

# '94 TUNE-UP MANUAL FOR YZF750SP



The Performance Edge

For maximum safety

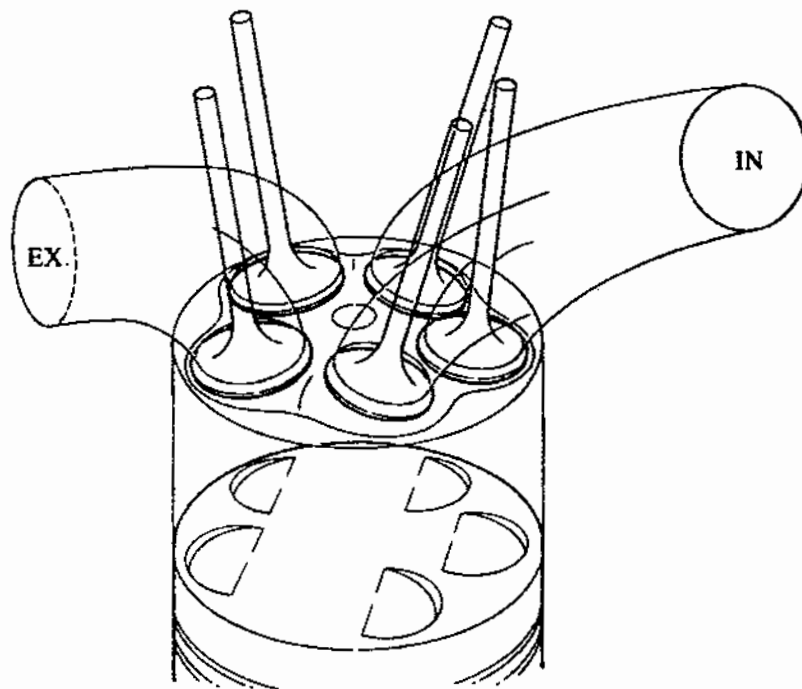
YEC

**Please note:**

- These parts are intended exclusively for racing purposes. You are strictly requested not to use them for a public road ride.  
Please abide by the laws of your own country.

**No warranty allowed:**

- These parts are prepared for the specific purpose of racing. Thus, please understand that they are not covered under warranty.



**Specifications are subject to change without notice for improvement.**

#### Engine specifications (Endurance races, Sprint races kit)

| Item              |                                     |
|-------------------|-------------------------------------|
| Engine type       | 4-cycle, water-cooled, DOHC 5-valve |
| Bore              | 72 mm                               |
| Stroke            | 46 mm                               |
| Displacement      | 749 cc                              |
| Compression ratio | 13.2                                |
| Carburetor type   | FCRD39                              |
| Exhaust system    | 4-2-1 Coupling                      |
| Clutch type       | Wet, multi-disk type                |
| Transmission      | Constant mesh type, 6-speed         |

- The compression ratio of 13.2 applies in cases where the cylinder and cylinder head each are surface ground by 0.1 mm. It is about 12.5 in a case where the kit piston is incorporated only.
- For other service data, refer to the standard model service manual.

☆ This kit is for '93, '94 YZF750SP

#### **Durability of Engine parts**

To maintain the basic performance of the engine and prevent engine trouble, each part should be replaced or maintained every 3,000 km of riding for sprint races as a guide, and every 5,000 km for endurance races.

The recommended engine speed is 13,000 rpm maximum for endurance races with the engine incorporating this kit. Remember that using the engine beyond the above speed applies to the operating conditions for sprint races.

The durability of an engine largely varies according to the assembling method of parts, oil used, riding manner, using manner, etc. Therefore, parts should be replaced or maintained ahead of time as much as possible to assure safety and efficiency.

**YZF750SP kit item**

| Endurance races kit              | Sprint races kit              |
|----------------------------------|-------------------------------|
| Gasket set                       | ←                             |
| Connecting rod set               | ←                             |
| Piston set                       | ←                             |
| Piston ring set                  | ←                             |
| Camshaft set                     | ←                             |
| Induction box set                | ←                             |
| Carburetor setting parts set     | ←                             |
| Exhaust set                      | ←                             |
| Ignitor unit                     | ←                             |
| Wire harness set (for endurance) | Wire harness set (for sprint) |
| Drive sprocket set               | ←                             |
| A.C.G. set                       | Plug set                      |
| Clutch spring                    | ←                             |
| Tune up manual                   | ←                             |

|                                |
|--------------------------------|
| Super cross-ratio transmission |
| Crankshaft kit                 |
| High throttle kit              |
| Mechanical clutch kit          |
| Sub radiator kit               |
| Gasket, cylinder               |
| Gasket, cylinder head          |
| Spark plug                     |
| Intake valve kit               |
| Exhaust valve kit              |
| Valve retainer kit             |
| Cam chain                      |
| Oil pump assembly              |

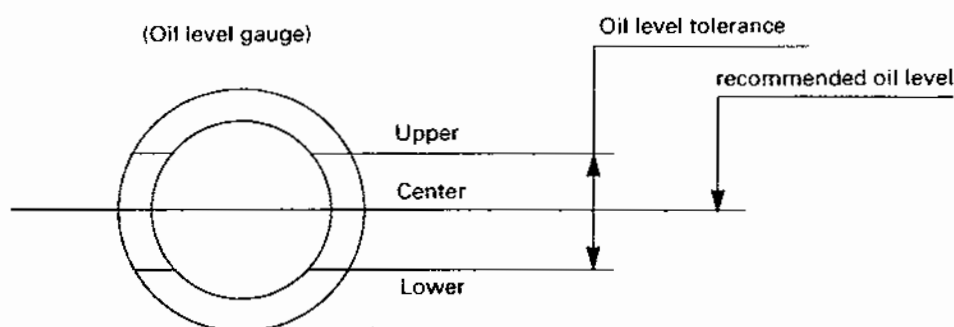
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# 1. Tuning methods for basic engines (Endurance races, Sprint races kit)

## 1) Engine oil level setting

For driving on circuit racecourses, adjust the oil for a level between the lower and upper lines of the oil level gauge (the center line is recommended as the target). The oil level should be adjusted within this range five minutes after the engine is warmed up (a water temperature of at least 70°C) and then stopped. Note that if the oil level drops below the lower line, engine trouble may result. Also note that if the oil level exceeds the upper line, the breather may be adversely affected.



### **CAUTION:**

**Be sure to use the strainer cover, the strainer housing and the oil strainer contained in the kit set.**

## 2) Adjustment of intake and exhaust valve clearances

The on-the-market YZF750SP has the valve clearance set to meet the intended performance and the related noise regulations.

When you ride a motorcycle on the circuit racecourse where high engine rpm is often needed, adjust the valve clearances as follows:

| In cold condition   | For public road | For circuit racecourse |
|---------------------|-----------------|------------------------|
| Intake valve (IN.)  | 0.11 ~ 0.20 mm  | 0.20 ~ 0.25 mm         |
| Exhaust valve (EX.) | 0.21 ~ 0.30 mm  | 0.30 ~ 0.35 mm         |

### 3) Adjustment of engine idling

Engine brake is very effective for a 4-stroke engine. Set the idling rpm a little higher than usual to get better stability in a circuit recourse run.

1,200 rpm (Standard)  $\Rightarrow$  1,500 ~ 1,700 rpm (Racing)

\* In relation to ignition timing advance characteristics, idling rpm deviates widely. Therefore, after a full warm up, make sure of the idling rpm again. Be careful that too high idling rpm will cause riding difficulty.

### 4) Selection of secondary reduction sprocket

Select a secondary reduction ratio according to the conditions of the driving course and weather.

Use a drive chain of size 520. (The standard size is 532.)

Before using a sprocket of size 520, be sure to replace with the 4FN-17463-71 nut.

(Endurance races, Sprint races kit)

| No. | Part No.     | Part name       | Q'ty | Remarks                                |
|-----|--------------|-----------------|------|--|
|     | 4FN-17460-75 | Sprocket, drive | 1    | 15T                                    |
|     | 4FN-17460-76 | Sprocket, drive | 1    | 15T                                    |
|     | 4FN-17460-77 | Sprocket, drive | 1    | 17T                                    |
| ☆   | 90215-21022  | Washer, lock    | 1    | $\phi 44 \times \phi 25$ with 5 spares |
|     | 4FN-17463-71 | Nut             | 1    | M18                                    |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

### 5) Change of exhaust

The '93 YZF750SP employs the EXUP exhaust system which offers the best specifications considering the use of the machine on general roads. However, the system contained in the kit, which is designed to implement even higher speeds and more lightweight, should be used for racing purposes. (It is necessary for the local made muffler to change the carb. setting.)

## 6) Selection of spark plug (Endurance races, Sprint races kit)

The following surface gap type spark plugs are designated for use in racing considering performance and durability.

We recommend that R0045G-10 and G54V usually be used. However, a spark plug should be selected depending on the individual engine and/or carburetor settings. In racing, do not use any spark plug other than these items.

| NGK       | CHAMPION                |
|-----------|-------------------------|
| R0045G-9  |                         |
| R0045G-10 | G54V (equivalent to 10) |
| R0045G-11 | G52V (equivalent to 11) |
|           |                         |

## 7) Engine break-in

Break-in the engine in the following steps: (Metal replacement and whole parts replacement)

|                       |        |
|-----------------------|--------|
| • Idling              | 30 min |
| • 6,000 rpm and less  | 20 min |
| • 8,000 rpm and less  | 20 min |
| • 9,000 rpm and less  | 20 min |
| • 10,000 rpm and less | 20 min |

### **CAUTION:**

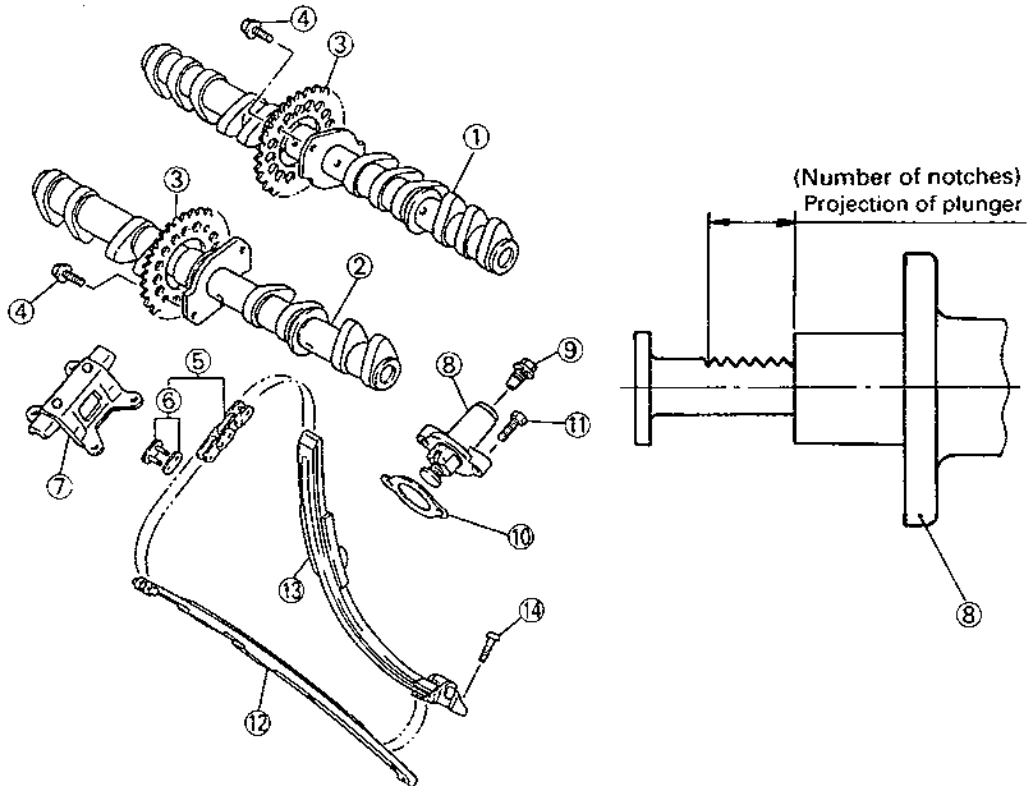
After break-in operation, check the tightness of engine bolts and the condition of the wire locking the drain bolt. Also, check for oil leakage and abnormal noise.



### 8) Maintenance around the cam chain

If the damper chain 2 ⑬ is abnormally worn, trouble such as breakage of the cam chain may result.

Make a check in the following manner.



- After removing the bolt ⑨ (90109-112F1), remove the cam chain tensioner assembly ⑧ (4FM-12210-00) and find the projection amount of the plunger from the number of notches (see the figure above).
  - a. There are no problems if the number of notches is 6 to 7.
  - b. If the number of notches is 8 to 9, remove the cylinder head cover and check the damper chain 2 ⑬ for wear. If partial abnormal wear or flaking is found, replace the damper chain 2 ⑬ as an assembly.
- Considering durability, it is recommended that a kit cam chain be used for the cam chain. (P/N 4FN-12190-70)

### 9) Others

- Recommendable fuel

Use race gasoline or high octane gasoline.

- Recommendable engine oil

Single grade #30~#40 or 20W-40 or equivalent  
(10W-40 or 10W-50 NG)

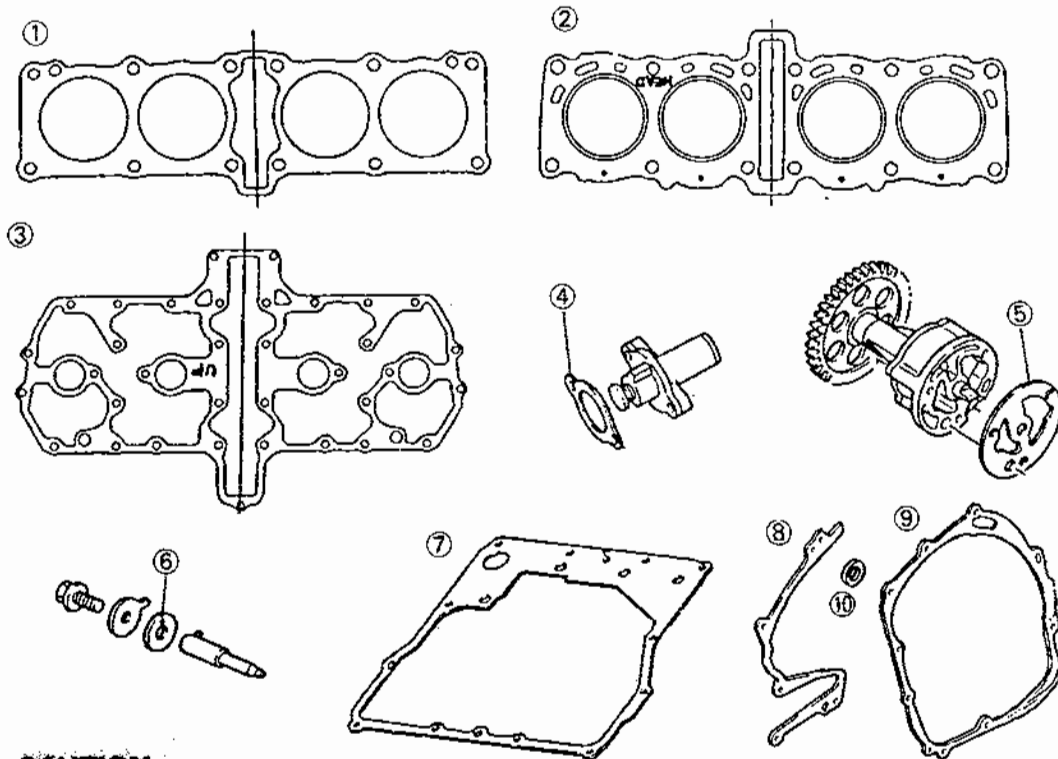
When overhauling the engine, replace both engine oil and oil filter.

## 2. Tuning methods by installation of kit parts (Endurance races, Sprint races kit)

### CAUTION:

It is advisable to use kit parts, which are performance parts, in the form of sets. The use of these kit parts in combination with other maker's parts will have an adverse effect on kit parts.

#### 1) Installations of cylinder gasket and cylinder head gasket



### CAUTION:

- Use a new gasket for each installation.

\*Install these gaskets in accordance with the procedures for the standard ones.

(See the service manual)

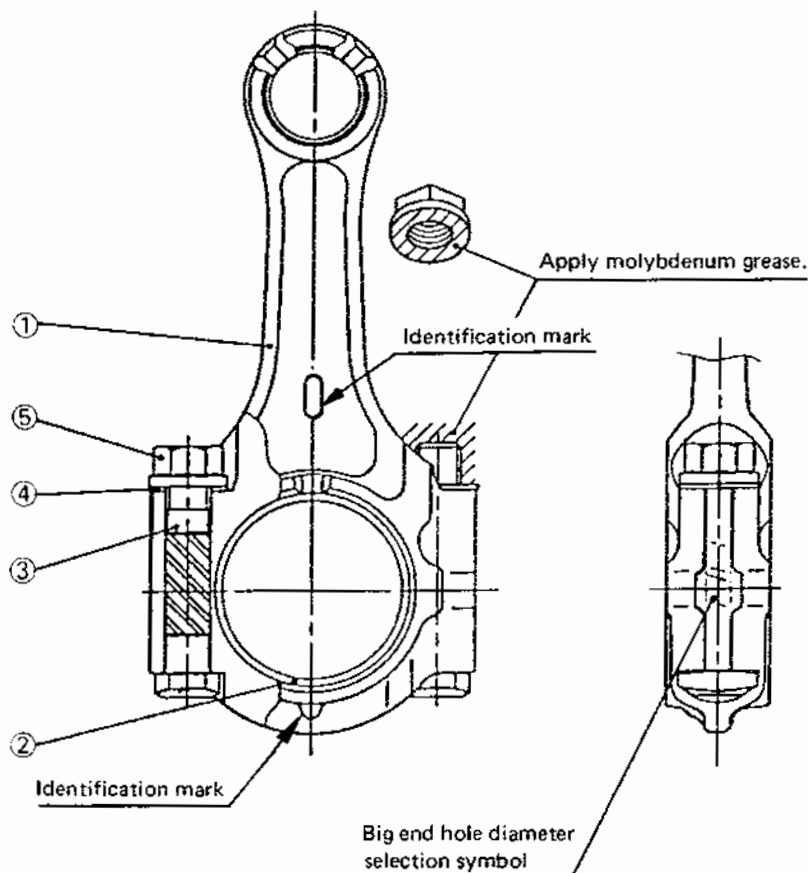
| No.  | Part No.     | Part name            | Q'ty | Remarks       |
|------|--------------|----------------------|------|---------------|
| ☆ 1  | 3FV-11351-00 | Gasket, cyl. (Metal) | 1    | With 2 spares |
| ☆ 2  | 3FV-11181-00 | Gasket, cyl. head 1  | 1    | ..            |
| ☆ 3  | 3FV-11182-00 | Gasket, cyl. head 2  | 1    | ..            |
| ☆ 4  | 4BE-12213-00 | Gasket, tensioner    | 1    | ..            |
| ☆ 5  | 2GH-13329-00 | Gasket, pump cover   | 1    | ..            |
| ☆ 6  | 4FM-13475-00 | Gasket               | 1    | ..            |
| ☆ 7  | 4FM-13414-00 | Gasket, strainer     | 1    | ..            |
| ☆ 8  | 4BH-15451-00 | Gasket, crank case 1 | 1    | ..            |
| ☆ 9  | 4BH-15461-00 | Gasket, crank case 2 | 1    | ..            |
| ☆ 10 | 4CR-15467-00 | Gasket, 2            | 1    | ..            |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

## 2) Installation of connecting rod (Endurance races, Sprint races kit)

A lightweight and high-strength titanium connecting rod is contained in the kit set to meet the high output and high revolution for the YZF750SP. This product is a connecting rod for races only, whose durability has been improved by using the forged material for the OW01 and generally reconsidering the tolerances and accuracy of finishing. Since installation of the connecting rod is an important step to secure the durability and reliability of the engine, the connecting rod should be carefully serviced by following the proper procedure.

How to tighten the connecting rod bolt, which is particularly important, is described in this manual. For other items, refer to the Service Manual.



| No. | Part No.        | Part name            | Q'ty | Remarks         |
|-----|-----------------|----------------------|------|-----------------|
| 1   | 4FN-11650-70    | Connecting rod ass'y | 4    | Silver in color |
| ☆ 2 | 3GM-11656-00~30 | Brg, conrod          | 8    | Option          |
| ☆ 3 | 3FV-11654-00    | Bolt, conrod         | 8    | With 8 spares   |
| ☆ 4 | 90201-090J9     | Washer, plain        | 8    | With 8 spares   |
| ☆ 5 | 90179-09379     | Nut                  | 8    | With 8 spares   |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

### CAUTION:

- Do not use the 3FV-11650-00 and 3FV-11650-01 connecting rods with the YZF.
- The 3FV-02 connecting rod is usable for races with the YZF. However, it is recommended that you use the 4FN-11650-70, which is a race-only product and provides better durability.

### **Tightening the connecting rod bolt**

The connecting rod bolt should be tightened by controlling bolt extension, which is even more reliable than the conventional tightening torque control.

Specified elongation:  $170\mu\text{m}\pm 25\mu\text{m}$

#### **Procedure**

1. Temporarily install the crankshaft, big-end bearing, connecting rod, and bolts in the normal order. (These parts should be installed with the identification mark on the left side, and the bearing should be fully oiled.)
2. The bolts should be fitted with washers. (Always use a new bolt.)
3. Apply molybdenum grease to bolt threads, washers, and contact surfaces of the nuts.
4. Lightly tighten the nut, and using a rag, wipe off the grease on both ends of the bolt.
5. Using a micrometer, measure the bolt length before tightening the bolt.  
(A standard type micrometer is acceptable, but a pin-point type is recommendable, which allows easy operation. For the correct measurement, it is advisable to make several measurements and calculate the average of measurements.)
6. Using a torque wrench, temporarily tighten the bolt on both sides to 0.7 ~ 1 kgm.
7. The bolt should be tightened so that the elongation of the bolt is  $170\mu\text{m}\pm 25\mu\text{m}$ .  
(First, tighten the bolt to 4.2 kgm, and measure its length. If the elongation is more than specification, retighten.)
8. If the bolt shows elongation more than specification.
  - When the elongation is more than  $220\mu\text{m}$  or more, replace the bolt and start reassembly.
  - If the elongation is  $195\mu\text{m} \sim 220\mu\text{m}$  the bolt may be used.

#### **CAUTION:**

**If the bolt has been elongated by more than  $195\mu\text{m}$  when measured with the plastigauge, replace the bolt and reassemble.**

### 3) Installation of high-compression piston (Endurance races, Sprint races kit)

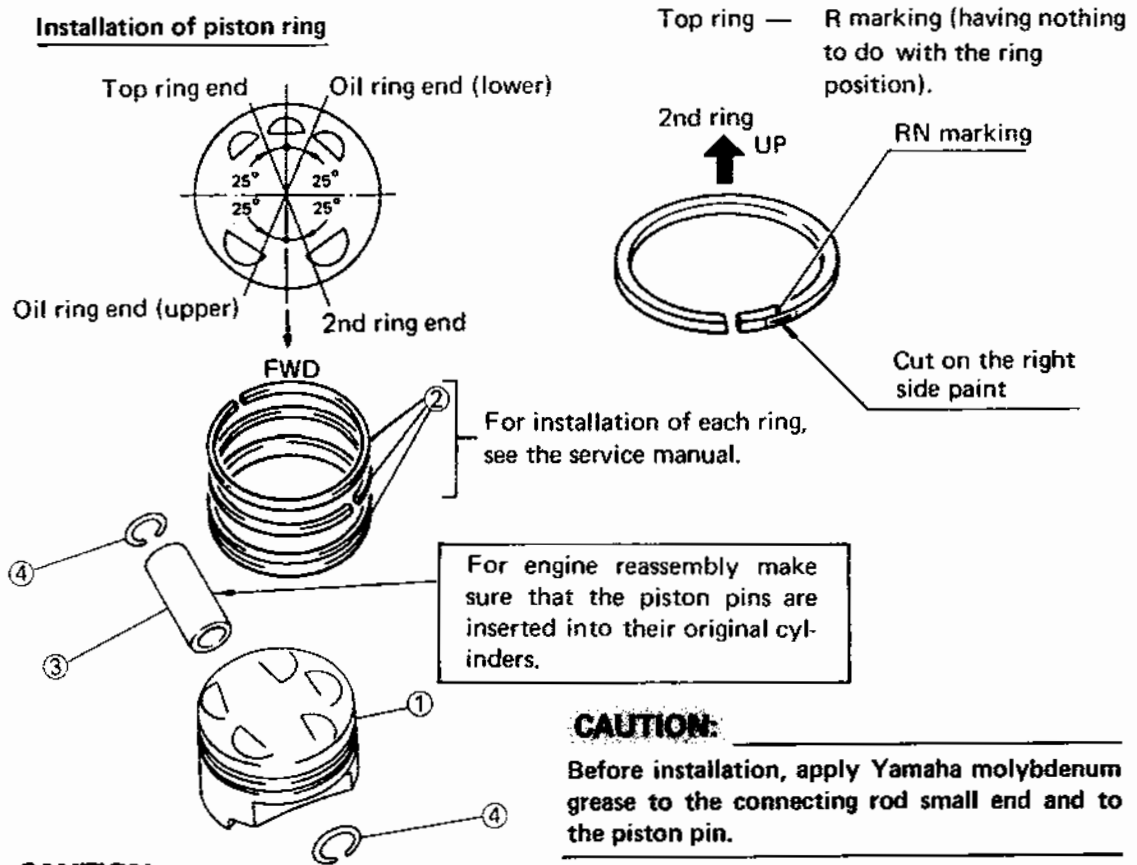
The '94 kit piston is a forged aluminum product which has been designed to improve its combustion efficiency and durability.

Kit piston finishing dimensions:  $\phi 72_{-0.065}^{-0.080}$   
 STD cylinder bore diameter:  $\phi 72_{-0.020}^{+0.020}$   
 Piston clearance: 45 ~ 100  $\mu\text{m}$

|                   |   |
|-------------------|---|
| Compression ratio | 13.2 ± 0.2: 1 (SPRINT KIT, ENDURANCE KIT) |
|-------------------|---|

Make measurements using engine oil by the volume-method or by the weight-method. The results thus obtained may somewhat vary from measurement to measurement, so they should be treated as a guideline.

#### Installation of piston ring



#### CAUTION:

- The compression ratio of 13.2 applies in cases where the cylinder and cylinder head each are surface ground by 0.1 mm.
- Be sure to use this piston and the 4FN-11650-70 connecting rod as a set.

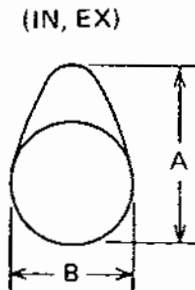
| No. | Part No.     | Part name          | Q'ty | Remarks       |
|-----|--------------|--------------------|------|---------------|
| 1   | 4FN-11631-80 | Piston             | 4    | With 4 spares |
| ☆ 2 | 4FM-11603-00 | Piston, ring ass'y | 4    | With 4 spares |
| ☆ 3 | 2GH-11633-02 | Pin, piston        | 4    |               |
| ☆ 4 | 93450-19052  | Circlip            | 8    | With 8 spares |

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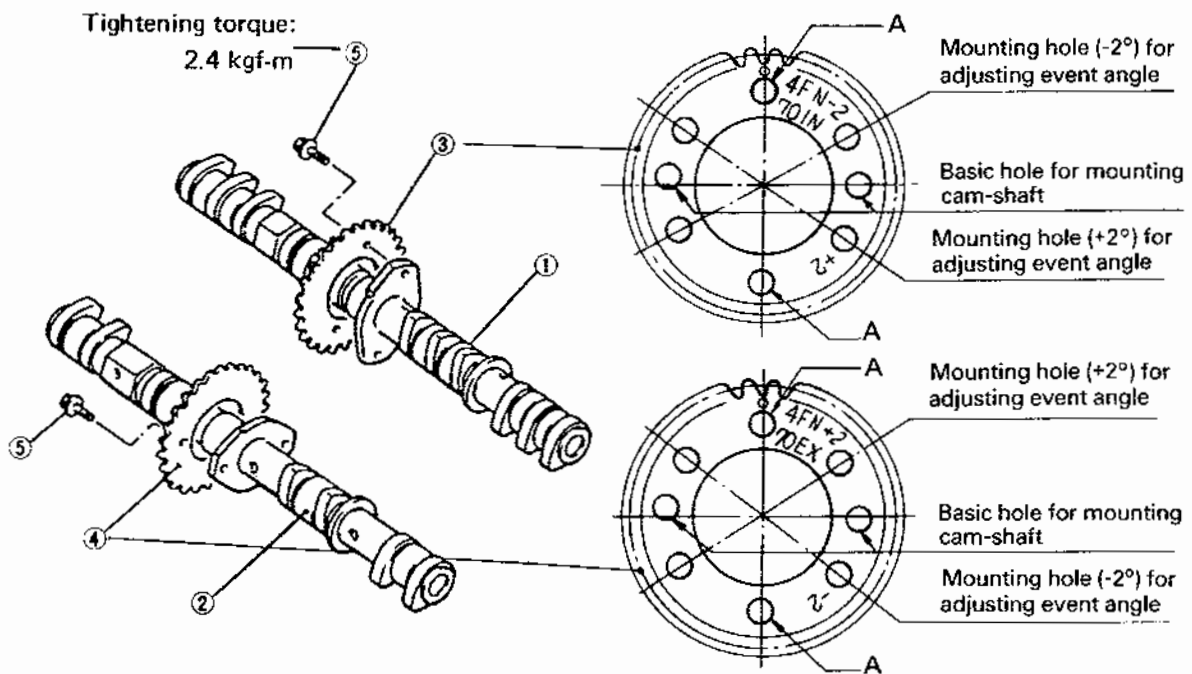
#### 4) Assembling the cam-shaft (Endurance races, Sprint races kit)

The camshaft lift, working angle, and cam profile have been changed to improve the basic engine performance. The standard intake camshaft should be used which well matches the exhaust camshaft in terms of performance.

Cam size



|               | STD. spec. |          | '94 kit spec. |          |
|---------------|------------|----------|---------------|----------|
|               | IN         | EX       | IN            | EX       |
| A             | 32.65 mm   | 33.05 mm | 32.65 mm      | 33.15 mm |
| B             | 25.00 mm   | 25.00 mm | 25.00 mm      | 25.00 mm |
| Working angle | 284°       | 284°     | 284°          | 292°     |
| Actual lift   | 7.40 mm    | 7.80 mm  | 7.40 mm       | 7.90 mm  |
| Event angle   | 105°       | 105°     | 105°          | 105°     |
| Sprocket      | 3GM-00     | 3GM-00   | 4FN-70        | 4FN-70   |



#### CAUTION:

Install the cam sprocket kit so that the surface (on which the model number is engraved) faces outside. At this time, do not use the A mounting hole, or valve timing will be incorrect, thus causing trouble. Select a mounting hole so that the event angle will be 105° (both IN and EX). The basic hole is designed to provide an event angle of 105°. However, the angle may not be 105° due to errors of the respective parts. In such a case, select one of the mounting holes (+2) and (-2) so that the angle will be nearly 105°. If the event angle is too small, the valve and the piston may interfere with each other.

Therefore, the event angle must be set at 105° (or more).

The assembly procedure is the same as that of the standard type cam-shaft. (Refer to the Service Manual.)

| No. | Part No.     | Part name      | Q'ty | Remarks |
|-----|--------------|----------------|------|---------|
| ☆ 1 | 4HD-12171-00 | Shaft cam 1    | (1)  | STD.    |
| 2   | 4FN-12181-71 | Shaft cam 2    | 1    |         |
| 3   | 4FN-12176-70 | Sprocket cam 1 | 1    |         |
| 4   | 4FN-12177-70 | Sprocket cam 2 | 1    |         |
| ☆ 5 | 90105-07342  | Bolt           | 4    |         |

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( ) Use the original equipment.

### CAUTION:

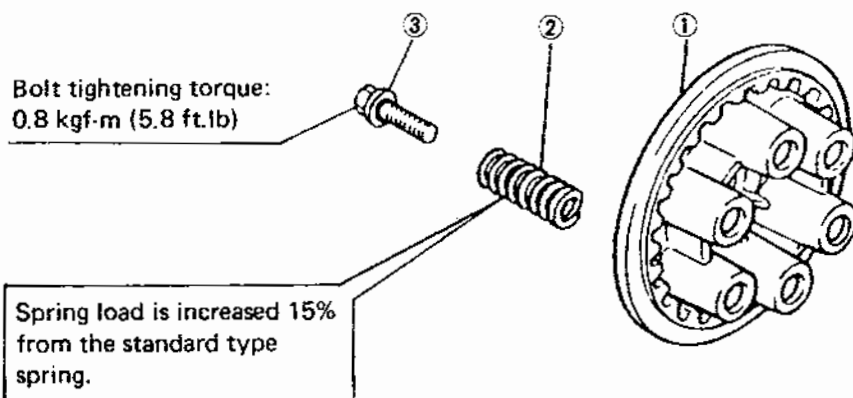
The camshaft and cam sprocket contained in the '94 kit are designed for ideal specifications and combination in terms of overall performance. However, if you want to use by preference the IN cam contained in the '93 kit, the event angle must be set at 105° or more.

Examples of combination of parts by preference

|             | IN ('93 kit) | EX ('94 kit) |
|-------------|--------------|--------------|
| Camshaft    | 4FN-12171-70 | 4FN-12181-71 |
| Camsprocket | 4FN-12176-70 | 4FN-12177-70 |
| Work angle  | 292°         | 292°         |
| Actual lift | 7.50 mm      | 7.90 mm      |
| Event angle | 105°         | 105°         |

### 5) Dimensions of the assembled clutch spring (Endurances races, Sprint races kits)

Since the engine using a race kit is higher in power, and therefore, the clutch tends to slip and acceleration is unsatisfactory. Therefore, it is generally required to replace the clutch spring with a reinforced spring.



\* This special spring can be installed in the same manner as the standard type.  
(Refer to the Service Manual)

| No. | Part No.     | Part name          | Q'ty | Remarks                 |
|-----|--------------|--------------------|------|-------------------------|
| ☆ 1 | 58L-16351-00 | Plate, pressure    | (1)  | Identified by red paint |
| ☆ 2 | 3FV-230E4-70 | Spring             | 6    |                         |
| ☆ 3 | 90159-06123  | Screw, with washer | (6)  |                         |

( ) Use the original equipment.

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

## 6) Installation of high-speed ignition unit (Endurance races, Sprint races kit)

Considering the increased engine power and speed, the ignition timing is changed, and an ignitor unit has been newly employed.

\* Replace the ignitor unit in the same manner as for the standard one.  
(See the Service Manual)

### ● Kit engine speed

| Kit specification | Recommendable engine speed | Ignition out setting engine speed |
|-------------------|----------------------------|-----------------------------------|
| Sprint races      | 13,500 rpm                 | 13,800 rpm                        |
| Endurance races   | 13,000 rpm                 | 13,800 rpm                        |
| Standard model    |                            | 13,300 rpm                        |

\*The sprint and endurance models use the same type ignitor.

### CAUTION:

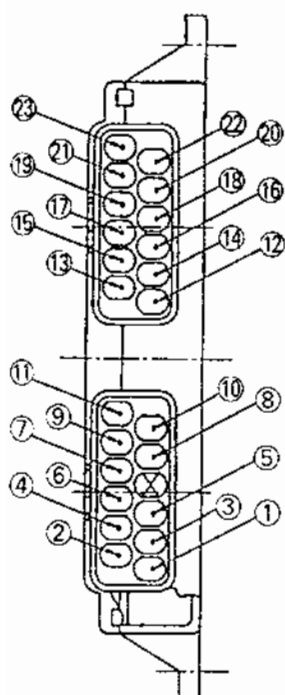
- The ignition timing of the '94 ignitor (4FN-71) has been changed from the '93 kit (4FN-70).
- Be careful to distinguish between the high-speed and the standard ignition.
- Ensure a clearance of 50 mm min. between the pick-up coil wire and the high-tension code.
- This component is for racing only. Avoid using the component on the standard vehicle, or trouble may result.
- Although this product is waterproof, it is recommended that the entire igniter (including the coupler) be covered with a plastic bag or the like to prevent trouble in case of rain, etc.
- A fully charged battery as new as possible should be used to prevent trouble with the electrical system. If the battery voltage drops below 12V, the battery should be replaced with a fully charged one.



### How to inspect the igniter

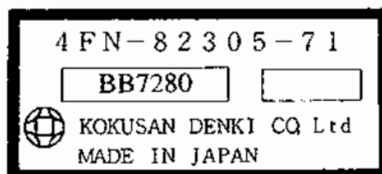
The igniter can be singly inspected by checking for continuity between the respective pins. Check for continuity between the pins from ① to ㉓ in order according to the table below. A circle in the table indicates that the corresponding line conducts, and an X indicates that the corresponding line does not conduct.

Remember that this method is tentative and cannot always find abnormalities.



| Tester | 11-pin coupler |   |   |   |   |   |   |   |   |   |   | 12-pin coupler |   |   |   |   |   |   |   |   |   |   |  |
|--------|----------------|---|---|---|---|---|---|---|---|---|---|----------------|---|---|---|---|---|---|---|---|---|---|--|
|        | ①              | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ | ⑫              | ⑬ | ⑭ | ⑮ | ⑯ | ⑰ | ⑱ | ⑲ | ㉑ | ㉒ | ㉓ |  |
| ①      |                | X | X | X | X | X | X | X | X | X | X | X              | X | X | X | X | X | X | X | X | X | X |  |
| ②      | X              |   | X | X | X | X | X | X | X | X | X | X              | X | X | X | X | X | X | X | X | X | X |  |
| ③      | ○              | ○ |   | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ④      | ○              | ○ | ○ |   | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑤      | X              | X | X | X |   | X | X | X | X | X | X | X              | X | X | X | X | X | X | X | X | X | X |  |
| ⑥      | X              | X | X | X | X |   | X | X | X | X | X | X              | X | X | X | X | X | X | X | X | X | X |  |
| ⑦      | ○              | ○ | ○ | ○ | X | ○ |   | ○ | ○ | ○ | ○ | ○              | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑧      | ○              | ○ | ○ | ○ | X | ○ | ○ |   | ○ | ○ | ○ | ○              | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑨      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ |   | ○ | ○ | ○              | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑩      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ |   | ○ | ○              | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑪      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ |   | ○              | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑫      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ |                | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑬      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              |   | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑭      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ |   | ○ | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑮      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ | ○ |   | ○ | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑯      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ | ○ | ○ |   | ○ | ○ | ○ | ○ | ○ | X |  |
| ⑰      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ | ○ | ○ | ○ |   | ○ | ○ | ○ | ○ | X |  |
| ⑱      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ | ○ | ○ | ○ | ○ |   | ○ | ○ | ○ | X |  |
| ⑲      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ | ○ | ○ | ○ | ○ | ○ |   | ○ | ○ | X |  |
| ㉑      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ | ○ | ○ | ○ | ○ | ○ | ○ |   | ○ | X |  |
| ㉒      | ○              | ○ | ○ | ○ | X | ○ | ○ | ○ | ○ | ○ | ○ | ○              | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |   | X |  |
| ㉓      | X              | X | X | X | X | X | X | X | X | X | X | X              | X | X | X | X | X | X | X | X | X | X |  |

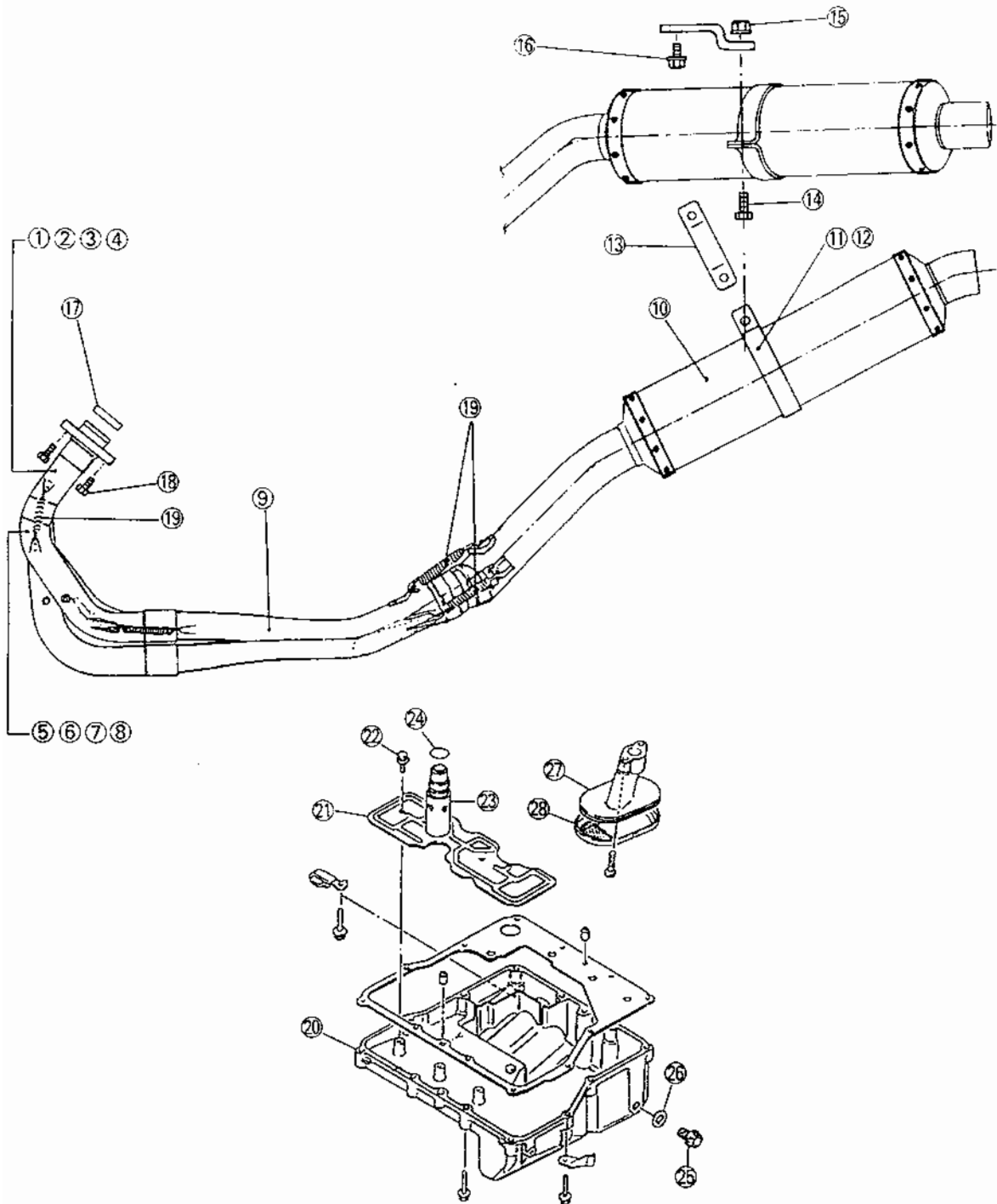
Stamped plate for racing ignitor



| No. | Part No.     | Part name    | Q'ty | Remarks                           |
|-----|--------------|--------------|------|-----------------------------------|
|     | 4FN-82305-71 | Ignitor unit | 1    | Endurance races, Sprint races kit |

## 7) Assembling the exhaust set (Endurance races, Sprint races kit)

Before mounting the exhaust, first remove the stud bolt for tightening the exhaust pipe form the cylinder head of the basic vehicle. For assembling the kit, use the bolt contained in the kit. When assembling the exhaust kit, be sure to use the oil pan contained in the kit as a set. If the oil pan of the basic vehicle is used as it is, it will interfere with the exhaust kit.



| No.  | Part No.     | Part name          | Q'ty | Remarks       |
|------|--------------|--------------------|------|---------------|
| 1    | 4FN-14615-70 | Joint, EXH. 1      | 1    |               |
| 2    | 4FN-14625-70 | Joint, EXH. 2      | 1    |               |
| 3    | 4FN-14635-70 | Joint, EXH. 3      | 1    |               |
| 4    | 4FN-14645-70 | Joint, EXH. 4      | 1    |               |
| 5    | 4FN-14611-71 | Pipe, EXH. 1       | 1    |               |
| 6    | 4FN-14621-71 | Pipe, EXH. 2       | 1    |               |
| 7    | 4FN-14631-71 | Pipe, EXH. 3       | 1    |               |
| 8    | 4FN-14641-71 | Pipe, EXH. 4       | 1    |               |
| 9    | 4FN-14785-71 | Pipe, diffuser     | 1    |               |
| 10   | 4FN-14710-71 | Muffler ass'y      | 1    |               |
| 11   | 4FN-1471A-70 | Bracket, muffler   | 1    |               |
| 12   | 3FV-91001-70 | Fiber, tape        | 1    |               |
| 13   | 4FN-21445-70 | Stay, muffler      | 1    |               |
| ☆ 14 | 90109-08718  | Bolt               | 1    |               |
| ☆ 15 | 95611-08200  | Nut                | 1    |               |
| ☆ 16 | 91011-08030  | Bolt               | (1)  |               |
| ☆ 17 | 4FM-14613-00 | Gasket, exhaust    | 4    |               |
| ☆ 18 | 91316-08012  | Bolt               | 8    |               |
| ☆ 19 | 90507-20030  | Spring             | 10   | With 4 spares |
| 20   | 4FN-13417-80 | Cover, strainer    | 1    |               |
| ☆ 21 | 3FV-13337-00 | Plate, baffle      | 1    |               |
| ☆ 22 | 95026-06010  | Bolt, flange       | 4    |               |
| ☆ 23 | 3FV-13490-00 | Relief valve ass'y | 1    |               |
| ☆ 24 | 93210-15566  | O-ring             | 1    | With 2 spares |
| ☆ 25 | 90340-14127  | Plug               | 1    |               |
| ☆ 26 | 214-11198-01 | Gasket             | 1    | With 2 spares |
| ☆ 27 | 3FV-13412-00 | Housing, strainer  | 1    |               |
| ☆ 28 | 16G-13411-00 | Strainer, oil      | 1    |               |

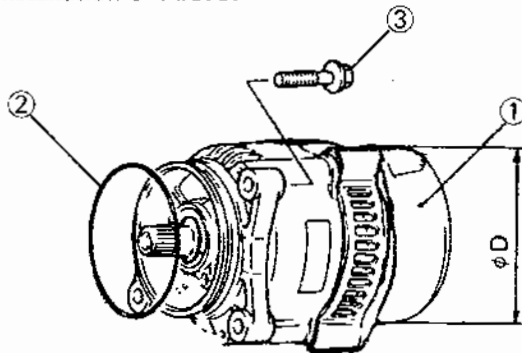
( ) Use the original equipment.

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

### 8) Installation of lightweight parts (Endurance races kit)

For endurance races, a lightweight A.C.G. is made available.  
(This A.C.G. is separately sold as an independent part.)

#### Installation of A.C.G.



|               |   |                             |
|---------------|---|-----------------------------|
| (Standard)    | ⇒ | (Racing)                    |
| φ D: φ 108 mm |   | φ D: φ 100 mm               |
| 12V28AH       |   | 12V20AH                     |
|               |   | Made lightweight<br>by 650g |

| No. | Part No.     | Part name | Q'ty | Remarks                      |
|-----|--------------|-----------|------|------------------------------|
| 1   | 1AE-81600-70 | A.C.G.    | 1    |                              |
| ☆ 2 | 36Y-81642-50 | O-ring    | 1    | With 1 spare (φ79.6 x 3.5)   |
| ☆ 3 | 95021-08030  | Bolt, FL  | 3    | For A.C.G. fitting (M8 x 30) |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

#### CAUTION:

- Apply grease to the O-ring for the installation of A.C.G. to the engine.

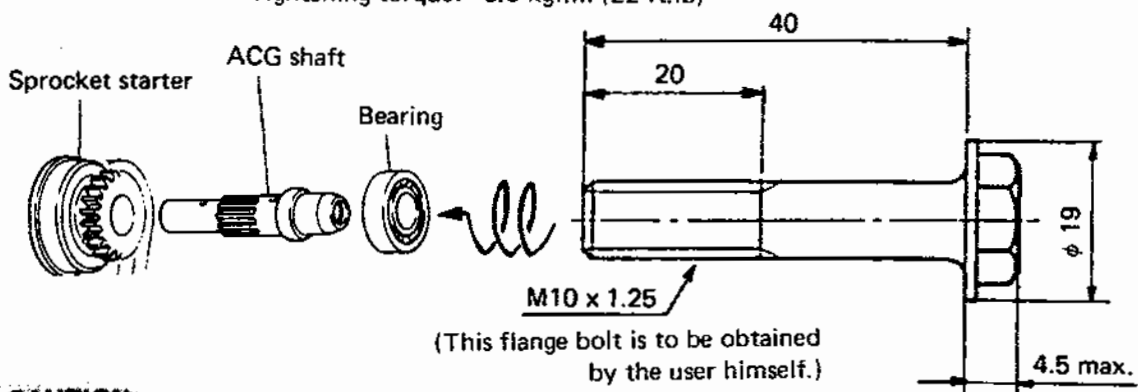
#### Removing A.C.G. and starter motor (Sprint races kit)

A.C.G. and starter motor can be removed for a short time race like a sprint, etc.

##### ① Removing A.C.G.

When A.C.G. is removed, the oil passage becomes open to the air with the result lower oil pressure which will lead to engine seizure. To prevent such a pressure drop, screw an M10 x 1.25 bolt into the A.C.G. shaft.

Tightening torque: 3.0 kgf.m (22 ft.lb)

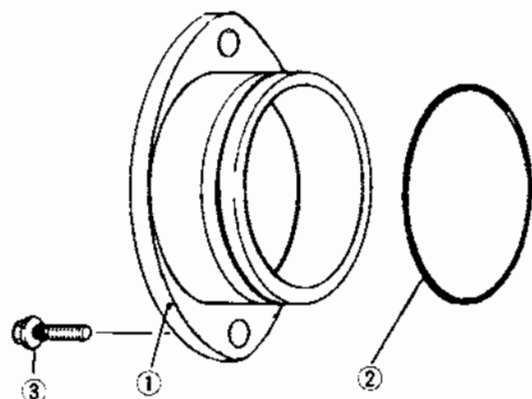


#### CAUTION:

Apply Loc-tite to this bolt for installation to the A.C.G. shaft.

② Installation of ACG cover

Install the cover upon removal of ACG.



**CAUTION:**

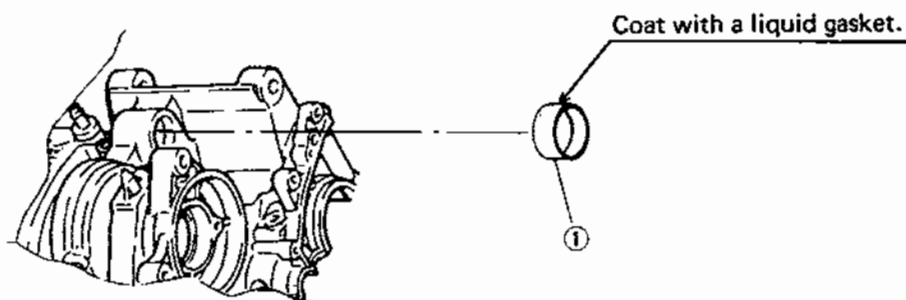
- Apply grease to O-ring for installation.

| No. | Part No.     | Part name | Q'ty | Remarks                     |
|-----|--------------|-----------|------|-----------------------------|
| 1   | 1AE-15178-70 | Plug      | 1    | ACG blind cover             |
| ☆ 2 | 36Y-81642-50 | O-ring    | 1    | With 1 spare (φ 79.6 x 3.5) |
| ☆ 3 | 95021-08016  | Bolt, FL  | 2    | For blind cover (M8 x 16)   |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

③ Removal of starter motor (Sprint races kit)

Remove the starter motor and force-fit the plug.

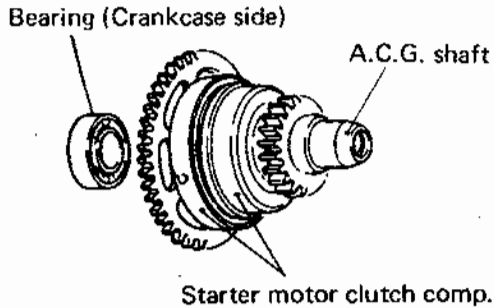


| No. | Part No.    | Part name | Q'ty | Remarks |
|-----|-------------|-----------|------|---------|
| ☆ 1 | 90338-30096 | Plug      | 1    |         |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

④ Removing A.C.G., starter motor and starter clutch comp.

When removing the complete starter motor clutch, remove the bearing which is force-fitted to the upper crankcase.



**CAUTION:**

- If the engine is operated with the bearing force-fitted, the bearing could slip off due to the engine vibration and thermal expansion of the bearing and thus, the engine could be damaged.
- Removal of the oil spray nozzle will allow the oil passage to open, and thus the oil pressure could be reduced. Never attempt to remove the oil spray nozzle.

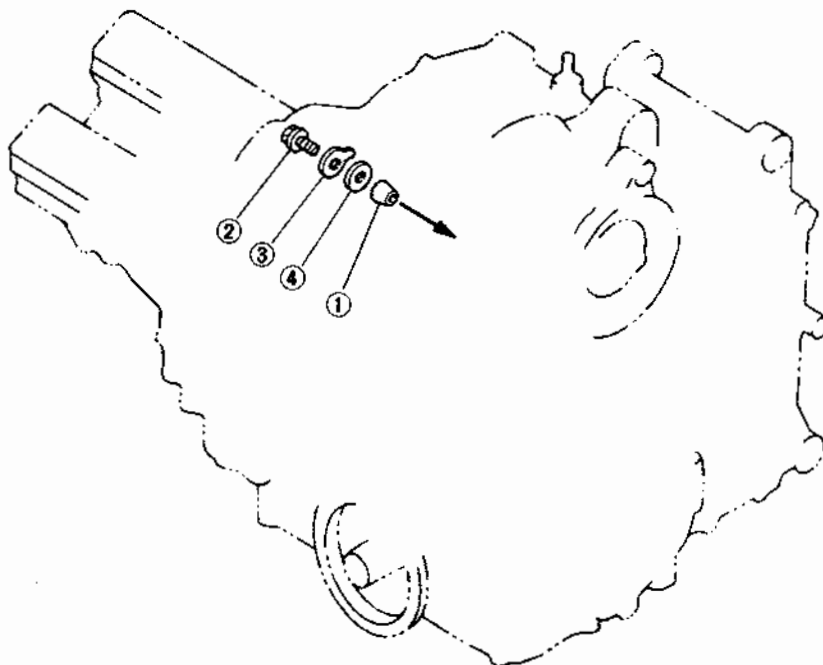
The complete starter clutch is oil lubricated. If it is removed from the crankcase, the oil passage becomes open to the air resulting in an oil pressure drop.

To prevent this drop, the starter clutch complete is lubricated with oil, and therefore, when it is removed, the oil passage is opened, thus causing the oil pressure to reduce. Therefore, install the plug the A.C.G. oil passage (see P. 18) to prevent the oil pressure from dropping, and close the oil blowing hose in the oil spray nozzle.

Close the oil spray nozzle. By closing the nozzle, the normal oil pressure can easily be maintained.



9) A.C.G. oil passsge plug installation (Sprint races kit)



| No. | Part No.    | Part name     | Q'ty | Remarks |
|-----|-------------|---------------|------|---------|
| ☆ 1 | 90336-06031 | Plug, taper   | 1    |         |
| ☆ 2 | 95821-06016 | Bolt, FL      | (1)  |         |
| ☆ 3 | 90201-061M7 | Washer, plate | (1)  |         |
| ☆ 4 | 90430-06210 | Gasket        | (1)  |         |

( ) Use the original equipment.

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

For plug ①, see page 17 about the removal of A.C.G., stater motor and starter motor clutch component.

## 10) Installation of carburetor setting parts (Endurance races, Sprint races kit)

For other than the items described in this manual, refer to the Service Manual of your basic vehicle.

### ① Basic carb. settings for race

- These settings apply to a case where an induction box is installed.

| Carburetor             | Model FCRD39 (KEIHIN)                                  |  |
|------------------------|--|--|
| Main jet (M.J.)        | # 175 (1-, 4-cylindereed), # 165 (2-, 3-cylindereed) * | (# 140)<br>(# 145)<br>(# 150)<br>(# 155) |
| Main air jet (M.A.J.)  | # 100  | (# 160)                                  |
| Pilot jet (P.J.)       | (#48), # 50, (#52)                                     | (# 170)                                  |
| Pilot air jet (P.A.J.) | (# 130), # 140   | (# 180)                                  |
| Jet needle (J.N.)      | OBEMQ-3 (3th notch), (OBEMP), (OBEMR)                  | (# 185)                                  |
| Needle jet (N.J.)      | Non-bleed type   | (# 190)                                  |
| Pilot screw (P.S.)     | 1-1/2  | (# 195)                                  |
| Float chamber set      | * Used with the main jet as a set.                     |  |

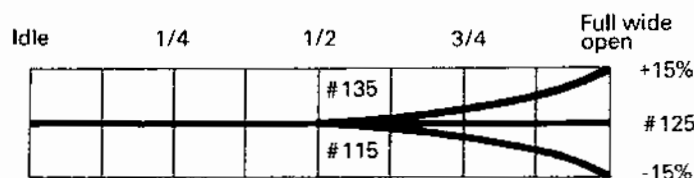
### CAUTION:

- ☆ The carburetor is an apparatus using gasoline. Installation of the carburetor must be carried out in a safety place without flammables and with good ventilation.
- ☆ The carburetor is apt to be easily damaged by foreign matters (dust, sand, water, etc). When installing or adjusting the carburetor, be careful not to allow such foreign matters to enter the carburetor.
- ☆ Carefully handle the carburetor and its parts. Many of the carburetor components fail to fulfill their original functions even if they are slightly flawed, bent or damaged. Carefully carry out servicing using the proper tools without using excessive force.
- ☆ After installing the carburetor on your vehicle, be sure to thoroughly check that the throttle is normal and opens and closes smoothly.
- ☆ Avoid carelessly looking into the carburetor suction pipe during engine running. Flames may blow out due to backfire. Even after the carburetor is removed, gasoline may spout out from the accelerator pump nozzle.
- ☆ Avoid unnecessarily opening and closing the throttle valve when the engine is stopped or running under no load, or the engine may fail to start easily or run smoothly due to the excessive fuel discharge of the accelerator pump.
- ☆ If the density becomes too high when accelerating, make a modification so that the right acceleration pump will not be operated.

### ② Effective range of settings of carburetor components

#### (1) Main jet

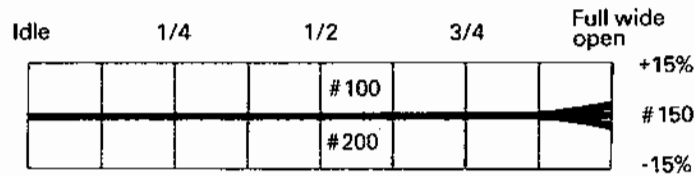
The main jet mainly adjusts the density around the full wide opening.





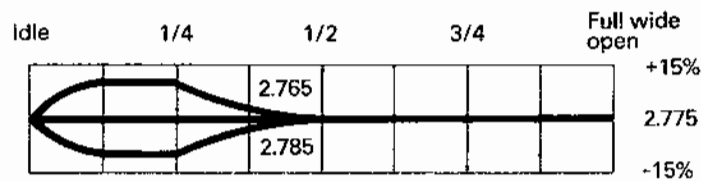
(2) Main air jet

For the primary type main system, the main air jet does not work very effectively. Therefore, it is not usually replaced.



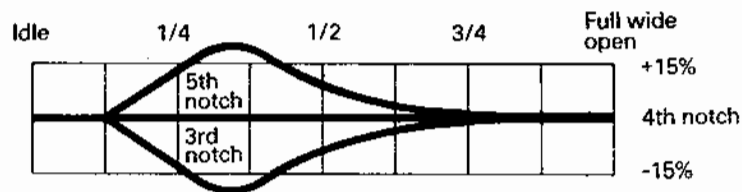
(3) Jet needle (straight diameter)

Adjust the air fuel ratio around the 1/8 opening to 1/4 opening.



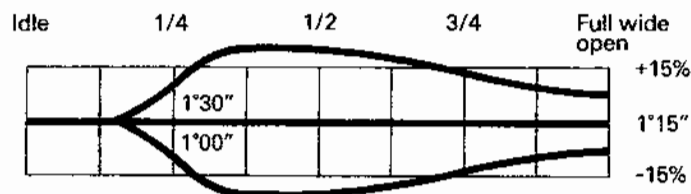
(4) Jet needle (No. of notches)

Adjust the air fuel ratio around the 1/4 opening to 1/2 opening.



(5) Jet needle (taper)

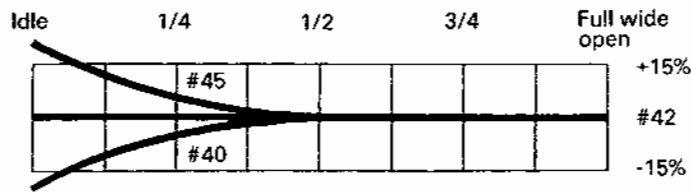
The jet needle with moderate taper affects the density as far as around the full wide opening. To change the density only around 1/2 opening, replace the jet needle together with the main jet.



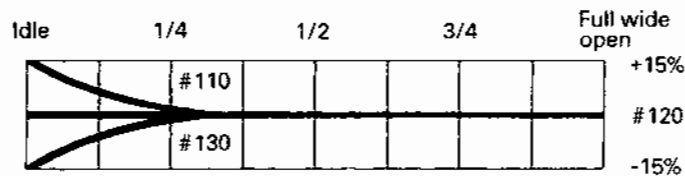
<Jet needle specifications>

| J.N   | Straight diameter | Taper |
|-------|-------------------|-------|
| OBEMP | $\phi$ 2.735      | 1°00' |
| OBEMQ | $\phi$ 2.745      | ↑     |
| OBEMR | $\phi$ 2.755      | ↑     |

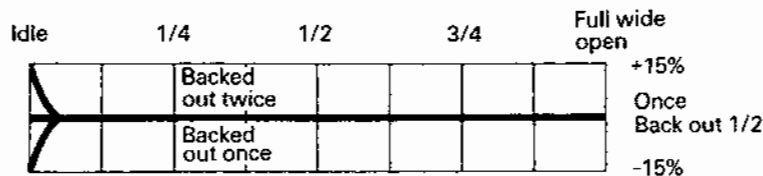
- (6) Pilot jet  
The pilot jet affects the entire slow system.



- (7) Pilot air jet  
The pilot air jet affects the density from idle as far as the 1/4 opening in the same manner as the pilot jet.



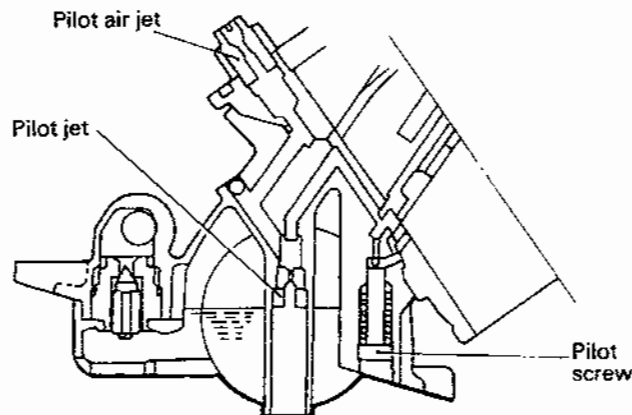
- (8) Pilot screw  
The pilot screw covers only around the idle opening.  
This will be explained on the next page.



• **Construction of slow system and setting parts**

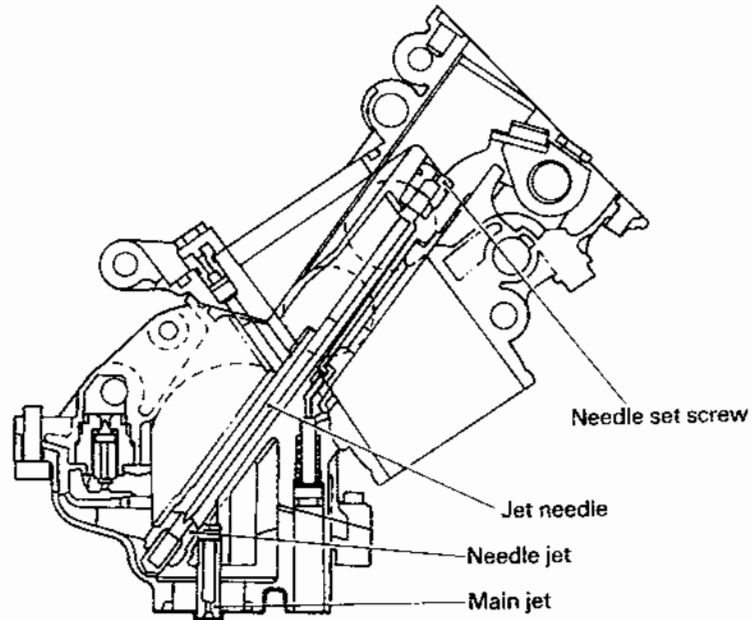
In the flat CR carburetor, the slow system is equipped with a "pilot screw type" adjusting mechanism when the machine is shipped. The characteristic of this method is that the effective adjusting range of the pilot screw is limited to around the idle opening. Therefore, even if the adjusting value is largely changed, it will not affect the actual running openings of 1/8 to 1/4.

To set the actual running range for the slow system, the pilot screw is not used but the pilot jet and pilot air jet should be adjusted while observing their balance.



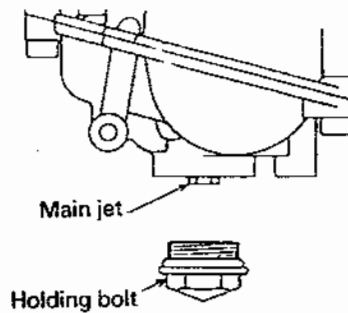
- **Construction of main system and setting parts**

In the main flat CR carburetor, a "primary type" main system is used. This system features a good flow even during full-load running and the best use as a racer. However, the construction of the main air jet little affects the air fuel ratio. These settings are made by the main jet and jet needle.



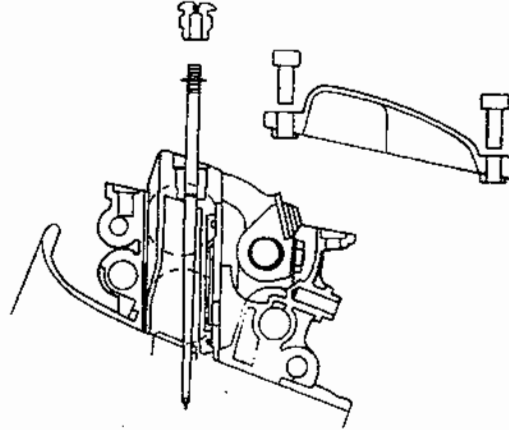
### ③ Replacing setting parts

1. Main jet (M.J.)
  - (1) Remove the holding bolt at the bottom of the float chamber.
  - (2) The head of the main jet should appear. Remove the main jet with the spanner.
  - (3) Installation of the main jet is the reversal of the removal.



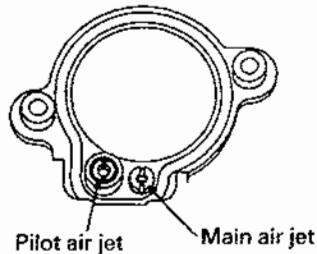
## 2. Jet needle (J.N.)

- (1) Remove the top.
- (2) Remove the needle set screw using the flat-blade screwdriver. With the engine installed, the throttle grip should be kept almost fully open to facilitate operation.
- (3) Draw out the jet needle using the long-nose pliers.
- (4) Installation of the jet needle is the reversal of the removal. Check that the end of the jet needle is reliably inserted into the needle jet hole.



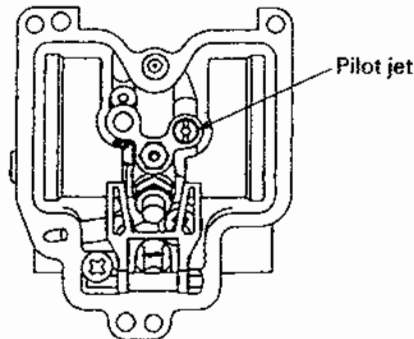
## 3. Air jets (M.A.J., P.A.J.)

These air jets are installed on the front of the carburetor intake side (funnel side). Be careful not to confuse the main air jet with the pilot air jet.

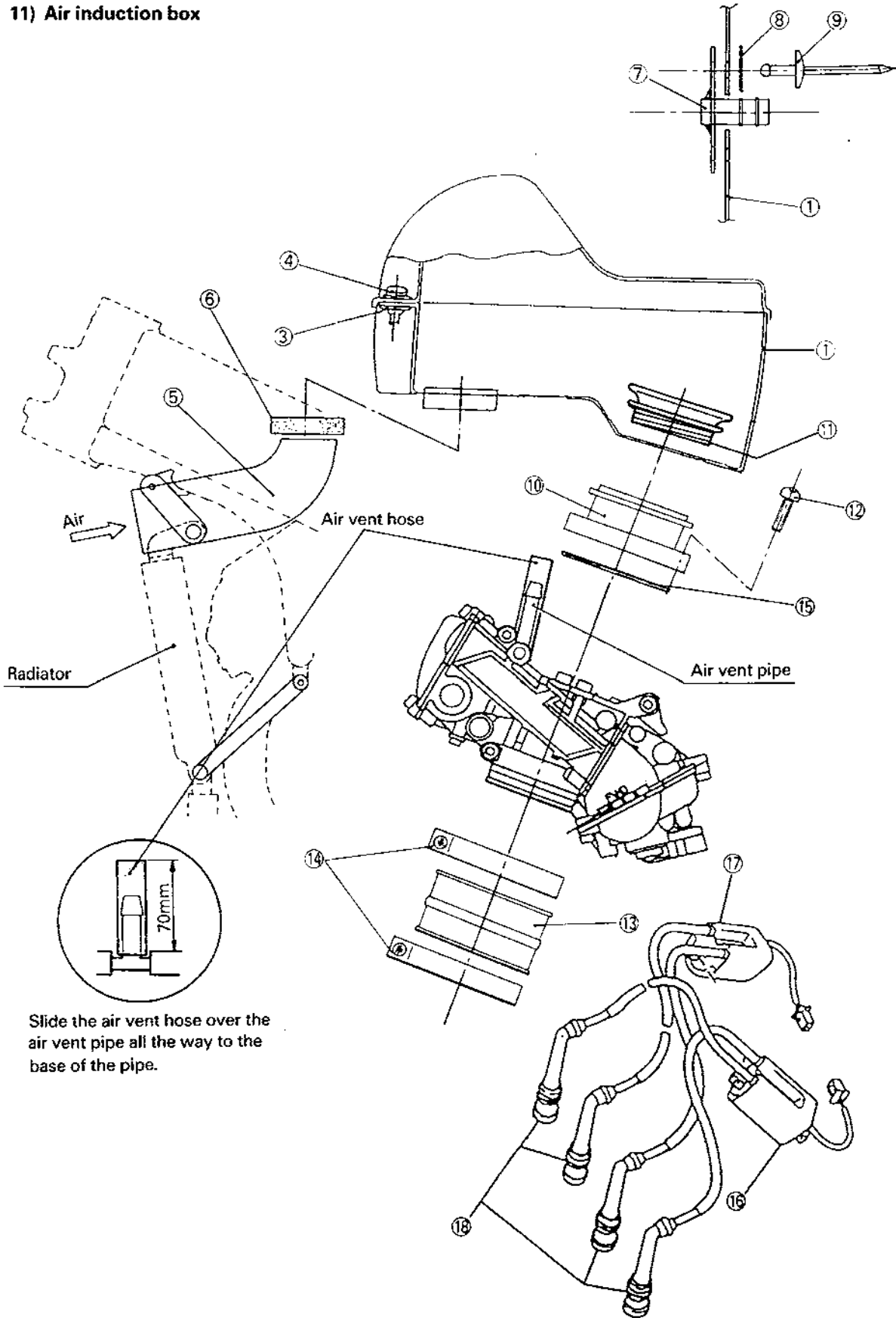


## 4. Pilot jet (P.J.)

- (1) Remove the float chamber body. Since the accelerator pump connection hose is assembled, all the connected parts should be removed at the same time to facilitate operation. When removing the float chamber, be careful not to apply excessive force to the float and accelerator pump rod.
- (2) Remove the pilot jet using a small flat-blade screwdriver (4 to 5mm wide).
- (3) Installation of the pilot jet is the reversal of the removal.
- (4) Before assembling the float chamber, check that the float chamber packing is reliably put in the groove.



11) Air induction box



Slide the air vent hose over the air vent pipe all the way to the base of the pipe.

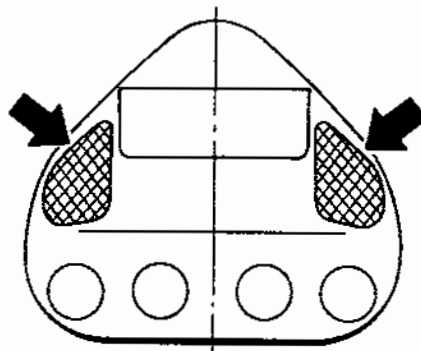
| No.  | Part No.     | Part name           | Q'ty | Remarks       |
|------|--------------|---------------------|------|---------------|
| 1    | 4FN-14411-70 | Case, air filter 1  | 1    |               |
| 2    | 4FN-14421-70 | Case, air filter 2  | 1    |               |
| ☆ 3  | 90183-05044  | Nut, spring         | 5    | With 5 spares |
| ☆ 4  | 97601-05216  | Screw, panhead      | 5    | With 5 spares |
| 5    | 4FN-2838J-71 | Duct 5              | 1    |               |
| 6    | 3FV-92001-70 | Net, air filter     | 1    |               |
| 7    | 4FN-11167-70 | Pipe, breather      | 1    |               |
| ☆ 8  | 92902-05200  | Washer              | 2    |               |
| ☆ 9  | 90267-48084  | Rivet, blind        | 2    |               |
| 10   | 4FN-1440F-70 | Joint air filter    | 4    |               |
| 11   | 4FN-14453-71 | Joint 1             | 4    |               |
| ☆ 12 | 91311-05012  | Bolt                | 8    |               |
| ☆ 13 | 4FN-13597-00 | Joint carburetor 3  | 2    |               |
| ☆    | 4FN-13598-00 | " 4                 | 2    |               |
| ☆ 14 | 90450-57044  | Hose, clamp         | (8)  |               |
| ☆ 15 | 4FN-14561-00 | O-ring              | (4)  |               |
| 16   | 3FV-82310-70 | Ignition coil ass'y | 1    |               |
| 17   | 3FV-82320-70 | Ignition coil ass'y | 1    |               |
| 18   | 4FN-82370-70 | Plug cap ass'y      | 4    |               |
| ☆ 19 | 90480-15363  | Grommet             | 4    |               |
| ☆ 20 | 90387-07391  | Collar              | 4    |               |
| ☆ 21 | 90201-06697  | Washer              | 2    |               |
| 22   | 4FN-2142G-71 | Stay 1              | 2    |               |
| ☆ 23 | 95811-06010  | Bolt, flange        | 2    |               |
| ☆ 24 | 95811-06025  | Bolt, flange        | 4    |               |
| ☆ 25 | 95701-06500  | Nut, flange         | 4    |               |
| 26   | 4FN-2142M-71 | Brkt, radiator 3    | 2    |               |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

( ) use the original equipment.

### CAUTION:

- Cut the air vent hose to a length of 70mm and slide it over the air vent pipe all the way to the base of the pipe. Then, insert the hose into the hole in the induction box when assembling.
- Before installing ① joint 1, apply grease to its screw part.
- To mount the ⑦ breather pipe, make holes in the hatched parts of the air filter 1 case of the induction box in the figure below. Determine the mounting position by considering routing of the breather hose.



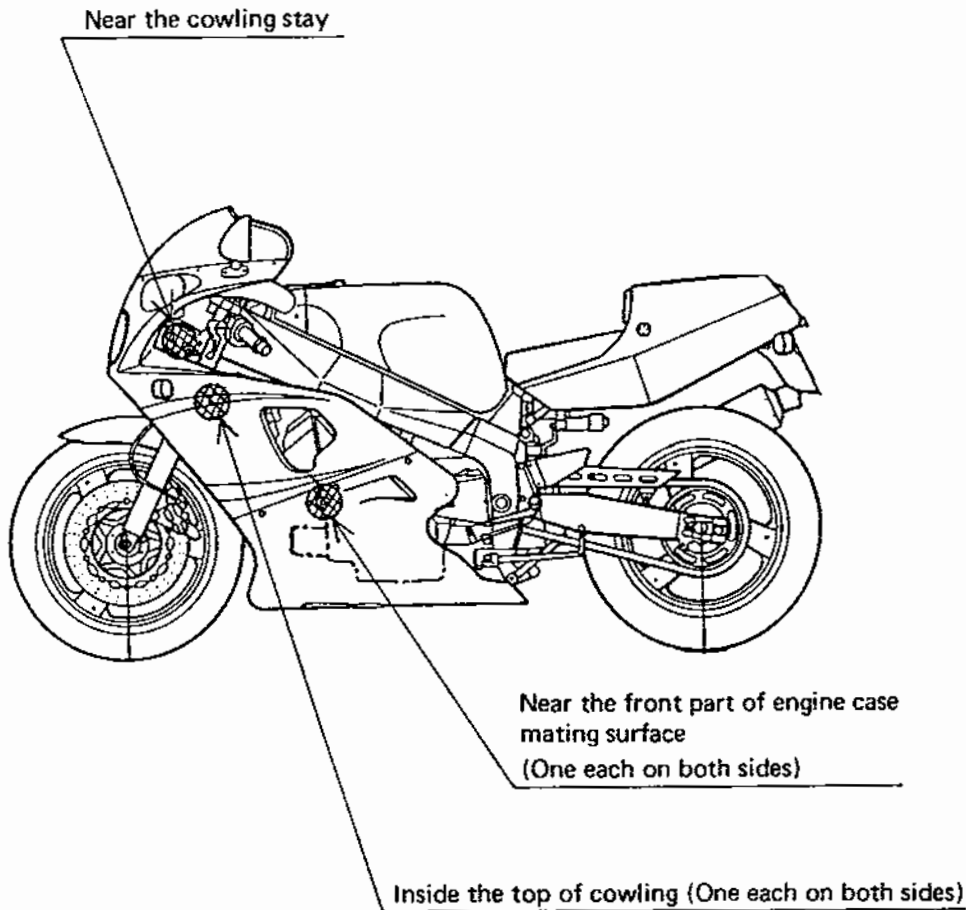
- Cut the ⑥ air filter net to a desired size before use.

- Lower the radiator position and mount the duct ⑤ so that the inlet port will be positioned in the upper side.

**CAUTION:**

The '94 YZF750SP air induction box kit has made the inlet port area of ⑤ Duct 5 as large as possible to increase the amount of air intake. This causes ⑤ Duct 5 to touch the ignition coil. To prevent this contact, change the position of the ignition coil, as required. On the standard model, a shorter high-tension cord is used. So it is necessary to cut the longer ignition coil contained in the kit to the proper length for use.

For your reference, an example of three coil positions are shown below. Use care not to position the high-tension cord too close to the ignitor



- If an abnormal condition suspected of being caused by noise has occurred in the tachometer or water temperature ass'y (digital), check the ground installation (see page 30).  
If the trouble cannot be eliminated although the ground is sufficient, wrap the ignition coil and high tension cord in aluminum foil and let its end touch a metallic area such as the sub-frame and stay.

## 12) Installation of wireharness kit set

| No.          | Part No.          | Part name         | Q'ty               | Remarks                  |                             |                             |
|--------------|-------------------|-------------------|--------------------|--------------------------|-----------------------------|-----------------------------|
| 1            | 4FN-W8259-71      | Wireharness kit   | 1                  | Kit for sprint race only |                             |                             |
|              | 4FN-82590-71      | Wireharness ass'y | 1                  |                          |                             |                             |
|              | 25G-81950-01      | Relay ass'y       | 1                  |                          | For pump relay              |                             |
|              | 2H7-82576-00      | Emergency switch  | 1                  |                          | Fuel cut switch             |                             |
|              | 4U8-81950-02      | Relay ass'y       | 1                  |                          | Fuel cut relay              |                             |
|              | 4FN-83509-70      | Socket cord       | 1                  |                          | For tachometer              |                             |
|              | 2AL-83520-70      | Socket cord       | 1                  |                          | For heat indicator          |                             |
|              | 4FN-82509-70      | Wire sub lead     | 1                  |                          | For battery                 |                             |
|              | 4FN-83976-70      | Switch, handle. 1 | 1                  |                          |                             |                             |
|              | 4FN-W8259-80      | Wireharness kit   | 1                  |                          | Kit for endurance race only |                             |
|              | 4FN-82590-80      | Wireharness ass'y | 1                  |                          |                             |                             |
|              | 25G-81950-01      | Relay ass'y       | 2                  |                          |                             | For fuel pump and lamp reay |
|              | 1HX-84735-00      | Socket cord ass'y | 2                  |                          |                             | For tail light              |
|              | 2H7-82576-00      | Emergency switch  | 1                  |                          |                             | Fuel cut switch             |
| 4U8-81950-02 | Relay ass'y       | 1                 | Fuel cut relay     |                          |                             |                             |
| 4FN-83509-70 | Socket cord       | 1                 | For tachometer     |                          |                             |                             |
| 2AL-83520-70 | Socket cord       | 1                 | For heat indicator |                          |                             |                             |
| 3FV-83963-00 | Switch, handle. 3 | 1                 |                    |                          |                             |                             |

No socket cord (2AL-83520-70) is required when using the heat indicator in the kit.

- |   |  |
|---|--|
| ① Wire harness assy                           | ⑰ Clamp                                  |
| ② Pump relay (25G-81950-01)                   | ⑱ Band                                   |
| ③ Starter switch (4FM-81940-00)               | ⑲ Clamp                                  |
| ④ Socket cord ass'y (1HX-84735-00)            | ⑳ Clamp                                  |
| ⑤ Fuse (for head light)                       | ㉑ Thermo unit                            |
| ⑥ Relay ass'y (for 25G-01 head light)         | ㉒ Ground                                 |
| ⑦ Ignitor unit                                | ㉓ Fuse (ignition)                        |
| ⑧ Starter motor lead                          | ㉔ Emergency stop switch (2H7-82576-00)   |
| ⑨ Negative lead wire                          | ㉕ Bracket (3TJ-2117J-70)                 |
| ⑩ EXUP motor lead                             | ㉖ Fuel cut relay assembly (4U8-81950-02) |
| ⑪ Starter motor                               | A Wire harness position x White tape     |
| ⑫ Generator                                   | B To stop switch                         |
| ⑬ Water temperature gauge lead (2AL-83520-70) | C To handle switch (R)                   |
| ⑭ Tachometer lead (4FN-83509-70)              | D To head light                          |
| ⑮ Pick-up lead                                | E To fuel pump                           |
| ⑯ Band  | F To thermo unit                         |

On the sprint and endurance models, the wire harness can be routed in the same manner.  
(The wiring diagram for the endurance model is shown here)

\*To the purchaser of the kit (B kit) for endurance races.

### 1) Lights switch

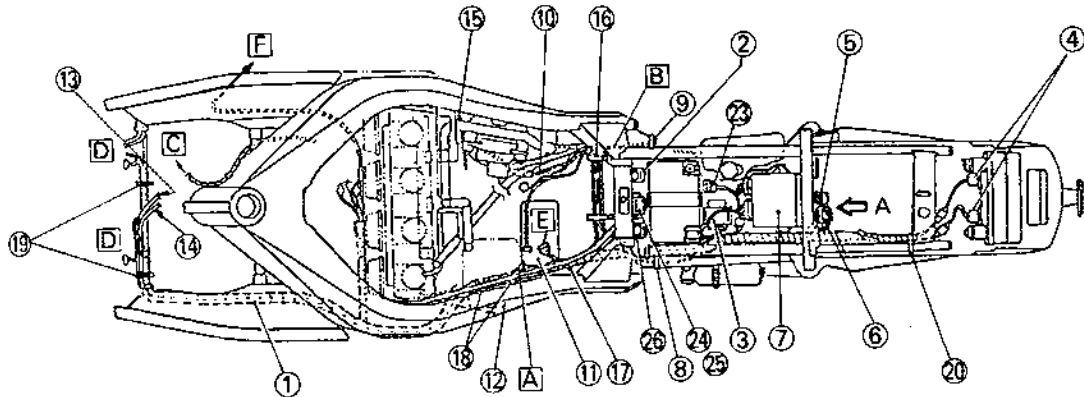
- Off - OFF  
 PO - Tail light Only one lamp  
 ON - Head light (Hi-beam)  
       Meter illumination } Lamp  
       Tail light

### 2) Battery coupler

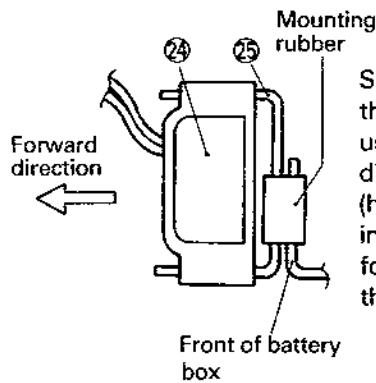
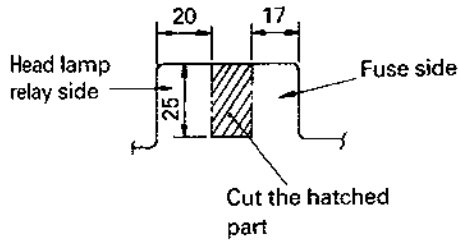
Disconnect the battery coupler from the coupler on the wire harness side.  
(The circuit is so designed that the brake lamp is directly connected to the battery.)



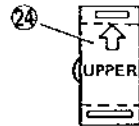
**Wire harness routing diagram**



**View A**  
For ⑤ and ⑥, the fuse and lamp relay, cut the mud guard as shown below.

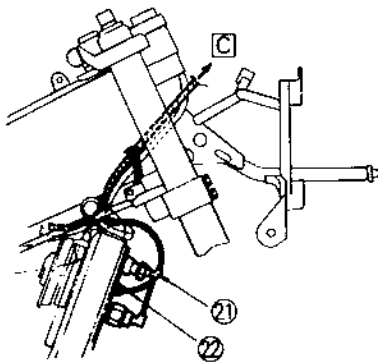


Secure ⑳ Emergency Switch to the front of the battery box by using ㉑ Bracket and the disused relay mounting rubber (holder). The switch should be installed at a right angle to the forward direction as shown in the figure at left.



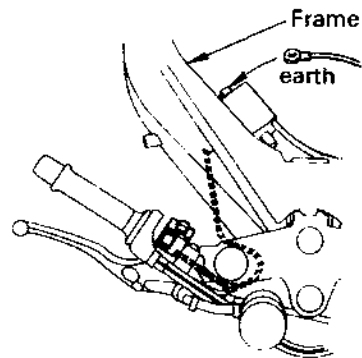
**CAUTION:**

Install the emergency switch ㉒ with the arrow pointing upward.



**CAUTION:**

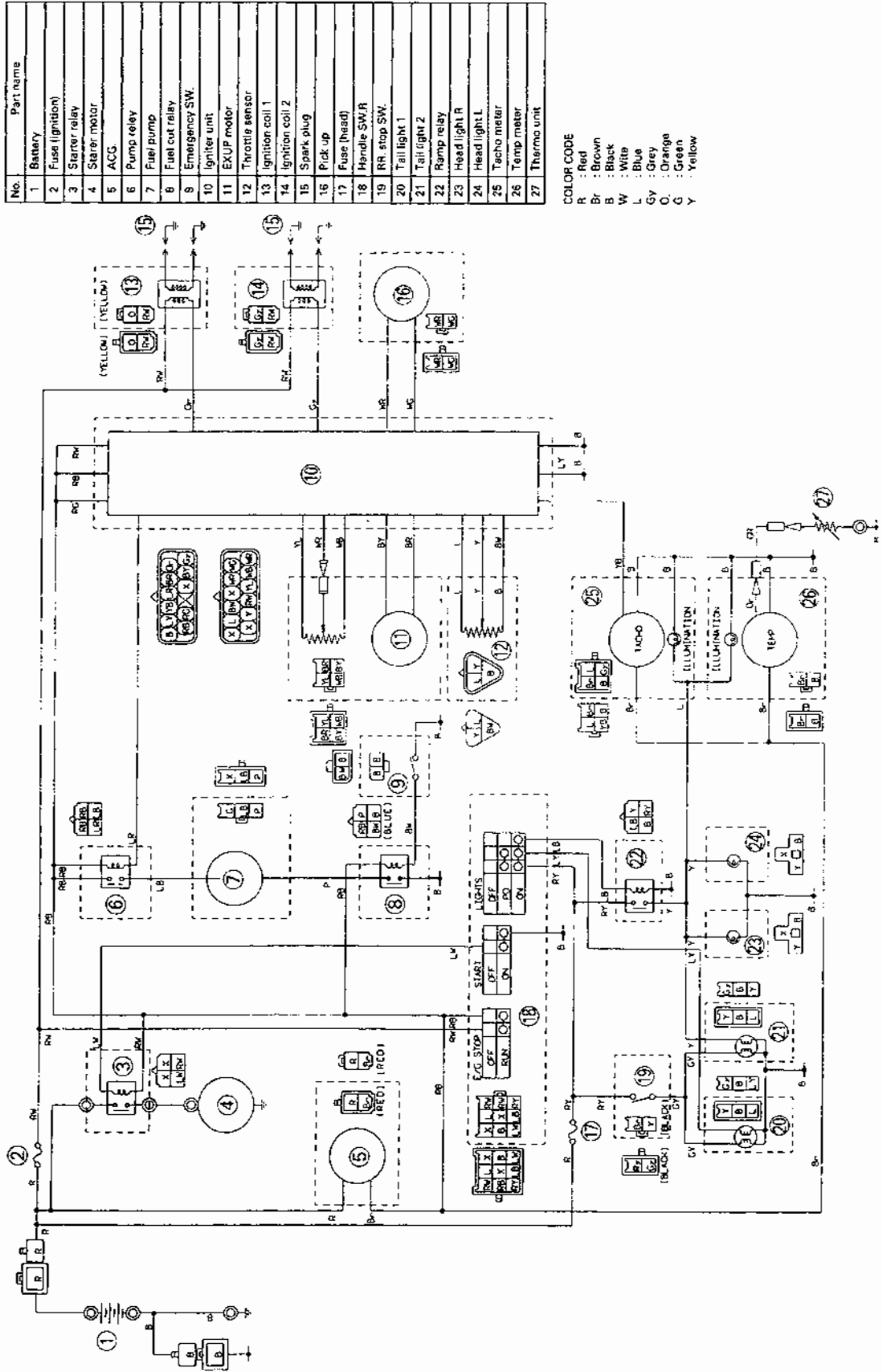
It is recommended that each coupler be sealed with silicon rubber to prevent electric leaks in case of rain.



**CAUTION:**

Secure the ground wire terminal to the mounting boss on the frame side of the ignition coil.

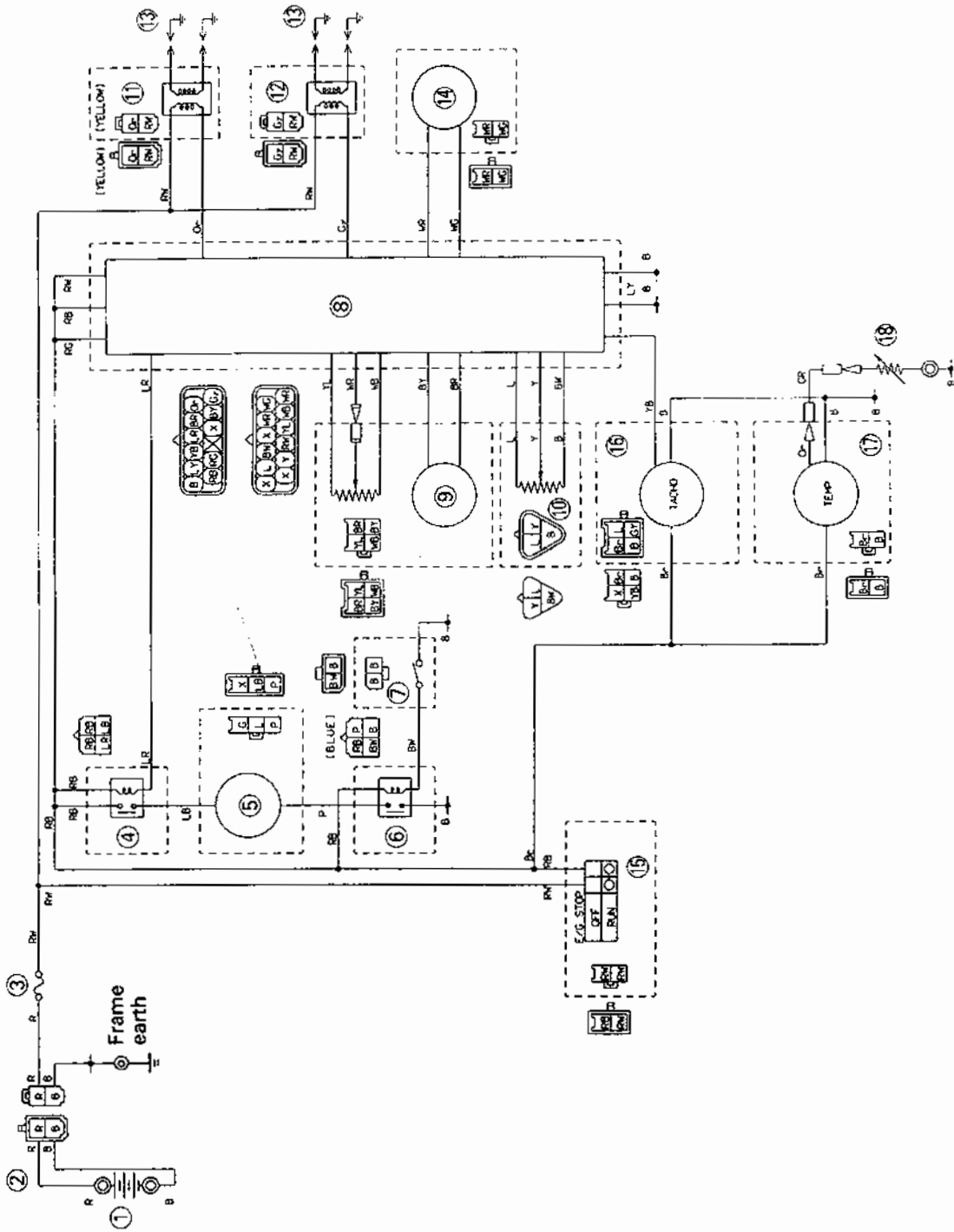
**Connecting diagram for endurance races  
(4FN-82590-80)**



| No. | Part name       |
|-----|-----------------|
| 1   | Battery         |
| 2   | Fuse (ignition) |
| 3   | Starter relay   |
| 4   | Starter motor   |
| 5   | ACC.            |
| 6   | Pump relay      |
| 7   | Fuel pump       |
| 8   | Fuel cut relay  |
| 9   | Emergency SW.   |
| 10  | Igniter unit    |
| 11  | EXUP motor      |
| 12  | Throttle sensor |
| 13  | Ignition coil 1 |
| 14  | Ignition coil 2 |
| 15  | Spark plug      |
| 16  | Pick up         |
| 17  | Fuse (head)     |
| 18  | Handle SW/R     |
| 19  | RR stop SW.     |
| 20  | Tail light 1    |
| 21  | Tail light 2    |
| 22  | Ramp relay      |
| 23  | Head light R    |
| 24  | Head light L    |
| 25  | Tacho meter     |
| 26  | Temp meter      |
| 27  | Thermo unit     |

**COLOR CODE**  
 R : Red  
 Br : Brown  
 B : Black  
 W : White  
 L : Blue  
 Gy : Grey  
 O : Orange  
 G : Green  
 Y : Yellow

Connecting diagram for sprint races (4FN-82590-71)

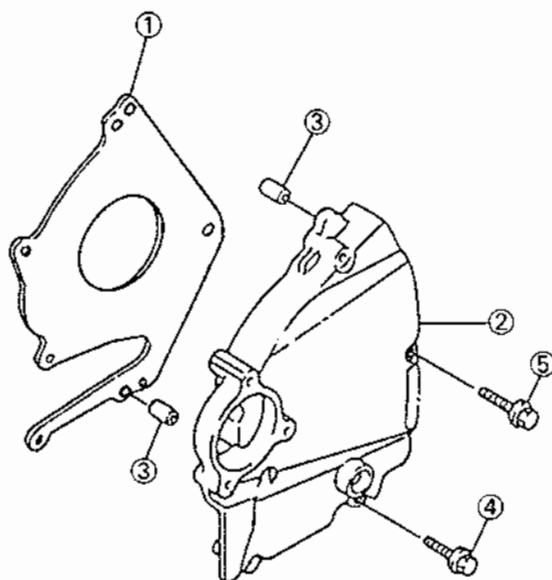


| No. | Part name       |
|-----|-----------------|
| 1   | Battery         |
| 2   | Wire sub-lead   |
| 3   | Fuse (ignition) |
| 4   | Pump relay      |
| 5   | Fuel pump       |
| 6   | Fuel cut relay  |
| 7   | Emergency SW.   |
| 8   | Igniter unit    |
| 9   | EXUP motor      |
| 10  | Throttle sensor |
| 11  | Ignition coil 1 |
| 12  | Ignition coil 2 |
| 13  | Spark plug      |
| 14  | Pick up         |
| 15  | Handle SW R     |
| 16  | Tacho meter     |
| 17  | Temp meter      |
| 18  | Thermo unit     |

COLOR CODE  
 R : Red  
 Br : Brown  
 B : Black  
 W : White  
 L : Blue  
 Gy : Grey  
 O : Orange  
 G : Green  
 Y : Yellow

### 13) Plate bearing cover

If the crank case internal pressure has abnormally risen for some reason, the oil seal outside the drive shaft might be dislocated to cause oil leak trouble. To prevent the dislocation of the oil seal, this kit should be mounted in place of the gasket and crank case cover (4FM-15451-00).



| No. | Part No.     | Part name               | Q'ty | Remarks |
|-----|--------------|-------------------------|------|---------|
| 1   | 4FN-15381-70 | Plate, bearing cover    | 1    |         |
| ☆ 2 | 4FM-15410-00 | Crankcase cover ass'y 1 | (1)  |         |
| ☆ 3 | 99510-08012  | Pin, dowel              | (2)  |         |
| ☆ 4 | 95023-06040  | Bolt, flange            | (3)  |         |
| ☆ 5 | 95021-06050  | Bolt, flange            | (2)  |         |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

( ) use the original equipment.

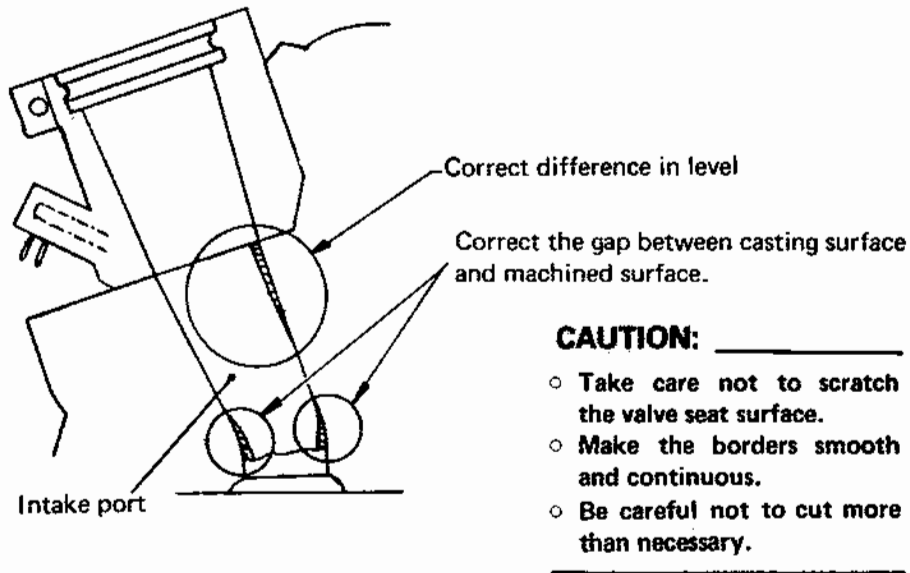
### 3. Other modification of engine interior

#### 1) Modification of stepped intake and exhaust ports

To reduce intake and exhaust resistance, it is advisable to modify the stepped portion of ports and hone their inner surfaces so that both mixture and exhaust gases can flow through smoothly.

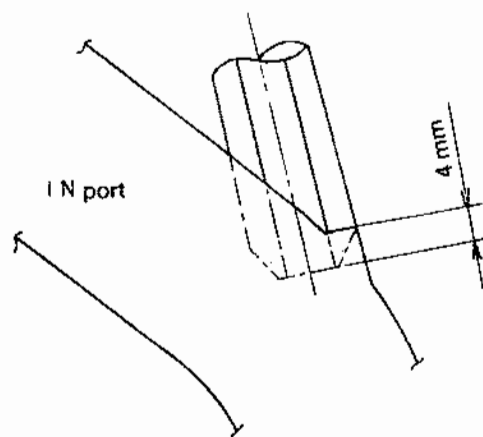
#### Ⓐ Modification of intake port step and inner wall grinding.

Modify the step shown below and provide a fine finish on the inner wall.



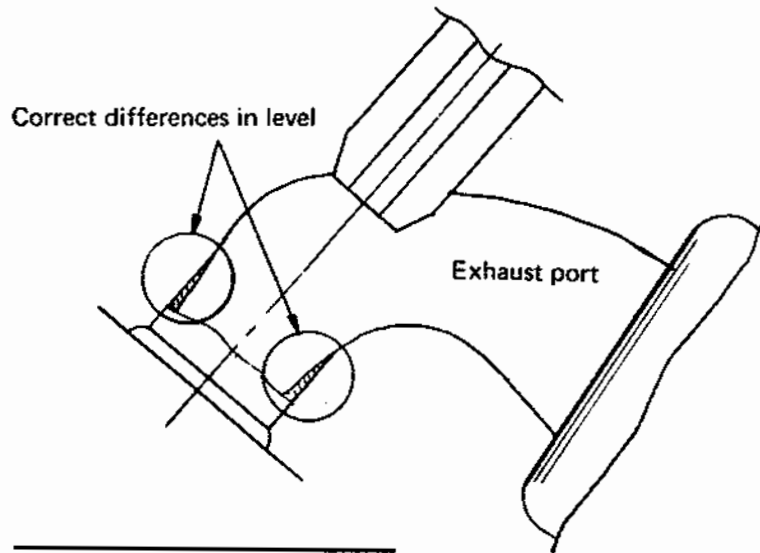
#### Ⓑ Modification of intake valve guide

Cut the intake valve guide along the port as shown below. In this case, the end of the valve guide will be pointed and breakable. Cut the guide by about 4mm from its end. The inner side of the valve guide should be thoroughly deburred.



© Modification of exhaust port steps and inner wall.

Modify the exhaust port steps as shown below and provide a fine finish on the inner wall.

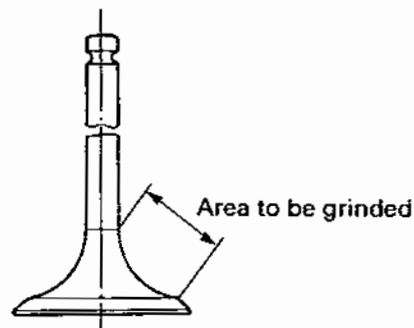


**CAUTION:**

- Take care not to scratch the valve seat surface.
- Make the borders smooth and continuous.

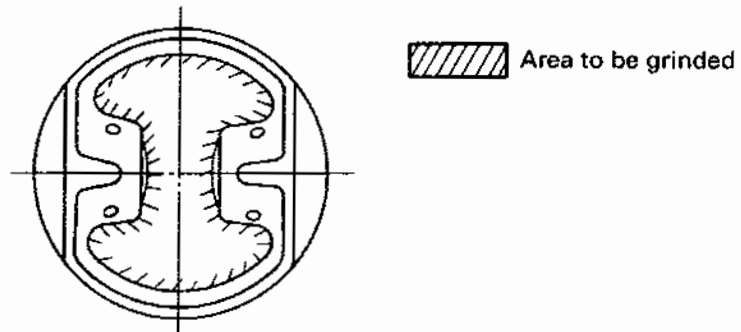
**2) Grinding the valve funnel**

Carefully grind the area as shown below to improve the durability and intake/exhaust efficiency (intake, exhaust).



**3) Grinding the piston back side**

Carefully grind the area (hatched part) on the piston back side to improve the durability.

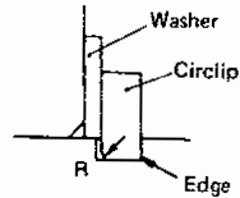
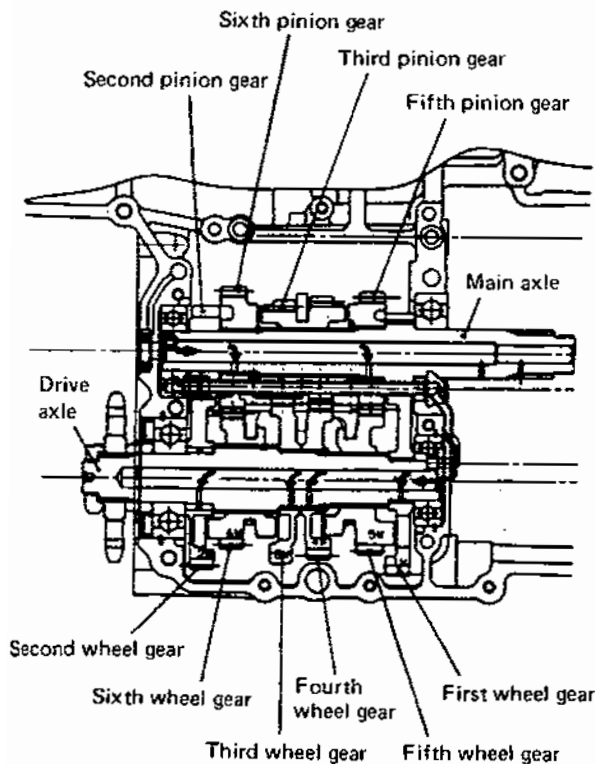


## 4. Installation of optional parts

### CAUTION:

It is advisable to use the kit parts, which are functional parts, as a set, as much as possible. Use of kit parts and other maker's parts may impair the function of kit parts.

#### 1) Installing the super cross-ratio transmission assembly



The circlip should be so installed that the round edge is on the gear side and the square edge is on the other side.

The ends of the circlip must be positioned in a groove of the spline.



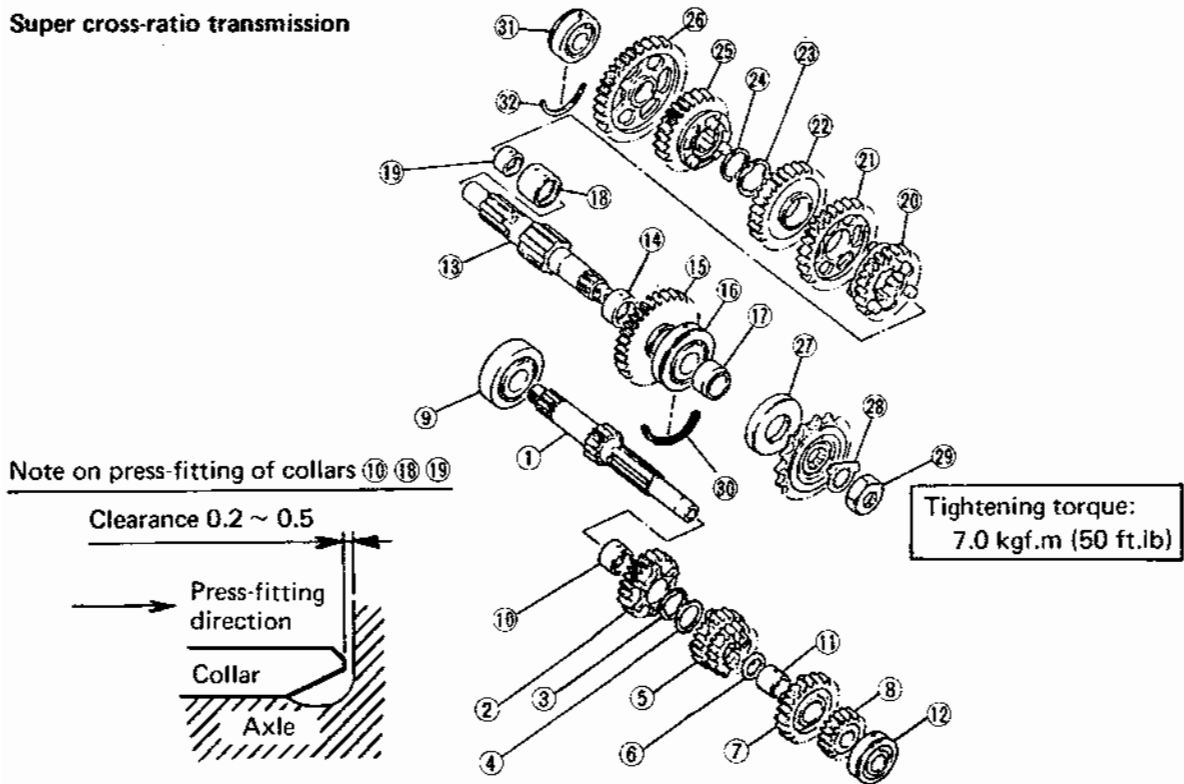
### CAUTION:

- Before installing the transmission assembly, be sure to make sure that the any oil passage in the main axle and drive axle is clogged.

#### Comparison of transmission gear ratios

|         | Standard ratio  | Super cross-ratio |
|---------|-----------------|-------------------|
| Speed 1 | $32/13 = 2.462$ | $39/16 = 2.438$   |
| Speed 2 | $33/17 = 1.941$ | $37/18 = 2.056$   |
| Speed 3 | $31/19 = 1.632$ | $35/20 = 1.750$   |
| Speed 4 | $33/23 = 1.435$ | $34/22 = 1.545$   |
| Speed 5 | $26/20 = 1.300$ | $32/23 = 1.391$   |
| Speed 6 | $25/21 = 1.190$ | $28/22 = 1.273$   |

## Super cross-ratio transmission



| No. | Part No.     | Part name        | Q'ty | Remarks                                   |
|-----|--------------|------------------|------|---|
|     | 3FV-17410-90 | Main axle ass'y  | 1    |   |
| 1   | 3FV-17411-80 | Axle, main       | 1    |   |
| 2   | 3FV-17151-90 | G5P              | 1    |   |
| 3   | 90209-22191  | Washer           | 1    | G5P left side (φ30.3 x φ22.2)             |
| 4   | 93440-25084  | Circlip          | 1    | G3, 4P right side (φ25)                   |
| 5   | 3FV-17131-90 | G3P              | 1    |   |
| 6   | 90201-200K3  | Washer           | 1    | G6P right side (φ27 x φ20.8)              |
| 7   | 3FV-17161-90 | G6P              | 1    |   |
| 8   | 3FV-17121-80 | G2P              | 1    |   |
| 9   | 93306-30534  | Bearing          | 1    | Main axle, right side (φ65 x φ25)         |
| 10  | 90387-253M6  | Collar           | 1    | For G5P (φ28 x φ25 x 18.9)                |
| 11  | 90387-203M7  | Collar           | 1    | For G6P (φ23.5 x φ20.5 x 18)              |
| 12  | 93306-20455  | Bearing          | 1    | Main axle, left side (φ47 x φ20)          |
|     | 3FV-17420-90 | Drive axle ass'y | 1    |   |
| 13  | 3FV-17421-00 | Axle, drive      | 1    |   |
| 14  | 90387-263M8  | Collar           | 1    | For G2W (φ32 x φ26 x 14.3)                |
| 15  | 3FV-17221-80 | G2W              | 1    |   |
| 16  | 93305-30501  | Bearing          | 1    | Drive axle, left side (φ62 x φ2.5)        |
| 17  | 90387-255V9  | Collar           | 1    | Drive sprocket, side (φ35 x φ25 x 14.2)   |
| 18  | 90387-284M0  | Collar           | 1    | For G3, 4W (φ23 x φ20 x 12.6)             |
| 19  | 90387-204M1  | Collar           | 1    | For G1W (φ23 x φ20 x 12.6)                |
| 20  | 3FV-17261-90 | G6W              | 1    |   |
| 21  | 3FV-17231-80 | G3W              | 1    |   |
| 22  | 3FV-17241-90 | G4W              | 1    |   |
| 23  | 90209-25196  | Washer           | 1    | G4W right side (φ34 x φ25.2)              |
| 24  | 93440-28062  | Circlip          | 1    | G5W left side φ28                         |
| 25  | 3FV-17251-90 | G5W              | 1    |   |
| 26  | 3FV-17211-80 | G1W              | 1    |   |
| 27  | 93102-35423  | Seal, oil        | 1    | With 1 spare (φ35 x 6)                    |
| 28  | 90215-21022  | Washer, lock     | 1    | φ44 x φ25                                 |
| 29  | 4FN-17463-71 | M18 nut          | 1    |   |
| 30  | 278 17424 01 | Clip             | 1    | Drive axle, left side (φ58.6 semi-circle) |
| 31  | 93306-20455  | Bearing          | 1    | Drive axle, right side (φ47 x φ20)        |
| 32  | 93440-45144  | Circlip          | 1    | Drive axle, right side (φ45 semi-circle)  |



**Note on the assembling of the cross-ratio transmission**

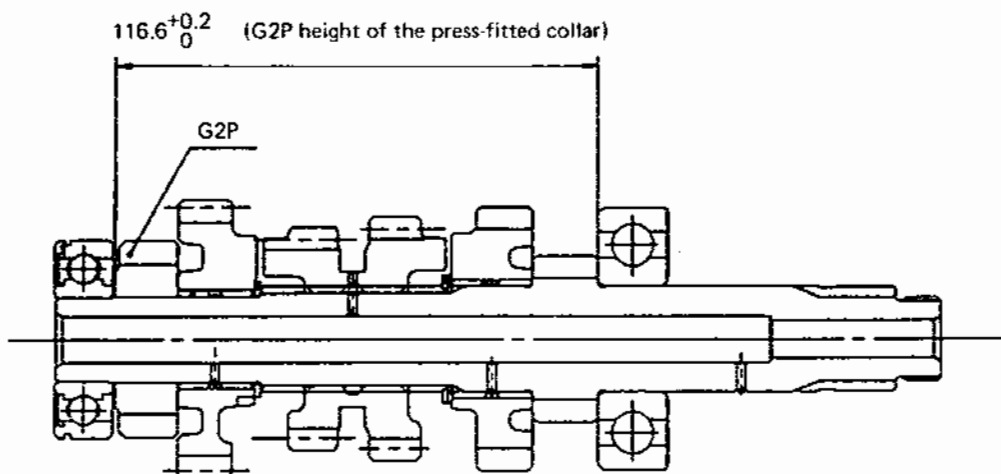
Care to be taken when press-fitting the collar (10, 11, 14, 18, 19)

1. Press-fit each collar so that the edge chamfered at 30° is on the inner side.
2. Be sure the oil hole ( $\phi 3$ ) in each collar is aligned with each collar in the shaft.
3. Take care not to press-fit the collar excessively, or it may deform.  
(After press-fitting the collar, make sure the gear can rotate smoothly.)

After setting the drive axle in the lower case, shift the clips 30, 32 outward by tapping the bearings on both ends with a soft-head hammer.

Apply molybdenum oil desulfured to the inner surface and sides of the transmission side gears, contact surfaces of the axle with other parts, and grooves in the forks.

\*For the assembly procedure of other parts, refer to the Service Manual.



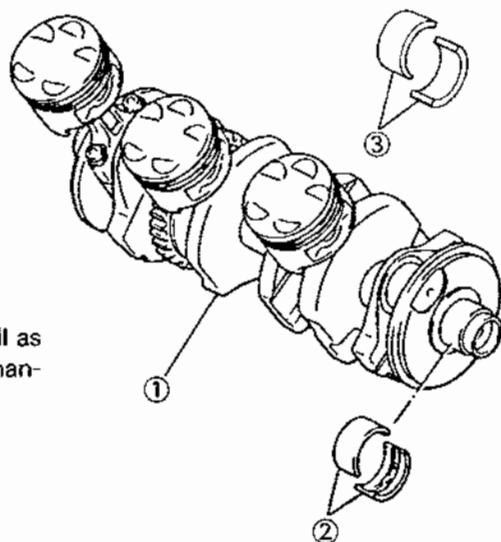
G2P dimensions of the press-fitted collar

**CAUTION:**

- The G2P cannot be reused. Whenever disassembled, it must be replaced with a new one.
- If either of the pinion gear and the wheel gear needs to be replaced, both gears must always be replaced in pairs.  
(Example) When replacing the G2P, the G2W must be replaced.
- For additional safety, the cross-ratio transmission ass'y should be replaced.

## 2) Crankshaft kit

This crank is designed by reducing the weight and moment of inertia of the standard crank by about 700 g and 20%, respectively.



- \* Checking of sizes of the bearings ② as well as their installation, can be done in the same manner as the standard type bearing.  
(Refer to the Service Manual)

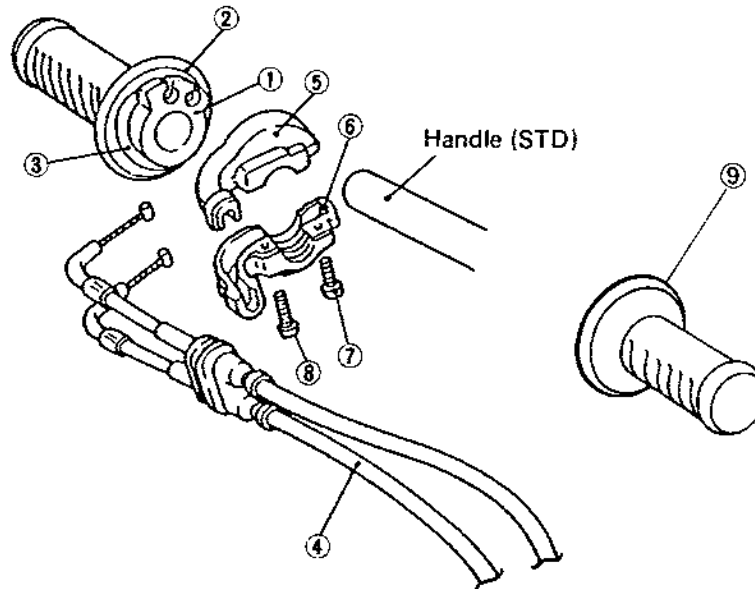
| No. | Part No.     | Part name               | Q'ty | Remarks                    |
|-----|--------------|-------------------------|------|----------------------------|
| 1   | 4FN-11411-70 | Crank shaft             | 1    |                            |
| ☆ 2 | 3GM-11416-00 | Bearing, crank shaft    | 10   | Identification: Blue paint |
| ☆ 2 | 3GM-11416-10 | "                       | 10   | " Black paint              |
| ☆ 2 | 3GM-11416-20 | "                       | 10   | " Brown paint              |
| ☆ 2 | 3GM-11416-30 | "                       | 10   | " Green paint              |
| ☆ 2 | 3GM-11416-40 | "                       | 10   | " Yellow paint             |
| ☆ 3 | 3GM-11656-00 | Bearing, connecting rod | 8    | Selection                  |
| ☆ 3 | 3GM-11656-10 | "                       | 8    | "                          |
| ☆ 3 | 3GM-11656-20 | "                       | 8    | "                          |
| ☆ 3 | 3GM-11656-30 | "                       | 8    | "                          |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

( ) use the original equipment.

### 3) High throttle kit

The throttle valve angle can be set at 60° against 72° of the standard type.



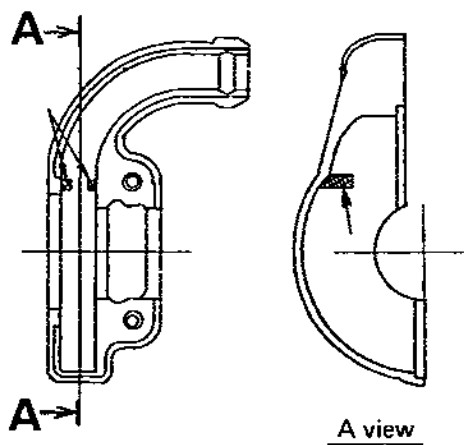
| No. | Part No.     | Part name            | Q'ty | Remarks                 |
|-----|--------------|----------------------|------|-------------------------|
| 1   | 3FV-26243-80 | Tube, guide          | 1    |                         |
| ☆ 2 | 47X-26242-00 | Grip 2               | 1    |                         |
| ☆ 3 | 47X-26249-00 | Ring, leaf           | 1    |                         |
| 4   | 4FN-26302-70 | Wire, throttle ass'y | 1    |                         |
| ☆ 5 | 3FV-26281-00 | Cap, grip upper      | (1)  | Correction is necessary |
| ☆ 6 | 3FV-26282-00 | Cap, grip under      | (1)  |                         |
| ☆ 7 | 98506-05020  | Screw, pan head      | (1)  |                         |
| ☆ 8 | 98506-05025  | Screw, pan head      | (1)  |                         |
| ☆ 9 | 47X-26241-00 | Grip (LH.)           | 1    |                         |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

( ) use the original equipment.

The part in parenthesis is the part which is originally installed on the vehicle and which can be used again.

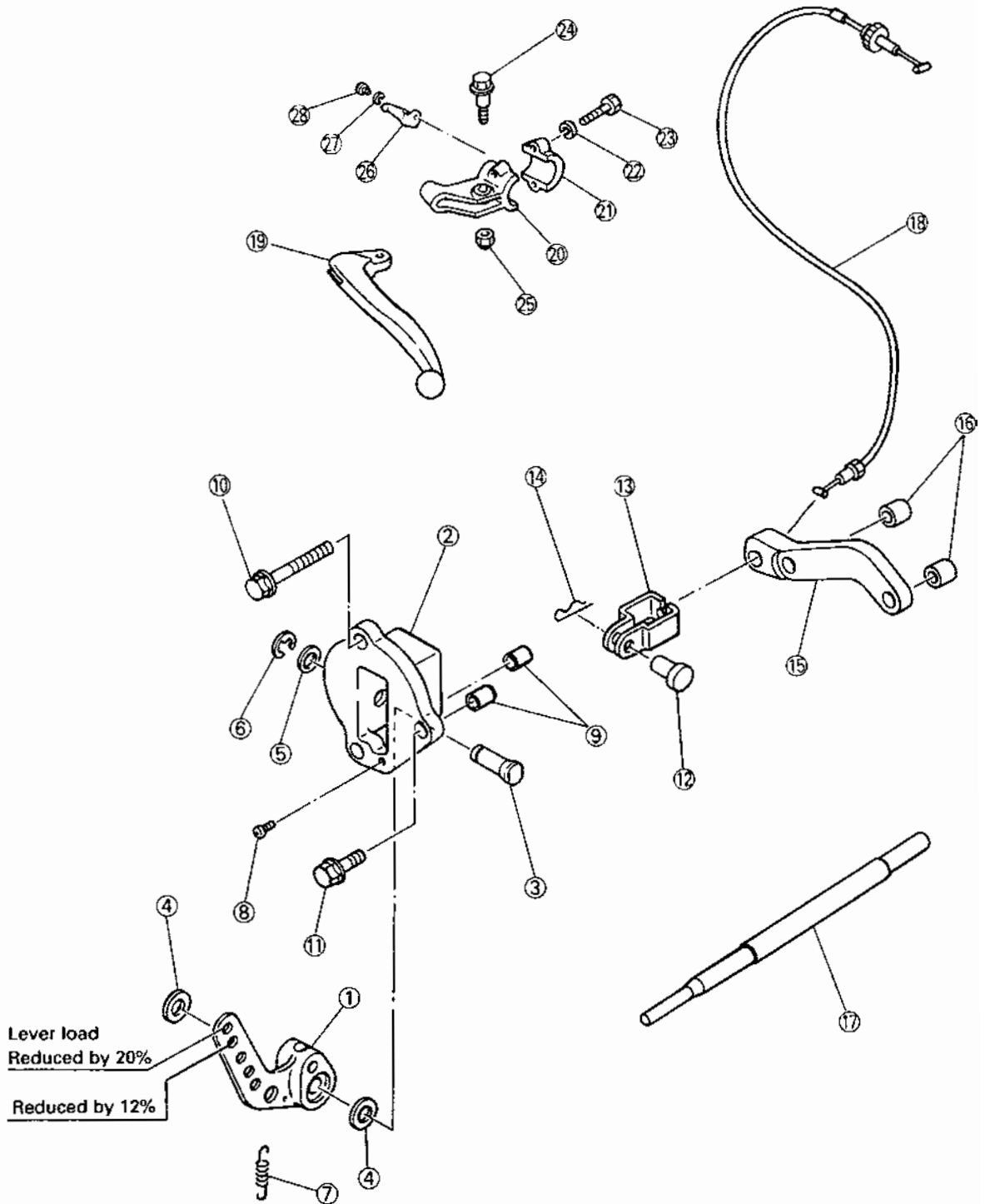
As shown below, part ⑤ should be modified in the following manner:



\*Cut the shaded area ~~XXXXXX~~ using a router.  
After cutting, assemble the kit and check if it smoothly operates.

#### 4) Mechanical clutch kit

This mechanical clutch is changed from the hydraulic type as of the standard mechanical clutch to the mechanical type. Select a desired lever ratio from the two mounting holes.

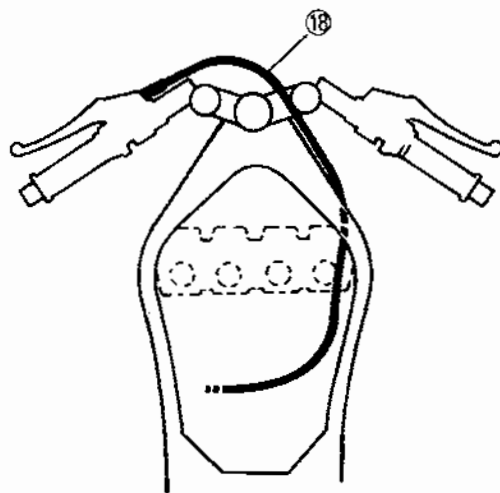


| No.  | Part No.     | Part name         | Q'ty | Remarks |
|------|--------------|-------------------|------|---------|
| 1    | 4FN-16340-70 | Lever ass'y       | 1    |         |
| 2    | 4FN-16381-80 | Holder, lever     | 1    |         |
| 3    | 4FN-16382-70 | Axle, push, lever | 1    |         |
| ☆ 4  | 90201-087H6  | Washer            | 2    |         |
| ☆ 5  | 90201-084L7  | Washer            | 1    |         |
| ☆ 6  | 99001-06600  | Circlip           | 1    |         |
| ☆ 7  | 90506-08227  | Spring            | 1    |         |
| ☆ 8  | 98501-04010  | Screw             | 1    |         |
| ☆ 9  | 91810-18013  | Pin               | 2    |         |
| ☆ 10 | 95026-06090  | Bolt              | 1    |         |
| ☆ 11 | 95026-06030  | Bolt              | 2    |         |
| ☆ 12 | 91701-06010  | Pin               | 1    |         |
| ☆ 13 | 214-16389-00 | Joint             | 1    |         |
| ☆ 14 | 90468-12007  | Clip              | 1    |         |
| 15   | 4FN-15441-70 | Holder, wire      | 1    |         |
| ☆ 16 | 90387-064Y0  | Bush              | 2    |         |
| 17   | 4FN-16357-70 | Rod, push         | 1    |         |
| 18   | 4FN-26335-70 | Wire, clutch      | 1    |         |
| ☆ 19 | 214-83912-00 | Lever 1           | 1    |         |
| ☆ 20 | 5F6-82911-00 | Holder, lever     | 1    |         |
| ☆ 21 | 4V4-82913-00 | Holder, lower     | 1    |         |
| ☆ 22 | 92906-05100  | Washer            | 2    |         |
| ☆ 23 | 97006-05020  | Bolt              | 2    |         |
| ☆ 24 | 90109-06799  | Bolt              | 1    |         |
| ☆ 25 | 95616-06100  | Nut               | 1    |         |
| ☆ 26 | 5F6-26368-00 | Spring, lock      | 1    |         |
| ☆ 27 | 92906-05100  | Washer            | 1    |         |
| ☆ 28 | 98506-05010  | Screw             | 1    |         |

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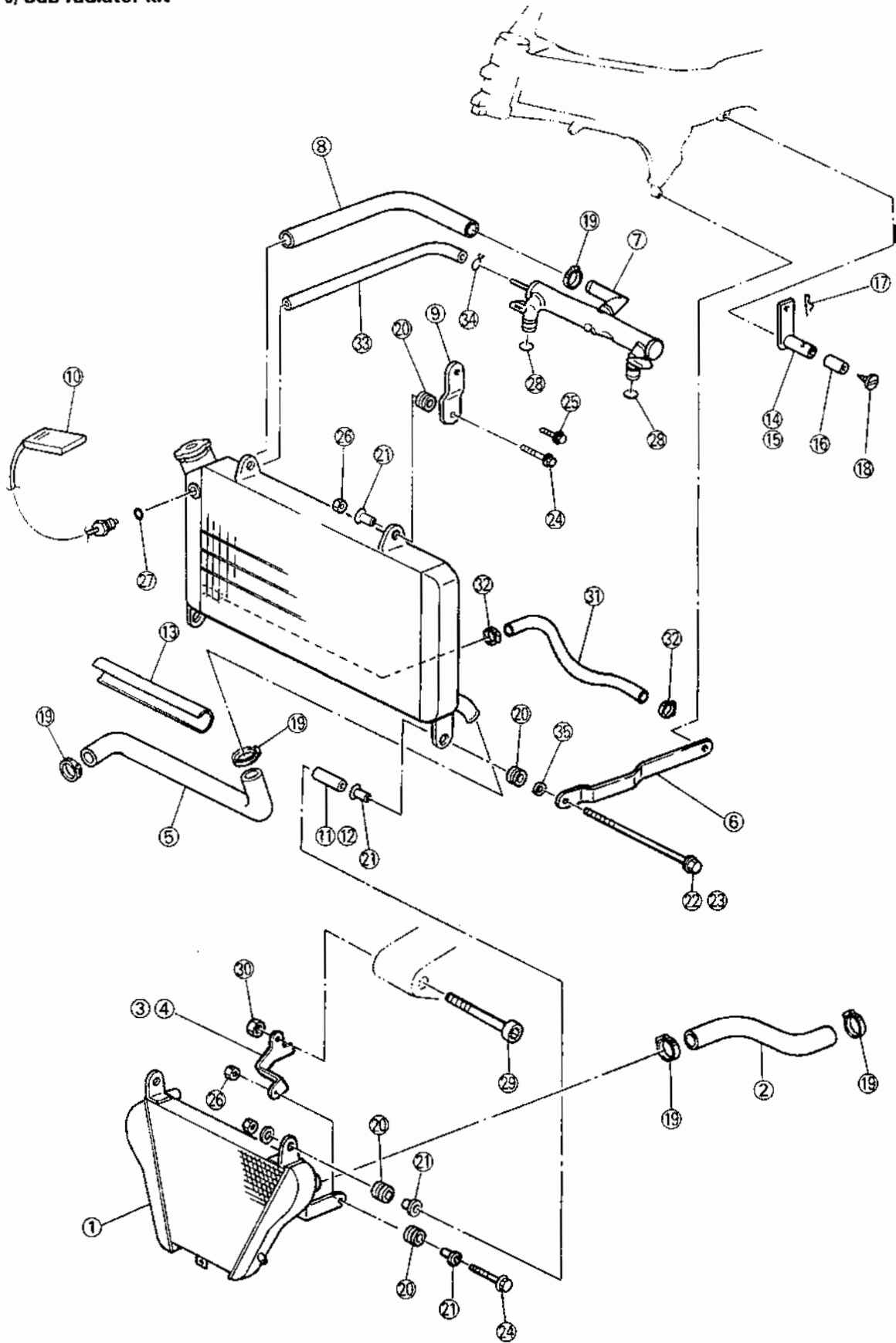
**CAUTION:**

1. Place the washer ④ between the lever ass'y ① and the holder ②.
2. Tighten the holder, wire ⑮ together with the selfstarter mount. To remove the self-starter, fit in the bush ⑯. Use the bolt, securing the selfstarter, for the mounting bolt.
3. Route the wire ⑰ on the right inner side of the frame and pass it above the under bracket.



4. Determine the mounting position of the joint ⑬ by preference.

5) Sub radiator kit



| No.  | Part No.     | Part name               | Q'ty | Remarks                  |
|------|--------------|-------------------------|------|--------------------------|
| 1    | 4FN-2140A-70 | Radiator ass'y 2        | 1    |                          |
| 2    | 4FN-12579-70 | Hose (w/p~rad.)         | 1    |                          |
| 3    | 4FN-2142K-71 | Bracket 1 (lower)       | 1    | Left side                |
| 4    | 4FN-2142L-71 | Bracket 2 (lower)       | 1    | Right side               |
| 5    | 4FN-12589-70 | Hose (main~sub)         | 1    |                          |
| 6    | 4FN-2142M-71 | Bracket (middle)        | 2    | Common to left and right |
| 7    | 4FN-12482-70 | Pipe (head/cyl.)        | 1    |                          |
| 8    | 4FN-12576-70 | Hose (⑦~rad.)           | 1    |                          |
| 9    | 4FN-2142G-70 | Stay 1 (upper)          | 2    | Common to left and right |
| 10   | 4FN-83590-70 | Water temperature ass'y | 1    |                          |
| 11   | 4FN-12528-70 | Connector 1             | 1    | ℓ =36 (Left side)        |
| 12   | 4FN-12529-70 | Connector 2             | 1    | ℓ =43 (Right side)       |
| 13   | 4FN-1258A-70 | Shaft glass wool        | 1    |                          |
| 14   | 4FN-28321-71 | Stay 1                  | 1    | Left                     |
| 15   | 4FN-28322-71 | Stay 2                  | 1    | Right                    |
| ☆ 16 | 4A0-28364-00 | Nut                     | 2    |                          |
| ☆ 17 | 4DP-28334-00 | Clip                    | 2    |                          |
| ☆ 18 | 90150-06031  | Screw                   | 2    |                          |
| ☆ 19 | 90450-38040  | Hose clamp (large)      | 5    |                          |
| ☆ 20 | 90480-15363  | Grommet                 | 5    |                          |
| ☆ 21 | 90387-07391  | Collar                  | 4    |                          |
| ☆ 22 | 91316-06085  | Bolt                    | 1    | Left                     |
| ☆ 23 | 91316-06075  | Bolt                    | 1    | Right                    |
| ☆ 24 | 91316-06025  | Bolt                    | 4    |                          |
| ☆ 25 | 95816-06012  | Bolt                    | 2    |                          |
| ☆ 26 | 95701-06500  | Nut                     | 6    |                          |
| ☆ 27 | 93210-13016  | O-ring                  | 1    |                          |
| ☆ 28 | 93210-18417  | O-ring                  | 2    |                          |
| ☆ 29 | 91316-10055  | Bolt                    | 2    | Mounting stays 1 and 2   |
| ☆ 30 | 90185-10037  | Nut, U                  | 2    | Mounting stays 1 and 2   |
| ☆ 31 | 4FN-12588-70 | Hose 5                  | 1    | Oil cooler×radiator      |
| ☆ 32 | 90450-22017  | Hose clamp              | (2)  | For hose 5               |
| ☆ 33 | 90445-126H7  | Hose                    | (1)  | Pipe 2×radiator          |
| ☆ 34 | 90467-11090  | Clip                    | (2)  |                          |
| ☆ 35 | 90201-06697  | Washer                  | 2    |                          |

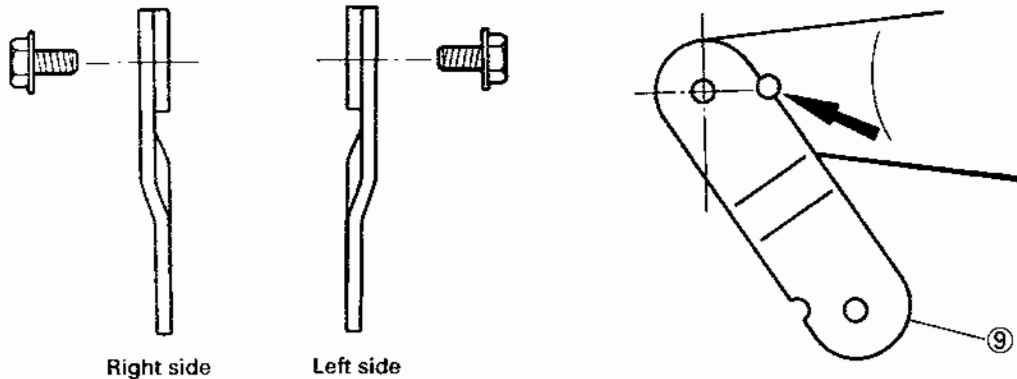
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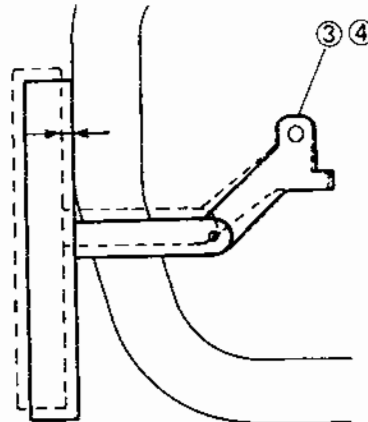


**CAUTION:**

1. The parts ② and ③ must be mounted in the inner side of the engine case mounting part.
2. Of the parts ⑪ and ⑫, the longer one must be on the right side as you ride. Note that if you make a mistake the exhaust pipe and water hose tend to interfere with each other.
3. The stay 1 ⑨ is common to left and right. Mount it by aligning the notch in the stay with the indentation on the body side.



4. After assembling, check for clearance (5 mm) between the exhaust pipe and the radiator ass'y 2 ①. If they are touching each other, slightly move the brackets ② and ③.



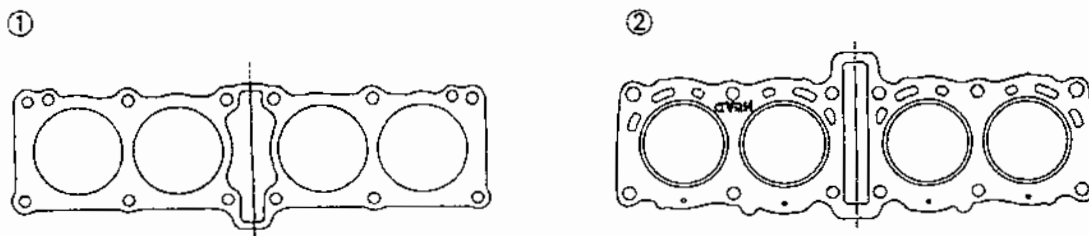
5. The bolts ⑫ and ⑬ should be put in from the inner side and the nut ⑭ should be on the outer side for easier work.
6. The hoses ⑧ and ⑩ are rather long and should be cut to the proper length before use.
7. Note that excessively tightening the hose clamp may result in water leaks or damage to the clamp body.
8. For mounting the cowl, use the supplied stay because the position of the radiator ass'y 2 is slightly lower. The fastener for mounting the under cowl and the radiator ass'y 2 may interfere with each other.
9. The water should be checked as often as possible.  
Air somewhat tends to remain because of routing of the hose, etc. If there remains too much air, the machine cannot exert its capability fully.
10. Use city water for the water and do not use water containing coolant. If the machine is not to be used for an extended period of time, be sure to drain cooling water.
11. An electric water temperature ass'y (digital) is contained in this kit. If the battery capacity is deteriorated and drops below 12V, the may malfunction. Attention should be given to control of the battery. Check that the capacity is at least 12.0 V more than 30 minutes after charging.
12. The sheet ⑬ should be wrapped around the area near the exhaust pipe of the hose for insulation and should be retained with stainless wire to prevent it from coming off.

**6) Gasket, cylinder**

This part is for adjusting the compression ratio. It is available in three thicknesses, 0.15, 0.25, and 0.30. The standard part is 0.20 mm in thickness.

**7) Gasket, cylinder head**

This part has been changed to the double bead type from the standard part for better durability and reliability.



| No. | Part No.     | Part name           | Q'ty | Remarks |
|-----|--------------|---------------------|------|---------|
| 1   | 4FN-11351-70 | Gasket, cyl.        | 1    | t=0.15  |
|     | 4FN-11351-80 | Gasket, cyl.        | 1    | t=0.25  |
|     | 4FN-11351-90 | Gasket, cyl.        | 1    | t=0.30  |
| 2   | 4FN-11181-70 | Gasket, cyl. head 1 | 1    |         |

**8) Spark plug**

The following parts are the NGK surface gap (see P. 3) type spark plugs specified for use in YZF750 races. The champion spark plug should be purchased in the market.

| No. | Part No.  | Part name       | Q'ty | Remarks |
|-----|-----------|-----------------|------|---------|
| 1   | R0045G-9  | Spark, plug #9  | 4    |         |
| 2   | R0045G-10 | Spark, plug #9  | 4    |         |
| 3   | R0045G-11 | Spark, plug #11 | 4    |         |

**9) Intake valve kit**

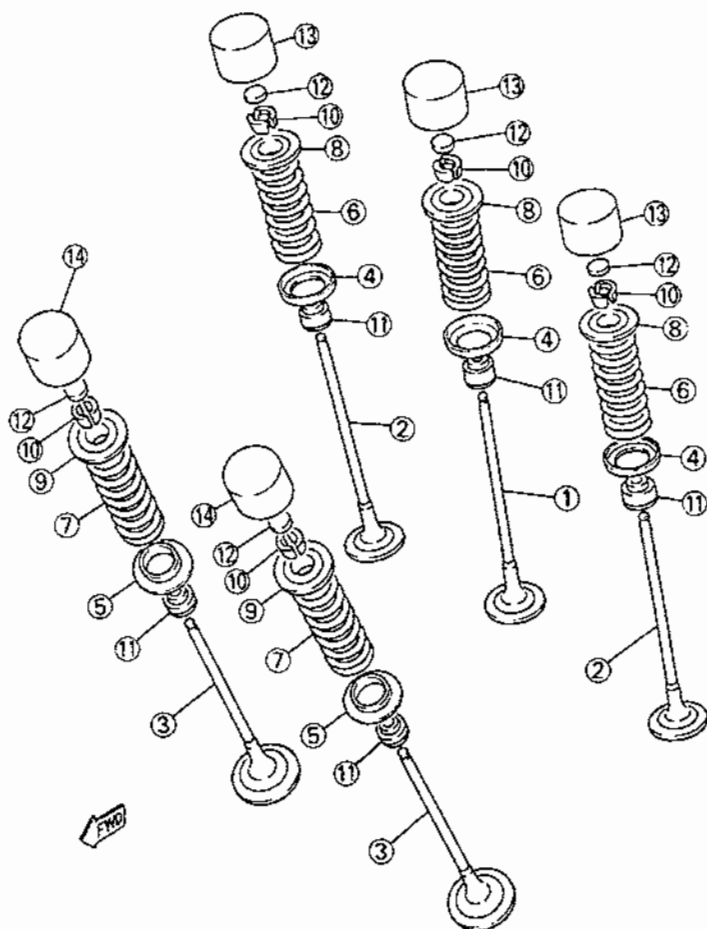
The shaft has been changed to the waist type from the standard part and the heat treatment has also been changed to improve the intake efficiency and durability. The funnel shape is the same as that of the standard part so that it can be combined with the kit piston as it is.

**10) Exhaust valve kit**

The machining method has been changed from the standard part to improve the exhaust efficiency and durability. The funnel shape is the same as that of the standard part so that it can be combined with the kit piston as it is.

**11) Valve retainer kit**

This valve retainer is made of titanium and designed for the purpose of reducing weight and better response. It can be mounted on either standard valve or kit valve.



**CAUTION:**

- The valve kit and retainer kit should be assembled in the same manner as for the standard machine.
- Thoroughly fit the valve and valve seat by referring to the Service Manual.

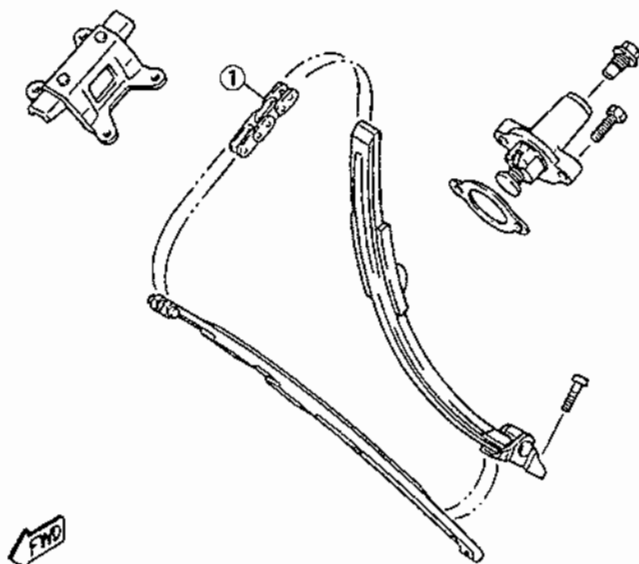
| No.  | Part No.        | Part name               | Q'ty | Remarks |
|------|-----------------|-------------------------|------|---------|
| 1    | 4FN-12111-70    | Valve, intake           | 4    |         |
| 2    | 4FN-12112-70    | Valve, intake 2         | 8    |         |
| 3    | 4FN-12121-70    | Valve, exhaust          | 8    |         |
| ☆ 4  | 4FM-12116-00    | Seat, valve spring      | (12) |         |
| ☆ 5  | 3GM-12126-00    | Seat, valve spring 2    | (8)  |         |
| ☆ 6  | 3FV-12113-00    | Spring, valve inner     | (12) |         |
| ☆ 7  | 3FV-12114-00    | Spring, valve outer     | (8)  |         |
| 8    | 4FN-12117-70    | Retainer valve spring 1 | 12   |         |
| 9    | 4FN-12127-70    | Retainer valve spring 2 | 8    |         |
| ☆ 10 | 1WG-12118-00    | Cotter, valve           | (40) |         |
| ☆ 11 | 1WG-12119-00    | Seal, valve stem        | (20) |         |
| ☆ 12 | 1HX-12168-00~Y1 | Pad, adjusting          | (20) | UR      |
| ☆    | 1HX-12169-11~T0 | Pad, adjusting          | (20) | UR      |
| ☆ 13 | 3LN-12153-20~30 | Lifter, valve           | (12) | UR      |
| ☆ 14 | 3FV-12153-10    | Lifter, valve           | (8)  |         |

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( ) use the original equipment.

### 12) Cam chain

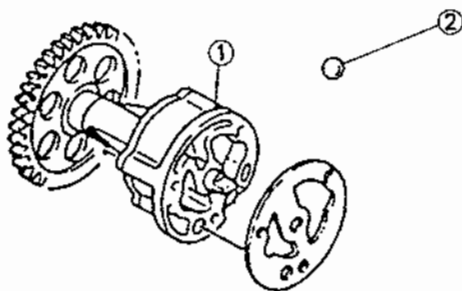
Shot peening has been performed on the bush and plate of the standard part to improve the strength and durability.



| No. | Part No.     | Part name       | Q'ty | Remarks |
|-----|--------------|-----------------|------|---------|
| 1   | 4FN-12190-70 | Cam chain ass'y | 1    |         |

### 13) Oil pump assembly

The rotor width has been changed from 16 mm of the standard part to 14 mm to reduce the loss horsepower.

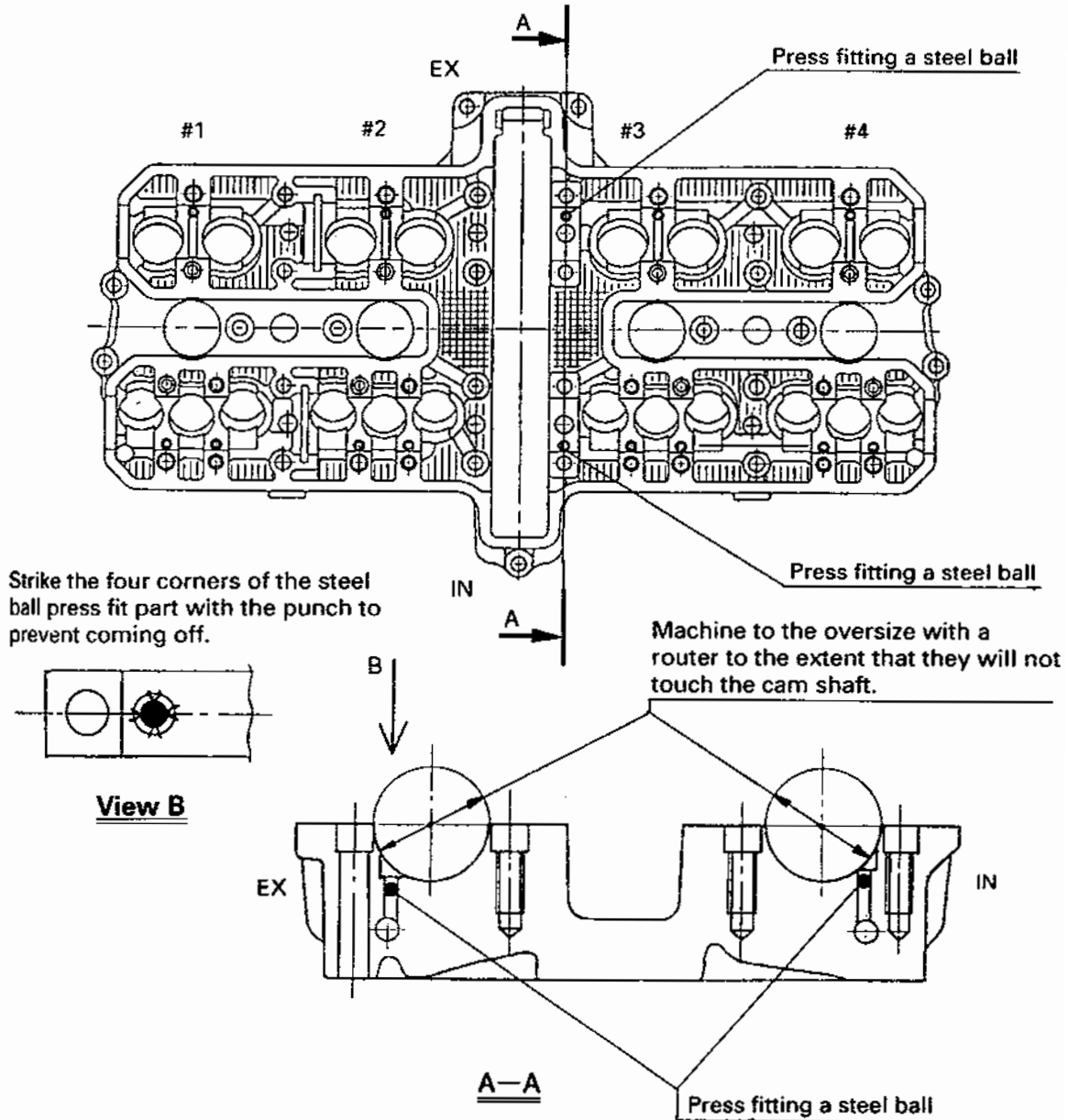


| No. | Part No.     | Part name      | Q'ty | Remarks |
|-----|--------------|----------------|------|---------|
| 1   | 4FN-13300-70 | Oil pump ass'y | 1    |         |
| ☆ 2 | 93501-08001  | Ball           | 2    | φ 3.175 |

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.

**CAUTION:**

- This oil pump should be assembled and inspected in the same manner as for the standard part. Refer to the Service Manual.
- When using this oil pump, the oil pressure of the engine drops by about 0.2 kg/cm<sup>2</sup> at the main gallery. Therefore, be sure to stop up the #3 bearing oil passages (IN, EX) by press fitting steel balls into them (2 places). This allows the oil pressure to increase by about 0.2 kg/cm<sup>2</sup> so that this oil pump will be at the same level as that of the standard part. For the #3 bearings (IN, EX) with the oil passages stopped up, grind both the cam case side and cap cam shaft side with a router to the extent that they will not touch the cam shaft so that they will not seizure with the cam shaft.



- This kit is for races only. Avoid using it on general roads to prevent possible trouble.

## 5. Kit Parts Interchangeability Between OW01 and YZF750SP (Endurance races, Sprint races kit)

Note that of '92 OW01 kit parts those listed in the table below cannot be used with the YZF750SP.

| No. | Part Name                         | Description   |
|-----|-----------------------------------|---|
| 1   | Piston                            | Differs in head shape and touches the valve.                        |
| 2   | Cam shaft IN                      | Differs in cam timing. Can touch the valve.                         |
| 3   | Cam shaft EX                      | ↑   |
| 4   | Cam sprocket, IN                  | ↑   |
| 5   | Cam sprocket, EX<br>(90501-230E4) | ↑   |
| 6   | Clutch spring                     | Insufficient load of spring   |
| 7   | Ignitor unit                      | Differs in ignition characteristic and can damage the engine.       |
| 8   | Muffler ass'y                     | Different mounting on the diffuser and different routing dimension. |
| 9   | Carburetor<br>setting parts       | Different mounting and shape.                                       |
| 10  | Wire harness                      | Different routing and specifications.                               |
| 11  | Exhaust pipe kit                  | Different mounting and specifications.                              |
| 12  | Air induction box<br>kit          | Different mounting and specifications.                              |
| 13  | High throttle kit                 | Different mounting and specifications.                              |
| 14  | Radiator kit                      | Different mounting and shape.                                       |
| 15  | Subradiator kit                   | Different mounting and shape.                                       |
| 16  | 4-2-1 Exhaust kit                 | Different mounting and specifications.                              |
| 17  | Drive sprocket                    | Different applicable chain size.                                    |

## 6. Engine Maintenance Data

### 1) List of engine tightening torque (Endurance races, Sprint races kit)

| No.   | Sec. | Tightening point              | Part No.                    | Part name            | Dia x Pitch | Tightening torque (kgf·m) | Q'ty | Neji-lock washer | Lock washer | Remarks                                 |
|-------|------|-------------------------------|-----------------------------|----------------------|-------------|---------------------------|------|------------------|-------------|---|
| T-001 | Std. |                               | 9502Δ-06ΔΔΔ                 | Bolt, flange (small) | M6 x 1.0    | 1.0 ± 0.2                 |      |                  |             |   |
| T-002 |      |                               | 9507Δ-06ΔΔΔ<br>9102Δ-06ΔΔΔ  | Bolt, flange         | M6 x 1.0    | 1.0 ± 0.2                 |      |                  |             |   |
| T-003 |      |                               | 9131Δ-06ΔΔΔ                 | Bolt, hexagon socket | M6 x 1.0    | 1.0 ± 0.2                 |      |                  |             |   |
| T-004 |      |                               | 92501-06ΔΔΔ                 | Screw, panhead       | M6 x 1.0    | 0.7 ± 0.2                 |      |                  |             |   |
| T-006 |      |                               | 9502Δ-08ΔΔΔ                 | Bolt, flange (small) | M8 x 1.25   | 2.0 ± 0.2                 |      |                  |             |   |
| T-007 |      |                               | 9582Δ-08ΔΔΔ                 | Bolt, flange         | M8 x 1.25   | 2.0 ± 0.2                 |      |                  |             |   |
| T-010 | 111  | Sand hole plug                | 90340-18101                 | Plug, straight screw | M18 x 1.5   | 5.5 ± 0.5                 | 4    | S2-M<br>(TB1321) |             |   |
| T-020 |      | Spark plug installation       | 9470Δ-0318<br>9470Δ-0318    | Plug, spark          | M10 x 1.5   | 1.25 ± 0.25               | 4    |                  |             |   |
| T-030 |      | Head tightening               | 90179-10584                 | Nut                  | M10 x 1.25  | 4.1 ± 0.2                 | 8    |                  |             | Lubricate with oil to screw and stopper |
| T-040 |      | Head tightening               | 90176-10064                 | Nut                  | M10 x 1.25  | 4.1 ± 0.2                 | 4    |                  |             | Lubricate with oil to screw and stopper |
| T-050 |      | Cap x Cam case                | 90105-06153                 | Bolt, flange         | M6 x 1.0    | 1.0 ± 0.2                 | 16   |                  |             |   |
| T-060 |      | Cap x Head                    | 90105-06541                 | Bolt, flange         | M6 x 1.0    | 1.0 ± 0.2                 | 20   |                  |             |   |
| T-065 |      | Cap x Head                    | 90105-06693                 | Bolt, flange         | M6 x 1.0    | 0.8 ± 0.2                 | 4    |                  |             | Refer to 4FM-0A111-00                   |
| T-070 |      | Head cover tightening         | 90109-064F0                 | Bolt                 | M6 x 1.0    | 1.0 ± 0.2                 | 8    |                  |             |   |
| T-080 |      | Oil hole plug                 | 90336-06031                 | Plug taper           |             |                           | 3    | S2-M<br>(TB1321) |             | Cam case, plug taper section            |
| T-090 |      | Oil hole plug                 | 90336-06021                 | Plug taper           |             |                           | 2    | S2-M<br>(TB1321) |             | Cam case, plug taper                    |
| T-100 |      | (exhaust pipe installation)   | 95611-08625                 | Bolt, stud           | M8 x 1.25   | 1.5 ± 0.2                 | 8    |                  |             | Lubricate with oil to screw             |
| T-110 | 114  | Conrod<br>Conrod cap          | 36V-11654-00<br>90179-08327 | Bolt, conrod<br>Nut  | M8 x 0.75   | 3.6 ± 0.25                | 8    |                  |             | Lubricate Molybdenum gear grease        |
| T-120 | 121  | Plug x Tensioner case (12210) | 90109-112F1                 | Bolt                 | M11 x 1.0   | 2.0 ± 0.5                 | 1    |                  |             |   |
| T-130 |      | Sprocket x Cam shaft          | 90105-07342                 | Bolt, flange         | M7 x 1.0    | 2.4 ± 0.2                 | 4    |                  |             |   |
| T-140 |      | Damper chain 2 x Lower case   | 90109-065A8                 | Bolt                 | M6 x 1.0    | 1.0 ± 0.2                 | 2    | S2-M<br>(TB1321) |             |   |
| T-150 | 124  | Pipe 4 installation           | 90110-06142                 | Bolt, hexagon socket | M6 x 1.0    | 1.0 ± 0.2                 | 1    |                  |             |   |
| T-152 |      | Hose installation             | 90450-38040                 | Hose clamp ass'y     |             | 0.15-0.25                 | 4    |                  |             |   |
| T-154 |      | Hose installation             | 90160-22017                 | Hose clamp ass'y     |             | 0.15-0.25                 | 4    |                  |             |   |
| T-160 | 131  | Oil cooler installation       | 90401-20151                 | Bolt, union          | M20 x 1.5   | 6.3 ± 0.3                 | 1    |                  |             | Lubricate with oil to screw and flange  |

| No.   | Sec. | Tightening point                  | Part No.     | Part name                  | Dia X Pitch | Tightening torque (kgf·m)        | Q'ty | Neji-lock        | Lock washer | Remarks                                 |
|-------|------|-----------------------------------|--------------|----------------------------|-------------|----------------------------------|------|------------------|-------------|---|
| T-170 |      | Oil pan installation              | 3VD-13455-00 | Plug                       | M14 x 1.5   | 4.3 ± 0.4                        | 1    |                  |             |   |
| T-175 |      | Delivery pipe 1 installation      | 95026-06012  | Bolt, flange               | M6 x 1.0    | 1.0 ± 0.2                        | 3    | S2-M<br>(TB1322) |             |   |
| T-180 |      | Oil hose x Cam case               | 90401-10096  | Bolt, union                | M10 x 1.25  | 2.1 ± 0.2                        | 2    |                  |             |   |
| T-190 |      | Oil hose x Cam case               | 90401-10044  | Bolt, union                | M10 x 1.25  | 2.1 ± 0.2                        | 1    |                  |             |   |
| T-195 |      | Nozzle installation               | 95811-06016  | Bolt, flange               | M6 x 1.0    | 1.0 ± 0.2                        | 1    | S2-M<br>(TB1322) |             |   |
| T-200 |      | Baffle plate 1, 2, 3 installation | 95026-06012  | Bolt, flange (small)       | M6 x 1.0    | 1.0 ± 0.2                        | 10   | S2-M<br>(TB1322) |             |   |
| T-210 |      | Baffle lower plate installation   | 95026-06010  | Bolt, flange (small)       | M6 x 1.0    | 1.0 ± 0.2                        | 4    | S2-M<br>(TB1322) |             |   |
| T-220 |      | Oil cleaner ass'y installation    | 3FV-13440-00 | Oil cleaner ass'y          | M20 x 1.5   | 1.7 ± 0.2                        | 1    |                  |             | Lubricate with oil to O-ring            |
| T-240 | 141  | Joint air filter x Carburetor     | 91311-05012  | Bolt, hexagon              | M5 x 0.8    | 0.5 ± 0.2                        | 8    |                  |             |   |
| T-250 | 146  | Nut ring x Head cylinder          | 90179-08410  | Nut                        | M8 x 1.25   | 2.0 ± 0.2                        | 8    |                  |             |   |
| T-260 |      | Exhaust pipe x Muffler            | 95811-08025  | Bolt, flange               | M8 x 1.25   | 2.0 ± 0.2                        | 1    |                  |             |   |
| T-270 |      | Exhaust gas outlet                | 90101-06576  | Bolt, hexagon              | M6 x 1.0    | 1.0 ± 0.2                        | 4    |                  |             |   |
| T-280 |      | Protector installation            | 90119-06187  | Bolt, hexagon W/washer     | M6 x 1.0    | 1.0 ± 0.2                        | 3    |                  |             |   |
| T-290 |      | Wire bracket installation         | 90119-06115  | Bolt, hexagon W/washer     | M6 x 1.0    | 1.0 ± 0.2                        | 3    |                  |             |   |
| T-300 |      | Exhaust pipe ass'y installation   | 95816-08035  | Bolt, flange               | M8 x 1.25   | 2.0 ± 0.2                        | 1    |                  |             |   |
| T-310 | 151  | Crankcase 1                       | 90116-105ΔΔ  | Bolt, stud                 | M10 x 1.25  | Stretch control<br>0.5-1.5 kgf·m | 12   |                  |             | Lubricate with oil to screw and stopper |
| T-320 |      | Crankcase 1 x Crankcase 2         | 90105-09373  | Bolt, flange               | M9 x 1.25   | 3.2 ± 0.2                        | 9    |                  |             | Lubricate with oil to screw and stopper |
| T-330 |      |                                   | 90105-09580  | Bolt, flange               | M9 x 1.25   | 3.2 ± 0.2                        | 1    |                  |             | Lubricate with oil to screw and stopper |
| T-340 |      |                                   | 95811-06ΔΔΔ  | Bolt, flange               | M6 x 1.0    | 1.2 ± 0.2                        | 7    |                  |             | Lubricate with oil to screw and stopper |
| T-350 |      |                                   | 95811-08ΔΔΔ  | Bolt, flange               | M8 x 1.25   | 2.4 ± 0.2                        | 17   |                  |             | Lubricate with oil to screw and stopper |
| T-360 |      |                                   | 90105-09555  | Bolt, flange               | M9 x 1.25   | 3.2 ± 0.2                        | 1    |                  |             | Lubricate with oil to screw and stopper |
| T-370 |      | Cover installation (15416)        | 90152-06014  | Screw, cross reset oval    | M6 x 1.0    | 0.7 ± 0.2                        | 6    |                  |             | Seal bolt                               |
| T-380 |      | Plate, bearing cover installation | 90151-06014  | Screw, cross reset counter | M5 x 1.0    | 1.0 ± 0.2                        | 3    | S2-M<br>(TB1322) |             |   |
| T-390 |      | Cover 2 installation (15427)      | 92011-06010  | Bolt, flange               | M6 x 1.0    | 1.0 ± 0.2                        | 1    | S2-M<br>(TB1322) |             |   |
| T-392 |      | Cover 1 installation (15417)      | 98501-06010  | Screw, panhead             | M6 x 1.0    | 0.7 ± 0.2                        | 3    |                  |             |   |
| T-393 |      | Breather 1                        | 98501-06020  | Screw, panhead             | M6 x 1.0    | 0.7 ± 0.2                        | 4    |                  |             |   |
| T-394 |      | Cover crankcase 2 x Breather 1    | 90157-06104  | Screw, cross reset pan     | M6 x 1.0    | 0.7 ± 0.2                        | 1    |                  |             | Sea bolt                                |
| T-395 |      |                                   | 90152-06024  | Screw, cross reset oval    | M6 x 1.0    | 0.7 ± 0.2                        | 1    |                  |             | Seal bolt                               |





2) List of lubricants and sealing compound (Endurance races, Sprint races kit)

| No.   | Sec. | Lubricate spot  | Seal                     | Parts requiring lubrication seals |  |                              |                             |
|-------|------|---|--------------------------|-----------------------------------|--|------------------------------|-----------------------------|
|       |      |   |                          | Case 2 (Change shaft)             | Case 2 (Rod push)                              | Drive sprocket               |                             |
| L-010 |      | Overall oil seal lip portions                         |                          |                                   |  | Cover, crankcase 1           |                             |
| L-020 |      | Overall outer circumferential portions of O-ring      | Grease                   | Oil cooler ass'y                  | Byps valve                                     | Relief valve                 | Water pipe                  |
|       |      |   |                          | Sell motor                        | A.C.G.   | Neutral switch               | Pipe delivery 1, 3, 4, 5, . |
|       |      |   |                          | Rod bush 2                        | Water pump                                     | Cover 1 (L, R)               | Pick up                     |
|       |      |   |                          | Nozzle ass'y                      | Pipe 1 (Both end)                              | Pipe oil 1, 2 (Both end)     | Pipe breather               |
| L-030 |      | Overall bearings                                      | Oil                      | Gear primary driven inner diam.   | Main shaft (L, R)                              | Drive shaft (L, R)           |                             |
|       |      |   |                          | Lay shaft (L, R)                  | Gear idler 2 inner diam.                       | Camshaft (R)                 |                             |
| L-040 | 114  | Enlarged end portion of crankshaft                    | Oil                      | Crankshaft                        |  |                              |                             |
| L-050 |      | Circumferential of piston                             | Oil                      | Piston                            | Inner circumference of bearing control (Metal) | Enlarged end portion con-rod |                             |
| L-060 |      | Circumferential of pin, piston                        | Oil                      | Pin, piston                       | Sleeve, cylinder                               | Ring, piston                 |                             |
| L-070 |      | Portion of conrod bolt                                | Molybdenum gear grease   | Conrod                            | Piston   | Small end portion of con-rod |                             |
| L-080 |      | Portion of crankshaft journal                         | Oil                      | Crankshaft                        | Bolt   | Nut, screw and stopper       |                             |
| L-090 | 121  | Shaft cam<br>Portion of profile<br>Portion of journal | Molybdenum disulfide oil | Shaft cam                         | Inner circumference of bearing control (Metal) | Crankcase 1 stopper          |                             |
| L-100 |      | Valve IN, EX portion of stem                          | Molybdenum disulfide oil | Valve IN, EX                      | Cam case                                       | Cam cap                      | Pad                         |
| L-110 |      | Valve IN, EX stem end                                 | Oil                      | Lifter valve                      | Guide IN, EX valve                             | Stem seal                    |                             |
| L-120 | 124  | W/P shaft impeller portion                            | Oil                      | Shaft impeller                    | Cam case                                       |                              |                             |
| L-130 | 131  | Oil pump ass'y (inside)                               | Oil                      | Shaft                             | Crankcase 2                                    |                              |                             |
| L-140 |      | Straigner ass'y                                       | Oil                      | Housing straighter (inside)       | Rotor IN, OUT                                  |                              |                             |
| L-145 |      | Byps valve ass'y                                      | Oil                      |                                   | Screen portion                                 |                              |                             |
| L-150 | 156  | Gear, idler 1 (interior)                              | Oil                      | Gear idler 1                      |  |                              |                             |
| L-160 |      | Starter clutch outer ass'y (inside)                   | Oil                      | Clutch starter (outer)            | Shaft 1  |                              |                             |
| L-170 |      | Sprocket, starter 2 (inner diam.)                     | Oil                      | Sprocket starter 2                | Pin (Roller)                                   | Gear, Id 2 outer diam.       |                             |
| L-175 |      | Gear, idler 2 (interior)                              | Oil                      | Gear idler 2 (interior)           | Shaft 2  |                              |                             |
| L-180 | 161  | Gear, primary driven end surface                      | Oil                      | Gear                              | Wheel starter (outer)                          |                              |                             |
| L-190 |      | Ball (for clutch)                                     | Oil                      | Ball                              | Plate, thrust (L, R)                           |                              |                             |
| L-200 | 171  | Transmission sliding gear<br>Inner surface            | Molybdenum disulfide oil | Gear 4P, 5P                       | Rod, push                                      |                              |                             |
|       |      |   |                          | Gear 1W, 2W, 3W                   |  | Axle main drive              |                             |

| No.   | Sec. | Lubricate spot  | Seal                     | Parts requiring lubrication seals |                    |                 |
|-------|------|---|--------------------------|-----------------------------------|--------------------|-----------------|
|       |      |   |                          | Gear 3P                           | Gear 4W, 5W        | Axle main drive |
| L-210 |      | Transmission floating gear groove of folk inner surface | Molybdenum disulfide oil |                                   |                    |                 |
| L-220 | 181  | Left side bearing portion of camshaft                   | Oil                      | Cam shaft                         | Case 2             |                 |
| L-230 |      | Outer circumference of bar shift folk                   | Oil                      | Bar shift folk                    | Folk shift 1, 2, 3 | Case 2          |
| L-240 |      | Shaft shift ass'y                                       | Oil                      | Shaft shift ass'y                 | Case 2             |                 |
| L-250 |      | Boss shift inner diam.                                  | Grease                   | Change pedal                      | F foot rest (B/D)  |                 |
| S-010 | 111  | Head cover sealing surface                              | Three-bond TB1541        | Head cover cleaning               | Head cover gasket  |                 |
| S-020 |      | Head cover sealing surface                              | YGK8624-IC               | Head cover gasket                 | Cam case           |                 |
| 030   | 151  | Crankcase 1 and 2 sealing surface                       | YGK8624-IC               | Case sealing surface              |                    |                 |

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# 1. FRONT FORK BRACKET KIT FOR ÖHLINS FRONT FORK SET (4FN-750BK-93)

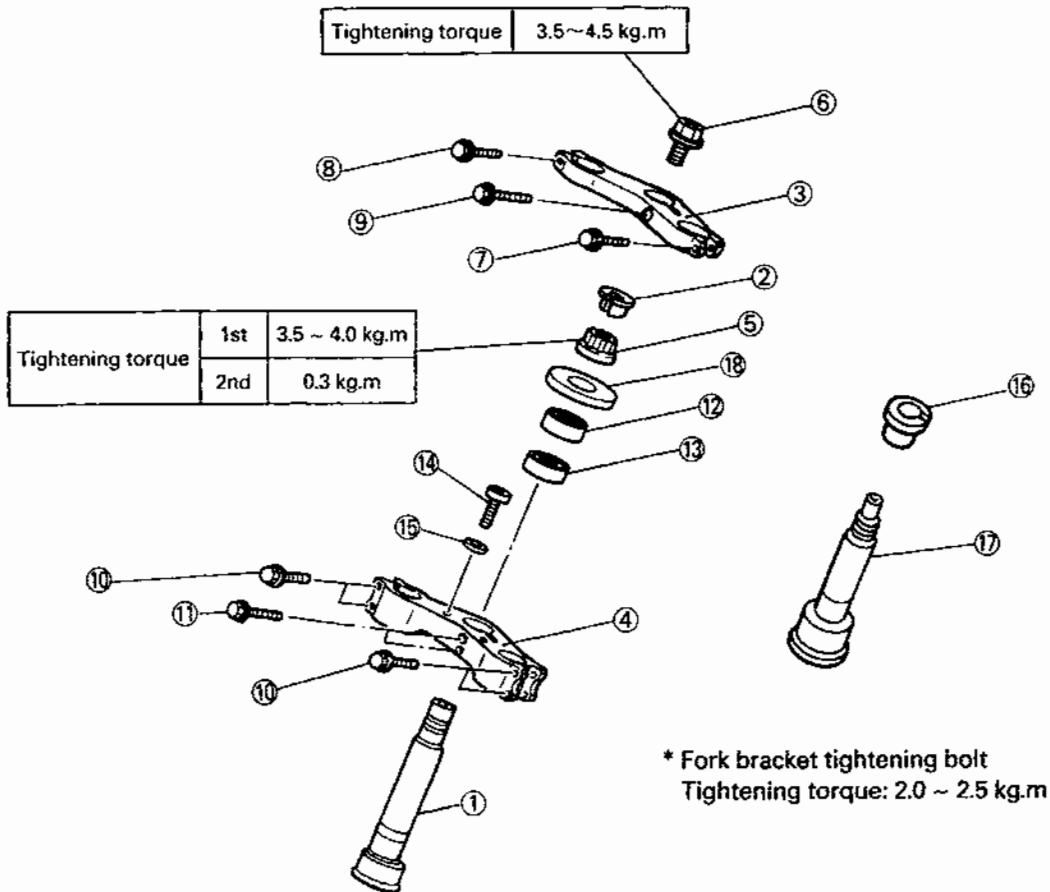
## 1) Front fork bracket kit (4FN-C3400-90)

This front fork bracket is designed for use with the ÖHLINS FG9300 and FG9200 front forks. The offset is set at 30mm, the same as the standard, when the kit is delivered.

### <Parts list>

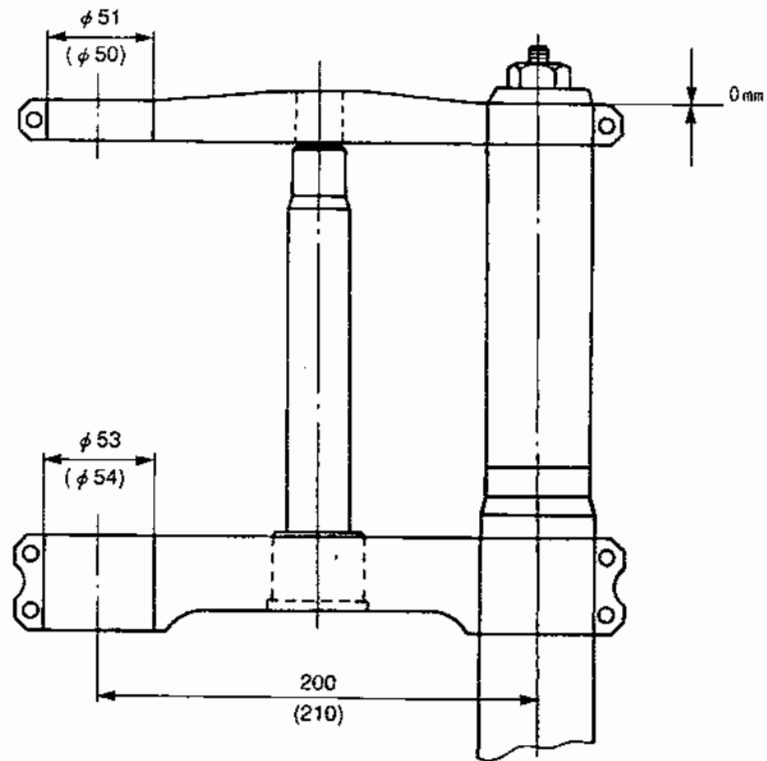
| No.  | Part No.     | Part name         | Q'ty | Remarks   |
|------|--------------|-------------------|------|-----------|
| 1    | 3FV-23341-71 | Shaft, steering   | 1    |           |
| 2    | 3FV-23343-71 | Flange, steering  | 1    |           |
| 3    | 4FN-23435-90 | Crown, handle     | 1    |           |
| 4    | 4FN-23345-90 | Under, bracket    | 1    |           |
| 5    | 4FN-23453-70 | Nut, fitting      | 1    |           |
| 6    | 1AE-23451-70 | Bolt, fitting     | 1    |           |
| ☆ 7  | 95811-08040  | Bolt, flange      | 1    |           |
| ☆ 8  | 95811-08045  | Bolt, flange      | 1    |           |
| ☆ 9  | 95811-08055  | Bolt, flange      | 1    |           |
| ☆ 10 | 95811-08045  | Bolt, flange      | 4    |           |
| ☆ 11 | 95811-08055  | Bolt, flange      | 2    |           |
| ☆ 12 | 93399-99931  | Bearing           | 1    | Upper     |
| ☆ 13 | 93399-99932  | Bearing           | 1    | Under     |
| ☆ 14 | 91311-06020  | Bolt, hex. socket | 2    |           |
| ☆ 15 | 92901-06600  | Washer            | 2    |           |
| 16   | 1AE-23343-70 | Flange, steering  | 1    | Eccentric |
| 17   | 3FV-23341-70 | Shaft, steering   | 1    | Eccentric |
| ☆ 18 | 3GM-23415-00 | Cover, ball race  | 1    |           |

For the parts marked with (☆), apply to a Yamaha dealer.



<Specification>

|                     |  |
|---------------------|--|
| Front fork          | ÖHLINS FG 9300 or FG9200 (to be purchased by user) |
| Fork pitch          | 200mm  |
| Offset              | 30mm, variable $\pm 3$ mm (27mm, 33mm)             |
| Angle of steering   | 20° to right/left                                  |
| Calipers to be used | BREMBO 4 pots or SAME DIMENSION PARTS              |
| Disk diameter       | $\phi 320$ mm                                      |
| Disk line           | 64mm (L, R)  |
| Axle shaft diameter | $\phi 22$ mm                                       |



( )=STD

• Front fork assembly notes



1. First, temporarily tighten the fitting nut ① to 3.5 ~ 4.5 kg.m, and then move the fork bracket to right and left. Next, loosen the fitting nut once and tighten with a torque of 0.3 kg.m.

2. After installing, check that the fork bracket is tight, but should not be stiff and it should operate smoothly. If the fork bracket is not mounted properly or does not operate smoothly, loosen the fitting nut ① and adjust.

3. Temporarily install the front forks, and determine the handle crown position.



4. Tighten the steering fitting bolt to specification.

Tightening torque: 3.5 ~ 4.0 kg.m

5. After tightening, check that the steering moves smoothly. If it does not operate smoothly, loosen the steering fitting nut and adjust.

6. Tighten the bolts ⑨ and ⑩ (2.0-2.5kg.m).

7. Do not tighten the front fork too hard, or the fork operation may be adversely affected. (2.0kg.m)

(PHOTO IS OW-01)

• Standard settings

|                                     |   |
|-------------------------------------|---|
| Outer tube projection value         | 0 mm (at the top of the crown handle)                 |
| Rear vehicle height adjusting value | +1 mm (29.5 mm with the vehicle height adjusting kit) |

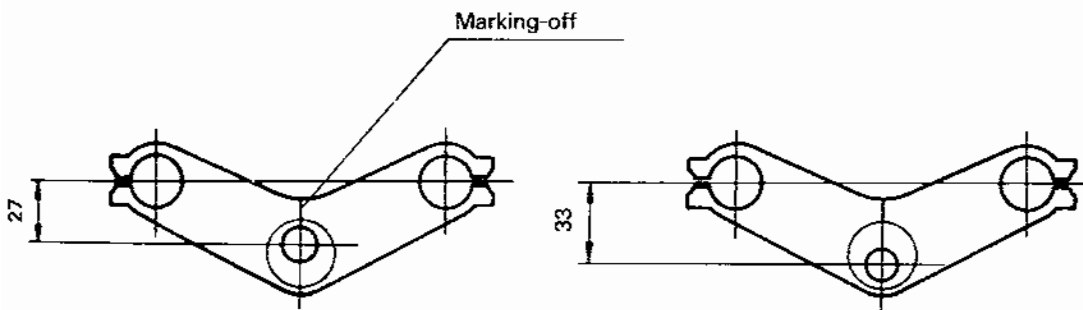
**NOTE:**

The outer projection value is +8.5mm with the above settings using the standard front fork and handle crown.

• **Changing the offset**

To change the offset to 27mm or 33mm, follow the procedures below.

1. Change the steering shaft to a 3FV-23341-70.
2. Secure so that the marking-off line of the shaft and the marking-off line on the under bracket bottom will be aligned.
3. Change the flange to a 1AE-23343-70 and align the marking-off line on the top with the marking-off line on the top of the crown handle.
4. Follow the assembling procedures in the preceding paragraph for assembly.



**CAUTION:**

When the offset value is to be 27 mm, check that the wheel and radiator do not touch each other.



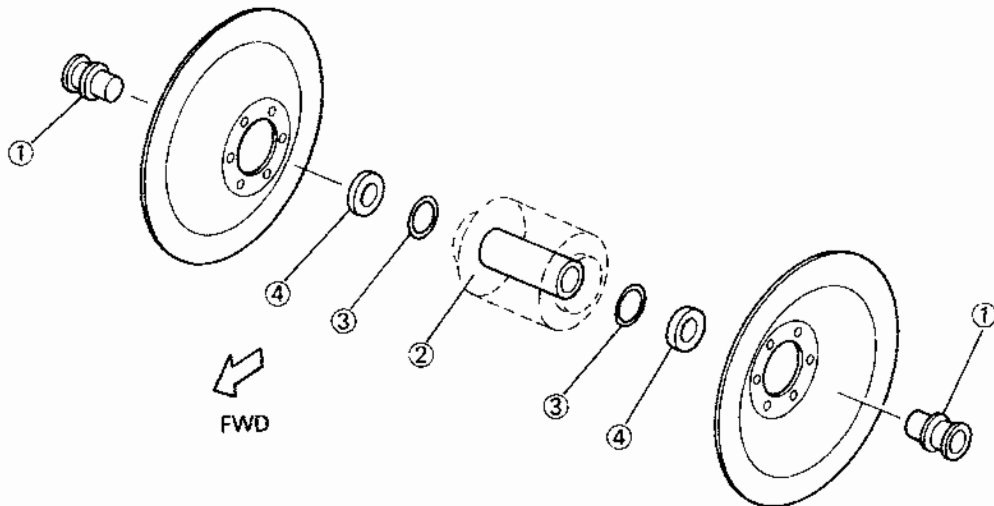
## 2) Front wheel collar kit (4FN-C5110-90)

This front wheel collar kit is designed for use with the ÖHLINS front fork and front fork ratchet kit.

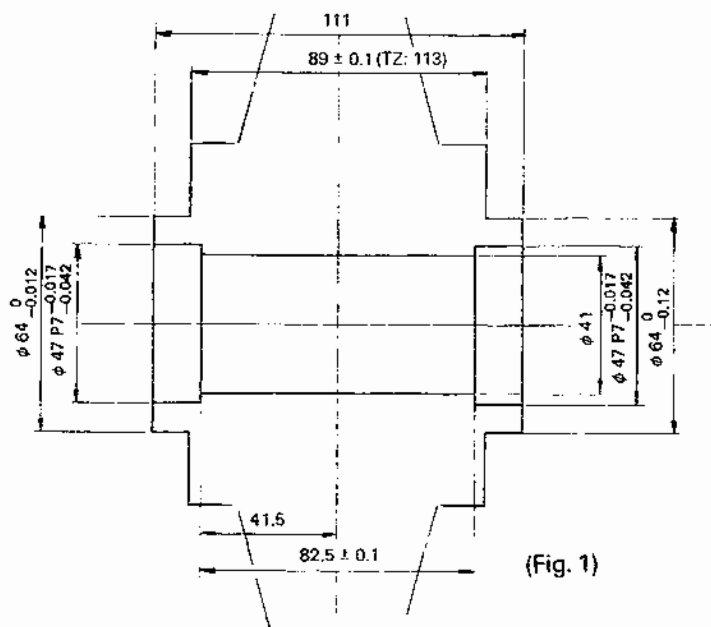
### <Parts list>

|   | No. | Part No.     | Part name             | Q'ty | Remarks |
|---|-----|--------------|-----------------------|------|---------|
|   | 1   | 3FV-25183-90 | Collar, wheel shaft 1 | 2    |         |
| ☆ | 2   | 4DP-25117-00 | Spacer, bearing       | 1    |         |
| ☆ | 3   | 4DP-2518A-00 | Plate                 | 2    |         |
| ☆ | 4   | 93306-00507  | Bearing               | 2    |         |

For the parts marked with (☆), apply to a Yamaha dealer.



- Use the wheel of the hub dimensions for Yamaha (see Fig. 1). It is appropriate to use the disk ass'y for the OW01. (Disk pitch of 64mm, BREMBO 4-pot calipers used)
- The '92 and '93 TZ250 wheels can also be used. However, since their disk mounting widths (OW-01 = 89mm, TZ250 = 113mm) are different from that of the above wheel, use a 2KM-25830-00 disk ass'y or 320mm dia. disk ass'y for use with the TZ250).

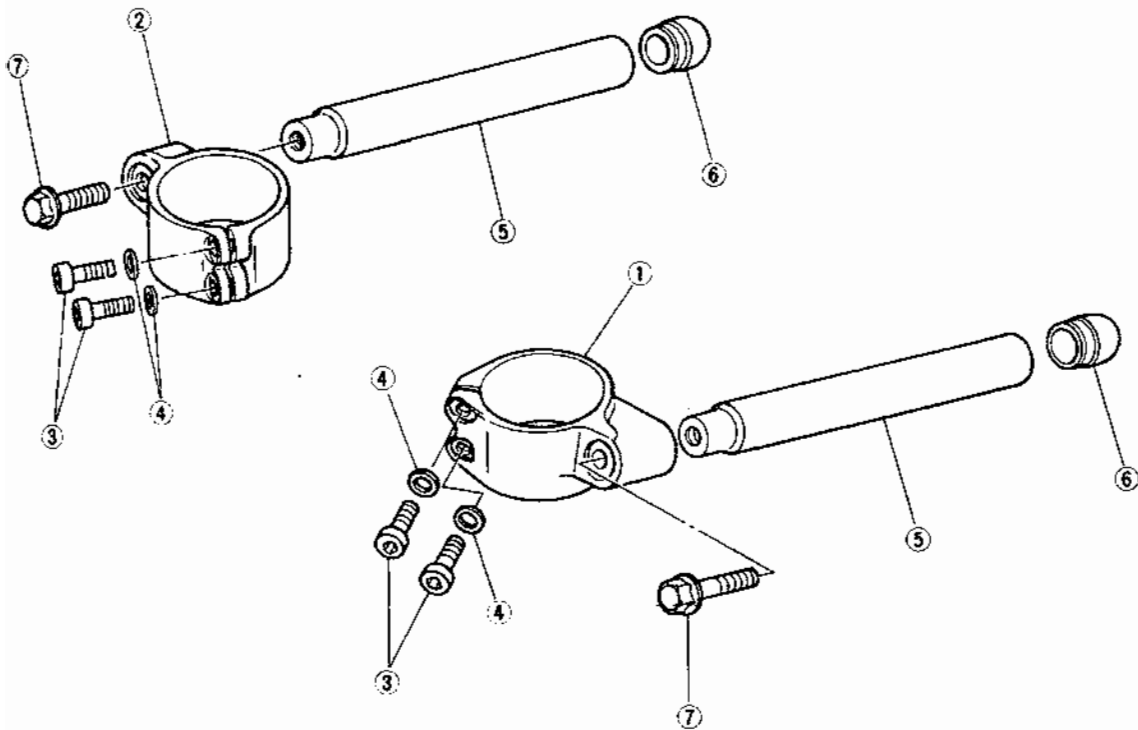


### 3) Handle kit (3FV-Y2344-90)

#### <Parts list>

| No. | Part No.     | Part name         | Q'ty | Remarks |
|-----|--------------|-------------------|------|---------|
| 1   | 3FV-23441-90 | Holder, handle LH | 1    |         |
| 2   | 3FV-23442-90 | Holder, handle RH | 1    |         |
| ☆ 3 | 91311-06025  | Bolt, hex. socket | 4    |         |
| ☆ 4 | 92901-06600  | Washer            | 4    |         |
| 5   | 3FV-26112-90 | Bar, handle       | 2    |         |
| 6   | 3FV-26246-90 | End, grip         | 2    |         |
| ☆ 7 | 90105-08548  | Bolt, flange      | 2    |         |

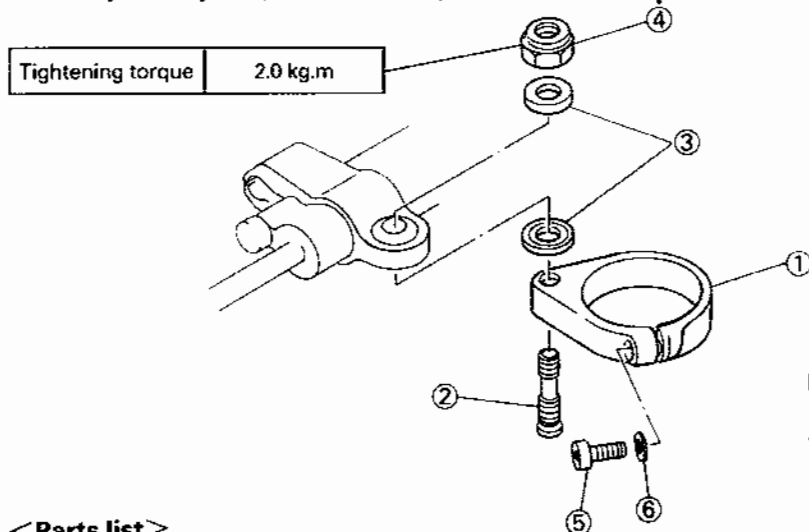
For the parts marked with (☆), apply to a Yamaha dealer.



**NOTE:** \_\_\_\_\_  
 For fork dimension  $\phi 51$ .  
 \_\_\_\_\_

- The handles (3XV-26121-00, 3XV-26122-01) for use with the TZR250R can be used with the standard fork.

#### 4) Damper Stay Kit (4FN-C3495-90) for ÖHLINS Damper



**NOTE:** \_\_\_\_\_  
For fork dimension  $\phi 53$ .

#### < Parts list >

| No. | Part No.     | Part name         | Q'ty | Remarks |
|-----|--------------|-------------------|------|---------|
| 1   | 4FN-23495-90 | Stay, damper      | 1    |         |
| 2   | 4FN-23419-90 | Shaft, damper     | 1    |         |
| 3   | 4FN-23488-90 | Spacer            | 2    |         |
| ☆   | 95611-08100  | Nut, U            | 1    |         |
| ☆   | 91311-06020  | Bolt, hex. socket | 1    |         |
| ☆   | 92901-06600  | Washer            | 1    |         |

For the parts marked with (☆), apply to a Yamaha dealer.

- It is desirable that the side cowl mounting stay be used for the mounting boss on the vehicle body side.

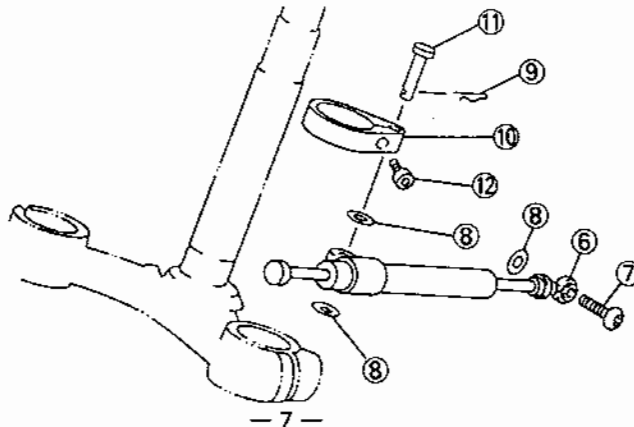
#### **NOTE:** \_\_\_\_\_

A damper stay kit for the '93 TZ250 can be used for the standard front fork.

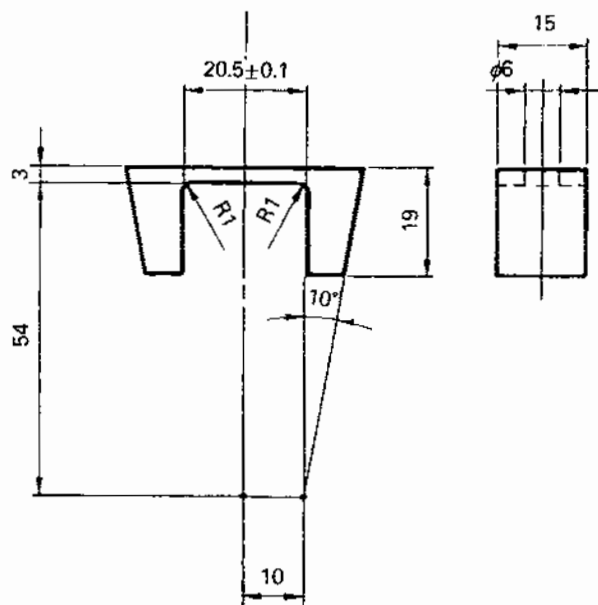
#### < Parts list >

| No. | Part No.     | Part name    | Q'ty | Remarks                    |
|-----|--------------|--------------|------|----------------------------|
| ☆   | 4DP-23490-00 | Damper ass'y | 1    |                            |
| ☆   | 92011-08025  | Bolt         | 1    |                            |
| ☆   | 90201-08455  | Washer       | 3    |                            |
| ☆   | 90468-16099  | Clip         | 1    |                            |
| ☆   | 3YL-23495-00 | Stay         | 1    | Mounting dia. of $\phi 52$ |
| ☆   | 91701-08042  | Pin          | 1    |                            |
| ☆   | 91311-06025  | Bolt         | 1    |                            |

For the parts marked with (☆), apply to a Yamaha dealer.



- Fabricate a handle stopper by referring to the following figure. (The angle of steering is 20° to left/right.)



**NOTE:**

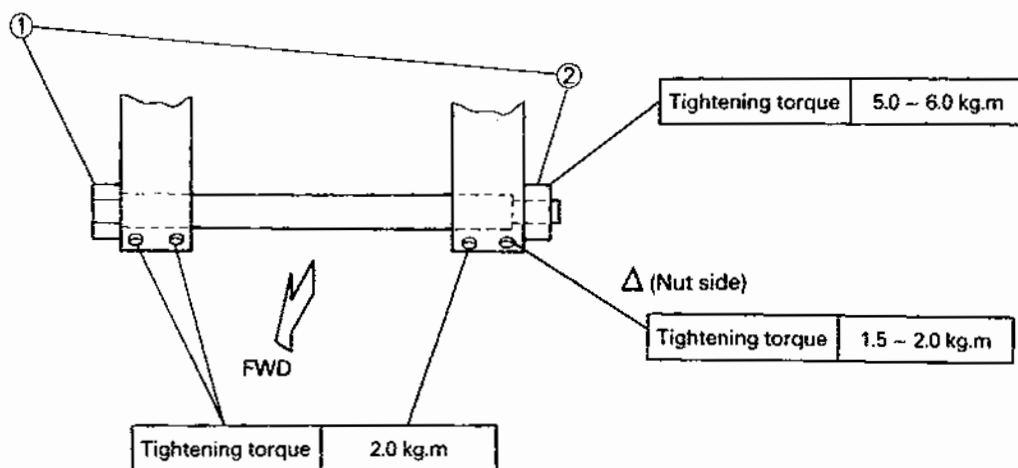
Not required in the ÖHLINS front fork bracket kit.

### 5) Front wheel axle (4FN-25181-90)

<Parts list>

| No. | Part No.     | Part name         | Q'ty | Remarks |
|-----|--------------|-------------------|------|---------|
| 1   | 4FN-25181-90 | Axle, wheel (F.R) | 1    |         |
| 2   | 4FN-25182-70 | Nut, axle         | 1    |         |

For the parts marked with (☆), apply to a Yamaha dealer.

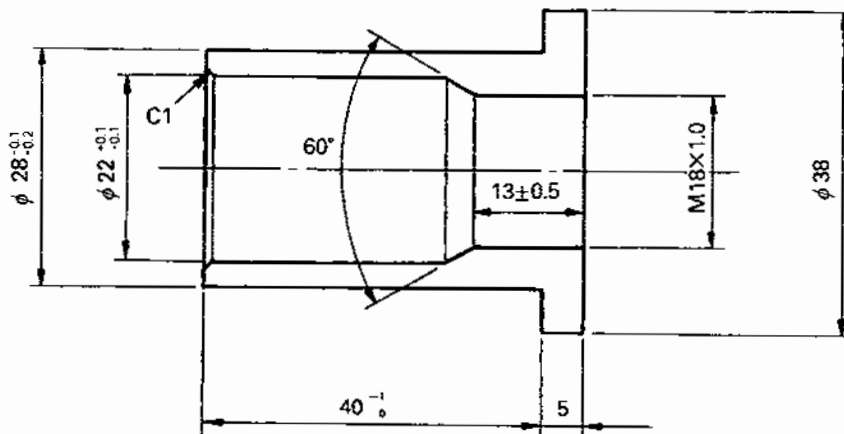


1. Before securing the axle, tighten the nut ② and operate the front fork.
2. Avoid tightening too hard the place marked with Δ of the axle tightening bolt on the front fork side.

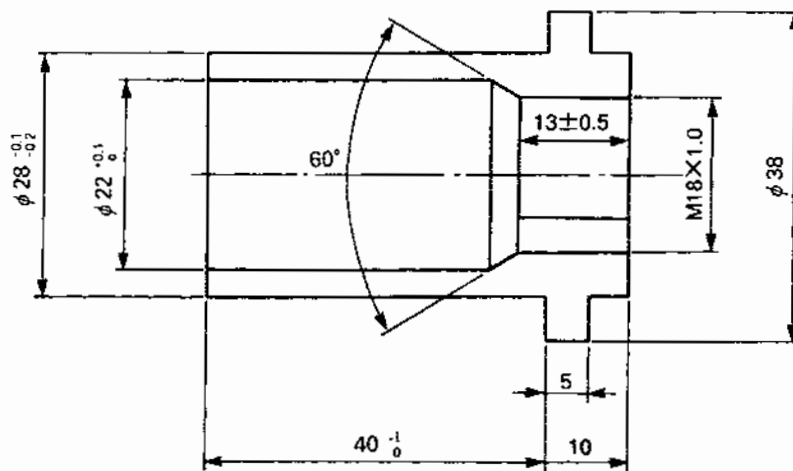
**NOTE:**

When using the kit in endurance races, it is desirable that the front fork axle hole have a diameter of  $28 \pm 0.1$  and the special nut be used to facilitate work.

① If you use axle shaft: TZ250 (4DP-25181-00)



② If you use axle shaft: YZF750 (4FM-25181-00)

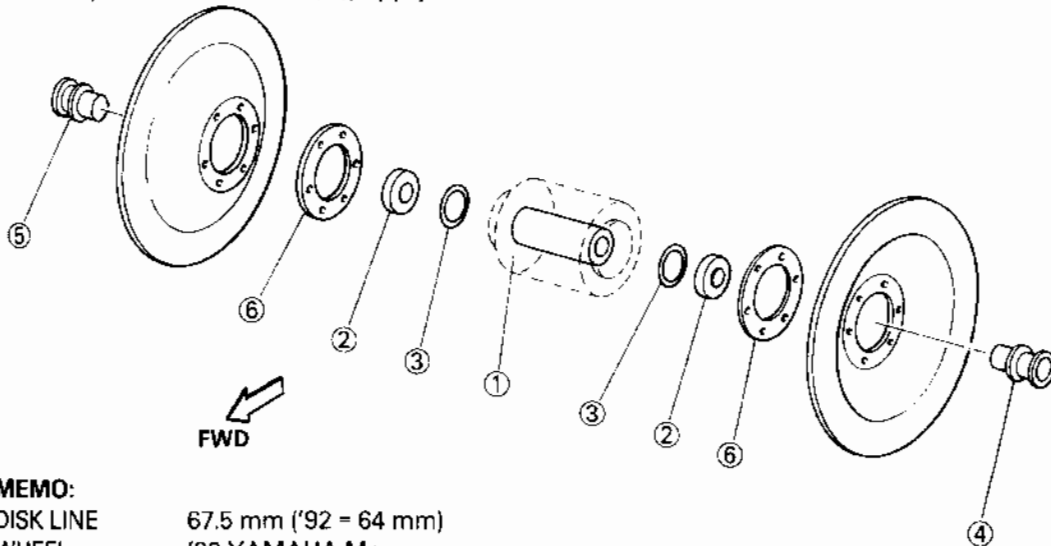


## 2. FRONT WHEEL COLLAR KIT FOR STD F/FORK (4FN-C5110-70)

### <Parts list>

| No. | Part No. | Part name    | Q'ty     | Remarks |                 |
|-----|----------|--------------|----------|---------|-----------------|
| ☆   | 1        | 4DP-25117-00 | Spacer   | 1       |                 |
| ☆   | 2        | 93306-00507  | Bearing  | 2       |                 |
| ☆   | 3        | 4DP-2518A-00 | Plate    | 2       |                 |
|     | 4        | 4FN-25183-70 | Collar 1 | 1       | L (ℓ = 29.5 mm) |
|     | 5        | 4FN-25186-70 | Collar 2 | 1       | R (ℓ = 27.5 mm) |
|     | 6        | 4FN-25115-70 | Spacer   | 2       |                 |

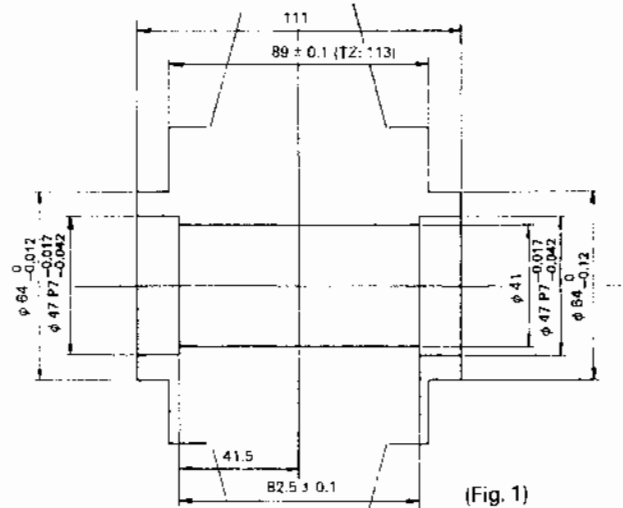
For the parts marked with (☆), apply to a Yamaha dealer.



#### MEMO:

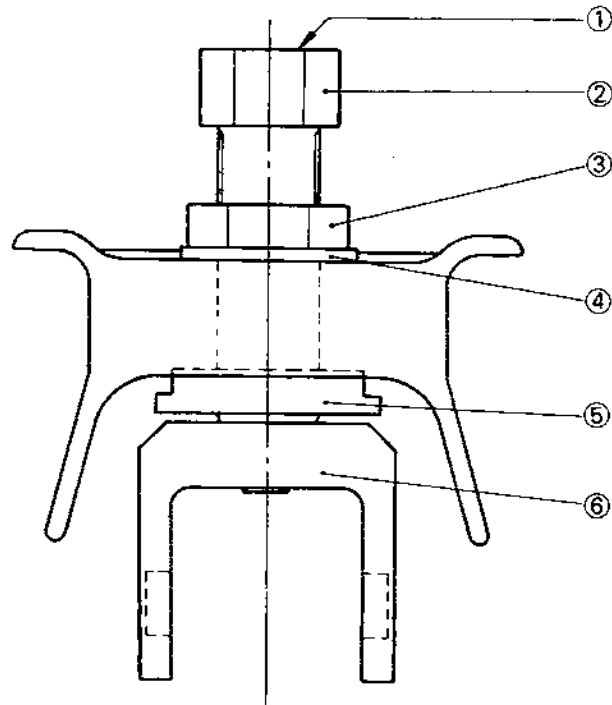
DISK LINE            67.5 mm ('92 = 64 mm)  
 WHEEL                '92 YAMAHA Mg  
 COLLAR ④ ⑤        FOR STD F/FORK  
 FORK PITCH         210 mm (OW-01 = 200 mm)

- Use the wheel of the hub dimensions for Yamaha (see Fig. 1). It is appropriate to use the disk ass'y for the OW01.  
 (Disk pitch of 64 mm, BREMBO 4-pot calipers used)
- The '92 and '93 TZ250 wheels can also be used.  
 However, since their disk mounting widths (OW-01 = 89 mm, TZ250 = 113 mm) are different from that of the above wheel, use a 2KM-25830-00 disk ass'y or 320 mm dia. disk ass'y for use with the TZ250).



(Fig. 1)

### 3. REAR HEIGHT ADJUSTER KIT (4FN-C2230-70)

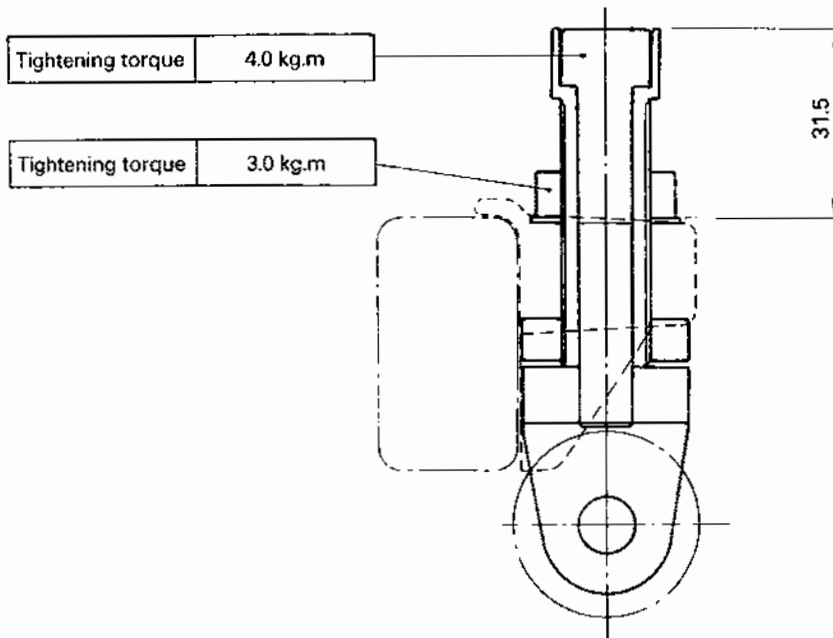


<Parts list>

| No. | Part No.     | Part name      | Q'ty | Remarks |
|-----|--------------|----------------|------|---------|
| ☆ 1 | 91316-10060  | Bolt           | 1    |         |
| 2   | 4FN-22239-70 | Adjuster       | 1    |         |
| ☆ 3 | 90170-16182  | Nut            | 1    |         |
| ☆ 4 | 90201-164H4  | Washer         | 1    |         |
| 5   | 4FN-22252-70 | Nut 2          | 1    |         |
| 6   | 4FN-22219-70 | Bracket, upper | 1    |         |

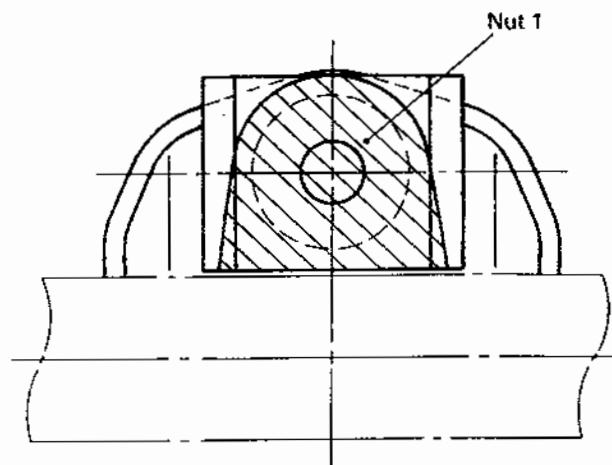
For the parts marked with (☆), apply to a Yamaha dealer.

- The basic setting position is 32.5mm from the top of the adjuster ② to the top of the standard washer.
- The rear height is adjustable in the range of 0 to +10mm.



#### ● Installation Procedures

1. Engage the nut ③ with the adjuster ② and put the adjuster in the mounting hole in the frame.
2. Hold the nut 1 ④ to the bottom of the bracket and screw in the adjuster.
3. Place the bolt ① inside the adjuster and temporarily secure the bracket ⑤.



4. After mounting the rear cushion, turn the adjuster to set it at the standard height and tighten the bolt ① and nut ③.

|                   |        |          |
|-------------------|--------|----------|
| Tightening torque | ① Bolt | 4.0 kg.m |
|                   | ③ Nut  | 3.0 kg.m |



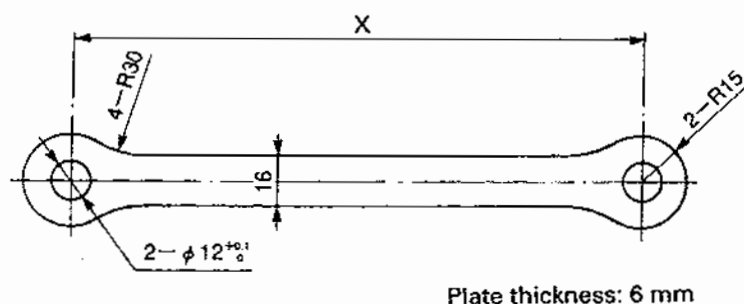
<Notes on adjusting the vehicle height>

• **Standard settings**

|                                |         |
|--------------------------------|---------|
| Rear vehicle height adjustment | 28.5 mm |
| Front fork projection          | 5 mm    |

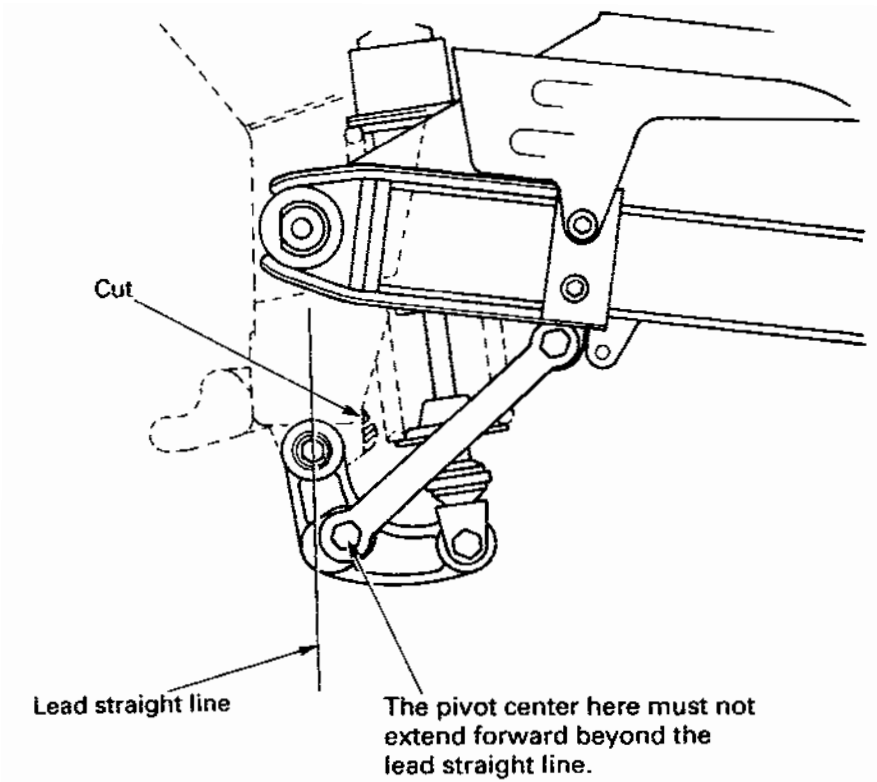
(This is an example for reference. You should set up based on these settings.)

- If the vehicle height is increased, the rear suspension and frame will touch each other. Cut the touching part on the frame side. (See the figure on the next page.)
- This vehicle height adjusting kit allows the vehicle height to be adjusted by up to +10 mm from the standard position (20 mm at the rear axle wheel part). The lever ratio also changes as the vehicle height is changed.  
To increase the vehicle height beyond this, make an arm 1 on your own.



| Arm length (X) | Rear shaft change |
|----------------|-------------------|
| 182.0 mm (STD) | 0~20 mm           |
| 178.8 mm       | 10~30 mm          |
| 175.8 mm       | 20~40 mm          |
| 172.8 mm       | 30~50 mm          |

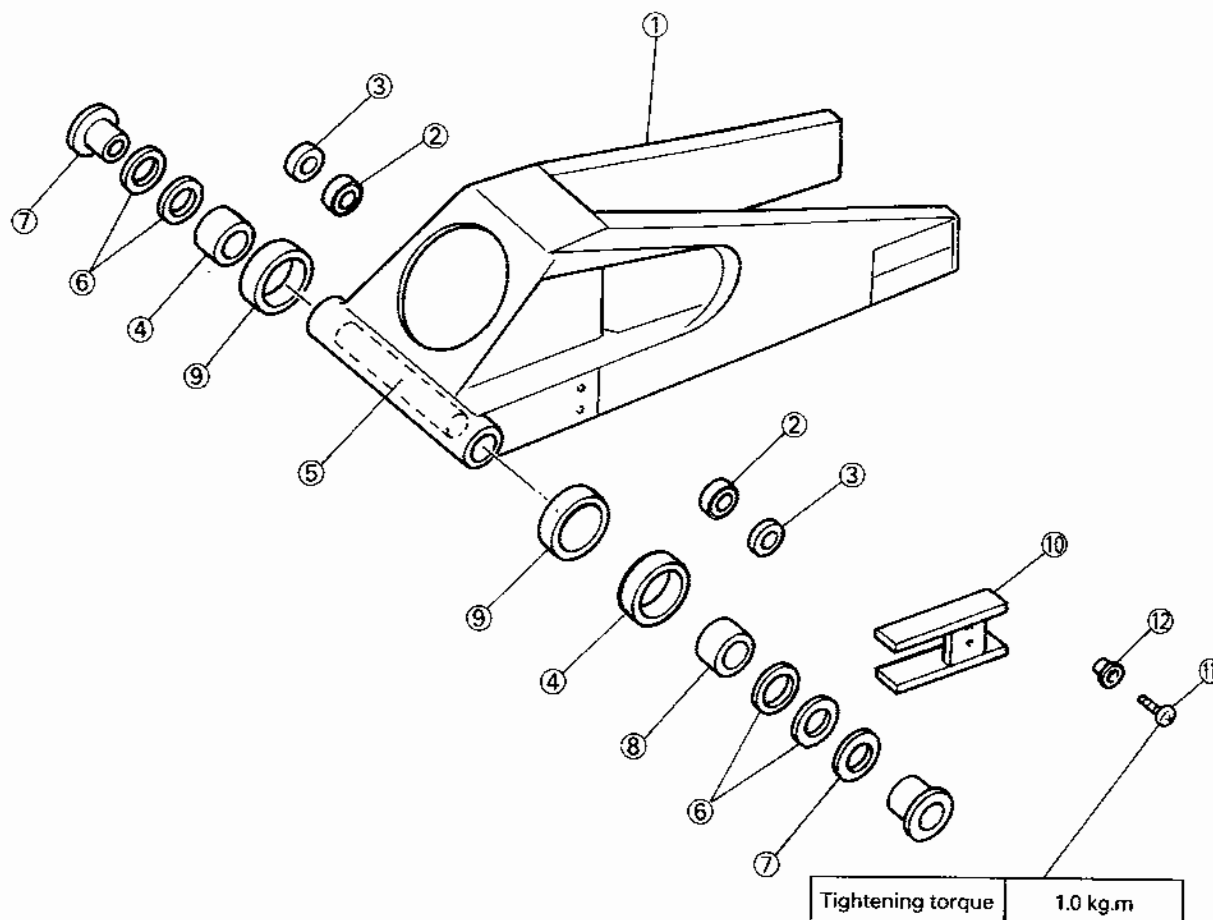
- When setting up, be careful not to put the arm relay in the state as shown below.



**NOTE:** \_\_\_\_\_  
The figure above shows YZF750R.  
\_\_\_\_\_

#### 4. REAR ARM KIT (4FN-C2100-70)

- This rear arm is of the delta box type to increase its mechanism also facilitates the removal and installation of the rear wheel.
- Use linking parts for YZF750SP (Not use YZF750R's parts)
- The rear arm kit consists of the parts from ① to ⑬.



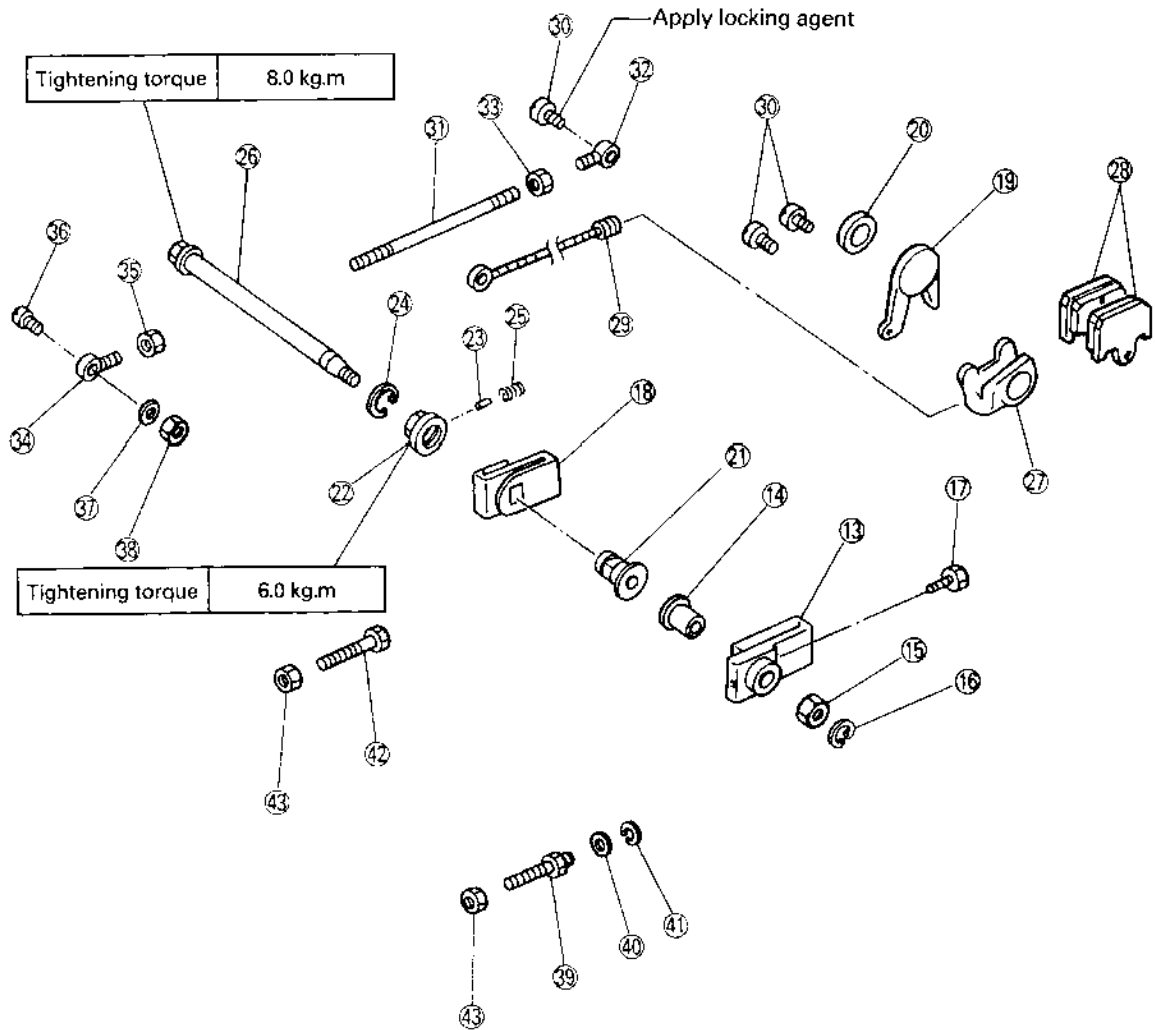
#### <Parts list>

|   | No. | Part No.     | Part name       | Q'ty | Remarks |
|---|-----|--------------|-----------------|------|---------|
|   | 1   | 4FN-22110-70 | Rear arm        | 1    |         |
| ☆ | 2   | 93317-21746  | Bearing         | 2    |         |
| ☆ | 3   | 93109-17048  | Oil seal        | 2    |         |
| ☆ | 4   | 93315-42523  | Bearing         | 2    |         |
|   | 5   | 4FN-22126-70 | Collar distance | 1    |         |
| ☆ | 6   | 93342-22502  | Bearing thrust  | 2    |         |
| ☆ | 7   | 1X2-22123-00 | Bush 1          | 2    |         |
| ☆ | 8   | 1X2-22127-00 | Shim            |      | t=0.2   |
|   | 9   | 4FN-2217H-70 | Cover, dust     | 1    |         |
|   | 10  | 4FN-22151-70 | Seal, guard     | 1    |         |
| ☆ | 11  | 97601-06120  | Screw           | 2    |         |
| ☆ | 12  | 90387-06681  | Collar          | 2    |         |

For the parts marked with (☆), apply to a Yamaha dealer.

**1) Rear wheel kit (4FN-C5300-70)**

The rear wheel kit consists of the parts from ⑬ to ⑥②.



| No. | Part No. | Part name    | Q'ty | Remarks |
|-----|----------|--------------|------|---------|
|     | 13       | 4FN-25366-70 | 1    |         |
|     | 14       | 4FN-25322-70 | 1    |         |
| ☆   | 15       | 95311-20700  | 1    |         |
| ☆   | 16       | 99009-32500  | 1    |         |
| ☆   | 17       | 90110-06142  | 1    |         |
|     | 18       | 4FN-25389-70 | 1    |         |
|     | 19       | 4FN-25819-70 | 1    |         |
|     | 20       | 4FN-2582M-70 | 1    |         |
|     | 21       | 4FN-2538L-70 | 1    |         |
|     | 22       | 4FN-2538M-70 | 1    |         |

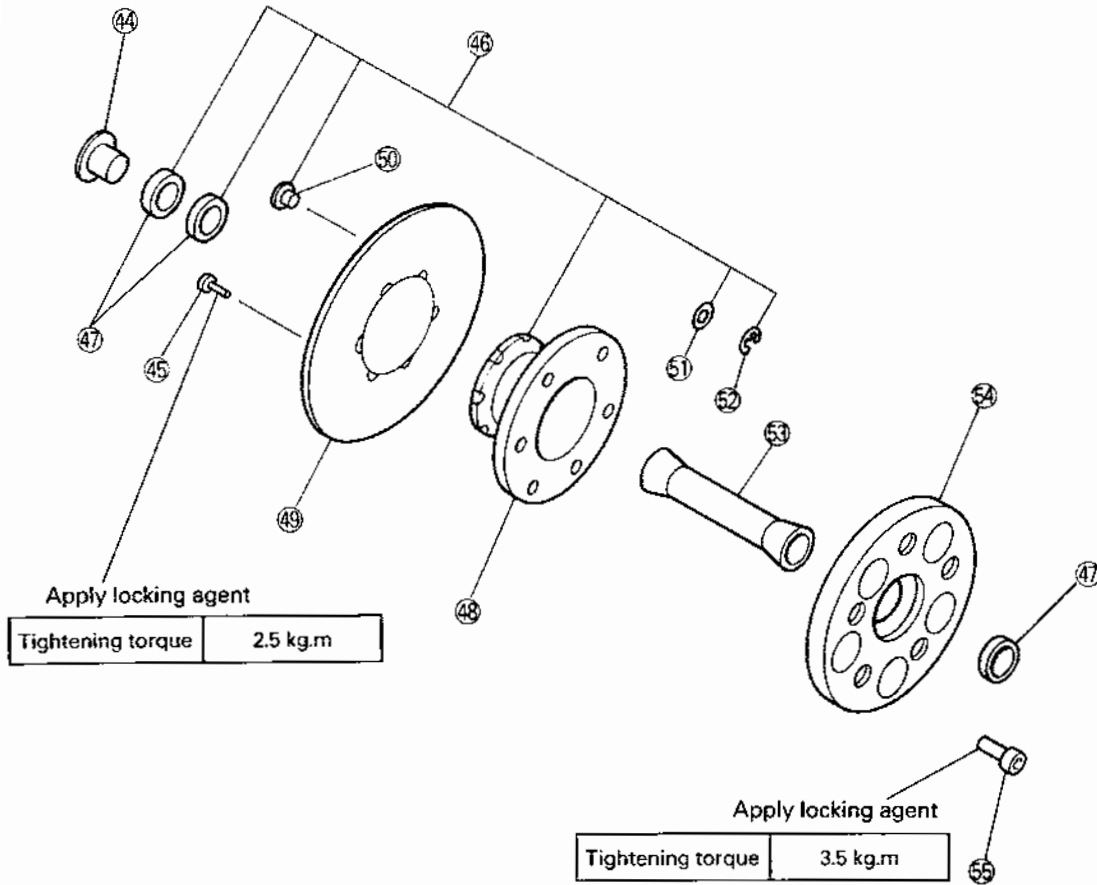
For the parts marked with (☆), apply to a Yamaha dealer.

|   | No. | Part No.     | Part name        | Q'ty | Remarks |
|---|-----|--------------|------------------|------|---------|
|   | 23  | 4FN-2576G-70 | Pin              | 3    |         |
|   | 24  | 4FN-2536E-70 | Clip             | 1    |         |
| ☆ | 25  | 90501-042A6  | Spring           | 3    |         |
|   | 26  | 4FN-25819-71 | Axle, wheel rear | 1    |         |
|   | 27  | 4FN-2580W-70 | Rear caliper     | 1    |         |
|   | 28  | 4FN-W0045-70 | Rear pad 1       | 4    |         |
| ☆ | 29  | 3LC-25874-01 | Hose, brake      | 1    |         |
| ☆ | 30  | 92011-08020  | Screw            | 3    |         |
|   | 31  | 4FN-25171-70 | Bar, tention     | 1    |         |
|   | 32  | 4FN-25163-70 | End, rod 1       | 1    |         |
| ☆ | 33  | 95301-08700  | Nut              | 1    |         |
|   | 34  | 4FN-25164-70 | End, rod 2       | 1    |         |
| ☆ | 35  | 90170-08244  | Nut, L           | 1    |         |
| ☆ | 36  | 92011-08030  | Screw            | 1    |         |
| ☆ | 37  | 90201-08455  | Washer           | 1    |         |
| ☆ | 38  | 90185-08054  | Nut, U           | 1    |         |
|   | 39  | 4FN-25379-70 | Bolt, puller 1   | 1    |         |
| ☆ | 40  | 92901-06200  | Waser            | 1    |         |
| ☆ | 41  | 99080-04600  | Circlip          | 1    |         |
| ☆ | 42  | 90101-08705  | Bolt             | 1    |         |
| ☆ | 43  | 95333-08600  | Nut              | 2    |         |

For the parts marked with (☆), apply to a Yamaha dealer.

## 2) Rear wheel collar kit (4FN-C5310-70)

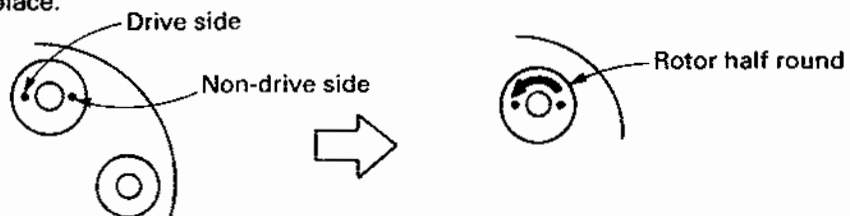
The rear wheel collar kit consists of the parts from 44 to 62.



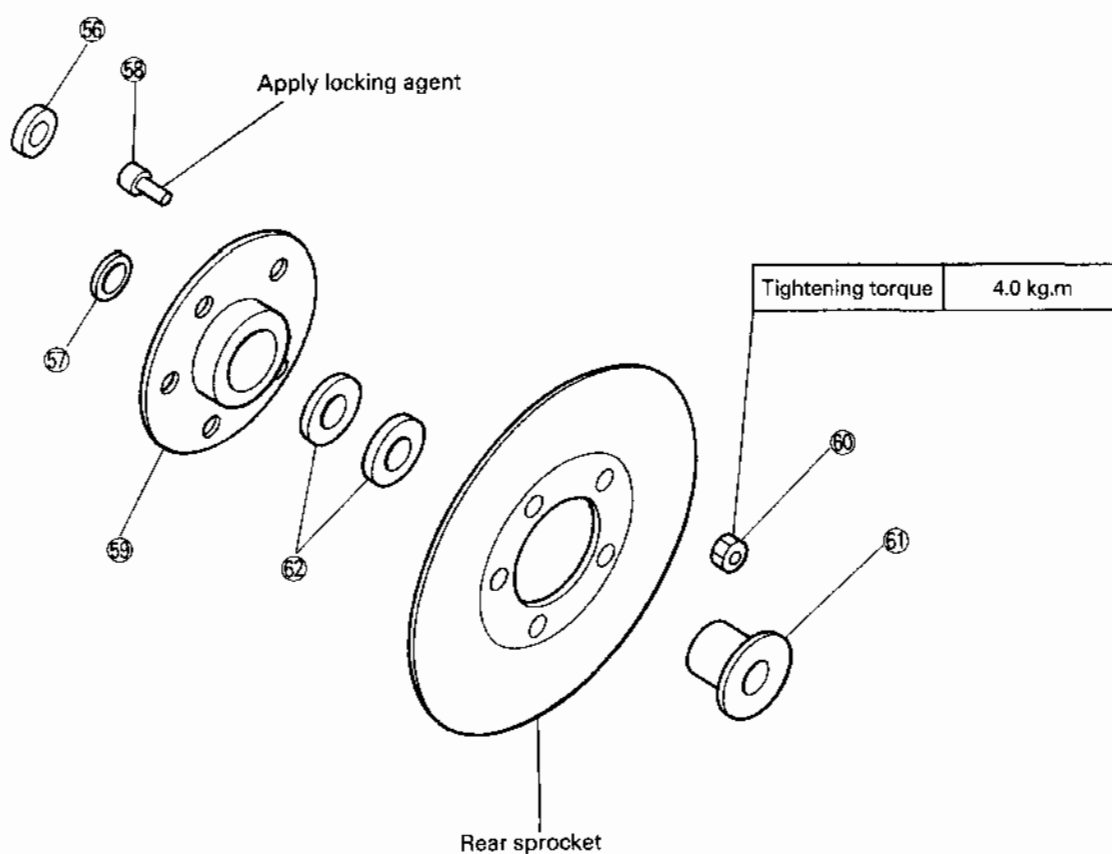
| No.  | Part No.     | Part name        | Q'ty | Remarks |
|------|--------------|------------------|------|---------|
| 44   | 4FN-25767-70 | Collar disk      | 1    |         |
| ☆ 45 | 91316-08025  | Bolt             | 6    |         |
| 46   | 4FN-25830-70 | Disk brake ass'y | 1    |         |
| ☆ 47 | 93306-90601  | Bearing          | 3    |         |
| 48   | 4FN-25832-70 | Bracket, disk    | 1    |         |
| 49   | 4FN-2582V-70 | Disk rear        | 1    |         |
| 50   | 4FN-2581M-70 | Pin              | 6    |         |
| 51   | 4FN-2581N-70 | Washer           | 6    |         |
| ☆ 52 | 93430-09038  | Circlip          | 6    |         |
| 53   | 4FN-25317-70 | Spacer, bearing  | 1    |         |
| 54   | 4FN-2531F-70 | Hub 2            | 1    |         |
| ☆ 55 | 91316-10030  | Bolt             | 5    |         |

For the parts marked with (☆), apply to a Yamaha dealer.

- Be sure to apply a locking agent to any reassembled bolt and nut.
- The damper is a consumption item. If cracked or damaged, rotate the damper by 180° for use or replace.



### 3) Sprocket holder kit (4FN-C5360-70)



| No.  | Part No.     | Part name    | Q'ty | Remarks |
|------|--------------|--------------|------|---------|
| ☆ 56 | 4A0-25364-00 | DAMPER       | 5    |         |
| 57   | 4FN-25365-70 | Plate        | 1    |         |
| ☆ 58 | 91316-10018  | Bolt         | 5    |         |
| 59   | 4FN-25366-70 | Clutch hub   | 1    |         |
| ☆ 60 | 90185-10037  | Nut          | 5    |         |
| 61   | 4FN-25376-70 | Collar wheel | 1    |         |
| ☆ 62 | 93306-90601  | Bearing      | 2    |         |

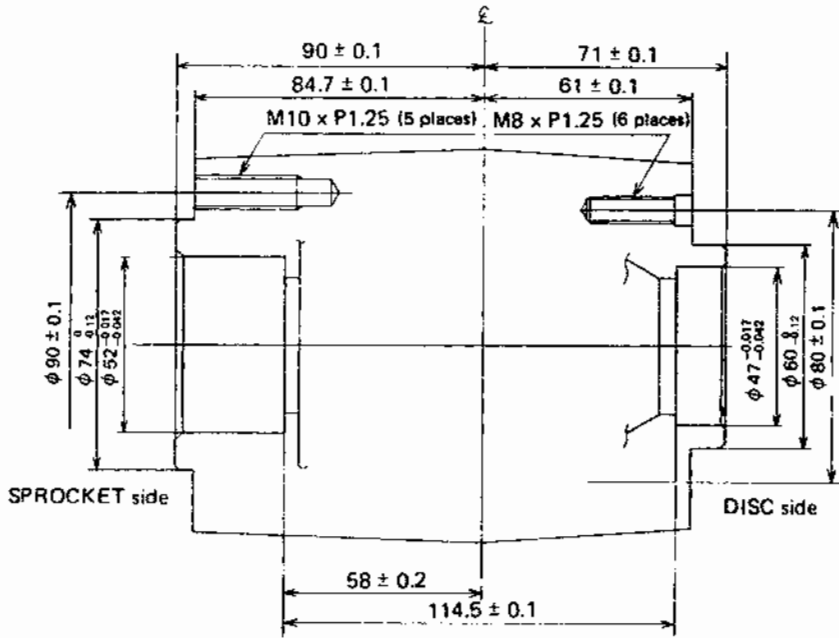
For the parts marked with (☆), apply to a Yamaha dealer.

- The sprocket is usable if:
 

|                            |                        |
|----------------------------|------------------------|
| Center hole                | Min. $\phi 64$ dia.    |
| Mounting hole pitch circle | $\phi 90$ dia.         |
| Mounting hole              | $\phi 10$ dia. 5 holes |

● Precautions for assembly

This rear wheel kit should be used for MARCHESINI wheels of the '85 Yamaha YZR500 type.  
If any other brand wheels are used, refer to the following diagram.



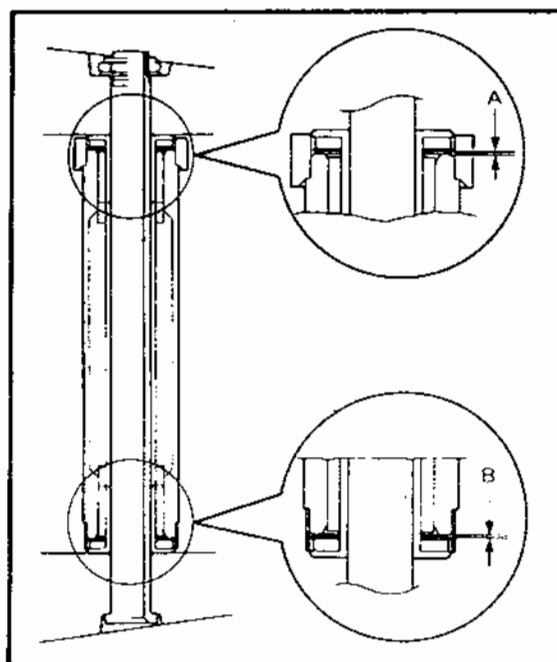
MEMO:

|            |                        |
|------------|------------------------|
| Chain line | 111.5 mm (STD: 113 mm) |
| Disk line  | 100 mm                 |



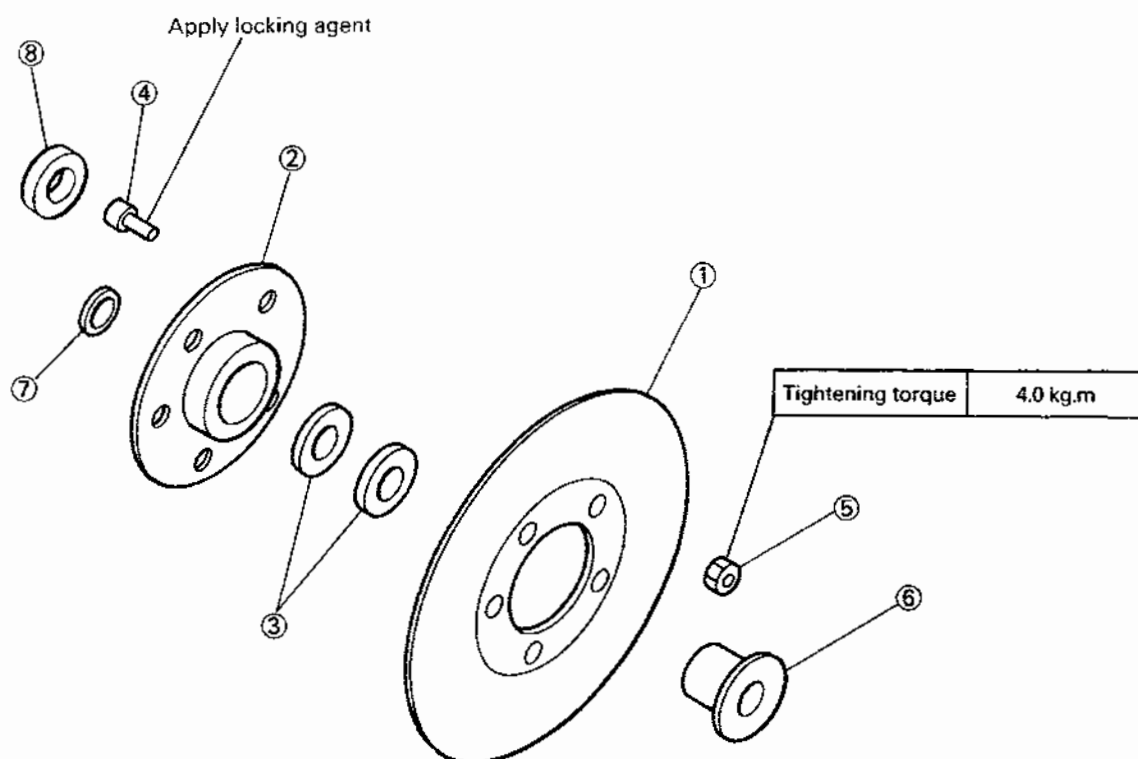
**CAUTION:**

- ① The installation is basically the same as that of the standard. For the arm relay and arm collar, use the standard parts.
- ② The clearance of the pivot has already been adjusted. To readjust the clearance in overhauling, adjust the thrust clearance for 0.1 to 0.2mm.
- ③ After assembling the pivot shaft, check the shaft for unsmooth movement and excessive lateral play.
- ④ It is preferable that molybdenum grease not be used.



|                                 |         |
|---------------------------------|---------|
| Tightening torque for pivot nut | 10 kg.m |
|---------------------------------|---------|

## 5. REAR SPROCKET KIT (4FN-C5400-70)



### <Parts list>

| No. | Part No.     | Part name    | Q'ty          | Remarks      |  |
|-----|--------------|--------------|---------------|--------------|--|
| 1   | 4FN-25438-70 | Sprocket     | 1             | 38T 520 size |  |
|     | 4FN-25439-70 | Sprocket     | 1             | 39T 520 size |  |
|     | 4FN-25440-70 | Sprocket     | 1             | 40T 520 size |  |
|     | 4FN-25441-70 | Sprocket     | 1             | 41T 520 size |  |
|     | 4FN-25442-70 | Sprocket     | 1             | 42T 520 size |  |
|     | 4FN-25443-70 | Sprocket     | 1             | 43T 520 size |  |
|     | 4FN-25444-70 | Sprocket     | 1             | 44T 520 size |  |
|     | 4FN-25445-70 | Sprocket     | 1             | 45T 520 size |  |
| 2   | 4FN-25366-70 | Clutch hub   | 3             |              |  |
| ☆   | 3            | 93306-90601  | Bearing       | 6            |  |
| ☆   | 4            | 91316-10018  | Bolt          | 15           |  |
| ☆   | 5            | 90185-10037  | Nut           | 15           |  |
|     | 6            | 4FN-25376-70 | Collar, wheel | 3            |  |
|     | 7            | 4FN-25365-70 | Plate         | 3            |  |
| ☆   | 8            | 4A0-25364-00 | DAMPER        | 15           |  |

For the parts marked with (☆), apply to a Yamaha dealer.

## 6. REAR SPROCKET KIT (FOR STD WHEEL) (4FN-C5400-80)

### <Parts list>

| No. | Part No.     | Part name | Q'ty | Remarks      |
|-----|--------------|-----------|------|--------------|
| 1   | 4FN-25438-80 | Sprocket  | 1    | 38T 520 size |
| 2   | 4FN-25439-80 | Sprocket  | 1    | 39T 520 size |
| 3   | 4FN-25440-80 | Sprocket  | 1    | 40T 520 size |
| 4   | 4FN-25441-80 | Sprocket  | 1    | 41T 520 size |
| 5   | 4FN-25442-80 | Sprocket  | 1    | 42T 520 size |
| 6   | 4FN-25443-80 | Sprocket  | 1    | 43T 520 size |
| 7   | 4FN-25444-80 | Sprocket  | 1    | 44T 520 size |
| 8   | 4FN-25445-80 | Sprocket  | 1    | 45T 520 size |

For the parts marked with (☆), apply to a Yamaha dealer.

|                  |          |
|------------------|----------|
| Chain Line       | 111.5 mm |
| Chain to be used | 520 size |

- Use a 4FN-17461-70, -80 or -90 for the drive sprocket.

## 7. LIST OF BODY TIGHTENING TORQUE (FOR STANDARD PARTS)

Unit: kg·m

| Tightening Point                       | Die. × Pitch | Tightening torque (kg·m) | Note |
|--|--------------|--------------------------|------|
| Handle crown×Outer tube                | M8×1.25      | 2.5                      |      |
| Handle crown×Steering shaft            | M22×1.0      | 11.0                     |      |
| Handle×Outer tube                      | M6×1.0       | 1.3                      |      |
| Handle×Handle crown                    | M6×1.0       | 1.3                      |      |
| Steering shaft×Ring nut                | M25×1.0      |                          | *1   |
| Outer tube×Under bracket               | M8×1.25      | 2.3                      |      |
| Brake hose union bolt                  | M10×1.25     | 2.6                      |      |
| Front master cylinder                  | M6×1.0       | 1.0                      |      |
| Clutch hose union bolt                 | M10×1.25     | 2.6                      |      |
| Engine mount (Front top, bottom)       | M10×1.25     | 4.0                      |      |
| Engine mount (Rear top)                | M10×1.25     | 5.5                      |      |
| Engine mount (Rear bottom)             | M10×1.25     | 5.5                      |      |
| Frame and fender stay                  | M8×1.25      | 2.8                      |      |
| Engine mount pinch bolt (Front)        | M8×1.25      | 2.2                      |      |
| Engine mount pinch bolt (Rear top)     | M8×1.25      | 1.5                      |      |
| Exhaust pipe bracket                   | M10×1.25     | 3.6                      |      |
| Pivot shaft×Nut                        | M18×1.5      | 12.5                     |      |
| Relay arm×Frame                        | M10×1.25     | 4.8                      |      |
| Relay arm×Connecting rod               | M10×1.25     | 4.8                      |      |
| Connecting rod×Rear arm                | M10×1.25     | 4.8                      |      |
| Rear cushion×Relay arm                 | M10×1.25     | 4.0                      |      |
| Rear cushion×Rear cushion bracket      | M10×1.25     | 4.0                      |      |
| Frame and rear cushion bracket         | M16×1.5      | 5.1                      |      |
| Fuel pump×Fuel tank                    | M5×0.8       | 0.3                      |      |
| Fuel pump×Fuel cock                    | M6×1.0       | 0.7                      |      |
| Foot rest bracket×Frame                | M8×1.25      | 2.8                      |      |
| Rear foot rest×Frame                   | M8×1.25      | 2.8                      |      |
| Rear master cylinder×Foot rest bracket | M8×1.25      | 2.3                      |      |
| Rear brake reserve tank×Stay           | M6×1.0       | 0.5                      |      |
| Brake hose union bolt                  | M10×1.25     | 2.6                      |      |
| Side stand bracket×Frame               | M8×1.25      | 2.8                      |      |
| Front wheel axle×Front fork            | M18×1.5      | 7.2                      |      |
| Rear wheel axle×Nut                    | M25×1.5      | 20.3                     |      |
| Front brake calipers×Front fork        | M10×1.25     | 3.5                      |      |
| Rear brake calipers×Caliper bracket    | M10×1.25     | 3.5                      |      |
| Brake disk×Wheel (Front, rear)         | M8×1.25      | 2.0                      |      |
| Driven sprocket×Clutch hub             | M10×1.25     | 6.0                      |      |
| Tension bar (Front, rear)              | M8×1.25      | 3.0                      |      |
| Air bleed screw×Calipers               | M8×1.25      | 0.6                      |      |
| Front axle pinch bolt                  | M8×1.25      | 2.3                      |      |

\*1

First tighten with a torque of 4.8 kg·m, then loosen the nut completely and tighten with a torque of 1.6 kg·m again.

For other parts, refer to the following:

|           |          |
|-----------|----------|
| M6×P1.0   | 1.2 kg·m |
| M8×P1.25  | 2.5 kg·m |
| M10×P1.25 | 3.5 kg·m |

