

MODEL S, SP MERCURY SERIES 135-220 HP  
ASSEMBLY INSTRUCTIONS

1. Temporarily clamp the engine on the transom of your boat or an engine stand so that the gearbox can be removed. Remove the trim tab and six upper and lower nuts holding the gearbox to the exhaust housing. Remove the gearbox.
2. Remove the three rear gearbox mounting studs from the exhaust housing using a pipe wrench.
3. Install the taper lock stud at the rear of the motor midsection. Grease the threads and after tightening, grease the tapered section.
4. Remove the water pump assembly from the gearbox driveshaft, leaving the studs in place. The bottom of the water pump is also transferred to the Jet Drive.
5. Install the three 7/16 studs in the Jet unit. Use a little grease on the threads. Two 7/16 nuts are provided to be used as jam nuts for locking in the studs. Thread the nuts onto a stud and jam the nuts against each other, not against the end of the thread. Wind in the stud and tighten. Loosen the two nuts, remove and repeat on the other two studs.
6. Install the jet driveshaft assembly into the main housing, locking it in place with the four 5/16-18 x 1 bolts with lock washers. Use grease on the threads. Tighten to 15 Ft-Lbs.
7. Install the water pump onto the Jet driveshaft, using the gasket supplied. **Be sure to install the pump impeller drive key.** Lock the pump in place firmly with the two 1/4-20 x 2 3/4 and one 5/16-18 x 2 3/4 bolts and lock washers. Place the plastic guide sleeve for the cooling water tube into the water pump.
8. Install the two 3/8 x 7/8 dowel pins. The 5/16 x 2 1/2 rod goes in the front hole in the housing to center the gearbox shift rod which is no longer used. Grease the driveshaft spline, water tube, and shift rod guide pin.
9. Next, attach the Jet Drive to the motor. Install fiber lock nuts and washers on the three forward studs. After tightening to approximately 25 Ft-Lbs, grease the threads and tapered section of the wedge bolt. Install through the 5/16 cross hole at the rear of the jet drive, to capture the taper lock stud. Install the fiber lock nut and tighten to 7 Ft-Lbs.
10. 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 seven shim washers, rubber washer and cup, and nut retainer on the shaft, up against the impeller, and bring the nut up snug by hand.

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" between the impeller edge and the water intake liner, one or more of the 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 unless the blade clearance exceeds 1/32 inch. Insufficient blade clearance will do more harm than good from any performance gains it might provide.**

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11. Place the intake casing in position with the lower end at the rear and tighten the six nuts. No lock washers are used. Grease the threads.
12. Attach the gearshift cable to the inner hole of the lower arm in the remote control box to give 2 3/4 inch total cable travel. (The outer hole gives too much travel.)
13. With the shift handle in forward and the reverse gate in forward, **with the cam roller at the end of the slot**, adjust the cable and/or cable anchor position to this condition. **Shift to reverse and back to forward. The roller should be at the end of the cam slot 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.

14. **When converting to jet drive, your motor will have to be raised to height shown in the diagram on page 3, using a straight edge under the boat.** Test run the boat and then raise or lower the motor 5/16 inch at a time to obtain the best results.

The motor has four sets of upper mounting holes. You will use one set to begin with. Mark pencil lines on the boat transom through the other sets. Then if you wish to go up or down 5/16 inch, you can drill one alternate set of holes 5/16 inch up or down from the pencil marks. By alternating between these two sets of transom holes and the three sets of motor holes, the motor can be moved in 5/16 inch increments over almost one inch. The transom height should be about 26" measured vertically from the boat bottom.

**If you raise it too much it will suck air and cavitate, either on start up or when banking on turns.** When cavitating, the motor overspeeds in spurts and shakes considerably in the motor mount. **This is not a normal condition and should be avoided by proper adjustment of motor height on each individual boat.** If you lower it too much you will have excessive drag, therefore mount the motor as high as possible without allowing cavitation

### **CAUTION**

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

### **MAINTENANCE AND LUBRICATION**

See separate sheet.

### **CAUTION**

#### **V4 and V6 jet drives**

It is important on high HP installations to mount the motor at the correct height and to use the power tilt properly.

Power tilt is convenient for drifting and when operating at low throttle in very shallow areas. When under power however, the engine should not be tilted out in an effort to gain speed as is done with propellers.

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The engine driveshaft should be vertical when planing or tilted toward the boat in order to provide a scooping angle on the water intake grill. **Tilting the motor out beyond a vertical position reduces the scoop angle and can cause impeller slippage and cavitation burns on the impeller blades.**

When running in a bay, lake or wide river in windy conditions, particularly when running with the wind, the jet can suck in air when jumping across the wave crests. This will result in overspeeding and causes severe strain on the driveshaft when the engine is suddenly brought back to normal speed as the impeller once again grabs solid water.

If your boat is used frequently under these conditions, the engine height should be set lower than normal to minimize overspeeding. Running at reduced throttle will help when winds are strong. You can also experiment with a plate extending from the hull bottom to the top of the leading edge of the water intake as shown in paragraph 7 of the owner's manual. This tends to reduce air intake as well as to reduce spray.

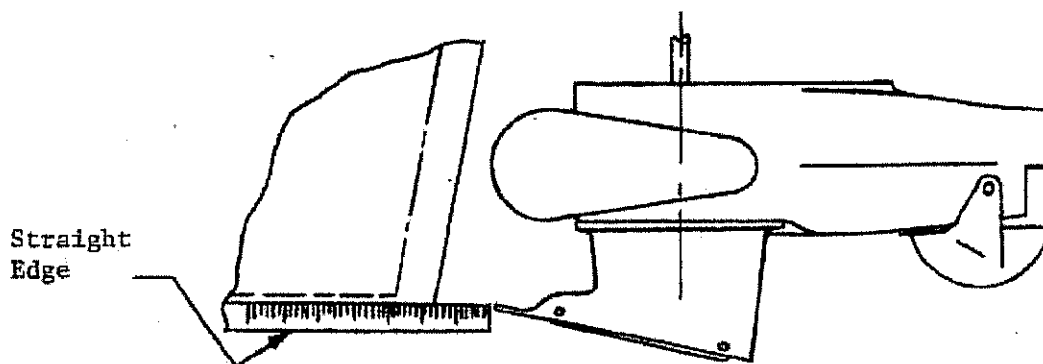
**A water intake fin kit, part #1186 for Model S, and #1726 for Model SP, is now available.** The purpose of these fins is to ram more water into the intake and to shield the forward sides of the intake from the entrance of air. There is a noticeable reduction of engine overspeeding when running with the wind on a heavy chop. To a lesser degree, the fins provide some rudder effect when operating at a low speeds. This is not a cure all for cavitation and it is still necessary to set the engine height and angle properly and to minimize obstructions or imperfections in the hull ahead of the intake.

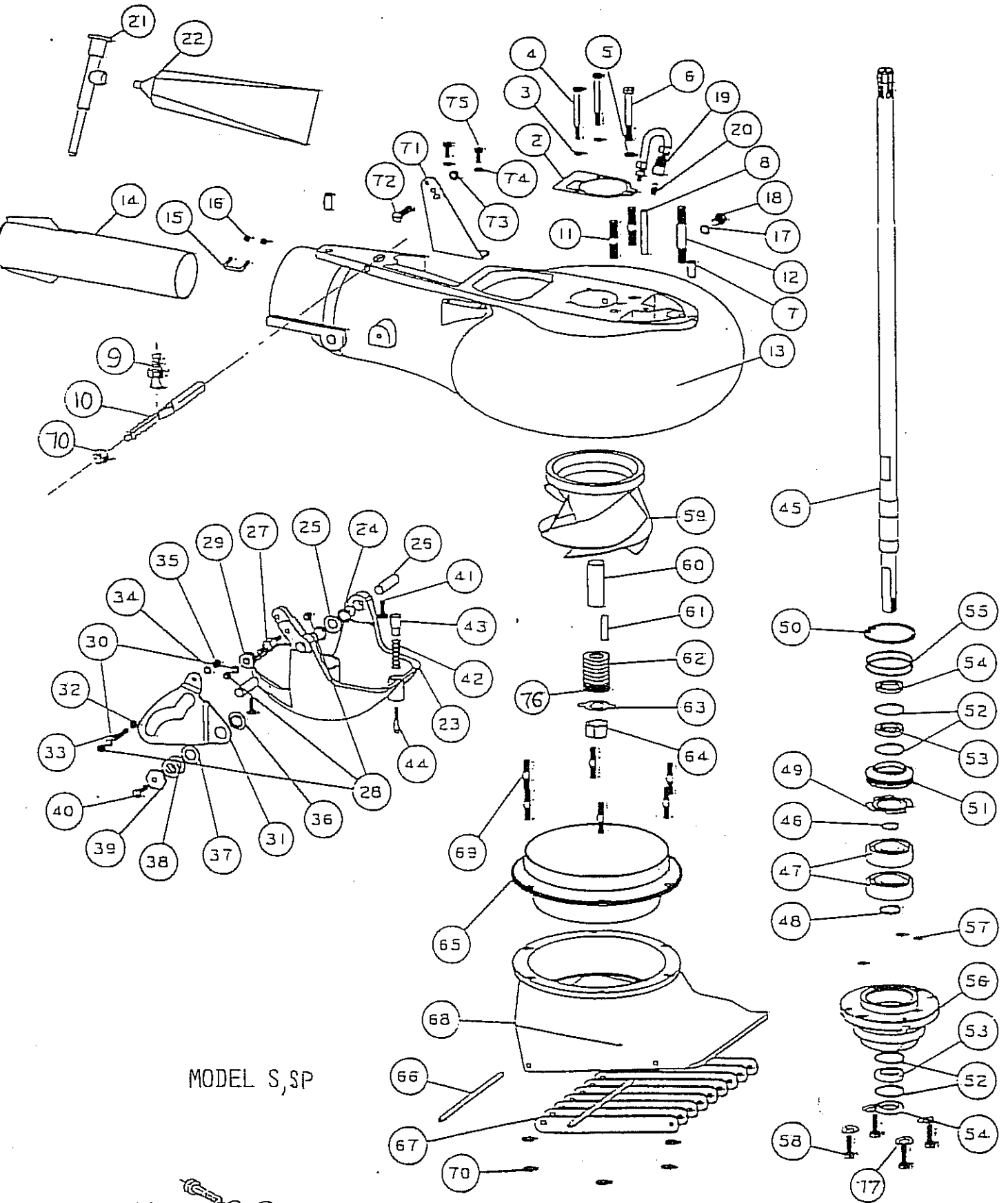
The cooling system can be flushed by removing the hex bolt next to the grease fitting. A hose coupling, 24789A1, is available from a Mercury dealer. Turn on the water gently, and start the motor set to idle. Watch for cooling water at the tell tale. Adjust the water pressure if needed. **Be sure to replace the bolt after flushing.**

GOOD BOATING AND HAVE FUN!

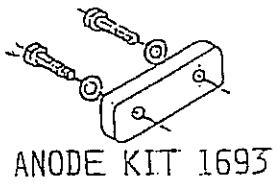
Specialty Manufacturing Company  
Outboard Jets  
2035 Edison Avenue  
San Leandro, CA 94577

### **SETTING MOTOR HEIGHT**





MODEL S, SP



## MODEL S AND MODEL SP (7 5/8 INTAKE) MERCURY, MARINER

REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
2	1	1124	GASKET WATER PUMP S	48	1	511	TRUARC 5100-98
3	2	638	WASHER SPRING LOCK 1/4	49	1	404	BACKUP WASHER
4	2	581	BOLT HEX HD 1/4-20 X 2 3/4	50	1	513	TRUARC N5002-250ZD
5	1	640	WASHER SPRING LOCK 5/16	51	1	432	UPPER SEAL CARRIER W/SEALS & O RINGS
6	1	599	BOLT HEX HD 5/16-18 X 2 3/4	52	4	517	SPIROLOX RR-150S
7	2	630	DOWEL PIN 3/8 X 7/8	53	2	506	SEAL INNER
8	1	428	SHIFT PILOT ROD S	54	2	507	SEAL OUTER 6324-S
9	1	2012	WEDGE STUD S, SP	55	2	527	O RING 568-141 3/32X2 5/16X2 1/2
10	1	1762	WEDGE BOLT AB,AV,L,R,S	56	1	393.5	BEARING CARRIER W/SEALS & O RINGS 5/16
11	2	463	STUD SHORT S	57	3	521	O RING 563-011 1/16X5/16X7/16
12	1	58	STUD S	58	4	602.1	BOLT HEX HD 5/16-18 X 1 PATCH
12	1	1722	STUD SX 25" SHAFT	59	1	1738	IMPELLER 4BLADE W/136 SLEEVE V6
		40140	VOLUTE WITH GATE S	60	1	136	SHAFT SLEEVE PLASTIC LARGE
13	1	401.4	VOLUTE WITH EXHAUST TUBE S	61	1	434	IMPELLER TEE KEY - SQUARE
14	1	128	EXHAUST TUBE ASSY LARGE 2 1/2	61	1	1706	IMPELLER TEE KEY - 1/2 ROUND
15	1	846	CLIP EXHAUST TUBE 1"	62	8	121	SHIM WASHERS
16	2	621	NYLOC 10-32	63	1	781	NUT KEEER LARGE 2 PER BAG
17	1	1023	WASHER FIBER 3/8	64	1	122.1	SHAFT NUT 3/4-16 BRASS
18	1	1022	BOLT HEX HD 3/8-16 X 1/2			1333	INTAKE ASSY FLANGED WITH GRILL BAR & LINER
19	1	975	LUBE HOSE ASSY	65	1	1431	LINER 7 3/8 FLANGED
20	1	539	ZIRC FITTING 1/4-28	66	2	14	GRILL ROD
21	1	550	GREASE GUN	67	9	117	GRILL BAR LARGE
22	1	552	GREASE 10 OZ TUBE NO. 630-AA	68	1	1332	INTAKE PAINTED ONLY
23	1	1172	REVERSE GATE, LARGE	69	6	1319	STUD - INTAKE LARGE
24	1	536	NYLINER 1/2 ID X 13/16	70	7	625	NYLOC 5/16-18
25	1	1178	SPRING GATE PIVOT 1/2			334	BRACKET ASSY MERCURY W/HARDWARE
26	2	823	PIN GATE PIVOT 1/2 LARGE	71	1	153	BRACKET CABLE SUPPORT MERCURY
27	1	1043	SHAFT ROLLER	72	1	597	BOLT HEX HD 5/16-18 X 1 1/4
28	3	624	NYLOC 1/4-28	73	1	625	NYLOC 5/16-18
29	1	1042	ROLLER ASSY	74	2	635	1/4 WASHER AN960C416
30	2	635	1/4 WASHER AN960C416	75	2	572	BOLT HEX HD 1/4-20 X 5/8
31	1	1034	SHIFT CAM LARGE	76	1	1719	TORSIONAL DAMPER 3/4
32	1	62	NUT HEX JAM 1/4-28	77	4	640	WASHER SPRING LOCK 5/16
33	1	1199	PIVOT - CABLE END				
34	1	638	WASHER SPRING LOCK 1/4				
35	1	622	NUT HEX 1/4-28				
36	1	1037	BUSHING CAM				
37	1	1038	WASHER CAM				
38	2	1039	SHIM - CAM	13	1	1690	VOLUTE WITH EXHAUST TUBE AT
39	1	1036	CAM ECCENTRIC DRILLED			1691	VOLUTE WITH GATE AT
40	1	574.1	BOLT HEX HD 1/4-20 X 1 PATCH	59	1	1721	IMPELLER 7 5/8 20OHP
41	2	574	BOLT HEX HD 1/4-20 X 3/4 PATCH	59	1	1735	IMPELLER 7 5/8 CB 175HP
42	1	1170	SPRING GATE BUMPER	68	1	1602.04	INTAKE 7 5/8 PAINTED ONLY
43	1	1497	GATE BUMPER			1603.04	INTAKE ASSY 7 5/8 WITH GRILL & LINER
44	1	559.2	FIL HD SLOTTED 10-32 X 1 1/4 PATCH	65	1	1605	LINER 7 5/8 FLANGED
		400.1	SHAFT ASSY COMPLETE, S, 8T 5/16	66	2	1667	GRILL ROD
45	1	400.3	SHAFT ONLY, S, 8T 30 7/8 LG	67	10	1622	GRILL BAR X LARGE
		1212.1	SHAFT ASSY COMPLETE, SX, 8T-5/16				
45	1	1211	SHAFT ONLY, SX, 8T 35 7/8 LG				
		429	BRG & SEAL KIT 2 7305				
46	1	41	SHAFT BEARING THRUST RING				
47	2	502	BEARING 7305B-UA				

**MODEL SP - BALANCE OF PARTS SAME AS MODEL S**

SIZE	TORQUE
1/4-20 (M6)	8-9 FT-LBS
5/16-18 (M8)	12 FT-LBS
3/8-16 (M10)	22 FT-LBS

BEARING, SEAL, SNAP & "O" RING KIT  
 1 BRG 462.1  
 2 BRG 462.2

# 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