

SCOTT

McCULLOCH CORPORATION
6101 West Century Blvd.
Los Angeles 45, Calif.

CONDENSED SERVICE DATA

Series	Fishing Scott	Fleet Scott
1960.....	A3EB	A3FB, B3FB
1961.....	81300610, 81300710	81301210, 81301220
1962.....	62300710	62301210
1963.....	63300711, 63300712, 63300750, 63300760	63301411
TUNE-UP		
Hp @ rpm.....	6 @ 4500, 7.5 @ 4500	12 @ 4000, 14.1 @ 5000
Bore—Inches.....	1 $\frac{11}{16}$	2 $\frac{1}{4}$
Stroke—Inches.....	1 $\frac{11}{16}$	2 $\frac{1}{8}$
Number of Cylinders.....	2	2
Displacement—Cu. In.....	10.0	16.4
Spark Plug		
Champion.....	H10J	J6J
AC.....	M48L	N44 or M44B
Electrode gap.....	0.035	0.035
Magneto		
Point gap.....	0.020	0.020
Timing.....	See Text	See Text
Carburetor		
Make.....	Tillotson or M-S	Carter
Model.....	HC-8AX (Tillotson), SUM (M-S)	Type N
Adjustment.....	See Text	
Fuel-Oil Ratio.....	40:1*	40:1*
*Using Scott Crown Imperial Oil. Use 20:1 ratio with other Outboard Motor Oils in models before 1962. A fuel-oil ratio of 100:1 is authorized by manufacturer, using Scott 100:1 oil only, for 1963 motors.		
SIZES—CLEARANCES		
Cylinder—Diameter.....	See Note.	
Piston Rings		
End Gap.....		
Side Clearance.....		
Piston to Cylinder Clearance		
Piston Pin Diameter.....		
Crankshaft Journal Diameters		
Top Main Bearing.....		
Center Main Bearing.....		
Lower Main Bearing.....		
Crankpin.....		
NOTE: Publication not authorized by manufacturer.		
TIGHTENING TORQUES (All Values In Inch-Pounds)		
Connecting Rod.....	(Steel) 80, (Aluminum) 50-55	80
Crankcase Halves		
Main Bearing Screws.....	100	80-90
Flange Screws.....	70	70
Cylinder Head.....	100	80
Powerhead Mounting Screws.....	70	80-90
Powerhead Adapter.....	80	80
Pump Housing & Gearcase		
Housing Screws.....	150	150
Gearcase Bearing Housing.....	100	75
Flywheel Nut.....	400	500
Spark Plug.....	250	250

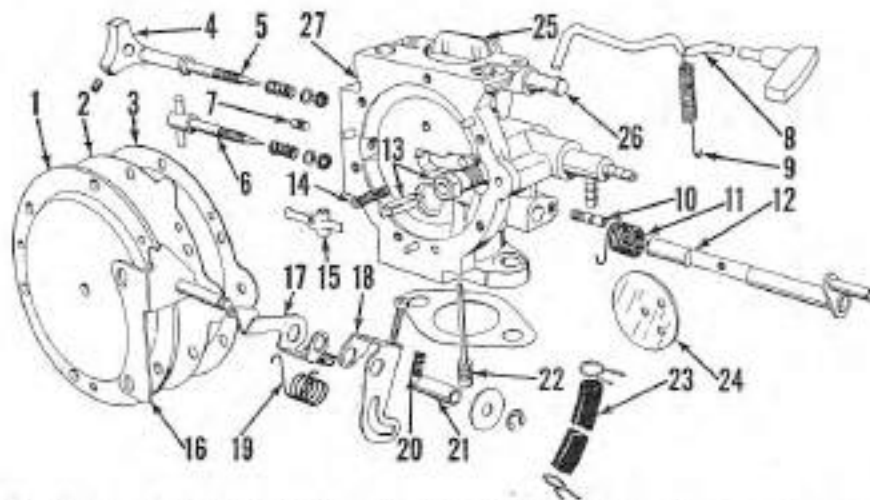


Fig. Mc45 — Exploded view of the Tiltson, diaphragm type carburetor used on some Fishing Scott models.

- | | | | |
|----------------------|-------------------------|-----------------------|---------------------|
| 1. Diaphragm cover | 8. Choke rod | 14. Spring | 21. Bearing |
| 2. Diaphragm | 9. Spring | 15. Inlet valve lever | 22. Pivot pin |
| 3. Gasket | 10. Pin | 16. Bracket | 23. Inlet hose |
| 4. Knob | 11. Spring | 17. Cam follower | 24. Throttle valve |
| 5. High speed needle | 12. Throttle shaft | 18. Throttle arm | 25. Choke valve |
| 6. Idle needle | 13. Inlet needle & seat | 19. Spring | 26. Choke shaft |
| 7. Plug | | 20. Spring | 27. Carburetor body |

LUBRICATION

The power head is lubricated by oil mixed with the fuel. One-fifth (1/5) pint of Scott Crown Imperial outboard motor oil or 3/4-pint of other approved outboard motor oil should be mixed with each gallon of regular gasoline in models before 1962. The manufacturer authorizes the use of 1/5 pint of any top-grade outboard motor oil per gallon of fuel in 1962 and 1963 motors. A fuel-oil mixture of 1 part oil to 100 parts regular gasoline is authorized for 1963 motors, provided Scott 100:1 Oil is used.

The lower unit gears and bearings are lubricated by oil contained in the gearcase.

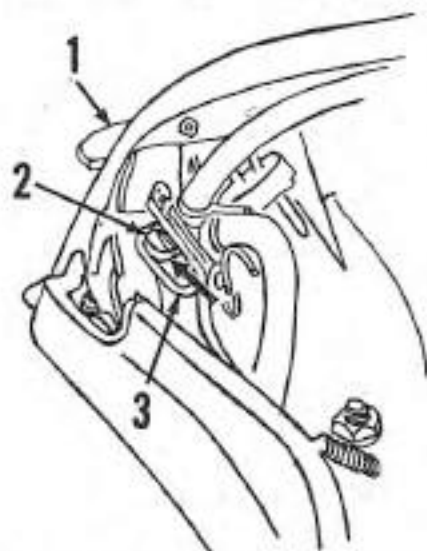


Fig. Mc46—On early Fishing Scott models the fuel system bleeder valve is operated by the choke knob as shown. See text for details.

1. Choke knob
2. Adjusting screw
3. Bleed valve

Only EP 90 outboard gear lubricant should be used. Lower unit gearcase should be drained and refilled every 30 hours or 60 days of operation. On Fishing Scott motors, check or renew the lower unit lubricant by filling to the level of upper (vent) plug with motor in upright position. On Fleet Scott models, install vent plug and fill to level of fill plug with motor resting on rear carrying handle. Tighten both plugs securely, using new gaskets if necessary, to ensure a water-tight seal.

FUEL SYSTEM

CARBURETOR. Fishing Scott models use either a Tiltson model HC-8AX, diaphragm type carburetor as shown in Fig. Mc45, or a Marvel-Schoeller model SUM float type carburetor shown in Fig. Mc47. Fleet Scott

motors use a Carter N type carburetor as shown in Fig. Mc48. Refer to the appropriate following paragraphs for service and adjustment procedures.

Tiltson Model HC: On models equipped with the diaphragm type carburetor, it is necessary to bleed the fuel system prior to starting the motor. On early motors to bleed the fuel system, depress the choke button and squeeze the primer bulb located in fuel line until a solid stream of fuel is discharged from starboard side of motor. On late motors, the bleed valve is opened by turning the speed control grip fully clockwise until the "VENT" marking is aligned with arrow, then squeeze the primer bulb. On all models, maintain pressure on the primer bulb until the bleed valve is closed. On early models the bleed valve may be adjusted as follows: Refer to Fig. Mc46. Loosen screw (2). Fully depress choke button (1) and move bleed valve (3) in direction of arrow as far as possible then tighten screw (2). When choke button is released, there should be no contact between the stop on choke rod and stem on bleed valve. If there is, move bleed valve just slightly in opposite direction until clearance exists.

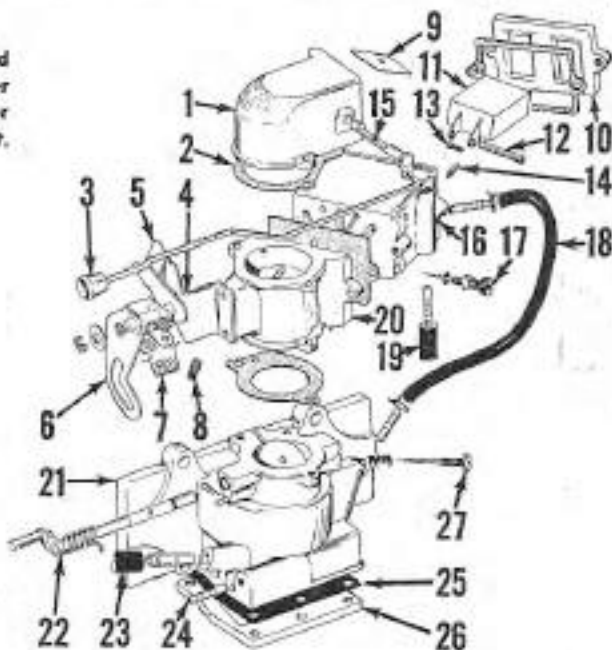
Normal initial carburetor adjustments are 1 turn open for the high speed adjusting needle (5—Fig. Mc45) and 3/4-turn open for the slow speed adjusting needle (6). Fuel adjustments must be made under load when motor is warm.

To remove the carburetor for service, it is first necessary to remove the power head as outlined in POWER HEAD section, then remove carburetor from inlet manifold.

To disassemble the carburetor, remove the diaphragm cover (1), control linkage (16 through 21) and the diaphragm (2). To remove the inlet lever (15), first remove the pivot pin (22). When reassembling, make sure inlet lever spring (14) is seated in the well of carburetor body (27) and on the raised dimple of lever (15). Free end of lever (15) should be flush with gasket flange

Fig. Mc47 — Exploded view of Marvel-Schoeller model SUM carburetor used on late Fishing Scott.

1. Air horn
2. Gasket
3. Choke knob
4. Bracket
5. Cam follower
6. Throttle arm
7. Spring
8. Spring
9. Choke valve
10. Cover plate
11. Float
12. Float shaft
13. Spring
14. Inlet needle
15. Choke shaft
16. Miter body
17. High speed needle
18. Fuel hose
19. Vent hose
20. Venturi body
21. Throttle body
22. Throttle shaft
23. Inlet hose
24. Drain hose nipple
25. Diaphragm
26. Fuel pump body
27. Idle needle



of carburetor body (27) when carburetor is assembled, and can be adjusted, if required, by bending lever. Check diaphragm (2) for cracks, pin holes or deterioration and install with large disc toward inlet lever (15). After motor is assembled, synchronize the linkage as outlined in SPEED CONTROL LINKAGE paragraph.

Marvel-Schebler SUM: Refer to Fig. Mc47. Carburetors are provided with two mixture adjustment needles. The idle mixture adjustment needle (27) and high speed mixture adjustment needle (17) should be initially set to approximately 1½ turns open from the closed position. Final adjustment of both needles must be made under load after motor is at operating temperature.

To remove the carburetor, it is first necessary to remove the power head as outlined in the POWER HEAD section. Float level is determined by the depth the float shaft (12) is pressed into retaining slots in meter body (16). Refer to Fig. Mc48. To adjust the float, remove the meter body and remove cover plate (10—Fig. Mc47). Adjust the float clearance by moving shaft (12—Fig. Mc48) in the retaining slots until clearance (A) measures 0.040-0.090 when measured with a feeler gauge. Inlet needle (14) must be held closed while measurement is taken. Note: The float shaft (12) can be moved in slot with a small pin punch by working through open end of body or through the two access holes (P) drilled in body. Make sure both ends of shaft are moved an equal amount so that float is parallel with housing. To remove the float, tap shaft (12) from slots by working through the two access holes (P). Note the position of spring (13—Fig. Mc47) after float assembly is removed, and reinstall in the same position.

The fuel pump and inlet manifold is an integral part of throttle body (31). Diaphragm (25) can be renewed after removing pump body (26).

Marvel-Schebler part numbers are as follows:

Repair kit	286-1355
Gasket set	18-705
Metering body	10-4544
Float & Lever Assembly.....	30-754
Inlet needle	34-142

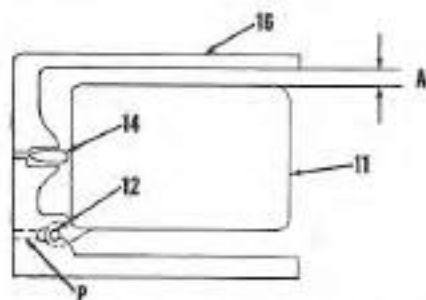
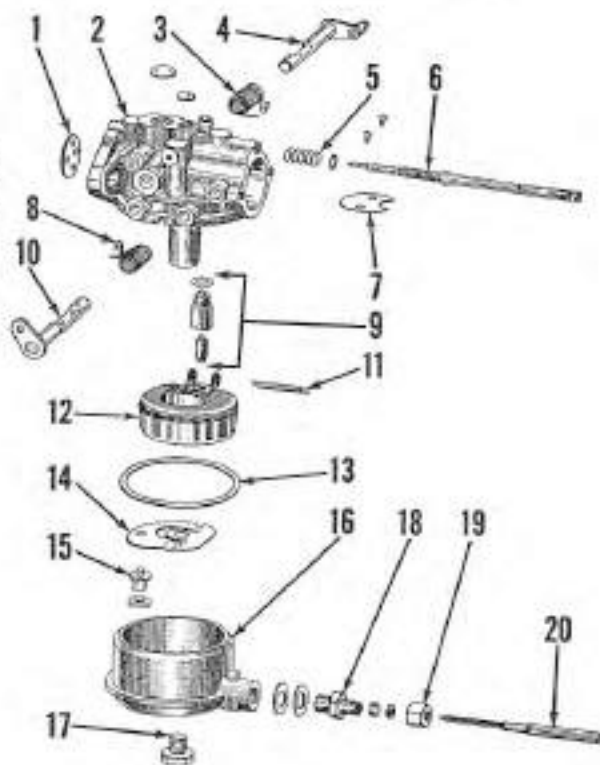


Fig. Mc48 — Adjust float level on Marvel-Schebler carburetor by moving shaft (12) in or out in slots until distance (A) is 0.040-0.090 with needle valve (14) closed. Access holes (P) are drilled through closed end of body to each end of pin. Refer to Fig. Mc47 for legend.

Fig. Mc49 — Exploded view of Carter N type carburetor used on some models.

1. Throttle valve
2. Body
3. Spring
4. Throttle shaft
5. Spring
6. Slow speed needle
7. Choke valve
8. Spring
9. Inlet needle & seat
10. Choke shaft
11. Float shaft
12. Float
13. Gasket
14. Spring
15. Drain plug
16. Float chamber
17. Retaining screw
18. Packing
19. Packing nut
20. High speed needle



Float shaft	52-434
Pump diaphragm	237-74
Check ball	208-59

Carter Model N: Refer to Fig. Mc49. Carburetors are provided with two mixture adjustment needles. The idle mixture needle (8) and high speed adjustment needle (20) should both be initially adjusted to approximately ¾-turn open, then readjusted under load for best performance after motor is warm. When engine is at normal operating temperature and under load, high speed needle should be adjusted to leanest position which will allow satisfactory acceleration. Clockwise rotation of the needle leans the mixture. Readjust the idle mixture needle for smoothest and fastest idle speed whenever a major adjustment is made of high speed needle. Recheck high speed setting after adjusting idle mixture.

To disassemble the carburetor, first scribe a mark on body and bowl for proper location when reassembling. Remove high speed needle, packing nut and packing, then remove bowl retaining screw (17), gasket (13) and bowl (16). Bowl is provided with a spring loaded drain plug (15). Make sure sealing surfaces of plug and bowl are even and smooth, and that spring (14) applies sufficient pressure for a good seal. Float setting should be 11/64-inch, measured from nearest surface of float to carburetor body gasket flange, with body in inverted position and inlet needle valve closed. Adjust by bending the tab which contacts inlet needle.

Main nozzle and slow speed jet are installed permanently and cannot be renewed. Throttle valve (1) must be installed with trademark "C" on side toward idle port when viewed from flange side. Seat the

valve by tapping lightly with small screwdriver and use new screws when installing valve.

Model designations and Carter part numbers are as follows:

Models N-3033S, N-3037S, N-3198S, N-3199S

Flange gasket	1A-73
Throttle valve (N-3033S, N-3037S).....	2-234
Throttle valve (N-3198S, N-3199S).....	2-238
Throttle shaft	3-1169S
Choke valve	7-230
Bowl drain plug (N-3033S, N-3037S)	11B-375S
Choke shaft	14/590
Float and lever	21-206S
Bowl (N-3198S, N-3199S)	23-47
Bowl (N-3033S, N-3037S)	23-65
Inlet needle and seat (N-3033S, N-3037S)	25-317S
Inlet needle and seat (N-3198S, N-3199S)	25-332S
Idle needle (N-3033S, N-3198S).....	30A-97
Idle needle (N-3037S, N-3199S).....	30A-98
High speed needle (N-3037S, N-3198S) ..	37-88
High speed needle (N-3033S, N-3198S) ..	37-88
Main metering screw (N-3033S, N-3198S)	159-175S
Main metering screw (N-3037S, N-3199S)	159-176S

SPEED CONTROL LINKAGE. The speed control lever on all models is connected to the magneto stator plate, and moves the plate to advance or retard the ignition timing. The carburetor throttle valve is synchronized to open as the ignition timing is advanced. It is very important that ignition timing and throttle valve opening be properly synchronized to obtain satisfactory operation. To adjust the speed control linkage, refer to the appropriate following paragraphs:

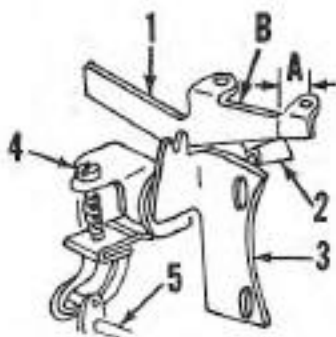


Fig. Mc50—Schematic view of synchronizing linkage used on Fishing Scott motors. See text for adjustment details.

- | | |
|--------------------|--------------------|
| 1. Synchronous cam | 4. Adjusting screw |
| 2. Cam follower | 5. Throttle shaft |
| 3. Bracket | |

On Fishing Scott motors refer to Fig. Mc50. With the engine not running, turn the speed control grip to the "SLOW" position, then in the opposite direction until the speed control cam (1) attached to the magneto stator plate contacts the cam follower arm (2). On 1960 models equipped with Tillotson carburetor, follower arm should contact cam at a point approximately $\frac{1}{8}$ inch from end of cam as shown at (A). On later models with Marvel-Schebler carburetor, follower arm should contact cam at scribe line midway between the two cam attaching lugs as shown at (B). On all models, adjust by turning the adjusting screw (4).

On Fleet Scott models, turn the speed control grip until the cam follower arm (5—Fig. Mc51) is centered on the first cam attaching spacer (1) as shown. Turn the adjusting screw (5) until the follower arm just contacts the speed control cam (3) and throttle lever (6) has not yet started to move. As speed control grip is moved farther toward the "FAST" position the throttle valve should begin to move from the closed position.

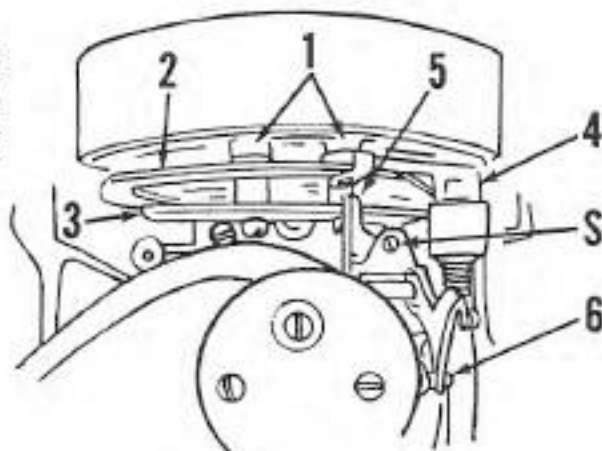
On all models, if follower arm fails to stay in contact with speed control cam, check for binding or damaged linkage.

REED VALVES. The inlet reed valve unit is located between inlet manifold and crankcase. Reed petals should seat very lightly against reed plate throughout their entire length, with the least possible pressure. Check seating visually and/or by blowing and drawing air lightly through parts with mouth. Reed stop setting is fixed and should be $\frac{1}{4}$ inch when measured between end of stop and reed plate as shown at (A)—Fig. Mc52. Renew reed stop if bent. Renew the reed petals if broken, cracked, warped, rusted or bent. A broken reed petal is sometimes caused by a bent or damaged reed stop. Seating surfaces of plate should be smooth and flat.

FUEL PUMP. All motors except Fishing Scott models with Marvel-Schebler carburetor are equipped with a diaphragm type fuel pump as shown in Fig. Mc53. Pressure and vacuum pulsations in one crankcase of the power head are directed through inlet (1) to rear of pump diaphragm (3). When the powerhead

Fig. Mc51 — Schematic view of speed control linkage used on Fleet Scott Motors. Refer to text for details of adjustment.

1. Cam spacer
2. Magneto link
3. Synchronous cam
4. Speed control arm
5. Follower arm
6. Throttle shaft
8. Adjusting screw



piston moves upward in its cylinder, vacuum in crankcase draws the diaphragm outward as shown in view "A". Fuel is drawn in past the inlet check valve (7) as shown. As powerhead piston moves downward in cylinder (view "B"), the pressure forces diaphragm down and fuel passes out through outlet check valve (4) into carburetor.

Fuel pump used in Fishing Scott models is integral with the inlet manifold. Fleet Scott models use a separate pump as shown in Fig. Mc54. When overhauling the fuel pump, all defective or questionable parts should be renewed.

IGNITION

Breaker point gap should be 0.020 and can be adjusted after recoil starter and flywheel have been removed.

For a quick test of magneto condition, remove the spark plugs and hold spark plug wire about $\frac{1}{4}$ -inch away from cylinder head. Have someone spin the motor and note the condition of spark. Although spark may not be visible in bright daylight, a distinct snap will be noted as spark jumps the gap. If spark is weak or erratic, adjust the points as outlined above. Be sure to

note point condition. If spark is weak although points are in good condition and properly adjusted, examine the condition of point, condenser and coil wiring, and the insulation on the magneto coils. Look for broken or worn insulation or broken wires. Also check for loose or corroded connections. Renew any parts which are damaged or in poor condition. Tighten the flywheel nut to a torque of 400 inch pounds on Fishing Scott models, and 500 inch pounds on Fleet Scott.

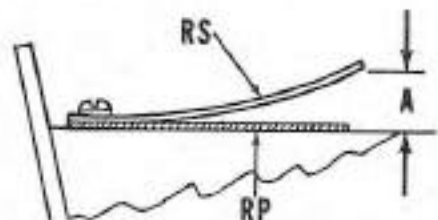


Fig. Mc52 — Cross sectional view of reed-type inlet valve. Reed petal (RP) should make full contact with plate. Reed stop (RS) adjustment should not be changed. Clearance (A) should be $\frac{1}{4}$ inch.

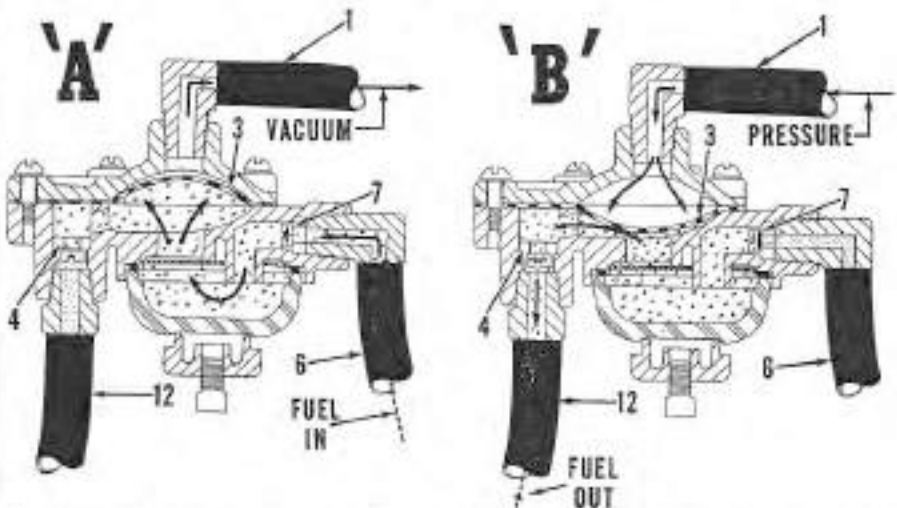


Fig. Mc53 — Schematic view of single stage fuel pump used. Fuel pump is operated by vacuum and pressure pulsations from one crankcase of the power head. Check valves (4 and 7) limit fuel flow to one direction through pump. Refer also to Fig. Mc54 for exploded view.

COOLING SYSTEM

WATER PUMP. All motors are equipped with a rubber impeller water pump of the general type shown in Fig. Mc55. An identical pump is mounted directly above the

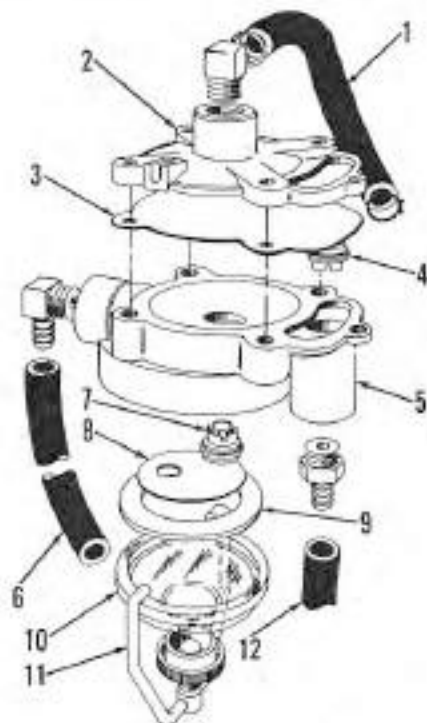


Fig. Mc54 — Exploded view of diaphragm type fuel pump. Refer also to Fig. Mc53.

- | | |
|-------------------|------------------|
| 1. Crankcase hose | 7. Check valve |
| 2. Upper body | 8. Filter screen |
| 3. Diaphragm | 9. Gasket |
| 4. Check valve | 10. Filter bowl |
| 5. Lower body | 11. Clamp |
| 6. Inlet hose | 12. Outlet hose |

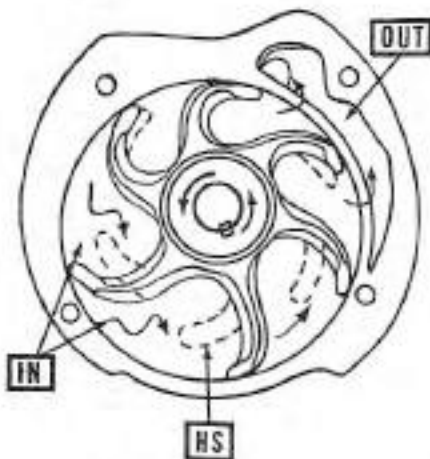


Fig. Mc55 — Schematic view of the rubber impeller type water pump used for cooling and for the automatic boiler unit. Impeller blades flex at slow speeds as shown by solid lines. The offset housing causes water to be drawn into pump body (IN) and forces water out (OUT) due to difference in area between blades. At high speeds, blades remain curved as shown by broken lines (HS) and pump operates by centrifugal action.

cooling system pump which operates the "Bail-A-Matic" bilge pump. Operation and service procedures on the two pumps are identical.

On Fishing Scott models, the pumps are mounted at the top of the lower unit gearcase and are accessible for service after removing gearcase as outlined in the

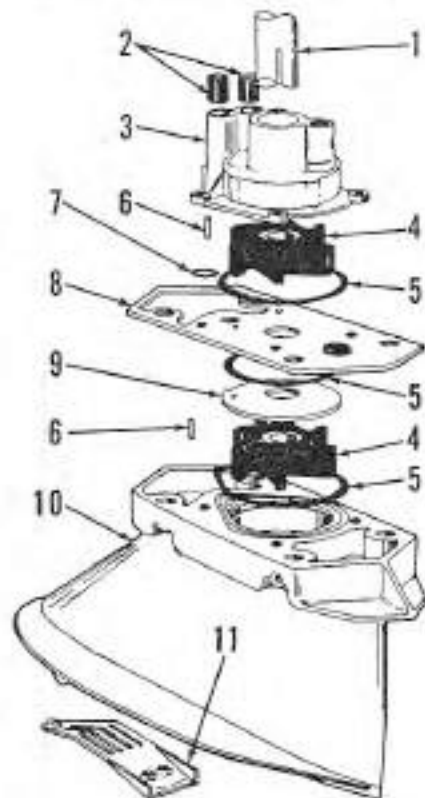


Fig. Mc56 — Exploded view of pump housing and associated parts used on Fleet Scott models. On Fishing Scott, pumps are located in lower unit gearcase.

- | | |
|-------------------|------------------|
| 1. Drive shaft | 7. Seal |
| 2. Grammet | 8. Cover plate |
| 3. Boiler housing | 9. Cover plate |
| 4. Impeller | 10. Pump housing |
| 5. Seal | 11. Inlet cover |
| 6. Impeller key | |

LOWER UNIT section. The pump on these models differs slightly from that illustrated in Fig. Mc55 and described in the following paragraph for Fleet Scott models. In that pump body is concentric with drive shaft and a flat is machined into one side to serve as pump inlet and exhaust.

The cooling system pump and boiler pump on Fleet Scott models are housed in a separate pump housing located on the lower unit just above the gearcase housing. See Fig. Mc56. The pumps are mounted on the lower unit driveshaft and impeller housing is offset in relation to the driveshaft as shown in Fig. Mc55. At slow engine speeds, the tips of impeller blades bend to follow contour of housing as shown by solid lines. Water is drawn into impeller (IN) as area between impeller blades increases. As area decreases due to shape of housing, water is forced into outlet (OUT) passage of pump. At high engine speeds, the flexible blades remain curved as shown by broken lines (HS) and the pump operates by centrifugal action. Flow is thus maintained at an approximately constant level at most engine speeds.

The cooling system inlet (11—Fig. Mc56) is located above and aft of the propeller. When cooling system problems are encountered, first check the water inlet for plugging or partial stoppage, then if not corrected, remove lower unit gearcase housing (or pump housing) and check the condition of the water pump, water passages, gaskets and sealing surfaces.

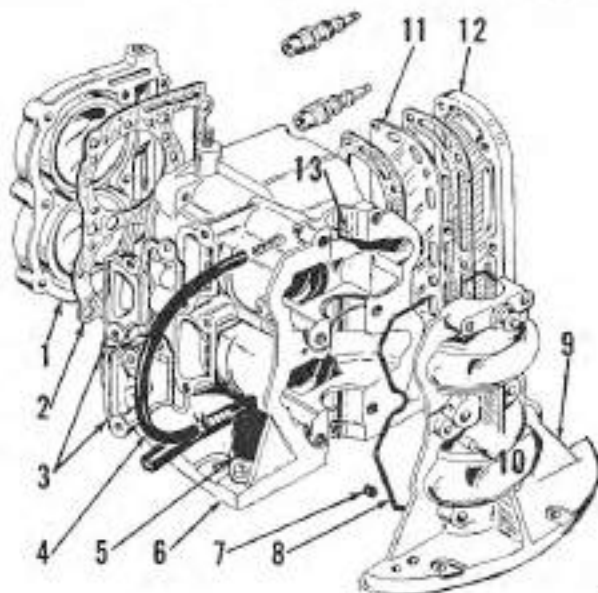
When assembling the pumps, install impellers with side marked "TOP" toward power head. Pump bodies and impellers should be liberally coated with water pump grease during installation.

POWER HEAD

R&R AND DISASSEMBLE. To overhaul the power head, clamp the motor on a stand or support and remove the starter assembly, shrouds and flywheel. On Fleet Scott models, remove the carburetor. On all models, remove the screws securing the

Fig. Mc57 — Exploded view of Fishing Scott power head crankcase and associated parts. Refer also to Fig. Mc58.

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|------------------------|
| 1. Cylinder head |
| 2. Gasket |
| 3. Transfer port cover |
| 4. Oil line |
| 5. Shift rod boot |
| 6. Cylinder assembly |
| 7. Diesel valve |
| 8. Seal strip |
| 9. Crankcase half |
| 10. Dowel |
| 11. Exhaust cover |
| 12. Dowel |



power head to lower unit or adapter plate and lift off the power head. Disassemble the power head as outlined in the appropriate following paragraphs:

Fishing Scott: Refer to Figs. Mc57 and Mc58. One half of the crankcase is integral with the cylinder block. The top main bear-

ing (2—Fig. Mc58) is of the bushing type and is secured to cylinder block by the dowel pin (13—Fig. Mc57). The center and lower main bearings are integral with the cylinder block and crankcase assembly.

To disassemble the removed power head, remove the cylinder head (3) and the car-

buretor and inlet manifold. Remove transfer part covers (9) and exhaust covers (11 & 12), then unbolt and remove the crankcase front half (9). Crankcase halves are positively located by the dowel pin (10).

Pistons, rods and crankshaft may now be removed and overhauled as outlined in the appropriate following paragraphs. When reassembling, follow the procedures outlined in the ASSEMBLY paragraph.

Fleet Scotts Refer to Fig. Mc59. One half of the crankcase is integral with the cylinder block. The upper and lower main bearings are of the caged, needle roller type. The center main bearing rollers are housed in a split cage.

To disassemble the removed power head, remove the cylinder head, inlet manifold and reed plate. Transfer port covers and exhaust covers should be removed for proper cleaning. Remove the cap screws retaining front crankcase half to cylinder block and separate the crankcase halves.

Pistons, rods, crankshaft and bearings are now accessible for removal and overhaul as outlined in the appropriate following paragraphs. When reassembling, make certain main bearing dowels are properly aligned and follow the procedures outlined in the ASSEMBLY paragraph.

ASSEMBLY. Because of the two-cycle design, crankcase and inlet manifold must be completely sealed against both vacuum and pressure. Exhaust manifold and cylinder head must be sealed against water leakage and pressure. Mating surfaces of water intake, and exhaust areas between power head and lower unit must form a tight seal.

Whenever the power head is disassembled, it is recommended that all gasket surfaces, and mating surfaces without gaskets, be carefully checked for nicks, burrs and warped surfaces which might interfere with a tight seal. The cylinder head, head end of cylinder block, and some mating surfaces of manifolds and crankcase may be checked, and lapped if necessary, to provide a smooth surface. Use a regular lapping block or a sufficiently large piece of smooth plate glass. Lay a sheet of No. 00 emery cloth on the lapping block then place the surface to be lapped on the emery cloth. Apply very light pressure and use a figure-eight motion, checking frequently to determine progress. Do not remove any more metal than is necessary. Finish lap using lapping compound or worn emery cloth. Thoroughly clean the parts with new oil on a clean, soft rag then wash with soapsuds and clean rags.

Mating surfaces of crankcase may be checked on the lapping block, and high spots or nicks removed, but surface must not be lowered. If extreme care is used, a slightly damaged crankcase may be salvaged in this manner. In case of doubt, renew the crankcase assembly.

A heavy, non-fibrous grease should be used to hold loose needle bearings in position during assembly. Main bearing outer races are prevented from rotation by dowels located in crankcase boss. All friction surfaces should be lubricated with new engine

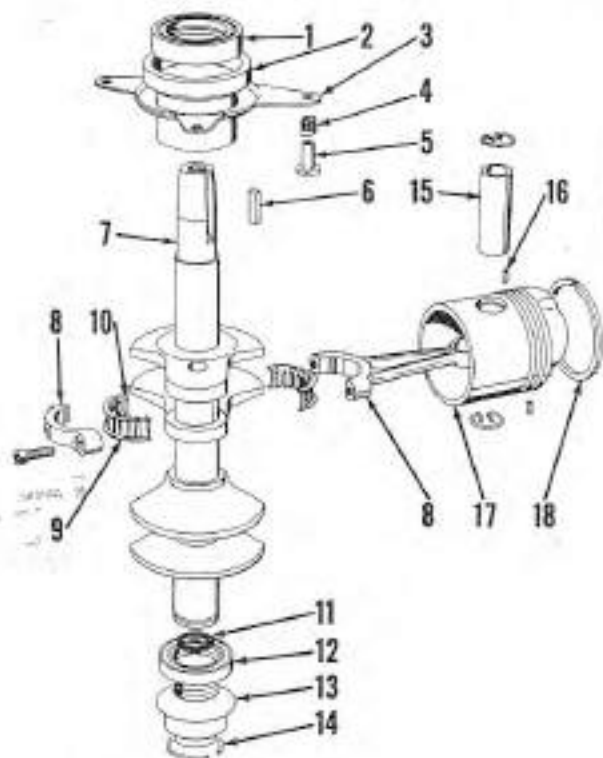


Fig. Mc58 — Exploded view of crankshaft, pistons and associated parts used on Fishing Scott. Refer also to Fig. Mc57.

1. Seal
2. Top bearing
3. Magneto plate
4. Spring
5. Spacer
6. Key
7. Crankshaft
8. Connecting rod
9. Bearing cage
10. Bearing roller
11. Seal
12. Seal
13. Seal
14. Lock ring
15. Piston pin
16. Piston
17. Piston ring

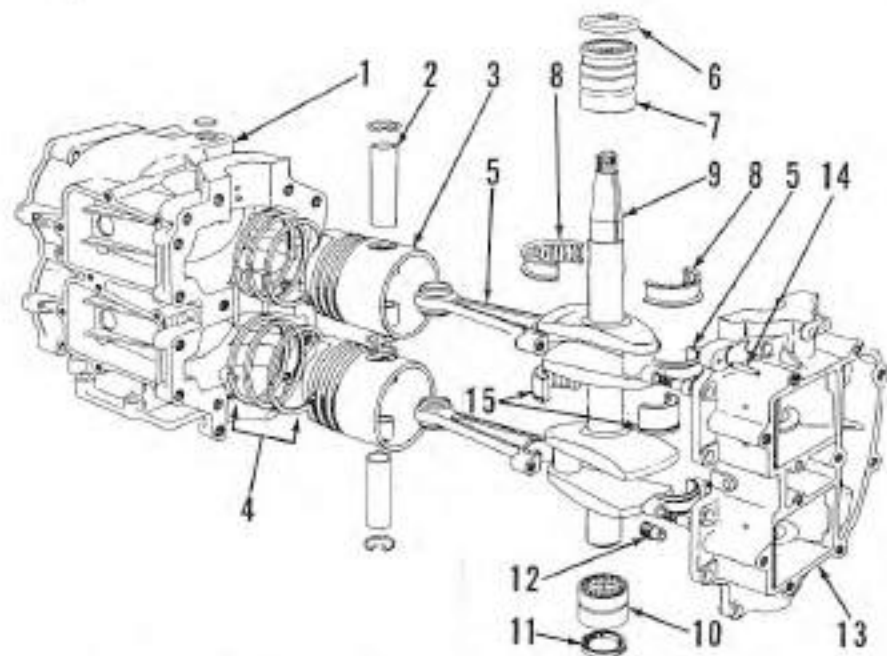


Fig. Mc59 — Exploded view of power head used on Fleet Scott models.

- | | | | |
|----------------------|-------------------|-------------------|--------------------|
| 1. Cylinder assembly | 5. Connecting rod | 9. Crankshaft | 13. Crankcase half |
| 2. Piston pin | 6. "C" ring | 10. Lower bearing | 14. Dowel pin |
| 3. Piston | 7. Upper bearing | 11. Seal | 15. Center bearing |
| 4. Piston rings | 8. Bearing cage | 12. Bleed valve | |

oil during assembly. Check frequently as power head is being assembled, for binding of the moving parts. If binding or locking is encountered, remove the cause before proceeding with the assembly. Make sure the piston rings are properly assembled with end gap surrounding the locating pins in piston grooves. Be sure to inspect the scavenging check valves (7—Fig. Mc57 or 12—Fig. Mc59) and to blow out the scavenging and ciling ports and lines.

Gasket and sealing surfaces should be lightly and carefully coated with a gasket cement. Make sure entire surface is coated, but avoid letting excess cement squeeze out into crankcase, bearings or other passages. When installing the cylinder head or joining the crankcase halves, tighten the retaining screws in the sequence shown in Fig. Mc60 or Fig. Mc61. Tightening torques are listed in the CONDENSED SERVICE DATA table.

PISTONS, PINS, RINGS AND CYLINDERS. Before detaching connecting rods from crankshaft, make certain rod and cap are properly marked for correct assembly to each other and in the correct cylinder.

Fishing Scott models are fitted with two rings per piston. Fleet Scott pistons have three rings. Rings are interchangeable in grooves but must be installed with beveled inner edge toward closed end of piston as shown at (B)—Fig. Mc62. Rings are pinned to prevent rotation in ring grooves as shown at (P). Head end of piston is provided with

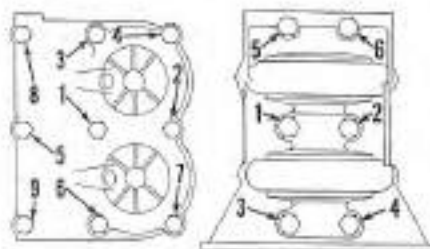


Fig. Mc60 — On Fishing Scott motors tighten the cylinder head screws to a torque of 100 inch pounds in the sequence shown in the left view. Tighten the crankcase screws to a torque of 100 inch pounds in the sequence shown in the right view.

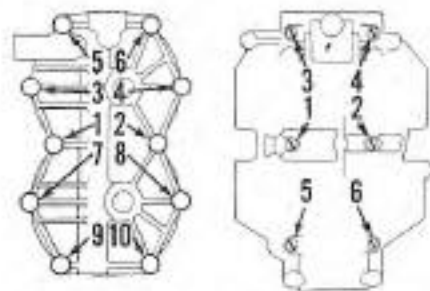


Fig. Mc61—On Fleet Scott motors tighten the cylinder head screws to a torque of 80 inch pounds in the sequence shown in the left view. Tighten the crankcase main bearing screws to a torque of 80-90 inch pounds in the sequence shown in the right view, then tighten the flange screws to a torque of 70 inch pounds.

a deflector (D) which directs the flow of incoming fuel charge for proper scavenging of the cylinder. The high, straight side of deflector must be installed to the inlet (Starboard) side of cylinder block.

The full floating piston pin is a tight push fit in piston bores and a slightly looser fit in rod. Fit is correct when piston will rock of its own weight on the rod, with no noticeable looseness. Connecting rod is marked "TOP" for proper assembly. All bearing and friction surfaces should be lubricated during assembly.

CONNECTING ROD, CRANKSHAFT AND BEARINGS. Before detaching connecting rod from crankshaft, make certain that rod and cap are properly marked for correct assembly to each other and in the proper cylinder.

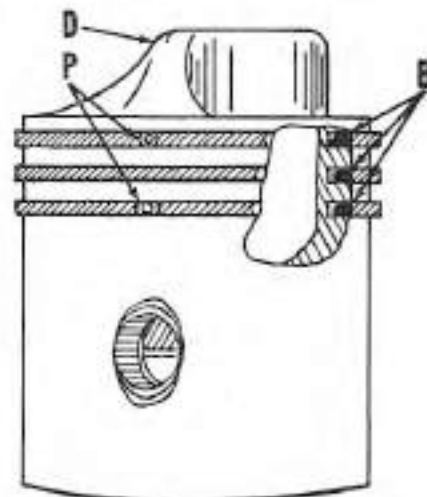


Fig. Mc62 — Cross sectional view of Fleet Scott piston showing two of the three piston ring locating pins (P). The other pin is in opposite side of piston. Rings are installed with beveled inner edge (B) to the top. Deflector (D) directs the flow of incoming fuel charge for proper scavenging. Fishing Scott pistons are similar except that locating pins (P) for the two rings are located in opposite sides of piston.

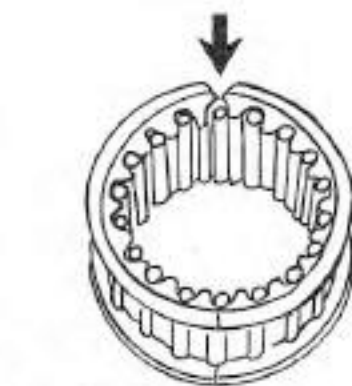


Fig. Mc63—Connecting rod bearing cages have one ground corner as indicated by arrow. Ground corners must be matched during assembly.

Connecting rod bearing is of the caged roller type as shown in Fig. Mc63. Cages and rollers are available as an assembly only, and the parts should be kept together and not interchanged. Examine bearings for wear, pitting or other damage, and bearing surface of rod and cap for roughness, scoring, wear or heat discoloration. When installing connecting rod bearings, make sure cage is properly installed, with the matching ground corners aligned as shown by arrow. Parting faces of rod and cap are not machined, but are fractured at point of arrows, Fig. Mc64, to provide positive location. When installing cap, make sure the correlation marks (C) are aligned; then shift cap back and forth a slight amount while tightening, until fractured sections are in perfect mesh. When tightened completely, the parting line of rod and cap is practically invisible. When installing the connecting rod, the side marked "TOP" should face flywheel end of crankshaft.

Inspect crankshaft crankpin and main bearing journal surfaces and if rough, scored, worn, out-of-round, or show evidence of overheating, renew the crankshaft. Renew main bearings if needle rollers are worn or pitted, or if crankshaft must be renewed because of a damaged main bearing. The split cage of the center main bearing on Fleet Scott models is separated by fracturing as described above for the connecting rod. When assembling the bearing around crankshaft journal, work the sections back and forth a slight amount until the fracture lines mesh, then install the retaining ring. When installing the crankshaft and main bearings assembly in crankcase, make sure the main bearing locating dowels enter the holes provided in bearing races.

All friction surfaces should be lubricated during assembly.

MANUAL STARTER

Fig. Mc65 shows an exploded view of the recoil starter assembly. To renew the starter pawls (8) or friction spring (9), re-

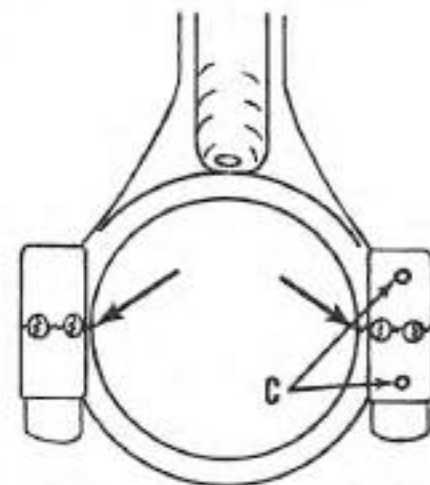


Fig. Mc64 — Uneven fractured parting line of rod and cap (shown by arrows) assures positive fit after assembly. Be sure correlation marks (C) are aligned.

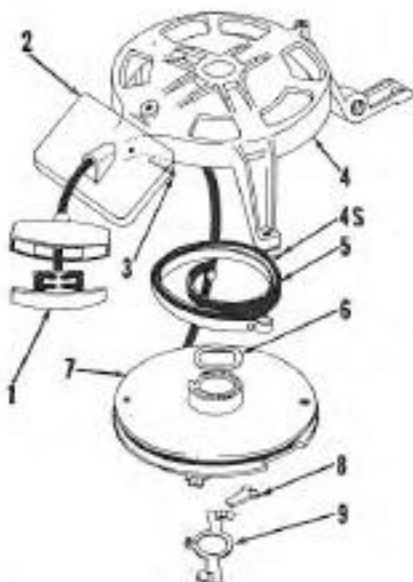


Fig. Mc67 — Exploded view of lower motor housing used on Fishing Scott models.

1. Gasket
2. Seal
3. Molding
4. Housing
5. Bushing
6. Drain eyelet
7. Baller fitting
8. Grommet
9. Shift rod
10. Shift yoke
11. Bracket
12. Shift lever
13. Shift arm
14. Fitting
15. Hood latch
16. Latch release
17. Spring
18. Throttle arm
19. Pin
20. Connector
21. Swivel bracket

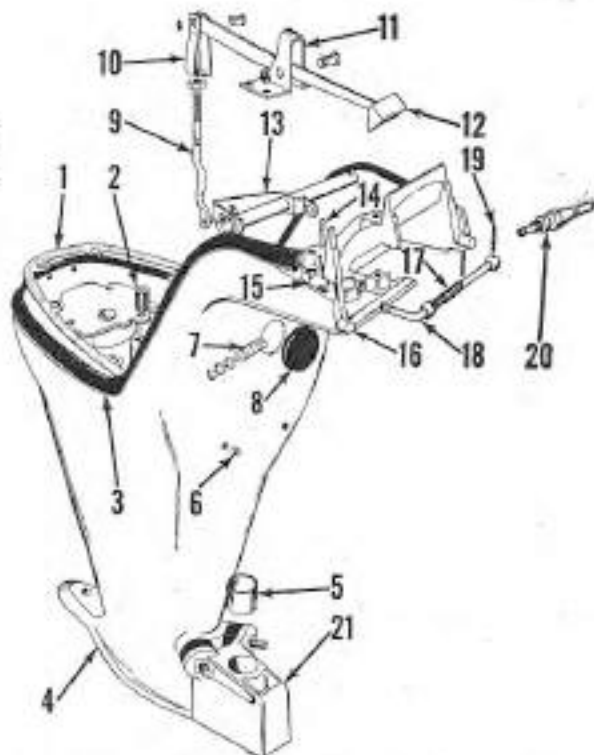


Fig. Mc65 — Exploded view of recoil starter assembly.

- | | |
|-------------|--------------------|
| 1. Handle | 5. Recoil spring |
| 2. Panel | 6. Washer |
| 3. Roll pin | 7. Pulley |
| 4. Housing | 8. Pawl |
| 4S. Shim | 9. Friction spring |

move and invert the assembled starter on a bench. Remove friction spring (9) with snap ring pliers and withdraw the pawls.

Pulley (7) can be removed after removing friction spring (9). Be careful that recoil spring (5) remains in cavity of housing (4) when pulley is removed. If spring is to be removed, clamp spring to prevent uncoiling, using a pair of vice-grip pliers. Replacement spring is coiled and secured with a band clip. Leave clip in place until spring is installed in housing. When reassembling,

make sure there is sufficient tension on recoil spring to completely rewind starter rope.

LOWER UNIT

PROPELLER AND DRIVE PIN. Shear pin protection is carefully engineered for each unit. Protection depends on shear pin material as well as size. Although, in an emergency, the shear pin may be replaced by one of any available material, the correct

shear pin should be installed as soon as possible to insure maximum performance and protection. Fishing Scott motors use a $\frac{3}{8}$ x $\frac{11}{16}$ -inch brass shear pin, manufacturers part number A38B-3122. Fleet Scott motors use a 11/84 x $\frac{3}{8}$ -inch stainless steel drive pin with a cushioned propeller hub. Manufacturers part number of the drive pin is 130-3122. A spare supply of shear pins should be kept on hand. Factory equipment propeller sizes are as follows:

Motor	Propeller		
	Diameter	Pitch	No. Blades
Fishing Scott	6 in.	7 in.	3
Fleet Scott	6½ in.	7½ in.	3

B&R AND OVERHAUL. Most service on the lower unit can be performed by detaching the gearcase housing from drive-shaft and exhaust housing. When servicing the lower unit, pay particular attention to water pump and water tubes with respect to air or water leaks. Leaky connections may interfere with proper cooling and performance of motor.

Fishing Scott Except Models 83300750 and 83300760, Use Figs. Mc66 and Mc67 as a guide when overhauling the lower unit. To renew or service the propeller shaft, reverse gear or bearings, first drain the lubricant and remove the propeller and shear pin. Remove the cap screws retaining housing (12—Fig. Mc66) and remove the housing, propeller shaft (24), reverse gear (17), bushings and seals. A change was made during production, in the clutch dog (27). The original clutch dog was 0.500 in width (measured horizontally when clutch dog is in operating position). This dimension was increased to 0.550 to obtain a greater engaging area. The two styles are interchangeable and the new style should

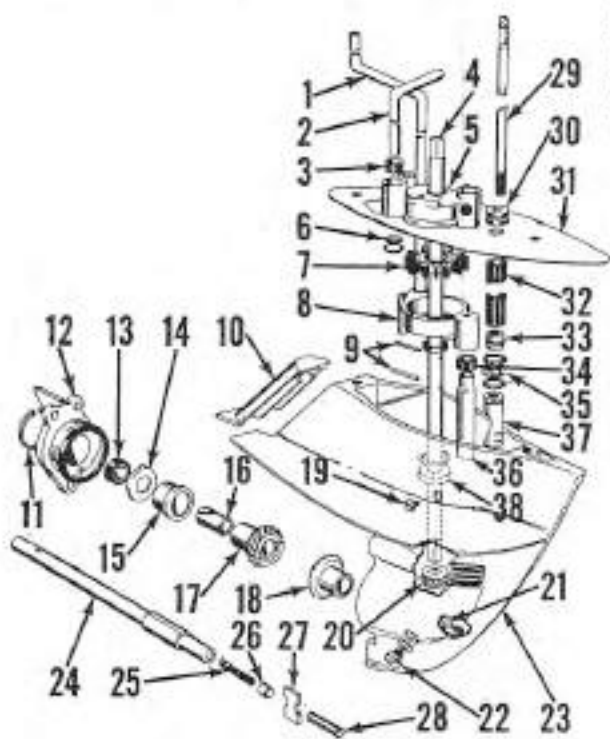


Fig. Mc66 — Exploded view of lower unit gearcase, water pumps and associated parts used on Fishing Scott except some 1963 models. Refer also to Fig. Mc68A.

1. Water tube
2. Baller tube
3. Grommet
4. Drive shaft
5. Diac
6. Impeller
7. Pump housing
8. Impeller pin
9. Exhaust cover
10. Snap ring
11. Bearing cap
12. Seal
13. Retainer
14. Bearing
15. Bearing
16. Bearing
17. Reverse gear
18. Forward gear
19. Vent plug
20. Drive pinion
21. Detent
22. Drain plug
23. Propeller shaft
24. Shift spring
25. Gap
26. Clutch dog
27. Shift plunger
28. Shift rod
29. Grommet
30. Plate
31. Nut
32. Grommet
33. Shim
34. Water tube
35. Shift cam
36. Seal

be used whenever the unit is disassembled. Part number of the new clutch dog is 70417.

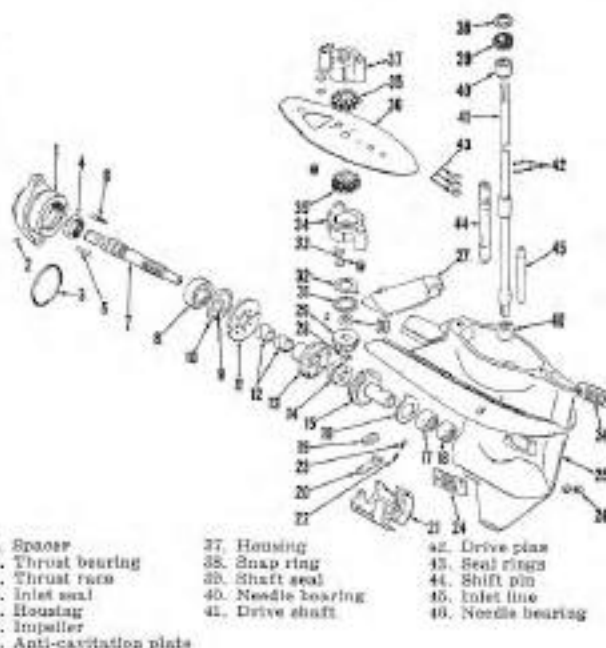
To detach the gearcase housing from the lower unit, first remove the motor shroud and power head, then detach the lower swivel bracket (21—Fig. Mc67) from exhaust housing (4). Disconnect the lower shift rod (29—Fig. Mc66) from the actuator (13—Fig. Mc67). Remove the two cap screws securing the gearcase housing (23—Fig. Mc66) to the exhaust housing and withdraw the unit straight down out of exhaust housing. Cooling system and boiler pumps, and the drive shaft, pinion and forward gear can be removed and serviced. Refer to WATER PUMP paragraph for details. If shift rod or shift mechanism is removed, pay particular attention to the position of the shift rod (29) with relation to the selector cam (37). When assembling, turn the shift rod into selector cam until it bottoms, then back off until the offset upper end of rod is aligned with cam surface of selector as shown at (A—Fig. Mc68). Make sure seals (5) are in place. Lock the assembly in position by tightening the locknut (33—Fig. Mc66). Detent plunger (21) is retained in housing by selector cam (37) and will be released when cam is removed. Use care not to lose the plunger and spring, and make sure they are correctly installed when reassembling. When the lower unit is assembled, adjust the shift mechanism as outlined in the ADJUSTMENT paragraph.

Fishing Scott Models 63300750 & 63300760: A newly designed gearcase is used on some 1963 Fishing Scott models as shown in Fig. Mc68A. Ball or needle roller bearings are used throughout except for reverse gear (13).

Fleet Scott Models: Refer to Figs. Mc69 and Mc70. To renew or service the propeller shaft, gear or bearings, first drain the lubricant and remove the propeller, shear pin, and cushion hub. Remove the

Fig. Mc68A — Exploded view of gear case and associated parts used on some late Fishing Scott motors. Refer also to Fig. Mc66.

1. Bearing cap
2. Lock pin
3. "O" ring
4. Shaft seal
5. Guide pin
6. Detent pin
7. Propeller shaft
8. Shaft bearing
9. Snap ring
10. Thrust bearing
11. Gear bearing
12. Reverse gear
13. Clutch dog
14. Forward gear
15. Thrust bearing
16. Needle bearing
17. Needle bearing
18. Shift cam
19. Shift link
20. Shift fork
21. Detent spring
22. Detent
23. Inlet screen
24. Gear case
25. Drain plug
26. Exhaust cover
27. Snap ring
28. Drive pinion



29. Spacer
30. Thrust bearing
31. Thrust race
32. Inlet seal
33. Housing
34. Impeller
35. Anti-cavitation plate
36. Housing
37. Snap ring
38. Shaft seal
39. Needle bearing
40. Drive shaft
41. Drive pin
42. Seal rings
43. Shift pin
44. Inlet line
45. Needle bearing

cap screws retaining the bearing housing (2—Fig. Mc66) and withdraw shaft, bearing, housing and gear as a unit. Remove the bearing retainers (8) then press the shaft, bearing and gear assembly out of housing. Seal (1) can be renewed at this time. Gear (10) is retained to shaft by pin (5). Bearing (7) is positively located by the snap ring (9) and gear. Gasket (3) is available in thicknesses of 0.010 and 0.015 to provide the proper mesh for the drive gears. To adjust the backlash, shift the lever into neutral and install the propeller shaft assembly with one 0.010 shim. If the propeller shaft turns hard, increase the gasket thickness by 0.005 steps until propeller shaft turns freely with a minimum of backlash.

To remove the gearcase housing from the

exhaust housing, first disconnect the shift rod coupling (15—Fig. Mc70) then remove the cap screws retaining the pump housing to the exhaust housing (7). Remove the pump housing and gearcase housing as a unit. Disassemble the cooling system and boiler pumps as outlined in WATER PUMP paragraph, then remove pump housing from gearcase housing (11—Fig. Mc69). Drain the gearcase housing and remove the propeller shaft assembly as previously outlined. Remove the split driveshaft retainers (19) then pull the driveshaft seal and inner bearing races out of gearcase. Remove the other gearcase components. Forward gear (20) and upper side of clutch dog (21) are marked with the letter "T" as an aid to proper assembly. Reverse gear

Fig. Mc69 — Exploded view of gearcase housing and associated parts used on Fleet Scott models.

1. Seal
2. Bearing cap
3. Shim gasket
4. Propeller shaft
5. Snap ring
6. Drain plug
7. Bearing
8. Retainer
9. Pin
10. Driven gear
11. Gearcase housing
12. Plug
13. Plug
14. Bearing
15. Shim
16. Upper race
17. Thrust bearing
18. Lower race
19. Retainer
20. Forward gear
21. Clutch dog
22. Reverse gear
23. Thrust washer
24. Bearing
25. Shift rod
26. Shift fork
27. Flange dowel
28. Seal
29. Snap ring

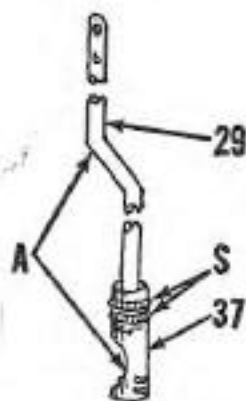
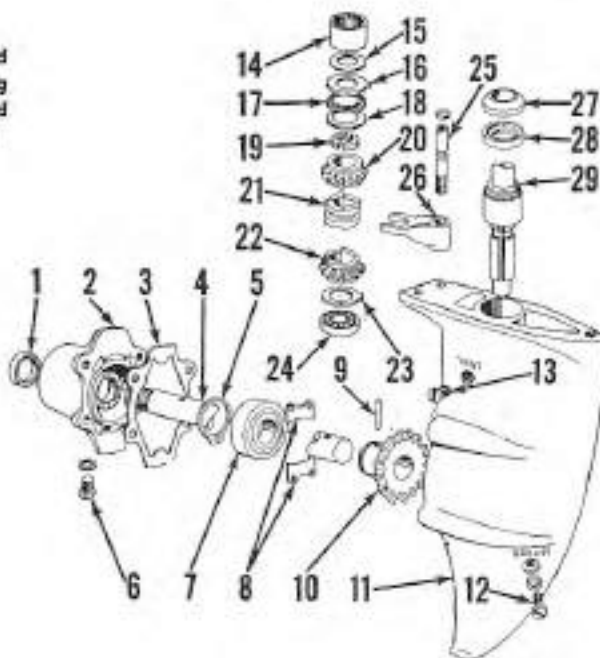


Fig. Mc68 — Schematic view of shift rod and shift cam used on Fishing Scott models. When assembling, offset portion of shift rod (29) must be aligned with flat of cam (37) as shown at (A). Be sure seals (5) are installed.

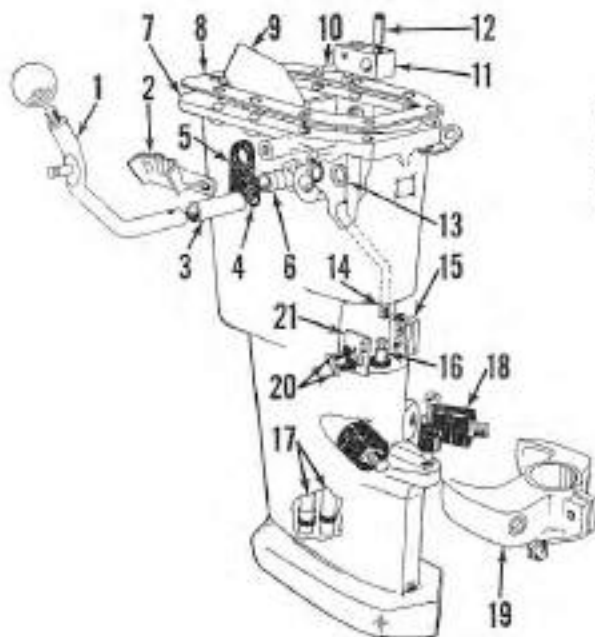


Fig. Mc70 — Exploded view of lower motor housing and associated parts used on Fleet Scott models.

- 1. Shift lever
- 2. Detent
- 3. Bushing
- 4. Seal
- 5. Bailer cover
- 6. Bailer fitting
- 7. Housing
- 8. Gasket
- 9. Relief plate
- 10. Pin
- 11. Actuator
- 12. Pin
- 13. Washer
- 14. Shift rod
- 15. Coupling
- 16. Shift rod
- 17. Water lines
- 18. Rubber mount
- 19. Bracket

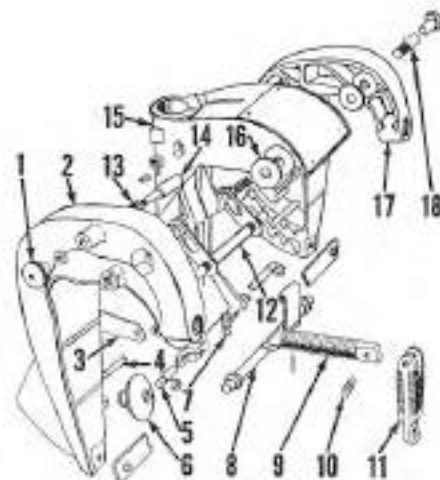


Fig. Mc71—Exploded view of stern bracket and associated parts.

- 1. Knob
- 2. Stern bracket
- 3. Yoke
- 4. Pivot shaft
- 5. Lock pin
- 6. Clamp pad
- 7. Spring
- 8. Tilt pin
- 9. Clamp screw
- 10. Pin
- 11. Lever
- 12. Tilt stop
- 13. Spring
- 14. Plunger
- 15. Pivot bracket
- 16. Washer
- 17. Stern bracket
- 18. Bolt

(22) and lower side of clutch dog (21) are marked with the letter "R". To adjust the backlash of the gears when assembling, measure the combined assembled thickness of thrust bearing upper race (16), bearing (17) and lower race (18), then add shims (15) to give a total thickness (bearing and shims) of 0.298-0.300. Shims are available in thicknesses of 0.002, 0.003, 0.005 and 0.010 and no more than two shims should be used in the pack. If more than two 0.010 thick shims are required, renew the bearing assembly. Shims are color coded in the following order from the thinnest shim to the thickest: Silver; Orange; Blue; and Yellow. Make final backlash adjustment by varying the thickness of gasket (3) as previously outlined.

When final backlash adjustment has been determined, remove the propeller shaft, housing and gear assembly, reassemble the gearcase housing to exhaust housing, then adjust the shift mechanism as outlined in the following ADJUSTMENT paragraph. After shift linkage has been adjusted, reinstall the propeller shaft assembly and propeller then refill the gearcase with the recommended lubricant.

ADJUSTMENT. To adjust the gear shift linkage on Fishing Scott models, first remove the power head from lower unit. Move the shift lever (12—Fig. Mc67) to the NEUTRAL position. When the neutral detent is seated, shift lever (13) should be aligned with the "Neutral" marking on the front panel. If it is not, disconnect lever

(12) from clevis (10) and turn the clevis up or down on upper shift rod (8) as required.

To adjust the gear shift linkage on Fleet Scott models, drain the gearcase housing and remove the propeller, shear pin and cushion hub, then remove the propeller shaft and housing assembly. Move the shift lever (1—Fig. Mc70) to the neutral detent position and check to make sure that clutch dog (21—Fig. Mc69) is midway between the gears (20 and 22). If it is not, loosen the coupling screws (20—Fig. Mc70) and thread the coupling (15) up or down on upper shift rod (14). Move the shift lever into "Reverse" and move the actuator (21) up or down until the reverse lock yoke is fully depressed, then tighten screws (20).