

NEPTUNE

MUNCIE GEAR WORKS, INC.
P. O. Box 433
Cordele, Georgia

CONDENSED SERVICE DATA

Model	
Year Produced	Mighty-Mite
1955	A1
1956	AA1
1957-1960	AA1-A
1961-1963	WC-1

TUNE-UP

HP @ rpm	1.7 @ 4000
Bore — Inches	1 $\frac{9}{16}$
Stroke — Inches	1 $\frac{1}{2}$
Number of cylinders	1
Displacement — Cu. In.	2.87
Spark Plug	
Autolite	A2X
AC	
Champion	J6J
Electrode gap	0.025
Magneto Point Gap	0.020
Carburetor	
Make	Tillotson
Model	AJ-21A
Adjustment	See Text
Fuel - Oil Ratio	16:1

SIZES-CAPACITIES

Piston Rings	
End Gap	
Side Clearance	
Piston Skirt Clearance	
Crankshaft Bearing Diameter	
Top Main Bearing	
Lower Main Bearing	
Crankpin	
Crankshaft Bearing Clearance	
Top Main Bearing	
Lower Main Bearing	
Crankpin	
Crankshaft End Play	
Piston Pin Diameter	
Clearance in Piston	
Clearance in Rod	
Drive Shaft Diameter	
Diametral Clearance	
Propeller Shaft Diameter	
Diametral Clearance	

Publication
Not Authorized
by Manufacturer

LUBRICATION

The power head is lubricated by oil mixed with the fuel. Use $\frac{1}{2}$ pint Mobil Outboard or SAE 40 Paraffin Base Oil to one gallon of regular gasoline. Mix gasoline and oil thoroughly, using a separate container, before pouring mixture into fuel tank.

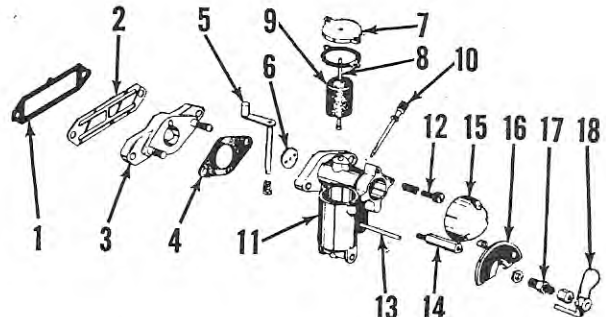
The lower unit gears and bearings are lubricated by oil contained in the gearcase. Use a non-channeling, waterproof grease, filling through plug hole located in rear of gearcase rear cover, just above propeller shaft. Check lubricant after each 20 hours of operation.

FUEL SYSTEM

CARBURETOR. A Tillotson, Model AJ-21A carburetor is used. Refer to Fig. N1 for exploded view. Normal initial setting of high speed mixture adjusting screw (13) is one

Fig. N1 — Exploded view of Tillotson carburetor used on Neptune motors.

1. Gasket
2. Reed valve assembly
3. Intake manifold
4. Gasket
5. Throttle shaft
6. Throttle valve
7. Bowl cover
8. Inlet needle valve
9. Float
10. Idle tube
11. Body assembly
12. Idle adjustment screw
13. Main adjustment screw
14. Spacer
15. Air Deflector
16. Dial plate
17. Gland nut
18. Adjustment lever



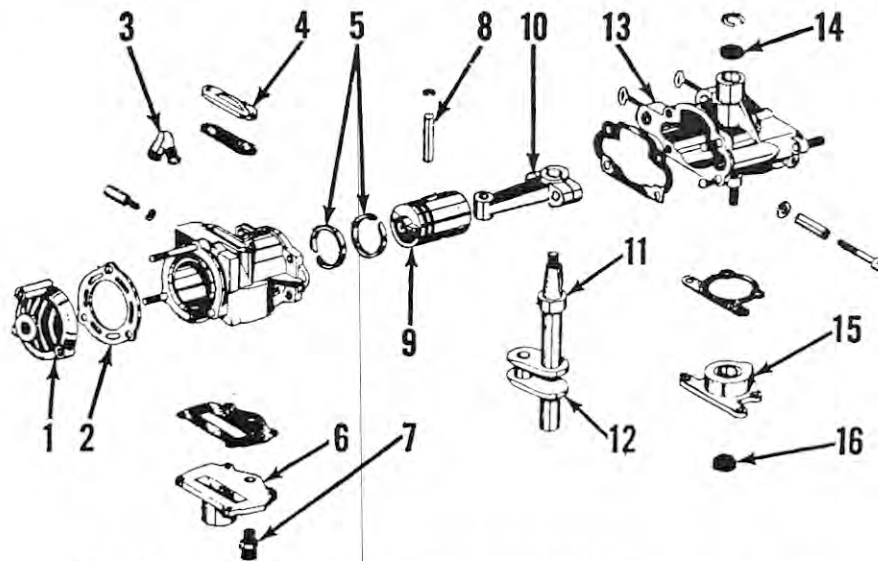


Fig. N2 — Exploded view of Neptune power head and associated parts.

- 1. Cylinder head
- 2. Gasket
- 3. Outlet elbow
- 4. Transfer port cover
- 5. Piston rings

- 6. Exhaust cover
- 7. Inlet fitting
- 8. Piston pin
- 9. Piston
- 10. Connecting rod
- 11. Magneto cam

- 12. Crankshaft
- 13. Crankcase
- 14. Shaft seal
- 15. Lower bearing adapter
- 16. Shaft seal

turn open from closed position. Mixture adjustment lever (18) must be removed for major adjustment of main needle. Normal initial setting of idle adjustment screw (12) is 1/2 to 3/4 turn open from closed position. Final adjustment of both needles must be made under load after motor is at operating temperature. Make sure air vent valve in fuel cap is open and clear when carburetor is adjusted.

Carburetor is not equipped with a choke in air horn. A rich mixture for cold starting is obtained by momentarily depressing inlet valve (8) where it protrudes through float chamber cover (7). The fuel level is approximately correct when level is maintained at approximately 1/8-inch below float bowl rim. The float is positively located on inlet valve stem (8) by spring clips which fit into positioning grooves above and below float. If fuel is maintained at a constantly higher than normal level, disassemble and clean or renew the inlet valve assembly.

Tillotson parts numbers are as follows:

- Repair kitRK-219
- Gasket setGS-112
- Inlet needle and seat06941
- Idle adjustment screw06910
- Idle tube07113
- Main adjustment screw06974

SPEED CONTROL LINKAGE. The speed control lever moves the magneto stator plate to advance or retard the ignition timing. The throttle valve is synchronized to open as timing is advanced. The synchronization

is fixed and non-adjustable. It is important to check, however, to be sure parts are not worn or bent and that throttle valve opens and closes fully as timing is advanced and retarded.

REED VALVES. The inlet reed valves (2— Fig. N1) are located between intake manifold (3) and crankcase. Inlet reed valves should be removed and checked whenever carburetor is removed for service. Reed petals should seat very lightly against seating surface of manifold. Renew reed petals if broken or bent, and manifold if seating surface is rough.

COOLING SYSTEM

An impeller type water pump is located on the lower unit drive shaft just above the gearcase. Refer to Fig. N3. Make sure that water inlet and water tubes are open and clean. Disassembly of water pump requires disassembly of lower unit.

POWER HEAD

R&R AND DISASSEMBLE. To remove the power head, first loosen thumb screws and remove steering handle; then remove fuel tank and cowling. Remove flywheel, magneto assembly and carburetor and manifold assemblies if power head is to be disassembled. Disconnect coolant lines, remove the stud nuts retaining power head to lower motor leg and lift off the power head. Refer to Fig. N2 for an exploded view of power head.

Remove spark plug, cylinder head, and cylinder. On some models, exhaust cover (6) is an integral part of cylinder and cannot be removed. Crankshaft can be removed from bottom of crankcase (13) after removing piston and connecting rod assembly and lower bearing adapter (15).

REASSEMBLE. Because of the two-cycle design, crankcase and intake manifold must be completely sealed against both vacuum and pressure. Exhaust manifold and cylinder head must be sealed against water leakage and pressure. Whenever power head is disassembled, it is recommended that all gasket surfaces be carefully checked for nicks and burrs or warped surfaces which might interfere with a tight seal. Mating surfaces may be lightly lapped on a lapping block or sufficiently large piece of smooth plate glass after studs have been removed. Apply very light pressure and use a figure-eight motion, checking frequently to determine progress. Do not remove any more metal than is necessary. Thoroughly clean the parts with new oil and a clean, soft rag; then wash with soapsuds and clean rags. Use a non-hardening cement on gasket surfaces when reassembling.

PISTON, PIN, RINGS AND CYLINDER. Before detaching rod from crankshaft, check to make sure that rod and cap are properly marked so that cap can be assembled in same relative position on rod as before removal.

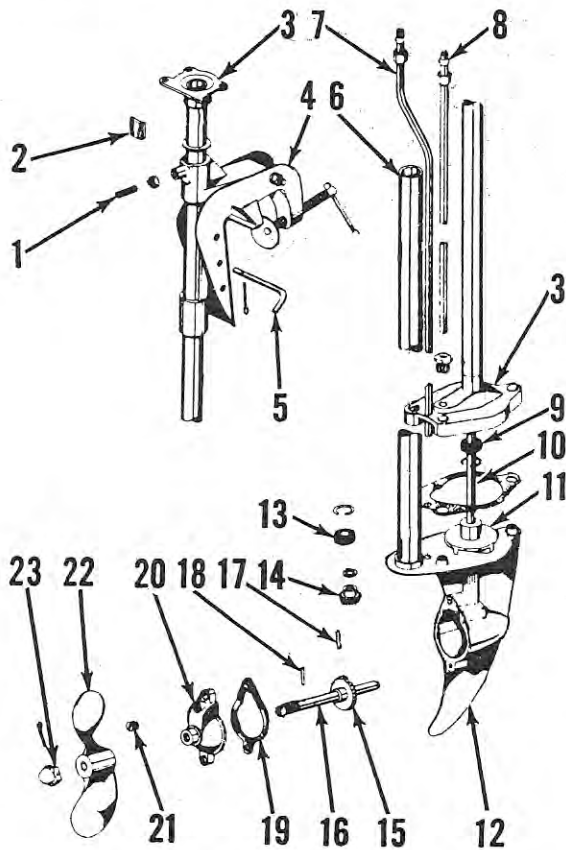


Fig. N3—Exploded view of Neptune lower unit, gear case and associated parts.

1. Friction screw
2. Friction block
3. Lower motor leg
4. Stern clamp
5. Tilt pin
6. Exhaust tube
7. Outlet water line
8. Inlet water line
9. Shaft seal
10. Drive shaft
11. Impeller
12. Gearcase
13. Oil seal
14. Drive pinion
15. Propeller shaft gear
16. Propeller shaft
17. Gear pin
18. Shear pin
19. Gasket
20. Gearcase cover
21. Fill plug
22. Propeller

The piston is fitted with two rings which are interchangeable. Piston must be installed in cylinder with the long, sloping (exhaust) side of piston downward as shown. The full floating piston pin is retained in piston by lock rings which fit into grooves in piston bosses.

CONNECTING ROD, BEARINGS AND CRANKSHAFT. The connecting rod is unbushed and rides directly on crankpin and piston pin. If excessively worn, connecting rod should be renewed.

The crankshaft main bushings are renewable only by renewing crankcase (13—Fig. N2) or lower adapter (15). Crankshaft seals

are renewable and can be installed without removal of crankshaft. Upper seal (14) is retained in crankcase by a snap ring. Upper seal can be removed after removing flywheel, magneto assembly and the snap ring. To remove the lower seal, first remove the power head, then remove lower adapter (15).

LOWER UNIT

PROPELLER AND DRIVE PIN. The two blade propeller has a diameter of 6 inches and a pitch of 5 inches. Refer to Fig. N3. Propeller is retained to shaft by a cap nut (23) and cotter pin, and is driven by a $\frac{3}{8}$ x 1-inch bronze shear pin (18). Extra shear pins should be carried.

OVERHAUL. Most service on the lower unit can be performed by removing gearcase rear cover (20—Fig. N3); or by removing the gearcase lower housing (12). The water pump impeller (11) is retained to drive shaft by a drive pin.

Renew the water pump packing (9 & 13) whenever lower unit is disassembled. Examine drive shaft and propeller shaft for wear or scoring and the gears for breakage, wear and proper mesh. Gear mesh is controlled by thrust washers which should be renewed if backlash is excessive. Fill the gearcase with a non-channeling, waterproof grease through hole for plug (21), when gearcase is reassembled.

PARTS PROCUREMENT

If parts are required and name and address of nearest dealer is not known, parts can be obtained by writing directly to MUNCIE GEAR WORKS, INC., 700 Wysor Street, Muncie, Indiana.