



Thank you for purchasing the KALT KG-22 engine. To obtain the best performance and satisfaction from your engine, please read carefully this instruction manual before starting your new engine.

#### Notice

- KG-22 engine has electric spark noise protection. However, use only R/C equipment which is not affected by electric noise.
- Gasoline is very flammable. Do not handle near open flame.
- Do not carry more gasoline than is necessary. Do not store fuel in a hot place.
- Do not burn rubbish by pouring gasoline on it.
- Do not use gasoline nor operate the engine in a closed area, such as a garage.
- Use a strong steel can for carrying gasoline, and keep away from batteries. Do not use a plastic container, because it is subject to bursting from expansion.
- Do not fly where buildings and people are nearby, and do not allow the controlled helicopter to fly near to you or spectators.
- Prepare a fire extinguisher for emergencies.

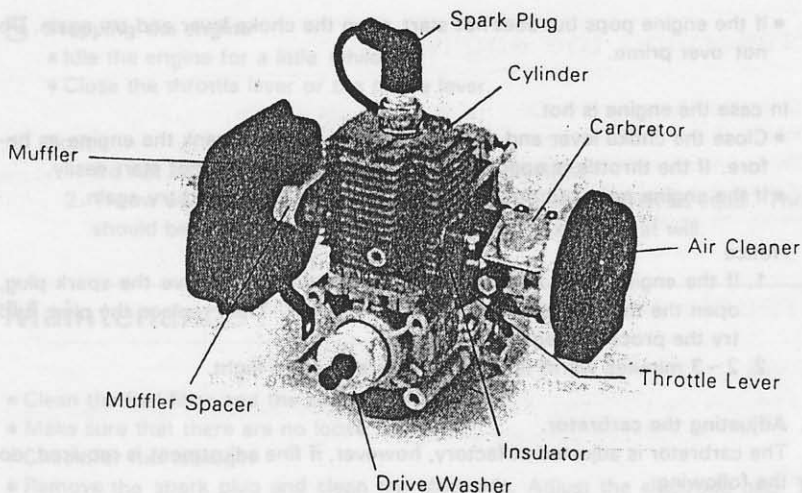
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## Specifications

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### KG-22 2-Cycle Gasoline Engine

|                    |   |
|--------------------|---|
| Displacement       | 22.5cc                                      |
| Stroke             | 28mm  |
| Bore               | 32mm  |
| Practical R.P.M.   | 1,800~10,000 R.P. M.                        |
| Rotation Direction | Left (Front view)                           |
| Fuel               | Oil Mixed Gasoline (Gasoline 20~25 : Oil 1) |
| Lubricant          | 2 Cycle Motor Oil                           |
| Carburetor         | Diaphragm System                            |
| Ignition           | Magneto                                     |
| Spark Plug         | NGK BMR-7A                                  |
| Air Cleaner        | Dry Filter                                  |
| Weight             | 1,300 gr. (W/O Muffler)                     |
| Size (L × W × H)   | 185 × 146 × 111mm                           |



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## Preparation prior to starting

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### 1 Check

- Make sure that there are no loose nuts, bolts, plug, muffler or carburetor.
- Check the air filter. If the air filter is clogged up by oil or dust, the engine will not work well.
- Inspect the gap of the spark plug and not fouled by carbon or sludge.
- Check the compression by rotating the crank shaft.

### 2 Fuel

- The carburetor of KG-22 engine has a very precision bypass. If the bypass is clogged up by foreign substance, the engine does not work well. Keep your fuel clean and be sure to use a fuel filter.
- For the best performance, use a fuel which is mixed 20~25 gasoline and 1 oil. The initial 10 hours break in, use a fuel mixed 15 gasoline and 1 oil.
- Use a high grade 2 cycle motor oil as supplied by named petroleum companies or KALT KG OIL.
- Do not handle the fuel near flame or while smoking.

### 3 Starting the engine

In case the engine is cold.

- Close the choke lever and open the throttle lever  $1/4 \sim 1/3$  way.
- Wind the starting rope around starter reel and pull the rope with strong force. In case of a propeller, crank it with strong-snap.
- After the engine starts, gradually open the choke lever and close the throttle lever.

- If the engine pops but does not start, open the choke lever and try again. Do not over prime.

In case the engine is hot.

- Close the choke lever and open the throttle a little. Crank the engine as before. If the throttle is opened too much, the engine will not start easily.
- If the engine pops but does not start, open the choke and try again.

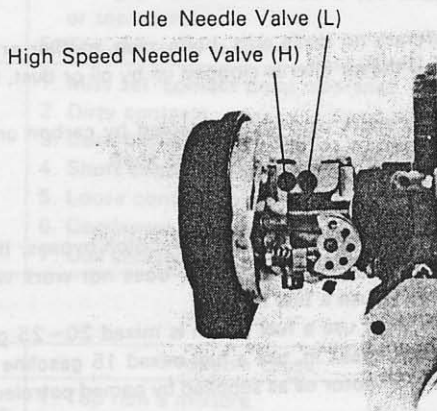
#### Notice

1. If the engine does not start after repeated tries, remove the spark plug, open the throttle lever and crank 5~6 times. Then replace the plug, and try the procedure again.
2. 2~3 minutes warm up time is required before flight.

## 4 Adjusting the carbretor.

The carbretor is adjusted at factory, however, if fine adjustment is required, do the following.

- Start the engine and adjust RPM until the clutch engages.
- Adjust the Idle Needle Valve (L). Close the (L) valve all the way by screwing down and then open it 1 1/2 turns. Adjust the (L) valve gradually ( $\pm 1/4$  turn) to find the stable position. As the RPM becomes higher, adjust the throttle lever.



- Adjust the High Needle Valve (H).
  1. Open the (H) valve 1 turn open from closed position. Open the throttle lever all the way and adjust the (H) valve gradually ( $\pm 1/4$  turn) to find maximum RPM position.
  2. Then turn the valve (anti clockwise) so-RPM comes down a little. (The mixture is now a little rich)

## 5 Stopping the engine

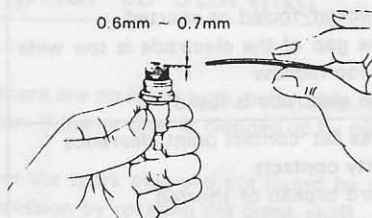
- Idle the engine for a little while.
- Close the throttle lever or the choke lever.

### Notice

1. Do not stop the engine suddenly from high RPM.
2. Throw of the throttle lever and motor control servo must be equal. Throw should be adjusted so that the engine can be stopped at will.

## Maintenance

- Clean the fuel filter and the air cleaner.
- Make sure that there are no loose parts.
- Check for fuel leakage.
- Remove the spark plug and clean the electrode. Adjust the electrode gap. The proper gap is 0.6~0.7mm. As a replacement, use the NGK BMR-7A spark plug. (Electric noise sheilded)



- If the contact point is roughened, smooth its face using fine sanding paper (#400), and clean it with gasoline. When the points are defaced, replace with new ones.
- The clearance of the contact point is 0.35mm ( $\pm 0.05$ mm). Loosen the screw which mounts the contact point unit and put a 0.35mm thickness gauge between the points, then tighten the screw.

Notice : Use a special tool when remove the magneto rotor disk.



## Preserving the engine

- Drain the fuel tank of fuel and run the engine till it stops.
- Wash all parts of the engine and spray anti-rust oil to all metal parts.
- Prime some machine oil into the cylinder head and crank the engine several turns.
- If there is a damaged part, repair it before preserving.
- Wrap the engine in vinyl bag and store it in dry place.

## Trouble shooting

### 1 Will not start

- Remove the spark plug. Touch the plug body to the engine head, then crank. Check for spark between the electrodes.

No spark

| Symptom    | Probable cause  | Remedy  |
|------------|---|---|
| Spark Plug | 1. The electrode is wet<br>2. Carburetor is dirty<br>3. Cracked, fouled or shorted<br>4. The gap of the electrode is too wide or too narrow<br>5. The electrode is fused                                    | Dry it<br>Clean it up<br>Replace plug<br>Adjust (0.6~0.7)<br><br>Replace plug |
| Magneto    | 1. Miss set contact point clearance<br>2. Dirty contacts<br>3. Cord broken or shorted<br>4. Short circuit of contact breaker<br>5. Loose contact point unit screw<br>6. Condenser broken<br>7. Coil shorted | Adjust<br>Clean it up<br>Replace<br>Repair<br>Tighten<br>Replace<br>Replace   |

Spark

| Symptom                            | Probable cause  | Remedy  |
|------------------------------------|---|---|
| Good compression and fuel supplied | 1. Too rich a mixture<br>2. Using wrong fuel<br>3. Too much raw fuel<br>4. The loss or gain of spark timing | Adjust the carburetor<br>Change the fuel<br>Refer to page 2<br>Adjust |
| Fuel supplied but no compression   | 1. Defacement of the cylinder, piston or piston ring  | Replace   |
| Fuel does not supply               | 1. Fuel tank empty<br>2. Loose fuel tubing or carburetor  | Supply the fuel<br>Replace or fasten                                  |

## 2 Insufficient power

| Symptom                              | Probable cause  | Remedy   |
|--------------------------------------|---|--|
| Good compression and not miss-firing | 1. Air leaking into fuel from crack or joint of fuel tubing<br>2. Air leakage from the carbretor mounting<br>3. Water mixed in the fuel<br>4. Over heated<br>5. The exhaust pipe stopped up or fouled by carbon or varnish<br>6. The diaphragm of the carbretor not working | Insert tubing firmly<br>Fasten firmly or change gasket<br>Change fuel<br>Adjust carbretor<br>Remove the muffler<br>Heat it and remove carbon<br>Replace the diaphragm or carbretor |
| Over heat                            | 1. The mixture is too lean<br>2. Wrong spark timing<br>3. The cooling shroud or cylinder fins clogged   | Adjust carbretor<br>Adjust<br>Clean it up  |
| Knocking                             | 1. Wrong spark timing<br>2. Using wrong fuel<br>3. Carbon fouled head or cylinder   | Adjust<br>Change the fuel<br>Clean up  |
| Others                               | 1. The air cleaner stopped up<br>2. Over loaded   | Wash with gasoline<br>Decrease the load  |

## 3 Stopped during operation

| Symptom           | Probable cause  | Remedy   |
|-------------------|---|--|
| Suddenly stopped  | 1. Plug cap fell off<br>2. Frozen piston<br>3. Short circuit of the spark plug by carbon<br>4. Trouble of magneto | Replace<br>Polish the cylinder and piston and replace piston ring<br>Remove carbon<br>Check and repair |
| Gradually stopped | 1. Fuel has gone<br>2. Stopped up carbretor<br>3. Water mixed in the fuel   | Supply fuel<br>Clean the nozzle<br>Change the fuel   |

## Service

The KALT company carefully checks each engine at the factory. But if after following the instructions, the engine does not work, please contact your dealer to get assistance or return engine to us. The guarantee is voided if the engine is disassembled or modified.