

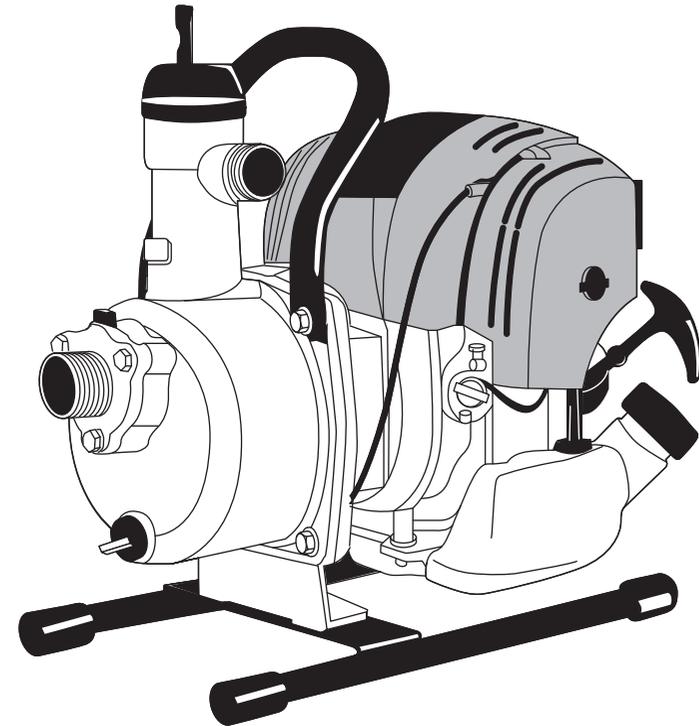
## HIDELS PUMP

Ultralight 4-stroke Engine

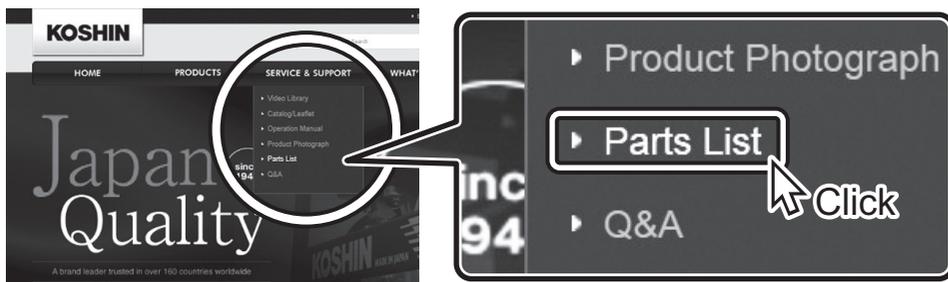
### SEV-25F

OPERATION MANUAL

- Thank you for choosing KOSHIN products.
- This manual is for your safety.  
Please read carefully before use.  
(Wrong usage could cause serious injury or death.)
- Please keep this manual at all time.



### SPAREPARTS



For spareparts information, visit



<http://www.koshinpump.com>

**KOSHIN LTD.**  
<http://www.koshinpump.com>

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This manual is prepared for your safety when operating pump. Please read carefully and comprehend fully before use. (Wrong usage could cause injury or death.) Please keep this manual handy for future reference.

### Unpacking

Upon receiving the pump it should be inspected for any damage and/or missing parts. If there is any damage, file a claim with the carrier who delivered the pump. Ensure the Pump Model is correct and keep all operating manuals with the pump for reference.

### CAUTION

**Do not operate unit if there is any damage due to shipping, handling, or use. Damage may cause injury or property damage.**

### Safety Precautions

Read these "Safety Precautions" before operation.

This manual contains information that is very important to know and understand. This information is provided for your SAFETY and to PREVENT EQUIPMENT PROBLEMS.

To help recognize this information, observe the following symbols:

### DANGER

**Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

### WARNING

**Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

### CAUTION

**Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.**

	<b>Avoid open flames or spark when refueling or maintaining the pump or engine.</b> <b>Gasoline and vapors are highly flammable!</b>
	<b>Do not operate Engine pump inside a room or confined area without proper ventilation.</b>
	<b>Exhaust gases are dangerous. There is danger of gas poisoning.</b>
	<b>Do not use pump on slope. Fuel leakage at fuel tank or carburetor may cause fire.</b>
	<b>Keep area around the engine muffler free of debris—muffler can be very hot. It may cause fire or breakage.</b>
	<b>Read instructions carefully and understand fully before use.</b>
	<b>Keep children away from pump when in operation.</b>
	<b>Do not overhaul, service or repair, except by a qualified person who is trained to do so.</b>
	<b>Do not dead head or restrict water flow either at suction or discharge side of the pump. This may cause high air pressure and/or high temperature conditions within the pump. Extreme heat or pressure may exist.</b>
	<b>When priming the pump, only use water. If long priming times - 5 min or more, turn off engine and allow pump to cool off.</b>

	<b>Do not open plugs or hoses if heat or pressure exists within the pump.</b>
	<b>Do not touch muffler or any part of the engine. It could cause burn.</b>
<b>Do not open plugs or hoses if heat or pressure exists within the pump.</b>	
<b>WARNING</b>	
	<b>This pump is designed to pump water. Not to be used for drinking water, chemicals, or flammable liquids.</b>
	<b>Water temperature range is 5°C/41°F to 45°C/113°F. Damage may result if not followed.</b>
	<b>Do not run pump dry. This will cause premature wear and/or failure.</b>
	<b>Please use proper suction hose and connectors at suction side of pump.</b>

### CAUTION

**Do not operate the pump without proper training. Know how to stop the pump quickly and understand the operation of all of the controls.**

**Attach discharge hose before operating pump. Do not restrict or obstruct discharge hose.**

### Personal Safety

Wear eye protection at all times when operating or maintaining pumps.

Keep area of operation clean, uncluttered and properly lighted; replace all unused tools and equipment.

Must keep visitors at a safe distance from the area of operation.

Gasoline and its vapors are highly flammable.

- Use gasoline only.
- Only use an approved container to store gasoline.
- Keep gasoline away from heat, spark, or open flame.

- When working with gasoline, a fire extinguisher must be provided.
- When handling flammable liquid, adequate ventilation must be provided.
- Smoking is prohibited.

### CAUTION

**Pump failure will occur if the suction strainer is not properly fitted. The strainer keeps the size of the suspended solids entering the pump to the predetermined size the pump has been designed to handle. The strainer should be installed in the position where water accumulates most easily. When installing on weak ground, such as gravel or sand, position wooden boards or blocks, etc. below the strainer to prevent it from sinking into the ground.**

### CAUTION

**Make sure discharge hose is secure before operating the pump. A loose discharge hose may slip causing damage or personal injury. Do not overtighten threaded fittings. Check hoses and all connections before operation. Inspect pump and associated accessories before each use. Drain pump of water before servicing. Incorrect or improper usage could cause injury or death. Please keep this manual handy for future reference.**

	<b>Before starting the engine, always conduct a pre-operation inspection. Doing so can prevent personal injury or damage to the pump (For further information, please refer to "2. Inspection of each part (p. 3)").</b>
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	<b>To avoid destroying the pump, avoid sudden acceleration or stopping of the engine. Do not open the throttle lever fully directly after start-up, and do not turn the engine switch off with the throttle level fully open.</b>
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## BEFORE USE (ENGINE)

### 1. Fuel and Engine Oil

#### ▲ CAUTION

4-stroke engines require engine oil.

The pump is shipped from the factory without engine oil.

Make sure you put engine oil in the engine before starting it. Starting the engine without engine oil in it will cause it to seize, and it will be difficult to repair (Engine seizure is not covered by the warranty).

#### 1) Engine oil

- a. Oil is a major factor influencing the performance and service life of the pump. Use 4-stroke automobile engine oil.

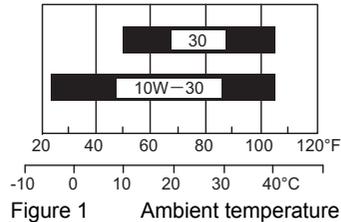
**Oil volume: 0.1 L (100 cc)**

**API standard SE grade or above**

- \* Make sure to check that the oil label states SE grade or above.
- \* Synthetic oil can not be used.

#### Recommended oil

For general use, SAE 10W-30 is recommended. If the average temperature of the area where the pump is to be used falls within the range marked in Figure 1, then oil of other viscosities may be used, as indicated in the figure.



- b. Engine oil inspection. Set the engine in a level position, remove the oil cap, and inspect to see whether the oil level is up to the bottom of the oil port (Figure 2, 3). If the oil level is too low, add new oil until the level reaches the bottom of the oil port.

- If the oil is noticeably dirty or discolored, change it (For timing and method of replacement, refer to "d. Changing the engine oil").

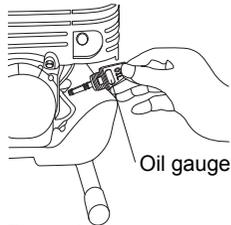


Figure 2

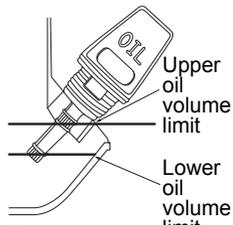


Figure 3

#### Operation Tips:

- If operating the engine continuously, inspect and top-up the engine oil every 8 hours.
  - Since the engine oil volume is small, pour it in small quantities.
  - Make sure to close the oil cap firmly. If the cap is left loose, the oil may leak out.
- c. Test operation  
Be sure to thoroughly run-in engines that have had complete disassembly repairs, and particularly when there are new replacement parts such as cylinders, piston rings, and valves, etc.
- d. Changing the engine oil  
Dirty engine oil can markedly shorten the service life of sliding or rotating parts. Make sure to observe the required oil change period and oil amount.

#### ▲ CAUTION

Immediately after stopping, the engine body and engine oil will be very hot. Allow sufficient time for them to cool before changing the oil. There is a risk of sustaining a burn injury.

#### Oil Change Period

First time: After either one month or the first eight hours of operation, thereafter: Every six months or 50 hours of operation (change on the earliest of either the displayed period or the hours of operation).

#### Oil Change

1. Check to ensure that the fuel cap is tightened.
2. Remove the oil cap, tilt the pump toward the oil port side and drain the oil. Use a container to receive the oil.
3. Return the engine to level position and pour in new oil until the level reaches the bottom of the oil port. Since the oil volume is small, pour it in small quantities.
4. After pouring in the oil, tighten the oil cap securely so that it will not become loose.

#### Operation Tips:

- Do not dispose of the used oil in the trash, or by pouring it on the ground or into a drain. The method for disposing of oil is obligatory under laws and regulations. Dispose of used oil properly in accordance with laws and regulations. If you are uncertain about anything, consult with the supplier of the oil before disposing of it.
- Even if it is not used, oil will degrade naturally. Inspect and change the oil regularly.

#### ▲ CAUTION

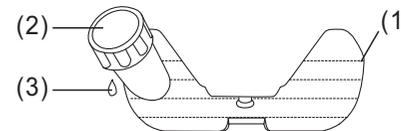
- To prevent unintended starting of the engine, remove the spark plug lead during inspection and maintenance.
- Do not touch the engine immediately after operation as it will be hot.
- Flames and sparks are strictly prohibited when handling fuel (gasoline).
- If fuel has been spilled around the engine, wipe the area clean before using it.
- Do not wash the engine with water.

#### 2) Fuel

#### ▲ WARNING

Fuel is highly flammable, and it may combust and the smoke may be inhaled. Therefore be especially careful when handling fuel or filling up the fuel tank.

- a. Use unleaded automobile gasoline for the engine fuel.
- b. Be sure to fill up the fuel tank in a well-ventilated area. Always stop the engine when filling the fuel tank.
- c. Do not allow the fuel tank to overflow. Do not allow the fuel to spill onto the oil cap. (1) After refueling, tighten the fuel cap firmly. (2)
- d. If fuel has spilled, do not start the engine until the fuel has evaporated or until it is completely cleaned up. (3)
- e. Do not smoke or generate flames or sparks in the area where the engine refueling is performed, or the area where gasoline is stored.
- f. Discharge any static electricity on your body before carrying out refueling. You can discharge static electricity by touching the handle or a metal part of the pump.



- (1) Do not fill the fuel tank more than 80% of its capacity.
- (2) Tighten the cap.
- (3) Wipe away spilled fuel.

Figure 4

#### 2. Inspection of each part

Always inspect the engine before operation.

##### Air cleaner inspection (1)

- Is the air cleaner element dirty?
- If the element is dirty, or if the oil part has dried out, perform inspection and maintenance following "3. Air cleaner inspection and cleaning (p. 6)".

##### Fuel pipe inspection (2)

- Does the fuel pipe have any splits or cracks? Are the sections that are inserted into the fuel tank and ventilator inserted properly?

#### ▲ CAUTION

- If there are splits or cracks in the pipe, or if it has come out from the points where it is inserted, fuel may leak out causing a fire or explosion. The pipe must therefore be replaced or maintained.

##### Fuel and engine oil inspection (3)

- Is there fuel and engine oil in the engine?
- Are you using old fuel or engine oil?
- Fill the fuel tank with the correct fuel, following the items in "1. Fuel and Engine Oil (p. 3)".

#### ▲ CAUTION

- Naturally, you should take sufficient care against sparks when handling fuel during refueling. Sparks can cause fires and explosions.
- Make sure the fuel tank cap is tightened firmly.

##### Blockage inspection (4)

- Is there any debris, grass, etc. blocking the cooling fins, the area around the muffler, or the air cooling inlet?
- Remove any blockages.

##### Cover, screw and nut inspection

- Have any screws or nuts become loose or fallen off in each section?
- If any have become loose or fallen off, tighten or replace them.
- Check that the plug covers have been sealed.

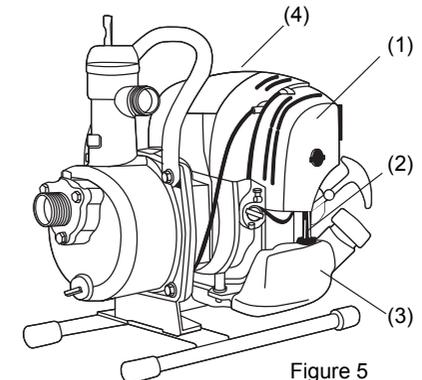


Figure 5

## OPERATION

### 1. Application

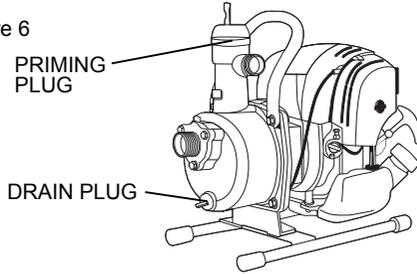
<Clean Water Pump>

This pump is designed for clean water and dewatering applications, agriculture use, do not use with muddy or silt laden water.

#### ⚠ CAUTION

Premature wear, damage and failure of the mechanical seal will occur if these instructions are not followed.

Figure 6



### 2. Priming

Refer to Figure 6 for priming instruction. This is a self-priming pump, fill pump casing fully with water before starting or running the engine. If not filled with water, pumping will not begin.

#### ⚠ CAUTION

If these instructions are not followed, the pump will not draw water and this will cause damage or failure of the mechanical seal.

### 3. Connection of suction hose

Place the pump as close to the fluid source as possible. Make the suction hose as short as possible. The suction hose should be the same diameter as the suction port. Air leaks in the suction hose will prohibit the pump from priming. The suction strainer, if used, should be the same diameter as the hose and match the solids handling capability of the pump.

#### ⚠ CAUTION

If this step is not followed, the pump will fail to prime.

### 4. Drain water after use

Water inside may freeze at below 0°C/32°F in winter and may damage pump. After use, drain water from drain plug before storing.

#### ⚠ CAUTION

If these instructions are not followed, pump casing may crack due to water freezing in the pump casing.

### 5. Long storage

Remove fuel from fuel tank and carburetor completely.

#### ⚠ CAUTION

If fuel is left in the tank and carburetor, it may get stale and harm the engine. Hard starting or possible no starting may result. (Refer to Engine Operation Manual)

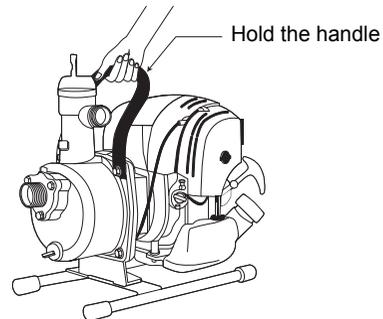
### 6. Preventing water hammer.

Do not abruptly block, close or compress discharge hose while pump is running. Do not allow cars or trucks to drive over the discharge hose.

#### ⚠ CAUTION

If not followed, pump casing may break.

### How to carry pump



- Make sure to close the fuel tank cap before carrying.
- Do not tilt or wield the pump when carrying.

## BEFORE USE (PUMP)

### 1. Make sure all accessories are provided.

List of accessories provided are printed on the pump manual.

#### ⚠ CAUTION

Check your engine carefully to determine 2-cycle or 4-cycle engine.

### 3. Please install coupling in order of: (1) → (2) → (3) (\*If Applicable)

If this coupling assembly is not installed correctly in accordance with Figure 7, it will leak and pump will fail to prime.

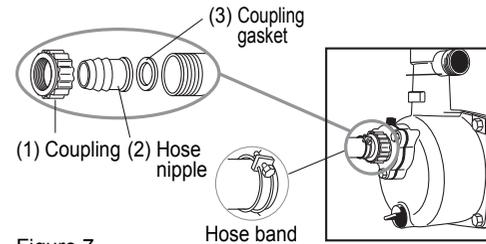


Figure 7

### 4. Do not use a smaller diameter suction hose.

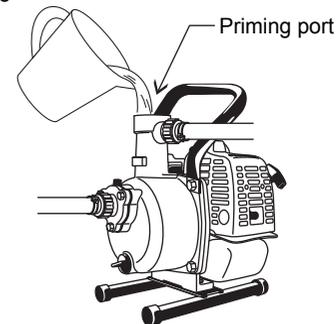
Using a smaller diameter hose will cause the pump to cavitate. Cavitation will result in mechanical seal failure.

### 5. Make sure suction hose is connected properly.

To avoid air leaks and slow priming, ensure the suction hose is connected properly.

### 6. Ensure pump is fully filled up with water.

Figure 8



#### ⚠ CAUTION

Dry running may cause serious damage to pump.

## HOW TO USE (ENGINE)

### 1. Starting the Engine

- 1) Turn the engine switch to ON.  
Press the priming pump with your finger.  
(At least 10 times) The priming pump is pressed to pump the fuel up into the carburetor.

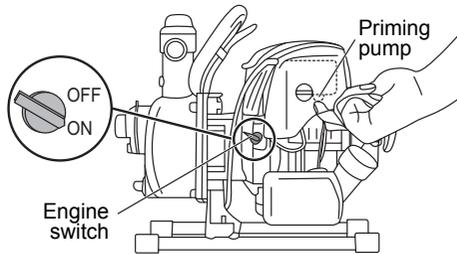


Figure 9

- 2) Set the choke lever in the fully closed position (upward side). When there is remaining fuel and the engine is hot or during summer, set the choke lever to fully open position (downward side).

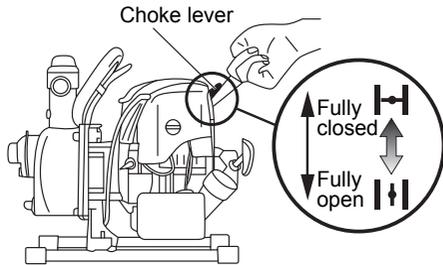


Figure 10

- 3) Move the throttle lever to halfway between the "low speed" and "high speed" positions.

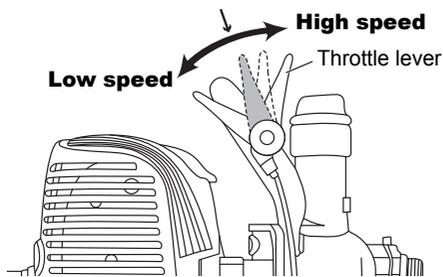


Figure 11

- 4) Holding the pump in place, grasp the recoil started grip and pull it hard.

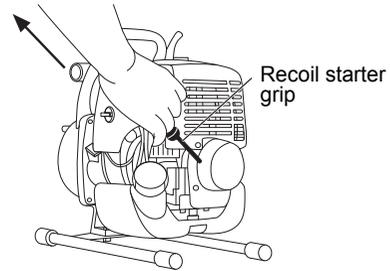


Figure 12

- 5) After starting, move the choke lever into fully open position (downward side). If there is a combustion sound but the engine doesn't start, set the choke in fully open position and pull the recoil starter grip again.

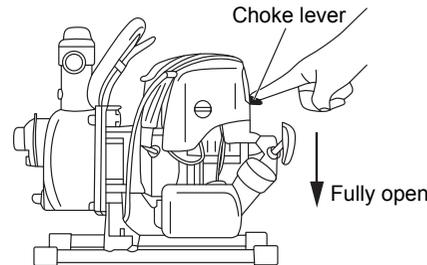


Figure 13

- This engine is constructed so that excess fuel will be returned to the fuel tank when the priming pump is operated. Even if the priming pump is operated too much, the carburetor will not become flooded. Conversely, insufficient fuel may cause starting trouble, so be sure to use the priming pump sufficiently.

### ⚠ CAUTION

- If the engine does not run well, change the positions of the choke lever and the throttle lever and repeat the starting process.
- To achieve the best performance from the engine pump, allow plenty of time for warm up operation after cold-starting, and do not shift the throttle suddenly.

### 2. Method of warm-up operation

- After starting the engine, set the throttle lever in the low-speed position and allow the engine to warm up for about three to five minutes. As the engine warms up, it will deliver smooth acceleration.

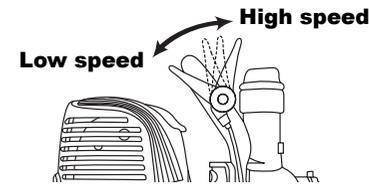


Figure 14

- Immediately after starting, lubricating oil has not fully circulated to all the parts of the engine. Therefore, do not increase the engine speed suddenly.

### 3. Engine stopping method

- 1) Set the throttle lever in low-speed position.

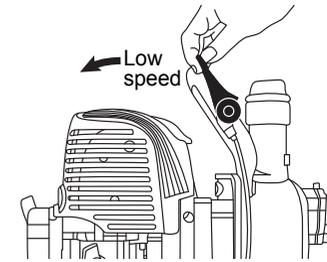


Figure 15

- 2) Turn the engine switch to OFF to stop the engine.

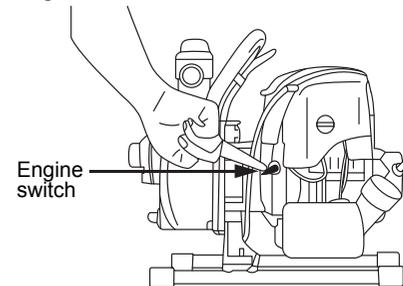


Figure 16

- If you will not continue operating afterwards, drain the fuel from the fuel tank and start the engine again to use up the fuel from inside the carburetor.

### ⚠ CAUTION

When you are using fire or not using the operating machinery during a break, etc., place the engine in a level position. (If the fuel tank cap is below the fuel level, it may leak).

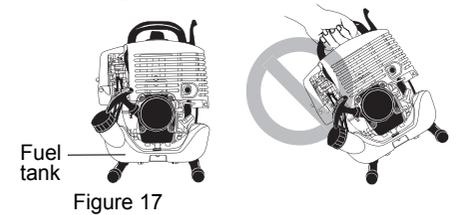


Figure 17

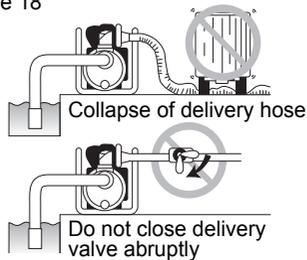
## HOW TO USE (PUMP)

1. Ensure the pump casing is completely filled (primed) with liquid prior to start-up. Failure to properly prime the pump will result in pump damage.
2. Ensure strainer at the end of suction hose is fully submerged in water. If any mud or sand is at the bottom of water, suspend hose avoiding any debris.
3. Do not block, kink, or obstruct the flow of liquid through the discharge hose.

### ⚠ CAUTION

**Beware of water hammering**  
Do not allow any vehicle to run over the delivery hose. Do not close the delivery valve abruptly because water-hammer may occur. This may result in excessive damage to the pump.

Figure 18



For engine instructions and notes, please refer to the Engine Operation Manual enclosed.

### ⚠ CAUTION

Do not smoke or expose to open flame or spark as fuel is highly flammable. Unused fuel must not remain in the tank for long-term storage. Unused, older fuel may cause future engine failure.

## AFTER USE

### 1. Long-term Storage

When not using the pump for a period of a week or more, maintain the engine and store according to the following procedure so that the fuel does not become denatured and cause starting or running trouble.

- 1) After draining the fuel from the fuel tank, start the engine and run it until it stalls due to using up all the fuel. (Always fill the pump with priming water, and after the engine has stalled, drain the priming water from the drain port.)
- 2) Wash inside the fuel tank and the fuel filter with new white kerosene.
- 3) Remove the spark plug and pour a small amount of new engine oil into the spark plug port, then slowly turn the engine a few times using the recoil starter grip, before replacing the spark plug and pulling the recoil starter grip until it stops at a point where it feels heavy.
- 4) Cover the outside surface of the pump with a soft cloth and store it in a place with low humidity and no flames.

### ⚠ CAUTION

**Fuel is extremely flammable. Avoid flame and smoking when handling it.**

### ⚠ CAUTION

**If the engine is stored for a long time with fuel left in the tank, impurities in the fuel may clog the fuel line, such as the carburetor and fuel filter, causing engine trouble. Always drain the fuel from the engine when storing for a long time.**

## 2. 50-hourly inspection and maintenance

### Clean fuel filter

Use a wire or similar tool to draw the filter out through the fuel port and wash it with clean white kerosene.

If the filter is very dirty, replace it and then wash the inside of the tank.

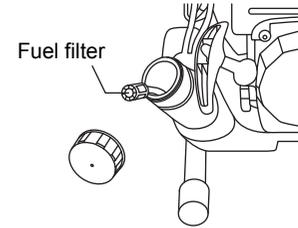


Figure 19

### Spark plug cleaning and inspection

- If the spark plug is wet or dirty, wipe it clean with a rag etc.
- Set the plug gap at 0.6 mm to 0.7 mm.

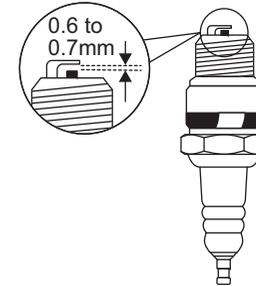


Figure 20

- If the engine does not start even after cleaning the spark plug and setting the gap, replace the spark plug with a new one.
- After changing the spark plug, close and lock the plug cover.
- Please do not remove the fixed part of plug cover.

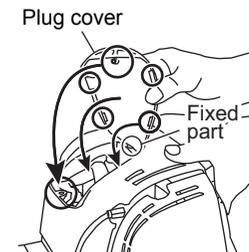


Figure 21

## 3. Air cleaner inspection and cleaning

Clean the air cleaner frequently. If the air cleaner is dirty, the engine output power will decline. If the element is clogged with dust, wash it with white kerosene and squeeze it out thoroughly before attaching it to the plate.

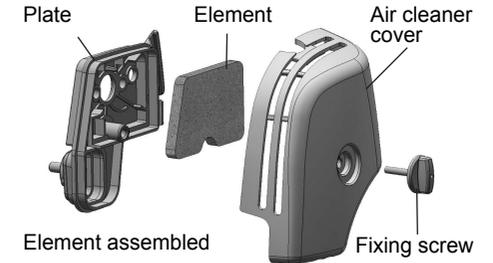


Figure 22

### IMPORTANT

**Do not operate the engine without attaching the element. Doing so will accelerate engine wear.**

## PERIODIC ENGINE INSPECTIONS

Inspection and maintenance items	Inspection period		After one month or after the first 8 hours of operation	Every three months or after every 20 hours of operation	Every six months or after every 50 hours of operation	Every two years
	Inspect	Replace				
Inspect for loose screws and nuts in every part	Inspect	○				
Inspect and replace engine oil	Inspect	○				
	Replace		○		○	
Inspect and replace fuel pipe	Inspect	○			○	
	Replace					○*1
Inspect, clean, and replace air cleaner	Inspect and clean	○		○*2		
	Replace					○*3
Clean the area around the air cooling intake, cooling fins, and muffler	Inspect and clean				○	
Inspect, clean, and replace spark plug	Inspect and clean				○	
	Replace					○
Inspect the gap in the intake and exhaust valves	Inspect and adjust				○*1	
Adjust idling speed	Inspect and adjust				○*1	
Inspect and clean fuel tank	Inspect and clean				○	
Inspect and clean fuel filter	Inspect and clean				○	
Inspect, clean, and replace muffler	Inspect and clean			○		
	Replace					○*1

\*1 These items require the use of appropriate tools and maintenance techniques. Please contact your dealer about these. We recommend replacement of parts to ensure continuing safe, comfortable use of the engine over the long-term.

\*2 When using the engine in a dusty environment, inspect and clean daily.

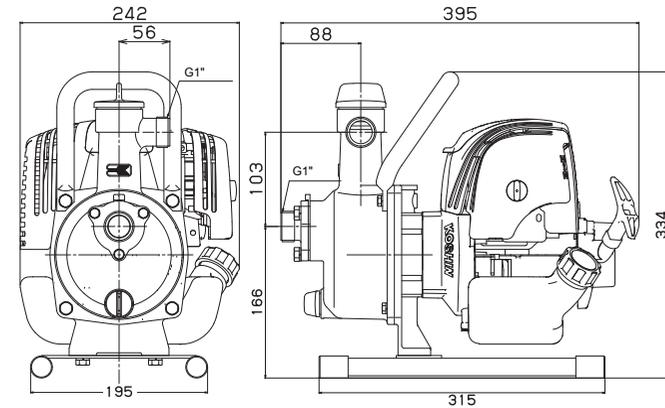
\*3 When replacing the air cleaner, replace the element only.

○ Carry out the periodic inspection upon the shorter of either the displayed period or the operating time.

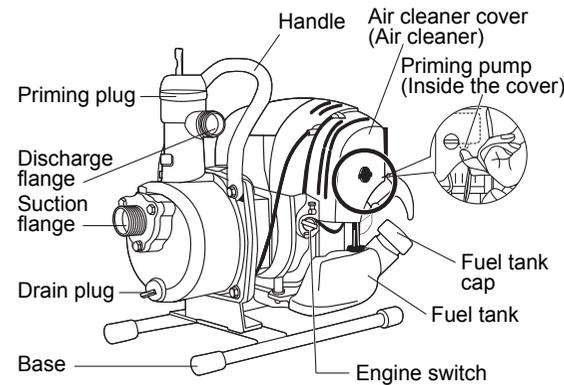
○ Conduct the inspection promptly after the displayed period has elapsed.

## OUTLINE DRAWING

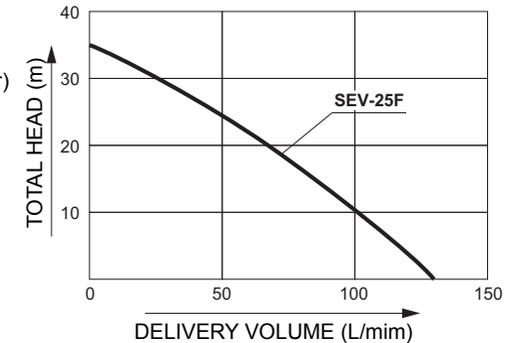
(SEV-25F)



## NOMENCLATURE



## PERFORMANCE CURVE



Note : Performance ratings are guaranteed minimum, not inflated maximum.

## SPECIFICATIONS

Model		SEV-25F	
PUMP	Connection Dia	25 mm (1")	
	Connection Thread	Outer Pipe Thread BSPF	
	Total Head	35 m (115 ft)	
	Delivery Volume	130 L/min (34 USG/min)	
	Max. Suction Head	8 m (26 ft)	
ENGINE	Model	K35 Forced Air-cooled 4-stroke Gasoline Engine	
	Exhaust Volume	35 cc	
	Output	Rated Power	0.81 kW (1.1 PS) / 6500 rpm
	Fuel	Automotive Unleaded Gasoline	
	Fule Tank Capacity	0.73 L (0.19 USG)	
	Continuous Operating Time	Approx. 55 min *Depending on usage.	
	Starting Method	Recoil Starter	
	Net Weight	7.4 kg (16.3 lbs)	
	Gross Weight	8.5 kg (18.7 lbs)	
Standard Accessories	2 Coupling Sets, 1 Strainer, 3 Hose Bands, 1 Garden Hose Adapter, 1 Engine Tool Set		

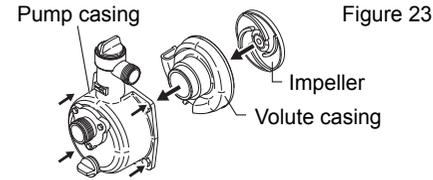
For the purpose of improvement, specifications are subject to changes without notice.

## Troubleshooting

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Cannot pull or hard to pull recoil starter	<ol style="list-style-type: none"> <li>1. Old fuel</li> <li>2. Rusting inside engine</li> <li>3. Burn out of engine</li> <li>4. Blocked impeller</li> <li>5. Debris at impeller</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuel. If there is no improvement, repair engine</li> <li>2. Refer to Engine Operation Manual. (Repair)</li> <li>3. Refer to Engine Operation Manual. (Repair)</li> <li>4. Dismantle &amp; clean the impeller ⇒ <b>SOLUTION (1)</b></li> <li>5. Dismantle &amp; clean the impeller</li> </ol>
Low delivery volume	<ol style="list-style-type: none"> <li>1. Air leakage from suction side</li> <li>2. Low output from engine</li> <li>3. Damage of mechanical seal</li> <li>4. Suction lift is high</li> <li>5. Suction pipe is too long or too small in diameter</li> <li>6. Water leaking from delivery hose or pipe</li> <li>7. Debris at impeller</li> <li>8. Worn or broken impeller</li> </ol>	<ol style="list-style-type: none"> <li>1. Check hose at suction side ⇒ <b>SOLUTION (2)</b></li> <li>2. Check and repair engine</li> <li>3. Replace mechanical seal (Repair)</li> <li>4. Decrease suction lift</li> <li>5. Shorten suction pipe or enlarge to proper diameter</li> <li>6. Check and stop leakage of water</li> <li>7. Dismantle &amp; clean the impeller ⇒ <b>SOLUTION (1)</b></li> <li>8. Replace the impeller (Repair)</li> </ol>
Pump does not prime water	<ol style="list-style-type: none"> <li>1. Air leaking in from suction side</li> <li>2. Insufficient priming water Inside pump casing</li> <li>3. Drain plug is not tightened</li> <li>4. Engine speed/rpm is too low</li> <li>5. Damage to mechanical seal</li> <li>6. Wrong suction hose used</li> </ol>	<ol style="list-style-type: none"> <li>1. Check hose and connections at suction side ⇒ <b>SOLUTION (2)</b></li> <li>2. Fill pump with water for priming Refer to BEFORE USE - "Fill pump with water before use"</li> <li>3. Tighten drain plug firmly. Please refer to "ATTENTION AFTER USE"</li> <li>4. Refer to Engine Operation Manual</li> <li>5. Replace mechanical seal (Repair)</li> <li>6. Use suction hose correctly</li> </ol>
Engine does not start	<ol style="list-style-type: none"> <li>1. Carburetor is choked/blocked</li> <li>2. Spark Plug is wet</li> <li>3. Air cleaner dirty</li> <li>4. Too much engine oil (4-cycle engine)</li> <li>5. After checking above points, still engine does not start</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair</li> <li>2. Check &amp; repair the plug ⇒ <b>SOLUTION (3)</b></li> <li>3. Clean air cleaner. (Refer to Engine Operation Manual)</li> <li>4. Adjust engine oil to suitable level</li> <li>5. Possibility of damage, inner parts of engine (Repair)</li> </ol>
Oil leakage from muffler or air cleaner	<ol style="list-style-type: none"> <li>1. Tipping of engine</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean engine (Air Cleaner, Carburetor, Muffler, Spark plug, etc.)</li> </ol>

### SOLUTION (1)

Remove debris from impeller.  
(Please don't remove impeller)



### SOLUTION (2)

Check suction hose. In case of no suction or small delivery, the cause is usually due to air leakage at suction side. In such case:

1. Remove suction hose.
2. Start engine with water inside the pump.
3. Press the palm of your hand to cover the suction hole and wait 30 seconds. If you feel suction on your palm, the pump is working fine but hose connection needs correction.

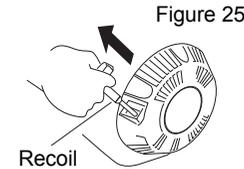
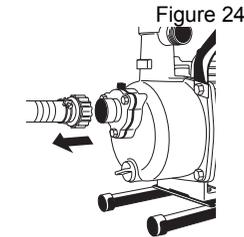
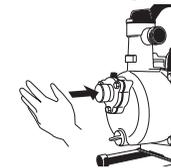
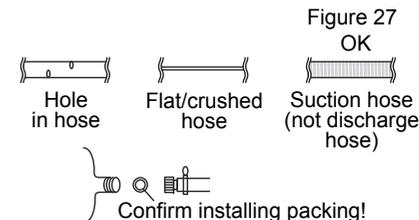


Figure 26



Test for suction

4. Please check if rubber/gasket packing is installed and if there is any hole in suction hose.



### SOLUTION (3)

Confirm the spark plug is clean and free of debris. Otherwise use a clean cloth to remove stains and dirt.

Confirm gap between spark plug. Plug gap should be 0.6-0.7 mm or 0.024-0.028 in. Adjust gap to be within this range.

New spark plug may be required if engine still will not start after you clean plug and adjust gap of plug.

#### CAUTION

**There are many different types of spark plugs. Please check and select correct plugs according to Engine Operation Manual.**

**NOTE:** A leak between the pump casing and the engine is usually due to a damaged mechanical seal. Refer to a local service center.

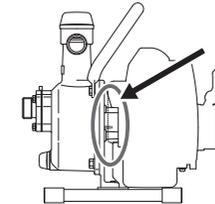


Figure 29

#### CAUTION

**For assistance with checking and repair, please ask your nearest sales store for after sales service.**

Figure 28



# EMISSIONS CONTROL WARRANTY STATEMENT

## YOUR WARRANTY RIGHTS AND OBLIGATIONS

United States Environmental Protection Agency (EPA), and Koshin Ltd. are pleased to explain the emissions control system warranty on your 2015 small offroad engine (SORE). Koshin Ltd. must warrant the emissions control system on your SOREs for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your SOREs. Your emission control system may include parts such as the carburetor, fuel tanks, fuel caps, fuel lines, the ignition system, and catalytic converter. Also included may be hoses, belts, clamps, connectors and other emission related assemblies. Where a warrantable condition exists, Koshin Ltd. will repair your small off-road engine at no cost to you including diagnosis, parts and labor.

## MANUFACTURER'S WARRANTY COVERAGE:

The emissions control system is warranted for two years. If any emissions related part on your engine is defective, the part will be repaired or replaced by Koshin Ltd.

## OWNER'S WARRANTY RESPONSIBILITIES:

As the SORE owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Koshin Ltd. recommends that you retain all receipts covering maintenance on your SORE, but Koshin Ltd. can not deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the SORE owner, you should however be aware that Koshin Ltd. may deny your warranty coverage if your SORE or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications. You are responsible for presenting your SORE to a Koshin America distribution center, servicing dealer, or other equivalent entity, as applicable, as soon as the problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty coverage, you should contact Koshin Ltd. customer service representative at:

Koshin America Corp.

Tell : 1-800-630-4092

Email : tech@koshinamerica.com

Address : 1218 Remington Rd, Schaumburg IL 60173

## DEFECTS WARRANTY COVERAGE

Adopted by the Air Resources Board, Koshin Ltd. warrants to the ultimate purchaser and each subsequent purchaser that the small off-road engine (SORE) (1) has been designed, built and equipped so as to conform with all applicable regulations; and (2) is free from defects in materials and workmanship that cause the failure of a warranted part to conform with those regulations as may be applicable to the terms and conditions stated below.

- (A) The warranty period begins on the date the engine is delivered to an ultimate purchaser. The warranty period is two years.
- (B) Subject to certain conditions and exclusions as stated below, the warranty on emissions related parts is as follows:
  - (1) Any warranted part that is not scheduled for replacement as required maintenance in your Owner's Manual is warranted for the warranty period stated above. If the part fails during the period of warranty coverage, the part will be repaired or replaced by Koshin Ltd. according to Subsection (4) below. Any such part repaired or replaced under warranty will be warranted for the remainder of the period.
  - (2) Any warranted part that is scheduled only for regular inspection in your Owner's Manual is warranted for the warranty period stated above. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.
  - (3) Any warranted part that is scheduled for replacement as required maintenance in your Owner's Manual is warranted for the period of time before the first scheduled replacement date for that part. If the part fails before the first scheduled replacement, the part will be repaired or replaced by Koshin Ltd. according to Subsection (4) below. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.
  - (4) Repair or replacement of any warranted part under the warranty provisions herein must be performed at a warranty station at no charge to the owner.

- (5) Notwithstanding the provisions herein, warranty services or repair will be provided at a Koshin America distribution center, servicing dealer, or other equivalent entity, as applicable.
- (6) The engine owner must not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a warranty station.
- (7) Koshin Ltd. is liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.
- (8) Throughout the engine warranty period stated above, Koshin Ltd. will maintain a supply of warranted parts sufficient to meet the expected demand for such parts.
- (9) Any replacement part may be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner. Such use will not reduce the warranty obligations of Koshin Ltd..
- (10) Add-on or modified parts that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts by the ultimate purchaser will be grounds for disallowing a warranty claims. Koshin Ltd. will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.
- (11) The manufacturer issuing the warranty shall provide any documents that describe that manufacturer's warranty procedures or policies within five working days of request by the Air Resources Board.

## EMISSION WARRANTY PARTS LIST

The repair or replacement of any warranted part otherwise eligible for warranty coverage may be excluded from such warranty coverage if Koshin Ltd. demonstrates that the engine has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for repair or replacement of the part. That notwithstanding, any adjustment of a component that has a factory installed, and properly operating, adjustment limiting device is still eligible for warranty coverage. The following emissions warranty parts for each engine family list is covered.

For engine family:

- (1) Fuel Metering System:
  - (a) Gasoline carburetor assembly and its internal components
  - (b) Carburetor gaskets
  - (c) Fuel tank
  - (d) Fuel Line
  - (e) Fuel Line Fittings
  - (f) Clamps
- (2) Air Induction System including:
  - (a) Intake pipe/manifold
  - (b) Air cleaner
- (3) Ignition System including:
  - (a) Spark plug
  - (b) Ignition coil
- (4) Catalytic Muffler Assembly (if so equipped) including:
  - (a) Muffler gasket
  - (b) Exhaust manifold
  - (c) Catalytic converter
- (5) Crankcase Breather Assembly including:
  - (a) Breather connection tube.
- (6) Fuel tank evaporative emissions control system including:
  - (a) Purge Valves
  - (b) Carbon Canister (if equipped)
  - (c) Canister Mounting Brackets (if equipped)
  - (d) Fuel Cap
  - (e) Fuel Tank
- (7) Miscellaneous items Used in Above Systems including:
  - (a) Switches
  - (b) Hoses, belts, connectors, and assemblies.
- (8) Air injection system (if equipped)
  - (a) Pulse valve

# MEMO

# MEMO

