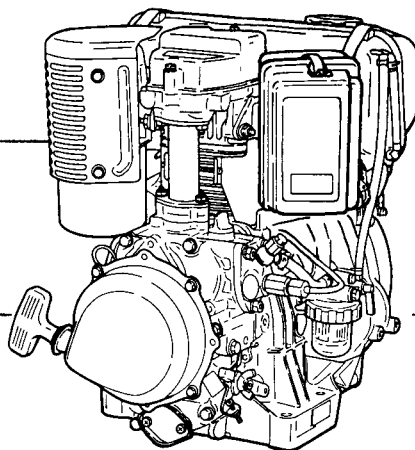




MODEL

DY41D/41B

INSTRUCTIONS FOR USE
FOR EMISSION CERTIFIED ENGINE



ISSUE EMD-EU1531

2ZZ9020080

Robin Engines

NOTICE

The **FEDERAL EMISSION COMPONENT DEFECT WARRANTY** and **CALIFORNIA EMISSION CONTROL WARRANTY** stated in the beginning of this manual are only applicable to the engines sold and used in respective States in the U.S.A.

To the engines exported to and used in the countries other than the U.S.A., warranty service shall be performed by the distributor in each country in accordance with the standard Robin engine warranty policy as applicable.



WARNING:



The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

FEDERAL EMISSIONS COMPONENT DEFECT WARRANTY

EMISSIONS COMPONENT DEFECT WARRANTY COVERAGE - This emission warranty is applicable in all States, except the State of California

Fuji Heavy Industries Ltd. and Robin America Inc., Wood Dale Illinois, (herein "ROBIN AMERICA") warrant(s) to the initial retail purchaser and each subsequent owner, that this Nonroad engine (herein "engine") has been designed, built, and equipped to conform at the time of initial sale to all applicable regulations of the U.S. Environmental Protection Agency (EPA), and that the engine is free of defects in materials and workmanship which would cause this engine to fail to conform with EPA regulations during its warranty period.

For the components listed under PARTS COVERED, the service dealer authorized by ROBIN AMERICA will, at no cost to you, make the necessary diagnosis, repair, or replacement necessary to ensure that the engine complies with applicable U.S. EPA regulations.

EMISSION COMPONENT DEFECT WARRANTY PERIOD

The warranty period for this engine begins on the date of sale to the initial purchaser and continues for a period of 2 years.

PARTS COVERED

Listed below are the parts covered by the Emission Components Defect Warranty. Some of the parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement point for that part.

- | | |
|--|--|
| <p>(1) Fuel Metering System</p> <ul style="list-style-type: none">(i) Carburetor and internal parts (and/or pressure regulator or fuel injection system).(ii) Air/fuel ratio feedback and control system, if applicable.(iii) Cold start enrichment system, if applicable.(iv) Regulator assy (gaseous fuel, if applicable) <p>(2) Air Induction System</p> <ul style="list-style-type: none">(i) Intake manifold, if applicable(ii) Air filter. | <p>(3) Ignition System</p> <ul style="list-style-type: none">(i) Spark plugs.(ii) Magneto or electronic ignition system.(iii) Spark advance/retard system, if applicable. <p>(4) Exhaust manifold, if applicable</p> <p>(5) Miscellaneous Items Used in Above Systems</p> <ul style="list-style-type: none">(i) Electronic controls, if applicable(ii) Hoses, belts, connectors, and assemblies.(iii) Filter lock assy (gaseous fuel, if applicable) |
|--|--|

OBTAINING WARRANTY SERVICE

To obtain warranty service, take your engine to the nearest authorized Robin America service dealer. Bring your sales receipts indicating date of purchase for this engine. The service dealer authorized by ROBIN AMERICA will perform the necessary repairs or adjustments within a reasonable amount of time and furnish you with a copy of the repair order. All parts and accessories replaced under this warranty become the property of ROBIN AMERICA.

WHAT IS NOT COVERED

*Conditions resulting from tampering, misuse, improper adjustment (unless they were made by the service dealer authorized by ROBIN AMERICA during a warranty repair), alteration, accident, failure to use the recommended fuel and oil, or not performing required maintenance services.

*The replacement parts used for required maintenance services.

*Consequential damages such as loss of time, inconvenience, loss of use of the engine or equipment, etc.

*Diagnosis and inspection charges that do not result in warranty-eligible service being performed.

*Any non-authorized replacement part, or malfunction of authorized parts due to use of non-authorized parts.

OWNER'S WARRANTY RESPONSIBILITIES

As the engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. ROBIN AMERICA recommends that you retain all receipts covering maintenance on your engine, but ROBIN AMERICA cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the engine owner, you should however be aware that ROBIN AMERICA may deny warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your engine to the nearest service dealer authorized by ROBIN AMERICA when a problem exists.

If you have any questions regarding your warranty rights and responsibilities, you should contact the Robin America customer service department at 1-630-350-8200 for the information.

THINGS YOU SHOULD KNOW ABOUT THE EMISSION CONTROL SYSTEM WARRANTY MAINTENANCE AND REPAIRS

You are responsible for the proper use and maintenance of the engine. You should keep all receipts and maintenance records covering the performance of regular maintenance in the event questions arise. These receipts and maintenance records should be transferred to each subsequent owner of the engine. ROBIN AMERICA reserves the right to deny warranty coverage if the engine has not been properly maintained. Warranty claims will not be denied, however, solely because of the lack of required maintenance or failure to keep maintenance records.

MAINTENANCE, REPLACEMENT OR REPAIR OF EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY REPAIR ESTABLISHMENT OR INDIVIDUAL ; HOWEVER, WARRANTY REPAIRS MUST BE PERFORMED BY A SERVICE DEALER AUTHORIZED BY ROBIN AMERICA. THE USE OF PARTS THAT ARE NOT EQUIVALENT IN PERFORMANCE AND DURABILITY TO AUTHORIZED PARTS MAY IMPAIR THE EFFECTIVENESS OF THE EMISSION CONTROL SYSTEM AND MAY HAVE A BEARING ON THE OUTCOME OF A WARRANTY CLAIM.

If other than the parts authorized by ROBIN AMERICA are used for maintenance replacements or for the repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to the parts authorized by ROBIN AMERICA in their performance and durability.

HOW TO MAKE A CLAIM

All repair qualifying under this limited warranty must be performed by a service dealer authorized by ROBIN AMERICA. In the event that any emission-related part is found to be defective during the warranty period, you shall notify Robin America customer service department at 1-630-350-8200 and you will be advised of the appropriate warranty service dealer or service providers where the warranty repair can be performed.

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and Fuji Heavy Industries Ltd. (herein "FUJI") are pleased to explain the emission control system warranty on your 2001 and later Small Off-Road engine (herein "engine"). In California, the engine must be designed, built and equipped to meet the State's stringent anti-smog standards. FUJI must warrant the emission control system on your engine for the periods of time described below, provided there has been no abuse, neglect or improper maintenance of your engine. Your emission control system may include parts such as the carburetor or fuel-injection system, and the ignition system. Also included may be hoses, belts, connectors and other emission-related assemblies. Where a warrantable condition exists, FUJI will repair your engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE :

The 2001 and later engines are warranted for two (2) years. If any emission related part on your engine is defective, the part will be repaired or replaced by FUJI.

OWNER'S WARRANTY RESPONSIBILITIES :

- As the engine owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual. FUJI recommends that you retain all receipts covering maintenance on your engine, but FUJI cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
- As the engine owner, you should ,however, be aware that FUJI may deny you warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.
- You are responsible for presenting your engine to a service dealer or warranty station authorized by ROBIN AMERICA Inc. 940 Lively Blvd., Wood Dale, IL 60191 (herein ROBIN AMERICA) as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact the Robin America Inc. Customer Service Department at 1-630-350-8200

FUJI warrants to the owner of the 2001 and later engine that the engine 1)has been designed, built and equipped so as to conform at the time of manufacture with the applicable regulations of the California Air Resources Board, and (2) is free from defects in materials and workmanship that could cause it to fail to conform with those regulations as may be applicable in the terms and conditions stated below.

A. COMMENCEMENT DATE

The warranty period begins on the date the engine is delivered to a first retail purchaser.

B. LENGTH OF COVERAGE

FUJI warrants to a first retail purchaser and each subsequent purchaser that the engine is free from defects in materials and workmanship that cause the failure of a warranted emission-related part for a period of two (2) years after the date of delivery to the first retail purchaser.

C. WHAT IS COVERED :

1. REPAIR OR REPLACEMENT PARTS

Repairs and replacement of any warranted part will be performed at no charge to you by an authorized service dealer or a warranty station. You may contact the Robin America Inc. Customer Service Department at 1-630-350-8200 to obtain the name of the nearest appropriate location where your warranty repairs are performed.

2. WARRANTY PERIOD

This warranty continues for a period of two (2) years and applies only to the repair, replacement or adjustment of the component parts that are not scheduled for replacement as required maintenance. Further, component parts which are scheduled only for regular inspection to the effect of "repair or replace as necessary" are warranted for the warranty period. Any warranted part which is scheduled for replacement as required maintenance is warranted for the period of time up to the first scheduled replacement point for that part.

3. DIAGNOSIS

You will not be charged for diagnostic labor that leads to the determination that a warranted part is defective, if the diagnostic work is performed at an authorized service dealer or warranty station.

4. DAMAGES

If a warranted part failed causing damage to other engine components, consult an warranty station.

D. WHAT IS NOT COVERED

1. This limited warranty does not cover any part which malfunctions, fails or is damaged due to failure to follow the maintenance and operating instructions set forth in the 2001 and later Owner's Manual including:

- (1) improper or inadequate maintenance of any warranted parts
- (2) improper installation, adjustment or repair of the engine or of any warranted part unless performed by an authorized service dealer
- (3) failure to follow recommendations on fuel use contained in the 2001 and later Owner's Manual
- (4) repairs performed outside of the authorized warranty service dealers
- (5) use of parts which are not authorized by FUJI.

2. Add-on or modified parts

This warranty does not cover any part that malfunctions, fails or is damaged due to alterations by changing, adding to or removing parts from the engine.

3. Expenses incurred by processing warranty claims

FUJI, any authorized service dealer and warranty station shall not be liable for any loss of use of the engine, for any alternative usage, for any damage to goods, loss of time or inconvenience.

E. HOW TO FILE A CLAIM

All repairs qualifying under this Limited Warranty must be performed by a dealer who sold you the engine or warranty station authorized by ROBIN AMERICA. In the event that any emission-related part is found to be defective during the warranty period, you must notify the Robin America Inc. Customer Service Department at 1-630-350-8200 and you will be advised of the appropriate warranty service facilities where the warranty repair is to be performed.

F. WHERE TO OBTAIN WARRANTY SERVICE

It is recommended that warranty service be performed by the authorized dealer who sold you the engine, although warranty service will be performed by any authorized service dealers or warranty stations anywhere in the United States. When warranty repair is needed, the engine must be brought to an authorized service dealer or warranty station's place of business during normal business hours. In all cases, a reasonable time, not to exceed 30 days, must be allowed for the warranty repair to be completed after the engine is received by the authorized service dealer or warranty station.

G. MAINTENANCE, REPLACEMENT AND REPAIR OF EMISSION-RELATED PARTS

Only warranted engine replacement parts approved by FUJI should be used in the performance of any warranty maintenance or repairs on emission-related parts. If other than authorized parts are used for maintenance, replacement or repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to authorized parts in performance and durability. FUJI, however, assumes no liability under this warranty with respect to parts other than authorized parts. The use of non-authorized replacement parts does not invalidate the warranty on other components unless the non-authorized parts cause damage to warranted parts.

H. PARTS COVERED UNDER THE CALIFORNIA EMISSIONS WARRANTY

(1) Fuel Metering System

- (i) Carburetor and internal parts (and/or pressure regulator or fuel injection system).
- (ii) Air/fuel ratio feedback and control system, if applicable.
- (iii) Cold start enrichment system, if applicable.
- (iv) Regulator assy (gaseous fuel, if applicable)

(2) Air Induction System

- (i) Intake manifold, if applicable
- (ii) Air filter.

(3) Ignition System

- (i) Spark plugs.
- (ii) Magneto or electronic ignition system.
- (iii) Spark advance/retard system, if applicable.

(4) Exhaust manifold, if applicable

(5) Miscellaneous Items Used in Above Systems

- (i) Electronic controls, if applicable
- (ii) Hoses, belts, connectors, and assemblies.
- (iii) Filter lock assy (gaseous fuel, if applicable)

I. MAINTENANCE STATEMENTS

It is your responsibility to have all scheduled inspection and maintenance services performed at the times recommended in the 2001 and later Owner's Manual and to retain proof that inspection and maintenance services are performed at the times when recommended. FUJI will not deny a warranty claim solely because you have no record of maintenance; however, FUJI may deny a warranty claim if your failure to perform required maintenance resulted in the failure of warranted part. The proof which you maintain should be given to each subsequent owner of the engine. You are responsible for performing the scheduled maintenance described below based on the procedures specified in the 2001 and later Owner's Manual. The scheduled maintenance below is based on a normal engine operating schedule.

















PROCEDURE	INTERVAL
1) Clean engine and check bolts & nuts	: Every 8 hours (daily)
2) Check and refill engine oil	: Every 8 hours (refill daily up to upper limit)
3) Change engine oil	: Initial 20 hours (25 hours-Diesel) and every 50 hours afterward
4) Check muffler exhaust outlet, clean if necessary	: Every 50 hours or weekly
5) Clean spark plug	: Every 50 hours (weekly)
6) Clean air cleaner	: Every 50 hours (100 hours-Diesel)
7) Check battery electrolyte fluid level	: Every 50 hours
8) Clean oil filter (Diesel)	: Every 50 hours
9) Clean fuel injector nozzle (Diesel)	: Every 100 hours
10) Check and setting of valve clearance (Diesel)	: Every 100 hours
11) Clean fuel filter (and fuel tank, if applicable)	: Every 200 hours (Monthly)(100 hours-Diesel)
12) Clean and adjust spark plug and electrodes	: Every 200 hours (Monthly)
13) Replace air cleaner element, if applicable	: Every 200 hours (100 hours-Diesel)
14) Clean carburetor	: Every 500 hours
15) Remove carbon from cylinder head	: Every 500 hours
16) Adjust valve clearance, if applicable	: Every 500 hours
17) Check and adjust valve seats	: Every 500 hours
18) Replace spark plug	: Every 500 hours
19) Replace fuel filter (Diesel)	: Every 500 hours
20) Replace fuel lines	: Every 1000 hours (Yearly)
21) Overhaul engine	: Every 1000 hours(1500 hours -Diesel)
22) Replace piston rings (Diesel)	: Every 1000 hours
23) Change engine oil filter, if applicable	: Initial 20 hours and every 200 hours thereafter
24) Fuel injector tips (Diesel)	: Every 1500 hours

Note : More frequent maintenance may be necessary under dusty, dirty or severe conditions.

CONTENTS

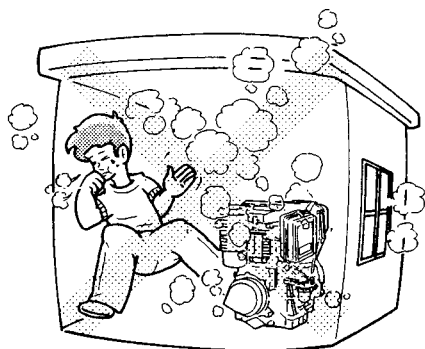
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SYMBOLS

		<p><i>Read the owner's manual.</i></p>	
		<p><i>Stay clear of the hot surface.</i></p>	
		<p><i>Exhaust gas is poisonous. Do not operate in an unventilated area.</i></p>	
		<p><i>Stop the engine before refueling.</i></p>	
		<p><i>Fire, open flame and smoking prohibited.</i></p>	
	<p><i>On (Run)</i></p>		<p><i>Plus; Positive polarity</i></p>
	<p><i>Off (Stop)</i></p>		<p><i>Battery</i></p>
	<p><i>Engine oil</i></p>		<p><i>Engine start (Electric start)</i></p>
	<p><i>Add oil</i></p>		<p><i>Stop</i></p>
	<p><i>Fast</i></p>		<p><i>Diesel fuel</i></p>
	<p><i>Slow</i></p>		

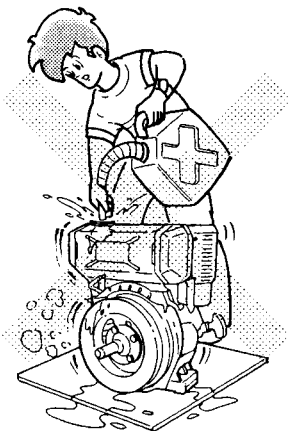
1. SAFETY PRECAUTIONS

Please make sure you review each precaution carefully.



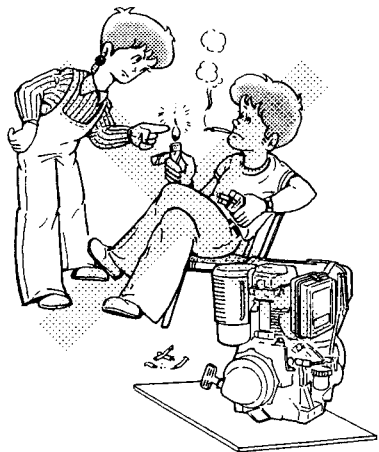
EXHAUST PRECAUTIONS

- Never inhale exhaust gasses. They contain carbon monoxide, a colorless, odorless and extremely dangerous gas which can cause unconsciousness or death.
- Never operate the engine indoors or in a poorly ventilated area, such as tunnel, cave, etc.
- Exercise extreme care when operating the engine near people or animals.
- Keep the exhaust pipe free of foreign objects.



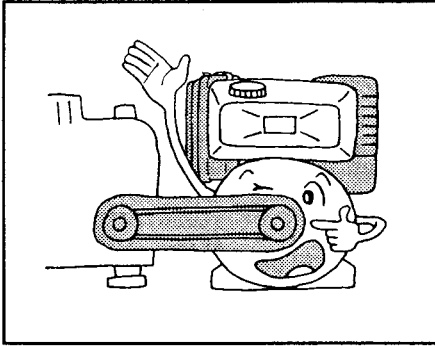
REFUELING PRECAUTIONS

- Be sure to stop the engine prior to refueling.
- Do not overfill the fuel tank.
- If fuel is spilled, wipe it away carefully and wait until the fuel has dried before starting the engine.
- After refueling, make sure that the fuel cap is secured to prevent spillage.



FIRE PREVENTION

- Do not operate while smoking or near an open flame.
- Do not use around dry brush, twigs, cloth rags, or other flammable materials.
- Keep the engine at least 3 feet (1 meter) away from buildings or other structures.
- Keep the engine away from flammables and other hazardous materials (trash, rags, lubricants, explosives).



PROTECTIVE COVER

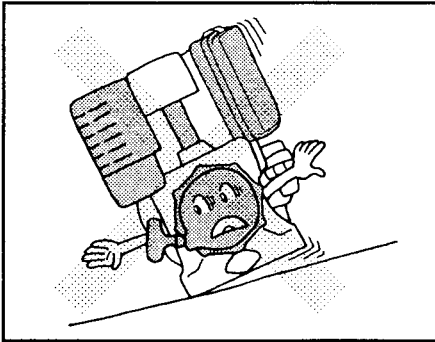
- Place the protective covers over the rotating parts.

If rotating parts such as the drive shaft, pulley, belt, etc. are left exposed, they are potentially hazardous. To prevent injury, equip them with protective covers or shrouds.

- Be careful of hot parts.

The muffler and other engine parts become very hot while the engine is running or just after it has stopped.

Operate the engine in a safe area and keep children away from the running engine.



SURROUNDINGS

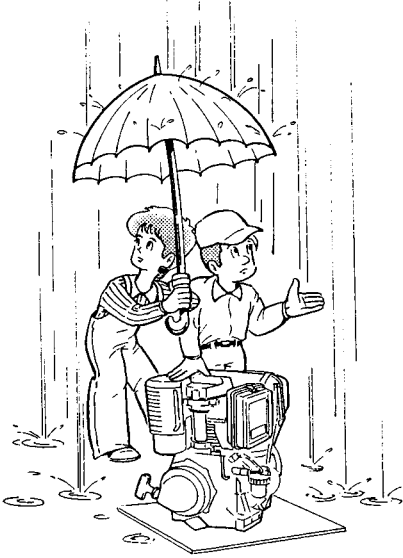
- Operate the engine on a stable, level surface free of small rocks, loose gravel, etc.

- Operate the engine on a level surface.

If the engine is tilted, fuel spillage may result.

NOTE :

Operating the engine at a steep incline may cause seizure due to improper lubrication even with a maximum oil level.



- **Be careful of fuel spillage when transporting the engine.**

Tighten the fuel tank cap securely and close the fuel strainer cock before transporting.

- **Do not move the engine while in operation when it has been removed from the equipment.**

- When the engine is transported over a long distance or on rough roads, drain fuel from fuel tank to prevent fuel leakage.

PRE-OPERATION CHECKS

- **Carefully check fuel pipes and joints for looseness and fuel leakage.**

Leaked fuel creates a potentially dangerous situation.

- **Check bolts and nuts for looseness.**

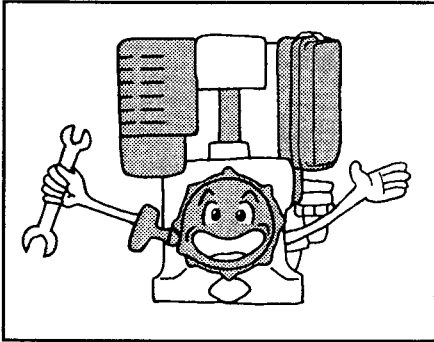
A loose bolt or nut may cause serious engine trouble.

- **Check the engine oil and refill if necessary.**

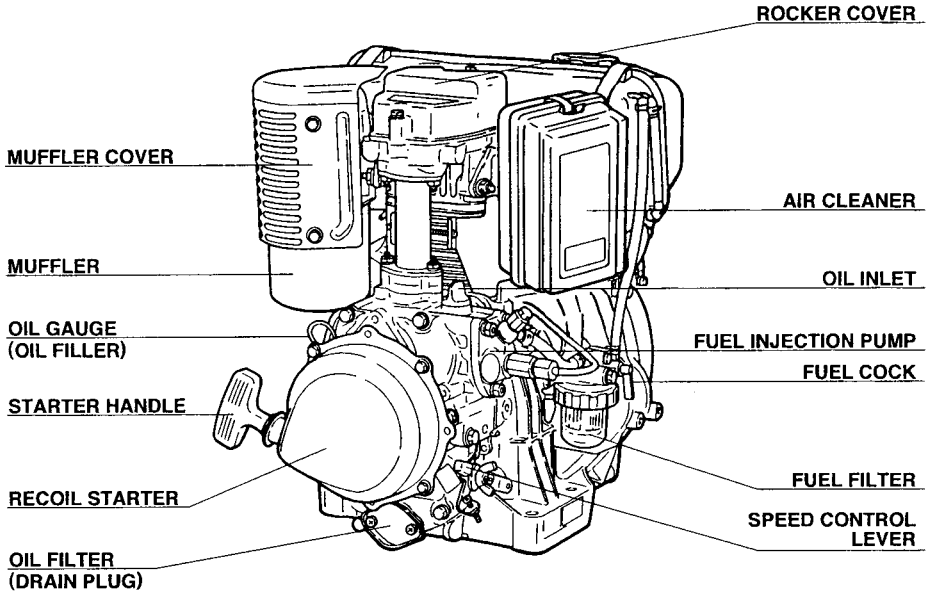
- **Check the fuel level and refill if necessary.**

Take care not to overfill the tank.

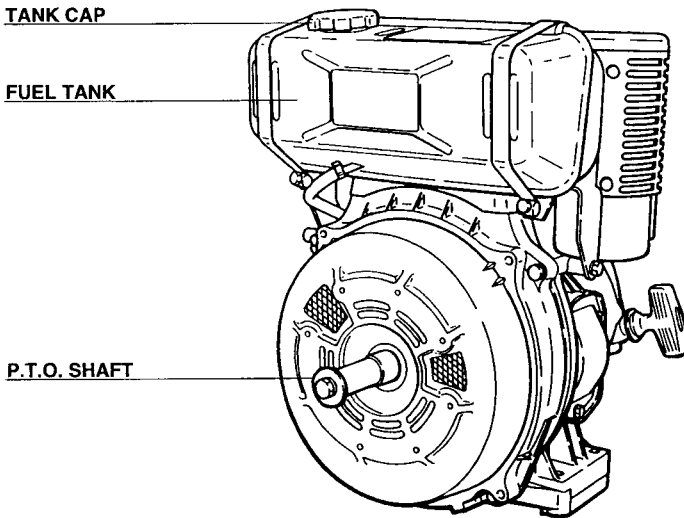
- **Wear snug fitting working clothes when operating the engine. Loose aprons, towels, belt, etc., may be caught in the engine or drive train, causing a dangerous situation.**



2. COMPONENTS



This illustration shows D type.



TANK CAP

FUEL TANK

OIL INLET
(for REDUCTION GEAR)

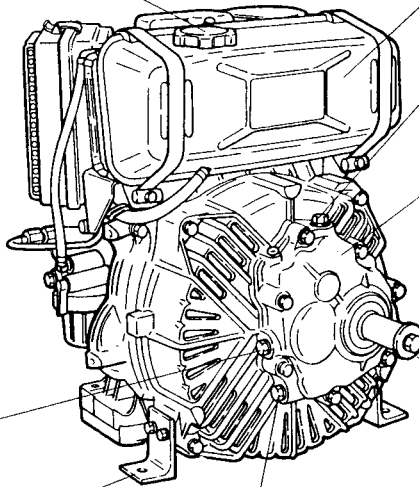
REDUCTION GEAR

OIL CHECKING PLUG

P.T.O. SHAFT

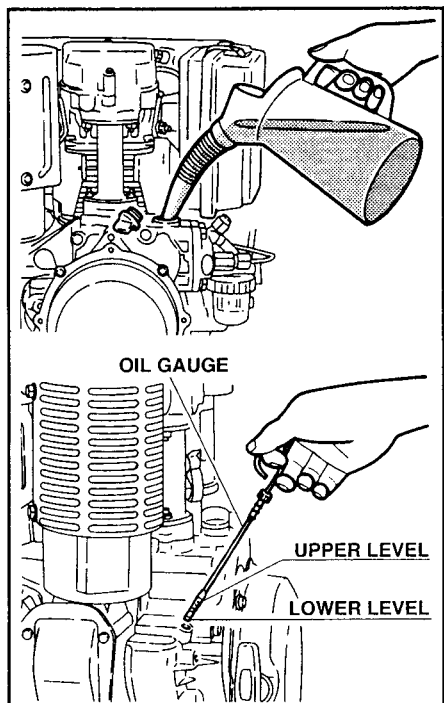
ENGINE SUPPORT

OIL DRAIN PLUG (for REDUCTION GEAR)



This illustration shows B type.

3. PRE-OPERATION CHECKS



FILLING ENGINE OIL

Place the engine horizontally and pour oil up to the upper level of the oil gauge (approx. 1.1 liter).

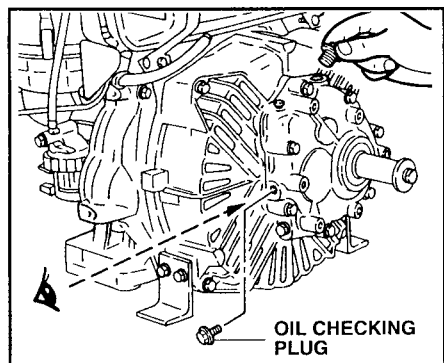
- Use diesel engine oil with a viscosity of :

SEASON or TEMPERATURE	GRADE OF OIL
Spring or Summer or Autumn +104°F (40°C) to +50°F (10°C)	SAE30
+68°F (20°C) to +14°F (-10°C)	SAE10W-30

Oil grades of "CC" or "CD" (API classification) are recommended. Inferior quality engine oil and/or lack of oil may cause a piston seizure.

CAUTION

**Do not use gasoline engine oil.
Use diesel engine oil only.**

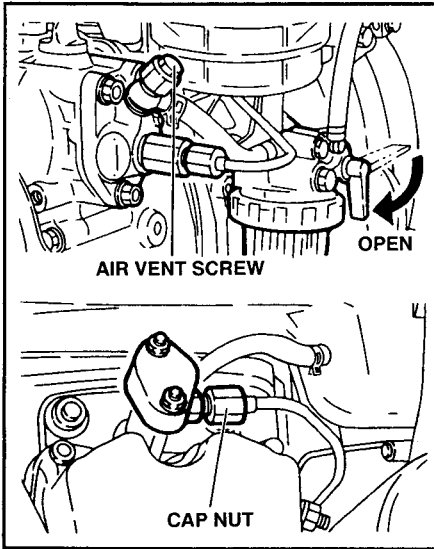


CHECKING ENGINE OIL FOR REDUCTION TYPE

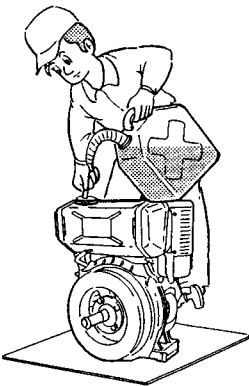
Place the engine horizontally. Remove the plug for oil checking hole and check the oil level. If the oil is about to flow over the hole, it is sufficient for the quantity specified (approx. 220cc).

- Overfilling may cause oil spouting out of the breather.
- Use diesel engine oil specified in the above table.

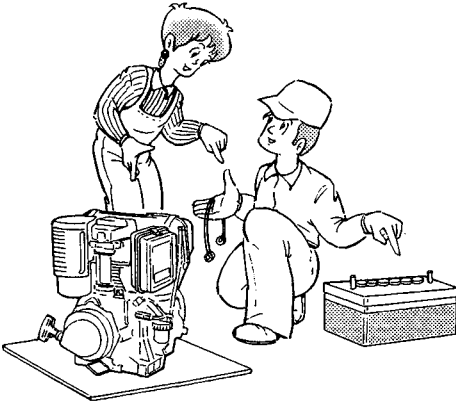
FILLING FUEL IN FUEL TANK AND DISCHARGE AIR FROM FUEL SYSTEM



- Use light automobile diesel fuel.
- Fuel should be clean and fresh. Fuel around the bottom of drum contains dirt, impurities and water. If contaminated fuel is used, the fuel injection pump and nozzle may be clogged.
- Fuel tank capacity is 4.5 liters. If the fuel is spilled while refilling, wipe off thoroughly.
- When starting the engine in the following conditions, air venting from fuel line is required.
 1. Starting the brand new engine for the first time.
 2. Restarting the engine after the engine has stopped due to fuel shortage.
 3. Starting the engine after fuel filter cleaning.
- Air venting procedure
 1. Open the fuel cock.
 2. Loosen the air vent screw of the fuel injection pump and let fuel flow out until air bubbles no longer appear.
 3. After completing the above work, retighten the air vent screw.
 4. Set the speed control lever at the "high" speed position and loosen the cap nut on the side of the nozzle and pull the recoil starter handle slowly until sufficient fuel has been injected.
 5. Retighten the cap nut.
- Stop the engine first, then refill fuel.



4. ELECTRIC STARTER MODELS



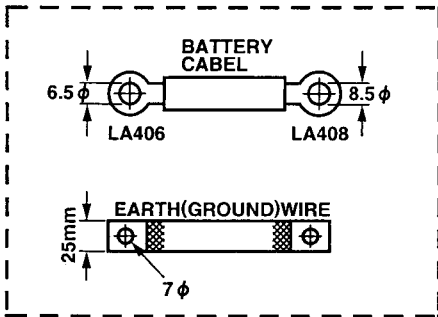
1. PREPARE THE FOLLOWING
 - (1) Battery with a capacity of 12V-35AH or larger.
 - (2) Lead wires for connecting battery, starter switch and starting motor.

a) BATTERY CABLE

CABLE LENGTH	CABLE DIA.	WIRE GAUGE		
		AWG(BS) BWG	SAE	JIS
Less than 1.5m	7.3mm	1	6	AV15
1.5m to 2.5m	8.5mm	0	4	AV20
2.5m to 4m	10.8mm	3/0	2	AV30

b) SWITCH CABLE

When remote key switch is used, select wires of proper gauge to connect key switch and magnetic switch on the engine.



CABLE LENGTH	CABLE DIA.	WIRE GAUGE		
		AWG(BS) BWG	SAE	JIS
Less than 1.5m	1.5mm	14	16	AV1.25
1.5m ~ 3.5m	1.9mm	12	14	AV2
3m ~ 5m	2.4mm	10	13	AV3

c) GROUND WIRE

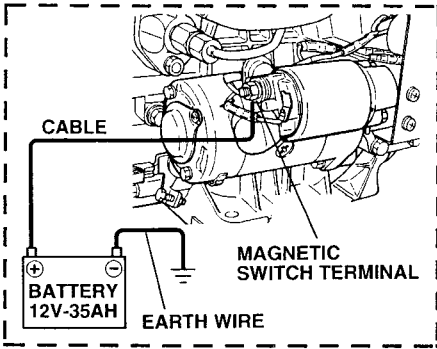
Use a flat braided wire of 0.03 sq. in. (20mm²) or larger sectional area.

2. WIRING

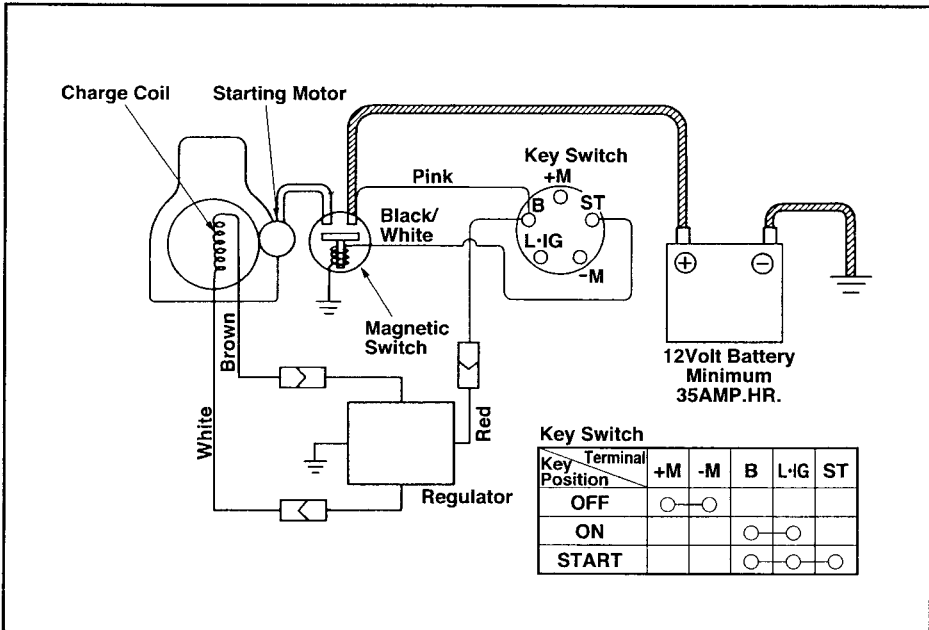
1. Connect positive terminal of the electric starter and positive terminal of the battery with battery cable.
2. Ground negative terminal of the battery to the body of engine or machine with ground wire.

NOTE :

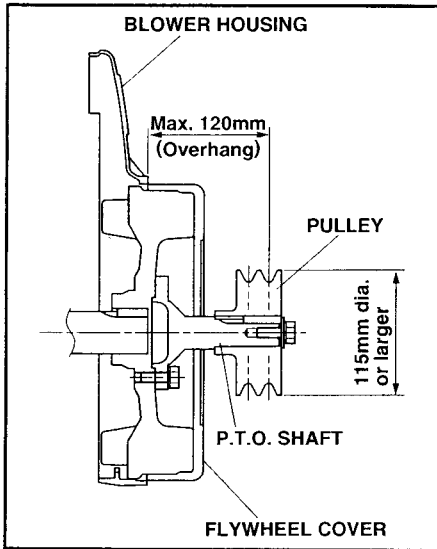
Tighten bolts and nuts on terminals securely so that they will not be loosened by vibration.



WIRING DIAGRAM



5. ADVICE ON BELT DRIVING



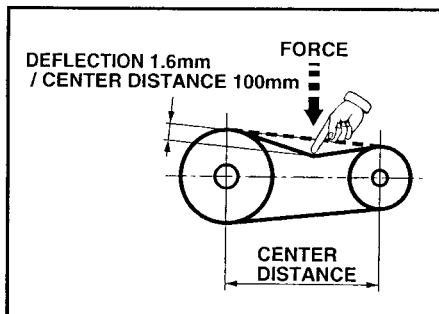
When your engine is used for powering the equipment by a belt drive system, be sure to observe the following recommendations in order to use the engine efficiently, safely and comfortably for a long time.

1. PULLEY SIZE AND INSTALLATION

- (1) Use a double groove V-pulley with 115mm diameter or larger for the drive pulley. Smaller pulley will cause belt slipping.
- (2) The overhang distance between the blower housing and the center of the outer groove of the drive pulley must be less than 120 mm. If this overhang distance is larger, the engine runs a risk of getting heavy damage such as breakage of crankshaft or main bearings.

2. RECOMMENDED BELT

Belt	V-belt type "B"
Numbers	2 (Use in double)



3. TENSION FOR BELT

Adjust the belt tension so as that the belt allows 1.6 mm deflection per 100 mm center distance between drive and driven pulleys when the middle of the belt is depressed with a finger. For example, when the center distance of pulleys is 500 mm, proper tension is to allow deflection by 8 mm.

$$\left(1.6 \text{ mm} \times \frac{500}{100} = 8 \text{ mm} \right)$$

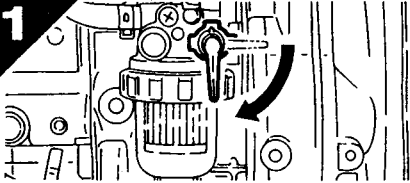
Too much tension will cause heavy starting and breakage of crankshaft and bearings.

6. OPERATING YOUR ENGINE

STARTING

FUEL COCK

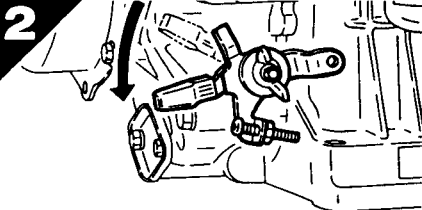
1



Open the fuel cock.

SPEED CONTROL LEVER

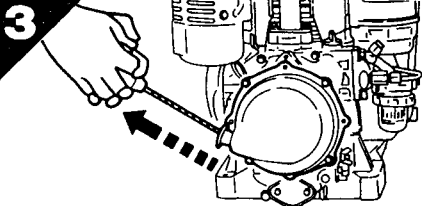
2



Set the speed control lever at the HIGH SPEED position.

RECOIL STARTER

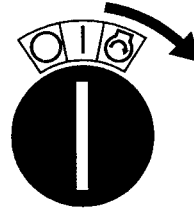
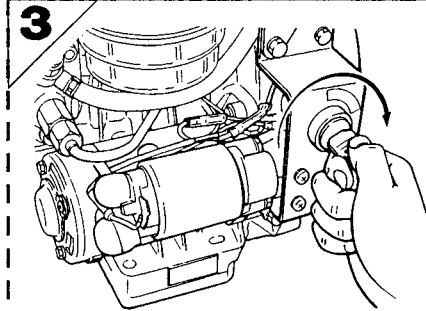
3



- Pull the starter handle slowly until resistance is felt. This is the "compression" point. Return the starter handle to its original position and repull swiftly.
- Do not pull out the rope all the way.
- After starting the engine, allow the starter handle to return to its original position while still holding the handle.

KEY SWITCH (Electric Starter) (Starting by key switch)

3

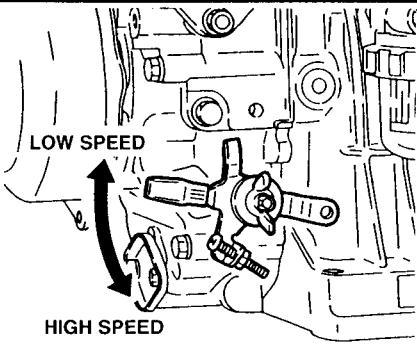


Insert the key into the key slot and turn it to the RUN (I) position. Turn it to the right (START position) to start the engine.

- Do not operate the electric starter continuously for more than 5 seconds, even if the engine does not start.
- If the engine failed to start, set the key to the RUN (I) position and wait for about 10 seconds before retrying.
- Never turn the key switch to the position START while the engine is running.

RUNNING

SPEED CONTROL LEVER



After the engine started, set the speed control lever at the LOW speed position and warm it up without a load for a few minutes.

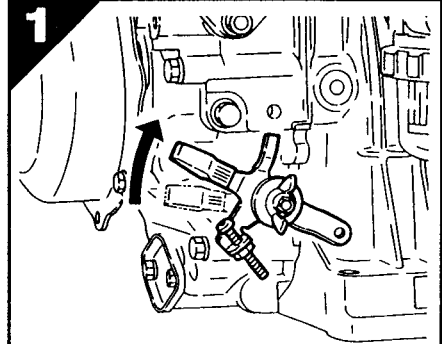
Gradually move the speed control lever toward the HIGH speed position and set it at the required engine speed.

NOTE :

Whenever high speed operation is not required, slow the engine speed down (idle) by moving the speed control lever to save the fuel and extend the engine life.

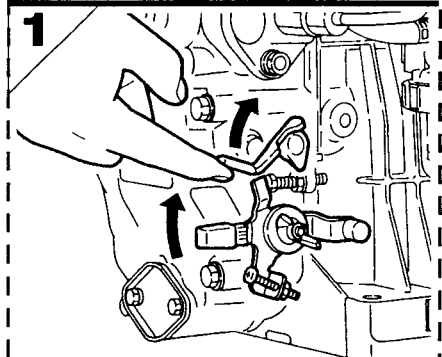
STOPPING

SPEED CONTROL LEVER (D type)



Set the speed control lever at the low speed position and allow the engine to run at low speed for 2 or 3 minutes before stopping. Set the speed control lever to "STOP" position to stop engine.

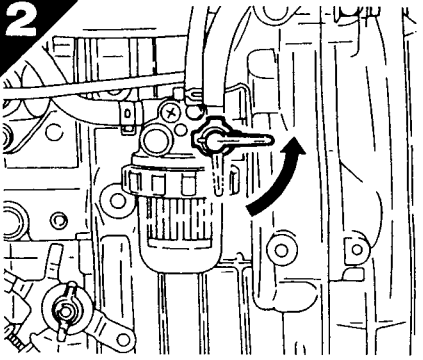
STOP LEVER (B type) (Stopping by Stop Lever)



Run the engine at idle speed for a few minutes to cool down, and pull up the stop lever until the engine stops.

FUEL COCK

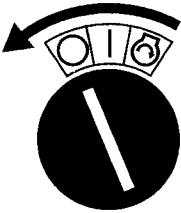
2



Close the fuel cock.

KEY SWITCH (Electric Starter)

2

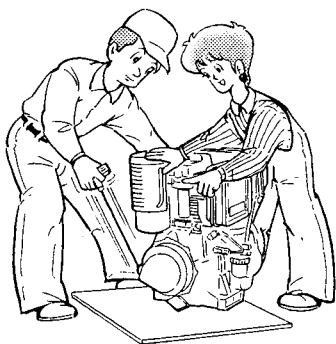


After the engine stops, set the key switch at the STOP (O) position and remove the key.

NOTE :

Note that when the key is either at the STOP position or is being pulled out of the key switch while engine is running, the battery is not being charged.

7. EASY TROUBLESHOOTING

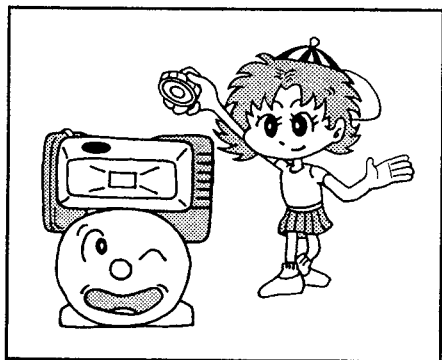


WHEN ENGINE DOES NOT START !

- Perform the following checks before you take the engine to your Robin dealer.
- If you still have trouble after completing the checks, take the engine to your nearest dealer.

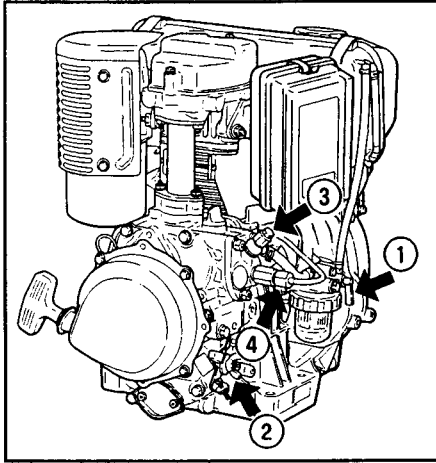
Are foreign substances contained in the fuel?

1. Drain all the fuel from the fuel tank and check that no foreign substances and/or water are contained in the fuel.
2. Clean the fuel filter.



Is your battery well charged ?

1. If the battery for the electric starter is discharged, the engine does not start. Change the battery then try starting again.
2. Check wiring, especially connectors for tightness.



Is fuel being injected ?

1. Check that the fuel cock is open.
2. Check that the speed control lever is in the "HIGH SPEED" position.
3. Loosen the air vent screw of the injection pump and let the air out of the pump.
4. Disconnect the high pressure pipe on the side of the injection pump, and set the speed control lever to the "HIGH SPEED" position.

Turn the engine over manually and check if fuel is injected. If the fuel is not being injected, the dealer or service shop should repair the unit.

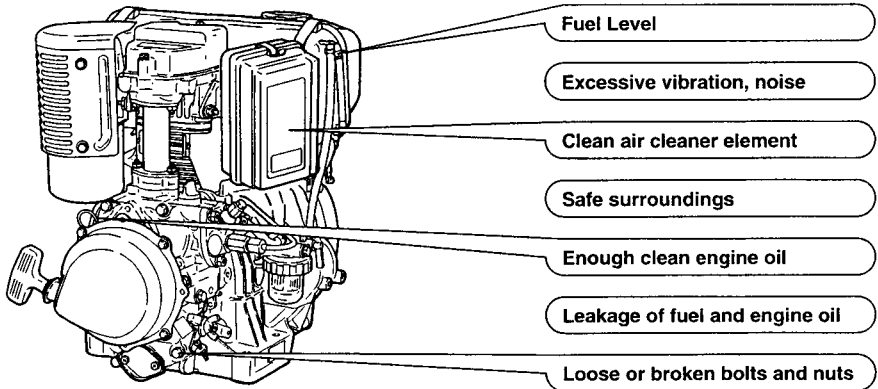
Is there enough compression ?

1. If compression is not sufficient, check the mounting of the injection nozzle. If the mounting nuts are loose, tighten them.

8. MAINTENANCE SCHEDULE

DAILY INSPECTION

Before running the engine, check the following service items.



PERIODIC INSPECTION

Periodic maintenance is vital to safe and efficient operation of your engine.

Check the table below for periodic maintenance intervals.

It is also necessary for the user of this engine to conduct the maintenance and adjustments on the emission-related parts listed below to keep the emission control system effective.

The emission control system consists of the following parts :

- | | | |
|---------------------------|--|-------------|
| (1) Fuel injection system | (2) Air cleaner element | (3) Muffler |
| (4) Fuel filter | (5) Hoses, belts, connectors, and assemblies | |

The maintenance schedule indicated in the following table is based on the normal engine operation.

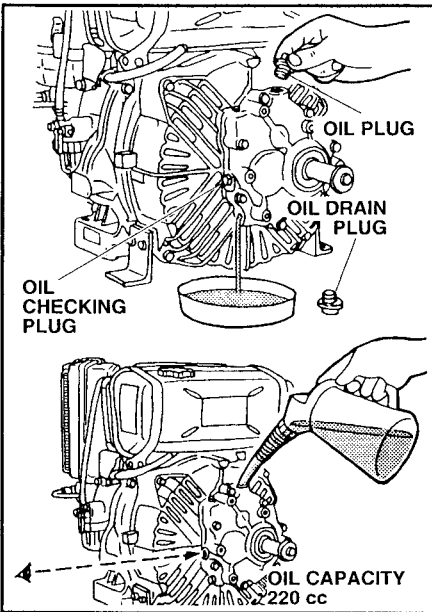
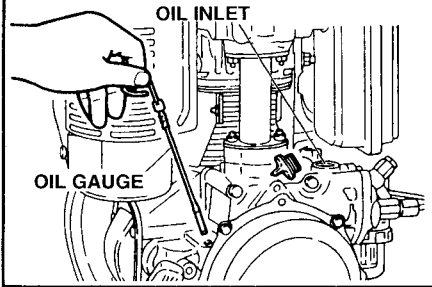
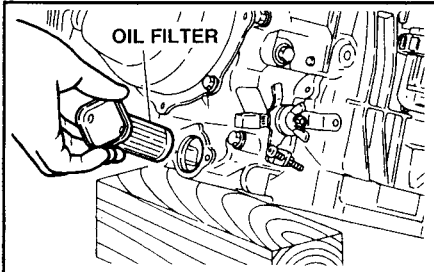
Should the engine be operated in extremely dusty condition or in heavier loading condition, the maintenance intervals must be shortened depending on the contamination of oil, clogging of filter elements, wear of parts, and so on.

Items \ Operating hours	Every 8 hours (daily)	Every 100 hours	Every 500 hours	Every 1500 hours
Check for oil and fuel leakage	●			
Check bolts and nuts for tightness	●			
Check engine oil	● Refill everyday up to upper level.			
Replace engine oil (*Note : 1)	● Initially 25 hrs.	● (50 hrs.)		
Clean air cleaner		●		
Check and adjust valve clearance			●	
Clean fuel filter (Remove contaminants and water)		●	● Replace	
Replace or clean oil filter (*Note : 1)		● (50 hrs.)		
Check nozzle and clean (*Note : 2)		●		
Check valve seat (*Note : 2)			●	
Reduction oil change (B type)			● (300 hrs.)	
Check battery electrolyte level		● (monthly)		
Overhaul engine (*Note : 2)				●

*Note : 1. Initial oil change should be performed after first twenty five (25) hours of operation. Thereafter change oil every fifty (50) hours.
 Before changing oil, check for a suitable way to dispose of old oil.
 Do not pour it down into sewage drains, onto garden soil or into open streams. Your local zoning or environmental regulations will give you more detailed instructions on proper disposal.

*Note : 2. As to the procedures for these items, please refer to the SERVICE MANUAL or consult your nearest Robin service dealer.

9. "HOW-TO" MAINTENANCE



ENGINE OIL CHANGE AND OIL FILTER CLEANING

- Initial oil change
..... After 25 hours of operation
 - Thereafter
..... Every 50 hours of operation
1. While the engine is still warm, remove the oil filter.
 2. Assemble oil filter after drain engine oil.
 3. Pour the engine oil up to upper level of the gauge and run engine for several minutes. Then, stop engine and let it stand for about 10 minutes. Check the oil level again and add if necessary. (Capacity : approx 1 liter)
 4. When changing oil, clean the oil filter with diesel fuel.

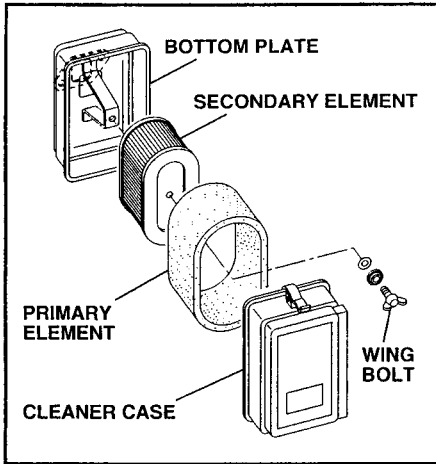
OIL CHANGE FOR REDUCTION GEAR BOX

CAUTION

Overfilling may cause oil to spout out of the breather. So, be careful.

- Use diesel engine oil for reduction gear oil.
 - Period of oil change
..... Every 300 hours of operation
1. While the engine is warm, remove the drain plug.
For quick draining, remove the plug of the oil inlet.
 2. When filling up the oil, first tighten the drain plug firmly, and remove the oil checking plug. Place the engine on a level surface and pour the oil in until it overflows from the oil checking plug.

DUAL ELEMENT AIR CLEANER



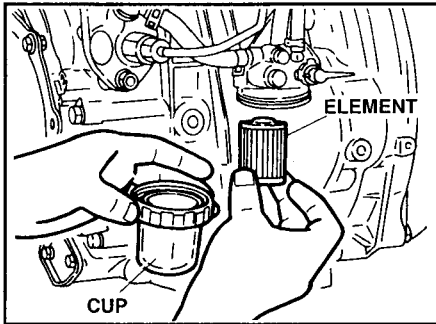
CAUTION

Do not wash elements with kerosene, gasoline or oil.

If the air cleaner is dirty, the engine will perform poorly due to air intake resistance. Always keep the air cleaner elements clean.

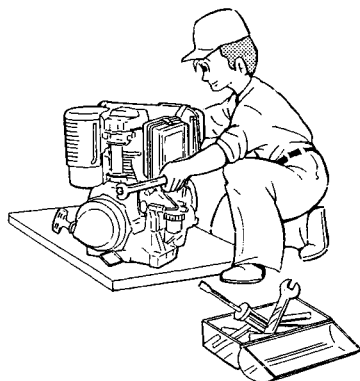
- After every 100 hours of operation, disassemble and clean the primary and secondary elements with detergent. After cleaning, dry them and attach.
- When operating the engine under extremely dusty conditions, clean the air cleaner elements every 30 to 50 hours of operation depending on the operating conditions.

CLEANING FUEL FILTER



Fuel injection pump is a very precise mechanism. If dust or water is contained in the fuel, the plunger may be damaged or seized up. Therefore, clean the fuel filter element and cup very carefully.

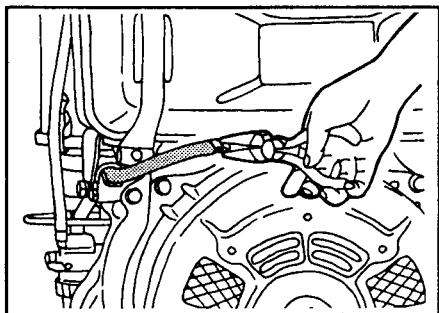
1. If and when water and/or foreign substances are found in the fuel filter cup, remove the cup and clean it.
 2. After every 100 hours of operation, clean the fuel filter and after every 500 hours of operation, replace the elements with new ones.
- Close the fuel cock before cleaning.
 - After cleaning bleed the air out of the fuel system. (Refer to page 7.)



CHECKING BOLTS, NUTS AND SCREWS

- Retighten loose bolts and nuts.
- Check for fuel and oil leaks.
- Replace damaged parts with new ones.

Keep safety on your mind.



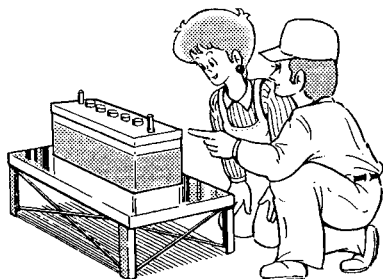
FUEL HOSE REPLACEMENT

WARNING

Take extreme caution when replacing fuel hose; gasoline is flammable.

Replace the fuel hose every 1,000 hours or every year.

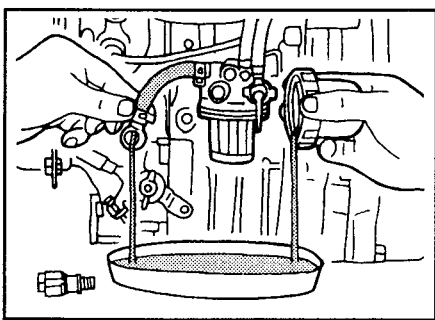
If fuel hose leak is found, replace the fuel hose immediately.



CHECK BATTERY

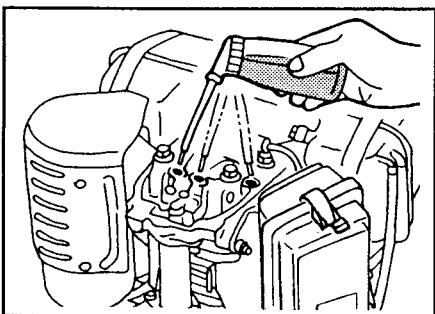
If the electrolyte is below the level line, refill with distilled water to the upper level line.

10. PREPARATIONS FOR STORAGE



DISCHARGE FUEL (NO SMOKING !)

- Remove the injection pump bolt and discharge the fuel from the fuel tank.
- Remove the fuel filter cup and discharge fuel from the fuel filter.
- After discharging the fuel, clean the fuel filter element.

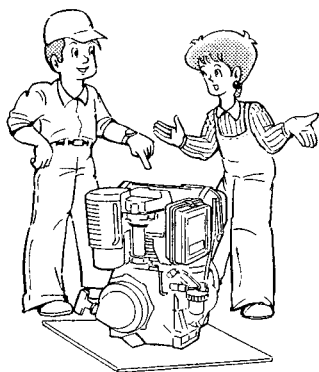


ENGINE LUBRICATING OIL

- Exchange the old engine oil with fresh oil.
- Remove the rocker cover, and lubricate rocker arm and valves. Lubricate hole on the side of the cleaner. Gently rotate the engine for two or three times, and tighten the rocker cover.

CLEAN AND STORE

- Pull the starter handle slowly until resistance is felt and leave it in that position.
- Disconnect the battery and charge it.
- Wipe the engine thoroughly with an oiled cloth, put the cover on, and store the engine indoors in a well-ventilated, low humidity area.



BATTERY CHARGING

- The battery discharges itself even when not connected, therefore it is necessary to recharge it once a month.

11. SPECIFICATIONS

MODEL	DY41D	DY41DS	DY41B	DY41BS
Type	Air-cooled, 4-Cycle, Vertical, Overhead Valve, Single Cylinder Diesel Engine			
Displacement	412 cm ³			
DIN6270NA	5.2kW/3000min ⁻¹ (7.0 HP/3000rpm)		5.2kW/1450min ⁻¹ (7.0 HP/1450rpm)	
	5.5kW/3600min ⁻¹ (7.5 HP/3600rpm)		5.5kW/1750min ⁻¹ (7.5 HP/1750rpm)	
DIN6270NB	6.0kW/3000min ⁻¹ (8.0 HP/3000rpm)		6.0kW/1450min ⁻¹ (8.0 HP/1450rpm)	
	6.3kW/3600min ⁻¹ (8.5 HP/3600rpm)		6.3kW/1750min ⁻¹ (8.5 HP/1750rpm)	
Direction of Rotation	Counterclockwise as viewed from P.T.O. shaft side			
Lubricant	Diesel Engine Lubricating Oil API classification "CC" or "CD" grade			
Fuel	Automotive Diesel Fuel			
Fuel Tank Capacity	Approx. 4.5 L			
Lighting Capacity (V-W/rpm)	--	12-29/3000 12-31/3600	--	12-29/1450 12-31/1750
Starting System	Recoil Starter	Electric Starter	Recoil Starter	Electric Starter
Dry Weight	47 kg	54 kg	51 kg	58 kg
	436 mm	436 mm	497 mm	447 mm
	394 mm	408 mm	394 mm	408 mm
Dimensions	478 mm	478 mm	478 mm	478 mm

Specifications are subject to change without notice.

OPTIONAL PARTS

P.T.O. shaft and adaptor for generator
P.T.O. shaft and adaptor for pump
Throttle wire bracket

One touch speed control lever
(Dust-proof cover is also available).
Updraft (Downdraft) muffler with tail pipe
Large capacity fuel tank (15 L)
Lighting coil

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