

MODEL AJ, AJ-44 SERIES
ASSEMBLY INSTRUCTIONS
4 STROKE 50 HP 57.0 CU. IN. STARTING 1995
4 STROKE 60 HP 60.8 CU. IN. STARTING 2002
2 STROKE FOR YAMAHA MOTORS 40-50 HP, 42.6 CU. IN. STARTING AUG. 1994

1. Place the engine on the transom of your boat so that it is mounted vertically, in the normal fashion. Remove the 5 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, gasket and dowel pins.
3. Install the jet driveshaft assembly into the spiral pump housing locking it in place with the four 1/4-20 x 3/4 bolts and lockwashers. Use grease on the threads.
4. Install the water pump assembly on top of the gasket and stainless steel plate, using 4 – M8 x 30MM bolts and the special steel washers under the bolt heads. Be sure also, to install the water pump impeller drive key and dowel pins. Grease the threads.
5. Install the plastic shift rod guide in the spline of the shift rod and the brass water tube extension onto the copper water tube. If there is a burr on the end of the water tube, file it smooth so the “O” ring inside the water tube extension will slide on.
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 the lockwasher secure it. Grease the bolt threads.
7. Next, attach the jet drive to the motor. Use two 5/16-18 x 2-1/2 bolts (front), two 5/16-18 x 2-3/4 bolts (rear) from below with lockwashers, one 3/8-16 x 1-1/2 bolt and lockwasher, above rear, inside motor mid-section, and two 3/16 x 1/2 dowel pins.

Grease the bolt threads, driveshaft spline generously, and rubber water tube pilot and guide the jet into place. Tighten the 5 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 7 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.

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.

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.

When the impeller clearance is satisfactory, 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.

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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 Cable and Handle Assembly Instructions," pages 4-5.
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 must 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, 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 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 four sets of motor holes, the motor can be moved in 5/15 inch 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.

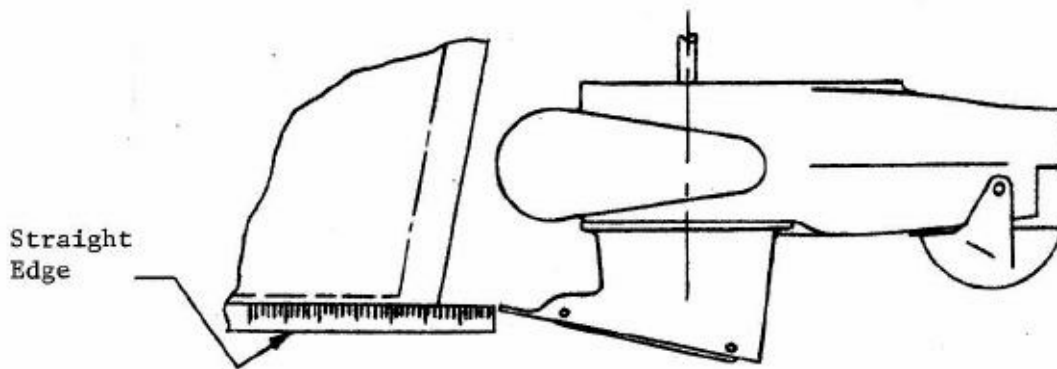
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CAUTION

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 MOTOR HEIGHT



CAUTION

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

MAINTENANCE AND LUBRICATION

See last 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.

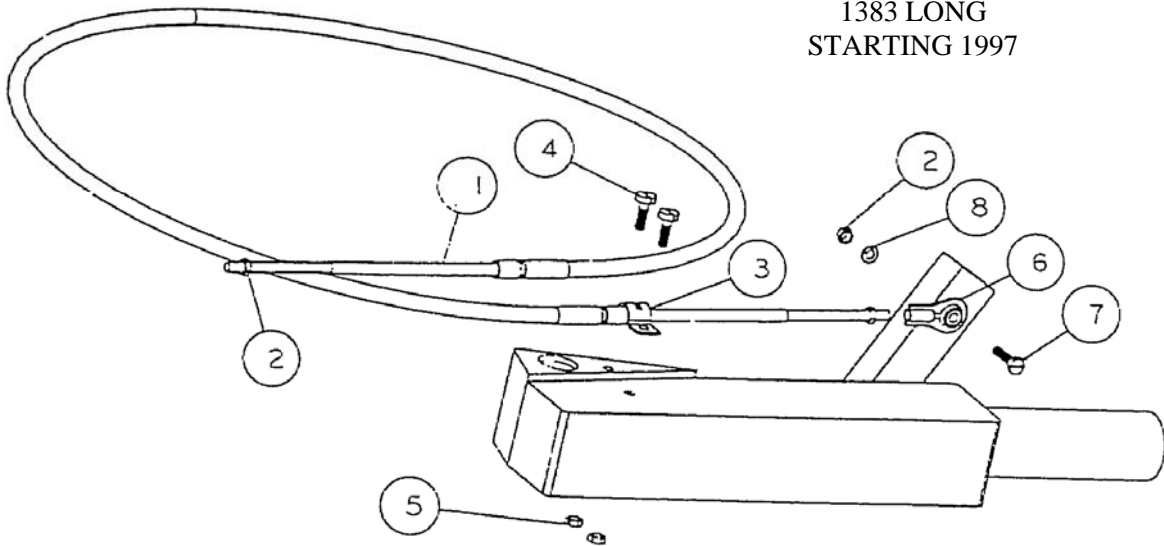
GUARANTEE

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.

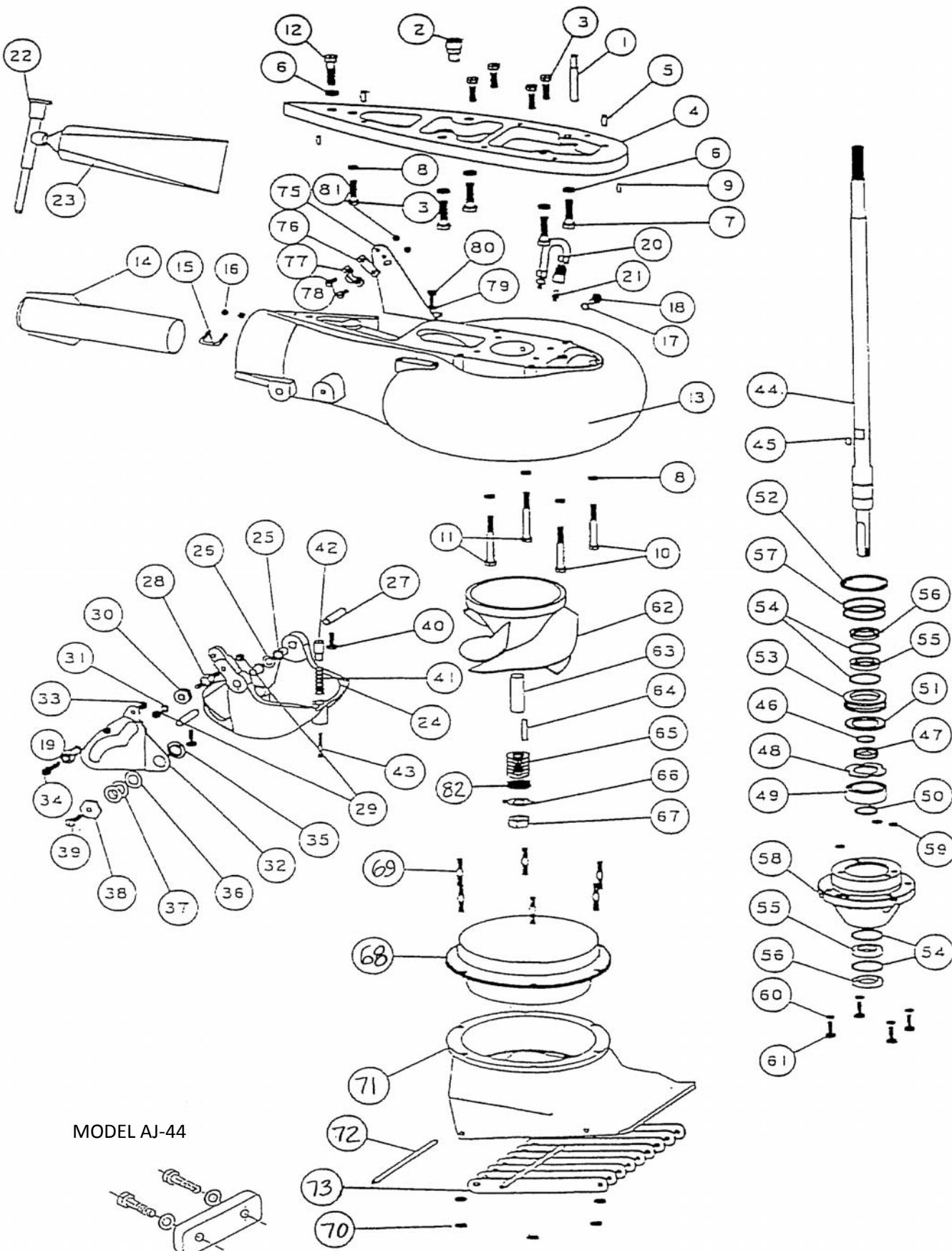
Specialty Manufacturing Company
Outboard Jets
2035 Edison Avenue
San Leandro, CA 94577

SHIFT HANDLE ON PORT SIDE OF
TILLER STEERING HANDLE- YAMAHA

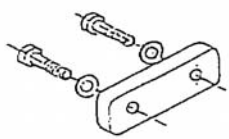
SHIFT CABLE ASSEMBLY
YAMAHA MODEL AJN, Y
TILLER STEERING
1382 SHORT
1383 LONG
STARTING 1997



REF	QTY	PART NO.	DESCRIPTION
1	1	547	CABLE 4FT MOR 33C SUPREME SHORT
1	1	547.1	CABLE 4 1/2 FT MOR 33C SUPREME LONG
2	3	621.1	HEX NUT 10-32 JAM
3	1	543	CLAMP CHRYS 154317
4	2	561	FIL HD SLOTTED 10-24 X 5/8
5	2	619	NYLOC 10-24
6	1	553.1	BALL END No. 10X10- 32 CABLE
7	1	558.4	BOLT HEX HD 10-32 X 3/4
8	1	637	WASHER SPRING LOCK No. 10



MODEL AJ-44



ANODE KIT 1693

MODEL AJ YAMAHA
 AJ 2 STROKE, 3CYL. 40-50 HP
 AJ-44 4 STROKE, 4 CYL. 50-60HP
 (DETERMINE IF DRIVESHAFT SPLINE 14 OR 16 TEETH)

REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
1	1	1378	SHIFT ROD GUIDE	46	1	41	SHAFT BEARING THRUST RING
2	1	1377	WATER TUBE EXT. AJ	47	1	477	COLLAR BACKFIT 7205
3	5	591	BOLT HEX HD M8-1.25 X 30MM	48	1	832	THRUST WASHER
4	1	1366	ADAPTER PLATE AJ	49	1	504	BEARING 7205B-UA
5	2	616	DOWEL PIN 6 X 16 MM	50	1	511	TRUARC 5100-98
6	5	636	WASHER SPRING LOCK M10	51	1	833	SPACER
7	4	592	BOLT HEX HD M10-1.25 X 35MM	52	1	512	TRUARC N5002-212ZD
8	5	640	WASHER SPRING LOCK 5/16	53	1	433	UPPER SEAL CARRIER W/SEALS & O RINGS
9	2	631	DOWEL PIN 3/16 X 1/2	54	4	517	SPIROLOX RR-150S
10	2	603	BOLT HEX HD 5/16-18 X 2 1/2	55	2	506	SEAL INNER
11	2	599	BOLT HEX HD 5/16-18 X 2 3/4	56	2	507	SEAL OUTER 6324-S
12	1	607	BOLT HEX HD 3/8-16 X 1 1/2	57	2	526	O RING 568-135 3/32X1 15/16X2 1/8
		1370	VOLUTE WITH GATE AJ	58	1	1380	BEARING CARRIER W/SEALS & O RINGS AJ
13	1	1369	VOLUTE WITH EXHAUST TUBE AJ	59	3	521	O RING 568-011 1/16X5/16X7/16
14	1	80	EXHAUST TUBE ASSY MED 2	60	4	638	WASHER SPRING LOCK 1/4
15	1	846	CLIP EXHAUST TUBE 1	61	4	573	BOLT HEX HD 1/4-20 X 3/4
16	2	621	NYLOC 10-32	62	1	8.23	IMPELLER 6 1/8 W/36.1 SLEEVE
17	1	1023	WASHER FIBER 3/8	62	1	1737	IMPELLER 6 1/8 W/36.1 SLEEVE, STAINLESS
18	1	1022	BOLT HEX HD 3/8-16 X 1/2	63	1	36.1	SHAFT SLEEVE PLASTIC MEDIUM
19	1	553.2	BALL END 1/4X10-32 CABLE	64	1	782	IMPELLER TEE KEY - SQUARE
20	1	975	LUBE HOSE ASSY	64	1	1705	IMPELLER TEE KEY - 1/2 ROUND
21	1	539	ZIRC FITTING 1/4-28	65	8	21	SHIM WASHER MEDIUM
22	1	550	GREASE GUN	66	1	805	NUTKEEPER MED/PKG 2 PER BAG
23	1	552	GREASE 10 OZ TUBE 630-AA	67	1	22.1	SHAFT NUT 5/8-18 BRASS
24	1	1175	REVERSE GATE MEDIUM			1447	INTAKE ASSY 6 1/8 FLANGED W/ GRILL & LINER
25	2	535	NYLINER 3/8 1D X 1D X 11/16	68	1	1521	LINER 6 1/8 FLANGED
26	1	1177	SPRING GATE PIVOT 3/8	69	2	1300	STUD - INTAKE MEDIUM
27	2	822	PIN GATE PIVOT 3/8 MEDIUM	70	2	623	NYLOC 1/4-20
28	1	1043	SHAFT ROLLER	71	1	1326	INTAKE PAINTED ONLY MED FLANGED
29	2	624	NYLOC 1/4-28	72	2	14	GRILL ROD
30	1	1042	ROLLER ASSY	73	9	16	GRILL BAR MEDIUM
31	1	635	1/4 WASHER AN960C416			171	BRACKET ASSY MORSE W/CLAMP & HARDWARE
32	1	1035	SHIFT CAM MEDIUM	75	1	156	BRACKET CABLE SUPPORT
33	1	623	NYLOC 1/4-20	76	1	542	SHIM MORSE A035777
34	1	573	BOLT HEX HD 1/4-20 X 3/4	77	4	543	CLAMP CHRYS 154317
35	1	1037	BUSHING CAM	78	2	561	FL JD SLOTTED 10-24 X 5/8
36	1	1038	WASHER CAM	79	2	635	1/4 WASHER AN960C416
37	2	1039	SHIM-CAM	80	2	572	BOLT HEX HD 1/4-20 X 5/8
38	1	1036	CAM ECCENTRIC DRILLED	81	2	619	NYLOC 10-24
39	1	574.1	BOLT HEX HD 1/4-20 X 1 PATCH	82	1	1718	TORSIONAL DAMPER 5/8
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 SLOTTED 10-32 X 1/4 PATCH				
44	1	1375	SHAFT ONLY, AJS, 14T, 25-1/16 LG.				
		1376	SHAFT ASSY COMPLETE, AJS, 14T W/1275 KEY				
44	1	1435	SHAFT ONLY, AJL, 14T 30-1/16 LG.				
		1436	SHAFT ASSY COMPLETE, AJL, 14T W/1275 KEY				
44	1	1444	SHAFT ONLY, AJL, 14T 4 STROKE				
		1445	SHAFT ASSY COMPLETE, AJL, 14T, 4 STROKE				
44	1	1695	SHAFT ONLY, AJL 16T, 4 STROKE				
		1696	SHAFT ASSY COMPLETE, AJL, 16T 4 STROKE				
45	1	1275	KEY, TEE WATER PUMP				
							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:

F50 - SHIFT CABLE ASSY, 1382, 1383, SEE PAGE 32 – PORT HANDLE

F60 - SHIFT CABLE ASSY, 1566 PG 26.1 LRG. SERIES-STARBOARD HANDLE

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

MODEL AJ TILLER HANDLE STEERING
SHIFT CABLE ASSEMBLY
KIT 1382 SHORT SHAFT MOTORS
KIT 1383 LONG SHAFT MOTORS

1. Cut out the drilling template, including the large centering hole. Fold the template to fit the raised section on the handle.

Place the template on the steering handle holding in place with masking tape at each end. Remove the plastic cover under the handle. Center punch the two hole locations and drill through using a 3/16 drill. Remove the template.

2. Remove the plastic cover from the shift handle. Center punch for a 3/16 hole on the centerline of the handle and as close to the threaded boss as possible while still being able to get the #10-32 nut inside, with the hex flat against the boss. Drill through.

3. Attach the lower end of the cable to the jet drive with the terminal end threaded on the cable as far as it will go and the cable anchor bracket slid forward and locked.

4. Attach the upper cable anchor to the handle using the two #10-24 x 5/8 screws and nyloc nuts.

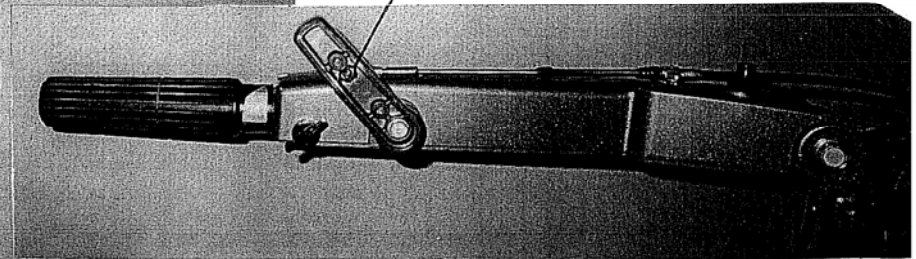
5. Place the reverse gate in forward with the cam roller at the end of the slot in the cam. Place the shift handle in forward, solidly in the detent. Adjust the ball rod end to reach this position. Install the hex #10-32 x 3/4 bolt, star lock washer and nut.\

6. Shift to reverse and back to forward. The cam 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. Readjust the rod end position if necessary to satisfy this condition. Lock the jam nut and install the plastic covers on the handle and tiller arm.

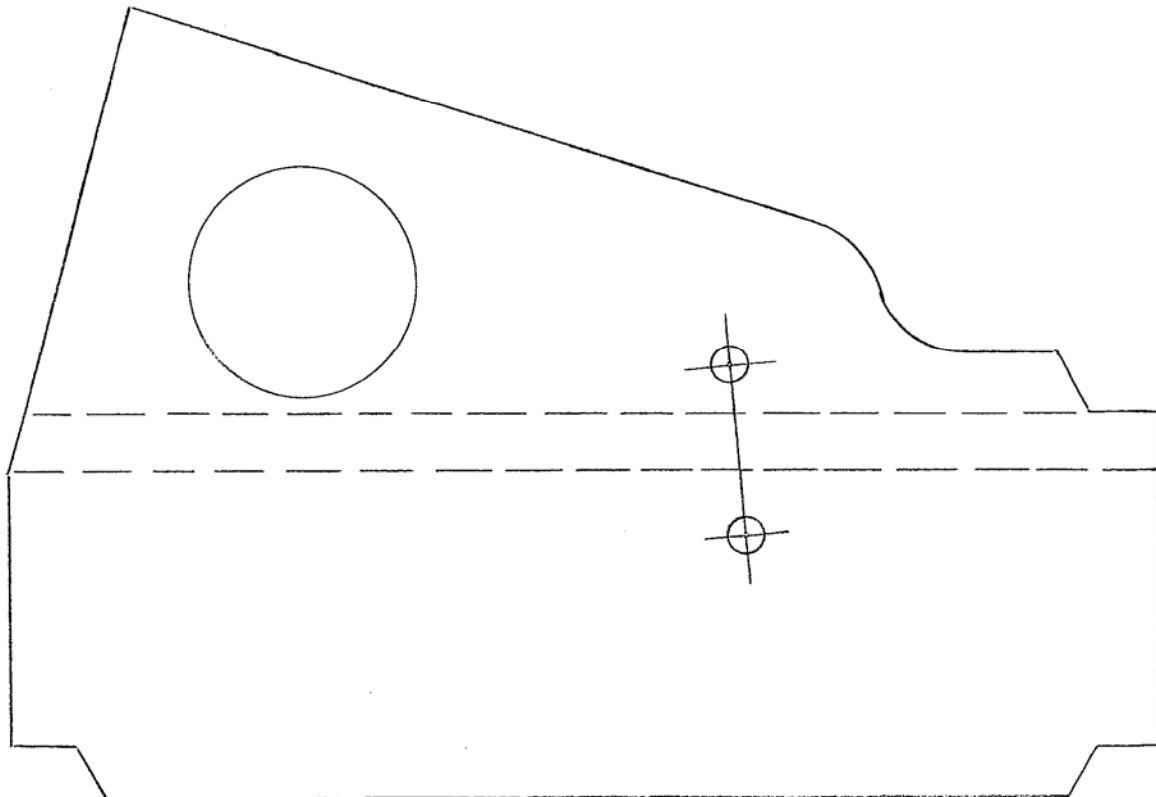
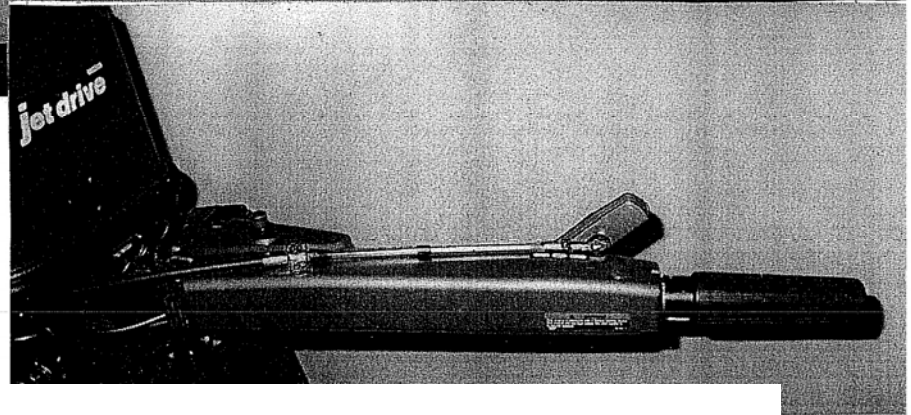
CAUTION You must return the throttle to idle before shifting

MODEL AJ TILLER HANDLE STEERING
SHIFT CABLE ASSEMBLY
KIT 1382 SHORT SHAFT MOTORS
KIT 1383 LONG SHAFT MOTORS

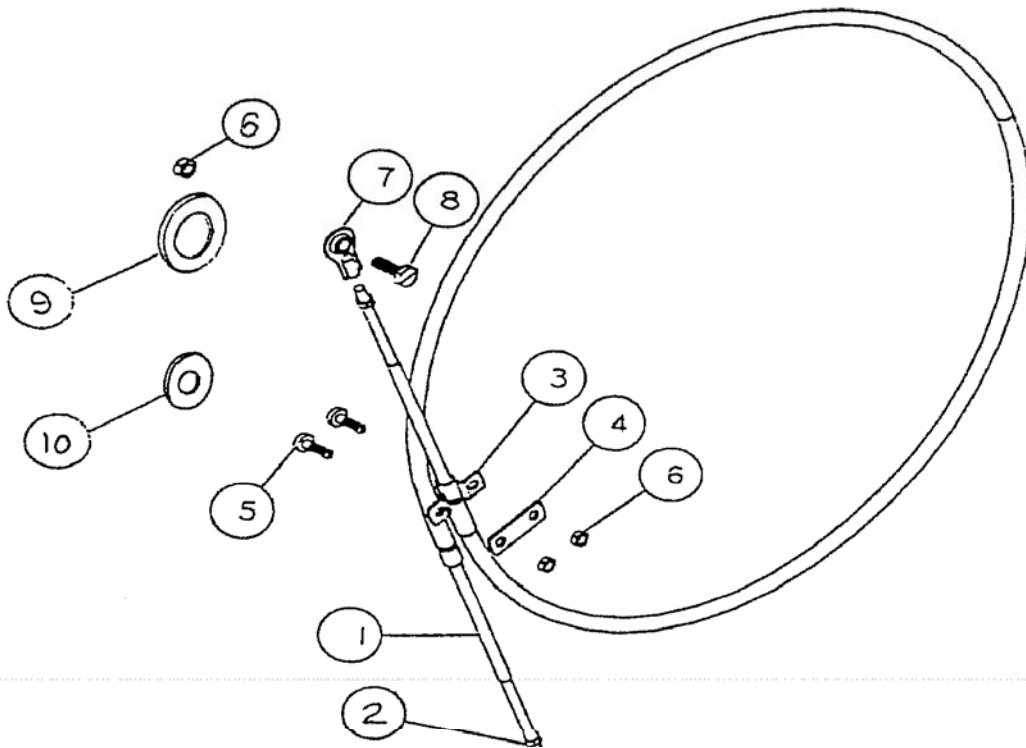
MODEL AJM



Nut as close to the
boss as possible

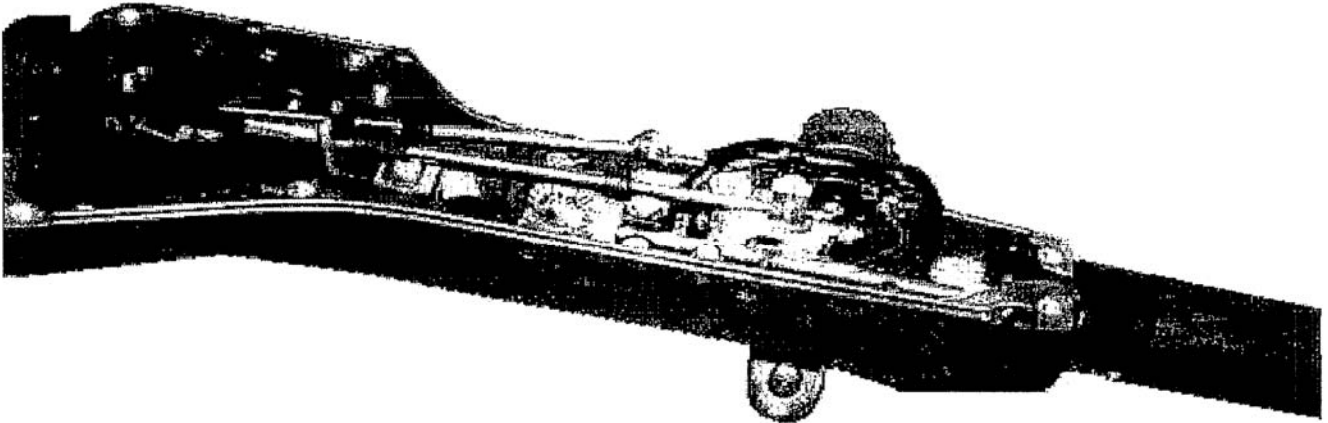


LARGE SERIES
 SHIFT CABLE ASSEMBLY TILLER STEERING
 MODEL Y100-4, AA, 1566
 SHIFT HANDLE ON STARBOARD SIDE OF TILLER STEERING HANDLE- YAMAHA



REF	QTY	PART NO.	DESCRIPTION
1	1	547.2	CABLE 5 FT MORE 33C SUPREME
2	2	621.1	HEX NUT 10-32 JAM
3	1	543	CLAMP CHRYS 154317
4	1	542	SHIM MORSE AO35777
5	2	558	FIL HD SLOTTED 10-32 X 1 1/4
6	3	621	NYLOC 10-32
7	1	553.1	BALL END #10X10-32 CABLE
8	1	1567	BOLT HEX HD 10-32 X 3/4 MOD
9	1	1568	SHIM WASHER LARGE
10	1	1569	SHIM WASHER SMALL

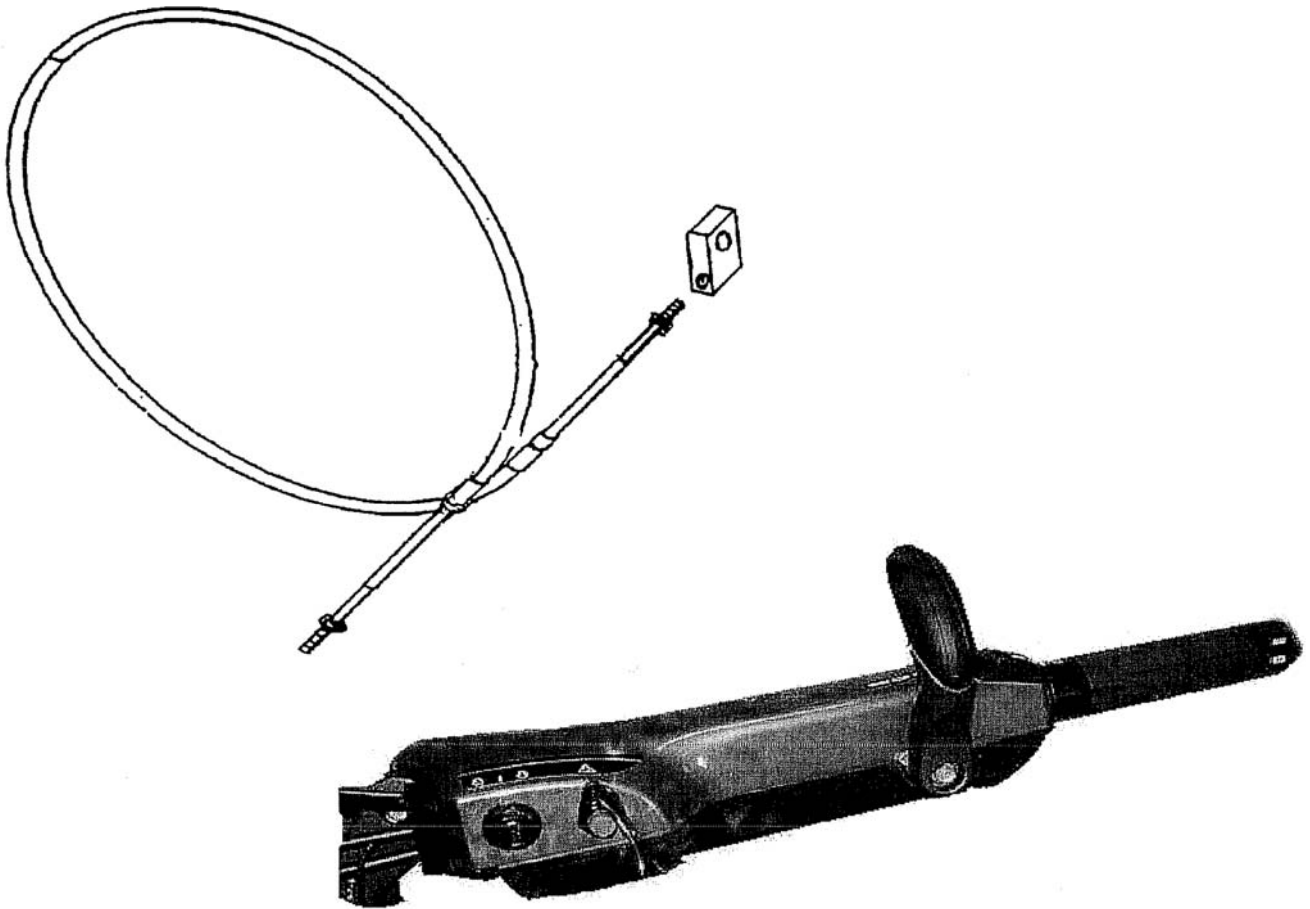
TILLER SHIFT CABLE ASSY
YAMAHA STARTING 2006
1856 SHORT
1857 LONG



1. Remove the lower plastic cover from the steering handle.
2. Remove the shift cable
3. Install the 4 ½ ft or 5 ft standard 33C cable, using the cable end 1851.
4. Attach the lower end of the cable to the jet drive with the ball rod end threaded on the cable as far as it will go and the cable anchor bracket centered and locked. Twist the cable in the U-clamp so that the cable rests against the motor cowling and tighten the clamp screws. The clamp base is slotted to allow alignment for minimum cable bending.
5. Place the shift handle in forward, solidly in the detent. The reverse gate cam roller must be at the end of the slot in the cam. If these conditions are not met, slide the cable anchor bracket on the jet drive and/or adjust the threaded rod end on the cable.
6. Shift to reverse and back to forward. Do not be concerned if the gate does not reach reverse. There is clearance at this position and water pressure will close the gate.
7. In forward, with the roller at the end of the cam slot, the gate cannot be forcibly rotated toward reverse. Pull on the gate by hand to verify this.
8. Lock the nuts on the cable against the rod ends to complete the adjustment and reassemble the lower cover of the steering arm.

CAUTION You must return the throttle to idle before shifting.

TILLER SHIFT CABLE ASSY
 YAMAHA STARING 2006
 1856 SHORT
 1857 LONG



REF	QTY	PART NO.	DESCRIPTION
1	1	547.1	CABLE 4 1/2 FT MOR 33C SUPREME LONG
1	1	547.2	CABLE 5 FT MOR 33C SUPREME LONG
2	1	1851	CABLE END YAMAHA 2006 TILLER