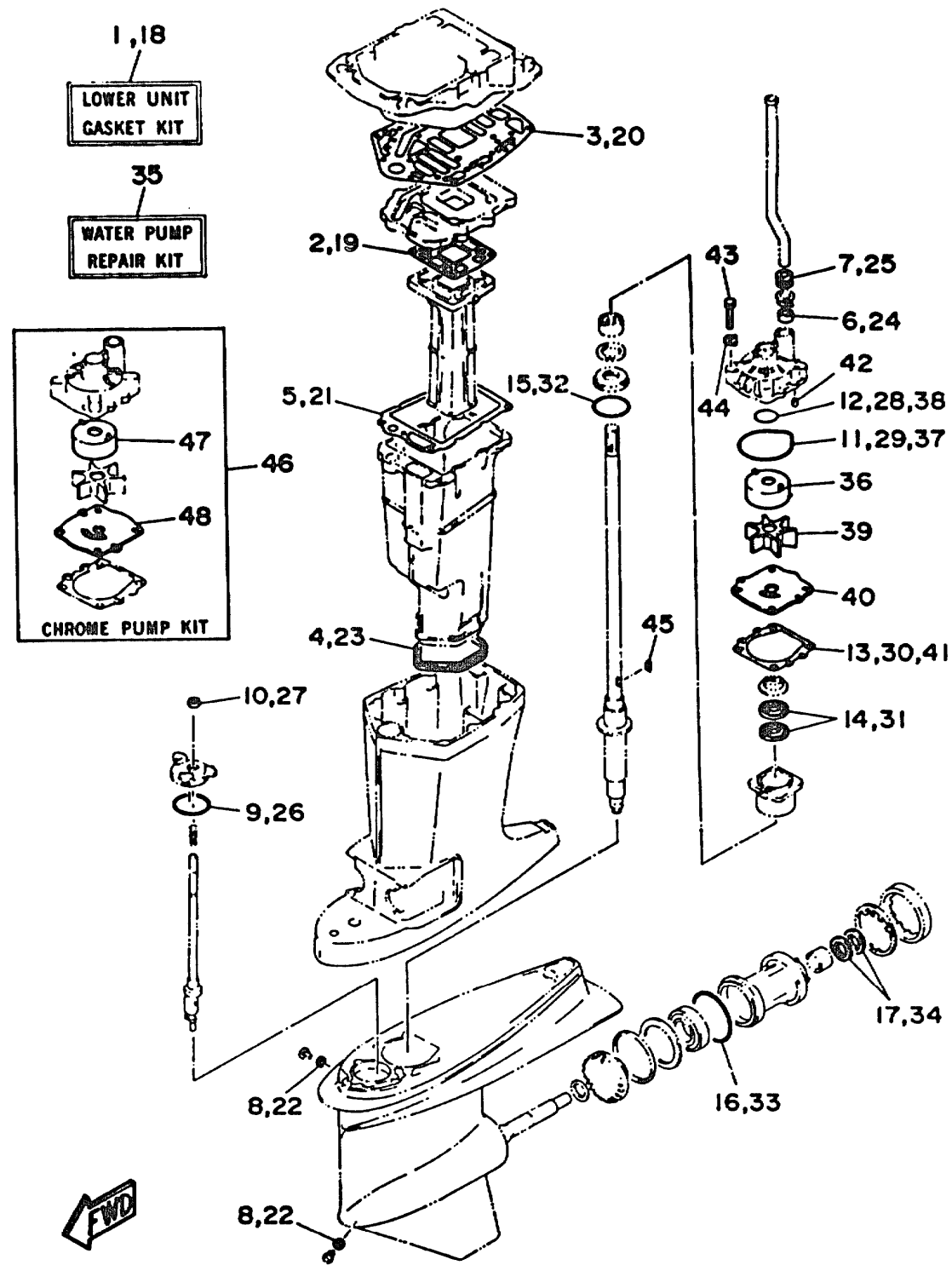


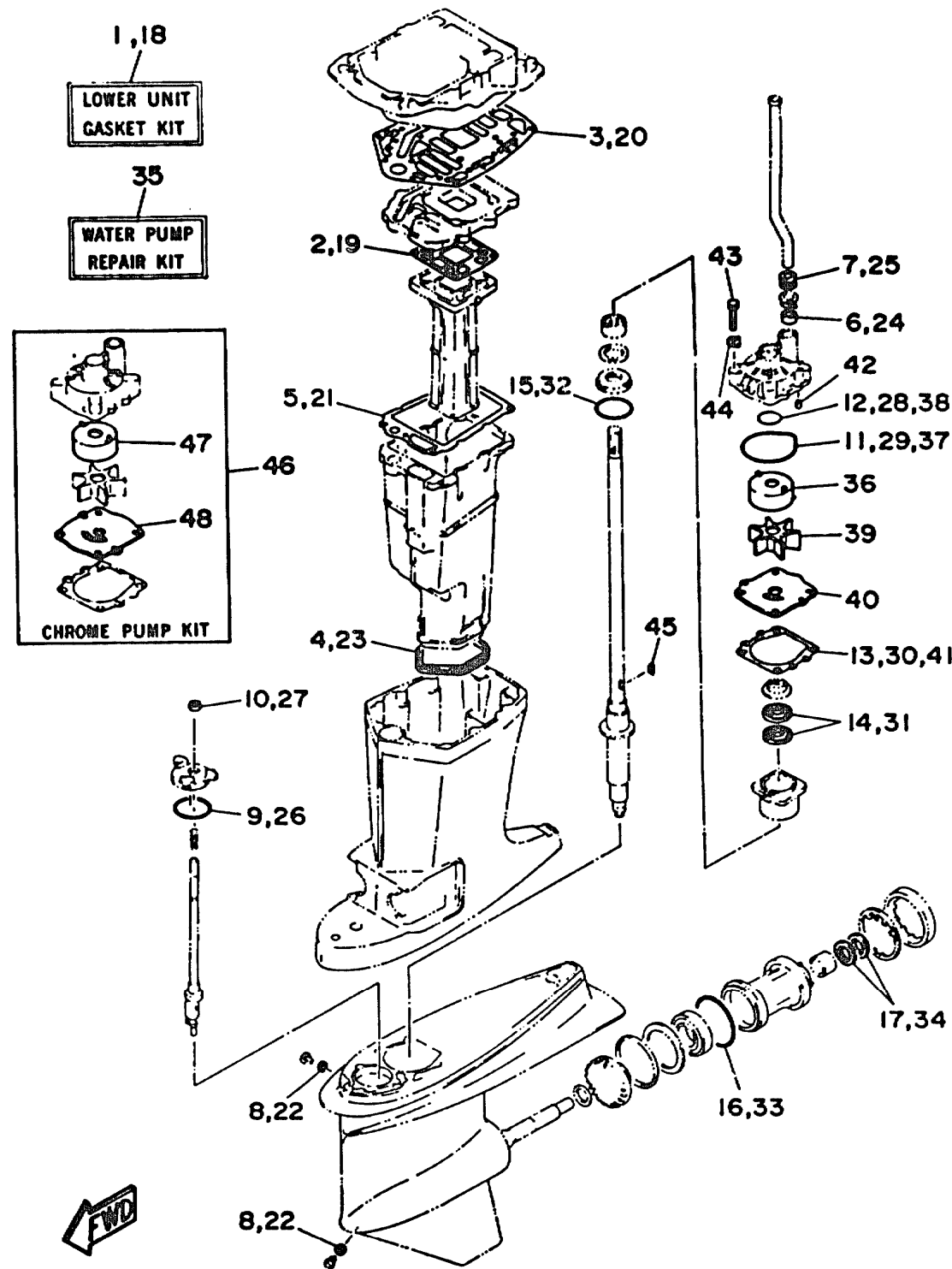
# REPAIR KIT 2



Ref No.	Part Number	Description	Qty	Remarks
1	6E5-W0001-F1-00	LOWER UNIT GASKET KIT	1	UR 115
2	6E5-41134-A0-00	. .GASKET, EXHAUST MANIFOLD	1	
3	6G5-45114-A0-00	. GASKET, UPPER CASING	1	
4	6E5-45123-00-00	. .GASKET, MUFFLER	1	
5	6E5-41135-A0-00	. .GASKET, EXHAUST MANIFOLD	1	
6	6E5-44365-00-00	. DAMPER, WATER SEAL 1	1	
7	6E5-44366-00-00	. DAMPER, WATER SEAL 2	1	
8	90430-08020-00	. .GASKET	2	
9	93210-58677-00	. O-RING	1	
10	93106-09014-00	. .OIL SEAL	1	
11	93210-86M38-00	. .O-RING	1	
12	93210-37M67-00	. O-RING	1	
13	6E5-44315-A0-00	. .GASKET, WATER PUMP	1	
14	93101-28M16-00	. .OIL SEAL	2	
15	93210-54534-00	. O-RING	1	
16	93210-86M39-00	. .O-RING	1	
17	93101-30M17-00	. .OIL SEAL	2	
18	6F3-W0001-C1-00	LOWER UNIT GASKET KIT	1	UR 130/L130
19	6G5-41134-A0-00	. .GASKET, EXHAUST MANIFOLD	1	
20	6G5-45114-A0-00	. GASKET, UPPER CASING	1	

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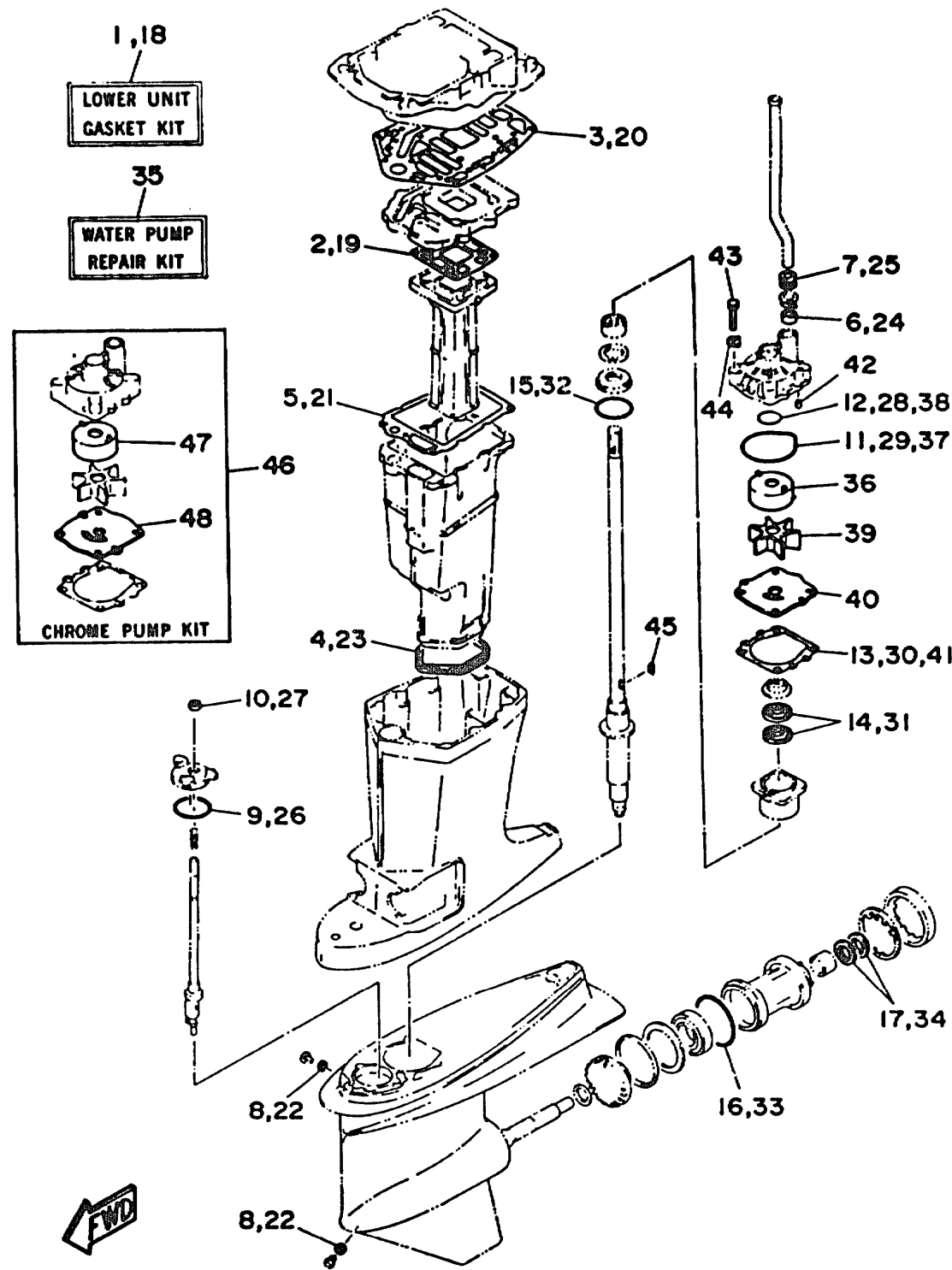
# REPAIR KIT 2



Ref No.	Part Number	Description	Qty	Remarks
21	6E5-41135-A0-00	.GASKET, EXHAUST MANIFOLD	1	
22	90430-08020-00	.GASKET	2	
23	6E5-45123-00-00	.GASKET, MUFFLER	1	
24	6E5-44365-00-00	.DAMPER, WATER SEAL 1	1	
25	6E5-44366-00-00	.DAMPER, WATER SEAL 2	1	
26	93210-58677-00	.O-RING	1	
27	93106-09014-00	.OIL SEAL	1	
28	93210-37M67-00	.O-RING	1	
29	93210-86M38-00	.O-RING	1	
30	6E5-44315-A0-00	.GASKET, WATER PUMP	1	
31	93101-28M16-00	.OIL SEAL	2	
32	93210-54534-00	.O-RING	1	
33	93210-86M39-00	.O-RING	1	
34	93101-30M17-00	.OIL SEAL	2	
35	6N6-W0078-00-00	WATER PUMP REPAIR KIT	1	
36	61A-44322-00-00	.INSERT, CARTRIDGE	1	
37	93210-86M38-00	.O-RING	1	
38	93210-37M67-00	.O-RING	1	
39	6E5-44352-00-00	.IMPELLER	1	
40	6E5-44323-00-00	.OUTER PLATE, CARTRIDGE	1	

CONTINUED ON NEXT FRAME >

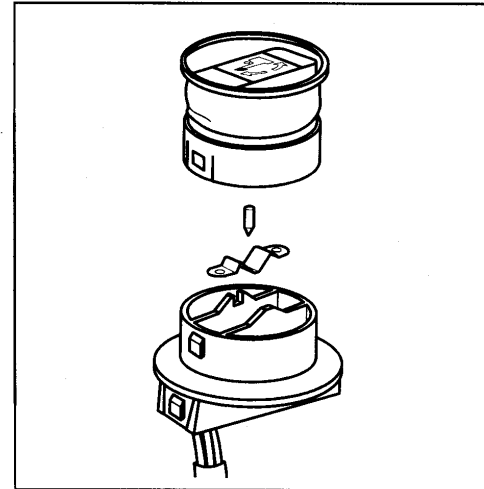
# REPAIR KIT 2



Ref No.	Part Number	Description	Qty	Remarks
41	6E5-44315-A0-00	. .GASKET, WATER PUMP	1	
42	93606-12019-00	. .PIN, DOWEL	1	
43	97095-08045-00	. .BOLT	4	
44	90209-08M02-00	. .WASHER	4	
45	90280-04M05-00	. .KEY, WOODRUFF	1	
46	6E5-W0078-1A-00	CHROME PUMP KIT	1	AP
47	6R3-44322-40-00	. .INSERT, CARTRIDGE	1	
48	6E5-44323-40-00	. .OUTER PLATE, CARTRIDGE	1	

#### Rebuilding the Pan-mounted PT&T Switch (Cont'd.)

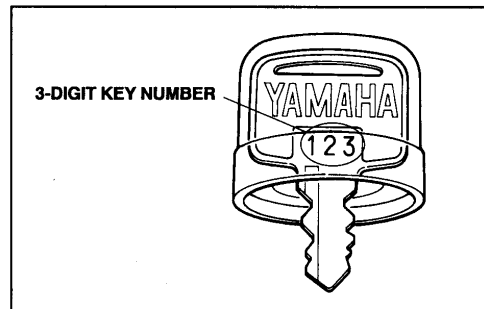
6. Reassemble the switch. Make sure the switch parts are positioned as shown in the drawing. Be sure the motor drawing on the switch rocker is correctly positioned as described earlier.
7. Test switch continuity with an ohmmeter. Reinstall the switch onto the motor pan, then test the operation of the power trim & tilt, verifying that the "UP" and "DOWN" works correctly.



## Outboard/Stern Drive Replacement Ignition Keys

#### SPARE KEYS

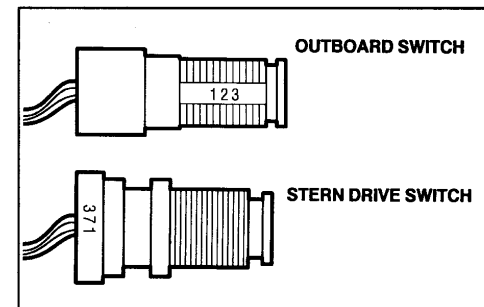
- Spare keys are available for Yamaha Outboards and Stern Drives. If you need to order a spare key for a customer, locate the 3-digit number on the key just below the embossed word YAMAHA. If the existing key has a black rubber cover, lift the cover slightly to expose the number.



- Match the 3-digit number to the same number on the following list and order the corresponding part number. The new key will arrive pre-cut and ready to use.

#### LOST KEYS

- If all keys to a Yamaha outboard or stern drive are lost and the key numbers were not recorded, you can still order the proper pre-cut key. The key number is stamped on the threaded neck of the key switch on outboards. On stern drives, the number is heat stamped on one of the bottom square flanges. On some outboard switches there may be other numbers (3 or 4 digit stamped on the other side). Copy the 3-digit versions and cross reference to the list. Only one set of 3-digit numbers will correspond to the key list. Order the proper key from the list.



**Outboard/Stern Drive Replacement Ignition Keys (Cont'd.)**

**NOTE:** If the customer's rig has dual-engines with a Yamaha dual-key switch panel, both keys will be the same number.

**IMPORTANT TIP**

- After the new key(s) have arrived, suggest to the owner that the number be written in the special space inside the front cover of the owner's manual.

**KEYS:**

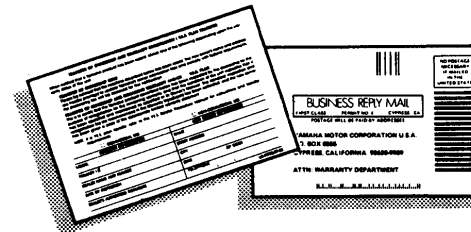
Key Number	Part Number
111*	90890-55957-00
112*	90890-55958-00
113*	90890-55959-00
121*	90890-55960-00
122*	90890-55961-00
123*	90890-55962-00
371	90890-55868-00
372	90890-55869-00
373	90890-55870-00
374	90890-55871-00
375	90890-55872-00
376	90890-55873-00
377	90890-55874-00
378	90890-55875-00
379	90890-55876-00
380	90890-55877-00
381	90890-55878-00
382	90890-55879-00
383	90890-55880-00
384	90890-55881-00
385	90890-55882-00

Key Number	Part Number
386	90890-55883-00
387	90890-55884-00
388	90890-55885-00
389	90890-55886-00
390	90890-55887-00
451*	90890-55820-00
452*	90890-55821-00
453*	90890-55822-00
454*	90890-55823-00
455*	90890-55824-00
456*	90890-55825-00
457*	90890-55826-00
458*	90890-55827-00
459*	90890-55828-00
460*	90890-55829-00
461*	90890-55830-00
462*	90890-55831-00
463*	90890-55832-00
464*	90890-55833-00
465*	90890-55834-00
466*	90890-55835-00
467*	90890-55836-00
468*	90890-55837-00
469*	90890-55838-00
470*	90890-55839-00
Key Cap	676-82577-00-00

\*Keys used for Outboards only

**Warranty Transfer Fee Dropped**

Yamaha's factory warranty has always been a strong selling point. Now we've found a way to make that coverage even more valuable. **Beginning last May 1, 1994, Yamaha eliminated the fees for transfer of warranty coverage to the new owner! You will no longer be charged the \$10 for an in-warranty transfer.**



If you have technical tips you think other dealers could use, let us know. You'll receive credit in the Tech Exchange for ideas we use, and we'll send you an exclusive Yamaha Tech Exchange hat as our thanks. Send your tips to: Yamaha Motor Corporation, U.S.A., Attn: Tech Exchange, P.O. Box 6555, Cypress, CA 90630

### Phase Separation

Although small amounts of water in the fuel will normally not affect or interfere with engine operation, problems can develop if too much water is present in alcohol oxygenated gasoline. If there is enough water in the oxygenated fuel, the alcohol and gasoline will separate into two liquid

phases: a top phase or layer which is almost entirely gasoline, (and oil, in the case of 2-stroke premix fuel) and a bottom phase of water and alcohol. Phase separation makes the engine difficult or often impossible to start. Replace the separated fuel with fresh gasoline.

### Parts Information

Part Number	Description	Remarks	Dealer Cost
LUB-RNGFR-EE-12	Ring Free Fuel Additive	Case/12	
LUB-FUELC-12-00	Fuel Conditioner & Stabilizer	Case/12	

## Overheating When Using Flush Attachment

Yamaha Marine Field Service has received some reports about overheating when using a flush attachment, especially aftermarket flush attachments. **NEVER TROUBLESHOOT AN OVERHEATING PROBLEM ON A YAMAHA OUTBOARD WHILE USING A FLUSH ATTACHMENT!**

When using a flush attachment, the water entry into the engine's cooling system is directly related to the supply of water pressure, size of the hose used, and the design of the attachment. All these areas are of no concern when the motor is being operated in the water. The Yamaha water

intake screens on the lower unit are designed to direct water into the intake as the lower unit travels through the water. A flush attachment commonly directs water at the side of the intake. This produces excessive turbulence around the intake screen reducing the amount of water entering the intake. If you must operate an engine on a flush attachment with inferior water flow, the intake screens can be temporarily removed to increase water flow. **Do not** forget to reinstall the intake screens after removing the flush attachment.

For best results, use the flush attachment available from Yamaha Parts and Accessories, Part No. ABB-MOTOR-FL-SH.



- SUBJECTS:** 1. Rebuilding the Pan-mounted PT & T Switch  
2. Outboard/Stern Drive Replacement Ignition Keys  
3. Warranty Transfer Fees Dropped

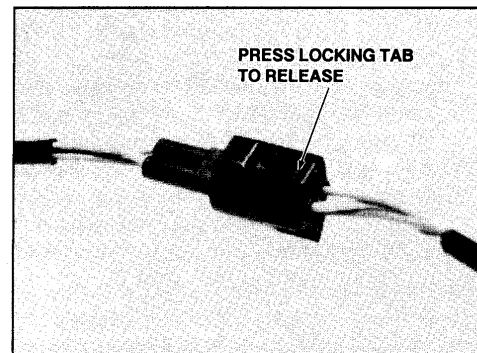
### Rebuilding the Pan-mounted PT&T Switch

The pan-mounted power trim & tilt switch can fail with age. If this happens to one of your customer's units, it can cause a major inconvenience if the new switch is not in stock in your parts department. Usually, the switch can be made operational by a simple 5 minute repair. In most cases, you need only to disassemble the switch, clean the terminals, and reassemble the switch to make the switch functional again.

#### REPAIR PROCEDURES

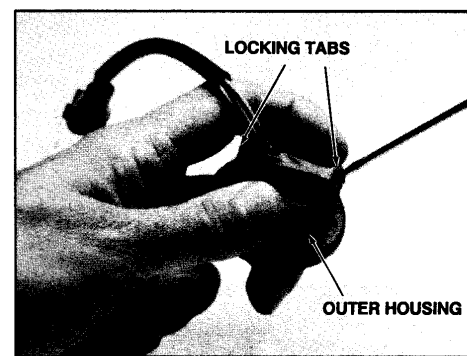
1. Remove the switch from the engine.

**NOTE:** Most of Yamaha's engine electrical connectors are the locking type. The lock can be easily released by pressing on the connector as shown in the illustration.



2. Note the location of the wires on the back of the switch in relation to the propeller end of the motor drawing on the switch. This location determines that the "UP" and "DOWN" function of the PT&T operates properly.

3. Holding the switch as shown, release the two outer housing lock tabs with a flat blade screwdriver.



4. Carefully roll the rubber covering away from the switch body to expose the inner housing. Again, with a flat blade screw driver, release the two inner housing locks. Be careful to note the location of the various internal parts and make sure you do not lose any of the parts.
5. Clean the four contact surfaces with emery cloth or #600 wet & dry sand paper. Clean with contact cleaner before reassembly.



OUTBOARD

11/28/94

O94-012

**SUBJECTS:** 1. Oxygenated Fuels  
2. Overheating When Using Flush Attachment

## Oxygenated Fuels

Beginning in 1992, all gasoline sold during the winter months (usually October through February) in 39 designated metropolitan areas (and all of California) must be oxygenated as mandated by the 1990 Amendments to the Federal Clean Air Act. The purpose of the oxygenated fuel is to reduce the amount of carbon monoxide in the air. Internal combustion engines tend to emit more carbon monoxide at low operating temperatures such as when first started and during longer warm-up times in the colder, winter months.

The information provided in this Tech Exchange clarifies some concerns that customers and dealers may have about the use of oxygenated fuels in Yamaha outboards.

### *What is "Oxygenated Gasoline"?*

Oxygenated gasoline is a blend of gasoline and one or more combustible liquids containing oxygen. Presently, two different classes of oxygenates are being added to gasoline: alcohol (both ethanol and methanol) and ethers (methyl tertiary-butyl-ether; MTBE). The oxygen content of the gasoline must be 2.7%.

### *Can oxygenated fuels be used in Yamaha Outboards?*

Yes, oxygenated fuel can be used in Yamaha outboards. This Tech Exchange addresses concerns regarding its use.

### **Service, Storage, & Usage Information** PRACTICE GOOD FUEL MANAGEMENT . . .

Don't worry about instructing customers about testing or identifying oxygenated fuel. If they are in one of the mandated areas, oxygenated fuel is all they can purchase. Instead, educate your customers about oxygenated gasoline using the following tips:

- Match gasoline purchases to consumption. Don't buy more than will be used in one month.
- Store gasoline in a tightly-closed, approved container in a cool, dry place.
- Store boats with built-in fuel tanks FULL with fresh fuel and treat the fuel with a stabilizer such as Yamaha Fuel Conditioner & Stabilizer

**NOTE:** Yamaha Ring Free Fuel Additive can be used with all oxygenated gasoline and is recommended for use in all Yamaha outboard engines. For more information about Ring Free, refer to Technical Bulletin O91-014.

### **Carburetor Jetting**

Oxygenated fuels have a very slight leaning affect on the fuel mixture. This will not cause any problems with the performance of Yamaha outboards. At times the leaner mixture may cause the idle to be slightly rougher than normal. If this occurs, richen the pilot screws 1/4 turn.

### **Water Absorbing Additives**

If the oxygenated gasoline being used contains an alcohol blend, **do not use** additional alcohol based water absorbing additives. If there is water in the fuel tank prior to refueling, **do not use** oxygenated gasoline until all water has been removed from the tank.

### **⚠WARNING**

**Gasoline and oxygenated gasoline are extremely flammable and can be explosive under certain conditions. Follow the recommendations in the owner's and service manuals for handling and storing gasoline.**

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