

SUBARU



WARNING:



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

FOREWORD

Thank you very much for purchasing a ROBIN ENGINE.
Your ROBIN ENGINE can supply the power to operate various sorts of machines and equipment.
Please take a moment to familiarize yourself with the proper operation and maintenance procedures in order to maximize the safe and efficient use of this product.
Due to constant efforts to improve our products, certain procedures and specifications are subject to change without notice.
When ordering spare parts, always give us the MODEL, SPECIFICATION and SERIAL NUMBER of your engine.
Please fill in the following blanks after checking the specification number on your engine.

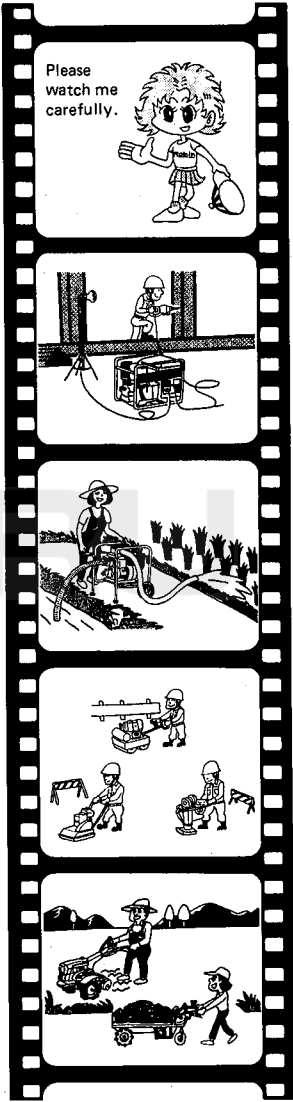
SPEC NO.

E	Y													
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--



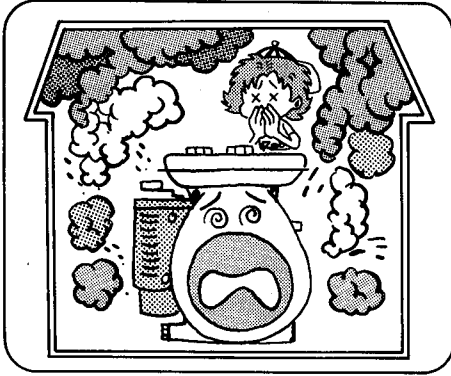
CONTENTS

1. SAFETY PRECAUTIONS	1
2. COMPONENTS	4
3. PRE-OPERATION CHECKS	5
4. OPERATING YOUR ENGINE	6
5. EASY TROUBLESHOOTING	9
6. MAINTENANCE SCHEDULE	11
7. "HOW-TO" MAINTENANCE	12
8. PREPARATIONS FOR STORAGE	15
9. SPECIFICATIONS	16



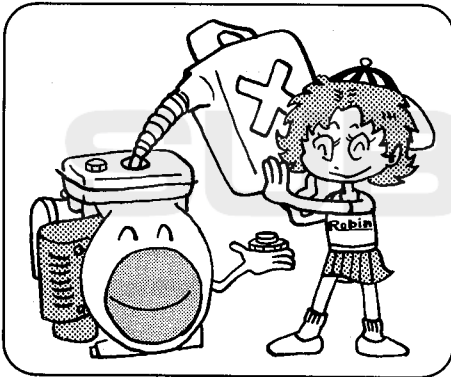
1. SAFETY PRECAUTIONS

Please make sure you review each precaution carefully.



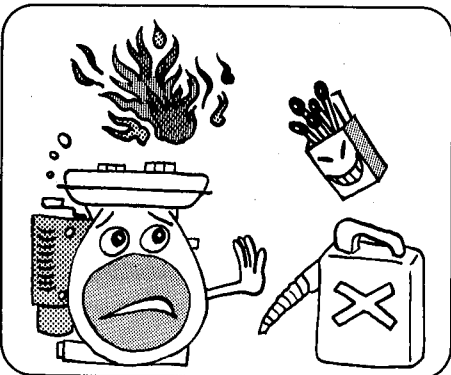
EXHAUST PRECAUTIONS

- 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.



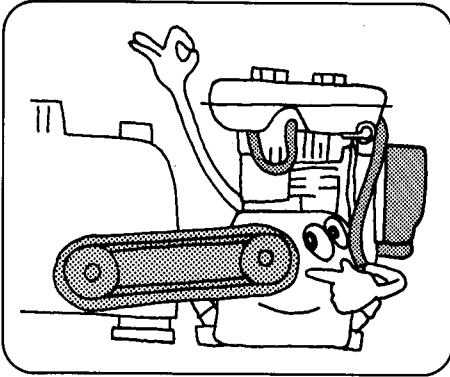
REFUELING PRECAUTIONS

- Be sure to stop the engine prior to refueling.
- Do not overfill the fuel tank.
- If fuel is spilt, wipe it away carefully and wait until the fuel has dried before starting the engine.
- When changing oil, make sure that the fuel tank cap is secure 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.

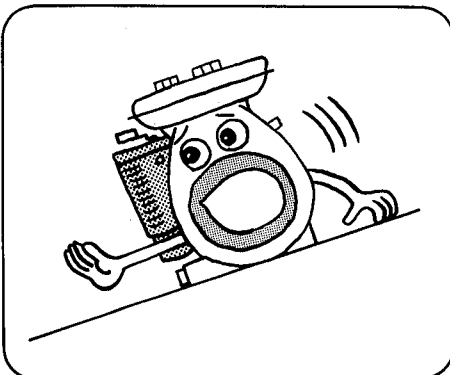
- **Be careful of hot parts.**

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.

- **Never make adjustments on the machinery while it is connected to the engine, without first removing the ignition cable from the spark plug.**
Turning over the machinery by hand during adjusting or cleaning might start the engine, and machinery with it, causing serious injury to the operator.
- **Never run the engine with governor disconnected, or operate at speeds in excess of 3600 rpm load.**

SUBARU

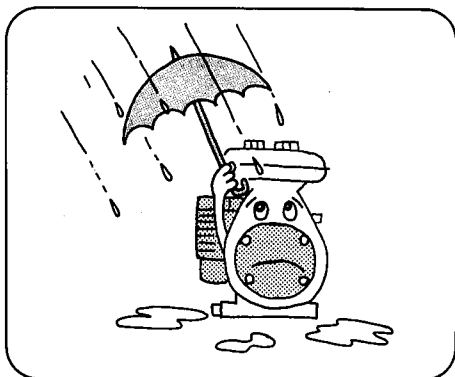


SURROUNDINGS

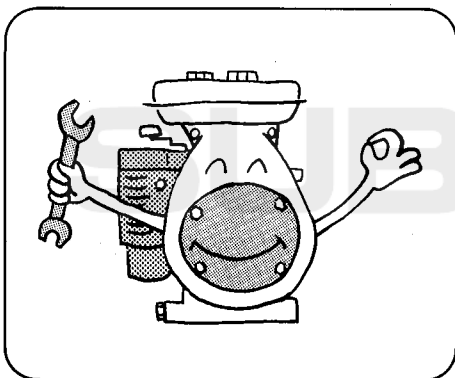
- **Operate the engine on a stable, level surface free of small rocks, loose gravel, etc.**
- **Operate the engine on a level surface.**
If the engine is tilted, fuel spillage may result.

NOTE:

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



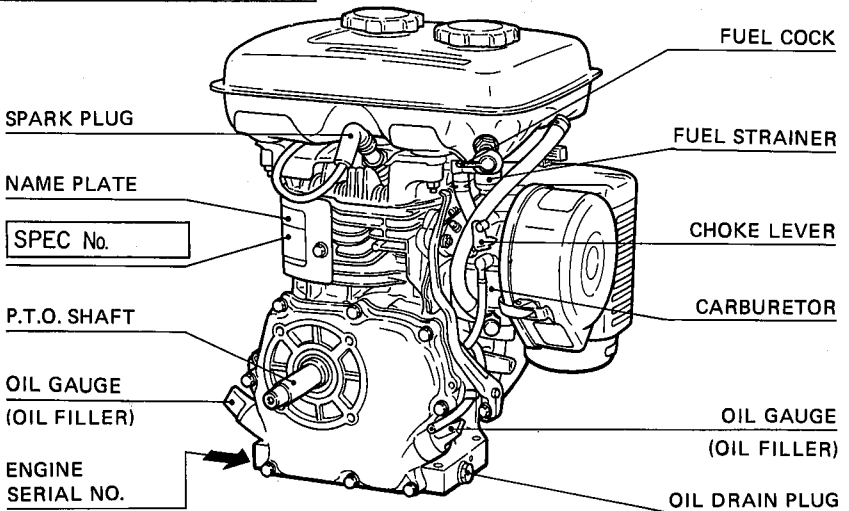
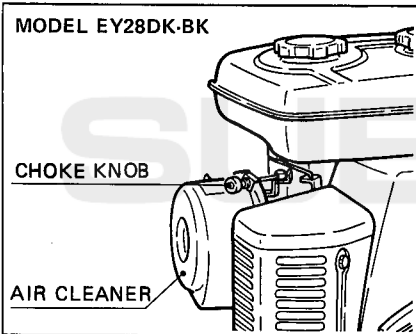
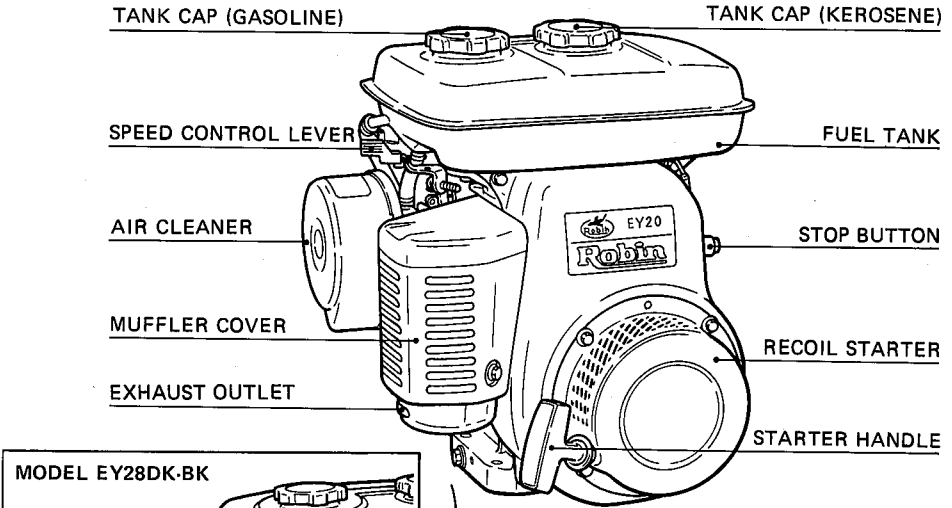
- **Be careful of fuel spillage when transporting the engine.**
Tighten the fuel tank cap securely and close the fuel strainer cock before transit.
- **Do not move the engine while in operation.**
- **Keep the unit dry (do not operate it in rainy conditions or near water).**



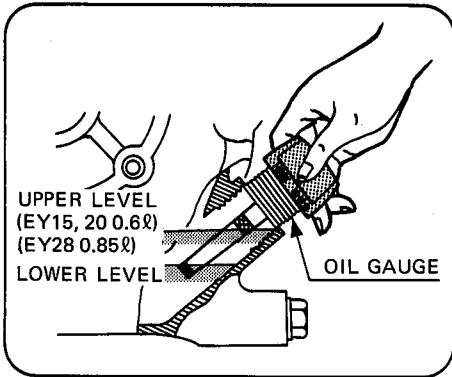
PRE-OPERATION CHECKS

- **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



3. PRE-OPERATION CHECKS

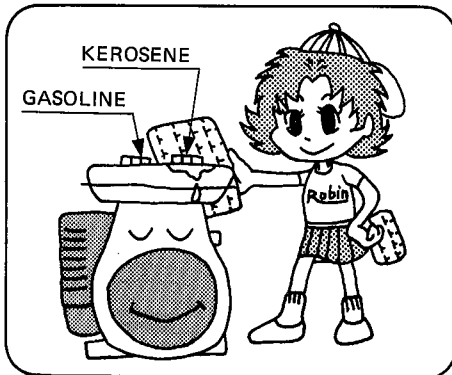


CHECK ENGINE OIL

Before checking or refilling engine oil, be sure the engine is located on a stable, level surface and stopped.

- Remove the oil gauge.
- If the oil level is below the fill level line on the dipstick, refill with the proper oil (see table) to edge of the oil filler neck.
- Change the oil if it is contaminated. (See page 11 Maintenance Schedule.)
- Use class SC (API classification) or higher grade oil.
- If multi-grade oil is employed, oil consumption tends to increase when the ambient temperature is high.

Single grade	5W						
	10W						
Multi-grade	20W						
	#20						
	#30						
Multi-grade							
Ambient temperature	-20	-10	0	10	20	30	40°C
	-4	14	32	50	68	86	104°F



CHECK FUEL

- Close fuel cock (kerosene) before replenishing fuel.
- Fill the kerosene tank with kerosene, and the gasoline tank with gasoline, respectively.

CAUTION:

Particularly be careful not to take gasoline for kerosene or vice versa.

- Use fuel strainer provided at the fuel tanks opening without fail whenever pour in fuel.
- Wipe off fuel, if spilled, before starting engine. Spilled fuel, if any, could cause a fire.

CAUTION:

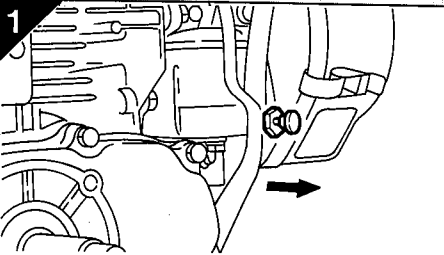
Do not refill fuel to tank while engine is running or hot.

4. OPERATING YOUR ENGINE

STARTING

GASOLINE VALVE

1

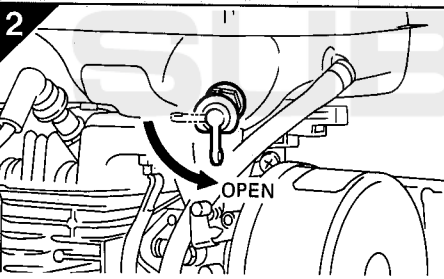


Pull the gasoline valve of the carburetor until the fuel overflows.

Detailed description: A line drawing showing the carburetor area of an engine. A hand is shown pulling a lever labeled 'GASOLINE VALVE'. An arrow points to the right, indicating the direction of the pull. The fuel is shown overflowing from the carburetor.

FUEL COCK

2

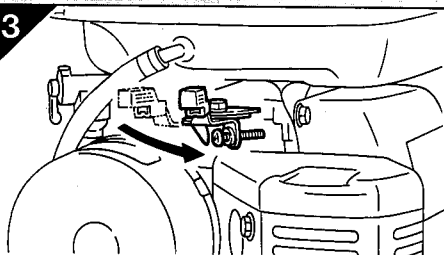


Open the fuel cock (kerosene).

Detailed description: A line drawing showing the fuel cock on the engine. A hand is shown turning a knob labeled 'FUEL COCK' to the 'OPEN' position. An arrow points to the right, indicating the direction of the turn.

SPEED CONTROL LEVER

3

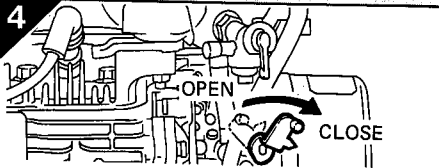


Set the speed control lever 1/3 of the way towards the high speed position.

Detailed description: A line drawing showing the speed control lever on the engine. A hand is shown moving the lever towards the right, which is labeled as the 'high speed position'. An arrow points to the right, indicating the direction of movement.

CHOKE LEVER

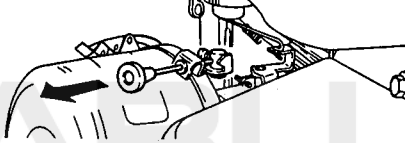
4



Close the choke lever.

- If the engine is warm or the ambient temperature is high, close the choke lever half-way, or keep it open fully.
- If the engine is cold, or the ambient temperature is low, close the choke.

FOR MODEL EY28DK-BK



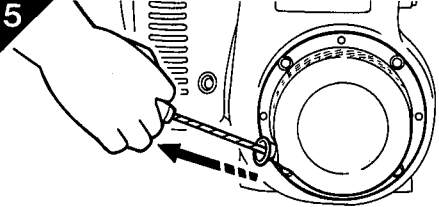
Pull the choke knob.

- If the engine is warm or the ambient temperature is high, pull the choke knob half-way, or push it fully.
- If the engine is cold or the ambient temperature is low, pull the choke knob fully.

Detailed description: This block contains two diagrams. The top diagram, labeled '4', shows a hand moving a lever labeled 'CHOKE LEVER' from an 'OPEN' position to a 'CLOSE' position. The bottom diagram, labeled '5', shows a hand pulling a knob labeled 'CHOKE KNOB' towards the left. Arrows indicate the direction of movement for both diagrams.

RECOIL STARTER

5



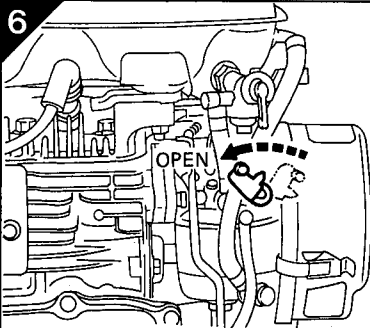
Pull the starter handle slowly until resistance is felt. This is the "compression" point. Return the handle to its original position and pull swiftly.

Detailed description: A line drawing showing a hand pulling a handle labeled 'RECOIL STARTER' on a circular housing. An arrow points to the left, indicating the direction of the pull.

RUNNING

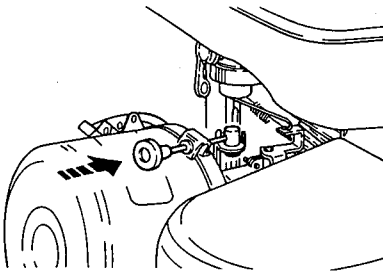
CHOKE LEVER

6



- After starting the engine, gradually open choke by turning the choke lever counterclockwise and finally keep it open fully.
- Do not fully open the choke lever immediately when the engine is cold or the ambient temperature is low, because the engine may stop.

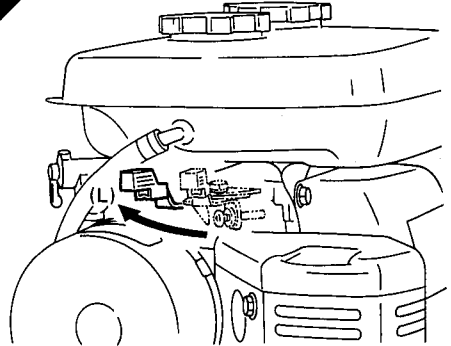
FOR MODEL EY28DK-BK



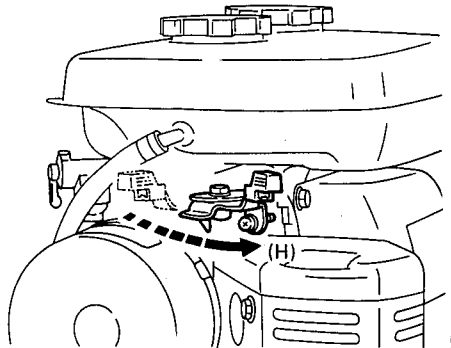
- After starting the engine, gradually open choke by pushing the choke knob and finally push it fully.
- Do not fully push the choke knob immediately when the engine is cold or the ambient temperature is low, because the engine may stop.

SPEED CONTROL LEVER

7



After the engine starts, set the speed control lever at the low speed position (L) and warm it up without a load for a few minutes.



Gradually move the speed control lever toward the high speed position (H) and set it at the required engine speed.

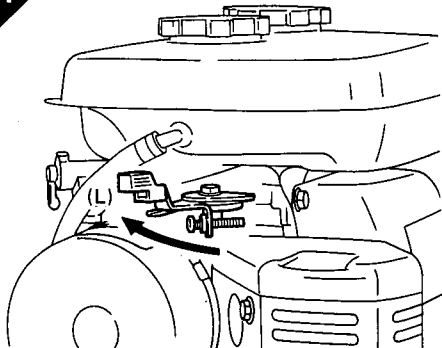
NOTE:

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

STOPPING

SPEED CONTROL LEVER

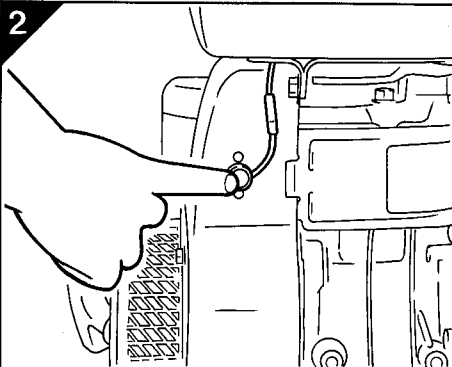
1



Set the speed control lever at the low speed position (L) and allow the engine to run at low speed for 2 or 3 minutes before stopping.

STOP BUTTON

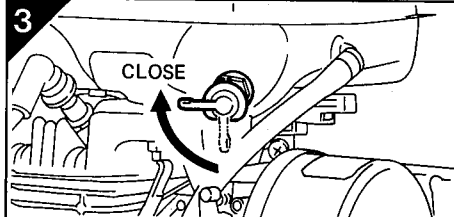
2



Keep depressing the STOP BUTTON until the engine stops.
Do not stop the engine suddenly when it is running at high speed.

FUEL COCK

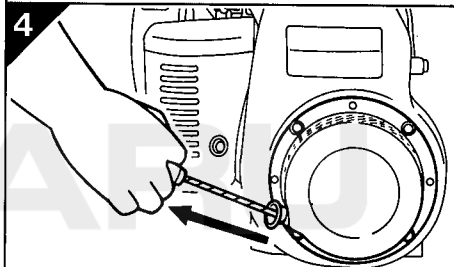
3



Close the fuel cock.

RECOIL STARTER

4



- Pull the starter handle slowly and return the handle to its original position when resistance is felt.

NOTE:

The above operation is necessary to prevent outside moist air from intruding into the combustion chamber.

STOPPING ENGINE WITH THE FUEL COCK

Close the fuel cock and wait for a while until the engine stops.

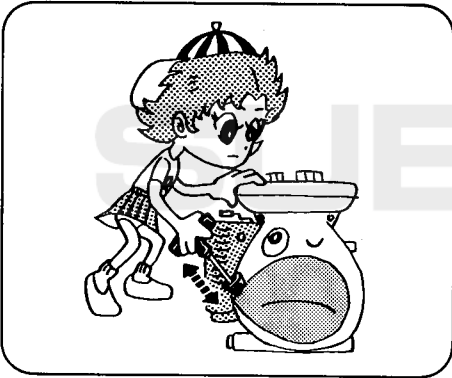
Avoid letting fuel stand in the carburetor over long periods, or the passages of the carburetor may become clogged with impurities, and malfunctions may result.

5. EASY TROUBLE SHOOTING



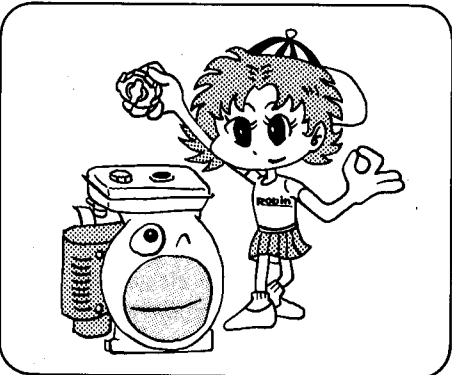
WHEN ENGINE WILL NOT START:

- 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 Robin dealer.



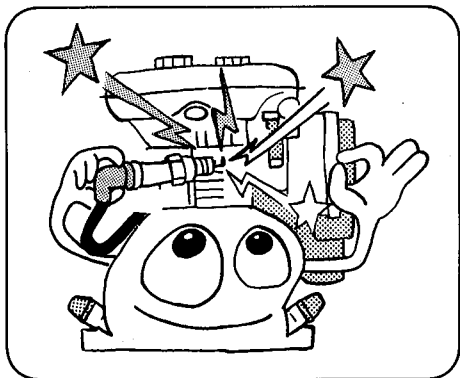
Is there enough compression?

1. Pull the starter handle slowly and check if resistance is felt.
2. If little force is required to pull the starter handle, check if the spark plug is tightened firmly.
3. If the spark plug is loose, tighten it.



Is the spark plug wet with fuel?

1. Choke (close choke lever) and pull the starter handle five or six times. Remove the plug and check if its electrode is wet. If the electrode is wet, fuel is well supplied to your engine.
2. When the electrode is dry, check where the fuel stops. (Check the fuel intake of the carburetor and fuel strainer intake.)
3. In case the engine does not start with well supplied fuel, try using different fuel.



Is there a strong spark across the electrode?

1. Remove the plug and connect it to the plug cap.
Pull the starter handle while holding the plug against the engine ground.
2. Try with a new plug if the spark is weak or there is no spark.
3. The ignition system is faulty if there is no spark with a new plug.
Take your engine to your nearest Robin dealer.

NOTE:

Engines with the oil sensor will stop automatically when the oil level falls below the prescribed limit.

The engine can not be started unless the oil level is raised above the prescribed limit.

WARNING:

Before testing, carefully wipe up spilled gasoline.

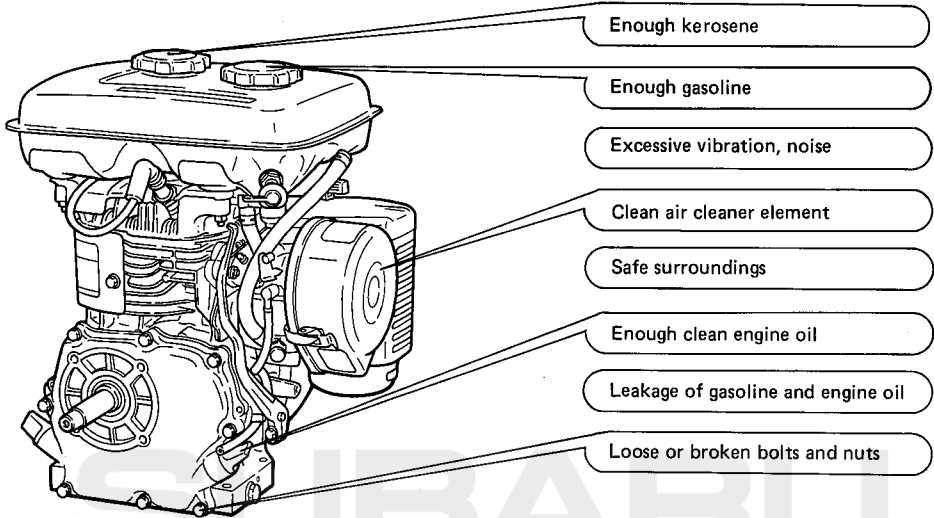
Hold the plug as far away from the spark plug hole as possible.

Ground the side of the electrode to any engine ground.

6. MAINTENANCE SCHEDULE

DAILY INSPECTION

Before running the engine, check the following service items



PERIODIC INSPECTION

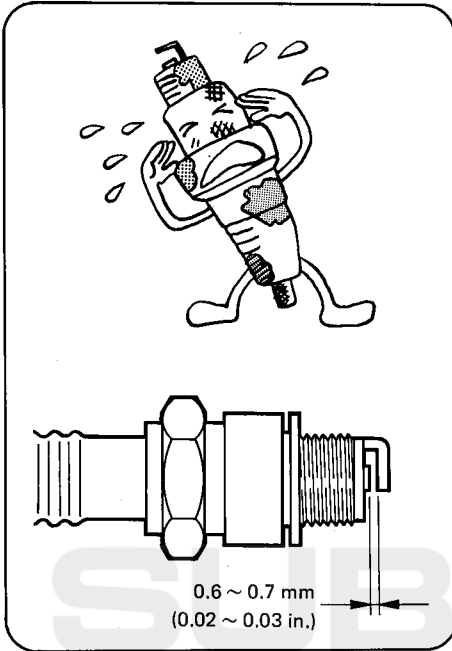
Periodic maintenance is vital to the safe and efficient operation of your engine.

Check the table below for periodic maintenance intervals.

The following chart is based on the normal engine operation schedule.

	8 hours (daily)	50 hours (Weekly)	200 hours (Monthly)	500 hours	1000 hours
CLEAN ENGINE AND CHECK BOLTS & NUTS	○ (daily)				
CHECK AND REFILL ENGINE OIL	○ (Refill daily up to upper limit.)				
CHANGE ENGINE OIL	(Initial 20 hours)	○ (Every 40 hours)			
CLEAN SPARK PLUG		○			
CLEAN AIR CLEANER		○			
CLEAN FUEL STRAINER			○		
CLEAN AND ADJUST SPARK PLUG GAP			○		
CLEAN AND ADJUST CARBURETOR				○	
CLEAN CYLINDER HEAD				○	
ADJUST VALVE CLEARANCE				○	
OVERHAUL ENGINE				○	○

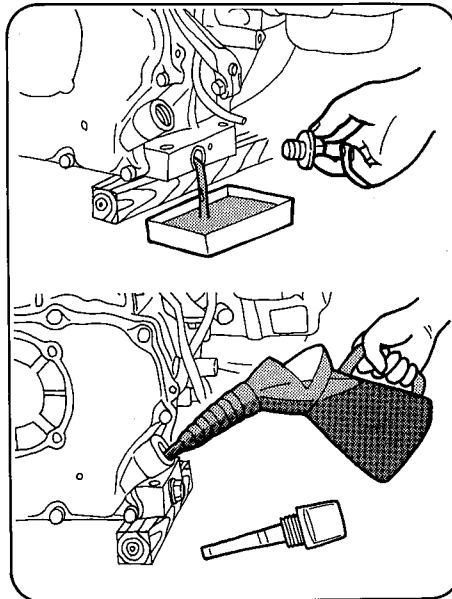
7. "HOW-TO" MAINTENANCE



INSPECTING THE SPARK PLUG

- Clean off carbon deposits on the plug electrode using a plug cleaner or wire brush.
- Check electrode gap. Adjust it to between 0.02 and 0.03 inches (0.6 and 0.7 mm).
- Select the proper plug.

Part Name	Make
BP-4HS	NGK
L95Y	CHAMPION



ENGINE OIL CHANGE

- Initial oil change
..... After 20 hours of operation
- Thereafter
..... Every 40 hours of operation

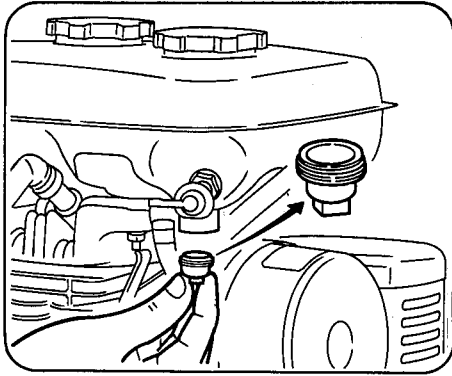
CAUTION:

Make sure the fuel cap is tightly secured to avoid spillage.

1. When changing oil, stop the engine and loosen the drain plug.
2. Tighten the drain plug when refilling.
3. Refer to the recommended oil table on page 5.
4. Always use the best grade and clean oil. If the engine oil is contaminated, there is not enough or it is of poor quality, engine life will be shortened.

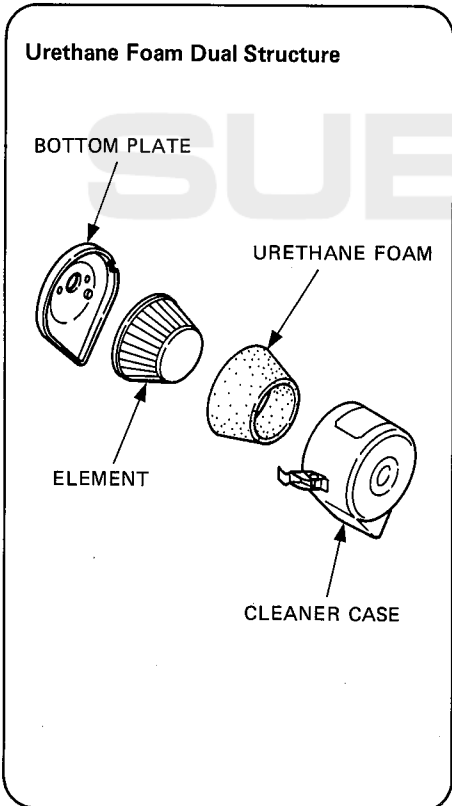
OIL CAPACITY:

EY15/20	0.6ℓ
EY28	0.85ℓ



CLEANING FUEL STRAINER

- Check for water or contaminants in the fuel strainer.
- To remove contaminants, close the fuel cock and remove the strainer cup.
- After removing contaminants and water, wash the strainer cup with kerosene . Reinstall it securely to prevent leakage.

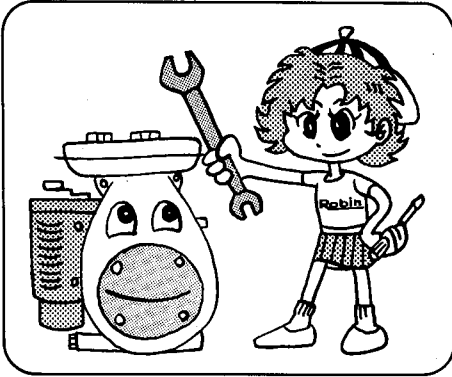


CLEANING AIR CLEANER

If your air cleaner element is dirty, this will cause engine starting trouble, power loss, engine malfunctions, and extremely shorten engine life.

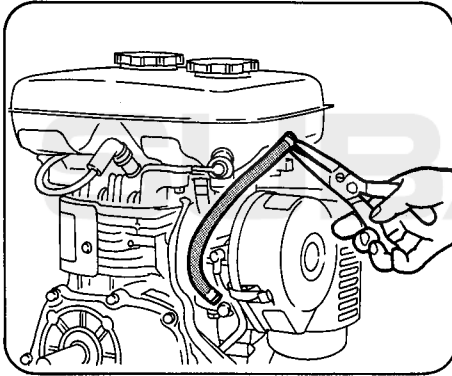
Keep the air cleaner element clean.

- **Urethane Foam Dual Structure**
 1. Remove the urethane foam and wash it in kerosene. Then saturate it in a mixture of 3 parts kerosene and 1 part engine oil, squeeze the urethane foam to remove the mixture.
 2. Wash the element in kerosene. With the kerosene still dripping off, saturate it in the mixture of 3 parts kerosene and 1 part engine oil, wring the element to remove the mixture.
 3. Install the urethane foam and element in the air cleaner.



CHECKING BOLTS, NUTS AND SCREWS

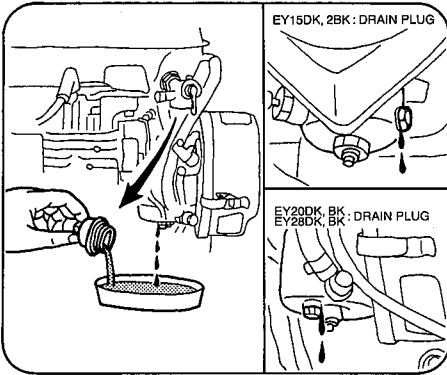
Retighten loose bolts and nuts.
Check for fuel and oil leaks.
Replace damaged parts with new ones.
Keep safety on your mind.



FUEL PIPE REPLACEMENT

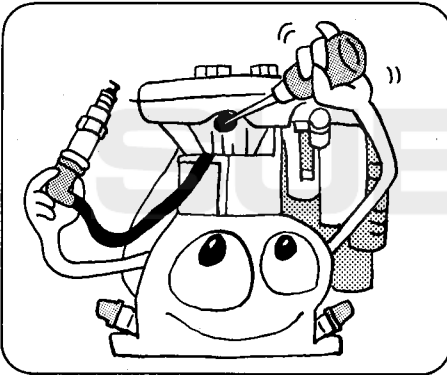
Replace the fuel pipe every 2 years.
If the fuel pipe is found to be leaking,
replace it immediately.

8. PREPARATIONS FOR STORAGE



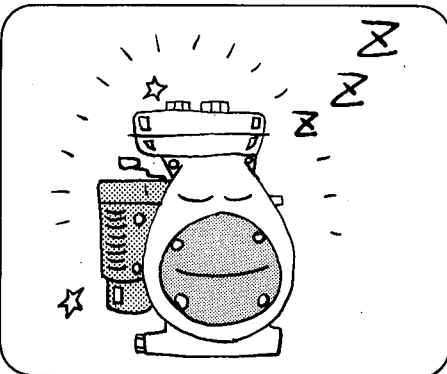
DISCHARGE FUEL (NO SMOKING!)

- Remove the strainer cup, place it in a container and open the strainer cock to discharge the fuel from the fuel tank.
- Loosen the carburetor drain plug and discharge fuel from the carburetor float chamber.



OIL

- Change the used engine oil with fresh oil.
- Remove the spark plug, pour about 5 cc of engine oil into the spark plug hole, slowly pull the starter knob of the recoil starter 2 or 3 times, and tighten the spark plug.



CLEAN AND STORE

- Slowly pull the recoil starter knob until resistance is felt and leave it in that position.
- Clean the engine thoroughly with an oiled cloth, put the cover on, and store the engine indoors in a well-ventilated, low humidity area.

9. SPECIFICATIONS

Model	EY15DK	EY15-2BK	EY20DK	EY20BK	EY28DK	EY28BK
Type	Air-cooled, 4-cycle, single cylinder, side valve					
Displacement	143 cc (8.73 cu. in.)		183 cc (11.17 cu. in.)		237 cc (16.6 cu. in.)	
Maximum Output	3.3HP/4,000rpm (2.46kW/4,000min ⁻¹)	3.3HP/2,000rpm (2.46kW/2,000min ⁻¹)	4.3HP/4,000rpm (3.21kW/4,000min ⁻¹)	4.3HP/2,000rpm (3.21kW/2,000min ⁻¹)	6.5HP/4,000rpm (4.85kW/4,000min ⁻¹)	6.5HP/2,000rpm (4.85kW/2,000min ⁻¹)
Continuous Output	2.2HP/3,600rpm (1.64kW/3,600min ⁻¹)	2.2HP/1,800rpm (1.64kW/1,800min ⁻¹)	3.1HP/3,600rpm (2.31kW/3,600min ⁻¹)	3.1HP/1,800rpm (2.31kW/1,800min ⁻¹)	5HP/3,600rpm (3.73kW/3,600min ⁻¹)	5HP/1,800rpm (3.73kW/1,800min ⁻¹)
Direction of rotation	Counterclockwise, facing P. T. O. shaft					
Lubricant	Class SC or higher grade, SAE #20, #30, #40					
Fuel	Automobile gasoline / Kerosene (Starting)		Automobile gasoline / Kerosene (Starting)		Automobile gasoline / Kerosene (Starting)	
Fuel Tank Capacity	Approx. 0.13 liters (0.03 U.S. gal.)		Approx. 0.17 liters (0.04 U.S. gal.)		Approx. 0.4 liters (0.11 U.S. gal.)	
Spark Plug	NGK BP-4HS CHAMPION L95Y					
Starting System	Recoil starter			Recoil starter (Electric starter available as option)		
Dry Weight	14.5 kg (32 lbs.)	15.5 kg (34.2 lbs.)	16 kg (35.3 lbs.)	17 kg (37.5 lbs.)	21.5 kg (47.4 lbs.)	22 kg (48.5 lbs.)
Dimension (L x W x K)	303 x 323 x 368 mm (11.93 x 12.72 x 14.49 in.)	324 x 323 x 368 mm (12.76 x 12.72 x 14.49 in.)	319 x 336 x 392 mm (12.56 x 13.23 x 15.43 in.)	324 x 336 x 392 mm (12.76 x 13.23 x 15.43 in.)	346 x 412 x 442 mm (13.6 x 16.2 x 17.4 in.)	346 x 412 x 442 mm (13.6 x 16.2 x 17.4 in.)

The following accessories are available as options:

1. Lighting Coil Assembly (12V-15W)
2. Noiseless Spark Plug and Plug Cap

ISSUE EMD-EU0973

SUBARU



SUBARU

FUJI HEAVY INDUSTRIES LTD.

INDUSTRIAL PRODUCTS COMPANY

4-410 ASAHI, KITAMOTO-SHI, SAITAMA, 364-8511, JAPAN

TEL:+81-48-593-7798, FAX:+81-48-593-7946

<http://www.fhi.co.jp/robin/>