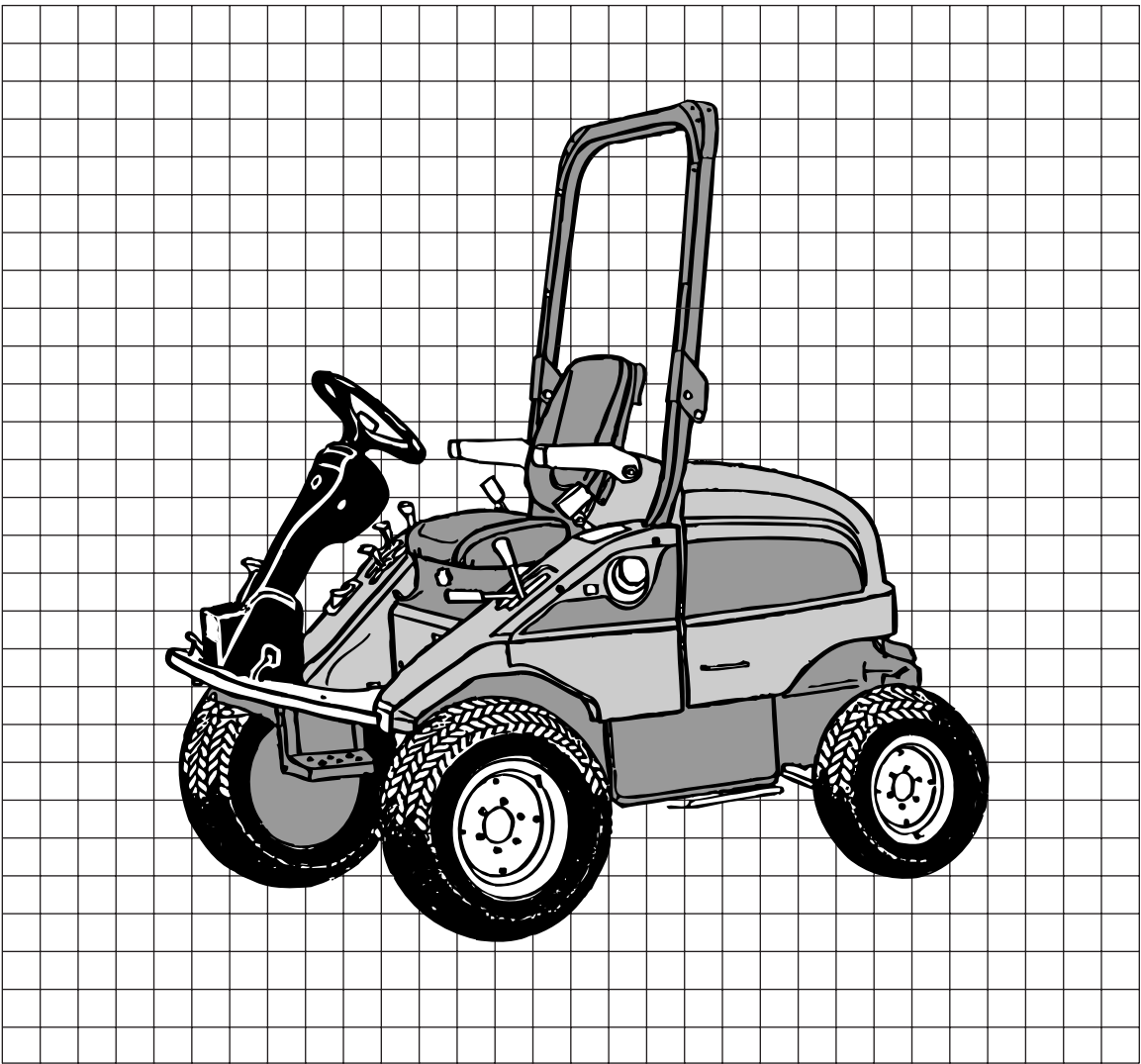


SHIBAURA

TRACTOR OPERATOR'S MANUAL

MODEL

CM314 CM374



IHI Shibaura Machinery Corporation

IHI GROUP

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TO THE OWNER:

This manual contains information concerning the operation, adjust, and maintenance of the CM Mower. You have purchased a dependable machine, but only by proper care and operation can you expect to receive the performance and long service built into this Mower. Please have all operators read this manual carefully and keep the manual available for reference.

Your SHIBAURA dealer will instruct you in the general operation of your Mower.(Refer to the "Delivery Report" at the back this of this manual.) Your dealer's staff of factory-trained service technicians will be glad to answer any questions that may arise regarding the operation of you Mower.

Your SHIBAURA dealer carries a complete line of genuine SHIBAURA parts.These parts are manufactured and carefully inspected to insure high quality and accurate fitting of any necessary replacement parts.



CAUTION:THIS SYMBOL IS USED THROUGHOUT THIS BOOK WHENEVER PERSONAL SAFETY IS INVOLVED. TAKE TIME TO READ AND FOLLOW THE INSTRUCTIONS. BE CAREFUL!

CAUTION:PICTURES IN THIS MANUAL MAY SHOW PROTECTIVE SHIELDING OPEN OR REMOVED TO BETTER ILLUSTRATE A PARTICULAR FEATURE OR ADJUSTMENT.


BE CERTAIN, HOWEVER, TO CLOSE OR REPLACE ALL SHIELDING BEFORE OPERATING THE MACHINE.

IMPROVEMENTS

IHI-SHIBAURA is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

SAFETY RULES

1. SAFETY RULES

Please pay particular attention to all boxed-parts in the text which have the sign .

This sign warns you to be careful when carrying out certain functions.

DANGER:

Indicates serious injury or death will result if instructions are not followed.

WARNING:

Indicates a strong possibility that serious injury or death could result if instructions are not followed.

CAUTION:

Indicates a possibility that minor injury can result if instructions are not followed.

NOTE: Gives helpful information.

Labels attached to certain parts of the Front Mower give important safety information.

Please read them carefully. Should a label detach itself or become illegible, contact your dealer for a replacement.

SAFETY INSTRUCTIONS

A) TRAINING

- 1) Read the instructions carefully. Be familiar with the controls and the proper use of the equipment. Learn how to stop the engine quickly.
- 2) Only use the Front Mower for the purpose for which it was made, that is, the cutting and collection of grass. Any use not specifically indicated in the instruction handbook can be dangerous and result in damage to the machine, and will also result in the annulling of the warranty and the manufacturer declining all responsibility.
- 3) Never allow children or people unfamiliar with these instructions to use Front Mower. Local regulations may restrict the age of the operator.
- 4) Never use the Front Mower.

- When people, especially children, or pets are nearby.

- If the operator has taken medicine or substances that can affect his ability to react and concentrate.

- 5) Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.
- 6) Do not carry passengers.
- 7) The operator of a Front Mower must carefully follow the driving instructions, particularly:

- The need for care and concentration when using Front Mowers;

- That control of a Front Mower sliding on a slope will not be regained by the application of the brake.

The main reasons for loss of control are:

- Insufficient wheel grip;

- Being driven too fast;

- Inadequate braking;

- The type of machine is unsuitable for its task;

- Lack of awareness of the effect of ground conditions, especially slopes;

- Incorrect hitching and load distribution.

- 8) The Front Mower is equipped with a series of safety microswitches and devices which must never be removed, altered or tampered with. Removing these devices invalidates the warranty and the manufacturer declines any responsibility.

B) PREPARATION

- 1) While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.

SAFETY RULES

2) Thoroughly inspect the area where the equipment is to be used and remove all objects which may be thrown by the machine (stones, sticks, metal wire, bones, etc.)

3) **WARNING:** Engine fuel is highly flammable:

- Store fuel in containers specifically designed for this purpose.
- Refuel using a funnel and outdoors only. Do not smoke while refuelling or whenever handling the fuel.
- Add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel while the engine is running or when the engine is hot.
- If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until the fuel has evaporated and the fumes dispersed.
- Tighten caps of all fuel tanks and containers securely.

4) Replace faulty silencers.

5) Before using, always carry out visual inspection, particularly of the blades, seeing that the screws and cutter assembly are not worn or damaged. Replace worn or damaged blades and screws in sets to preserve balance.

6) Before mowing, attach the discharge opening guards (grass-catcher or deflector).

7) Take care as the rotation of one blade can cause the other blade to turn.

C) OPERAITON

1) Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.

2) Mow only in daylight good artificial light.

3) Avoid operating the equipment in wet grass, where feasible.

4) Before starting the engine, disengage the blades, shift into neutral and engage the

parking brake.

5) Do not use on slopes of more than 10°(17%).

6) Remember there is no such thing as a “safe” slope.

Travel on grass slopes requires particular care. To guard against overturning:

- It is advisable to use a rear counterweight (supplied on request);
- Do not stop or start suddenly when going up or downhill;
- Always keep the machine in gear, especially when traveling downhill;
- Machine speeds should be kept low on slopes and during tight turns;
- Stay alert for humps and hollows and other hidden hazards;
- Never mow across the face of the slope.

7) Stop the blades rotating before crossing surfaces other than grass. When moving the Front Mower away from the lawn disengage the blades and put the cutting plate into the highest position.

8) Never operate the Front Mower as a Mower-deck with defective guards, or without safety devices, for example deflectors and/or grass catchers, in place.

9) Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.

10) Before leaving the operator's position:

- Disengage the blades and lower the Mower-deck.
- Charge into neutral and set the parking brake.
- Stop the engine and remove the key.

11) Disengage blades, stop the engine and remove key:

- Before carrying out any work beneath the cutting deck or unclogging the chute;

- Before checking, cleaning or working on Front Mower;
 - After striking a foreign object. Inspect the Front Mower for damage and make repairs before restarting and operating the Front Mower;
 - If the Front Mower starts to vibrate abnormally (immediately check and remove the cause of the vibration)
- 12) Disengage drive to blades when transporting or not in use. Disengage the blades for them to stop before emptying the grass-catcher.
 - 13) Stop the engine and disengage blades:
 - Before refuelling.
 - Every time the grass-catcher is removed or replaced.
 - Before making height adjustment.
 - 14) Reduce the throttle setting during engine shut down and turn the fuel off at the conclusion of mowing, following the instructions in the handbook.
 - 15) Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times.
 - 16) Use care when pulling loads of using heavy equipment.
 - Use only approved drawbar hitch paints.
 - Limit loads to those you can safely control.
 - Do not turn sharply. Use care when reversing.
 - 17) Watch out for traffic when crossing or near roadways.
 - 18) When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the machine while in operation.

D) MAINTENANCE AND STORAGE

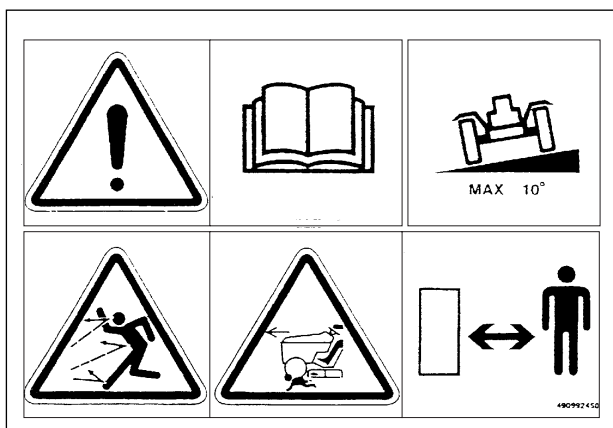
- 1) Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition. Regular maintenance is essential for safety and for maintaining performance levels.
- 2) Never store the equipment with fuel in the tank inside a building where fumes may reach a flame or a spark or a source of extreme heat.
- 3) Allow the engine to cool before storing in an enclosed space.
- 4) To reduce the fire hazard, keep the engine, exhaust silencer, battery compartment and fuel storage area free of grass, leaves, or excessive grease. Always empty the grass-catcher and do not leave garden rubbish containers within a room.
- 5) Check the deflector and grass-catcher frequently for wear and deterioration.
- 6) For reasons of safety, do not use the equipment with worn or damaged parts. Parts are to be replaced and not repaired. Use genuine spare parts. Parts which are not of an equivalent quality can damage the equipment and be dangerous for your safety.
- 7) If the fuel tank has to be drained, this should be done outdoors and when the engine is cool.
- 8) Wear strong work gloves when removing and reassembling the blades.
- 9) Check the blades' balance after sharpening.
- 10) Take care as the rotation of one blade can cause the other blade to turn.
- 11) When the machine is to be parked, stored or left unattended, lower the cutting means.
- 12) The ignition key must never be left inserted in the machine, or where children or persons not familiar to the machine may reach them.
Before any maintenance or repair, remove the ignition key.

SAFETY AND INSTRUCTION DECALS

You Front-tractor must be used with care. Therefore, decals have been placed on the machine, to remind you pictorially of main precautions to take during use. Their meaning is explained below.

We also strongly recommend to carefully read the safety instructions given in the concerned chapter of this manual.

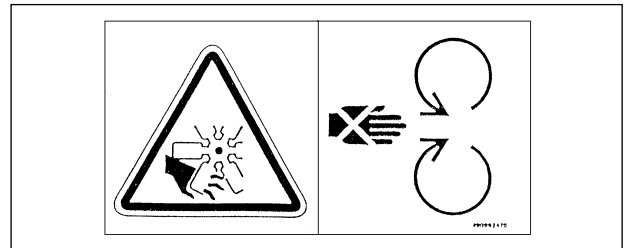
SAFETY DECALS



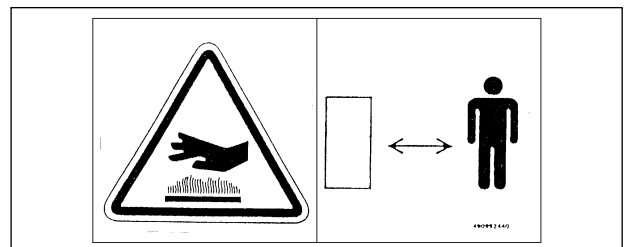
- Read this Operator's Manual before using the Front-tractor.
- Keep other people at a distance while using.
- Make sure that children stay clear of the machine all time when engine is running.
- Do not use this machine on slopes greater than 10°.



- Batteries produce explosive gas. Keep sparks and flames away.
- Battery contains sulfuric acid. Wear protective clothing and use eye protection.



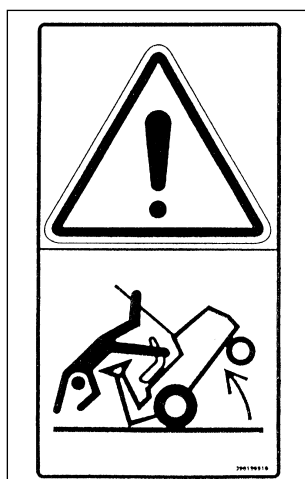
- Never reach into rotating parts while engine is running.



- Stay clear of hot surface.



- Use diesel fuel.
- Diesel fuel is flammable.
- Add diesel fuel before starting the engine.
- Never remove the fuel tank cap or add diesel fuel while the engine is running or when the engine is hot.
- Refuel outdoors only and do not smoke while refuelling.



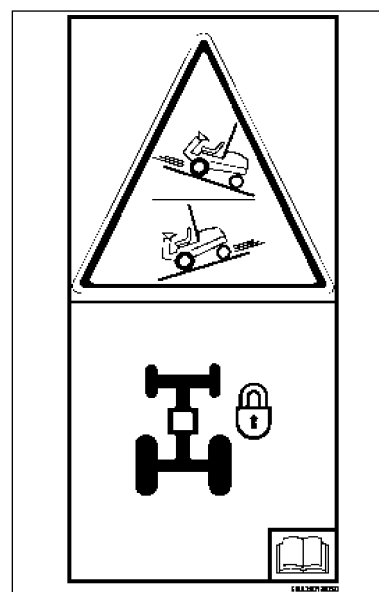
- Do not depress the brake pedal quickly. Quick brake will cause upset of the machine.



- Do not open when hot.
- Contents under pressure.



- Always lock ROPS in upright position unless it has to be folded down to allow operation underneath trees or bushes.
- Always wear seat belt expect for ROPS is lowered.
- Do not attach ropes or chains to ROPS for pulling purposes. Use of ROPS and seat belt reduce the chance of injury or death if rollover or upset occurs.

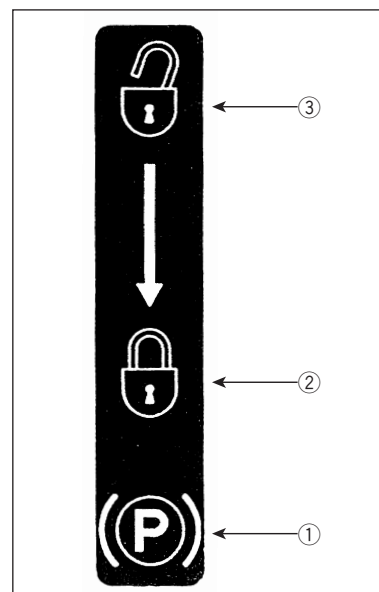


- While driving on slopes, always use Permanent/Full Time 4WD.

INSTRUCITON DECALS

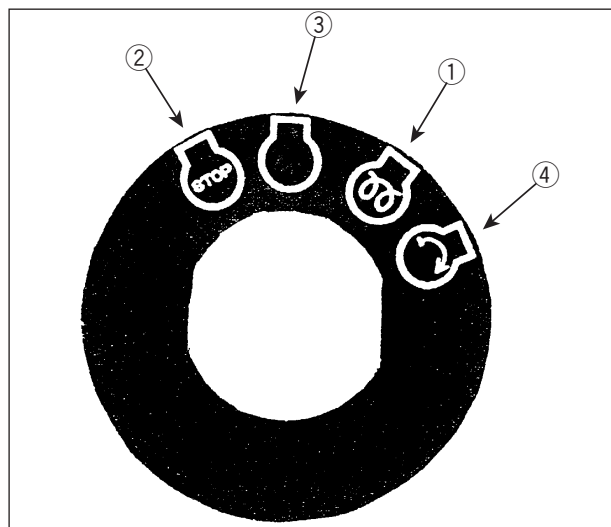
Parking Brake

- ① Parking Brake
- ② "Lock" Position
- ③ "Release" Position



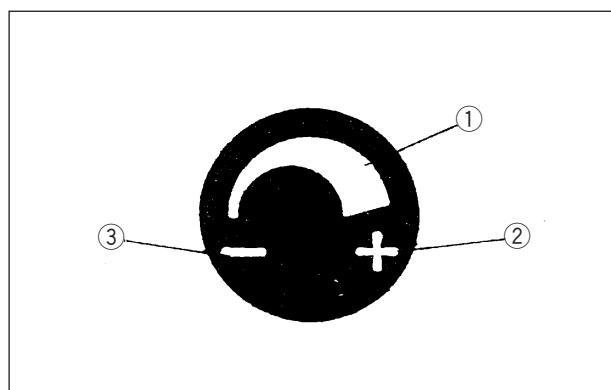
Key Switch

- ① Engine "HEAT" Position
- ② Engine "STOP" or "OFF" Position
- ③ Engine "ON" Position
- ④ Engine "START" Position



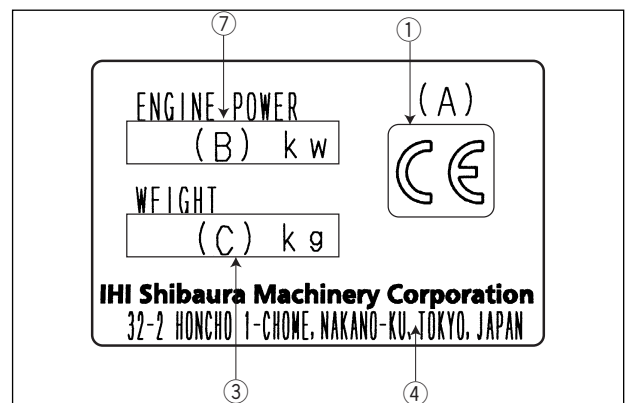
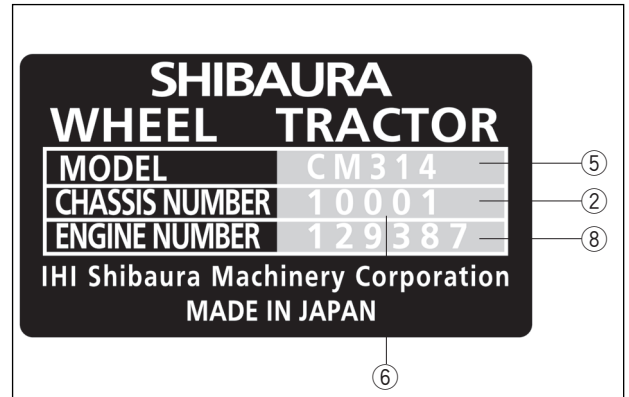
Weight Transfer

- ① Continuously variable
- ② Increase
- ③ Decrease



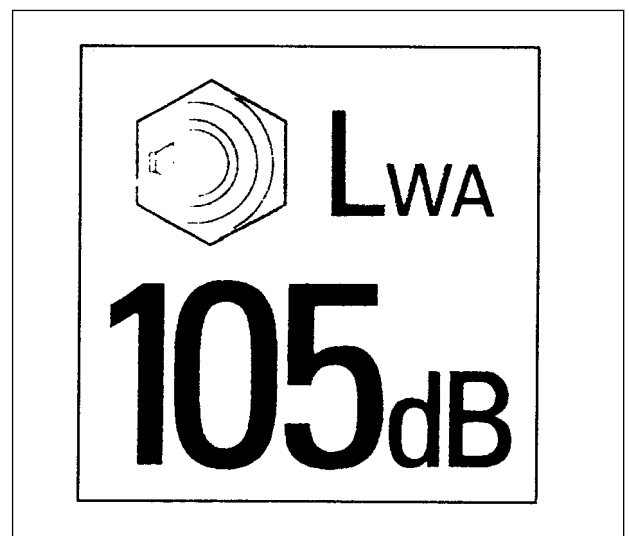
MACHINE IDENTIFICATION PLATE

- ① CE Conformity Mark
- ② Year of Manufacture
- ③ Weight in kgs
- ④ Name and Address of Manufacturer
- ⑤ Type of Front Mower
- ⑥ Serial Number
- ⑦ Engine Power
- ⑧ Engine Number



GUARANTEED SOUND POWER LEVEL MARK

Guaranteed Sound Power Level According to Directive 2000/14/EC



SECTION 1

GENERAL INFORMATION

PLEASE READ CAREFULLY:

For a complete list of the pre-delivery service checks performed by your dealer, refer to the PRE-DELIVERY SERVICE checklist found at the back of this manual. Keep one copy as your record of the service performed. The other copy should be removed from the manual and kept by your dealer. MAKE SURE THAT BOTH COPIES ARE COMPLETED AND THAT YOU AND THE DEALER SIGN BOTH COPIES.

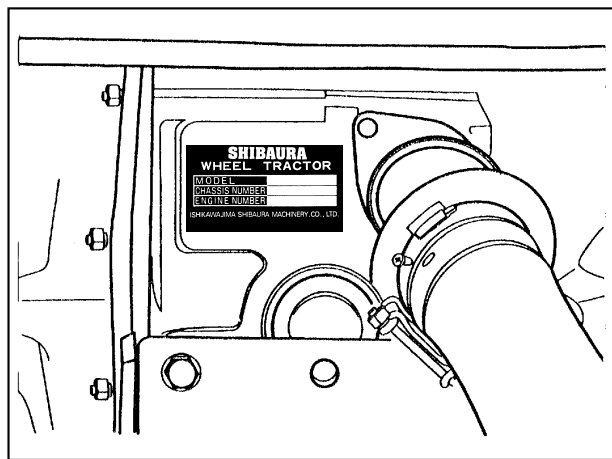
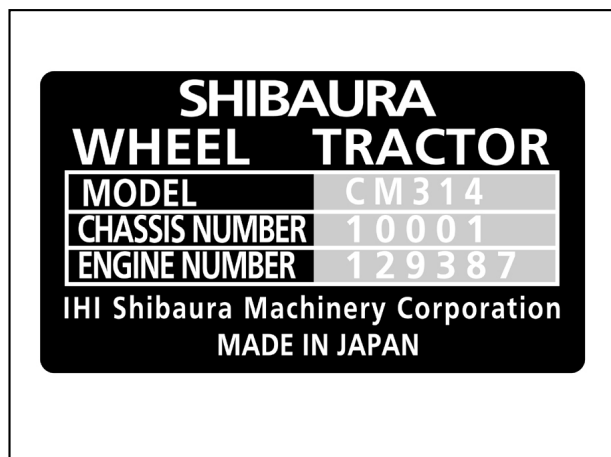
A PRODUCT IDENTIFICATION PLATE is located in the front transmission case under the front body of the mower.

The numbers on the plate are important in the event your mower should require future service. For your convenience, have your dealer record these numbers in the appropriate spaces below.

IHI Shibaura Machinery Corporation is continually striving to improve its products. We reserve the right to change prices, specification, or equipment at any time without notice.

All data given in this book is subject to production variations. Dimensions and weights are approximate only, and the illustrations do not necessarily depict Mower in standard condition. For exact information about any particular Mower, please consult your SHIBAURA dealer.

This Mower has been designed for doing light work, such as mowing, blowing snow. Don not attempt to use implements that were not designed for this mower, as they may cause damage to the mower.



MINIMUM HARDWARE TIGHTENING TORQUES

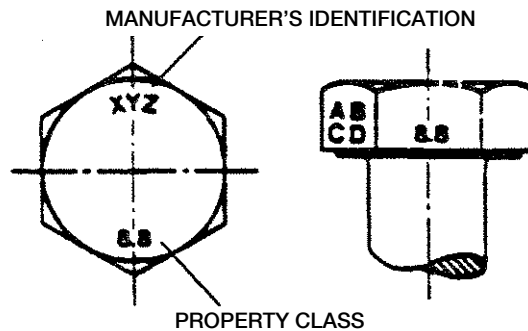
IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

METRIC HARDWARE AND LOCKNUTS

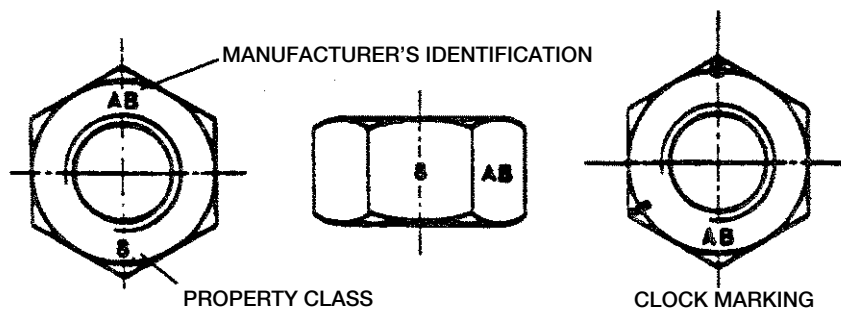
| NOMINAL SIZE | CLASS 5.8 | | CLASS 8.8 | | CLASS 10.9 | | LOCKNUT CL.8 W/CL8.8 BOLT |
|-----------------|-----------|------------------|-----------|------------------|------------|------------------|------------------------------------|
| | UNPLATED | PLATED W/ZnCr | UNPLATED | PLATED W/ZnCr | UNPLATED | PLATED W/ZnCr | |
| M4 | 15*(1.7) | 19*(2.2) | 23*(2.6) | 30*(3.4) | 33*(3.7) | 42*(4.8) | 16*(1.8) |
| M6 | 51*(5.8) | 67*(7.6) | 79*(8.9) | 102*(12) | 115*(13) | 150*(17) | 56*(6.3) |
| M8 | 124*(14) | 159*(18) | 195*(22) | 248*(28) | 274*(31) | 354*(40) | 133*(15) |
| M10 | 21 (28) | 27 (36) | 32 (43) | 41 (56) | 45 (61) | 58 (79) | 22 (30) |
| M12 | 36 (49) | 46 (63) | 55 (75) | 72 (97) | 79 (107) | 102 (138) | 39 (53) |
| M16 | 89 (121) | 117 (158) | 137 (186) | 177 (240) | 196 (266) | 254 (344) | 97 (131) |
| M20 | 175 (237) | 226 (307) | 277 (375) | 358 (485) | 383 (519) | 495 (671) | 195 (265) |
| M24 | 303 (411) | 392 (531) | 478 (648) | 619 (839) | 662 (897) | 855 (1160) | 338 (458) |

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION HEX DCAP SCREW AND CARRIAGE BOLTS CLASSES 5.6 AND UP






































HEX NUTS AND LOCKNUTS CLASSES 05 AND UP



INTERNATIONAL SYMBOLS

As a guide to the operation of your tractor, various international symbols have been used on instruments and controls. These symbols are depicted and described below.

| | | | | | |
|---|--------------------------|---|-------------------|---|------------------------------------|
|  | Hours Recorded |  | Neutral |  | Battery |
|  | Engine Water Temperature |  | Diesel Fuel |  | Power Take-off (ON) |
|  | Air Filter |  | Glow |  | Power Take-off (OFF) |
|  | Engine Oil Pressure |  | Engine Stop |  | "Tortoise"-SLOW or Minimum Setting |
|  | Full Time 4WD |  | Engine Oil |  | "Hare"-FAST or Maximum Setting |
|  | Auto 4WD |  | Engine Start |  | Warning |
|  | Continuously Variable |  | Parking Brake |  | Control Lever Hold |
|  | Increase |  | Lock |  | Rock Shaft (Raised) |
|  | Decrease |  | Release Lock |  | Rock Shaft (Lowered) |
|  | Fuel Level |  | Differential Lock |  | Remote Cylinder (Retracted) |
|  | High Range |  | Volume Empty |  | Remote Cylinder (Extended) |
|  | Low Range |  | Volume Full | | |

SECTION 2

OPERATION

CONTROLS AND INSTRUMENTS

SEAT, SEAT BELT AND ROPS

OPERATORS SEAT

Your seat is adjustable to obtain the most comfortable position.

Seat Travel Lever

By tilting the Seat Travel Lever outward, the seat can be moved in a range of 6.50 in. (165 mm) in forward and backward direction, and it can be fixed in a position as you like.

Seat Flotation

To adjust for operator weight, turn the flotation adjuster knob: turn it to the right and it will be for move (+), and turn it to the left, it will be for less (-).

IMPORTANT: If not adjusted properly, the seat switch will not close to allow engine to start.



WARNING: DO NOT ATTEMPT BYPASS SEAT SAFETY INTERLOCK SWITCH.

Reclining Lever

By tilting the reclining lever forward, the inclination of the back of the seat can be changed to any position you like.

Seat Belt

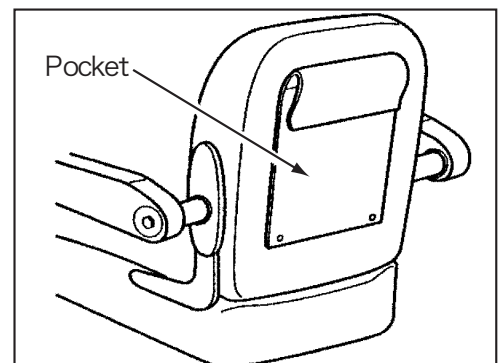
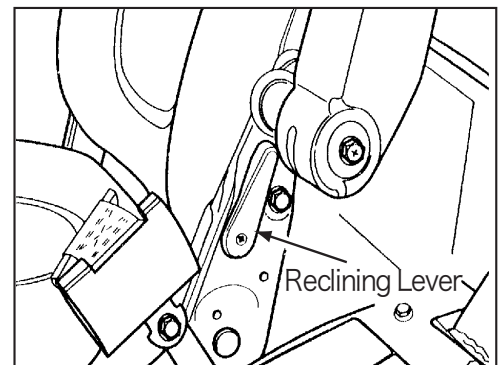
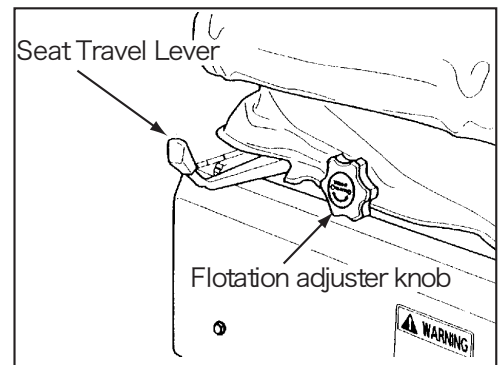
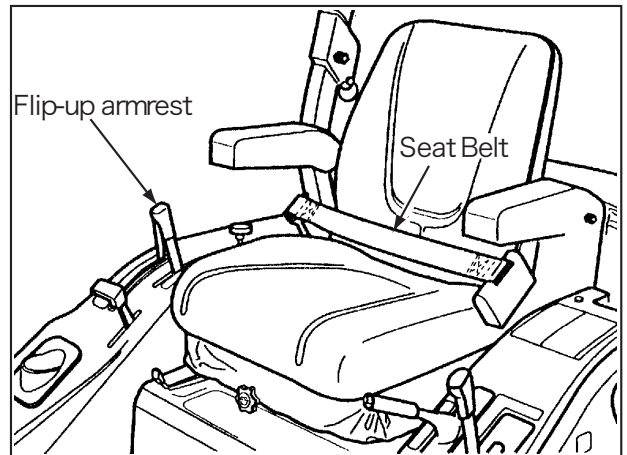
Always fasten the seat belt before starting.

Flip-up Armrest

The armrest is used by tilting it forward.

Pocket

A storage pocket is located at the rear of the seat. This is the recommended storage area for the operator's Manual.



STEERING WHEEL

ADJUSTING THE STEERING WHEEL

The CM mower is equipped with an adjustable steering wheel which can telescope and tilt.

To telescope the wheel, turn the wheel hub ① to the left and raise or lower the steering wheel to the desired height. Then turn the hub to the right to lock it into position.

NOTE: When locking the hub into position, do not overtighten.

To tilt the wheel, pull up on the lever ② and move the steering wheel fore or aft the desired position. If the wheel is not held in position when the lever is raised, the steering wheel will spring to its most forward position. Use this feature to gain additional clearance when mounting and dismounting the CM mower.

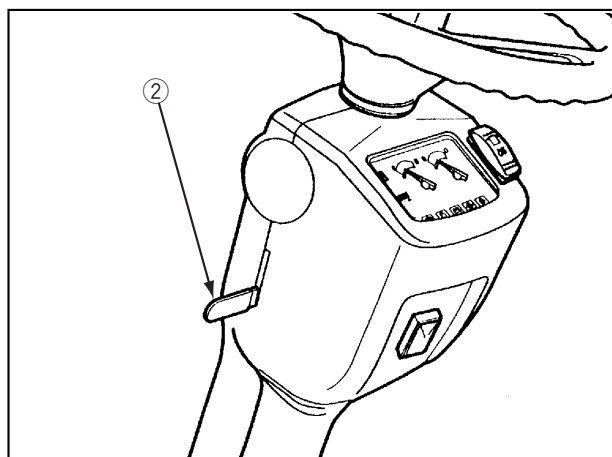
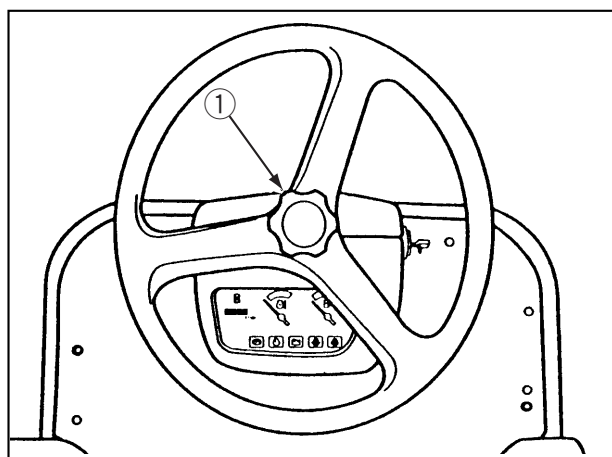
ROLL OVER PROTECTIVE STRUCTURE (ROPS)

A Roll Over Protective Structure (ROPS) and seat belts are standard equipment.

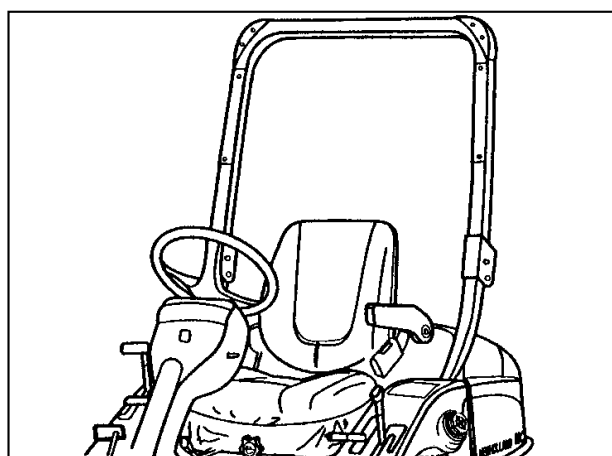
DO NOT remove a ROPS and seat belts. ROPS when used with seat belt is effective in reducing injuries during unit overturn accidents. Overturning the unit without a ROPS can result in serious injury or death.



WARNING! WHEN IMPROPERLY OPERATED, THE UNIT CAN ROLL OVER OR UPSET! FOR LOW CLEARANCE USE ONLY, THE ROLL BAR CAN BE LOWERED. NO PROTECTION IS PROVIDED WHEN THE COMMERCIAL MOWER IS OPERATED WITH THE ROLL BAR IN THE LOWERED POSITION. ALWAYS RAISE THE ROLL BAR IMMEDIATELY AFTER LOW CLEARANCE USE. WHEN THE UNIT IS BEING DRIVEN TO AND FROM A LOW CLEARANCE JOB, THE ROLL BAR SHOULD BE IN THE RAISED POSITION. WHEN THE ROLL BAR IS LOWERED, USE OF THE SEAT BELT IS NOT RECOMMENDED. ALWAYS USE THE SEAT BELT WHEN THE ROLL BAR IS RAISED. SEAT BELTS SAVE LIVES WHEN THEY ARE USED.



ADJUSTMENT THE STEERING WHEEL



ROLL OVER PROTECTIVE STRUCTURE (ROPS)

DO NOT weld on ROPS, or use a damaged ROPS. Replace ROPS if cracked or damaged.

If the seat belt is to be cleaned, use soap and water. Do not use carbon tetrachloride, naphtha, etc., as these will weaken the webbing. For the same reason, do not bleach or dye the webbing. Replace seat belt if worn or damaged.

Roll Over Protective Structure (ROPS), and seat belts are available from your SHIBAURA Dealer.

Foldable ROPS

The ROPS can be folded by removing right and left retaining rings and by pulling out the pins. Operate with the ROPS in the "UP" position whenever possible. Use the ROPS in the "folded" position only when it is absolutely necessary.

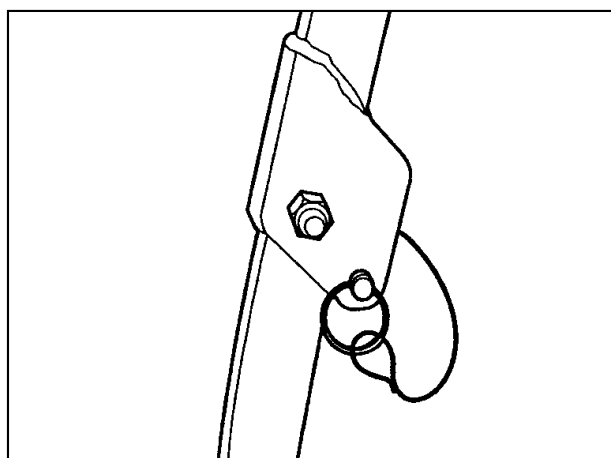


WARNING: DO NOT OPERATE THE MOWER WITH THE ROLLOVER PROTECTIVE STRUCTURE FOLDED AS A STANDARD OPERATING MODE. A FOLDED ROPS DOES NOT PROVIDE ROLLOVER PROTECTION.

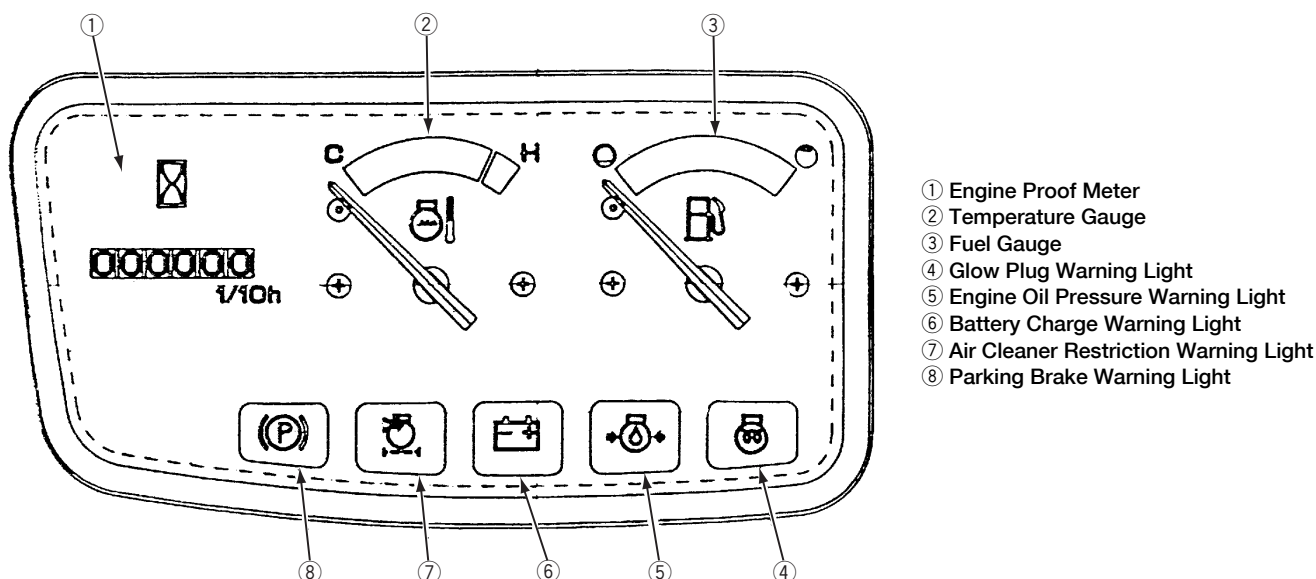
WARNING: ALWAYS WEAR THE SEAT BELT WHEN THE MOWER IS EQUIPPED WITH A ROPS. HOWEVER, IF THE ROPS HAS BEEN REMOVED FROM THE MOWER, OR IF THE ROPS IN THE FOLDED POSITION, THE SEAT BELT SHOULD NOT BE USED.

WARNING: ALWAYS PULL FROM THE MOWER DRAWBAR. DO NOT ATTACH CHAINS OR ROPES TO THE ROPS FOR PULLING PURPOSES, AS THE MOWER CAN TIP BACKWARDS.

WARNING: WHEN DRIVING THROUGH DOOR OPENINGS OR UNDER LOW OVERHEAD OBJECTS, MAKE SURE THERE IS SUFFICIENT CLEARANCE FOR THE ROPS.



INSTRUMENT PANEL



PROOF - METER

The Proof-Meter is located on the left side of the instrument panel.

Proof-Meter indicates hours of operation, and the figures after the decimal point express 0.1 hour.

Use the Proof-Meter as a guide to determine hourly service and maintenance intervals.

TEMPERATURE GAUGE

When the needle is in the middle area, the engine is at its normal operating temperature. The needle at the "H" end indicates an overheated engine.



WARNING: THE COOLING SYSTEM OPERATES UNDER PRESSURE WHICH IS CONTROLLED BY THE RADIATOR CAP. IT IS DANGEROUS TO REMOVE THE CAP WHILE THE SYSTEM IS HOT.

ALWAYS COVER THE CAP WITH A THICK CLOTH AND TURN THE CAP SLOWLY COUNTER-CLOCKWISE TO THE FIRST STOP. ALLOW ALL PRESSURE TO ESCAPE BEFORE REMOVING THE CAP COMPLETELY.

FUEL GAUGE

The needle indicates the amount of fuel in the tank.

WARNING LIGHTS

When the key start switch is turned "ON" the oil pressure and charge lights come on. After the engine has been started, the lights should go out within a few seconds. If they do not go out:

Glow plug indicator warning light: This light comes on when turning the key switch to the "HEAT" position or "START" position. This light will stay on for approximately 5 seconds in the "HEAT" Position.

Engine oil pressure warning light: Stop the engine immediately and investigate the cause. It is important to remember that this light indicates oil pressure only. The operator must regularly check the crankcase for proper oil level.

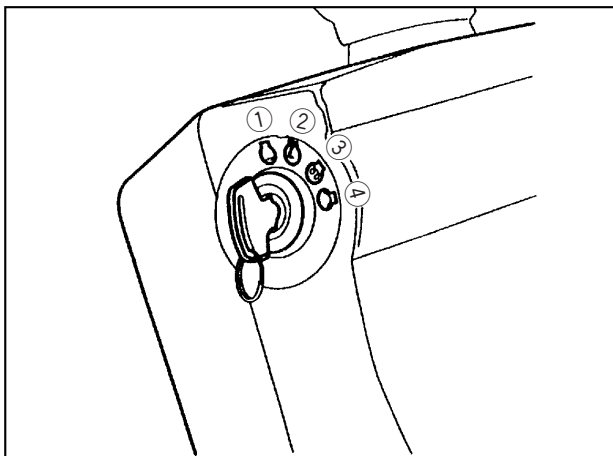
Charge indicator warning light: This is an indication that charging system is not operating normally. Investigate the cause as soon as possible, otherwise the battery will become fully discharged.

Air Cleaner Restriction Warning Light: When the air cleaner element is clogged by foreign substance such as Dust and clear air is restricted to the engine, this light will illuminate.

Parking brake light: Is illuminated when the parking brake is applied.

SWITCHES

KEY START SWITCH



KEY START SWITCH

1. 'Off' Position
2. 'On' Position
3. Heat Position
4. Starter Position

Turning the key right to the "ON" position activates the warning lights and instruments. The pre-heat system is activated when the key is turned further to the right to the "HEAT" position, and the engine starts when the key is turned to the extreme right. The key spring returns to the "ON" position when released.

PRE - HEATING THE SYSTEM

Your CM mower has a diesel engine. Before starting a cold engine, the precombustion chambers must be heated.

To pre-heat the engine, turn the key switch to the "HEAT" position and hold the key in this position for approximately 5 seconds. The glow plugs heat the precombustion chambers during this time, and the engine will start.

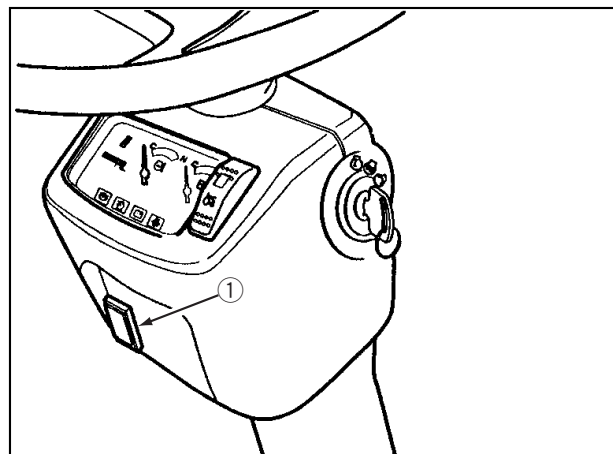
The starting circuit can only be activated when:

1. Operator is seated.
2. HST foot pedals are released.
3. PTO lever is in the "OFF" position.
4. Master brake pedal is depressed or parking brake lever is locked.

For safe operation, always check to make certain the range shift lever and lift control lever are in neutral before attempting to start engine. Refer to page 2-12 for complete starting instructions.

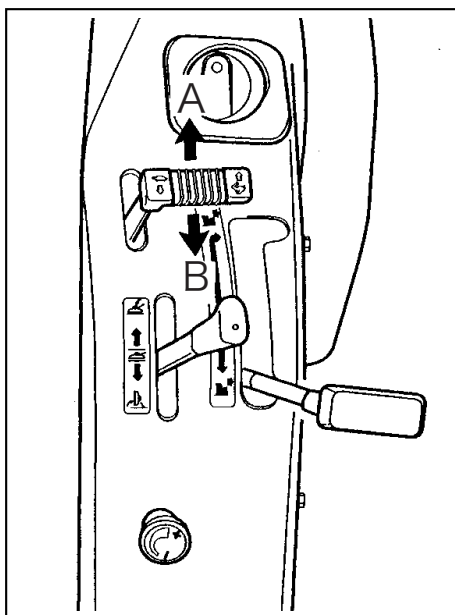
IMPORTANT: The key start switch must remain in the "ON" position while operating the engine. The warning lights and battery charging system will not function with the switch in the "OFF" position.

HEAD LIGHT SWITCH



The head light switch ①, is located under the instrument panel. Push switch "in" and key in "ON" position to illuminate headlight.

THROTTLE CONTROL



HAND THROTTLE CONTROL LEVER
A. Increase Engine RPM
B. Decrease Engine RPM

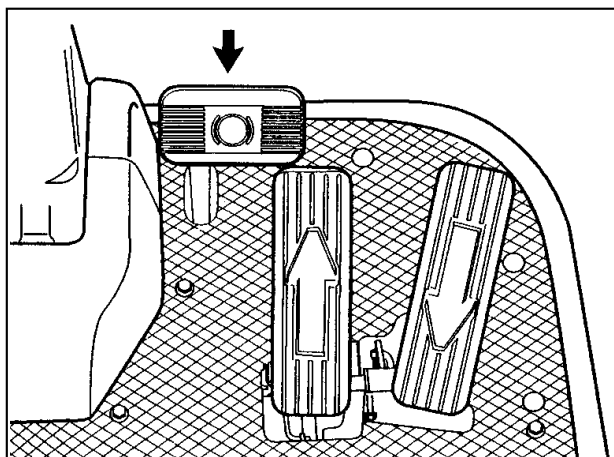
Push the throttle forward to increase engine rpm. Pull the throttle rearward to decrease engine rpm. Always operate mower deck or other attachment at full engine rpm.

BRAKE CONTROLS

MASTER BRAKE PEDAL

Depress the master brake pedal to stop the unit.

The cruise control switch (OPTIONAL) will be returned to the "OFF" position by depressing the master brake pedal, if the cruise control switch is in the "SET" position. Refer to page 2-8 for cruise control switch instructions.



BRAKE PEDALS

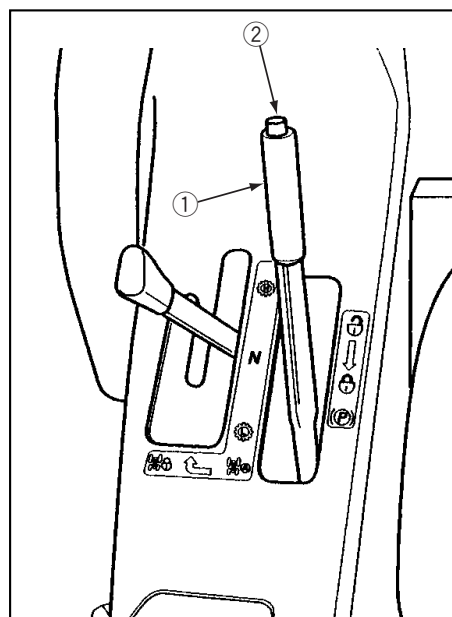
DUAL PEDAL TURNING BRAKE PEDALS (OPTIONAL)

The independent brake pedals are used to assist in turning in confined spaces at slow speed. The right brake pedal is used to brake the right front wheel. The left brake pedal is used to brake the left front wheel.

PARKING BRAKE

The parking brake should be applied whenever the CM Mower is parked or when the operator is out of the seat.

The parking brake will be applied by raising up the parking brake lever ①. Releasing of the parking brake is made by lowering the lever while pressing down the button ②.



PARKING BRAKE



WARNING: DO NOT PARK ON AN INCLINE. IF NECESSARY TO PARK ON AN INCLINE BE SURE TO CHOCK THE WHEELS TO PREVENT ACCIDENTAL ROLLING OF THE MACHINE.

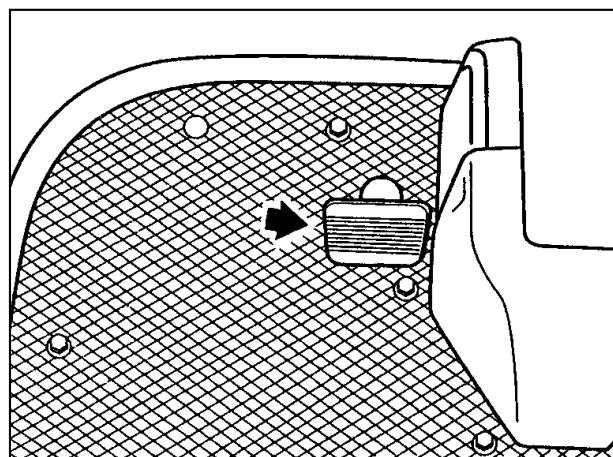
DIFFERENTIAL CONTROL

DIFFERENTIAL LOCK PEDAL

Depressing the pedal, locks the front axle shafts together, providing additional traction in wet or loose soil. Refer to page 2-17 for differential lock operating information.



WARNING: THE CM MOWER IS VERY DIFFICULT TO STEER WITH DIFFERENTIAL LOCK APPLIED.



DIFFERENTIAL LOCK PEDAL

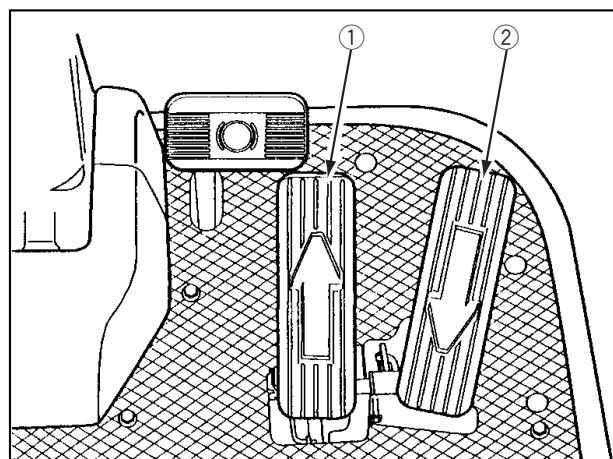
TRANSMISSION AND PTO CONTROLS

HST FOOT PEDALS

The ground speed of the unit is continuously variable from zero to full rated speed in each range.

The ground speed is controlled by HST foot pedals. Depress the forward travel pedal ① to progressively increase forward speed. For reverse travel, depress the reverse travel pedal ②.

NOTE: THE HST FOOT PEDALS MUST BE IN NEUTRAL TO START THE ENGINE.



HST FOOT PEDALS
1. Forward Travel Pedal
2. Reverse Travel Pedal

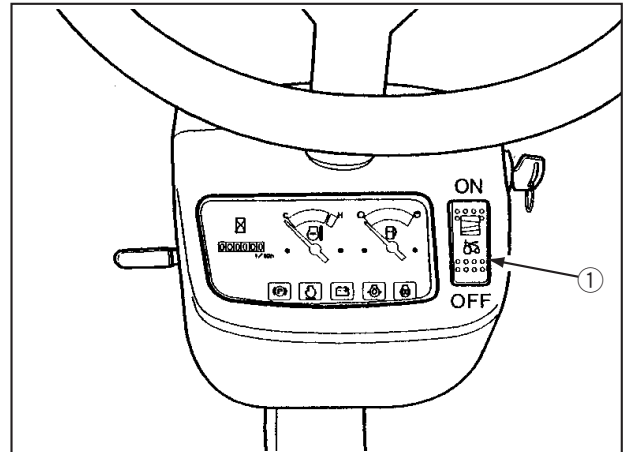
CRUISE CONTROL SWITCH



WARNING: TO AVOID INJURY, THE SWITCH SHOULD NOT BE PUT IN THE “ON” POSITION WHEN OPERATING AT TRANSPORT SPEED OR WHEN IN REVERSE.

The cruise control switch ①, may be used to maintain a constant forward speed when desired. After attaining the desired speed with the forward travel pedal, put the switch to the “ON” position, and the unit will maintain the set speed even if the pedal is released.

To cancel the speed setting or stop the unit, put the cruise control switch to the “OFF” position or firmly depress the master brake pedal.



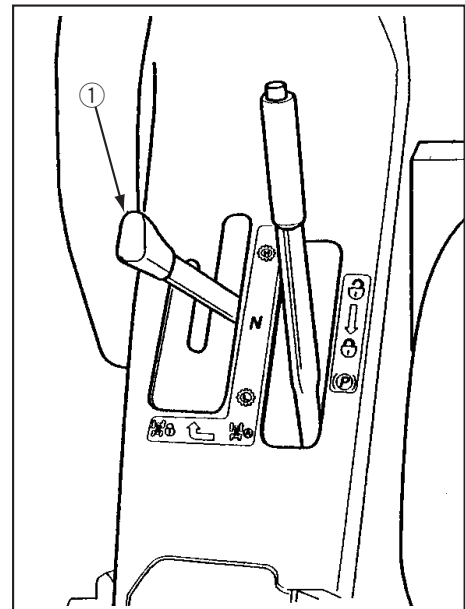
CRUISE CONTROL SWITCH

HST RANGE SELECTOR LEVER

Range Selector Lever and Four-Wheel Drive (FWD) Selector Lever are activated by the same lever.

The range selector lever ①, on the left side of the seat, can be shifted when the HST foot pedal is in the Neutral position to select, High range (“H”), Low range (“L”) or Neutral.

| Range | Forward | Reverse |
|-----------|---------|---------|
| Low km/h | 0-10.0 | 0- 6.5 |
| High Km/h | 0-24.5 | 0-15.8 |



HST RANGE SELECTOR LEVER

AUTOMATIC OR PERMANENT FOUR WHEEL DRIVE (FWD) SELECTOR LEVER

Four Wheel Drive (FWD) Selector Lever ① is activated by the same lever as the one that activates the Range Selector Lever.

When the lever is located in the position of Range Selector Lever, the tractor will run in Automatic FWD mode.

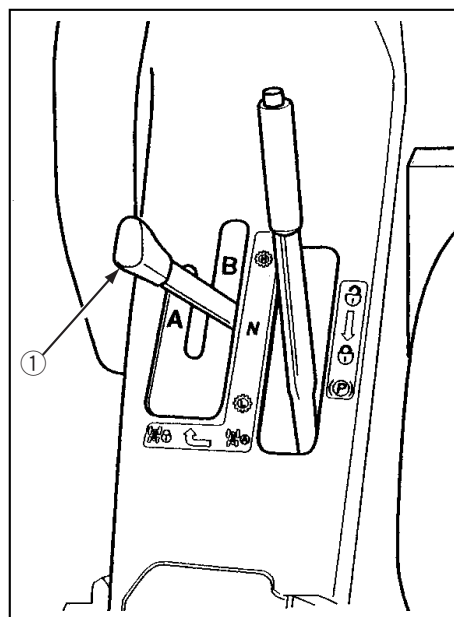
When the lever is brought to the outer slot, the mower will run in Permanent FWD mode.

The PERMANENT FWD selector lever activates rear axle drive for improved traction in adverse conditions.



WARNING: WHILE DRIVEING ON SLOPES, ALWAYS USE PERMANENT /FULL TIME 4WD.

NOTE: When mower is in Permanent FWD mode, ONLY low range is engaged.



FWD SELECTION

1. Lever

A. Permanent FWD

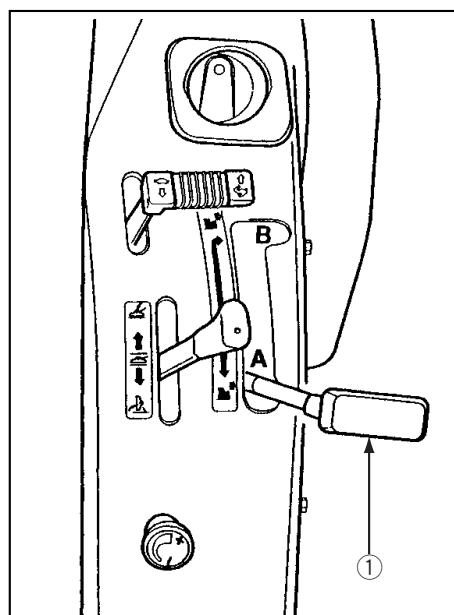
B. Auto FWD

PTO CONTROL LEVER

The lever engages and disengages the PTO. Move the lever forward and hold it to engage the PTO. Move the lever rearward to disengage the PTO.

NOTE: PTO must be in disengaged position to start the engine.

IMPORTANT: Do not repeat the lever engages and disengage the PTO when Mower becomes clogged. Doing so may cause PTO clutch failure. If Mower becomes clogged, stop the engine, remove starter key and clean underside of deck.



PTO SELECTION LEVER

A. Disengaged

B. Engaged

HYDRAULIC LIFT SYSTEM CONTROLS

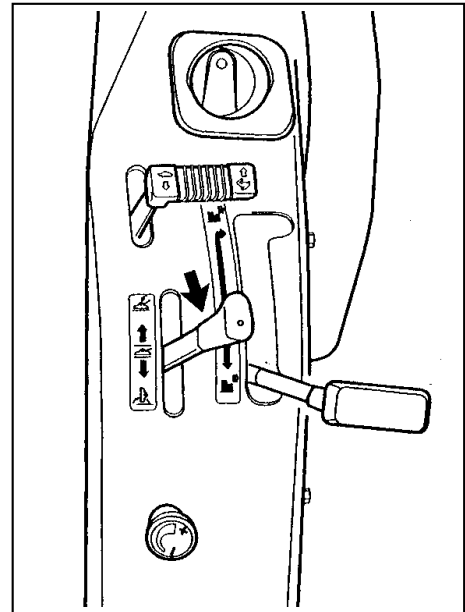
LIFT CONTROL LEVER

The front mounted equipment can be raised and lowered by the lift control lever. Place handle in the forward position to lower and to the rearward position to raise front mounted equipment.

To lower and float the equipment, pull the lever forward. To raise the equipment, pull the lever rearward and hold it until the equipment is raised to the desired position.



WARNING: TO AVOID PERSONAL INJURY, DISENGAGE THE PTO CONTROL LEVER BEFORE OPERATING THE LIFT CONTROL LEVER.

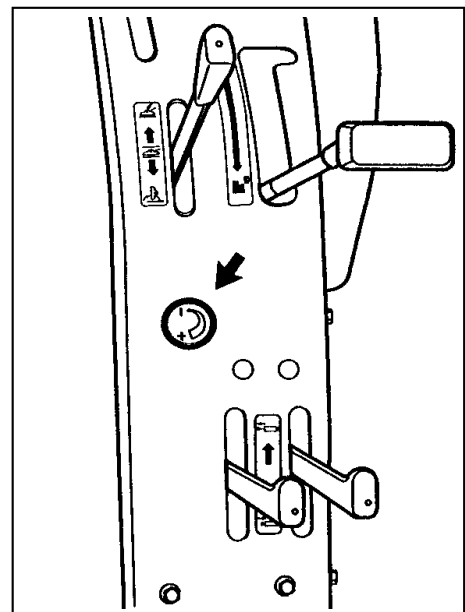


LIFT CONTROL LEVER

WEIGHT TRANSFER CONTROL

This feature enables the operator to transfer the weight of the mower or other equipment to the tractor unit.

Turn the knob clockwise, the effort of weight transfer is increased, refer to page 2-18 for weight transfer operating instructions.



WEIGHT TRANSFER VALVE

BREAK-IN PROCEDURES

Your CM Mower will provide long and dependable service if given proper care during the first 50-hour break-in period. During the first 50 hours of operation:

1. Avoid “lugging” the engine. Operating in too high a gear under heavy load may cause engine lugging, which is indicated when the engine will not respond to a throttle increase.
2. Use the lower gear ratios when pulling heavy loads and avoid continuous operation at constant engine speeds. You will save fuel and minimize engine wear by selecting the correct gear ratio for a particular operation. Operating the tractor in low gear with a light load and high engine speed wastes fuel.
3. Avoid prolonged operation at either high or low engine speeds without a load on the engine.
4. Check the instruments frequently and keep the radiator and oil reservoirs filled to recommended levels. Daily checks include the engine oil level, radiator coolant, and air cleaner.
5. After the first 50 hours of use, be sure to perform the maintenance items listed in the maintenance schedule.

STARTING THE ENGINE

SAFETY STARTING DEVICE

Your CM Mower is equipped with four safety switches;

HST foot pedals, PTO lever, master brake pedal and seat. The engine can be started only when;

- HST foot pedals are released
- PTO lever is disengaged
- Depressing the master brake pedal or applying the parking brake
- Operator is in seat.

For safe operation the front mounted equipment should be lowered prior to starting the engine.



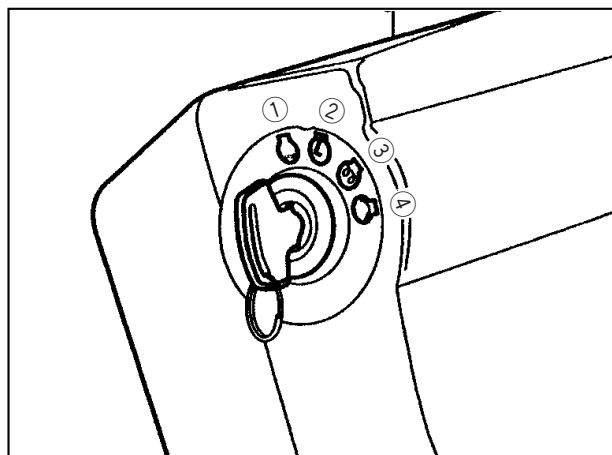
WARNING: NEVER ATTEMPT TO START THE ENGINE WHILE STANDING BESIDE THE UNIT-ALWAYS SIT IN THE SEAT WHEN STARTING THE ENGINE.

IMPORTANT: DO NOT ENGAGE THE STARTING MOTOR CONTINUOUSLY FOR MORE THAN 30 SECONDS; DOING SO MAY CAUSE STARTING MOTOR FAILURE.

WARM WEATHER STARTING

To start a cold engine in warm weather or to start an engine that is warm;

1. Depress the master brake pedal fully and move the PTO and transmission shift levers to the off and neutral positions.
2. Move the hand throttle forward to a near half open position.



KEY SWITCH

1. 'STOP' Position
2. 'Run' Position
3. 'Cold Start' Position
4. 'starter' Position

3. Turn the key switch to the "start" position. When the engine starts, release the key. Check to be sure the warning lights go out. If the engine fails to start after cranking for approximately 10 seconds, refer to the following "COLD WEATHER STARTING" information.

COLD WEATHER STARTING

If the engine fails to start using the preceding warm weather starting procedure or when starting the engine in cold weather;

1. Depress master brake pedal fully and move the PTO and transmission shift levers to the off and neutral positions.
2. Move the hand throttle forward to the full-open position.
3. Turn the key switch to "HEAT" to preheat the precombustion chamber and wait until the glow plug indicator warning light on the instrument panel goes out (approximately 5 seconds).
4. Turn the key switch to the "START" position. When the engine starts, release the key. Check to be sure the warning lights go out.

IMPORTANT: IN COLD WEATHER BELOW 23°F(-5°C) START THE ENGINE AFTER HOLDING THE KEY SWITCH TO THE "HEAT" POSITION FOR APPROXIMATELY 10 SECONDS EVEN IF THE GLOW PLUG INDICATOR WARNING LIGHT HAS GONE OUT.



WARNING: DO NOT USE ETHER WITH THE THERMOSTAT STARTING AID.

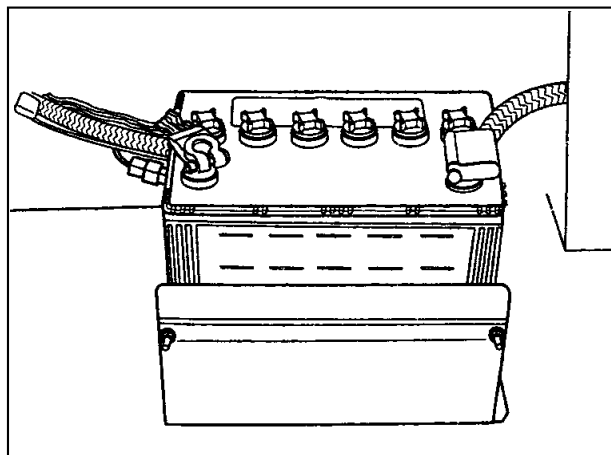
STARTING THE ENGINE WITH JUMPER CABLES



WARNING: START ENGINE ONLY FROM THE OPERATOR'S SEAT.

If it is necessary to use jumper cables to start the engine, follow the instructions below.

1. Shield eyes.



Battery

2. Connect one end of the jumper cable to the battery positive (+) terminal and the other to the auxiliary battery positive (+) terminal. Connect one end of the other cable first to the auxiliary battery (-) negative terminal, and the other end to the (-) negative terminal. Follow the starting procedures above after the jumper cables are connected as instructed.

Idle the engine and turn on all electrical equipment, then disconnect the cables in reverse order of the connecting procedure above. This will help protect the alternator from damage due to extreme load changes.



WARNING: BATTERIES CONTAIN SULFURIC ACID AND PRODUCE EXPLOSIVE GASES. FOLLOW THE INSTRUCTIONS BELOW TO PREVENT PERSONAL INJURY.

- Wear eye and skin protection.
- Keep sparks and flame away.
- Always have adequate ventilation while charging or using the battery.
- If ice is present or the battery is cracked, DO NOT ATTEMPT TO "JUMP START" vehicle.
- Follow the battery manufacturer's instructions which are shown on the battery.
- Bring helper vehicle with a battery of the same voltage as disabled machine within easy cable reach. "THE VEHICLES MUST NOT TOUCH".

ENGINE WARM-UP

In cold weather, run the engine at half throttle for a few minutes to allow engine oil and transmission oil to warm-up.



WARNING: ALWAYS APPLY THE PARKING BRAKE, WHEN LEAVING THE SEAT.

STOPPING THE ENGINE

Stopping the engine should be done according to the following procedures;

1. Push the throttle lever fully rearward.
2. Release the HST foot pedals.
3. Apply the parking brake.
4. Place the range selector and lift control levers in the "N" position.
5. Turn the key start switch to the "OFF" position.
6. Remove the key.

IMPORTANT: Failure to turn the key start switch to the "OFF" position, after the engine stops, will allow the warning lights to remain on, causing the battery to discharge.

IMPORTANT: Do not stop the engine immediately after hard or extended operation. Keep the engine running at slow idle for about 2 minutes to allow engine to cool down.

OPERATING THE HYDROSTATIC TRANSMISSION AND PTO

HYDROSTATIC TRANSMISSION

The hydrostatic transmission is controlled by the HST foot pedals ①, cruise control switch ②, and range selector lever ③.

When operating the range selector lever, place the HST foot pedals in the neutral position. If it is difficult to engage, slightly depress the Forward or Reverse foot pedal for smooth engagement.

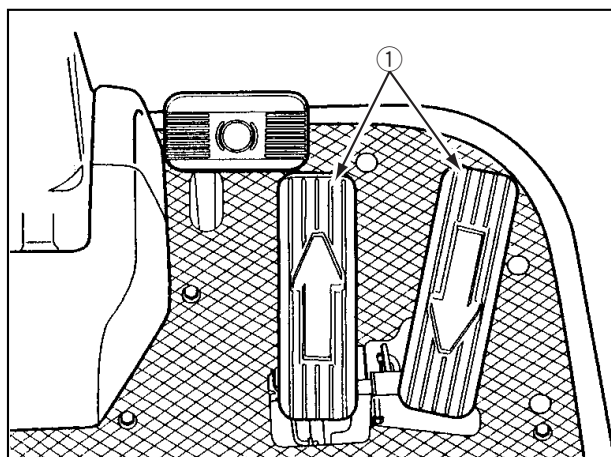
Never engage or disengage the shift lever when the unit is in motion.

With the shift lever in "H" range, ground speed can be varied from zero to maximum by depressing the forward or reverse travel pedal. In "L" range, speeds are about 60% of "H" range. Maximum speeds in reverse are about a 65% of maximum forward speeds.

To stop the unit, release the pedal gradually (except on an emergency). When release, the pedal returns to the Neutral position automatically, stopping the unit. Sudden release can result in an abrupt, and possible dangerous stop.

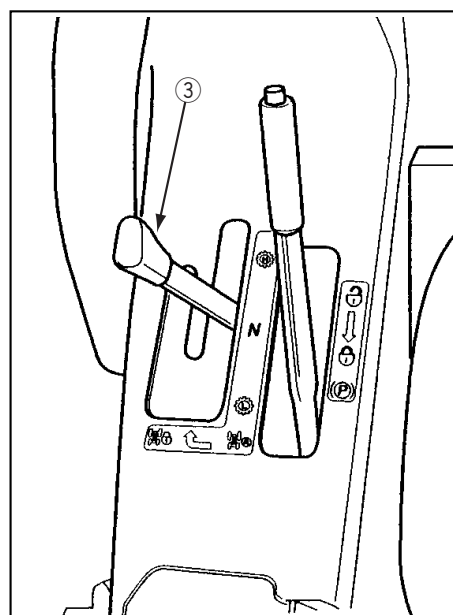
For prolonged operation at a fixed forward speed, use the forward travel pedal to attain the desired speed, then move the cruise control switch to the "ON" position. Speed will remain at the set value when the pedal is released.

To cancel the speed setting or stop, push the switch to the "OFF" position.



HST FOOT PEDALS AND SPEED CONTROL LEVER

1. HST Foot Pedals
2. Cruise Control Switch



RANGE SELECTION

3. Range Selector Lever

AUTOMATIC OR PERMANENT FOUR-WHEEL DRIVE (FWD)

The lever is used to select automatic Four-Wheel Drive or permanent Four-Wheel Drive.

Four Wheel Drive (FWD) Selector Lever is activated by the same lever as the one that activates the Range Selector Lever.

When the lever is located in the position of Range Selector Lever, the tractor will run in Automatic FWD mode.

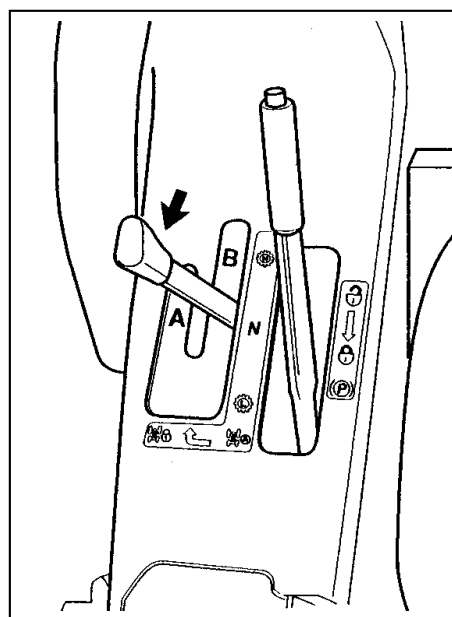
When the lever is brought to the outer slot, the tractor will run in Permanent FWD mode and low range.

When in motion, always bring the unit to a complete stop before moving the selector lever.

Automatic Four-Wheel Drive (FWD) means that the four-wheel drive line is engaged automatically when the front wheels start to slip, but, in normal mowing, reverts to 2WD, this provides sharp and smooth turn without damaging turf.

Permanent Four-Wheel Drive should be used when additional traction is required while operating in loose soil, wet, slippery conditions or slopes.

The steering (rear) axle will not drive in reverse when mower is operating in Automatic FWD.



FWD SELECTION LEVER
A. Permanent FWD
B. Auto FWD

POWER TAKE-OFF OPERATION

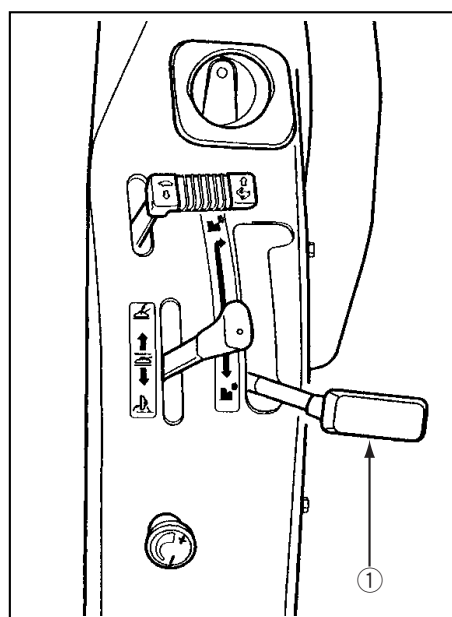
The power take-off (PTO) transfers engine power directly to the PTO equipment.

PTO is controlled through the PTO lever ①. To engage the PTO, push the lever forward. To disengage the PTO, pull the lever rearward.



WARNING! TO AVOID PERSONAL INJURY, KEEP CHILDREN AND OTHERS AWAY WHEN OPERATING PTO EQUIPMENT.

NOTE: The PTO lever must be placed in the disengaged position to start the tractor.



PTO ENGAGEMENT
1. PTO Control lever

OPERATING THE DIFFERENTIAL LOCK

The differential lock is engaged by depressing the pedal ①. Depressing the pedal locks both differential gears together, preventing one wheel from rotating independently of the other. The lock should be used to obtain additional traction from the opposite wheel whenever one wheel begins to slip in wet or loose soil.

Do not engage the differential lock when ground speed is above 8 kmh.



WARNING: DO NOT ENGAGE THE DIFFERENTIAL LOCK WHEN TURNING THE UNIT. IF THE LOCK IS ENGAGED WHEN TURNING, A LOSS OF STEERING CONTROL WILL RESULT.

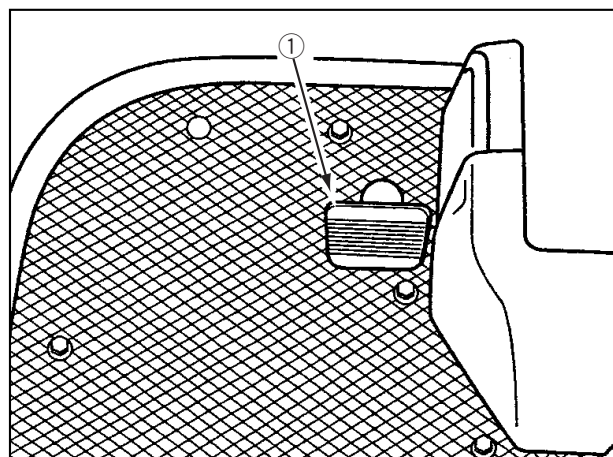
To operate the differential lock depress and hold down the pedal until the lock is positively engaged. It is best to engage the differential lock while the wheels are turning slowly to minimize shock loads to the drive line. If a wheel spins at high speed, as on ice, reduce engine speed to idle before engaging the lock, or damage may occur. The differential lock is released when the pedal releases as the loads equalise on both drive wheels.

NOTE: In some instances the lock may remain engaged after the pedal is released. This may occur if one front wheel tends to turn at a faster speed than the other. Should this happen, the lock may be disengaged by either of two ways:

- Decrease the drawbar pull by raising or disengaging the implement so that neither wheel tends to slip.

— OR —

- Rapidly apply and release a light braking load to the slipping front wheel.



DIFFERENTIAL LOCK
1. Differential lock pedal

OPERATING THE HYDRAULIC LIFT SYSTEM

The hydraulic lift system provides accurate, smooth, and instant hydraulic power for raising front mounted equipment whenever the engine is running.

To raise the front mounted equipment, pull the lift control lever ① rearward and hold it until the desired equipment height is reached.

To lower the equipment, push the lever forward. When pushed all the way forward, the lever will remain in a lowered float detent position.

IMPORTANT: Always set the lift control lever in the float detent position when mowing.



WARNING: MAKE SURE THE AREA IS CLEAR OF PEOPLE BEFORE RAISING OR LOWERING EQUIPMENT.

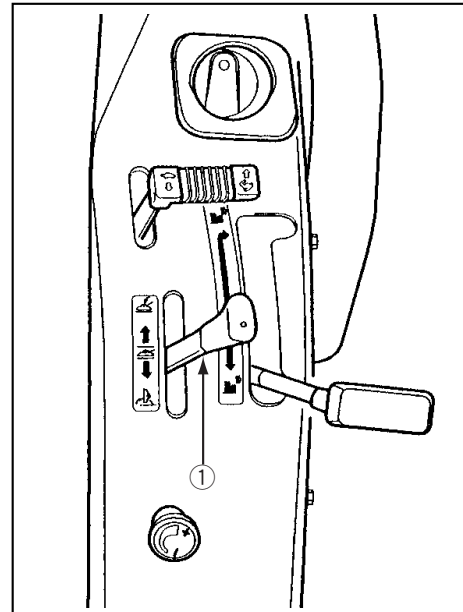


WARNING: ALWAYS LOWER THE HYDRAULIC LIFT AND EQUIPMENT BEFORE STOPPING THE UNIT.

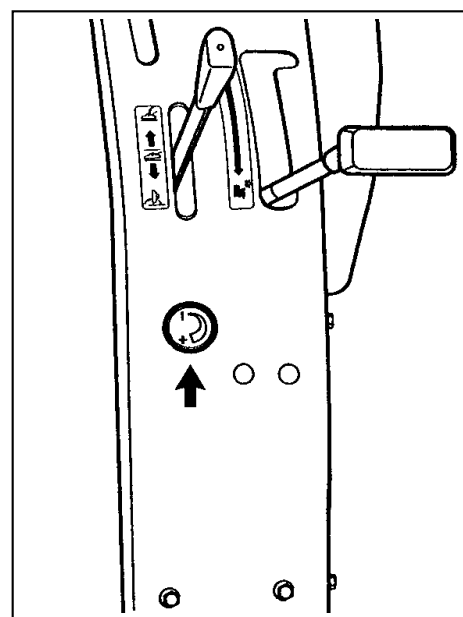
NOTE: Set the Lift Control Lever to RAISE position, and the PTO will be disengaged automatically.

WEIGHT TRANSFER VALVE

The valve is used to transfer the mower deck weight to the tractor unit to reduce equipment weight on turf and prevent damage and improve traction.



HYDRAULIC LIFT CONTROL
1. Lift control lever



Weight Transfer Valve Knob