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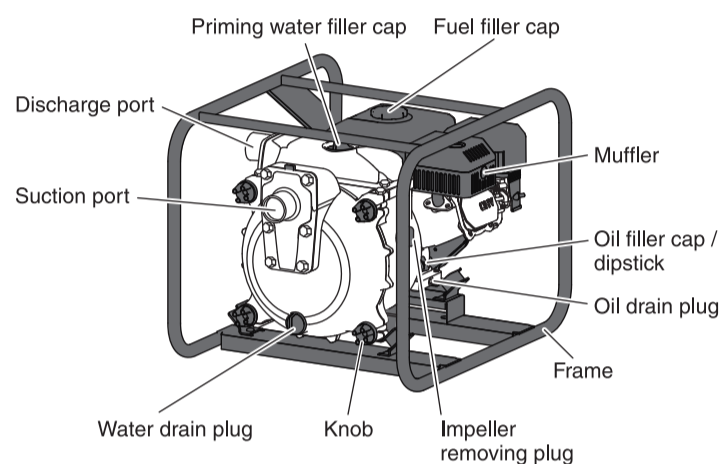
KOSHIN

Self-priming
TRASH PUMP
for Sandy and muddy water

GASOLINE ENGINE PUMP OPERATION MANUAL

- Thank you for choosing Koshin Trash Pump.
- 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.

NAME OF PARTS



KOSHIN LTD.

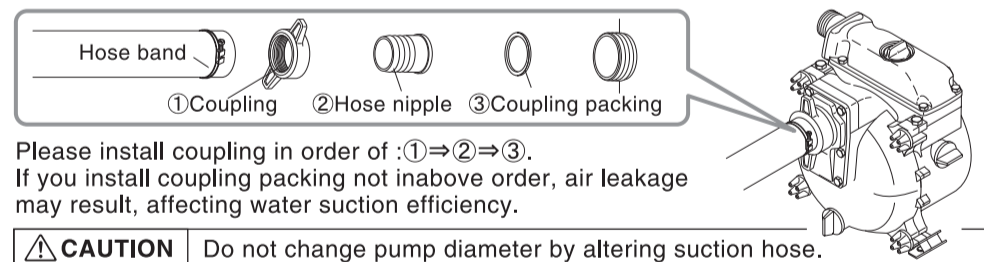
12 Kami-Hachinotsubo Kotari, Nagaokakyo City, Kyoto 617-8511 JAPAN
TEL.+81-75-953-2499 FAX.+81-75-954-6119
www.koshinpump.com

19-12 012328001

WARNING	Inflammable!! Avoid fire when refuel or maintenance.
CAUTION	Before starting engine, please check if engine oil is filled to required level. Without engine oil or shortage of engine oil can cause troubles for engine.
	Please read carefully Engine Operation Manual for engine oil instructions.
	Inflammable! Do not operate near open fire.
	Any fuel spillage must be cleaned completely.
CAUTION	Check engine oil before operation. Check and refuel periodically. Please read Engine Operation Manual for instructions.
	Stop engine operation when refuel engine oil. Engine oil can be very hot after operation.

3 How to install Coupling

CAUTION	Different accessories are suitable for different models. Please check connection diameter and install correct parts.
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CAUTION	Do not change pump diameter by altering suction hose.
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4 Make sure suction hose is connected properly

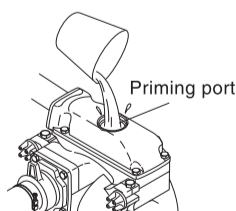
In case of no self-priming after filling pump with water and engine is started, check suction hose connection carefully again. Most cases of no self-priming are caused by improper hose connection.

CAUTION	Use suction hose for suction side. Use couplings/hose band as provided in accessory and attach hose properly. Installation of strainer at the end of suction hose is necessary.
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5 Fill pump with water before use

As pump is self-priming type, fill water fully from priming port into pump before running. Insufficient water can cause damage to pump.

CAUTION	Running without filling water can damage mechanical seal.
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HOW TO USE

- 1 Ensure pump is fully filled up with water.
- 2 Ensure strainer at the end of suction hose is in water. (If any mud or sand is at the bottom of water, suspend hose avoiding the bottom.)
- 3 Ensure no obstacle is at discharge hose side.

SAFETY PRECAUTIONS

Read and understand this manual completely before operation. Below information should not be neglected for proper use of this product. Your understanding can prevent harm or danger to user or others.

Following information is very important for safety in handling this product. Be sure to observe them.

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.
IMPORTANT	PROHIBITED ALERT

DANGER	Avoid fire when refuel or maintenance. Highly inflammable!	Do not use pump on slope. Fuel spillage at tank cap or carburetor may cause fire.
WARNING	Do not operate Trash pump inside a room or under bad ventilation condition. Harmful substances are in exhaust gas. There is danger of gas poisoning.	Do not use pump in a well or in a hollow, the person operating the pump must not enter the small space as there is danger of gas poisoning.
CAUTION	Do not put any obstacle around engine muffler. It may cause fire or breakage.	Do not overhaul or repair, except by person who is trained to do so.
IMPORTANT	Read carefully and understand fully before use.	Keep children away from pump when in operation.
CAUTION	Do not touch muffler or any part of the engine. It could cause burn.	Do not run pump without water inside the pump. This will cause pump damage.
CAUTION	Use correct type of suction hose. Water temperature tolerance: 5 to 45°C. May cause breakage if use outside the mentioned range.	This pump is not Suitable: drinking water, seawater, kerosene, light oil, heavy oil, gasoline, chemical, acid, alkaline etc.
CAUTION	Please use suction hose for suction side. Please purchase suitable hose to fit to connection dia and suitable length.	Please firmly connect hose with coupling and hose band when you connect suction or discharge hose to pump.

BEFORE USE

1 Check accessories provided

List of accessories provided are printed on the pump manual.

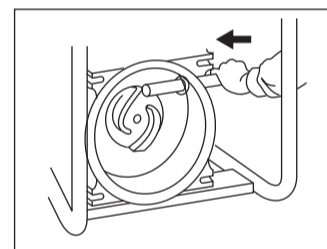
4-stroke engine

4-stroke engine needs "engine oil" There is **no engine oil in the engine.**

Before starting engine, engine oil must be filled. If you start engine without engine oil, engine will burn out and it is difficult to repair. (Warranty does not cover such claim.) Please use "Non-Lead Gasoline for Automobile".

DISASSEMBLY AND CLEANING (Parts replacement)

1. Turn the knob counterclock-wise and remove the knob.
2. Pull the handle towards you, and then both front cover and volute casing can be removed.
3. Remove the peripheral plug before taking impeller out. The impeller can be detached by giving it a shock with a rod or the like.
4. Draw out the mechanical seal from the engine shaft along with the sleeve.



NOTE: Please do not hammer an impeller directly when you want to take it out from the machine. It might damage the impeller. Instead, take out the plug set first and then insert something like a stick which is thin enough to get through the hole and hammer the stick at the other end. The impeller can be removed out easily without damaging it.

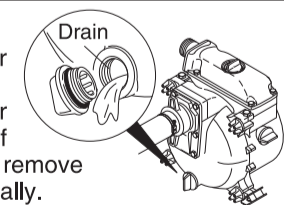
NOTE: When assembling the parts, do not forget to place the adjusting washer, O-ring, etc., in the right positions. Also, correctly install the front cover and evenly tighten the right and left knobs. Note that incomplete assembling may affect the performance of the unit.

CAUTION	Beware of water hammering Do not allow any vehicle to run over the discharge hose. Do not close the discharge valve abruptly because water-hammer may occur. This may result in heavy damage to the pump.	
For engine manual and notes, please refer Engine Operation Manual enclosed.		

ATTENTION AFTER USE

1 Drain water after use

After use, remove the drain plug at the bottom and pour water from the suction/discharge ports so that the remaining sand is forced out of the pump. If the pump is used to transfer muddy water over a long period of time, a large volume of sand will be piled up in the pump casing, making it difficult to remove the front cover. Therefore, clean the inside the pump periodically.



CAUTION	Water inside may freeze at below 0°C in winter and may damage pump. After use, drain water from drain plug before storing.
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2 Long storage

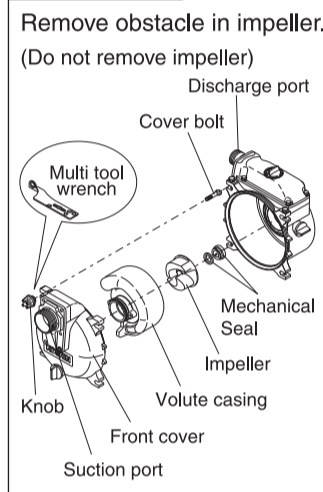
Discharge fuel in fuel tank and carburetor completely. Unused fuel in tank (if kept more than 30days) may cause engine failure. *Please refer Engine Operation Manual.

CAUTION	Do not smoke as fuel is highly inflammable. Unused fuel must not remain in the tank for long term storage. Unused fuel may cause future engine failure.
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TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump does not revolve	Rusting inside engine	Refer to Instruction manual of engine (Repair)
	Burn out of engine	Refer to Instruction manual of engine (Repair)
	Stuck impeller	Disassemble & clean the impeller⇒ SOLUTION ①
	Intrusion of foreign matters	Remove foreign matters
Not enough discharge volume	Air leakage from suction side	Check piping at suction side⇒ SOLUTION ②
	Output power down from engine	Check & Repair engine
	Damaged mechanical seal	Replace mechanical seal (Repair)
	Suction lift is high	Make suction lift lower
	Thin or too long or kinks of hose	Thicken or shorten or straight
	Leakage of water from discharge hose or pipe	Check and stop leakage of water
	Clogging of foreign matters at impeller	Disassemble & clean the impeller⇒ SOLUTION ①
	Wearing out of impeller	Replace the impeller (Repair)
Pump does not self-prime water	High sand content	Remove sand content
	Air goes in from suction side	Check piping at suction side⇒ SOLUTION ②
	Insufficient priming water inside pump casing	Prime water fully. Refer [BEFORE USE] "5 Fill pump with water before use"
	Drain plug is not tighten	Tighten drain plug firmly. Please refer "ATTENTION AFTER USE"
	Imperfect revolution of engine	Refer to Engine Operation Manual.
	Air leakage from mechanical seal	Replace mechanical seal (Repair)
	discharge hose is broken	Replace discharge hose

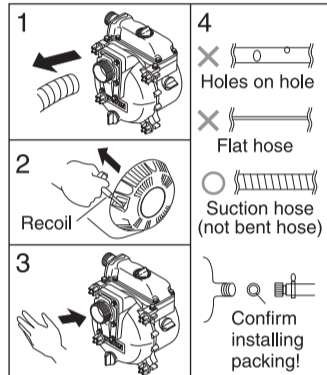
SOLUTION ①



SOLUTION ②

Check suction pipe!
In case of no suction or small discharge, the cause is usually due to air leakage at suction side.

- In such case :
- Remove suction hose. Start engine with water
- inside the pump. 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.
- Please check if rubber packing is installed and if there is any hole on suction hose

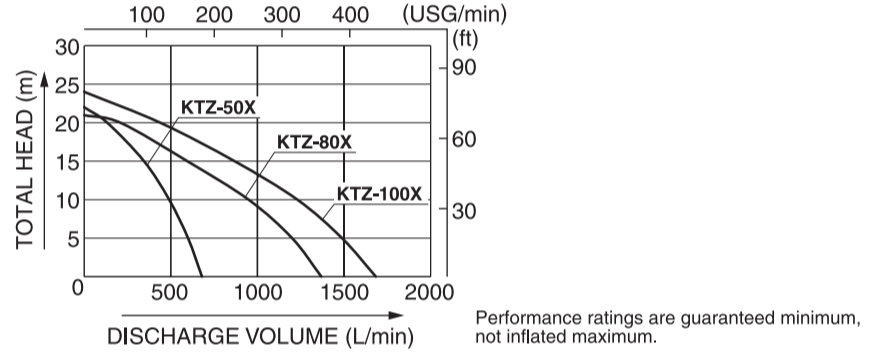


SPECIFICATIONS

Model	KTZ-50X		KTZ-80X		KTZ-100X	
	Standard	North America	Standard	North America	Standard	North America
Type	Standard					
Category	Self-priming, Trash pump					
Applicable liquids	Sandy and muddy water (suspended solids) *1					
Consistency	Sandy and muddy water (suspended solids) *1					
Suspended solid percentage	25 % *2					
Max. solids size	20 mm (0.78 ")		27 mm (1.06 ")			
Temperature	5 °C – 45 °C (41 °F – 113 °F)					
Pump	Connection dia		80mm (3")		100mm (4")	
	Connection thread		BSP	NPT	BSP	NPT
	Total head		22 m (72 ft)		24 m (78 ft)	
	Discharge volume		680 L/min (179 USG/min)		1370 L/min (361 USG/min)	
	Max. suction head		8 m (26ft)			
Engine	Type					
	Forced air-cooled 4-stroke gasoline engine					
	Model		K180		K420	
	Exhaust volume		179cc		301cc	
	Rated output		3.1 kW (4.2 PS)(4.1 HP) / 3600 rpm		5.0kW (6.8PS)(6.7 HP) /3600rpm	
	Max. output		3.5kW (4.8PS)(4.7 HP) /3600rpm		6.0kW (8.2PS)(8.1 HP) /3600rpm	
	Fuel		Automobile unleaded gasoline			
	Fuel tank capacity		3.6L (0.95 USG)		5.9L (1.5 USG)	
	Continuous operating time *3		Approx. 2.0 hrs		Approx. 1.5 hrs	
	Engine oil		Engine oil for 4-stroke gasoline engine: API grade SE or above, SAE 10W-30			
	Engine oil capacity		0.55 L		1.1 L	
	Starting method		Recoil starter			
	Net weight	48.1 kg (106.0 lbs)		61.6 kg (135.8 lbs)		78.2 kg (172.4 lbs)
Accessories	2 Coupling sets		3 Hose bands, 1 Strainer, 1 Multi tool wrench, 1 Engine tool set,		2 Coupling sets	

*1: Sandy and muddy water (suspended solids) are defined as debris "floating" within the water.
*2: If the suspended solid percentage is higher, premature wear and failure will occur.
*3: Figure when fuel is filled up to fuel limit position.

PERFORMANCE CURVE



SPECIFICATIONS

Model	KTZ-80S		KTZ-100S	
	Standard	North America	Standard	North America
Type	Standard			
Category	Self-priming, Trash pump			
Applicable liquids	Sandy and muddy water (suspended solids) *1			
Consistency	Sandy and muddy water (suspended solids) *1			
Suspended solid percentage	25 % *2			
Max. solids size	27 mm (1.06 ")			
Temperature	5 °C – 45 °C (41 °F – 113 °F)			
Pump	Connection dia		80mm (3")	
	Connection thread		BSP	NPT
	Total head		22 m (72 ft)	
	Discharge volume		1420 L/min (375 USG/min)	
	Max. suction head		8 m (26ft)	
Engine	Type			
	Forced air-cooled 4-stroke gasoline engine			
	Model		K300	
	Exhaust volume		301cc	
	Rated output		5.0kW (6.8PS)(6.7 HP) /3600rpm	
	Max. output		6.0kW (8.2PS)(8.1 HP) /3600rpm	
	Fuel		Automobile unleaded gasoline	
	Fuel tank capacity		5.9L (1.5 USG)	
	Continuous operating time *3		Approx. 2.0 hrs	
	Engine oil		Engine oil for 4-stroke gasoline engine: API grade SE or above, SAE 10W-30	
	Engine oil capacity		1.1 L	
	Starting method		Recoil starter	
	Net weight	65.3 kg (144.0 lbs)		81.2 kg (179.0 lbs)
Accessories	3 Hose bands, 1 Strainer, 1 Multi tool wrench, 1 Engine tool set,		2 Coupling sets	

*1: Sandy and muddy water (suspended solids) are defined as debris "floating" within the water.
*2: If the suspended solid percentage is higher, premature wear and failure will occur.
*3: Figure when fuel is filled up to fuel limit position.

PERFORMANCE CURVE

