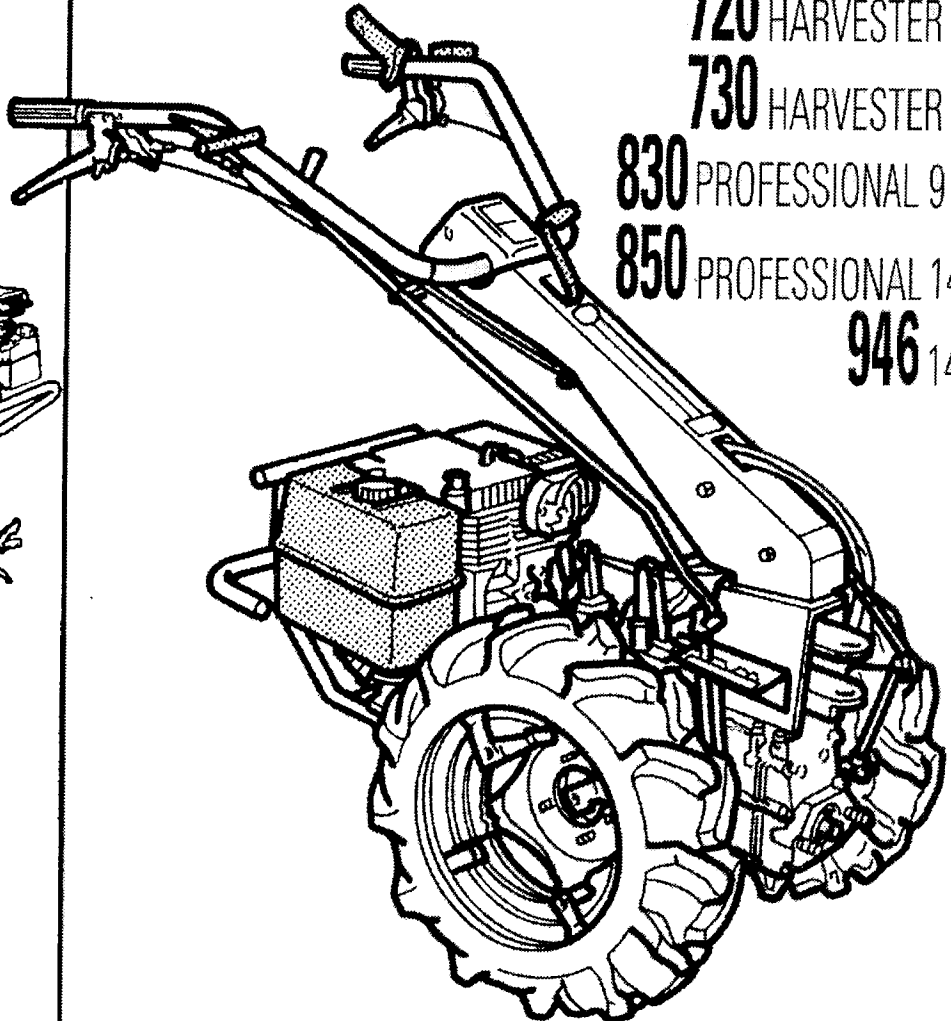
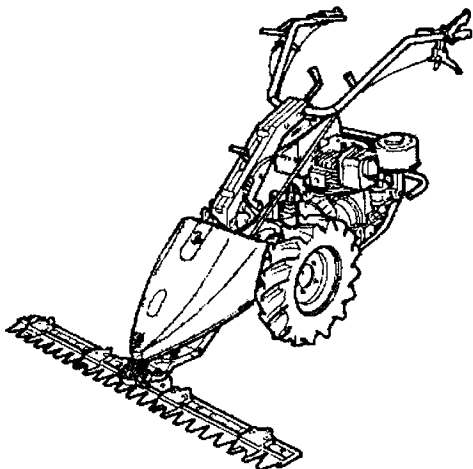
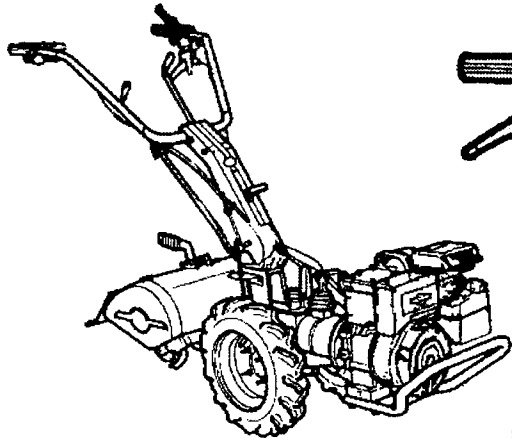
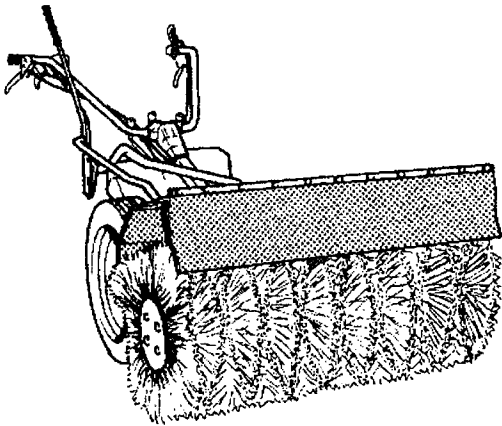
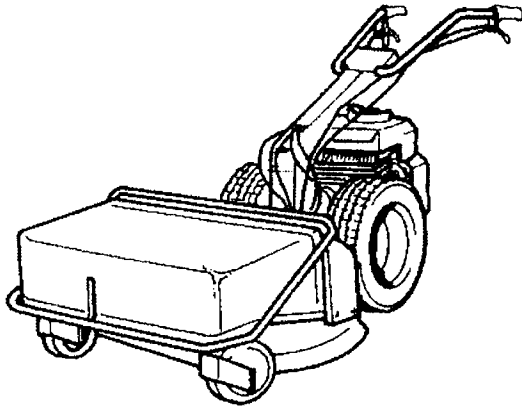


POWER UNITS & Gardening Attachments



OWNERS USE & CARE MANUAL



! READ THIS OWNER'S
MANUAL BEFORE
ATTEMPTING TO
OPERATE ANY OF THE
POWER UNITS OR
ATTACHMENTS

MODELS

710 GARDENER

716 GARDENER PLUS

720 HARVESTER

730 HARVESTER PLUS

830 PROFESSIONAL 9 HP

850 PROFESSIONAL 14 HP

946 14 HP

Dear Customer:

Thank you for your purchase. Get set to enjoy the benefits your wise selection of a BCS unit has earned for you. We believe that no other make machine that can handle so many lawn and garden tasks with such fine results - and with so little effort on your part.

Your BCS unit has precision gearing for lasting, trouble-free service. There are no drive belts to stretch and break.

Our network of BCS distributors and servicing dealers stands ready to supply your needs for attachments, accessories, parts and service. With a yearly check-up, your dealer can help you keep your BCS equipment in top shape. Meanwhile, be sure to follow the operating and maintenance tips in this owner's manual for satisfied performance of your machine.

BCS America

MODELS IN THIS EDITION

BCS America maintains a dynamic updating policy. It notifies the field of the serial number of the first unit off the line after a change. This edition covers the models and model options listed in the specifications on page 16.

Accordingly, be sure to record the BCS unit serial number printed between two stars on the transmission, and the engine model and serial numbers from the engine name plate.

GRAPHIC SYMBOLS



THIS SYMBOL IS LIKE A FLAG. IT FLAGS YOUR ATTENTION TO DANGER WARNINGS IN THE MANUAL.



WHEN PLACED OVER A PICTURE OR AN ITEM IN THE PICTURE, THIS SYMBOL SAYS "NO!" DO NOT DO, OR USE OR PERMIT WHATEVER IS SHOWN.



WARNING

READ ALL SAFETY RULES AND OPERATING AND MAINTENANCE INSTRUCTIONS IN THIS MANUAL BEFORE USING ANY POWER UNIT, ATTACHMENT, OR ACCESSORY.

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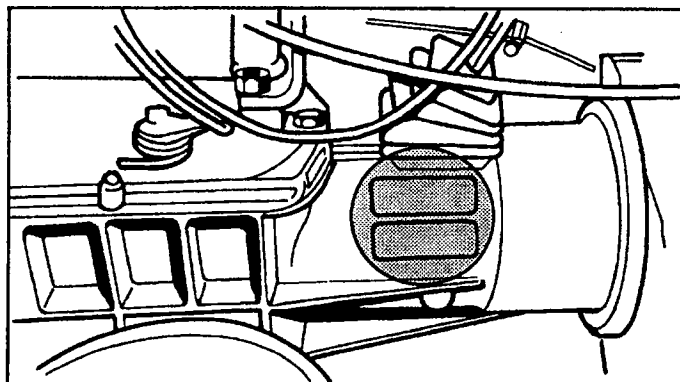
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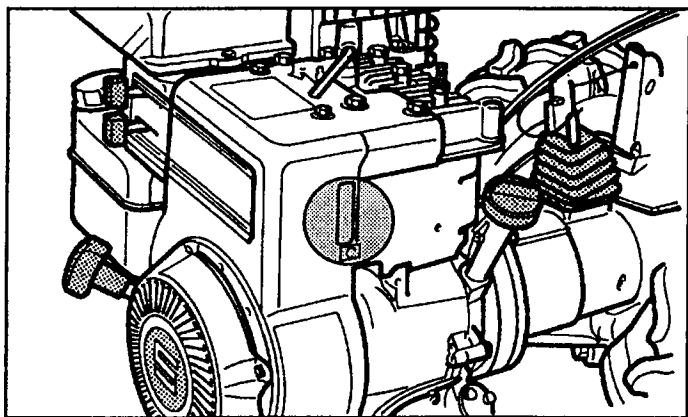
RECORD OF SERIAL NUMBERS



BCS UNIT SERIAL NUMBER * _____ *
(Located between stars on transmission)

**BRIGGS & STRATTON
ENGINE SERIAL NUMBER** _____

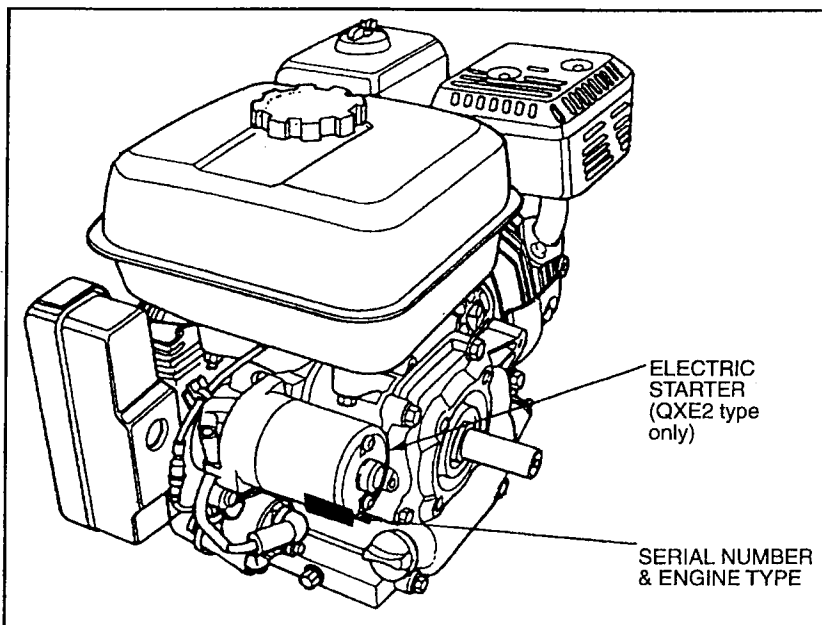
(Stamped on crankcase about two inches from
name plate on side of engine)



HONDA ENGINE SERIAL NUMBER:

TYPE _____

SERIAL NO. _____



LOMBARDINI ENGINE SERIAL NUMBER _____ (Located on engine name plate)

! WARNING

**READ ALL SAFETY RULES AND OPERATING AND MAINTENANCE
INSTRUCTIONS IN THIS MANUAL BEFORE USING ANY POWER UNIT,
ATTACHMENT, AND/OR ACCESSORY.**

SECTION ONE

1

INSTRUCTIONS FOR SAFE OPERATION OF BCS POWER UNITS AND ATTACHMENTS

General precautions and instructions are followed by specific precautions for each combination of attachment and power unit in the owner's manual.

GENERAL PRECAUTIONS AND INSTRUCTIONS

TRAINING

READ THIS OWNER'S MANUAL PRIOR TO OPERATING THE POWER UNITS AND ATTACHMENTS. BCS power units and attachments are designed for operation by properly instructed adults only. Make certain that any person operating this equipment has read this manual.

DO NOT LET CHILDREN OPERATE THE POWER UNIT.

KEEP THE OPERATING AREA CLEAR OF PEOPLE AND ANIMALS. BE CAREFUL THAT CHILDREN DO NOT COME NEAR.

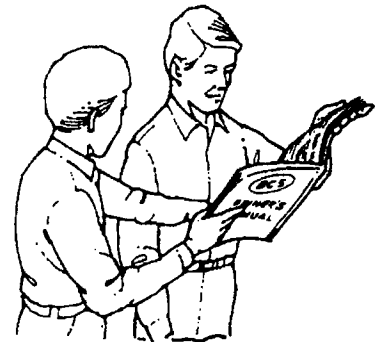
During storage, and whenever the power unit is unattended, disengage the PTO (power take-off) and render the engine unstartable by disconnecting the spark plug wire from the spark plug.

PREPARATION

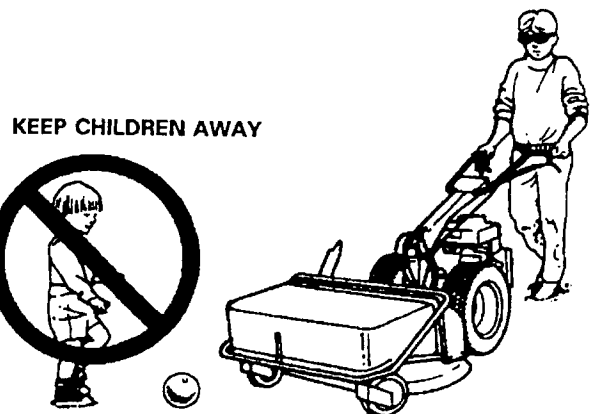
Wear appropriately protective clothing and safety protection articles for the climate and type of attachment you are to operate.

1. For all walk-behind applications, wear sturdy non-slip boots or safety toe shoes. See recommendations listed for use of a particular attachment. Do not wear open-toed sandals or go barefoot when operating these machines.
2. Wear snug-fitting protective clothing which allows freedom of movement without being loose-fitting. Ties, scarfs and jewelry which could be caught in the machinery should not be worn.
3. Wear hearing protection.
4. Wear eye protection when operating a snow-thrower, power sprayer, chipper/shredder or mower attachment.
5. Overexposure to sunlight can be damaging to your eyes and skin. When working in strong sunlight, protect your eyes with sun glasses, and either keep your body covered or apply a sun screen lotion.

Do not operate on terrain where you cannot maintain good footing, or where the machine could overturn or slide into you. When walking behind the unit, walk slowly, DO NOT RUN!



ONLY PROPERLY INSTRUCTED PERSONS SHOULD USE THIS EQUIPMENT



KEEP CHILDREN AWAY



EYE AND HEARING PROTECTION

STURDY FOOTWEAR



Thoroughly inspect the area where you are going to mow or thatch the lawn, sweep walks or drives, or throw snow. Remove toys, stones, bones, wires, glass, newspapers and other objects which could be caught up and thrown by the machine.

Take the following precautions for the safe handling and storage of fuel:

1. Keep fuel supplies in approved type, properly labeled fuel containers.
2. Do not store fuels or fueled units in closed (unventilated) areas, or in garages or shops connected to human living quarters. Do not store units or fuel where there are flames or sources of sparks such as electrical appliances and switches.
3. Obey all local regulations for the storage and handling of fuel.
4. Do not smoke when fueling, or fuel where the fumes could be ignited by fire or sparks.
5. Do all fueling outdoors over non-flammable surfaces. If fuel is spilled on the unit, wipe the unit dry and properly dispose of the wiping rag. **ALWAYS MOVE THE UNIT AT LEAST 10 FEET (3 m) AWAY from the fueling spot and fuel supplies before starting the engine.**
6. Always remove the engine fuel cap very slowly to equalize tank pressure and avoid spurting of fuel. Keep your face and eyes away from the tank while loosening the fuel cap.
7. Do not fuel a running or hot engine. Do not loosen the fuel cap until the engine has stopped.

Then wait several minutes for the engine to cool before pouring fuel.

Before starting the engine, put all control levers in neutral (N) position. All "N" positions on the gear selector are neutral. Also be sure to disengage the PTO (power take-off) to the attachment.

Never make blade height or any other adjustment to the power unit or any attachment while the engine is running.

OPERATION

Operate only when there is good visibility. Do not operate at dusk or at night. Do not operate when it is foggy or hazy.

Never change the engine governor setting or overspeed the engine. Use the throttle and gear settings recommended for particular attachments and applications in this owner's manual.

Do not put hands and feet under the mower deck or into the discharge openings of a rotary mower.

Do not put fingers or any other part of the body into the intake or discharge openings of any mower, snow thrower, or chipper/shredder unless you have disconnected the spark plug wire so the engine cannot be started accidentally. Keep the machine clean-out holes closed. Stay out of the discharge stream of a mower, chipper/shredder, power sweeper or power sprayer.

Always stop operation of a rotary mower, a cutter bar mower, snow thrower, or a tiller before crossing paved or gravel roadways.



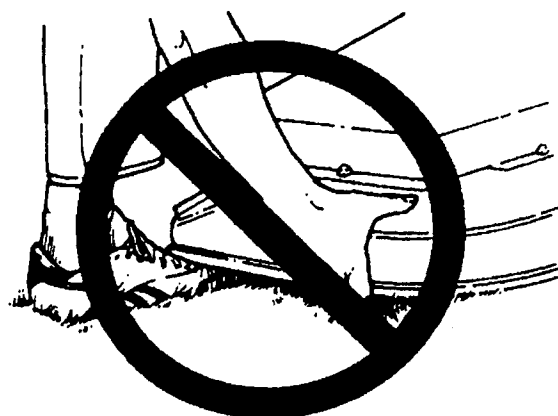
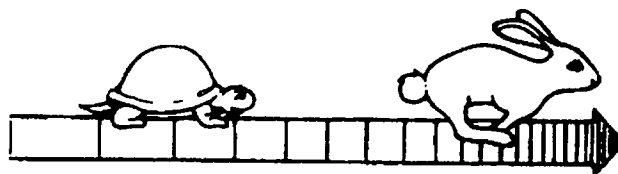
DON'T KEEP FUEL OR FUELED ENGINES WHERE SPARKS COULD CAUSE FIRE OR EXPLOSIONS



DO NOT SMOKE OR BRING ANY FLAME OR SPARKS NEAR FUEL !

USE SLOW SPEEDS FOR OPERATING

SEE OPERATING SPEED RECOMMENDATION FOR EACH ATTACHMENT



NEVER PUT HANDS OR FEET UNDER MOWER DECK OR INTO OPENING

Never ride the tractor or an attachment. Ride only on riding accessories designed for the purpose. Do not take children on a sulky with you.

1. Use **transport sulkies** only for transport to and from the operating area, and never for operation.
2. Use **utility wagons** only for hauling, and limit the payload to the rated capacity of the wagon.
3. A **mowing sulky** is exclusively for operation of a rotary mower and must not be used with any other attachment.
4. Never use ride-on attachments on the highway or any city street.

Do not disconnect or otherwise defeat the purpose of the lockout devices

The high-speed lockout prevents using too fast a gear for backing up a front-mounted attachment.

The PTO/REVERSE lockout permits backing up a rear-mounted attachment only when the PTO is disengaged. Read Section Two for explanation of the lockout devices.

Do not use the highest numbered gear on the gear selector when walking behind the machine.

On all units in this manual, the highest gear produces much faster than walking speed, and is only to be used for transport in conjunction with a transport sulky.

Do not make adjustments or repairs to the machine when the engine is running.

Put all controls in neutral, wait until reciprocating or rotating parts of the attachment have stopped, and disconnect the spark plug wire:

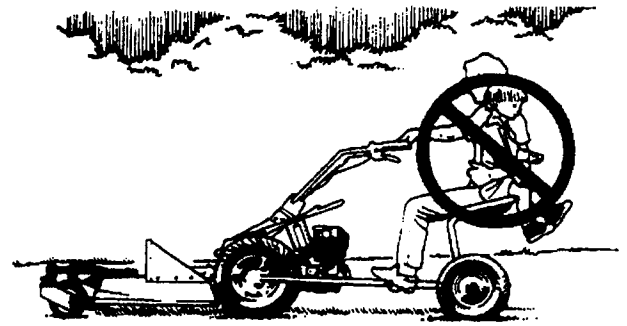
1. Before leaving the unit where unauthorized persons may start it accidentally.
2. When a foreign object has been struck or taken into the attachment.
Proper operation should be restored before further use.
3. Before cleaning out a clogged attachment such as a rotary mower, cutter bar mower, snow-thrower, chipper/shredder or power sweeper.
4. If the machine suddenly starts to vibrate or run erratically.
The entire machine should be inspected by an authorized BCS servicing dealer before further use.

All safety guards, plates, lockouts, deflectors and shields must be in proper position.

Do not operate if any safety devices or fastening parts are missing from the unit.

Do not run the engine indoors where deadly poisonous carbon monoxide fumes can collect.

If the engine is to be started inside a garage or barn, open the doors and windows wide so the fumes can escape.



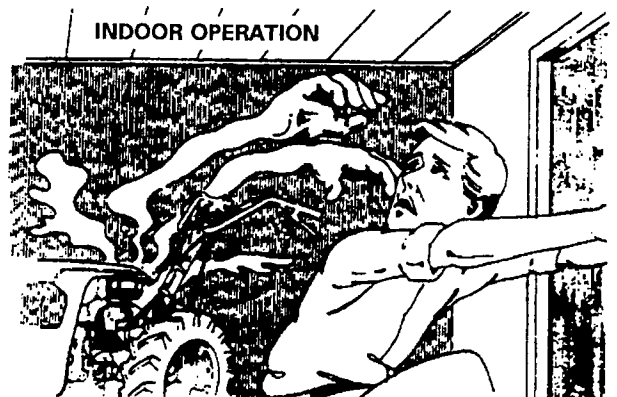
DO NOT LET CHILDREN RIDE WITH YOU ON A SULKY



DO NOT OPERATE IF MACHINE STARTS TO VIBRATE



UNIT SERVICING SHOULD BE DONE BY AUTHORIZED BCS DEALERS



BUILD-UP OF FUMES CAN BE VERY DANGEROUS



MAINTENANCE AND STORAGE

Keep engine, tractor and all attachments in safe working condition.

Clean the unit and accessories at regular intervals, also check for damaged or missing parts. Check the tightness of all fasteners. Perform the items of maintenance recommended in this owner's manual. Do not attempt any disassembly and repairs for which instructions have not been furnished. Certain engine adjustments, and internal servicing of the engine, tractor, clutch and transmission, and gearboxes of attachments should be done only by a BCS-trained serviceman at an authorized BCS servicing dealer or distributor.

Do not store the machine with fuel in the system. Disconnect the fuel line at the carburetor inlet, and drain the fuel into a fuel container. Then reconnect the fuel line. Start and run the engine until it stops from lack of fuel.

When storing the machine, use the spring latch (illustrated on page 30) to latch the clutch lever in the depressed (disengaged) position. This prevents the clutch cone from sticking to the lining during storage.

Store the machine in a well-ventilated place, protected from dampness and the weather.

REAR-TINE TILLER PRECAUTIONS

All the models have **PTO/reverse lockout** devices to prevent tine rotation while the Tiller is being backed up. These devices are shown and their operation described on page 28. Before operating the Tiller, always check that the lockout device is properly assembled on the machine. **Do not remove the high speed lockout or render it inoperable.**

Do not put hands or feet near or under the tiller housing. Keep away from the rotating tines. The tines of the BCS tiller rotate at high speeds independent of the tractor gear speed settings.

Inspect the area to be tilled. Pick up rocks and other objects of a size which may jam or otherwise interfere with tiller operation.

Till only when there is good light.

Use caution to avoid slipping and falling. Wear footwear which will improve footing on slippery surfaces.

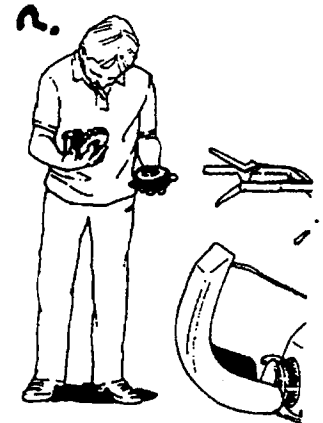
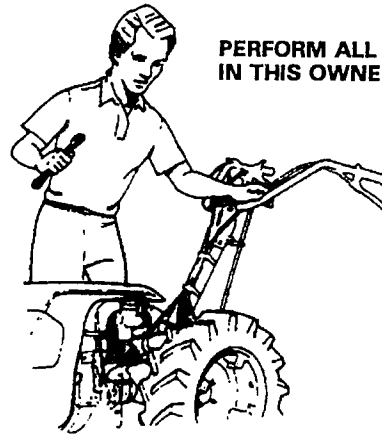
Do not overload the machine by attempting to till too deeply or in fast forward. See tiller operation instructions in Section 3.

On new (previously untilled) or hard, rocky ground, use lowest gear and throttle settings, and set the tiller tines for minimum soil penetration. Be alert for the possibility the machine may leap forward if the tines contact an underground obstruction. If this occurs, let go of the tiller handles to stop the engine.

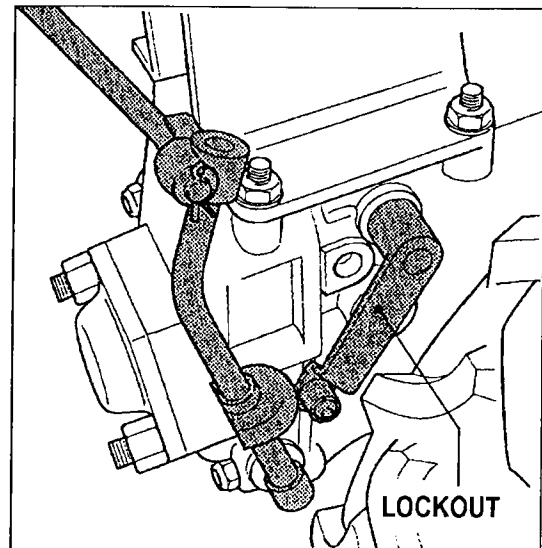
Do not use makeshift accessories in conjunction with the tractor and tiller. Use only wheels, counterweights, shaft extensions, connectors, and tine combinations recommended for each tractor and tiller attachment by BCS.

The highest number gear selection is only for transport of the unit and tiller attachment in conjunction with a transport sulky.

PERFORM ALL MAINTENANCE
IN THIS OWNER'S MANUAL



DON'T ATTEMPT REPAIRS
NOT COVERED IN THIS
OWNER'S MANUAL



TILLER HITS HARD
GROUND OBSTRUCTION
AND TINE WALKS OR
LEAPS FORWARD





Do not operate the tiller in high gear. Do not use high transport speeds on slippery surfaces. When using a transport sulky, look behind and use care when backing.

ROTARY MOWER PRECAUTIONS

IMPORTANT NOTICE

Do not deactivate the PTO Reverse Lockout on any of the convertible models. The new design lockouts on these models automatically disengage during a conversion for front-mount attachments.

Clear the area to be mowed of all objects (wires, rocks, toys, etc.) which might be picked up and thrown by the mower.

Disengage the PTO and put the transmission into neutral (gear selector position "N") before cranking to start the engine, and also whenever leaving the operator zone behind the handlebar or dismounting from a sulky. Stay alert for holes, rocks, roots in the terrain and other hidden hazards. Keep away from drop-offs. Use wheel extensions for added stability of a walk-behind mower. When walking behind, be especially cautious when changing direction on slopes.

When operating from a riding sulky, reduce speed and use extreme caution on slopes and in sharp turns to prevent tipping and loss of control.

MOW SLOPES AS FOLLOWS:

1. When riding, mow up and down, never across the slope.
2. When walking behind, mow across the slope, never up and down.
3. Do not mow excessively steep slopes.

Be careful not to discharge grass in direction of roadways, houses, vehicles and people.

Inspect grass bags frequently for wear and deterioration. Replace grass bags which are not in good condition.

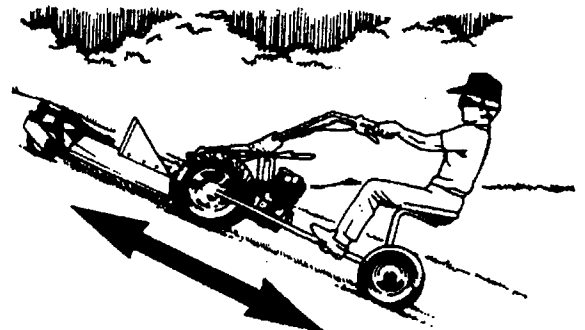
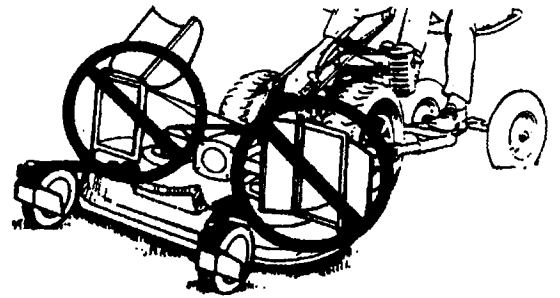
When the 2-blade mower is used without the grass bag, the grass deflector **must** be in the down position covering one discharge chute, and the door on the other chute **must** be closed, to prevent open discharge from the chutes. When mounting the grass bag on the deck to collect the cuttings, open the door and raise the deflector for discharge from the volutes into the bag.

Before removing the grass bag for emptying, disengage the PTO, shut off the engine and wait until the mower blades have stopped.

Never put hands in any openings of the mower or grass bag when the engine is running. If necessary to clear out the discharge chute with your hands, always first disconnect the spark plug wire.

Keep the mower blades in good condition. Inspect, sharpen and maintain blades as recommended for mower attachments in Section 3. Replace bent, badly worn blades, because pieces breaking off can become projectiles. After sharpening, blades should be balanced.

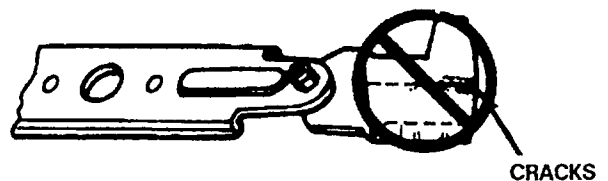
DO NOT MOW WITH
GRASS DEFLECTORS
OPEN



WHEN RIDING, MOW UP AND DOWN SLOPES



WHEN WALKING BEHIND,
MOW ACROSS THE SLOPES



IMPORTANT NOTICE

Do not deactivate the **PTO Reverse Lockout** on any of the convertible models. The new design lockouts on these models automatically disengage during a conversion for front-mount attachments.

CUTTER BAR MOWER PRECAUTIONS

Cutter Bar Mower attachments are intended for walk-behind operation only. Do not use a riding sulky.

Mow only at a slow rate of speed. See page 39 for recommended throttle and gear combinations for cutter bar mowing. Do not use (transport) gear # 4 on 830/850 for any purpose other than using a transport sulky for transport. Transport speed of these models far exceeds the walking speed of an operator.

The models 716, 720, 730 and 946 converted for cutter bar operation have high gear position blocked by a high speed lockout.

Do not remove or otherwise defeat the purpose of the high speed lockout device.

Disengage the PTO when backing the machine.

Cutter bar mowers are designed for mowing over terrain which is too rugged or steep for use of rotary mowers. Use care when mowing hilly terrain. Always mow across the face of a slope, never up and down. Use wheel extenders for added stability. Do not mow excessively steep slopes. Go slowly and carefully on all turns.

SNOW THROWER PRECAUTIONS

Wear protective, trim fitting winter clothing with no scarfs or draw strings which could be caught in the machinery. Wear boots or shoes designed to improve your footing on slippery surfaces. Wear proper eye protection.

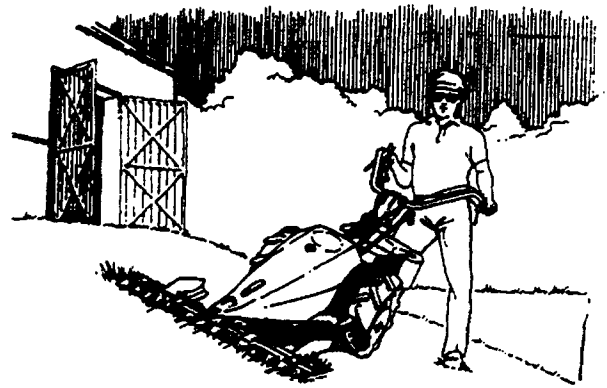
When necessary to start the engine indoors and drive the machine out of the building, keep the doors and windows wide open. Exhaust fumes can be dangerous.

Never put your hands into the discharge opening or impeller/collector when the engine is running. Always disengage the PTO, shut off the engine, and wait until all moving parts have stopped before doing the following:

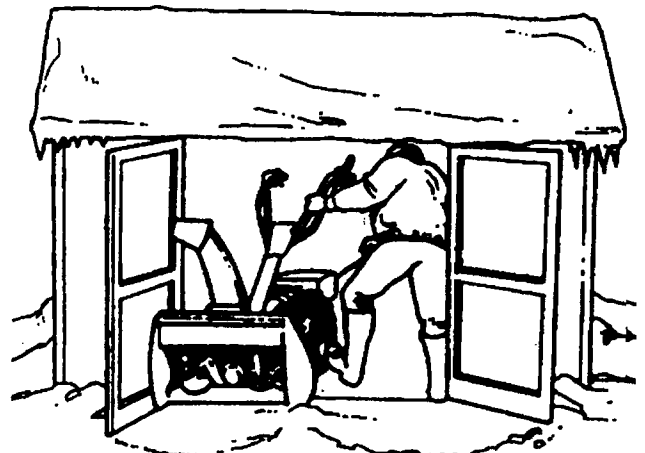
1. Cleaning or deicing the impeller/collector and discharge chute. (If possible, detach snow-thrower and thaw in a warm, dry place.)
2. After striking a foreign object, thoroughly inspect for damage. Make repairs before further operation.

Never use the snow thrower near glass enclosures, automobiles, window wells, drop-offs, etc., without adjusting the discharge angle away from them.

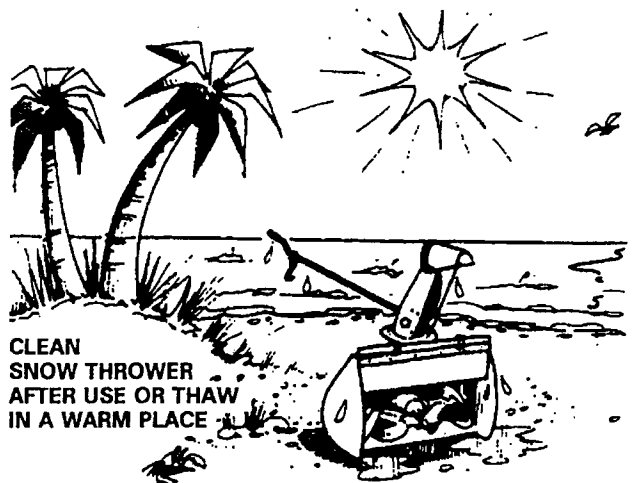
Keep children, pets and observers away.



MOW ACROSS THE FACE OF A SLOPE



OPEN DOORS WIDE IF STARTING THE ENGINE INDOORS



CLEAN SNOW THROWER AFTER USE OR THAW IN A WARM PLACE

POWER SPRAYER PRECAUTIONS

Always read and follow the information and instructions for the application of herbicides, fungicides, insecticides and fertilizers obtained from the labels of such products or from the manufacturer.

In addition, advice on chemicals approved for use in your area can be obtained from your local county agent. Be sure you know the proper application rate for any chemical you wish to spray.

Inspect the sprayer before each use. The sprayer develops high pressure, so be sure all pressure lines and connections are in good condition.

Choose windless days for the spraying of any chemical considered hazardous. Do not spray where drift could contaminate people, animals or property.

When applying any substance dangerous if breathed in, or absorbed through the skin, wear adequate protection. This should include rubber gloves and boots, goggles, respirator masks, caps, and clothing to cover as much of the body as possible. Cotton articles are suggested for their launderability as well as high absorbency. After the spraying of any hazardous substance, remove clothing articles for laundering, and immediately take a thorough soap-and-water shower before residues have time to enter your body.

Before spraying, always prepare for proper wash-down of equipment.

Never allow passengers to ride the sprayer.

The pressure at the discharge nozzle is as high as 300 psi. The spray can penetrate the skin and cause severe blood poisoning. Do not put hands into the discharge stream. Do not direct spray at people or animals.

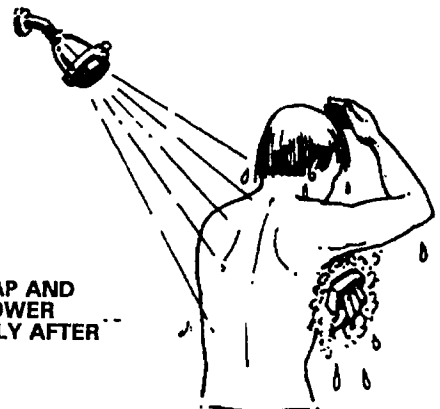
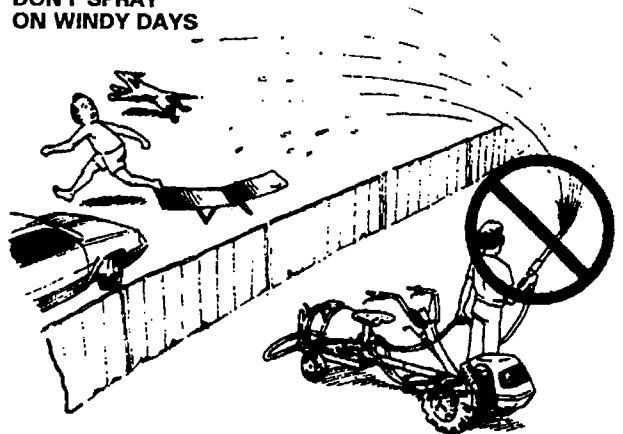
Unless the manufacturer of the chemicals claims that certain products can be combined for application, spray only one chemical at a time. Flush the sprayer tank before changing sprays.

Always hose down the equipment and flush the sprayer tank after each use. Select an area where the run-off will not contaminate groundwater. Do not dump into ditches and storm sewers.



READ DIRECTION
ON LABEL OF
SPRAY PRODUCT

DON'T SPRAY
ON WINDY DAYS



TAKE A SOAP AND
WATER SHOWER
IMMEDIATELY AFTER
SPRAYING



CHIPPER/SHREDDER PRECAUTIONS

Read all instructions in this owner's manual, plus detailed instructions in the Chipper/Shredder owner's manual.

Material may be thrown out of the intake or discharge openings at high velocity. Wear safety eye protection goggles stamped "Z87" (for ANSI Standard Z87). Also wear a hat.

Wear trim-fitting articles of clothing with no dangling ties, laces, chains, etc. Remove rings, bracelets and wrist watches before operating the Chipper/Shredder. Gloves may be worn when feeding the Chipper, but remove gloves before feeding material into the Shredder hopper.

Set up the machine on soft, firm ground which provides support and acts as a shock absorber. But, do not set up on hard paved or graveled surfaces which provide no cushion.

Before starting the engine, always look to be sure the Chipper/Shredder is empty.

Do not go on the discharge side when the Chipper/ Shredder is running. Do not look into the shredder hopper or place your head over it when feeding material. Do not feed the chipper chute from directly in front, but always stand to the side.

Do not reach into the chipper chute to push through short pieces. Push short ends through with another long branch.

Put only shreddable materials into the hopper. Be careful not to include cloth, string, plastics, glass, rubber, rocks or paving, bricks, large wood chunks, metal or long branches or vines. These things are not shreddable, and can cause violent ejection of materials from the Chipper/Shredder.

Do not allow processed material to pile up in the discharge area. A blockage of the discharge can result in kickback of material through the feed opening.

Always disengage the PTO before transporting the unit and attachment. Never leave the machine unattended without putting the controls in neutral and disconnecting the spark plug wire to prevent unauthorized operation.



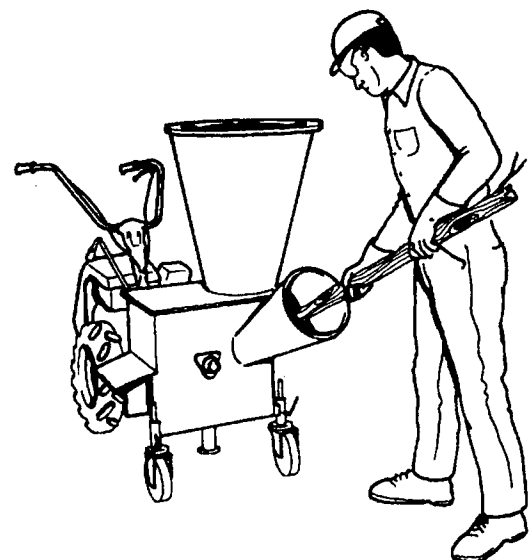
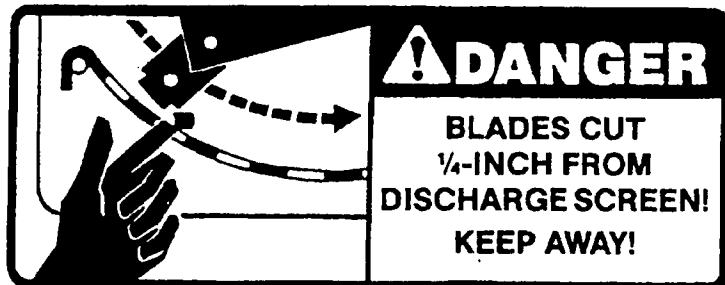
WEAR EYE PROTECTION GOGGLES



DO NOT WEAR THINGS WHICH COULD BE CAUGHT AND PULLED INTO THE HOPPER



DO NOT GO ON DISCHARGE SIDE WHEN THE CHIPPER/SHREDDER IS RUNNING



POWER SWEEPER PRECAUTIONS

Follow "General Precautions and Instructions" in Section One of this manual, and all instructions in the Power Sweeper Attachment owner's manual (part number 101.00915) for the safe use of the Power Sweeper.

IMPORTANT NOTICE

Deactivation of the **PTO Reverse Lockout** (see **WARNING** in Sweeper owner's manual) is not to be done on the tractor models in this updated owner's manual. New design lockouts automatically disengage during the conversion of these models for the Sweeper, or any other front-mounted attachment.

Do not put hands, feet or any other part of your body near the Sweeper brush or any other rotating part.

Keep the work area clear of people and pets. Do not let children come near. Be extremely careful on gravel or paved surfaces to direct the discharge away from people and passing vehicles.

Wear a dust mask or respirator for protection when sweeping dusty surfaces.

Wear eye protection goggles stamped "Z87" (for ANSI Standard Z87).

Before transport or storage of the unit, adjust the casters of the Sweeper so the bristles do not touch the ground.

Thoroughly inspect the surface to be swept and remove objects which could be thrown by the Sweeper or cause it to run off course. Remove wires, glass objects, doormats, boards, toys and other obstructions.

Always put the unit in gear before engaging the PTO to power the Sweeper. If the Sweeper bristles engage the ground when the unit is in neutral, the Sweeper will drive back the unit.

On irregular terrain with hillocks, prepare to let go of the controls to stop all motion if the brush suddenly drives the unit backward.

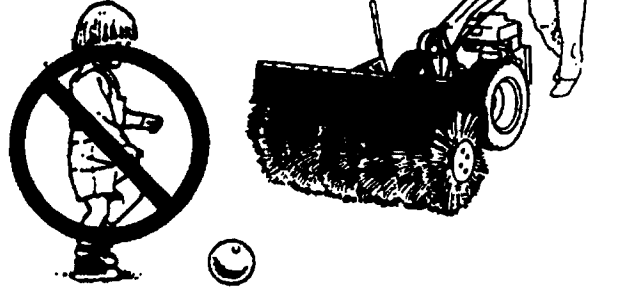
Do not use the Sweeper on any surface where you cannot keep your footing, or the unit could overturn. Walk behind the unit. Disengage the PTO when going up or down a slope. Work across the slope when sweeping or thatching.

If using the Sweeper on rooftops, set up barricades so you will not come too close to the edges. Be sure the surface is dry and does not pitch more than 5 degrees (1/2" per foot.)

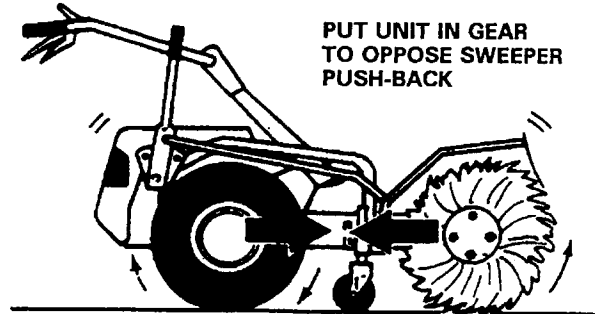
Do not drive the Sweeper onto frozen lakes or ponds unless the ice is thick and strong enough to support the combined weight of you, the Sweeper and the unit.

WEAR GOGGLES AND
DUST MASK

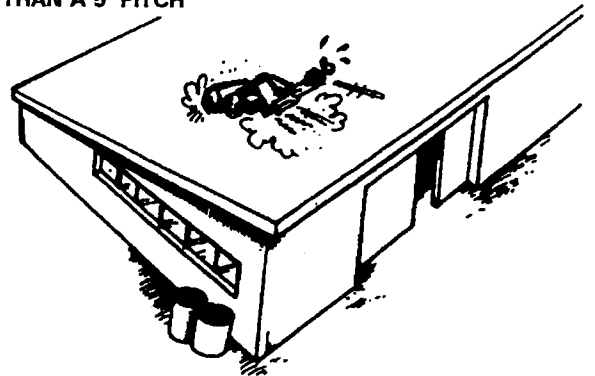
KEEP CHILDREN AWAY



PUT UNIT IN GEAR
TO OPPOSE SWEEPER
PUSH-BACK



DO NOT SWEEP ON
ROOFTOPS WITH MORE
THAN A 5° PITCH



WATCH OUT
FOR THIN ICE

SECTION

2

MODEL CONFIGURATIONS

NATURAL CONFIGURATION

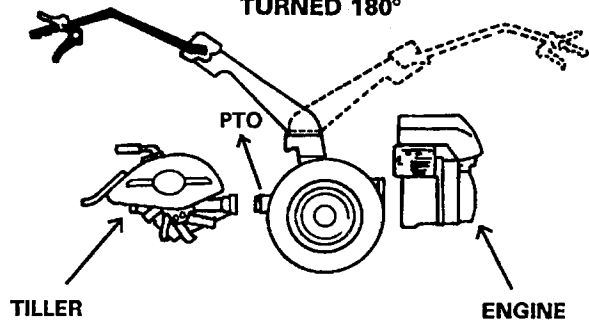
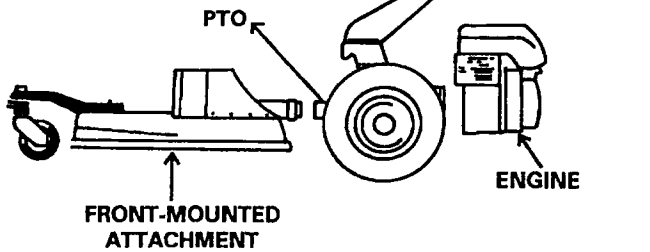
CONVERSE-MODE CONFIGURATION

MODELS 830/850
FRONT-MOUNT MODE

MODELS 830/850
CONVERSION FOR REAR-MOUNT ATTACHMENT

TRANSMISSION
DESIGNED FOR
FRONT-MOUNT
ATTACHMENTS

CONTROL HANDLE
TURNED 180°

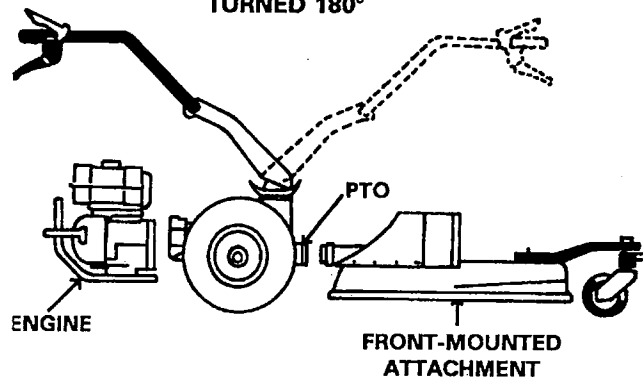
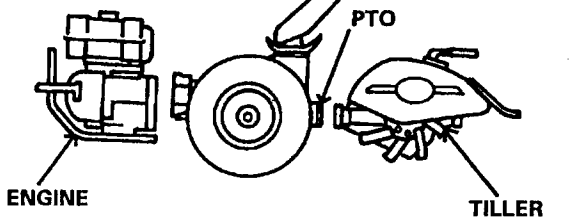


MODELS 710/716/720/730
REAR-MOUNT MODE

MODELS 710/716/720/730
CONVERSION FOR FRONT-MOUNT ATTACHMENT

TRANSMISSION
DESIGNED FOR
REAR-MOUNT
ATTACHMENTS

CONTROL HANDLE
TURNED 180°

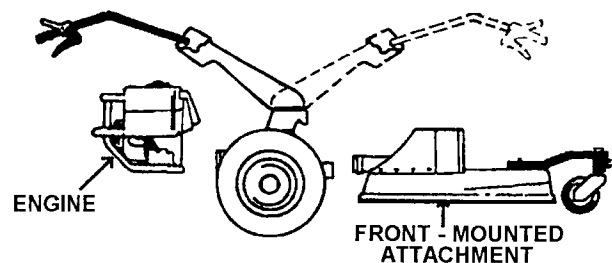
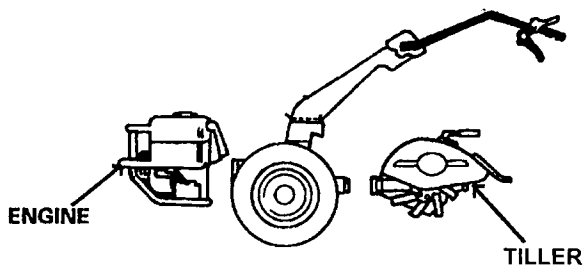


MODEL 946
REAR-MOUNT MODE

MODEL 946
CONVERSION FOR FRONT-MOUNT ATTACHMENT

TRANSMISSION
DESIGNED FOR
REAR-MOUNT
ATTACHMENTS

CONTROL HANDLE
TURNED 180°





MODELS DESIGNED FOR FRONT-MOUNTED ATTACHMENTS

Models of the 800 series are designed for front-mounted attachments. They have the PTO (power take-off) coupling up front, and the engine and control column at the rear.

*Models 830/850 are convertible model designed primarily for front-mount attachments, has four speeds **forward** and three speeds **reverse**. Swinging the handlebars around to place them over the PTO coupling at the rear of the unit converts the 830 and 850 for rear-mount attachments. The new design transmission automatically changes drive wheel rotation to drive the unit forward in either front-mount or rear-mount mode. Selecting one of three available gear positions on the gear selector, and engaging the **red reverser lever** on the right handlebar backs up the unit in either front-mount or rear-mount mode. The **high speed lockout blocks** selection of gear position #4 for backing up the unit.*

MODELS DESIGNED FOR REAR-MOUNTED ATTACHMENTS

All models of the 700 series and 946 are designed for rear-mount tillers, and all models are convertible for front-mount attachments. In the rear-mount mode, the PTO (power take-off) flange and the control column are at the rear and the engine is up front.

*Model 710 has one speed **forward**, one **reverse**. Models 716, 720 and 730 have three speeds forward, two **reverse**. Model 946 has four speeds forward, three **reverse**.*

*Swinging the control column around from the PTO end of the unit to the engine end converts it for front-mount attachments. A safety high speed/reverse lockout device on the control column blocks the high **forward** speeds on 716, 720, 730 and 946 which are too fast for use in backing the unit.*

*All models have a new type transmission that drives the unit forward when placed in gear - even when converted for front-mount attachments. In either front-drive or rear-drive mode, selecting any gear except the high speed (that the **lockout** blocks) and moving the **red reverser lever** on the right handlebar backs up the unit. Gear #3 (#4 for 946) is too fast for backing up the unit.*



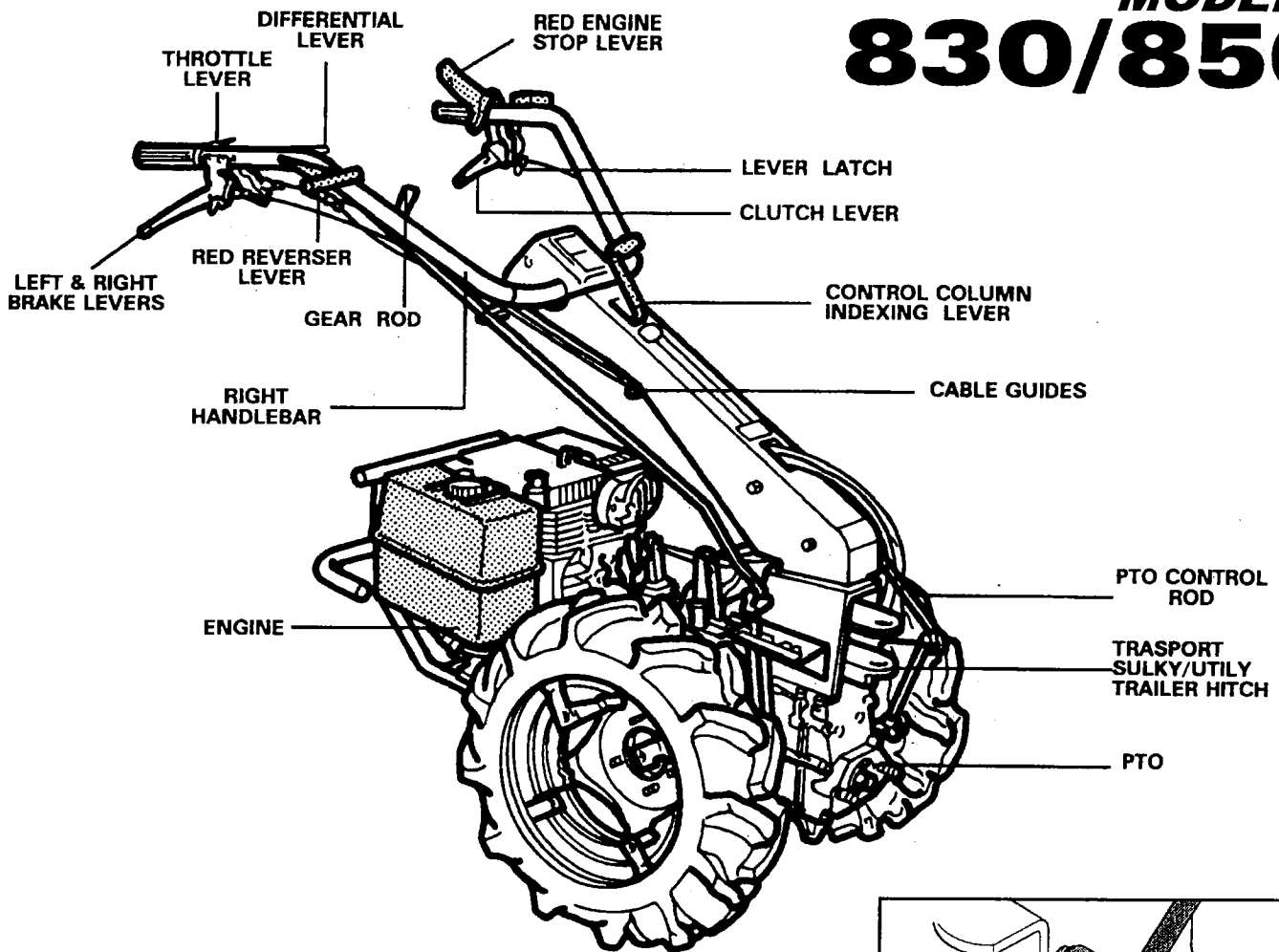
SPECIFICATIONS

ENGINE AND POWER UNIT

MODEL	830	850	710	716	720	730	946
Design Type Convertible	Pusher To tractor	Pusher To tractor	Tractor To Pusher	Tractor To Pusher	Tractor To Pusher	Tractor To Pusher	Tractor To Pusher
Engine Make Type Air filter Prefilter	BR/ST Gas/9Hp Vang. Dry Cartridge Standard	BR/ST Gas/14Hp Vang. Dry Cartridge Standard	BR&ST/HONDA 5,5Hp INT./ Gx160-240 Dry Cartridge Standard	BR/ST Gas/6,5Hp INT. Dry Cartridge Standard	BR/ST Gas/8Hp I/P Dry Cartridge Standard	BR&ST/HONDA 9Hp Vang./ Gx240-340 Dry Cartridge Standard	BR/ST Gas/14Hp Vang. Dry Cartridge Standard
Transmission Differential	Precision steel gears Yes	Precision steel gears Yes	Precision steel gears No	Precision steel gears No	Precision steel gears No	Precision steel gears No (Yes mod Gx11)	Precision steel gears Yes
Gears forward Reverse	PUSH TRACT. 4 3 3* 3*	PUSH TRACT. 4 3 3* 3*	PUSH TRACT. 1 1 1 1	PUSH TRACT. 2 3 2* 2*	PUSH TRACT. 2 3 2* 2*	PUSH TRACT. 2 3 2* 2*	PUSH TRACT. 3 4 3* 3*
Speed (mph) † 1st 2nd 3rd 4th 5th Reverse (1) Reverse (2) Reverse (3)	0.7 1.4 2.4 7.5 - 0.7 1.5 2.5	0.8 1.6 2.7 8.3 - 0.8 1.7 2.8	0.6 - - - - 1.5 - -	0.6 1.2 6.2 - - 0.6 1.3 -	0.7 1.4 7.0 - - 0.7 1.4 -	0.7 1.4 7.0 - - 0.7 1.4 -	0.6 1.4 2.1 6.5 - 0.6 1.5 2.2
Power Take-off	(Independent - PTO rpm controlled by throttle setting on all models)						
PTO rpm/ Engine rpm Attaching Method	990/3600 2 threaded studs w/nuts	990/3600 2 threaded studs w/nuts	990/3600 2 threaded studs w/nuts	990/3600 2 threaded studs w/nuts	990/3600 2 threaded studs w/nuts	990/3600 2 threaded studs w/nuts	990/3600 2 threaded studs w/nuts
Wheels & Tires Size Tread Track width ‡	4.0 x 10" Tractor 19"	5.0 x 10" Tractor 20"	3.50 x 8" Tractor 17"	3.50 x 8" Tractor 17"	4.00 x 8" Tractor 17"	4.00 x 8" Tractor 17"	6.5/80 x 12" Tractor 26"
Weight (lbs.) ‡	160	165	140	145	150	165	300
Dimensions (in.) Height Width Length	47" 27" 47"	47" 27" 47"	40" 25" 67"	40" 25" 67"	40" 25" 67"	40" 25" 67"	34" - 43" 27" 78"
Capacities (L) Transmission Crankcase Running time @ 3000 rpm**	2.00 1.20 3 Hrs.	2.00 1.70 2 1/2 Hrs.	1.90 0.60 2 - 2 1/2 Hrs.	1.90 0.60 2 Hrs. 45'	1.90 1.20 2 1/2 Hrs.	1.90 1.20 3 Hrs.	2.20 1.70 2 1/2 Hrs.

NOTE: * Has "Reverser" control to change direction of travel.
† May be adapted by mode of mounting wheels, or with optional accessories.
‡ Power unit with standard wheels and tires.
** at 3/4 load.

MODELS 830/850



This "pusher" model, designed and geared to drive mowers and other front-mounted attachments, may be converted into a tractor by swinging the control handles around as illustrated on page 32.

Of the very latest design, the 830, like the 850, has both high speed and PTO/reverse safety lockout devices that function when needed, and require no disassembly or deactivation.

A differential lever on the right handlebar has two-wheel drive and differential drive settings.

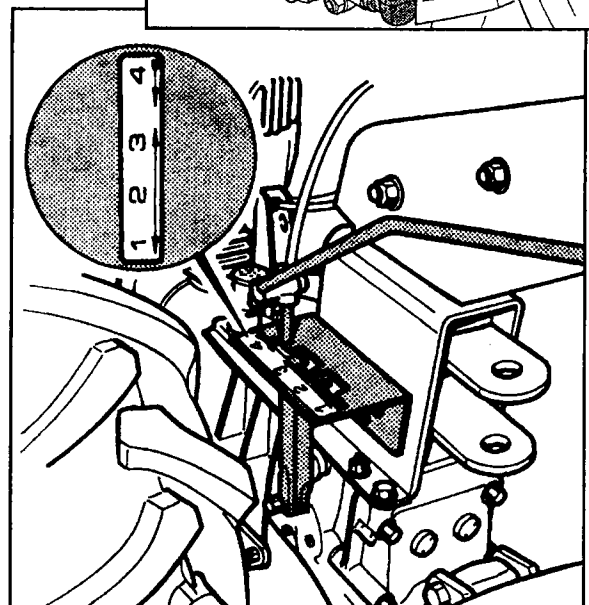
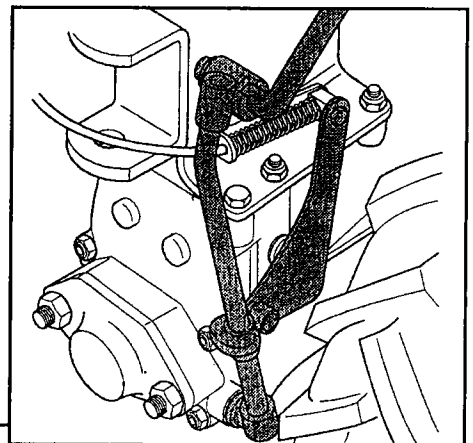
In differential drive, applying just one wheel brake aids in turning to that side.

Whether in the front-drive or rear-drive mode, the unit will drive forward when placed in any gear on the gear selector.

The 830 has the same red reverser lever on the right handlebar as does model 850.

With the reverser lever pulled and left against the handlebar, and gear position #1, #2 or #3 selected, the unit will back up.

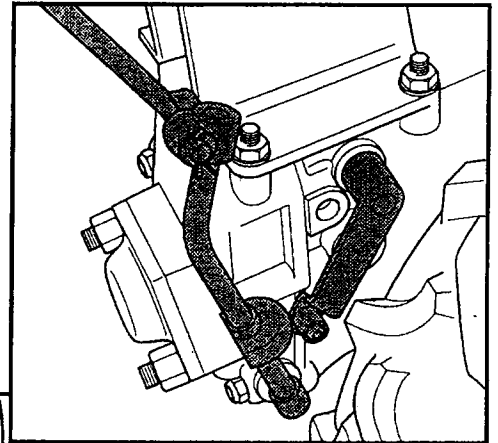
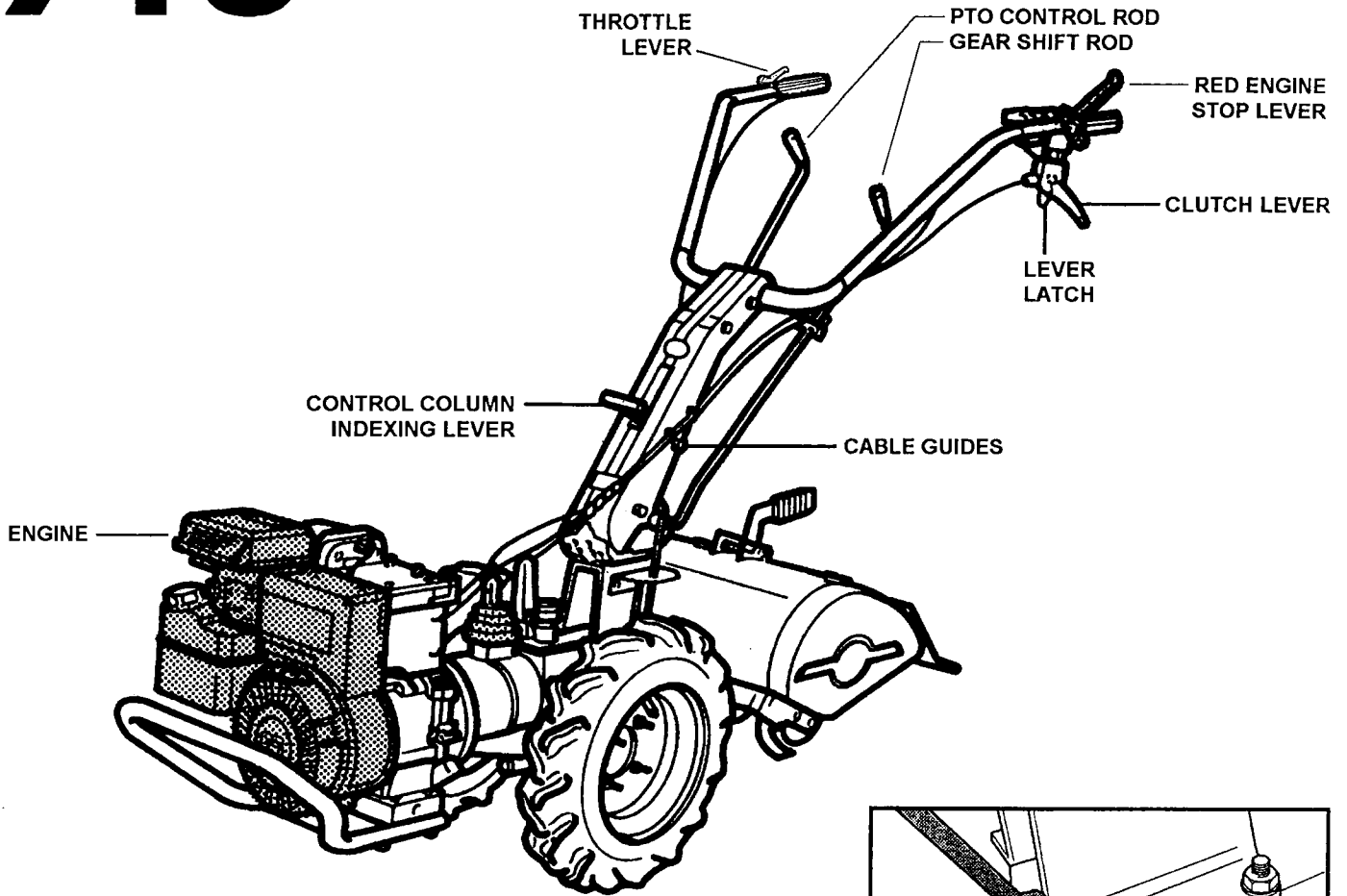
Too fast to use when backing the unit, gear position #4 is blocked by the high speed lockout.





MODEL

710



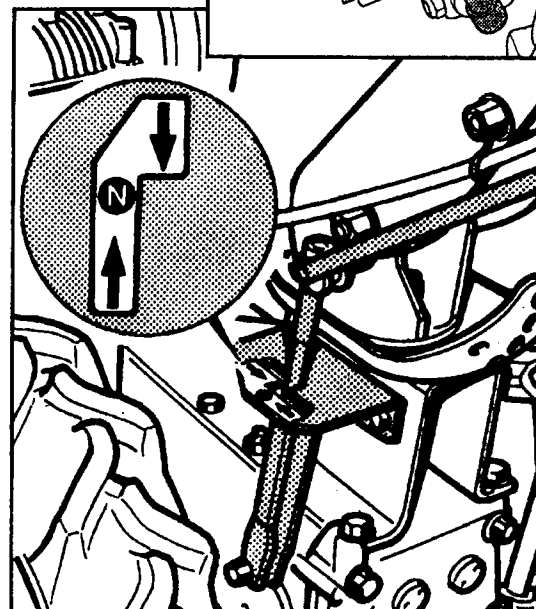
The model 710 is the smallest tractor of the BCS product line. It has one gear forward and one reverse available.

The drive is controlled using only one control rod located on the left side of the handlebar.

On this model there is also a PTO/reverse lockout device that prevents shifting into reverse with the tiller engaged.

The lockout disengages automatically when a front attachment is installed on the unit.

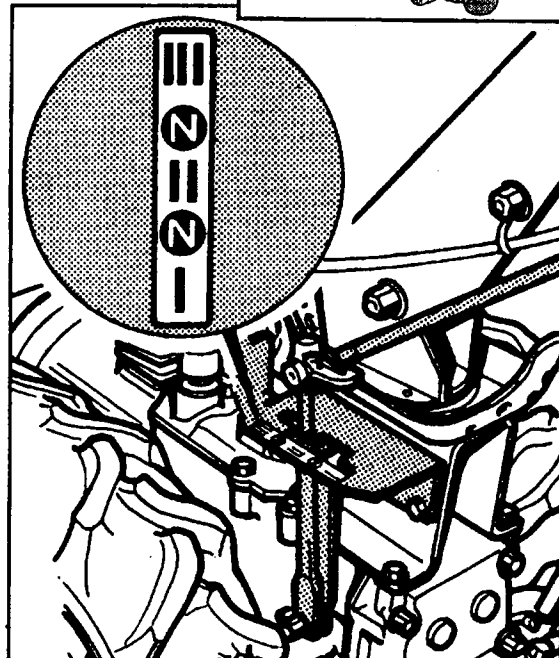
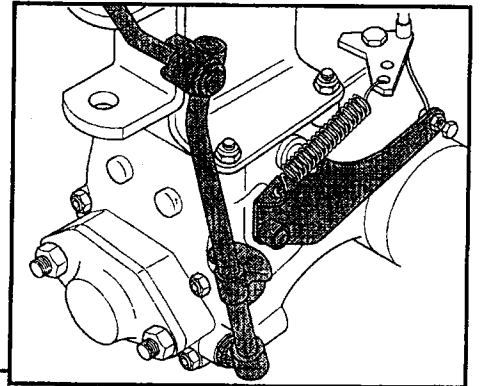
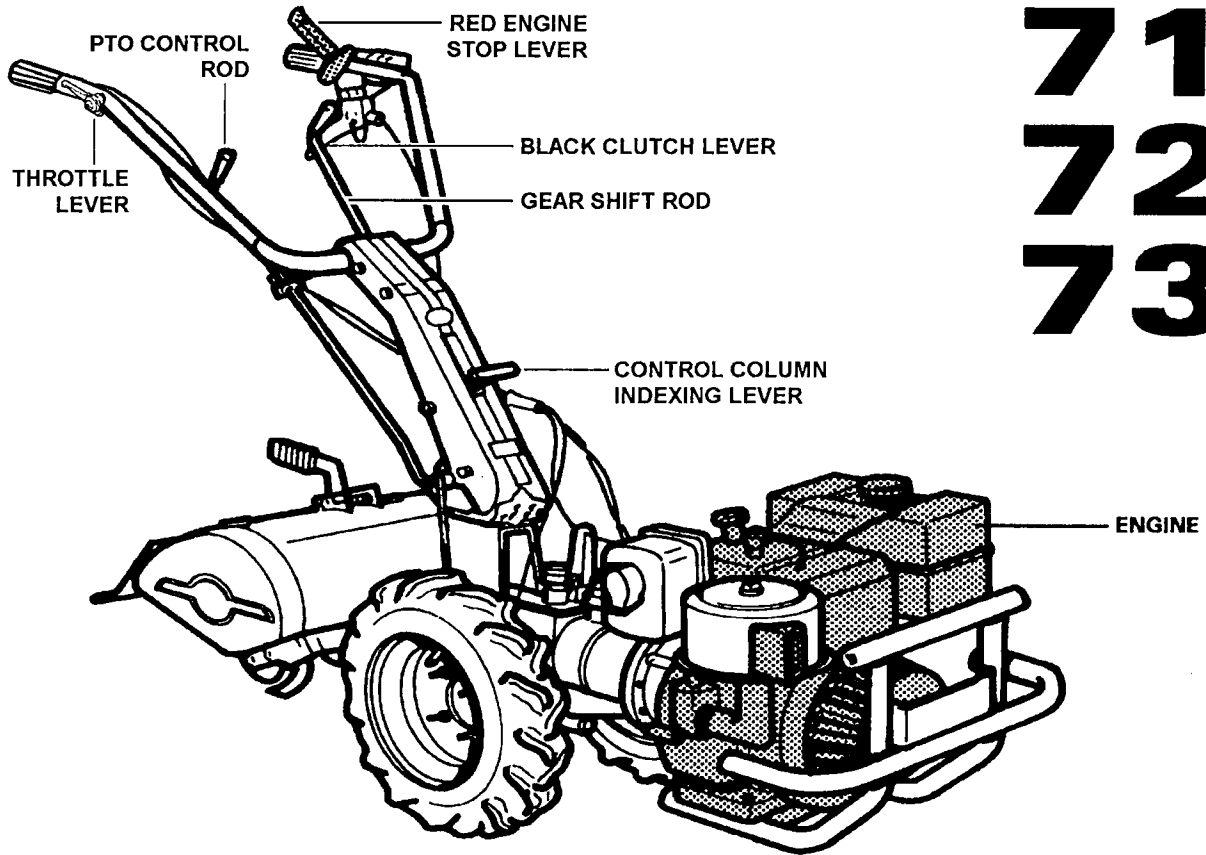
When a front attachment is installed on the unit, what was the reverse gear in the tilling mode is now the forward gear.





MODELS

716
720
730



These models are similar to the model 710 in many respects, but the number of speeds is increased to three forward speeds and two reverse. The drive gears are available through a rod on the left side of the handlebar.

Forward and reverse are controlled with the red lever on the right top of the handlebar.

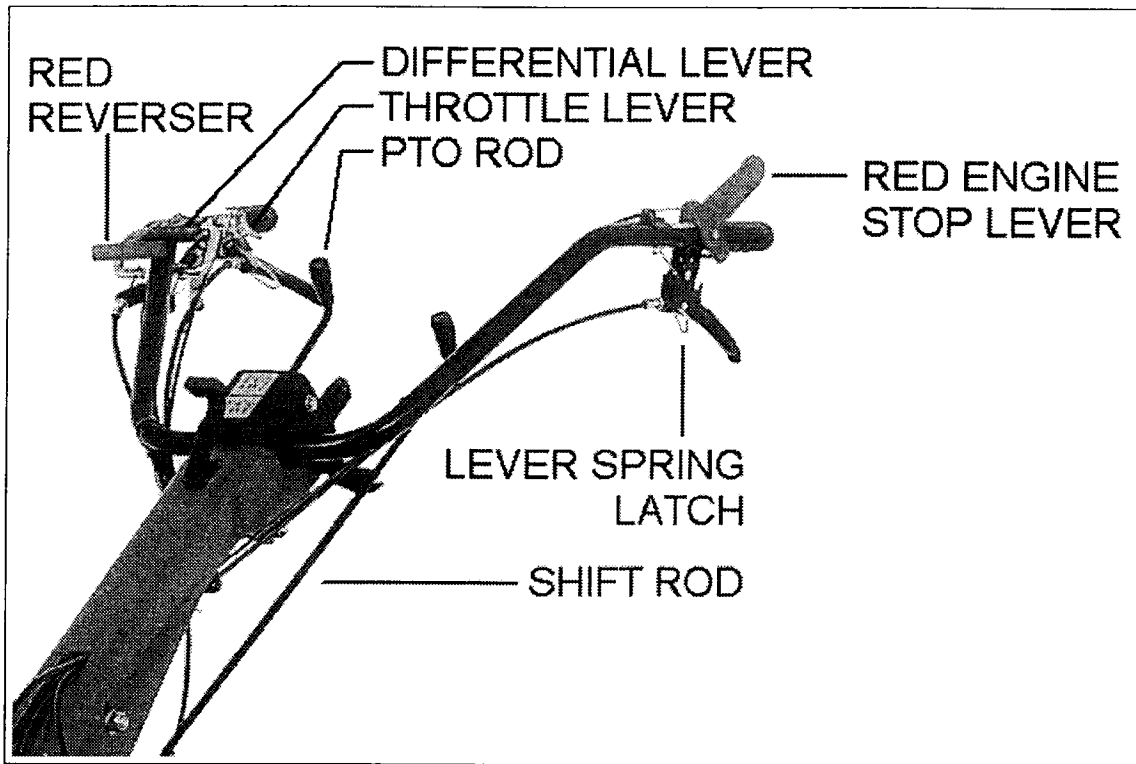
On each of these models, a PTO/reverse lockout device prevents shifting into reverse with the tiller engaged.

But the lockout disengages automatically during operation with a front mount attachment on the unit. When a front mount attachment is on the unit the third gear (transport gear) is blocked out.



MODEL

946



This is the largest tractor in the BCS product line.

It has a differential drive transmission and two wheel brakes, four forward gears and three reverse gears. The drive is controlled using only one control rod located on the right side of the handlebar.

The PTO is controlled using one control rod located on the right side of the handlebar.

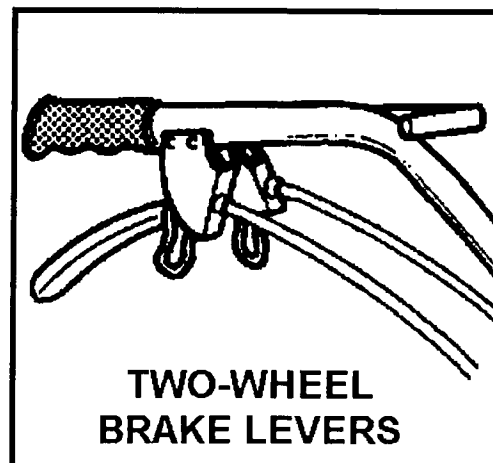
With the tiller attachment on this model there is also a PTO/reverse lockout device that prevent shifting into reverse with the tiller tines engaged.

This lockout automatically disengaged when a front mount attachment is installed.

This allows you to drive in forward or reverse with the PTO engaged.

When a front mount attachments installed, what was the reverse gears in the tilling mode are now the forward gears in the front attachment mode.

In the front attachment mode there is a high speed lockout that blocks out the high speed gears that were used in the tilling mode.



UNPACKING

IMPORTANT

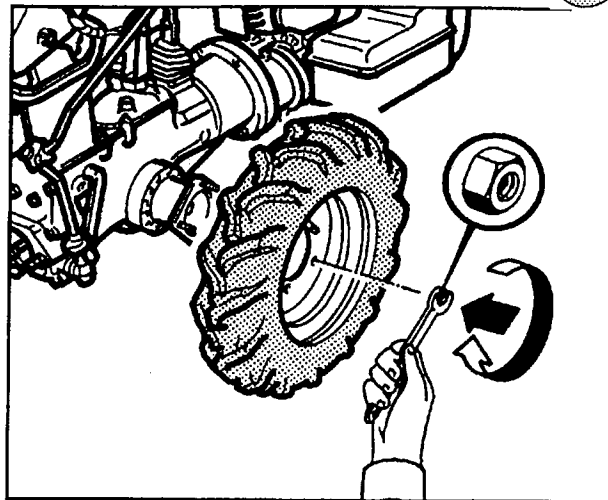
Use extreme care to avoid crimping or severely bending the control cables while unpacking and assembling the unit.



WARNING

Take care to avoid being cut by the staples or nails when opening the carton.

Open the top and lay out the sides of the carton. Remove the parts and tools to be used in assembling the unit. The fasteners required for assembly have been placed at locations where they are to be used.



ASSEMBLING THE UNIT

1. INSTALL THE WHEELS:

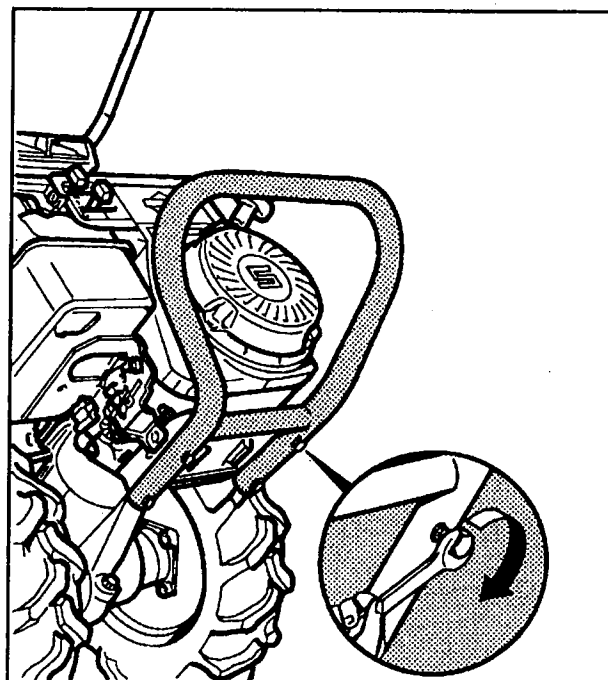
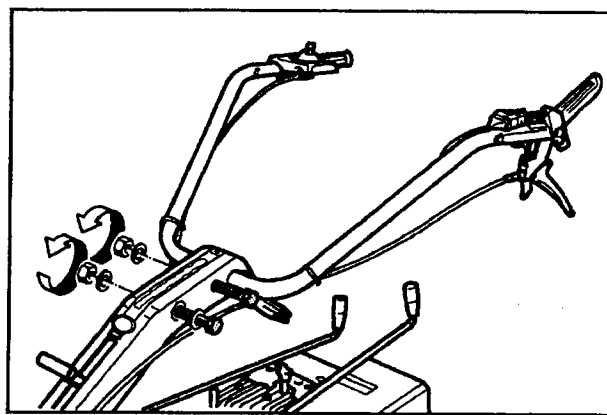
- a) Except for one or two special sizes, most wheel and tire combinations can be mounted for either a wide or narrow track.

For all applications except tilling and plowing, the recommended mounting is wide track for stability. The "Vees" of tractor tread tires should point in the direction of forward rotation.

On convertible models, which can be used with both front-mount and rear-mount attachments, mount the wheels for the attachment that will be used the most.

It is not necessary to remount the wheels when changing attachments.

- b) For wide track, mount the wheels with the tire valves towards the outside.
For a narrower track, mount the wheels with the valves toward the inside.



2. ADJUST TIRE PRESSURE TO 15 POUNDS.

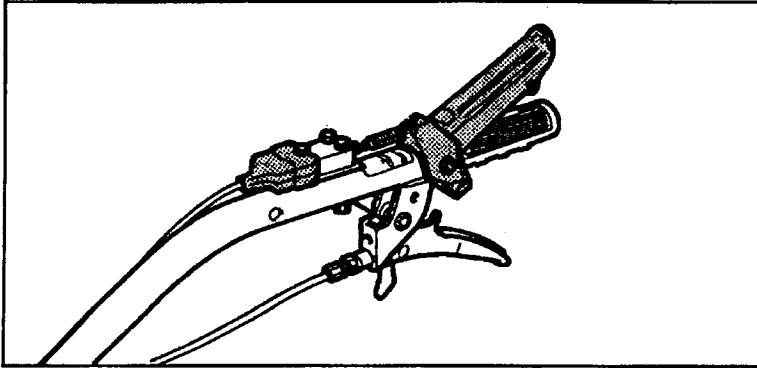
3. ASSEMBLE CONTROL COLUMN TO COLUMN SUPPORT ABOVE THE TRANSMISSION.



IMPORTANT

Refer to the drawing of the stop switch cable, showing the casing ferrule being inserted into a grooved retainer on the handlebar.

Be sure to make this insertion on your model of machine so the stop switch can be used to start and stop the engine.



MODELS 830, 850 AND 946 :

These models come with the control column and handlebar preassembled, but mounted in a compact position on the unit.

Remove the lower of the two bolts at the base of the column.

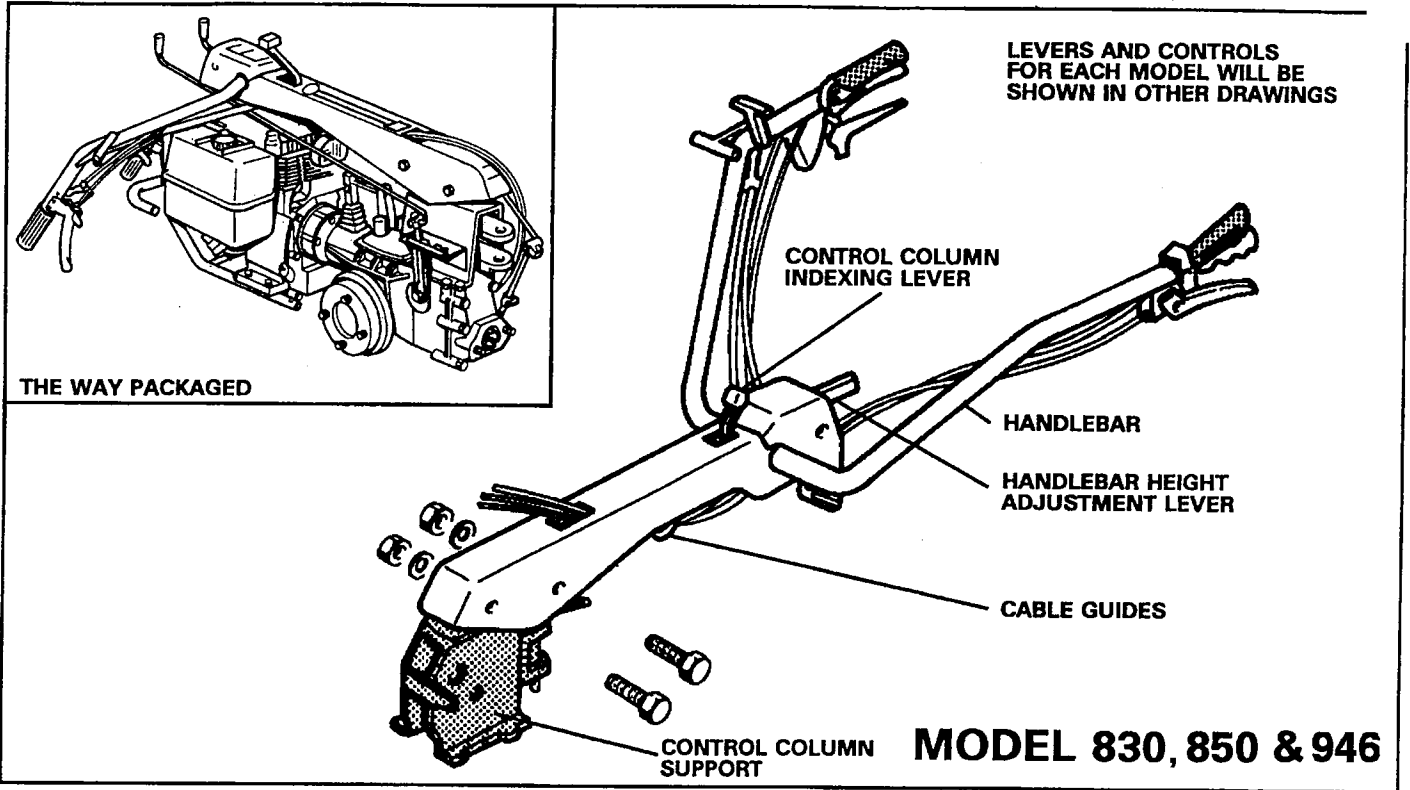
Raise the column so it clears the filler cap on the fuel tank.

Align holes in the column and column support, and reinstall the bolt. Secure with a lock washer and self-locking nut.

Note the extra mounting holes in the column.

It gives you a choice of column angles.

4. ASSEMBLE HANDLEBAR SUPPORT BRACKET, AND CONTROL ROD SUPPORTS TO THE MACHINE.



MODELS 830,850 AND 946

Fit the control rods into the supports on each side of the control column.

Align the supports with the rods and tighten the nuts securely.

Tuck the cables into the cable guides on the underside of the control column.

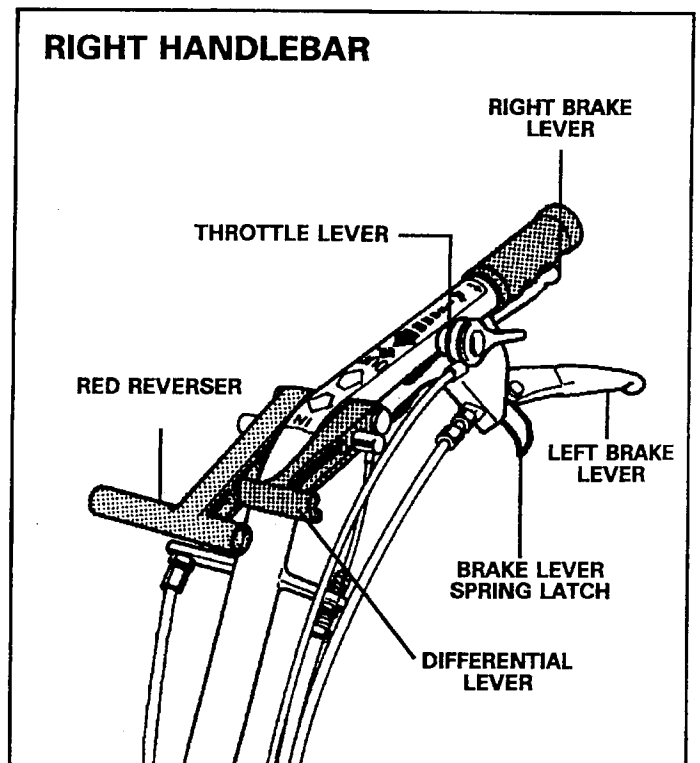
5. INSTALL BRAKE LEVERS (830, 850 AND 946):

Models 830, 850 and 946 are factory equipped with two wheel brakes, controlled by brake levers on the right handle.

The handlebar clamp nuts at top control column connection have been left loose, with the two wire clamps hanging loosely.

Put the cables in the clips and position the clips to support the cables while tightening the clamp nuts.

An optional one-wheel brake kit is available for models 710, 716, 720 and 730.





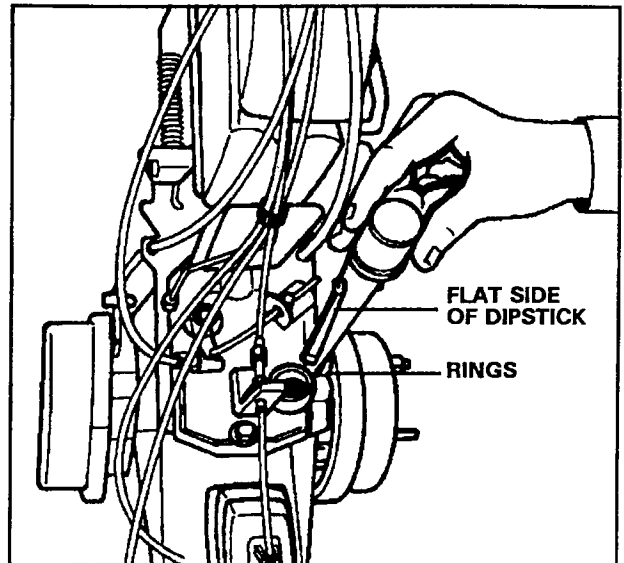
6. TRANSMISSION:

For shipping purposes, the transmission (gear case) filler hole is sealed with a plastic plug, and the dipstick is in the owner's kit.

Remove the plug. Before installing the dipstick, it is important to oil the O-ring with a light engine oil. It also is important to install the dipstick with its flat side towards the center of the transmission.

If installed flat-side-out, it will not be clear of the rotating gears. (See drawing.)

Check the level of gear oil at this time. (See "Gearbox Lubrication" on page 25).



7. ENGINE PRESERVICE:

BRIGGS AND STRATTON ENGINES:

Remove and discard the thimble-shaped, clear plastic cover from the oil breather tube located to the left of the carburetor.

Remove the crankcase oil filler plug (or dipstick) and check that the oil is at proper level.

(See "Engine Crankcase Lubrication" on page 25 and its specific use and care manual).

HONDA ENGINES:

Check the oil fill cap/dipstick at the left of engine. If oil level is below full mark, see "Engine Crankcase Lubrication" on page 25.

No other preservice is required. For Honda engine operating and service instructions, see Honda Engine owner's manual 31ZH7622.

ELECTRIC SYSTEM BATTERY:

The battery is a 12 volt 14-16 AH (Dimensions mm: 135x90x168 or 160x90x161). For the model 946 the battery is a 12 Volt, 33 AH (Dimensions mm: 232x130x167).

Push the unit to an open ventilated spot.

Wear safety goggles and gloves when filling the cells with the electrolyte solution.

Follow instructions supplied with the battery for filling with electrolyte, maintaining fluid level in the cells, and charging and recharging.

⚠ DANGER

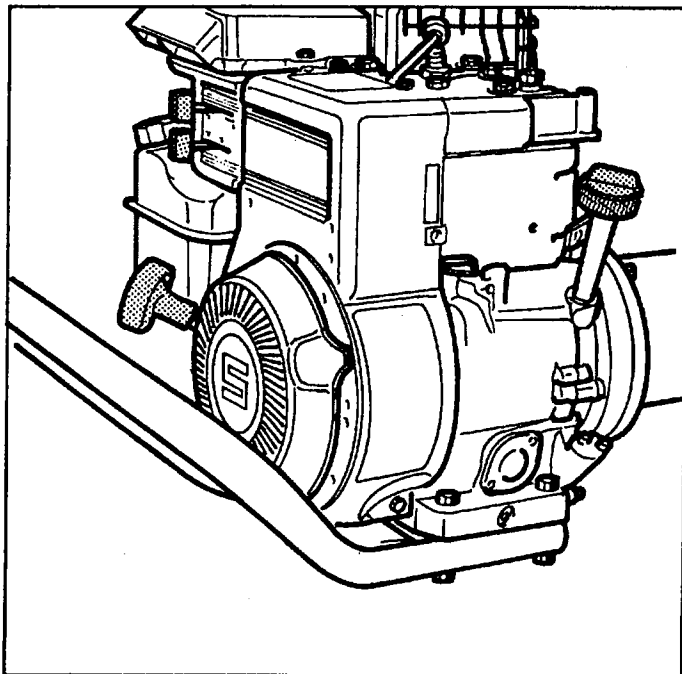
The battery electrolyte is a strong acid.

The acid or the fumes from it can cause severe burns. The battery constantly emits hydrogen gas which can be exploded by flame or sparks.

Avoid contact with the battery acid.

Always fill the battery in a well ventilated place, and do not bring flame or sparks of any kind near the battery. If acid contacts your body, flood the area immediately with soap and water.

LUBRICATION, FILTERS AND FUEL



ENGINE CRANKCASE LUBRICATION

The oils selected for use should be high quality, high-detergent products of API service classification "SF".

The oil usually recommended for warm weather use is a straight SAE 30 weight.

A multi-viscosity type oil such as SAE 10W-40 can also be used in warm weather.

When the air temperature falls below 32 degrees F (0°C) switch to 10W-40 or 10W-30 weight oil.

For extremely cold (sub-zero Celsius) temperatures, it may be necessary to use SAE 5W-30 or 5W-20 weight oils.

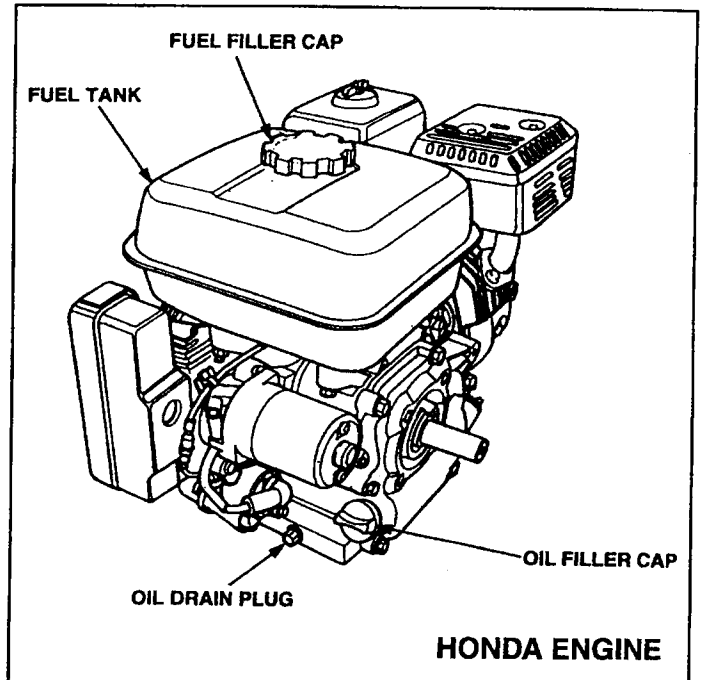
Always check the oil level every day of use. Change the oil after the first five hours of engine operation, and at least once a season thereafter.

Put the unit on a level surface when checking oil level.

If the engine has a dipstick, maintain the oil level between the high and low marks on the stick. If no dipstick, keep the oil level no lower than half an inch (12.7 mm) below the top thread of the filler hole. **For Honda Engines check the oil level such as indicated on the owner's manual. Add oil if the oil level is at the half of the dipstick.**

NOTE

Engine manufacturers recommend the types and weights of oil for seasonal use in their engine. Always consult the engine instruction manual for their recommendations.



When changing oil, always run the engine to get the oil warm. Then shut down, remove the drain plug, and drain the dirty oil into a container for proper disposal. Do not pollute the environment with waste oil.

GEARBOX LUBRICATION

The gearbox requires maintenance of the oil level with SAE 80/90 or SAE 90 EP (extreme pressure) gear oil.

The gearbox filler cap (see drawing, page 24) has a dipstick with marker rings denoting full and low levels.

NOTE

When checked on a brand new machine, the oil level will be at the full mark on the dipstick. When it drops near the low mark add oil, but do not fill above the full mark. Do not operate if level is not up to the low mark.

1. Twist and pull up the filler cap to check the dipstick. Checking every 50 operating hours is recommended.
2. Put the dipstick back into the filler hole, and twist the stick around so the flat side is toward the center of the transmission gear box.