

Please read and save this Repair Parts Manual. Read this manual and the General Operating Instructions carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. The Safety Instructions are contained in the General Operating Instructions. Failure to comply with the safety instructions accompanying this product could result in personal injury and/or property damage! Retain instructions for future reference. AMT reserves the right to discontinue any model or change specifications at any time without incurring any obligation.

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**WARNING** Periodic maintenance and inspection is required on all pumps to insure proper operation. Unit must be clear of debris and sediment. Inspect for leaks and loose bolts. Failure to do so voids warranty.

# 4-INCH TRASH PUMP

Refer to pump manual 1808-633-00 for General Operating and Safety Instructions.

## Description

This trash pump is a heavy duty, centrifugal, engine-driven, self-priming (to 20 ft. lift after initially filling casing with liquid), portable unit. Pump is equipped with precision lapped mechanical seal to reduce the likelihood of leakage, and a clog-resistant impeller capable of handling solids up to 2" diameter. Units are used to handle water containing stones, sticks, mud and other solids (up to 25% by volume). O-ring sealed flange connections facilitate easy removal of suction and discharge lines. Handles liquids from 40° to 180° F (4° to 82° C). For use with nonflammable fluids compatible with pump component materials.

All models come standard with manual recoil starter, E-start models 3993-96, 3993-D6 and 3994-96 feature in addition a 12V electric starter switch and cables. 5" W x 7¾" L x 5" H battery holder included. (Battery not included; obtain 12V, 32 amp hour battery from local lawn and garden shop).

Pump and engine are mounted on rugged transport dolly with fully pneumatic 16" ball bearing wheels. Proper weight distribution ensures easy portability, yet pump is stable when operating. Four position discharge manifold provides a choice in placing hose.

## Specifications

- Suction inlet. . . . . 4" MNPT
- Discharge outlet. . . . . 4" MNPT
- Engine
  - 4210-96. . . . 1 CY B&S Vanguard
  - 3993-96\*. . . . 2 CY B&S Vanguard
  - 3994-96\* . . . . . Honda GX390
  - 3993-D6\*. . . . Yanmar Diesel L100
- \*E-Start Models

Basic construction. Aluminum with cast iron volute, impeller, wear-plates and discharge manifold; silicon carbide seal.

Battery. . . . . 12 Volt, type No. 9A1, 32 amp hour (not supplied)

Battery tray\*. . . 5" W x 7¾" L x 5" H (\*E-Start Models)

## Unpacking

Refer to Repair Parts Illustration and Repair Parts List to aid in identifying parts. Unpack and separate all pump components from container, making sure all parts are accounted for.

Packages should contain:

1. Pump and engine completely assembled on wheel kit.
2. Battery tray (Ref. No. 37) and battery tray hardware (E-start models only).
3. 4" NPT Nipple Pack and Strainer.

## ASSEMBLY (Refer to Figure 2)

1. Remove pump from packaging.
2. Stand pump carefully on pump end. Reposition handle (Ref. No. 32) (as shown in Figure 2) facing outwards by removing and replacing existing handle fasteners.
3. **Electric Start Models Only:** Attach battery tray (Ref. No. 37) to left engine rail using fasteners used with handle. Install a 12 volt type no. 9A1 garden tractor battery 32 amp hour rating, approx. size 7¾" L x 5" W x 6" H (not included) onto battery tray. Using hardware included with pump, insert hook bolts through battery tray holes, thread facing up. Attach battery box holddown bar across battery and thread wing nuts onto hook bolts. Refer to engine manual for proper wiring instructions.

## Maintenance

### MECHANICAL SEAL REPLACEMENT

Refer to Figures 1 and 2

**NOTE:** Always replace the seal seat (Ref. No. 8), seal head (Ref. No. 9) and shaft sleeve (Ref. No. 10) to ensure proper mating of mechanical seal components!

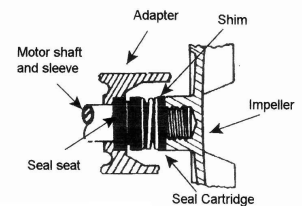


Figure 1

1. Unthread cap screws (Ref. No. 30) and remove casing (Ref. No. 18) and casing seal (Ref. No. 7) from adapter (Ref. No. 6).
2. Unthread screws (Ref. No. 14) and remove volute (Ref. No. 13) from adapter.
3. Unscrew impeller (Ref. No. 12) from the engine shaft. Remove the impeller shim (Ref. No. 11), shaft sleeve and seal head from engine shaft. Use a rubber mallet or soft block of wood to loosen impeller. Turn it counterclockwise.

**WARNING** Disconnect spark plug wire and battery to prevent accidental starting.

4. Unthread cap screws (Ref. No. 4) and remove the adapter from the engine mounting face.
5. Push seal seat from the adapter recess with a screwdriver.
6. Clean the adapter recess before inserting a new seal seat.
7. Carefully wipe the polished surface of the new seal seat with a clean cloth.
8. Wet the rubber portion of the seal seat with a light coating of soapy water.
9. Press the new seal seat squarely into the cavity in the adapter. If the seal seat does not press squarely into the cavity, it can be adjusted in place by pushing on it with a piece of pipe. Always use a piece of cardboard between the pipe and the seal seat to avoid scratching the seal seat. (This is a lapped surface and must be handled very carefully).
10. After the seal seat is in place, ensure that it is clean and has not been marred.
11. Using a clean cloth, wipe the shaft and make certain that it is perfectly clean.
12. Secure the adapter on the engine mounting face.

**NOTE:** Tighten cap screws **EVENLY** to avoid cocking rabbet on engine mounting face.

13. Apply a light coating of soapy water to the inside rubber portion of seal head and slide onto the shaft sleeve. Slip the shaft sleeve with seal head onto the engine shaft.

**IMPORTANT:** Before installing new shaft sleeve, apply a bead of non-hardening, pliable sealant (such as Permatex® Form-A-Gasket® No. 2) to motor shaft shoulder.

**CAUTION** *Do not touch or wipe the face of the polished part of the seal head.*

14. Replace any impeller shims removed in disassembly.
15. Screw the impeller back in place tightening until it is seated against shims and shaft sleeve.

**NOTE:** Check to ensure that the shaft flange (Ref. No. 2) is in place against engine shaft shoulder.

16. Remount volute with fasteners.
17. Refer to section titled Shim

Adjustment at this time if shaft sleeve or any other parts listed therein have been replaced.

18. Inspect position of flapper valve assembly (Ref. No. 16) to ensure proper movement and sealing.
19. Replace O-ring seal on volute rabbet.

**NOTE:** Always inspect O-ring seals. Replace when cracked or worn. Wet O-ring with soapy water for ease of assembly.

20. Remount casing.
21. Remount any other parts and reconnect spark plug wire and battery (if so equipped). Pump should now run with renewed original performance.

#### SHIM ADJUSTMENT

1. When installing a replacement impeller, engine, shaft sleeve, adapter, or volute, it may be necessary to vary the number of impeller shims (Ref. No. 11) that will be required. This is easily done by adding one shim more than was removed and reassembling the pump as described in Mechanical Seal Replacement section.
2. Ensure that volute (Ref. No. 13) and adapter (Ref. No. 6) are fitted firmly (check fastener Ref. No. 4 and 14). Remove spark plug wire from engine and turn engine over by pulling the recoil starter. If engine does not turn freely, disassemble pump and remove one shim.

**NOTE:** When adding or removing shims, it is best to proceed with a 0.010" increment each time. If engine does not turn freely, add shims until it does strike, then remove a 0.010" shim. This should allow proper clearance.

3. Proper running clearance is 0.010".
4. Follow the above procedure until proper clearance is obtained. This will ensure maximum performance.

#### IMPELLER AND WEARPLATE REPLACEMENT

Impeller (Ref. No. 13) and volute/wearplate (Ref. No. 14) are subject to wear only by abrasive sand or sediment laden liquids. If badly worn, all these parts can be replaced easily and the pump thus restored to full efficiency.

**NOTE:** When the clearance between the impeller and the volute/wearplate

exceeds 1/16" at the face of the impeller or 1/8" on the outside diameter of the impeller, it may be necessary to take corrective action. The increased clearance can cause lengthened priming times and reduced pumping capacity. If both the priming and capacity of your unit are satisfactory for your application, it is recommended that no corrective maintenance be performed regardless of what clearances on your unit may have developed, since the increased clearances in themselves are not generally harmful to your pump. Normally, new pump clearances can be restored by simply shimming behind the impeller. (Add shim washers, Ref. No. 11). If the impeller is badly worn it is recommended that the impeller be replaced. This is usually all that is required since only on unusually abrasive services does the cast iron wearplate show deterioration. Occasionally a stone or hard object might get caught in the impeller and cause damage to the volute/cutwater. In these cases, follow the instructions below for replacement and refer to Figure 2.

1. Disassemble pump for access as described in MECHANICAL SEAL REPLACEMENT, steps 1 and 2.
2. Replace parts as necessary.

**NOTE:** When replacing volute, attach flapper valve assembly (Ref. No. 16) to new volute with fasteners (Ref. No. 17).

**NOTE:** Before installing new parts, clean all mating surfaces thoroughly. For information pertaining to the engine and engine parts, consult the Engine Manual or contact the nearest authorized service representative or the manufacturer.

#### CLEANING

These units are designed so that for most cleanout or clogging problems it should not be necessary to remove hoses or piping. The suction area and impeller chambers can be reached by removing (2) threaded handles (Ref. No. 25) and removing suction cleanout cover plate (Ref. No. 27) and gasket (Ref. No. 28).

**NOTE:** When replacing cleanout cover plate, carefully wipe clean all surfaces on which the gasket has contact. Also, make sure the gasket is in position. The screen in the spark arrester should be checked.

**Repair Parts List**

Ref. No.	Description	Part Number	Qty.	Ref. No.	Description	Part Number	Qty.
1	Engine (4210-96)	1639-032-00	1	23	Gasket Kit includes (2) gaskets	3993-071-90	1
	Engine (3993-96)	1639-005-00	1	24	Suction plate kit includes (1) -24,	3993-050-95	1
	Engine (3993-D6)	1639-039-00	1		(4) -21, (4) -22		
	Engine (3994-96)	1639-031-00	1	25	T handle	1601-000-00	2
2	Shaft flange (Models 3993-96, 3994-96, 3993-D6)	3923-140-09	1	26	3/8" SAE Washer	*	12
3	3/8" Lockwasher	*	4	27	Cleanout cover	2115-002-01	1
4	3/8-16 UNC x 1-1/4" Hex head cap screw	*	4	28	Cleanout cover gasket	2115-003-00	1
5	1/2"-13 UNC Hex nut	*	4	29	3/4" NPT Pipe plug	*	1
6	Adapter	2184-001-02	1	30	1/2"-13 UNC x 4 3/4" Hex head cap screw	*	4
7	No. 276 O-ring seal (casing to adapter)	2185-000-00	1	31	1/2" SAE Washer	*	4
8,9	Seal assy. Silicon carbide/Viton	1640-163-94	1	32	Handle kit	3993-100-90	1
10	Shaft sleeve (3993-96, 3994-96, 3993-D6)	1555-000-09	1	33	Frame rail kit (2 req.)	3993-111-90	2
	Shaft sleeve (4210-96)	1555-000-00	1	34	Stop arm kit (2 req.)	N/A	N/A
11	Impeller shim pkg.	1656-000-90	1	35	16" Wheel	1685-000-00	2
12	Impeller (3993-96, 3994-96)	3945-012-01	1	36	4" Pump axle/rail assy. kit	3993-110-90	1
	Impeller (4210-96, 3993-D6)	3945-012-02	1	37	Battery mount kit (3993-96, 3994-96, 3993-D6)	3993-106-90	1
13	Volute	1990-002-01	1	38	3/8"-16 UNC x 1 3/4" Hex head cap screw	*	4
14	1/4"-20 UNC x 7/8" Stn. Stl. hex hd cap screw	1718-001-00	2	39	Suction Strainer	1681-001-00	1
15	Flapper valve retainer pin	2121-000-00	4				
16	Flapper valve assembly	1696-033-90	1				
17	#10-24 UNC x 3/8" Stn. St. Flat hd Mach screw	1704-000-00	2				
18	Casing	2116-001-01	1	‡	Casing support bracket kit	3993-109-90	2
19	Discharge manifold kit includes (1) -19, (4) -21, (4) -22	3993-080-95	1	‡	Battery cable (each)	1639-004-90	2
20	Fill plug kit includes Fill Plug & O-Ring	3SXB-170-90	1	‡	Spindle collar kit (includes set screw)	1173-000-90	1
21	7/16"-14 UNC x 1 1/2" Hex head cap screw	Incl. w/19 & 24	8	‡	Raising block	3922-100-00	2
22	7/16" Split lock washer	Incl. w/19 & 24	8				

(\*) Standard hardware item, available locally.

(‡) Not shown

