

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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- Dealers should have their own technician to provide After Sales Services to their Customers. KisanKraft Limited provides free training to Authorized Dealer's technicians at KisanKraft Limited's head office, on request from Authorized Dealer

Product	Agricultural HTP Sprayer Set-	KisanKraft Invoice Date	
Brand	KisanKraft	KisanKraft Invoice No.	
Model	<input checked="" type="checkbox"/> KK-PSP-20		
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	

Warranty Policy

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.

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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 (8) Any modification to the product what-so-ever.

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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.

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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.



User Manual



KisanKraft Limited

Warehouse: 818 3B1 to 818 3B18, Podalukur - Sangam Road, Prabagirpatnam, Podalukur, Nellore - 524345, Andhra Pradesh, INDIA

Head Office: #4, 1st Main, 7-A Cross, Maruthi Layout, Dasarahalli, HAF Post, Hebbal, Bangalore 560024, Karnataka, INDIA

- ◆ Bangalore (HO) ◆ Ahmedabad ◆ Bhopal ◆ Bhubaneswar ◆ Coimbatore
- ◆ Guwahati ◆ Hubli ◆ Hyderabad ◆ Jaipur ◆ Karnal
- ◆ Kolkata ◆ Lucknow ◆ Nellore ◆ Pune ◆ Raipur



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ENGINE-PARTS LIST **Error! Bookmark not defined.**

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

<p>Brush Cutters and Accessories</p> <ul style="list-style-type: none"> 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 <p>Chainsaws</p> <ul style="list-style-type: none"> Petrol Chainsaw Electric Chainsaw Chain Sharpening Machine <p>Engines and Water Pumps</p> <ul style="list-style-type: none"> Engine –Diesel-(Horizontal) Engine –Diesel(Vertical) Engine-Kerosene Water Pump with Petrol Engine Water Pump with Kerosene Engine Water Pump with Diesel Engine <p>Hand Tools</p> <ul style="list-style-type: none"> 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 <p>Garden Tools</p> <ul style="list-style-type: none"> Electric Pressure Washer Hedge Trimmer Lawn Mower (Electric, Petrol & Manual) Leaf Blower 	<p>Cultivators and Accessories</p> <ul style="list-style-type: none"> Petrol and Diesel <p>Sprayers and Accessories</p> <ul style="list-style-type: none"> 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 / Granule Sprayer HTP Sprayer Set with Diesel Engine HTP Sprayer Set with Kerosene Engine Fogging Machine <p>Milking Machine</p> <ul style="list-style-type: none"> Wood Shredder Fodder Ensiling Chaff Cutter Fodder Grinder Chaff Cutter Fodder Mini Chaff Cutter <p>Harvester</p> <ul style="list-style-type: none"> Maize Sheller Maize Sheller + Dehusker Maize Combine Harvester Onion Digger Carlotta Italy Tea Leaf Harvester Sugarcane Combine Harvester Sugarcane Leaf Stripper <p>Transplanter and Post Hole Digger</p> <ul style="list-style-type: none"> Paddy Transplanter (2 & 8 Rows) Transplanter-Vegetable & Tobacco Post Hole Digger(4" to 14" Augers)
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No.	Part Name	Sr .	Qty
106	Fuel Tank		1
107	Fuel Tank Strainer		1
108	Fuel Tank Lid		1

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No.	Part Name	Sr .	Qty
85	Screw	M6*22	1
86	R Pin		1
87	Switch Lever		1
88	Governing Spring		1
89	Switch		1
90	Screw	M6*8	1
91	Amplifier		1
92	Heatproof Lagging		1
93	On/Off Switch		1
94	Rear Bracket		1
95	Front Bracket		1
96	Left Bracket		1
97	Right Bracket		1
98	Fuel Tank Filter Aleset		1
99	Locking Clip	φ 11	1
100	1 Oil Pipe		1
101	Locking Clip	φ 9	2
102	Gasoline Valve Switch		1
103	Screw	M *12	1
104	L Oil Pipe		1
105	Locking Clip	φ 10	1

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No.	Part Name	Sr .	Qty
64	Screw	M5*15	3
65	Fuel Level Sensor		1
66	O-Ring	2.5*4.0	1
67	Washer	φ 10* φ 16*1.8	1
68	Screw	M10*1.25	1
69	Cable Clip		2
70	Key		1
71	Flywheel		1
72	Fan		1
73	Starter Reel		1
74	Nut	M12*1.25	1
75	Screw	M6*12	13
76	Baffle		1
77	Ignition Coil		1
78	Screw	M6*25	3
79	Flywheel Cover		1
80	Recoil Starter		1
81	Throttle Spring		1
82	Throttle Lever Sleeve		1
83	Throttle Lever		1
84	Winding Lever		1

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 INSTRUCTIONS

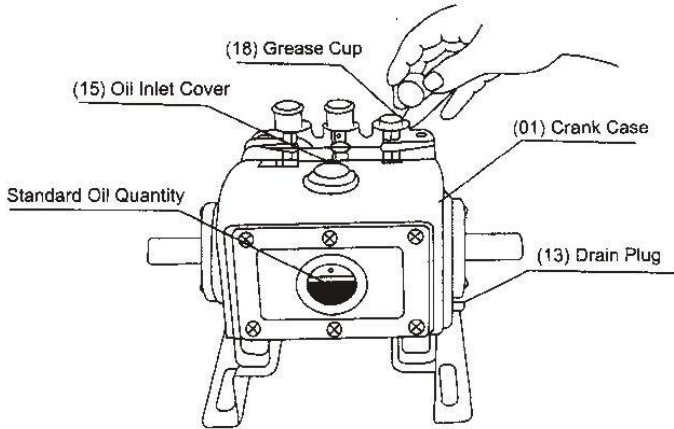
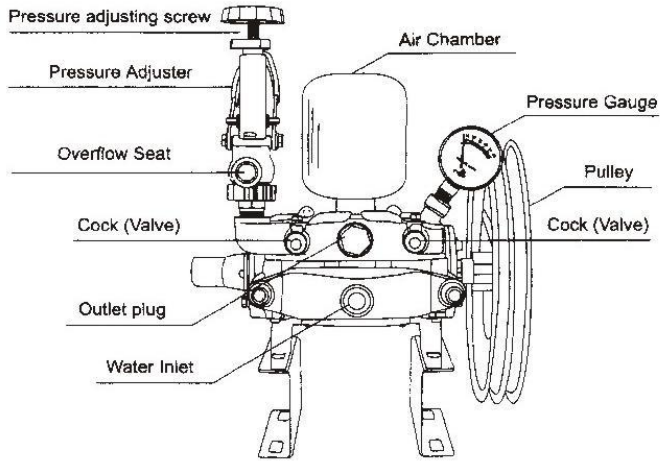
- Using this machine with extra high pressure is prohibited ($\leq 35 \text{kgf/cm}^2$).
- The rotary parts should have safety protective device.
- Protective Clothing:

- Wear flange cap.
- Wear dirt/fog-proof glasses.
- Wear gauze mask.
- Wear long gloves.
- Wear coat to protect against poisons.
- Wear boots.



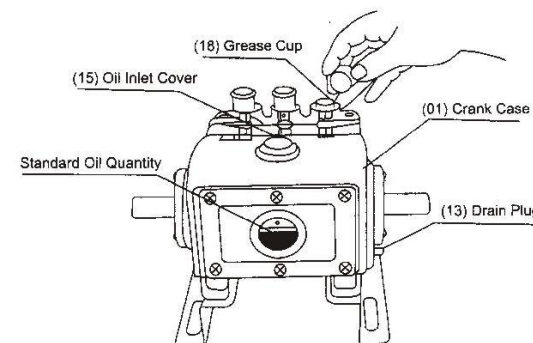
- Spraying towards personnel and working at the downwind position are prohibited.
- Running the machine without water or lubricating oil is prohibited.
- Using special working solutions such as strong acid, strong alkali, etc. is prohibited.
- Following personnel should not use the machine:
 - Mentally challenged.
 - Drunk.
 - Under the age of 18 or older people.
 - Person with no knowledge of machines.
 - Tired person or patient and others who cannot operate the machine normally.
 - A person who has just exercised strenuously or has not slept enough. Women feeding breast milk to the baby or is pregnant.
- Spraying
 - It is fine to carry out an operation during cool weather with little wind. For example, early in the mornings or in the late afternoons as this can reduce the evaporation and drift of chemicals and improve the protective effect.
 - The operator should move windward.
 - If your mouth or eyes are spattered with chemicals, wash them with clean water and then visit a doctor.
 - If the operator has a headache or dizziness, should stop working at once and consult a doctor immediately.
 - For the operator's safety, misting/dusting must be carried out strictly according to the instruction of the chemicals and agricultural requirements.
 - Spray over, according to pesticide manual to clean out any residual spray mixture in chemical tank.
 - After spraying always wash your hands and face thoroughly

PUMP DIAGRAMS



No.	Part Name	Sr .	Qty
43	Rod Cap		1
44	Crankshaft Assy		1
45	Connecting Rod Body		1
46	Piston Ring		
47	Piston Pin	φ12 *35	
48	Piston		
49	Doctor-Bar		
50	Backing Ring		
51	Second Piston Ring		
52	First Piston Ring		1
53	Top Sleeve		1
54	Governor		1
55	Washer	φ 6 *φ 13*1	2
56	Cylinder Side Cover Gasket		1
57	Crankcase Side Cover		1
58	Oil Seal	17*30*6	2
59	Screw	M6*30	10
60	Oil Scale		1
61	O-Ring		1
62	Screw	M8*16	4
63	Floor		1

No.	Part Name	Sr .	Qty
22	Carburettor		1
23	Choke Lever Sleeve		1
24	Choke Lever		1
25	Balancing Pressure Pipe		1
26	Air Filter Gasket		1
27	Air Filter Seat		1
28	Screw	M6*18	2
29	Air Filter Net Gasket		1
30	Air Filter Net		1
31	Butterfly Nut		2
32	Air Filter Cover		
33	Intake Valve		
34	Exhaust Valve		
35	Cylinder Gasket		
36	Hollow Pin		4
37	Crankcase		1
38	Bearing	6203	2
39	Cam Wheel		1
40	Valve Tappet		2
41	Tappet		2
42	Screw	M5 *25	2



OPERATING INSTRUCTIONS

1. Check every fastener and make sure that the sprayer and the motor are installed firmly on the frame.
2. Set both the pulleys in a straight line and the belt in an appropriate tightness.
3. All joints of the hoses must be tightened to prevent any leakage.
4. Before starting the motor shut-off the cock (valve) Loosen the pressure adjusting screw and pull the pressure adjuster to the top.
5. Start the motor to power the sprayer. Keep a proper RPM. Press the pressure adjuster to the bottom.
6. Keep the pressure around 20-35 Kgs by adjusting the Pressure adjusting screw.
7. Open the cock (valve) to start spraying.
8. After the spraying is over, pull the pressure adjuster to the top and operate the sprayer with fresh water to clean out the remaining chemicals.

PUMP LUBRICATION

1. Replace the lubricating oil, after the sprayer has been used for the first 10 hours. Next oil change should be after 40 hours. Afterwards oil should be changed every 70 hours.
2. Drain away the dirty oil by opening the drain plug.
3. After the drain plug is screwed back, remove the oil inlet cover and refill fresh SAE 20W-40 engine oil.
4. Keep the oil level at 2/3rd of the oil gauge.
5. Always fill the grease cups with grease. Screw on the grease cups, 2-3 cycles every 2 hours of spraying.

TROUBLE SHOOTING

Problem	Probable cause	Remedy
Feeding Failure & Pressure Instability	The suction hose is leaking or is blocked or struck	Clear the blockage and fix the leakage
	The valve assembly is damaged or struck.	Remove the suction chamber and the water outlet chamber, clean the valve assembly.
Pressure Insufficiency	Pressure screw is not adjusted properly	Adjust the pressure screw accordingly

	Check if the belt is loose	Tighten the belt
	The sprayer hose and the couplings are broken or damaged or loose	Repair or replace the sprayer hose and the coupling if necessary
Cylinder Leakage	Problem with the adjusting rings	Remove the gland cover and wind up the adjusting rings. If the problem is not fixed replace the v-packing in the cylinder

MAINTENANCE AND STORAGE

1. Replace the oil after first 40 hours, and afterwards replace it once every 70 hours.
2. Each and every time once the work is finished operating it with clean water for 2~3 minutes to eliminate the residual chemical and keep all the parts clean.
3. For long term storage, clean and wipe the spraying machine dry and place it in a cool and dry place.

TECHNICAL SPECIFICATION

HTP Sprayer sets with Petrol Engines (4-Stroke)

Model	Engine
KK-PSP-20	
Displacement	79.7 cc
Bore*Stroke	46*48 mm
Rated Power	1.5kW(2HP)/ 3600 RPM
Fuel Tank	1.5 L
Max Torque	4.5N.m/ 2500 RPM
Oil Tank	0.36 L

	Sprayer	Irrigation
Model (Cast Iron)	KK-KK-PSP-20	
Pump RPM	3600	1200
Suction Vol. (L/min)	18	16
Pressure (Kg/cm2)	2.5-3PS	1.4
Power kW (hp)		1.5 kW (2 hp)

PART LIST

No.	Part Name	Sr .	Qty
1	Screw Pin		1
2	Washer		1
3	Cylinder Cover		2
4	Cylinder Cover Gasket		1
5	Screw	M6*50	5
6	Intake Rocker Arm		1
7	Exhaust Rocker Arm		1
8	Valve Locker		4
9	Valve Spring Seat		2
10	Valve Spring		2
11	Valve Oil Seal		1
12	Rocker Pin		2
13	Spark Plug		1
14	Cylinder		1
15	Stud	M6*25	2
16	Muffler Gasket		1
17	Muffler		1
18	Nut	M6	5
19	Stud	M6*90	2
20	Carburettor Gasket		2
21	Admitting Pipe		1

ENGINE PARTS DIAGRAM & LIST

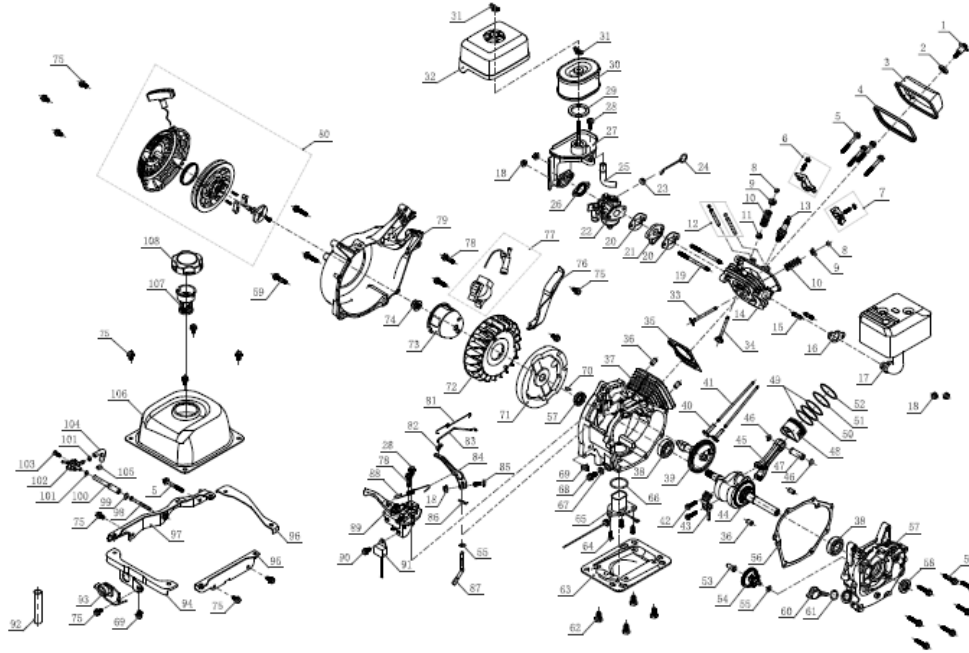
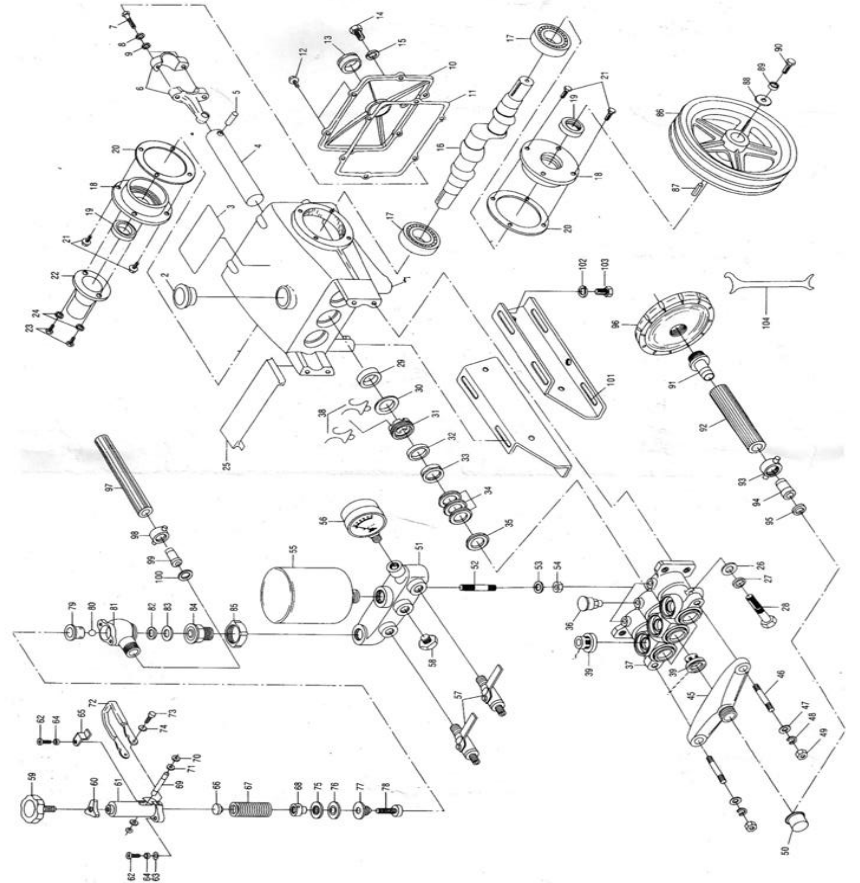


DIAGRAM - POWER SPRAYER



POWER SPRAYER-PARTS LIST

Part No	Part Name	Part No	Part Name
1.	Crank Case	54.	Hex Nut
2.	Oil Inlet Cover	55.	Air Chamber
3.	Name Plate	56.	Pressure Gauge
4.	Plunger	57.	Cock (valve)/Ball Cock
5.	Plunger Pin	58.	N/A
6.	Connecting Rod	59.	Pressure Adjusting Screw
7.	Bolt Connecting Rod	60.	Fly Nut
8.	Spring Washer	61.	Spring Box
9.	Plain Washer	62.	Cross Screw
10.	Crank Case cover	63.	Plain Washer
11.	Packing Cover	64.	Spring Washer
12.	Screw Cover	65.	Level
13.	Oil Gauge	66.	Upper Metal
14.	Drain Plug	67.	Regulation Spring
15.	Packing Drain Plug	68.	Spring Seat
16.	Crank Shaft	69.	Pin-Spring Box
17.	Ball Bearing	70.	E-Ring
18.	Case Ball Bearing	71.	Plain Washer
19.	Oil Seal, Crank Shaft	72.	Pressure Adjuster
20.	Packing Bearing Case (Only for 120A3)	73.	Hex Bolt
21.	Hex Bolt (Only for 120A3)	74.	Plain Washer
22.	Cover-Crank Shaft	75.	N/A
23.	Screw-Crank Cover	76.	N/A
24.	Plain Washer	77.	Box Oil Seal
25.	Gland Cover	78.	Spindle
26.	Plain Washer	79.	N/A
27.	Spring Washer	80.	Ball Valve / Steel Ball
28.	Stud Bolt	81.	Body Over Flow
29.	Plunger Oil Seal	82.	Valve Seat/ Steel Ball Seat
30.	Check Ring	83.	Packing Valve Seat
31.	Adjusting Ring	84.	N/A
32.	Grease Seal	85.	N/A
33.	Grease Ring	86.	V-Pulley

STORAGE

If the engine is not used for a long time, do the necessary maintenance before its storage.

- Firstly, take off the fuel tank, drain out all fuel, and clean the dirt and water inside the tank. Open the fuel cock, unscrew the drain plug at the bottom of carburetor, drain out fuel in carburetor thoroughly, and then tighten the drain plug.
- Secondly, unscrew the drain plug at the bottom of the crankcase and drain out the lubricant oil in the crankcase thoroughly, then tighten the drain plug.
- Finally, clean the surface of the engine with clean cloth, remove the dirt and dust etc. Then store the engine in a well-ventilated, dirt-free place.

TRANSPORTATION

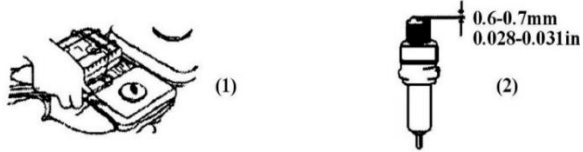
- Contact with the hot engine or exhaust system can cause serious burns or fires. Allow the engine to cool down before transporting or storing the engine.
- During transport of the engine, turn the engine switch and the fuel valve to OFF. Keep the engine cool.

TROUBLESHOOTING

- The Engine Can't Startup**
 - Have the engine checked if it is hard to or cannot be started.
 - Firstly, check the fuel level of the fuel tank. Turn fuel valve to (2), Fuel should flow from the drain when the fuel valve is turned ON. Tighten the drain plug. (Refer to starting of the engine)
- Spark Plug**

Check the spark plug. Remove the spark plug cap and clean any dirt around it. If the engine still cannot be started after repeating several times, please see the authorized dealer. Users are not allowed to dismantle or reassemble the unit by themselves.
- Not Enough Power**
 - Check the air-cleaners. Please refer the maintenance inspection book to clear the air-cleaner.
 - Check the fuel. Please strain out the gasoline in fuel tank and in carburetor, and fill in new gasoline.
 - For any other trouble, please contact our dealer.

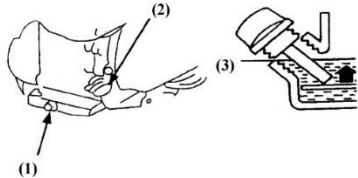
3. Clean carbon fouling of the spark plug after working up to 50hrs. Check the clearance, and adjust the gap to 0.6-0.7mm (see figure 4-1). Check radiator, and clean fouling among radiators.
- Drain the oil while the engine is warm to assure rapid and complete draining.
 - Remove the drain plug and sealing washer, remove the oil filler cap, and drain the oil.
 - Reinstall the drain plug and sealing washer. Tighten the plug securely.
 - Refill with the recommended oil and check the oil level.



(1) Dismantle Spark Plug

(2) Adjust Clearance

4. Clean the fuel tank and filter when working time reaches 100hrs: Remove the fuel cover, drop out filter, and wash it with brush slightly. Remove fuel tank, clean the fouling and water inside fuel tank. Reinstall fuel tank, place filter from fill-in hole, filling the clean fuel to red line level.



1) Drain plug

2) Engine switch

3) Lower level

Check aging of fuel pipe every 2 years. If ageing, hardening and cracking is detected, have it replaced. Tighten the joints, and check leakage.

Before storing the unit for an extended period:

1. Make sure the storage area is free of excessive humidity and dust.
2. Service according to the table below.

Storage Time	Recommended Service Procedure To Prevent Hard Starting
Less than 1 month	No preparation required
1 to 2 months	Fill with fresh gasoline and add gasoline conditioner
2 months to 1 year	<ul style="list-style-type: none"> • Fill with fresh gasoline and add gasoline conditioner • Drain the carburetor float bowl • Drain the fuel sediment cup

Part No	Part Name	Part No	Part Name
34.	V-Packing	87.	Key-V-Pulley
35.	V-Packing Seat	88.	Plain Washer
36.	Grease Cup	89.	Spring Washer
37.	Cylinder	90.	Hex Bolt
38.	Set Clip For Adjusting	91.	Strainer Joint
39.	Valve Assembly	92.	Suction Hose
40.	N/A	93.	Wing Nut, Suction
41.	Valve Spring	94.	Male Joint
42.	N/A	95.	Suction Packing
43.	Valve Seat	96.	Strainer Suction Assy
44.	Valve Seal	97.	Overflow Hose
45.	Suction Chamber	98.	Wing Nut, Over Flow
46.	Stud Bolt-Suction Chamber	99.	Male Joint
47.	Plain Washer	100.	Overflow Packing
48.	Spring Washer	101.	Bed, Crank Case
49.	Hex Nut	102.	Spring Washer
50.	Suction Cap	103.	Hex Bolt
51.	Water Outlet Chamber	104.	Adjusting Handle
52.	Stud Bolt-Outlet Chamber	105.	Partial Regulator
53.	Plain Washer	106.	

USER MANUAL- PETROL 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. This manual is a part of the gasoline engine and should be transferred when the machine is resold.

SAFETY LABELS



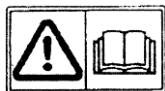
DANGER Indicates a hazard, if not avoided, can result in human injury or death.



WARNING Indicates a hazard, if not avoided, could result in human injury and/or property damage.

CAUTION

Indicates a hazard, if not avoided, might result in slight injury and/or property damage.

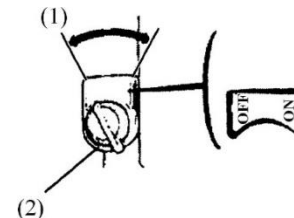


Please read and understand this owner's manual before operation of the engine to avoid accidents by familiarizing yourself with your engine's controls and safe operation procedures.

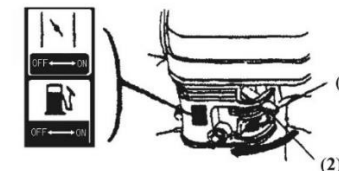
SAFETY INSTRUCTIONS

STOPPING THE ENGINE

Adjust throttle to proper position. Reduce engine speed, close the choke. Turn engine switch to OFF position.



(1) Throttle knob



(2) Throttle is at OFF

! DANGER:

- Gasoline is extremely flammable and explosive under certain conditions.
- Refuel in well-ventilated places with the engine stopped. Do not smoke or allow flames or sparks near the places where the engine is refueled or gasoline is stored.
- Do not add fuel over the shoulder of strainer. After fueling, tighten the tank cover.
- Fuel vapors are extremely flammable and may ignite after the engine has started. Make sure that any fuel spillage has been wiped off before starting the engine.
- Avoid skin coming in contact with gasoline for a long time, avoid breathing in gasoline vapors. Keep children away from them.

NOTE:

Fuel can damage paint and plastics. Be careful when refueling. Damage caused by spilling fuel is not covered under warranty.

MAINTENANCE

Do periodic maintenance to keep the engine in good condition. Always follow the inspection and maintenance recommendation and schedules given in this manual.

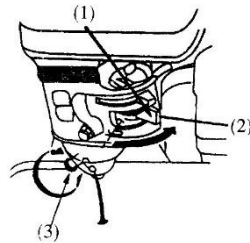
! WARNING:

Stop the engine before doing any maintenance work. If the engine must be operated, provide adequate ventilation. Breathing in exhaust can cause loss of consciousness and even lead to death.

Everyday Maintenance:

1. **Air cleaner:** A dirty air cleaner will restrict air flow into the carburetor. To prevent carburetor malfunction, service the air cleaner regularly. Service more frequently when operating the generator in extremely dusty areas.
 - Check air cleaner core, get rid of fouling, and keep the core clean.
 - Check bolts, fasten the loose ones.
 - Check whether lubricant oil level is within the limits.
2. Clean the core after 25hrs of engine run

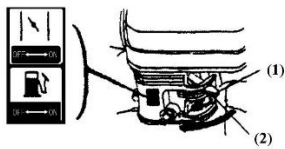
- Pull the choke rod to the CLOSE position. Adjust throttle to proper position. Pull the starter grip lightly until resistance is felt, then pull it rapidly



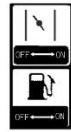
(1) Fuel Valve (2) Start Level (3) Drain Plug

NOTE:

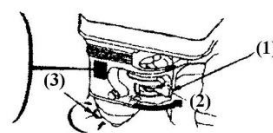
- Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.
- Once the engine got started, let it run for 1-3 minutes at idle speed, check whether it is balanced, cracked, then pull the throttle to open position, adjust choke rod to OPEN.



(1) Auto-Throttle



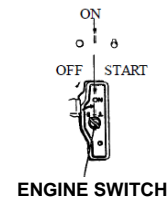
(2) Off Position



(3) Starter Knob

Electrical Starting:

Turn the engine switch to START position and hold a while until the engine started



NOTE: Restrict the starting time within 5 seconds to avoid engine damage. If engine cannot be started, release starter knob, retry after 10 seconds.

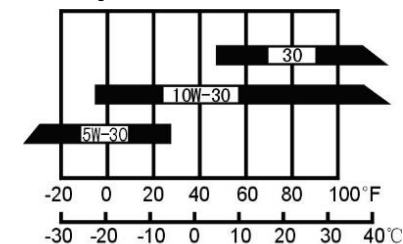
1. Please perform some pre-operation checks before operation to avoid human injury and equipment damage.
2. Keep the engine in good, ventilated places at least 1 meter away from buildings and other equipment's during operation and keep the flammable substances away from the engine to avoid fire.
3. Keep children and pets away from the operation area.
4. Make sure that the person who operates the engine receives proper instruction.
5. Keep the flammable substances (gasoline, matches) away from the operating engine.
6. As gasoline is extremely flammable and explosive under certain conditions, please refuel in a well-ventilated area with the engine stopped.
7. Do not fill above the shoulder of the fuel strainer.
8. Make sure the fuel cover is tightened.
9. Make sure that any spilled fuel has been wiped off before starting the engine.
10. Do not smoke or allow flames or sparks where the engine is refueled or where gasoline is stored.
11. Exhaust contains poisonous carbon monoxide, a colorless and odorless gas. Breathing exhaust can cause loss of consciousness and may lead to death. Do not operate the engine without good ventilation or in enclosed room.
12. If you run the engine in an area that is confined, or even partially enclosed, the air you breathe could contain a dangerous amount of exhaust gas. Provide adequate ventilation so as to keep exhaust gas from accumulation.
13. Place the engine on flat (level) surface, tilting angle of the engine should not be more than 20°, otherwise it will lead to fuel spilling out.
14. Do not cover the engine so as to avoid fire occurrence.
15. The muffler becomes very hot during and immediately after operation. Be careful not to touch the muffler while it is hot. Let the engine cool down before storing the engine indoors.

PRE-OPERATION CHECKS

Check the oil level.

Lubricating oil:

- Engine lubricant oil is a major factor affecting engine performance and service life.
- The use of the lubricating oil free of cleaning agent or the lubricating oil for the two-stroke engine will shorten the life of the gasoline engine.
- The operating temperature range recommended for the gasoline engine is -5°C~40°C.
- Use 4-stroke motor lubricant oil. 20W-40 is recommended in general, at all temperature use. Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

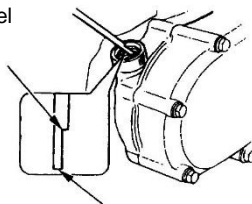


Ambient temperature



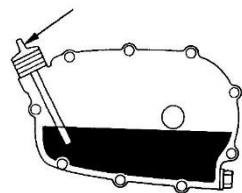
- Before checking engine lubricant oil, place the engine on level surface
- Turn out the oil filler cap and clean the dipstick with a clean cloth.
- Insert the dipstick back into the oil filler hole without turning it in.
- If oil level is below the lower mark of the dipstick, fill oil to the upper level of the dipstick.
- Reinstall the oil filler cap properly.

Upper level



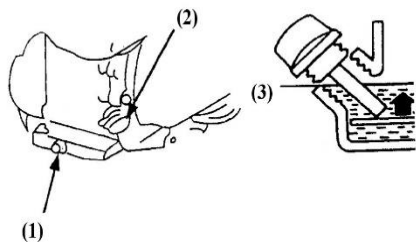
Lower level

Dipstick



Engine oil alert system (optional function):

The oil alert system is designed to prevent engine damage caused by insufficient oil in the crankcase. When the oil level in the crankcase falls below the safe limit, the oil alert system will automatically stop the engine even if the engine switch remains at the ON position. If the engine stops and cannot be restarted, check the engine oil level before troubleshooting in other areas.



(1) Drain plug

(2) Engine switch

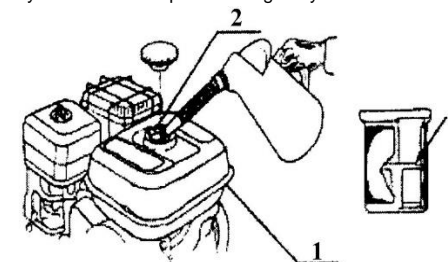
(3) Lower level

Fuel level

- Check the fuel gauge, and refill the tank if the fuel level is low. Do not fill above the shoulder of the fuel strainer. The fuel 90# gasoline is recommended.
- Unleaded gasoline produces less engine and spark plug fouling and extends exhaust system life.
- Never use stale or contaminated gasoline or oil/gasoline mixture. Avoid dirt, rubbish and water from getting into the fuel tank.
- If spark knock or pinging occurs at a steady engine speed under normal load, change brands of gasoline. If spark knock or pinging persists, see an authorized dealer.

! WARNING:

- Running the engine with persistent spark knock or pinging can cause engine damage.
- If persistent spark knocks or pinging is caused by improper usage of the unit, the Distributor's Limited Warranty does not cover parts damaged by that.



(1) Fuel tank

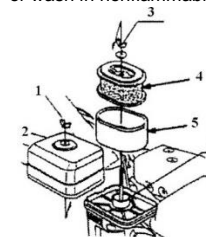
(2) Fill in hole

(3) Red line level

Air cleaner

The air cleaner is a dry type including paper element and foam element.

- Remove the clip and dismantle the air cleaner housing or remove the wing nuts and air cleaner cover.
- Wash the element in solution of household detergent and warm water, then rinse thoroughly, or wash in nonflammable or high flash point solvent. Allow the element to dry thoroughly



- 1) Butterfly nut
- 2) Air cleaner cover
- 3) Butterfly nut
- 4) Paper element
- 5) Foam element
- 6) Seal washer
- 7) Silencer plate

! WARNING:

Do not run the engine without air cleaner.

! DANGER

Using gasoline or flammable solvent to clean the filter element can cause a fire or explosion.

! CAUTION:

Do not run the engine without air cleaner core, otherwise dust and/or other foreign matters may get into the engine through carburetor, and results in rapid engine worn-out.

STARTING THE ENGINE

- Turn the fuel valve to ON position, unscrew the drain plug on carburetor bottom, and fasten the drain plug until oil spills out.