

Product	Paddy Transplanter	KisanKraft Invoice Date	
Brand	KisanKraft	KisanKraft Invoice No.	
Model	<input type="checkbox"/> KK-RRT-4R. <input type="checkbox"/> KK-RRT-8R		
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	

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- (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

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

KisanKraft Limited (formerly known as KisanKraft Machine Tools P Ltd)

🌐: www.kisankraft.com

✉: info@kisankraft.com

☎: +91.80. 22178200

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 warranties hereunder, including, but not limited to, any implied warranty of merchantability must be brought within the applicable warranty period.

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What you must do to obtain limited warranty service: To obtain performance of any obligation under this warranty for failure during the applicable warranty period, deliver the defective product, to the nearest Authorized Dealer. KisanKraft Limited, its manufacturers and its dealers reserve the right to inspect the claimed defective part(s) to determine if the malfunction is the result of a defect covered by this warranty. Please note that the decision of KisanKraft Ltd with respect to any warranty claim is final.

Receipt is required for availing warranty services

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

Our Products	<ul style="list-style-type: none"> ◆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◆
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User Manual



KisanKraft Limited

(Formerly known as KisanKraft Machine Tools Pvt. Ltd)

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

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♦ Jammu ♦ Guwahati ♦ Shimla ♦ Hinudpur ♦ Hubli ♦ Hyderabad ♦
♦ Jaipur ♦ Karnal ♦ Kolkata ♦ Lucknow ♦ Patna ♦ Pune ♦ Raipur ♦

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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.



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)
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Injector

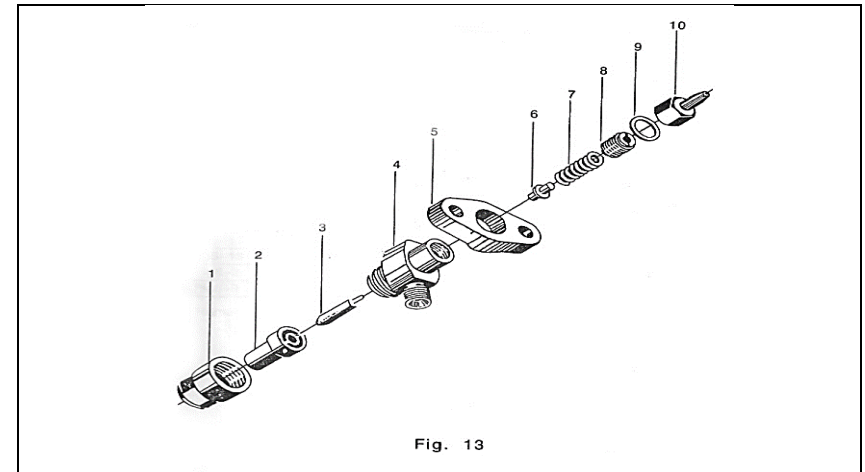


Fig. 13

SI No	Part No	Part Name	SI 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

Injection Pump

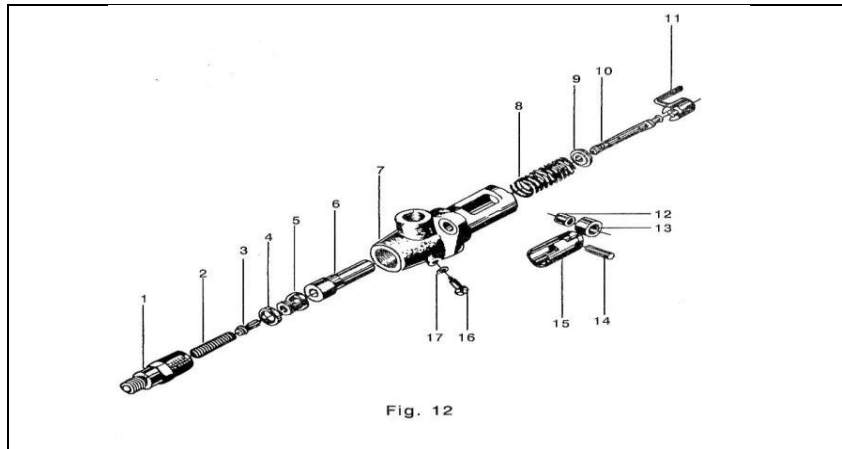


Fig. 12

SI No	Part No	Part Name	SI 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	Delivery Valve Seat	14	165f/Z175f-1/13007	Roller Pin
6	165f/Z175f-1/13102	Barrel	15	165f/Z175f-1/13004	Roller Holder
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			

BEFORE GETTING STARTED

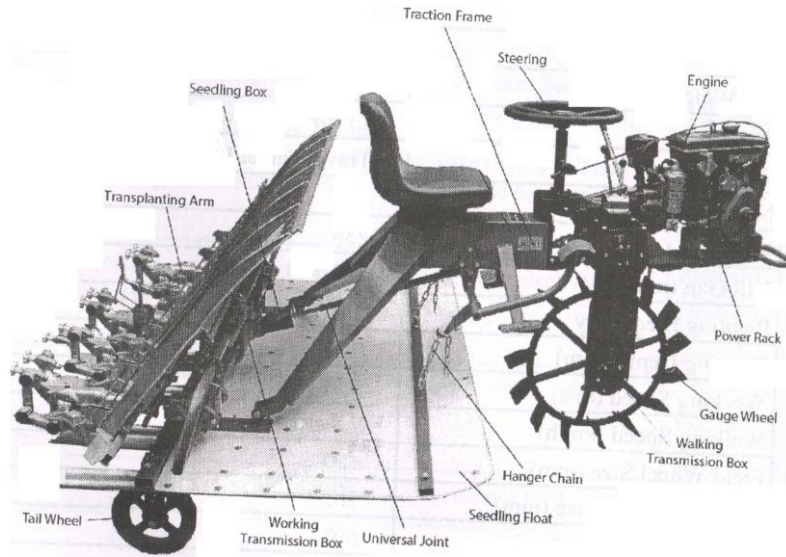
Before using the machine for the first time be sure to read through this manual in order to avoid wrong operation. Please preserve this manual properly so that it can provide you with information whenever necessary.

SAFETY SYMBOLS

		This sticker is placed in the middle of belt cover to remind the user to "read instruction manual before operation"
		This sticker is placed near the power exporting shaft and operation box to remind the user to "not do any disassembly or installation" while the engine is operating
		This sticker is placed on the tracking frame to remind the user to "not touch or get close to the moving parts" while the engine is operating.
		This sticker is placed on the side of belt cover to remind the user to "not install or uninstall the belt" while the engine is operating.
		This sticker is placed under the Engine's exhaust to remind that "the exhaust system could be very hot while engine is operating or even 1-hour after". User must not touch or be close to the air exhaustion during Engines operation

SAFETY INSTRUCTIONS

- Read the instruction manual carefully before operating the paddy- transplanter. It is recommended to get training from an expert technician.
- It is necessary to carefully check the correct installation of all parts. All fittings must be tight and secure.
- Please ensure correct lubrication of necessary parts before starting the engine.
- Check the control lever is in "off" position before starting the engine.
- Do not touch any moving part while the engine is operating.
- Use only transport wheel to drive on the road. Iron wheel should be used only for working in the field. Make sure the operation lever is "off" on the road.
- During operation, if you intend to STOP or TURN 30-degrees or above, it is necessary to pull "off" the operation lever.
- Please perform any maintenance, lubrication, adjustment etc. when the engine is off and cold.
- To operate the shift, you should pull off "power lever" first.



RAISING NURSERY FOR RICE TRANSPLANTER

1. First level (smooth) the field surface Next, spread Plastic Sheets (50-micron thick) 1-m wide x 10-m length strips on the leveled surface. You will need approximately 35 Sq. Meters area (4-strips) for 1acre transplanting	
2. Now spread the cleaned (without stones) soil mixture (3 parts soil and 1 part Compost Organic Manure), with ¾"-1" thickness on the plastic.	
3. If the soil mixture is dry make it wet and spread the germinated seeds at 0.40 - 0.50 kg per sq.ft.	

Governor System

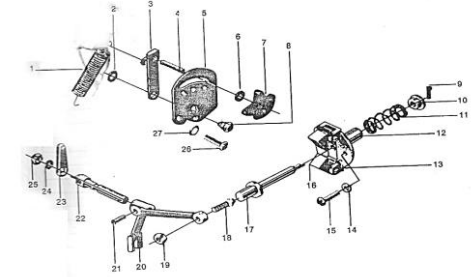








Fig. 11

SI No	Part No	Part Name	SI 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
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			

SI No	Part No	Part Name	SI No	Part No	Part Name
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			

4. Cover this nursery-bed with hay/straw for quick germination.	
5. Sprinkle water for 4 days on the nursery-bed. Then remove the hay/straws gently and after that irrigate the water through channels.	
6. Nursery will be ready within 15 – 20 days (6" - 8" height of nursery is advisable).	
7. Lift the nursery, turn it and cut into pieces to fit the Rice Transplanter grooves.	
8. According to soil condition 3 - 6 days before transplanting, use light weight machineries like power tillers & small tractors with rotary to PUDDLE the field. After puddling, let the field settle, so that soil has settled and water is remaining. Now use a flat-leveler to level the field, and again let the soil settle down. After the soil settles down (takes minimum 1-day) then remove the water.	
9. Now let the land dry for 1-2 days. One day before the transplantation, put 1" water above the plain field, and let it soften. Now Rice Transplanter can enter the field. Nursery pieces can be loaded in the nursery trays & the machine is ready to transplant.	

PADDY FARM'S FIELD CONDITIONS:

1. Field must have been tilled well and puddled
2. Field must not have any rocks, plastics, nets etc.
3. Field mud depth should be between 10~25cms
4. Field water depth should be 2~4cm

SEEDLING TRAY OR SHEETS:

1. Before putting the plastic mats or trays on it, please make sure that the ground is level.
2. Make sure no foreign object (rocks, plastic pieces, metal pieces, etc.) are on field
3. Make sure the soil layer is even on the plastic mat or trays.
4. Soil bed depth should be 2~3cm.
5. Soil bed width should be 21.6cm

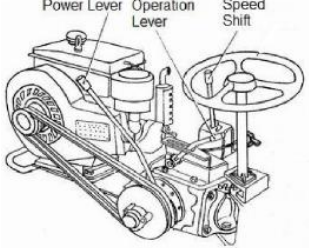
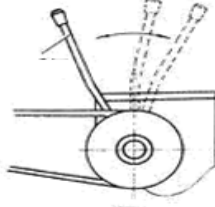
PADDY SEEDLING CONDITION:

1. Seedling height should be 12-18cms
2. Seedlings should not have any disease
3. Seedlings should be of same height and evenly separated
4. There should not be too much soil at the bottom

PADDY SEEDING QUANTITY:

1. Small grain rice dry seed: 1.2kg/m², Germination seed 1.48kg/m²
2. Long grain rice dry seed: 0.6kg/m², Germination seed 0.74kg/m²

PADDY TRANSPLANTER CONTROLS:

<p>The Paddy Transplanter has three control levers:</p> <p>Power Lever: For power engagement and disengagement</p> <p>Operation Control Lever: For engaging or disengaging the planting of rice seedlings</p> <p>Speed Shift: For adjusting the hill gap and walking speed</p>	
<p>Power Lever: It is used to engage or disengage power to transmission.</p> <p>NOTE: Make sure it is at "off" position while starting the engine.</p>	

Fuel System

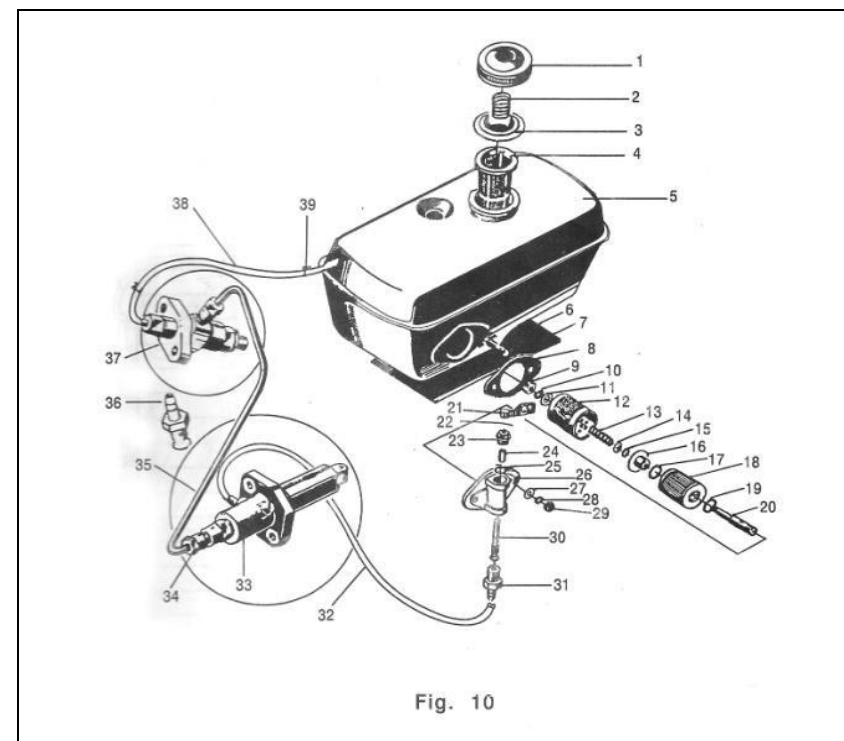


Fig. 10

SI No	Part No	Part Name	SI 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

Air Cleaner Assembly



Fig. 8

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

Exhaust Assembly

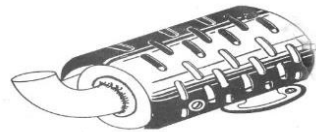
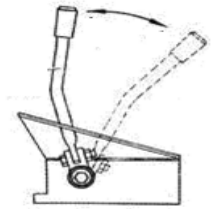


Fig. 9

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

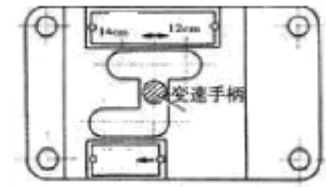
Operation Control Lever: It is used for engaging or disengaging the planting of rice seedlings.

NOTE: Make the Power Lever is set to OFF position, when changing the Operation Control Lever position.



Speed Shift: There are three position of speed shift.

1. **Middle Shift** is neutral position.
2. **Bottom Shift** is used for road drive.
3. **Top Shift** is used to choose an appropriate hill gap (14cms or 12cms).



INSTALLATION

1. Remove the wood under the seedlings, will spiral lift rod through the flat washer, lift rod fixed pin hole and, after another flat washer, then insert the rod cotter pin in to cotter pin hole and lock it.
2. Fix the bolt on the connection between transmission box and tracking frame tightly.
3. Pull traction frame connecting pin, and bring the traction frame forward, and detach the ship plate. Next put on rack to connect pins (short connecting pin) into the original holes, fitted with flat washer and cotter pin, as working part with board by original connection; will lead the traction frame in front of the move to connect with the ship plate bearing holes aligned. Insert the traction frame connecting pin (long connection pins), fitted with flat washer and cotter pin, so that traction frame is connected with the board.
4. Use the nut, bolt and spring washer to fix the engine frame and transmission box.
5. Install the walking wheel and back wheels
6. Hang the chain on the ship board to the hooks.
7. Install the driver seat and steering.
8. Mount the engine on the frame. Install the drive-belts. Next align the belt pulley and adjust belt tension. Finally tighten the bolt.
9. Install the throttle.
10. Install the transplanter head to the left or right of the limit position, put the universal joint cavity through the traction frame, by marking the universal joint shaft into one end of a round square tube, and then the box at one end and the universal joint walking gearbox output shaft with the pin connections.

LUBRICATION

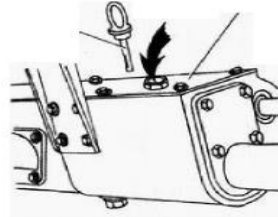
After installation, inject either the lubrication oil or grease into event parts and rotating parts

ENGINE

1. Fill the engine oil according to the specifications given in the engine manual
2. Put the oil meter in the mount without screwing it
3. Check the level to make sure the oil level is between the lowest and highest.
4. Lock the oil level tightly.

TRANSMISSION

1. Unscrew the bolt of the top which is near shift show in draw and open, inject #30 gear lubrication oil approximately 4L.
2. Check the oil level by oil meter as it is in the middle.

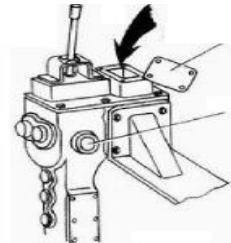


CHAIN BOX

Take off the plug inject 0.5L #30 oil 2. Put plug back.

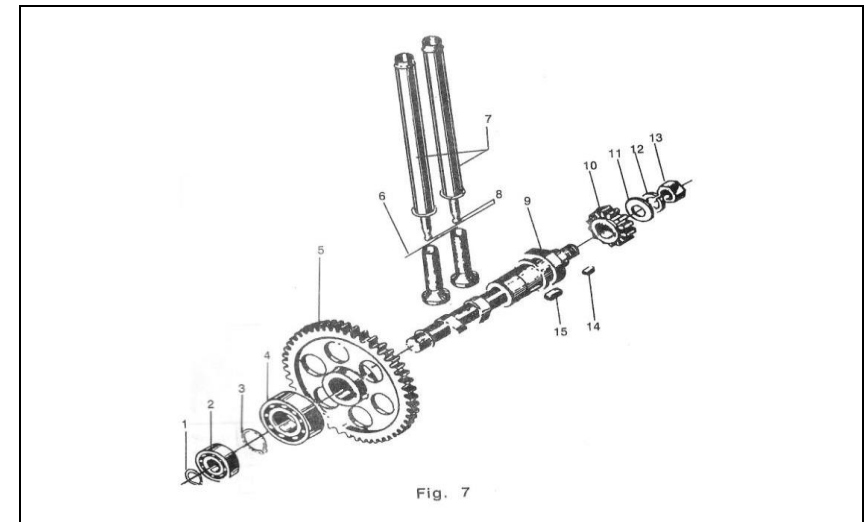
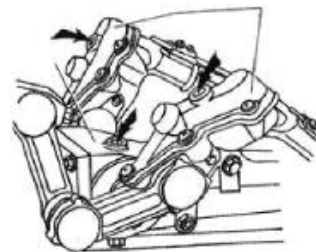
OPERATION BOX:

1. Unscrew the oil meter from operation box, inject approximately 2-Liters of #30 gear lubrication oil.
2. Check the oil meter level to make sure the oil level meets the requirement.



TRANSPLANTER ARM:

1. Take off the plug. Inject about 0.1L #00 lubrication grease, and put the plug back
2. Open the arm, hold the lid until you unscrew all the five screws. Now gently open the cover, and apply grease to the planting arm.
3. After applying enough grease put spring back to original position, and put on the gasket, and then install planted arm cover and tighten the five screws evenly to prevent mud and water from entering.



SI No	Part No	Part Name	SI 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

SI No	Part No	Part Name	SI 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

CHECKS & ADJUSTMENTS:

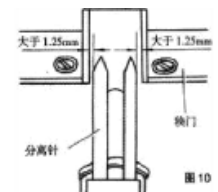
After installation is complete you need check and make necessary adjustments by following steps given below.

Engine Checks and Adjustments:

1. Tighten all nuts, bolts, washers and pay special attention to the engine, engine frame, tracking parts front, operation box.
2. Check engine, operation box, transmission box and chain box and all the connections.
3. Make sure that rotating parts are properly lubricated.

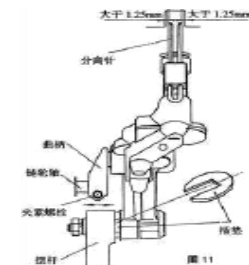
Transplanter Arm Checks & Adjustments:

1. Make sure that the transplanter-arms shift and operate without colliding with seedling door.
2. Both sides of clearance, from arm's pins to the door should be 1.25mm - 1.75mm. This gap should be equal on both sides, if not then, arm should be adjusted.



Adjustment Method:

Release the crank on the side of clamping bolts and the pendulum arm in fixed planting nut. Gently tap the crank and move around planting arm, so that both sides are equal; be placed in accordance with rod gap junctions with the planting arm size. Insert the required thickness of pad and then tighten clamping bolts and nuts. Next check the amount of collected seeding



Engine Belts:

To check belt tension, take off belt cover, use finger to push the belt down. It should go down 15mm – 20mm from normal position. If the belt is very tight or very loose it should be adjusted.

Adjustment Method:

Loosen the engine mount bolt. Pull or push the engine to the position until you meet requirement and tight the bolt. Repeat the checking procedural and put the belt cover back and tighten it.

Note: Starting the engine without installing the belt cover is prohibited.

Gently roll the engine starter and check:

First, place clutch handle in the "engagement" position, speed shift in the "neutral gear" position and gently roll the starter.

Separate the handle to manipulate positioning alternately placed in the "off", "on" position to observe the working part of the action. It is required to incorporate reliable, complete separation of all parts of running sports and flexible, non-impact, catching phenomenon, provided all the planting arm running condition is consistent.

The operation handle should be positioned in the "off" position, the fork tip should stop at the end of the top plate from the tail plate and should not be less than 70mm If it is less than 70mm need to be adjusted.

Adjustment method:

Unscrew bolts from the top of operation box that for fixed bevel gear on the gearbox assembly and the guard, the bevel gear drive

Working part is not allowed to run without protection box assembly outward from the working out of 2cm, so that the Deputy undocked from meshing bevel gears inside.

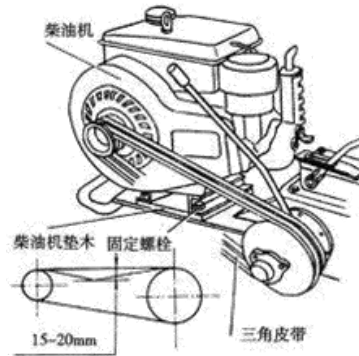
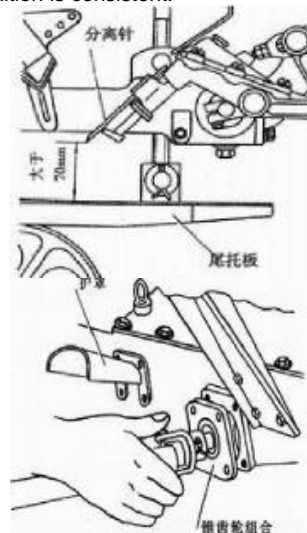


图 12



SI No	Part No	Part Name	SI 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

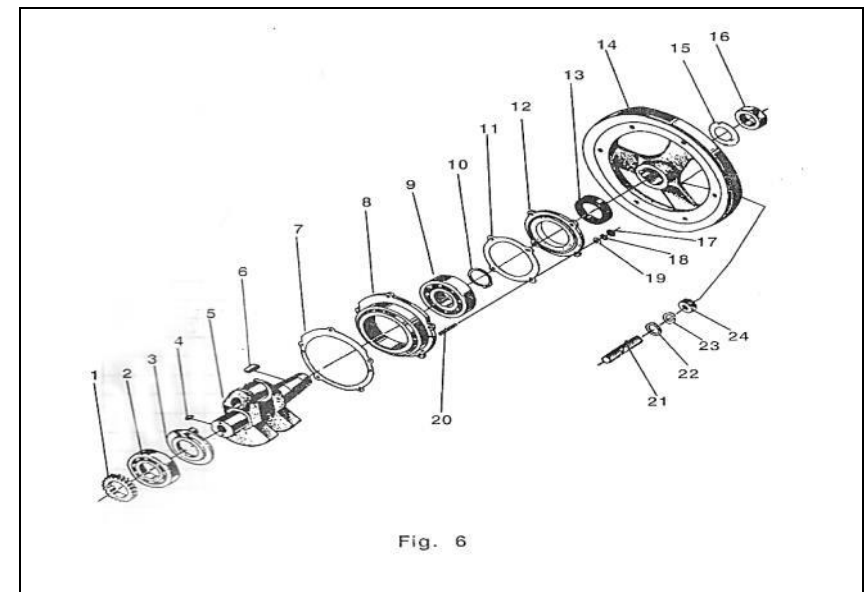


Fig. 6

SI No	Part No	Part Name	SI No	Part No	Part Name
1	165F/Z170F/Z175F-1/05009	Crankshaft timing gear	13	HG4-692-67	Oil seal 40x62x12
2	GB276-82	Ball bearing D308	14	165F/Z170F/Z175F-1/05003	Flywheel

SI No	Part No	Part Name	SI 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

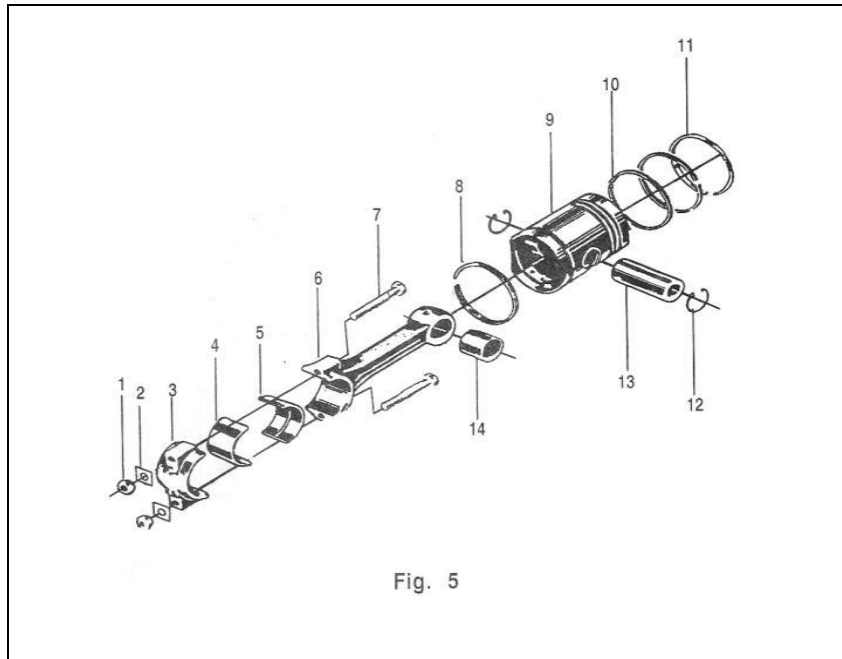


Fig. 5

SI No	Part No	Part Name	SI 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

Let the engine bounce back to the nature position slowly. Easily push the planting arm to natural position (fork tip above the gate)

Put the bevel gear back into operation box, tightening bolts and spring washers.

The operation handle positioned at "on" roll of the starter Re-check the planting arm stop position, until it meets the requirement.

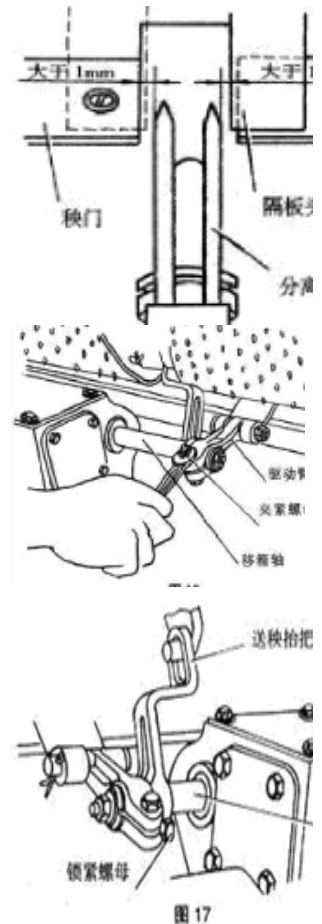
Seedlings are to be moved to the extreme position, the space between forks and board should be more than 1mm, and the two end-gap should be equal. If the gap is less than 1mm gaps are not equal, then it need to be adjusted

Adjustment Method:

Roll the engine starter gently, so that it will be moved to the end of the seeding boxes limit position; release the mobile shaft-driven two-side-arm clamping nut; move around seeding boxes, to enable the gap to meet the requirements; and then tighten the clamp nut, and then re-examine other side.

Vertical Seedling Delivery: The downward movement should not be less than 12mm. When the seedling boxes move to the left limiting position, plant shall be affixed to the bottom of the door by seeding. If the seeding for each delivery is less than 12mm, or posted by seeding the bottom of the door, then adjustment is necessary.

Adjustment Method: Unscrew the nut on both side of moving shaft, roll the starter from diesel engine (not start) to enable the seedling box movement; after a period of one end of the extreme position and return, two serving of seedlings by hand carried to the direction of thrust to the seedling box and finally screw locking nut tight.



When the delivery belt is not working properly, seedling belt is slipping or seeding box vibrates, it should be adjusted.

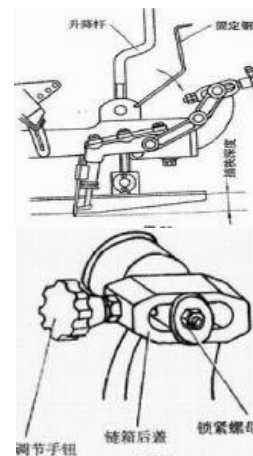
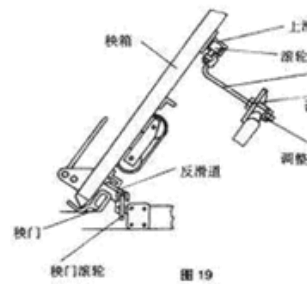
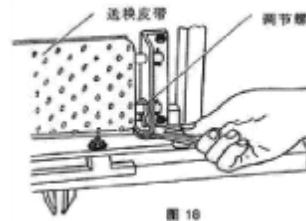
Adjustment Method:

If seedlings belt is slipping, screw into the adjustment screw on the nut to increase the degree of belt tension. If seedling box vibrates, you can screw out the adjustment screw on the nut to reduce the degree of belt tension. pay attention to remain parallel to the upper and lower rollers during adjustment

When the seedlings and the bottom of the door posted by seeding boxes with the horizontal tilt is about 50 degrees, seeding boxes move flexibly. If the seedling boxes are not moving flexibly then it need to be adjusted.

Adjustment Method:

Release the three groups bent arm adjustment nut so that seedling boxes glide path to ride on the roller door. First adjust the regulators and the bending arm bearing's highs in equal consistency, so that seedling box is parallel to the bottom of the door with the seedling posted by (seedling box and horizontal tilt of about 50 degrees), move seedling box light and flexible; Finally, adjust the milled curved arm bearing according to the actual height tightening the adjusting nut.



The user need to adjust the rice seedlings depth according to local agronomic requirements to leave the lift before rotating the fixed wire rod, and then switch to clockwise, making the depth shallower. If switch is turned anti-clockwise the depth becomes deeper.

The user need to adjust the seedlings amount according to local agronomic requirements. To locsen the nut at the back of arms which are connected to the chain box, turn the adjusting bolt clockwise to reduce the seedling collect amount, or turn the bolt anti-clockwise to increase the seedling collect amount. In order to enable each fork is taking the same amount of seedling, adjust according to the standards given.

SI No	Part No	Part Name	SI 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

Cylinder Head Assembly

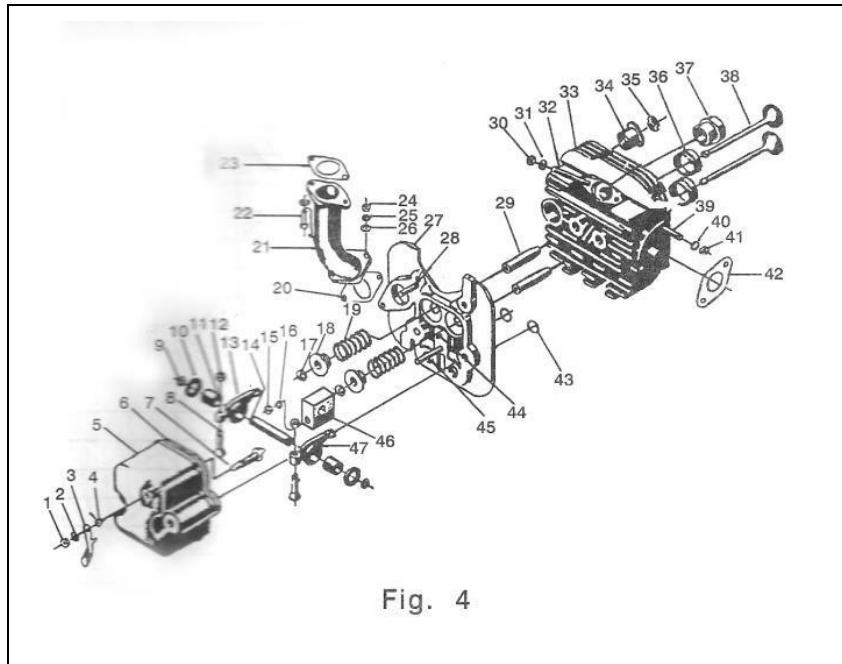


Fig. 4

Adjustment Method:

Seeding needle is rotated to the door at the top of seedlings, put the standard blocker on each doors that are under fork, check fork into the door of required depth, so that all are aligned the same location, adjusting the screw after locking nut tight. Blocks before installation are preferable. Take out all standard blocks.



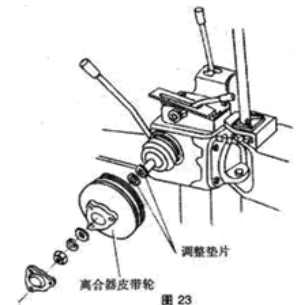
per-running

Before per running, ensure power lever and operation lever are disengaged, shift lever placed in the "free" location. Make sure nobody around the machine expect operator.

1. Before riding on the machine

- According to the diesel manual to start engine.
- Operate throttle switch, check the throttle lever at fixed position, and then transferred to low-speed diesel engine running
- Slowly engage the operation lever to view the operation part is in good working condition for about 10 minutes, then disengage the Disengage operation lever. Now slowly engage clutch lever, making the clutch bond smoothly. This clutch can put all the engine power output pulley is passed to walk the transmission. If the power cannot be passed to the transmission case or part of the walk pass, adjust the clutch. Manipulate the clutch lever and then quickly place it in the "off" position, and check if the clutch is completely cut off from the power. If it is not completely cut off from the power, they should adjust the clutch.

Clutch adjustment method: First, unscrew the three screws; to remove the clutch pulley cover the screw under the nut, and remove the clutch pulley. If the power cannot be reduced then adjust the transmission gasket



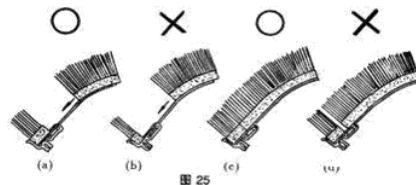
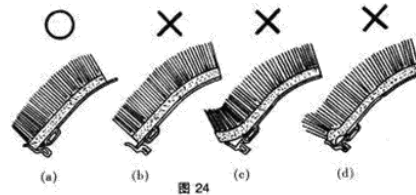
Operator ride on the machine (one person only):

- First, disengage the clutch lever, then shift lever placed in the "planting" in 14cm or 12cm, engage the clutch. Then, the separation of the handle positioning has placed in the "off" and "integration" of the location test run 10 ~ 20min. Separation will be preceded by positioning the handle down place "off" position.
- Disengage the power lever, then shift lever placed in the "fast" gear position, clutch engagement, keep running for 5 ~ 10min.

Operation of rice transplantation:

Loading the rice.

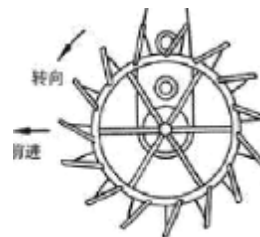
- Pull up the stick before loading the rice.
- Take off the whole bed of rice from plate.
- To obtain films with seedling transplanter flap box, gently take out from seedling boxes, free slid down, and then take rice out. Do not use pressure pushing film to prevent damage of seedling transplanting film.
- Seedling should be close to bottom of the bottom piece, the bottom of the door next to seedlings ,not arched door in the seeding. Figure 24b, 24c shows seeding conditions where the installation has failed.
- Add rice to the seedling box when exposed half of the belt, the seedlings cannot be fully loaded in seedling box chip can roll up the seedling pieces.
- Seedling access or transport process, not to crumble or break film seedlings, so as to avoid the hole. In case of a long break in operation, the seedlings should be left out of the seedling box and clear the door and put rice on belt, etc



Driving the rice transplanter:

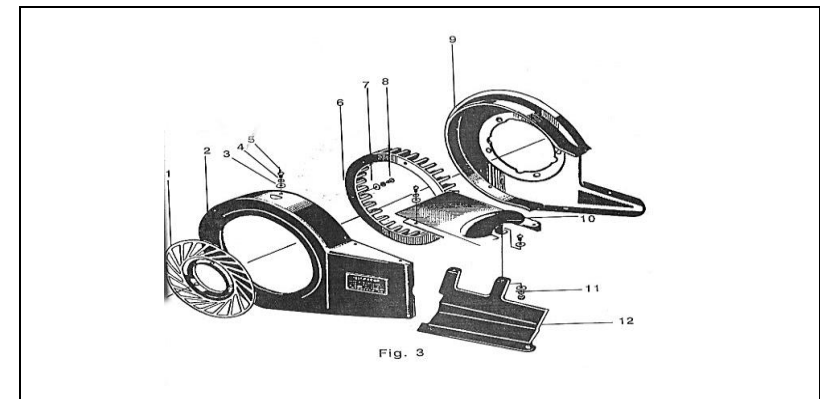
Driving Operation Technologies:

- After arriving at the field, replace iron wheel and remove the tail wheel, slowly enter the paddy fields. Note the installation location in the paddy fields correctly as planting must not be installed in the wrong way.
- Enter the paddy fields, according to the block of the shapes, to plan the planting of the location, walking route and the planting of the edge of the field location.



SI No	Part No	Part Name	SI 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

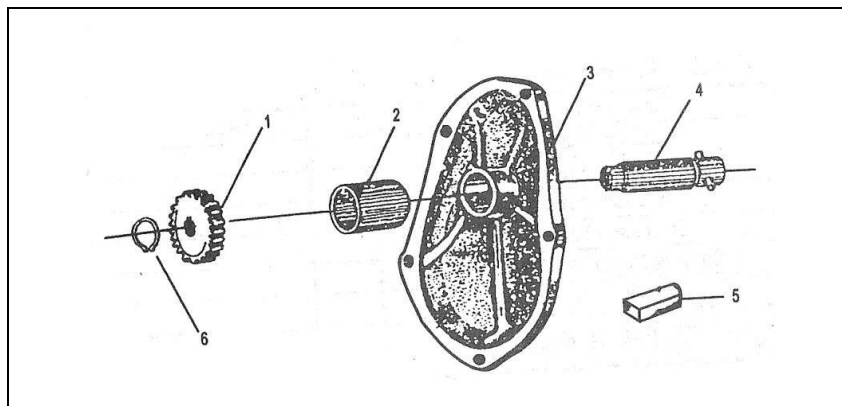
Cooling System



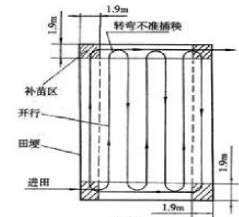
SI No	Part No	Part Name	SI No	Part No	Part Name
1	165F/Z175F-1/-02001	Shelter	7	GB848-85	Washer 6-140HV
2	165F/Z175F-1/-02100	Air Cowling	8	GB5783-86	Hexagon Bolt M6x16
3	GB95-85	Washer 6-100HV	9	165F/Z175F-1/-02200	Blower Base Plate
4	GB93-87	Spring Washer 6	10	165F/Z175F-1/-02002	Top Wind-Guide
5	GB67-8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

SI No	Part No	Part Name	SI No	Part No	Part Name
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)

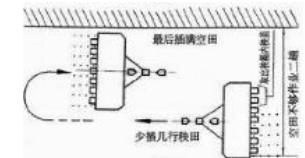
Starting Unit



- Diesel engine adjusts to small throttle running conditions when it arrives at the starting point. Operator should locate its transplanter side of 1.9m, near the field door from rice transplanter behind Tanabe has also been 1.9m



- Adjust chain length, so that the vine attached under the bottom of the plane and paddy field ground are in full contact. Hanging chain attached to natural length should not be too tight, the seedlings ship up front.
- The seedling box without throwing a little, not forward cases transplanter, seedling box moves to the extreme position, and the seedling nursery needle through doors down-shift box, waiting for loading seedlings.
- At the end of the loading the seedling, increase the engine throttle, driving transplanter enters the ovipositor
- Industry and job 2 ~ transplanter 3m distance after should be shut down, such that it meets the agronomic requirements, and make adjustments accordingly.
- Transplanted operations walk straight to the first trip walking transplanter side and 1.9m from the edge of the field must be maintained.
- In the paddy field if too much mud or water occurs while wrecking the cover of seedlings has been inserted; the operator should slow down operations or drain the excess water.



- The operator should start at the point with enough space such that they can move round the field at the end.
- In case if the machine is not reversible such as over drains or high ridge, should it ever stepped on the Ridge with pedals that make the seedlings ship front-end tilted and if necessary take the transplanter in the job,you need to temporarily stop at corners and must first position the handle wrench to the separation from11. Through drains or high ridge, the ridge should be too depressed pedal device, so that seedlings ship tilt front end, if necessary, to catch the wood, which cannot be forced through.
- If you want to stop the trasplanter temporarily or make a turn, you must first locate the handle to separate "off" position.
- After each operation, cleaning and maintenance should be done.

PADDY TRANSPLANTER MAINTENANCE

Good maintenance reduce breakdowns and extend the life. Therefore, the operator must frequently do systematic inspection, cleaning, lubricating, tightening, adjust or replace parts as a part of maintenance.

Half-day maintenance operations

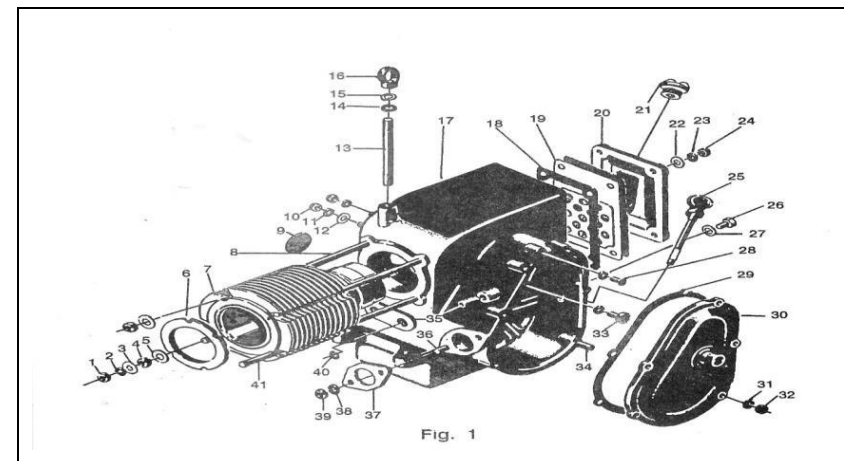
- Check if the gap between fork and gate is between 1.25 ~ 1.75mm. Otherwise it should be adjusted.
- Check if the gap of each side between fork and tray is equal, the difference should be less than 1mm. otherwise it should be adjusted.
- Check every fork is sited the same depth. If not, should be adjusted.
- Check the gap between fork and rice delivery. If the gap is greater than 2mm, it should adjust or replace the sub-needle seedlings
- Check the itinerary to promote seeding device. If it is less than 12mm it should be adjusted.
- Check fasteners. If found loose, should be tightened.

Daily maintenance

- Do all half-day maintenance operations mentioned above
- Wash the whole machine, especially in seedling boxes, seedling belts, seedling planting arm of the door, clean mud and debris, then wipe the water off and park in a dry area.
- Check the engine, transmission gearbox, operation box and chain box's oil level and quality. If the oil is not enough, the same grade oil should be added; if the oil is not clean, should be replaced with the same grade lubricating oil. For New transplanter, oil should be replaced within the first 10 hours of operation
- Check all joint parts for lubrication.
- Check V-belt tension degree, if not meeting the requirements, should be adjusted
- Check clutch and its positioning

Maintenance at the End of Each Planting Season:

- Follow the daily maintenance routine
- In accordance with the instructions of the maintenance requirements of diesel engine maintenance.
- Replacement engine, transmission, operation and chain box oil.
- Use light diesel oil and rub all over.
- Check if the power and operation lever is on "engage" position; speed shift to place the middle "neutral gear" position.
- Store the transplanter indoor in a dry indoor place and cover it appropriately.

PARTS DIAGRAM & LIST-KK-DE-Z170F/Z175F**Crankcase Assembly.**

SI No	Part No	Part Name	SI 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)

Cause	Remedy
2. Piston rings worn or stuck.	Clean or replace the piston rings if necessary.
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°C 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.

TROUBLESHOOTING

Problem	Probable cause	Action to be taken
Rice seedling is not erect	Depth is not adjusted correctly	Adjust the planting depth
	Rice bed is too hard or too soft	Recultivate or let mud settle
Fork or collector push more than one rice each time	Rice bed is dry	Spray water
	Rice pusher is broken	Replace the part (rice pusher)
	Rice bed is too soft	Allow the mud to settle
	Lack of water in paddy filed	Add more water
Skip hole	Uneven rice bed	Improve rice bed quality
	Rice seedling sticks to the gate.	Reload the rice seedling
	Gate is blocked with mud, stone or grass	Clean the gate
Uneven transplanting	Rice bed quality is poor	Improve the rice bed quality
Rice bed arched	Rice bed is too soft	Allow the mud to settle
	Rice bed not thick enough	Increase the thickness of the rice bed
No consistent depth	Chain is not correctly assembled	Reassemble the chain
	Chain is too tight	Loosen the chain
Wheel not working	Belt slip	Adjust belt tension
	Clutch slip	Adjust clutch
	Speed selector or gear teeth abrasion	Adjust speed selector and change the gear.
Operation part Is not working	Locking pin of universal joint is broken	Change the lock pin
Planting arm is not working (with noise)	Chain is loose	Re-install and tighten the chain

Problem	Probable cause	Action to be taken
Rice collector is not moving	Collector banded	Adjust or replace it
	Collector broken	Replace the spring
	Rice transfer shift fork got rusted.	Remove the rust or replace it.
	Lack of lubrication in planting arm	Apply grease
	Fork twisted	Replace fork
Knock in the planting arm	Rubber washer is missing or broken	Replace the rubber washer
Horizontal delivery is not working	Gear worn out	Replace the gear
	Clutch got worn out or broken	Replace the clutch
	Spring is loose or broken	Replace the spring

Cause	Remedy
d) Needle valve and nozzle body worn.	Replace the needle valve and nozzle, whichever is necessary
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. 2. Fuel pipe line or filter choked 3. Air in fuel system 4. Needle valve seized. (If little or no "chattering" is heard from the injector while turning the starting shaft of the engine.)	Fill the tank with fuel Clean the fuel pipe line or filter, replace if necessary Bleed. 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. 2. Air cleaner choked or leakage in air cleaner.	Reduce the load. 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.

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.
6. Valve stem seized	Test for leakage by means of kerosene. Wash valve stem and guides

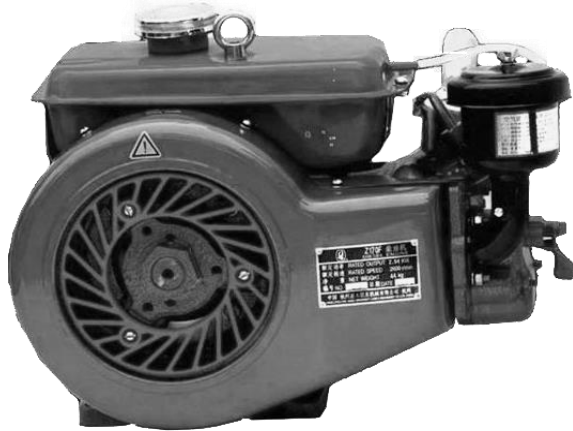
Insufficient output

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

TECHNICAL SPECIFICATIONS

Technical Parameter	KK-RRT- 8R	KK-RRT- 4R
Dimension (mm)	2510×2186×1230	2430×1160×1080
Net Weight (kg)	320	180
Power	Z170F (2.94kw, 2600r/min)	
Walking parts	Travel wheel/Iron wheel	
Number of Row	8	4
Row Gap (mm)	238	
Hill Gap (mm)	120/140,160/200	
Planting Frequency	224(2600r/min)	
Planting Depth (mm)	0~45	
Working Speed (m/s)	0.35~0.58	
Working Effectiveness (h m ² /h)	0.13~0.20	0.07~0.10
Walking Speed (km/h)	7.8~10.7	
Field Wheel Size (mm)	680	540
Walking Wheel Size (mm)	705	500
Maximum Turning Angle	60°	

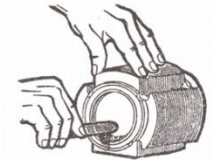
USER MANUAL-DIESEL ENGINE (DEH- Z170F)



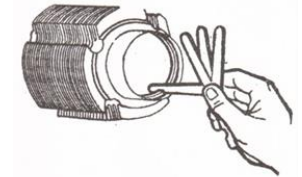
BEFORE GETTING STARTED

1. The Model Z170F 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.

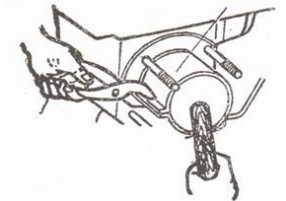
8. The upper part of the cylinder should be decarbonized as well.



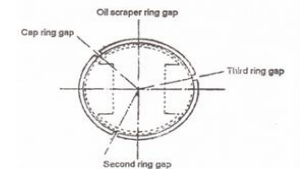
9. Check the piston ring gap by placing a ring into the cylinder liner about 20mm. Renew the piston ring if its gap is over 1mm. It is necessary to refit the rings on the piston with a ring expander. The chrome-plated ring should be fitted in the top ring groove.



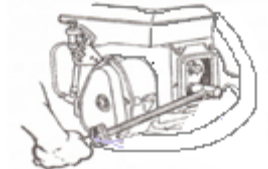
10. Clean the piston connecting rod assembly and smear with a little clean oil before re-installing into the cylinder. All the piston rings must be compressed in a guide tool and place it on the top of the liner, and then tap lightly the assembly into the cylinder liner with a wooden handle.



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



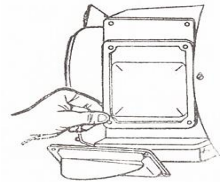
12. Reinstall the connecting rod cap, tighten the connecting rod bolts. The tightening torque should be needed.



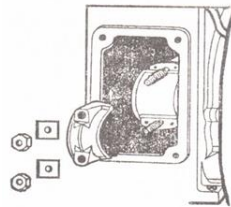
Cautions:

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.

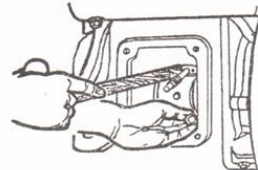
1. Remove the cylinder head.
2. Remove the rear cover of the crankcase when dismantling; take care not to damage the rear cover gasket.



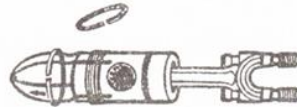
3. Unscrew the connecting rod nuts and take off the connecting rod cap.



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.

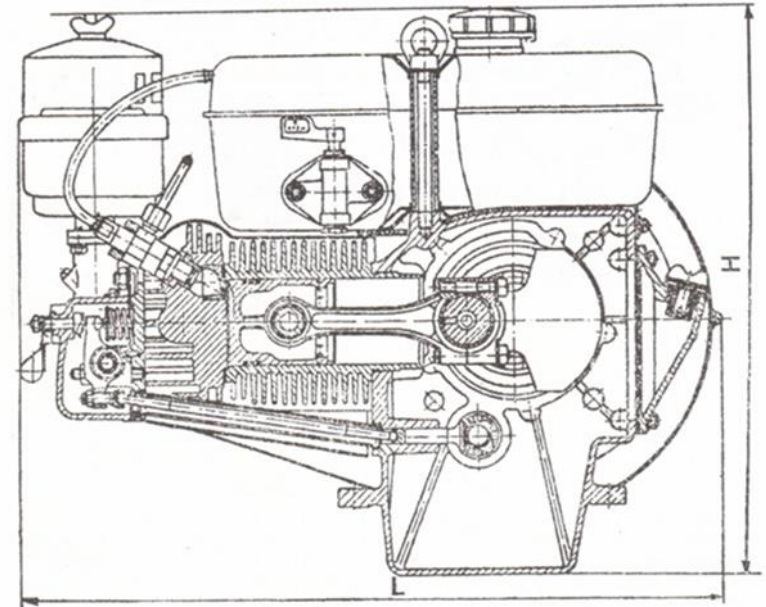


7. Scrape off the carbon deposited with a chip both on the piston surface and in the ring grooves. Then clean the piston in diesel.

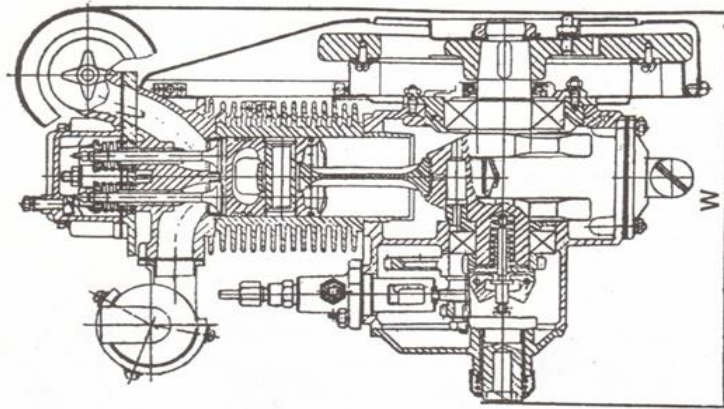


SECTIONAL VIEW OF THE ENGINE

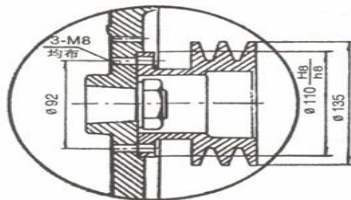
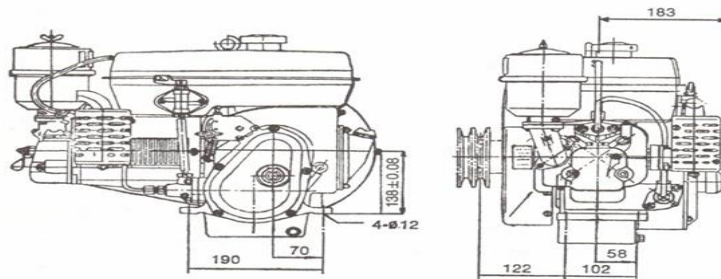
Longitudinal Section



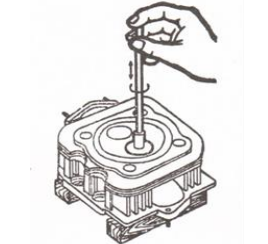
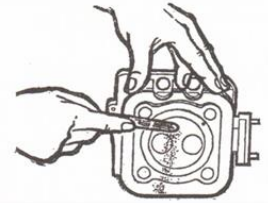
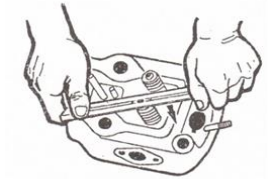
Transverse Section



MOUNTING DIMENSIONS



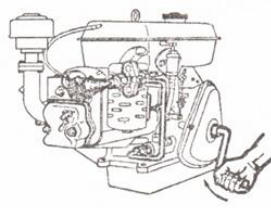
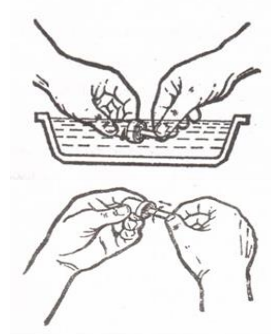
6. Remove the valve collets by compressing the valve spring. Then take off the valve and valve spring.
7. Scrape off the carbon deposited on the valves and valve seats with a chip, and clean with fuel. If serious pitting is found on the valve seat, repair with a reamer and then relap it.
8. Smear a little 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:

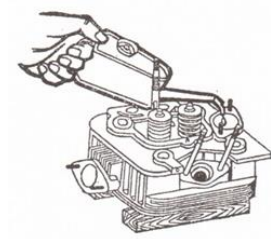
The worn piston ring will cause leakage in the cylinder, excessive consumption of lubricating oil and fuel and a reduction of the output of the engine.

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:

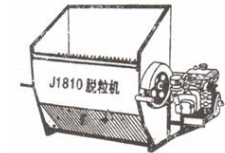
1. Remove the cylinder head cover.
2. Remove the injector.
3. Unscrew the set nut of the rocker arm shaft support and take off the rocker arm.
4. Unscrew the cylinder head nuts gradually in turn with a box spanner and remove them. Then take off the cylinder head.
5. Fill fuel or kerosene (paraffin) into the intake and exhaust passages to check the valve tightness. If leakage is found, dismantle, decarbonize and relap the valves.



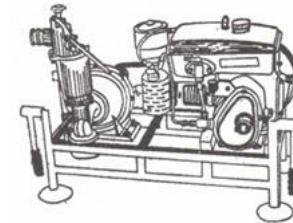
APPLICATION



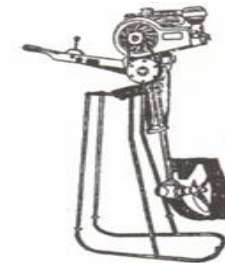
Generating sets



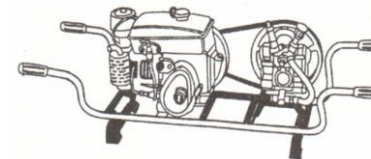
Bicylinder type threshers



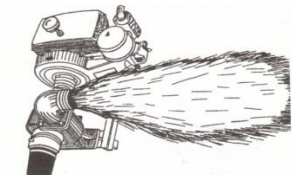
Water pump sets



Motor boats



Sprayers



Sprinklers



Transplanters

TECHNICAL SPECIFICATION

Particulars	KK-DE-Z170F
Engine Type	4-Stroke
HP	4 hp
CC	269 cc
Fuel Used	Diesel
Oil	1200ml (20W40 Grade)
Fuel Tank Capacity	4.5 ltrs
Fuel Consumption	350ml/1 hr (Engine)
RPM/Output Capacity	2600 RPM
Weight	44 Kg

Note:

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

Atmospheric pressure 100kpa

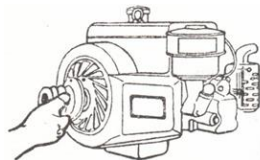
Ambient temperature 25°C

Relative humidity 30%

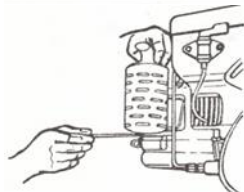
- The low caloric value of the fuel should not be less than 10000 kcal/kg.

INSTALLATION

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

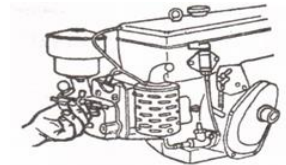


- Slacken the nut on the bottom of silencer and turn the exhaust pipe to the direction as required

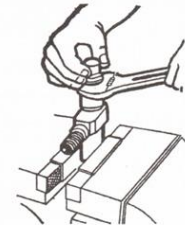


the engine. Take care of the matching surface of the needle valve, nozzle body as well as the nozzle hole is not damaged.

- 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.



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



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



- 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.



- 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.



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



After every 100 hours of operation:

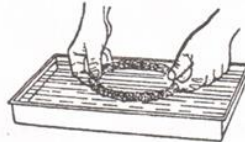
1. Clean the fuel screen of the fuel tank.



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 choked 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:

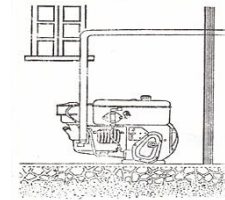
Besides the procedures listed in "Maintenance after every 100 hours", the following points are to be practiced:

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

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

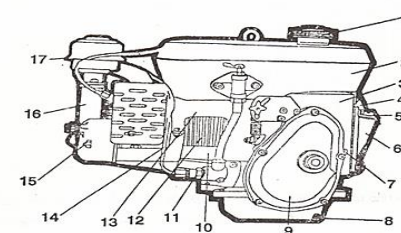
D1: the diameter of the pulley on the engine shaft. (mm)

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

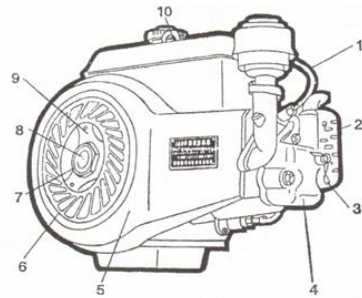
n1: The rotation speed of the engine(r/min)

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

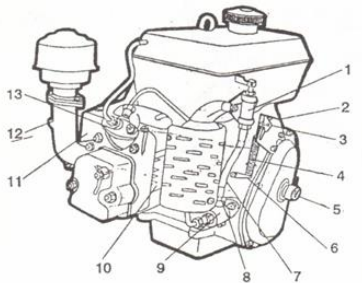
PART NAME LIST



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



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

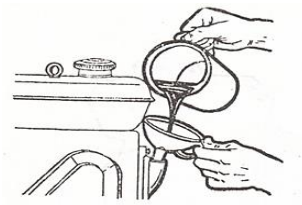
Under ordinary conditions, after unpacking the engine is ready to be put into service, when the following procedures are performed.

If the engine is stored over a long period of time, additional treatments according to special instruction should be done prior to these procedures.

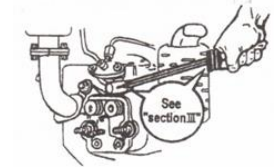
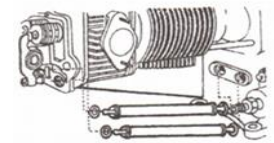
Preparation before starting:

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-11 in summer.



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:

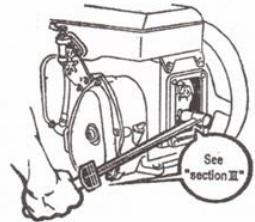
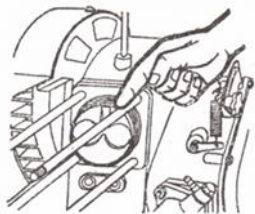
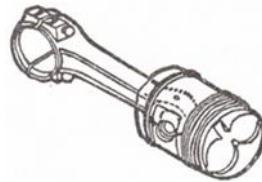
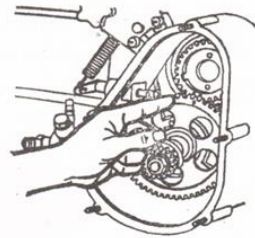
1. Run the new engine for 20 hours under comparatively light load.
2. If a new engine or when the engine which has been spared from service for some time is put into service, better renew the lubricating oil after 40 hours of operation. Do it again after another 60 hours and then once in every 100 hours. 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:

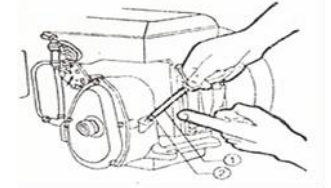
1. After 8 hours of continuous running, stop the engine and check the lubricating oil level. If it falls below the lower marked line on the dipstick, replenish clean oil.
2. Check for leakage. All leakages should be corrected.
3. Clean the dust gathered on the openings and the passages between the cooling 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

Precautions during re-installing the Engine

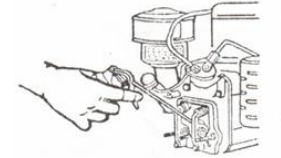
1. While re-installing the crankshaft into crankcase, it is absolutely necessary that the tooth-mesh mark on the crankshaft timing gear must be lined up with the mark on the camshaft timing gear.
2. When re-installing the piston connecting rod assembly, be sure the marks on the connecting rod and connecting 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.



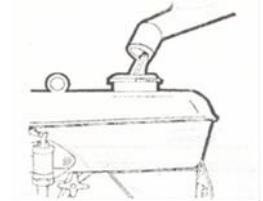
2. ① Upper marked line
② Lower marked line
Check the lubricating oil level



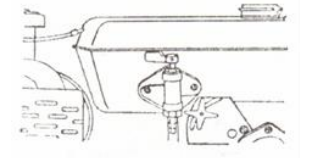
3. Fill the oil to the level between the upper and lower marked line on the dipstick.



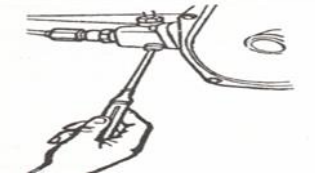
4. Remove the cylinder head cover and fill a little bit of oil into each orifice of the two valve rocker arms and valve guides with an oil-feeder



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.

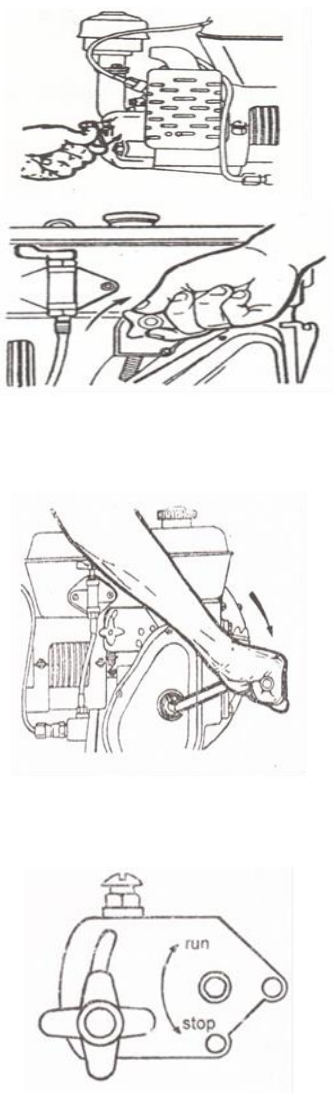


6. If there is any air in the fuel pipeline, loosen the vent screw on the fuel injection pump until fuel pipe is without air, once bubbles flows out, and retighten the vent screw.



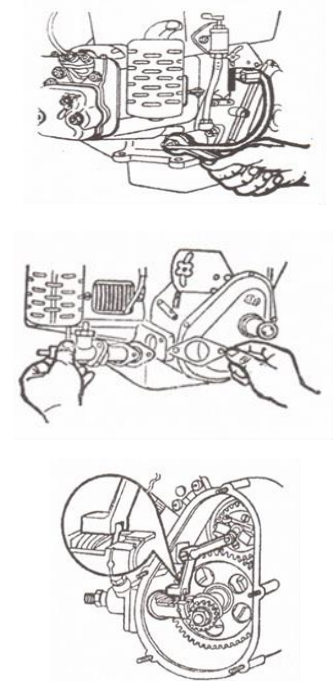
Starting

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.

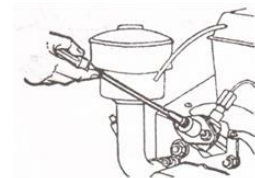


Adjustment of the injection timing:

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 1°. The injection timing of this engine is 20°-24° before 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



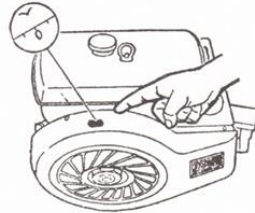
Unscrew the lock nut and turn the adjusting screw which varies the compression of the spring by means of a screwdriver. Tighten it, the pressure will be increased and vice versa.

ADJUSTMENT

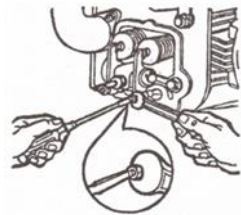
Adjustment of Valve Clearance:

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.

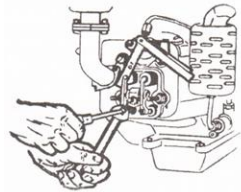
1. Remove the cylinder head cover.
2. Turn the flywheel until the "O" mark on its periphery lines with "Timing Mark" on the air cowling.



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

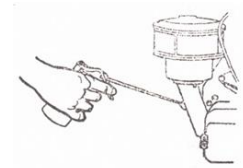


4. Adjust the valve clearance to 0.1-0.2mm with the help of a feeler gauge



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.

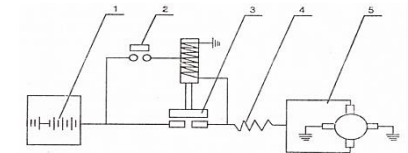
5. When the engine is difficult to start in cold weather, it is advisable to add a bit of engine oil into the oil cup on the intake pipe. Then crank the engine. Other methods may also be used to assist starting.



Electric start

1. Wiring diagram

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



2. Starter

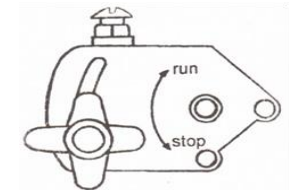
Model
Voltage
Power

ZQ112
12V
0.37kw

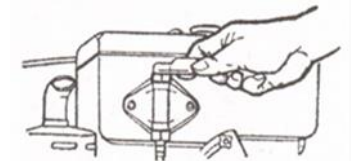
3. The starter should not be operated for more than 5 seconds. The next starting must be done 2 minutes later if the first starting fails. The starting switch should be released immediately after the engine has been started.

Stopping

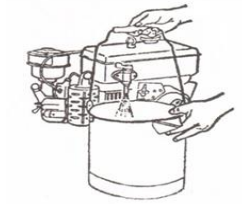
1. Before stopping, reduce the load and speed of the engine, and let it run idle for a while. Shift the speed control handle towards the "stop" position, then to its extreme position, and the engine stops.



2. Turn the fuel cock to the "CLOSE" position



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



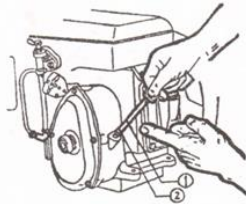
4. If the engine is to be stored for a long time, keep its intake and exhaust valve closed to prevent the cylinder from getting rust. Turn the flywheel until the "O" mark on its periphery in line with the "Timing Mark" on the Air cowl.



Cautions during operation

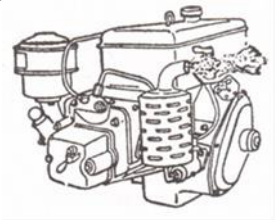
1. After the engine is started, run it for 3-5 minutes at low speed without any load. Then load the engine.

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

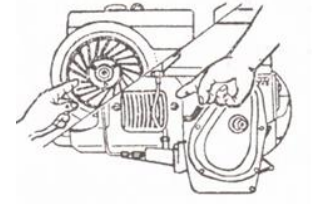


- ① Upper marked line
- ② Lower marked line

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



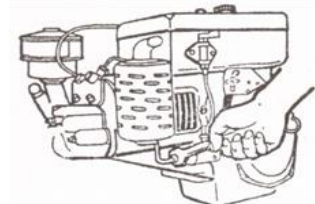
4. Keep the entrance and exit of cooling-air and passages between all cooling-fins freely.



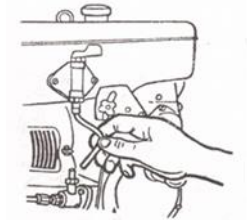
Emergency stop

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.

