MODEL Z YAMAHA SERIES
ASSEMBLY INSTRUCTIONS
40, 50 HP 1983-1994, 30 HP SINCE 1987

1. Place the engine on the transom of you boat so that it is mounted vertically, in the normal fashion. Disconnect the shift rod by backing off the hex nuts, lower front. Remove the bolts holding the gearbox to the exhaust housing and remove the gearbox assembly.

2. Remove the water pump assembly from the propeller drive, including the lower stainless steel plate, gaskets, impeller drive key, and dowel pins.

3. Install the jet driveshaft assembly into the spiral pump housing locking it in place with the two #10-24 x 5/8 screws and lockwashers. Use grease on the threads.

4. Install the water pump assembly on top of the 1-5/16 inch thick aluminum adapter and stainless steel plate. Be sure also, to install the water pump impeller brass tee key (Woodruff key no longer used), and dowel pins. Lock in place using two 5/16-18 x 2-1/4 and two 5/16-18 x 2-3/4 bolts and lockwashers. Grease the threads.

5. Push the sponge rubber sleeve up inside the pivot tube to prevent the disconnected shift rod from rattling.

6. The large 3/4 inch adapter plate is attached to the exhaust housing to hold the jet drive. Two 6 x 16mm dowels locate the plate, four M10 x 35mm bolts with lockwashers and one M8 x 30mm bolt with lockwasher secure it. Grease the bolt threads.

7. Next, attach the jet drive to the motor. Two 3/16 x 1/2 dowel pins center the jet drive on the adapter plate. Four 5/16-18 x 2-3/4 bolts and lockwashers from below and one 3/8-16 x 1-1/4 bolt from above rear, are used.

   Grease the bolt threads, driveshaft spline generously, and rubber water tube pilot and guide the jet into place. Tighten the five bolts.

8. 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 nine shim washers and nut retainer on the shaft, up against the impeller, and bring the nut up snug by hand. <u>Be careful that the retainer does not fall into the thread groove and jam the nut.</u>

   Place the water intake in position and secure with 2 bolts. Observe the clearance between the impeller blade edge and the intake liner. Then remove the intake.

   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 liner, one or more of the stainless 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.

   <u>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.</u>

   Then bump the nut 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 the impeller clearance is satisfactory, bump the nut up snug with a wrench. If the ears of the retainer do 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.

9. Place the intake casing in position with the lower end at the rear and tighten the six 1/4-20 x 3/4 hex head bolts. No lockwashers are used. Grease the threads. See diagram page 3.

10. If your jet drive was ordered for use with a steering tiller handle, see attached page "Shift Rod and Handle Assembly Instructions," pages 4-6.

11. If your motor is equipped for remote controls, proceed as follows:

    Attach the shift cable and cable anchor bracket to the jet drive.

    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. Tighten hardware.

    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.

12. If the neutral position is too far out of adjustment, the tendency of the gate to move toward reverse, under water pressure, will put tension 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.

13. When converting to jet drive, your motor will have to be raised to height shown in 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 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 two sets of transom holes and the four sets of motor holes, the motor can be moved in 5/16 increments over almost one inch. The transom height should be about 21 inches measured vertically from the boat bottom for short shaft motors and 26 inches for long shaft.

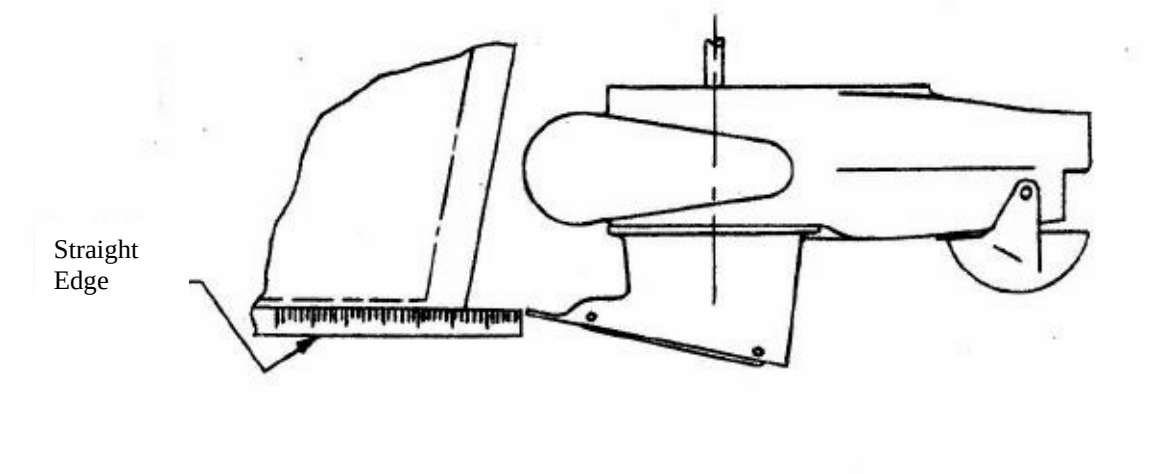
    If you raise it too much it will suck air and cavitate, either on start up or when banking on turns. When cavitating, the motor overspeeds in spurts and shakes considerably in the motor mount. This is not a normal condition and should be avoided by proper adjustment of motor height on each individual 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 cooling water comes out of the small hole at the rear side of engine just below the powerhead. This is to check your assembly of the cooling water pump and its connections.

The cooling system can be flushed by removing the slotted screw next to the grease fitting. A hose coupling No. 24789A1 is available from a Yamaha dealer. Turn on the water gently, start the motor, set to idle and watch for cooling water at the tell tale. Adjust water pressure if needed. Replace the screw after flushing.

SETTING ENGINE HEIGHT



MAINTENANCE AND LUBRICATION

See last page.

MODEL ZSM 40 HP
SHIFT ROD AND HANDLE ASSEMBLY INSTRUCTIONS
SHORT SHAFT #1215, LONG SHAFT #1217

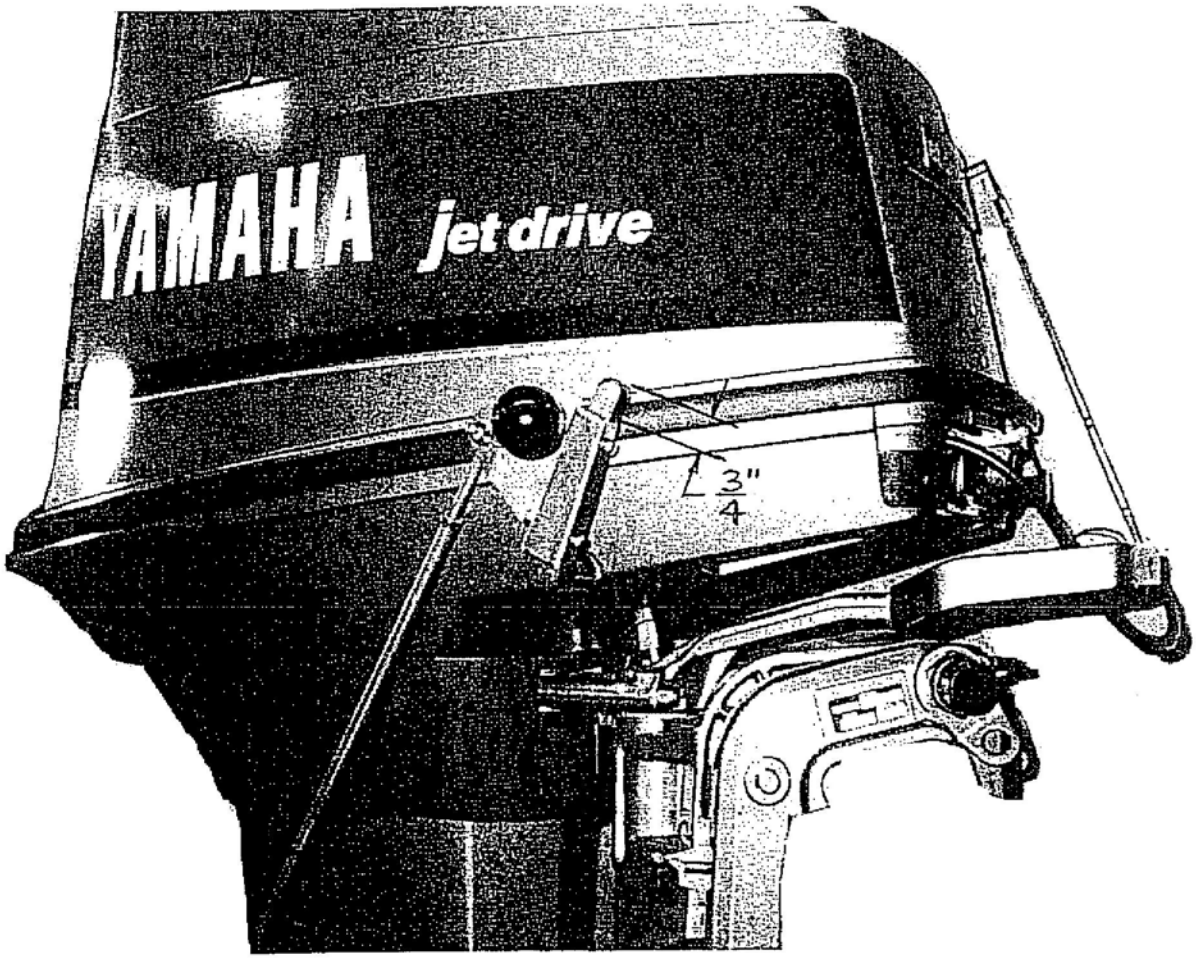
1. Place the pressed steel shift handle on the motor shift handle and clamp in place, spaced ¾ inch as shown in the diagram. Using a 3/16 inch drill, drill through the shift handle for the #10-32 fil head screws. Install the screws and fiber lock nuts. Attach the black knob on top of the apcer and tighten the bolt.

2. Next, attach the shift rod. Using a light finger pressure on the reverse gate, move the gate toward reverse until the cam roller is nested in the neutral notch of the cam. Adjust the length of the rod so that with the handle in neutral, the roller on the reverse gate is in the neutral notch of the cam, with the gate held up by hand.

3. Shift to forward. The roller should be at the end of the slot in 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 position is not met, readujust the rod length, giving less importance to neutral. Lock the rod end nuts.

4. Return to page to, and proceed with setting motor height.

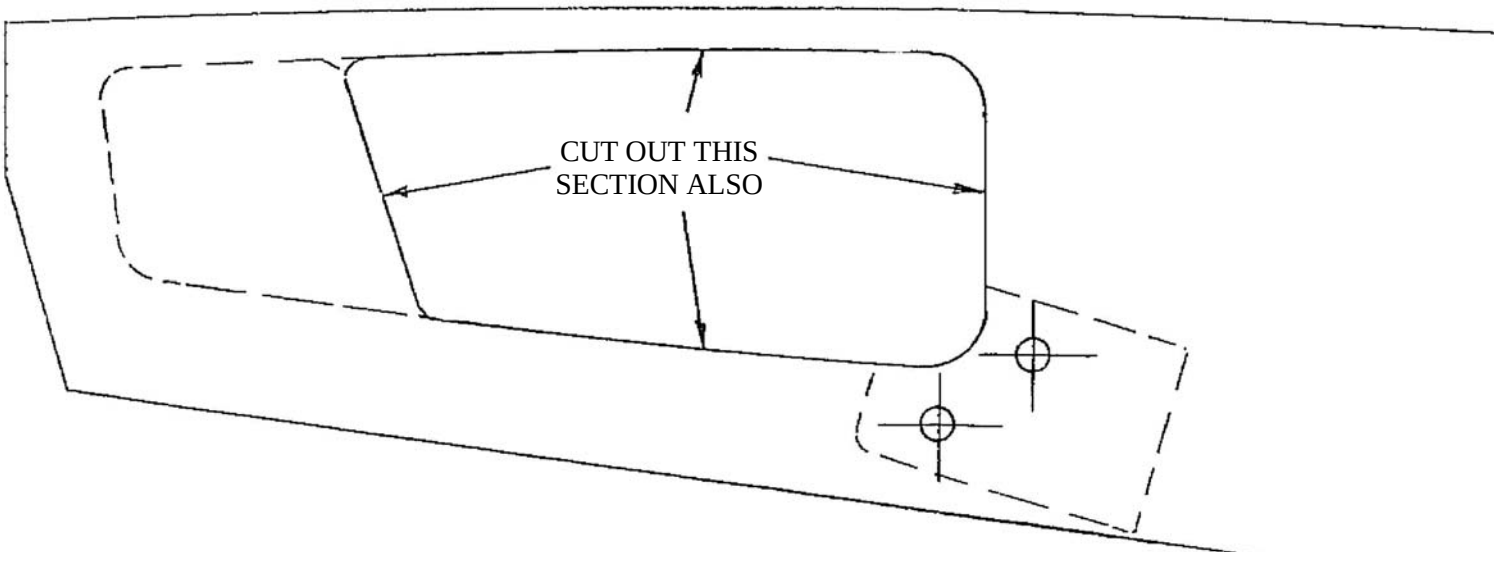
MODEL Z YAMAHA SERIES
ASSEMBLY INSTRUCTIONS
40, 50 HP 1983-1994, 30 HP SINCE 1987



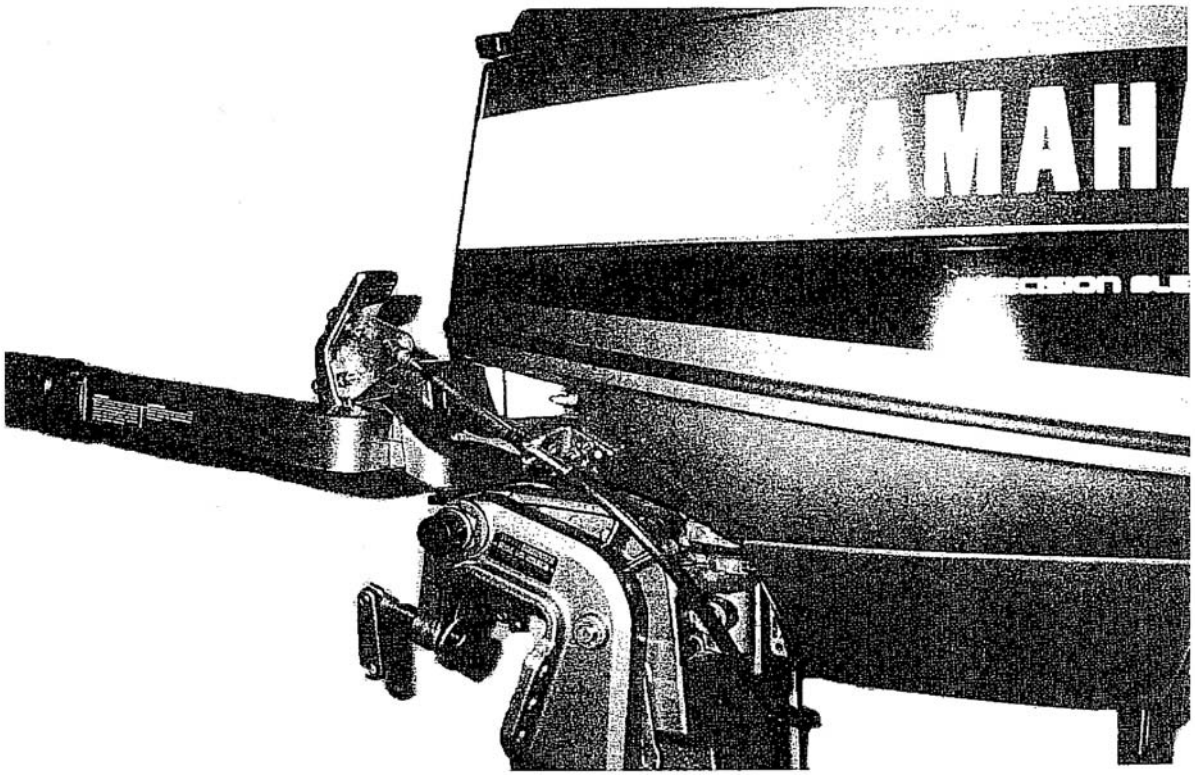
Specialty Manufacturing Company
OUTBOARD JETS
2035 Edison Avenue
San Leandro, CA 94577

MODEL Z30SM 30 HP
Shift Handle and Cable Assembly Instructions
Short Shaft #1261
Long Shaft #1262

1. Cut out the paper template, bottom of this page. Align the template on the motor cowl and hold in place with masking tape. Drill 2-3/16 inch holes and remove template.
2. Attach the cable anchor bracket using 2- #10-32 x 1 fil head screws and fiber lock nuts.
3. Place the cable end ball bracket in position on the shaft handle. Adjust the position so that it does not rock and will not put a strain on the plastic handle when the through bolts are tightened. Refer to the picture on page 6. Hold in this position using a "C" clamp on one of the ears. Drill a ¼ inch hole through the bracket and handle on the exposed ear.
4. Install a ¼ inch bolt with a plain washer under the head and a lockwashwer under the nut. Tighten the nut, remove the clamp and drill the 2nd hole. Install the 2nd bolt and tighten the nut.
5. Attach the shift cable and cable anchor bracket to the jet drive, using 2-1/4-0 x 5/8 bolts and flat washers. Move the bracket forward and tighten the bolts. 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 ends such that the roller is in the neutral notch when the shift handle is in neutral. Tighten hardware.
Shift to forward. The roller should be at the end of the slot in 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.
6. Return to page 2, and proceed with setting motor height.



MODEL "Z30SM" 30 HP



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.

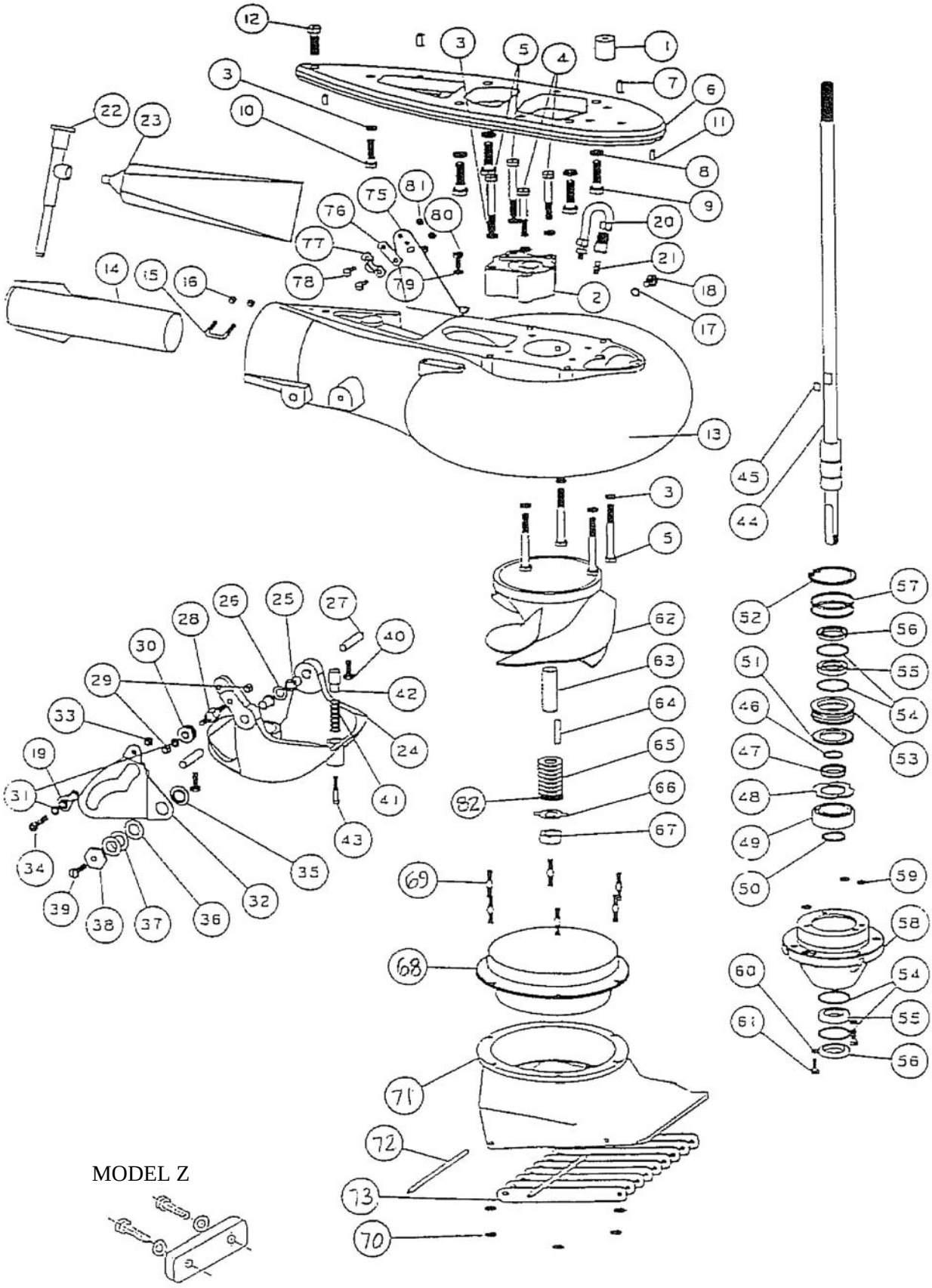
SALT WATER USE

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



MODEL Z

ANODE KIT 1693

REF	QTY	PART NO.	DESCRIPTION
1	1	928	SPONGE COLLAR Z SHIFT GUIDE
2	1	906	PUMP ADAPTER Z
3	9	640	WASHER SPRING LOCK 5/16
4	2	598	BOLT HEX HD 5/16-18 X 2 1/4
5	6	599	BOLT HEX HD 5/16-18 X 2 3/4
6	1	904	ADAPTER PLATE Z
7	2	616	DOWEL PIN 6 X 16 MM
8	4	636	WASHER SPRING LOCK M10
9	4	592	BOLT HEX HD M10-1.25 X 35MM
10	1	591	BOLT HEX HD M8-1.25 X 30MM
11	2	631	DOWEL PIN 3/16 X 1/2
12	1	606	BOLT HEX HD 3/8-16 X 1 1/4
		90200	VOLUTE WITH GATE Z
13	1	902	VOLUTE WITH EXHAUST TUBE Z
14	1	80	EXHAUST TUBE ASSY MED 2
15	1	846	CLIP EXHAUST TUBE 1
16	2	621	NYLOC 10-32
17	1	1023	WASHER FIBER 3/8
18	1	1022	BOLT HEX HD 3/8-16 X 1/2
19	1	553.2	BALL END 1/4X10-32 CABLE
20	1	975	LUBE HOSE ASSY
21	1	539	ZIRC FITTING 1/4-28
22	1	550	GREASE GUN
23	1	552	GREASE 10 OZ TUBE 630-AA
24	1	1175	REVERSE GATE MEDIUM
25	2	535	NYLINER 3/8 1D X 1D X 11/16
26	1	1177	SPRING GATE PIVOT 3/8
27	2	822	PIN GATE PIVOT 3/8 MEDIUM
28	1	1043	SHAFT ROLLER
29	2	624	NYLOC 1/4-28
30	1	1042	ROLLER ASSY
31	1	635	1/4 WASHER AN960C416
32	1	1035	SHIFT CAM MEDIUM
33	1	623	NYLOC 1/4-20
34	1	573	BOLT HEX HD 1/4-20 X 3/4
35	1	1037	BUSHING CAM
36	1	1038	WASHER CAM
37	2	1039	SHIM-CAM
38	1	1036	CAM ECCENTRIC DRILLED
39	1	574.1	BOLT HEX HD 1/4-20 X 1 PATCH
40	2	574	BOLT HEX HD 1/4-20 X 3/4 PATCH
41	1	1170	SPRING GATE BUMPER
42	1	1169	GATE BUMPER
43	1	559.2	FIL HD SLOT 10-32X 1 1/4 PATCH
44	1	1255	SHAFT ONLY, Z30S, 14T, 24-1/4 LG.
		1256	SHAFT ASSY COMPLETE,Z30S, 14T W/1275 KEY
44	1	1322	SHAFT ONLY, Z30L, 14T 29 LG.
		1323	SHAFT ASSY COMPLETE, Z30L, 14T W/1275 KEY
44	1	910	SHAFT ONLY, ZS, 14T 24 5/8 LG.
		911	SHAFT ASSY COMPLETE, ZS, 14T, W/1275 KEY
44	1	914	SHAFT ONLY, ZL 14T, 29 7/16 LG.
		915	SHAFT ASSY COMPLETE, ZL, 14T, W/1275 KEY
45	1	1275	KEY, TEE WATER PUMP
46	1	41	SHAFT BEARING THRUST RING
47	1	477	COLLAR BACKFIT 7205
48	1	1536	THRUST WASHER
49	1	504	BEARING 7205B-UA
50	1	511	TRUARC 5100-98
51	1	1535	SPACER
52	1	512	TRUARC N5002-212ZD
53	1	433	UPPER SEAL CARRIER W/SEALS & O RINGS
54	4	517	SPIROLOX RR-150S
55	2	506	SEAL INNER
56	2	507	SEAL OUTER 6324-S
57	2	526	O RING 568-135 3/32X1 15/16X2 1/8
58	1	917	BEARING CARRIER W/SEALS & O RINGS Z
59	3	521	O RING 568-011 1/16X5/16X7/16
60	2	637	WASHER SPRING LOCK #10
61	2	561	FIL HD SLOTTED 10-24 X 5/8
62	1	8.21	IMPELLER 5 7/8 W/36.1 SLEEVE 25-30 HP
62	1	8.23	IMPELLER 6 1/8 W/36.1 SLEEVE 40-50 HP
62	1	1737	IMPELLER 6 1/8 W/36.1 SLEEVE, STAINLESS
63	1	36.1	SHAFT SLEEVE PLASTIC MEDIUM
64	1	782	IMPELLER TEE KEY - SQUARE
64	1	1705	IMPELLER TEE KEY - 1/2 ROUND
65	8	21	SHIM WASHER MEDIUM
66	1	805	NUTKEEPER MED/PKG 2 PER BAG
67	1	22.1	SHAFT NUT 5/8-18 BRASS
		1448	INTAKE ASSY 5 7/8 FLANGED W\ GRILL & LINER
68	1	1678	LINER 5 7/8 FLANGED
69		1447	INTAKE ASSY 6 1/8 FLANGED W\ GRILL & LINER
68	1	1521	LINER 6 1/8 FLANGED
69	6	1300	STUD - INTAKE MEDIUM
70	6	623	NYLOC 1/4-20
71	1	1326	INTAKE PAINTED ONLY MED FLANGED
72	2	14	GRILL ROD
73	9	16	GRILL BAR MEDIUM
		171	BRACKET ASSY MORSE W/CLAMP & HARDWARE
75	1	156	BRACKET CABLE SUPPORT
76	1	542	SHIM MORSE A035777
77	4	543	CLAMP CHRYS 154317
78	2	561	FL JD SLOTTED 10-24 X 5/8
79	2	635	1/4 WASHER AN960C416
80	2	572	BOLT HEX HD 1/4-20 X 5/8
81	2	619	NYLOC 10-24
82	1	1718	TORSIONAL DAMPER 5/8
			NOTE: FLUSH SCREW AND WASTER METRIC ON BLUE VOLUTES
17	1	1025	WASHER FIBER M8
18	1	1024	BOLT HEX HD M8-1.25 X 12

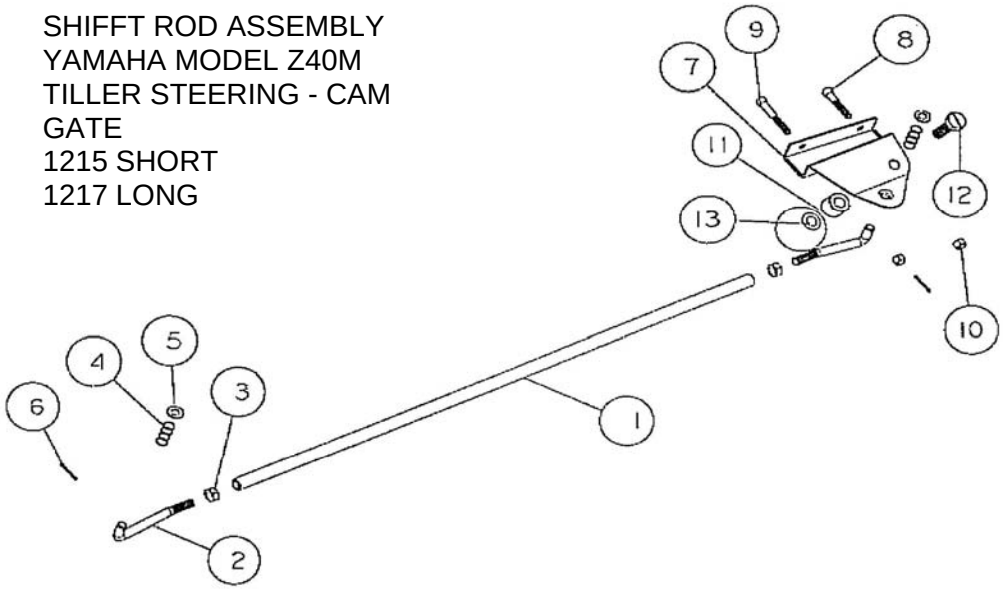
SIZE	TORQUE
1/4-20 (M6)	8-9 FT-LBS
5/16-18 (M8)	12 FT-LBS
3/8-16 (M10)	22 FT-LBS

TILLER STEERING:

SHIFT ROD ASSY 1215, 1217, SEE PAGE 24

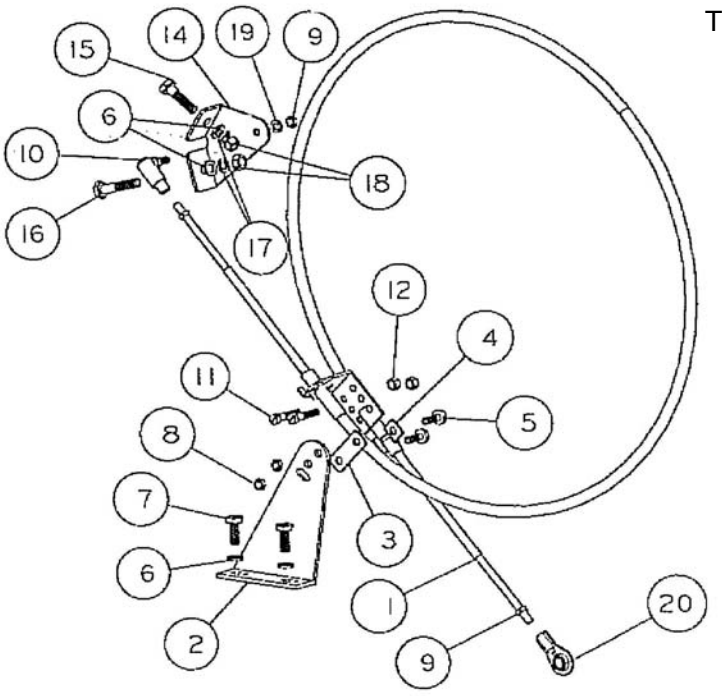
SHIFT CABLE ASSY 1261, 1262, SEE PAGE 27, Pg. 16
1317, SEE PAGE 28

SHIFFT ROD ASSEMBLY
YAMAHA MODEL Z40M
TILLER STEERING - CAM GATE
1215 SHORT
1217 LONG



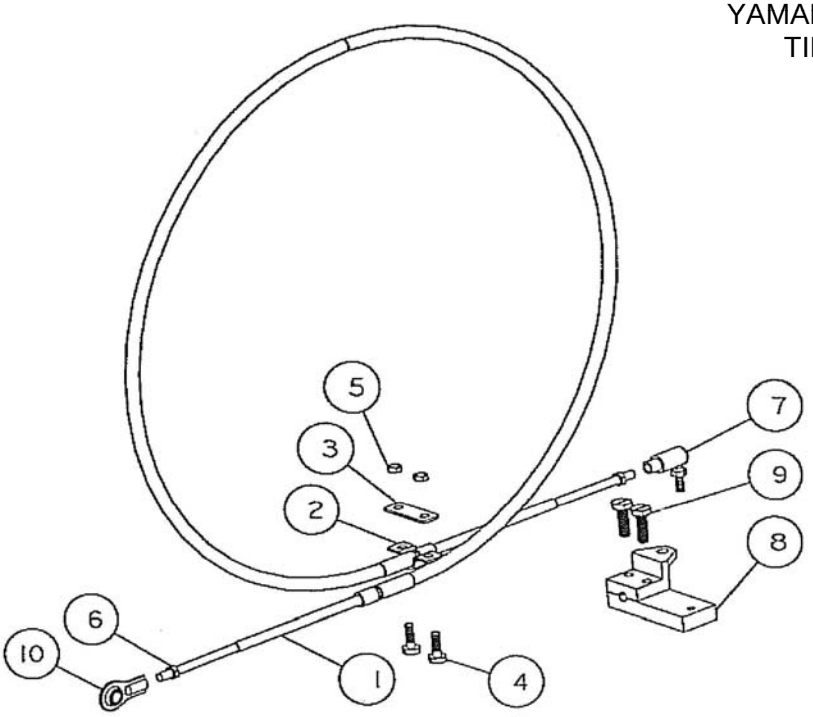
REF	QTY	PART NO.	DESCRIPTION
1	1	1213	SHIFT ROD ZSM 18 7/8 SHORT
1	1	492	SHIFT ROD U2L, V, ZLM, 23 1/8 LONG
2	2	24	ROD END FORMED
3	2	622	NUT HEX 1/4-28
4	2	1164	SPRING-ROD END
5	2	635	1/4 WASHER AN960C416
6	2	645	COTTER PIN 1/16 X 1/2
7	1	1214	SHIFT LEVER ZM
8	1	559	FIL HD SLOTTED 10-32 X 1
9	1	558	FIL HD SLOTTED 10-32 X 1 1/4
10	2	621	NYLOC 10-32
11	1	886	SPACER 5/16 ID X 1/2
12	1	602	BOLT HEX HD 5/16-18 X 1
13	1	551	KNOB 1 3/8

SHIFT CABLE ASSEMBLY
YAMAHA MODEL Z30M
TILLER STEERING
1261 SHORT
1262 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	1	156	BRACKET CABLE SUPPORT
3	1	542	SHIM MORSE A035777
4	1	543	CLAMP CHRYS 154317
5	2	561	FIL HD SLOTTED 10-24 X 5/8
6	4	635	1/4 WASHER AN960C416
7	2	572	BOLT HEX HD 1/4-20 X 5/8
8	2	619	NYLOC 10-24
9	3	621.1	HEX NUT 10-32 JAM
10	1	543.1	CABLE ANCHOR MORSE 36174
11	2	559	FIL HD SLOTTED 10-32 X 1
12	2	621	NYLOC 10-32
13	1	544.1	BALL JOINT MORSE 31799-001
14	1	1252	SHIFT LEVER Z30
15	1	576	BOLT HEX HD 1/4-20 X 1
16	1	585	BOLT HEX HD 1/4-20 X 1 1/4
17	2	638	WASHER SPRING LOCK 1/4
18	2	628	NUT HEX 1/4-20
19	1	637	WASHER SPRING LOCK NO. 10
20	1	553.2	BALL END 1/4 X 10-32 CABLE

SHIFT CABLE ASSEMBLY
YAMAHA MODEL Z50, Y70,
TILLER STEERING
1317



REF	QTY	PART NO.	DESCRIPTION
1	1	549	CABLE 3 1/2 FT MOR 33C SUPREME
2	1	543	CLAMP CHRYS 154317
3	1	542	SHIM MORSE A035777
4	2	561	FIL HD SLOTTED 10-24 X 5/8
5	2	619	NYLOC 10-24
6	2	621.1	HEX NUT 10-32 JAM
7	1	544.1	BALL JOINT MORSE 31799-001
8	1	1316	CABLE BLOCK Z Y TILLER
9	2	573	BOLT HEX 1/4-20 X 3/4
10	1	553.2	BALL END 1/4 X 10-32 CABLE