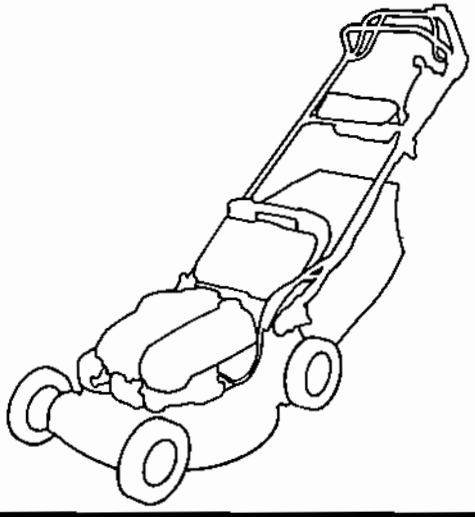
HONDA®

ROTARY MOWER

HR 2150 - HR 2160 - HRA 2160

HYDROSTATIC TRANSMISSION



OWNER'S MANUAL

Thank you for purchasing the Honda Rotary Mower.

This manual covers operation and maintenance of the HONDA ROTARY MOWER HR 2150 - HR 2160 - HRA 2160.

All information in this publication is based on the latest product information available at the time of going to press.
Honda Motor Company Ltd. reserves the right to make changes at any time without notice and without incurring any obligation.
Pay particular attention to statements preceded by the following words :

⚠ DANGER

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

⚠ WARNING

Indicates a strong possibility of severe personal injury or death if instructions are not followed.

CAUTION :

Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE :

Gives helpful information.

If any problem occurs, or if there are any questions concerning the mower, consult an authorized HONDA dealer.

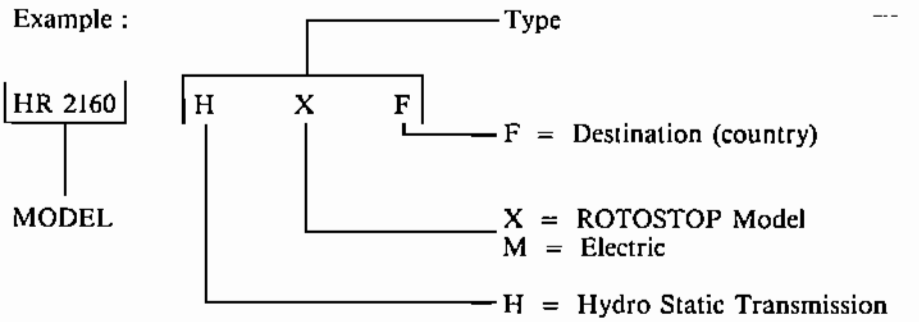
Illustrations herein are mainly based on the model HR 2160 HXF.

⚠ WARNING

The Honda Rotary Mower is designed to give safe and dependable service if operated according to instructions and intended use : mowing (cutting) grass and collecting cut grass, when equipped with a grass bag. Any other use could be dangerous. Read and understand the Owner's Manual before operating the mower.
Failure to do so could result in personal injury or equipment damage.

CONTENTS

The codes used in this manual :

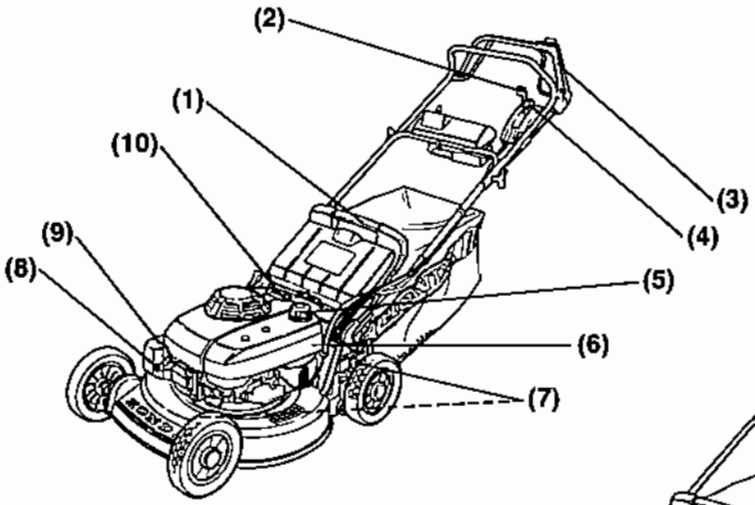


1. GENERAL SAFETY

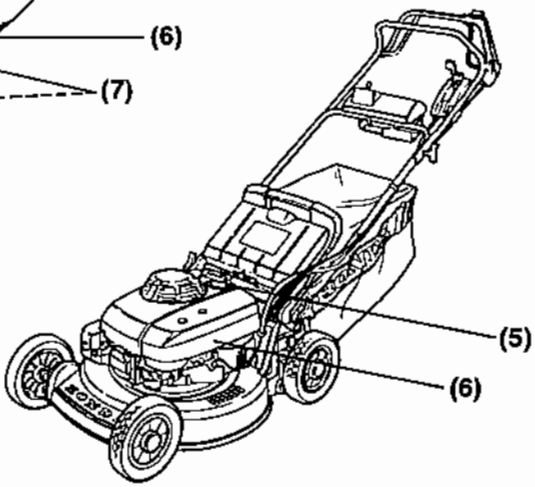
⚠ WARNING

To ensure safe operation :

- Know how to the stop the engine quickly and understand the operation of all controls. Never permit anyone to operate the mower without proper instruction.
- The rear shield is for your protection ; keep it in place at all times.
- The blade is sharp and dangerous. Never put your hands or feet under the mower. Never tilt the mower to expose the blade while the engine is running. If you find it necessary to work on the mower, stop the engine and remove the spark plug cap.
- Never stand in front of self-propelled mowers when the engine is running. Someone may accidently engage the drive clutch.
- Clear the lawn of sticks, stones, or debris before mowing. Mow only in cleared areas in daylight or good artificial light.
- Protect yourself by wearing long trousers and appropriate shoes. Don't wear loose fitting clothing or sandals when mowing.
- Stop the engine immediately if the blade hits an object or if the mower starts to vibrate. Remove the spark plug cap to be certain that the engine will not start accidently and inspect the mower for damage. Replace any damaged parts before continuing to mow.
- Do not allow children to operate the mower. Keep children and pets away from the area of operation.
- Never run the engine in an enclosed or confined area. Exhaust gas contains poisonous carbon monoxide gas ; exposure may cause loss of consciousness and may lead to death.
- Petrol is highly flammable and is explosive under certain conditions. Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks where the mower is refueled or where petrol is stored.
- Do not overfill the fuel tank. Make sure the filler cap is closed securely.
- Be careful not to spill fuel when refilling. Fuel vapour or spilled fuel may ignite. If any fuel is spilled, make sure the area is dry and allow petrol vapours to dissipate before starting the engine.
- The muffler becomes very hot during operation and remains hot for a while after the engine stops. Be careful not to touch the muffler while it is hot. Let the engine cool before storing the mower indoors.
- To reduce the hazard of fire, never leave grass clippings or leaves in the bag when the mower is stored. Never leave containers of clippings in or near buildings. The decomposition of vegetable matter causes a considerable rise in temperature.

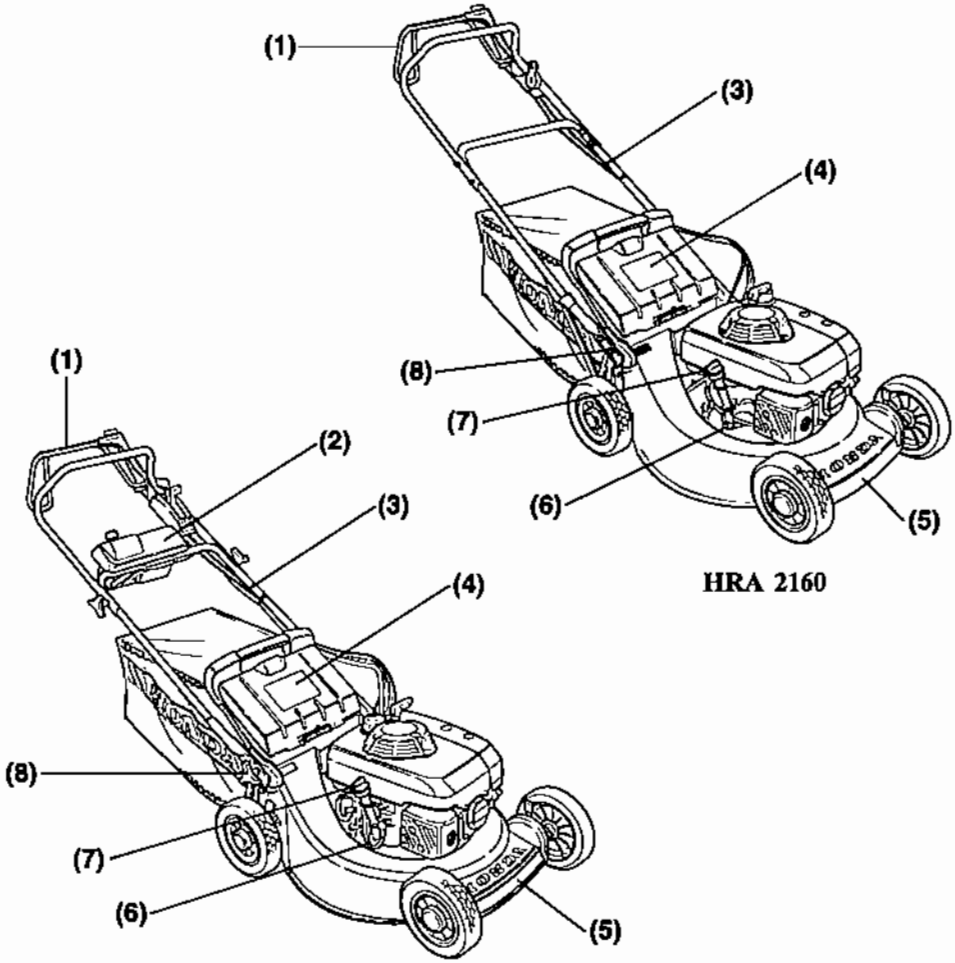


HR 2160 HMF



HR 2150 HMF

1/ GRASS BAG HANDLE
2/ SHIFT LEVER
3/ ROTO-STOP LEVER
4/ THROTTLE CONTROL LEVER
5/ FUEL TANK CAP
6/ AIR CLEANER
7/ CUTTING HEIGHT ADJUSTING LEVER
8/ SPARK PLUG CAP
9/ MUFFLER
10/ RECOIL STARTER



HRA 2160

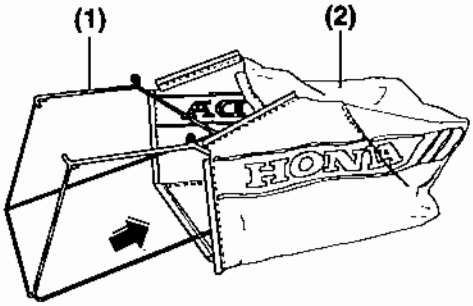
HR 2160 HMF

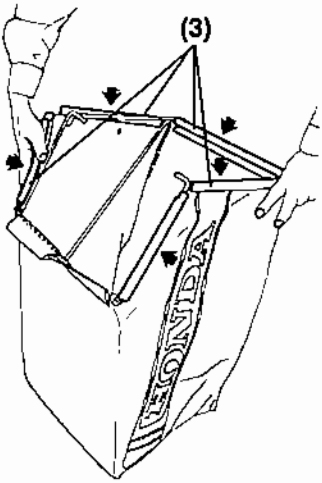
1/ DRIVE CLUTCH LEVER
2/ CONTROL BOX (HM Types)
3/ HANDLE
4/ DISCHARGE GUARD
5/ CUTTER HOUSING
6/ ENGINE OIL DRAIN PLUG
7/ OIL FILLER CAP
8/ HANDLE HEIGHT ADJUSTER

3. GRASS BAG ASSEMBLY

1. Insert the bag frame into the grass bag as shown.
2. Hook the plastic edges of the grass bag onto the frame.

1/GRASS BAG FRAME
2/GRASS BAG
3/PLASTIC EDGE



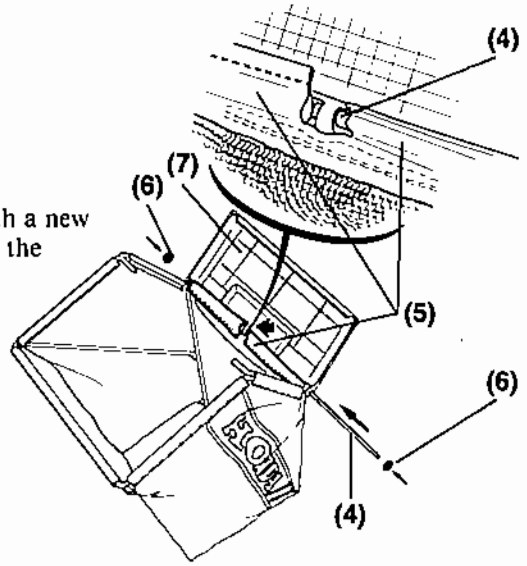


3. Assemble the upper lid by threading the shaft througt the hinge and the hem of the grass collection bag.
Fix the cap to each end of the shaft using a mallet.

4/ SHAFT
5/ HEM
6/ CAP
7/ UPPER LID

NOTE :

- Be sure to replace the cap nuts with a new one when disassembling or replacing the grass bag as an assembly.
- When assembling the grass bag, insert the shaft in the sequence shown.
- Ensure that the shaft (1) is threaded through the hem of the grass collection bag as shown.



4. CONTROLS

THROTTLE CONTROL LEVER

Throttle positions : START (CHOKE)

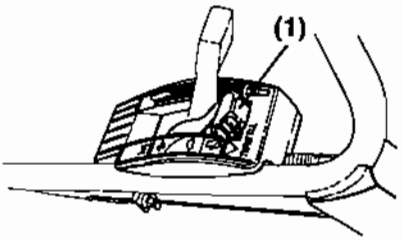
HI

LO

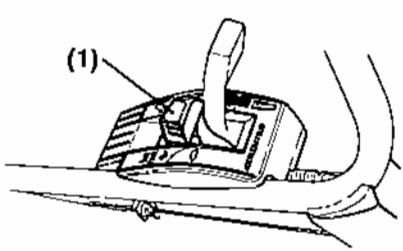
STOP (H - HX types)

1/ THROTTLE CONTROL LEVER

(H and HX types)



(HM types)



ROTO-STOP (ROTO-STOP equipped type only)

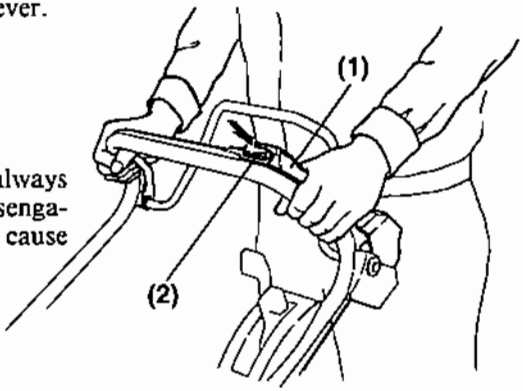
The cutting blade turns when the lever is engaged whilst depressing the yellow button and when the lever is released.

NOTE :

It is essential that ROTO-STOP engagement/disengagement be carried out with a single, sharp movement of the lever.

1/ ROTO-STOP LEVER
2/ YELLOW BUTTON

The ROTO-STOP lever must always be completely engaged, or disengaged. A middle position may cause damage to the blade clutch.



DRIVE CLUTCH LEVER

The mower moves forward only when the drive clutch lever is engaged and stops when the lever is released.

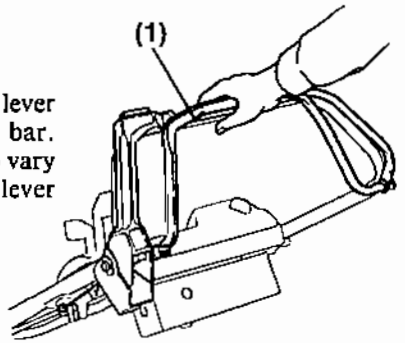
CAUTION :

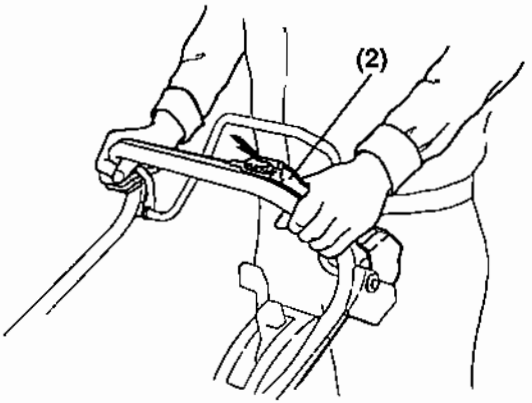
When cutting grass :

- **First, engage the ROTO-STOP lever only (ROTO-STOP equipped type only). At this time, the cutting blade should be free of any obstacle such as grass, etc. to allow for rapid acceleration to normal engine RPM.**
- **After normal engine RPM is reached, engage the drive clutch lever, this allows the engine to operate smoothly and efficiently.**

1/ DRIVE CLUTCH LEVER
2/ ROTO-STOP LEVER

To propel the mower push the drive clutch lever forward and hold it against the handle bar. Release the lever to disengage the drive. To vary the forward speed move the orange shift lever to the required position.





CAUTION :

Always maintain the ROTO-STOP lever fully squeezed during mowing and whilst adjusting the speed to avoid the clutch slipping.

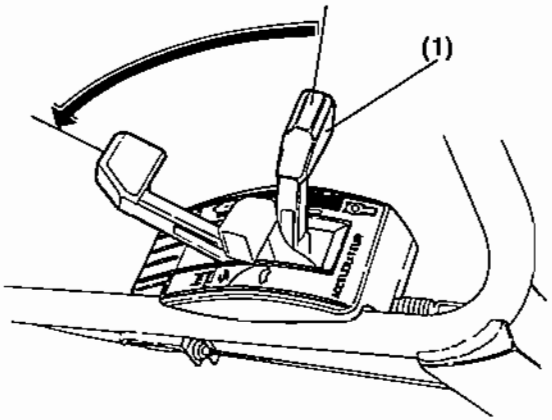
SHIFT LEVER

Continuous forward speeds are available :

Type / Position	HR 2150	HR 2160	HRA 2160
	H. HX. HM.		
MINIMUM	0.6 m/sec	0.6 m/sec	0.85 m/s
MAXIMUM	1,45 m/sec	1,45 m/sec	1.65 m/s

All intermediate speeds can be selected by adjusting the shift lever.

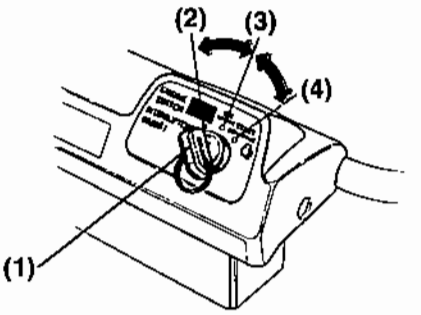
1/ SHIFT LEVER



CONTROL BOX (HM types)

The HM type is equipped with electric starter and control box to allow easy operation. This allows the engine to be started remotely.

1/ ENGINE SWITCH
2/ OFF
3/ ON
4/ START



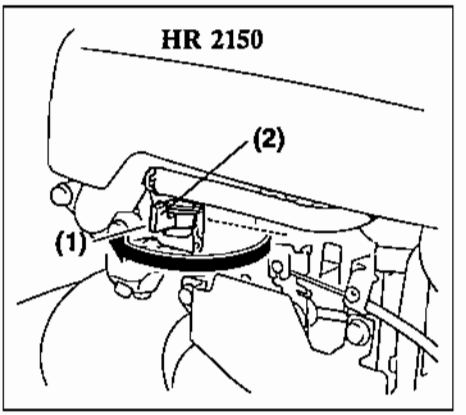
FUEL VALVE

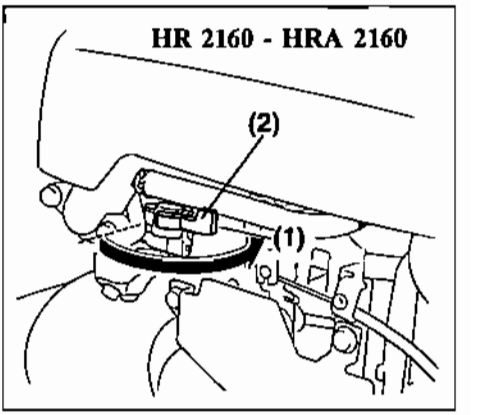
The fuel valve controls the flow of fuel from the fuel tank to the carburetor. Always ensure the valve is turned fully to the ON (open) or OFF (closed) position.

NOTE :

To avoid the risk of petrol spillage when transporting or storing the mower, turn the valve to the OFF (closed) position.

1/ ON
2/ FUEL VALVE





5. PRECAUTIONS

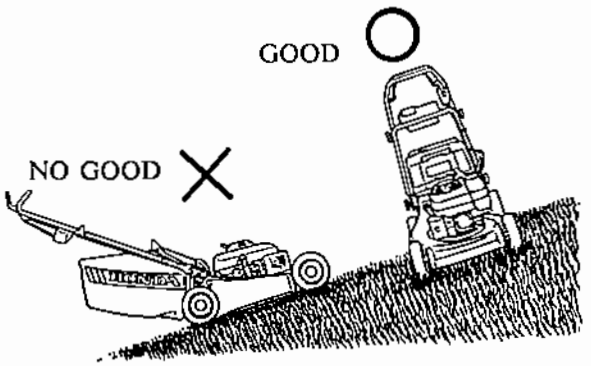
The following suggestions and rules are intented to help you operate your Honda mower under the safest possible conditions. Be alert and exercise extreme care when using the mower.

⚠ WARNING

• Be especially careful when mowing uneven or rough ground. The mower may tilt, exposing the blade and hidden objects could be thrown by the blade. Keep all four wheels on the ground.
• Mow across slopes. Do not mow excessively steep slopes.
• Control direction by the handle and not by foot pressure on the mower deck.
• Keep a firm hold on the handle and walk, never run, with the mower. Don't lag behind the machine or let it pull you.

CAUTION :

• Use extra care when mowing around objects to keep the blade from striking them. Never deliberately mow over any object.
• Stop the engine immediately if the blade hits an object or the mower starts to vibrate. Remove the spark plug cap (keep the wire away from the plug) and remove the engine key (HM types) and then inspect for damage.



• When mowing on an uneven surface, always use first gear, reduce engine speed, grip the mower's handles firmly and watch your step.
• Move the shift lever a little towards HIGH if the mover speed is reduced excessively on the upgrade or when riding over an obstacle.

6. BEFORE YOU START THE MOWER

For efficient and safe mowing, always carry out the following checks before using the mower.

⚠ WARNING

Carry out the pre-operation checks on firm and level ground, with the engine switched off and the spark plug cap removed from the spark plug.

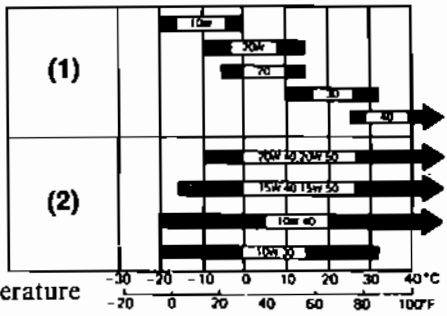
CHECK THE ENGINE OIL LEVEL

CAUTION :

- **Engine oil condition is a major factor affecting engine performance and service life. Non-detergent oil and 2-stroke engine oil are not recommended.**
- **Running the engine with insufficient oil can cause serious damage to the engine. Use Honda 4-stroke oil, or an equivalent high detergent, premium quality motor oil. Select the appropriate viscosity for the average temperature in your area.**

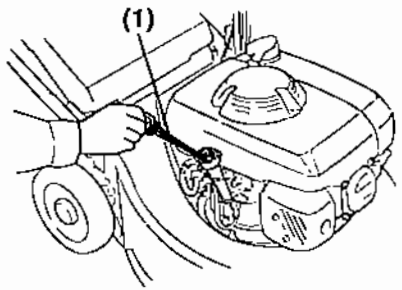
1/ SG SF/CC CD
SINGLE VISCOSITY

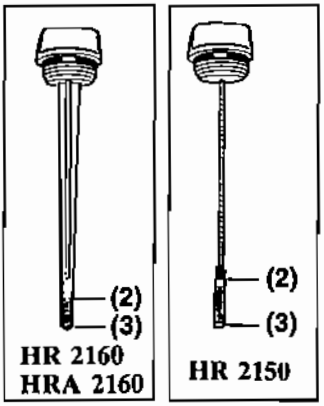
2/ SG SF/CC CD
MULTI VISCOSITY



Ambient temperature

a. Place the mower on a level surface
b. Remove the oil filler cap and wipe the dipstick clean.
c. Insert the dipstick into the oil filler neck, but do not screw it in.
d. Check the oil level shown on the dipstick. If near the lower level, fill to the upper level with the recommended oil.





1/ OIL FILLER CAP
2/ UPPER LEVEL
3/ LOWER LEVEL

CHECK THE FUEL LEVEL

Check the fuel level and refill the tank if the fuel level is low.
Never use an oil/petrol mixture or dirty petrol. Avoid getting dirt, dust or water into the fuel tank. After refilling the tank, screw the fuel tank filler cap back on tightly. Use automotive petrol (unleaded preferred)

⚠ WARNING

• Petrol is highly flammable and explosive under certain conditions.
• Refuel in a well-ventilated area, with the engine stopped. Do not smoke or allow flames or sparks in the area where the engine is refueled or where gasoline is stored.
• Do not overfill the tank (there should be no fuel in the filler neck). After refueling, make sure the tank cap is closed properly and securely.
• Be careful not to spill fuel when refueling. Spilled fuel or fuel vapour may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.
• Avoid repeated or prolonged contact with the skin or breathing of vapour. Keep out of reach of children.

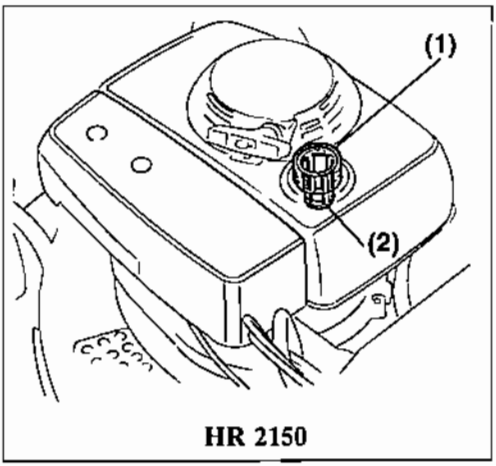
NOTE :

Petrol substitutes are not recommended and can harm the components of the fuel system.

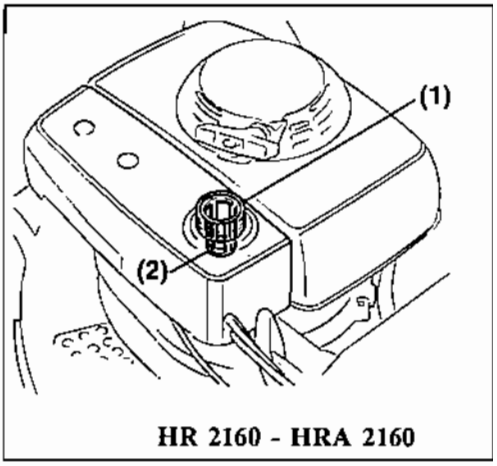
Petrol tank capacity : HR 1950 - HR 2150 : 1 l. (0,22 imp.gal)
HR 2160 - HRA 2160 : 2 l. (0,44 imp.gal)

Recommended fuel : ordinary, unleaded prefered.

1/ FUEL FILLER HOLE
2/ LEVEL MARK



HR 2150

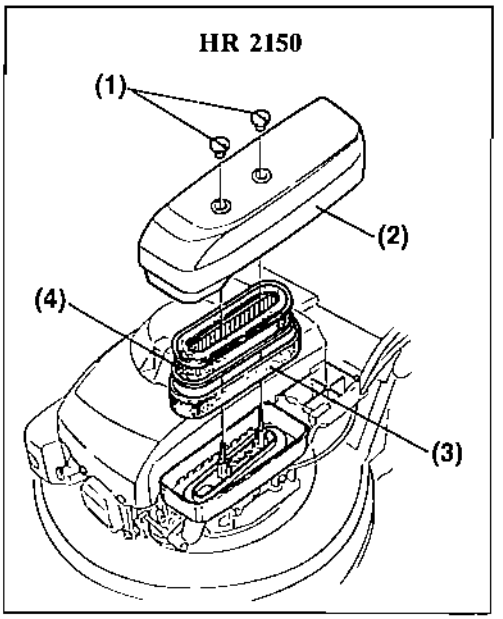


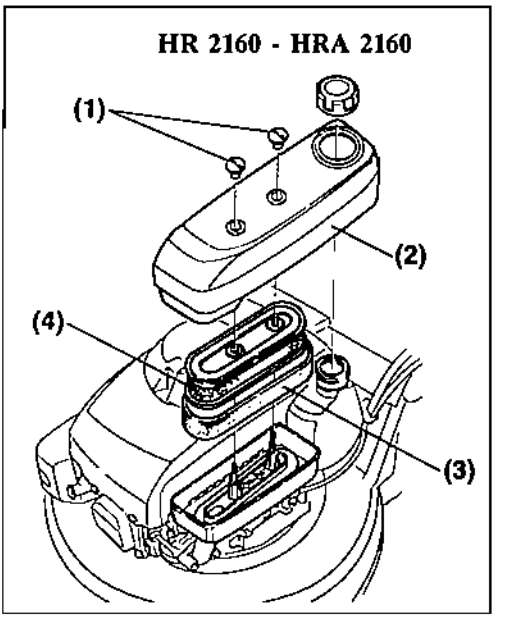
HR 2160 - HRA 2160

CHECK THE AIR CLEANER

a. Check the air cleaner element to see if it is dirty.
b. If the element is dirty, follow the cleaning procedure described on page 35.

1/ BOLTS
2/ AIR CLEANER COVER
3/ FOAM ELEMENT
4/ PAPER ELEMENT





NOTE :

- After cleaning the air cleaner element, replace the air cleaner cover and close it securely. If the bolts holding the cover are not tightened fully, the cover may not stay in place and this could cause the engine to malfunction.
- Never run the engine without an air cleaner, as premature engine wear will result.

CHECK THE BLADE CONDITION

Before use, check to see if the cutter blade is damaged or badly worn.

⚠ WARNING

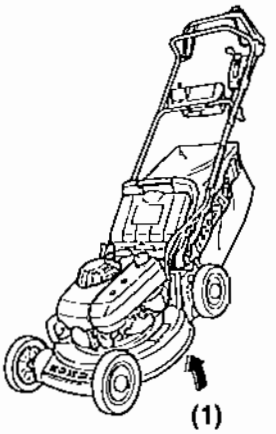
To avoid severe personal injury, disconnect the spark plug cap to prevent accidental starting, and wear heavy gloves to protect your hands from the cutter blade.

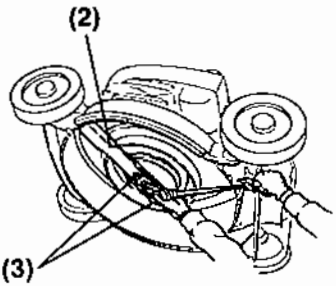
a. Stop the engine and turn the fuel tap to the OFF (closed) position.
b. Disconnect the spark plug cap.
c. Rest the mower on its side, carburetor side up (left hand side).

CAUTION :

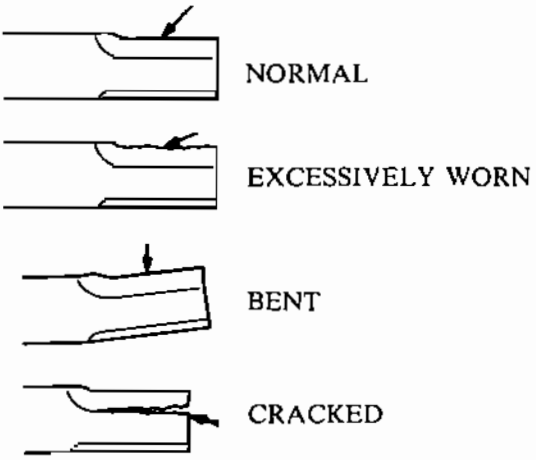
Never position the mower with the carburetor side down, as this will make the engine difficult to start.

1/ CARBURETOR SIDE UP
2/ BLADE
3/ BLADE BOLTS





d. Check the blade for wear and replace if necessary



⚠ WARNING

Severe injury can result if a piece of blade breaks off and is thrown from under the mower deck during operation.

- **Never operate the mower with a worn or damaged blade.**
- **Never operate the mower with a blade that is cracked or notched at the base of its upturned rear edge.**

CAUTION :

- **Use a genuine Honda replacement blade or equivalent.**
- **To reduce the possibility of weakening the blade, or causing imbalance or poor cutting performance, sharpening should be performed by an authorized Honda lawn mower dealer.**

NOTE :

Blade wear is quicker when the mower is operated in sandy environments. If the mower is to be operated in such conditions, the blade should be checked frequently.

e. Check that the blade bolts are properly tightened.

Blade bolt torque : 5.0 - 6.0 kg-m (36.2 - 43.4 ft-lb)

CUTTING HEIGHT ADJUSTMENT

in	1/2	3/4	1	1 1/2	2	2 1/2	3	3 1/2
mm	13	16	25	38	51	63	76	89
HR 2150 - HR 2160								
HRA 2160								
HR 2160 HMS - HRA 2160 HXE								
HR 2150 HXE - HR 2160 HXE								

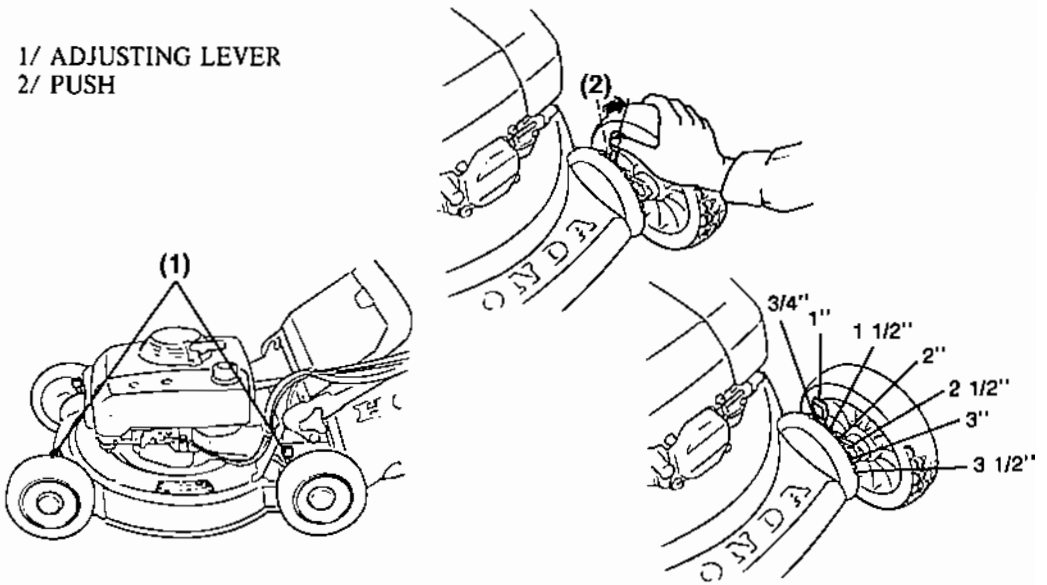
To change cutting height :

1. Stop the engine.
2. Push the front and rear adjusting levers towards the wheels and move them up or down to raise or lower the cutting height. Adjust front and rear wheels to the same height.

⚠ WARNING

- **Before adjusting the height, make sure the engine is switched off.**
- **Be careful not to touch the muffler when adjusting the right front wheel height.**
- **The muffler will remain hot for a while after the engine is stopped.**
- **Before moving the mower from one place to another, switch off the engine and adjust height to the highest setting.**

1/ ADJUSTING LEVER
2/ PUSH



GRASS BAG

The grass bag is subject to wear under normal usage. Frequently check for fraying and tears. Replace deteriorated bags only with Honda replacement bags or equivalent.

Removal :

1. Stop the engine.
2. Lift the discharge guard, grasp the handle and remove the bag rearward while holding the bag upward.

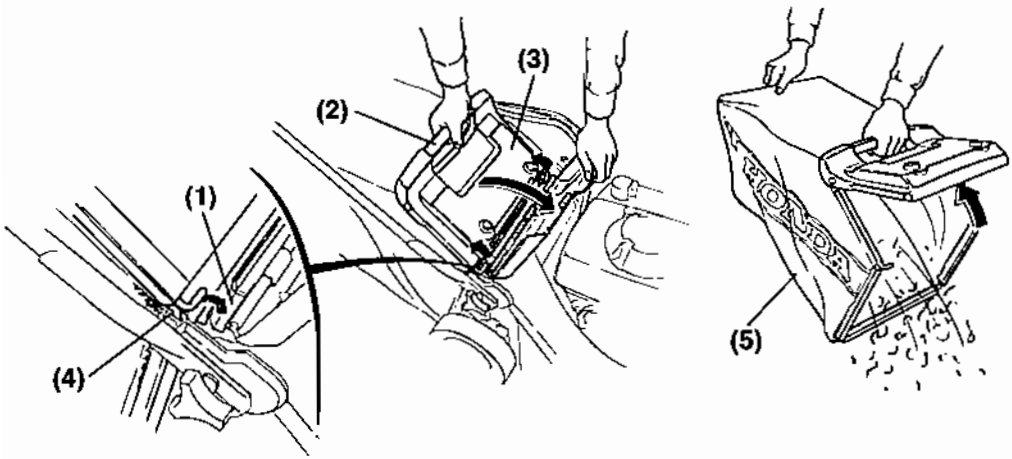
Installation :

Raise the discharge guard and hook the front end of the grass bag over the retaining lugs on the mower.

⚠ WARNING

Make sure the grass bag fastener is securely closed before use (discharge guard).

1/ LUG
2/ GRASS BAG HANDLE
3/ DISCHARGE GUARD
4/ FRONT END
5/ GRASS BAG



7. STARTING AND STOPPING THE ENGINE

STARTING THE ENGINE

- With recoil starter

⚠ WARNING

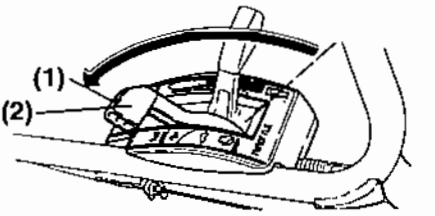
Exhaust gas contains poisonous carbon monoxide. Never run the engine in an enclosed area. Be sure to provide adequate ventilation.

1. Move the throttle lever to "CHOKE".

NOTE :

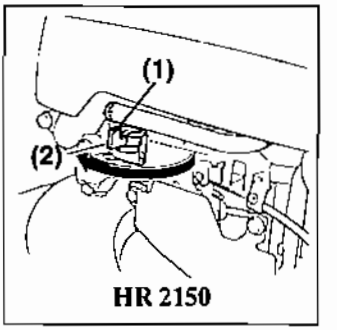
- Do not use "CHOKE" when the engine is warm or the air temperature is high. Move the throttle lever to "HIGH" instead.

1/ CHOKE
2/ THROTTLE LEVER

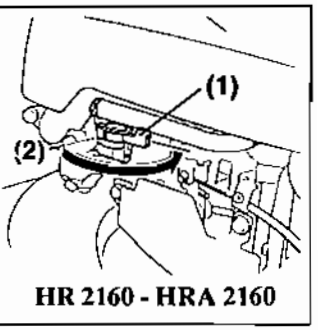


2. Turn the fuel valve "ON".

1/ FUEL VALVE
2/ ON



HR 2150



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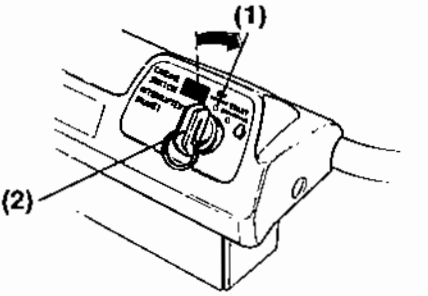
3. Turn the engine switch to the "ON" position (HM types).

1/ ON POSITION
2/ ENGINE SWITCH

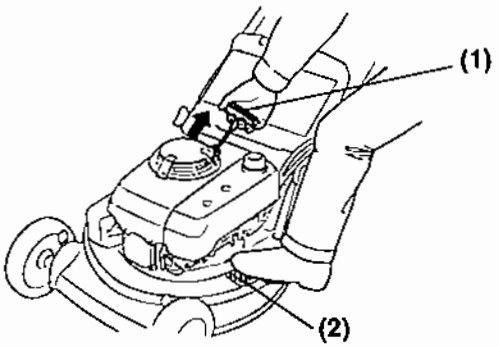


4. Place your foot on the non-slip step on the mower housing.
5. Pull the starter rope lightly until you feel resistance, then pull briskly.

NOTE :

Do not let the rope snap back ; return it by hand.

1/ STARTER
2/ STEP

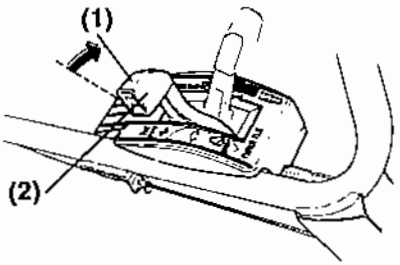


6. After the engine warms up, move the throttle to "HIGH".
Engage the ROTO-STOP to turn the blade (ROTO-STOP equipped type only).
7. Move the shift lever to select the desired mowing speed position. Engage the drive clutch and mower will move forward.

NOTE :

- The throttle lever may be positioned anywhere between "HI" and "LO" to adjust engine speed during operation. Best results are achieved however on "HI".
- The engine may stall if the lever is at "LO" when the ROTO-STOP is engaged.

1/ HI
2/ THROTTLE LEVER



With electric starter (HM types)

⚠ WARNING

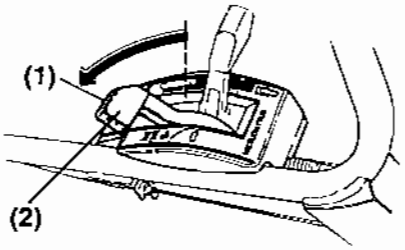
Exhaust gas contains poisonous carbon monoxide. Never run the mower in an enclosed area. Be sure to provide adequate ventilation.

1. Move the throttle lever to "START (choke)".

NOTE :

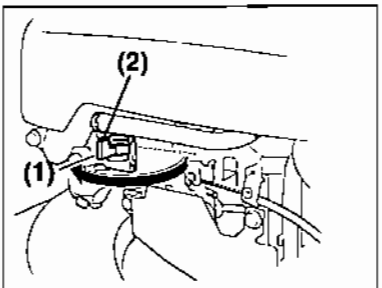
• Do not use "START (choke)" when the engine is warm or the air temperature is high. Move the throttle level to "HIGH" instead.

1/ CHOKE
2/ THROTTLE LEVER

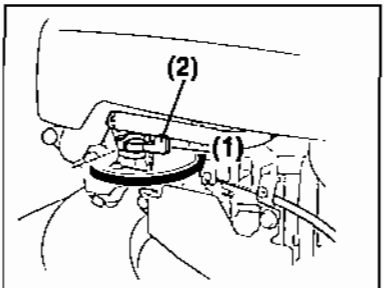


2. Turn the fuel valve "ON".

1/ ON
2/ FUEL VALVE



HR 2150



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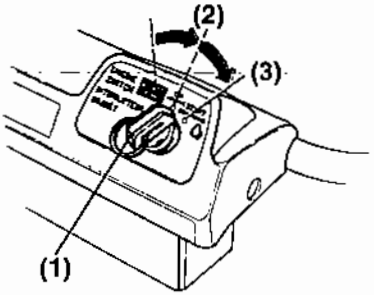
3. Turn the engine switch to the "START" position and hold it there until the engine starts.
4. After the engine starts, let the engine switch return to ON.
Do not use the electric starter for more than 5 seconds at a time. If the engine fails to start, release the switch and wait 10 seconds before operating the starter again.

1/ ENGINE SWITCH
2/ ON (DEPRESS)
3/ START

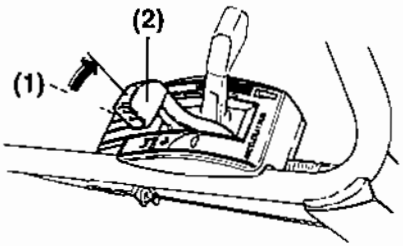


5. After the engine warms up, move the trottle to "HI". Engage the ROTO-STOP to start the blade.
6. Move the shift lever to select the desired mowing speed position. Engage the drive clutch and mover will move forward.

NOTE :

•The throttle lever may be moved anywhere between "HI" and "LO" to adjust engine speed during operation. Best results are obtained however on the "HI" position.
• The engine may stall if the lever is at "LO" when the ROTO-STOP is engaged.

1/ HI
2/ THROTTLE LEVER



HIGH ALTITUDE OPERATION

At high altitude, the standard carburetor air fuel mixture will be excessively rich. Performance will decrease and fuel consumption will increase.

High altitude performance can be improved by installing a smaller diameter main fuel jet in the carburetor and readjusting the pilot screw. If you operate the rotary mower at altitudes higher than 1830 m (6000 ft) above sea level, have your authorized Honda dealer perform these carburetor modifications.

Even with suitable carburetor jetting, engine horsepower will decrease approximately 3.5% for each 305 m (1000 ft) increase in altitude. The affect of altitude on horsepower will be greater than this if no carburetor modification is made.

CAUTION :

Operation of the rotary mower at an altitude lower than the carburetor is jetted for may result in overheating and serious engine damage, caused by an excessively weak air/fuel mixture.

FLOODED ENGINE

If the engine won't start after several pulls on the starter rope or presses of the starter, the engine may be flooded.

To clear a flooded engine :

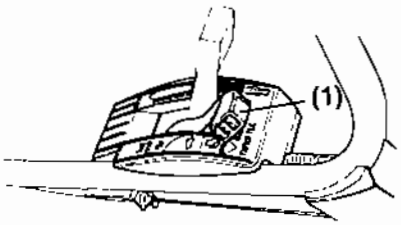
1. Move the throttle lever to "STOP" and turn off the fuel valve (H - HX types). Turn the engine switch to the "OFF" and turn off the fuel valve (HM types).

2. Remove and dry the spark plug. When re-installing the plug, thread it in by hand until it seats. Then tighten it an additional 1/8 - 1/4 turn with the spark plug wrench to compress the washer.

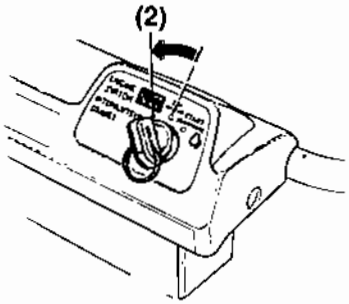
3. Move the throttle to "HI", turn on the fuel valve and repeat steps 3-6 (page 22) under "Starting the Engine".

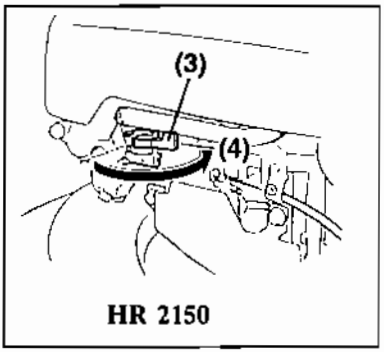
1/ STOP
2/ OFF
3/ FUEL VALVE
4/ OFF (CLOSED)

(H and HX types)

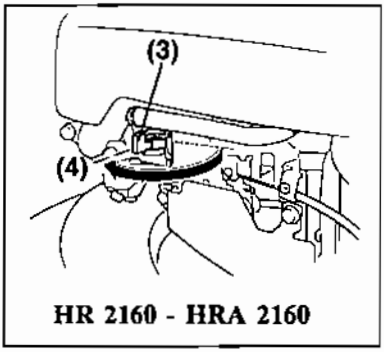


(HM types)





HR 2150



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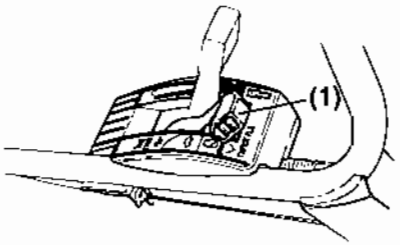
STOPPING THE ENGINE

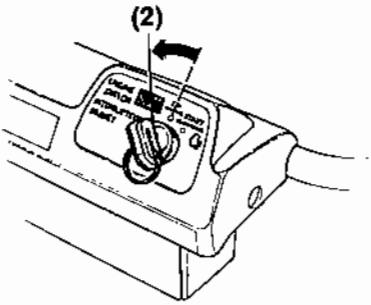
1. Release the drive clutch.
2. Release the ROTO-STOP lever (HM - HX types).
3. Move the throttle lever to "STOP" (H - HX types).
Turn the engine switch to "OFF" (HM types).
4. Close the fuel valve.

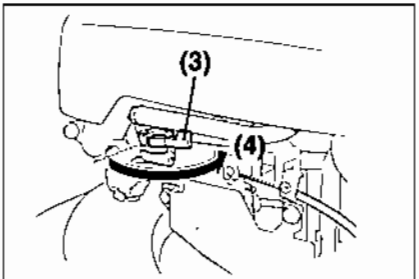
1/ STOP
2/ OFF
3/ FUEL VALVE
4/ OFF (CLOSED)

(H and HX types)

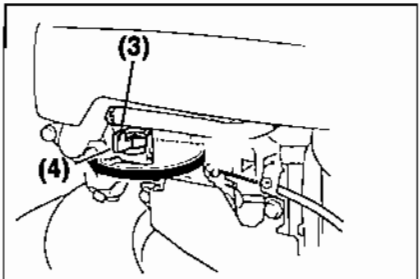


(HM types)





HR 2150



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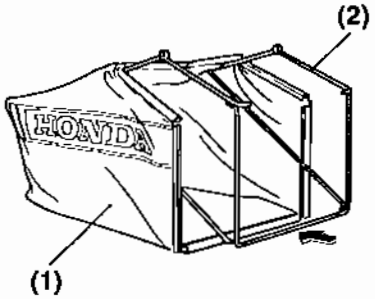
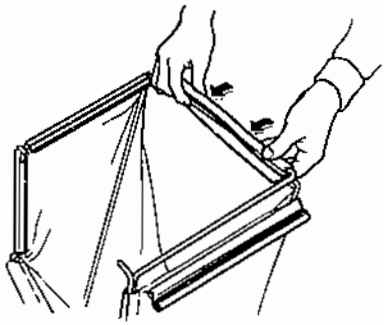
GRASS BAG CLEANING

- Blocked mesh stops grass from going into the bag.
- To clean the bag, hose it down and ensure it is completely dry before using it again.

If the bag is used whilst damp it will clog up quickly.

1/ GRASS BAG
2/ GRASS BAG MOUNTING





CAUTION :

Steam or high pressure jet wash will damage the grass bag.

TRANSPORTING

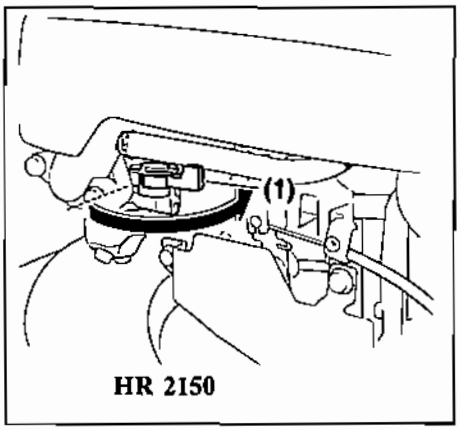
Turn the fuel valve OFF when transporting the mower.

⚠ WARNING

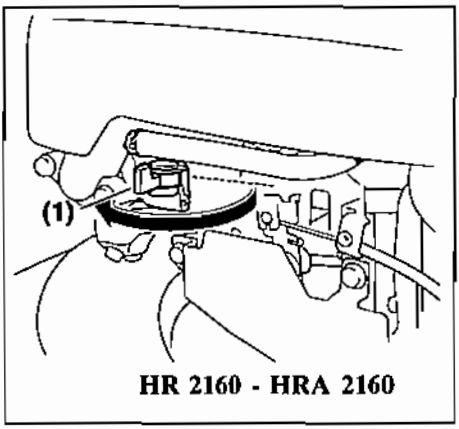
To avoid fuel and oil spillage do not tilt the mower ; Spilled fuel or vapour may ignite.

The handle may be folded for convenience :
1. Remove the grass bag (page 20).
2. Loosen the handle knobs and fold the handle as shown.

1/ OFF (closed)
2/ HANDLE



HR 2150



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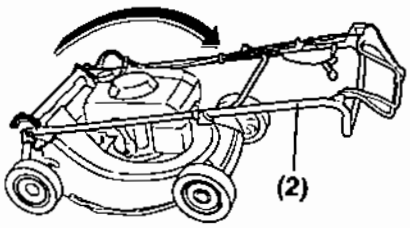
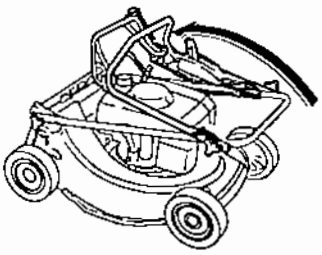
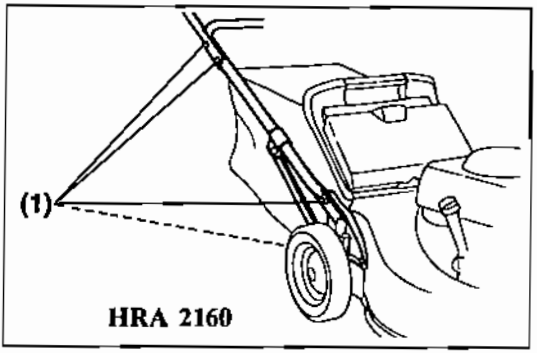




NOTE :

After folding the handle, check that the cables are not kinked, twisted or pulled taught.

For the HRA 2160 transportation, loosen the four fixing bolts to fold the handle.



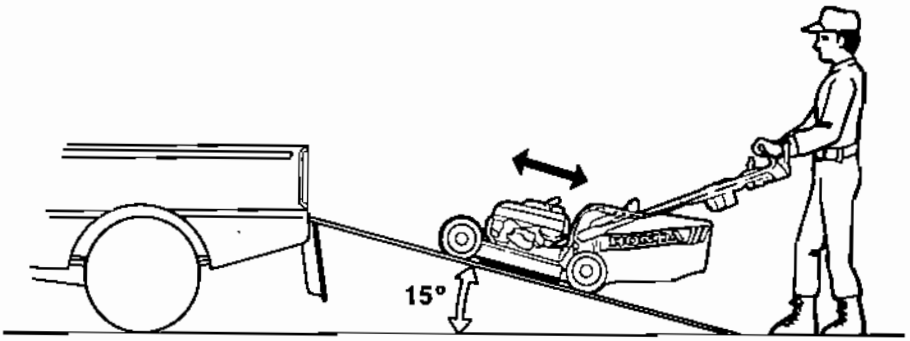
HRA 2160

1/ FIXING BOLTS

Loading

CAUTION :

- **To avoid any possible loss of control or damage to the mower, do not use the traction system when taking the mower up or down a ramp.**
- **To avoid damaging the traction system, do not engage the clutch drive when the mower is moved backwards.**
- **Transport the mower in the normal horizontal position, the four wheels flat on the truck platform.**
- **Use a loading ramp, or get someone to help you load or unload the mower.**
- **Adjust the loading ramp, so that it is inclined at an angle of less than 15°**



- **When transporting the mower, tie it down and place wedges under the wheels.**
- **Do not let the tie cords interfere with the following components : throttle lever, blade brake lever, fuel control valve, petrol tank, blade height adjustment and all control cables.**

PREPARATION FOR STORAGE

The following steps should be taken to protect the mower whenever it is to be stored for a period of more than 30 days.

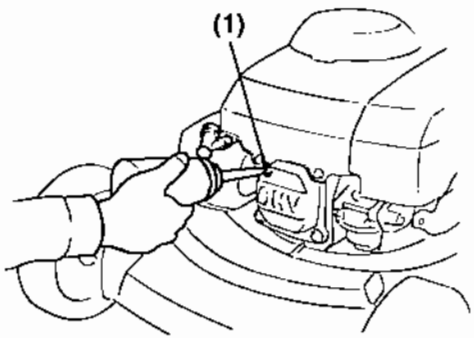
NOTE :

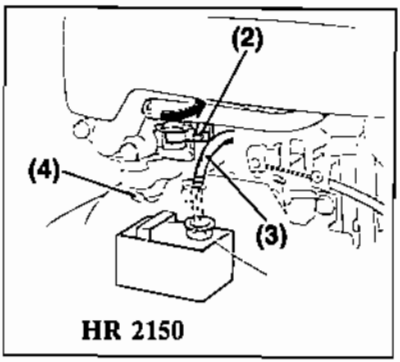
If the mower is to be stored for a period greater than 3 months, first remove the spark plug and pour three tablespoons of clean motor oil into the cylinder. Pull the starter rope slowly two or three times to distribute the oil.
Storing the mower for a long time on its side may make the engine difficult to start and cause HST transmission oil leakage.

⚠ WARNING

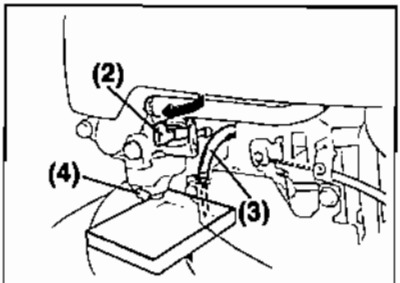
- **Petrol is highly flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in the area.**
- **Do not drain the fuel tank when the exhaust system is hot.**

1/ CYLINDER
2/ FUEL VALVE
3/ CARBURETOR DRAIN BOLT
4/ FUEL LINE





HR 2150



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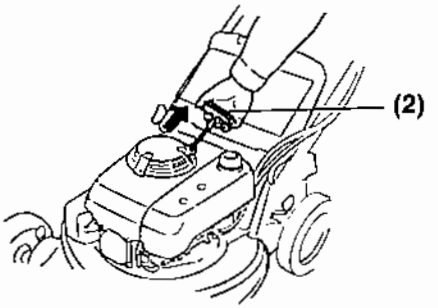
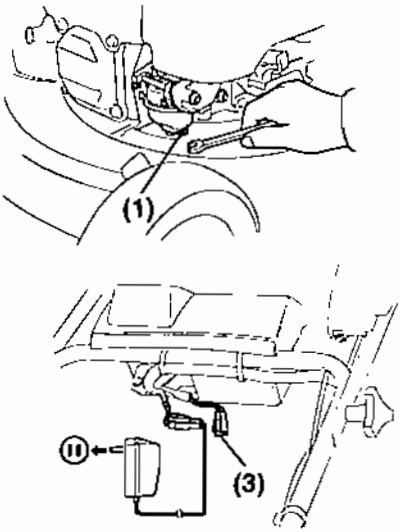
1. Drain the fuel tank and carburetor into a suitable container.

a. Disconnect the fuel lines from the carburetor and drain the fuel tank.
b. Remove the drain bolt to drain the carburetor.
c. Replace the drain bolt, connect the fuel line and turn the fuel valve OFF.

2. Change the engine oil (p. 35).
3. Pull the starter rope until resistance is felt. This closes the valves and protects them from dust and corrosion.
4. Coat areas that may rust with a light film of oil. Cover the mower and store it on a level surface in a dry, dust-free area.
5. Disconnect the black lead on the battery under the control box (HM types).
6. For electric starter models, recharge the battery every 6 months (p.38) or when the terminal voltage is less than 12 volts.

1/ DRAIN BOLT
2/ STARTER ROPE
3/ BLACK LEAD





REMOVAL FROM STORAGE

1. Remove the spark plug ; check that it is clean and the gap properly set (p. 37). Pull the starter rope several times.
2. Thread the spark plug in as far as possible by hand, then use the plug wrench to tighten 1/8 to 1/4 turn further.
3. Connect the black lead of the battery under the control box (HM types).
4. Check the engine oil level and condition.
5. Fill the fuel tank and start the engine.

NOTE :

If the cylinder was coated with oil, the engine will smoke when started this is normal.

⚠ WARNING

To prevent accidental start-up, shut off the engine and disconnect the spark plug cap and remove the engine key (HM types) before carrying out any maintenance work.

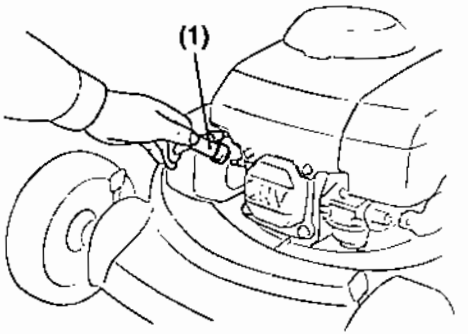
CAUTION :

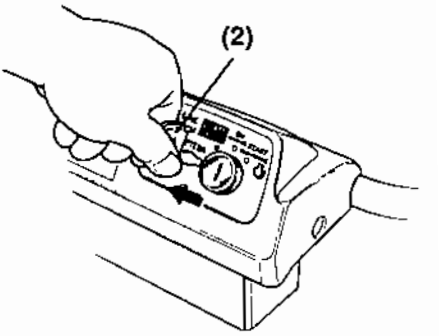
Use only genuine Honda parts or their equivalent for maintenance or repair. Replacement parts which are not of equivalent quality may damage the mower.

Periodic inspection and adjustment of the mower is essential if a high level of performance is to be maintained. Regular maintenance will ensure a long service life. The required service intervals and the kind of maintenance to be performed are described on page 34.

For longer service life and greater efficiency, keep the underside of the mower clean and free from grass clippings by washing it down with a hose after use and/or cleaning it with a wire brush and scraper. Remove any rust and apply a rention are especially important before seasonal storage.

1/ SPARK PLUG CAP
2/ ENGINE SWITCH KEY (HM types)





MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD Perform at every indicated month or operating hour interval, whichever comes first. Item		Eachy use	First month or 20 hours	Every 3 month or 50 hours	Every 6 month or 100 hours	Every year or 300 hours	Every year or 1000 hours
Engine oil	Check level	o					
	Change		o		o		
Transmission oil	Check level					o (2)	
	Change						o (2) HRA 2160 only
Air cleaner	Check	o					
	Clean			o (1)			
Grass Bag	Clean	o					
Blade bolt tightness and blade condition	Check	o					
Spark plug	Check-clean				o		
Spark arrester (optional part)	Clean				o		
ROTO-STOP cable	Check-adjust (3)	o HRA 2160 only	o		o Except HRA 2160		
ROTO-STOP	Check (3)				o (2)		
Shift cable	Check-adjust (3)		o HRA 2160 only		o		
Check-throttle cable	Adjust (3)					o	
Valve clearance	Check-adjust					o (2)	
Fuel tank and filter	Clean					o (2)	
Fuel line	Check (replace if necessary)	Every 2 years (2)					
Battery	Recharge (3)			o (4)			

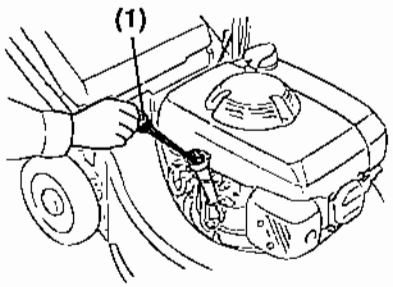
NOTE :

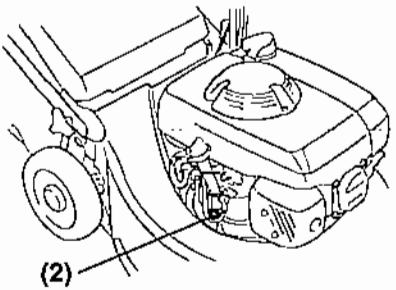
1/ Service more frequently when used in dusty areas.
2/ These items should be serviced by an authorized Honda dealer, unless the owner has the proper tools and is mechanically proficient. See the Honda Shop Manual.
3/ If applicable.
4/ During storage.
5/ For professional commercial use, log hours of operation to determine proper maintenance intervals.

ENGINE OIL CHANGE

Drain the oil while the engine is still warm to ensure rapid and complete draining.
1. Remove the filler cap.
2. Remove the drain bolt, drain the oil and retighten the bolt securely.

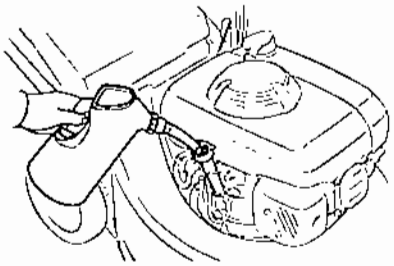
1/ FILLER CAP
2/ OIL DRAIN BOLT

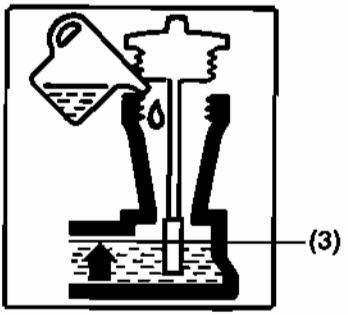




3. Refill to the "upper" level with the recommended oil (see p.13). Tighten the cap securely to prevent leakage.

3/ UPPER OIL LEVEL





CAUTION :

Used motor oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

NOTE :

Please dispose of used motor oil in a manner that is compatible with the environment. We suggest you take it in a sealed container to your local waste disposal site for recycling. Do not throw it in the dustbin or pour it onto the ground, down sewers or drains.

AIR CLEANER SERVICE

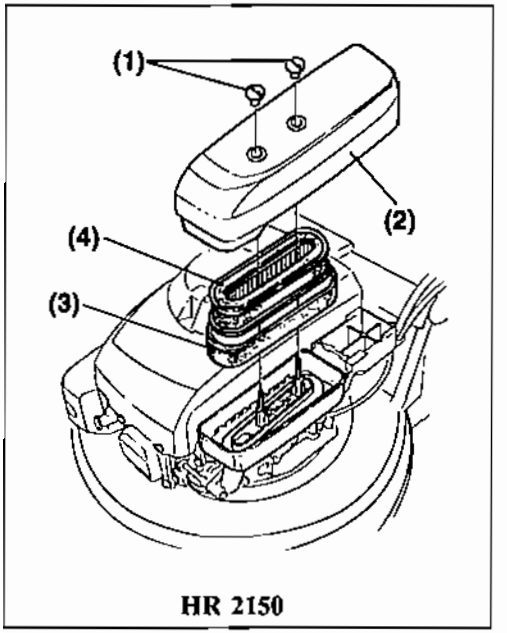
A dirty air cleaner will restrict air flow to the carburetor. To prevent carburetor malfunction, service the air cleaner frequently.

⚠ WARNING

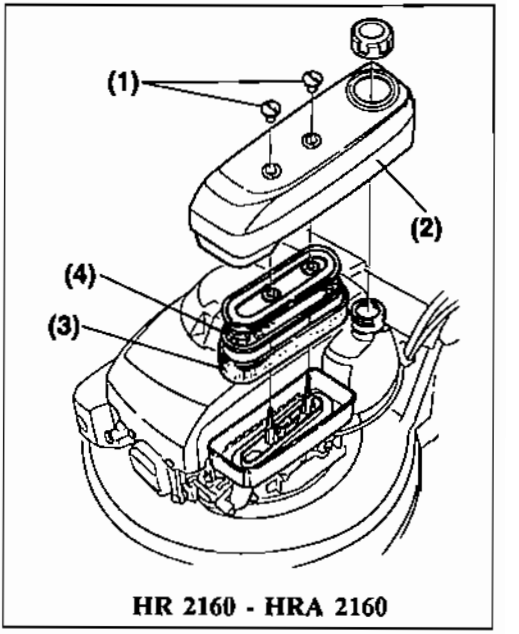
Never use petrol or flammable solvents for cleaning the air cleaner element ; a fire or explosion could result.

1. Remove the bolts and the air cleaner cover. Remove the elements and separate them. Carefully check elements for holes or tears and replace as required.
2. Foam element : Clean in warm soapy water, rinse and allow to dry thoroughly. Or clean in high flash-point solvent and allow to dry. Dip the element in clean engine oil and squeeze out all excess oil. The engine will smoke during start-up if too much oil is left in the foam.
3. Paper element : Tap the element lightly several times on a hard surface to remove excess dirt, or blow compressed air through the filter from the inside out : Never try to brush the dirt off ; brushing will force dirt into the fibres.

1/ BOLTS
2/ AIR CLEANER COVER
3/ FOAM ELEMENT
4/ PAPER ELEMENT



HR 2150



HR 2160 - HRA 2160

SPARK PLUG

Standard plugs : BPR5ES (NGK)
W16EPR-U (NIPPONDENSO CO., Ltd)

CAUTION :

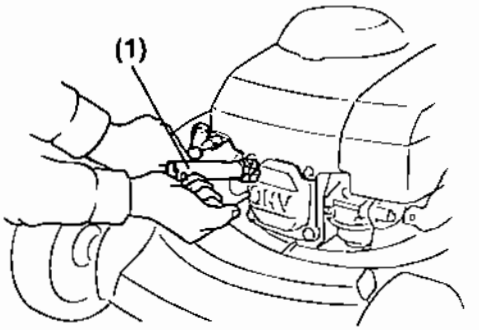
Use only recommended spark plugs or their equivalent. Spark plugs which have an improper heat range may cause engine damage.

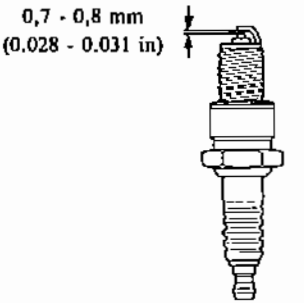
⚠ WARNING

If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler.

1. Disconnect the cap and remove the spark plug.
2. Visually inspect the plug. Renew the plug if heavily deposited or if the insulator is cracked or chipped.

1/ SPARK PLUG WRENCH





3. Measure the plug gap with a wire-type feeler gauge ; it should be 0.7-0.8 mm (0.028 - 0.031 in.). If adjustment is necessary, bend the side electrode carefully.
4. Make sure the sealing washer is in good condition, then thread the spark plug in by hand until it seats.
5. Use the wrench to tighten a new plug 1/2 turn further to compress the washer. If your are reusing the plug, it should only take 1/8-1/4 turn after the plug seats.
6. Replace the spark plug cap.

CAUTION :

The spark plug must be securely tightened. An improperly tightened spark plug can become very hot and may damage the engine.

BATTERY CHARGING (HM types)

The battery will automatically recharge while the mower is operated. A plug-in charger is provided for additional charging if the mower is not operated frequently enough to keep the battery charged. Use the plug-in charger to recharge the battery after prolonged storage, or whenever you notice a decrease in starter motor speed.

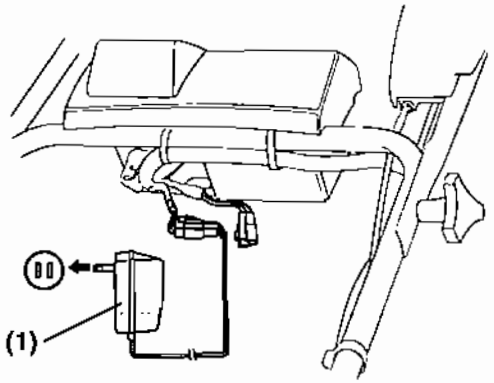
1. Disconnect the black battery lead, located under the control box.
2. Connect the black battery lead to the charger.
3. Plug the charger into a standard AC power outlet and allow the battery to charge for 18-36 hours (HR 2150), 36-72 hours (HR 2160).

NOTE :

It is normal for the charger to become a little warm during charging.

4. When the battery has been fully charged, disconnect the charger and reconnect the black couplers under the control box.

1/ OPTIONAL CHARGER



NOTE :

Only use the genuine Honda charger or equivalent. The use of a charger whose electrical characteristics are different from the recommended one could cause damage to the battery.
Avoid quick charging or overcharging. It could result in a shortened service life of the battery.

FUSE (HM types)

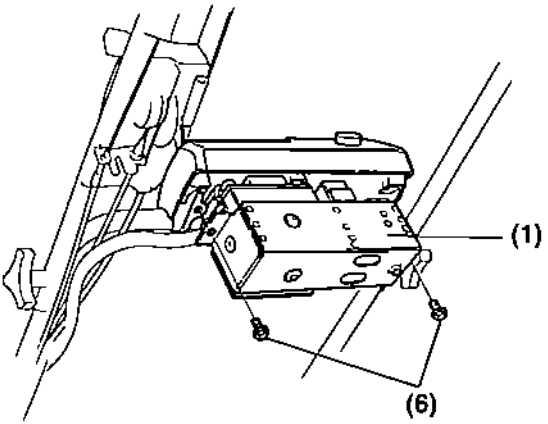
If the fuse has blown, check the cause and replace the fuse with a spare fuse of the rated capacity. Unless the cause is corrected, the fuse may blow again.

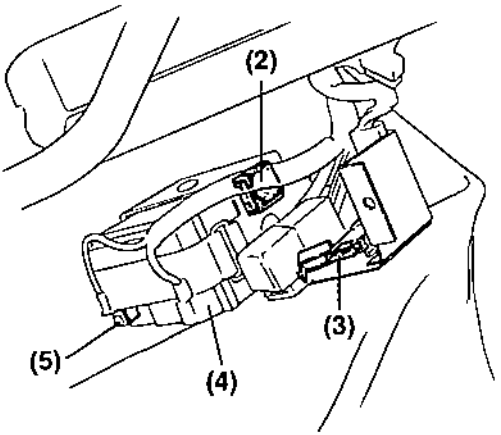
Replacement method :

1. Remove the two bolts and separate the control box from panel as shown.
2. Pull out the spare fuse and install it in place of the blown fuse in figure.

Specified fuse : 1A

1/ CONTROL BOX
2/ SPARE FUSE
3/ FUSE
4/ POSITIVE (+) TERMINAL
5/ NEGATIVE (−) TERMINAL
6/ BOLTS





BLADE REMOVAL AND SHARPENING

⚠ WARNING

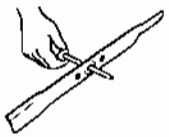
- **Wear heavy gloves to protect your hands.**
- **Disconnect the spark plugs to prevent accidental start-up.**

1. Close the fuel valve and drain the carburetor (see p.32).
2. Tilt the mower with carburetor side up. Remove the blade bolts to disassembly the blade.

NOTE :

Never tilt the mower so the carburetor side is down, as it will make the mower difficult to start.

3. Sharpen the blade cutting edges with a file. File the top side only. Maintain the original bevel for a fine cutting edge. File both ends evenly to maintain blade balance.
4. After sharpening, test the blade's balance using a screwdriver as shown. If either side dips slightly below the horizontal, file that side. Replace the blade if it dips excessively.



CAUTION :

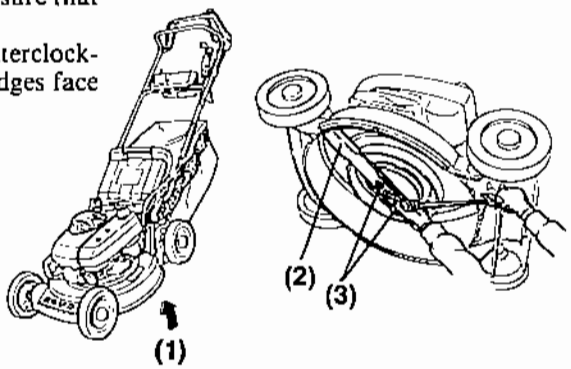
- **Blade balance is critical to proper mower performance. Replace any blade that is damaged or out of balance.**
- **Use only a genuine HONDA replacement blade or equivalent.**

5. Clean away any dirt and grass from the blade housing and from around the blade shaft.
6. Install the blade with spring washer and tighten the blade bolts to the specified torque. Torque : 5.0-6.0 kg-m (36.2-43.4 ft-lb)

NOTE :

When installing the spring washer, ensure that the "OUT" mark is outside.
As shown below, the blade turns counterclockwise ; install the blade so its cutting edges face this direction of rotation.

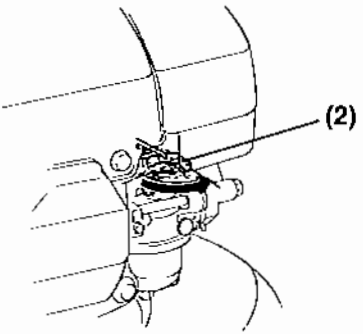
1/ UP
2/ BLADE
3/ BLADE BOLTS AND WASHERS

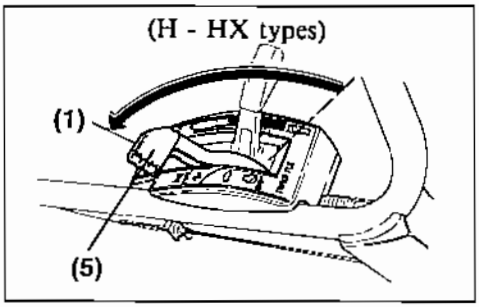


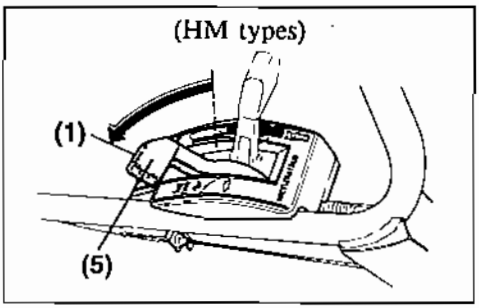
THROTTLE CONTROL CABLE ADJUSTMENT

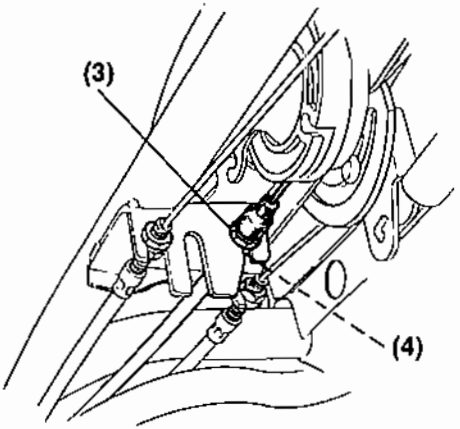
1.With the throttle lever in the "CHOKE" or "START (CHOKE)" position, the carburetor choke arm should move all the way to right, as far as it will go. Push the choke arm with your finger to check whether it is all the way to the right.
2. If adjustment is necessary, loosen the control cable lock nut and move the adjusting nut to increase or decrease as required. Tighten the lock nut and recheck the carburetor choke arm position.
3. Start the engine and make sure the engine stops when the throttle lever is moved to the STOP position (H - HX types). Readjust the cable if necessary.

1/ CHOKE POSITION
2/ CHOKE ARM
3/ LOCK NUT
4/ ADJUSTING NUT
5/ THROTTLE LEVER





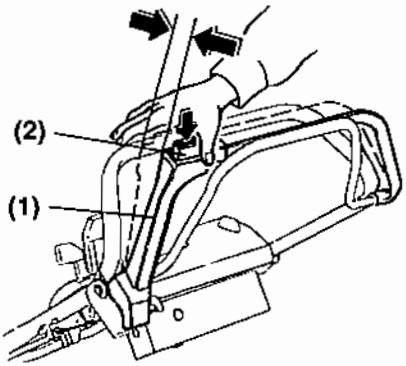


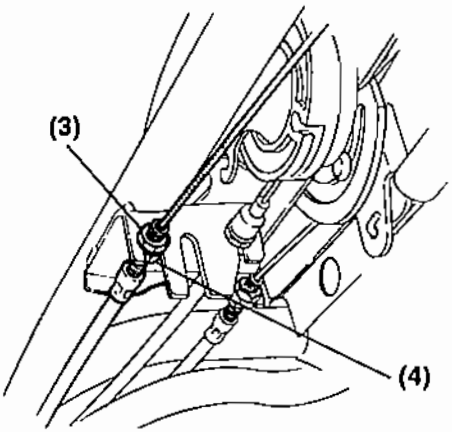


ROTO-STOP LEVER FREE PLAY (ROTO-STOP equipped type only)

1. Measure free play at the tip of the lever while pushing the yellow button as shown ; it should be between 20-25 mm (3/4-1 in).
2. If adjustment is necessary, loosen the lock nut at the cable lever and turn the adjusting nut to increase or decrease play.
3. Tighten the lock nut securely.
4. After adjusting, make sure the rotary blade is stopped when releasing the ROTO-STOP lever.

1/ ROTO-STOP LEVER
2/ YELLOW BUTTON
3/ LOCK NUT
4/ ADJUSTING NUT





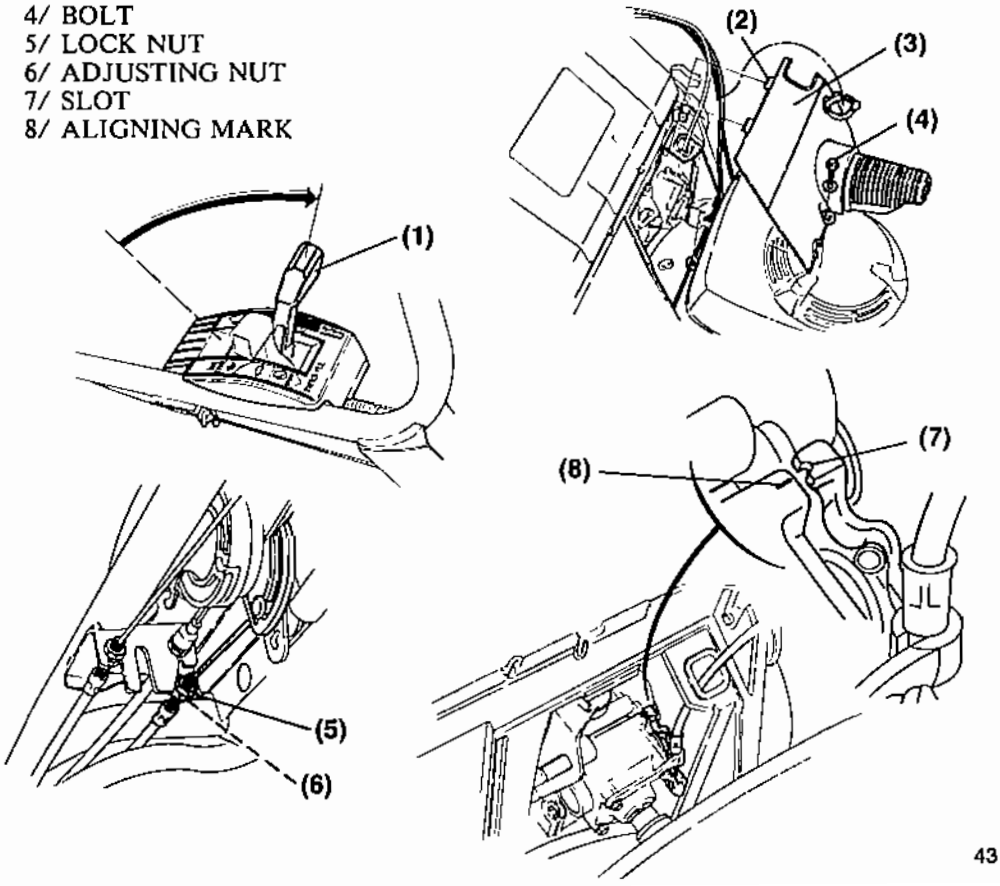
SHIFT LEVER ADJUSTMENT (HR 2150 - HR 2160)

1. Lower the cutter deck by using the cutting height adjusting lever.
2. Remove the bolt and drive shaft cover.
3. Position the shift lever to minimum speed, and engage the drive clutch lever as it is.
4. Make sure that slot of the control arm aligning with index mark of the case as shown.
5. If adjustment is necessary, keep this position loosen the lock nut and turn the adjusting nut to align the slot with the index mark.
6.Start the engine and operate the shift lever. Check to ensure the transmission is shifting smootly.

NOTE :

When installing the drive shaft cover, be sure that the claws of the cover are located securely.

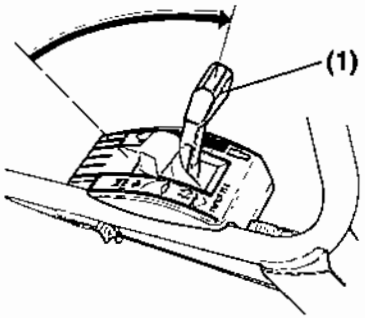
1/ SHIFT LEVER
2/ CLAWS
3/ DRIVE SHAFT COVER
4/ BOLT
5/ LOCK NUT
6/ ADJUSTING NUT
7/ SLOT
8/ ALIGNING MARK

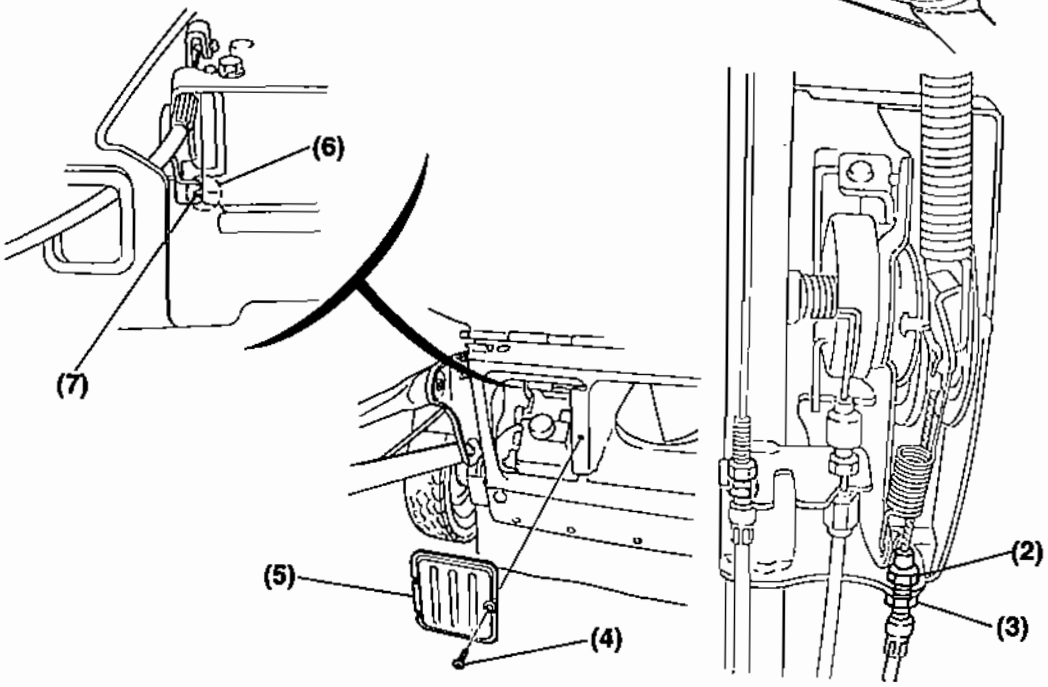


SHIFT LEVER ADJUSTMENT (HRA 2160)

1. Raise the cutter deck by using the cutting height adjusting lever.
2. Remove the screw and rear cover.
3. Position the shift lever to minimum speed, and engage the drive clutch lever as it is.
4. Make sure that slot of the control arm aligning with index mark of the case as shown.
5. If adjustment is necessary, keep this position, loosen the lock nut and turn the adjusting nut to align the slot with the index mark. Install the rear cover securely.
6. Start the engine and operate the shift lever. Check to ensure the transmission is shifting smoothly.

1/ SHIFT LEVER
2/ LOCK NUT
3/ ADJUSTING NUT
4/ SCREW
5/ REAR COVER
6/ INDEX MARK
7/ SLOT





SPARK ARRESTER MAINTENANCE (Optional part)

⚠ WARNING

If the mower has been running, the muffler will be very hot. Allow it to cool before proceeding.

• It is illegal in some areas to operate an engine without a spark arrester. Check local laws and regulations before operating. An optional spark arrester is available from Honda dealers.

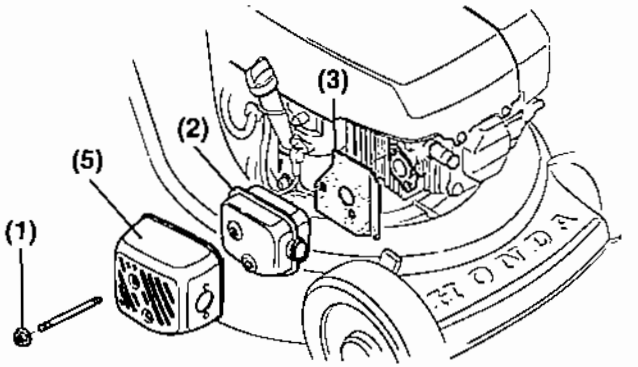
1. Loosen the two 6 mm nuts and remove the muffler protector, muffler and gasket.
2. Remove the spark arrester from the muffler. (Taking care not to damage the wire mesh).

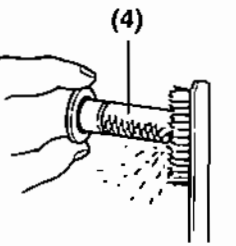
NOTE :

Check for carbon deposits around the exhaust port and spark arrester and clean if necessary.

3. Install spark arrester in the muffler.
4. Install gasket, muffler, muffler protector and then tighten the two 6 mm nuts securely.

1/ NUT
2/ MUFFLER
3/ GASKET
4/ SPARK ARRESTER (optional part)
5/ MUFFLER PROTECTOR



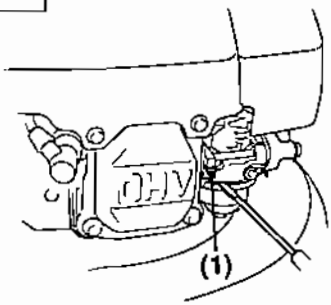


CARBURETOR ADJUSTMENT

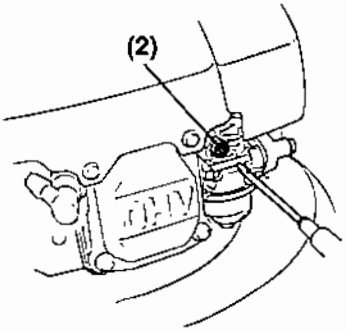
1. Start the engine and allow it to warm up to normal operating temperature.
2. Place the throttle lever in the LO position.
3. Turn the pilot screw in or out to the setting which produces the highest idle rpm. The correct position will usually be approximately 2 turns out from the fully closed position.

Standard idle speed :

HR 2150	2000 ± 150 rpm
HR 2160 HRA 2160	1700 ± 150 rpm



1/ PILOT SCREW
2/ THROTTLE STOP SCREW



TRANSMISSION

A regular oil change of the hydrostatic transmission is not necessary. However, a special fluid has to be used if required. This operation has to be performed by an authorized Honda Dealer exclusively.

Engine will not start :	1. No fuel 2. Throttle lever in STOP position (except electric starter type) 3. Spark plug wire loose or disconnected 4. Spark plug faulty or improperly gapped (p.37) 5. Engine flooded (p.26) 6. Battery discharged (electric starter type only)
Hard starting or loss of power :	1. Dirt in petrol tank 2. Dirty air cleaner 3. Water in petrol tank and carburetor 4. Vent in fuel cap and/or carburetor clogged
Erratic operation :	1. Spark plug faulty or improperly gapped (p.37) 2. Dirty air cleaner
Engine overheats :	1. Spark plug improperly gapped 2. Dirty air cleaner 3. Dirty cooling fins 4. Low oil level 5. Starter pulley clogged by grass etc.
Excessive vibration :	1. Loose blade or engine mounting bolts 2. Blade unbalanced
The starter won't turn (electric starter type only) :	1. Battery disconnected (p.38) 2. Battery discharged (p.38) 3. Blown fuse

11. SPECIFICATIONS

MODEL	HR 2150
POWER PRODUCT DESCRIPTION CODE	MZAM
ENGINE	HONDA GXV 140
ENGINE TYPE	OVERHEAD VALVES, SINGLE CYLINDER FOUR STROKE
COOLING	FORCED AIR
FUEL	PETROL
DISPLACEMENT - BORE AND STROKE	135 cm³ - 64 × 42 mm (2.53 × 1.65 in)
IGNITION TIMING	25° BTDC
IGNITION SYSTEM	TRANSISTORIZED MAGNETO IGNITION
ENGINE OIL CAPACITY	0,6 l. (0.52 imp. Qt)
FUEL TANK CAPACITY	1 l. (0.22 imp. Gal)
SPARK PLUG	BPR 5 ES (NGK) / W 16 EPR U (ND*)
FUEL CONSUMPTION	0,53 l/h. (0.50 imp. Qt/h)
RECOMMENDED FUEL	ORDINARY, UNLEADED PREFERED
ENGINE SPEED	3 100 ± 150 (rpm)
IDLE SPEED	2 000 ± 150 (rpm)
OPERATING	1.9 h.
DIMENSIONS Length × width × height	HMB, HXF, HMF, HXG, HMG : 1630 × 570 × 1060 mm (64.2 × 22.45 × 41.7 in) HG : 1630 × 570 × 1030 mm (64.2 × 22.45 × 40.5 in) HE : 1625 × 570 × 1035 mm (64.0 × 22.45 × 40.7 in) HXE : 1625 × 570 × 1065 mm (64.0 × 22.45 × 41.9 in) HML : 1665 × 570 × 1060 mm (65.5 × 22.45 × 41.7 in)
TRACK FR/ RR	470/500 mm (19.5/19.7 in)
CUTTING WIDTH	530 mm (21 in)
WHEELS DIAMETRE	200 mm (7.9 in)
GRASS BAG CAPACITY	83 l (18.3 imp Gal)
DRY WEIGHT	HE : 43,0 kg (94.80 lb) HMB, HMF, HMG : 50 kg (110.23 lb) HXE, HXF, HXG : 46 kg (101.41 lb) HG : 42,5 kg (93.69 lb) HML : 50,5 kg (111.33 lb)
TRANSMISSION	H.S.T. (hydraulic variation capacity)
ENGINE TO TRANSMISSION	DRIVE SHAFT (gimbal joint)
MAIN CLUTCH	NEUTRAL VALVE (open/close)
NUMBER OF SPEED	CONTINUOUS 0,6 to 1,45 m/sec. (1.96 to 4.75 ft/sec.)
SPEED CHANGE	REMOTE SHIFT LEVER
LUBRIFICATION	OIL BATH AND SPLASH
TRANSMISSION OIL	HONDA HYDROSTATIC FLUID
TRANSMISSION OIL CAPACITY	0,35 l (0.30 imp. Qt)

* : NIPPONDENSO CO., Ltd.

MODEL	HR 2160
POWER PRODUCT DESCRIPTION CODE	MZAP
ENGINE	HONDA GXV 140
ENGINE TYPE	OVERHEAD VALVES, SINGLE CYLINDER FOUR STROKE
COOLING	FORCED AIR
FUEL	PETROL
DISPLACEMENT - BORE AND STROKE	163 cm³ (5.5 cu in)- 68 × 45 mm (2.67 × 1.77 in)
IGNITION TIMING	20° BTDC
IGNITION SYSTEM	TRANSISTORIZED MAGNETO IGNITION
ENGINE OIL CAPACITY	0,65 l. (0.56 imp. Qt)
FUEL TANK CAPACITY	2 l. (0.44 imp. Gal)
SPARK PLUG	BPR 5 ES (NGK) / W 16 EPR U (ND*)
FUEL CONSUMPTION	0,65 l/h. (0.56 imp. Qt/hour)
RECOMMENDED FUEL	ORDINARY, UNLEADED PREFERED
ENGINE SPEED	3 100 $^{0}_{-150}$ (rpm)
IDLE SPEED	1 700 $_{\pm 150}$ (rpm)
OPERATING	3 h.
DIMENSIONS Length × width × height	HMB, HXF, HMF, HXG, HMG : 1630 × 570 × 1060 mm (64.2 × 22.45 × 41.7 in) HB, HF, HG : 1630 × 570 × 1030 mm (64.2 × 22.45 × 40.5 in) HE : 1625 × 570 × 1035 mm (64.0 × 22.45 × 40.7 in) HXE, HME : 1625 × 570 × 1065 mm (64.0 × 22.45 × 41.9 in) HL : 1665 × 570 × 1030 mm (65.5 × 22.45 × 41.7 in) HML : 1665 × 570 × 1060 mm (65.5 × 22.45 × 41.7 in) HXS : 1715 × 600 × 1065 mm (67.5 × 23.60 × 41.9 in)
TRACK FR/ RR	470/500 mm (19.5/19.7 in)
CUTTING WIDTH	530 mm (21 in)
WHEELS DIAMETRE	200 mm (7.9 in)
GRASS BAG CAPACITY	83 l (18.3 imp Gal)
DRY WEIGHT	HB, HE, HF : 47,0 kg (103.61 lb) HMB, HME, HMF, HMG : 55,5 kg (122.35 lb) HXE, HXF, HXG : 50.5 kg (111.33 lb) HG : 46,5 kg (102.51 lb) HL : 47,5 kg (104.72 lb) HML : 56 kg (123.45 lb) HXS : 53 kg (116.84 lb) HMS : 58 kg (127.86 lb)
TRANSMISSION	H.S.T. (hydraulic variation capacity)
ENGINE TO TRANSMISSION	DRIVE SHAFT (gimbal joint)
MAIN CLUTCH	NEUTRAL VALVE (open/close)
NUMBER OF SPEED	CONTINUOUS 0,6 to 1,45 m/sec.
SPEED CHANGE	REMOTE SHIFT LEVER
LUBRIFICATION	OIL BATH AND SPLASH
TRANSMISSION OIL	HONDA HYDROSTATIC FLUID
TRANSMISSION OIL CAPACITY	0,35 l (0.30 imp. Qt)

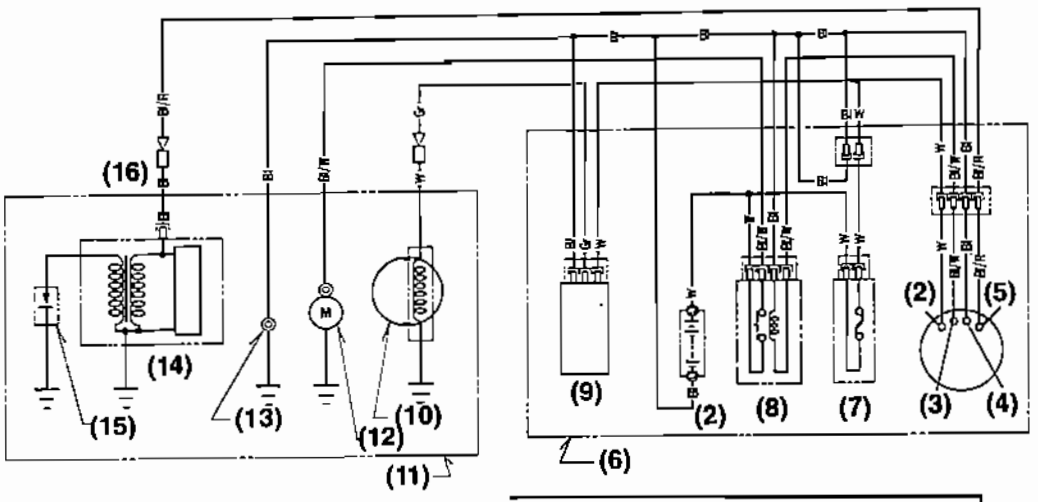
* : NIPPONDENSO CO., Ltd.

MODEL	HRA 2160
POWER PRODUCT DESCRIPTION CODE	MZAP
ENGINE	HONDA GXV 160
ENGINE TYPE	OVERHEAD VALVES, SINGLE CYLINDER FOUR STROKE
COOLING	FORCED AIR
FUEL	PETROL
DISPLACEMENT - BORE AND STROKE	163 cm^3 (5.5 cu in)- 68 × 45 mm (2.67 × 1.77 in)
IGNITION TIMING	20° BTDC
IGNITION SYSTEM	TRANSISTORIZED MAGNETO IGNITION
ENGINE OIL CAPACITY	0,65 l. (0.56 imp. Qt)
FUEL TANK CAPACITY	2 l. (0.44 imp. Gal)
SPARK PLUG	BPR 5 ES (NGK) / W 16 EPR U (ND*)
FUEL CONSUMPTION	0,65 l/h. (0.56 imp. Qt/hour)
RECOMMENDED FUEL	ORDINARY, UNLEADED PREFERED
ENGINE SPEED	3 100 $^{+150}_{-150}$ (rpm)
IDLE SPEED	1 700 ± 150 (rpm)
OPERATING	3 h.
DIMENSIONS Length × width × height	HB, HF, HG : 1665 × 565 × 990 mm (65.5 × 22.24 × 38.98 in) HXE, HXF, HXG : 1630 × 565 × 1020 mm (64.2 × 22.24 × 40.16 in)
TRACK FR/ RR	470/500 mm (19.5/19.7 in)
CUTTING WIDTH	530 mm (21 in)
WHEELS DIAMETRE	200 mm (7.9 in)
GRASS BAG CAPACITY	83 l (18.3 imp Gal)
DRY WEIGHT	HB, HF, HG : 54,0 kg (119 lb) HXE, HXF, HXG : 57,5 kg (126.76 lb)
TRANSMISSION	H.S.T. (hydraulic variation capacity)
ENGINE TO TRANSMISSION	DRIVE SHAFT (gimbal joint)
MAIN CLUTCH	NEUTRAL VALVE (open/close)
NUMBER OF SPEED	CONTINUOUS 0.85 to 1,65 m/sec.
SPEED CHANGE	REMOTE SHIFT LEVER
LUBRIFICATION	OIL BATH AND SPLASH
TRANSMISSION OIL	HONDA HYDROSTATIC FLUID
TRANSMISSION OIL CAPACITY	0,35 l (0.30 imp. Qt)

* : NIPPONDENSO CO., Ltd.

(1)	Combination switch
(2)	Battery
(3)	Starter
(4)	Ground
(5)	Ignition
(6)	Control box block
(7)	Main fuse
(8)	Starter relay switch
(9)	Regulator/rectifier
(10)	Charge coil
(11)	Engine block
(12)	Starter motor
(13)	Ground terminal
(14)	Ignition coil
(15)	Spark plug
(16)	Red mark

Bl	Black
Y	Yellow
Bu	Blue
G	Green
R	Red
W	white
Br	brown
O	Orange
Lb	Light blue
Lg	Light green
P	Pink
Gr	Grey



(1)

	BAT	ST	IG	E
OFF			○-○	
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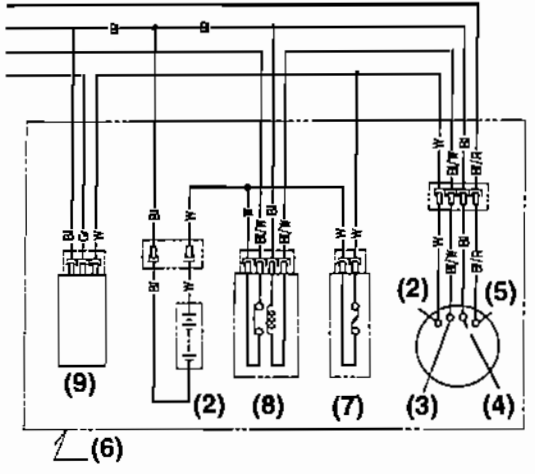

THE ASBESTOS PRODUCTS (SAFETY) REGULATION 1985

SOME OR ALL of the following components may contain ASBESTOS:

The following precautions must be taken when replacing these components:

- Brake Pads Use vacuum cleaner to prevent spread of dust.
- Brake Shoes Use vacuum cleaner to prevent spread of dust.
- Gaskets or Insulator Do not bend or break into small pieces.
- Clutch Disks Do not bend or break into small pieces.
- High Tension Plug Caps Do not bend or break into small pieces.
- Muffler Assembly Do not separate or sever.
- Noise Suppressor Assembly Do not separate or sever.

First edition 1990

Thank you very much for purchasing
the HONDA ROTARY MOWER

Printed in France
1993 - 04

HONDA

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