Bäumr-AG

Diesel Stationary Engine

User Manual

RETAIN THIS MANUAL FOR FUTURE REFERENCE

PLEASE READ THIS MANUAL CAREFULLY BEFORE USE

Table of Contents

Preface

Thank you for purchasing our product.

This manual describes how to operate and service your engine. Please read it before using the engine to ensure correct and safe operation. Follow the instructions carefully to keep your engine in the best running condition. If you have any question concerning this manual, or any suggestions, please contact your nearest dealer.

In order to insure safe working conditions, be sure to read the precaution statements for safe operation.

Pay special attention to statements preceded by the following words.

WARNING:

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

CAUTION:

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

NOTE:

Gives helpful information.

If a problem should arise, or if you have any questions about the engine, consult an authorized dealer.

WARNING:

The engine is designed to give safe and dependable service provided that it is operated according to instructions.

Read and understand the manual before operating the engine. Failure to do so could result in personal injury or equipment damage.

Tips on Safety

WARNING:

1. Preventing Fires

   Never add fuel to the fuel tank while the engine is running.

   Wipe away all fuel spills with a clean cloth. Keep gasoline, kerosene, matches and other explosives and inflammables away from the engine because the temperature around the exhaust muffler is very high during operation.

   – To prevent fire hazards and to provide adequate ventilation, keep the engine at least 1m (3') away from buildings and other equipment during operation.

   – Operate the engine on a flat surface as much as possible. The allowable inclination of the engine for continuous use is 20 degrees. There may be fuel spillage if the engine is tilted exceeding the limit.

   – Do not put the engine or the engine mounted machinery indoors while the engine is still hot.

2. Preventing Exhaust Gas Inhalation

   – Exhaust gas contains poisonous carbon monoxide.

   – Never use the engine in poorly ventilated locations such as indoors and inside tunnels. If indoor operation is unavoidable, provide proper ventilation so that people and cattle will not be affected.

3. Preventing Burns

   – Never touch the muffler, muffler cover or engine body while the engine is running or hot.

4. Other Safety Tips

   – Know how to stop the engine quickly and understand how to operate all of the controls. Never permit anyone to operate the engine without proper instruction.

   – Always wear a helmet and safety shoes (non-skid soles) and proper clothes.

   – Do not operate under the influence of alcohol.

   – Keep children and pets away from the engine when it is in operation.

   – Stay away from rotating parts while the engine is running.

   – When the engine is coupled with a machine, be sure to provide suitable covers for the belt, coupling and other dangerous parts.

   – A spark arrester is provided as an optional part for this engine. It is illegal in some areas to operate the engine without a spark arrester. Check local laws and regulations before operating the engine.

   – Work according to the rules and regulations of the work area.

   – Use the correct tools and equipment.

5. When Charging the Battery

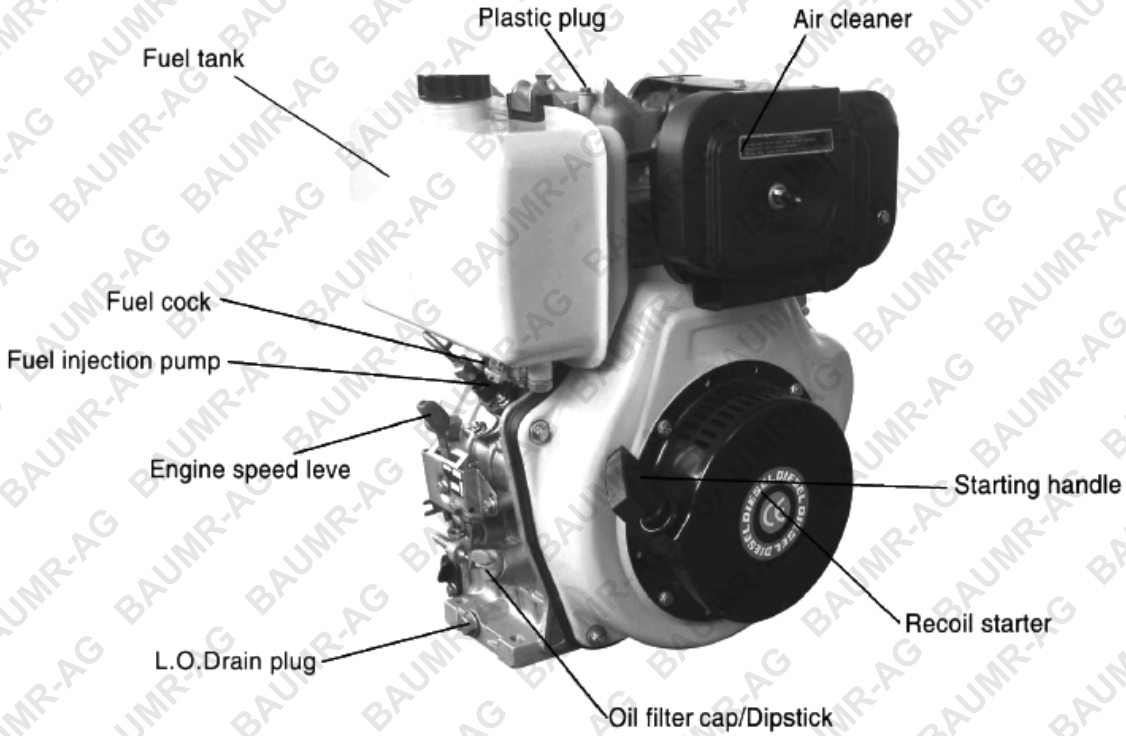
- Battery electrolyte contains sulphuric acid. Protect your eyes, skin and clothing. In case of contact, flush thoroughly with water and get prompt medical attention, especially if your eyes are affected.
- Batteries generate hydrogen gas, which can be highly explosive, Do not smoke or allow flames or sparks near a battery, especially during charging.
- Charge the battery in a fully ventilated place.
- Be sure to confirm battery polarity.

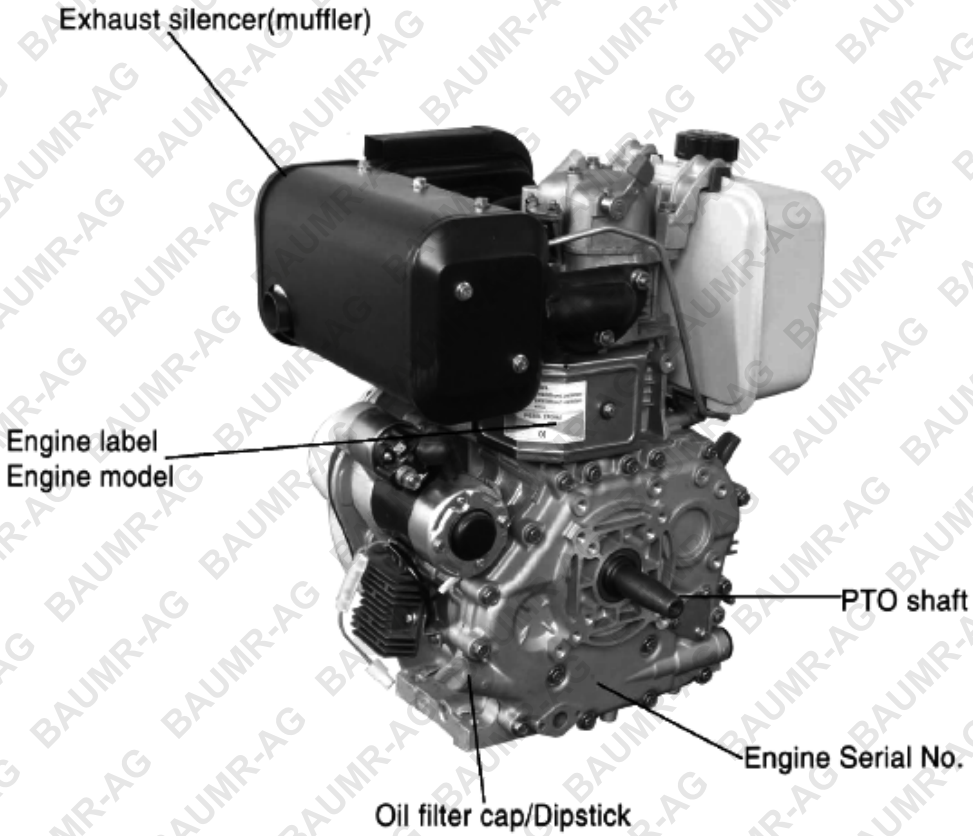
Specifications and Name of Parts

Specifications

Model	R30 Engine	R42 / E42 Engine
Engine Type	Single cylinder 4-stroke air-cooled diesel	Single cylinder 4-stroke air-cooled diesel
Starting System	Recoil/Electric	Recoil/Electric
Fuel Capacity	3.5L	5.5L
Engine oil System Capacity	1.1L	1.65L
Combustion system	Direct injection	Direct injection
Fuel type	Commercial pump diesel. No bio-diesel	Commercial pump diesel. No bio-diesel
Engine oil type	SAE 10W-30 / SAE 15W-40	SAE 10W-30 / SAE 15W-40
Option	oil bath air cleaner	oil bath air cleaner
Net Weight	33kg (Recoil) /38kg(Electric)	48kg (Recoil) / 53kg (Electric)
Overall dimension	440x370x480mm	480x420x530mm

Name of Parts





Installation

Instructions

1. Use an engine mount which is strong enough to prevent misalignment and play during engine operation.

   Fasten the engine base firmly to the engine mount with adjustable shims.
2. Ensure accurate centring for coupling with the output shaft.
3. Check that the pulley's shaft hole (fitting hole) and the key groove will fit the output shaft precisely.
4. For belt driving, select a pulley which is a suitable size for the engine and which matches the revolution speed and pulley size of the driven machinery. The proper pulley size for the engine can be obtained by the following formula:

$$\text{Engine's pulley dia} = \frac{\text{Driven machinery pulley dia} \times \text{Driven machinery revolution speed}}{\text{Engine's service speed}}$$

5. Ensure proper belt tension.

WARNING:

Too much play in the output shaft coupling may cause an accident. Be sure to tighten the output shaft bolts firmly.

CAUTION:

Use of an unsuitable pulley overloads the engine, and this shortens the engine life.

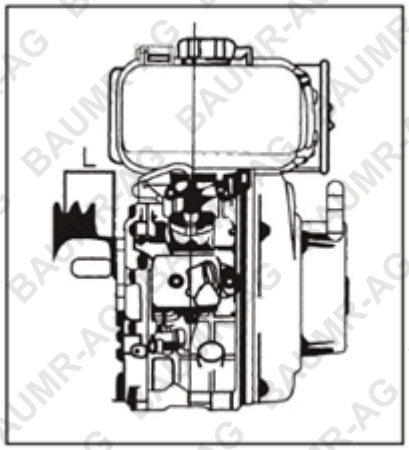
CAUTION:

Too much tightness overloads the engine at starting and stretches the belt, making it prone to damage. The output shaft can also be broken, and other accidents could occur. Too much looseness causes belt slippage during high output and high speed operation.

Allowable Offset

The pulley should be as close as possible to the engine to reduce stresses on the output shaft, however, the pulley MUST be aligned with the driven machinery. The offset distance should be within the range listed below.

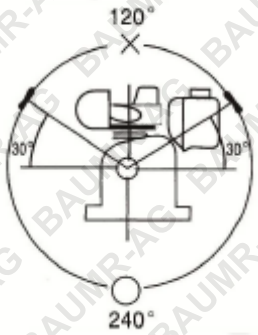
		R30	R42 \ E42
Belt	Type	B	B
	No. of belts	2	3
L		Within 95mm	Within 70mm



NOTE:

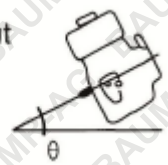
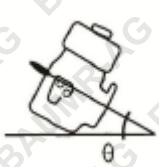
1. The offset distance "L" is the distance between the output shaft shoulder and the centre of the farthest pulley groove.
2. The allowable offset distance varies according to the type and number of belts (determined by the driving load of the driven machinery), and the belt tension. For details, consult your nearest dealer.

Belt-Pull Angle



1. The belt-pull angle should be within 240 degrees, as illustrated.

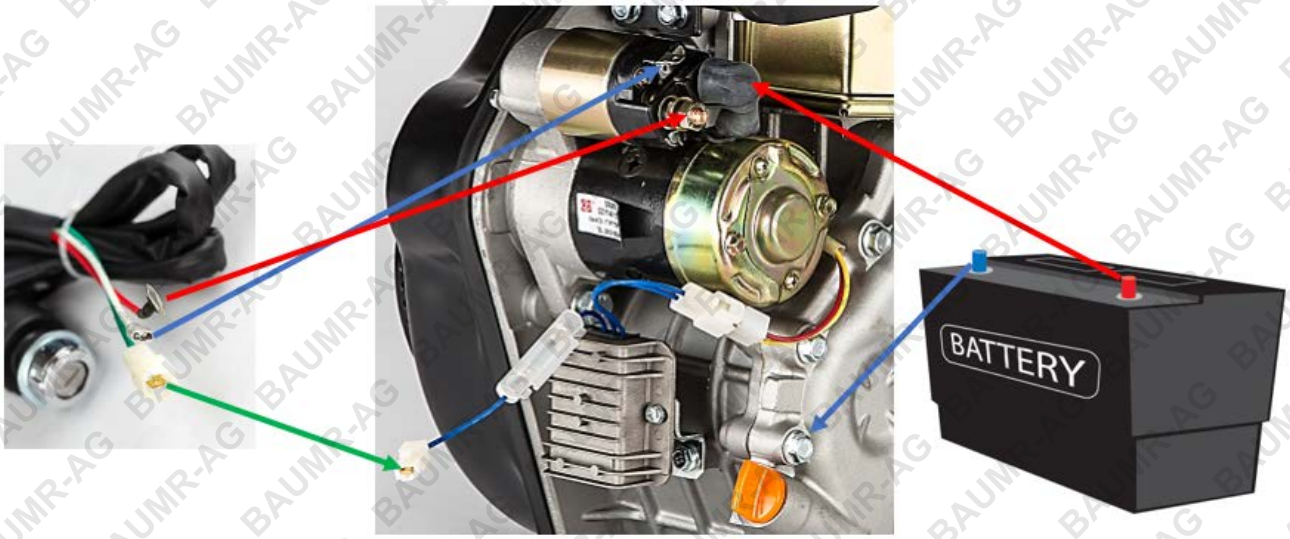
Inclination angle

Allowable inclination (for continuous use)	Output shaft 			
Keep the engine inclination within the specified range. **NOTE**: Place the engine on the level when refilling with engine oil.				

Electric Start Switch Wiring

If the electric start switch wiring is supplied unconnected, use the following wiring guide:

1. Connect the starter switch RED wire (with circular connector) to the starter solenoid terminal.
2. Connect the starter switch WHITE wire (with spade connector) to the starter solenoid spade connector.
3. Connect the starter switch GREEN wire (with plastic connector) to the engine ignition wire.
4. Using suitable high-current cable, connect the battery POSITIVE terminal to the starter solenoid positive terminal.
5. Using suitable high-current cable, connect the battery NEGATIVE terminal to a point on the engine crankcase.



The battery should have a minimum capacity of 24Ah for R30 engines, and 36Ah for R42/E42 engines.

Handling The Engine

While your engine is still new, application of heavy loads may shorten the life of the engine. Follow the breaking-in procedures during the first 20 hours.

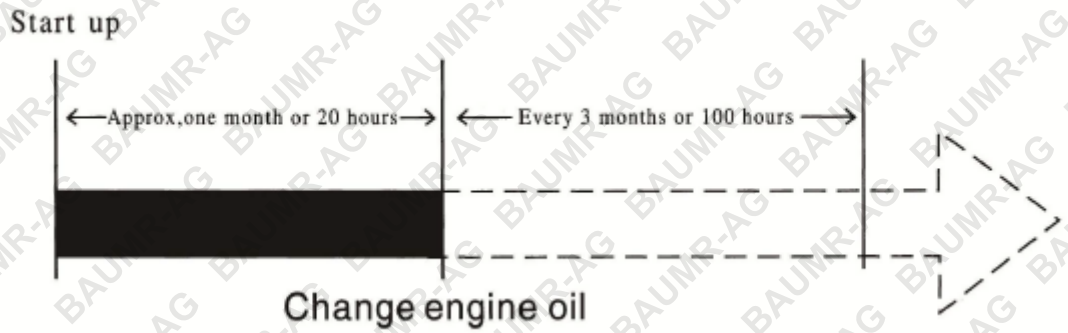
- Avoid overloads

  Avoid applying any heavy load during the breaking-in period.

  NOTE: Be sure to drain the oil while the engine is still warm. When cold, it may be difficult to drain the oil completely.

- Change the engine oil regularly

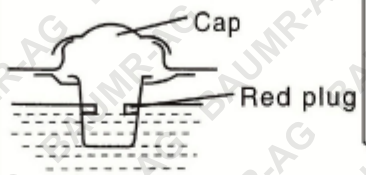
  Change the engine oil after 20 hours of initial operation or at the end of the first month, and every three months or 100 hours thereafter.



Preparations for Starting

Fuel tank

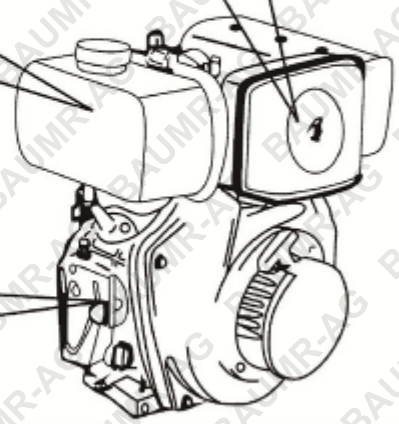
Use diesel light oil. Take care not to enter dust and water into the fuel and the fuel tank.



Air cleaner element

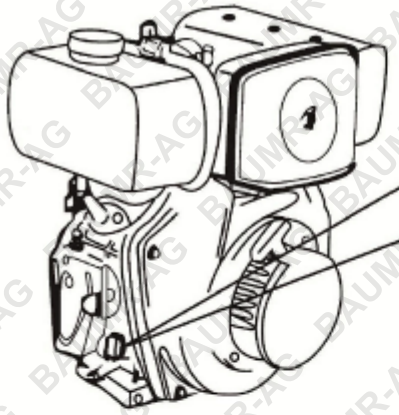
Do not wash the air cleaner element because this is a wet type element.When the engine output tends to drop or the exhaust colour changes adversely,replace the element.Do not perforate the element and never run the engine without it.

Engine Speed lever



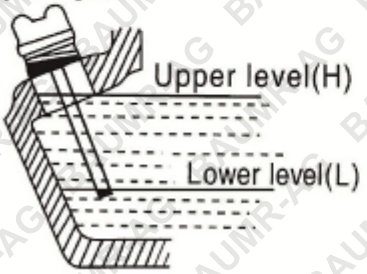
Lube Oil Filler Port

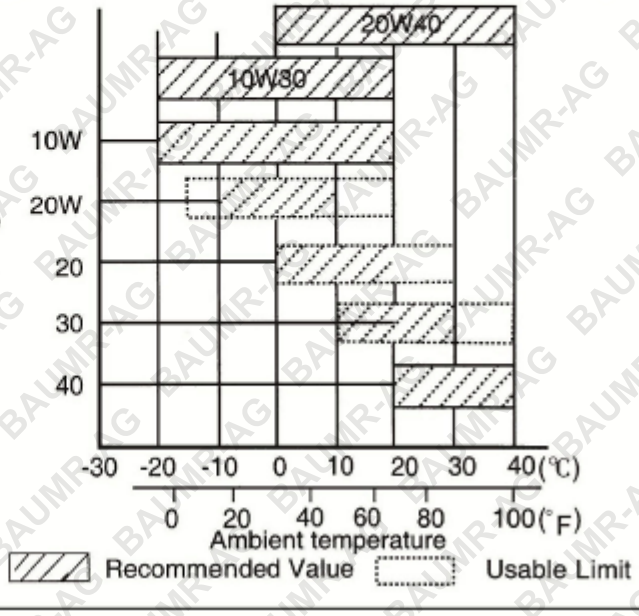
Fill the Oil up to the mouth of the filler port with the engine placed on the level.When checking the Oil,simply dip the dipstick into the Oil pan.Do not screw in the dipstick.



ENGINE OIL

We recommends A.P.I engine service classification of CC or CD. Always use oil with the right viscosity for the ambient temperature in which your engine is being operated. Use the chart mentioned right side whin choosing your engine oil.





Plastic plug

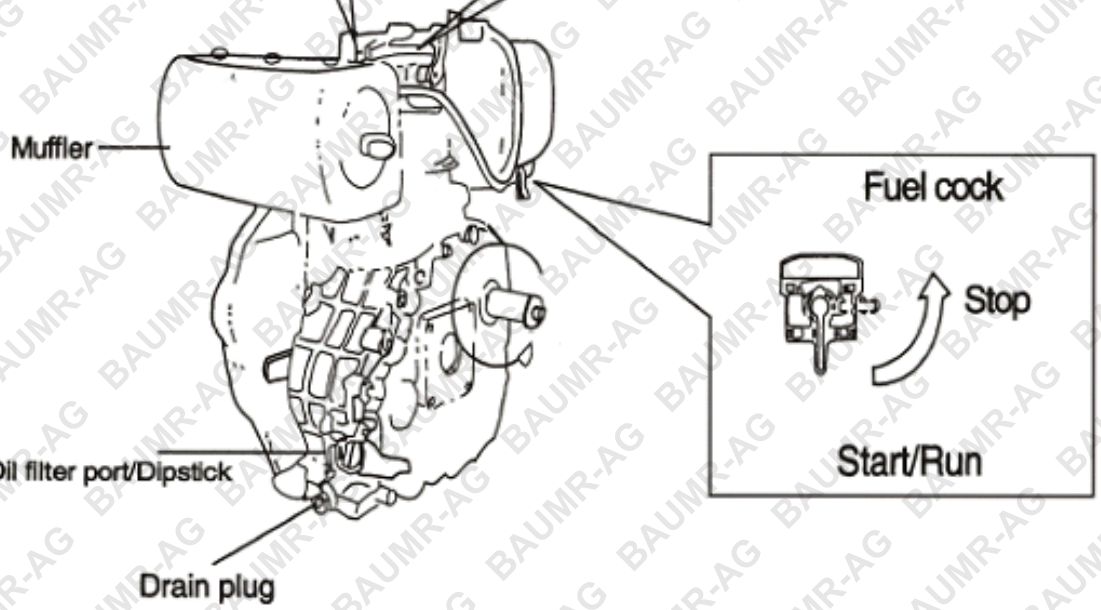
In cold weather,when the engine is hard to start, remove the plastic plug and add 2cc of engine oil, put the plug back in place.

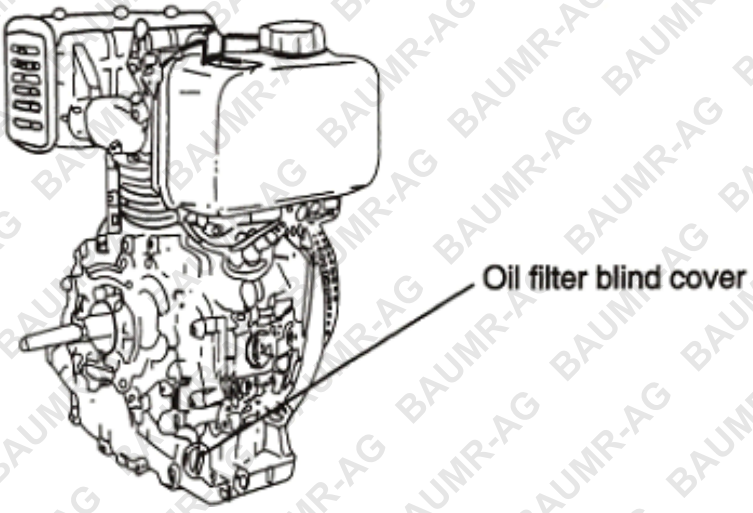
NOTE:

Always keep the plastic plug in place. If it is removed,the engine will suck in dust band be damaged.

Decompression lever

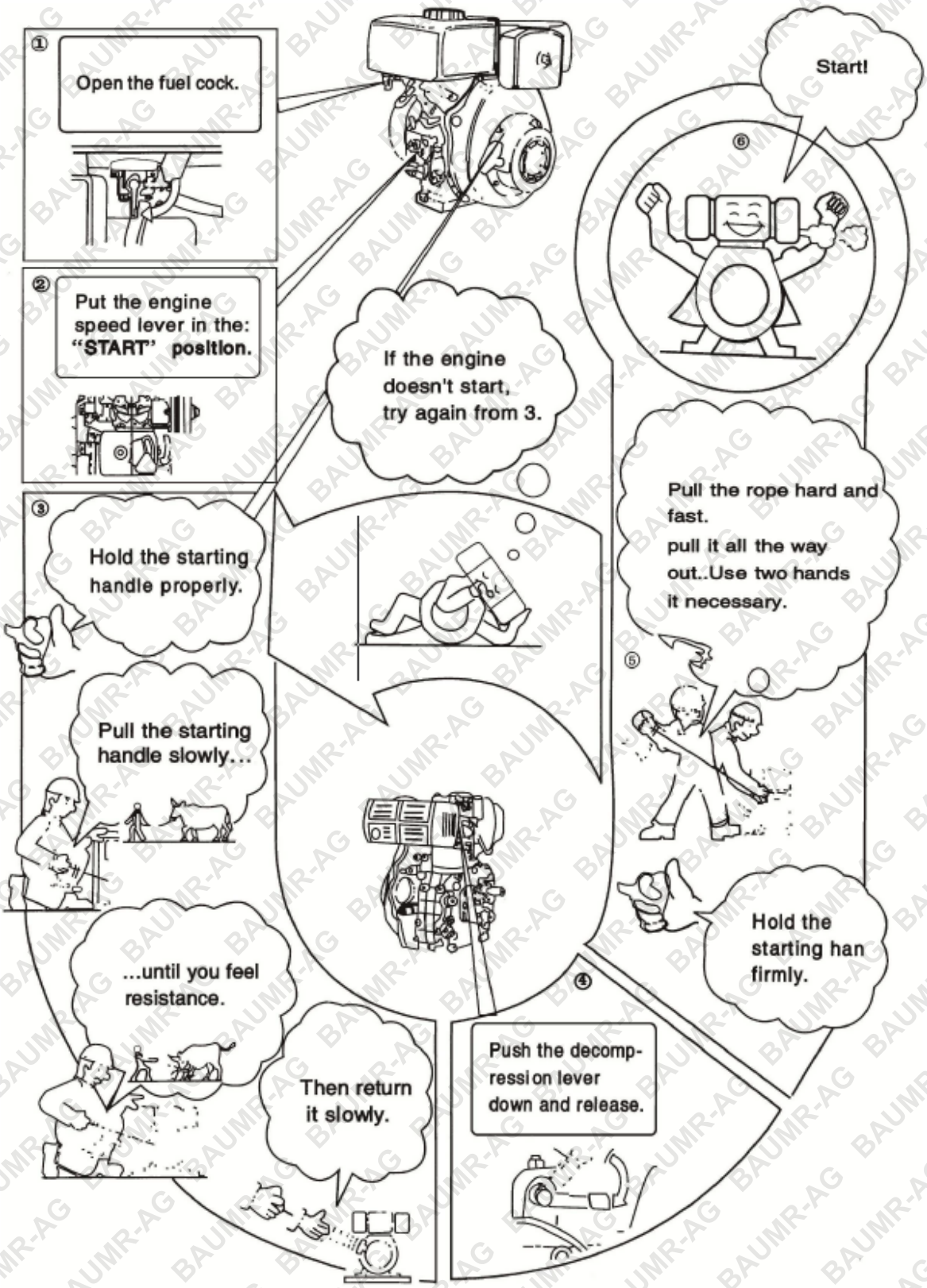
Do not use decompression lever to stop the engine.





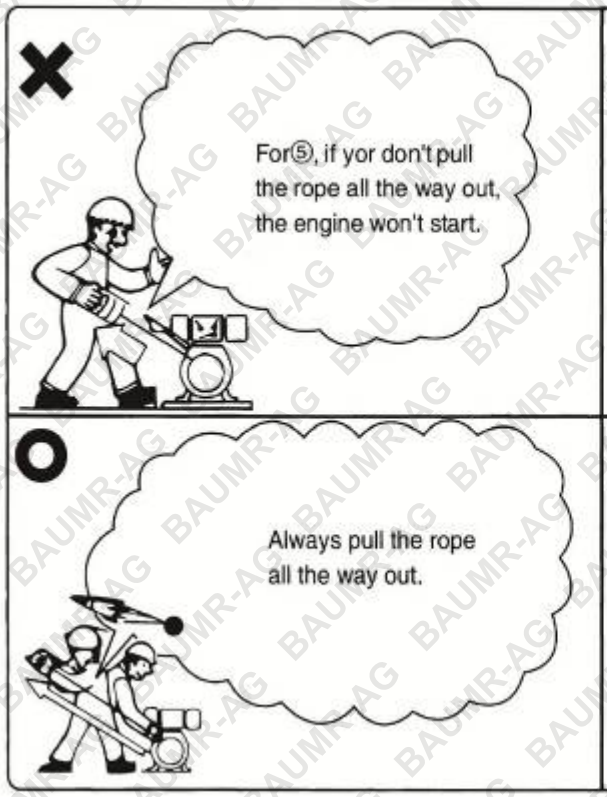
How to Start the Engine

Recoil Starting



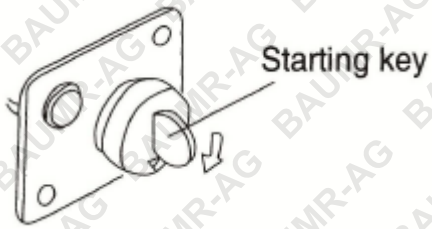

For③, don't pull the rope too fast or too hard.
Always pull the rope slowly.


Open the fuel cock.
Put the engine speed lever in the "START" position.
Hold the starting handle properly.
Pull the starting handle slowly...
...until you feel resistance.
Then return it slowly.
Push the decompression lever down and release.
If the engine doesn't start, try again from 3.
Start
Pull the rope hard and fast. pull it all the way out.Use two hands if necessary.
Hold the starting han firmly.


For⑤, if yor don't pull the rope all the way out, the engine won't start.
Always pull the rope all the way out.


For⑤, if yor don't pull hard enough,the engine won't start.
Always pull the rope hard and fast.

Electric Starting



1. Starting

   (The preparations for electric starting are the same as for manual (recoil) starting).

   a. Open the fuel cock.

   b. Set the engine speed lever at the "START" Position.

   c. Turn the starting key clockwise to "START".

   d. Remove your hand from the key as soon as the engine starts.

   e. If the starting motor doesn't start after 10 seconds, wait for a while (about 15 seconds) before attempting to start again.

CAUTION:

If the starting motor is turned for too long, the battery will go flat and the motor will seize up. Always leave the starting key turned on (in the "ON" position) while the engine is running.

2. Battery

Check the level of the fluid in the battery once a month. When the level has dropped to the lower mark, replenish it with distilled water up to the upper mark.

CAUTION:

- It the battery fluid is low, the engine may not start because too little electricity is reaching the starter motor. Always keep the fluid level within the upper and lower limits.
- If too much battery fluid is supplied, the fluid may spill and corrode the surrounding parts.

Operating the Engine

1. Warm up the engine without a load for about 3 minutes.
2. Turn the engine speed lever to the desired speed position and fasten the thumb nut.

CAUTION:

- Be sure to use the engine speed lever to control the engine speed.
- Do not loosen or readjust either the revolution speed limiting bolt or fuel injection limiting bolt. Performance may be affected.

Checks During Operation

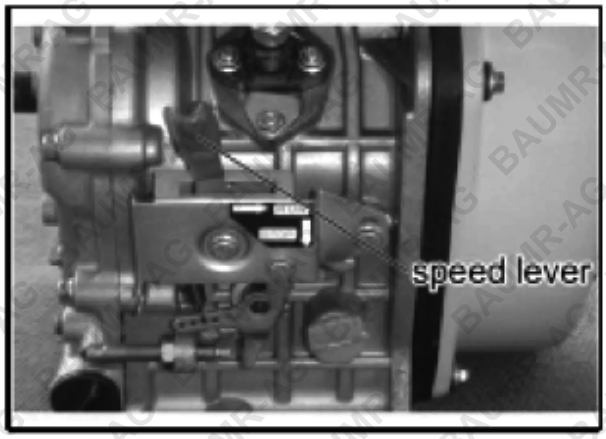
1. Any abnormal sound or vibrations?
2. Is the engine misfiring or running rough?
3. What about the colour of the exhaust gas? (Is it black or too white?)

If you notice any of the above, stop the engine and consult your nearest dealer.

WARNING:

If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler. Never refill the fuel while the engine is running.

Stopping the Engine



1. Before stopping the engine, move the engine speed lever to lower the speed and run the engine for about three minutes with no load.
2. Return the engine speed lever to the “STOP” position.
3. In electric start models, return the starter key to the “OFF” position.
4. Set the fuel tap to S (closed).
5. Slowly pull out the recoil handle until the pressure is low (that is to the point in the compression stroke where the intake and exhaust valves are closed), and leave the handle in this position.

CAUTION:

- When stopping the engine, reduce the load slowly. Do not stop the engine suddenly since this may cause the temperature to rise drastically.
- Do not stop the engine with the decompression lever.

Periodic Checks and Maintenance

Periodic checks and maintenance are very important for keeping the engine in good condition and prolonging its durability. The chart below indicates which checks to make and when to make them.

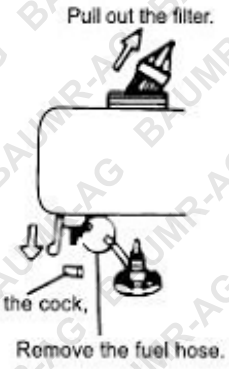
The mark (•) indicates that special tools and skills are required.

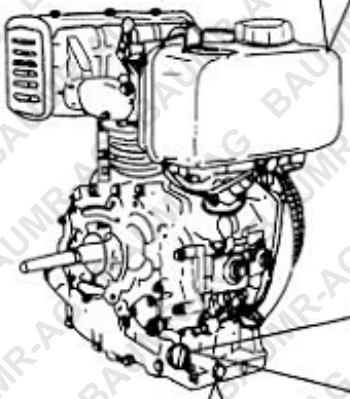
Operation hours / Item	Daily	First month or 20 Hrs	Every 3 months or 100 Hrs	Every 6 months or 500 Hrs	Every I year or 1000 Hrs
Check and tighten bolts and nuts	○				
Check and resupply engine oil	○				
Replace engine oil		○ 1 st time	○ 2nd time and thereafter		
Clean and replace oil filter			○	○ Replace if necessary	
Check oil leakage	○				
Replack air cleaner element		Service more frequently when used in dusty areas		○	
Drain the fuel tank	Monthly				
Clean and replace fuel filter			○ Clean	○ Replace	
Check fuel injection nozzle				●	
Check fuel injection pump				●	
Check fuel piping				○ Replace if necessary	
Adjust intake/exhaust valves head clearance		● 1 st time		●	
Check and lap intake/exhaust valves seat					●
Replace piston rings					●
Check battery liquid	Monthly				
Oil bath type air cleaner Oil level check and cleaning of element	○ Oil level check	○ (Clean)Monthly or/50 Hrs			

Cleaning and replacement of fuel filter

The fuel filter has to be cleaned regularly to insure maximum engine output.Remove the filter from the fuel tank and clean.

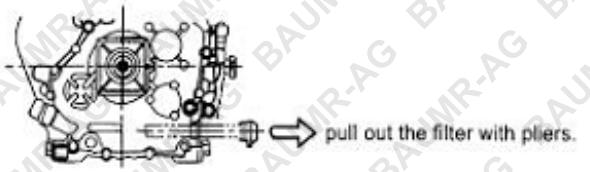
Clean	Every 3 months or 100 hours
Replace	Every 6 months or 500 hours





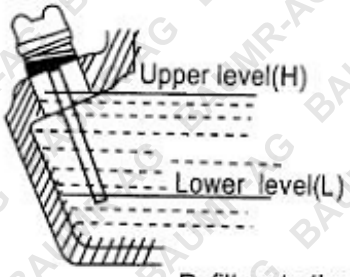
Replacement of lube oil filter.

Clean	Every 3 months or 100 hours
Replace	Every 1,000 hours or during engine disassembly



Replacement of lube oil

Lube oil replacement	Operation hours
1 st time	First month or after 20 hours
2 nd time and thereafter	Every 3 months or 100 hours



Refill up to the top of the filler port with the engine on the level.

Changing the Air Cleaner Element

Do not wash the air cleaner element with detergent because this is a wet type of element.

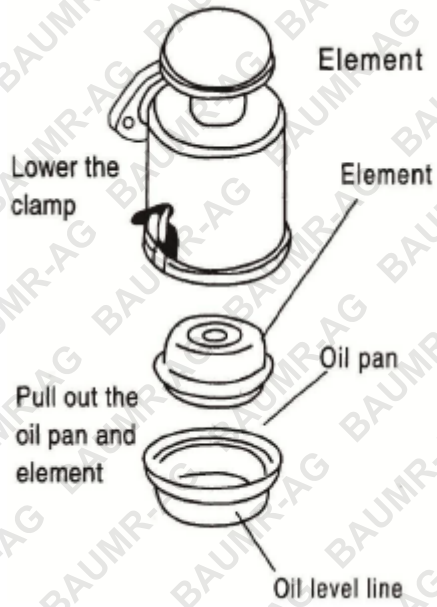
CAUTION:

Never run the engine without the element or with a defective element.

NOTE:

- A clogged element hinders the flow of air to the combustion chamber. This reduces engine output, increases lube oil and fuel oil consumption and makes starting more difficult.
- Make sure that you clean your element regularly.
- Change it every 6 months or 500 hours.

Cleaning the Air Cleaner Element (Oil Bath Type Air Cleaner)



Wash the dirty element with diesel fuel.

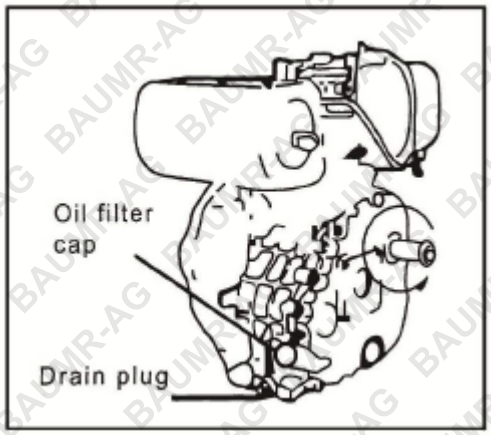
Remount it, after dipping it in the oil and squeezing out the oil from the element. Fill the new engine oil up to the oil level of the oil pan. Then put it back into the cylinder.

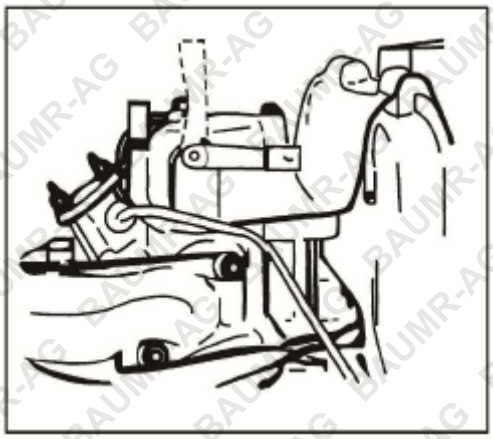
WARNING:

Never use gasoline or low flash point solvents.

- Oil level check: Daily
- Cleaning of element: Every one month or 50 hours

Long Term Storage





If storing your engine for long periods of time, make the following preparations:

1. Run the engine for about 3 minutes and then stop.
2. Stop the engine. Drain the engine lube oil while the engine is still warm and fill it with new oil.
3. Remove the plastic plug on the rocker arm cover and add about 2cc of lube oil. Put the plug back in place.
4. Recoil starting

   Push the decompression lever down (non-compression position) and hold it while you pull the recoil starter 2 or 3 times. (Don't start the engine.)

   Electric starting

   Turn on the engine for 2 - 3 seconds with the decompression lever set at the non-compression position, and the starter key at the “START” position. (Don't start the engine.)
5. Pull the decompression lever up. Pull the recoil starter slowly. Stop when it feels tight. This closes the intake and exhaust valves (in compression position) and helps prevent rust from forming.
6. Wipe the oil and dirt from the engine and store it in a dry place.

NOTE:

This plug is not provided to the engines supplied for some tropical areas. With these engines, disregard numbers 3 and 4 procedures.

Troubleshooting

When the engine will not start:

1. Is there enough fuel?
2. Is the fuel cock at the “OPEN” position?
3. Is diesel fuel reaching the fuel injection pump or nozzle?
4. Is the speed control lever in the “START” position?
5. Is the lube oil level correct?
6. Is the fuel injection nozzle working properly?
7. Is the recoil starter sufficiently pulled quickly and firmly?
8. Is the spark arrester clogged by carbon?
9. Is the battery discharging?

WARNING:

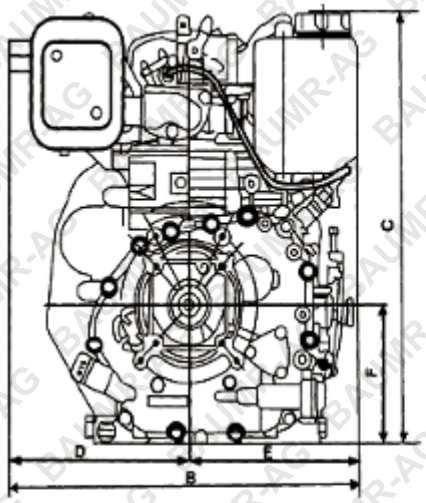
Keep away from the injection nozzle when performing the injection spray test.

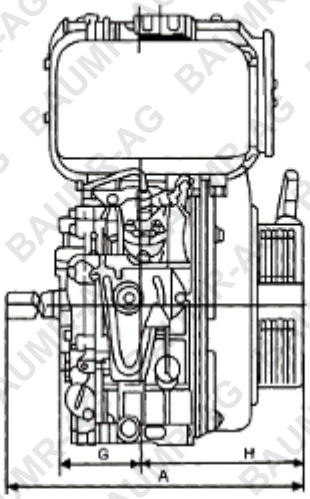
NOTE:

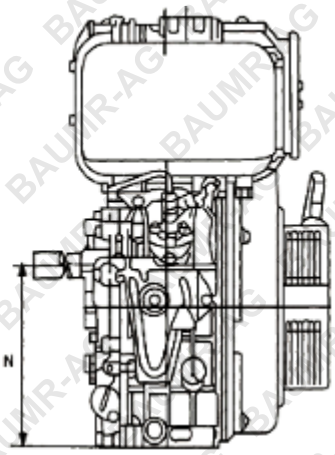
Always pull the recoil starter quickly and firmly.

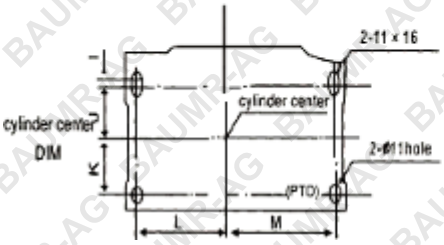
(See the section, How to Start Your Engine.)

Overall Dimensions and Installation









	A	B	C	D	E	F	G	H	I	J	K	L	M	N
ENGOGL8MRAR30	358	421	450	218	203	145	96	199	5	41.5	43.5	104	144	171.8
ENGOGL8MRAR42 ENGOGL8MRAB42	392	470	494	247	223	155	105	224	5	43.5	51.5	117	155	173.8

Some experts believe that the incorrect or prolonged use of almost any product may cause serious injury or death. To help reduce your risk of serious injury or death, refer to the information below. For more information, see www.datastreamserver.com/safety

- Consult all documentation, packaging and product labelling before use. Note that some products feature documentation available online. It is recommended to print and retain the documentation.
- Before each use, check the product for loose/broken/damaged/missing parts, wear or leaks (if applicable). Never use a product with loose/broken/damaged/missing parts, wear or leaks.
- Products must be inspected and serviced (if applicable) by a qualified technician every 6 months. This is based on average residential use by persons of average size and strength, and on a property of average metropolitan size. Use beyond these recommendations may require more frequent inspections/servicing.
- Ensure that all users of the product have completed a suitable industry recognised training course before being allowed access to the product.
- If this product has been purchased in error when considering the information presented here, contact the retailer directly for details of their returns policy, if required.
- The product has been supplied by a general merchandise retailer that may not be familiar with your specific application or description of application. Be sure to attain third-party approval from a qualified specialist for your application before use, regardless of any assurances from the retailer or its representatives.
- This product is not intended for use where fail-safe operation is required. As with any product (for example, automobile, computer, toaster), there is the possibility of technical issues that may require the repair or replacement of parts, or the product itself. If the possibility of such failure and the associated time it may take to rectify could in any way inconvenience the user, business or employee, or financially affect the user, business or employee, then the product is not suitable for your requirements. This product is not intended for use where incorrect operation or a failure of any kind, including but not limited to, a condition requiring product return, replacement, parts replacement or service by a technician may cause financial loss, loss of employee time or an inconvenience requiring compensation.

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