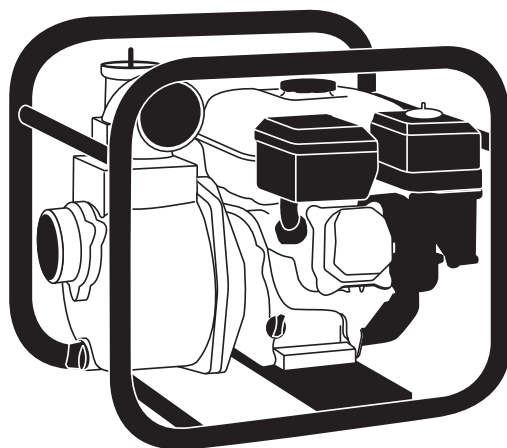


# KOSHIN

## HIGH PERFORMANCE SELF-PRIMING ENGINE PUMP

OPERATION MANUAL



**HIDELS PUMP**

- 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.

13-02 012047401

## SPARE PARTS

For spare parts information, visit



<http://www.koshinpump.com>



English

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

• Main Contact:  
TEL.: +81-75-953-2499 FAX.: +81-75-954-6119  
E-mail: [info@koshin-ltd.co.jp](mailto:info@koshin-ltd.co.jp)  
12 Kami-Hachinotsubo Kotari, Nagaokakyo City,  
Kyoto 617-8511 JAPAN

• Customer Service for US & Canada Customer:  
Toll Free: 1-800-634-4092  
E-Mail: [CustomerService@koshinamerica.com](mailto:CustomerService@koshinamerica.com)

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.**

## DANGER

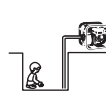


**Avoid open flames or spark when refueling or maintaining the pump or engine.**

**Gasoline and vapors are highly flammable!**



**Do not operate Engine pump inside a room or confined area without proper ventilation.**



**Exhaust gases are dangerous. There is danger of gas poisoning.**



**Do not use pump on slope. Fuel leakage at fuel tank or carburetor may cause fire.**



**Keep area around the engine muffler free of debris—muffler can be very hot. It may cause fire or breakage.**



**Read instructions carefully and understand fully before use.**



**Keep children away from pump when in operation.**



**Do not overhaul, service or repair, except by a qualified person who is trained to do so.**



**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.**



**When priming the pump, only use water. If long priming times - 5 min or more, turn off engine and allow pump to cool off.**

## DANGER



**Do not open plugs or hoses if heat or pressure exists within the pump.**



**Do not touch muffler or any part of the engine. It could cause burn.**

**Do not open plugs or hoses if heat or pressure exists within the pump.**

## WARNING



**This pump is designed to pump water. Not to be used for drinking water, chemicals, or flammable liquids.**



**Water temperature range is 2°C/35°F to 41°C/105°F. Damage may result if not followed.**



**Do not run pump dry. This will cause premature wear and/or failure.**



**Please use proper suction hose and connectors at suction side of pump.**

### 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.

a. Use gasoline only.

b. Only use an approved container to store gasoline.

c. Keep gasoline away from heat, spark, or open flame.

d. When working with gasoline, a fire extinguisher must be provided.

e. When handling flammable liquid, adequate ventilation must be provided.

f. Smoking is prohibited.

### CAUTION

**Semi-Trash Pumps are designed to pump water with up to 10% suspended solid\* solution. Basically a 10% suspension is the maximum a trash pump is designed for, if the suspension is any higher premature wear and failure will occur. To properly pump water with any debris, these solids must be in a suspension.**

**\*Suspended solids are defined as debris "floating" within the water. The size of the suspended solid is determined by the size of the pump. Refer to the chart below for maximum suspended size.**

**Pump failure and costly damage will occur if the suction strainer is not properly used.**

**The strainer keeps the size of the suspended solids entering the pump to the predetermined size the pump has been designed to handle.**

### MODEL

### SUSPENDED SOLID SIZE

STH-50X, STV-50X, STR-50EX 8mm (0.3")  
STH-80X, STV-80X, STR-80EX 9mm(0.35")  
STH-100X 9mm(0.35")

### 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.**

## OPERATION

### 1. Application

<Clean Water Pump>

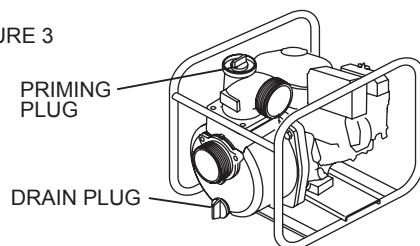
This pump is designed for clean water and dewatering applications, agriculture use, do not use with muddy or silt laden water.

<Semi-Trash Pump>

This pump is designed for general dewatering of sites that contain suspended solids as large as 3/4 inch. Do not use with sandy water which contains suspended solids larger than 3/4 inch.

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

FIGURE 3



### 2. Priming

Refer to Figure 3 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.

## BEFORE USE

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

List of accessories provided are printed on the pump manual.

### 2-A. 4-stroke engine needs "engine oil" (Not applicable for 2-cycle engine)

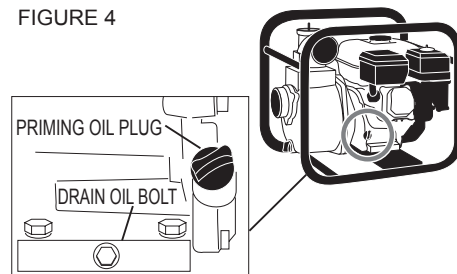
The engine is shipped without oil. Ensure engine is filled with oil to the required level prior to start-up. Starting the engine without oil will destroy the engine. Warranty will not cover low oil situations. Use only Regular Unleaded Gasoline.

### Engine oil

Refer to Figure 4 to check oil level. Fill engine oil into oiling port at bottom of engine, as shown in illustration. Change oil every 8 hours for the first 20 hours and every 50 hours thereafter.  
SAE#30 (spring-summer)  
SAE#20 (autumn-winter)  
SAE10W-30 (cold district, below -10°C/14°F)  
Always check level of engine oil before each use.

**⚠ CAUTION** Low or no oil will prematurely damage engine. Warranty will not cover low oil situations.

FIGURE 4



### 2-B. 2-Cycle engine needs "Mixed Gas"

(Model: SEM-25E/L, SEV-25L), Model subject to change.

Use "Unleaded gasoline mixed with 2-cycle engine oil" only.

Recommended Mixing Ratio, Unleaded

Gasoline: 2-Cycle Engine Oil = 25 : 1

**⚠ 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 5, it will leak and pump will fail to prime.

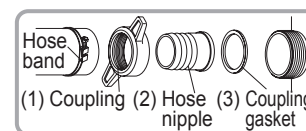


FIGURE 5

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

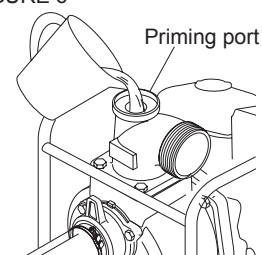
Using a smaller diameter hose will cause the pump to cavitate. Cavitation will result in mechanical seal failure.

### 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 6



### ⚠ CAUTION

Dry running may cause serious damage to pump.

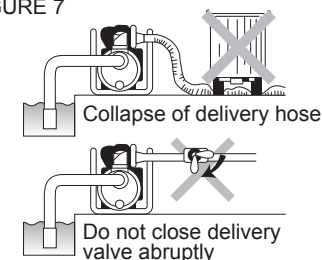
## HOW TO USE

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 7



**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.**

## Troubleshooting

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Cannot pull or hard to pull recoil starter	1. Old fuel 2. Rusting inside engine 3. Burn out of engine 4. Blocked impeller 5. Debris at impeller	1. Replace fuel. If there is no improvement, repair engine 2. Refer to Engine Operation Manual. (Repair) 3. Refer to Engine Operation Manual. (Repair) 4. Dismantle & clean the impeller 5. Dismantle & clean the impeller ⇒ <b>SOLUTION (1)</b>
Low delivery volume	1. Air leakage from suction side 2. Low output from engine 3. Damage of mechanical seal 4. Suction lift is high 5. Suction pipe is too long or too small in diameter 6. Water leaking from delivery hose or pipe 7. Debris at impeller 8. Worn or broken impeller	1. Check hose at suction side ⇒ <b>SOLUTION (2)</b> 2. Check and repair engine 3. Replace mechanical seal (Repair) 4. Decrease suction lift 5. Shorten suction pipe or enlarge to proper diameter 6. Check and stop leakage of water 7. Dismantle & clean the impeller ⇒ <b>SOLUTION (1)</b> 8. Replace the impeller (Repair)
Pump does not prime water	1. Air leaking in from suction side 2. Insufficient priming water Inside pump casing 3. Drain plug is not tightened 4. Engine speed/rpm is too low 5. Damage to mechanical seal 6. Wrong suction hose used	1. Check hose and connections at suction side ⇒ <b>SOLUTION (2)</b> 2. Fill pump with water for priming Refer to BEFORE USE - "Fill pump with water before use" 3. Tighten drain plug firmly. Please refer to "ATTENTION AFTER USE" 4. Refer to Engine Operation Manual 5. Replace mechanical seal (Repair) 6. Use suction hose correctly
Engine does not start	1. Carburetor is choked/blocked 2. Spark Plug is wet 3. Air cleaner dirty 4. Too much engine oil (4-cycle engine) 5. Insufficient engine oil (4-stroke engine) 6. After checking above points, still engine does not start	1. Repair 2. Check & repair the plug ⇒ <b>SOLUTION (3)</b> 3. Clean air cleaner. (Refer to Engine Operation Manual) 4. Adjust engine oil to suitable level 5. Function of oil alert (oil sensor) is working. (This function protects engine. If volume of engine oil is not a suitable level, engine does not start) 6. Possibility of damage, inner parts of engine (Repair)
Oil leakage from muffler or air cleaner	1. Tipping of engine	1. Clean engine (Air Cleaner, Carburetor, Muffler, Spark plug, etc.)

### SOLUTION (1)

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

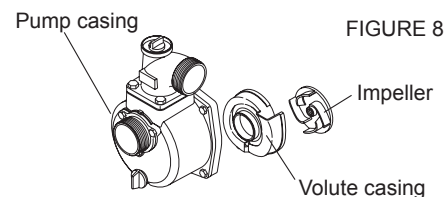


FIGURE 8

### 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.

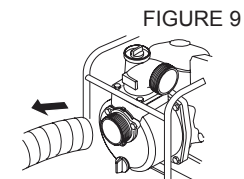


FIGURE 9

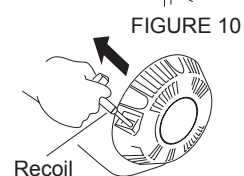


FIGURE 10

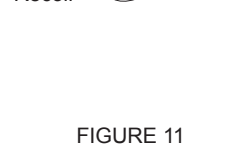


FIGURE 11

Test for suction

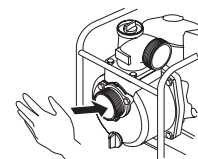
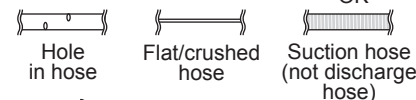


FIGURE 12



Confirm installing packing!

### 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.

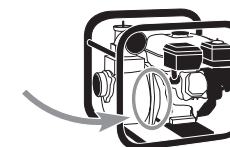


FIGURE 14

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

FIGURE 13

