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.

4-Inch Trash Pump

Refer to form 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), 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, while models 3993-96 and 3994-96 feature in addition a 12V electric starter switch and cables. 5"W x 7 3/4"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 and swing-down brake feet. 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" NPT

Discharge outlet. . . . . 4" NPT

Dimensions (overall) . . 44"L x 37"W x 31"H

Engine

- 4210-96. . . . . 13 HP B&S Vanguard
- 3993-96. . . . . 16 HP B&S Vanguard
- 3994-96 . . . . . 13 HP Honda GX

Weight

- 3993-96 . . . . . 294 lbs.
- 4210-96 . . . . . 238 lbs.
- 3994-96 . . . . . 299 lbs.

Basic construction . . Aluminum with cast iron volute, impeller, wearplates and discharge manifold; Silicon carbide seal

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

Battery tray (3993-96 & 3994-96) . . . 5"W x 7 3/4"L x 5"H

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 & engine completely assembled on engine rails.
2. Axle assembly (Ref. No. 38).
3. Two inflatable tires and wheels (Ref. No. 41).
4. Handle (Ref. No. 51).
5. Battery tray (Ref. No. 56) and battery strap (Ref. No. 57).
6. Package of fasteners.

Assembly

1. Remove packing base from pump engine rails.
2. Place a large washer (Ref. No. 40) on either side of wheel (Ref. No. 41) onto axle shafts of axle assembly (Ref. No. 38). Lock in place with wheel collar and set screw (Ref. Nos. 42 & 43).
3. Attach assembled axle assembly to pump engine rails (Ref. Nos. 36 & 50) with the wheels toward the front. Attach with four cap screws, four washers and four hex nuts (Ref. Nos. 30, 37, & 39).
4. ELECTRIC START MODELS ONLY: Attach battery tray (Ref. No. 56) to the right engine rails (Ref. No. 50). Insert two cap screws (Ref. No. 49) through inside of engine rail, then

Performance Chart

	GPH at Total Head in Feet											*Max.
	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	Head
4210-96	31,800	30,300	28,500	26,400	23,700	21,000	17,700	14,400	10,800	6,900	2,700	118 ft.
3993-96 3994-96	37,800	36,000	33,600	31,200	28,500	25,500	22,200	18,600	14,400	10,200	5,100	120

(*) Shut off; to convert to PSI, divide by 2.31.

4-Inch Trash Pumps

Assembly (Continued)

through battery tray with two hex nuts (Ref. No. 48) on the outside of the tray.

5. Stand the pump carefully on the pump end and attach handle (Ref. No. 51). Remove the two hex nuts (Ref. No. 39) at the rear of engine mounting foot from cap screws (Ref. No. 37) leaving the screws in place. Install the handle on underside of engine rails with the screws, through the first set of holes on either side of the handle. Replace the two previously removed hex nuts. Insert two cap screws, two washers, and two hex nuts (Ref. Nos. 50, 53, & 39) through the remaining two holes in the handle and base rails. Return pump to level.
6. ELECTRIC START MODELS ONLY: Install a 12 volt type No. 9A1 garden tractor battery 32 amp hr. rating (not included, approx. size 7¾"L x 5"W x 6"H) with battery strap (Ref. No. 57) and two hex nuts (Ref. No. 48). 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. 9), seal head (Ref. No. 10), and shaft sleeve (Ref. No.11) to ensure proper mating of mechanical seal components!

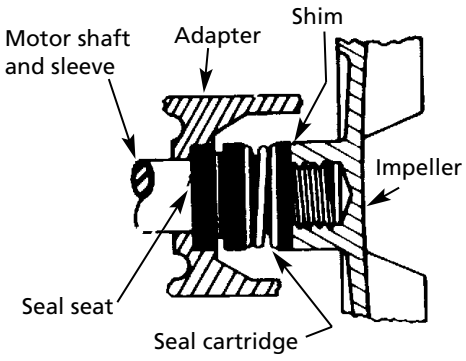


Figure 1 – Mechanical Seal Replacement

1. Unthread cap screws (Ref. No. 34) and remove casing (Ref. No. 22) and casing seal (Ref. No. 8) from adapter (Ref. No. 7).
2. Unthread screws (Ref. No. 15) and remove volute (Ref. No. 14) from adapter.
3. Unscrew impeller (Ref. No. 13) from the engine shaft. Remove the impeller shim (Ref. No. 12), 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.

⚠ 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 entitled 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. Nos. 16-21) 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. 12) that will be required. This is easily done by

Models 3993-96, 3994-96 and 4210-96

Maintenance (Continued)

adding one shim more than was removed, and reassembling the pump as described in Mechanical Seal Replacement section.

2. Ensure that volute (Ref. No. 14) and adapter (Ref. No. 7) are fitted firmly (check fastener Ref. Nos. 4 and 15). 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 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. 12.) 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. Nos. 16-21) to new volute with fasteners (Ref. No. 19).

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. 29) and removing suction cleanout cover plate (Ref. No. 31) and gasket (Ref. No. 32).

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 arrestor should be checked.

For Repair Parts, contact dealer where pump was purchased

Please provide following information:
-Model number
-Serial number (if any)
-Part description and number as shown in parts list

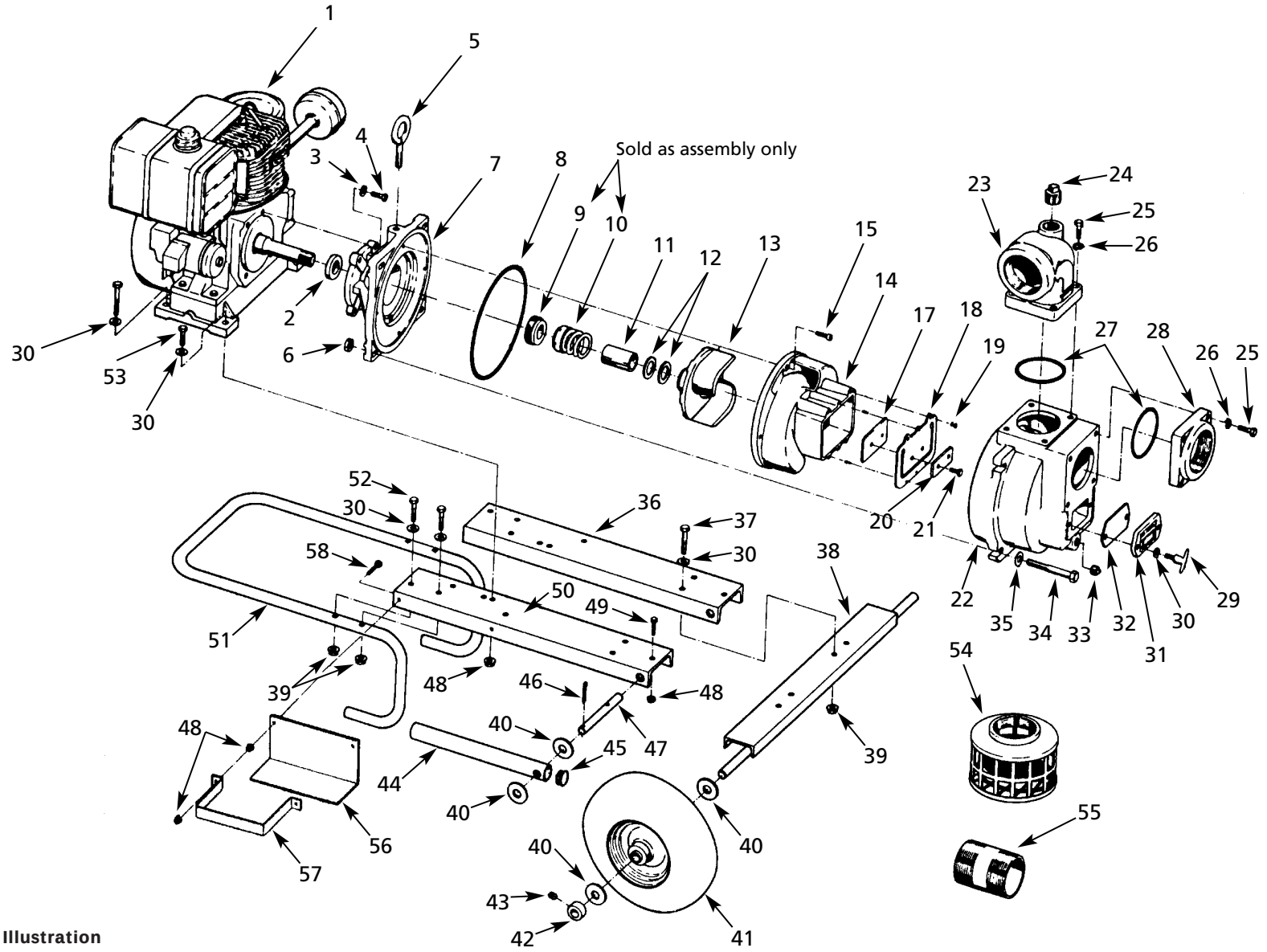
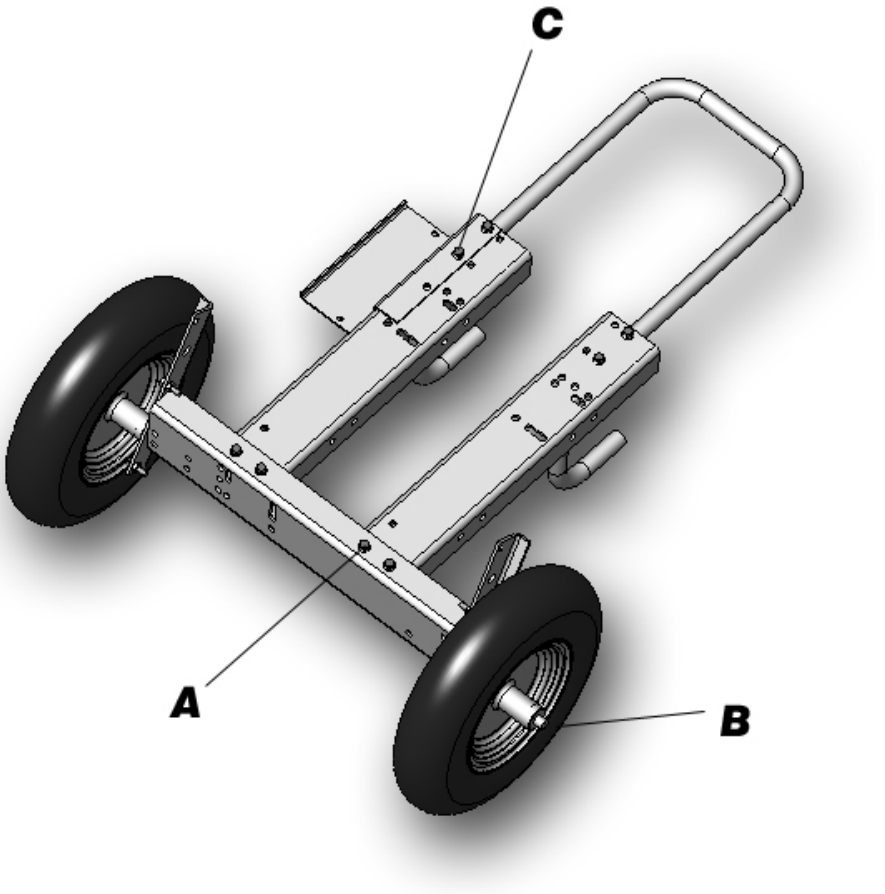


Figure 2 – Repair Parts Illustration

WHEEL KIT ASSEMBLY INSTRUCTIONS
AMT MODELS 3993-96, 3994-96, 3993-D6, 4210-96



Instructions

A. Install axle rail to engine rails with four (4) bolts and nuts provided.
B. Install two (2) wheels on axles, fix in postion with collars.
C. Install handle/foot to engine rails with four (4) bolts and nuts provided.

Repair Parts List

Ref. No.	Description	Part Number	Qty.
1	Engine (4210-96)	1639-032-00	1
	Engine (3993-96)	1639-005-00	1
	Engine (3994-96)	1639-031-00	1
2	Shaft flange (Models 3993-96, 3994-96)	3923-140-09	1
3	3/8" Lockwasher	*	4
4	3/8"-16 UNC x 1¼" Hex head cap screw	*	4
5	3/8"-16 UNC x 1¼" Eyebolt	2169-000-00	1
6	1/2"-13 UNC Hex nut	*	4
7	Adapter	2184-001-02	1
8	No. 276 O-ring seal (casing to adapter)	2185-000-00	1
9,10	Seal assy. silicone carbide/Viton	1640-167-90	1
11	Shaft sleeve (3993-96, 3994-96)	1555-000-09	1
	Shaft sleeve (4210-96)	1555-000-00	1
12	Impeller shim, 1 pkg. contains one each: 0.010, 0.020, 0.030"	1656-000-90	1
13	Impeller (3993-96, 3994-96)	1990-003-01	1
	Impeller (4210-96)	1990-003-07	1
14	Volute	1990-002-01	1
15	1/4"-20 UNC x 7/8" Stainless hex head cap screw	1718-001-00	2
16	Flapper valve retainer pin	2121-000-00	4
17	Rear flapper weight	1990-006-01	1
18	Flapper valve	1990-005-00	1
19	#10-24 UNC x 3/8" Stainless flat head machine screw	1704-000-00	2
20	Front flapper weight	2128-000-01	1
21	1/4"-20 UNC x 1/2" Hex head cap screw	*	2
22	Casing	2116-001-01	1
23	Discharge manifold	1990-009-01	1
24	1½" NPT Pipe plug	*	1
25	7/16"-14 UNC x 1½" Hex head cap screw	*	8
26	7/16" Split lockwasher	*	8
27	No. 251 O-ring seal (Suction/discharge plate to casing)	1990-008-00	2
28	Suction plate	1990-004-01	1
29	Tee handle	1601-000-00	2
30	3/8" SAE Washer	*	12
31	Cleanout cover	2115-002-01	1
32	Cleanout cover gasket	2115-003-00	1
33	3/4" NPT Pipe plug	*	1
34	1/2"-13 UNC x 4¾" Hex head cap screw	*	4
35	1/2" SAE Washer	*	4
36	Left engine rail	1888-000-03	1
37	3/8"-16 UNC x 2½" Hex head cap screw	*	4
38	Axle assembly	1696-012-90	1
39	3/8"-16 UNC Flanged hex nut	*	8
40	5/8" SAE Washer	*	8
41	8 x 5" Wheel and tire	1685-000-00	2
42	Wheel collar	1173-000-00	2
43	1/4"-20 UNC x 1/4" Socket set screw	*	2
44	Stop tube	1696-014-09	2
45	Closure end plug	1256-000-00	2
46	1/8 x 1¼" Cotter pin	*	2
47	Stop pivot rod	1696-013-09	2
48	5/16"-18 UNC Flanged hex nut (4210-96)	*	6
	5/16"-18 UNC Flanged hex nut (3993-96 & 3994-96)	*	10
49	5/16"-18 UNC x 1½" Hex head cap screw	*	2
50	Right engine rail	1888-000-02	1
51	Handle	1696-011-00	1
52	3/8"-16 UNC x 1¾" Hex head cap screw	*	4
53	5/16"-18 UNC x 2¾" Hex head cap screw	*	4
54	Suction strainer	1681-001-00	1
55	4" NPT Hex pipe nipple	1696-035-00	2
56	Battery tray (3993-96, 3994-96)	1889-000-09	1
57	Battery strap (3993-96, 3994-96)	1696-000-09	1
58	5/16"-18 UNC x 1¾" Hex head cap screw (3993-96 & 3994-96)	*	2
‡	Raising block (not shown)	3922-100-00	2
‡	Flapper valve assembly (Incl. Ref. Nos. 17, 18, 20, 21)	1696-033-90	1
‡	Battery cable (each)	1639-004-90	2

(*) Standard hardware item, available locally. (‡) Not Shown.

Notes