

Care of Marine Toilet

From: Peggie Hall--Specializing in marine sanitation since '87

<http://www.cruisersforum.com/forums/members/peghall-52296.html>

1. Add at least 1 pint of fresh water to the bowl ahead of solids.
 2. Once a day flush at least a quart of **fresh water** to rinse out discharge hose.
 3. The old recommendation here has been removed because the chemical is too dangerous.
 4. Once a week flush a cupful of undiluted distilled **white vinegar** ALL the way through the system to prevent sea water mineral buildup in the head discharge hose. Don't leave it sitting in the bowl and make sure to flush all of it out of the pump...**soft rubber left to sit and soak in vinegar will swell up and distort.**
After an hour, follow with fresh water.
 5. Replace the **joker valve** in the toilet discharge **every year** or at most every two years because as the joker valve wears, the toilet becomes less and less able to move bowl contents.
 6. Never use a plunger in a marine toilet. The upward suction will misalign and damage the seals, valves and o-rings in the pump.
- From Groco
7. Periodic lubrication of the pump's piston and rings will prevent salt build-up.
Pour 1/4 cup of **vegetable oil** into the bowl and flush normally.

SPARE PARTS <http://yhst-38476110118519.stores.yahoo.net/index.html>

Item	Spares	Part	Name		When use	Price	Order
4	2	HT-52-A	Gasket (neoprene)	Kit	Assembly	10	20
6-7	2	HT-26-A	Gasket	Kit	Assembly	9	18
8-11		HT-84-A	Spring Assembly	Kit	Rebuild	9	
19		HT-56	Check Ball	Kit	Rebuild	2	
25		HT-3557-A	Gasket (polyethelene)	Kit	Storage	5	
26	2	HT-3557	Gasket	Kit	Assembly	10	20
30, 31	1	HT-6566-K	Shaft		8 years	61	61
32		WS-2422	Seal	Kit	Rebuild	10	
35		HT-3564	Seal	Kit	Rebuild	5	
41	3	H-27-A	Joker Valve	Kit	2 year	7	21
45	3	K-7-A	Gasket for Joker	Kit	2 year	2	6
46		K-3-R	Piston Rings Set (2)	Kit	Rebuild	7	
47		2-041	O-Ring	Kit	Rebuild	1	
Kit	2	K-Regular	Toilet Service Kit		Rebuild	119	238
						Total	384

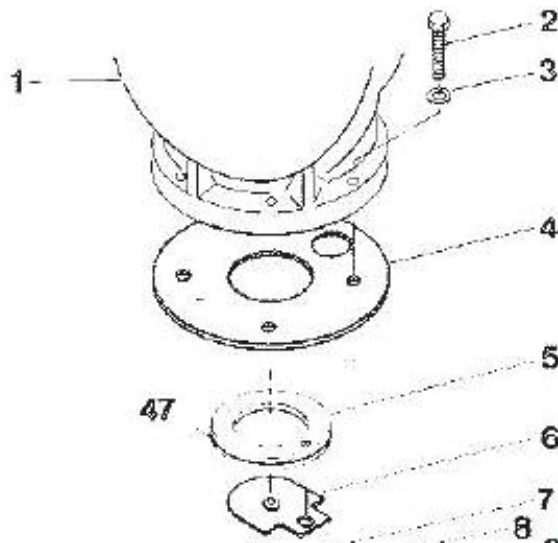
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<http://yhst-38476110118519.stores.yahoo.net/k-7-a.html>
<http://yhst-38476110118519.stores.yahoo.net/k-regular.html>

TOOLS

- heavy-duty silicone or marine grease
- rubber mallet
- hammer
- 5/16 inch bolt to aid in the removal of the piston and crank assembly.
- metal coat hanger

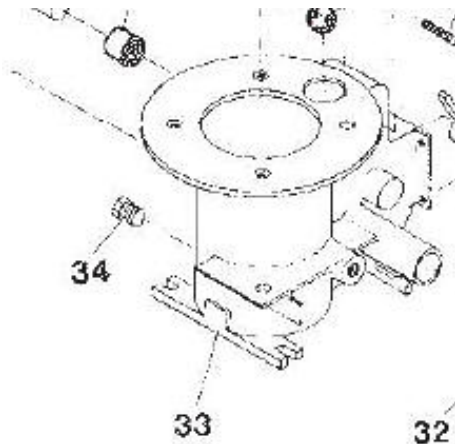
1. Remove the four bowl bolts, #2 (51618X2HB), and lift bowl, #1 (4985-X), and gasket, #4 (HT-52-A), off pump assembly casting, #33 (K PUMP ASSY). Replace the gasket on reassembly.
2. Note that the pump casting, #33, and flap plate, #5 (K-4) have alignment grooves to position flap properly. Remove the flap plate and flap assembly, #'s 5-12 (plate is loose fit into pump casting and can be removed by prying with a long screwdriver, or threading screw back of the tapped ¼ inch X 20 screw hole in plate).

S1



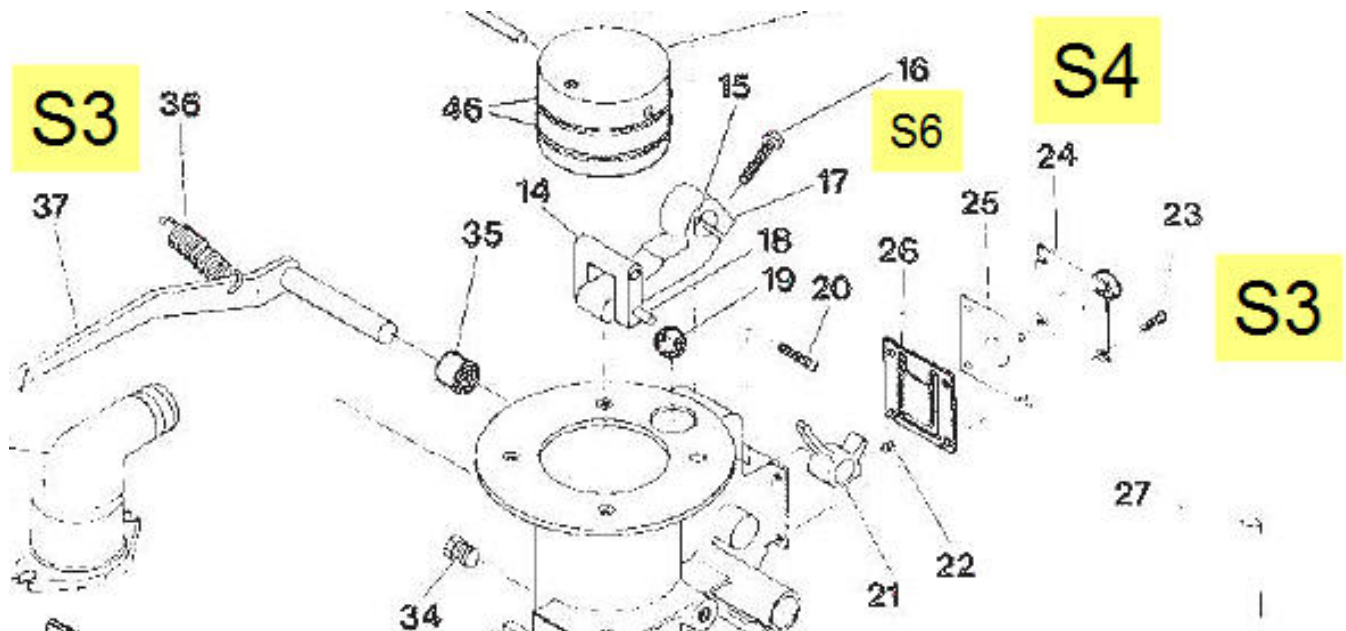
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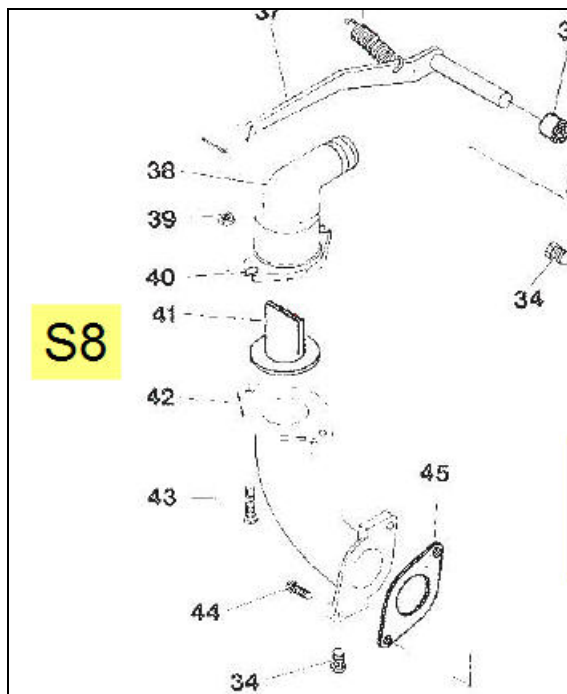
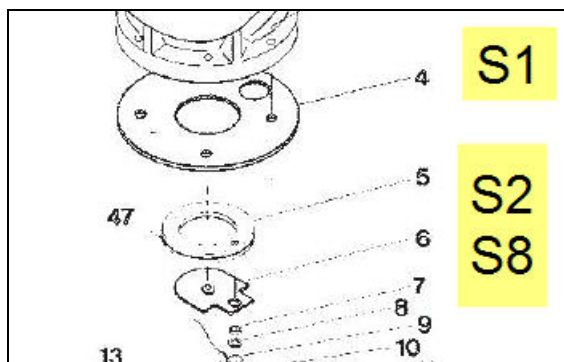
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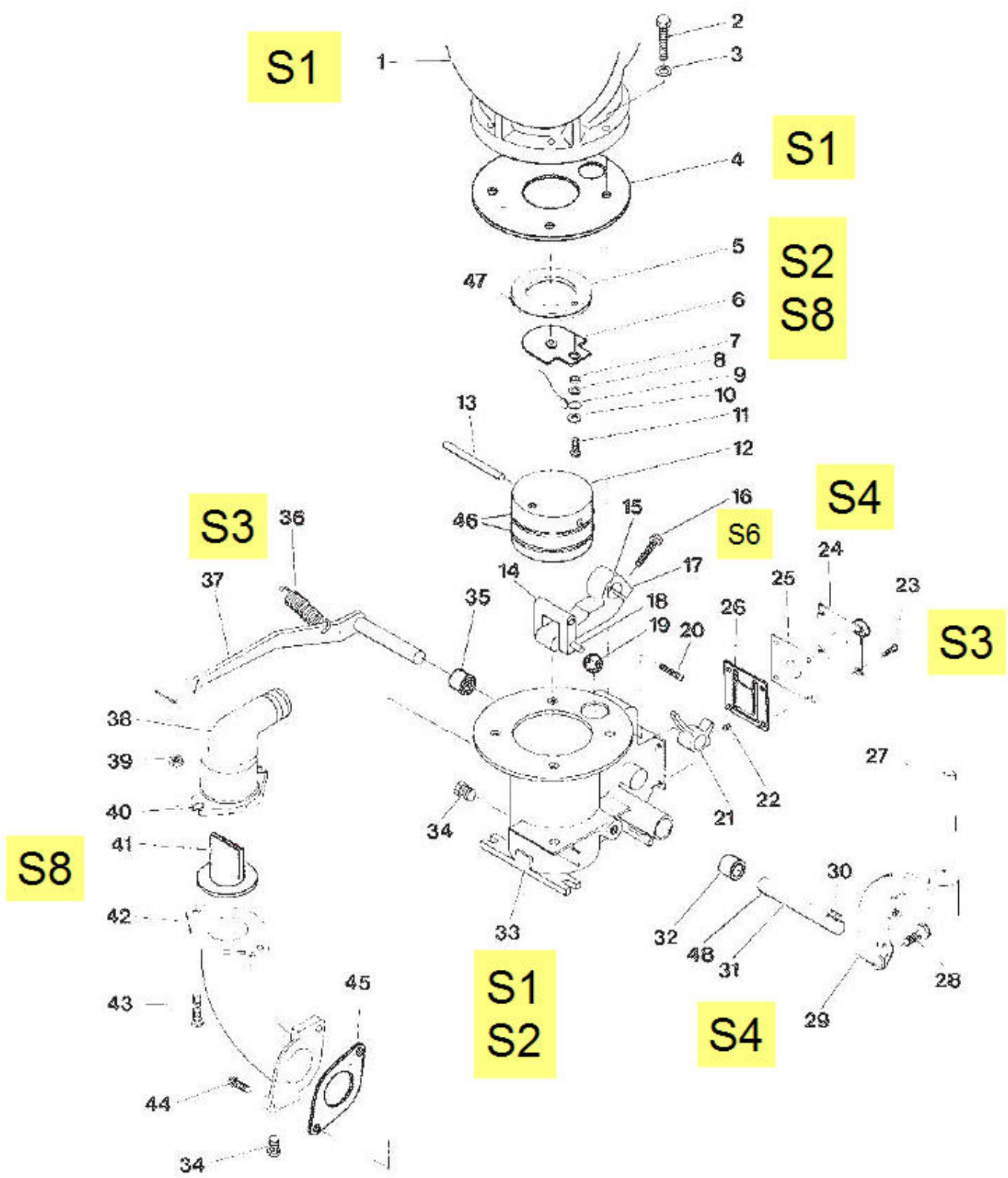
3. Remove foot pedal and valve assembly by removing screws, #23 (1024X12HB), inlet casting #24 (HT-3556) and gaskets #25 (HT-3557-A), and #26 (HT-3557). Loosen the cam set screw, #22 (1420X38RB) and foot pedal spring, #36 (S-72587) and remove foot pedal, #37 (HT-3570-A) and valve cam, #21 (K-1). Replace gasket #26 upon reassembly. The cellophane gasket #25 is not needed unless the head will be stored and not used for a long time.
4. Removing valve cam #21, exposes the piston crank assembly, #'s 12 through 18. (K-32). Pressing the piston down to its lowest position will expose the crank set screw, #16 (51618X112HB) in the inlet port. Loosen the crank set screw approximately 3 turns using ½ inch socket wrench (the position may have to be tapped to the full down position with a rubber mallet to enable seating of the socket head on the set screw.) Note the approximate shaft handle position to assist reassembly of the shaft key. Now remove pump shaft, #31 (HT-6566-K) and pump handle arm, #29 (HT-3560-D) by tapping on the inner part of the handle arm as close to shaft as possible with a rubber mallet to drive the arm and shaft out of the body at the same time.



5. The piston has a threaded hole, either $\frac{1}{4}$ inch [20 older models], or $\frac{5}{16}$ inch [18 newer models] , that allows you to screw in a bolt to aid in the removal of the piston and crank assembly. Reinstall the piston upside down by holding the crank assembly to determine the new rings provide a close fit. If the piston is loose remove and expand the rings by tapping on rings with a hammer. Pack area between piston rings with heavy-duty silicone or marine grease. On models built before 1992 peen both side of pin #13 (K-3-P) to prevent the pin from extending beyond the shoulder of the piston. On later models the piston is fastened to the crank assembly with a bolt.
6. Once rings have been properly sized and pin has been checked, replace the crankshaft key in crank lever assembly using heavy-duty grease to hold the key in place. Remove crank set screw, #16 (diagram on page above) from crank arm assembly to enable use of a coat hanger in the setscrew hole to pull the crank assembly around the corner in pump casting. Reinstall piston and crank assembly into pump using coat hanger inserted in crank assembly set screw hole to pull crank assembly outward and upward to permit piston to travel to full down position.
7. Grease shaft seals and shaft seal seats and install seals in pump casting. Note the smaller ID on both the crankshaft and foot pedal shaft seals should face inward. Position pump shaft handle casting in position noted in Step 5 and press shaft through seal using a slight back and forth rotary motion. This rocking motion will facilitate mating the shaft to the key in the crank assembly. Press in shaft until contact is made with the casting wall. Insert and tighten the setscrew.

8. Reassemble inlet valve on foot pedal shaft and tighten the setscrew. Reinstall flapper plate etc., when reassembling Bowl Flap Plate assembly #5-12, align slot on plate with slot on pump casting as noted in Step 2. Wet bowl gasket to hold it in place and reinstall bowl (DO NOT OVER TIGHTEN OR BOWL WILL CRACK) on pump casting. When reassembling joker valve, #41 (H-27-A) position the valve so the top of the valve flap is perpendicular to a line drawn across the bolt holes on #42 (K-8) discharge casting. You can test the unit by connecting a hose to the inlet and dropping the other end into a bucket of water and pumping. Check for leaks and make sure the pump is working before reinstalling on the boat.







Model K Marine Toilets

Installation, Operation, and Maintenance

The Concept: Model K marine toilets are designed and built for years of dependable service. Commercial users, live-aboards, and frequent boaters will appreciate the durability and rugged construction. Waste is pumped manually or electrically from the bowl with a 3" bronze piston with replaceable rings.

Installation: Fasten the pump securely to the floor or mount platform. Assure that there is sufficient room to operate the manual pump handle, and to completely open the seat and cover.

Plumbing: The inlet is at the back of the toilet. To make a connection straight back use 1" ID hose or **GROCO**® TP-750 for 3/4" ID hose. To make a 90-degree connection use **GROCO**® TPC-750 for 3/4" ID hose.

The toilet discharge is the swivel fitting at the left and below the bowl. Loosen the hex nuts and screws that secure the swivel and point it to the desired direction. Retighten (do not overtighten) the swivel screws. Connect 1-1/2" ID sanitation hose.

Vented Loops: The 1-1/2" plumbing line between the toilet discharge and the holding tank or treatment device should be fitted with a **GROCO**® HVL-1500 vented loop to prevent waste from flowing back to the toilet after pumping has stopped or while the boat is moving, especially in sailboats. A vented loop will help to maintain an odor-free toilet compartment.

Service Notes:

- The manufacture date is stamped on the mount pad for the electric drive motor. If there is no date stamp the manufacture date is prior to 11/92.
- 4985 series bowl is standard after 6/94; 4978 bowl is no longer available. When replacing 4978 with 4985, the seat must be replaced with 500-D.
- Replacement bowls and seats are available in standard white, bone and gray.
- K-32 is standard after 10/91. It replaces K-3 and K-2, and enables the piston rings to be replaced from the top of the pump without removing K-2.
- The replacement of HT-6566-K is recommended after eight (8) years of use.
- Special-order HA-13 to replace HA-1 if a straight discharge is desired.

Electrical: Adequate wire size is essential for the proper operation of any motorized equipment. Refer to the wire size selection chart enclosed with electric models.

Operation: K toilets have two modes of operation, water-in and waste-out. Each is independently controlled by the user to suit the desired operation.

While pumping, depress the footpedal to open the inlet valve and allow flush water to enter. Release the footpedal when no more water is needed.

The removal of waste and tissue is controlled by the action of the pump handle. As long as pumping takes place the contents of the bowl will be removed. The footpedal does not need to be depressed to remove waste.

To dry-flush or to reduce the amount of water in the bowl after a flush, pump the handle without depressing the footpedal. A small amount of water should remain in the bowl after flushing.

Note: Once the bowl has been cleared pump an additional five strokes to clear the toilet discharge arm and joker valve.

Note: Do not flush cigarette butts or trash.

Maintenance: Periodic lubrication of the pump's piston and rings will prevent salt build-up. Pour 1/4 cup of vegetable oil into the bowl and flush normally.

**K-H Hand
Operated Toilet**

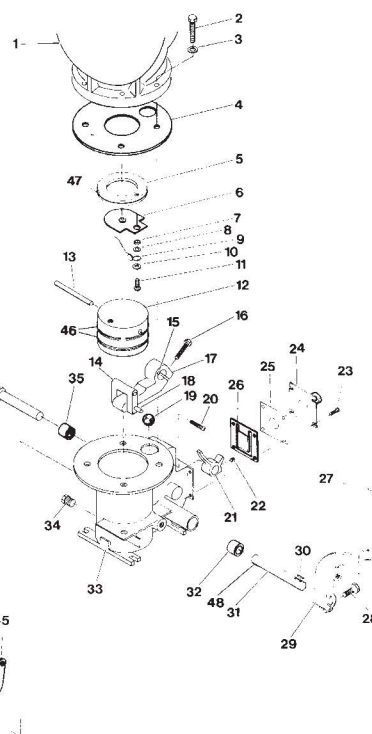


**K-H Electrically
Operated Toilet**



Winterization: Freezing water will damage the toilet pump. Remove two (2) drain plugs to drain water before freezing weather. One is located at the bottom of the discharge elbow as it exits the toilet body; the other is at the bottom of the toilet body on the left side below the footpedal.

Disconnect inlet and discharge hoses before draining.



Item	Part Number	Description	Qty	Model K Regular Kit
1	4985-0	Bowl (White color)	1	
	4985-1	Bowl (Bone color)		
	4985-2	Bowl (Grey color)		
2	51618x2HB	Bolts	4	
3	20LP	Washers	4	
4	HT-52-A	Gasket	1	x
5	K-4	Plate	1	
6-7	HT-26-A	Gasket	1	x
8-11	HT-84-A	Spring Assembly	1	x
12-18	K-32	Piston & Crank 1		
12	K-92	Piston & Rings	1	
13	K-3-P	Piston Pin	1	
14-18	K-2	Crank Assembly	1	
19	HT-56	Check Ball	1	x
21-22	K-1	Cam	1	
23	1024x12HB	Screws	4	
24	HT-3556	Inlet	1	
25	HT-3557-A	Gasket	1	x
26	HT-3557	Gasket	1	x
27	HT-3560-C	Handle	1	
28	51618x1HB	Bolt	1	
29	HT-3560-D	Arm	1	
30, 31	HT-6566-K	Shaft	1	
30, 48	KS	Key Set	1	
32	WS-2422	Seal	1	x
33	K-A	Pump Housing	1	
34	1827HB	Drain Plug	2	
35	HT-3564	Seal	1	x
36	S-72587	Spring	1	
37	HT-3570-A	Pedal	1	
38	HA-1	Discharge	1	
40	HA-11	Bracket	1	
41	H-27-A	Joker Valve	1	x
42	K-8	Discharge	1	
45	K-7-A	Gasket	1	x
46	K-3-R	Piston Rings Set (2)	1	x
47	2-041	O-Ring	1	x
NS	500-D-0	Seat (White color)	1	
	500-D-1	Seat (Bone color)		
	500-D-2	Seat (Grey color)		
NS	TT-50 NLA	Seat for 4978 bowl	1	