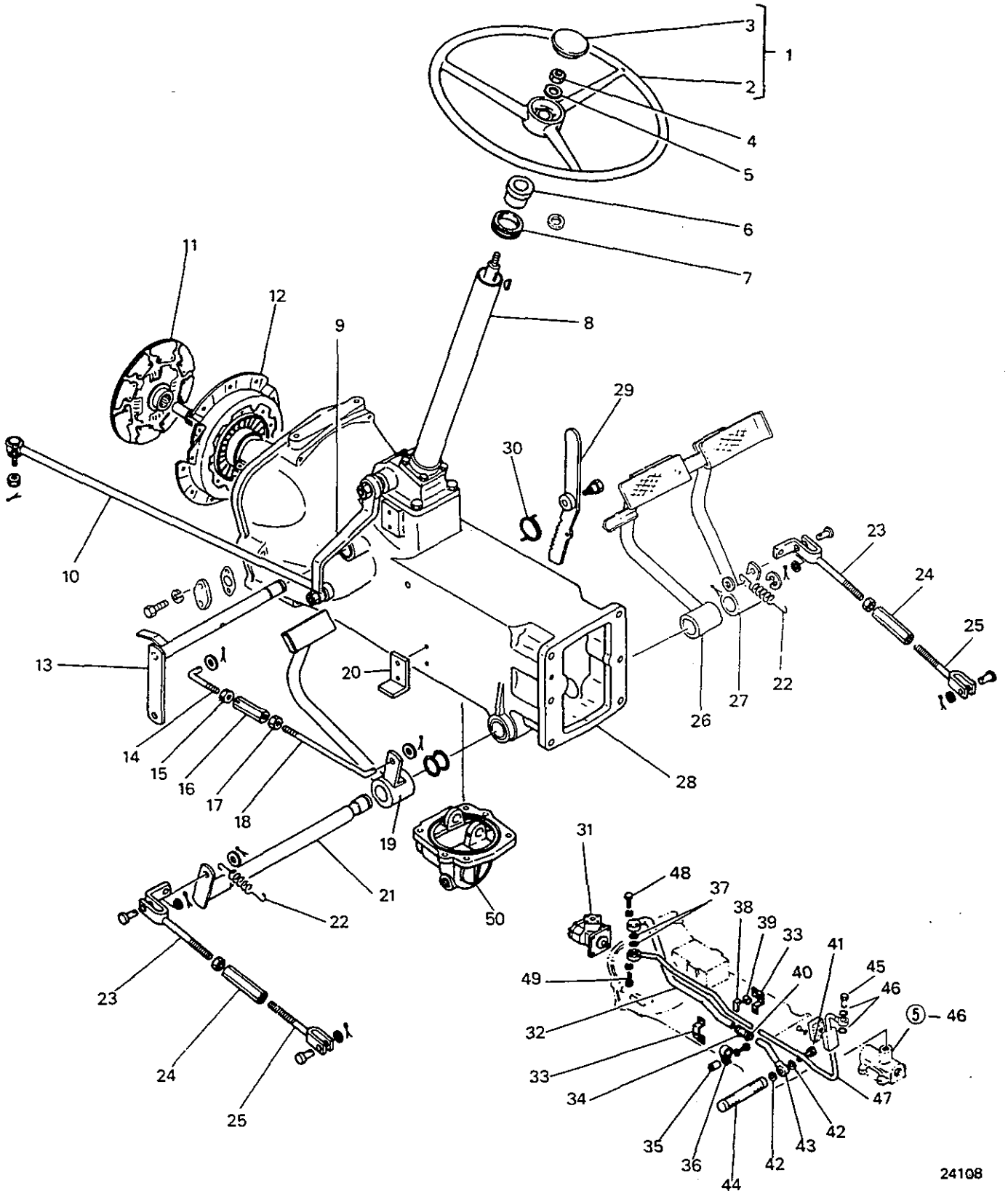
3. FRONT AXLE

No.	Name of part	Q'ty/unit
3-1	Bracket, front axle	1
3-2	Bracket, radiator	1
3-3	Axle, front	1
3-4	Arm (L), knuckle	1
3-5	Arm (R), knuckle	1
3-6	Bush	2
3-7		
3-8	Support, center pin	2
3-9		
3-10	Kingpin	2
3-11	Tie-rod	1
3-12	Nut (LH screw)	1
3-13	Turnbuckle	1
3-14	Nut (RH screw)	1
3-15	Tie-rod end ass'y	1
3-16	Oil seal	2
3-17	Ball bearing	2
3-18	Hub, front wheel	2
3-19	Tire ass'y, front	2
3-20	Spring washer 14	8
3-21	Bolt, M14 x 25	8
3-22	Ball bearing	2
3-23	Washer 20	2
3-24	Nut M20	2
3-25	Cotter pin	2
3-26		
3-27	Cover, front wheel hub	2
3-28		
3-29		
3-30	Bracket, front axle	1
3-31	Oil plug	1
3-32	Support, king pin (R)	1
3-33	Arm (R), knuckle	1
3-34	Axle case, front	2
3-35	Gear case, front drive (upper)	2
3-36	Support, king pin (L)	1
3-37	Bearing case, front	2
3-38	Spindle, front wheel	2
3-39	Tire ass'y, front wheel	2
3-40	Gear case, front drive (lower)	2
3-41	Arm (L), knuckle	1
3-42	Housing, front differential	1
3-43	Tie-rod end ass'y RL	1
3-44	Tie-rod	1

No.	Name of part	Q'ty/unit
3-45	Tie-rod end ass'y LR	1
3-46		
3-47	Cover, propeller shaft, front	1
3-48	Cover, propeller shaft, rear	1
3-49	Bracket, radiator	1

4. STEERING. CLUTCH, BRAKES AND HYDRAULIC LINES

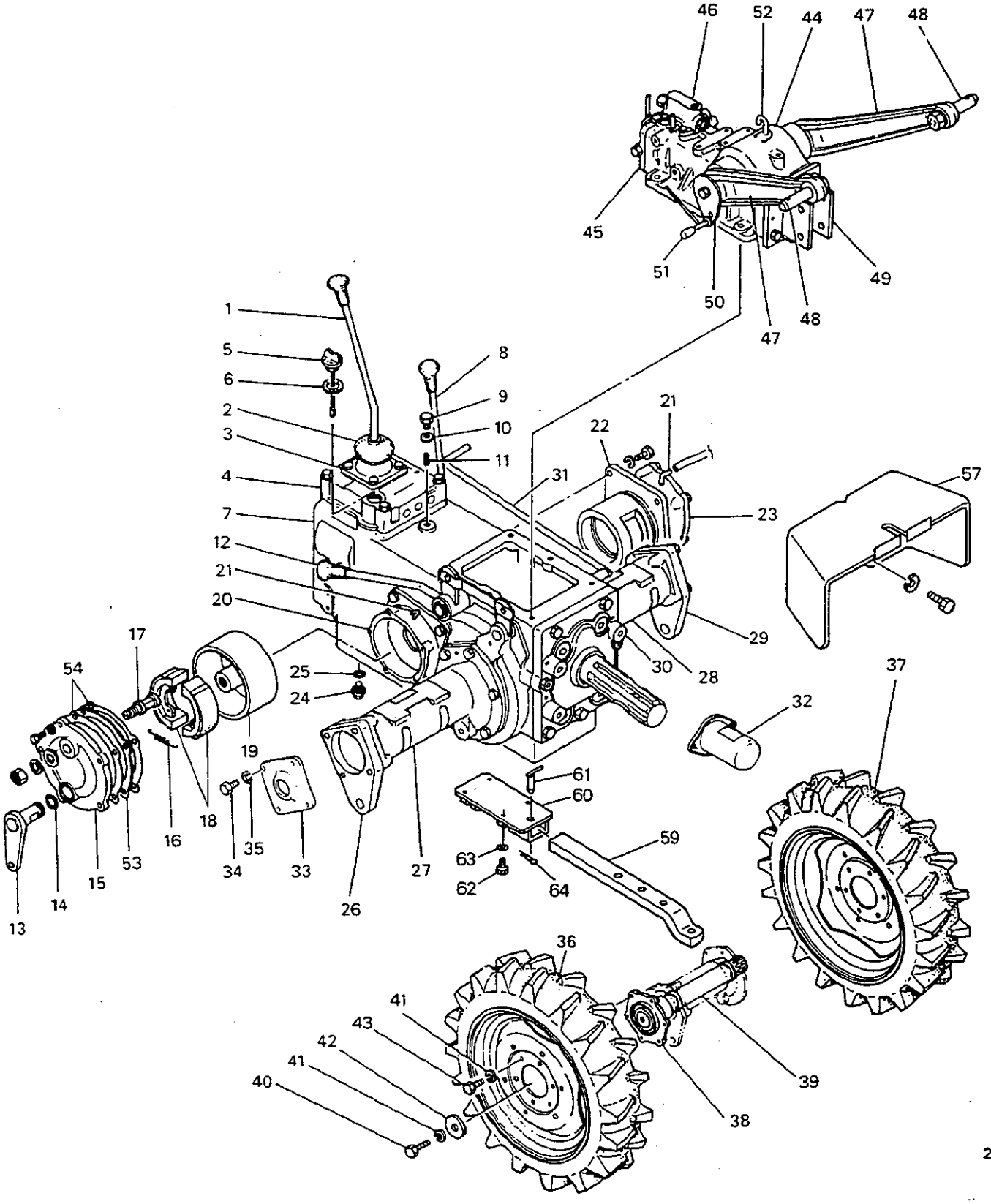


4. STEERING, CLUTCH, BRAKES AND HYDRAURIC LINES

No.	Name of part	Q'ty/unit
4-1	Steering wheel ass'y	1
4-2	Steering wheel	1
4-3	Cap, steering wheel	1
4-4	Lock nut	1
4-5	Washer 12,5 x 22 x 2.3	1
4-6	Bush, column	1
4-7	Grommet	1
4-8	Gear ass'y, steering	1
4-9	Arm, pitman	1
4-10	Drag rod ass'y	1
4-11	Clutch disc ass'y	1
4-12	Pressure plate ass'y	1
4-13	Shaft with lever, clutch release	1
4-14	Rod (LH screw), clutch	1
4-15	Nut 10 (LH screw)	1
4-16	Turnbuckle 10 x 70	1
4-17	Nut 10 (RH screw)	1
4-18	Rod (RH screw), clutch	1
4-19	Clutch pedal	1
4-20	Stopper, clutch pedal	1
4-21	Shaft, brake pedal	1
4-22	Spring, brake pedal	2
4-23	Rod (LH screw)	2
4-24	Turnbuckle 10 x 90	2
4-25	Rod (RH screw)	2
4-26	Pedal, inside	1
4-27	Pedal, outside	1
4-28	Housing, clutch	1
4-29	Lever, brake pedal lock	1
4-30	Spring, brake pedal lock	1
4-31	Pump ass'y, hydraulic	1
4-32	Pipe (A), low pressure	1
4-33	Clamp	2
4-34	Hose band	2
4-35	Spacer, low pressure pipe clamp	1
4-36	Clamp, low pressure	1
4-37	O-ring P20	2
4-38	Retainer, pipe clamp	1
4-39	Protector, pipe clamp	1
4-40	Pipe (C), low pressure, rubber	1
4-41	Bolt 28, pipe joint	1
4-42	Packing 28, copper	2
4-43	Pipe (B), low pressure	1
4-44	Strainer ass'y	1

No.	Name of part	Q'ty/unit
4-45	Bolt 18, pipe joint	1
4-46	Packing 18, copper	2
4-47	Pipe, high pressure	1
4-48	Bolt, M6 x 40	3
4-49	Bolt, M6 x 35	4
4-50	Housing, front drive gear	1

5. TRANSMISSION, REAR AXLE AND HYDRAULIC LIFT

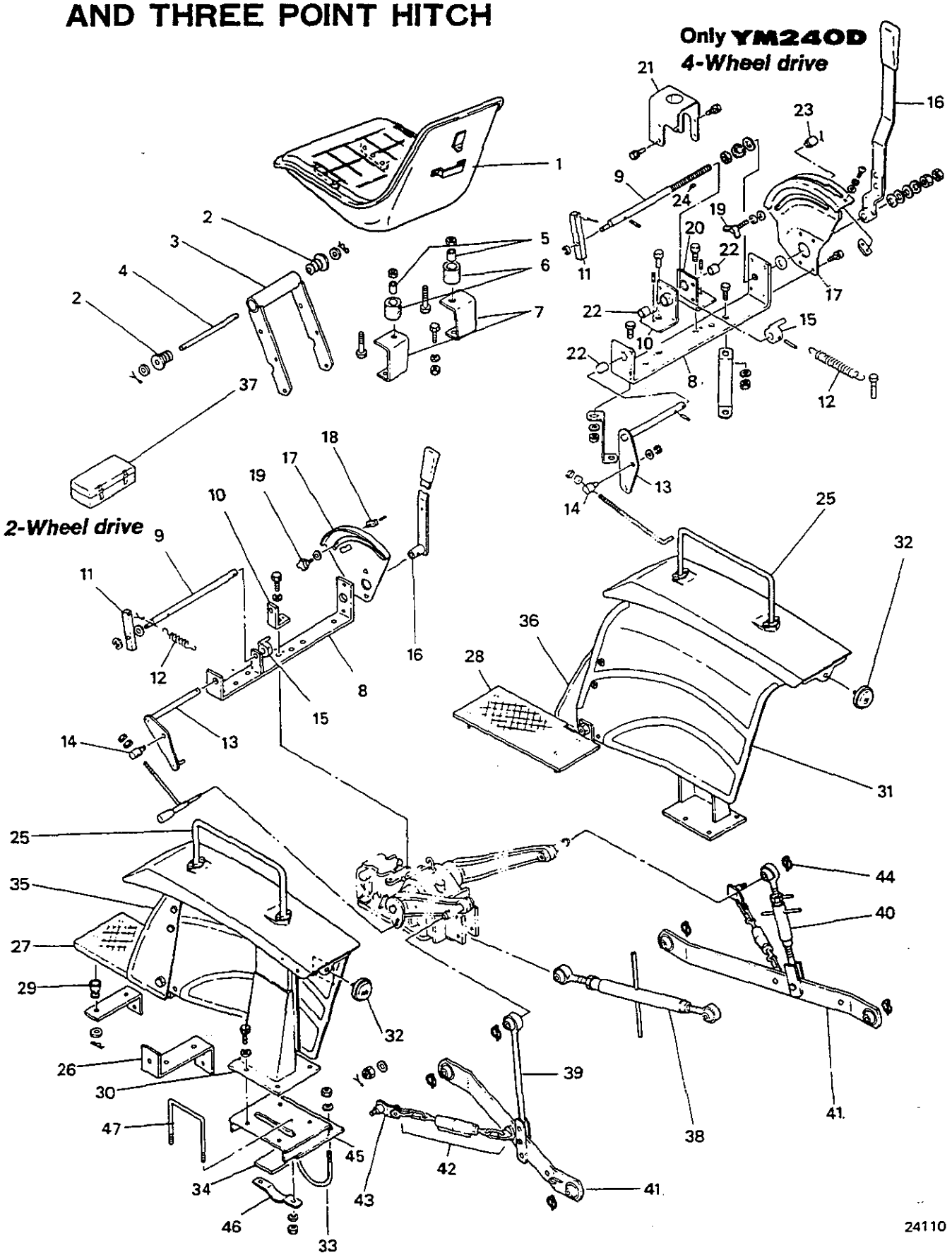


5. TRANSMISSION, REAR AXLE AND HYDRAULIC LIFT

No.	Name of part	Q'ty/unit
5-1	Lever ass'y, gear shift complete	1
5-2	Boot, rubber	1
5-3	Retainer, gear shift lever	1
5-4	Cover, transmission housing	1
5-5	Cap, with dipstick	1
5-6	O-ring	1
5-7	Housing, transmission	1
5-8	Lever, range shift	1
5-9	Plug M8	1
5-10	Packing M8, copper	1
5-11	Spring pin 6 x 14	1
5-12	Lever, P.T.O. shift	1
5-13	Camshaft, brake	2
5-14	O-ring P20	2
5-15	Cover (L), brake	1
5-16	Spring, brake shoe	4
5-17	Anchor pin, brake	2
5-18	Brake shoe	4
5-19	Drum, brake	2
5-20	Carrier (L), differential	1
5-21	Joint, air breather	2
5-22	Carrier (R), differential	1
5-23	Cover (R), brake	1
5-24	Plug 14	1
5-25	O-ring P14	1
5-26	Bracket (L), oil seal	1
5-27	Housing (L), rear axle	1
5-28	Housing (R), rear axle	1
5-29	Bracket (R), oil seal	1
5-30	Cover, transmission rear	1
5-31	Pedal, differential lock	1
5-32	Cover, P.T.O. shaft	1
5-33	Cover, oil seal	2
5-34	Bolt, 10 x 35	8
5-35	Spring washer 10	8
5-36	Tire (L) ass'y, rear	1
5-37	Tire (R) ass'y, rear	1
5-38	Hub, rear wheel	2
5-39	Shaft, rear axle	2
5-40	Bolt 16 x 45	4
5-41	Spring washer 16	16
5-42	Washer, axle	4
5-43	Bolt 16 x 30	12
5-44	Housing, hydraulic cylinder	1

No.	Name of part	Q'ty/unit
5-45	Head, cylinder	1
5-46	Valve ass'y, control	1
5-47	Arm, lift	2
5-48	Pin, lift arm	2
5-49	Hinge,	1
5-50	Arm, feed back	1
5-51	Rod, feed back	1
5-52	Pipe, air breather	1
5-53	Spacer, brake cover	2
5-54	Packing, brake cover	2
6-55		1
5-56		1
5-57	Master shield, P.T.O.	1
5-58		1
5-59	Drawbar	1
5-60	Bracket, drawbar	1
5-61	Pin 22 x 75, drawbar	1
5-62	Bolt M14 x 30	4
5-63	Spring washer 14	4
5-64	Snap pin 19	1

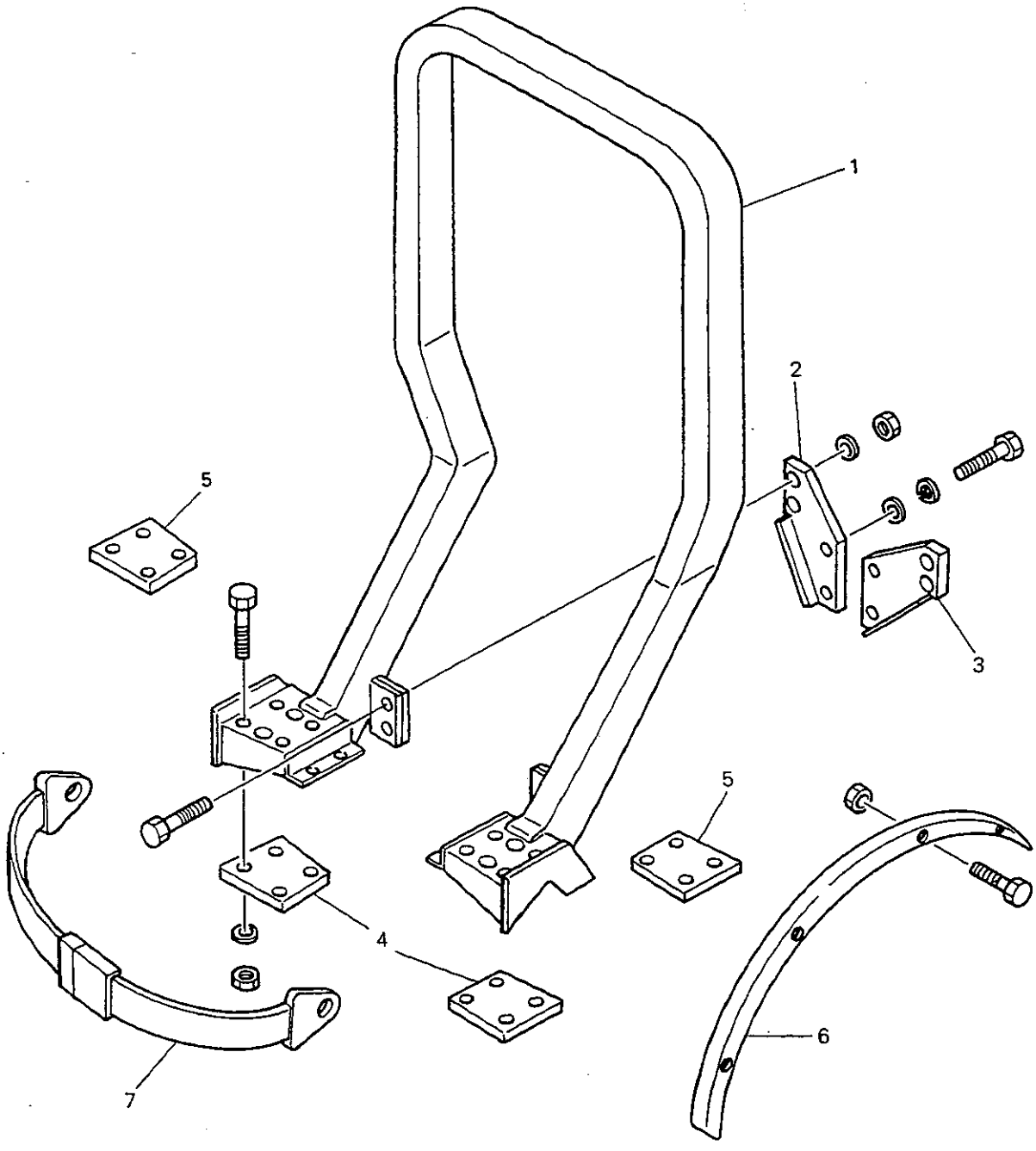
6. REAR FENDER, SEAT, HYDRAULIC CONTROL AND THREE POINT HITCH



6. REAR FENDER, SEAT, HYDRAULIC CONTROL AND THREE POINT HITCH

No.	Name of part	Q'ty/unit
6-1	Operator's seat	1
6-2	Damper, operator's seat	2
6-3	Bracket, operator's seat	1
6-4	Pin, hinge	1
6-5	Spring, cushion rubber	2
6-6	Cushion rubber	2
6-7	Bracket, cushion	1
6-8	Bracket, control	1
6-9	Shaft, control lever	1
6-10	Hinge, shaft	1
6-11	Lever (A), feed back	1
6-12	Spring	1
6-13	Shaft, feed back	1
6-14	Retainer	1
6-15	Lever (B), feed back	1
6-16	Lever, control	1
6-17	Guide, control lever	1
6-18	Stopper	1
6-19	Wing bolt	1
6-20	Hinge, shaft	1
6-21	Cover, link	1
6-22	Bush 13 x 15 x 15	3
6-23	Stopper	1
6-24	Key 3 x 13	1
6-25	Bar, assist	2
6-26	Bracket (R), step	2
6-27	Step (L)	1
6-28	Step (R)	1
6-29	Cushion rubber, step	8
6-30	Fender (L)	1
6-31	Fender (R)	1
6-32	Reflector	2
6-33	U-bolt 10	2
6-34	Packing fender	2
6-35	Sub-fender (L)	1
6-36	Sub-fender (R)	1
6-37	Tool box	1
6-38	Link ass'y	1
6-39	Link ass'y (L), lift	1
6-40	Link ass'y (R), lift	1
6-41	Lower link	2
6-42	Check chain ass'y	2
6-43	Hinge, check chain	2
6-44	Pin ass'y, ball socket	8
6-45	Support, fender	2
6-46	Retainer, U-bolt	2
6-47	U-bolt (B), 10	2

7. ROLLOVER PROTECTIVE STRUCTURE (ROPS)

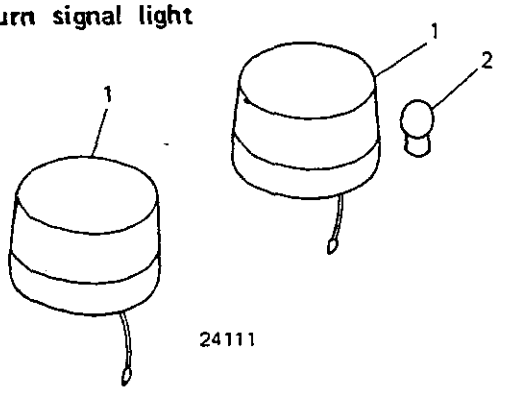


7. ROLLOVER PROTECTIVE STRUCTURE (ROPS)

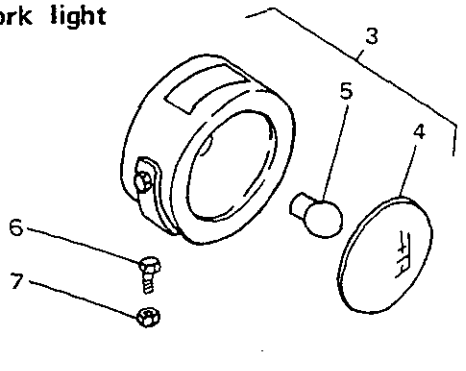
No.	Name of part	Q'ty/unit
7-1	ROPS	1
7-2	Rear mount gusset RH	1
7-3	Rear mount gusset LH	1
7-4	Bottom attachment weldment	2
7-5	Rubber pad	2
7-6	Guard extension	1
7-7	Seat belt	1

8. OPTIONAL EQUIPMENT

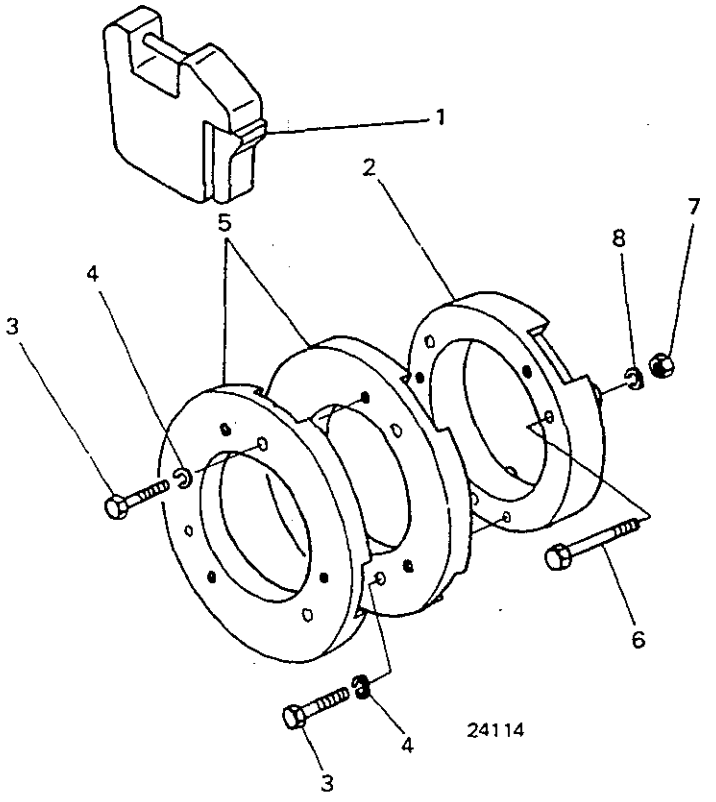
Turn signal light



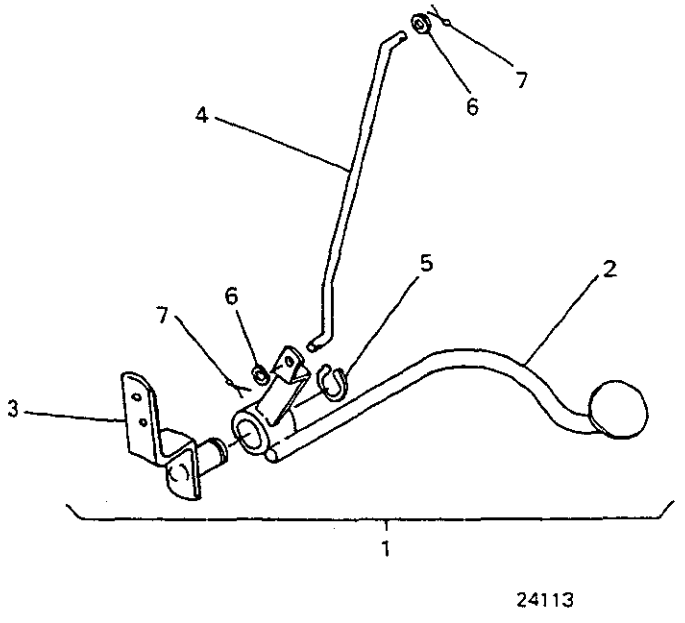
Work light



Front weight & rear wheel weight



Throttle pedal



8. OPTIONAL EQUIPMENT

Turn signal light and Work light

No.	Name of part	Q'ty/unit
1	Turn signal light ass'y	2
2	Bulb 12V–20W	2

No.	Name of part	Q'ty/unit
1	Work light ass'y	1
2	Lens, work light	1
3	Bulb, 12V–20W	1
4	Bolt M8 x 18	1
5	Nut M8	1

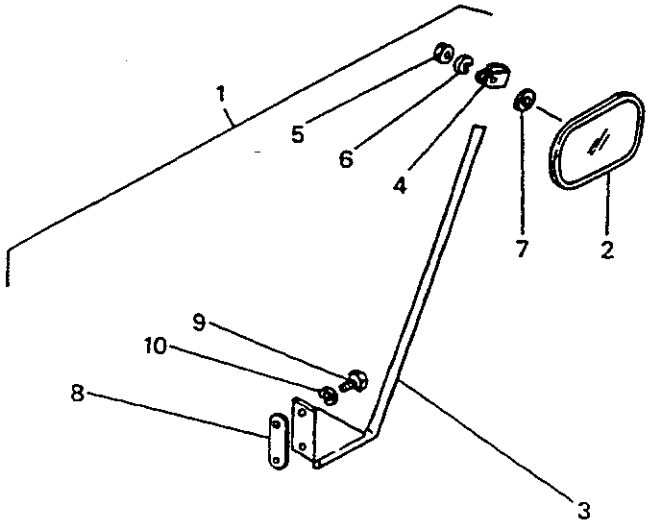
Throttle pedal

No.	Name of part	Q'ty/unit
1	Throttle pedal ass'y	1
2	Throttle pedal	1
3	Stay, pedal	1
4	Rod, throttle pedal	1
5	Circlip 20	1
6	Washer 8	2
7	Cotter pin 1.6 x 18	2

Front weight & rear wheel weight

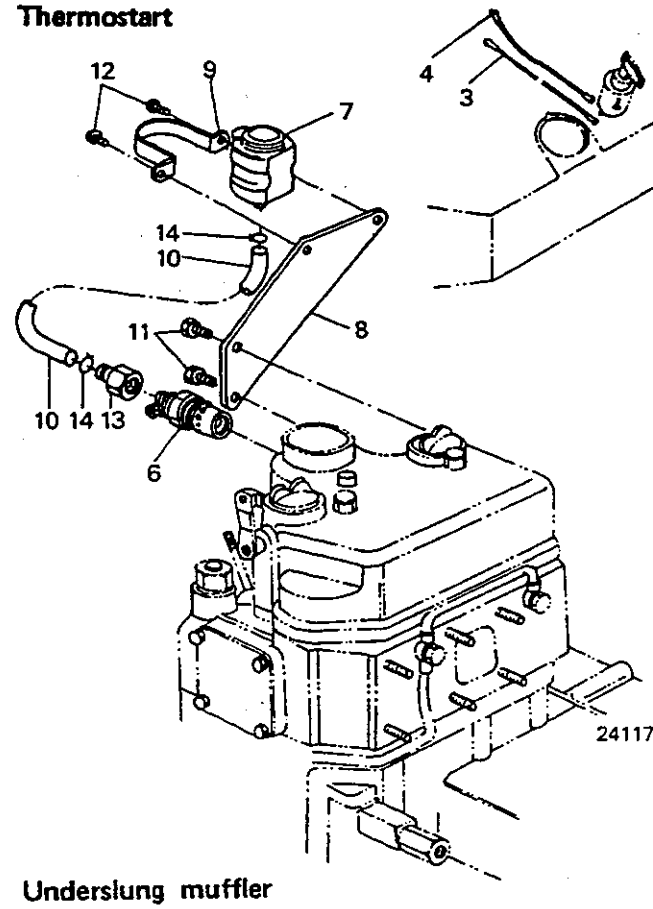
No.	Name of part	Q'ty/unit
1	Weight 20, front	5
2	Weight 20, rear wheel	2
3	Bolt M16 x 60	12
4	Spring washer 16	12
5	Weight 25, rear wheel	4
6	Bolt M16 x 110	6
7	Nut M16	6
8	Spring washer 16	6

Rearview mirror



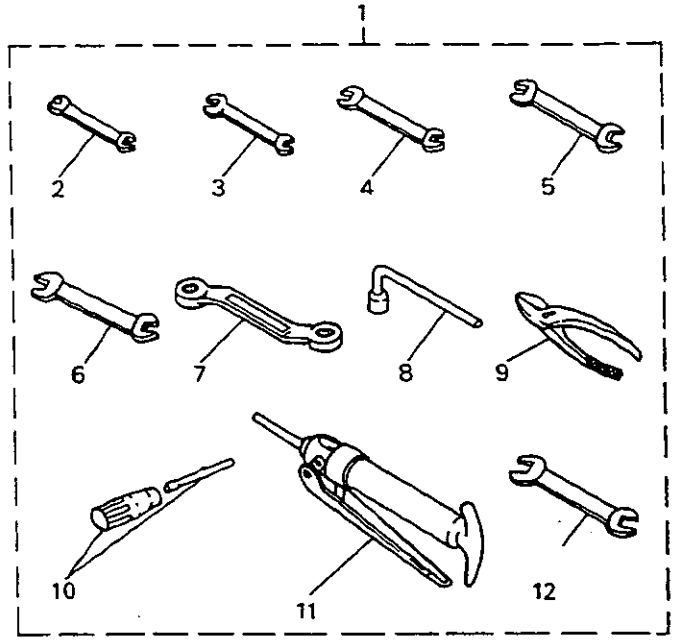
24115

Thermostart



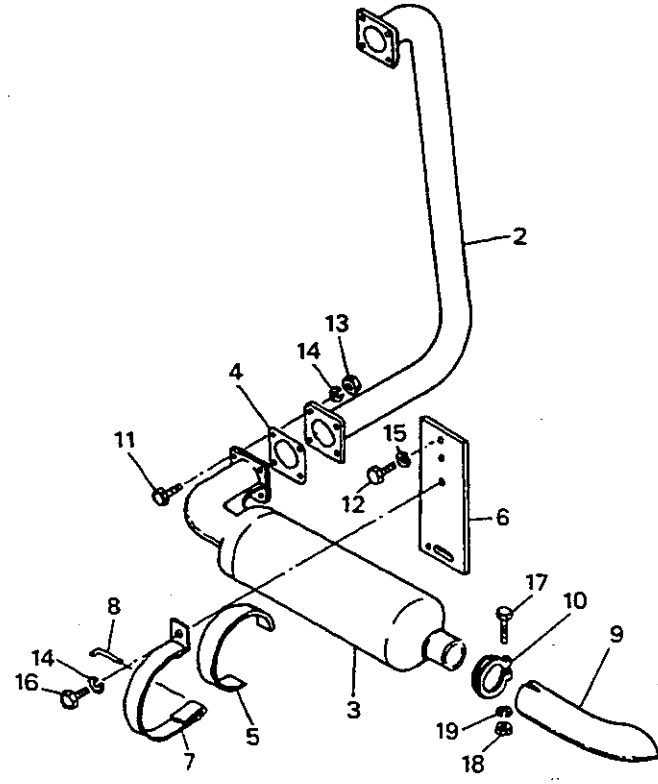
24117

Tools



23116

Underslung muffler



24118

Rearview mirror

No.	Name of part	Q'ty/unit
1	Rearview mirror ass'y	1
2	Rearview mirror	1
3	Stay, rearview mirror	1
4	Clamp 12, rearview mirror	1
5	Nut M8	1
6	Spring washer M8	1
7	Packing, rearview mirror	1
8	Packing, rearview mirror	1
9	Bolt M8 x 20	2
10	Spring washer 8	2

Tools

No.	Name of part	Q'ty/unit
1	Tool kit	1
2	Wrench 8 x 10	1
3	Wrench 10 x 13	1
4	Wrench 17 x 19	1
5	Wrench 22 x 24	1
6	Wrench 27 x 30	1
7	Box wrench 17 x 19	1
8	Rim wrench 26	1
9	Pliers 200	1
10	Screw driver, changeable blade type	1
11	Grease pump	1
12	Wrench 26 x 32	1

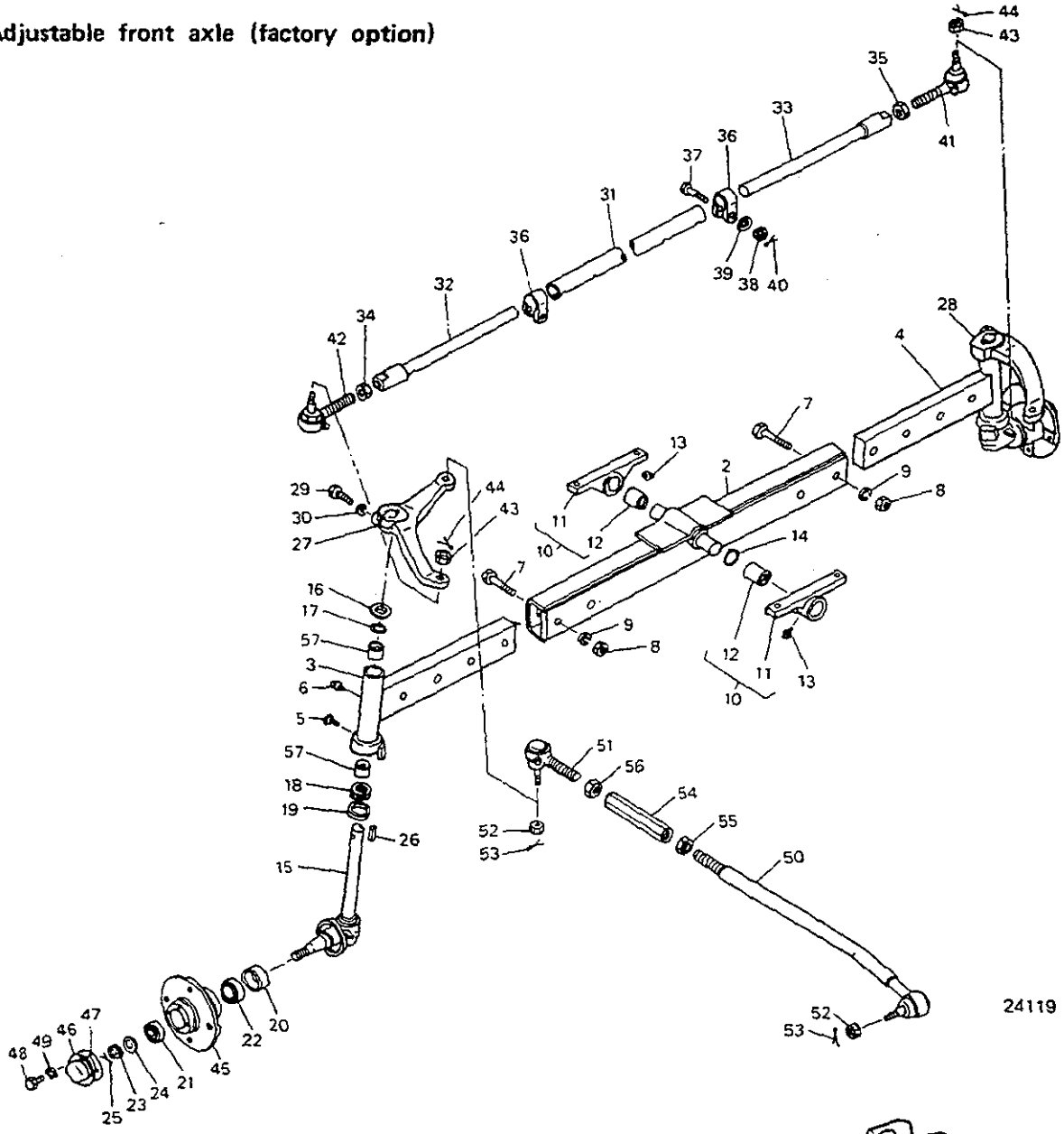
Thermostart

No.	Name of part	Q'ty/unit
1	Thermostart ass'y	1
2		
3	Lead wire (A), thermostart	1
4	Lead wire (B), thermostart	1
5		
6	Plug, thermostart	1
7	Header tank ass'y	1
8	Bracket, header tank	1
9	Band, header tank	1
10	Pipe, fuel	1
11	Bolt M8 x 12	2
12	Screw M6 x 8	2
13	Joint, fuel pipe	1
14	Clamp, fuel pipe holder	2

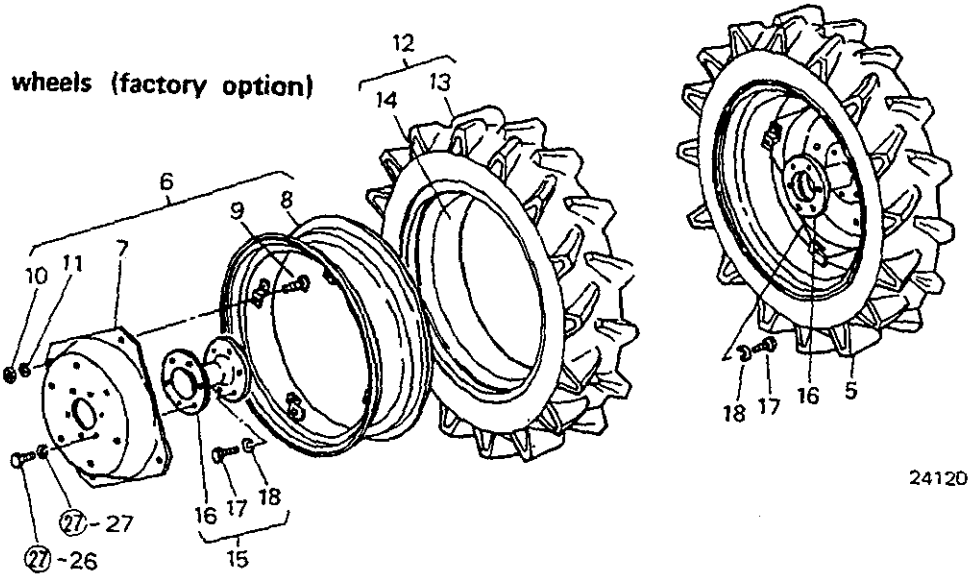
Underslung muffler

No.	Name of part	Q'ty/unit
1	Muffler ass'y, underslung	1
2	Pipe, underslung exhaust	1
3	Muffler	1
4	Gasket	1
5	Packing, muffler band	1
6	Bracket, underslung	1
7	Band, underslung	1
8	Pin, muffler band locking	1
9	Extension, muffler	1
10	Clamp, extension	1
11	Bolt M8 x 25	4
12	Bolt M10 x 35	2
13	Nut M8	4
14	Spring washer 8	4
15	Spring washer 10	2
16	Bolt M8 x 28	1
17	Bolt M10 x 65	1
18	Nut M10	1
19	Spring washer 10	1

Adjustable front axle (factory option)



Adjustable rear wheels (factory option)



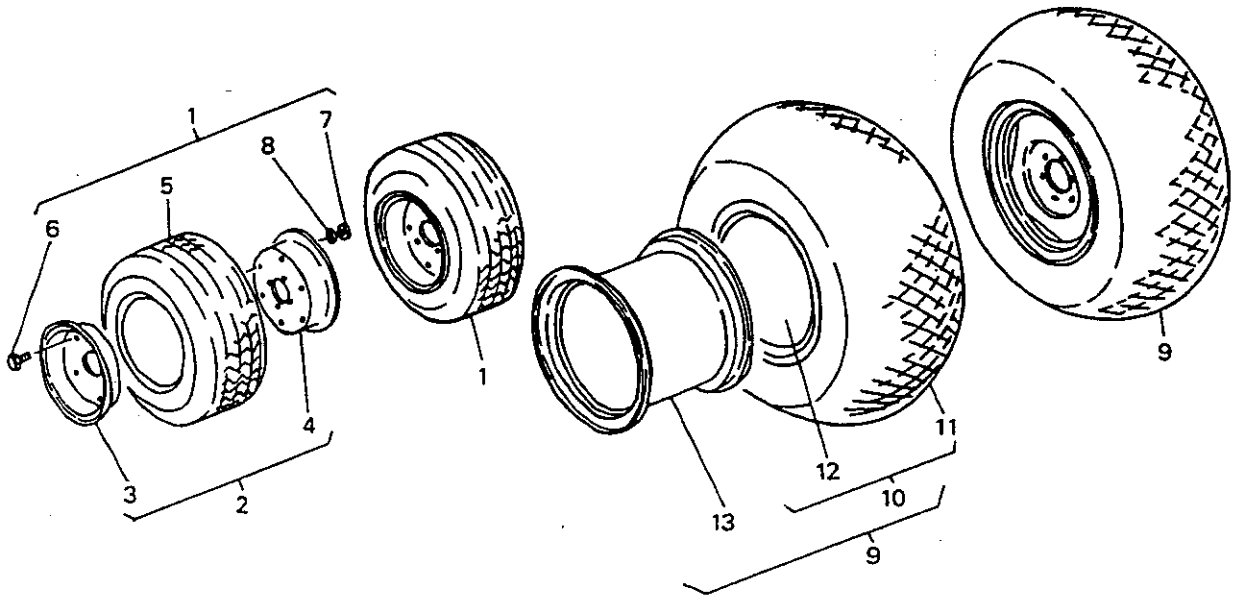
Adjustable front axle — 2-Wheel drive (factory option)

No.	Name of part	Q'ty/unit
1	Adjustable front ass'y	1
2	Front axle	1
3	Extension (L), complete	1
4	Extension (R), complete	1
5	Bolt 6 x 5	2
6	Grease nipple	2
7	Bolt M16 x 70	4
8	Nut M16	4
9	Spring washer 16	4
10	Bracket, complete, center pin	2
11	Bracket, center pin	2
12	Bush 2F/30 x 2 x 40	2
13	Grease nipple PT6F	2
14	Shim, center pin	1
15	King pin, complete	2
16	Cover, king pin, upper	2
17	O-ring	2
18	Thrust ball bearing	2
19	Oil seal	2
20	Oil seal	2
21	Taper roller bearing	2
22	Taper roller bearing	2
23	Castle nut	2
24	Washer 24	2
25	Cotter pin 4 x 45	2
26	Key, feather	2
27	Arm (L), knuckle	1
28	Arm (R), knuckle	1
29	Bolt M12 x 60	2
30	Spring washer 12	2
31	Tie-rod	1
32	Extension (L), tie-rod	1
33	Extension (R), tie-rod	1
34	Nut 17 (LH screw)	1
35	Nut 17 (RH screw)	1
36	Clamp, tie-rod	4
37	Bolt 10 x 38	4
38	Castle nut	4
39	Washer 10	4
40	Cotter pin 2.5 x 25	4
41	Tie-rod end ass'y RL	1
42	Tie-rod end ass'y LR	1
43	Castle nut	2
44	Cotter pin 3 x 25	2
45	Hub, front wheel	2
46	Cover, front wheel hub	2
47	Packing, front wheel hub cover	2
48	Bolt M6 x 12	8
49	Spring washer 6	8
50	Drag-rod, complete	1
51	Tie-rod end ass't RL	1
52	Castle nut	2
53	Cotter pin 3 x 25	2
54	Turnbuckle 17 x 1.5	1
55	Nut 17 (LH screw)	1
56	Nut 17 (RH screw)	1
57	Bush	4

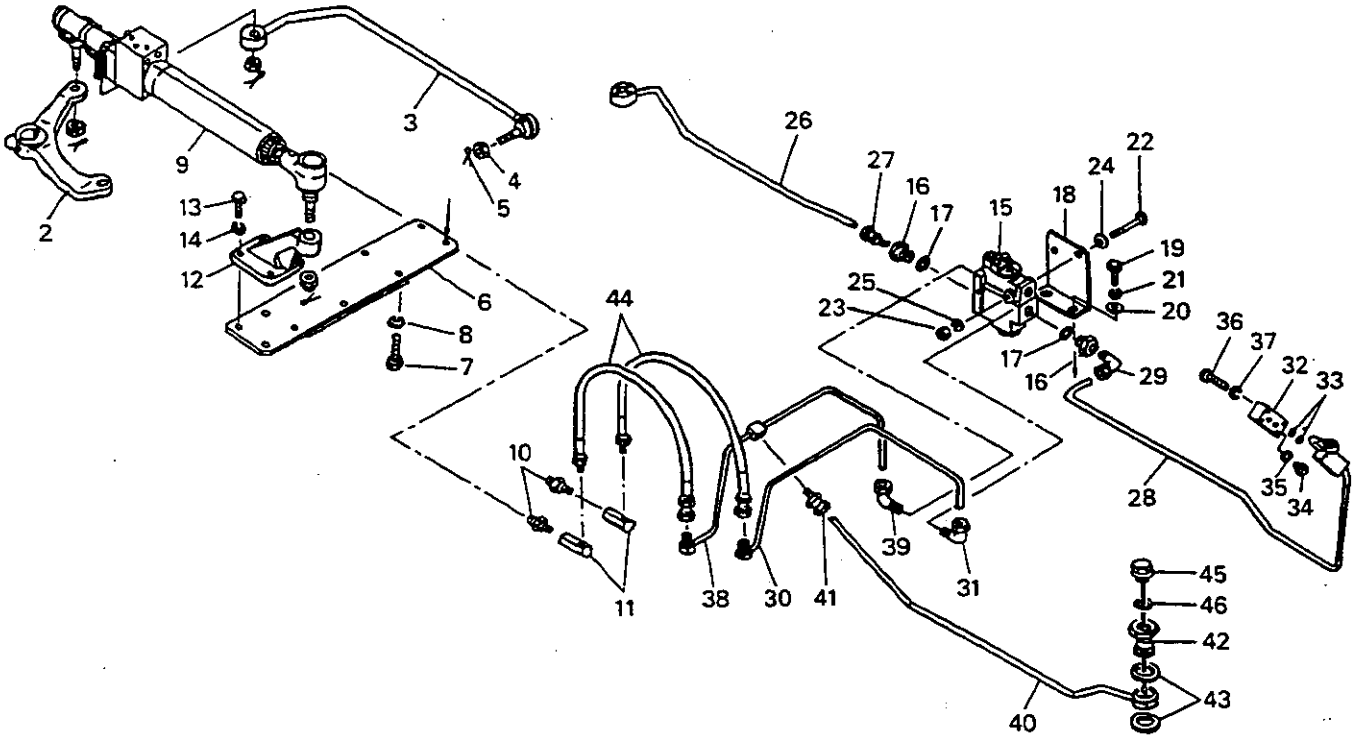
Adjustable rear wheels — 2-Wheel drive (factory option)

No.	Name of part	Q'ty/unit
1	Adjustable rear assy	1
2	Adjustable rear assy (L side)	1
3	Adjustable rear assy (R side)	1
4	Tire (L) assy, rear	1
5	Tire (R) assy, rear	1
6	Disc wheel assy, rear	2
7	Disc	2
8	Rim	2
9	Bolt 16 x 35, round head & sq. root	8
10	Nut 16	8
11	Spring washer 16	8
12	Tire assy	8
13	Tire	2
14	Tube, tire	2
15	Extension assy, rear shaft	2
16	Extension, rear shaft	2
17	Bolt M16 x 45	12
18	Spring washer 16	12

Turf (factory option)



Power steering



Turf tire (factory option)

No.	Name of part	Q'ty/unit
1	Front tire ass'y (turf)	2
2	Wheel, front (turf)	2
3	Wheel (A), front (turf)	2
4	Wheel (B), front (turf)	2
5	Front tire ass'y (turf)	2
6	Bolt M10 x 20	12
7	Nut M10	12
8	Spring washer 10	12
9	Rear tire ass'y (turf)	2
10	Rear tire ass'y (turf)	2
11	Tire, rear (turf)	2
12	Tube, rear tire (turf)	2
13	Wheel, rear (turf)	2

Power steering

No.	Name of part	Q'ty/unit
1	Power steering ass'y	1
2	Arm (L), knuckle	1
3	Drag-rod, complete	1
4	Castle nut	1
5	Cotter pin 3 x 25	1
6	Plate, mounting	1
7	Bolt M12 x 40	4
8	Spring washer 12	4
9	Booster	1
10	Nipple	2
11	Hose connection	2
12	Bracket, booster	1
13	Bolt M10 x 28	4
14	Spring washer 10	4
15	Valve, flow divider	1
16	Straight socket	2
17	O-ring	2
18	Bracket, valve mount	1
19	Bolt M10 x 20	2
20	Washer 10	2
21	Spring washer 10	2
22	Bolt M6 x 55	2
23	Nut M6	2
24	Washer 6	2
25	Spring washer 6	2
26	Pipe (A), high pressure	1
27	Bayonet joint	1
28	Pipe (B), high pressure	1
29	Elbow, bayonet joint	1
30	Pipe, PS	1
31	Elbow, bayonet joint	1
32	Cover, hydraulic adapter	1
33	O-ring P20	2
34	Plug 14, hex. headed	1
35	Packing 14, copper	1
36	Bolt M8 x 40	4
37	Spring washer 8	4
38	Pipe (A), drain	1
39	Elbow, bayonet joint	1
40	Pipe (B), drain	1
41	Bayonet joint	1
42	Banjo bolt	1
43	Packing, copper	2
44	Rubber hose, PS	2
45	Oil level gauge	1
46	Packing 24, copper	1

YANMAR DIESEL TRACTOR

16. INDEX

YANMAR DIEBEL TRACTOR

MEMO

YANMAR DIESEL ENGINE CO., LTD.

YANMAR DIESEL AMERICA CORPORATION
951 CORPORATE GROVE DRIVE BUFFALO GROVE, IL 60089-4508 U.S.A.
TEL :(1) 847-541-1900
FAX :(1) 847-541-2161

41812-011200