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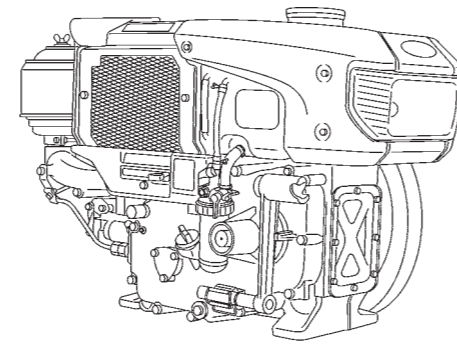
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## OPERATOR'S MANUAL

# KUBOTA DIESEL RK 70-T, RK 80-1T, RK 95-1T SERIES



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READ AND SAVE THIS BOOK

## FOREWORD

KUBOTA Corporation wishes to express its deep appreciation to you for your purchase of the KUBOTA Diesel Engine which has been designed and manufactured through many years of research and development.

We also wish to express our deep appreciation for your patronage of KUBOTA products.

We are confident that the machine will give you the results you desire, but in order to get

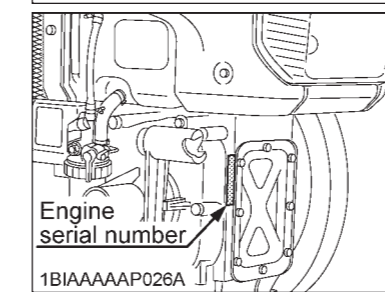
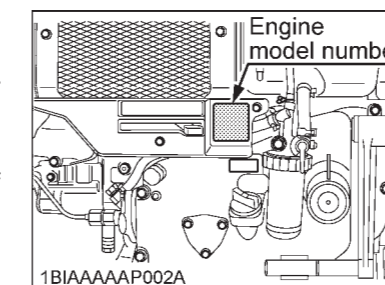
“Higher efficiency” “Greater economy” “Longer service”

To obtain the best use of your engine, please read this manual carefully.

It will help you become familiar with the operation of the engine and contains many helpful hints about engine maintenance.

## REQUESTING SERVICING

When you want to have servicing from the dealer from whom you purchased your KUBOTA diesel engine, please inform them of the model number and serial number of your KUBOTA diesel engine.



## SAFE OPERATION

- Before operation, wear a proper cap and work clothes to prevent clothing, hair, towels and such from getting caught in the engine.
- Before operation, check all set bolts and nuts for looseness and tighten if necessary.
- Avoid placing inflammable materials close to the engine during operation.
- As exhaust gases are harmful:
  - Avoid operating the engine in an ill-ventilated place or where exhaust gases accumulate easily.
  - Take special care during operation to prevent exhaust gases from affecting yourself, or people or animals around you.
- When using an belt, install a cover, fence or similar device to prevent the risk of injury. Be sure to stop the engine before installing or removing the belt.
- If the engine is to be lent to somebody, explain the handling procedures and point out that the Operator's Manual must be read carefully before use.
- Keep children away from the engine during operation.
- Do not touch the muffler, exhaust pipe or other hot parts during or immediately after operation.
- Always stop the engine in the following cases:
  - When checking, adjusting or cleaning each part.
  - When discharging, pouring or injecting oil from or into each part.
  - When cleaning off dust or other foreign matter accumulated on the muffler.

## SPECIFICATIONS

Models	RK70-T	RK80-1T	RK95-1T	
Type	Horizontal, water-cooled 4 cycle diesel engine			
Number of cylinder	1			
Bore × Stroke (mm)	80×75	82×84	86×84	
Displacement (cm <sup>3</sup> )	376	443	487	
Continuous rated output	kW/s <sup>-1</sup> (rps)	4.5 / 36.7	5.2 / 36.7	6 / 36.7
	HP/min <sup>-1</sup> (rpm)	6 / 2200	7 / 2200	8 / 2200
Max. output	kW/s <sup>-1</sup> (rps)	5.2 / 40	6 / 40	7.1 / 40
	HP/min <sup>-1</sup> (rpm)	7 / 2400	8 / 2400	9.5 / 2400
Cooling system	Radiator			
Combustion system	Three vortex combustion system	Direct injection system		
Fuel	Light diesel oil (SAE No.2-D)			
Lubricating oil	API Service CC, CD or CF class (SAE#30, 20, 10W-30)			
Lubricating system	Forced lubrication with trochoid pump			
Starting system	Manual speed-doubling handle			
Direction of revolution	Counter-clockwise (facing flywheel)			
Cooling water capacity (L)	1.3	1.6		
Fuel tank capacity (L)	8	10		
Crankcase oil capacity (L)	2.0	2.4		
Lamps	12V32W			
Dynamo (V-W)	[12V-45W]			
Dry weight (kg)	67	83	86	

NOTE :  
• Specifications are subject to change without notice.

## REVERSED ENGINE REVOLUTION AND REMEDIES



**CAUTION**  
To avoid personal injury:

- Reversed engine operation can make the machine reverse and run it backwards. It may lead to serious trouble.
- Reversed engine operation may make exhaust gas gush out into the intake side and ignite the air cleaner; It could catch fire.

Reversed engine revolution must be stopped immediately since engine oil circulation is cut quickly, leading to serious trouble.

**How to tell when the engine starts running backwards**

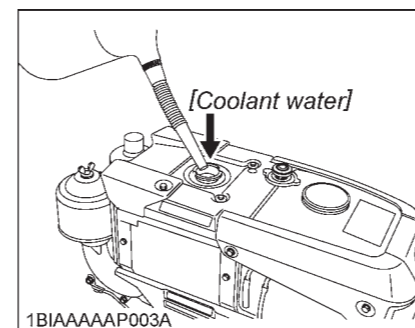
- Lubricating oil pressure drops sharply. Oil pressure warning light, if used, will light.
- Since the intake and exhaust sides are reversed, the sound of the engine changes, and exhaust gas will come out of the air cleaner.
- A louder knocking sound will be heard when the engine starts running backwards.

**Remedies**

- Immediately set the engine stop lever to the “STOP” position to stop the engine.
- After stopping the engine, check the air cleaner, intake rubber tube and other parts and replace parts as needed.

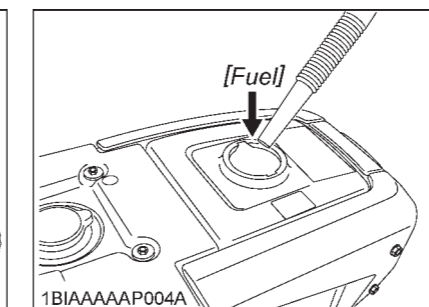
## PRE-OPERATION CHECK

### COOLANT WATER



Fill the radiator with tap water or clear rain water and retighten the pressure cap. If any mud or dust is admitted into the radiator, it will impede radiator performance, eventually leading to overheating of the engine. Although the radiator will perform for more than a week once it is filled, be sure to check and see if the water level is proper before starting the engine each time.

### FUELING



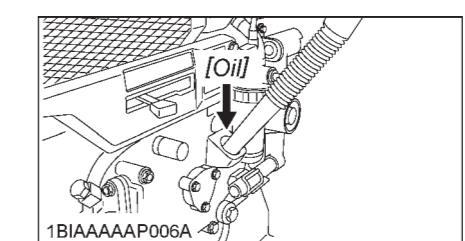
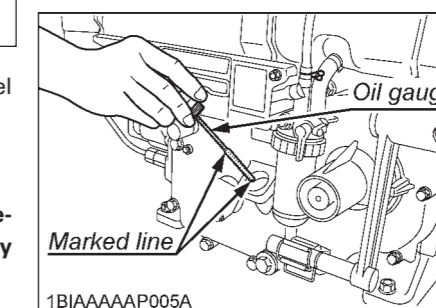
Fill the fuel tank with SAE No.2-D Diesel Fuel Oil.



**CAUTION :**  
• Always stop the engine before refueling. Keep away from sparks and flames.

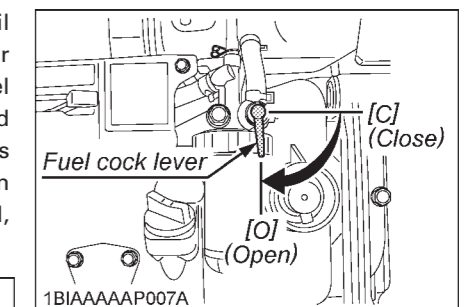
### OILING

(1) Level the engine and check the oil level on the oil gauge. If it is lower than the line marked on the oil level gauge (the prescribed level), add more oil until the oil level reaches the upper marked line. If the oil in the engine is badly contaminated, drain all the oil and refill.



(2) Remove the air cleaner and check the oil level and see if the oil is contaminated. If the air cleaner is stained heavily, wash it with fuel and add oil until it reaches the specified level.

### AIR BLEEDING

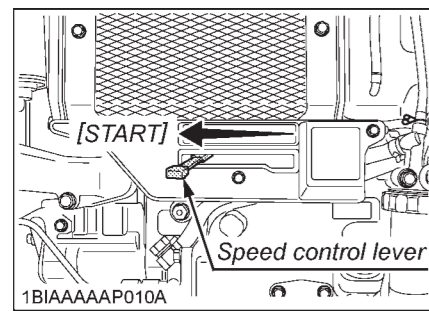


When the engine is started for the first time or right after being refueled, be sure to bleed air from the fuel system in the following manner.

- Throw the fuel cock lever from the “C” (closed) position to the “O” (open) position and wait 20 seconds before starting the engine.
- Operate the engine with the fuel cock lever in the “O” (open) position.

## STARTING

### START



To start the engine, do the following:  
Set the speed control lever to the "START" position.

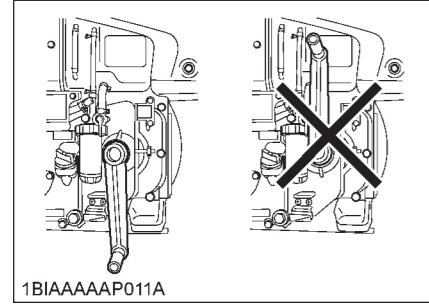
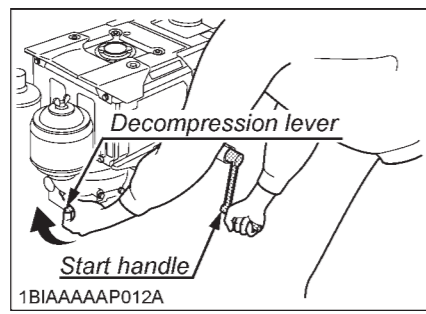


Fig.A Fig.B

Push the start handle in and turn it a little until you feel some resistance. At this point, if the start handle assumes the position pictured in Fig.B, re-insert it as shown in Fig.A.



Next, raise the compression release lever (decompression lever) with your left hand as illustrated and turn the start handle. When the engine starts to turn over lightly, release the compression release lever and turn the start handle with more force and the engine will start.



### CAUTIONS :

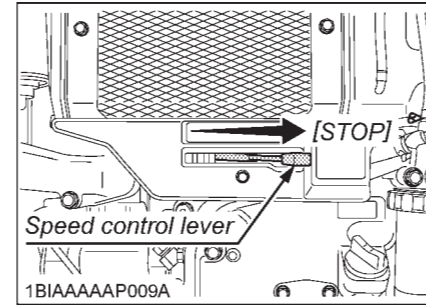
- Be absolutely sure not to release your hand from the start handle right after the engine has started. The start handle will free itself after the engine has started. It is very dangerous to release your hand from the start handle before the engine is running.
- After the engine is started, see the oil signal. If the top of it should not turn blue but remain red, and yet air cleaner should emit smoke, immediately stop the engine. The engine may be turning reversely.
- Run the engine for four or five minutes to fully lubricate the individual parts of the engine before putting it into operation. Note that a brand-new engine needs to be run 40 to 50 hours of light-duty operation to break in the individual parts of the engine well.

## SERVICE INTERVALS

NO	parts	time				
		Every day	First 50 hours	Every 100 hours	Every 300 hours	
1	Radiator	▲ ●				
2	Crankcase oil	▲ ●	■	■		
3	Air cleaner	※		■		
4	Fuel filter			■		
5	Fuel tank	▲ ●			■	

※ Check and clean often, especially when engine is used in a dusty place.

## STOPPING

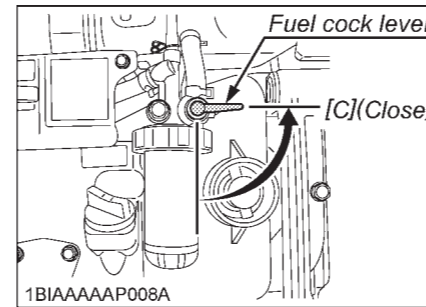


The engine is stopped by setting the speed control lever to the "STOP" position.

### NOTE :

- When stopping the engine, never touch the compression release lever, or the valve train will be damaged.

## STORAGE



When the engine is not to be used for a long time, store it after taking the following precautions:

- Turn the fuel cock lever to the "C" (closed) position to shut off fuel, drain all the water and oil and clean the various part of the engine.

- Place a cover on the engine protect it from dust, and move it to a dry, clean place for storage.



### CAUTION :

- Be sure to cover the engine after the engine has cooled off.

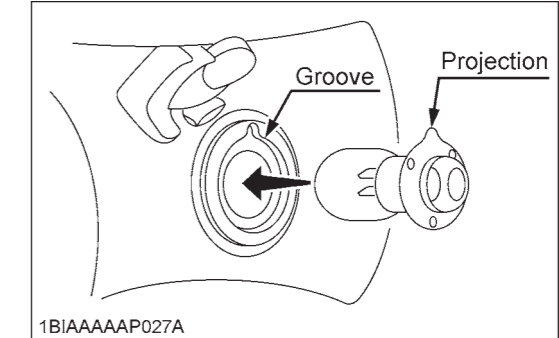
- Set the start handle to the compression position to keep humidity out of the cylinders.

### NOTE :

- When the temperature falls below 0°C, be sure to drain coolant water from the radiator even if the engine is to be used again soon or the cylinder head will crack.

## LAMPS

### Bulb fitting direction



When changing the bulb, please point the projection of the bulb upward, and locate it into the groove of the bulb holder.

### Electrical Connection of Lamps

The lamp can be turned on any time while the engine is in operation.

If you use LAMP SWITCH (optional), install wiring as shown in Fig. A. Switch "0"OFF, "1"high beam, "2"low beam.

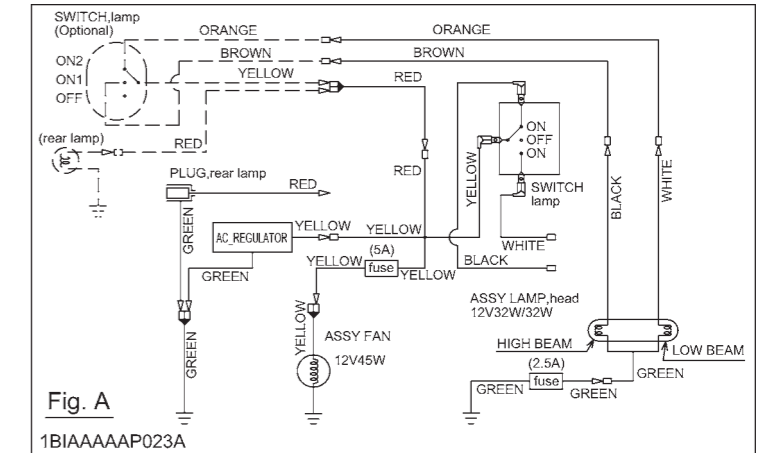


Fig. A  
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If you do not use LAMP SWITCH (optional), remove WIRE HARNESS 2, LAMP SWITCH and then install wiring as shown in Fig. B.

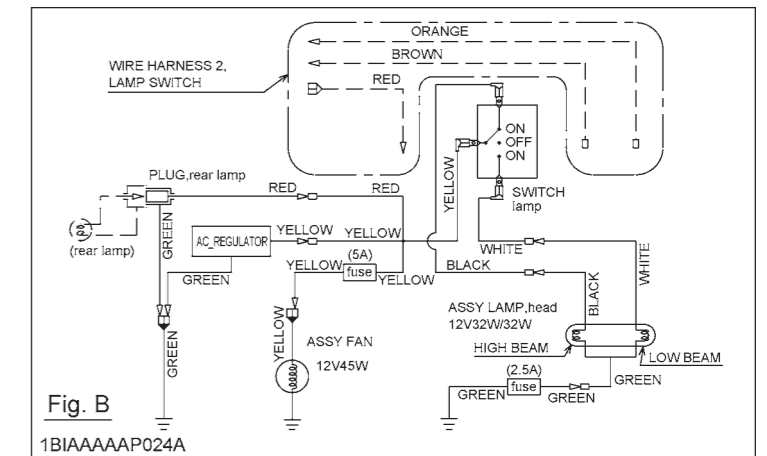
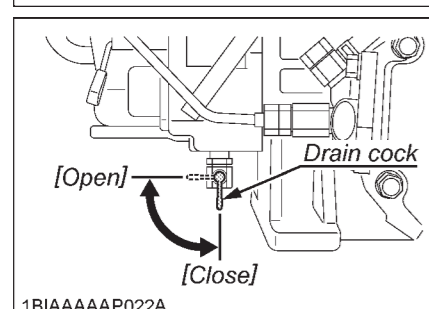
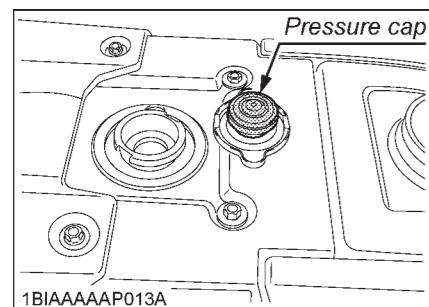


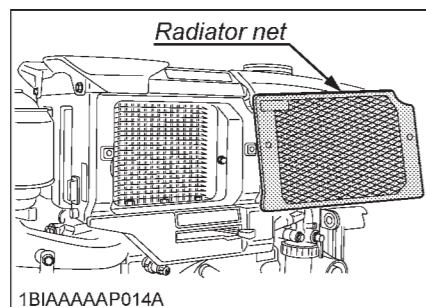
Fig. B  
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## PERIODIC SERVICE

### RADIATOR



- In order to completely drain coolant water from the radiator, open the drain cock at the bottom of the cylinder head, remove the pressure cap and turn over the engine several times.



- To prevent the radiator from becoming clogged, remove the radiator net from time to time and take off any dust and dirt from the radiator and the net with a soft brush, compressed air, or pressured water, as illustrated.

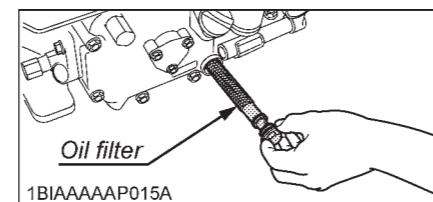
- Do not remove the pressure cap during or right after operation, or hot water may gush out and scald the operator.

### ENGINE OIL

Summer	above 20°C	SAE30
Spring/Fall	5 to 20°C	SAE20
Winter	below 5°C	SAE10W or 10W-30
All seasons		SAE10W or 10W-30

Change the type of engine oil according to the ambient temperature, referring to the chart. CC or CD class (according to API classification) oil is recommended.

### OIL FILTER

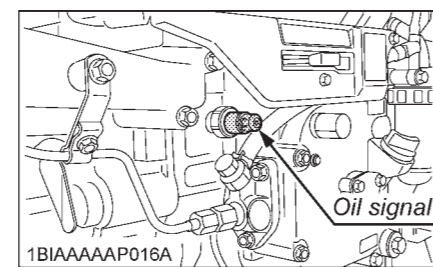


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Clean the oil filter after the first 50 hours of operation and thereafter every 100 hours. To clean:

- Remove the oil filter and drain all the oil from the crankcase.
- Rinse the oil filter and the inside of the crankcase with light oil.
- Refit the oil filter and refill the crankcase with oil until the oil level reaches the mark on the oil level gauge.

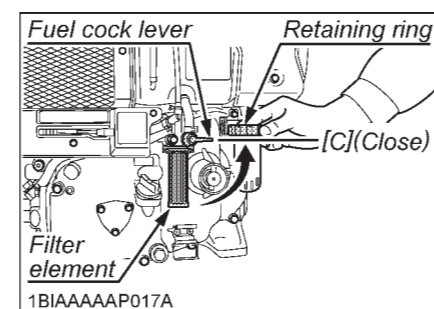
### OIL SIGNAL



The top of the oil signal remains red while the engine is stopped, and turns blue when the engine is started. This indicates the oil pump is functioning

normally. If it should not turn blue but remain red when the engine is started, immediately stop the engine, or the engine will seize up.

### FUEL FILTER



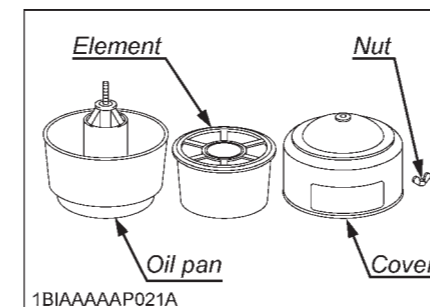
Clean the fuel filter every 100 hours of operation.

- Remove the retaining ring from the top of the filter cup and take off the filter cup. Remove any dust or water in the filter cup.
- Take out the element by pulling it downward slowly. Rinse the element with new fuel. Take much care when handling the element because it is very fragile.

### NOTE :

- If the element should have holes, replace it with a new one. A damaged element will reduce the service life of the nozzle and injection pump.

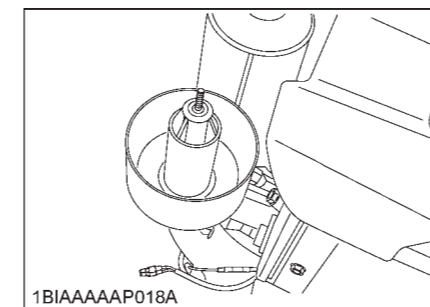
### AIR CLEANER



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Clean the air cleaner every 100 hours of operation. When the engine is operated in a dusty place, be sure to check the air cleaner every day and clean it as necessary.

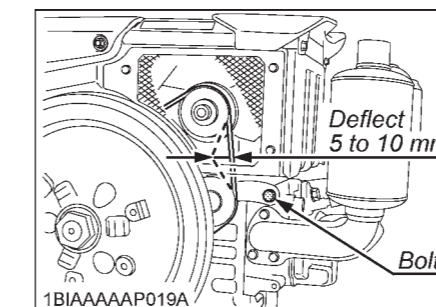
- Remove the air cleaner and remove the nuts from the top. Then take out the element and rinse it with light oil, shaking the element in the oil to allow it to permeate the element.
- Clean the oil pan with light oil when there is dust or sand deposits in it.



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- After cleaning, pour a specified quantity of oil into the oil pan and refit it to the engine.

### FAN BELT



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The tension of the fan belt should be taut enough. If the belt is pressed down with the finger between two pulleys, the deflection should be about 5 to 10mm. To tighten the fan belt, first loosen the Bolt (10 mm bolt), and determine the location of the tension pulley, and then tighten the Bolt to fix the fan belt.

### IMPORTANT :

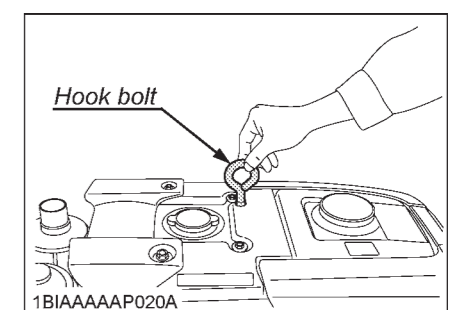
- If the engine is used with the belt tension too weak, the belt would not only slip and decrease the cooling effect of the fan, but also shorten the life of belt. Please always check the tension of belt and maintain the proper tautness.



### CAUTION :

- Adjustment and check of the fan belt should be done when the engine is not running.

### HOISTING UP THE ENGINE



To hoist up the engine, remove the red cap from the top of the engine and screw in the supplied hook bolt all the way.



### CAUTION :

- Make sure that the hook bolt is screwed all the way.

### PULLEY

To achieve the most efficiency, the pulley must be a size most appropriate for the machine to be driven by the engine. If the size of the pulley is not suited to the machine, the engine will emit black fumes and output will decrease, not only lowering operating efficiency, but also reducing the life of the engine.

To select the proper pulley size, use the following formula :

$$\text{Machine pulley size} \times \frac{\text{Machine RPM}}{\text{Engine RPM}}$$

- Machine pulley size:

$$\text{Engine pulley size} \times \frac{\text{Engine RPM}}{\text{Machine RPM}}$$