

MODELS E, F SERIES

ASSEMBLY INSTRUCTIONS

For MERCURY 40-50 HP, 4 cylinder 43.9 cu. in. 1965 to Present and
35-40 HP 2 cylinder 33.3 cu. in. 1963 to 1989

1. Place the engine on the transom of your boat so that it is mounted vertically in the normal fashion. Remove the 4 upper and lower nuts holding the gearbox to the upper housing and remove the gearbox.
2. Remove the 2 rear gearbox mounting studs from the upper housing, using a pipe wrench. The rearmost 3/8 stud hole must now be drilled through to the top of the housing to receive the rear jet mounting bolt from above. Drill through with the 25/64 stepped drill. Back spotface the top of the hole just until a full diameter seat is formed. A 5/8 dia. x 1/2 long steel spacer fits here, under the bolt head. The drills and spotfacer are available on loan or from your dealer. If it is ever desired to remount the propeller gearbox, a 3/8-16 bolt can be used at this rear hole.
3. Remove the complete water pump assembly from the propeller driveshaft. Remove the rubber cushion which supports the base of the engine exhaust tube.
4. Slide the jet driveshaft assembly into the engine exhaust housing to check for proper spacing of the 2 mounting studs. If the offset studs mounted in the bearing housing are spaced too far apart, they must be removed and replaced with straight studs, available from the factory for 1971 or older motors.
5. The two 3/16 dia. alignment dowels must be used with the jet drive mounting flange, if used with the propeller drive.
6. Next, install the jet pump driveshaft assembly into the spiral pump housing, locking it in place with the four 1/4-20 x 3/4 long bolts and lockwashers.
7. On older models, seal the flushing inlet on the water pump base with the 3/8-16 set screw provided. It may be necessary to thread the hole. Install the gasket and aluminum centering ring on the water pump base.
8. Now install the water pump onto the driveshaft bearing carrier. Be sure to install the pump-impeller key. Lock the pump in place firmly with the three 1/4-20 x 2-1/8 bolts and lockwashers. Place the plastic guide sleeve for the cooling water tube into the water pump. Replace the rubber washer over the water pump and the shaft spline seal where used.
9. A tilt latch mechanism is provided to keep the engine from tilting up in reverse. A splined shift lever attaches to the engine gearshift-tilt latch shaft and guides into a 3/8 hole in the front of the jet housing. Install the tilt latch cam on the spline with the vertical wall aligned as shown on page 3. A fiber washer is placed between the shift lever and the aluminum housing. Place the engine gearshift control in "forward" position. The splined shift lever is installed in the jet drive rotated back against the housing. This is the position for the remote control in "forward." Grease the shift lever spline and cam. Then remove the shift lever from the jet housing and insert it into the engine spline in the same position.
10. Place the rubber cushion for the engine exhaust tube in the jet housing. Remove any sharp lower edges from the exhaust tube with a file so that the tube will enter the rubber cushion easily.

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11. Now you are ready to mount the jet to the engine. Tip the engine up toward the horizontal. Lubricate the mating parts of the shift shaft fiber washer, driveshaft spline, water tube, exhaust tube and their rubber seats with grease for easy assembly. Install the jet pump housing and shaft assembly onto the engine, guiding the shift shaft, driveshaft, water tube and exhaust tube into place. Operate the remote control to be sure the tilt latch cams are assembled properly. Then tighten the 2 nuts and rear bolt firmly.
12. Next, install the impeller. Grease the shaft threads, key and impeller bore. Place the plastic sleeve inside the impeller, hold the key in the nose of the impeller with your forefinger and slide onto the driveshaft. Install the eight shim washers and nut retainer on the shaft, up against the impeller, and bring the nut up snug by hand. Be careful that the retainer does not fall into the thread groove and jam the nut.

Then bump the nut up snug with a wrench. If the ears of the retainer do not line up with the flats on the nut, spin the nut off, turn the retainer over and tighten the nut again. In one of these two positions you will have alignment and can fold the ears up against the nut to retain it. The flat in the retainer is angled to the ears to allow this.

When, after use in sand and gravel, the blade clearance becomes more than about 1/32 inch between the impeller edge and the water intake casing wall, one or more of the brass shim washers can be transferred from the bottom stack to the top of the impeller, which moves the impeller down into the tapered casing to reduce the clearance.

Shims should not be used above the impeller on new installations where no wear has occurred. Insufficient blade clearance will do more harm than good from any performance gains it might provide.

13. Place the intake casing in position with the lower end at the rear and tighten the 6 bolts. Grease the threads.
14. With the remote control in forward, thread the shift rod into the pivot on the splined shift lever and adjust the thread engagement so that the reverse gate is in the full forward position with the cam roller on the gate at the end of the slot in the cam. Install the washer and cotter pin. If your motor uses a tiller steering handle, see insert pages.
15. Remove the shift cable from inside the cowl and prepare to attach it directly to jet drive. The shift cable must be attached to the jet drive for the system to operate properly. An aluminum sleeve, 7/16 dia. x 3/8 long, is placed on the pin in the power head, where the cable end normally attaches, so that the cable end keeper can be secured. If this is not done, the keeper may turn sideways and jam the mechanism.
16. Attach the cable anchor bracket to the jet drive using 2 - 1/4-20 x 5/8 bolts and flat washers. Attach the cable.

Using a light finger pressure on the gate, move the gate toward reverse until the cam roller is nested in the neutral notch of the cam.

Adjust the shift cable end and the cable anchor bracket on the jet drive such that the roller is in the neutral notch when the shift handle is in neutral. Secure hardware, while allowing enough looseness for rotation of the cable anchor and cable end.

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17. Shift to forward. The roller should be well onto the flat section of the cam such that the gate cannot be forcibly rotated toward reverse. Pull on the gate by hand to verify this.

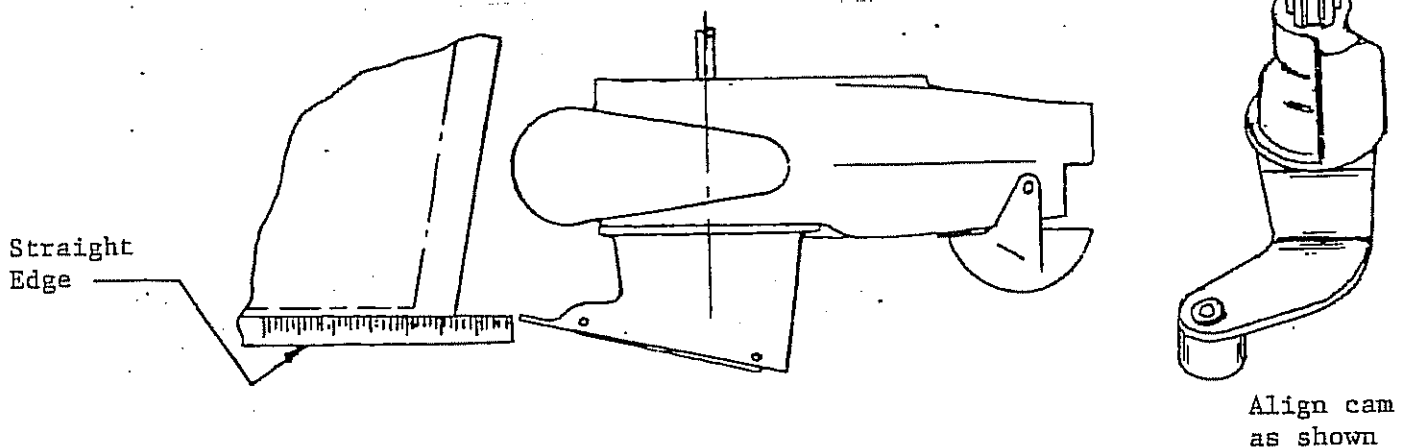
If this forward lock condition is not met, readjust the cable positions, giving less importance to the roller position in neutral.

If the neutral position is too far out of adjustment, the tendency of the gate to move toward reverse, under water pressure, will put a strain on the cable in neutral. In some remote control boxes, this makes it difficult to re-engage the shift mode with the motor running in the high speed idle, cold start setting. It is then necessary to stop the motor, operate the shift handle to engage the shifting pin and then restart the motor.

Proper cable adjustment will prevent this problem but it is most important that the forward locking condition be met if a compromise is to be made.

18. When converting to jet drive, your motor will have to be raised to the height shown on the next page, using a straight edge under the boat. Test run the boat and then raise or lower the motor 1/4" at a time to obtain the best results, using wood shim under the motor clamps. If you raise it too much it will suck air and cavitate, either on start up or when banking on turns. When cavitating, the engine overspeeds in spurts and shakes considerably in the engine mount. This is not a normal condition and should be avoided by proper adjustment of engine height on each individual boat. If you lower it too much you will have excessive drag, therefore mount the engine as high as possible without allowing cavitation.

GOOD BOATING AND HAVE FUN!



CAUTION

When starting the engine for the first time, watch to see that cooling water comes out of the small hole at the rear side of engine just below the power-head. This is to check your assembly of the cooling water pump and its connections.

MAINTENANCE AND LUBRICATION

See next page.

MAINTENANCE AND LUBRICATION OUTBOARD JET DRIVE

BEARING LUBRICATION

A grease gun and tube of grease is supplied with your jet drive. We recommend greasing the bearing every 10 hours. Make greasing a part of your cleanup after the days use. Pump in just enough grease to fill the lube hose. Then reconnect the lube hose coupling to the zerk grease fitting.

Every 30-40 hours, pump in extra grease so as to purge any moisture. The texture of the grease coming out gives an indication of conditions inside the bearing housing. A gradual increase in moisture content indicates seal wear. If the grease begins to turn dark, dirty gray, the bearing and seals should be inspected and replaced if necessary. Some discoloration of the grease is normal during the break in period on new sets of seals.

We have selected a water resistant grease of the proper consistency for this application. If you use a substitute grease, be sure it is water resistant and of the same consistency.

IMPELLER

Your jet drive is equipped with a key to protect the unit in the event of a rock jam. This can be reached by removing the water intake, and then the driveshaft nut, similar to a propeller drive. After replacing the key, pull the shaft nut up tight to remove any play between the impeller and shaft. Note the position of the impeller shim washers, and replace them in the same order.

REVERSE GATE MECHANISM

Occasionally check adjustment of the gate shifting linkage. In "forward" the gate should be firmly locked in position. Pull on the gate by hand to verify this. This will prevent wave action from accidentally shifting the gate into reverse as the boat is violently maneuvered

GENERAL

Check all mounting bolts, intake screws, linkage connections, etc., occasionally to be sure they are tight.

SALT WATER USE

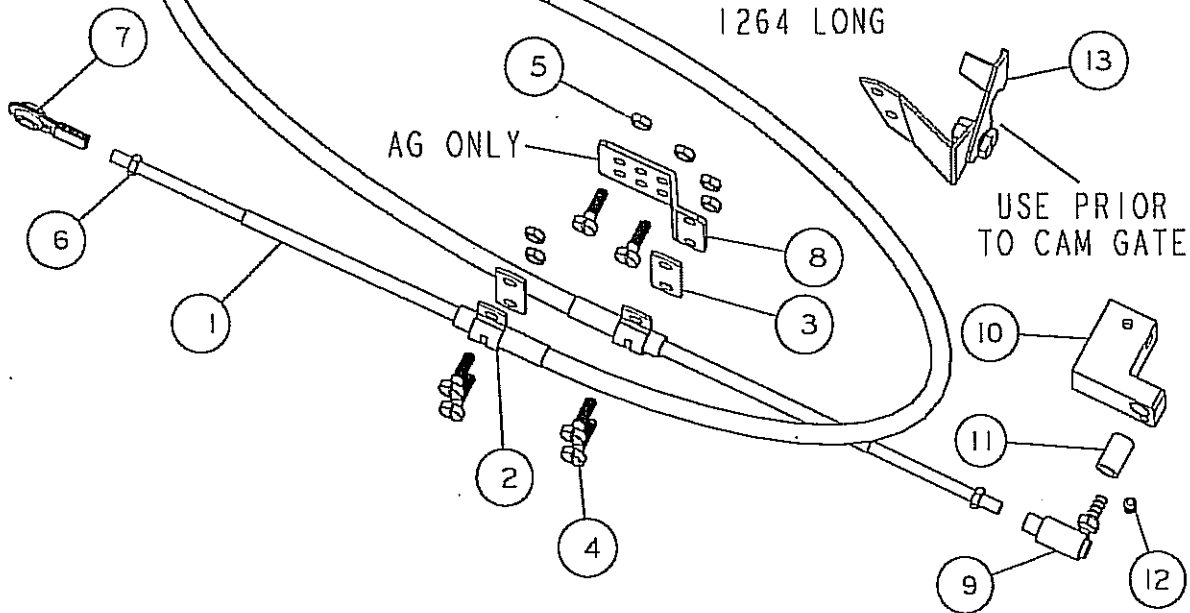
Aluminum and stainless steel have been used in the construction of your jet drive. These materials have either been treated or are inherently resistant to corrosion. It is recommended, however, that when not in use the motor be tipped up so that the jet unit is out of the water. When used in salt water more than in fresh water, remove mounting hardware, grease, and reassemble once a year. Failure to do this may result in hardware that is difficult if not impossible to remove at a later date.

GUARANTEE

Due to inflexible government regulation, we do not have a written warranty. We have, however, a good reputation for fairness with our customers which we intend to maintain. If you think you have a warranty situation, regarding material, workmanship, call us before making repairs.

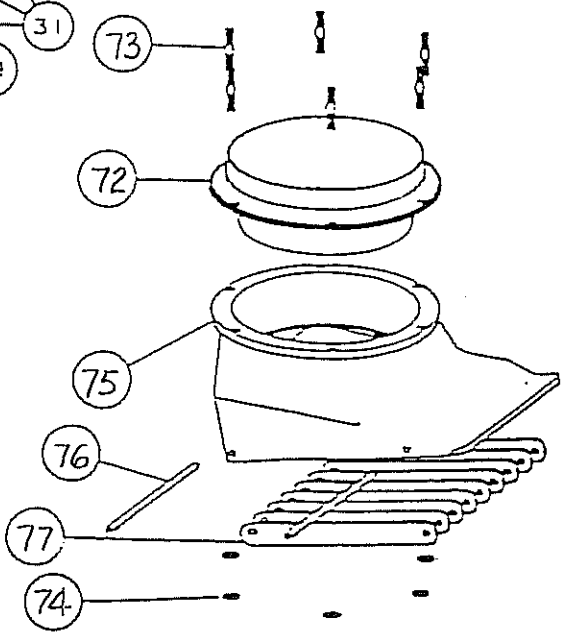
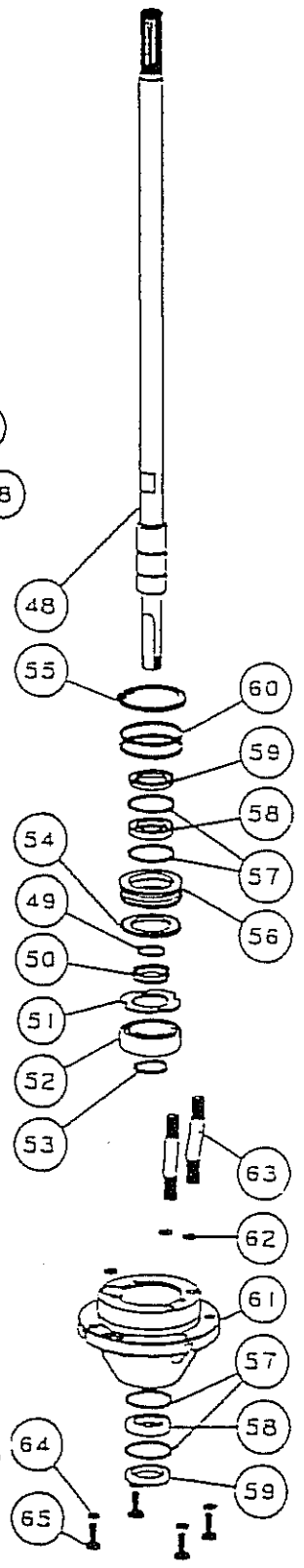
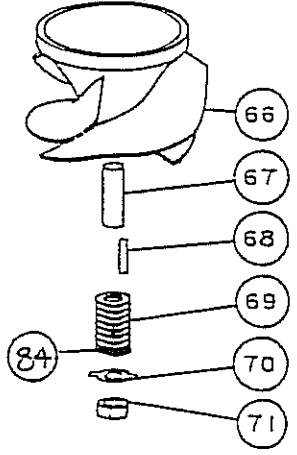
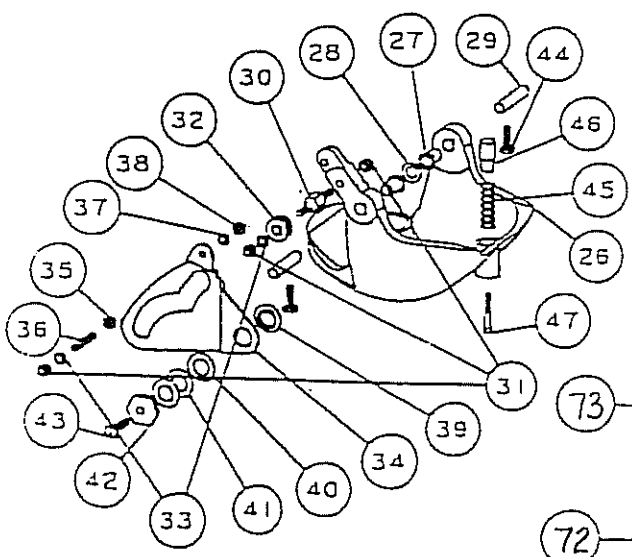
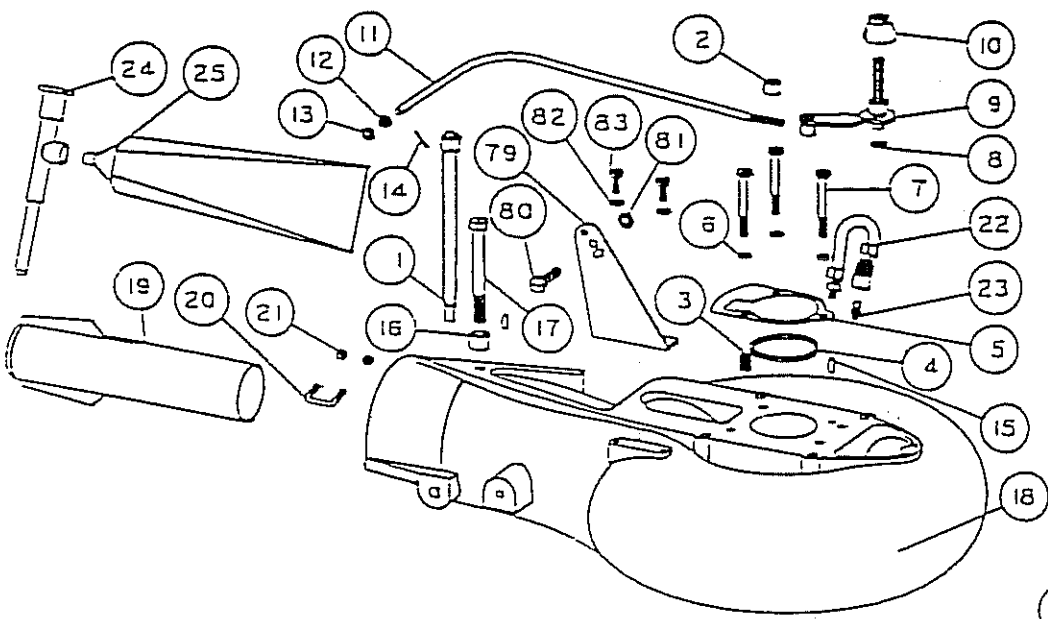
Specialty Manufacturing Company
Outboard Jets
2035 Edison Avenue
San Leandro, CA 94577

SHIFT CABLE ASSEMBLY
MERCURY/MARINER MODELS E, F, P, G, AC, AG
TILLER STEERING
1263 SHORT
1264 LONG

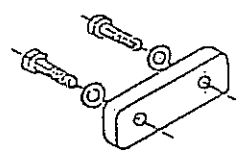


REF	QTY	PART NO	DESCRIPTION
1	1	555	CABLE 3 FT MOR 33C SUPREME SHORT
1	1	549	CABLE 3 1/2 FT MOR 33C SUPREME LONG
2	2	543	CLAMP CHRYS 154317
3	2	542	SHIM MORSE A035777
4	6	561	FIL HD SLOTTED 10-24 X 5/8
5	6	619	NYLOC 10-24
6	2	621.1	HEX NUT 10-32 JAM
7	1	553.2	BALL END 1/4X10-32 CABLE
8	1	1258	CABLE ANCHOR PORT SIDE
9	1	544.1	BALL JOINT MORSE 31799-001
10	1	1259	BLOCK AGC
11	1	1260	SLEEVE-BLOCK AGC
12	1	565.1	SOC SET-CUP PT 10-32 X 1/4
13	1	169	FORWARD LOCK E, F, G, P, AC

8. AUG. 97



MODEL EF



ANODE KIT 1693

MODEL EF MERCURY / MARINER

REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
1	1	403.23	SPOTFACER & DRILL KIT 5/8	49	1	41	SHAFT BEARING THRUST RING
2	1	335	SPACER CABLE END EFGP	60	1	477	COLLAR BACKFIT 7205
3	1	665	SET SCR HOLLOW HD 3/8-16 X 1/2	51	1	832	THRUST WASHER
4	1	59	RING WATER PUMP EF 1977&PRIOR	52	1	504	BEARING 7205B-UA
4	1	398	RING WATER PUMP EF 1978&LATER	53	1	511	TRUARC 5100-98
5	1	399	GASKET PUMP EF78	54	1	833	SPACER
6	3	638	WASHER SPRING LOCK 1/4	55	1	512	TRUARC N5002-212ZD
7	3	579	BOLT HEX HD 1/4-20 X 2 1/8	56	1	433	UPPER SEAL CARRIER W/SEALS & O RINGS
8	1	643	WASHER FIBER 1X1/32 BLACK	57	4	517	SPIROLOX RR-150S
9	1	99	TILT ARM ASSY CEF	58	2	506	SEAL INNER
10	1	130	CAM MILLED	59	2	607	SEAL OUTER 6324-S
11	1	78	SHIFT ROD FORMED	60	2	526	O RING 568-135
12	1	533	NYLINER 4L4F 1/4 ID	61	1	54.42	BEARING CARRIER W/SEALS & O RINGS EF
13	1	635	1/4 WASHER AN960C416	62	3	521	O RING 568-011 1/16X5/16X7/16
14	1	645	COTTER PIN 1/16 X 1/2	63	2	292	STUD OFFSET EF FORMED
15	2	631	DOWEL PIN 3/16 X 1/2	63	2	58	STUD EF STRAIGHT - PRIOR TO 1972
16	1	181	SPACER, REAR MOUNTING BOLT	64	4	638	WASHER SPRING LOCK 1/4
17	1	613	BOLT HEX HD 3/8-16 X 3 1/2	65	4	674	BOLT HEX HD 1/4-20 X 3/4 PATCH
	1	10042	RECOUP GATE EF	66	1	8.21	IMPELLER 5 7/8, ALUM/ ZINC, W/36.1 SLEEVE
18	1	100.42	RECOUP TUBE EF	66	1	8.23	IMPELLER 6 1/8, ALUM/ ZINC, W/36.1 SLEEVE
19	1	80	EXHAUST TUBE ASSY MEDIUM 2	66	1	1737	IMPELLER 6 1/8, STAINLESS STEEL, W/36.1 SLEEVE
20	1	847	CLIP EXHAUST TUBE 3/4	67	1	36.1	SHAFT SLEEVE PLASTIC MED.
21	2	621	NYLOC 10-32	68	1	782	IMPELLER TEE KEY - SQUARE
22	1	975	LUBE HOSE ASSY	68	1	1705	IMPELLER TEE KEY - 1/2 ROUND
23	1	539	ZIRC FITTING 1/4-28	69	8	21	SHIM WASHER MEDIUM
24	1	550	GREASE GUN	70	1	805	NUT KEEPER MED/PKG 2 PER BAG
25	1	552	GREASE TUBE NO 630-AA	71	1	22.1	SHAFT NUT 5/8-18 BRASS
26	1	1175.1	REVERSE GATE, EF			1448	INTAKE ASSY 5 7/8 FLANGED W/ GRILL & LINER
27	2	535	NYLINER 3/8 ID X 11/16	72	1	1678	LINER 5 7/8 FLANGED
28	1	1177	SPRING GATE PIVOT 3/8			1447	INTAKE ASSY 6 1/8 FLANGED W/ GRILL & LINER
29	2	822	PIN GATE PIVOT 3/8 MEDIUM	72	1	1521	LINER 6 1/8 FLANGED
30	1	1043	SHAFT ROLLER	73	6	1300	STUD - INTAKE MEDIUM
31	3	624	NYLOC 1/4-28	74	6	523	NYLOC 1/4-20
32	1	1042	ROLLER ASSY	75	1	1326	INTAKE PAINTED ONLY MED FLANGED
33	2	636	1/4 WASHER AN960C416	76	2	14	GRILL ROD
34	1	1035	SHIFT CAM MEDIUM	77	9	16	GRILL BAR MEDIUM
35	1	62	NUT HEX JAM 1/4-28			334	BRACKET ASSY MERC
36	1	1199	PIVOT - CABLE END	79	1	153	BRACKET CABLE SUPT MERCURY
37	1	638	WASHER SPRING LOCK 1/4	80	1	697	BOLT HEX HD 5/16-18 X 1 1/4
38	1	622	NUT HEX 1/4-28	81	1	625	NYLOC 5/16-18
39	1	1037	BUSHING CAM	82	2	636	1/4 WASHER AN960C416
40	1	1038	WASHER CAM	83	2	572	BOLT HEX HD 1/4-20 X 5/8
41	2	1039	SHIM - CAM	84	1	1718	TORSIONAL DAMPER 5/8
42	1	1036	CAM ECCENTRIC DRILLED				
43	1	574.1	BOLT HEX HD 1/4-20 X 1 PATCH				
44	2	574	BOLT HEX HD 1/4-20 X 3/4 PATCH				
45	1	1170	SPRING GATE BUMPER				
46	1	1169	GATE BUMPER				
47	1	559.2	FIL HD SLOTTED 10-32 X 1 1/4 PATCH				
	1	90.43	SHAFT ASSY COMPLETE, EFS, 11T				
48	1	67	SHAFT ONLY, EFS, 11T 24 7/8 LG				
	1	257	SHAFT ASSY COMPLETE, EFL, 11T				
48	1	200	SHAFT ONLY, EFL, 11T 28 5/8 LG				

SIZE	TORQUE
1/4-20 (M6)	8-9 FT-LBS
5/16-18 (M 8)	15 FT-LBS
3/8-16 (M10)	22 FT-LBS

TILLER STEERING:

SHIFT CABLE ASSY 1263, 1264 SEE PG. 26

BEARING, SEAL, SNAP & "O" RING KIT 803.1

SAMPLE

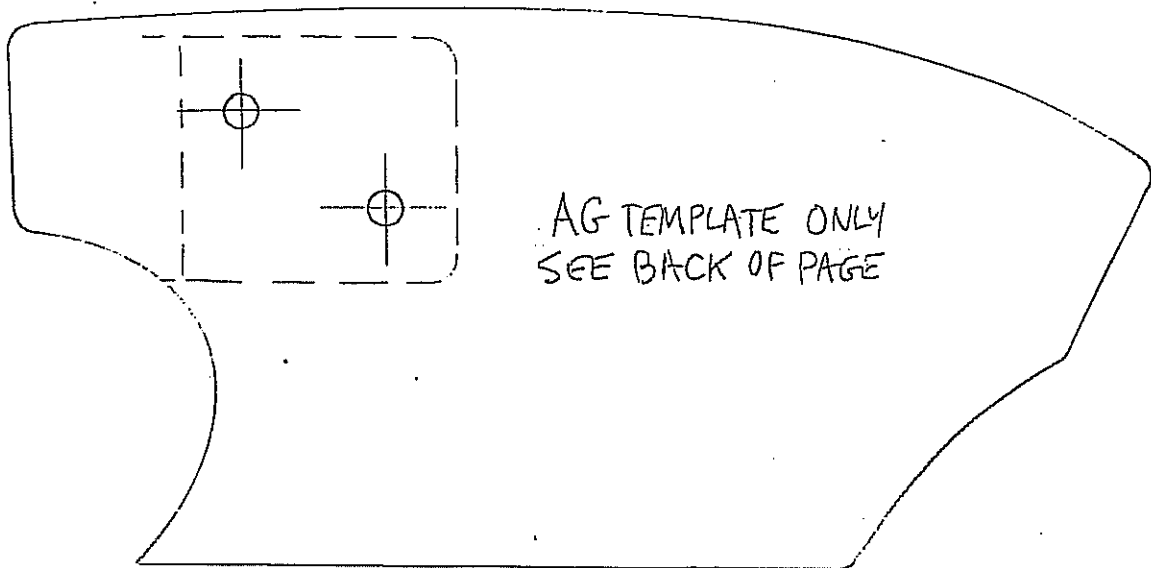
See AG 1263
1264

MODEL AGC 50 & 60 HP *

Shift Handle and Cable Assembly Instructions

Tiller Steering Kits, short shaft #1263, long shaft #1264

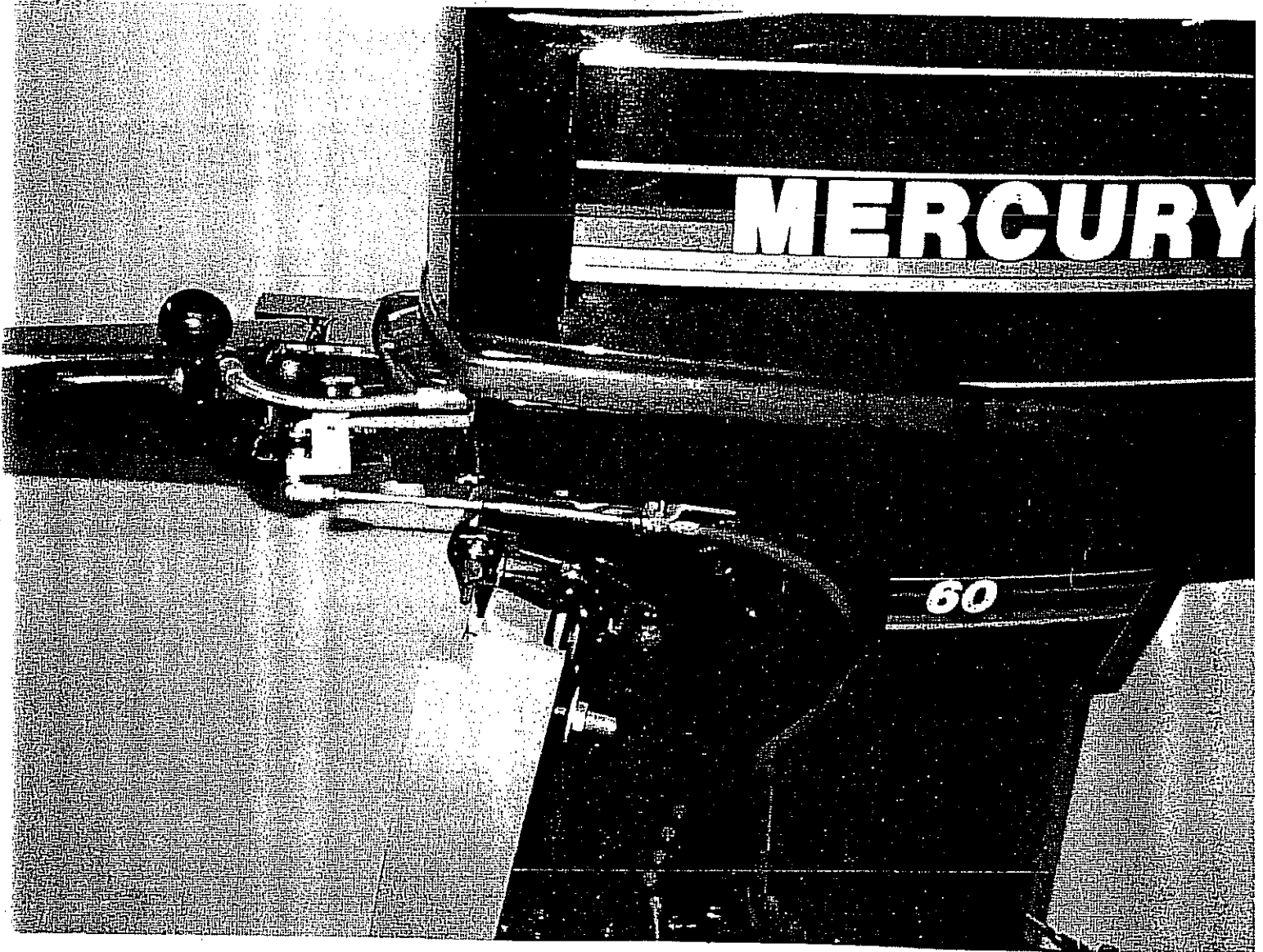
1. Cut out the paper template, bottom of this page. Align the template under the motor cowl and hold in place with masking tape. Drill 2 - 3/16 inch holes and remove template. Attach the upper cable anchor bracket using 2 - #10-24 x 5/8 fil head screws and fiber lock nuts.
2. Slide the aluminum cable end support over the 1/4 inch motor shift rod as shown in the photograph, next page. Use the nylon bushing where the shift rod enters the shift handle. Engage the steel sleeve, install the ball end with lockwasher and tighten. Lock the set screw against the shift rod.
3. Attach the lower cable anchor to the jet drive using 2 - 1/4-20 x 5/8 bolts and flat washers. Slide to the rear and lock.
4. Attach the cable to the cable anchors using 4 - #10-24 x 5/8 fil head screws and fiber lock nuts, upper end first. Then feed the cable through to the lower side and attach.
5. Place the reverse gate in forward with the roller at the end of the cam slot. Shift the handle to forward. Adjust the cable ends to meet these positions and lock the jam nuts against the cable end fittings.
6. Shift through neutral to reverse and back to forward. The roller should be well onto the flat section of the cam such that the gate cannot be forcibly rotated toward reverse. Pull on the gate by hand to verify this. Water pressure will fully seat the gate in the neutral and reverse positions.
- * 7. If this shift mechanism is used with E,F,G,P or AC jet drives, the rod connecting the reverse gate to the splined shift lever up front must be removed. See back of this page.
8. VERY IMPORTANT. The throttle must be returned to idle before shifting.



SAMPLE

MODEL AGC 50 & 60 HP

Sec AG *MAKER*



* We do not have the older outboards in house, which use the model E,F,G,P and AC jet drives, with which to develop a paper pattern to locate the upper cable anchor.

1. Follow steps 2, 3 & 4 on the reverse side of this page.
2. With both ends of the cable attached and the cable secured to the lower cable anchor, it remains to locate, drill and secure the upper cable anchor bracket under the motor cowl.
3. Set the shift handle in forward and the reverse gate in forward with the roller at the end of the cam slot. Attach some pieces of masking tape under the cowl where the anchor bracket will attach, for pencil marking purposes.
4. Using 3 hands!, position the anchor bracket under the cowl giving a good lineup and gentle bends in the cable and outline the bracket position with a pencil on the tape.
5. Drill the cowl, secure the bracket and check the system as in 6 on back of page.