KisanKraft®

Warranty Certificate

(KISANKRAFT COPY)

Important: (1) Normal maintenance and adjustments to the product is the responsibility of the customer. (2) Normal wear and tear is not covered under warranty. (3) Rubber/plastic parts and consumables such as blades, clutch and clutch-bell, spark-plugs, nylon line, air-filters, fuel-filters, oil seals etc. are not covered under the warranty.

No Warranty On Electrical Motor / Electrical Parts / Battery Etc.

Incidental / Consequential Loss: KisanKraft Limited or its manufacturers will not be liable for general damages, including bodily injuries, or for incidental or consequential damages including, but not limited to, loss of use, loss of profits, loss of production, expense of substitute equipment or other commercial loss or damage.

Limitation of Liability: This limited warranty is in lieu of all other express warranties, obligations, or liabilities. Any implied warranties, obligations or liabilities, including, but not limited to, any implied warranty of merchantability shall be limited in duration to the applicable warranty period. Any action for breach of any warranty hereunder, including, but not limited to, any implied warranty of merchantability must be brought within the applicable warranty period.

Modifications of Warranty: No agent, representative, dealer, or employee of KisanKraft Limited or any of its manufacturers has the authority to increase or alter the obligations of this warranty.

Assignment / Transfer of warranty: The warranty cannot be assigned and shall not transfer if the product is resold by the first buyer. The above warranties are extended to the first end user (original purchaser), and no warranty is made, nor authorized to be made assignable on resale by the first end user.

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Receipt is required for availing warranty services

Jurisdiction: All disputes are subject to Bangalore court's jurisdiction.

Our Products	◆Chainsaws◆Brush Cutters and Accessories◆Harvesters◆ ◆Engines and Water Pumps◆Hand Tools◆Garden Tools◆ ◆Cultivators and Accessories◆Sprayers and Accessories◆ ◆Transplanter and Post Hole Digger ◆Milking Machines◆

This warranty is null & void, if you fail to register the warranty with KisanKraft by sending the KisanKraft Copy with dealer's stamp.

KisanKraft Machine Tools Private Limited

🌎: www.kisankraft.com ✉: info@kisankraft.com ☎: +91.80. 22178200

KisanKraft®

Warranty Certificate

(DEALER COPY)

Product	**Water Pump-Diesel Engine**	KisanKraft Invoice Date	
Brand	**KisanKraft**	KisanKraft Invoice No.	
Model	☐ **KK-WPD-10025,** ☐ **KK-WPD-15020,** ☐ **KK-WPD-20** ☐ **KK-WPD-30**		
WARRANTY PERIOD	**6**-MONTHS	FOR THE SPECIFIED PERIOD FROM THE DATE OF SALE OR DELIVERY WHICHEVER IS EARLIER.	
Dealer's Invoice Date		Dealer's Invoice No.	
Buyer's Info (Name, Address, Phone, etc.):		Dealer's Stamp (Address, Phone, TIN, etc.):	
Buyer's Sign		Dealer's Sign	

What is covered: KisanKraft Limited and its manufacturers warrant this product to be free from defects in material or workmanship. All parts defective in material and workmanship are covered.

This warranty will only cover defects arising under normal usage.

This warranty is limited to repair or replacement by KisanKraft Limited or its manufacturers at the premises of Authorized Dealers, of such parts as appear to KisanKraft or its manufacturers, upon inspection, to be defective in material and/or workmanship. KisanKraft or its manufacturers make no warranty with respect to trade accessories not manufactured or sold by them.

What is not covered: The *warranty shall become null and void* and neither KisanKraft Limited nor any of its manufacturers, nor its authorized dealers assumes any responsibility, if the failure was caused by the following:

(1) Operation of product with incorrect fuel or lubricants, (2) Incorrect usage of machine or misuse, (3) Lack of maintenance, (4) Negligence, (5) Accident or physical damage, (6) Repairs made by unauthorized parties and/or with unauthorized parts, (7) Improper set up, adjustments, tampering or altered products

Note: The *purchase is not contingent upon a product demonstration. The purchaser shall satisfy himself with the product, including any product demonstration or verification of any function, before buying. KisanKraft Limited or its authorized dealers, including online sellers, shall not be liable to give any on-site demonstration after purchase of any of the product*

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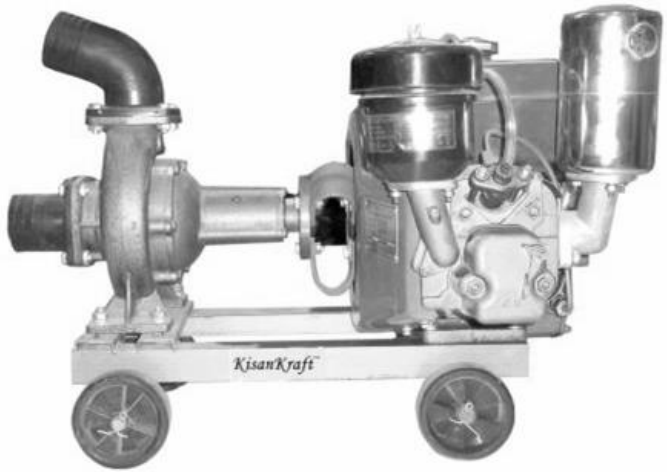
Wide Range of Products for Every Need

For more information give **MISSED CALL: 07676065555**

Many of our products have BIS: ISI certification.

Operation Manual



KisanKraft Limited

Sri Huchhanna Tower, #4,1st Main,7-A Cross, Maruthi Layout, Dasarahalli,
HAF Post, Hebbal, Bangalore 560024,Karnataka,INDIA

♦ Bangalore (HO) ♦ Ahmedabad ♦ Bhopal ♦ Bhubaneswar ♦ Coimbatore ♦
♦ Ernakulam ♦ Guwahati ♦ Patna ♦ Hinudpur ♦ Hubli ♦ Hyderabad ♦
♦ Jaipur ♦ Karnal ♦ Kolkata ♦ Lucknow ♦ Nagpur ♦ Pune ♦ Raipur ♦ Shimla ♦

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KisanKraft has a large range of products to serve the farmers. A list of our products is given below:

Brush Cutters and Accessories

- Brush Cutter/Power Weeder
- Backpack Brush Cutter
- Tea Pruner
- Pole pruner with Engine
- Reaper Attachment
- Blades-Circular
- Blades (2 &3 points)
- Baffle
- Nylon Rope
- Tap & Go

Chainsaws

- Petrol Chainsaw
- Electric Chainsaw
- Chain Sharpening Machine

Engines and Water Pumps

- Engine –Diesel-(Horizontal)
- Engine –Diesel(Vertical)
- Engine-Kerosene
- Water Pump with Petrol Engine
- Water Pump with Kerosene Engine
- Water Pump with Diesel Engine

Hand Tools

- Secateurs
- Folding Saw
- Garden Rake
- Garden Shovel
- Hedge Shear
- Lopper
- Telescopic Hedge Shear
- Telescopic Lopping Shear
- Tree Pruner
- Telescopic Steel Pipe & Fruit Picker Bag
- Sheep Shear

Garden Tools

- Electric Pressure Washer
- Hedge Trimmer
- Lawn Mower (Electric, Petrol & Manual)
- Leaf Blower

Cultivators and Accessories

- Petrol and Diesel

Sprayers and Accessories

- Battery Sprayer
- Portable Power Sprayer
- Trolley Sprayer
- Manual Knapsack Sprayer
- Manual Pressure Sprayer
- Rose Cans
- Hose Crimping Machine
- HTP Sprayer
- HTP Delivery Hose
- HTP Hose Reel
- HTP Stand
- HTP Gun / Lance(Brass Rod
- Knapsack Power Sprayer
- Mister / Duster / Granuel Spreader
- HTP Sprayer Set with Diesel Engine
- HTP Sprayer Set with Kerosene Engine
- Fogging Machine

Milking Machine

- Wood Shredder
- Fodder Ensiling Chaff Cutter
- Fodder Grinder Chaff Cutter
- Fodder Mini Chaff Cutter

Harvester

- Maize Sheller
- Maize Sheller + Dehusker
- Maize Combine Harvester
- Onion Digger Carlotti Italy
- Tea Leaf Harvester
- Sugarcane Combine Harvester
- Sugarcane Leaf Stripper

Transplanter and Post Hole Digger

- Paddy Transplanter (2 & 8 Rows)
- Transplanter-Vegetable & Tobacco
- Post Hole Digger(4” to 14”Augers)

Sl No	Part No	Part Name	Sl No	Part No	Part Name
7	165f/Z175f-1/13002	Injection Pump Body	16	165f/Z175f-1/13010	Vent Screw
8	165f/Z175f-1/13011	Plunger Spring	17	165f/Z175f-1/13009	Washer
9	165f/Z175f-1/13003	Lower Spring Seat			

Injector

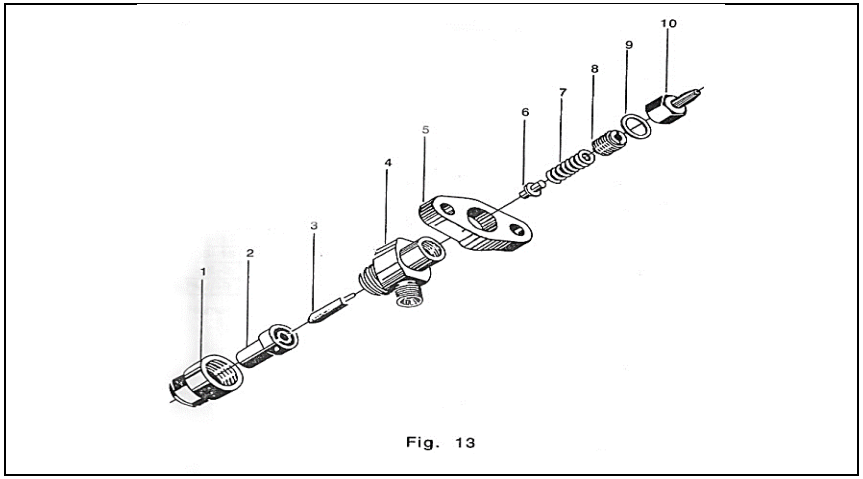

Fig. 13

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	165F/Z175F-1/14003	Cap Nut	6	165F/Z175F-1/14200	Needle valve spindle
2	165F/Z175F-1/14101	Nozzle body	7	165F/Z175F-1/14005	Pressure adjusting spring
3	165F/Z175F-1/14102	needle valve	8	165F/Z175F-1/14001	Pressure adjusting screw
4	165F/Z175F-1/14004	Nozzle holder	9	165F/Z175F-1/14006	washer
5	165F/Z175F-1/14002	Injector clamp plate	10	165F/Z175F-1/14007	fuel leak-off connecting bolt

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KisanKraft Machine Tools Private Limited

Sl No	Part No	Part Name	Sl No	Part No	Part Name
10	165f/Z175f-1/11404	Governor Spring Seat	24	Gb93-87	Spring Washer 6
11	165f/Z175f-1/11403	Governor Spring	25	Gb6170-82	Nut M6
12	165f/Z175f-1/11406	Fly-Weight Support	26	Gb5783-86	Hexagon Bolt M6x12
13	165f/Z175f-1/11405	Fly-Weight Pin	27	Gb93-87	Spring Washer 6
14	Gb93-87	Spring Washer 6			

Injection Pump

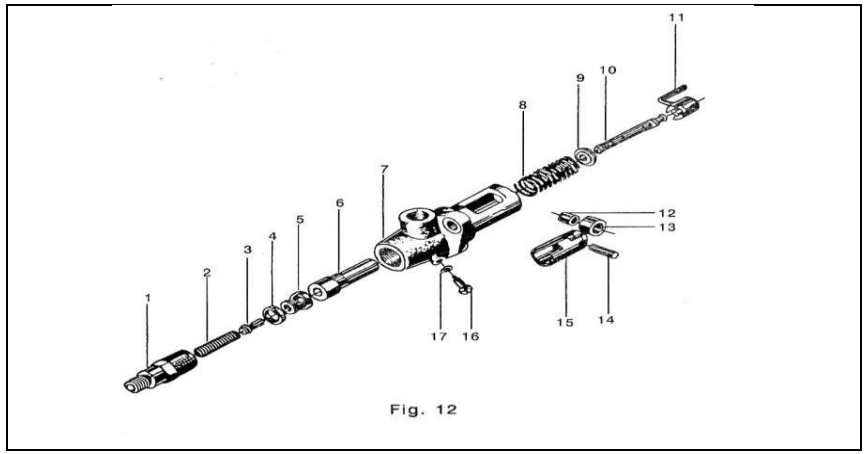


Fig. 12

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	165f/Z175f-1/13001	Delivery Valve Holder	10	165f/Z175f-1/13101	Pump Plunger
2	165f/Z175f-1/13008	Delivery Valve Spring	11	165f/Z175f-1/13400	Governor Fork
3	165f/Z175f-1/13201	Delivery Valve	12	165f/Z175f-1/13006	Inner Roller
4	165f/Z175f-1/13301	Delivery Valve Sucking Ring	13	165f/Z175f-1/13005	Outer Roller
5	165f/Z175f-1/13202	Deliver Valve Seat	14	165f/Z175f-1/13007	Roller Pin
6	165f/Z175f-1/13102	Barrel	15	165f/Z175f-1/13004	Roller Holder

Governor System

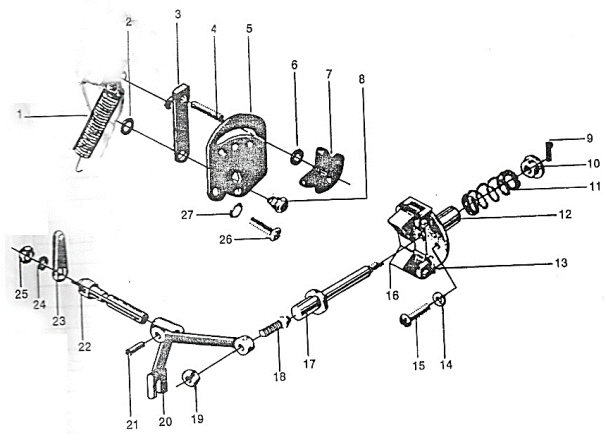


Fig. 11

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	165f/Z175f-1/11001	Governor Spring	15	Gb67-85	Screw M6x16
2	Gb95-85	Washer 5-100hv	16	165f/Z175f-1/11401	Fly-Weight
3	165f/Z175f-1/11303	Governor Plate	17	165f/Z175f-1/11402	Governor Spindle
4	165f/Z175f-1/11302	Screw	18	165f/Z175f-1/11601	Adjusting Screw
5	165f/Z175f-1/11304	Indicating Plate	19	Gb6170-82	Nut M6
6	Gb95-85	Washer Control Handle	20	165f/Z175f-1/11201	Governor Fork
7	165f/Z175f-1/11301	Speed Control Handle	21	165f/Z175f-1/11202	Set Screw
8	165f/Z175f-1/11305	Rivet	22	165f/Z175f-1/11101	Governor Fork Shaft
9	Gb91-86	Cotter Pin 2 X 10	23	165f/Z175f-1/11102	Governor Connecting Lever

BEFORE GETTING STARTED

Thank you for your purchase and use of our products. In order to avoid accidents or injury, please read this manual carefully before using the machine. After reading, preserve it for further reference.
This Water pump is characterized by light weight, simple structure high efficiency, convenient use and flexible movement. It can be used for agricultural irrigation, drainage construction and pumping, especially widely used in recurrent irrigation of small area for agricultural production at present.

SAFETY INSTRUCTIONS

1. Read the operation manual carefully before starting the engine in order to avoid any accident and damage.
2. Please do not use this engine inside an enclosed area. Ensure adequate ventilation while Engine is in operation.
3. To prevent fire hazard, please keep the Engine in operation at least 1-meter (3 feet) away from Combustible or Inflammable materials, buildings and equipment.
4. When refueling you must STOP the Engine. Please do not smoke near Engine. Wipe the spilled fuel after refueling.
   CAUTION: Spilled fuel is a fire hazard.
5. Always place the engine horizontally. Do NOT tilt the Engine more than 21 degrees Overturning or inclining the engine may cause oil spillage and result in fire hazard.
6. Do NOT cover the Engine when in operation.
7. Children are strictly not allowed near the engine operation area.

OPERATION

PREPARATION BEFORE OPERATION:

1. Connect the suction pipe:
   - Place the filter into the empennage of the suction pipe with the tie-in.
   - Place another end into the input with the tie-in.
2. Connect the discharging pipe:
   Place the discharging pipe into the output with the tie-in.
3. Check the oil:
   - Check the oil lever in the case that the engine is off and horizontal.
4. Check the fuel level:
   - Open the crankcase cover to check the fuel level. Please add fuel when the level is low.
5. Check the air cleaner:
   - Disconnect the papilionaceous (flower petal like) nut washer and air cleaner filter.
   - Check whether the foam filter element is dirty or air logged. Clean it if necessary.
   - Newly equip the air cleaner and operate the engine until it is well equipped.
   - It would accelerate the abrasion if the dust or the pollutant is absorbed into the engine through carburetor.

6. Check the water pump:
   - Check whether the water is added into the pump.
   - The pump must be fully filled with water before operating.
   - Operate the pump until the water is added so as to protect the air proof from the overheating in lasting operation without water.

STARTING THE ENGINE

1. Keep the fuel valve to “ON” position.
2. Shut down the throttle (throttle may be partly closing or open when the engine is warm or in the case of high temperature).
3. Keep the switch in the ON position.
4. Slowly move the regulating handle to the left.
5. Pull the start handgrip when feeling the resistance, then drawback swiftly.

USE

The use of the water pump:
1. Gradually open the throttle when the engine’s warm.
2. Set a scheduled rotation speed.

STOPPING THE ENGINE

1. Move the regulating handle to the right.
2. Keep the switch in the “OFF” position.
3. Turn off the fuel valve.

MAINTENANCE

Oil:
Change the oil and quickly discharge the oil when the engine is hot. Replace the oil for the first time after 50 hours of cumulative operation. After that, replace the oil per 500 hours operation. The specific procedure is as follows:
- Disconnect the oil cap and drain plug, then discharge the oil, newly equip the drain plug and screw it down.
- Add the clean oil to the appointed oil level.

Air cleaner filter:
Air flow in the carburetor is reduced if air cleaner is dirty. In order to clean it:
- Move the papilionaceous nut, and disconnect the air cleaner filter cover and the foam filter element with apyrous cleaning and then air dry it.
- Dip the foam filter element into the clean oil and extrude the additional oil. Newly equip the foam filter element and air cleaner filter.

Spark plug:
It would be kept 0.7-0.8 mm between the spark plug and no carbon so as to assure the normal running

STORAGE

Cool the engine and keep the fuel valve in the “OFF” position before moving or storing indoors to avoid the burning or fire.

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	165F/Z175F-1/10201	Fuel Tank Cap	21	165F/Z175F-1/10314	Cock handle
2	165F/Z175F-1/10202	Fuel tank cap spring	22	GB117-86	Pin 3x16
3	165F/Z175F-1/10203	Fuel tank cap packing	23	165F/Z175F-1/10304	Set Nut
4	165F/Z175F-1/10005	Fuel tank Strainer	24	165F/Z175F-1/10306	Packing ring
5	165F/Z175F-1/10100	Fuel Tank	25	165F/Z175F-1/10305	Sealing washer
6	165F/Z175F-1/10004	Gasket(Fuel Tank)	26	165F/Z175F-1/10302	Fuel filter support
7	GB897-88	Stud AGM6-M6x20	27	GB95-86	Washer 6-100HV
8	165F/Z175F-1/10313	Packing (Fuel cock)	28	GB93-87	Spring washer 6
9	GB6170-82	Nut M8	29	GB6170-82	Nut M6
10	GB93-87	Spring washer 8	30	165F/Z175F-1/10303	Fuel Cock Valve Lever
11	GB95-85	Washer 8-100HV	31	165F/Z175F-1/10301	Pipe adapter
12	165F/Z175F-1/10311	Filter Element housing	32	165F/Z175F-1/10003	fuel delivery pipe
13	165F/Z175F-1/10309	Spring	33	165F/Z175F-1/13000	fuel injection pump
14	165F/Z175F-1/10310	Washer	34	165F/Z175F-1/1403	Injector fuel pipe nut
15	HG4-333-66	O-Seal ring 10x1.9	35	165F/Z175F-1/1401	Injector pipe
16	165F/Z175F-1/10307	Bearing plate	36	HG4-333-66	O-seal ring 16x2.4
17	HG4-333-66	O-seal ring 10x2.4	37	165F/Z175F-1/14000	Injector
18	165F/Z175F-1/10300A	Fuel filter element	38	165F/Z175F-1/10002	fuel return pipe
19	HG4-333-66	O-seal ring 20x2.4	39	165F/Z175F-1/10001	clamp
20	165F/Z175F-1/10308	hollow screw			

Exhaust Assembly

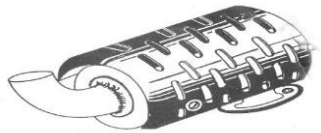


Fig. 9

Sl No	Part No	Part Name
1	165F/Z170F/R175A/-09000	Silencer assembly

Fuel System

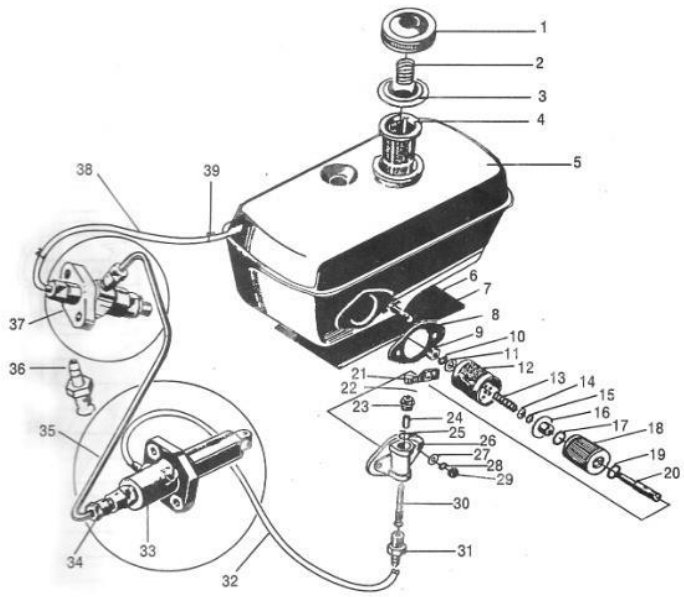


Fig. 10

1. Keep the storage place dry and less dust.
2. Clean the inner parts of the engine.
3. Replace the oil after completely discharging the fuel tank and the carburetor.
4. Disconnect the spark plug to infuse 2-3 grams of oil into the cylinder and rotate the engine 3-4 times and then equip the spark plug.
5. Cover the pump cover to avoid dust.

TROUBLESHOOTING

Problem	Probable cause	Action to be taken
The Engine can't be started	Refer the Engine manual	Refer the Engine manual
The pump cannot pump water	The water infused is not enough	Fill the pump with enough water.
	The filter is air – logged.	Clear the air from the filter.
	The tie-in is not firmly equipped , Suction pile is leaking.	Ensure proper suction Packing is proper and leak free.
	The pipe is damaged.	Replace the pipe.
	Whether the head lift is too high	Never exceed the rated max. Lift, if so lower the head lift.
Insufficient flux	Any block with impeller or strainer	Remove the blockage in the strainer
	Gas leakage in inlet pipe	Fix any leakage in the pipe
	Damage in impeller	Replace the impeller

TECHNICAL SPECIFICATIONS

Model	KK-WPD-10025	KK-WPD-15020
Type	Self-Priming	
Outlet/inlet size (mm)	100	150
Max discharge capacity (m^3/h)	90	120
Max Lift /delivery(m)	25	20
Max suction height (m)	7	
Diesel Engine model	186F	188F
Rated output power (kW)	6.3	7.3
Rated rotation speed (rpm)	3600	
Net Weight (kg)	64	84

Model	KK-WPD-20	KK-WPD-30
HP	4hp	5hp
CC	269cc	331cc
Engine Type	4-Stroke	
Engine Model	KK-DE-Z170F	KK-DE-Z175F
Rated rotation speed (rpm)	3000 RPM	
Fuel Used	Diesel	
Fuel Tank Capacity	100ml oil & 3 Ltr Diesel	
Oil(mixing)	750 ml (2W40 Grade)	
Weight Of The Machine (kg)	15kg	18kg
Fuel Consumption	1 Ltr/1 hr (Engine)	
Inlet/outlet port	2″	3″
Suction height	8 m(Vert)	
Max Lift / Delivery	26 m (Horz)	28 m(Horz)

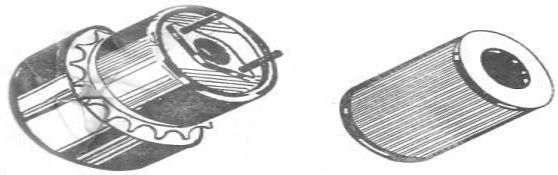


Fig. 8

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	165F/Z170F/R175A/-07000	Air Cleaner assembly	2	165F(K0708) /Z170F	Air Cleaner filter element

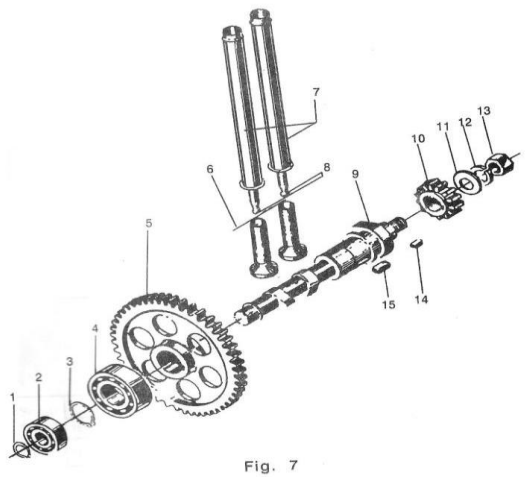
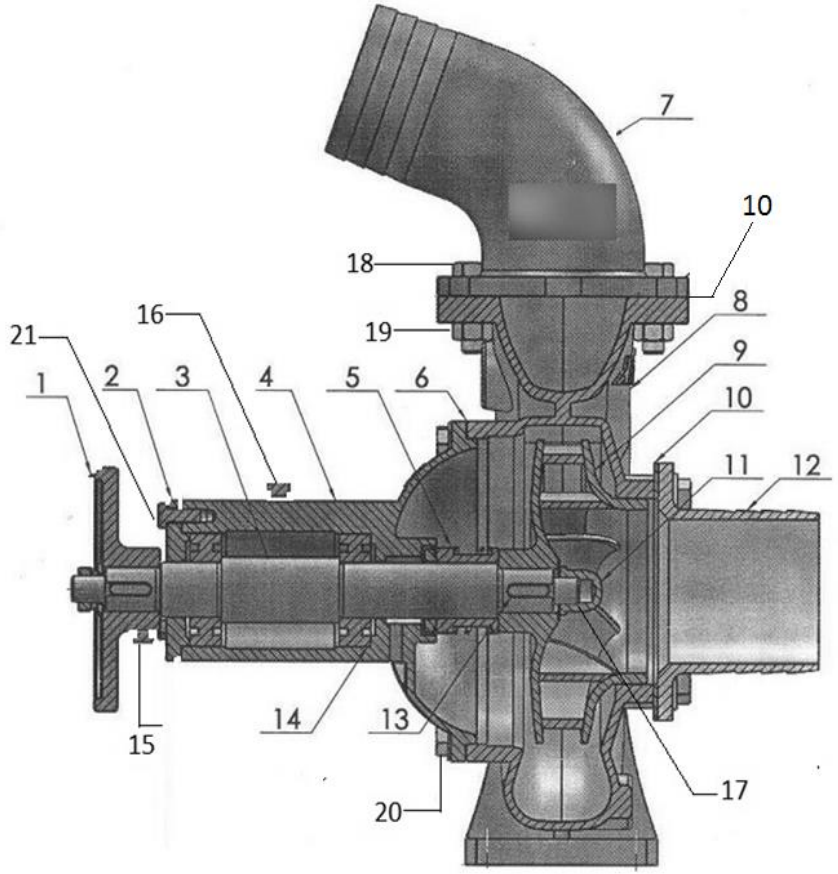


Fig. 7

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	GB894.1-86	Circlip 15	9	165F/Z175F-1/06001	Camshaft
2	GB276-82	Ball bearing 202E	10	165F/Z175F-1/06003	Driven Starting gear
3	GB894.1-86	Circlip 25	11	GB95-85	Washer 12-100HV
4	GB276-82	Ball bearing 205E	12	GB93-87	Spring Washer 12
5	165F/Z170F/Z175F-1/06002	Camshaft timing gear	13	GB170-86	Nut N12
6	165F/Z175F-1/06004	Valve tappet	14	GB1096-79	Key C5x10
7	165F/Z175F-1/06006	Push rod Sleeve	15	GB1096-79	Key 6x16
8	165F/Z175F-1/06005	Valve push rod	9	165F/Z175F-1/06001	Camshaft

Air Cleaner Assembly

PUMP PARTS -DIAGRAM



PUMP PARTS -LIST

Sl.No	Part Name
1	Coupling
2	Bearing Cap
3	Shaft
4	Pump Body(Small)
5	Water Seal
6	Gasket(Pump Body)
7	Outlet Bend
8	Pump Body(Big)
9	Impeller
10	Gasket(Inlet/Outlet)
11	Impeller Nut
12	Inlet Flange
13	Flat Key A6X20
14	Bearing 6205
15	Screw (Coupling)
16	Grease Plug
17	Washer (Impeller Nut)
18	Bolt M 10x30 HEX
19	Nut M-10
20	Bolt M 8x16 HEX
21	Bolt M 6x14 HEX

Sl No	Part No	Part Name	Sl No	Part No	Part Name
3	165F/Z170F/Z175F-1/05008	Oil slinger	15	165F/Z175F-1/05010	Lock washer
4	GB1096-72	Key B5x8	16	165F/Z175F-1/05001	Flywheel fixing nut
5	165F/Z170F/Z175F-1/05004	Crankshaft	17	GB6170-86	Nut m6
6	165F/Z175F-1/05002	Flat Key	18	GB93-87	Spring washer 6
7	165F/Z170F/Z175F-1/05006	Gasket (Bearing housing)	19	GB95-85	Washer 6
8	165F/Z170F/Z175F-1/05007	Bearing housing	20	GB898-88	Stud AGM6-M6x16
9	GB276-82	Ball bearing D308	21	GB898-88	Stud AGM8-M8x20
10	GB894.1-86	Circlip 40	22	GB95-85	Washer 8-100HV
11	165F/Z175F-1/05011	Gasket (Ball Bearing cover)	23	GB93-87	Spring 8
12	165F/Z175F-1/05005	Front ball bearing cover	24	GB6170-86	Nut M8

Camshaft Equipment

Sl No	Part No	Part Name	Sl No	Part No	Part Name
4	165F/R175A/ 04008	Connecting rod bearing shell	11	165F/Z170F/R175 A/04002	Chrome plated compression ring
5	165F/R175A/ 04008	Connecting rod bearing shell	12	165F/Z170F/R175 A/04006	piston pin snap ring
6	165F/R175A/ 04101	connecting rod	13	165F/Z170F/R175 A/04005	Piston pin
7	165F/R175A/ 04103	connecting rod bolt	14	165F/Z170F/R175 A/04105	connecting rod bushing

Crankshaft and Flywheel Assembly

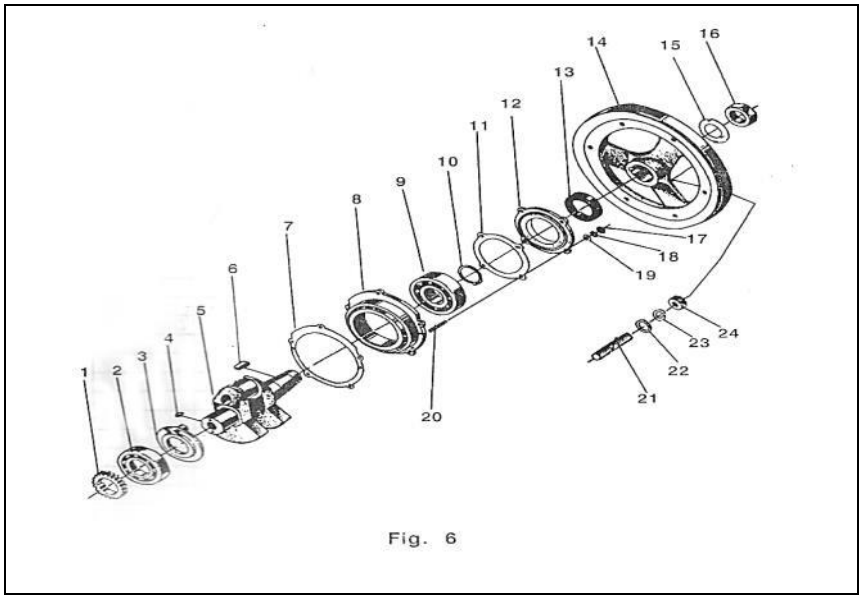


Fig. 6

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	165F/Z170F/Z17 5F-1/05009	Crankshaft timing gear	13	HG4-692-67	Oil seal 40x62x12
2	GB276-82	Ball bearing D308	14	165F/Z170F/Z 175F-1/05003	Flywheel

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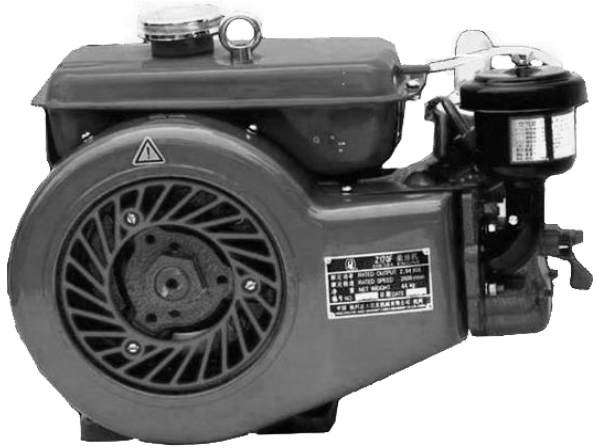
ENGINE-DIESEL
KK-DEH-Z165F/ Z170F/ Z175F

OPERATION MANUAL-DIESEL ENGINE



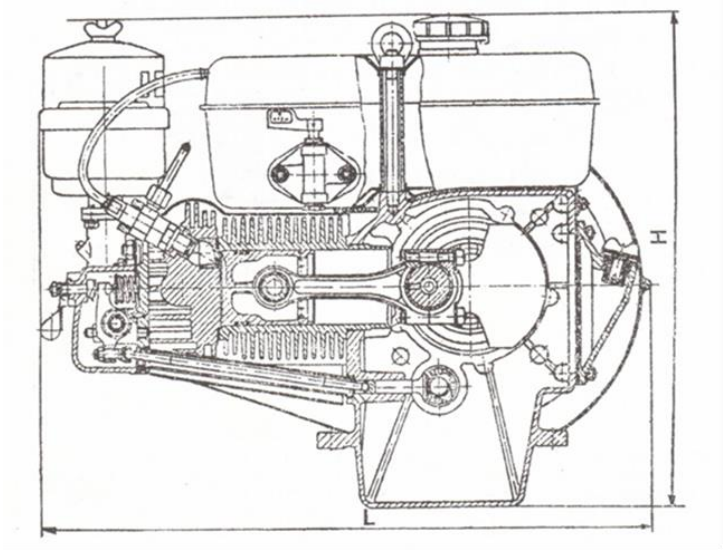
BEFORE GETTING STARTED

Thank you for your purchase and use of our products. In order to avoid accidents or injury, **please read this manual carefully** before using the machine. After reading, preserve it for further reference.

1. The Model 165F, Z170F, Z175F Diesel Engine is light in weight easy to operate and simple in construction. It is suitable for driving agricultural irrigation and drainage pumps and rural by products processing machines. It can also be used as a prime mover for small electric generators, transplanters, etc.
2. This engine will be modified from time to time, it is possible, therefore, that this manual is slightly different from the engine supplied.
3. The Model Z170F, Z175F Diesel Engine is the improved version of the Model 165F, main parts being the same.

SECTIONAL VIEW OF THE ENGINE

Longitudinal Section



Sl No	Part No	Part Name	Sl No	Part No	Part Name
23	165F/Z175 F-1/-03012	Gasket (Air filter)	47	165F/Z175F-1/-03212	Exhaust valve rocker arm
24	GB6170-86	Nut 6			

Piston and Connecting rod Assembly

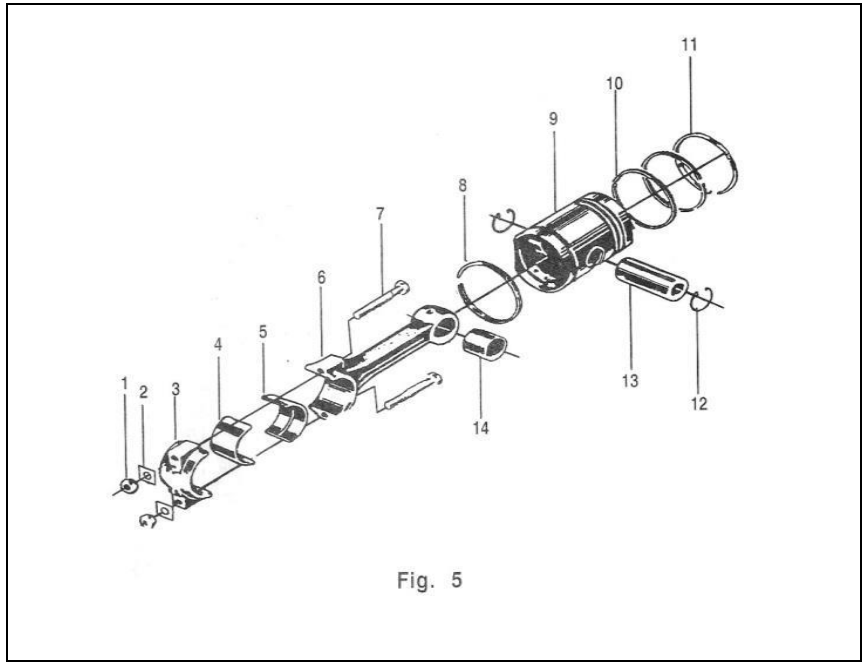


Fig. 5

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	165F/R175A/ 04104	Connecting Rod Nut	8	165F/Z170F/R175 A/04004	Oil scraper ring
2	165F/R175A/ 04007	Connecting rod bolt lock plate	9	165F/Z170F/Z175 F-1/04001	Piston
3	165F/R175A/ 04102	Connecting rod cap	10	165F/Z170F/R175 A/04003	Compression ring

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	GB6170-86	Nut M6	25	GB93-87	Spring Washer
2	GB93-87	Spring washer 6	26	GB95-85	Washer 6-100HV
3	165F/Z175 F-1/-03302	Decompression lever	27	165F/Z175F-1/-03001	Valve casing
4	165F/Z175 F-1/-03303	Decompression lever spring	28	GB898-88	Stud AGM6-M6x40
5	165F/Z175 F-1/-03301	Cylinder head cover	29	165F/Z175F-1/-03102	Valve Guide
6	165F/Z175 F-1/-03303	Cylinder head cover gasket	30	GB6170-86	Nut m8
7	165F/Z175 F-1/-03304	Decompression lever shaft	31	GB93-85	Spring Washer 8
8	165F/Z175 F-1/-03201	Valve rocker arm adjusting screw	32	GB900-88	Stud AGM8-M8x60
9	GB894.1-86	Circlip 12	33	165F/Z170F/ Z175F-1/-03101	Cylinder head
10	165F/Z175 F-1/-03205	Washer	34	165F/Z170F/ Z175F-1/-03009	Heat Insulation Sleeve
11	165F/Z175 F-1/-03211	valve rocker arm bushing	35	165F/Z175F-1/-03010	Heat Insulation Washer
12	165F/Z175 F-1/-03204	set nut	36	165F/Z175F-1/-03103	Valve seat
13	165F/Z175 F-1/-03222	inlet valve rocker arm	37	165F/Z175F-1/-03104	Combustion Chamber Insert
14	165F/Z175 F-1/-03203	Rocker arm shaft	38	165F/Z175F-1/-03008	Valve
15	GB6170-86	Nut M10	39	GB898-88	Stud AGM8-M8x16
16	GB93-85	Spring washer 10	40	GB93-87	Spring Washer 8
17	165F/Z175 F-1/-03007	Valve collet	41	GB6170-86	Nut M8
18	165F/Z175 F-1/-03006	Valve spring retainer	42	165F/Z175F-1/-03011	Gasket (Silencer)
19	165F/Z175 F-1/-03005	Valve spring	43	HG4-333-66	O-Seal ring 20x2.4
20	165F/Z175 F-1/-03002	Gasket (Air intake pipe)	44	GB119-86	Pin B4x10
21	165F/Z175 F-1/-03004	Air intake pipe	45	GB898-88	Stud AGM8-M8x40
22	GB67-85	Button head cap screw M6x12	46	165F/Z175F-1/-03202	Rocker arm shaft support

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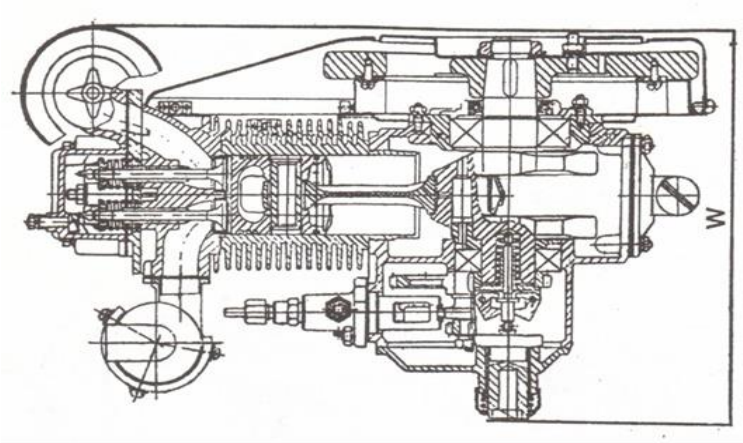
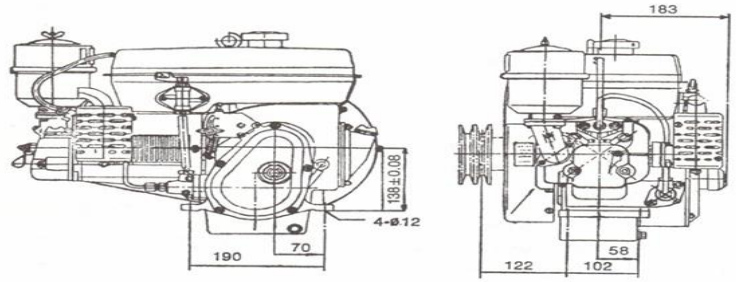
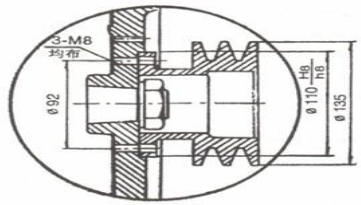
Transverse Section



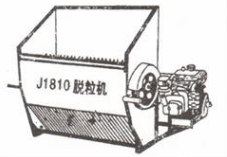
Mounting Dimensions



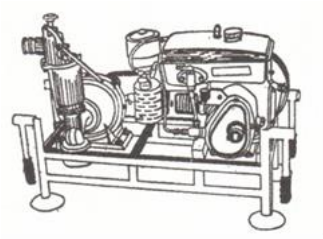


APPLICATION

Generating sets

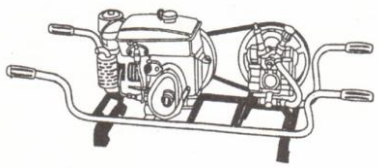


Bicylinder type threshers

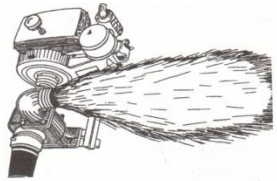


Water pump sets

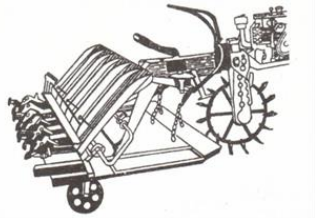
Motor boats



Sprayers



Sprinklers



Transplanters

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ENGINE-DIESEL
KK-DEH-Z165F/ Z170F/ Z175F

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	165F/Z175F-1/-02001	Shelter	7	GB848-85	Washer 6-140HV
2	165F/Z175F-1/-02100	Air Cowling	8	GB5783-86	Hexagon Bolt M6x16
3	GB95-85	Washer 6-100HV	9	165F/Z175F-1/-02200	Blower Base Plate
4	GB93-87	Spring Washer 6	10	165F/Z175F-1/-02002	Top Wind-Guide
5	GB67-8	Button Head cap screw M6x12 M6 x 16	11	GB170-86	Nut M6
6	165F/Z175F-1/-02003	Fan	12	165F/Z175F-1/-02004	Bottom Wind-Guide

Cylinder Head Assembly

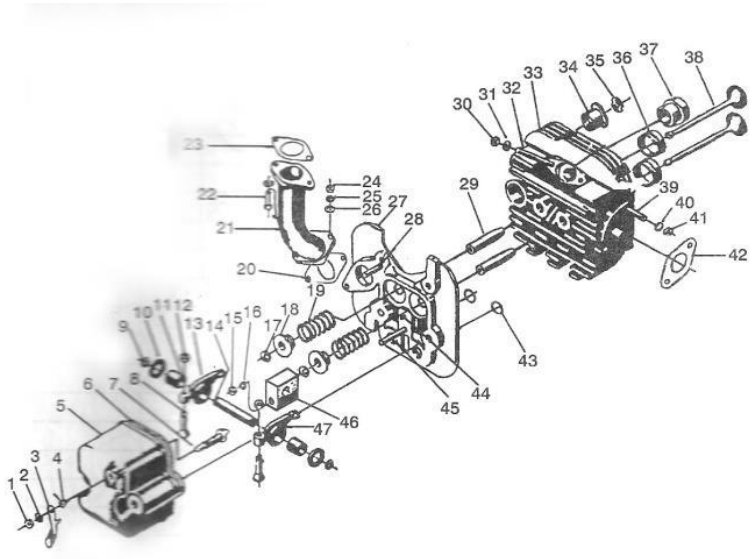
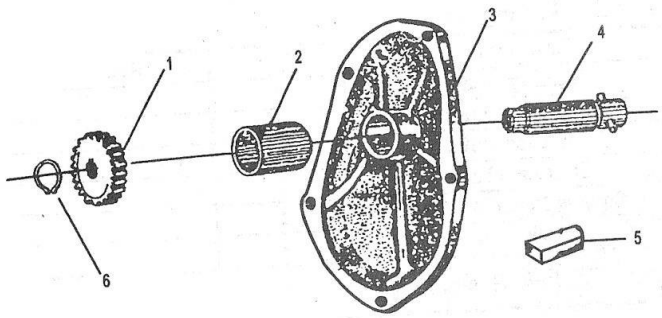


Fig. 4

Staring Unit



Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	165F/Z175F-1/-01202	Starting gear	4	165F/Z175F-1/-01203	Starting Shaft
2	165F/Z175F-1/-01204	Starting gear Bushing	5	165F/Z175F-1/-01205	Square Key C4x10
3	165F/Z175F-1/-01201	Gear Case Cover	6	GB894.1-86	Circlip 12

Cooling System

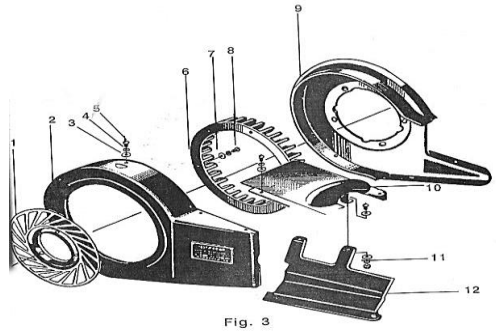


Fig. 3

KisanKraft®
ENGINE-DIESEL
KK-DEH-Z165F/ Z170F/ Z175F

TECHNICAL SPECIFICATION

Model	Z165F	Z170F	Z175F
Tightening torque of connecting rod bolts (N.m)	30—40		45—55
Tightening torque of the cylinder head nuts (N.m)	30—40		45—55
Length (mm)	518	520	535
Width (mm)	321	323	326
Height (mm)	423	425	445
Type of A. C. Generator	FJF-60A		

Note：

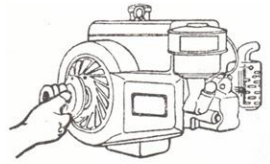
1. Power ratings and specified fuel consumption are based on the following conditions：

Atmospheric pressure	100kpa
Ambient temperature	25℃
Relative humidity	30%

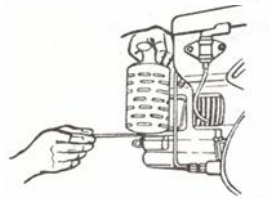
2. The low caloric value of the fuel should not be less than 10000 kcal/kg.

INSTALLATION

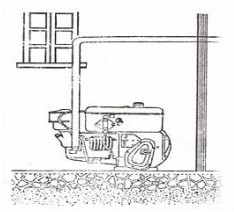
1. Fit the V-belt pulley on the flywheel with three nuts and three spring washers.



2. Slacken the nut on the bottom of silencer and turn the exhaust pipe to the direction as required



3. When the engine is used for stationary purpose in a long period of time, it is necessary to build a concrete foundation. If the engine is installed indoors the exhaust pipe must be lengthened with an extra pipe to conduct the exhaust out.



Selection of the size of pulleys.

The correct selection of the size of the pulleys is important for optimum use of the engine power, and it directly effects the operating condition of the engine and the productivity of the driven machine.

The size of the pulleys may be calculated according to following formulas,

$$D1 = \frac{D2 \times n2}{n1}$$

$$D2 = \frac{D1 \times n1}{n2}$$

Where

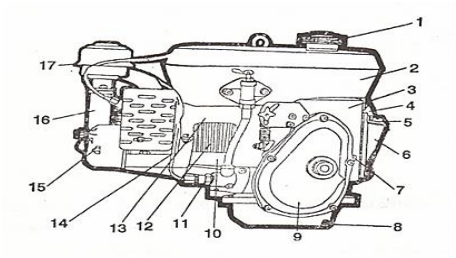
D1：the diameter of the pulley on the engine shaft. (mm)

D2：the diameter of the pulley on the shaft of the driven machine. (mm)

n1：The rotation speed of the engine(r/min)

n2：the rotation speed of the driven machine(r/min)

PART NAME LIST



1. Fuel tank cap
2. Fuel tank
3. Crankcase
4. Blower base plate
5. Plug
6. Rear cover
7. Dipstick
8. Oil drain plug
9. Gear casing cover
10. Bottom wind-guide
11. Delivery valve holder
12. Cylinder liner
13. Top wind-guide
14. Injection pipe
15. Cylinder head stud
16. Intake pipe
17. Air cleaner

KisanKraft®
ENGINE-DIESEL
KK-DEH-Z165F/ Z170F/ Z175F

Sl No	Part No	Part Name	Sl No	Part No	Part Name
1	GB6170-86	Nut M8	20	165F/Z175F-1/-01006	Rear cover
2	GB93-87	Spring Washer 8	21	165F/Z175F-1/-01300	Oil Filter Unit
3	GB95-85	Washer 8-100HV	22	GB95-85	Washer 6 100HV
4	165F/Z175F-1/-01009	Cylinder head nut	23	GB93-87	Spring Washer 6
5	GB8448-85	washer 10-140HV	24	GB6170-86	Nut M6
6	165F/Z170F/Z175F-1/-01010	Cylinder head gasket	25	165F/Z175F-1/-01001	Dipstick
7	165F/Z170F/Z175F-1/-01007	Cylinder Liner	26	GB5783-86	Hexagon bolt M10x10
8	165F/Z175F-1/-01008	Cylinder head stud(short)	27	165F/Z175F-1/-01005	Copper Washer
9	165F/Z175F-1/-01015	Camshaft plug	28	GB5783-86	Hexagon bolt M6x12
10	GB6170-86	Nut M8	29	165F/Z175F-1/-02012	Gasket (Gear case)
10a	GB6170-86	Nut M6	30	165F/Z175F-1/-01200	Starting Unit
11	GB93-87	Spring Washer 8	31	GB93-87	Spring Washer 6
11a	GB93-87	Spring Washer 6	32	GB6170-86	Nut M6
12	GB95-85	Washer 8-100HV	33	165F/Z175F-1/-01016	Round head Cap Screw
12a	GB95-85	Washer 6-100HV	34	GB898-88	Stud AGM8-M6x16
13	GB898-88	Stud AGM10-M10x120	35	165F/Z175F-1/-01003	Governor Lever bushing
14	GB95-85	Washer 10-100HV	36	GB898-88	Stud AGM8-M8x20
15	GB93-87	Spring washer 10	37	165F/Z175F-1/-01014	Injection pump gasket
16	165F/Z175F-1/-01004	Eye Nut	38	GB93-87	Spring Washer 8
17	165F/Z170F/Z175F-1/-01013	Crankcase	39	GB6170-86	Nut M8
18	165F/Z175F-1/-01002	Rear Cover gasket	40	HG4-333-66	O-Seal Ring 20X2.4
19	165F/Z175F-1/-01100	Oil screen Plate	41	165F/Z175F-1/-01011	Cylinder head stud(long)

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Part No	Part Name	Part No	Part Name
1	Governor spring	16	Spring washer 6
2	Washer 5-100HV	17	Screw M6x16
3	Governor plate	18	Fly-Weight
4	Screw	19	Governor spindle
5	Indicating plate	20	Adjusting screw
6	Nut M6	21	Nut M6
7	Screw M6x16	22	Governor fork
8	Washer 6-140HV	23	Set Screw
9	Speed control handle	24	Governor fork shaft
10	Rivet	25	Governor Connecting lever
11	Nut M6	26	Spring washer 6
12	Governor spring seat	27	Nut M6
13	Governor Spring	28	Hexagon bolt M6 x 12
14	Fly-weight support	29	Spring washer 6
15	Fly-Weight pin	16	Spring washer 6

PARTS DIAGRAM & LIST-KK-DE-Z170F/Z175F

Crankcase Assembly.

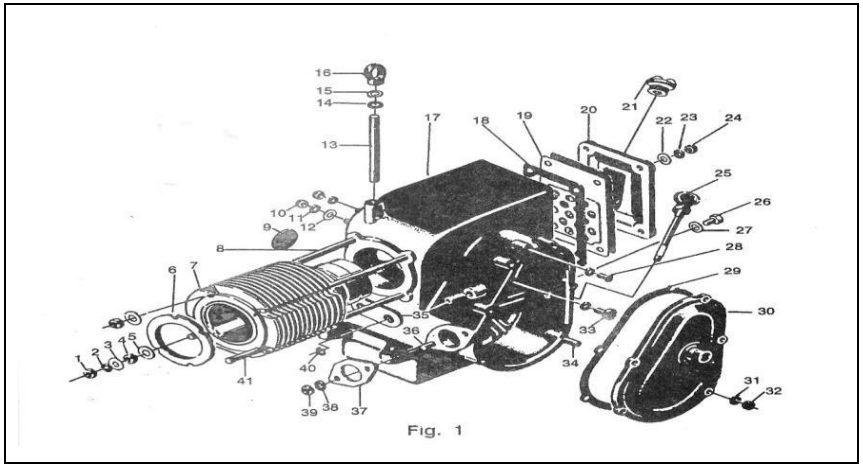
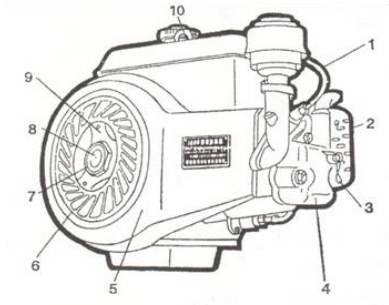
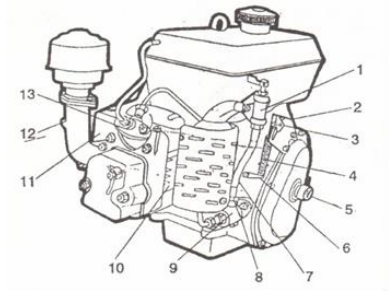


Fig. 1



1. Fuel return pipe
2. Silencer
3. Decompression lever
4. Cylinder head cover
5. Air cowling
6. Shelter
7. Flywheel nut
8. Crankshaft
9. Flywheel
10. Eye nut



1. Fuel cock
2. Indicating plate
3. Speed control handle
4. Adjusting spring
5. Starting gear
6. Governor lever
7. Fuel pipe
8. Pipe connector
9. Injection pump
10. Cylinder head
11. Valve casing
12. Plug
13. Injector

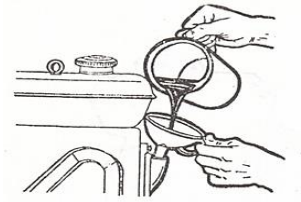
OPERATION

Under ordinary conditions, after unpacking the engine is ready to be put into service, when the following procedures are performed.
If the engine is stored over a long period of time, additional treatments according to special instruction should be done prior to these procedures.

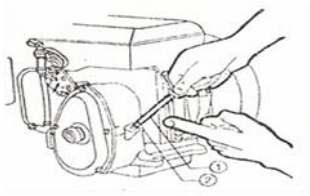
Preparation before starting:

Check the tightness of mounting bolts on the engine wooden bed and fixing bolts of the pulley before taking the following steps.

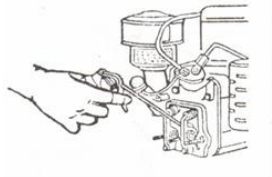
1. Pour clean lubricating oil into sump. Generally, use the Grade HC-8 lubricating oil in winter. Grade HC-11in summer.



2. ① Upper marked line
② Lower marked line
Check the lubricating oil level

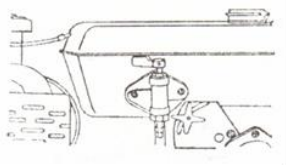


3. Fill the oil to the level between the upper and lower marked line on the dipstick.

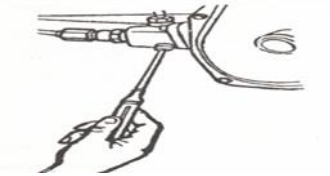


4. Remove the cylinder head cover and fill a little bit of oil into each orifice of the two valve rocker arms and valve guides with an oil-feeder

5. Pour light diesel fuel into the fuel tank. Use Grade “0” in summer, and Grade “0” and Grade “-10” in winter. The fuel should be well filtered and precipitated for more than 50 hours. The fuel containers must be kept clean. Turn the fuel cock to the “OPEN” position.



6. If there is any air in the fuel pipeline, loosen the vent screw on the fuel injection pump until fuel pipe is without air, once bubbles flows out, and retighten the vent screw.



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Part No	Part Name	Part No	Part Name
1	Fuel tank cap	20	Cock handle
2	Fuel tank cap spring	21	Pin 3 x 16
3	Fuel tank cap packing	22	Set Nut
4	Fuel tank strainer	23	Packing ring
5	Fuel tank	24	Sealing washer
6	Gasket (Fuel tank)	25	Fuel filter support
7	Stud M6x20	26	Washer 6-100HV
8	Packing (Fuel cock)	27	Spring washer 6
9	Nut M8	28	Nut M6
10	Spring washer 8	29	Fuel cock valve lever
11	Washer 8-140HV	30	Pipe Adapter
12	Filter element Housing	31	Fuel delivery pipe
13	Spring	32	Fuel injection pump
14	Washer	33	Injector fuel pipe nut
15	O-seal ring 10x 1.9	34	Injector pipe
16	Bearing Plate	35	Pipe Adapter
17	O-seal ring 20x2.4	36	Injector
18	Fuel filter element	37	Fuel return pipe
19	Hollow screw	38	Clamp

Governor System

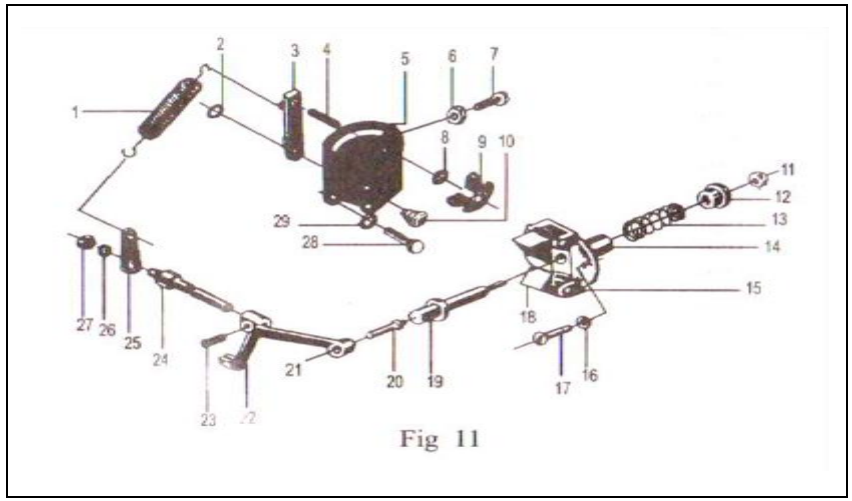

Fig 11

Part No	Part Name	Part No	Part Name
1	Muffler Focus pipe	7	Spring Washer 8
2	Muffler Upper Principal Part	8	Muffler shield
3	Muffler damper	9	Notch wad bolt M5x8
4	Muffler lower principal part	10	Spring Washer 5
5	Washer 8-140HV	11	Washer 5-140HV
6	Nut M8	12	Silencer Assy

Fuel System

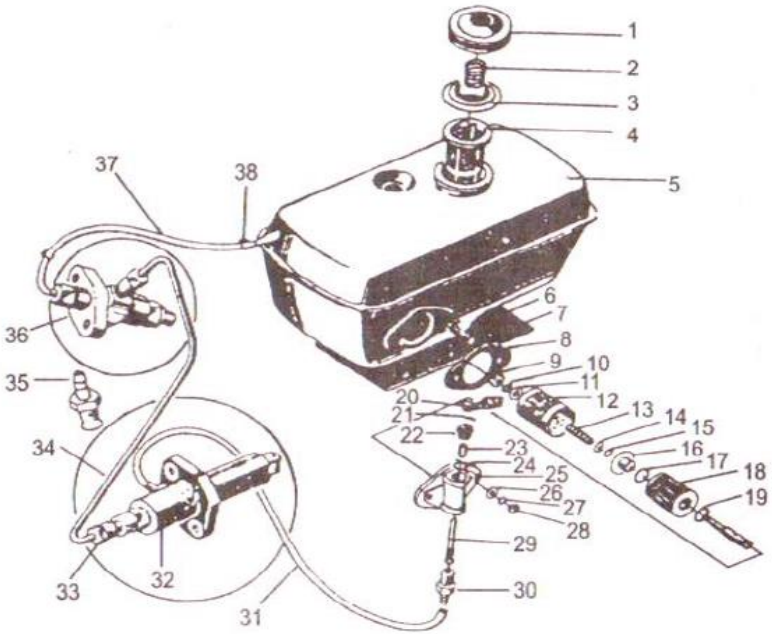

Fig 10

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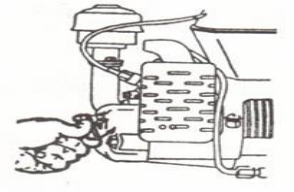
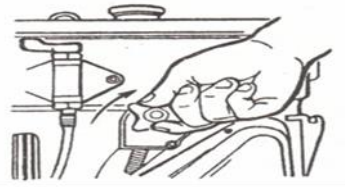
Starting

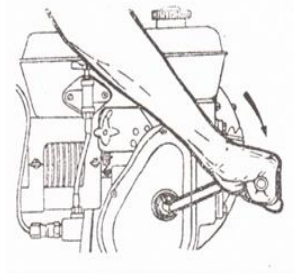
1. Push up the decompression lever with your left hand and hold it.



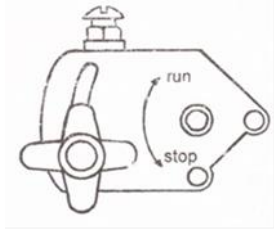
2. Shift the speed control handle to high speed position, indicated on the plate



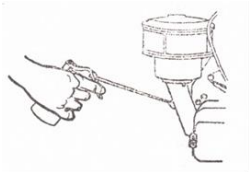
3. Crank the engine with your right hand by means of the starting handle, until a “Chattering” sound is heard from the injector. That means fuel has injected into the combustion chamber. Gradually speed up, when the cranking speed attains its max, suddenly release the decompression lever, but continue to crank the engine 1-2 rounds more. Then the engine will start up running. Once the engine starts up running, the starting handle will disengage and jerk out of itself, and therefore the operator must keep on holding it firmly in order to prevent any incident.



4. As soon as the engine starts up running, shift the speed control handle towards the “stop” position to reduce smoky exhaust. Then shift back to the middle position and let the engine run unloaded for a few minutes.

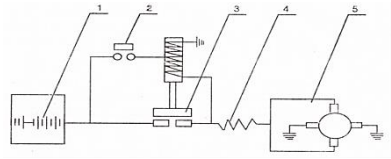


5. When the engine is difficult to start in cold weather, it is advisable to add a bit of engine oil into the oil cup on the intake pipe. Then crank the engine. Other methods may also be used to assist starting.



Electric start

1. Wiring diagram



1. Battery
2. Starting switch
3. Electro-magnet controlled
4. Magnetic field
5. Starter

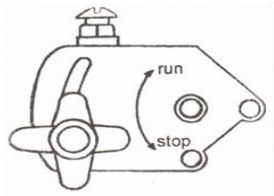
2. Starter

Model	ZQ112
Voltage	12V
Power	0.37kw

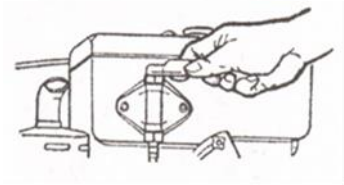
3. The starter should not be operated for more than 5 seconds. The next starting must be done 2 minutes later if the first starting fails. The starting switch should be released immediately after the engine has been started.

Stopping

1. Before stopping, reduce the load and speed of the engine, and let it run idle for a while. Shift the speed control handle towards the “stop” position, then to its extreme position, and the engine stops.



2. Turn the fuel cock to the “CLOSE” position



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Air Cleaner Assembly

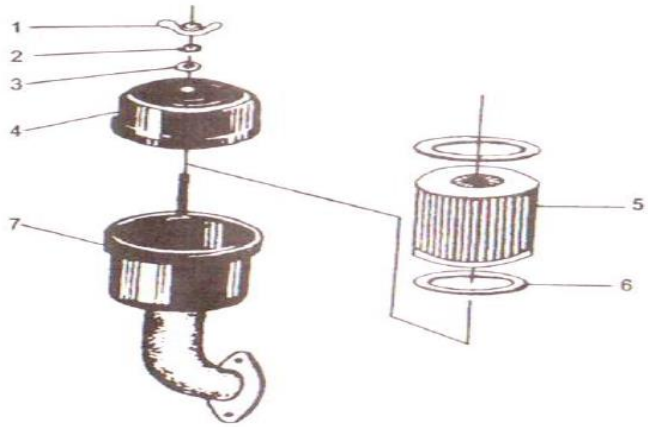

Fig 8

Part No	Part Name	Part No	Part Name
1	Wing Nut M5	5	Air Filter Element
2	Spring Washer 5	6	Shell
3	Washer 5	7	Rubber Washer
4	Upper Shell		

Exhaust Assembly

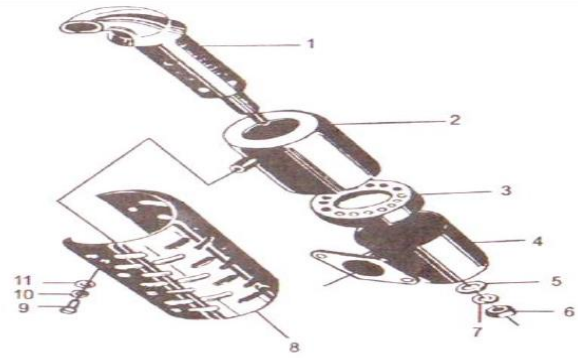

Fig 9

Part No	Part Name	Part No	Part Name
1	Crankshaft timing gear	10	Circlip 35
2	Ball bearing E207	11	Oil Seal 35x60x10
3	Oil Slinger	12	Flywheel
4	Key C5x8	13	Lock Washer
5	Crankshaft	14	Flywheel fixing nut
6	Flat Key	15	Spring washer 8
7	Gasket (Bearing Housing)	16	Hexagon bolt M8x20
8	Bearing housing	17	Stud AM8x30
9	Ball bearing E307	18	Nut M8

Camshaft Equipment

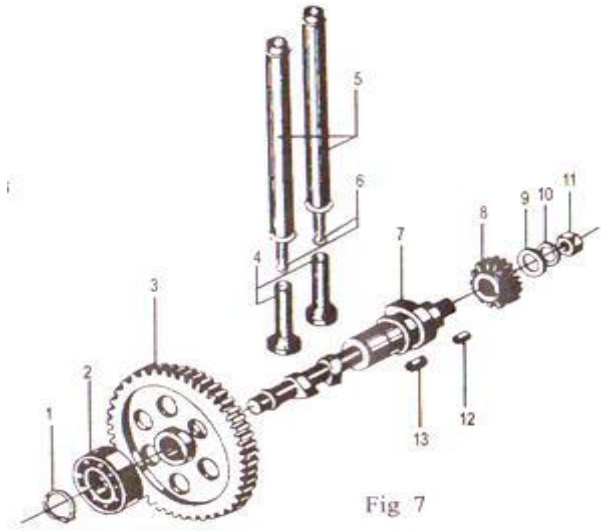

Fig 7

Part No	Part Name	Part No	Part Name
1	Circlip 25	8	Driven starting gear
2	Ball Bearing E205	9	Washer 10-140HV
3	Camshaft timing gear	10	Spring washer 10
4	Valve tappet	11	Nut M10
5	Push rod sleeve	12	Key C5x10
6	Valve push rod	13	Key A6x9
7	Camshaft	8	Driven starting gear

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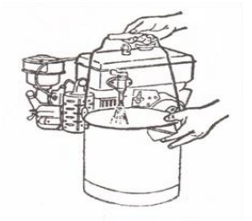
3. If the engine is not used for a long time, it is necessary to drain out the lubricating oil and fuel.

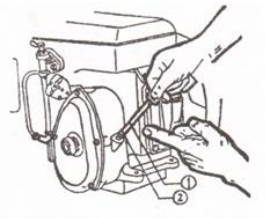


4. If the engine is to be stored for a long time, keep its intake and exhaust valve closed to prevent the cylinder from getting rust. Turn the flywheel until the “O” mark on its periphery in line with the “Timing Mark” on the Air cowling.

Cautions during operation

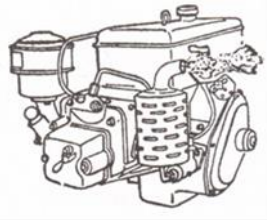
1. After the engine is started, run it for 3-5 minutes at low speed without any load. Then load the engine.

2. After 8 hours of continuous running, stop the engine and recheck the lubricating oil level. If it falls below the lower marked line on the dipstick, it is necessary to replenish clean oil

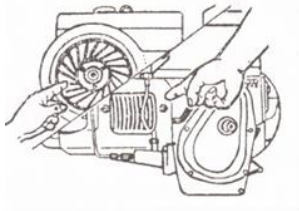


① Upper marked line
② Lower marked line

3. Pay close attention to the exhaust colour and the noise of the engine. If the engine emits dark smoke or abnormal noise, stop and check the engine immediately. Greyish exhaust indicates complete combustion



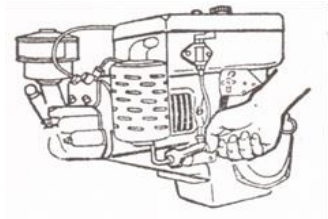
4. Keep the entrance and exit of cooling-air and passages between all cooling-fins freely.



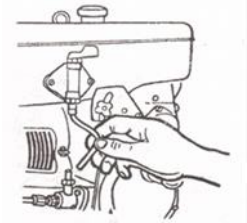
Emergency stop

When the engine is started or is operating normally, suddenly the engine runs away and may emit abnormal noise. It becomes impossible to stop the engine by the above mentioned methods .The following methods are recommended for emergency stop.

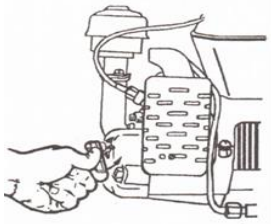
1. Immediately loosen the joint nut of the injection pipe



2. Pull out the fuel pipe.



3. The easiest way is to push up the decompression lever.



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Part No	Part Name	Part No	Part Name
1	Connecting rod nut	8	oil scraper ring
2	connecting rod bolt lock plate	9	Piston
3	connecting rod cap	10	Compression ring
4	Connecting rod bearing shell	11	Chrome plated Compression ring
5	Connecting rod bearing shell	12	Piston pin snap ring
6	connecting rod	13	Piston pin
7	connecting rod bolt	14	Connecting rod busing

Crankshaft and Fly Wheel Assembly

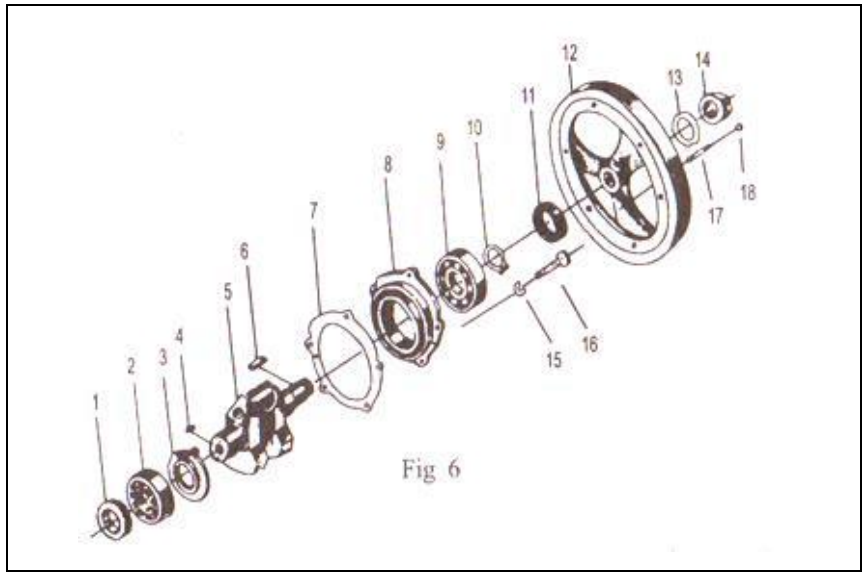

Fig 6

Part No	Part Name	Part No	Part Name
16	Spring Washer 8	37	O-seal ring 20 x 2.4
17	Valve collect	38	Pin B4 x 10
18	Valve spring retainer	39	Stud AM8x 35
19	Valve spring	40	Rocker Arm shaft support
20	Gasket (AIR INTAKE PIPE)	41	Exhaust valve rocker arm
21	Valve casing		

Piston and Connecting Rod Assembly

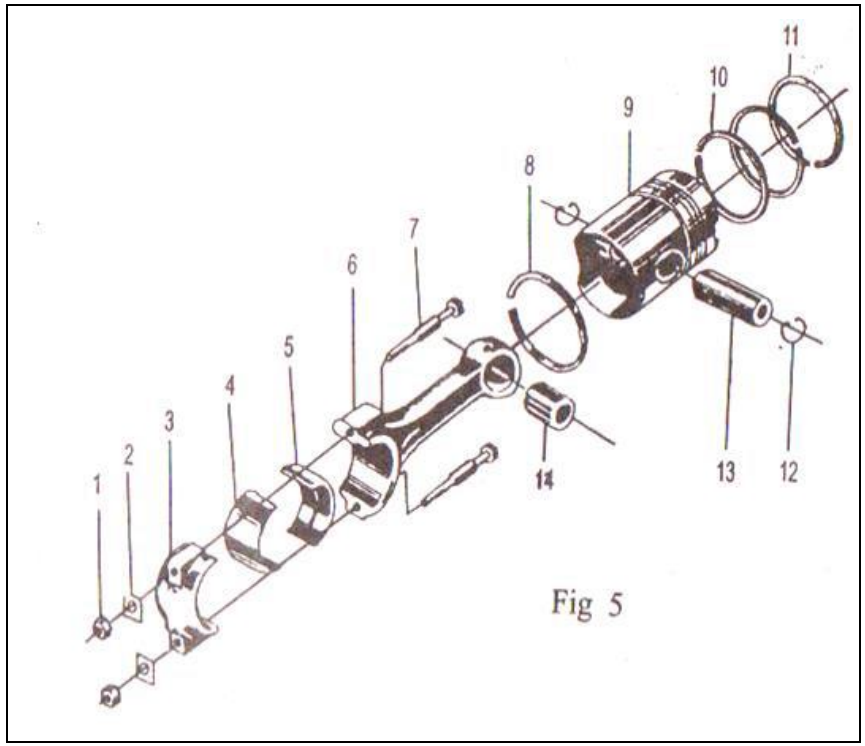

Fig 5

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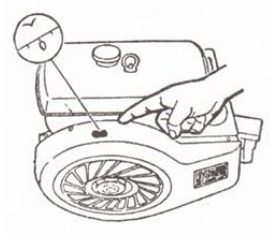
ADJUSTMENT

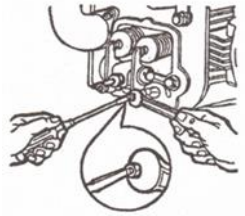
Adjustment of Valve Clearance:

Adjust the clearance (cold) of the intake and exhaust valve to 0.1-0.2 mm. This is very important for the normal operation of the engine.

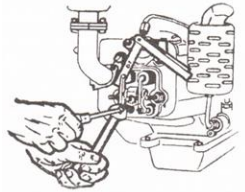
1. Remove the cylinder head cover.
2. Turn the flywheel until the “O” mark on its periphery lines with “Timing Mark” on the air cowling.



3. Slacken off the set nut with a wrench and turn the adjustment screw on the rocker arm with a screwdriver (as shown).



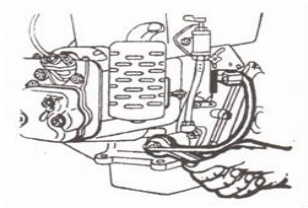
4. Adjust the valve clearance to 0.1-0.2mm with the help of a feeler gauge

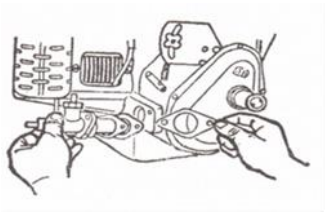


5. After adjustment, hold the adjusting screw with drive while tightening the set nut.
6. Check the valve clearance once again by means of a feeler gauge.

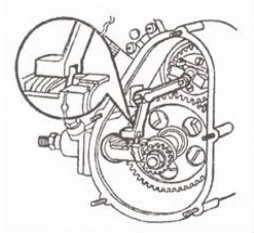
Adjustment of the injection timing:

1. Disconnect the injection pipe, turn the injection pipe with its open end upwards, push up the decompression lever and turn the flywheel slowly until fuel just begins to flow out of the open end of the pipe. Then the graduation on the flywheel periphery matches with the “Timing Mark” of the air cowling in the degree of the advance angle of injection.
2. The advance angle of injection may be adjusted by increasing or decreasing the number of shims between the pump flange and the mounting surface of the gear case, according to whether the delivery is to be delayed or advanced. Generally increase or decrease 0.1 mm shim, the injection timing will be delayed or advanced 1º. The injection timing of this engine is 20º-24ºbefore T.D.C

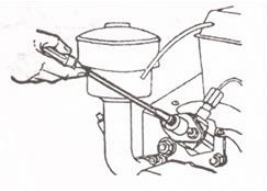




3. After adjusting, mount back the injection pump onto the crankcase. While doing so, it is necessary to pay attention so that the pump fork will be inserted into the groove of the governor lever. This should be checked once again, in order to prevent the engine from “running away” resulting from possible mismounting.



Adjustment of the opening pressure of the injector



Unscrew the lock nut and turn the adjusting screw which varies the compression of the spring by means of a screwdriver. Tighten it, the pressure will be increased and vice versa.

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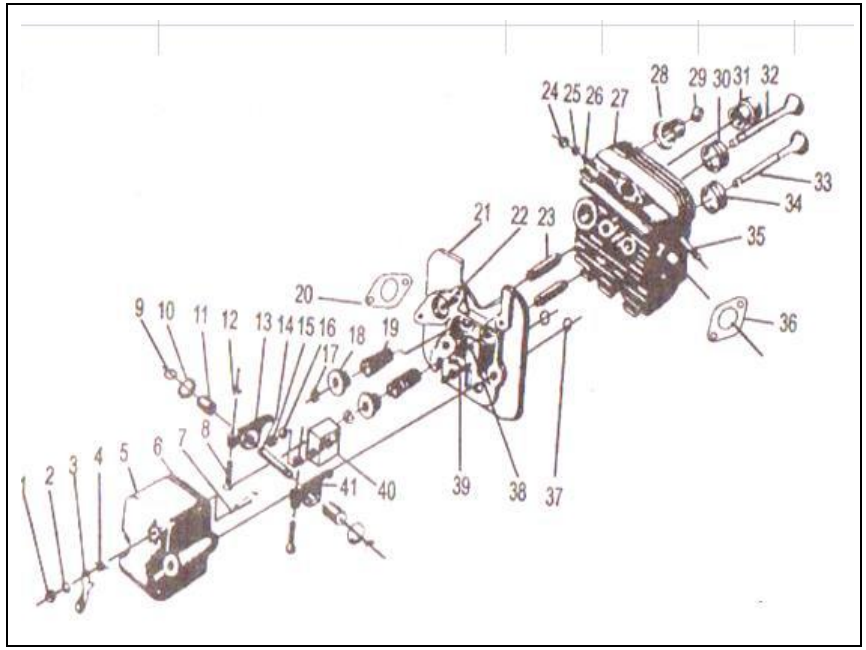
Cylinder Head Assembly



Part No	Part Name	Part No	Part Name
1	Nut M6	22	Stud M6 x 12
2	Spring Washer 6	23	Valve Guide
3	Decompression lever	24	Nut M8
4	Decompression lever spring	25	Spring washer 8
5	Cylinder head cover	26	Stud M8x 70
6	Cylinder head cover Gasket	27	Cylinder head
7	Decompression lever shaft	28	Heat insulating sleeve
8	Valve rocker arm adjusting screw	29	Heat insulating washer
9	Circlip 10	30	Inlet valve seat
10	Washer	31	Combustion chamber insert
11	Valve rocker arm bushing	32	Inlet valve
12	Valve adjusting set nut	33	Exhaust valve
13	Inlet valve rocker arm	34	exhaust valve seat
14	Valve rocker arm shaft	35	Stud M6 x 16
15	Nut M8	36	Gasket (silencer)

Part No	Part Name
1	Starting Gear
2	Starting gear bushing
3	Gear case cover
4	Starting shaft
5	Square key C4 x 10
6	Circlip 12

Cooling System

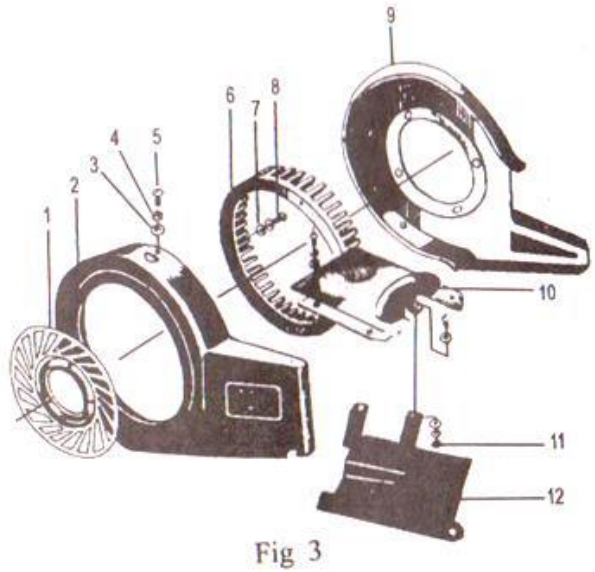


Fig 3

Part No	Part Name	Part No	Part Name
1.	Shelter	7.	Washer 6-140HV
2.	Air Cowling	8.	Hexagon bolt M620
3.	Washer 5-140HV	9.	Blower Base Plate
4.	Spring washer 5	10.	Top Wind-Guide
5.	Button head cap screw M5x10	11.	Nut M5
6.	Fan	12.	Bottom Wind-guide

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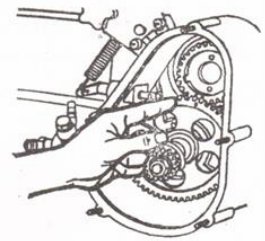
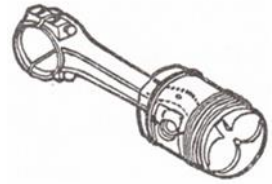
Precautions during re-installing the Engine

1. While re-installing the crankshaft into crankcase, it is absolutely necessary that the tooth-mesh mark on the crankshaft timing gear must be lined up with the mark on the camshaft timing gear.

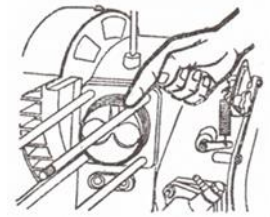


2. When re-installing the piston connecting rod assembly, be sure the marks on the connecting rod and connecting rod cap are matched. The matching marks, the oil-hole in the connecting rod small end and the combustion chamber gap on the piston top should be on the same side.

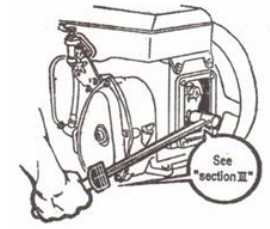


3. Before installing the piston rings, smear the piston surface and the ring grooves with clean lubricating oil. The piston ring gaps should be staggered off 120° with respect to each other. NO piston ring gap should be allowed to face the direction of the piston pin.

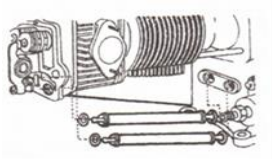
4. When installing the piston connecting rod assembly into the crankcase, set the combustion chamber gap on the top of the piston upwards



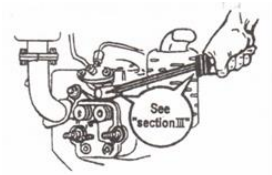
5. The connecting rod bolts are tightened by turn. The torque must be of need, then secure the lock plate on the connecting rod bolts.



6. Before installing the cylinder head the push rod sleeves and their o-seal rings should be fitted in the recesses on the cylinder head and the crankcase.



7. While re-installing the cylinder head the cylinder head nuts are to be tightened one by one in a diagonal order and with a torque of need .Set the Clearance between the top of the piston and cylinder head accordingly,(See "APPENDIX Ⅲ 8") when it is at T.D.C.



MAINTENANCE

Maintenance of the New Engine:

1. Run the new engine for 20 hours under comparatively light load.
2. If a new engine or when the engine which has been spared from service for some time is put into service, better renew the lubricating oil after 40 hours of operation. Do it again after another 60 hours and then once in every 100 hours.
   Renew the lubricating oil as follows：
   a. Screw off the drain plug on the sump and drain out the lubricating oil.
   b. Remove the rear cover and cleanse the sump with diesel oil.
   c. Re-Installing the rear cover, fill with clean oil.
   d. Check valve clearance, adjust it if necessary.

After every 8 hours of operation:

1. After 8 hours of continuous running, stop the engine and check the lubricating oil level. If it falls below the lower marked line on the dipstick, replenish clean oil.
2. Check for leakage. All leakages should be corrected.
3. Clean the dust gathered on the openings and the passages between the cooling fins.
4. Make sure to keep the outline of the engine clean.
5. Remove the cylinder head cover, fill a little bit of engine oil into the orifice on the intake and exhaust rocker arms

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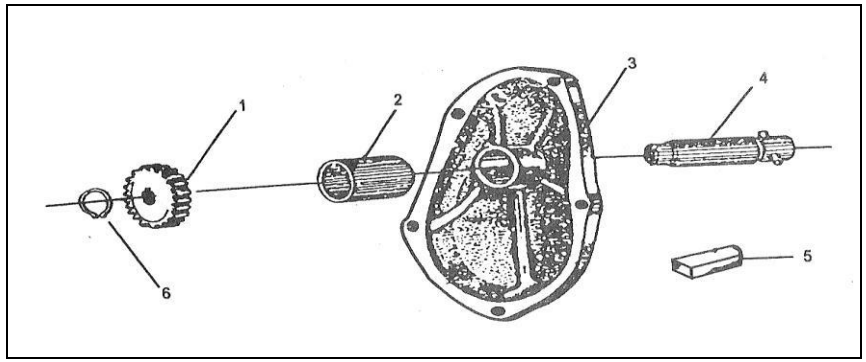
Part No	Part Name	Part No	Part Name
1	Nut M6	19	Washer 6-140HV
2	Spring washer 6	20	Spring washer 6
3	Washer 6-140HV	21	Nut M6
4	Cylinder head nut	22	Dipstick
5	Cylinder head nut washer	23	Hexagon bolt M6x12
6	Cylinder head gasket	24	Gasket (Gear Case)
7	Cylinder liner	25	Starting unit
8	cylinder head stud (A)	26	Roundhead cap screw
9	Camshaft plug	27	Hexagon bolt M10x12
10	Stud AM8x90	28	Copper washer
11	Washer 8-140HV	29	Stud AM6x16
12	Spring washer 8	30	Bearing 7943/6(Governor fork shaft)
13	Eye nut	31	Stud Am8x35
14	Crankcase	32	Injection pump gas
15	Rear cover gasket	33	Spring washer 8
16	Oil Screen Plate	34	Nut M8
17	Rear cover	35	O-Seal ring 20 x 2.4
18	Oil Filter Unit	36	Cylinder head stud (B)

Starting Unit



PARTS DIAGRAM & LIST- KK-DEH-Z165F

Crankcase Assembly

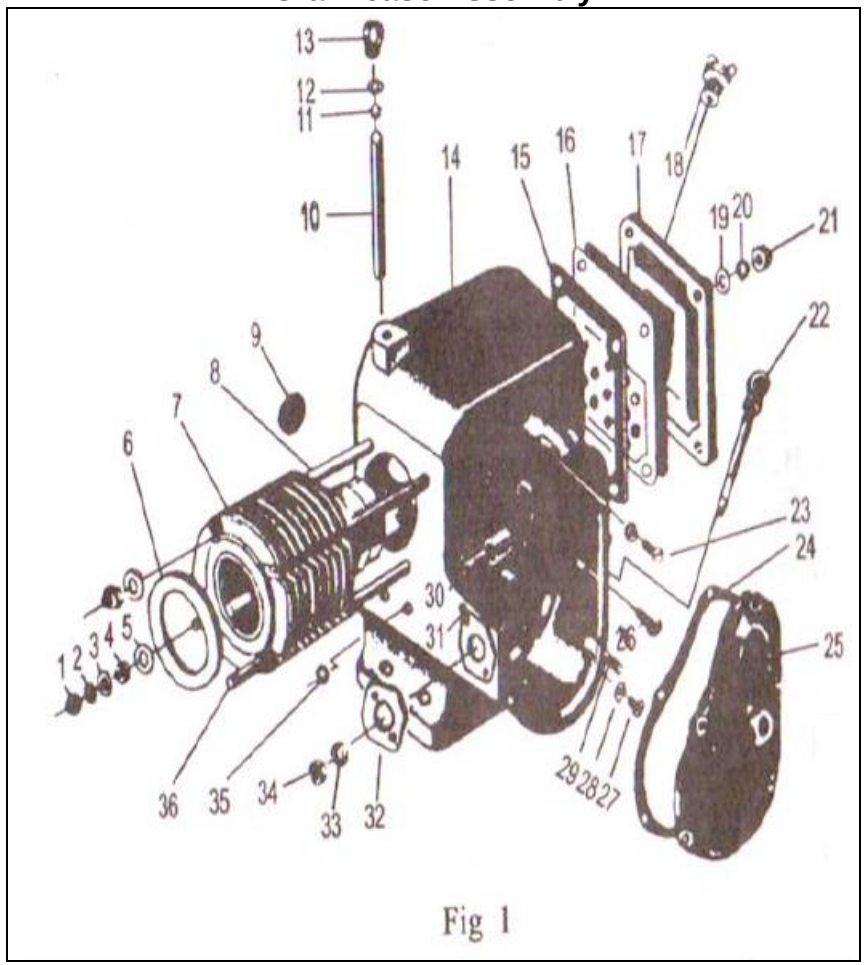


Fig 1

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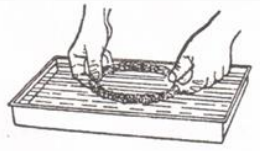
.After every 100 hours of operation:

1. Clean the fuel screen of the fuel tank.

2. Wipe off dust gathered on the air filter paper cartridge with a soft brush. Brush it frequently under dusty conditions. Renew the filter cartridge if it is chocked or damaged.

3. Dismount the screen from the air cleaner and wash it in clean fuel. (In case the engine is operating in a dusty atmosphere, it's necessary to clean the filter every 4 hours of operation.)



4. Clean the crankcase and renew the lubricating oil.
5. Check and adjust the valve clearance.
6. Check the tightness of bolts； e.g. the mounting bolts on the wooden bed and the fixing bolts of the pulley.

Every 500 hours of operation:

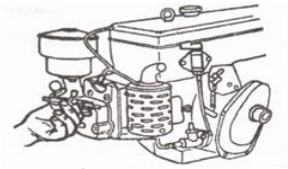
Besides the procedures listed in "Maintenance after every 100 hours", the following points are to be practiced:
1. Wash up the fuel tank and fuel cock.
2. Clean up the exhaust pipe and silencer.
3. Clean the fuel filter element with fuel or kerosene (paraffin). Renew it if damaged.
4. Wash the crankcase with clean fuel.
5. Clean the nozzle.
6. Check the valve for tightness.
7. Adjusting the valve clearance, if necessary.
8. Check the piston ring.
9. Renew the air filter paper cartridge.

Procedures for cleaning the nozzle are as follows:

The nozzle composes of a needle valve and a nozzle body. There are precisely mated and lapped with each other. Therefore, in the course of dismantling and assembling, special attention must be paid to the cleanliness of these parts to ensure the normal operation of

the engine. Take care of the matching surface of the needle valve, nozzle body as well as the nozzle hole is not damaged.

1. In order to remove the injection pipe, take out joint nut and two set nuts of injector, also take off the clamp plate and the injector from the engine.

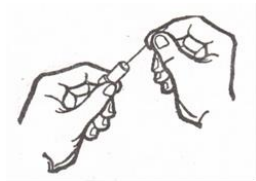


2. Clamp the injector in a vice between two copper or aluminium sheets and remove the cap nut.

3. Take off the nozzle, draw out the needle valve and soak them in clean fuel.

4. If the nozzle is stuck with the cap nut, don't try to force it out. Take out the needle valve first and lightly tap the nozzle body out. If it is difficult to pull out the needle valve, use pliers to turn the needle valve and slowly draw it out, take care to avoid scratches on the matching surface.

5. Clean the nozzle orifices with a chip dipped in fuel. Clean off the carbon deposited on the nozzle body with a chip or a clean rag soaked in fuel.



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Serial number	Part number				Spare part name	Qty	Remarks
	Z165F	Z170F	Z175F	No.			
5.	165F		R175A	14100	Nozzle body (with needle valve)	1	Model ZS4S1

Ⅲ. FITTING CLEARANCES & WEAR LIMITS OF THE MAIN MOVING PARTS

No	Fitting parts	Recommended clearance (mm)			Limits of Wear (mm)
		Z165F	Z170F	Z175F	
1.	Crankpin of crankshaft with connecting rod bearing.	0.05 - 0.105	0.05 - 0.111	0.05 - 0.102	0.23
2.	Clearance between the piston pin and the piston pin bore	0 - 0.015	0 - 0.015	0.002 - 0.020	0.04
3.	Piston pin with connecting rod bushing	0.02 - 0.041	0.02 - 0.041	0.025 - 0.046	0.12
4.	Piston skirt with cylinder liner	0.11 - 0.165	0.145 - 0.195	0.125 - 0.180	0.4
5.	Open gap of all piston compression ring	0.10 - 0.35		0.10 - 0.40	1
6.	Open gap of oil scraper ring	0.10 - 0.35		0.10 - 0.40	1
7.	Top of valve to cylinder head surface	1.8 - 2.2			1
8.	Cylinder head and top of piston when it is at the TDC.	0.50 - 0.65	0.7 - 0.85	0.7 - 0.9	

APPENDIX

Ⅰ. LIST OF TOOLS SUPPLIED WITH THE ENGINE

Serial number	Part number				Tool name	Qty
	Z165F	Z170F	Z175F	No.		
1.	165F		Z175F	15300	Tool box	1
2.	165F		Z175F	15005	10×14 Box spanner	1
3.	165F		Z175F	15100	Starting handle	1
4.	165F		Z175F	15004	Flywheel nut wrench	1
5.					4″ Screw driver	1
6.					Double-open-end spanner10×8	1
7.					Double-open-end spanner10×12	1
8.					Double-open-end spanner19×17	1
9.	GB 898-88				Stud AGM8-M8×40	2

Ⅱ. LIST OF SPARE PARTS SUPPLIED WITH THE ENGINE

Serial number	Part number				Spare part name	Qty	Remarks
	Z165F	Z170F	Z175F	No.			
1.	165F		R175A	-04003	Compression ring	3	
2.	165F		R175A	-04004	Oil scraper ring	1	R175A-04100
3.	165F		R175A	-04008	Connecting rod bearing (Standard)	1set	R175A-04009
4.	165F	Z170F	R175A	07100	Paper filter element	1	R175A-07300

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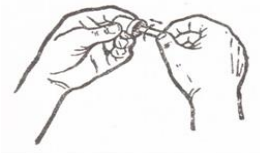
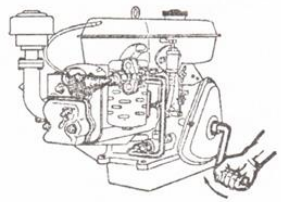
6. Wipe the needle valve with a clean rag or brush soaked in fuel. Brush off carbon deposited on the needle valve pin end.

7. Wash the nozzle body and needle valve in clean fuel.

8. Draw out the needle valve, smear a little bit of lubricating oil on its surface, then, insert it onto the nozzle body and lap it few times, then wash it with clean fuel.



9. Reset the nozzle onto the injector.
10. Before the injector is installed on the cylinder head, connect it with the injection pipe to see whether it sprays well. Fuel sprayed out should be well atomized. If drippings are around the nozzle hole, check the causes carefully. Then, dismantle, clean and lap the nozzle or renew it if necessary.

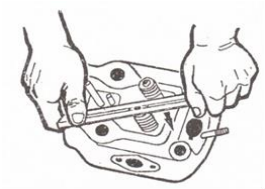


Procedures for checking the valve tightness:

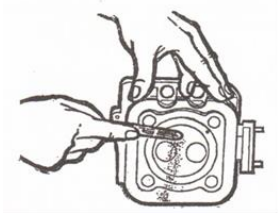
1. Remove the cylinder head cover.
2. Remove the injector.
3. Unscrew the set nut of the rocker arm shaft support and take off the rocker arm.
4. Unscrew the cylinder head nuts gradually in turn with a box spanner and remove them. Then take off the cylinder head.

5. Fill fuel or kerosene (paraffin) into the intake and exhaust passages to check the valve tightness. If leakage is found, dismantle, decarbonize and relap the valves.

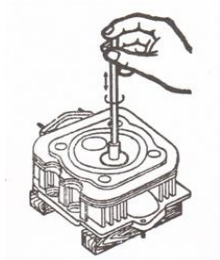
6. Remove the valve collets by compressing the valve spring. Then take off the valve and valve spring.



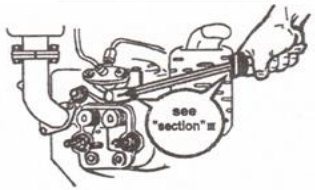
7. Scrape off the carbon deposited on the valves and valve seats with a chip, and clean with fuel. If serious pitting is found on the valve seat, repair with a reamer and then relap it.



8. Smear a little bit of lapping paste on the valve seat and relap the valve by means of a lapping tool, care must be taken to prevent the lapping paste from entering into the valve guides. When reassembling the valves should be installed back their matching seats.



9. After lapping, wash the valves, valve seats and valve guides with fuel or kerosene (paraffin). Recheck the valve tightness.
10. Reassemble these parts. Tighten the cylinder head nuts with a box spanner. The tightening torque should be needed.



Procedures for checking the piston ring:

The worn piston ring will cause leakage in the cylinder, excessive consumption of lubricating oil and fuel and a reduction of the output of the engine.

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Cause	Remedy
3. Clearance between piston and liner too large.	Repair or replace the piston or liner.
C. White exhaust may be water or air within the fuel system and the fuel injected is not completely ignited. 1. Water in fuel 2. Needle valve seized	 Clean fuel tank and filter. Replenish fuel. Replace the needle valve

PRESERVATION & STORAGE OF THE ENGINE

If the engine is to be put out of service for a long period of time, it's necessary to preserve according to the following procedures.

1. Drain out the fuel and the lubricating oil.
2. Clean dust and oil sludge on the engine.
3. Take 1.2kg of filtered lubricating oil of Grade Hc-8 and heat it to about 120℃ until all bubbles on the surface of the oil disappear (That is called dehydrated oil.) Pour into the crankcase about 1kg of this treated oil, and turn the engine until the surface of all the moving parts are splashed with this oil. Then drain it out.
4. Pour into the intake pipe a little bit of this dehydrated oil, turn the engine to make sure that the piston, cylinder liner and the valve seat are all covered with a layer of this oil. Then set the valve at the "close" piston, in order to isolate the inside of the cylinder from outside.
5. Remove the cylinder head cover, smear the rocker arm and other parts with the treated oil by brush evenly.
6. Cover the air filter, exhaust pipe and fuel tank in order to prevent any dust from getting in.
7. The engine so preserved should be stored in a room of good ventilation and low humidity but without any dust.

Cause	Remedy
B. Faulty compression.	Refer “Engine cannot start”.
C. Engine speed is too low	Readjust the speed adjusting spring.
D. Air cleaner cartridge choked	Wipe off dust or renew.

Engine stalls

Cause	Remedy
A. Faults in fuel system：	
1. No fuel in tank.	Fill the tank with fuel
2. Fuel pipe line or filter choked	Clean the fuel pipe line or filter, replace if necessary
3. Air in fuel system	Bleed.
4. Needle valve seized. (If little or no “chattering” is heard from the injector while turning the starting shaft of the engine.)	Clean and relap. Renew if necessary.
B. Air cleaner choked.	Clean or replace.
C. Piston seized owing to the engine over- heated. (Unusually stiff to turn after the engine has stalled for a while.)	Dismantle and repair.
D. Engine load has increased suddenly.	Reduce the load
E. Connecting rod bearing seized owing to the oil hole on the oil slinger choked.	Dismantle and check. Clean the oil slinger and the oil passage, replace the connecting rod bearing if necessary

Smoky Exhaust

(Grayish color exhaust shows the engine is in normal operation, while smoky or misty exhaust calls for the following remedy.)

Cause	Remedy
A. Dark exhaust is a sign of incomplete combustion.	
1. Engine overloaded.	Reduce the load.
2. Air cleaner choked or leakage in air cleaner.	Clean or repair the air cleaner
B. Bluish smoke is a sign of burning lubricating oil.	
1. Oil level in sump too high.	Drain off excessive oil.
2. Piston rings worn or stuck.	Clean or replace the piston rings if necessary.

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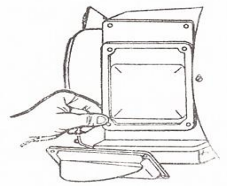
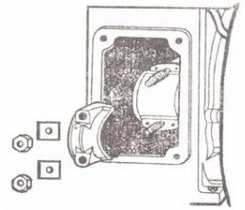
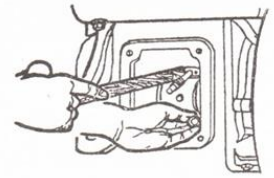
1. Remove the cylinder head.



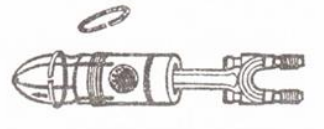
2. Remove the rear cover of the crankcase when dismantling; take care not to damage the rear cover gasket.



3. Unscrew the connecting rod nuts and take off the connecting rod cap.



4. Push the piston connecting rod assembly out of the cylinder bore from the cylinder head side. Be careful of this operation, not to damage the crankpin, the cylinder liner and the piston.



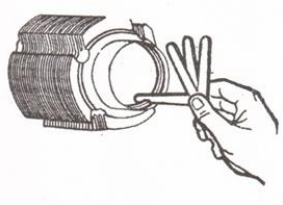
5. Dismantle the piston rings by means of a piston ring expander.

6. After dismantling, soak the piston rings in fuel and decarbonize with a chip or a brush. Then wash rings in diesel oil.

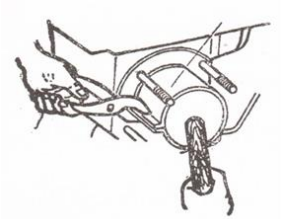
7. Scrape off the carbon deposited with a chip both on the piston surface and in the ring grooves. Then clean the piston in diesel.

8. The upper part of the cylinder should be decarbonized as well.

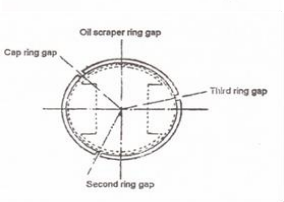
9. Check the piston ring gap by placing a ring into the cylinder liner about 20mm. Renew the piston ring if its gap is over 1mm. It is necessary to refit the rings on the piston with a ring expander. The chrome-plated ring should be fitted in the top ring groove.



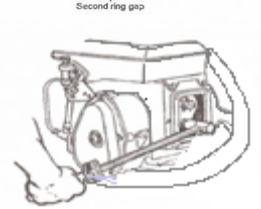
10. Clean the piston connecting rod assembly and smear with a little clean oil before re-installing into the cylinder. All the piston rings must be compressed in a guide tool and place it on the top of the liner, and then tap lightly the assembly into the cylinder liner with a wooden handle.



11. Set the oil hole of the connecting rod small end upwards and position the piston ring gaps staggered with respect to each other.



12. Reinstall the connecting rod cap, tighten the connecting rod bolts. The tightening torque should be needed.



Cautions：

1. Before assembling, wash up all parts carefully with fuel and smear the machining surface with clean lubricating oil.
2. When reinstalling, the connecting rod cap, plain bearing shells and connecting rod bolts, the matching marks on the connecting rod and connecting rod cap should be matched and kept upward.
3. Tighten the connecting rod nuts evenly with a box spanner.

KisanKraft®
ENGINE-DIESEL
KK-DEH-Z165F/ Z170F/ Z175F

TROUBLE SHOOTING

The engine cannot start

Cause	Remedy
A. Weather too cold	Add a few drops of lubricating oil into the hole on intake pipe.
Faults in fuel system：	
1. Water in the fuel.	Clean up the fuel tank, filter and fuel pipe. Fill clean fuel.
2. Fuel too viscous to flow.	Use recommended grade or heat the fuel.
3. Air within the fuel system.	Bleed.
4. Fuel injected is too little or no injection or fuel spray not well atomized.	Check the position of speed control handle or check and wash nozzle, check and repair injection pump.
B. Valve clearance incorrect	Readjust.
C. Grade of lubricating oil incorrect	Drain off the sump and fill with specified grade of oil.
D. Faults in lack of compression：	
1. Leakage in cylinder head gasket.	Tighten the nuts evenly in sequence. The torque of tightening these nuts should be done according to the specifications given. Check and replace the gasket if necessary.
2. Ring gap too large.	Adjust the gap
3. Leakage due to all ring gaps shifting into one direction.	Stagger off the ring gaps 120°with respect to each other.
4. Piston ring seriously stuck or broken	Wash up with fuel or replace.
5. Leakage in valves	Check the seating of the valves. Relap. Test for leakage by means of kerosene.
6. Valve stem seized	Wash valve stem and guides

Insufficient output

Cause	Remedy
A. Troubles in fuel system：	
1. Fuel system choked.	Check the fuel cock whether it is fully open or clean fuel filter and pipeline.
2. Faulty injection pump.	Check, repair or replace the pump.
3. Faulty injector：	
a) Opening pressure incorrect	Readjust to 14±1MPa.
b) Nozzle hole carbonized	Clean the nozzle hole
c) Needle valve seized	Replace the needle valve
d) Needle valve and nozzle body worn.	Replace the needle valve and nozzle, whichever is necessary