’04 YZF-R1

KIT MANUAL

The Performance Edge

for top-ranking riders

2004 YZF-R1 Kit Manual

Please note :

- It should be understood that these kit parts are not covered by warranty.
- The manufacturer does not assume any responsibility for problems caused by these parts.
- These kit parts are intended for racing alone. They are not to be used in any circumstances on public roads.
- The specifications and methods of use of these kit parts and the contents of the present manual are subject to improvement changes without notice.
- This manual is intended for persons with knowledge and experience of motorcycles. Please refer to the service manual for information on part assembly and maintenance.

CONTENTS

1 Standard Specifications

Item	Standard	Basic Kit
Displacement	998 cm^3	
Bore/stroke Primary reduction gear ratio	77,0 mm/53,6 mm 65/43 (1.512)	
Compression ratio Surface honing	12.4:1 -	13.3:1 0,45 mm
Squish height	0,75 mm	0,60 mm
Camshaft INT Nominal Major axis	5VY-00 292° – 7.6 32,9 mm	5VY-70 286 – 8.5 33,8 mm
Camshaft EXT Nominal Major axis	5VY-00 284° – 7.5 30,8 mm	5VY-70 288 – 8.5 31,8 mm
Valve timing (event angle) INT EXT	 105° 105°	 105° 105°
Valve clearance INT EXT	 0,17 mm – 0,23 mm 0,27 mm – 0,33 mm	
Throttle body	MIKUNI Throttle valve passage diameter 45.0 mm	
Exhaust system	4-2-1 type, #1-#2/#3-#4 connected	
Transmission 1st 2nd 3rd 4th 5th 6th	Constant mesh 6-speed box 38/15 (2.533) 33/16 (2.063) 37/21 (1.762) 35/23 (1.522) 30/22 (1.364) 33/26 (1.269)	
Clutch	Wet type, multiple disc	
Ignition timing	DC-CDI	

2 Kit Parts

2-1 Basic Kit Set Contents

Spark plug set
Head gasket (0.30 mm)
High lift camshaft (INT, EXT)
Valve spring set
Funnel set
AIS plug set
Clutch spring set
ACM rotor
Wire harness set
Engine control unit
Kit manual

Note:

The part marked [*] at the top of the parts list is included in the kit, but if it is specifically needed, it is available from Yamaha authorized dealers.

2-2 Engine Parts

1. Maintenance set (5VY-MAINT-70)

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
*	1	5VY-11181-00	GSKT., H/C	3	
*	2	5VY-11351-00	GSKT, 1	3	
*	3	5VY-11603-00	RING SET	12	
*	4	5VY-1165A-01	BOLT, CON-ROD	12	
*	5	90468-12069	CIRCLIP	12	
*	6	4TV-12119-00	SEAL, STEM	36	INT
*	7	4SV-12119-00	SEAL, STEM	24	EXT
*	8	5VY-13414-00	GSKT, STRAINER	3	
*	9	5VY-15451-00	GSKT COVER1	3	ACM
*	10	5VY-15461-00	GSKT COVER2	3	CLUTCH
*	11	5VY-15456-00	GSKT 1	3	PICK UP
*	12	5VY-15462-00	GSKT COVER3	3	BREATHER
*	13	90179-20007	NUT	3	CLUTCH BOSS
*	14	90215-30233	WASHER LOCK	3	SPROCKET
*	15	93102-40330	OIL SEAL	3	DRIVE AXLE
*	16	90110-06027	BOLT	9	MAIN AXLE

2. Spark Plugs

Parts List

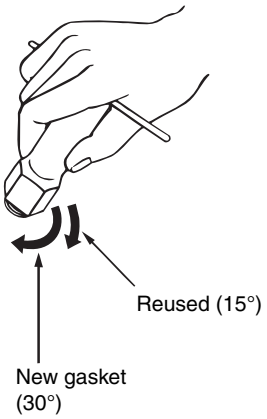
	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5FL-94700-70	PLUG, SPARK	1	NGK R0045Q-10

Set No. : 5FL-R045Q-70 (R0045Q-10, 4 plugs)

CAUTION :

Since these spark plugs have a copper gasket, caution is needed during installation on the following points.

1. **The tightening torque is 1.0 – 1.2 kg·m.**
2. **When not checking the torque, tighten by rotating through only 30° after manual tightening in the case of new plugs. When reusing plugs, tighten by rotating through 15°.**



3. AIS Plug Set (5VY-A4890-70)

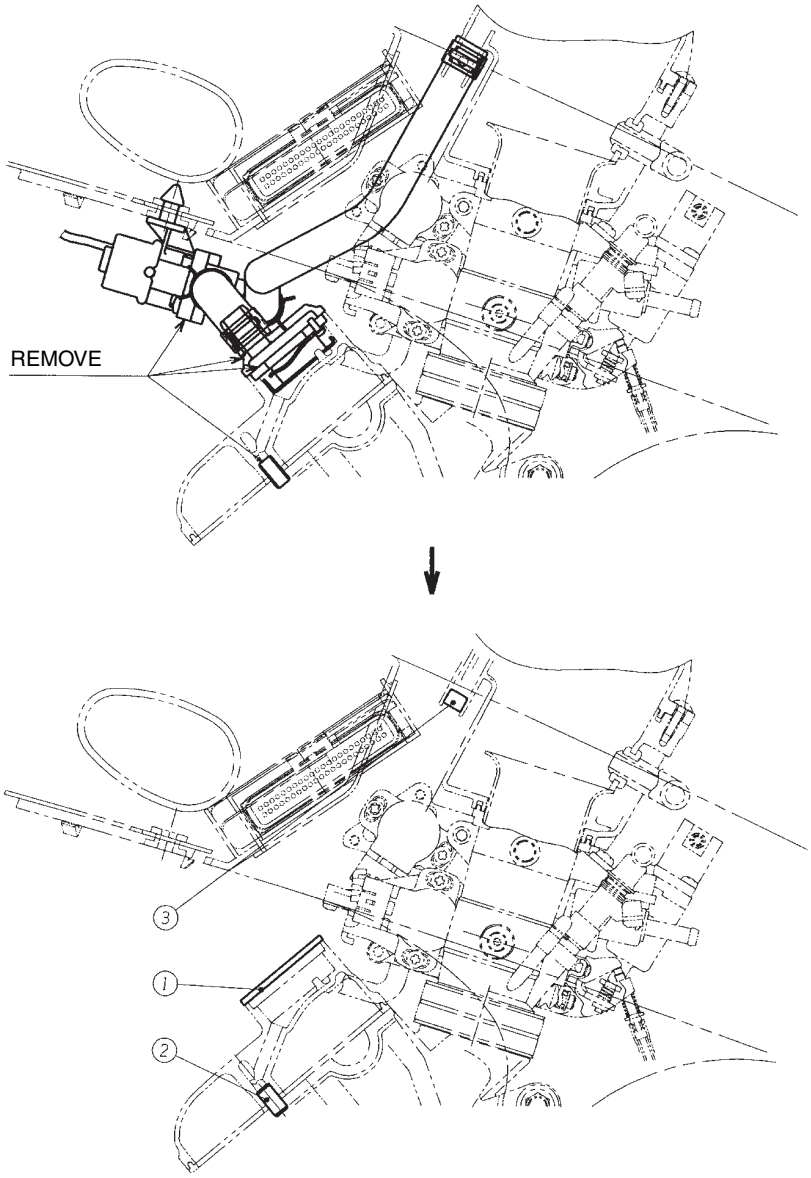
This plug set is used when the AIS (Air Induction System), an exhaust gas purifying system, is removed.

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5SL-1482L-70	PLATE	2	
*	2	93608-16M16	PIN	4	
*	3	93306-10020	PLUG	1	

Installation

1. Remove the hose attached to the cylinder head cover and the air cut-off valve accompanying the hose.
2. Remove the cap fitted to the hose, remove the reed valve and plate from inside.
3. Install the plate (5SL-1482L-70) in replacement of the cap. Apply liquid gasket to the plate.
4. Remove the cylinder head cover and the four collars fitted to the cover. Install the PIN (93608-16M16).
5. After removing the hose connected to the air filter casing form the air cut-off assembly, insert the PLUG (90336-10020) onto the side of the air filter casing to close the opening.



4. Gaskets

Parts List

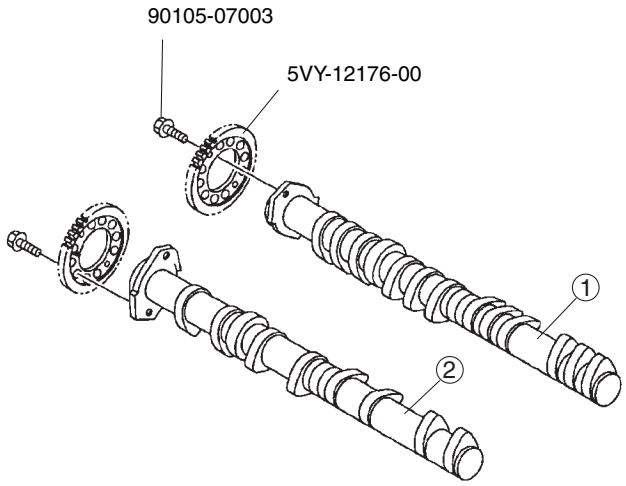
	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-11181-70	GASKET, HEADCYL.	1	t=0,30 mm
	2	5VY-11181-80	GASKET, HEADCYL.	1	t=0,35 mm
	3	5VY-11351-70	GASKET, CYL.	1	t=0,10 mm
	4	5VY-11351-80	GASKET, CYL.	1	t=0,15 mm

These parts are used to adjust the squish height and compression ratio.
They should be installed in the direction, which enables the punched alpha-numeral "5VY" to be visible.
The standard head cylinder gasket thickness is 0.40 mm and the cylinder gasket thickness is 0.20 mm.

5. High-lift Camshaft, Valve Spring

High-lift specification

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-12171-70	SHAFT, CAM 1	1	
	2	5VY-12181-70	SHAFT, CAM 2	1	



When using these camshafts, the valve springs should also be those in the kit.

Specification

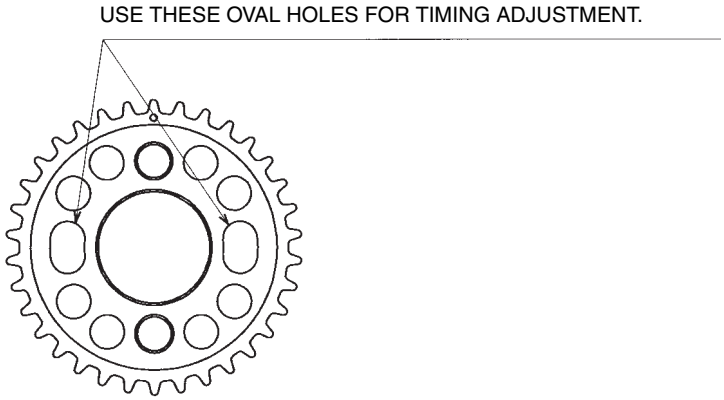
Nominal	Working angle	Major Axis
286-8.5	286	33.8
288-8.5	288	31.8

Valve spring set (5VY-A2111-70)

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-12113-70	SPRG., 1	12	For 5VY-12171-70
	2	5VY-12114-70	SPRG., 2	8	For 5VY-12181-70

The standard valve timing is 105° for both intake and exhaust valves.

To adjust the valve timing, use the oval holes of the standard cam sprocket.



6. Standard-lift Camshafts

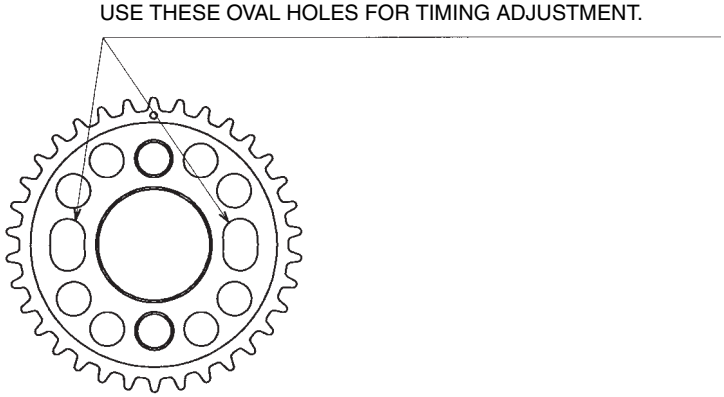
Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-12171-80	SHAFT, CAM 1	1	
	2	5VY-12181-80	SHAFT, CAM 2	1	

Specification

Nominal	Working angle	Major axis
288-7.9	288	32.9
288-7.8	288	30.8

The standard valve adjustment is 105° for both intake and exhaust valves.
For valve adjustment, use the oval holes in the standard cam sprocket.



7. Flat Valve Set (5VY-A2100-70)

Parts List

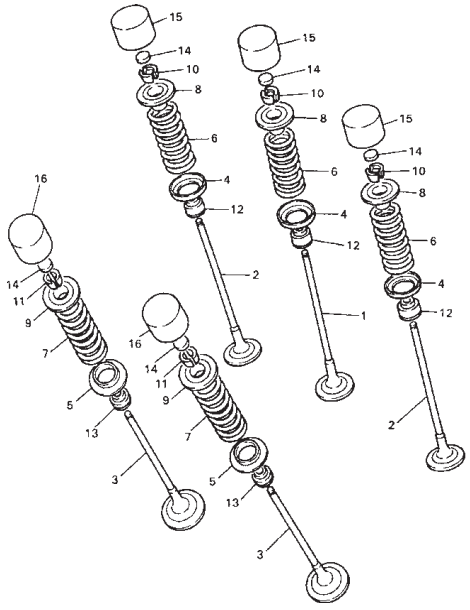
	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-12111-70	VALVE, INTAKE	4	Centre of intake (L=87.16)
	2	5VY-12112-70	VALVE, INTAKE 2	8	Side of intake (L=88.34)
	3	5VY-12121-70	VALVE, EXT.	8	

These valves are used to improve the compression ratio (about 0.2) by making their shape on the compression chamber side flatter than in the case of standard valves. They are made of steel and have the same weight as the standard ones.

Standard parts are the following:

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-12111-00	VALVE, INTAKE	4	
	2	5VY-12112-00	VALVE, INTAKE	8	
	3	5VY-12121-00	VALVE, EXHAUST	8	
	4	5NL-12116-00	SEAT, VALVE SPRING	12	
	5	3GM-12126-00	SEAT, VALVE SPRING 2	8	
	6	5VY-12113-00	SPRING, VALVE INNER	12	
	7	5VY-12114-00	SPRING, VALVE OUTER	8	
	8	5VY-12117-00	RETAINER, VALVE SPRING	12	
	9	5VY-12127-00	RETAINER, VALVE SPRING	8	
	10	1HX-12118-00	COTTER, VALVE	24	
	11	1WG-12118-00	COTTER, VALVE	16	
	12	4TV-12119-00	SEAL, VALVE STEM	12	
	13	4SV-12119-00	SEAL, VALVE STEM	8	
	14	1HX-12168-□□	PAD, ADJUSTING 2	20	
	15	3LN-12153-□□	LIFTER, VALVE	12	
	16	3FV-12153-□□	LIFTER, VALVE	8	



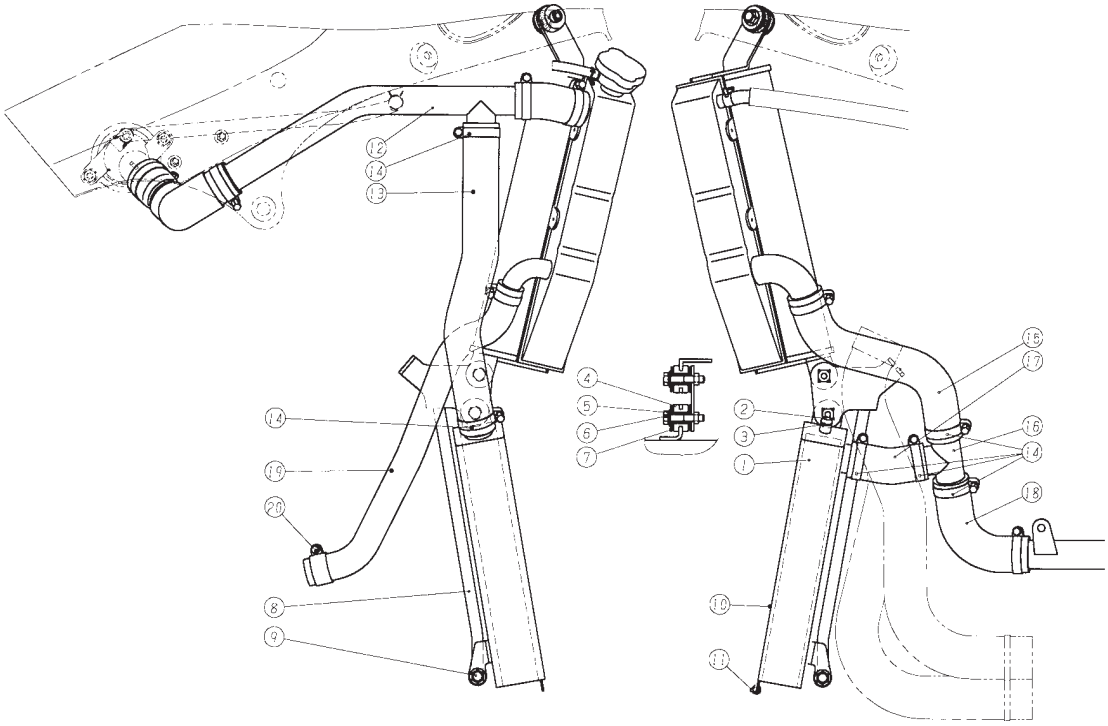
8. Sub-radiator Set (5VY-A240A-70)

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-1240A-70	RADIATOR ASS'Y	1	
*	2	95817-06012	BOLT	1	
*	3	90430-06014	GASKET	1	
*	4	90480-15363	GROMMET	1	
*	5	90387-0614M	COLLAR	1	
*	6	95827-06030	BOLT	1	
*	7	90201-06071	WASHER	1	
	8	5VY-12637-70	STAY	1	
*	9	95807-06016	BOLT	2	
*	10	5VY-12467-70	COVER, RADIATOR	1	
	11	90465-13275	CLAMP	3	
*	12	5VY-12483-70	PIPE, 3	1	
	13	5VY-12579-70	HOSE, 4	1	
	14	90450-35001	HOSE CLAMP ASS'Y	6	
*	15	5VY-1243F-70	HOSE, 3	1	
	16	5VY-12581-70	JOINT, HOSE 1	1	
	17	5VY-1244G-70	HOSE, 4	1	
	18	5VY-1244H-70	HOSE, 5	1	
	19	5VY-12589-70	HOSE, 6	1	
	20	90450-25037	HOSE CLAMP ASS'Y	1	

CAUTION :

- **This kit must not be installed on a muffler of competitive manufacture.**
- **The standard one should be used for the main radiator.**
- **Remove the cooling fan from the standard radiator.**
- **Do not fasten the hose clamp too tightly, otherwise the hose may become distorted and start leaking.**
- **After installation, ensure that the radiator and the hose do not touch the exhaust pipe.**
- **Air left in the water passage adversely affects cooling efficiency. To add water, rock the motorcycle from side to side to remove air from the water passages. After water has been added, let the engine idle, with the radiator cap removed and add water to fill the space formed in the passage by the escape of air. Lastly, tighten the cap.**



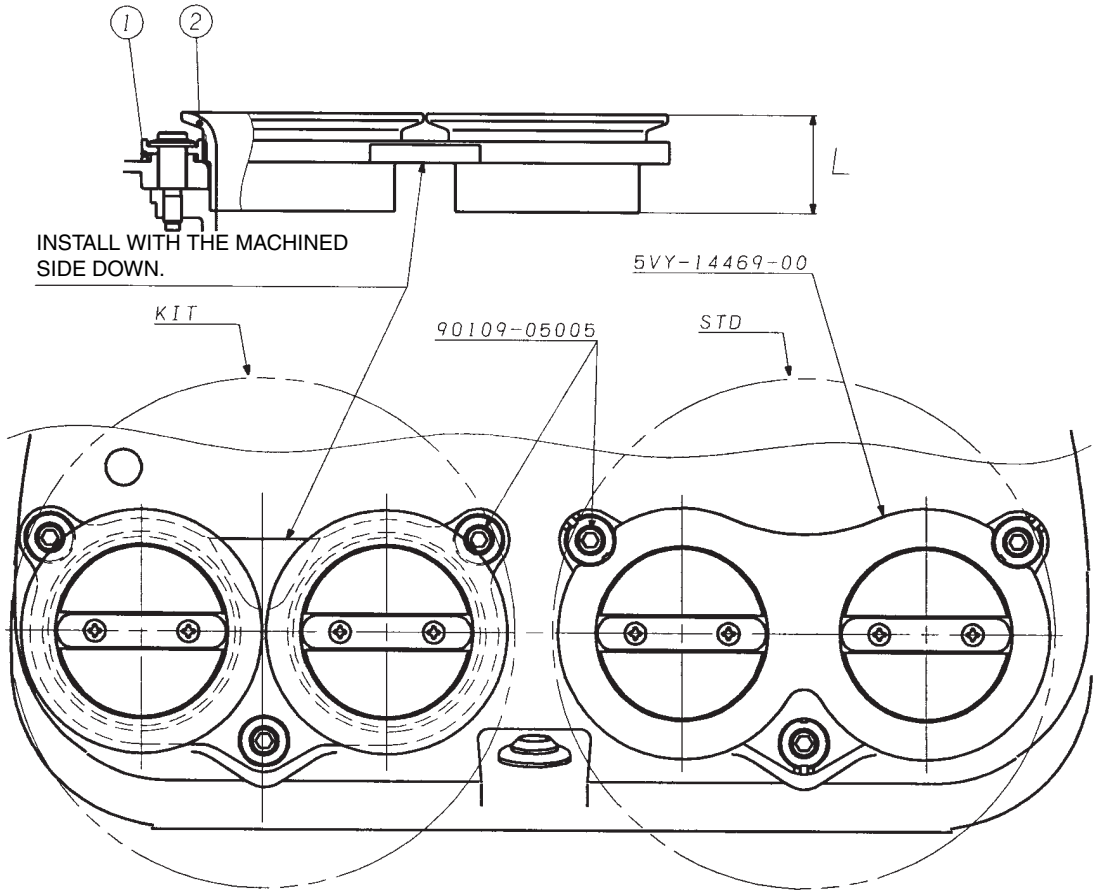
9. Funnel Set (5VY-A4460-70)

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
		5VY-14477-70	PLATE	2	
		5VY-14469-70	FUNNEL, 1	4	L=27 mm
		5VY-14469-90	FUNNEL, 1	4	L=46 mm

CAUTION :

- **The air cleaner case is kept fixed by the standard funnel. Remove this standard funnel and install the plate in its destined place.**
- **Before installation, apply a thin coat of grease to the threads of the funnel and plate.**
- **For standard setting, use funnel 5VY-14469-70 (the shorter one).**
- **Select the setting according to exhaust pipe specification, rider's preference and track layout.**



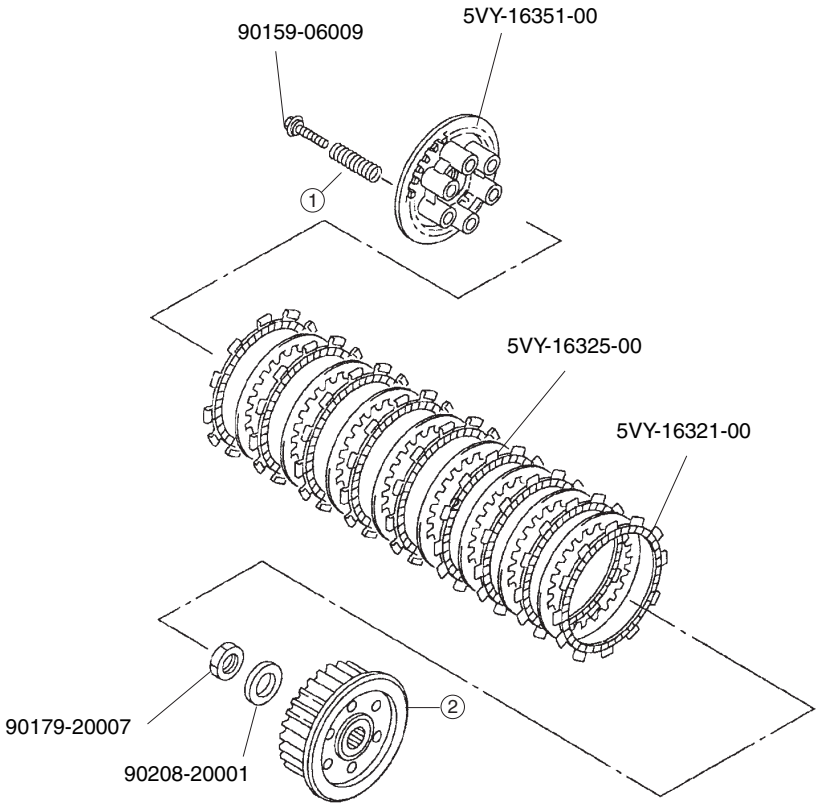
10. Clutch Spring, Clutch Boss

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-16334-70	SPRING, CLUTCH	6	
	2	5VY-16371-70	BOSS, CLUTCH	1	

The clutch spring has a 10% better load capacity than the standard one.

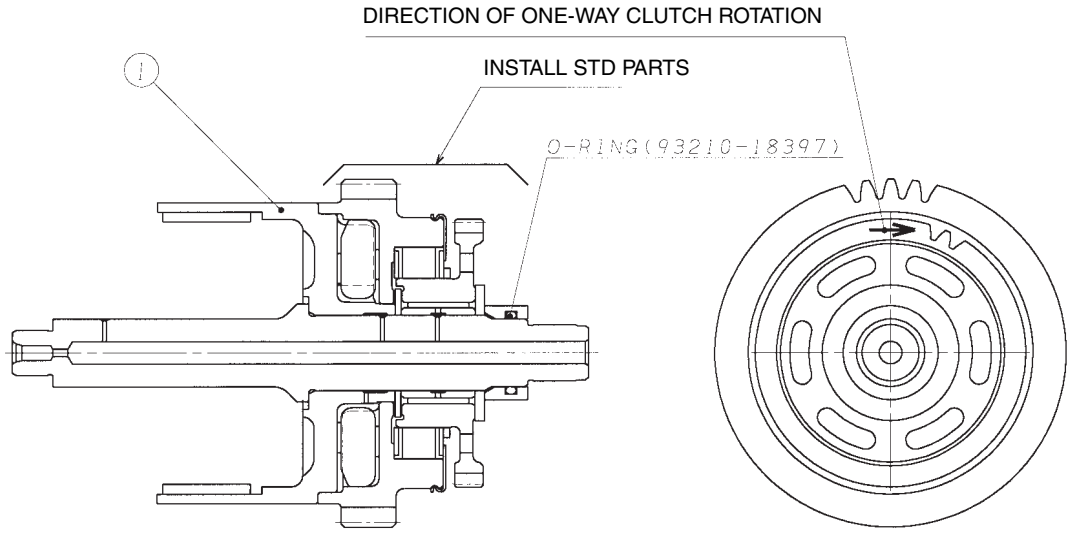
The clutch boss has been surface-treated for improved durability.
Use nine (9) 5VY-16321-00 plates as friction plates.



11. ACM Rotor

Parts List

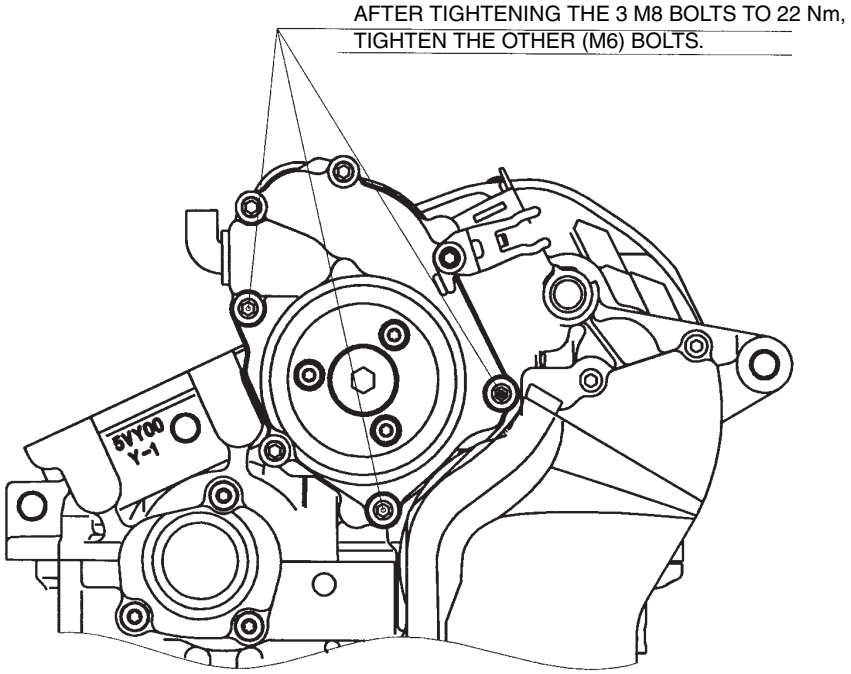
	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5SL-81450-70	ROTOR	1	



This rotor is narrower than the standard rotor, aiming at a reduced inertia mass and frictional load.
For the stator coil, use standard one.

CAUTION :

- **The rotor and starter clutch are integrated. Use a standard starter clutch.**
- **After the installation of the starter clutch, check for direction of rotation.**
- **To install the stator coil-integrated cover, tighten the three (3) bolts (M8) to 22.0 Nm and the other bolts (M6) to 10.0 Nm.**



12. Engine Control Unit (ECU)

Parts List

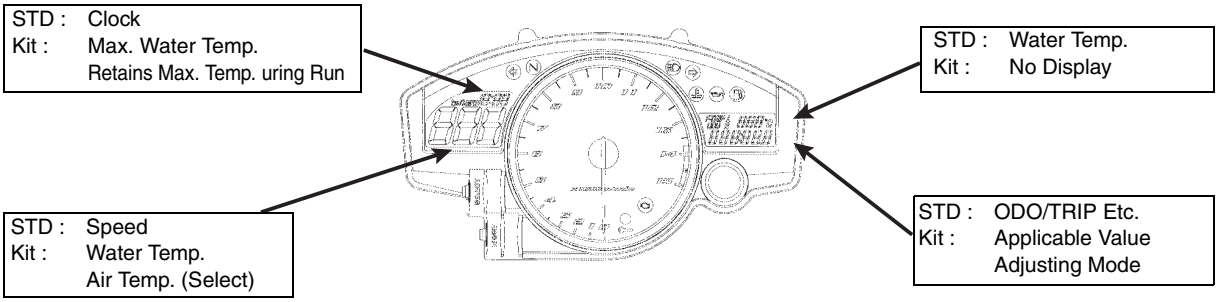
	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-8591A-70	ECU	1	

CAUTION concerning the basic motorcycle

The ECU kit cannot be used if the basic motorcycle conforms to the European specification and if the part number of the main harness is 5VY-82590-00.
Use the harness from the kit.
A combination of harness "5VY-82590-10" intended for the USA and Australia and the ECU kit can be used, but only for the ST (Stock Sports).

NOTE on meter display:

Connection of the ECU kit allows the standard meter to switch to the kit mode.



Change of basic data

Use of the kit harness makes it possible for basic data to be selected for SB (Super Bike) specification and ST (Stock Sports) specification.
For switching, use the white 2-pin connector located on the main switch connector for the kit wire harness. The SB specification is available, when the connector with a black lead is connected. When it is removed, the ST specification becomes available.

A. Setting Fuel Injection

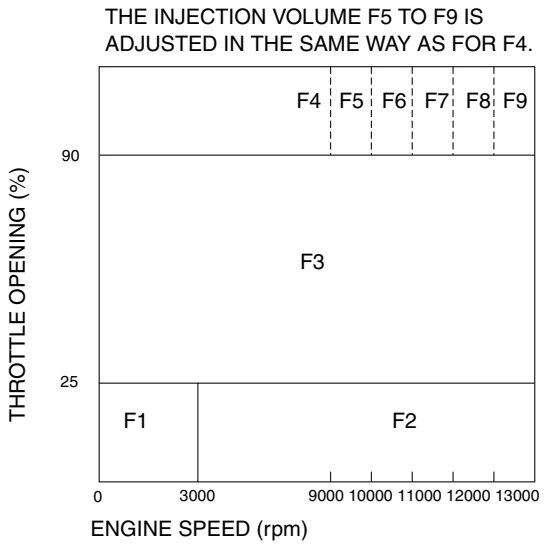
Changes that may be made to fuel injection

CAUTION :

It is recommended that an A/F measuring instrument should be used for this setting when checking the A/F figures on the instrument.

At high revolutions in particular, too lean a mixture may damage the engine.

The range of adjustment shown on the meter is ±25%.
As a guideline, a “1%” change effects a change of 0.1 in the A/F.



RANGE OF ADJUSTMENT OF THE VOLUME OF INJECTION F1 TO F9

F0: Transfer to the adjustment mode is shown in the display area at the bottom RHS of the meter.

F1: This mode helps to stabilize idle running.
Too rich an A/F may foul the spark plug.
Too lean an A/F may cause unstable idle running and the engine may come to a stop.

F2: The engine speed range of 3000 rpm or higher can be changed at a throttle opening of 25% or less.
A change in F2 produces an effect on “feel” experienced during engine brake activation and at the start of throttle opening.
Make a change of 2 to 5% at a time, while checking any change.
The rough A/F target is 12 to 14.

F3: Range of 25 to 90% throttle opening.
This range affects the feel, which is experienced as a result of the initial to half throttle opening.
Jump-out at the start and hesitation at half-throttle opening may be solved by a leaner A/F.
Make a change of 2 to 5% at a time, while checking any resulting changes.

F4: Adjusts the volume of fuel injected at any engine speed at a throttle opening of 90% or more. This mode constitutes the basic F5 to F9 data.

F5 to F9: Adjust the volume injected at individual engine speeds, at a throttle opening of 90% or more, but note that the adjusted values in these modes are based on the value adjusted in F4.

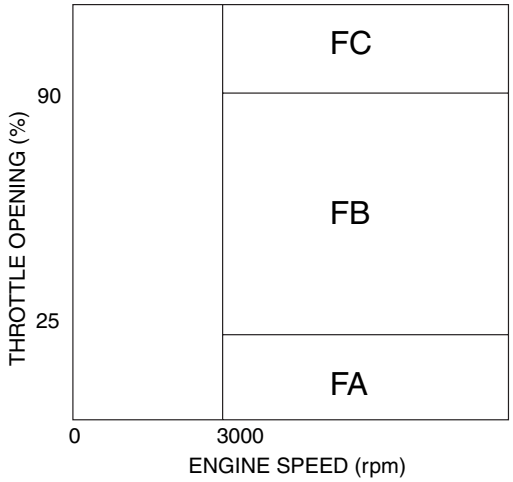
Example
Let F5 be “+3” after letting F4 be “+3”. The volume of fuel injected in the F5 range will be represented by “+6”.
Let F8 be “–6” after letting F4 be “+2”. The volume of fuel injected in the F8 range will be represented by “–4”.

B. Ignition Timing Correction

CAUTION :

This function corrects the gaps for the optimum ignition timing according to the difference of the characteristics of the fuel used.

Ignition timing must not be set at too early a (plus side) timing since it may cause problems. If no difference is felt as a result of correction, the ignition timing should be set on the slower side.



FA-FC: IGNITION TIMING ADJUSTMENT RANGE

FA: Adjusts the ignition timing at a throttle opening of 25% or less and at an engine speed of 3000 rpm or more, with a tolerance of ±15°.

FB: Adjusts the ignition timing at a throttle opening of 25% or more and 90% or less and at an engine speed of 3000 rpm or more with a tolerance of ±10°.

FC: Adjusts the ignition timing at a throttle opening of 90% or more and at an engine speed of 3000 rpm or more.
This range is apt to cause problems, according to engine tuning. In particular, if the setting is on the + side, change degrees one by one while checking the result.

C. Adjustment of the RAM-Pressure Fuel Volume Correction

FD: This ECU is designed to correct the fuel injection volume in response to engine speed.
Generally this requires no change.
This adjustment is made when a change occurs in the shape of the intake compared with standard, or when the intake duct is removed to avoid its being subjected to RAM pressure.
The adjustment is made with a tolerance of ±10 steps; +10 provides approximately two (2) x as much corrected volume and –10 provides a zero (0) corrected volume with no change due to engine speed.

Procedure (fuel adjustment, ignition timing correction, and adjustment of RAM-pressure fuel correction volume)

1. Transfer to F0 mode
   Keeping both the “SELECT” and “RESET” buttons pressed simultaneously, turn on the main switch.
   “F0 ” appears in the display area at the bottom RHS of the meter.
2. Transfer to the ECU applicable mode
   Keeping both the SELECT and RESET buttons pressed simultaneously. “F1” appears in the display.
3. Selecting and confirming the applicable mode
   When the SELECT or RESET buttons are simultaneously pressed, the display shows the next application or reverts to the previous mode.
   Keeping them pressed down allows the display to go step by step to the next mode or to revert to the previous mode.
   F1⇔F2⇔F3⇔F4⇔F5⇔F6⇔F7⇔F8⇔F9⇔FA⇔FB⇔FC⇔FD⇔FE⇔F1
   When the mode you want to change appears, simultaneously press the SELECT and RESET buttons in order to conform the desired mode.
4. Changing and confirming the applicable value
   When confirmation is made, “FX_YY” appears in the display.
   YY indicates the applicable value and “ 0” the standard value.
   For fuel volume correction, % is shown and for ignition timing correction, the timing angle is shown.
   To change the “YY” value, press the SELECT or RESET buttons and change the numerical value.
   To confirm the changed value and to transfer to another mode, simultaneously press the SELECT and RESET buttons.
   The value “YY” disappears from the display area in preparation for the adjustment mode to be switched.
5. Finishing the adjustment mode
   Turn off the main switch, and the adjustment mode will end.

D. Initialization of Value Changed

FE: Keeping the SELECT and RESET buttons simultaneously pressed, the transition to this mode brings about initialisation.
“FE_YY” is shown in the meter screen. The numerical value “YY” represents the value of each of the 13 modes from F1 to FD, but since it does not indicate which mode has been changed, it is necessary to transfer to the adjustment mode in order to check.
If “ 0” is displayed, it indicates an absence of changes and no initialisation is needed. Turn off the main switch to end

Initialization

(Bring all settings to “0”.)
Press the “RESET” or “SELECT” button with “FE_YY” displayed. “FE_88” will appear. While checking this display, simultaneously keep both the “RESET” and “SELECT” buttons pressed.
“FE_ 0” will be displayed and this completes initialisation. Turn off the main switch to end.

- While each applicable value is being changed, the value immediately preceding is memorised in the ECU, even with the main switch off.
- The set values changed are retained, even after the battery has been removed.

<EFI Fuel Amount/Ignition Timing Adjustment Mode>

Select code No.	Adjustment item	Adjustment range	Adjustment range/Remarks
F0	Adjustment mode for kit applicable value		Display at selection and transfer to diagnostic mode
F1	Adjustment of fuel volume	Throttle opening of 25% or less Engine speed of 3000 rpm or less	Adjustment range [±25%]
F2	Adjustment of fuel volume	Throttle opening of 25% or less Engine speed of 3000 rpm or more	Adjustment range [±25%]
F3	Adjustment of fuel volume	Throttle opening of 25 to 90%	Adjustment range [±25%]
F4	Adjustment of fuel volume	Throttle opening of 90% or more	Adjustment range [±25%]
F5	Adjustment of fuel volume	Throttle opening of 90% or more Engine speed of 9000 to 10000 rpm	Adjustment range [±25%]
F6	Adjustment of fuel amount	Throttle opening of 90% or more Engine speed of 10000 to 11000 rpm	Adjustment range [±25%]
F7	Adjustment of fuel amount	Throttle opening of 90% or more Engine speed of 11000 to 12000 rpm	Adjustment range [±25%]
F8	Adjustment of fuel amount	Throttle opening of 90% or more Engine speed of 12000 to 13000 rpm	Adjustment range [±25%]
F9	Adjustment of fuel amount	Throttle opening of 90% or more Engine speed of 13000 rpm or more	Adjustment range [±25%]
FA	Ignition timing correction	Throttle opening of 25% or less Engine speed of 3000 rpm or more	Adjustment range [±15 deg.]
FB	Ignition timing correction	Throttle opening of 25 to 90% Engine speed of 3000 rpm or more	Adjustment range [±10 deg.]
FC	Ignition timing correction	Throttle opening of 90% or more Engine speed of 3000 rpm or more	Adjustment range [±5 deg.]
FD	Adjustment of RAM pressure fuel volume correction	Correct according to vehicle speed.	Adjustment range [±10 steps]
FE	Initialisation of adjustment volume	Number of changes in adjustment value, along with initialisation	For change, “total number of changes in adjustment value” is displayed. Initialisation mode “88” for compatible value is displayed.

<Operation Procedure for F1 to FD Fuel Amount/Ignition Timing Adjustment>

Item	Operation	Meter display	Significance
① Mode	Transfer Keep "RESET" + "SELECT" simultaneously pressed and turn on "MAIN SWITCH".	[_____] ↓	
② ECU Applicable Value Adjustment/Diagnostic Function		[F0____] ↓	"F0" indicates ECU applicable value Adjustment mode.
③ Check for ECU Applicable Mode	Keep "RESET" + "SELECT" simultaneously pressed	[F1____] ↓	Selective state of Code F1 (at Ne-3000 rpm or less/Th-25% or less) * Always starts from F1.
④ Select ECU Applicable item	Each time "SELECT" is pressed, the selection code is added	[F2____] ↓	"F1➔F2➔F3 • • • FD➔FE➔F1 • • •" Sequential selection of F1 to FE F1 follows FE and again from F1 to FE
	Each time "RESET" is pressed, the selection code is subtracted.	[F1____] ↓	"F1➔FE➔FD • • • F2➔F1➔FE • • •"
⑤ Check for Applicable Item (F1 to FD)	Keep "RESET" + "SELECT" simultaneously pressed.	[F1___0] ↓	Current injection correction (0%) appears in the lower area of LC. Adjustable state of Code F1 (at Ne-3000 rpm or less and Th-25% or less)
⑥ Change in Adjustment Volume	Each time "SELECT" is pressed, the adjustment value is increased.	[F1___1] ↓	"F1___1➔2➔3 • • • (Max. + 25%) * Refer to adjustment range. "F1___0➔ –1➔ –2➔ –3 • • • –25" (Max. -25%) * Refer to adjustment range.
	Each time "RESET" is pressed, the adjustment value is decreased.	[F1___0] ↓	When "RESET" or "SELECT" is pressed, the correction volume is changed and at the same time it is memorised in ECU.
⑦ Select Other Items	Keep "RESET" + "SELECT" simultaneously pressed.	[F1____]	Adjustment amount display goes out, followed by the selective state for an applicable item. The rest of the procedure is the same as above.
⑧ Finish Changing the Applicable Value	Turn off "MAIN SWITCH".		"MAIN SWITCH" can be turned off at any timing above.

<Operation Procedure for Initialization of Adjustment Values>

Item	Operation	Meter display	Significance
(Items and their operating procedures are the same as <Operating procedure for F1 to FD fuel volume/ignition timing adjustment>			
⑨ Determine Applicable item (Code FE)	After selecting FE in above, keep "RESET" and "SELECT" simultaneously pressed.	[FE___*]	Number of changes in adjustment values for F1 to FD appears in lower figure place in LC: Mode for checking the number of adjustment values to be operated. Holding "RESET" and "SELECT" simultaneously pressed allows transfer to Select ECU applicable item.
⑩ Check number of adjustment values to be operated/initialise adjustment value.	Switch is possible by pressing "SELECT" or "RESET".	[FE__88] ↓	"88" appears in lower-figure place in LC: Initialisation mode for adjustment value Pressing "SELECT" or "RESET" alternately changes the mode either for checking the number of values to be operated, or for initialisation.
⑪ Initialisation of Changed Adjustment Values (Initialisation mode being selected)	Keep "RESET" and "SELECT" simultaneously pressed. (for 2 sec. or more)	[FE___0] ↓	The lower area of LC displays (0) to indicate the completion of initialisation.
⑫ Initialisation ends	After ceasing the simultaneous pressing of "RESET" and "SELECT", repeat the process	[FE____]	Enter the state for selecting Code FE (adjustment value management). The rest of the procedure is the same as the above, and the selection mode for ECU applicable items starts with "SELECT" or "RESET".

Self-diagnosis Function

(1) Function

This function detects a failure in the sensor and the actuator and alerts the user to the occurrence of failure by lighting up a pilot light on meter / displaying a failure code and simultaneously launching the evacuation procedure.

(2) Operation

Abnormality: The alarm comes on (during engine run),
Alarm comes on + Abnormality code appears (engine at standstill)

Failure code	Item	Major cause of failure	Engine operation
11	Cam sensor	• Break/short circuit between cam sensor and ECU • Cam sensor failure	Not possible
12	Crank sensor	• Interruption/short circuit between crank sensor and ECU • Crank sensor failure	Not possible
13	Intake sensor (broken/short circuit)	• Break/short circuit between intake pressure sensor and ECU • Failure of intake pressure sensor	Possible
14	Intake sensor (failure of piping system)	• Failure of intake pressure sensor piping system (misaligned, interrupted)	Possible
15	TPS (broken/short circuit)	• Break/short circuit between TPS and ECU • Failure of TPS sensor	Possible
20	Failure of intake pressure sensor or atmospheric pressure sensor	• Intake pressure sensor failure • Failure of atmospheric pressure sensor	Possible
21	Water temperature sensor (break/short circuit)	• Break/short circuit between water temp. sensor and ECU • Failure of water temperature sensor	Possible
22	Intake temp. sensor (broken/short circuit)	• Break/short circuit between intake temp. sensor and ECU • Failure of intake temperature sensor	Possible
23	Atmospheric pressure sensor (broken/short circuit)	• Break/short circuit between atmospheric pressure sensor and ECU • Failure of atmospheric pressure sensor	Possible
30	Overturn sensor (check for overturn.)	• Overturn sensor detects state of overturn.	Not possible
33	Ignition failure of #1 cylinder	• Broken line between ignition coil and ECU • Failure in ignition coil interior	Possible
34	Ignition failure of #2 cylinder	• Broken line between ignition coil and ECU • Failure in ignition coil interior	Possible

Failure code	Item	Major cause of failure	Engine operation
35	Ignition failure of #3 cylinder	• Broken line between ignition coil and ECU • Failure in ignition coil interior	Possible
36	Ignition failure of #4 cylinder	• Broken line between ignition coil and ECU • Failure in ignition coil interior	Possible
41	Overturn sensor (broken/short circuit)	• Wire broken/short circuit between overturn sensor and ECU • Overturn sensor failure	Possible
43	Failure of fuel system power (monitor voltage)	• Wire broken/short circuit between main relay and ECU • Broken ECU voltage monitor wire • Main relay failure	Possible
46	Abnormal power for vehicle system	• Failure of charging system • Failure in ACM or regulator	Possible
47	Sub-throttle sensor (broken/short circuit)	• Broken/short circuited line between sub-throttle sensor and ECU • Failure in sub-throttle sensor	Possible
48	Sub-throttle motor (stuck)	• Broken/shorted line between sub-throttle motor and ECU • Failure of sub-throttle motor • Failure of sub-throttle mechanism	Possible
50	ECU interior failure (abnormal ROM data)	• ECU interior data error	Impossible

Diagnosis Function (Status Checking Function)

(1) Function

To help users with troubleshooting and maintenance, sensor output display and actuator operation are made possible without the use of special tools or measuring instruments.

(2) Procedure

- Transfer to diagnostic mode as follows:
- Hold down "RESET" and "SELECT" buttons on meter and turn on the main switch. Continue holding the buttons down, until "F0" appears on meter.
- When "F0" appears on meter, press "SELECT" to switch to "DIAG" and confirm by simultaneously pressing down "SELECT" and "RESET" buttons.
- Using "RESET" or "SELECT", switch to destination diagnostic code.

(3) Operation

The following describes the operation of each diagnostic code in ECU.

*** NOTE: Remove the fuel pump coupler while codes 36 to 39 are in operation to prevent fuel from being injected.**

Code selected	Item	Description
01	Throttle sensor	• Displays throttle sensor input value in angle. • Fully closed throttle "15 to 18" degrees, fully open throttle approx. "95" degrees.
02	Atmospheric pressure sensor	• Displays atmospheric pressure in Kpa. • Approx. "101" Kpa at normal altitudes.
03	Intake pressure sensor	• Displays intake vacuum in Kpa. • Displays atmospheric pressure when crankshaft is at rest. • Less than atmospheric pressure during starting motor cranking.
05	Intake temp. sensor	• Displays sensor-detected temp. in °C.
06	Water temp. sensor	• Displays sensor-detected temp. in °C.
07	Vehicle speed sensor	• Displays integrating number of sensor detected pulses.
08	Overturn sensor	• Displays sensor output voltage. Erected "0.4 to 1.4" V Overturned "3.7 to 4.4" V Line broken "5.0" V
09	Monitor voltage	• Displays battery voltage when engine switch is turned on. • Approx. "12" V when engine is at rest.
20	Shifter switch	• Displays state of speed shift switch in ON/OFF. ON: Shift switch is on. OFF: Shift switch is off.
21	Select switch	• Displays state of select switch in ON/OFF. ON: SB (selects MAP in Super Bike specification.) OFF: ST (selects MAP in Stock Sports specification.)
30	Ignition coil #1	• Turning the engine switch off and on activates the ignition coil 5 times.
31	Ignition coil #2	
32	Ignition coil #3	
33	Ignition coil #4	

Code selected	Item	Description
36	Injector #1	• Turning the engine switch off and on activates the injector 5 times.
37	Injector #2	
38	Injector #3	
39	Injector #4	
50	Main relay	• Turning the engine switch off and on activates main relay 5 times.
53	EXUP	• Turning the engine switch off and on activates EXUP motor from fully open to fully closed throttle.
56	Sub-throttle	• Turning the engine switch off and on activates the sub-throttle motor from fully open to fully closed throttle.
60	No function	
61	No function	
62	No function	
70	Management No.	

13. Wire Harness

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-82590-70-0	WIRE HARNESS ASSY.	1	
	2	5FL-83976-70	SWITCH ASSY.	1	

This harness is designed to be lighter than standard for sprint racing.
The switch accompanying the assembly, functions as the main switch.

Even if the main switch is "OFF", the meter backup power is "ON". Before storing the motorcycle for 3 month or longer, remove the negative terminal from the battery.
For wiring, see the "WIRING DIAGRAM".

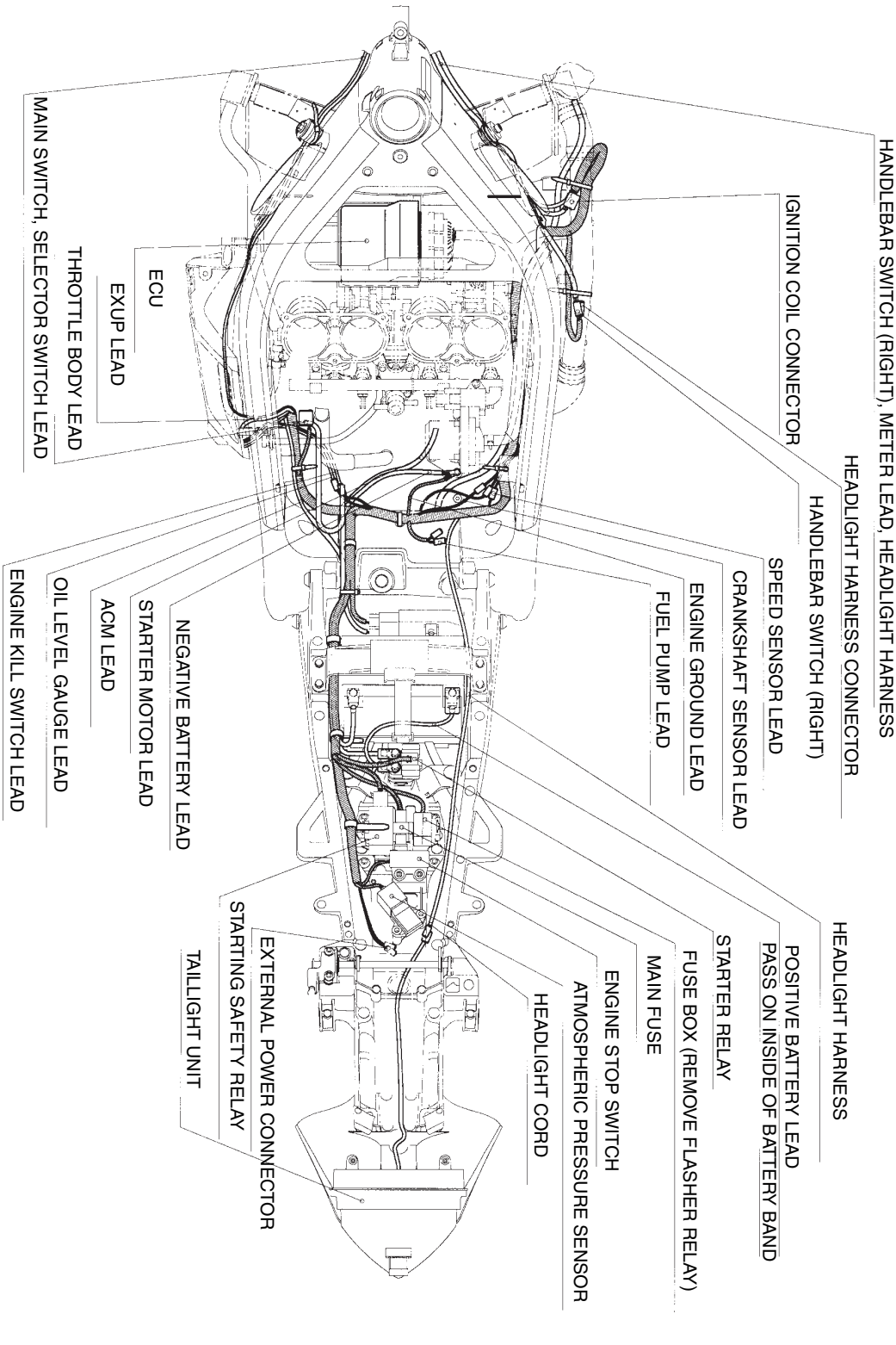
14. Headlight Harness Set (5VY-F4350-70)

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-84350-70	CORD, HEAD LIGHT	1	
*	2	5JJ-81950-20	RELAY	2	
*	3	5GF-83976-00	SWITCH, HANDLE		

This set is used in endurance races in combination with the kit harness for turning on the STD headlights and taillights.
It assumes that the standard headlights and taillights are used.
The 2-system circuit is provided to allow the other bulb to light up when one is broken. The headlight and taillight circuits are independent of one another. If the headlight is broken, the taillight will not go out.
For wiring, see the "WIRING DIAGRAM".

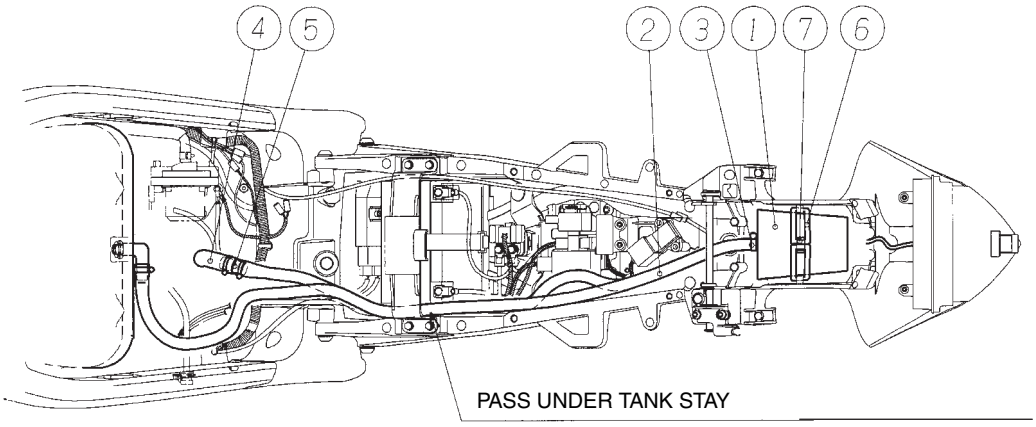
WIRING DIAGRAM



2-3 Chassis Parts
15. Oil Catcher Tank Set (5VY-C1707-70)

Parts List

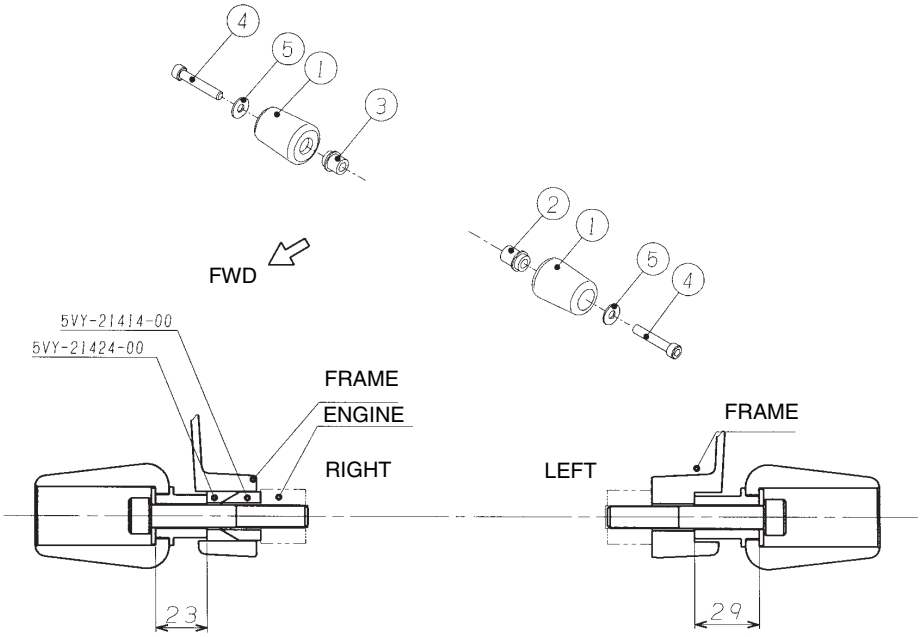
	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-21707-70	CATCH TANK COMP.	1	Capacity: 630 cc
	2	5EB-15373-70	HOSE	2	
*	3	90450-25037	HOSE CLAMP ASS'Y	6	
	4	5SL-11166-70	PIPE, BREATHER 1	1	
	5	371-11167-01	PIPE, BREATHER 1	1	
*	6	4XV-21376-00	BAND	2	
*	7	90464-08002	CLAMP	1	



16. Chasis Protector Set (5VY-C117G-70)

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-2117G-70	PROTECTOR	2	
	2	5SL-21472-70	COLLAR, PROTECTOR LH.	1	
	3	5SL-21477-70	COLLAR, PROTECTOR RH.	1	
*	4	91317-10070	BOLT, HEX. SOCKET	2	
*	5	90201-105R9	WASHER	2	



Remove the bolt holding the head and using the bolt supplied, install the chassis protector and cut the cowling to fit the vehicle.

17. Rear Suspension Spring

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-22212-70	SPRING, 1		K=9.0 kgf/mm

This spring is intended for use in the standard shock absorber.

Specification

	KIT	STD
Free length	174 mm	174 mm
Spring rate	9,0 kgf/mm	8,5 kgf/mm
External colour	Yellow	Silver

18. Front Fork Spring Set

5VY-1244H-70

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-23141-70	FR. FORK SPRING	2	0,95 kgf/mm
*	2	5PW-23118-00	SPACER	2	
*	3	4XV-23142-00	SEAT, SPRG UPPER	2	

5VY-C3141-80

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-23141-80	FR. FORK SPRING	2	1,00 kgf/mm
*	2	5PW-23118-00	SPACER	2	
*	3	4XV-23142-00	SEAT, SPRG UPPER	2	

Specification

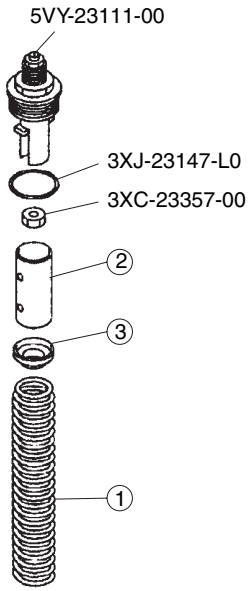
	–70	–80	STD
Free length	255 mm	255 mm	236 mm
Spring rate	0,95 kgf/mm	1,00 kgf/mm	0,90 kgf/mm
No. of ID lines	1	2	Nil

CAUTION :

- **The spring is longer overall than standard, because of its specification. For setting up, use the collar supplied instead of standard.**
- **The pre-load is set to provide 0 mm with the fork assembly fully extended and with the adjuster projecting 19 mm. When the front forks are free from load other than their own weight, the apparent pre-load is approximately 7 mm, because the rebound spring keeps the fork from rebounding fully.**
- **The spring rate is identified by the number of lines on its end.**

Basic setting

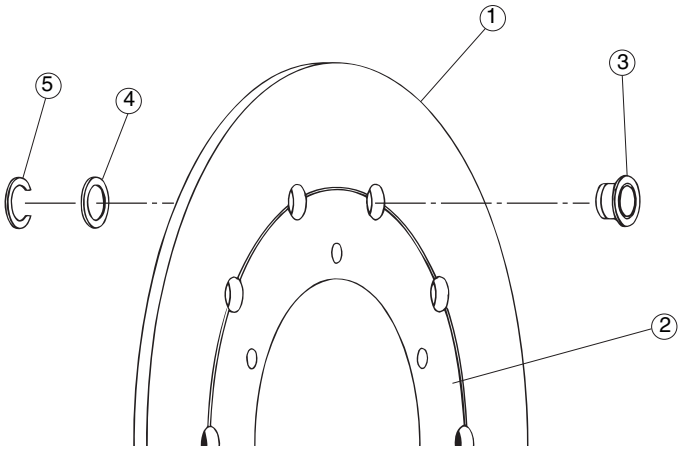
Initial adjuster	14 mm (up to top end)
Oil level	76 mm (when compressed as far as possible)
Suspension oil	Yamaha Suspension Oil 01



19. Front Disk Assembly (5VY-2581T-70)

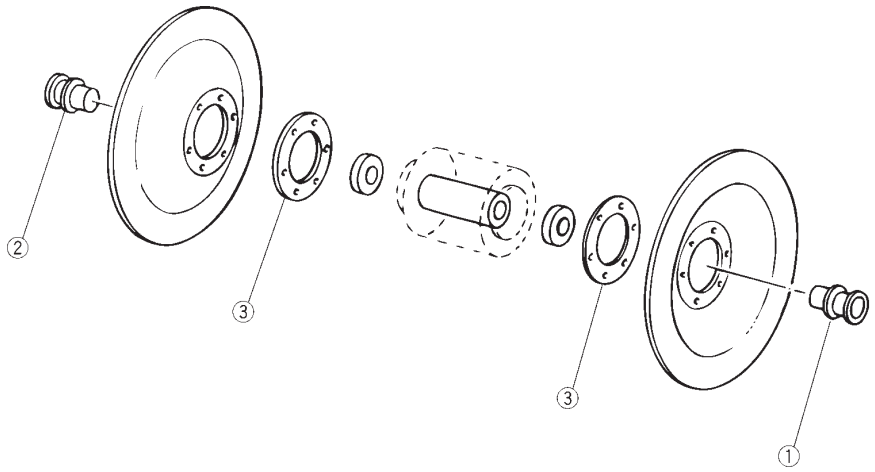
Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-2582T-70	DISK, BRAKE Fr.	1	t=5,0
	2	5VY-25832-70	BRACKET, DISK	1	
	3	5EB-2581M-70	PIN, FLOATING	10	
	4	5EB-2581N-70	WASHER	10	
*	5	93430-09052	CIRCLIP	10	
*	6	90109-064G6	BOLT	6	

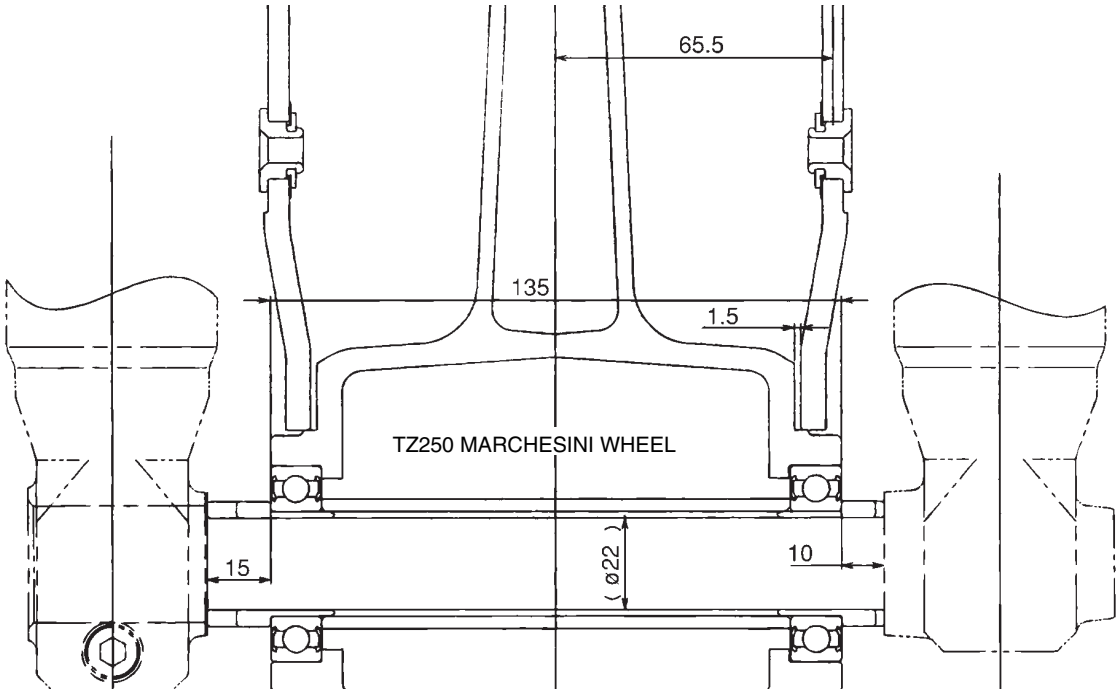


This assembly is of the fully floating type, with the outer rotor 5 mm thick for improved durability when racing.

20. Front Wheel Attachment Set



This fixing assembly is intended for the TZ250 Marchesini wheel.

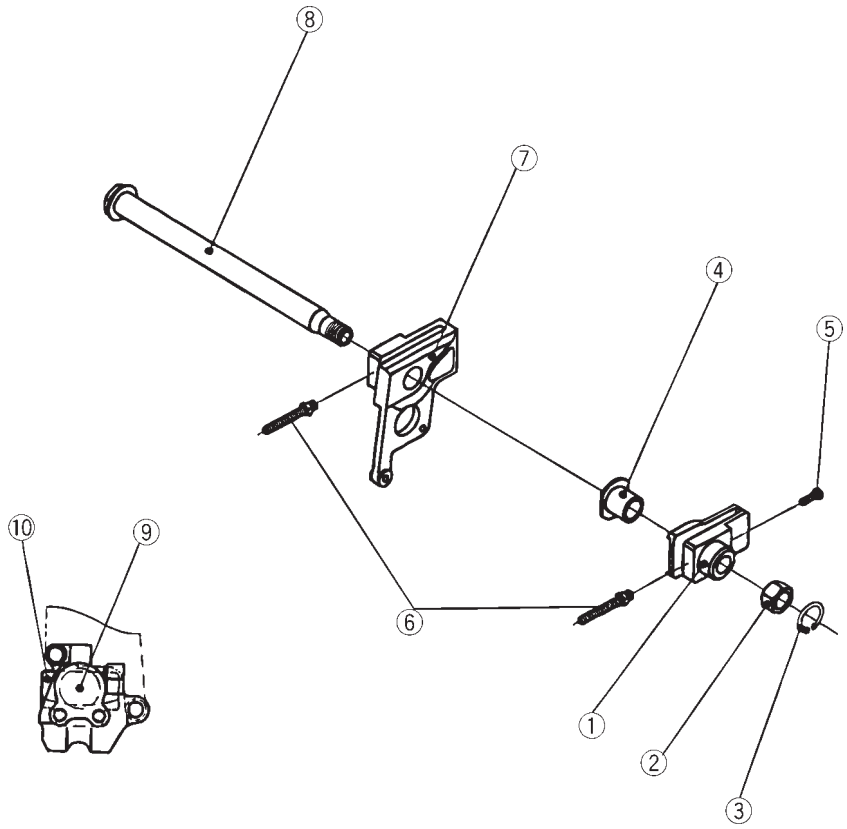


21. Rear Arm Attachment Set, Rear Wheel Attachment Set

Rear Arm Attachment Set (5VY-C2170-70)

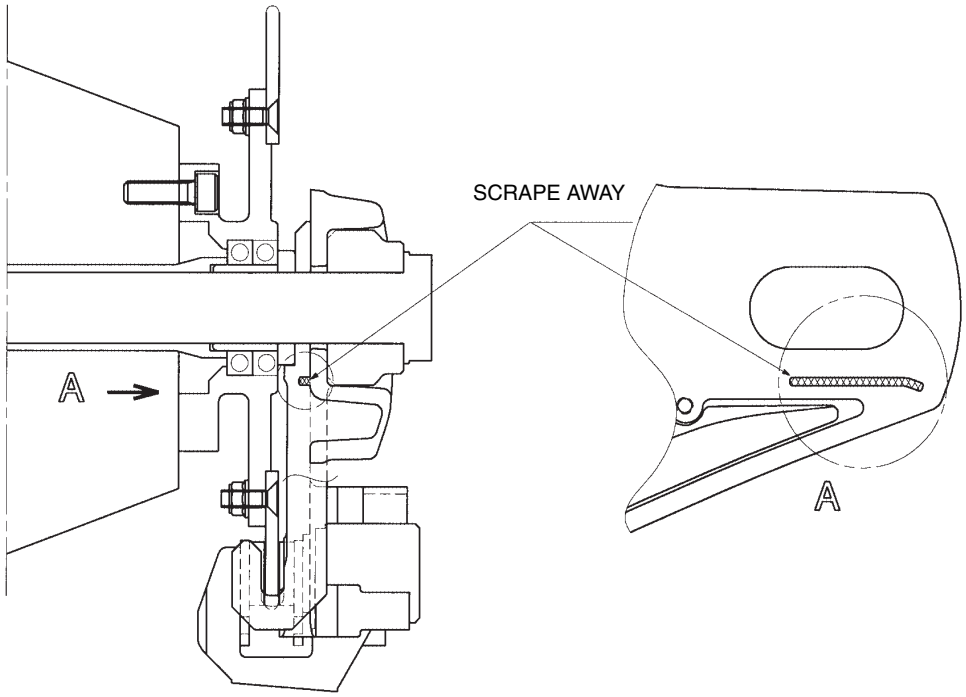
Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-25388-70	PULLER 1	1	
	2	95317-20700	NUT	1	
*	3	99009-32500	CIRCLIP	1	
	4	4FN-25322-70	INSERT, SHAFT	1	
*	5	90110-06142	BOLT	1	
	6	4XV-25379-70	BOLT, PULLER	2	
	7	5VY-25389-70-0	PULLER 2	1	
	8	4XV-25381-70	AXLE, WHEEL Rr.	1	
	9	4XV-2580W-70	CALIPER ASSY.	1	
	10	4XV-25911-70	PAD LINNING COMP.	2	
	11	4XV-25379-70	BOLT, CHAIN PULLER	2	



The rear arm attachment set includes a rear wheel fixing assembly to cover one wheel.
No special rear sprocket is included in the rear arm fixing assembly or in the rear wheel fixing assembly.

When using this set, it is necessary to reduce the length of the rear arm by 5 mm since contact is made between the rear arm and puller 2.



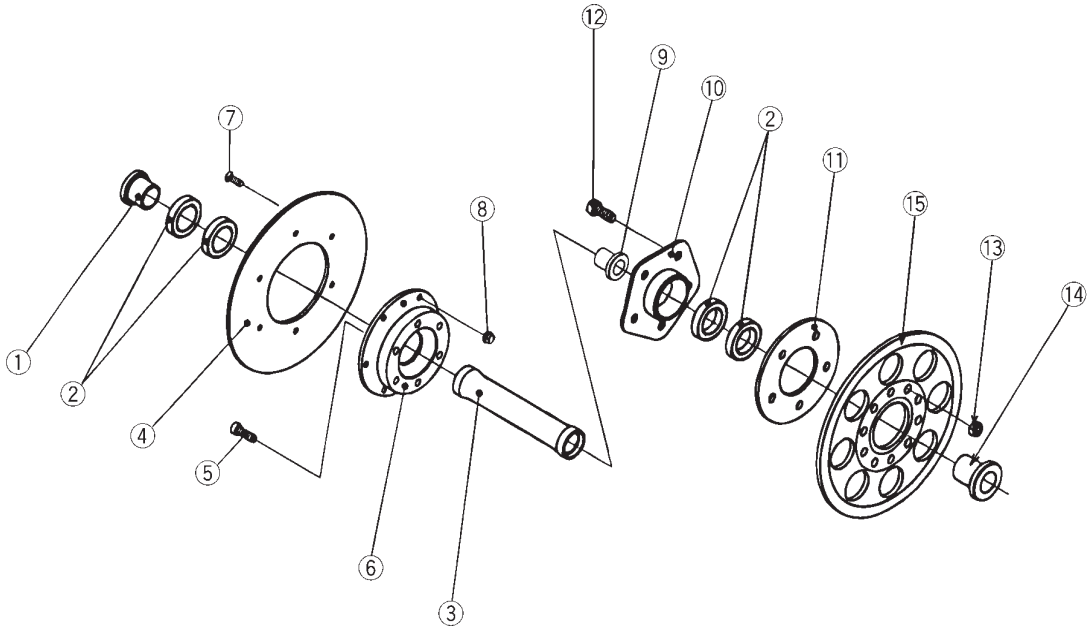
If a more competitive system is desired, with a rear arm for endurance racing, please contact the following company:

MG Competition
ZAE LA FORET N° 108
74130 CONTAMINE/ARVE-FRANCE
TEL: +33 (0) 450 255 996
FAX: +33 (0) 450 255 998
E-mail : info@mgcompetition.fr
or
mgcompetition@mgcompetition.fr

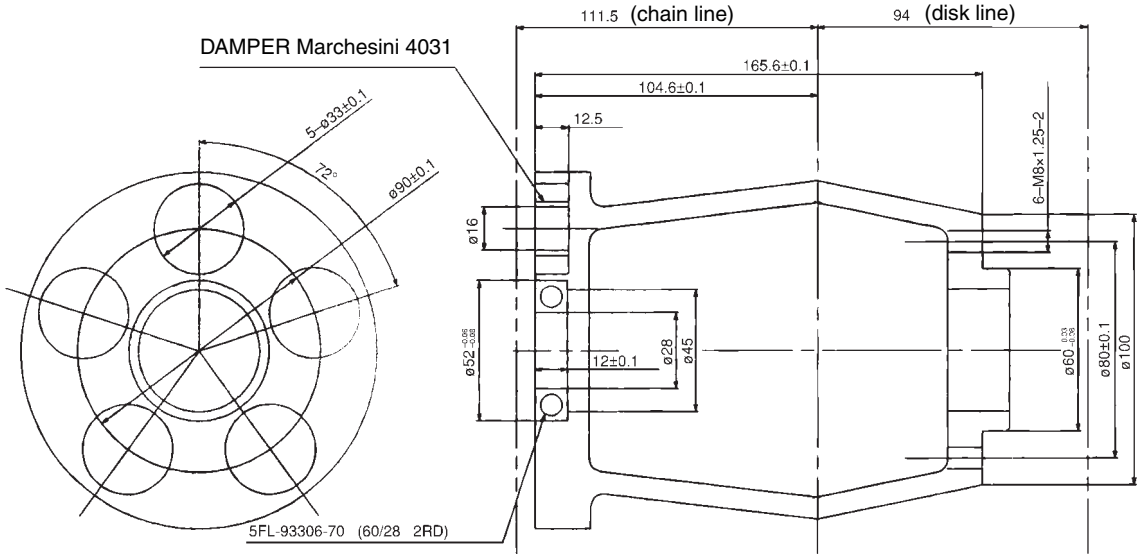
Rear Wheel Attachment Set (4XV-C5310-80)

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	4XV-25767-70	COLLAR, DISK BRAKE	1	
	2	5FL-93307-70	BEARING	4	
	3	4XV-25317-80	SPACER, BEARING	1	
	4	4XV-2582V-80	DISK, BRAKE	1	
*	5	91317-08025	BOLT	3	
	6	4XV-25832-80	BRACKET, DISK	1	
*	7	90149-06286	SCREW	3	
*	8	90185-06122	NUT	3	
	9	4XV-25683-80	SPACER	1	
	10	4FN-25366-70	CLUTCH, HUB	1	
	11	4XV-2539F-70	PLATE	1	
*	12	91317-10025	BOLT	5	
*	13	90185-10037	NUT	5	
	14	4XV-25376-80	COLLAR, SPROCKET	1	
	15	4FN-25441-70	Rr. SPROCKET 41T		SIZE 520
	16	5FL-93306-70	BEARING	1	
		4FN-25442-70	Rr. SPROCKET 42T		SIZE 520
		4FN-25443-70	Rr. SPROCKET 43T		SIZE 520
		4FN-25444-70	Rr. SPROCKET 44T		SIZE 520
		4FN-25445-70	Rr. SPROCKET 45T		SIZE 520
		4FN-25446-70	Rr. SPROCKET 46T		SIZE 520



This fixing assembly is intended for Marchesini wheel 72186
(for Yamaha Super Bike).
When using a different wheel, refer to the hub size below.



22. Sprocket, Sprocket Nut

Parts List

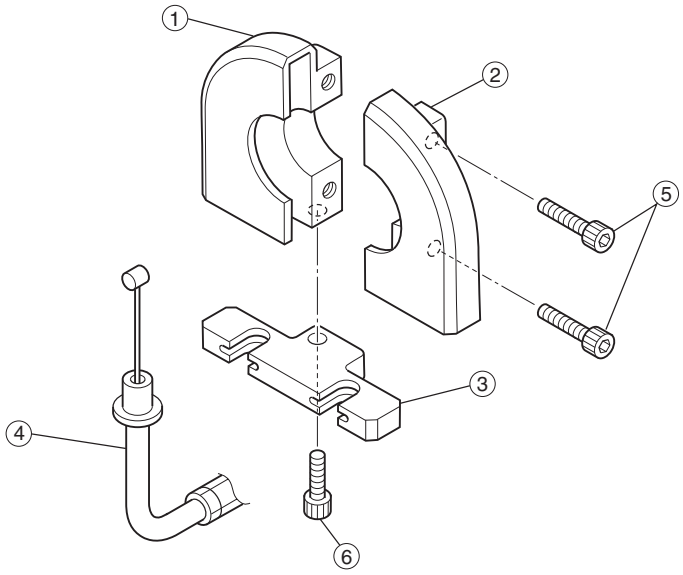
	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	4XV-17460-75	SPROCKET, DRIVE	1	15T, 520SIZE
	2	4XV-17460-76	SPROCKET, DRIVE	1	16T, 520SIZE
	3	4XV-17460-77	SPROCKET, DRIVE	1	17T, 520SIZE
	4	4XV-17463-70	NUT, SPROCKET	1	FOR KIT SPROCKETS
	5	4XV-25441-70	Rr. SPROCKET 41T		FOR STD WHEEL 520SIZE
	6	4XV-25442-70	Rr. SPROCKET 42T		FOR STD WHEEL 520SIZE
	7	4XV-25443-70	Rr. SPROCKET 43T		FOR STD WHEEL 520SIZE
	8	4XV-25444-70	Rr. SPROCKET 44T		FOR STD WHEEL 520SIZE
	9	4XV-25445-70	Rr. SPROCKET 45T		FOR STD WHEEL 520SIZE
	10	4XV-25446-70	Rr. SPROCKET 46T		FOR STD WHEEL 520SIZE
	11	4XV-25447-70	Rr. SPROCKET 47T		FOR STD WHEEL 520SIZE

When using the drive sprocket from the kit, use the sprocket nuts provided in that unit. If standard nuts are used, use three (3) stacked spring washers.

23. Throttle Set (5VY-C6300-70)

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5EB-26281-81	CAP, GRIP UPPER	1	
	2	5EB-26282-81	CAP, GRIP LOWER	1	
	3	5FL-26391-80	CLIP, THROTTLE WIRE	1	
	4	5VY-26302-70	THROTTLE WIRE ASSY.	1	
	5	5FL-26243-71	TUBE, GUIDE	1	WHITE
	6	4YR-26242-00	GRIP 2	1	
	7	90201-261L1	WASHER	1	
	8	91317-05020	BOLT	2	
	9	91317-05014	BOLT	1	



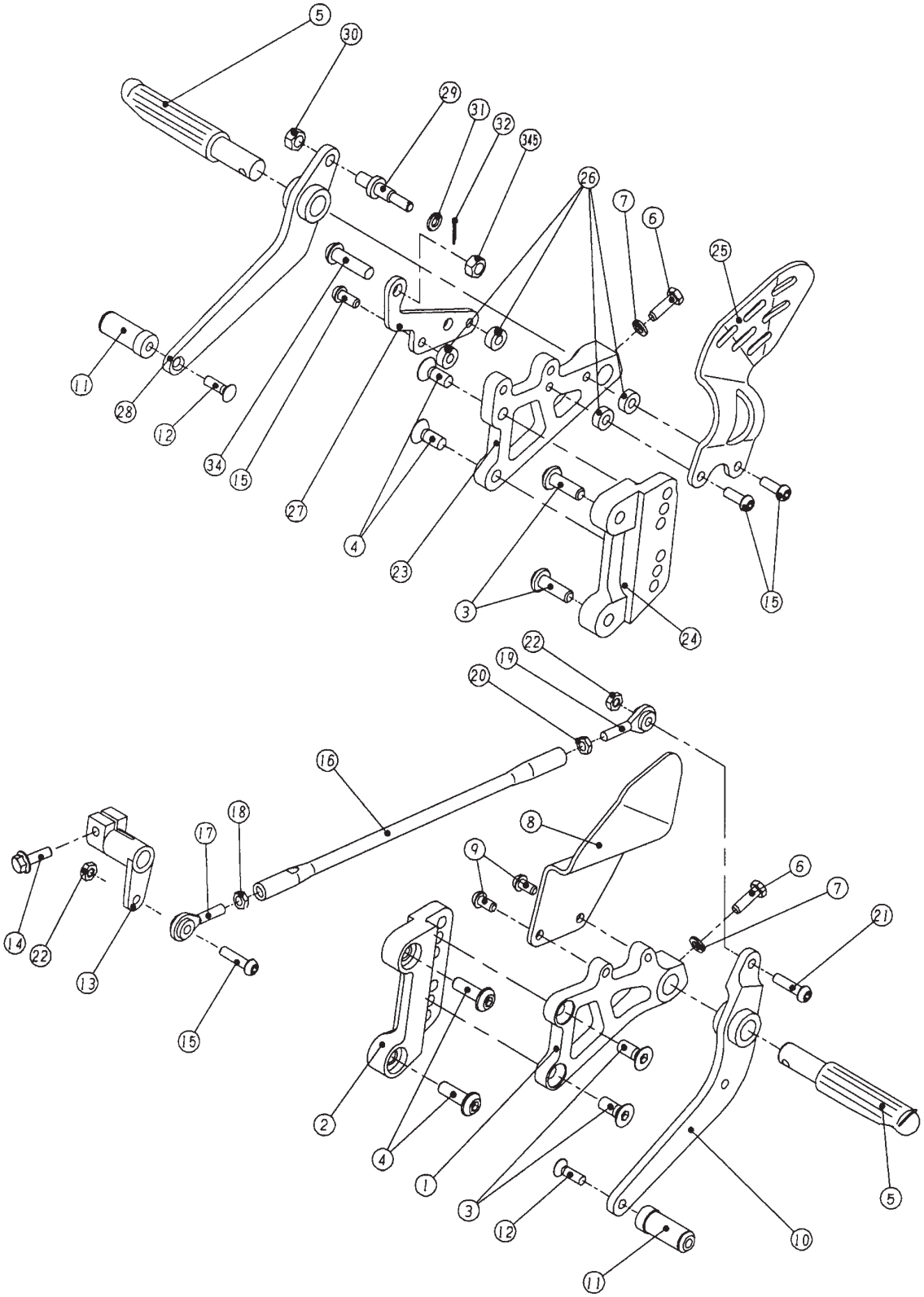
This kit has an operation angle of 57°, resulting in an improved racing operation. The use of the "5SL-26243-71" with the tube guide included in the R6 kit, allows an operating angle of 52°.

24. Footrest Set (5VY-C7400-70)

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5SL-27412-70	BRKT., 1	1	
	2	5VY-27452-70	BRKT., FOOTREST 1	1	
*	3	90151-08022	SCREW	4	
*	4	90109-085G6	BOLT	4	
*	5	4JT-27411-20	FOOTREST 1	2	
*	6	97007-06020	BOLT	2	
*	7	92907-06600	WASHER, PLATE	2	
*	8	5FL-27445-00	PLATE 1	1	
*	9	92017-06012	BOLT, BUTTON HEAD	2	
	10	5PW-18111-71	PEDAL, SHIFT	1	
	11	5EB-18162-70	PEDAL, FRONT	2	
*	12	98707-06020	SCREW, FLAT HEAD	2	
	13	5VY-18112-70	ARM, SHIFT	1	
*	14	95824-06020	BOLT, FLANGE	1	
*	15	92017-06020	BOLT, BUTTON HEAD	5	
	16	5VY-18115-70	ROD, SHIFT	1	
*	17	3TC-18116-00	JT., ROD 1	1	
*	18	95304-06700	NUT	1	
*	19	3TC-18117-00	JT., ROD 2	1	
*	20	90170-06228	NUT	1	
*	21	92017-06025	BOLT, BUTTON HEAD	1	
*	22	95607-06100	NUT, U	2	
	23	5VY-27422-70	BRKT., 2	1	
	24	5VY-27462-70	BRKT., FOOTREST 2	1	
*	25	5SL-27446-00	PLATE 2	1	
	26	5SL-2745A-71	COLLAR	4	
	27	5VY-2741L-70	BRKT., 4	1	
	28	5EB-27211-70	PEDAL, BRAKE	1	
*	29	5SL-27853-71	SHAFT, PEDAL 1	1	
*	30	95307-08700	NUT	1	
*	31	92907-06200	WASHER, PLAIN	1	
	32	91401-16012	PIN, SPRIT	1	
*	33	5EB-27456-70	SPRING, RETURN	1	
*	34	92017-08030	BOLT, BUTTON HEAD	2	
*	35	95307-08700	NUT	2	

Install the rear brake return spring to the master cylinder with the rubber boot removed.
This footrest is located on the lower side 5 mm to the rear, at the same height as that of the standard.
A change of 10 mm in height and of 5 mm to the rear of this location can be made for each step.

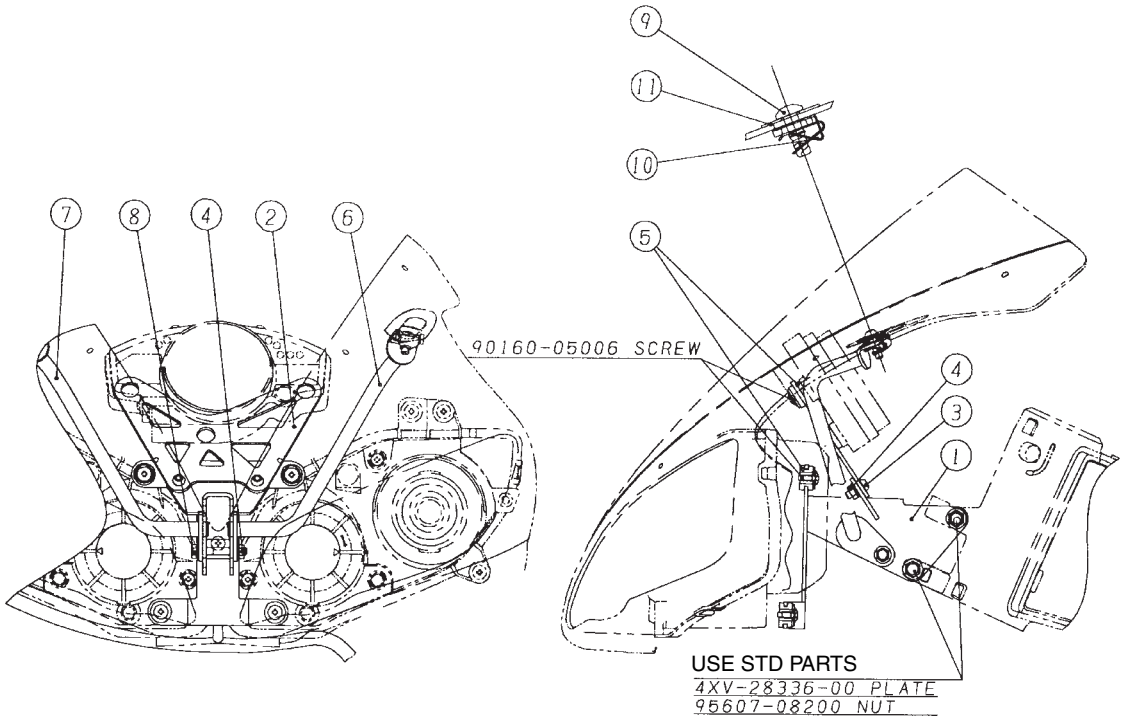


25. Front Stay Set (5VY-C8350-70)

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5VY-28356-70	STAY, 1	1	
*	2	5VY-83519-70	BRACKET, METER	1	
*	3	90149-06298	SCREW	2	
*	4	95707-06500	NUT	4	
*	5	4XV-83513-00	DAMPER	7	
*	6	5VY-28321-70	STAY 1	1	
*	7	5VY-28322-70	STAY 2	1	
	8	95807-06040	BOLT	2	
*	9	5PW-28386-00	HEAD	2	
*	10	5PW-2177L-00	PLATE, SPRING	2	
	11	90201-08008	WASHER	2	

Use standard parts except for those supplied.



2-4 Other

26. Valve Seat Cutter Set

Parts List

	No.	PART No.	PART NAME	Q'TY	REMARKS
	1	5SL-92110-70	CUTTER, INT 1	1	27.0 × 60°
	2	5SL-92110-80	CUTTER, INT 2	1	27.0 × 90°
	3	5SL-92110-90	CUTTER, INT 3	1	27.0 × 120°
	4	5SL-92120-70	CUTTER, EXT 1	1	25.0 × 60°
	5	5SL-92120-80	CUTTER, EXT 2	1	25.0 × 90°
	6	5SL-92120-90	CUTTER, EXT 3	1	25.0 × 120°
	7	5SL-92101-70	SPINDLE	1	4,0 mm
	8	5VY-92101-70	SPINDLE	1	4,5 mm

This cutter set includes the same parts as for the 03 R6, but when using them for the R1, reverse the respective names and locations for intake and exhaust.
The set includes an addition type of spindle in contrast with the assembly for the 03 R6.

3 Installation Precautions

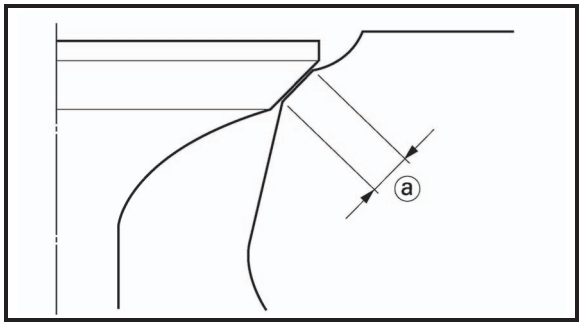
NOTE:

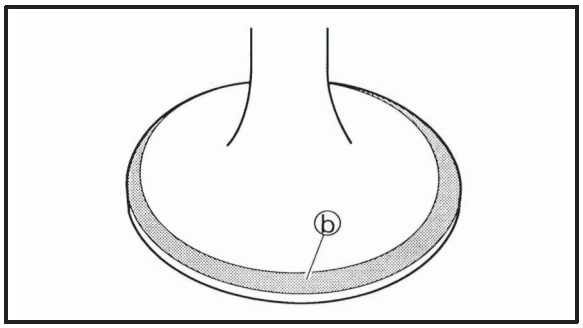
Please check next point for setting up your motorcycle.

3-1 Checking the Valve Seats

The following procedure applies to all valves and valve seats.

1. Eliminate :
   - lcarbon deposits (from the valve face and valve seat)
2. Check :
   - lvalve seat
     Pitting/wear ➔ replace cylinder head.
3. Measure :
   - lMeasure the width of the valve seat (a)
     Non-compliance with specification ➔ replace cylinder head.





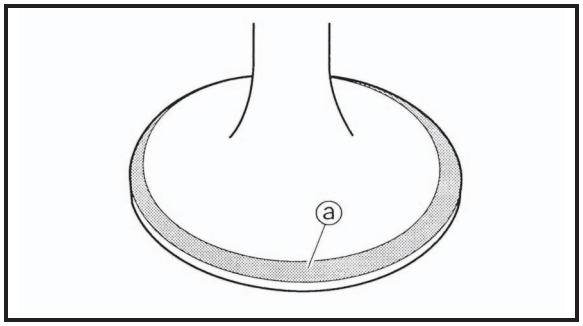
	Valve seat width 0,9 – 1,1 mm (0.0354 - 0.0433 in) <Limit>: 1.6 mm (0.06 in)

a. Apply mechanic's blue (Dykem) (b) on the valve face.
b. Install the valve in the cylinder head.
c. Push the valve through the valve guide and on the valve seat, to make a clear impression.
d. Measure the width of the valve seat.

NOTE:

Where the valve seat and valve face were in contact with one another, the blue deposit will have been removed.

4. Lap :
   - Ivalve face
   - Ivalve seat



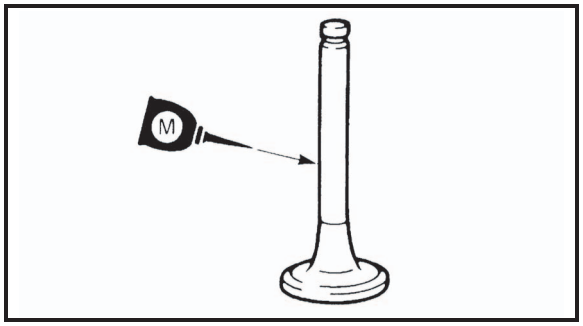
NOTE:

After replacing the cylinder head or the valve and the valve guide, the valve seat and valve face should be lapped.

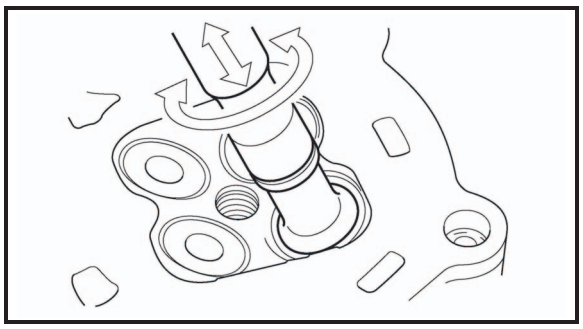
a. Apply a coarse lapping compound (a) to the valve face.

CAUTION :

Do not let the lapping compound enter the gap between the valve stem and the valve guide.



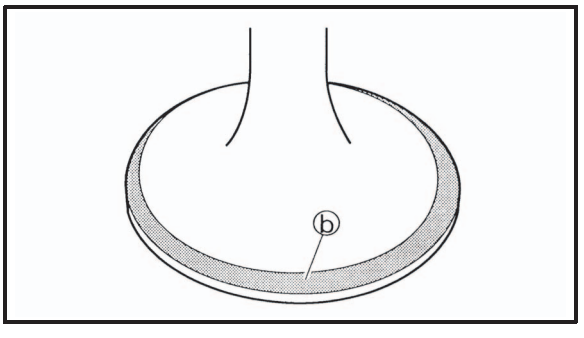
b. Apply molybdenum disulfide oil on the valve stem.
c. Install the valve in the cylinder head.
d. Rotate the valve, until the valve face and valve seat are evenly polished, then clean off all lapping compound.

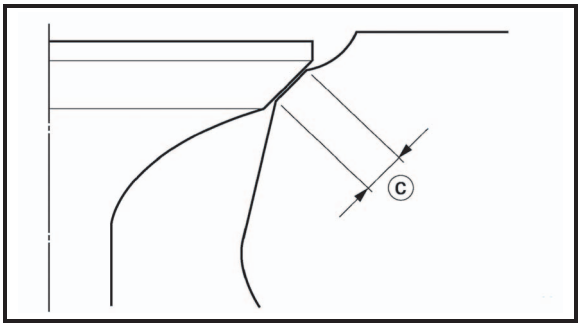


NOTE:

For best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

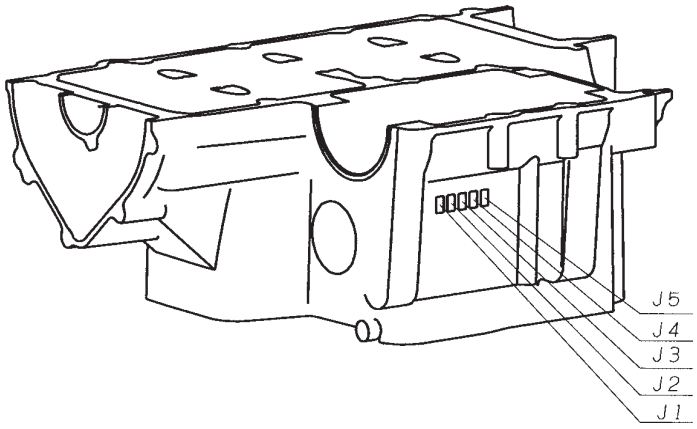
e. Apply a fine lapping compound to the valve face and repeat the above steps.
f. After every lapping cycle, clean off all lapping compound from the valve face and valve seat.
g. Apply mechanic's blue (Dykem) (b) on the valve face.
h. Install the valve in the cylinder head.
i. Push the valve through the valve guide and on the valve seat, to make a clear impression.
j. Measure the width (c) of the valve seat again. If the width is off specification, reface and lap the valve seat.





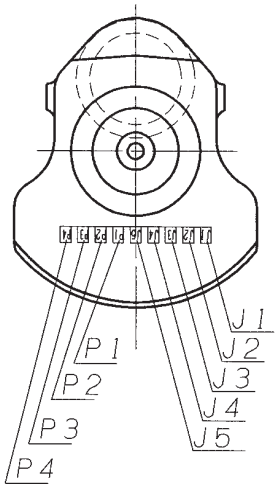
3-2 Selecting the crankshaft bearing

1. Read the crank journal size.
2. Read the crankcase journal size.
   (Read the size number on the rear wall of the engine mount boss on the lower casing)



3. (Casing size number) - (Crank journal size number) - 1
   = (Bearing size number)

5 (Yellow)	5VY-11416-40
4 (Green)	5VY-11416-30
3 (Brown)	5VY-11415-20
2 (Black)	5VY-11416-10
1 (Blue)	5VY-11416-00
0 (White)	5VY-11416-A0



CAUTION :

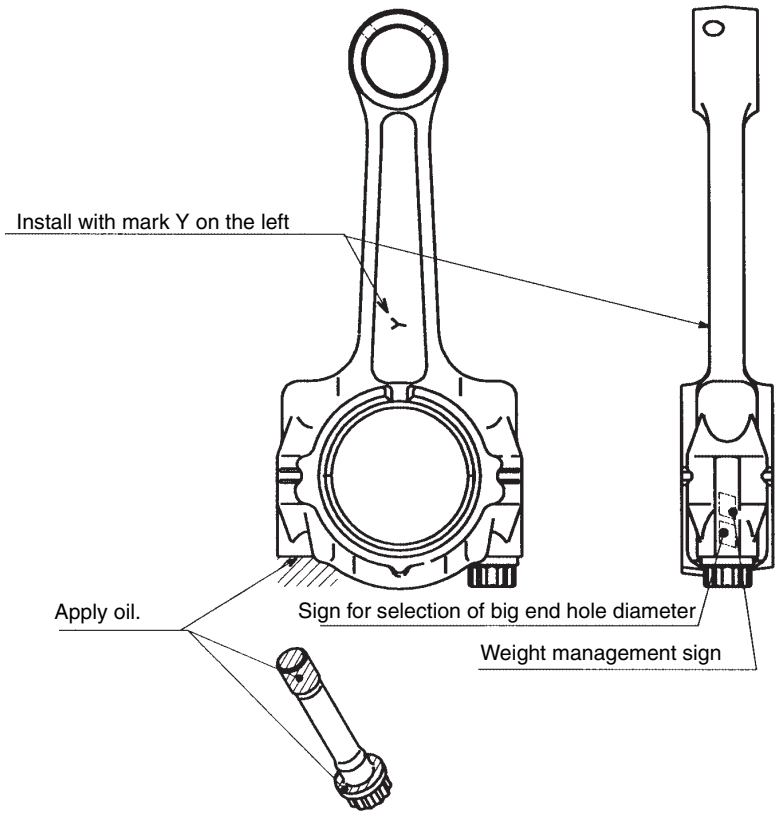
Before installing the bearing, apply oil to its surface.

3-3 Selecting the connecting rod bearing

1. Read the crank pin size. (Look at web 1 of the crankshaft.)
2. Read the big end size of the connecting rod (stamped on the connecting rod cap).
3. Selecting the connecting rod bearing
   (Big end size number) - (Crank pin size number) = (Bearing size number)
   4 (Green) 5VY-11656-30
   3 (Brown) 5VY-11656-20
   2 (Black) 5VY-11656-10
   1 (Blue) 5VY-11656-00

CAUTION :

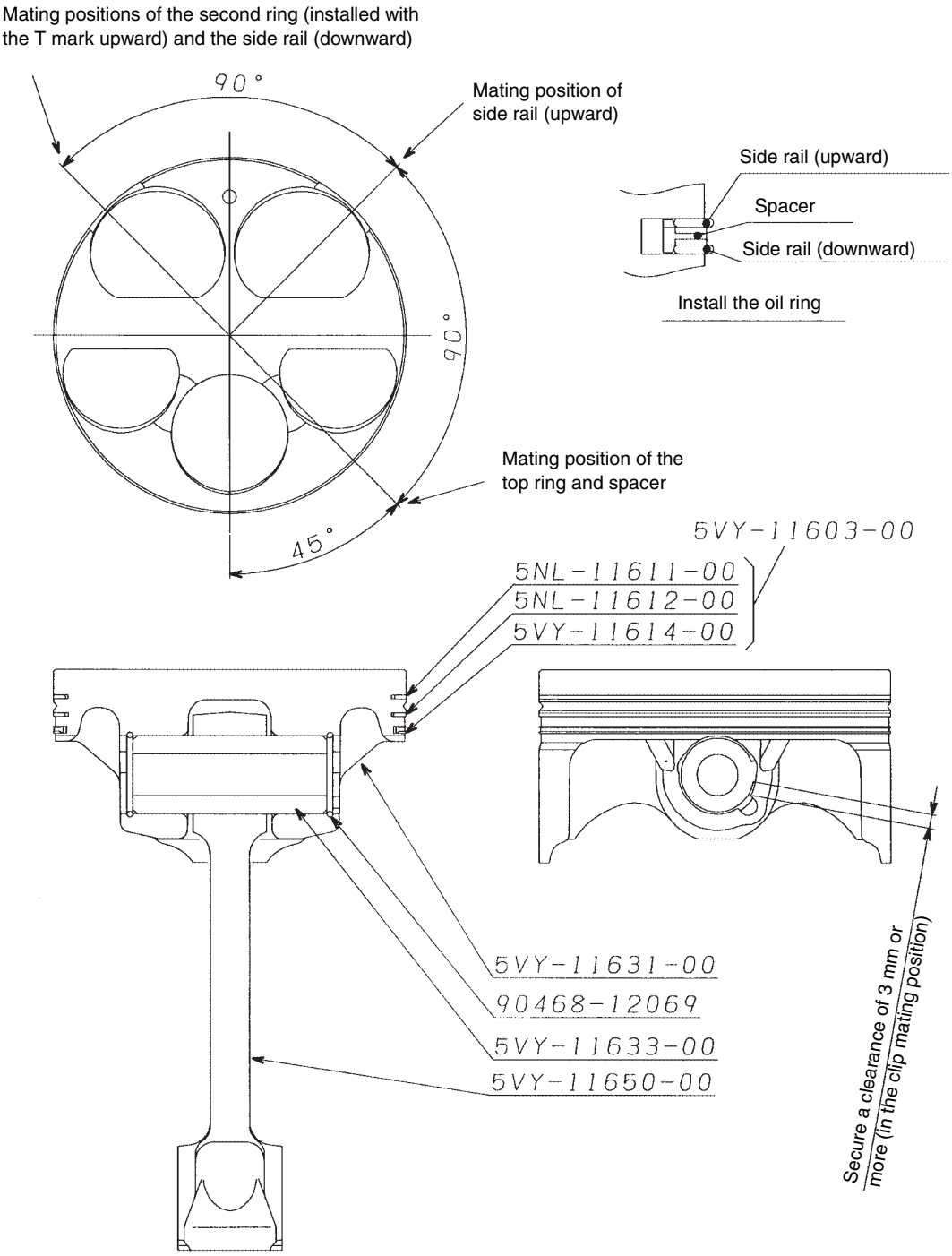
Use the same weight management symbol (alphabetical letter) for all four connecting rods.



Connecting rod installation precautions

1. Install the connecting rod bearing onto the connecting rod with the projection in alignment.
   Apply oil generously to the bearing surface.
2. For installation, the word "YAMAHA" or the letter "Y" facing leftward.
3. Apply a generous amount of oil or oil-diluted molybdenum grease to the threads and seating surfaces of the connecting bolts and to the connecting rod seating surface; then, install the connecting rods with aligning marks on the rods and caps in alignment with the individual crank pins. Using the nut rotation method, tighten the caps with an F-type torque wrench to 19.6±1.96 Nm (2.0±0.2 kgf•m), and then retighten them in a rotation angle of 150°±5°.
4. If the extension method is used, adjust the bolt extension to 300±50 µm.
5. For installation, take care to allow no steps forming on the connecting rod contact surfaces.
6. Provide protection for the connecting rod contact surfaces.

3-4 Installing the piston, piston ring, and connecting rod



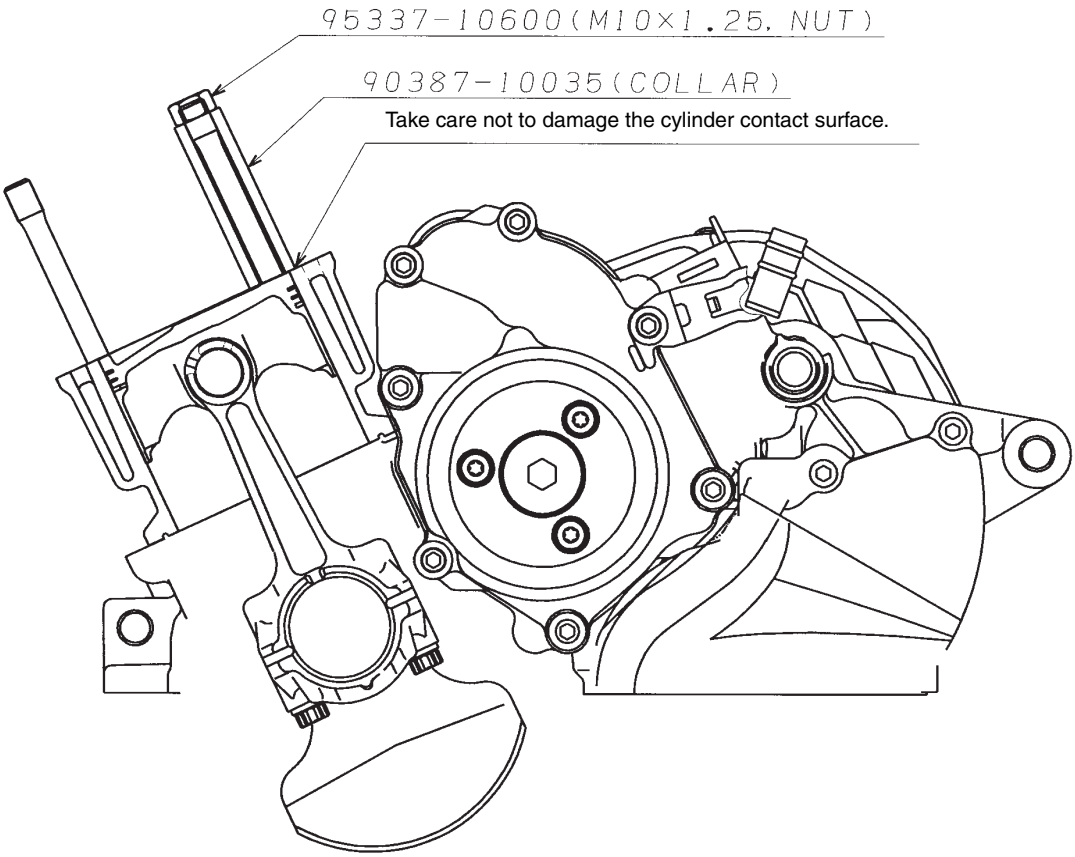
CAUTION :

Follow the procedure below to install the piston for the purpose of overhaul.

1. **Sub-assemble the piston and connecting rod.**
2. **Assemble the cylinder to the upper case.**
   (Use the collars and nuts to secure the cylinder.)
3. **Start installing the piston on the skirt side.**
4. **Install the connecting rod on the crank.**

When replacing a piston without dismantling the crankcase, insert the oil ring carefully.

A larger cylinder inclination may let the side rail come off and become wedged between the cylinders.



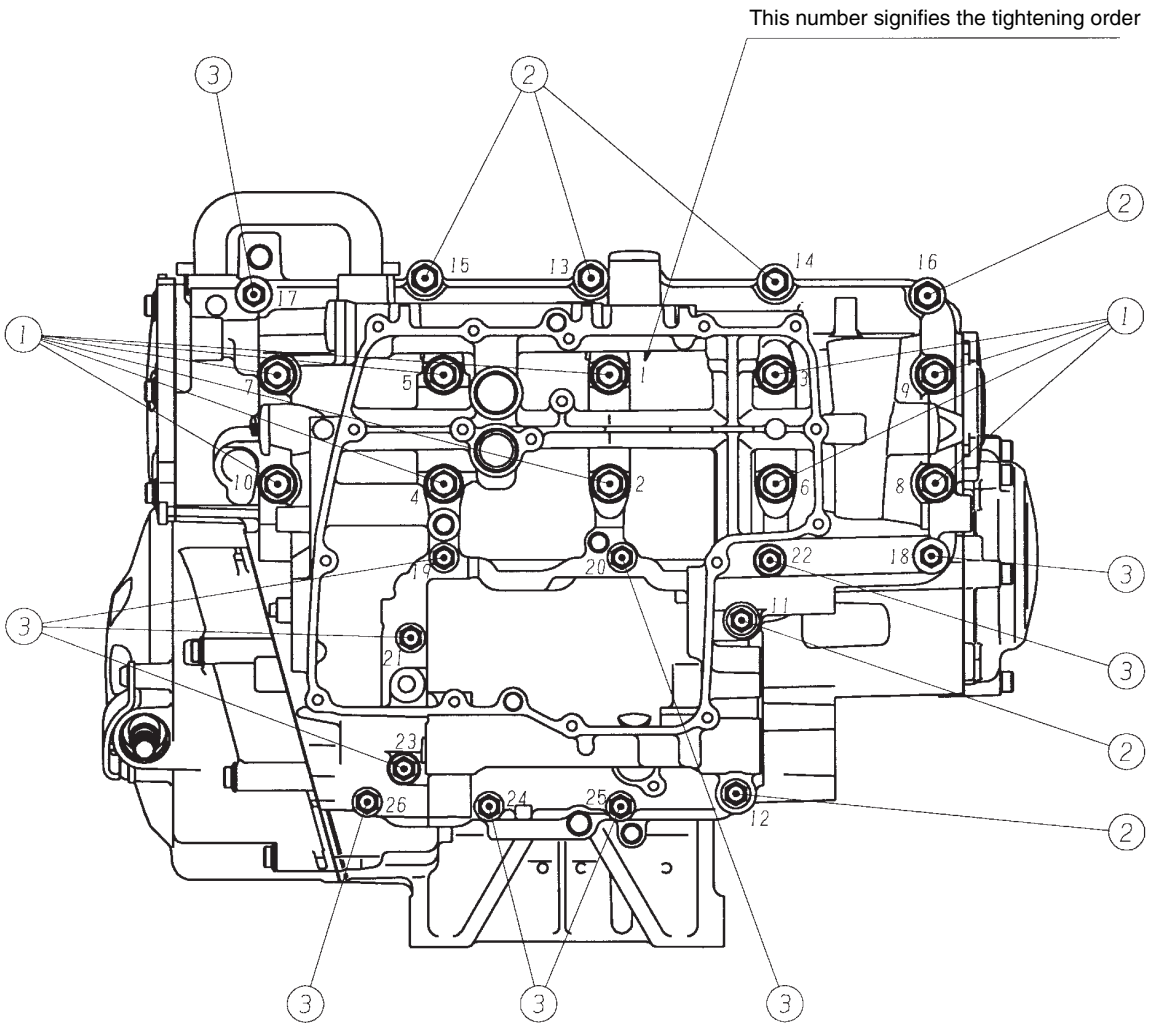
3-5 Crankcase installation

Tightening the bolt ①.

1. Follow the tightening sequence from 1 to 10 and tighten to a torque of 196 Nm (2.0 kg•m)
2. Following the sequence, tighten the bolts one by one and then retighten to a torque of 19.6 Nm
3. Following the tightening sequence, retighten the bolts to an angle of 56° to 61°. Reference tightening torque: 35.0 Nm (3.5 kg•m)

Bolt ②:24.0 Nm (2,4 kg•m)

Bolt ③:12 Nm (1,2 kg•m)



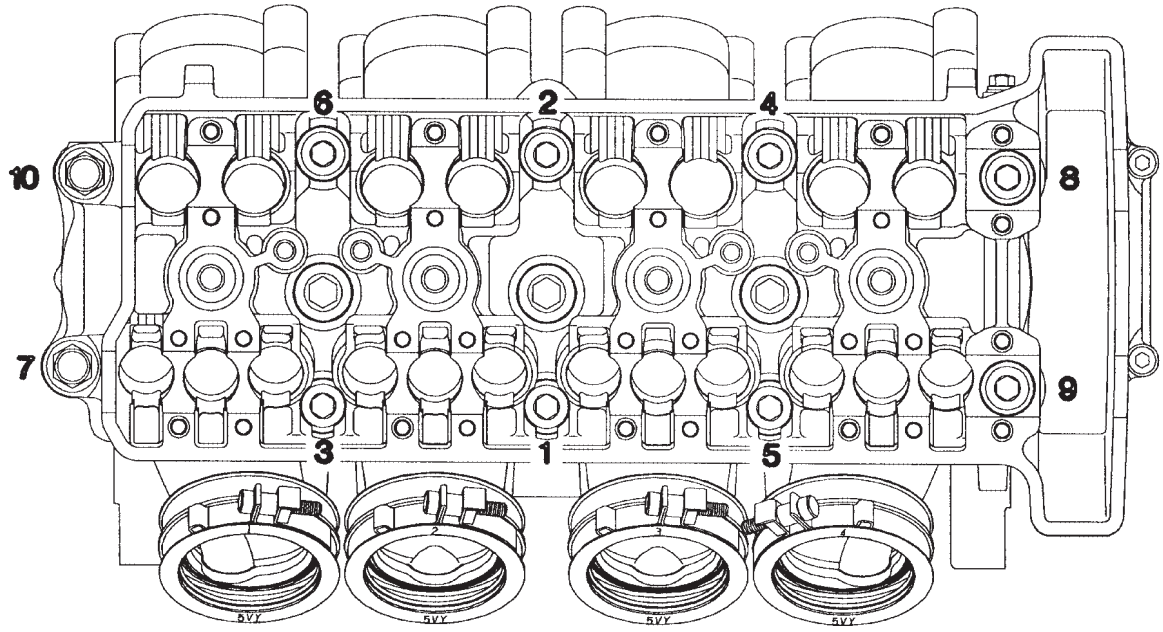
3-6 Cylinder head tightening (calibrated wrench tightening method).

1. Temporarily tighten to 19.0 Nm (1.9 kgf•m) before tightening fully.
2. Following the tightening sequence, tighten to 67.0 Nm (6.8 kgf•m).
3. After tightening the nuts, tighten the M6 bolts to 12 Nm (1.2 kgf•m).

CAUTION :

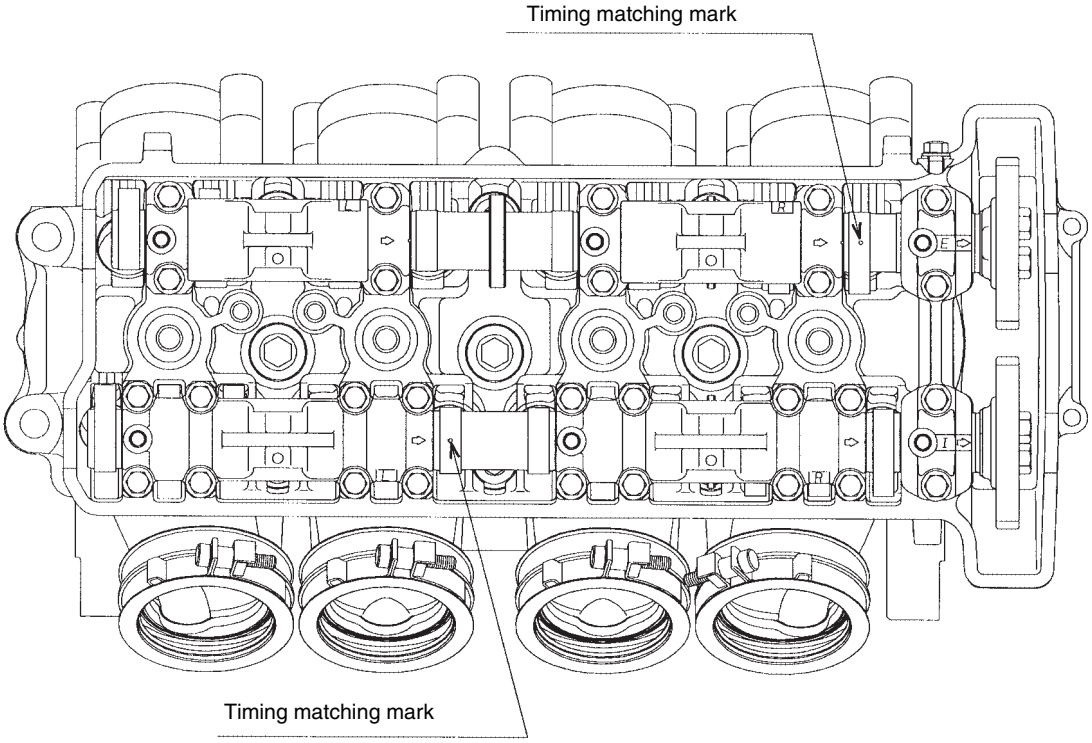
The figures 1 to 10 indicate the tightening sequence.

Apply engine oil to the threads, seating surfaces, and washers.

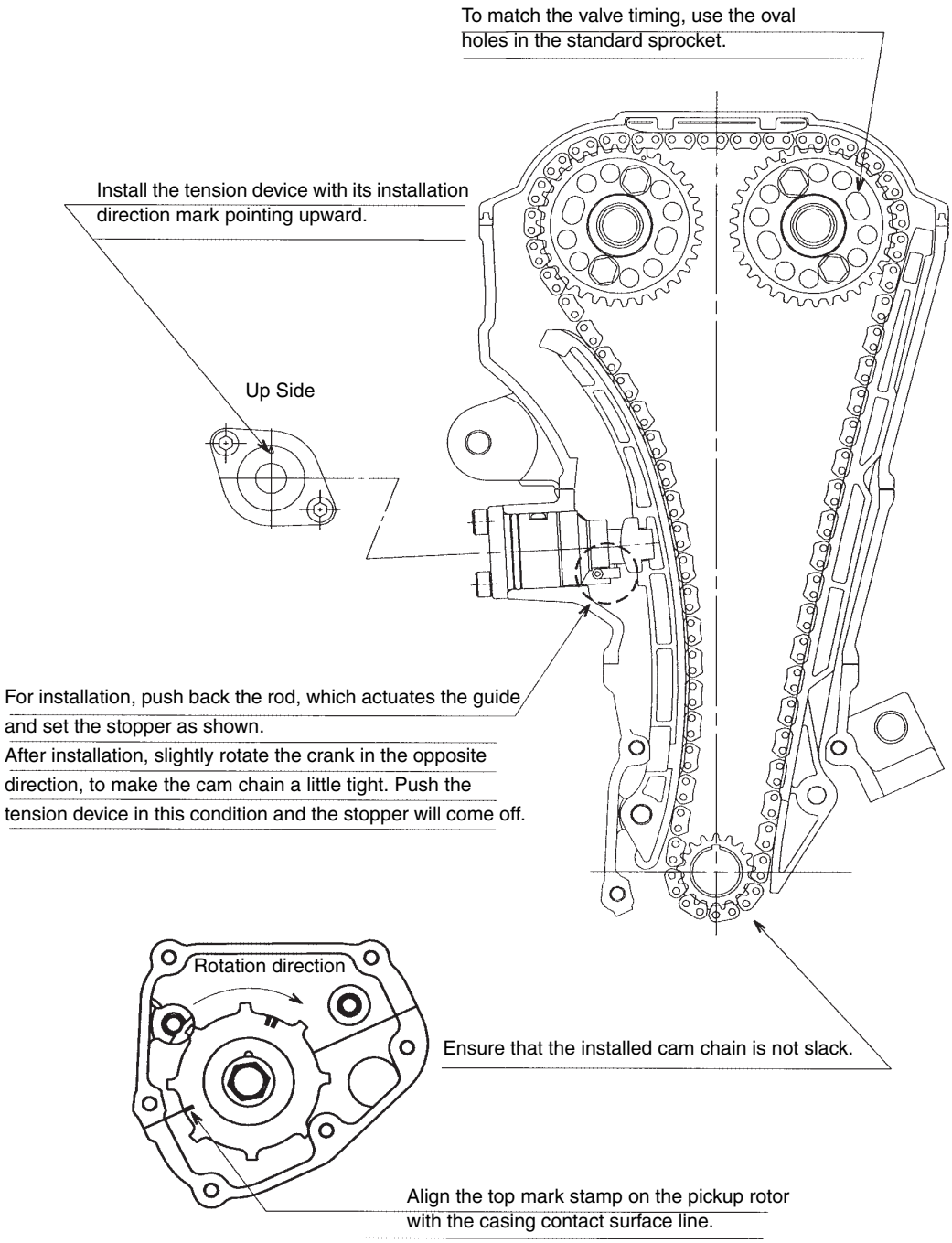


3-7 Camshaft installation

Timing matching

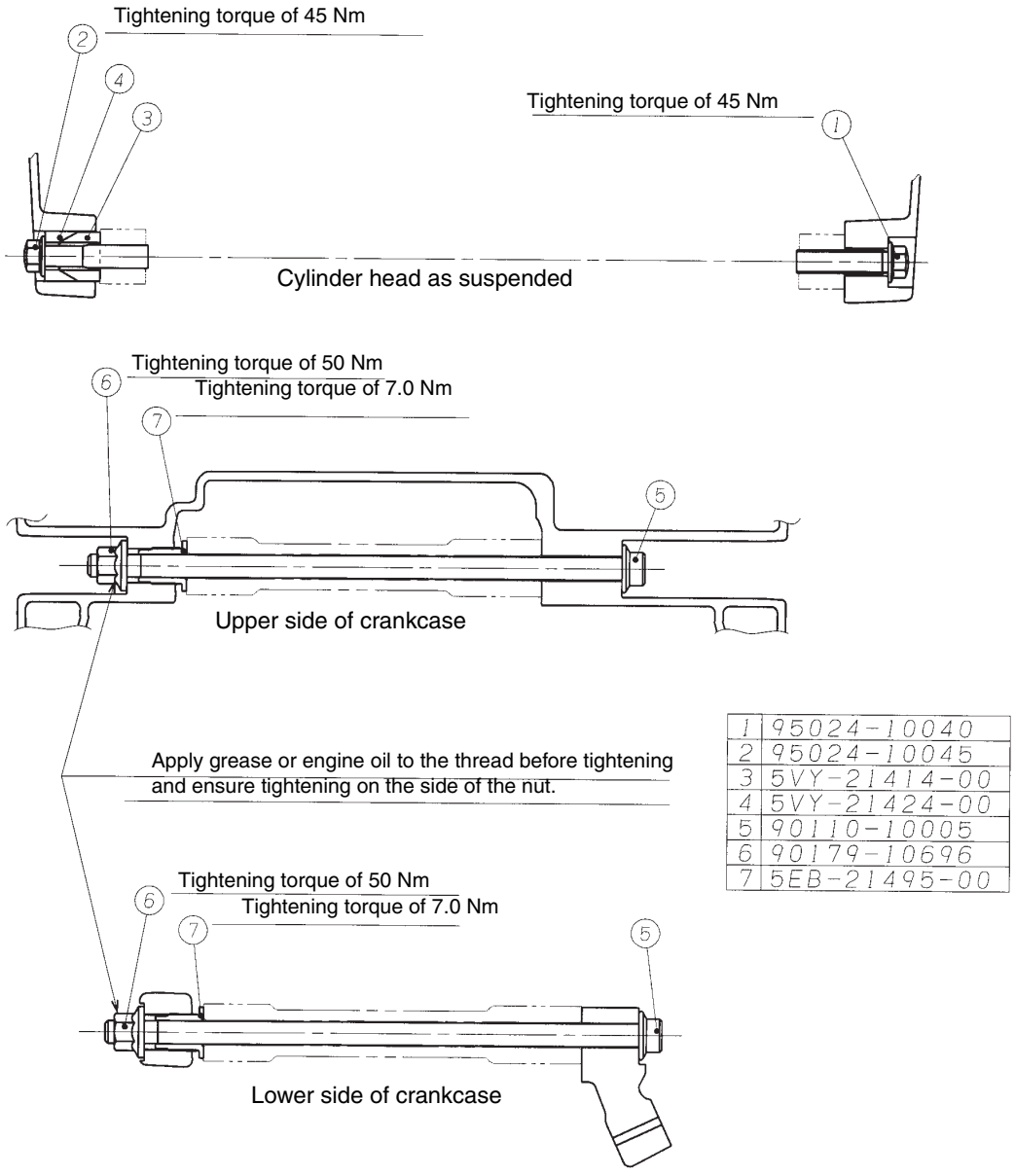


3-8 Cam chain tension device installation



3-9 Engine mounting

1. Temporarily fit ⑦ BOLT, ENG. ADJ. to the frame.
2. Place the engine on the mounting location of the frame and temporarily fit ⑤ BOLT.
3. Temporarily fit ③④ BOSS, ENG. MOUNT on the frame and temporarily fit ①② BOLT.
4. Tighten ⑦ BOLT, ENG. ADJ. to the specified torque.
   Check that the engine and the seating surface of ⑦ are in contact with one another.
5. Tighten ⑥ NUT on the crankcase bottom to the specified torque. Then tighten the ⑥ NUT on the crankcase top to the specified torque.
6. Tighten the ① BOLT to the specified torque.
7. Tighten the ② BOLT to the specified torque.



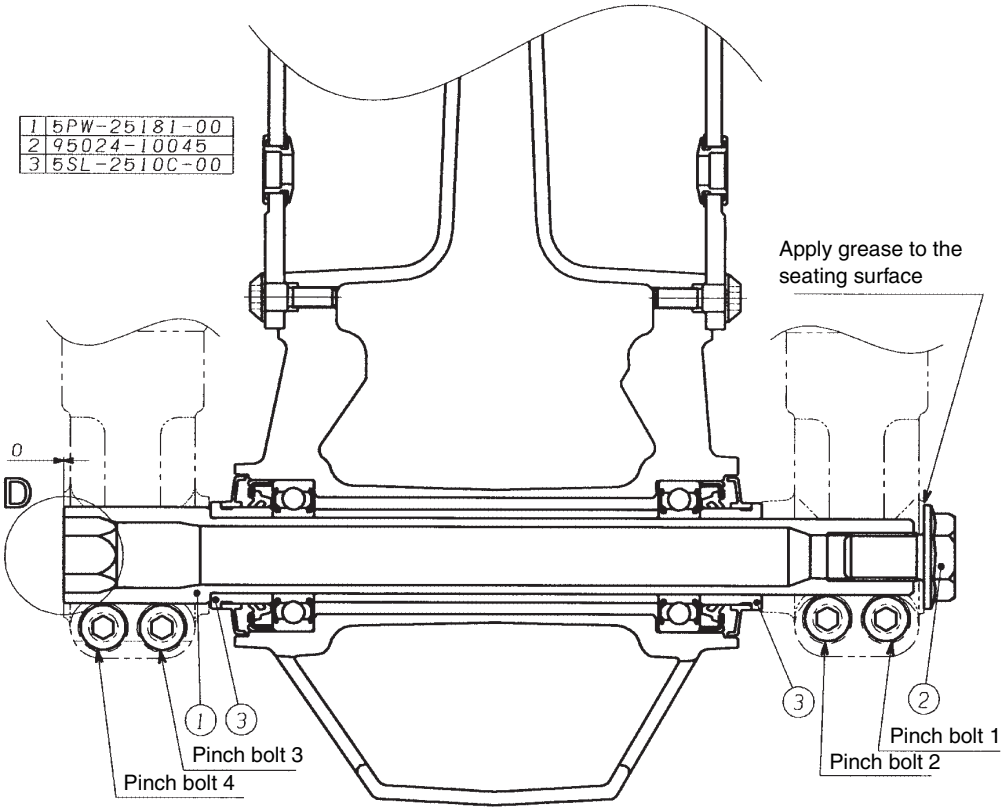
1	95024-10040
2	95024-10045
3	5VY-21414-00
4	5VY-21424-00
5	90110-10005
6	90179-10696
7	5EB-21495-00

3-10 Front axle installation

1. Insert the front wheel axle on the right side and tighten ② BOLT, FLG to 85 Nm on the left side.
2. Without preliminary tightening, fully tighten the bolts in the sequence pinch bolt 2, pinch bolt 1 and pinch bolt 2 to 10 Nm.
3. Check that the axle head end is flush with the fork side end (at D), and if it is not, make them flush applying external force by hand or a plastic headed hammer.
4. Without preliminary tightening, fully tighten the bolts in the sequence pinch bolt 4, pinch bolt 3 and pinch bolt 4 to 20 Nm.

CAUTION :

Pay attention to the direction of installation of the wheel assembly.



TIGHTENING TORQUE LIST
Engine

Tightening Point	Part No.	Part Name	Thread dia. × pitch	Tightening torque Nm (kgf•m)	Q'ty	Remarks
Cylinder head tightening	90176-10075	Nut	M10 × 1,25	Turn-of-nut method: Retighten to 135±5 degrees after tightening to 42 (4.2).	2	Apply oil to thread and seating surface.
Cylinder head tightening	90179-10006	Nut	M10 × 1,25	Turn-of-nut method: Retighten to 135±5 degrees after tightening to 33 (3.3).	8	Apply oil to thread and seating surface.
Cylinder head tightening	91317-06060	Bolt, hexagon socket head	M6 × 1,0	12±2 (1,2±0,2)	2	
Cap & cylinder head	90105-06026	Bolt, flange	M6 × 1,0	10±2 (1,0±0,2)	28	Apply oil to thread and seating surface.
Cylinder head cover tightening	90109-066F0	Bolt	M6 × 1,0	12±2 (1,2±0,2)	6	
AI cap	90110-06020	Bolt, hexagonal socket head	M6 × 1,0	10±2 (1,0±0,2)	4	
Sprocket & camshaft	90105-07342	Bolt, flange	M7 × 1,0	24±2 (2,4±0,2)	4	
Head & throttle body	90450-62001	Hose, clamp	M5 × 0,8	3±0,5 (0,3±0,05)	4	
Connecting rod	5VY-11654-00	Bolt, connecting rod big end	M8 × 0,75	Turn-of-nut method: Retighten to 135±5 degrees after tightening to 20 (2.0).	8	
Crank sprocket	90105-10290	Bolt, flange	M10 × 1,25	60±5 (6,0±0,5)	1	Apply oil to thread.
Cam chain tensioner	91314-06020	Bolt, hexagonal socket head	M6 × 1,0	10±2 (1,0±0,2)	2	
Hose tightening	90450-38040	Hose, clamp assembly		(Ref. 1.5 to 2.5 (0.15 to 0.25))		
Hose tightening	90450-35001	Hose, clamp assembly		(Ref. 1.5 to 2.5 (0.15 to 0.25))		
Hose tightening	90450-25037	Hose, clamp assembly		(Ref. 1.5 to 2.5 (0.15 to 0.25))		
Pump driving sprocket installation	90105-06154	Bolt, flange	M6 × 1,0	15±2 (1,5±0,2)	1	Degrease thread.
Pump installation	90110-06026	Bolt, flange	M6 × 1,0	12±2 (1,2±0,2)	2	
Thermostat assembly	90176-06065	Cap, nut	M6 × 1,0	10±2 (1,0±0,2)	2	
Oil cooler installation	5EB-12822-00	Bolt, union	M20 × 1,5	63±3 (6,3±0,3)	1	Apply oil to thread and seating surface.
Drain bolt installation	90340-14132	Plug	M14 × 1,5	43±4 (4,3±0,4)	1	
Installation of bolt union for cleaner	90401-20145	Bolt, union	M20 × 1,5	70±5 (7,0±0,5)	1	
Oil cleaner assembly installation	5GH-13440-00	Oil cleaner assembly	M20 × 1,5	17±2 (1,7±0,2)	1	Apply grease to O-ring.
Strainer cover installation	91317-06025	Bolt, hexagonal socket head	M6 × 1,0	12±2 (1,2±0,2)	14	
Strainer cover installation	90110-06020	Bolt, hexagonal socket head	M6 × 1,0	12±2 (1,2±0,2)	1	
Carburetor joint & throttle body	90450-62001	Hose, clamp	M5 × 0,8	3±0,5 (0,3±0,05)	4	
Throttle body & funnel 1	90109-05005-1	Bolt	M5 × 0,8	3,4 – 5,0 (0,34 – 0,5)	6	
Ring nut & cylinder head	90179-08410	Nut	M8 × 1,25	20±2 (2,0±0,2)	8	
Studded into crankcase	90116-1002*	Bolt, stud	M10 × 1,25	8±1 (0,8±0,1)	10	Apply oil to thread and seating surface.
Crankcase 1 & crankcase 2	90119-09003	Bolt, hexagonal with washer	M9 × 1,25	Refer to "Crankcase installation" section.	10	Apply oil to thread and seating surface.
Crankcase 1 & crankcase 2	90109-06063	Bolt	M6 × 1,0	12±2 (1,2±0,2)	2	Apply oil to thread and seating surface.
Crankcase 1 & crankcase 2	95817-06△△△	Bolt, flange	M6 × 1,0	12±2 (1,2±0,2)	8	Apply oil to thread and seating surface.
Crankcase 1 & crankcase 2	90105-08015	Bolt	M8 × 1,25	24±2 (2,4±0,2)	1	Apply oil to thread and seating surface.
Crankcase 1 & crankcase 2	95817-080△0	Bolt, flange	M8 × 1,25	24±2 (2,4±0,2)	5	Apply oil to thread and seating surface.

Engine

Tightening Point	Part No.	Part Name	Thread dia. × pitch	Tightening torque Nm (kgf•m)	Q'ty	Remarks
Crankcase cover 1 installation	90109-06031	Bolt	M6 × 1,0	12±2 (1,2±0,2)	4	ACM cover
Crankcase cover 1 installation	92014-08035	Bolt, button head	M8 × 1,25	20±2 (2,0±0,2)	3	ACM cover
Crankcase cover 1 installation	90110-06020	Bolt, hexagonal socket head	M6 × 1,0	10±2 (1,0±0,2)	2	Drive sprocket cover
Crankcase cover 2 installation	90110-06047	Bolt, hexagonal socket head	M6 × 1,0	10±2 (1,0±0,2)	1	Drive sprocket cover
Crank cover 3 installation	90151-06014	Screw, cross-recessed counter sack	M6 × 1,0	10±2 (1,0±0,2)	3	Crank left cover
Crankcase cover 2 installation	90109-06016	Bolt	M6 × 1,0	12±2 (1,2±0,2)	7	Clutch cover
Crankcase cover 2 installation	90110-06112	Bolt	M6 × 1,0	12±2 (1,2±0,2)	1	Clutch cover
Installation de couvercle 1	90109-06014	Bolt	M6 × 1,0	12±2 (1,2±0,2)	6	Cam chain cover
Installation de couvercle 1	90109-06015	Bolt	M6 × 1,0	12±2 (1,2±0,2)	4	Breather cover
Breather plate installation	90110-06018	Bolt, hexagonal socket head	M6 × 1,0	10±2 (1,0±0,2)	3	
Plate installation	90110-06004	Bolt, hexagonal socket head	M6 × 1,0	12±2 (1,2±0,2)	2	
Installation of plug to cover 1	92014-08016	Bolt, button head	M8 × 1,25	15±2 (1,5±0,2)	1	Check timing.
Installation of plug to cover 1	90340-32004	Plug, straight screw	M32 × 1,5	Close contact with seating surface	1	For crank turning
Installation of plug to crankcase cover 1	5PX-15189-00	Plug	M20 × 1,5	8±2 (0,8±0,2)	1	
Oil return plug for main gallery 1	36Y-15189-00	Plug	M16 × 1,5	8±2 (0,8±0,2)	3	
Main gallery 2	4H7-15189-00	Plug	M20 × 1,5	8±2 (0,8±0,2)	1	
Oil return pipe	90110-06041	Bolt, hexagonal socket head	M6 × 1,0	10±2 (1,0±0,2)	2	
Oil return plug	90340-12112	Plug, straight screw	M12 × 1,0	24±3 (2,4±0,3)	2	Apply Loctite.
Stator installation	90149-06035	Screw	M6 × 1,0	14±2 (1,4±0,2)	3	Torx
Housing bearing 2 installation	90149-06020	Screw	M6 × 1,0	10±2 (1,0±0,2)	3	
Installation of protector to crankcase cover 2	92014-06014	Bolt, button head	M6 × 1,0	10±2 (1,0±0,2)	2	
Thermo stay installation	91380-06014	Bolt, hexagonal socket head	M6 × 1,0	10±2 (1,0±0,2)	2	
Idler gear installation	90110-06063	Bolt, hexagonal socket head	M5 × 0,8	10±2 (1,0±0,2)	1	
Clutch boss installation	90179-20007-0	Nut	M20 × 1,0	95±5 (9,5±0,5)	1	Cramp nut.
Clutch spring installation	90159-06009-0	Bolt, flange	M6 × 1,0	10±2 (1,0±0,2)	6	Apply oil to thread.
Drive sprocket installation	90179-22003	Nut	M22 × 1,5	85±10 (8,5±1,0)	1	Bend at one point.
Installation of stopper, shift bar, plate, & stopper 2	90110-06226	Bolt, hexagonal socket head	M6 × 1,0	10±2 (1,0±0,2)	2	
Screw stopper installation	5VY-18127-00	Stopper, screw	M8 × 1,25	22±2 (2,2±0,2)	1	Degrease thread.
Neutral switch installation	3GB-82540-01	Neutral switch	M10 × 1,25	20±2 (2,0±0,2)	1	
Installation of thermo sensor (for water temperature)	8CC-85790-01	Thermo sensor assembly	M12 × 1,5	18±2 (1,8±0,2)	1	

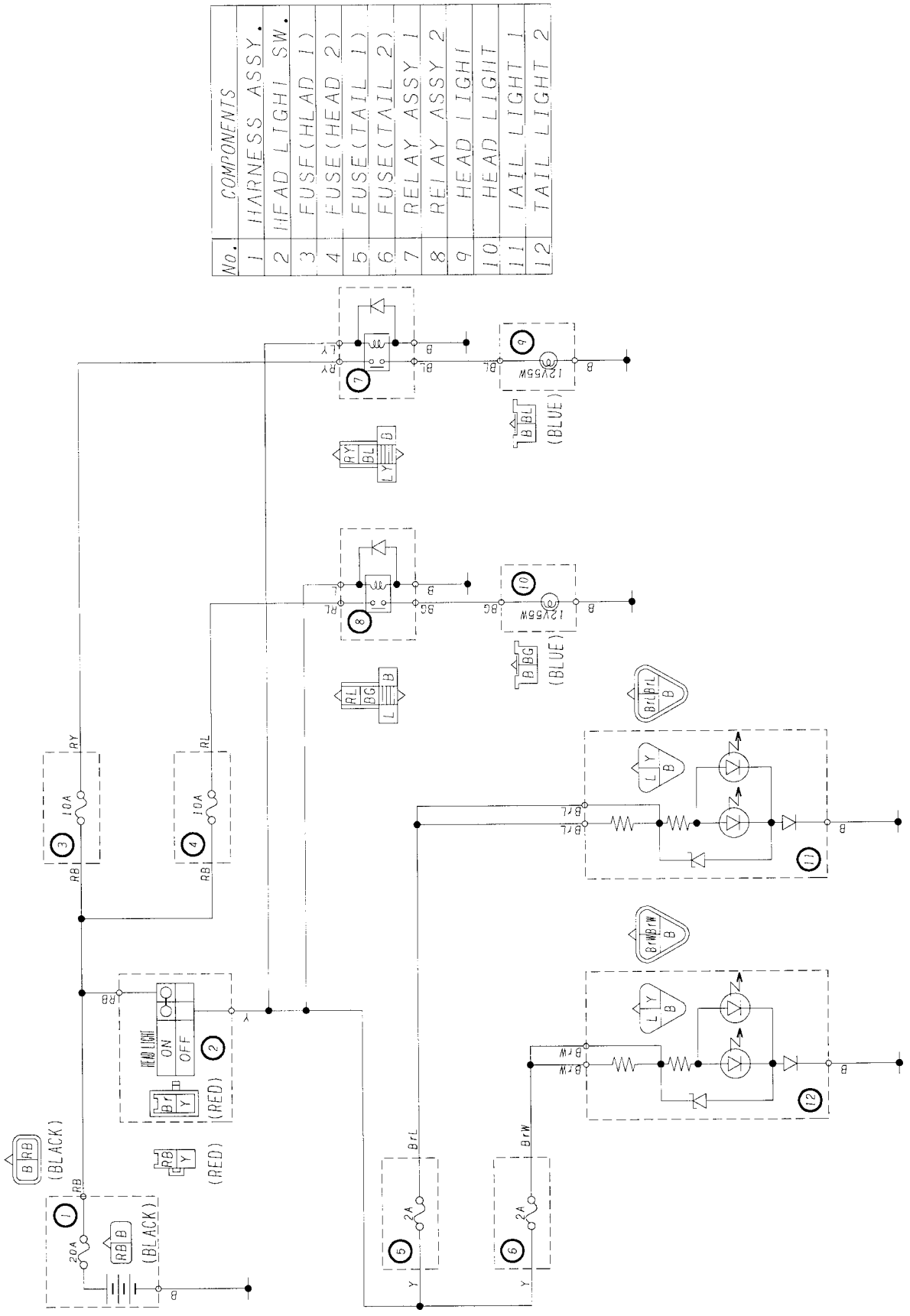
Chassis

Tightening Point	Part No.	Part Name	Thread dia. × pitch	Tightening torque Nm (kgf•m)	Q'ty	Remarks
Engine mounting: Cylinder head (left) tightening	95024-10045	Bolt	M10 × 1,25	45±2 (4,5±0,2)	1	
Engine mounting: Cylinder head (right) tightening	95024-10040	Bolt	M10 × 1,25	45±2 (4,5±0,2)	1	
Engine mounting: Crankcase top tightening	90179-10696	Nut	M10 × 1,25	50±2 (5,0±0,2)	1	
Engine mounting: Crankcase bottom tightening	90179-10696	Nut	M10 × 1,25	50±2 (5,0±0,2)	1	
Engine mounting: Tightening of adjustment bolt on crankcase side	5EB-21495-00	Bolt, adjusting	M16 × 1,0	7.0±2 (0,7±0,2)	2	
Frame & rear frame	90149-10004	Bolt	M10 × 1,25	40±2 (4,0±0,2)	4	
Frame & rear arm pivot shaft	90185-18167	Nut	M18 × 1,5	90±2 (9,0±0,2)	1	
Frame & arm 1	95607-10200	Nut	M10 × 1,25	45±2 (4,5±0,2)	1	
Relay arm & arm 1	95607-10200	Nut	M10 × 1,25	45±2 (4,5±0,2)	1	
Rear arm & relay arm	95607-10200	Nut	M10 × 1,25	45±2 (4,5±0,2)	1	
Rear shock absorber & relay arm	95607-10200	Nut	M10 × 1,25	45±2 (4,5±0,2)	1	
Rear shock absorber & upper bracket	95607-14200	Nut	M14 × 1,5	85±2 (8,5±0,2)	1	
Handle crown & outer tube	91314-08030	Bolt	M8 × 1,25	22±2 (2,2±0,2)	2	
Handlebar & outer tube	91314-08030	Bolt	M8 × 1,25	22±2 (2,2±0,2)	4	
Handle crown & steering shaft	90170-28419	Nut	M28 × 1,0	110±2 (10,0±0,2)	1	
Steering shaft & ring nut (lower)	70179-30691	Nut	M30 × 1,0	18 N•m after tightening to 50 N•m	1	Not loose, but smooth
Handle crown & damper stay	90110-06181	Bolt	M6 × 1,0	16±2 (1,6±0,2)	1	
Front axle & flange bolt	90105-14002	Bolt	M14 × 1,5	85±2 (8,5±0,2)	1	
Front calliper & front fork	90401-10012	Bolt	M10 × 1,25	35±2 (3,5±0,2)	1	
Front stay & wheel	90149-06043	Bolt	M6 × 1,0	18±2 (1,8±0,2)	10	
Rear disk & rear wheel	90149-08009	Bolt	M8 × 1,25	30±2 (3,0±0,2)	5	
Rear axle & nut	90185-24165	Nut	M24 × 1,5	150±2 (15,0±0,2)	1	
Rear sprocket & hub	90185-10009	Nut	M10 × 1,25	100±2 (10,0±0,2)	6	
Fuel tank & fuel pump	90110-05014	Bolt	M5 × 0,8	4±1 (0,4±0,1)	6	

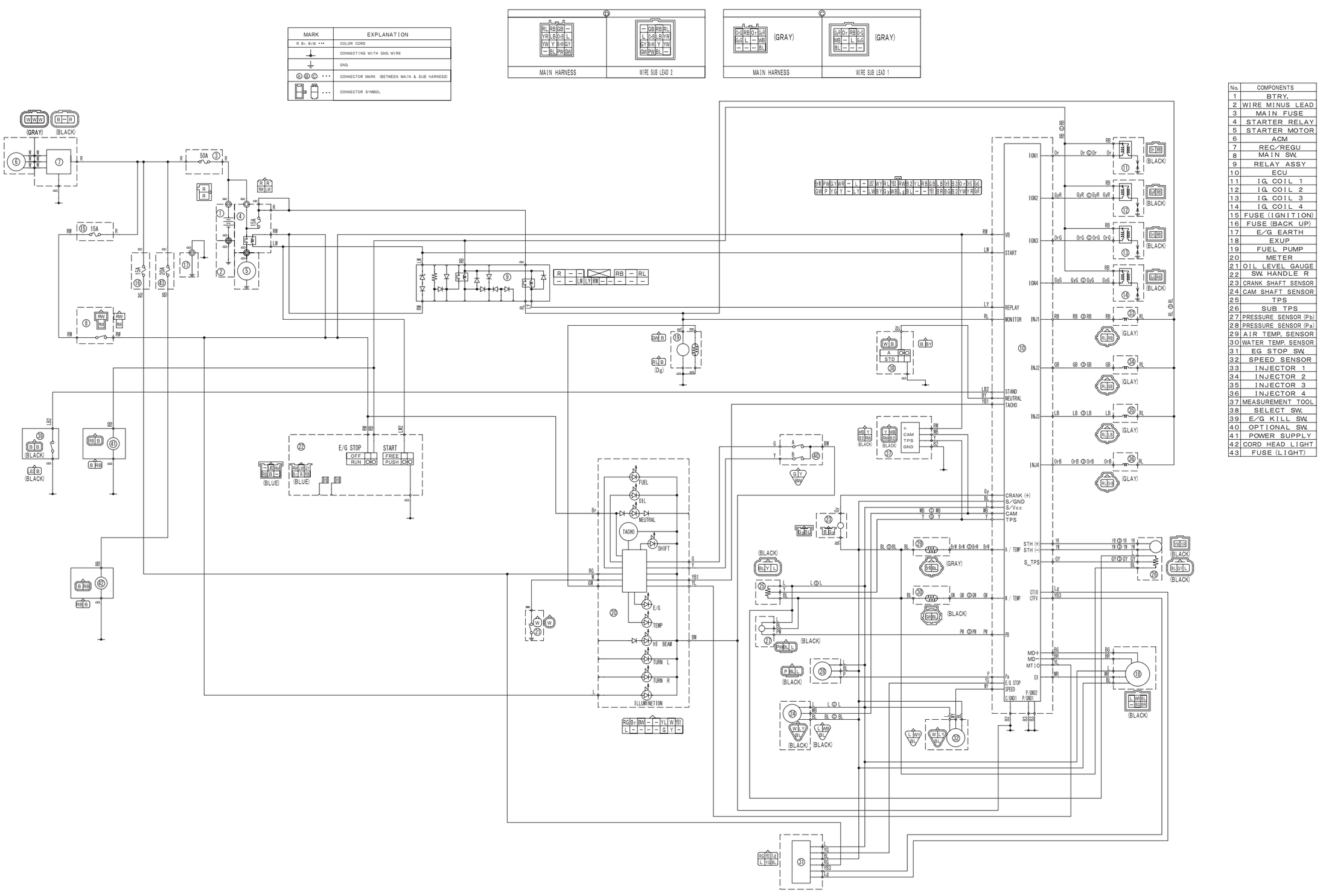
For reference

	Tightening torque
M5 × 0,8	4,5 – 7,0
M6 × 1,0	7,5 – 12
M8 × 1,25	18 – 28
M10 × 1,25	37 – 58
M10 × 1,25	68 – 108

Headlight cord wiring diagram



2004 YZF-R1 Wiring Diagram



No.	COMPONENTS
1	BTRY.
2	WIRE MINUS LEAD
3	MAIN FUSE
4	STARTER RELAY
5	STARTER MOTOR
6	ACM
7	REC/REGU
8	MAIN SW.
9	RELAY ASSY
10	ECU
11	IG. COIL 1
12	IG. COIL 2
13	IG. COIL 3
14	IG. COIL 4
15	FUSE (IGNITION)
16	FUSE (BACK UP)
17	E/G EARTH
18	EXUP
19	FUEL PUMP
20	METER
21	OIL LEVEL GAUGE
22	SW. HANDLE R
23	CRANK SHAFT SENSOR
24	CAM SHAFT SENSOR
25	TPS
26	SUB TPS
27	PRESSURE SENSOR (Pb)
28	PRESSURE SENSOR (Pa)
29	AIR TEMP. SENSOR
30	WATER TEMP. SENSOR
31	EG STOP SW.
32	SPEED SENSOR
33	INJECTOR 1
34	INJECTOR 2
35	INJECTOR 3
36	INJECTOR 4
37	MEASUREMENT TOOL
38	SELECT SW.
39	E/G KILL SW.
40	OPTIONAL SW.
41	POWER SUPPLY
42	CORD HEAD LIGHT
43	FUSE (LIGHT)

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