'94 TUNE-UP MANUAL FOR YZF750SP



The Performance Edge

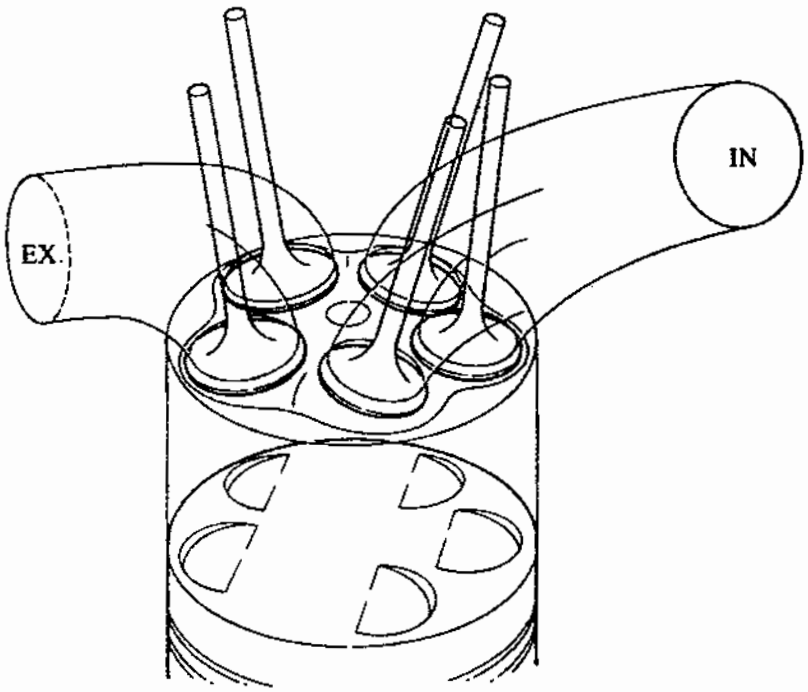
YEC

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
Carburator 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

CONTENTS (ENGINE)

1. **Tuning methods for basic engines (Endurance races, Sprint races kit)** 1
   1) Engine oil level setting 1
   2) Adjustment of intake and exhaust valve clearances 1
   3) Adjustment of engine idling 2
   4) Selection of secondary reduction sprocket 2
   5) Change of exhaust 2
   6) Selection of spark plug (Endurance races, Sprint races kit) 3
   7) Engine break-in 3
   8) Maintenance around the cam chain 4
   9) Others 4

2. **Tuning methods by installation of kits parts (Endurance races, Sprint races kit)** 5
   1) Installations of cylinder gasket and cylinder head gasket 5
   2) Installation of connecting rod (Endurance races, Sprint races kit) 6
   3) Installation of high-compression (Endurance races, Sprint races kit) 8
   4) Assembling the cam-shaft (Endurance races, Sprint races kit) 9
   5) Dimensions of the assembled clutch spring (Endurance races, Sprint races kits) 10
   6) Installation of high-speed ignition unit (Endurance races, Sprint races kit) 11
   7) Assembling the exhaust set (Endurance races, Sprint races kit) 13
   8) Installation of lightweight parts (Endurance kit) 15
   9) A.C.G. oil passage plug installation (Sprint races kit) 18
   10) Installation of carburetor setting parts (Endurance races, Sprint races kit) 19
   11) Air induction box 24
   12) Installation of wireharness kit set 27
   13) Plate bearing cover 31

3. **Other modification of engine interior** 32
   1) Modification of stepped intake and exhaust ports 32
   2) Grinding the valve funnel 33
   3) Grinding the piston back side 33

4. **Installation of optional parts** 34
   1) Installing the super cross-ratio transmission assembly 34
   2) Crankshaft kit 37
   3) High throttle kit 38
   4) Mechanical clutch kit 39
   5) Sub radiator kit 42
   6) Gasket, cylinder 45
   7) Gasket, cylinder head 45
   8) Spark plug 45
   9) Intake valve kit 45
   10) Exhaust valve kit 45
   11) Valve retainer kit 45
   12) Cam chain 47
   13) Oil pump assembly 47

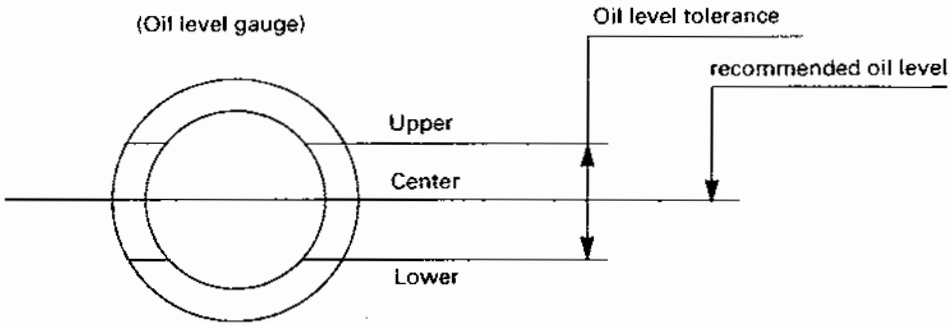
5. **Kit parts interchangeability Between OW01 and YZF750SP (Endurance races, Sprint races kit)** 49

6. **Engine Maintenance Data**
   1) List of engine tightening torque (Endurance races, Sprint races kits)
   2) List of lubricants and sealing compound (Endurance races, Sprint races kits)

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 rececourse run.

1,200 rpm (Standard) ⇨ 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	ϕ44 × ϕ25 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 sysem 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

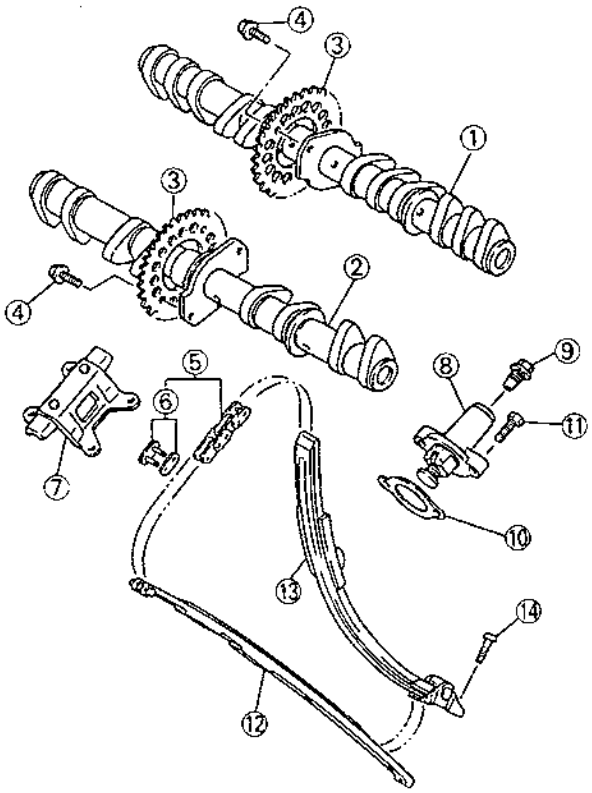
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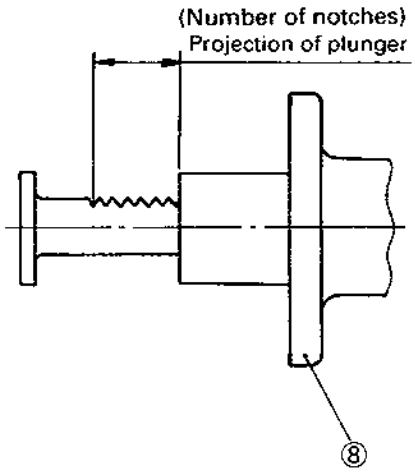
After break-in operation, check the tightness of engine bolts and the condition of the wire locking the drain bolt. Also, check for oil leakage and abnormal noise.

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)

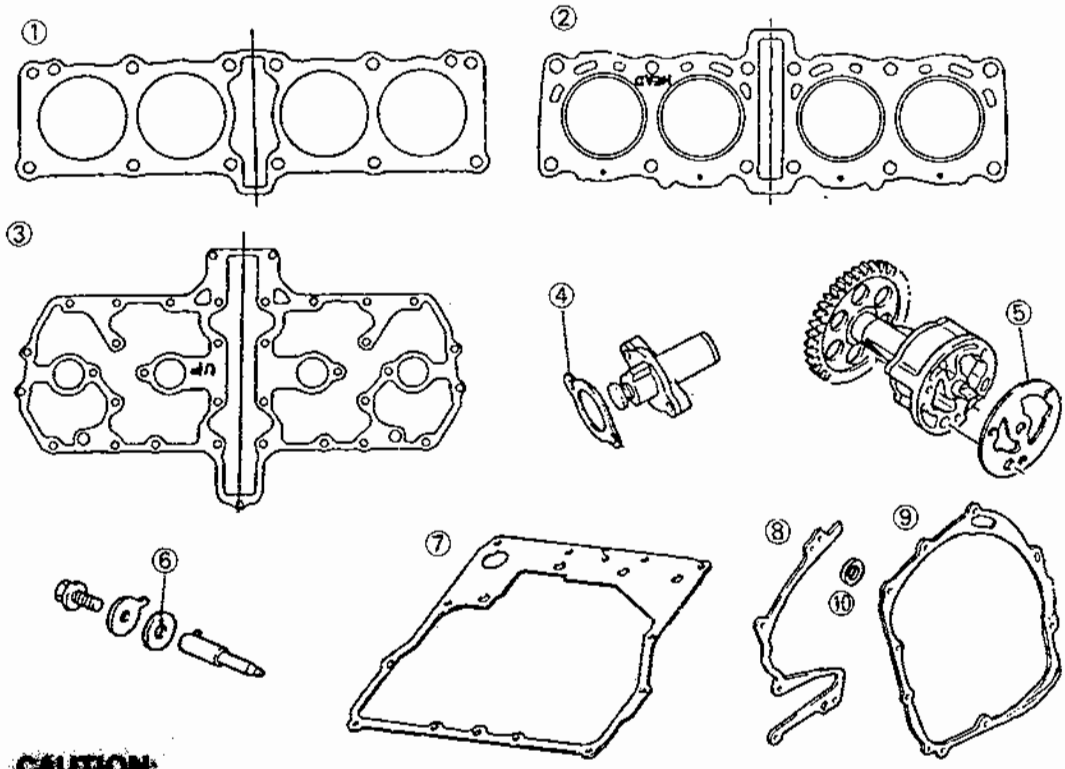
When overhauling the engine, replace both engine oil and oil filter.

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)

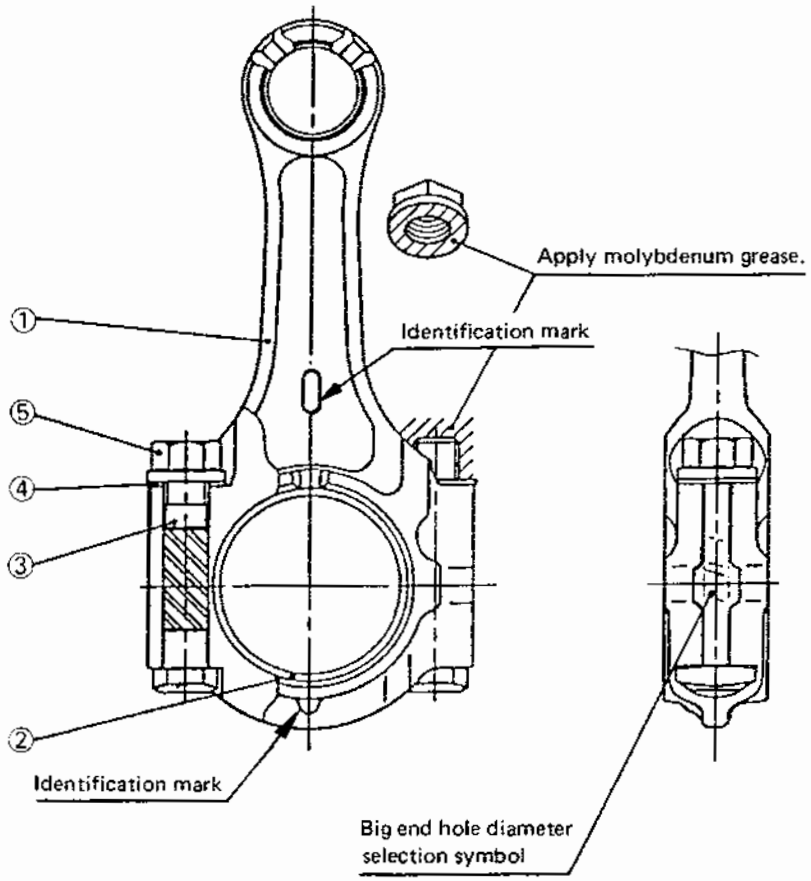
	No.	Part No.	Part name	Q'ty	Remarks
☆	1	3FV-11351-00	Gasket, cyl. (Metal)	1	With 2 spares
☆	2	3FV-11181-00	Gasket, cyl. head 1	1	,,
☆	3	3FV-11182-00	Gasket, cyl. head 2	1	,,
☆	4	4BE-12213-00	Gasket, tensioner	1	,,
☆	5	2GH-13329-00	Gasket, pump cover	1	,,
☆	6	4FM-13475-00	Gasket	1	,,
☆	7	4FM-13414-00	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: 170μm±25μm

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 170μm±25μm.
   (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 220μm or more, replace the bolt and start reassembly.
   - If the elongation is 195μm ~ 220μm the bolt may be used.

CAUTION:

If the bolt has been elongated by more than 195 μm 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: $\phi 72^{-0.065}_{-0.080}$

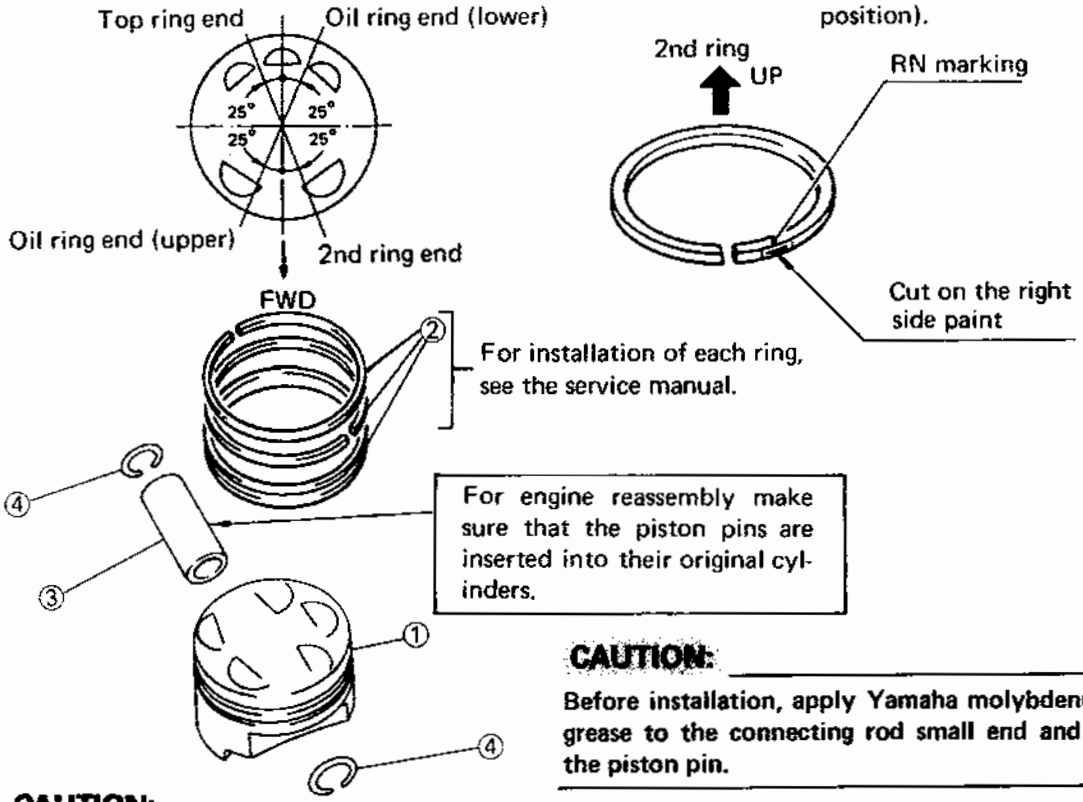
STD cylinder bore diameter: $\phi 72^{+0.020}_{-0.020}$

Piston clearance: 45 ~ 100 μm

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



Top ring — R marking (having nothing to do with the ring position).

For installation of each ring, see the service manual.

For engine reassembly make sure that the piston pins are inserted into their original cylinders.

CAUTION:

Before installation, apply Yamaha molybdenum grease to the connecting rod small end and to the piston pin.

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

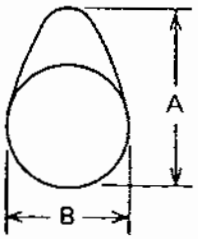
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4) Assembling the cam-shaft (Endurance races, Sprint races kit)

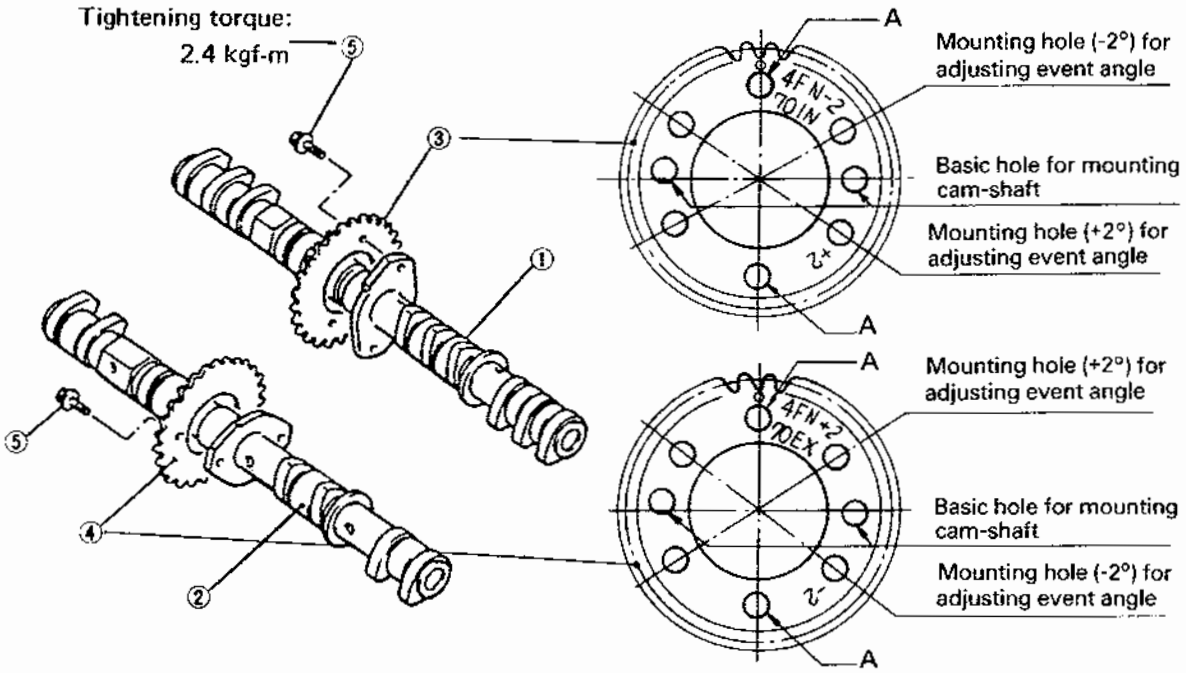
The camshaft lift, working angle, and cam profile have been changed to improve the basic engine performance. The standard intake camshaft should be used which well matches the exhaust camshaft in terms of performance.

Cam size

(IN, EX)



	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	

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

( ) Use the original equipment.

CAUTION:

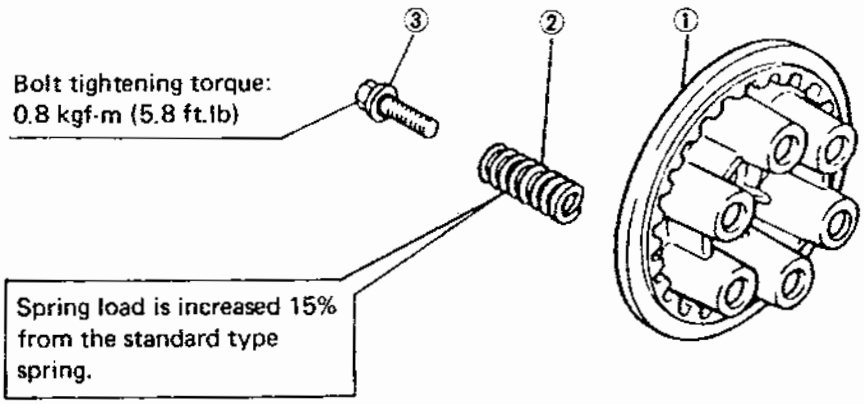
The camshaft and cam sprocket contained in the '94 kit are designed for ideal specifications and combination in terms of overall performance. However, if you want to use by preference the IN cam contained in the '93 kit, the event angle must be set at 105° or more.

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)	
☆	2	3FV-230E4-70	Spring	6	Identified by red paint
☆	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

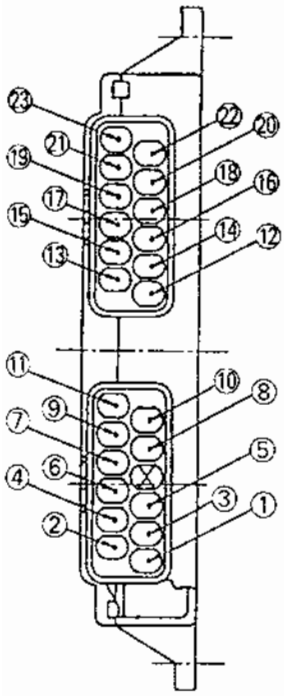
*The sprint and endurance models use the same type ignitor.

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-tention 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 ＼ 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	⑳	㉑	㉒	㉓
11-pin coupler	①		×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	②	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	③	○	○		○	×	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	×
	④	○	○	○		×	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	×
	⑤	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	⑥	×	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	⑦	○	○	○	○	×	○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	×
	⑧	○	○	○	○	×	○	○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	×
	⑨	○	○	○	○	×	○	○	○		○	○	○	○	○	○	○	○	○	○	○	○	○	×
	⑩	○	○	○	○	×	○	○	○	○		○	○	○	○	○	○	○	○	○	○	○	○	×
	⑪	○	○	○	○	×	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○	○	×
12-pin coupler	⑫	○	○	○	○	×	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○	×
	⑬	○	○	○	○	×	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	×
	⑭	○	○	○	○	×	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	×
	⑮	○	○	○	○	×	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	×
	⑯	○	○	○	○	×	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	×
	⑰	○	○	○	○	×	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○	×
	⑱	○	○	○	○	×	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	×
	⑲	○	○	○	○	×	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	×
	⑳	○	○	○	○	×	○	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○	×
	㉑	○	○	○	○	×	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		○	×
	㉒	○	○	○	○	×	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		×
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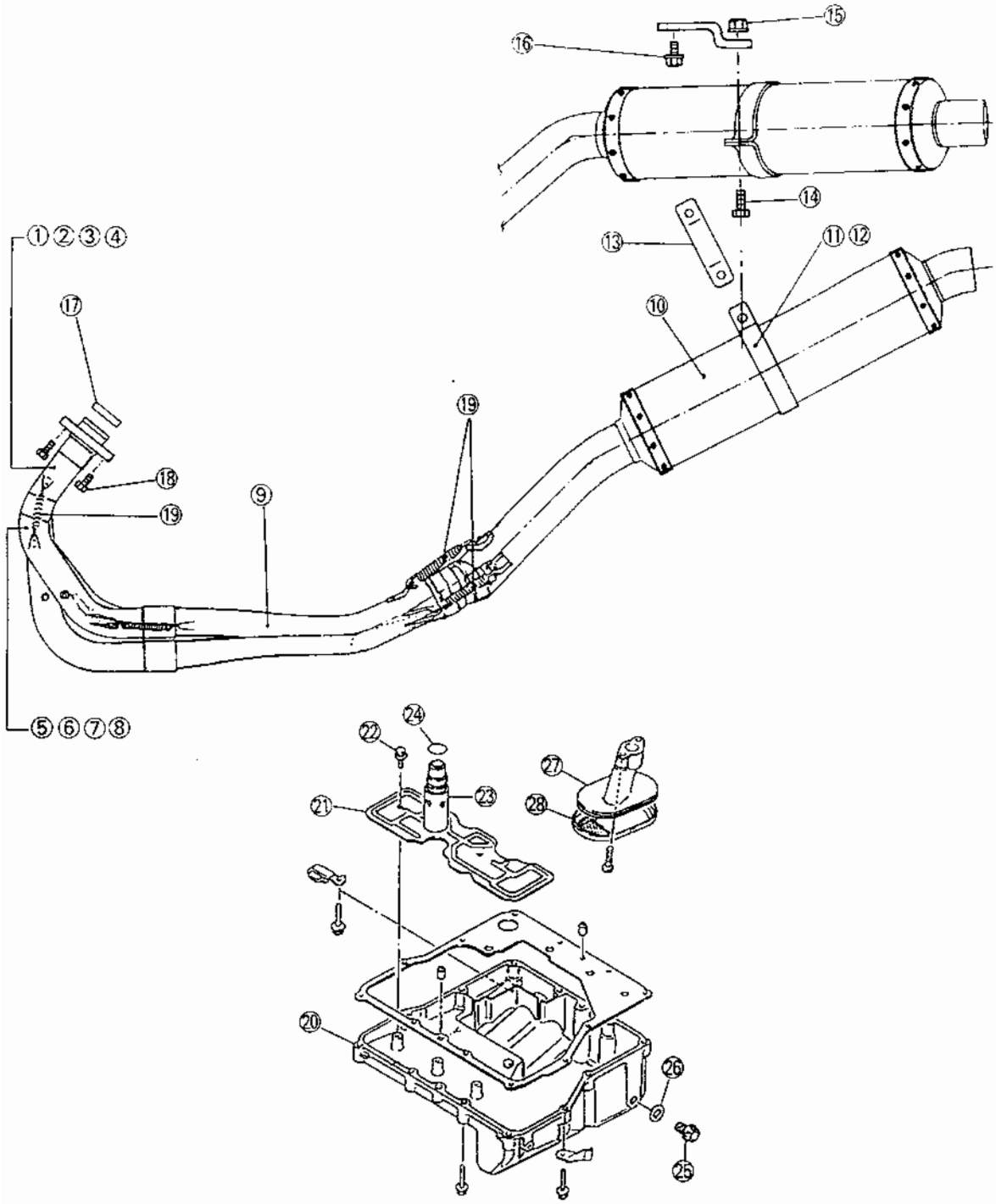
Stamped plate for racing ignitor



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.



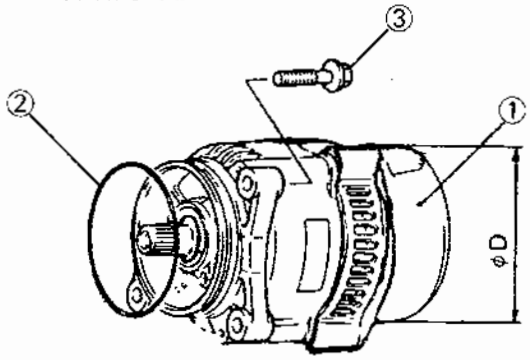
	No.	Part No.	Part name	Q'ty	Remarks
	1	4FN-14615-70	Joint, EXH. 1	1	
	2	4FN-14625-70	Joint, EXH. 2	1	
	3	4FN-14635-70	Joint, EXH. 3	1	
	4	4FN-14645-70	Joint, EXH. 4	1	
	5	4FN-14611-71	Pipe, EXH. 1	1	
	6	4FN-14621-71	Pipe, EXH. 2	1	
	7	4FN-14631-71	Pipe, EXH. 3	1	
	8	4FN-14641-71	Pipe, EXH. 4	1	
	9	4FN-14785-71	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, buffle	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 maked 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) φ D: φ 108 mm 12V28AH ⇨ (Racing) φ D: φ 100 mm 12V20AH
Made lightweight 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.

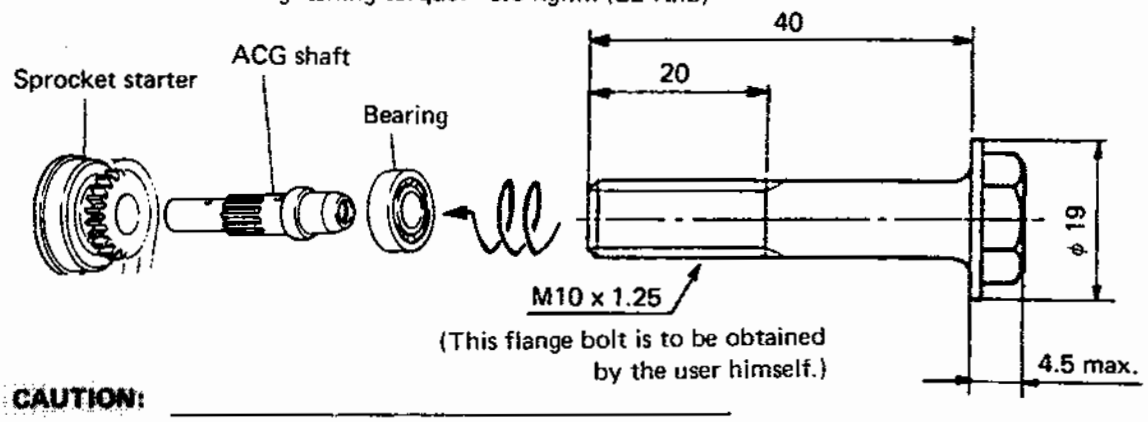
Removing A.C.G. and starter motor (Sprint races kit)

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)

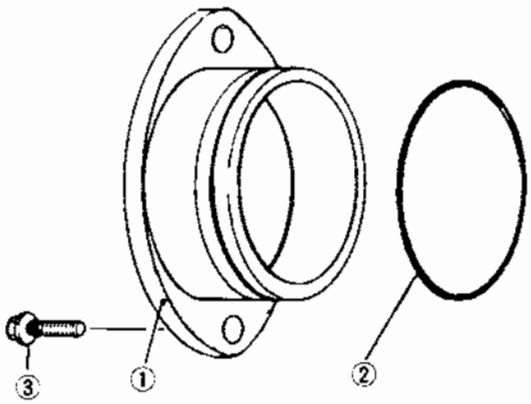


CAUTION:

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:

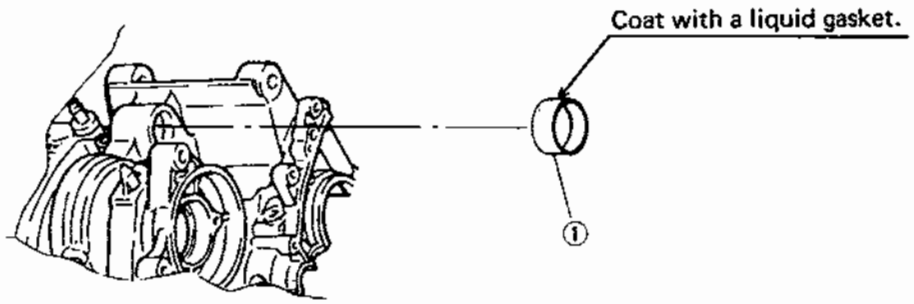
○ **Apply grease to O-ring for installation.**

	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.

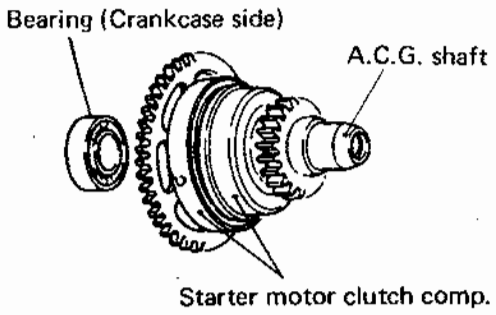


	No.	Part No.	Part name	Q'ty	Remarks
☆	1	90338-30096	Plug	1	

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

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

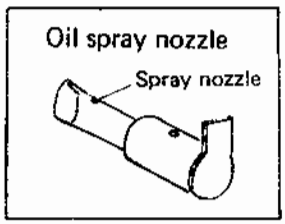
When removing the complete starter motor clutch, remove the bearing which is force-fitted to the upper crankcase.



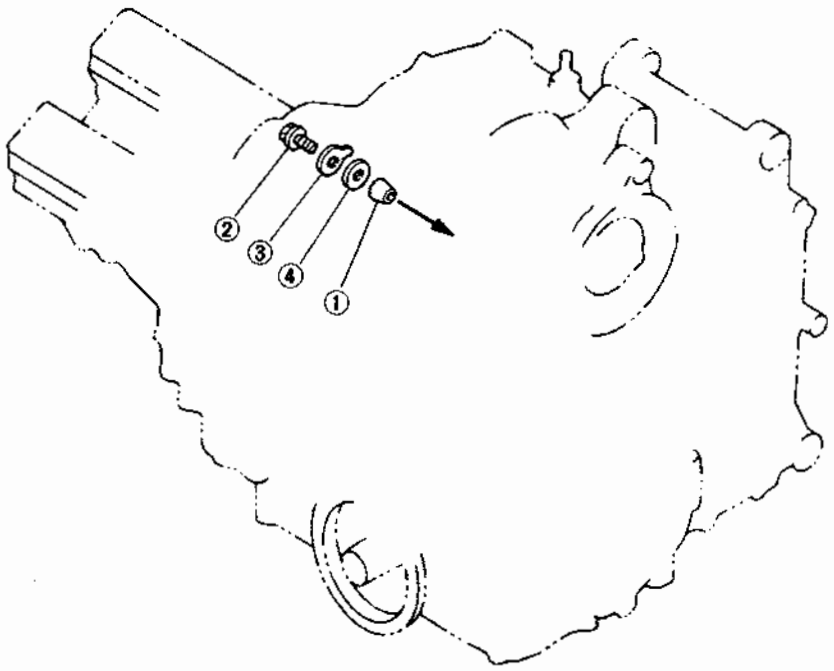
CAUTION:

- **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-cylindered), #165 (2-, 3-cylindered) *
Main air jet (M.A.J.)	#100
Pilot jet (P.J.)	(#48), #50, (#52)
Pilot air jet (P.A.J.)	(#130), #140
Jet needle (J.N.)	OBEMQ-3 (3th notch), (OBEMP), (OBEMR)
Needle jet (N.J.)	Non-bleed type
Pilot screw (P.S.)	1-1/2
Float chamber set	* Used with the main jet as a set.

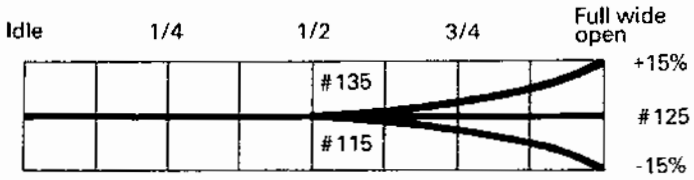
(# 140)
(#145)
(#150)
(#155)
(#160)
(#170)
(#180)
(#185)
(#190)
(#195)

CAUTION:

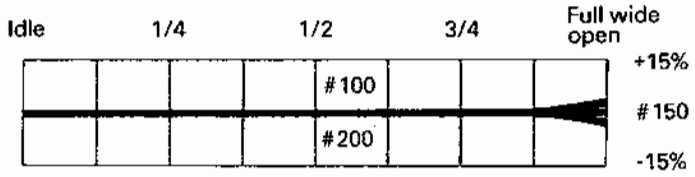
- ☆ **The carburetor is an apparatus using gasoline. Installation of the carburetor must be carried out in a safety place without flammables and with good ventilation.**
- ☆ **The carburetor is apt to be easily damaged by foreign matters (dust, sand, water, etc). When installing or adjusting the carburetor, 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 ot 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

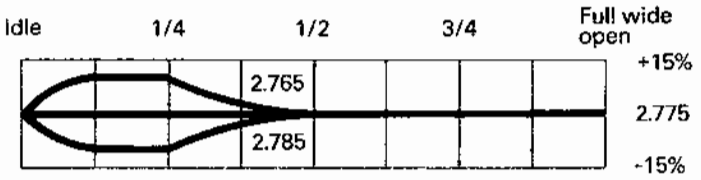
(1) Main jet
The main jet mainly adjusts the density around the full wide opening.



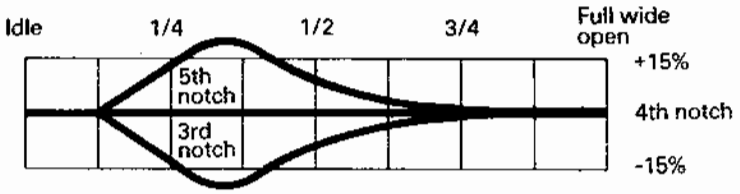
(2) Main air jet
For the primary type main system, the main air jet does not work very effectively. Therefore, it is not usually replaced.



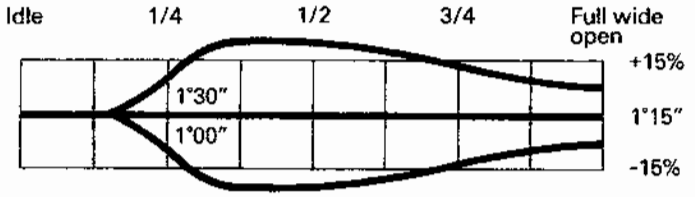
(3) Jet needle (straight diameter)
Adjust the air fuel ratio around the 1/8 opening to 1/4 opening.



(4) Jet needle (No. of notches)
Adjust the air fuel ratio around the 1/4 opening to 1/2 opening.



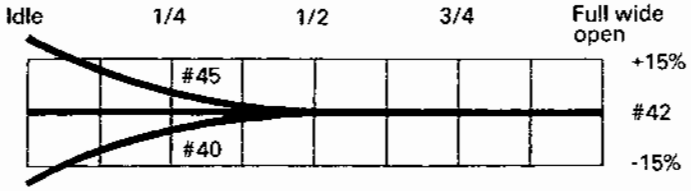
(5) Jet needle (taper)
The jet needle with moderate taper affects the density as far as around the full wide opening. To change the density only around 1/2 opening, replace the jet needle together with the main jet.



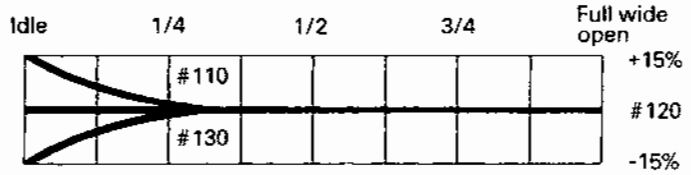
<Jet needle specifications>

J.N	Straight diameter	Taper
OBEMP	ϕ 2.735	1°00′
OBEMQ	ϕ 2.745	↑
OBEMR	ϕ 2.755	↑

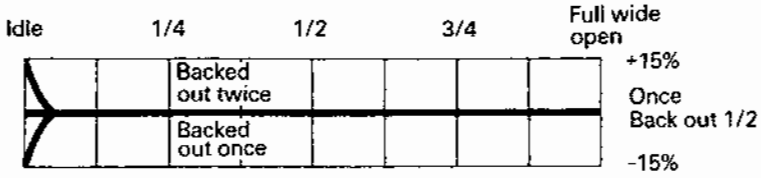
(6) Pilot jet
The pilot jet affects the entire slow system.



(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.

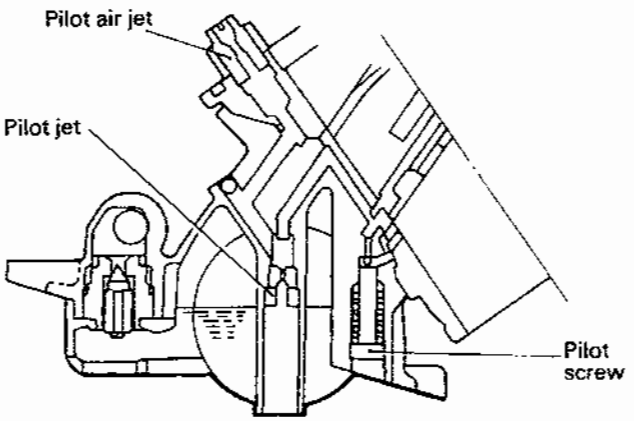


(8) Pilot screw
The pilot screw covers only around the idle opening.
This will be explained on the next page.



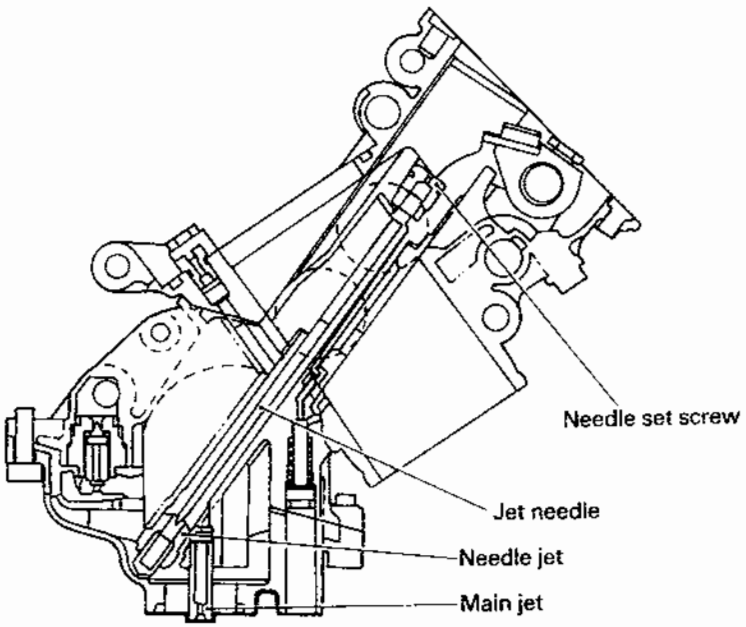
- **Construction of slow system and setting parts**
In the flat CR carburetor, the slow system is equipped with a "pilot screw type" adjusting mechanism when the machine is shipped. The characteristic of this method is that the effective adjusting range of the pilot screw is limited to around the idle 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.



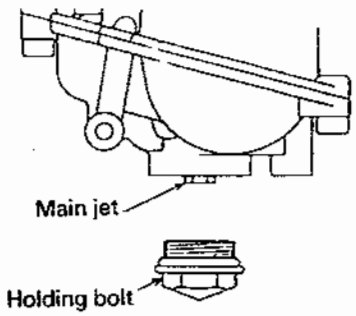
- **Construction of main system and setting parts**

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.



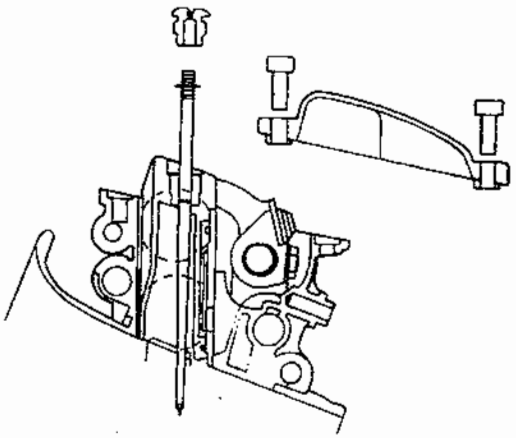
③ Replacing setting parts

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.



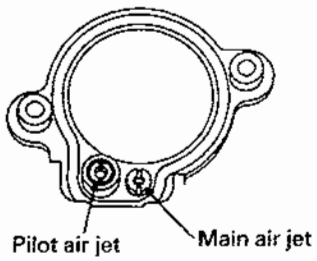
2. Jet needle (J.N.)

(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.



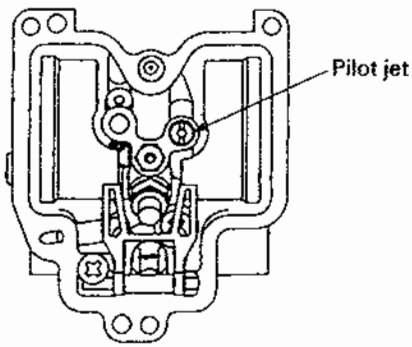
3. Air jets (M.A.J., P.A.J.)

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 .

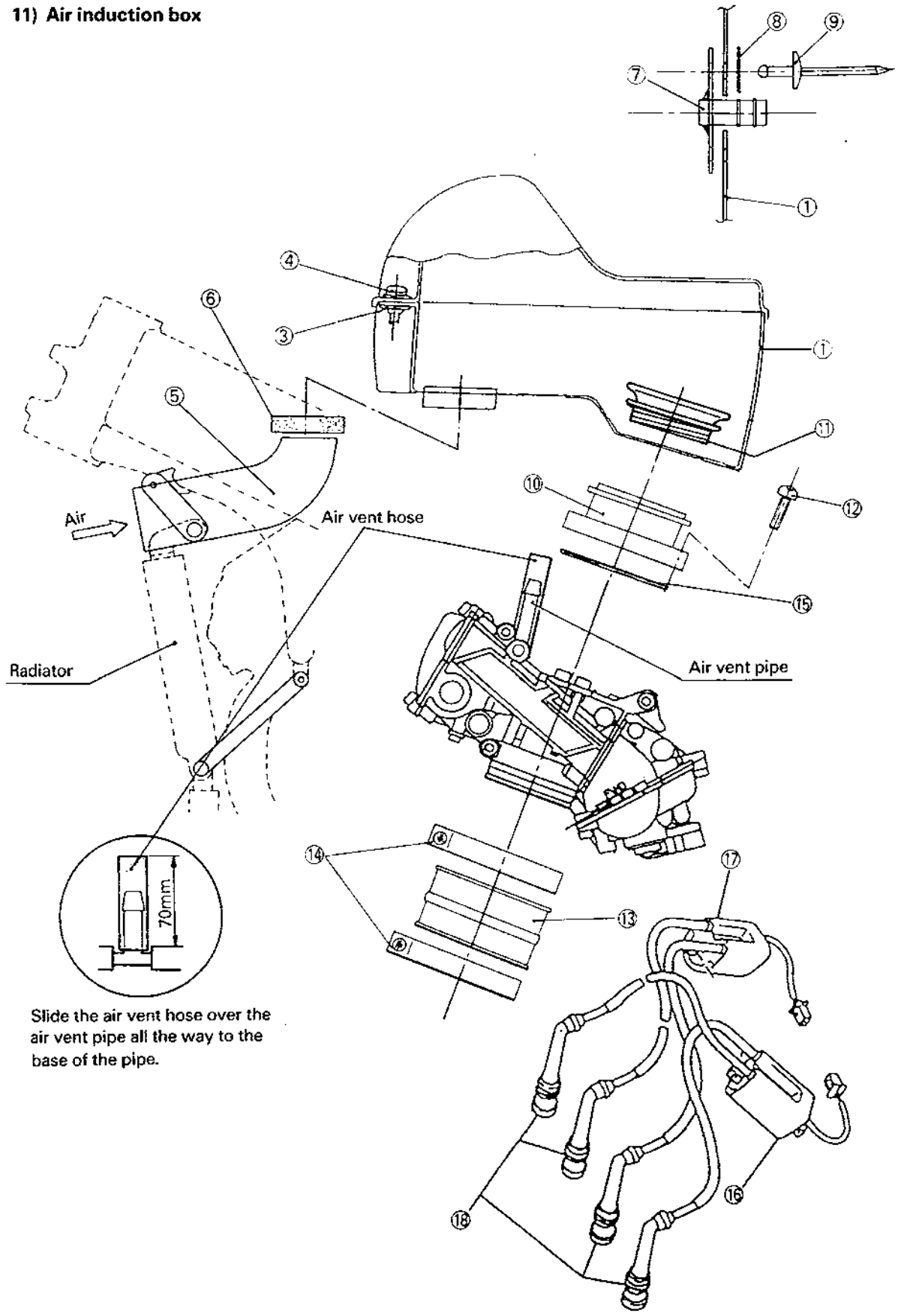


4. Pilot jet (P.J.)

(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



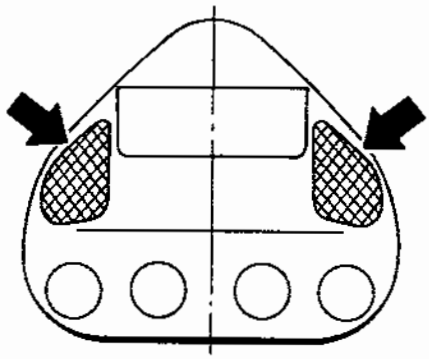
Slide the air vent hose over the air vent pipe all the way to the base of the pipe.

	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 ⑪ 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.**

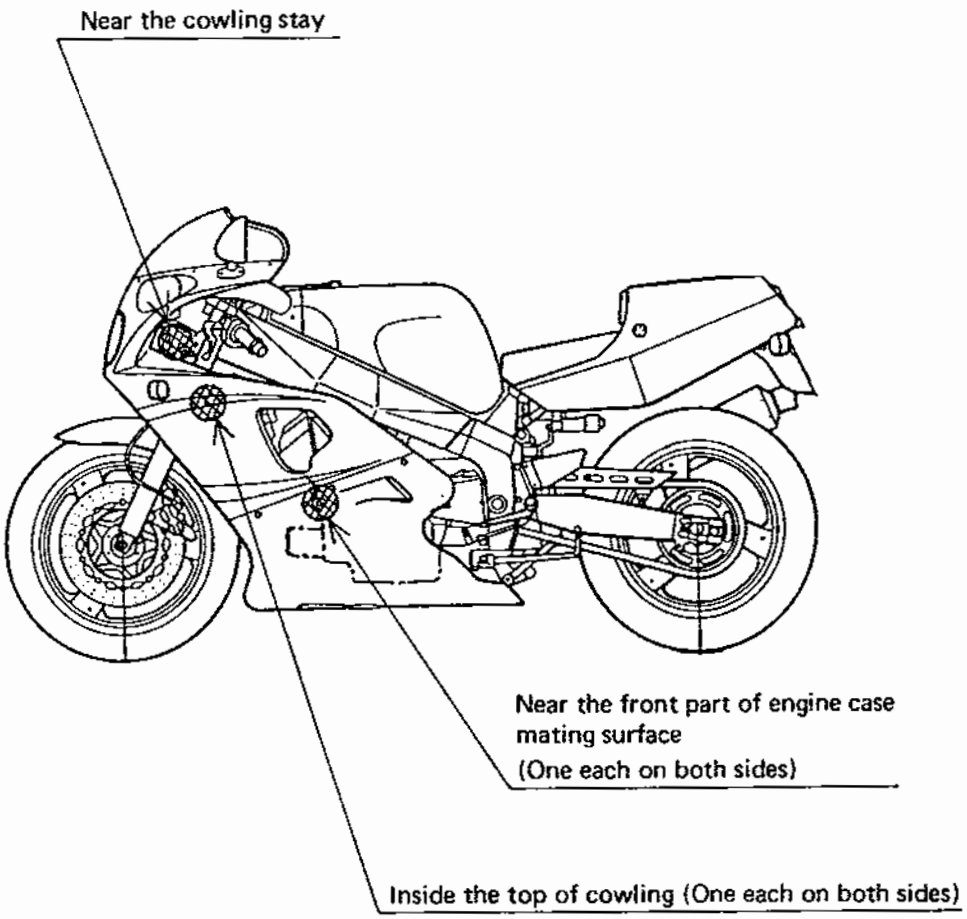


- **Cut the ⑥ air filter net to a desired size before use.**

- 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 ┐ Already	1	For tachometer
	2AL-83520-70	Socket cord ┤ installed	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 ┐ Already	1	For tachometer
	2AL-83520-70	Socket cord ┘ installed	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
② Pump relay (25G-81950-01)
③ Starter switch (4FM-81940-00)
④ Socket cord ass'y (1HX-84735-00)
⑤ Fuse (for head light)
⑥ Relay ass'y (for 25G-01 head light)
⑦ Ignitor unit
⑧ Starter motor lead
⑨ Negative lead wire
⑩ EXUP motor lead
⑪ Starter motor
⑫ Generator
⑬ Water temperature gauge lead (2AL-83520-70)
⑭ Tachometer lead (4FN-83509-70)
⑮ Pick-up lead
⑯ Band
⑰ Clamp
⑱ Band
⑲ Clamp
⑳ Clamp
㉑ Thermo unit
㉒ Ground
㉓ Fuse (ignition)
㉔ Emergency stop switch (2H7-82576-00)
㉕ Bracket (3TJ-2117J-70)
㉖ Fuel cut relay assembly (4U8-81950-02)

[A] Wire harness position x White tape
[B] To stop switch
[C] To handle switch (R)
[D] To head light
[E] To fuel pump
[F] To thermo unit

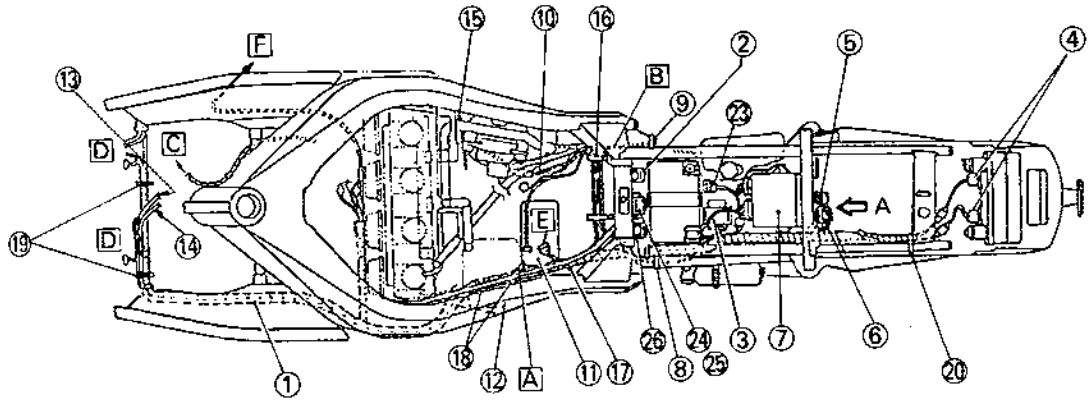
On the sprint and endurance models, the wire harness can be routed in the same manner.
(The wiring diagram for the endurance model is shown here)

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

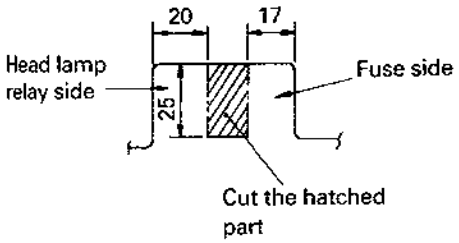
1) Lights switch
Off – OFF
PO – Tail light Only one lamp
ON – Head light (Hi-beem) } Lamp
Meter ilumination
Tail light

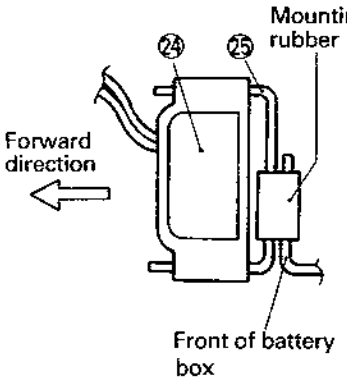
2) Battery coupler
Disconnect the battery coupler from the coupler on the wire harness side. (The circuit is so designed that the brake lamp is directly connected to the battery.)

Wire harness routing deagram

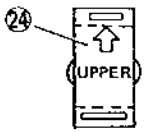


View A
For ⑤ and ⑥, the fuse and lamp relay, cut the mud guard as shown below.



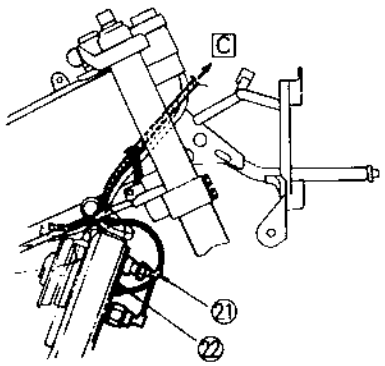


Secure ㉔ Emergency Switch to the front of the battery box by using ㉕ Bracket and the disused relay mounting rubber (holder). The switch should be installed at a right angle to the forward direction as shown in the figure at left.



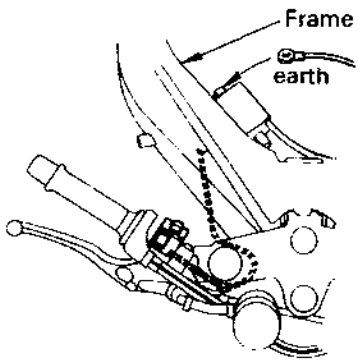
CAUTION:

Install the emergency switch ㉔ with the arrow pointing upward.



CAUTION:

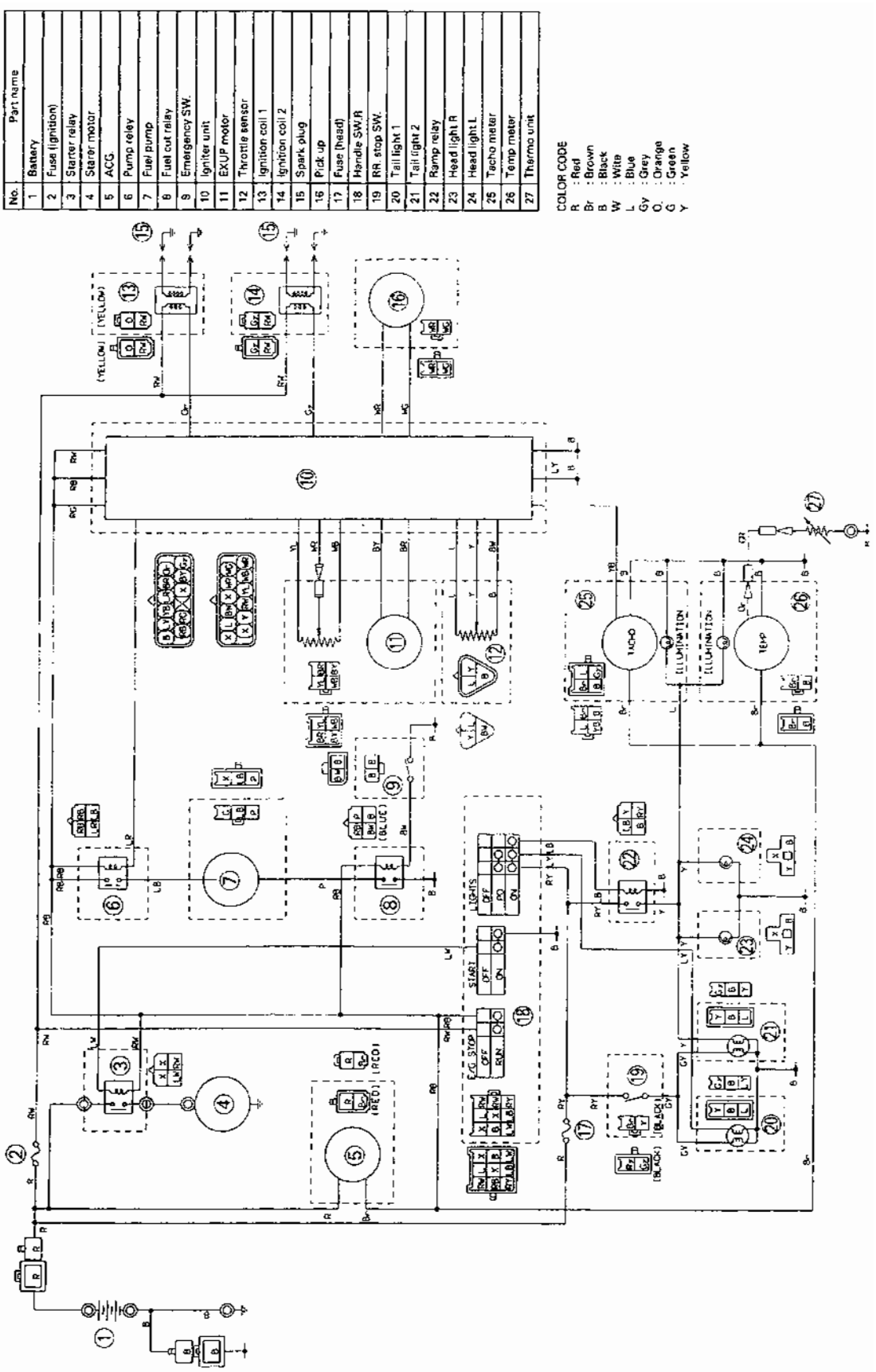
It is recommended that each coupler be sealed with silicon rubber to prevent electric leaks in case of rain.



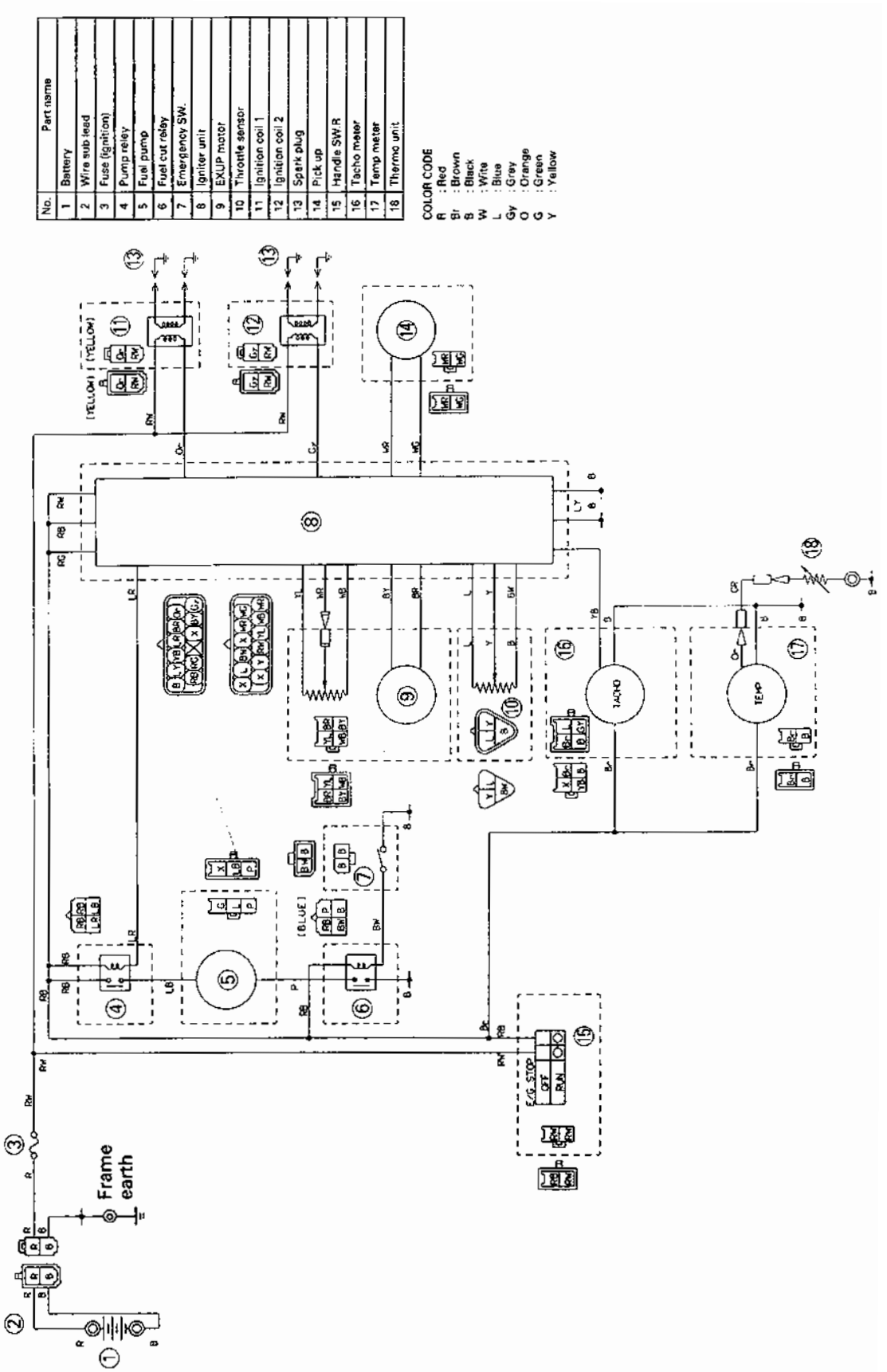
CAUTION:

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)

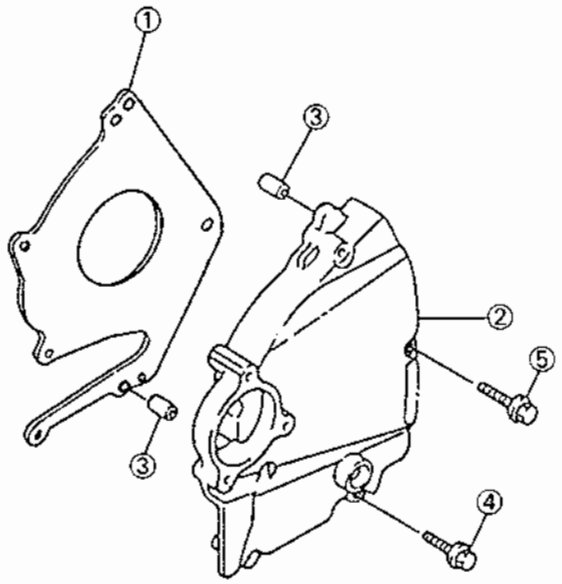


Connecting diagram for sprint races (4FN-82590-71)



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.

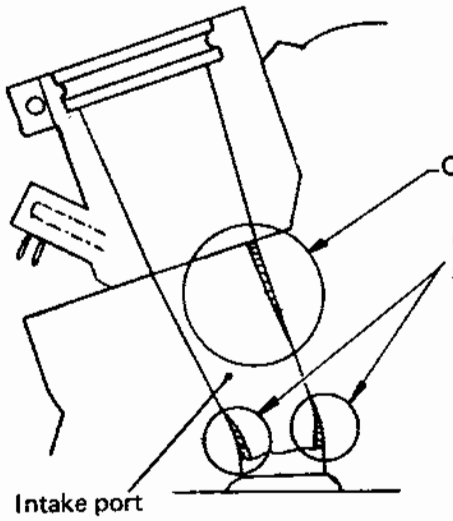
3. Other modification of engine interior

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 walland grinding.

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

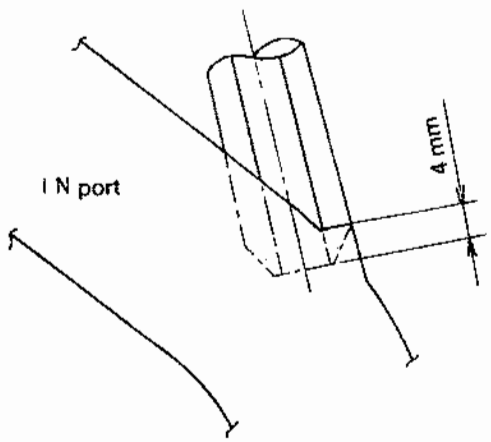


CAUTION:

- **Take care not to scratch the valve seat surface.**
- **Make the borders smooth and continuous.**
- **Be careful not to cut more than necessary.**

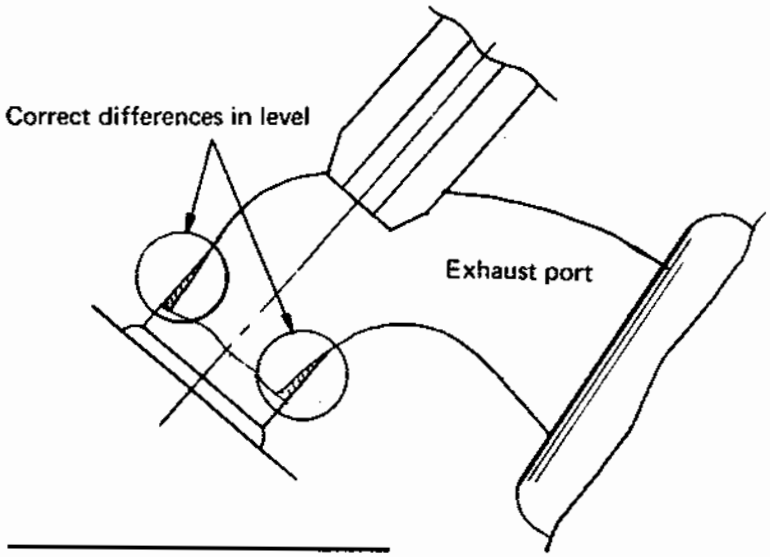
ⓑ Modification of intake valve guide

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.

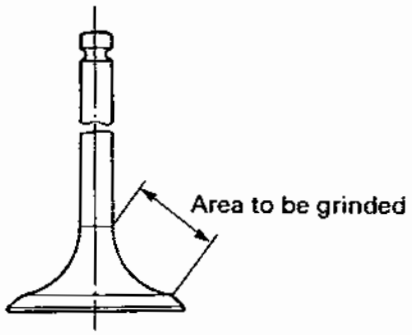


CAUTION:

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

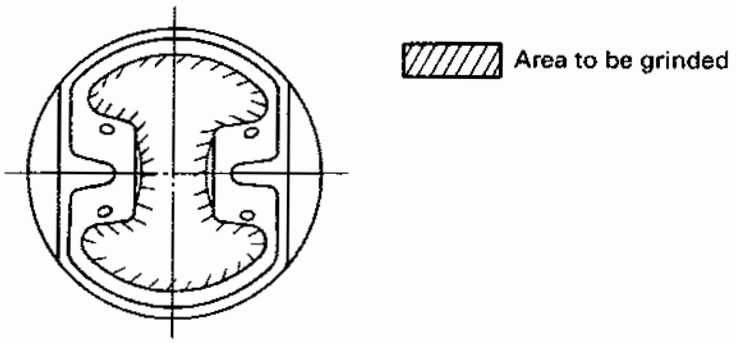
2) Grinding the valve funnel

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.

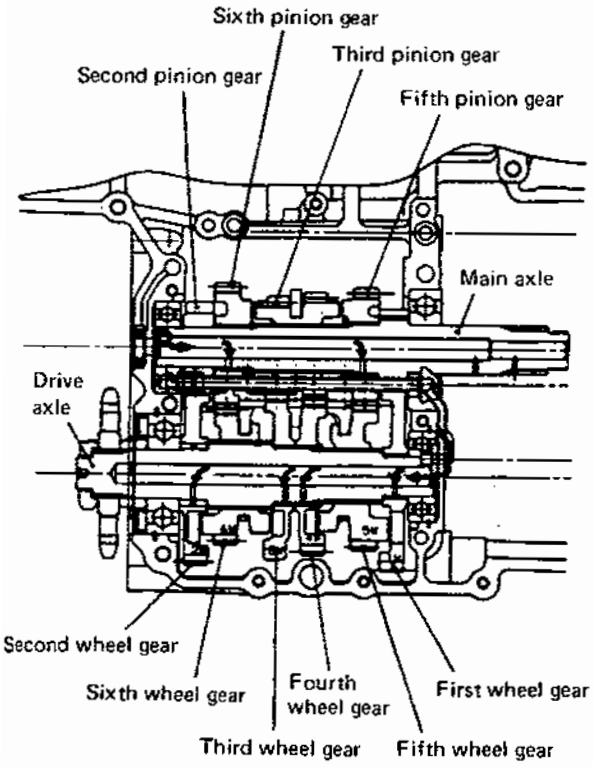


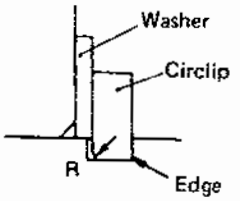
4. Installation of optional parts

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.



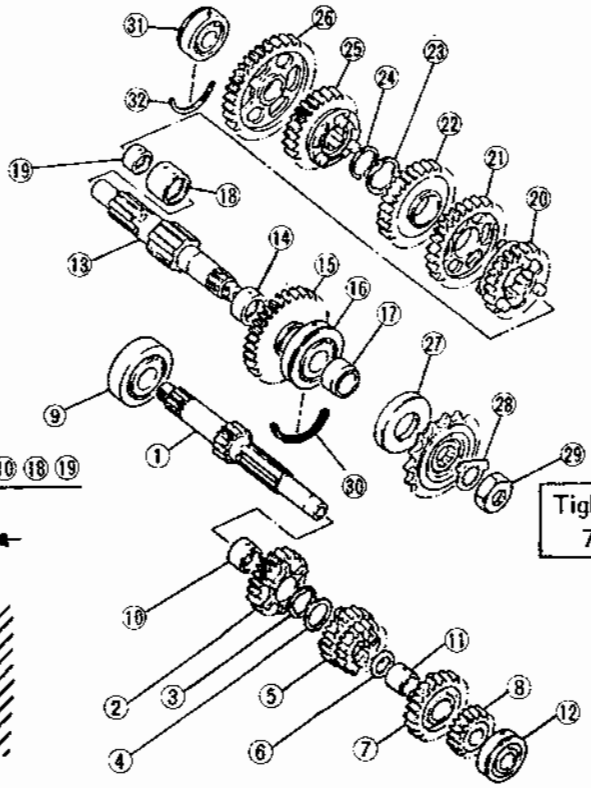
CAUTION:

- **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

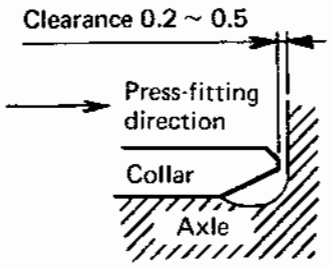
	Standard ratio	Super cross-ratio
Speed 1	32/13 = 2.462	39/16 = 2.438
Speed 2	33/17 = 1.941	37/18 = 2.056
Speed 3	31/19 = 1.632	35/20 = 1.750
Speed 4	33/23 = 1.435	34/22 = 1.545
Speed 5	26/20 = 1.300	32/23 = 1.391
Speed 6	25/21 = 1.190	28/22 = 1.273

Super cross-ratio transmission



Tightening torque:
7.0 kgf.m (50 ft.lb)

Note on press-fitting of collars ⑩ ⑱ ⑲



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

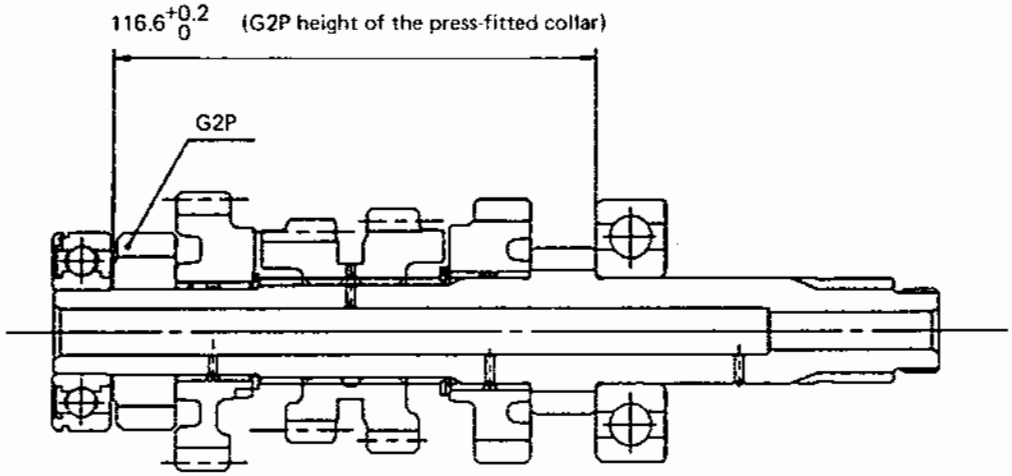
Care to be taken when press-fitting the collar (⑩, ⑪, ⑭, ⑱, ⑲)

1. Press-fit each collar so that the edge chamfered at 30° is on the inner side.
2. Be sure the oil hole (φ3) 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 desulfied 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.



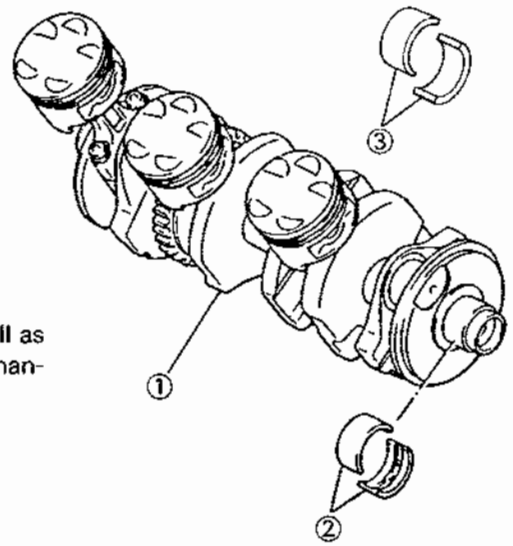
G2P dimensions of the press-fitted collar

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.



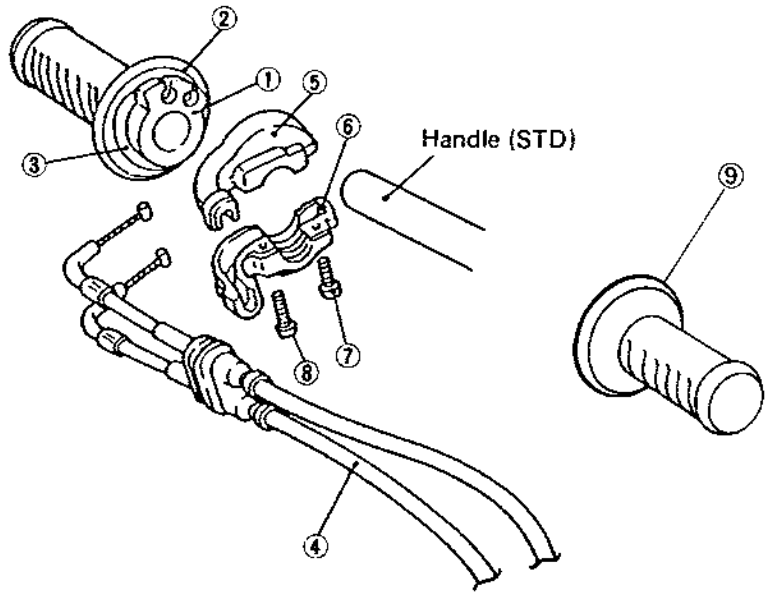
* Checking of sizes of the bearings ② as well as their installation, can be done in the same manner as the standard type bearing.
(Refer to the Service Manual)

	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.



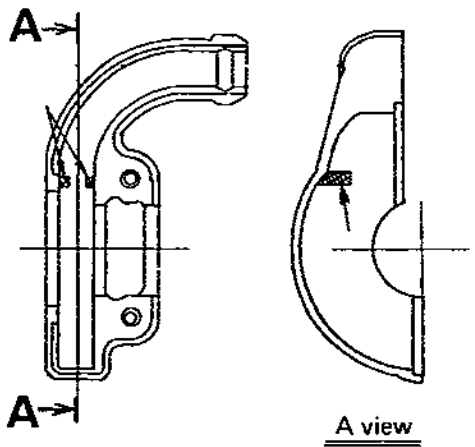
	No.	Part No.	Part name	Q'ty	Remarks
	1	3FV-26243-80	Tube, guide	1	
☆	2	47X-26242-00	Grip 2	1	
☆	3	47X-26249-00	Ring, leaf	1	
	4	4FN-26302-70	Wire, throttle ass'y	1	
☆	5	3FV-26281-00	Cap, grip upper	(1)	Correction is necessary
☆	6	3FV-26282-00	Cap, grip under	(1)	
☆	7	98506-05020	Screw, pan head	(1)	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

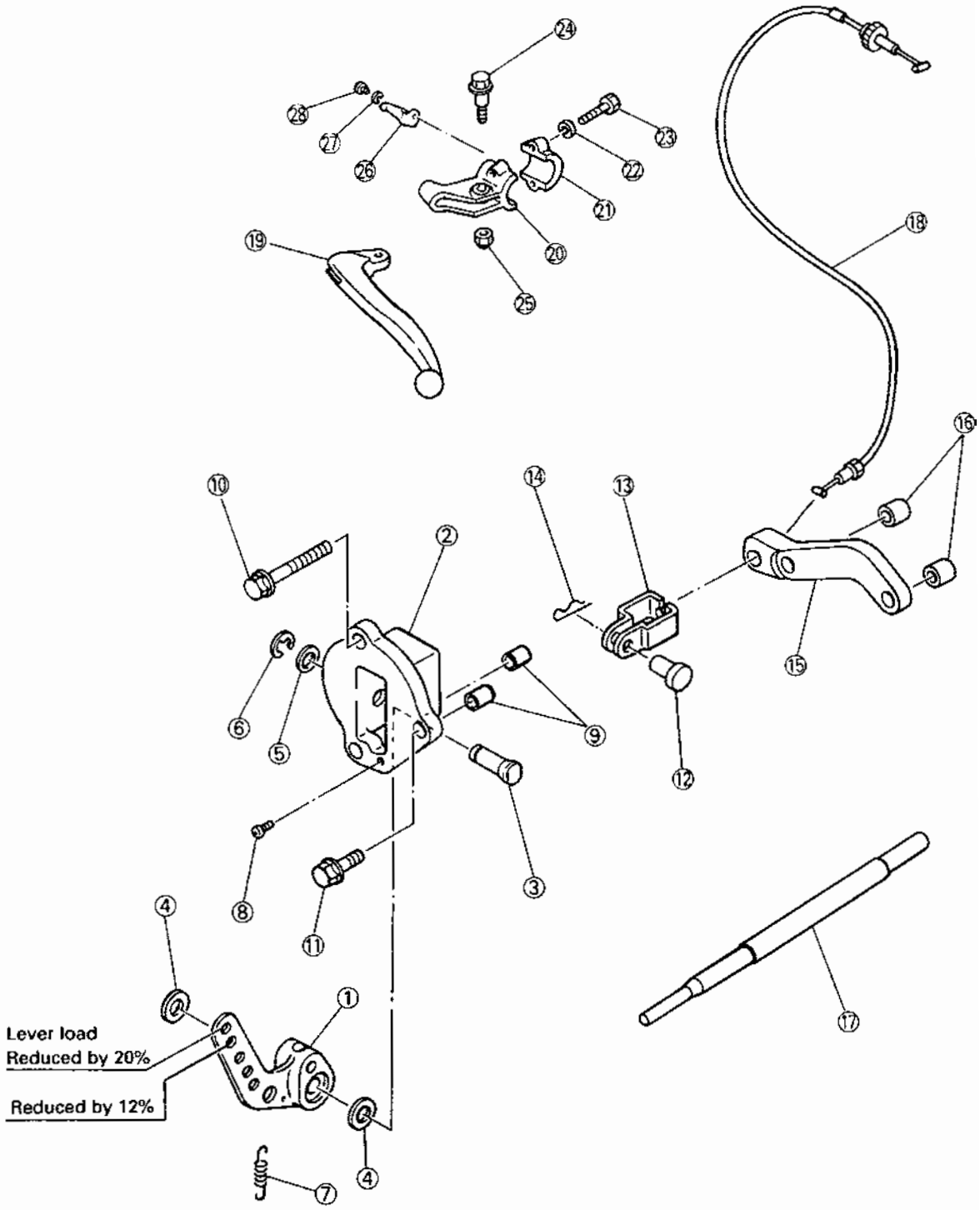


A view

*Cut the shaded area ▨ 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.

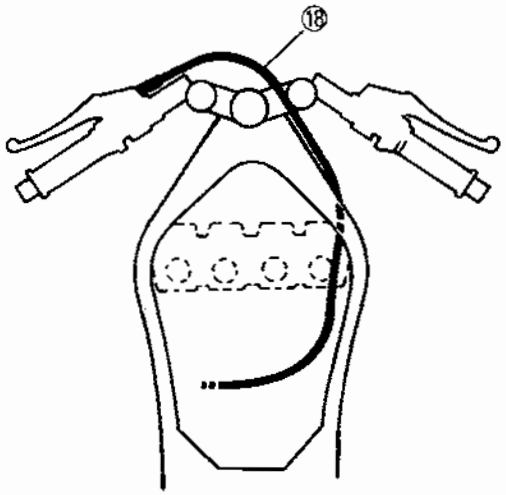


	No.	Part No.	Part name	Q'ty	Remarks
	1	4FN-16340-70	Lever ass'y	1	
	2	4FN-16381-80	Holder, lever	1	
	3	4FN-16382-70	Axle, push, lever	1	
☆	4	90201-087H6	Washer	2	
☆	5	90201-084L7	Washer	1	
☆	6	99001-06600	Circlip	1	
☆	7	90506-08227	Spring	1	
☆	8	98501-04010	Screw	1	
☆	9	91810-18013	Pin	2	
☆	10	95026-06090	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	

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

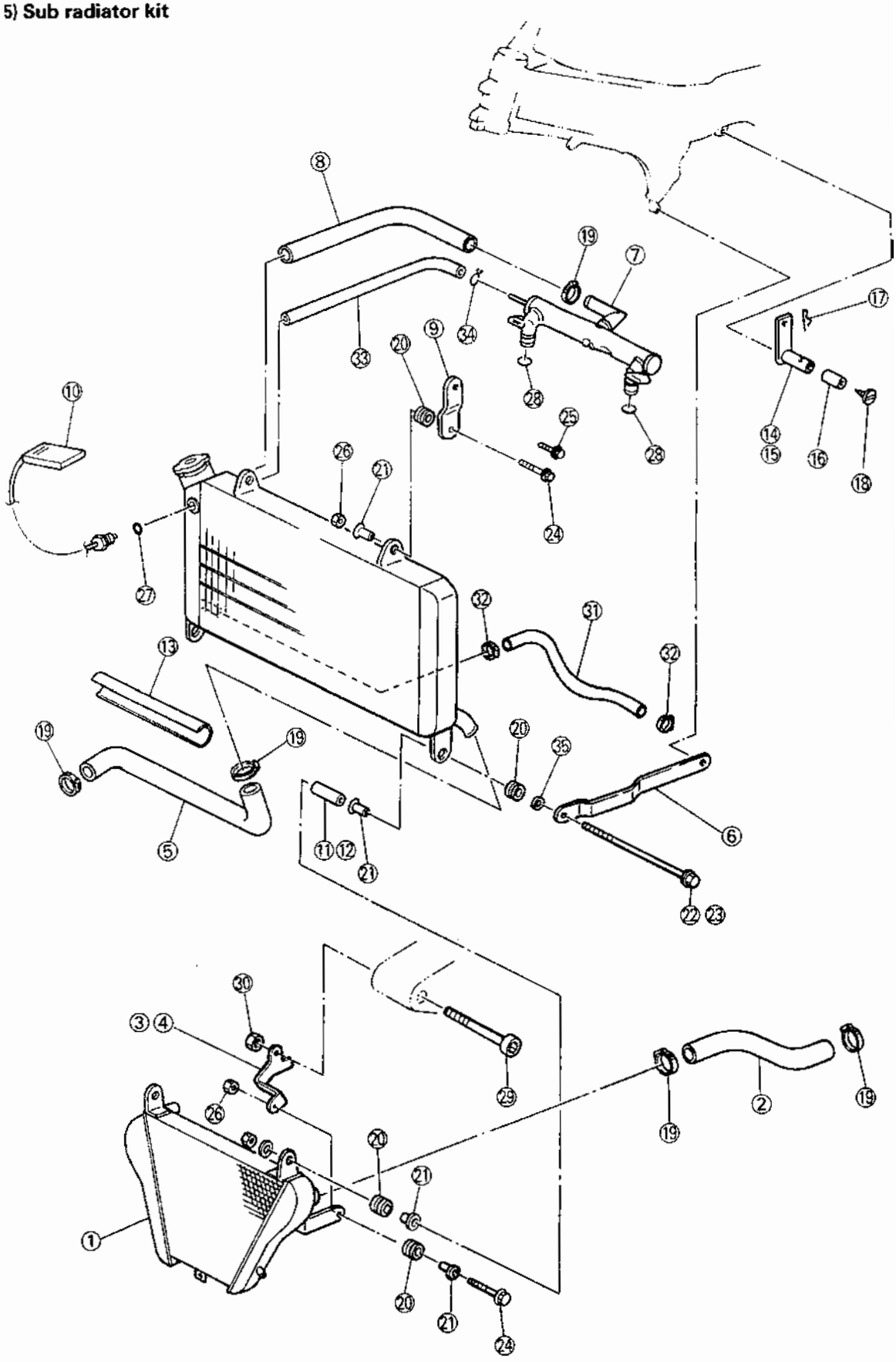
CAUTION:

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 ⑱ 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

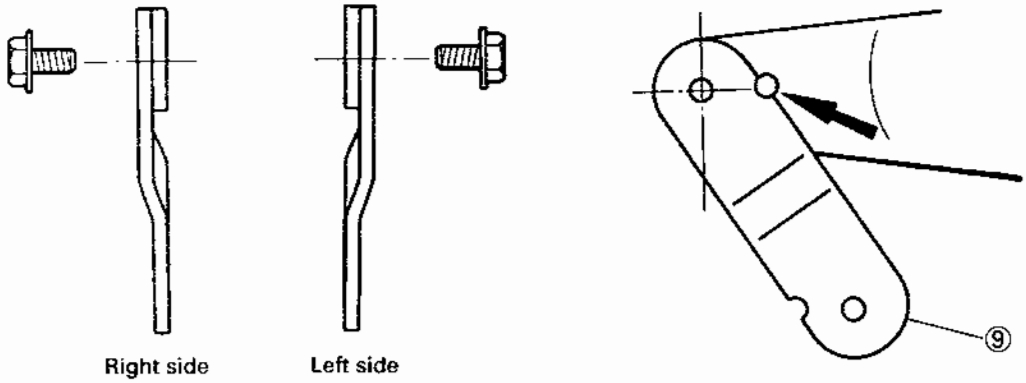


	No.	Part No.	Part name	Q'ty	Remarks
	1	4FN-2140A-70	Radiator ass'y 2	1	
	2	4FN-12579-70	Hose (w/p~rad.)	1	
	3	4FN-2142K-71	Bracket 1 (lower)	1	Left side
	4	4FN-2142L-71	Bracket 2 (lower)	1	Right side
	5	4FN-12589-70	Hose (main~sub)	1	
	6	4FN-2142M-71	Bracket (middle)	2	Common to left and right
	7	4FN-12482-70	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	

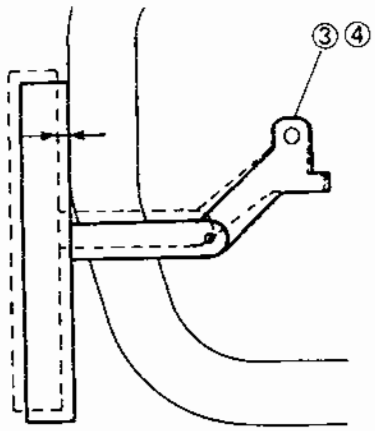
Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.
( ) use the original equipment

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.**

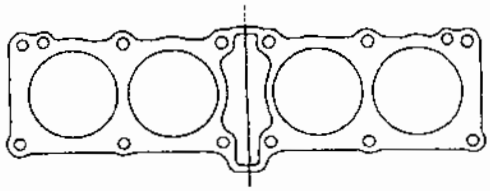


5. **The bolts ㉒ and ㉓ should be put in from the inner side and the nut ㉖ should be on the outer side for easier work.**
6. **The hoses ⑧ and ㉛ are rather long and should be cut to the proper length before use.**
7. **Note that excessively tightening the hose clamp may result in water leaks or damage 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.**

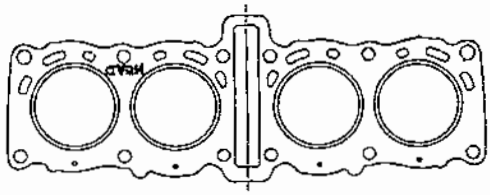
6) Gasket, cylinder
This part is for adjusting the compression ratio. It is available in three thicknesses, 0.15, 0.25, and 0.30. The standard part is 0.20 mm in thickness.

7) Gasket, cylinder head
This part has been changed to the double bead type from the standard part for better durability and reliability.

①



②



	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	

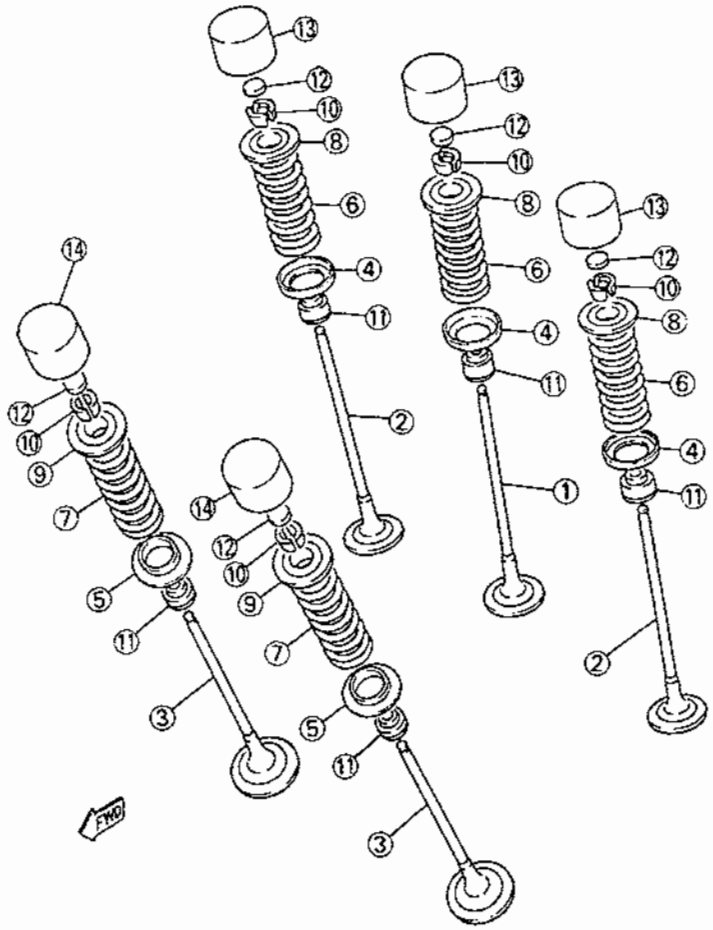
8) Spark plug
The following parts are the NGK surface gap (see P. 3) type spark plugs specified for use in YZF750 races. The champion spark plug should be purchased in the market.

	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:

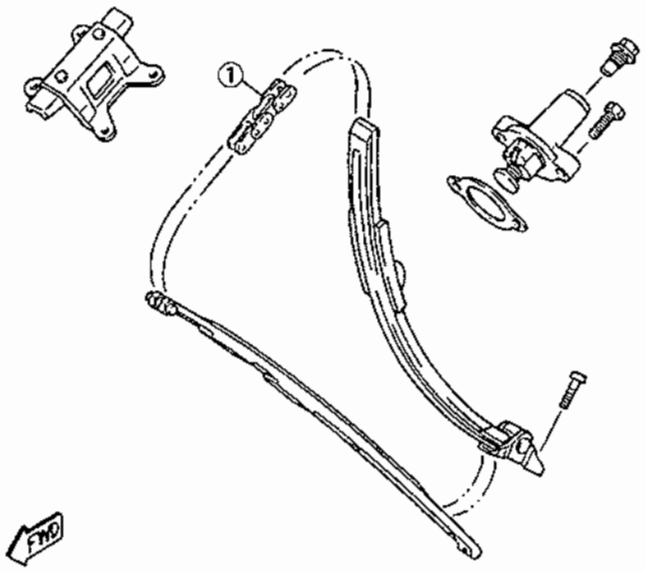
- **The valve kit and retainer kit should be assembled in the same manner as for the standard machine.**
- **Thoroughly fit the valve and valve seat by referring to the Service Manual.**

	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)	

Parts marked with ☆ are stamped YAMAHA parts and available through the general parts sales channel.
( ) use the original equipment.

12) Cam chain

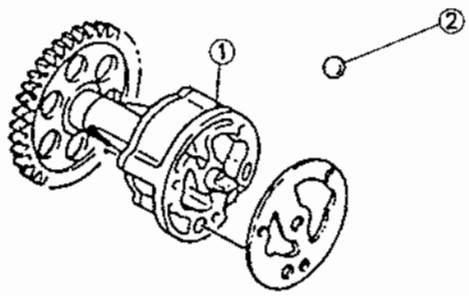
Shot peening has been performed on the bush and plate of the standard part to improve the strength and durability.



	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.

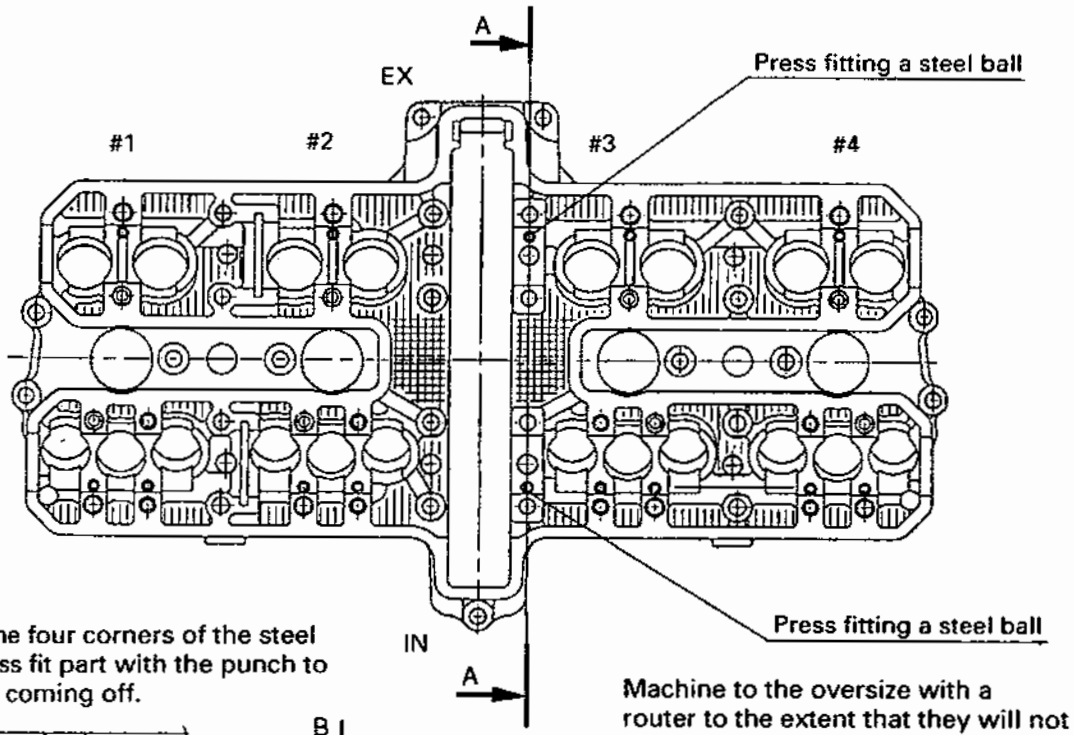


	No.	Part No.	Part name	Q'ty	Remarks
	1	4FN-13300-70	Oil pump ass'y	1	
☆	2	93501-08001	Ball	2	ϕ3.175

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/cm² 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/cm² 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 prevent seizure with the cam shaft so that they will not touch the cam shaft.**

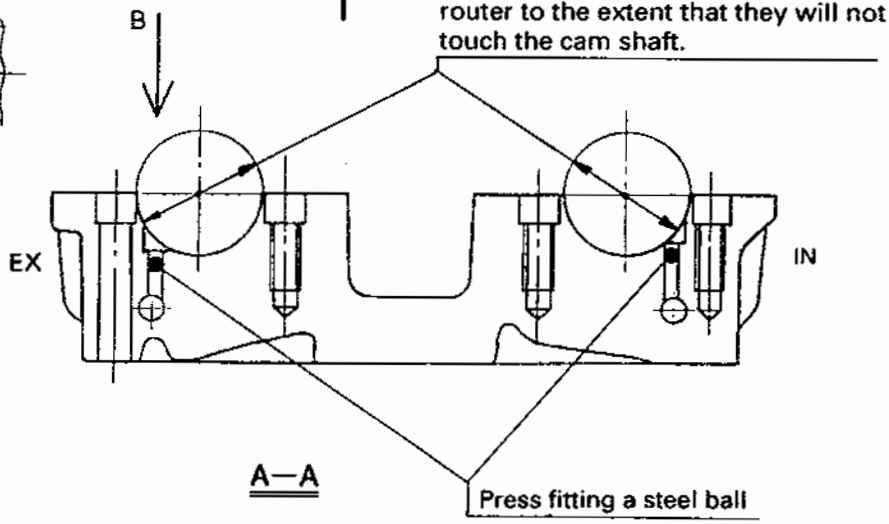


Strike the four corners of the steel ball press fit part with the punch to prevent coming off.



View B

Machine to the oversize with a router to the extent that they will not touch 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 (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 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 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 × Pitch	Tightening torque (kgf·m)	Q'ty	Neji-lock	Lock washer	Remarks
T-001	Std.		9502Δ-06ΔΔΔ	Bolt, flange (small)	M6 × 1.0	1.0 ± 0.2				
T-002			9582Δ06ΔΔΔ 9102Δ-06ΔΔΔ	Bolt, flange	M6 × 1.0	1.0 ± 0.2				
T-003			9131Δ-06ΔΔΔ	Bolt, hexagon socket	M6 × 1.0	1.0 ± 0.2				
T-004			92501-06ΔΔΔ	Screw, panhead	M6 × 1.0	0.7 ± 0.2				
T-006			9502Δ-08ΔΔΔ	Bolt, flange (small)	M8 × 1.25	2.0 ± 0.2				
T-007			9582Δ-08ΔΔΔ	Bolt, flange	M8 × 1.25	2.0 ± 0.2				
T-010	111	Sand hole plug	90340-18101	Plug, straight screw	M18 × 1.5	5.5 ± 0.5	4	S2-M (TB1322)		
T-020		Spark plug installation	94700-0031B 94700-00319	Plug, spark	M10 × 1.5	1.25 ± 0.25	4			
T-030		Head tightening	90179-10584	Nut	M10 × 1.25	4.1 ± 0.2	8			Lubricate with oil to screw and stopper
T-040		Head tightening	90176-10064	Nut	M10 × 1.25	4.1 ± 0.2	4			Lubricate with oil to screw and stopper
T-050		Cap × Cam case	90105-06153	Bolt, flange	M6 × 1.0	1.0 ± 0.2	16			
T-060		Cap × Head	90105-06541	Bolt, flange	M6 × 1.0	1.0 ± 0.2	20			
T-065		Cap × Head	90105-06693	Bolt, flange	M6 × 1.0	0.8 ± 0.2	4			Refer to 4FM-0A111-00
T-070		Head cover tightening	90109-064F0	Bolt	M6 × 1.0	1.0 ± 0.2	8			
T-080		Oil hole plug	90336-06031	Plug taper			3	S2-M (TB1322)		Cam case, plug taper section
T-090		Oil hole plug	90336-05021	Plug taper			2	S2-M (TB1322)		Cam case, plug taper
T-100		(exhaust pipe installation)	95611-08625	Bolt, stud	M8 × 1.25	1.5 ± 0.2	8			Lubricate with oil to screw
T-110	114	Conrod Conrod cap	36Y-11654-00 90179-08327	Bolt, conrod Nut	M8 × 0.75	3.6 ± 0.25	8			Lubricate Molybdenum gear grease
T-120	121	Plug × Tensioner case (12210)	90109-112F1	Bolt	M11 × 1.0	2.0 ± 0.5	1			
T-130		Sprocket × Cam shaft	90105-07342	Bolt, flange	M7 × 1.0	2.4 ± 0.2	4			
T-140		Damper chain 2 × Lower case	90109-065A8	Bolt	M6 × 1.0	1.0 ± 0.2	2	S2-M (TB1322)		
T-150	124	Pipe 4 installation	90110-06142	Bolt, hexagon socket	M6 × 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	90150-22017	Hose clamp ass'y		0.15~0.25	4			
T-160	131	Oil cooler installation	90401-20151	Bolt, union	M20 × 1.5	6.3 ± 0.3	1			Lubricate with oil to screw and flange

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

No.	Sec.	Tightening point	Part No.	Part name	Dia × Pitch	Tightening torque (kgf·m)	Q'ty	Neji-lock	Lock washer	Remarks
T-396		Crankcase 2 installation	90340-14068	Plug, straight screw	M14 × 1.5	0.7 ± 0.2	1			
T-397		Main gallery plug	4H7-15189-00	Plug	M20 × 1.5	1.2 ± 0.2	2			
T-400	156	Guide, upper installation	95816-06014	Bolt, flange	M6 × 1.0	1.0 ± 0.2	2	S2-M (TB1322)		
F-410		Wheel starter installation	90110-08177	Bolt, hexagon socket	M8 × 1.0	2.5 ± 0.2	3	S2-M (TB1322)		
T-420	161	Boss clutch installation	90170-20257	Nut, hexagon	M20 × 1.0	7 ± 1.0	1		0	Lock washer
T-430		Clutch, spring installation	90159-06123	Screw, with washer	M6 × 1.0	0.8 ± 0.2	6			
T-440	171	Drive sprocket installation	90179-18020	Nut	M18 × 1.0	7 ± 1.0	1		0	Lock washer
T-450	181	Stopper shift bar installation	95822-06016	Bolt, flange	M6 × 1.0	1.0 ± 0.2	2	S2-M (TB1322)		
T-460		Crankcase 2 installation	90109-063F8	Bolt	M6 × 1.0	1.0 ± 0.2	1	S2-M (TB1322)		
T-470		Rod shift installation	90170-06228	Nut, hexagon	M6 × 1.0	1.0 ± 0.2	1			Left screw
T-480		Rod shift installation	95303-06700	Nut, hexagon	M6 × 1.0	1.0 ± 0.2	1			
T-490		Case 2 installation	4G0-18127-00	Stopper screw	M8 × 1.25	2.2 ± 0.2	1	S2-M (TB1322)		
T-500	(181)	Cam, shift installation	98701-05012	Screw, flat head (+)	M5 × 0.8	0.3~0.45	1			
T-510	(181)	Arm, shift installation	91026-06020	Bolt, flange	M6 × 1.0	1.0 ± 0.2	1			
T-520	810	AC generator installation	95816-08065	Bolt, flange	M8 × 1.25	2.5 ± 0.2	3			
T-530		Ignitor unit installation	97706-60016	Screw, oval head tapping	M6 × 1.0	1.0 ± 0.2	3			
T-540		Neutral switch installation	92502-06016	Screw, panhead	M6 × 1.0	0.4 ± 0.2	2	S2-M (TB1322)		
T-550										
T-560		Radiator installation	11H-83591-00	Thermo unit	PT 1/8	1.5 ± 0.2	1			
T-570		Radiator installation	2EL-82560-00	Thermo switch ass'y	M16 × 1.5	2.25 ± 0.25	1			
T-580		Radiator installation (ground)	97606-05108	Screw panhead w/washer	M5 × 0.8	0.5 ± 0.2	1			
T-590		Servo motor installation	95801-06030	Bolt, flange	M6 × 1.0	1.0 ± 0.2	2			

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

No.	Sec.	Lubricate spot	Seal	Parts requiring lubrication seals			
L-010		Overall oil seal lip portions		Case 2 (Change shaft)	Case 2 (Rod push)	Drive sprocket	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.	Camshift (R)	
L-040	114	Enlarged end portion of crankshaft	Oil	Crankshaft	Inner circumference of bearing conrod (Metal)	Enlarged end portion con-rod	
L-050		Circumferential of piston	Oil	Piston	Sleeve, cylinder	Ring, piston	
L-060		Circumferential of pin, piston	Oil	Pin, piston	Piston	Small end portion of con-rod	
L-070		Portion of conrod bolt	Molybdenum gear grease	Conrod	Bolt	Nut, screw and stopper	
L-080		Portion of crankshaft journal	Oil	Crankshaft	Inner circumference of bearing conrod (Metal)	Crankcase 1 stopper	
L-090	121	Shaft cam Portion of profile Portion of journal	Molybdenum disulfide oil	Shaft cam	Cam case	Cam cap	
L-100		Valve IN, EX portion of stem	Molybdenum disulfide oil	Valve IN, EX	Guide IN, EX valve	Stem seal	Pad
L-110		Valve IN, EX stemend	Oil	Lifter valve	Cam case		
L-120	124	W/P shaft impeller portion	Oil	Shaft impeller	Crankcase 2		
L-130	131	Oil pump ass'y (inside)	Oil	Shaft	Rotor IN, OUT		
L-140		Straigner ass'y	Oil	Housing straigner (inside)	Screen portion		
L-145		Byps valve ass'y	Oil				
L-150	156	Gear, idler 1 (interior)	Oil	Gear idler 1	Shaft 1		
L-160		Starter clutch outer ass'y (inside)	Oil	Clutch starter (outer)	Pin (Roller)	Gear, Id 2 outer diam.	
L-170		Sprocket, starter 2 (inner diam.)	Oil	Sprocket starter 2	Shaft 2		
L-175		Gear, idler 2 (interior)	Oil	Gear idler 2 (interior)	Wheel starter (outer)		
L-180	161	Gear, primary driven end surface	Oil	Gear	Plate, thrust (L, R)		
L-190		Ball (for clutch)	Oil	Ball	Rod, push		
L-200	171	Transmission sliding gear Inner surface	Molybdenum disulfide oil	Gear 4P, 5P	Gear 1W, 2W, 3W	Axle main drive	

No.	Sec.	Lubricate spot	Seal	Parts requiring lubrication seals			
L-210		Transmission floating gear groove of folk inner surface	Molybdenum disulfide oil	Gear 3P	Gear 4W, 5W	Axle main drive	
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	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			

CONTENTS (BODY)

1. **FRONT FORK BRACKET KIT FOR ÖHLINS FRONT FORK SET (4FN-750BK-93)** 1
   1) Front fork bracket kit (4FN-C3400-90) 1
   2) Front wheel collar kit (4FN-C5110-90) 5
   3) Handle kit (3FV-Y2344-90) 6
   4) Damper stay kit (4FN-C3495-90) for ÖHLINS Damper 7
   5) Front wheel axle (4FN-25181-90) 8

2. **FRONT WHEEL COLLAR KIT FOR STD F/FORK (4FN-C5110-70)** 10
3. **REAR HEIGHT ADJUSTER KIT (4FN-C2230-70)** 11
4. **REAR ARM KIT (4FN-C2110-70)** 15
   1) Rear wheel kit (4FN-C5300-70) 16
   2) Rear wheel collar kit (4FN-C5310-70) 18
   3) Sprocket holder kit (4FN-C5360-70) 19

5. **REAR SPROCKET KIT (4FN-C5400-70)** 22
6. **REAR SPROCKET KIT (FOR STD WHEEL) (4FN-C5400-80)** 23
7. **LIST OF BODY TIGHTENING TORQUE (FOR STD PARTS)** 24

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

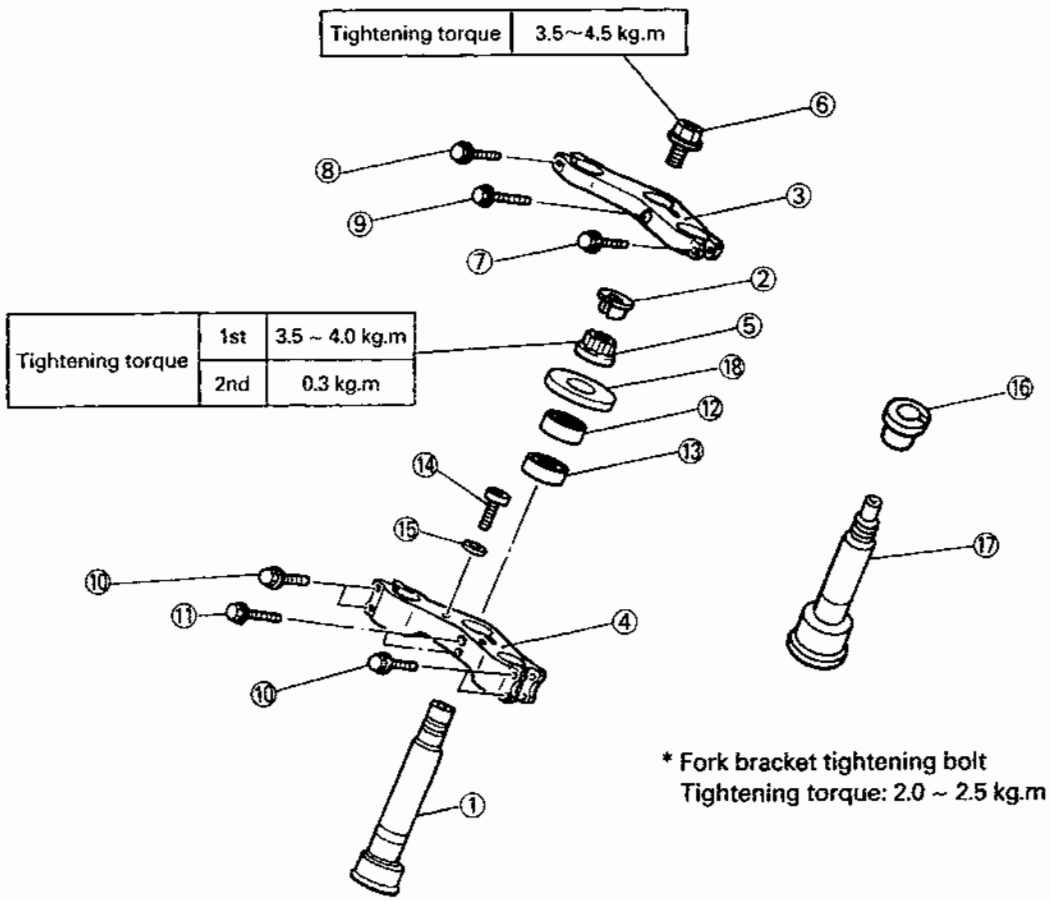
1) Front fork bracket kit (4FN-C3400-90)

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>

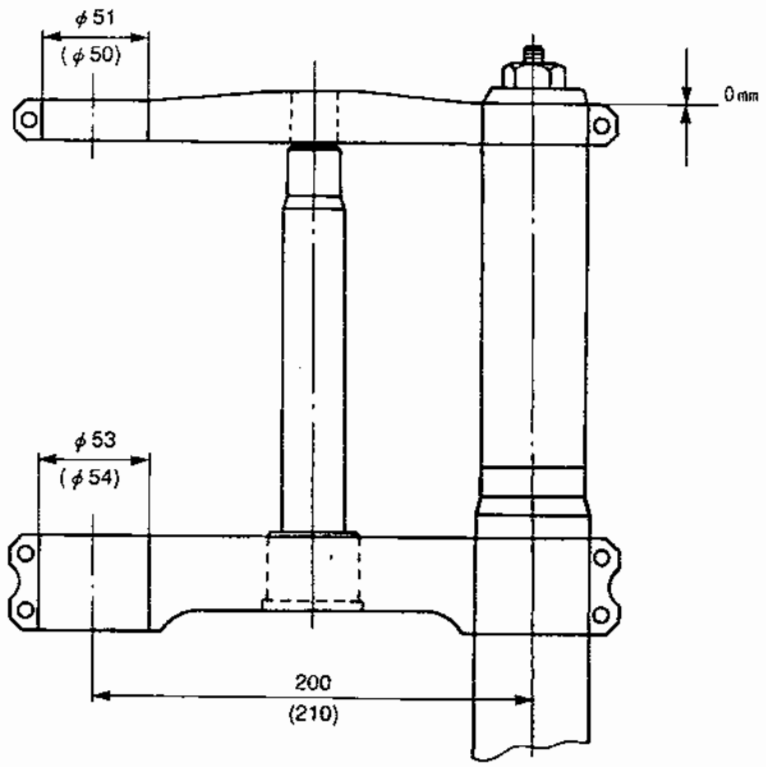
	No.	Part No.	Part name	Q'ty	Remarks
	1	3FV-23341-71	Shaft, steering	1	
	2	3FV-23343-71	Flange, steering	1	
	3	4FN-23435-90	Crown, handle	1	
	4	4FN-23345-90	Under, bracket	1	
	5	4FN-23453-70	Nut, fitting	1	
	6	1AE-23451-70	Bolt, fitting	1	
☆	7	95811-08040	Bolt, flange	1	
☆	8	95811-08045	Bolt, flange	1	
☆	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 ±3mm (27mm, 33mm)
Angle of steering	20° to right/left
Calipers to be used	BREMBO 4 pots or SAME DIMENSION PARTS
Disk diameter	ϕ320mm
Disk line	64mm (L, R)
Axle shaft diameter	ϕ22mm



( )=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.



(PHOTO IS OW-01)

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 ⑪ (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)

- 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 valve is +8.5mm with the above settings using the standard front fork and handle crown.

• **Changing the offset**

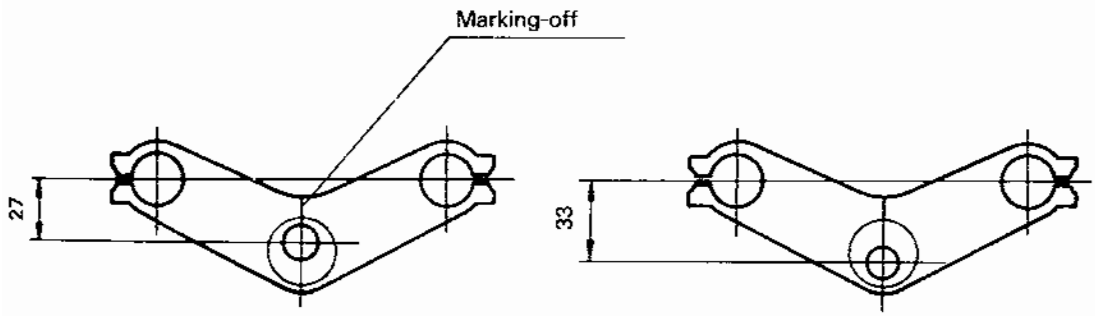
To change the offset to 27mm or 33mm, follow the procedures below.

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.

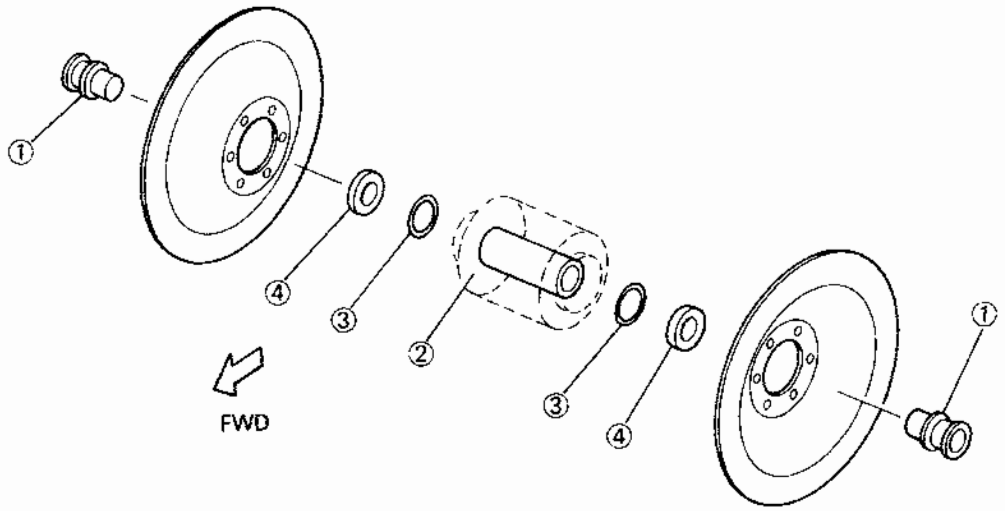
2) Front wheel collar kit (4FN-C5110-90)

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

<Parts list>

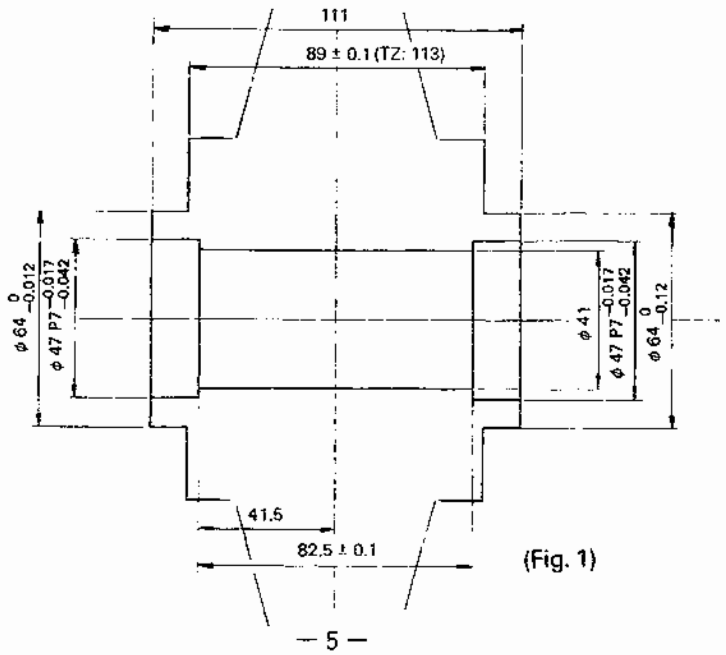
	No.	Part No.	Part name	Q'ty	Remarks
	1	3FV-25183-90	Collar, wheel shaft 1	2	
☆	2	4DP-25117-00	Spacer, bearing	1	
☆	3	4DP-2518A-00	Plate	2	
☆	4	93306-00507	Bearing	2	

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).



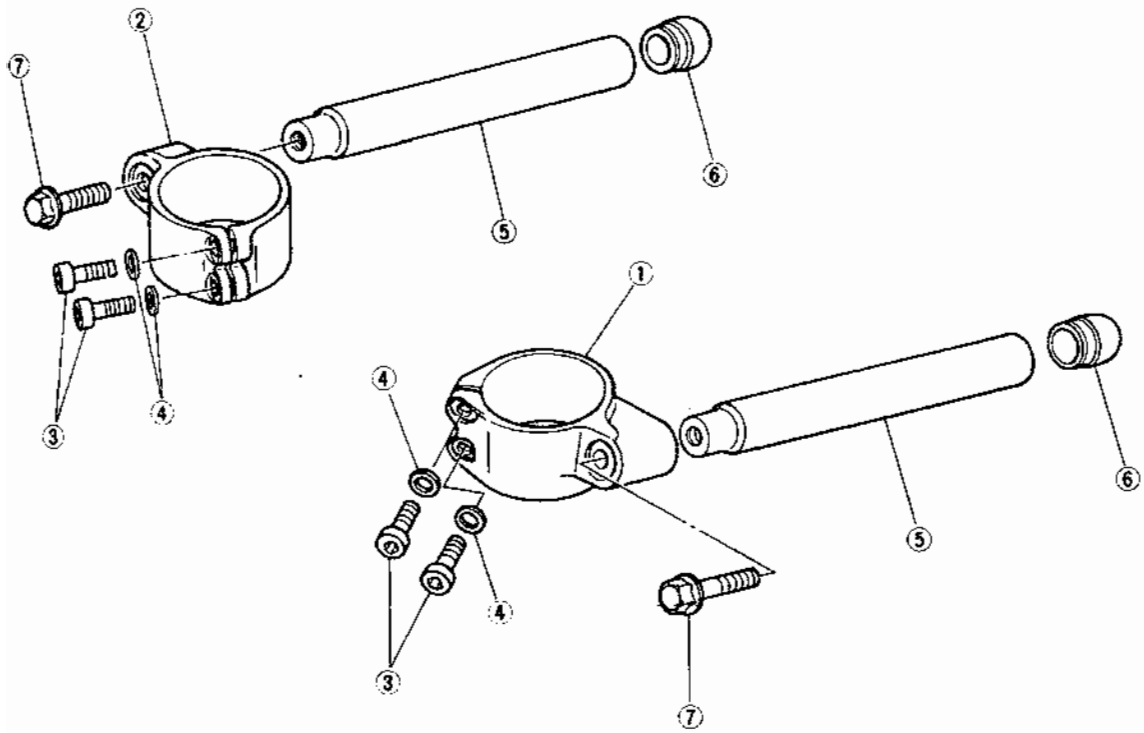
(Fig. 1)

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.

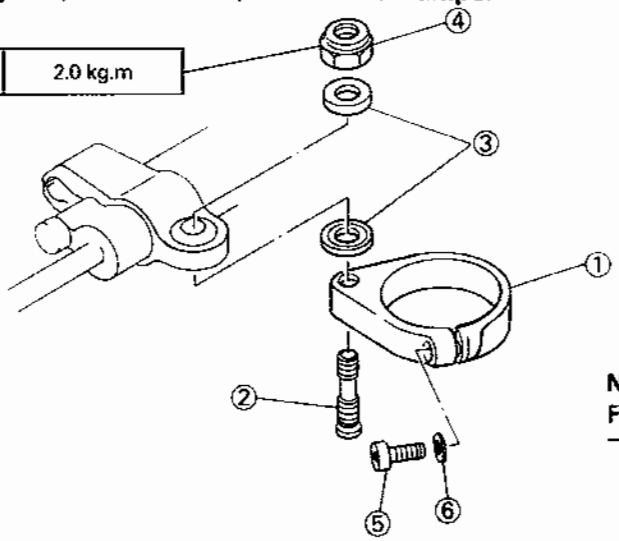


NOTE:
For fork dimention ϕ51.

- 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

Tightening torque	2.0 kg.m



NOTE:
For fork dimention ϕ53.

<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	
☆	4	95611-08100	Nut, U	1	
☆	5	91311-06020	Bolt, hex. socket	1	
☆	6	92901-06600	Washer	1	

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

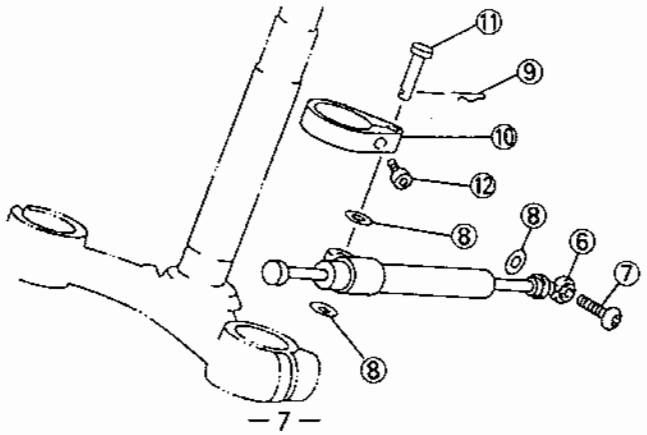
- It is desirable that the side cowl mounting stay be used for the mounting boss on the vehicle body side.

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

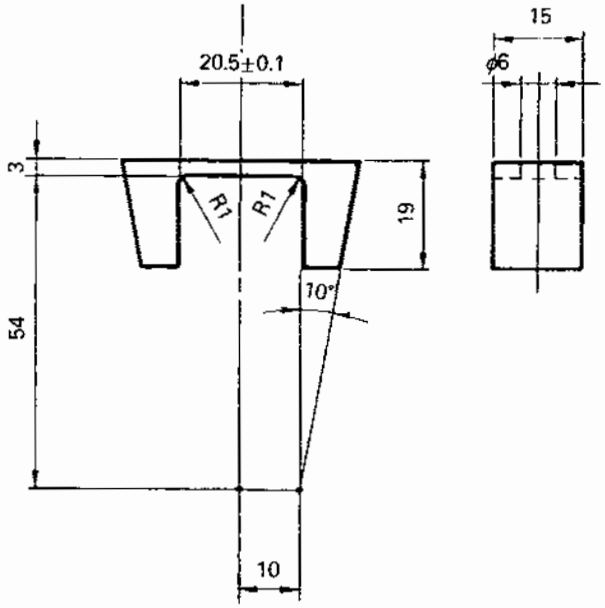
<Parts list>

	No.	Part No.	Part name	Q'ty	Remarks
☆	6	4DP-23490-00	Damper ass'y	1	
☆	7	92011-08025	Bolt	1	
☆	8	90201-08455	Washer	3	
☆	9	90468-16099	Clip	1	
☆	10	3YL-23495-00	Stay	1	Mounting dia. of ϕ52
☆	11	91701-08042	Pin	1	
☆	12	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:

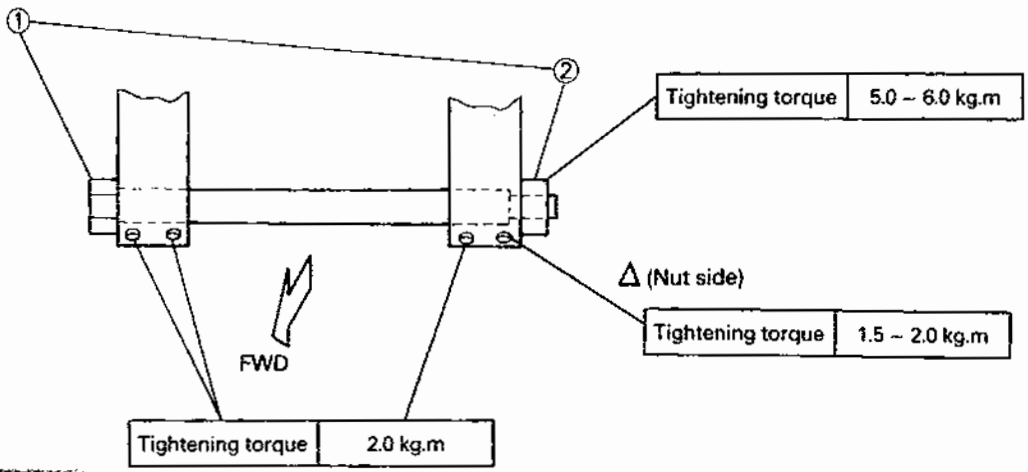
Not required in the ÖHLINS front fork bracket kit.

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.

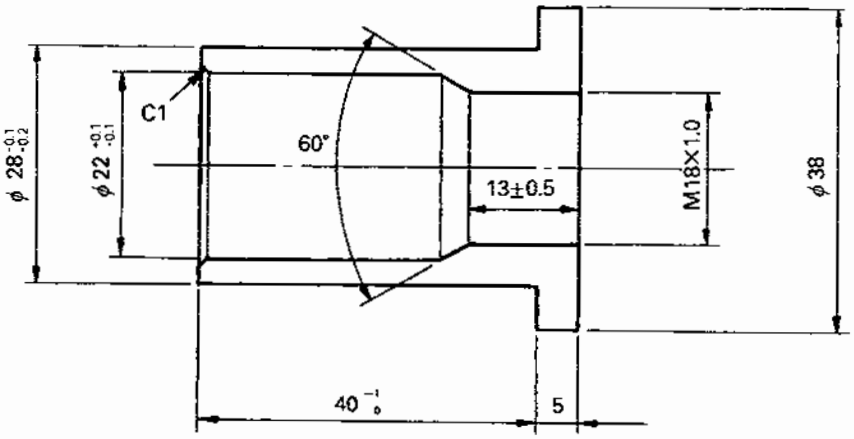


1. Before securing the axle, tighten the nut ② and operate the front fork.
2. Avoid tightening too hard the place marked with Δ of the axle tightening bolt on the front fork side.

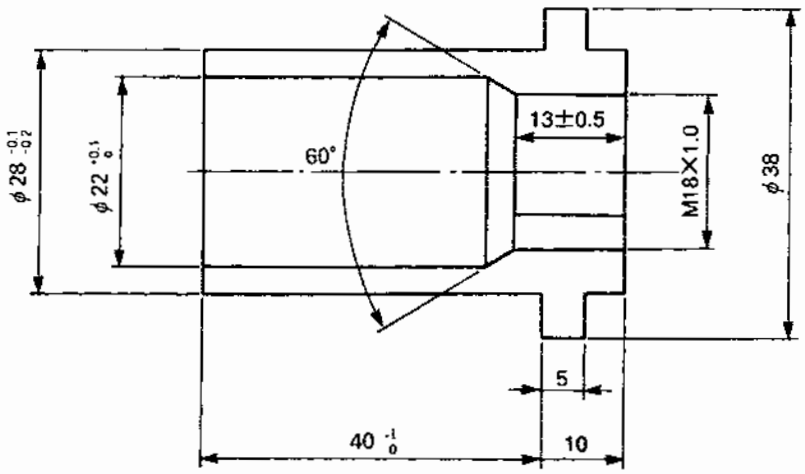
NOTE:

When using the kit in endurance races, it is desirable that the front fork axle hole have a diameter of 28 ± 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)

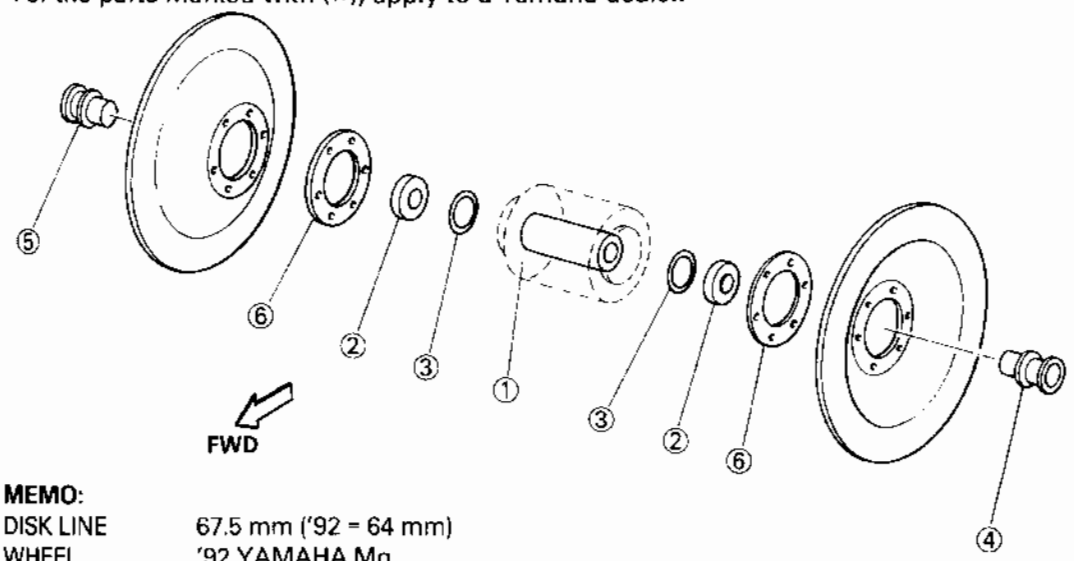


2. FORNT WHEEL COLLAR KIT FOR STD F/FORK (4FN-C5110-70)

<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.

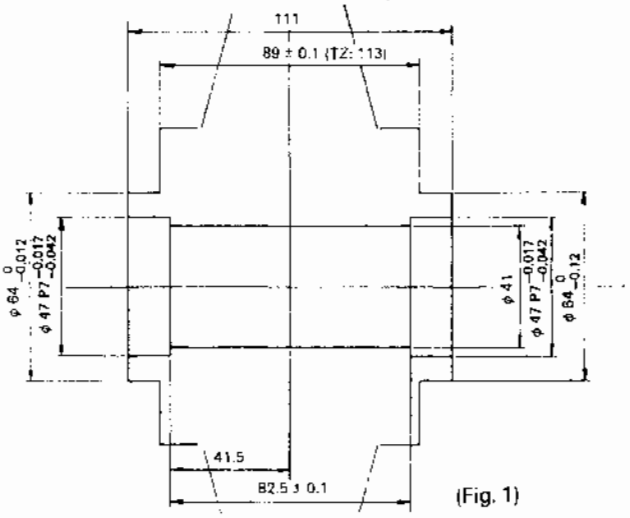


MEMO:

DISK LINE	67.5 mm ('92 = 64 mm)
WHEEL	'92 YAMAHA Mg
COLLAR④ ⑤	FOR STD F/FORK
FORK PITCH	210 mm (OW-01 = 200 mm)

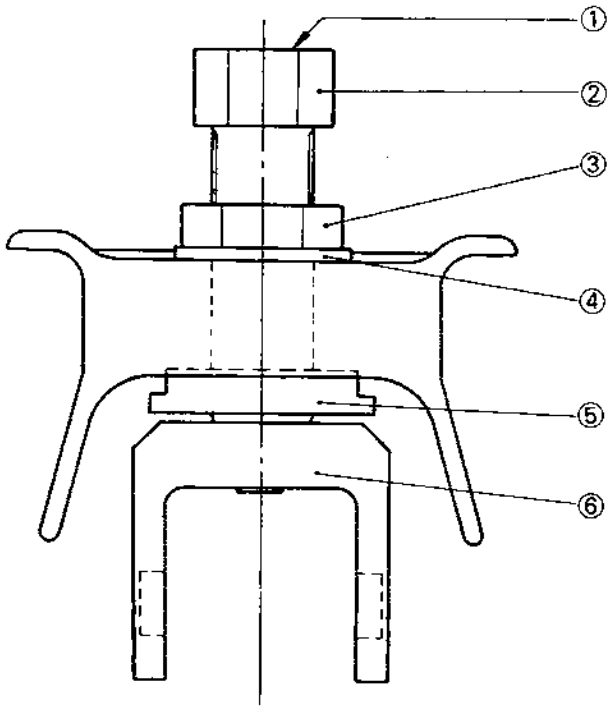
- Use the wheel of the hub dimensions for Yamaha (see Fig. 1). It is appropriate to use the disk ass'y for the OW01.
  (Disk pitch of 64 mm, BREMBO 4-pot calipers used)

- 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)

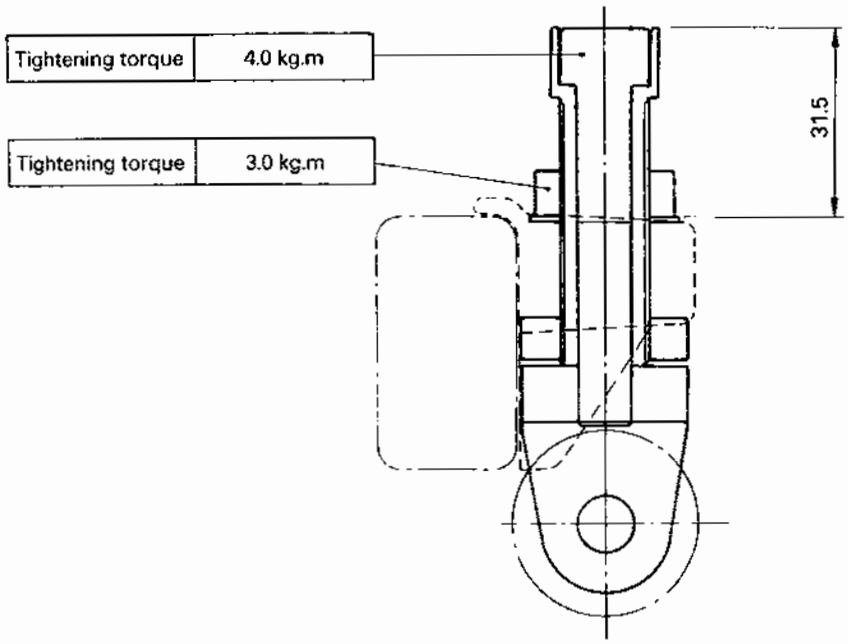


<Parts list>

	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	

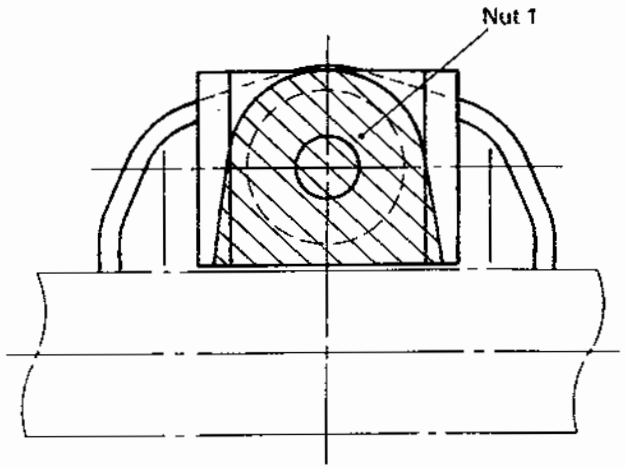
For the parts marked with (☆), apply to a Yamaha dealer.

- 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 Precedures**

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.

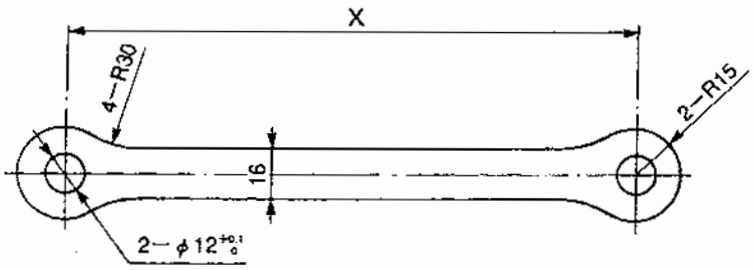
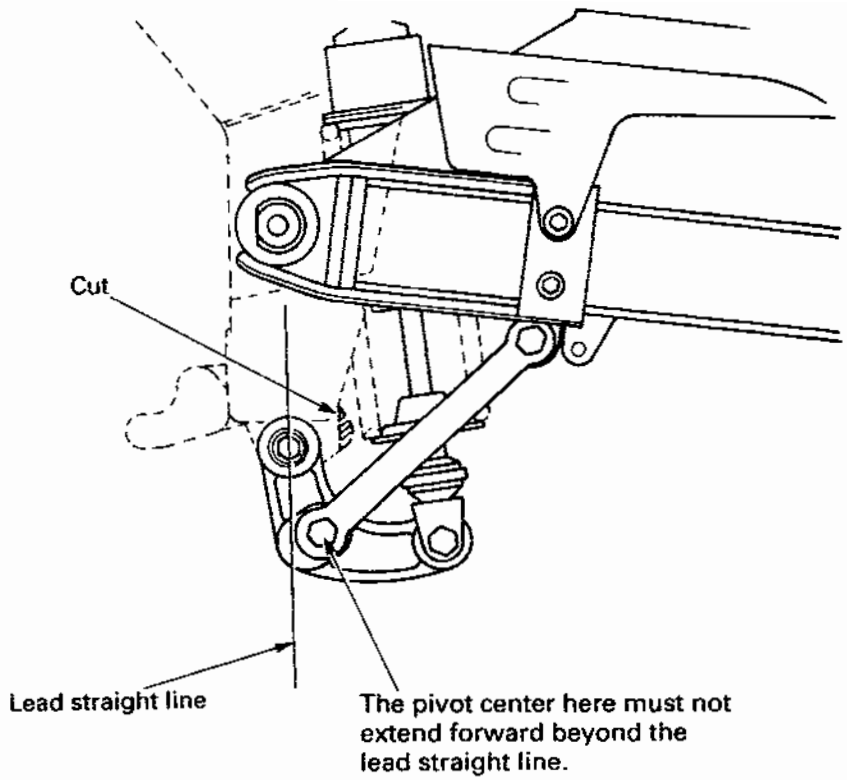


Plate thickness: 6 mm

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

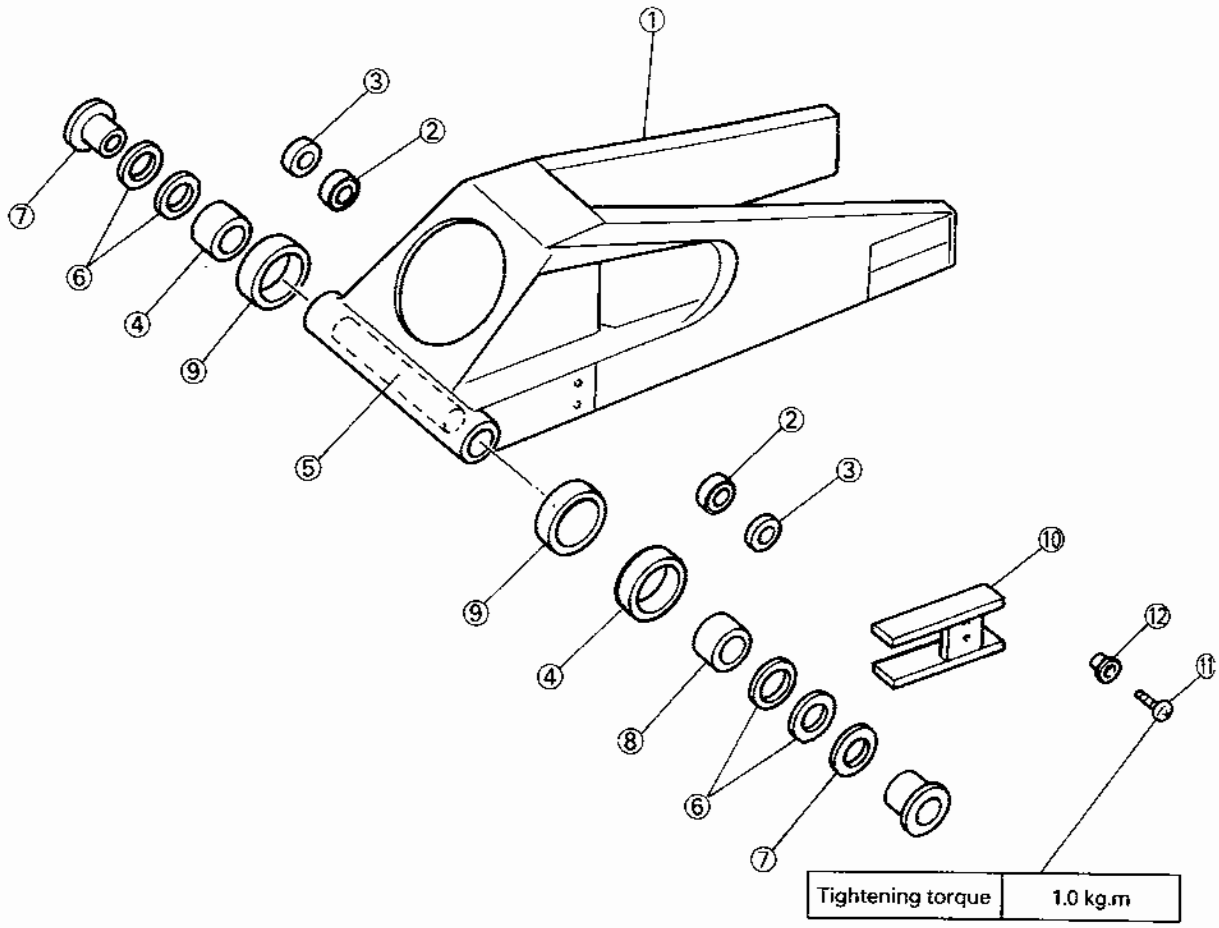
- ○ When setting up, be careful not to put the arm relay in the state as shown below.



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 ㊸.

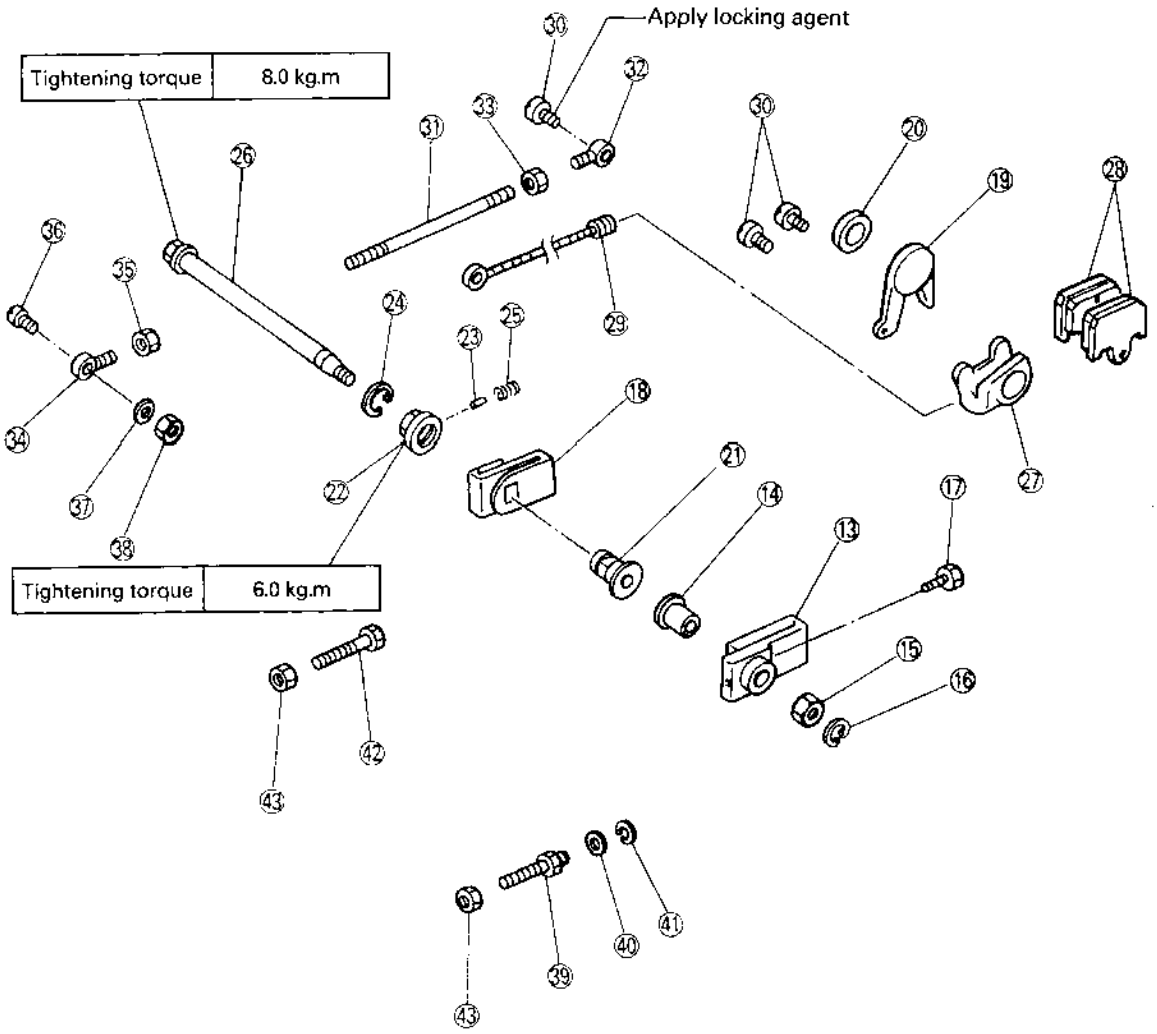


<Parts list>

	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 ⑫.



	No.	Part No.	Part name	Q'ty	Remarks
	13	4FN-25366-70	Puller 1	1	
	14	4FN-25322-70	Insert shaft	1	
☆	15	95311-20700	Nut	1	
☆	16	99009-32500	Circlip	1	
☆	17	90110-06142	Bolt	1	
	18	4FN-25389-70	Puller 2	1	
	19	4FN-25819-70	Bracket, caliper	1	
	20	4FN-2582M-70	Bearing	1	
	21	4FN-2538L-70	Holder, bracket	1	
	22	4FN-2538M-70	Holder, shaft	1	

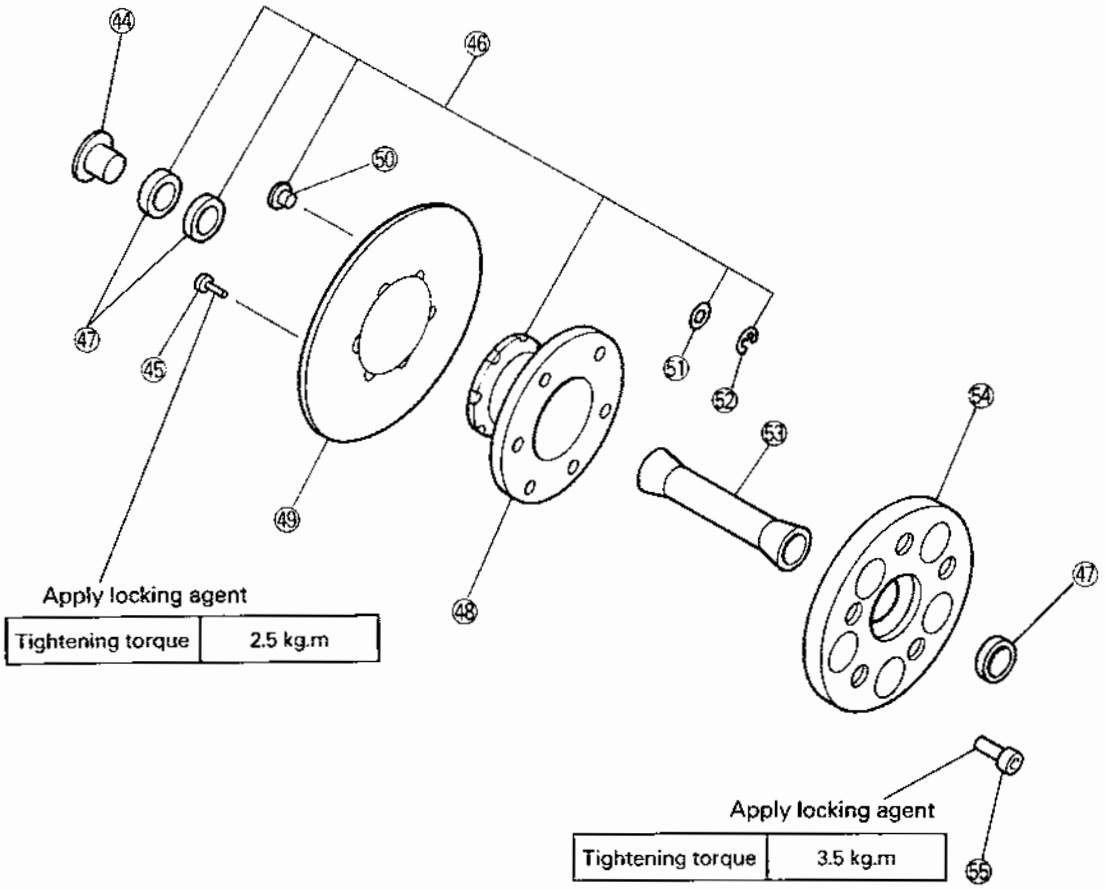
For the parts marked with (☆), apply to a Yamaha dealer.

	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)

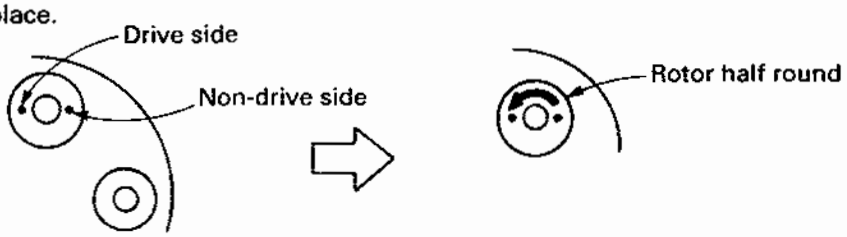
The rear wheel collar kit consists of the parts from ㊹ to ㊷.



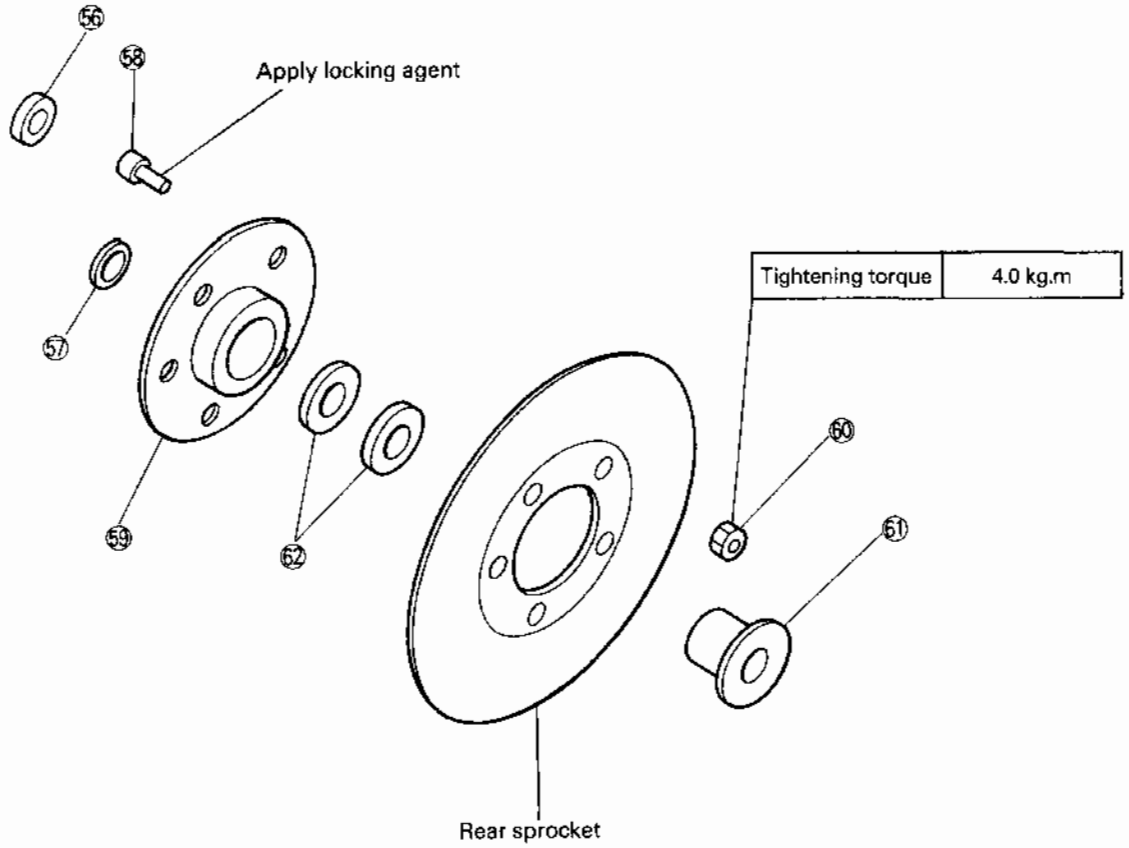
	No.	Part No.	Part name	Q'ty	Remarks
	44	4FN-25767-70	Collar disk	1	
☆	45	91316-08025	Bolt	6	
	46	4FN-25830-70	Disk brake ass'y	1	
☆	47	93306-90601	Bearing	3	
	48	4FN-25832-70	Bracket, disk	1	
	49	4FN-2582V-70	Disk rear	1	
	50	4FN-2581M-70	Pin	6	
	51	4FN-2581N-70	Washer	6	
☆	52	93430-09038	Circlip	6	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

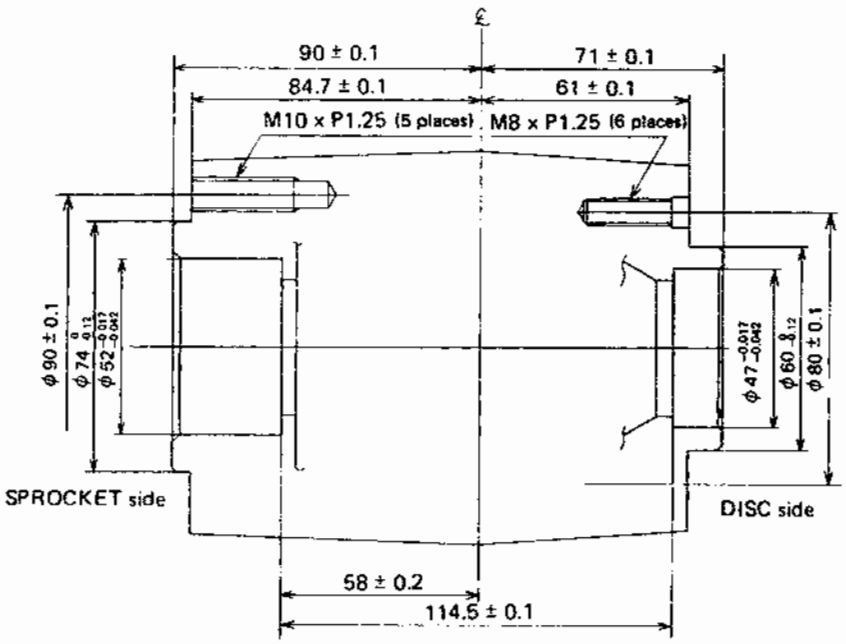
For the parts marked with (☆), apply to a Yamaha dealer.

- The sprocket is usable if:

Center hole	Min. ϕ64 dia.
Mounting hole pitch circle	ϕ90 dia.
Mounting hole	ϕ10 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.

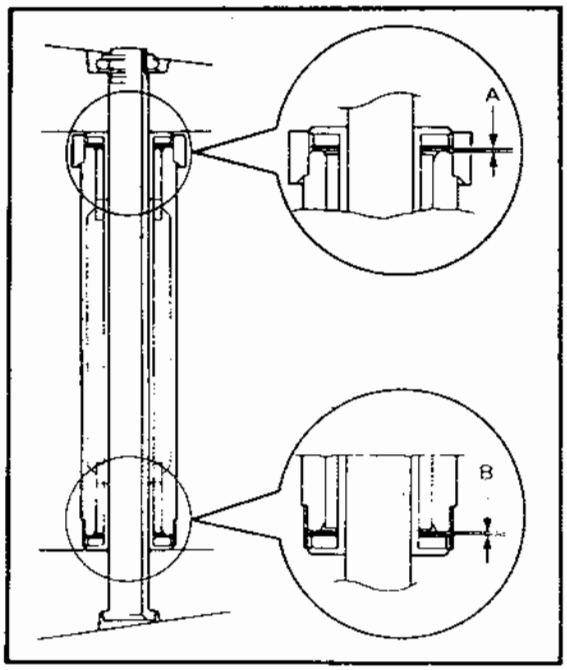


MEMO:

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

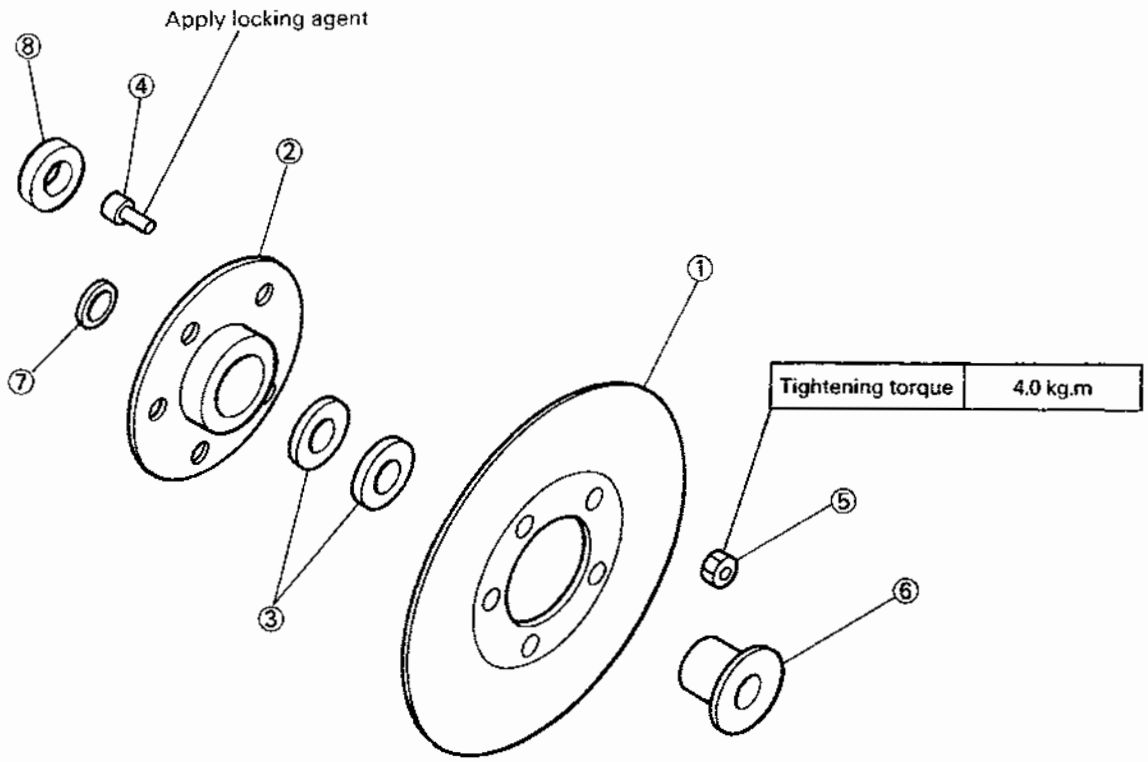
CAUTION:

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	Dia. × 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