

**Kawasaki** Ninja ZX-6RR

# 2003 Ninja ZX-6RR Racing Kit Manual

This manual contains only the information of the racing kit parts. Refer to the base manual listed below for information of the original model.

<b>Base Manual</b>	<b>Part Number</b>
Ninja ZX-6RR Motorcycle Service Manual	99924-1311-01

Congratulation on your purchase of racing kit parts for the 2003 Ninja ZX-6RR.

## **IMPORTANT**

This manual provides how to install racing kit parts for the 2003 Ninja ZX-6RR and how to tune up basically.

As for the basic knowledge, refer to the base Service Manual for the Ninja ZX-6RR (P/No. 99924-1311-01).

When you participate in a race, it is necessary to modify the machine for the regulation. So we want you to ask for the tuning up shop.

### **⚠ WARNING**

AFTER ANY MODIFICATION TO TUNE THE VEHICLE TO A COMPETITION MACHINE, IT SHOULD NOT BE USED ON PUBLIC STREETS, ROADS OR HIGHWAYS. THE USE OF THIS VEHICLE SHOULD BE LIMITED TO PARTICIPATION IN SANCTIONED COMPETITION EVENTS UPON A CLOSED COURSE.

### **CAUTION**

When operating the engine, be careful not to trouble persons with noise. Do not turn the engine with loud engine and exhaust noise.

## **DISCLAIMER OF WARRANTY**

ON OPTIONAL TUNING PARTS FOR RACING ARE NO WARRANTIES EXPRESSED OR IMPLIED.

## **BASIC WORKS IN INSTALLING KIT PARTS**

We are going to make up the original Ninja ZX-6RR for the racing machine. We recommend that the rider himself should do the basic works, removing parts or installing parts etc., given advices by the tuning shop. In a race, although trouble will be apt to happen, if you participate in basic works, you can discriminate cause of trouble, so you can return the race soon.

But concerning difficult technical works, you should as tuning shop.

## Table of Contents

General Specifications .....	3
Racing Kit Service Data.....	5
Periodic Maintenance Chart .....	5
Preparation.....	7
Before Installing .....	7
Racing Kit Parts.....	7
Engine Parts Installation.....	7
Air Intake Parts .....	7
Cylinder Head .....	9
Camshaft Chain Tensioner.....	10
Camshafts, Sprockets.....	11
Valve Springs .....	12
Cylinder Compression.....	12
Crankshaft Main Journal and Con-rod Big End Bushings .....	14
Water Temperature Sensor .....	14
Connecting Rod Bolts .....	14
Clutch Adjustment (Back-Torque Limiter Setting) .....	15
Transmission.....	18
Transmission Shimming.....	18
Oil Pump .....	19
Alternator (Optional Parts) .....	19
Alternator Cover (Optional Parts).....	20
Cover Gaskets .....	20
Assembly of Throttle Body Clamps and Air Funnel Clamps.....	20
Ducts (Air Funnels) .....	20
Frame Parts Installation.....	21
Throttle Parts (Optional Parts) .....	21
Final Drive Parts (Optional Parts) .....	22
Brake Pads (Optional Parts) .....	23
Steering Damper (Optional Parts).....	23
Seat and Pivot Height Adjustment .....	24
Front Fork Springs (Optional Parts) .....	27
Electric Parts Installation .....	29
Battery .....	29
Main Harness and Sub Harness (Optional Parts) .....	29
Meter (Optional Parts) Installation .....	29
Wiring Routing .....	31
Wiring Diagram (with Optional Meter) .....	37
Wiring Diagram (with Original Meter Assembly) .....	39

## General Specifications

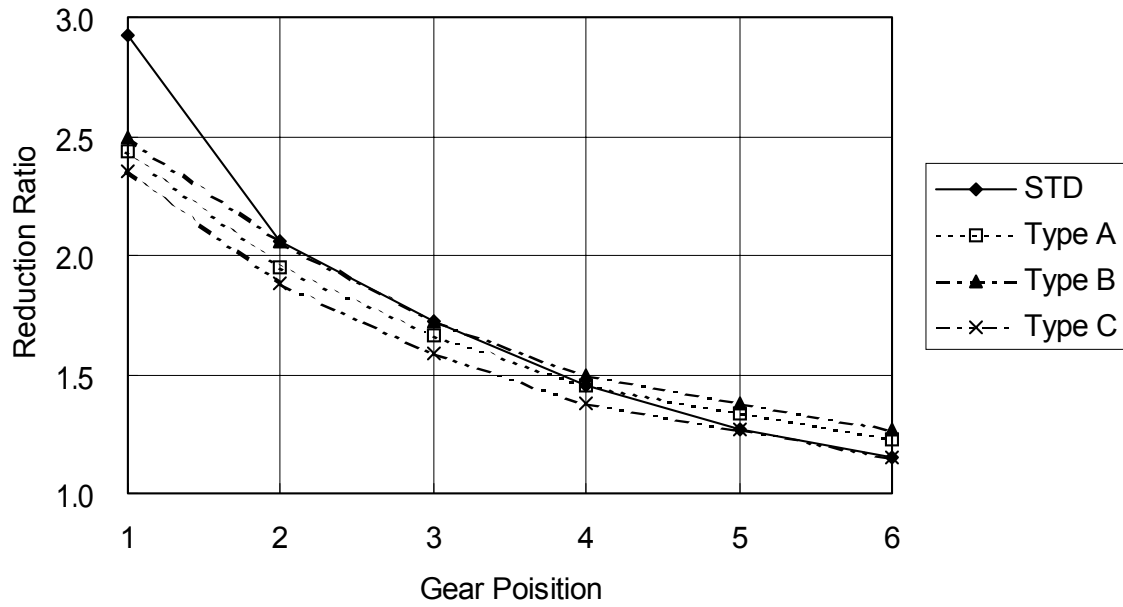
Item	2003 Ninja ZX-6RR Racing
<b>Engine:</b>	
Ignition timing	12.5°BTDC @1 000 r/min (rpm)
Fuel (Recommended)	Racing gasoline
Engine oil (Recommended): Level	Racing oil Between upper and lower levels of oil level gauge.
<b>Drive Train:</b>	
Primary drive reduction ratio	2.022 (89/44)

### Transmission Gear Table

		STD	Type A	Type B	Type C
1st	In	13127-0002	13127-005	13127-0006	13127-0010
	Out	13260-1456	13260-1619	13260-1543	13262-0034
	Teeth (Out/In)	38/13	39-16	35/14	40/17
	Gear Ratio	2.293	2.437	2.500	2.352
2nd	In	13260-1987	23262-0091	13260-1987	13262-0035
	Out	13260-1992	13262-0092	13260-1992	13262-0036
	Teeth (Out/In)	37/18	37/19	37/18	32/17
	Gear Ratio	2.055	1.947	2.055	1.822
3rd	In	13260-1998	see note	see note	see note
	Out	13260-1993	13262-0038	13260-1993	13262-0038
	Teeth (Out/In)	31/18	35/21	31/18	35/22
	Gear Ratio	1.722	1.666	1.722	1.590
4th	In	13260-1998	see note	see note	see note
	Out	13260-1994	13260-1994	13262-0044	13262-0090
	Teeth (Out/In)	29/20	29/20	33/22	29/21
	Gear Ratio	1.450	1.450	1.500	1.380
5th	In	13260-1989	13262-0045	13262-0045	13260-1989
	Out	13260-1995	13262-0046	13262-0047	13260-1995
	Teeth (Out/In)	28/22	28/21	29/21	28/22
	Gear Ratio	1.272	1.333	1.380	1.272
6th	In	13260-1990	13262-0048	13262-0048	13260-1990
	Out	13260-1996	13262-0049	13262-0050	13260-1996
	Teeth (Out/In)	30/26	27/22	28/22	30/26
	Gear Ratio	1.153	1.227	1.272	1.153

### Note:

		4th gear type		
		A	B	C
3rd gear type	A	13262-0037	13262-0051	13262-0039
	B	13260-1998	13262-0040	N/A
	C	13262-0041	N/A	03262-0043



### Number of Grooves

		STD	Type A	Type B	Type C
1st	In	0	1	2	3
	Out	0	1	2	3
2nd	In	1	2	1	3
	Out	0	2	0	3
3rd	In	0	1	0	2
	Out	0	1	0	1
4th	In	1	1	2	3
	Out	0	0	2	1
5th	In	1	0	0	1
	Out	1	0	2	1
6th	In	2	0	0	2
	Out	1	0	2	1

## Racing Kit Service Data

Item	Standard
<b>Cylinder Head, Valves:</b>	
Valve timing:	
Duration:	
Intake	320°
Exhaust	272°
Camshaft timing (cam lift center):	
Intake	105° (ATDC)
Exhaust	104° (BTDC)
Valve clearance:	
Intake	0.15 mm
Exhaust	0.25 mm
Valve to piston clearance:	
Intake	0.7 mm (minimum) @12°ATDC
Exhaust	1.1 mm (minimum) @12°BTDC
<b>Ignition System:</b>	
Spark plugs	NGK R016-10, R0373A-10
Spark plug tightening torque	13 N·m (1.3 kgf·m, 113 in·lb)

These values show the specifications when standard cylinder head and gasket are used.

When the clearance between the valve and the piston head is smaller than the minimum specific values, turn the installed position of the camshaft sprocket on the camshaft and change the camshaft timing.

## Periodic Maintenance Chart

The scheduled maintenance must be done in accordance with this chart to keep the motorcycle in good running condition.

OPERATION	FREQUENCY					
	Each Race	Every 3 races	Every 5 races	Every 10 races	As Required	
<b>Engine</b>						
Clutch plate - - check*			•			
Throttle grip play - - check*	•					
Spark plug - - clean/gap*	•					
Engine oil - - change		•				
Oil filter - - replace					•	
Valve lapping			•			
Cylinder head/valve - - decarbonization			•			

<b>OPERATION</b>	<b>FREQUENCY</b>	<b>Each Race</b>	<b>Every 3 races</b>	<b>Every 5 races</b>	<b>Every 10 races</b>	<b>As Required</b>
Piston - - clean/check*				•		
Cylinder - - check*				•		
Piston/cylinder clearance - - check*				•		
Piston ring - - replace				•		
Crankshaft main bearing - - check*					•	
Connecting rod big end bearing - - check*					•	
Transmission gear, bearing - - check*					•	
Engine sprocket - - check*	•					
Coolant - - change						•
Radiator hoses, connections - - check*	•					
<b>Frame</b>						
Brake operation - - check*	•					
Brake pad wear - - check*	•					
Brake fluid level - - check*	•					
Brake fluid - - change*						year
Brake master cylinder cup and dust seal - - replace						year
Brake caliper piston seal and dust seal - - replace						year
Brake hose - - replace						2 years
Drive chain - - adjust	•					
Drive chain - - lubricate	•					
Drive chain wear - - check*	•					
Drive chain guide - - replace		If damaged				
Front fork - - clean/check*	•					
Front fork oil - - change		First change after 2 races, then every 5 races				
Nut, bolt, and fastener tightness - - check*	•					
Fuel system - - clean	•					
Fuel hose, fuel filter - - replace						•
Steering play - - check*	•					
Steering stem bearing - - grease				•		
Rear sprocket - - replace						•
General lubrication of chassis - - perform	•					
Wheel bearing (rear) - - grease					•	
Swingarm pivot, uni-track linkage - - grease				•		
Swingarm pivot, uni-track linkage - - check*				•		

\*: Replace, add, adjust, clean, or torque if necessary.

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## Preparation

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### Before Installing

- Modify the parts based on your race regulation.
- To avoid misuse keep the parts replaced with the kit parts separate.
- When reusing parts, clean them and check them for damage or deterioration.
- Main Removal Parts:
  - Lights
  - Rear View Mirrors
  - Side Stand
  - Starter Lockout Switch
- Remove the side stand switch. When the optional main harness is not used, connect removing Black/Yellow and Green/White Leads directly.

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## Racing Kit Parts

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Also, we have provided the spare parts, and other optional parts (engine, frame, and electric parts) for racing. So please order each parts referring to the "Racing Kit Parts List" in the back of this manual.

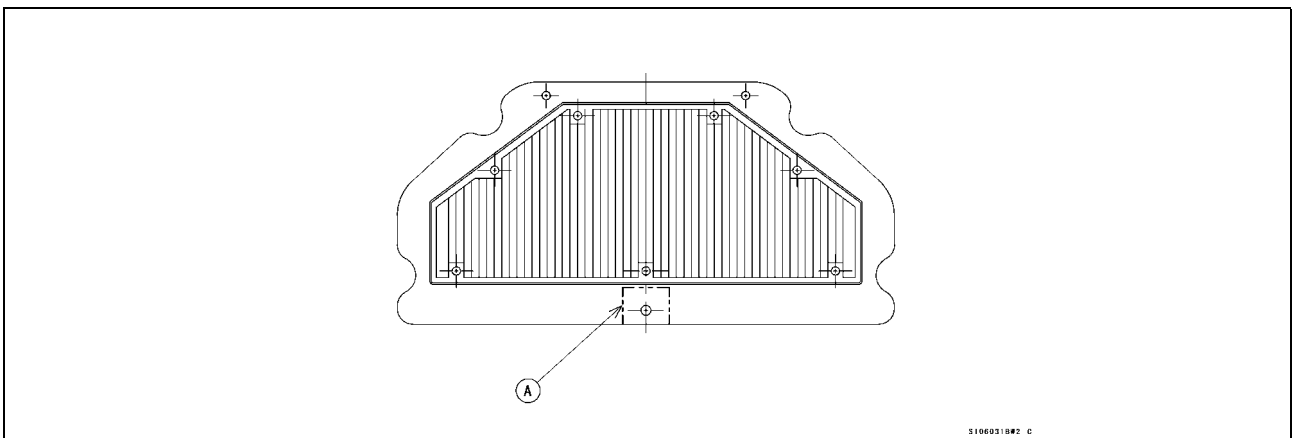
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## Engine Parts Installation

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### Air Intake Parts

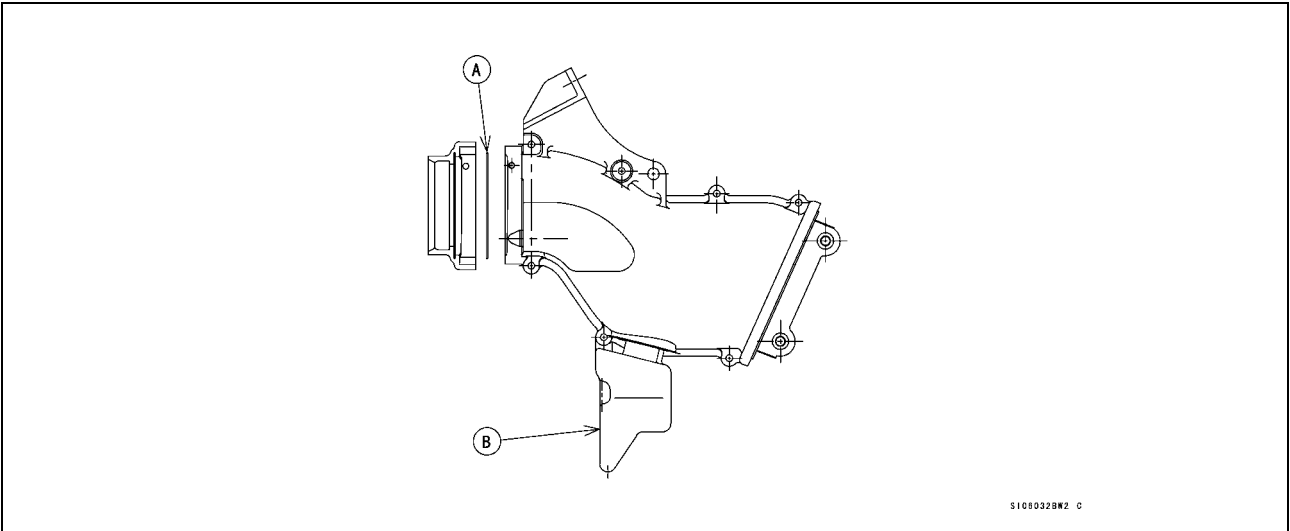
- Remove the air cleaner element or cut the cleaner element off remaining the wire net to reduce the air flow resistance.
- When removing the air cleaner element, put a washer (for example 92022-544, 5.5 × 12 × 2.3) between the upper and lower air cleaner housings, or cut the frame of element off and put it between the housings as shown.



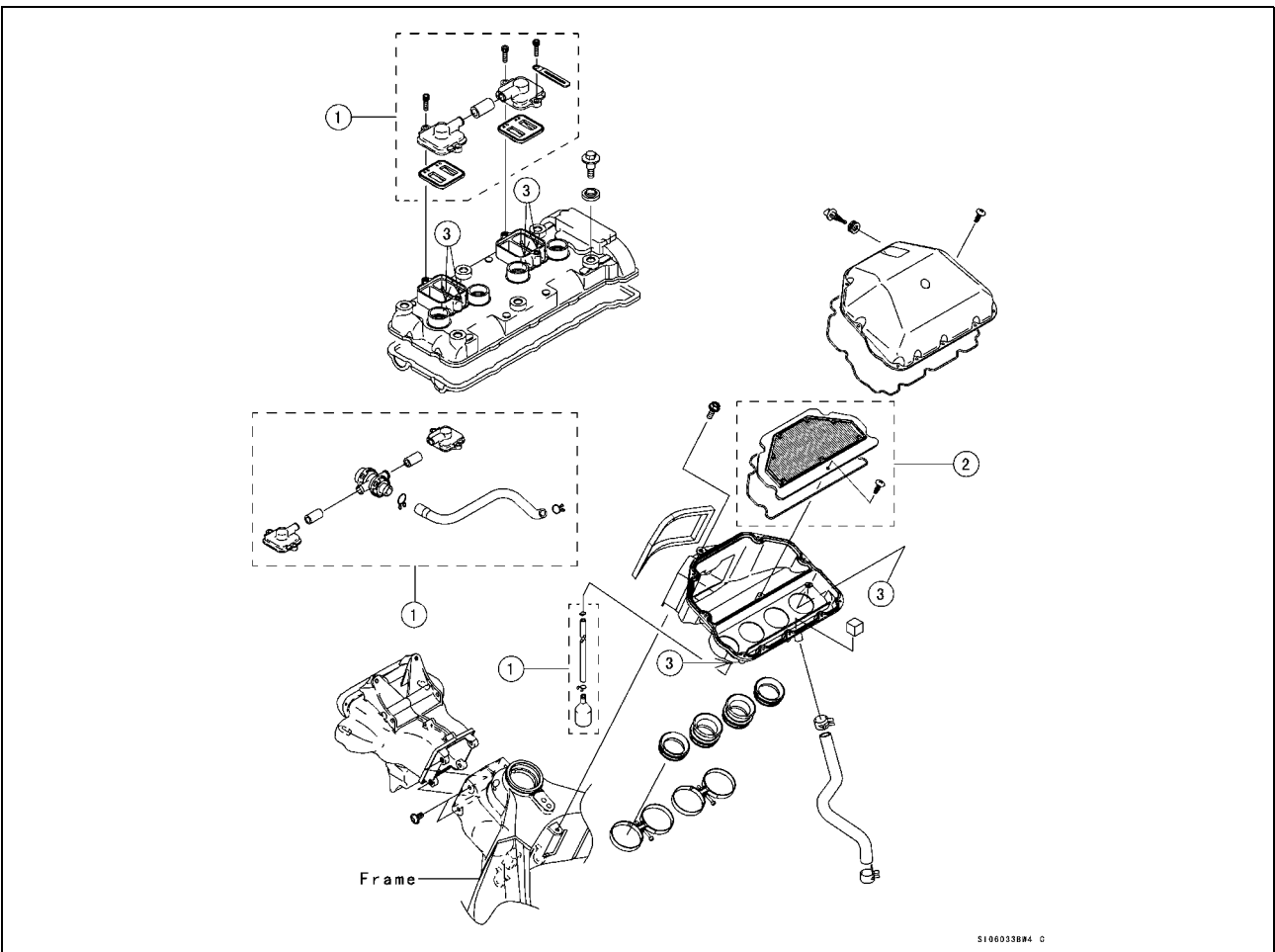
- A. Use a washer, or cut off and use this area of the frame of removing the air cleaner element.



- Remove the tank (16181-0001) to reduce the weight. Plug the holes firmly with a tape. The air pressure in the duct rises during high speed operation because the Ram Air System is used.



- A. Remove (Wire Net)
- B. Remove this part and plug the hole.



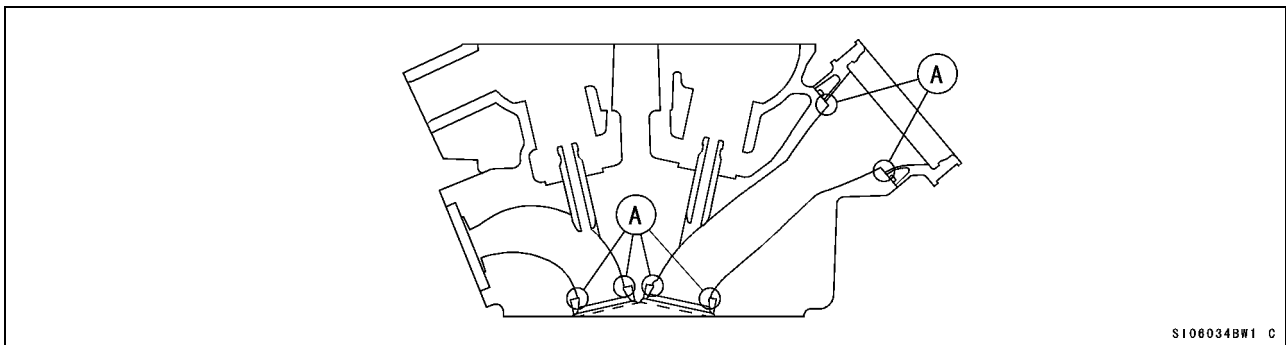
1. Remove the parts.
2. Remove the parts or cut the cleaner element off remaining the wire net.
3. Plug the holes.

## Cylinder Head

- Grind off the stepped portions of the ports and smooth the inside of ports to make intake/exhaust gas flow more smooth.
- Grind off the stepped portion only at the mating surface between the carburetor holder and the intake port. Do not port it. To extend the intake port, air flow speed will be reduced and the engine performance at the high speed range may be down.
- Mark the carburetor holders so that they can be installed in their original positions.
- Grind off and smooth the stepped portions at the mating surface between valve seat and the port.
- Smooth the inside of the intake port and exhaust port.
- Chamfer the machining edge of the cylinder head where the valve seat is installed, also smooth the dome of the combustion chamber with the valves installed. Excessive smoothing may reduce the cylinder compression.
- Use the hand grinder.
- Use #120 oil stone for eliminating any stepped portions.
- Use #200 oil stone for smoothing and #300 oil stone for finishing.

### NOTE

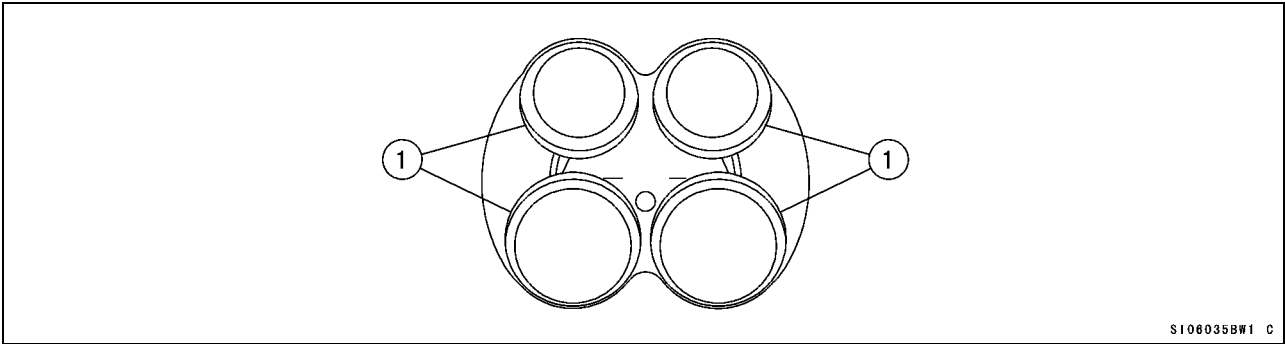
- *These procedures make air resistance less and intake/exhaust gas flow more smooth. However, much more effect can not be expected by excessive grinding and smoothing. It may be done to the extent of getting rid of uneven surfaces.*



A: Stepped Portions

- - -: Combustion Chamber Dome

- The combustion chambers are modified by cutting work but the edges shown must be hand finished for smooth corners (Round them to about R1).



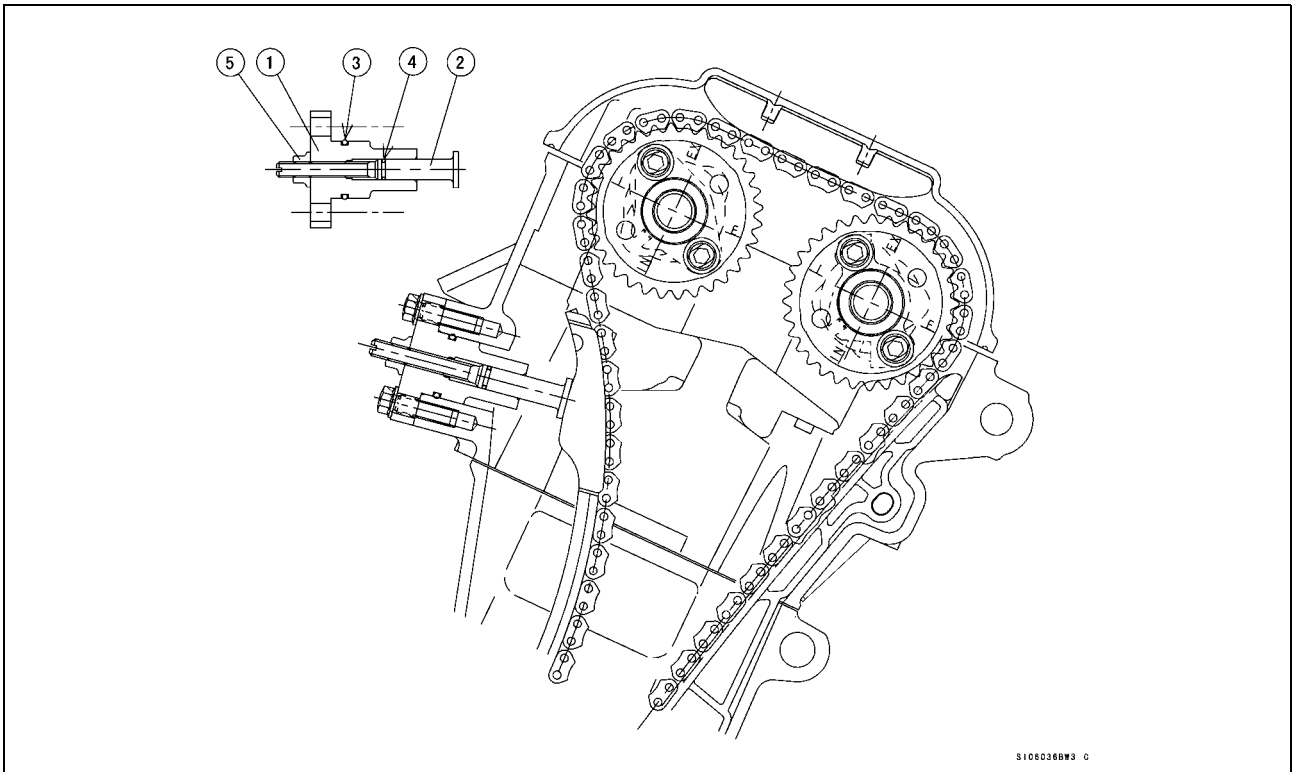
1. Edges (4)

#### NOTE

- *When grinding the cylinder head surface or using thinner gaskets, adjust the valve timing to keep that the valve to piston clearance is not less than the minimum value (IN: 0.7 mm, EX: 1.1 mm).*

### Camshaft Chain Tensioner

- Replace the cam chain tensioner with the kit to increase durability of tensioner.
- Apply the engine oil to the tensioner rod, O-ring and adjusting screw, insert them into the tensioner body.
- Check to see that the tensioner rod turns freely in the body, if not, polish the tensioner rod or fine the female threads in the adjusting screw hole with a tap (Diameter × Pitch = 6 mm × 1.0 mm).
- Install the tensioner on the cylinder block with the tensioner rod is fully pushed back.
- Turn the adjusting screw in with a screwdriver until it becomes hard to turn.
- Turn the crankshaft clockwise several times and then screw the adjusting screw in again to take up any gap and tighten the locknut.
- Never forward the tensioner rod forcibly, this will increase mechanical loss of the tensioner and may damage to the chain guide.
- The cam chain tensioner must be adjusted at every race.



1. Tensioner
2. Tensioner Rod
3. O-ring
4. O-ring
5. Nut

## Camshafts, Sprockets

### Camshafts, Sprockets:

Camshaft	Duration	Lift
49118-0006 (Intake)	320°	8.2 mm
49118-0007 (Exhaust)	272°	7.2 mm
Original Camshaft (Intake)	320°	8.2 mm
Original Camshaft (Exhaust)	276°	7.2 mm

- Adjust the valve clearance within the specified value. Intake: 0.13 ~ 0.17 mm, Exhaust: 0.23 ~ 0.27 mm
- If you can not adjust the valve timing for racing, install the camshaft sprocket to the kit camshaft using the small bolt holes and adjust the cam chain timing according to the Ninja ZX-6RR Service Manual. If you adjust the valve timing, install the sprocket to the camshaft using the long bolt holes.
- Tighten the camshaft sprocket bolts to 15 N·m (1.5 kgf·m, 11.0 ft·lb) of torque.

### Valve Timing (when the small bolt holes are used)

Timing (cam lift center)	Intake	Exhaust
Original	105°	104°
With KIT camshaft (49118-0006, 0007)	105°	104°

- When grinding the cylinder head surface, grinding the cylinder top surface or using thinner gaskets, be sure the valve to piston clearance especially.
- When using the sprocket long bolt holes and adjusting the valve timing to be different from the standard timing, check the valve to piston clearance of all cylinders after adjusting the valve clearance correctly.

### Valve to Piston Clearance (Min.)

Intake	0.7 mm
Exhaust	1.1 mm

If the valve to piston clearance is less than the minimum value, do not start the engine because the valves will touch the piston and the engine may be damaged.

- Measure the valve to piston clearance at about 12° ATDC (Intake) or 12° BTDC (Exhaust) of crankshaft timing. At this point, the valve to piston clearance will be minimum.

### Valve Springs

Replace the valve springs with the kit springs.

#### Valve Springs

	Intake	Exhaust
Part No.	49078-0005	49078-0006
Identification	White	Blue

### Cylinder Compression

- To adjust the cylinder compression, smooth the cylinder top surface to make the piston squish 0.65 ~ 0.8 mm. Keep the piston squish more than 0.65 mm.
- Position the piston at Top Dead Center, and put a small piece of modeling clay on the shoulder of the piston. Install the cylinder head gasket and cylinder head, and tighten the head bolts to the specified torque.
- Remove the cylinder head and measure the thickness of the clay. The thickness of the collapsed clay is the size of the squish.

### Squish Measurement

[1] Front and Rear	0.65 ~ 0.80 mm
[2] Left and Right	0.75 ~ 0.90 mm

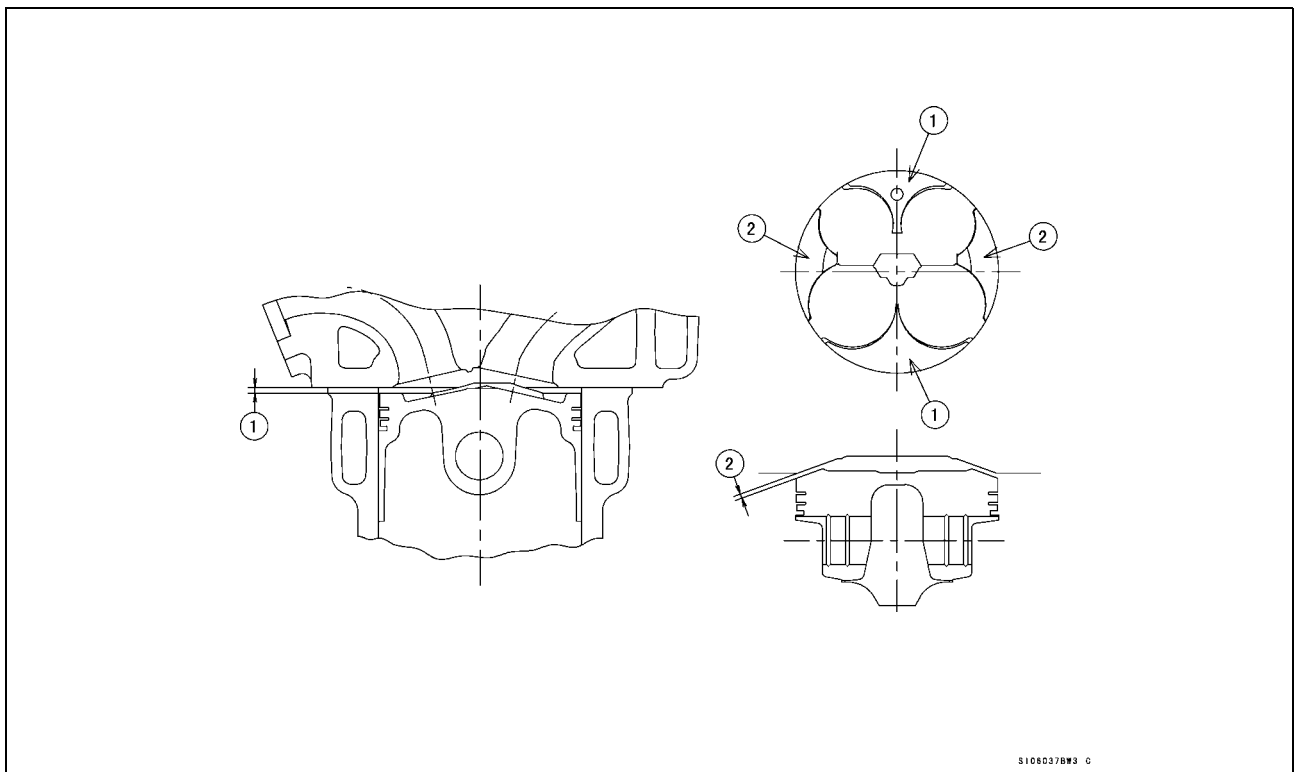
- The most preferable squish measurement is [1] 0.65 mm/[2] 0.75 mm.
- Select proper cylinder head gasket and cylinder base gasket.
- Recommended modification:
  - Grinding the cylinder head surface by 0.25 mm
  - Grinding the cylinder top surface by 0.15 mm
- Note that by grinding the cylinder head surface only left and right squishes become narrower, while by grinding the cylinder top surface or decreasing the gasket-thickness all the squishes become narrower.

**Cylinder Head Gasket**

Part No.	Thickness	Note
11004-0004	0.60 mm	KIT
11004-1383	0.65 mm	Original
11004-0005	0.70 mm	KIT

**Cylinder Base Gasket**

Part No.	Thickness	Note
11061-0036	0.15 mm	KIT
11061-0033	0.20 mm	KIT
11061-0041	0.25 mm	Original
11061-0037	0.30 mm	KIT

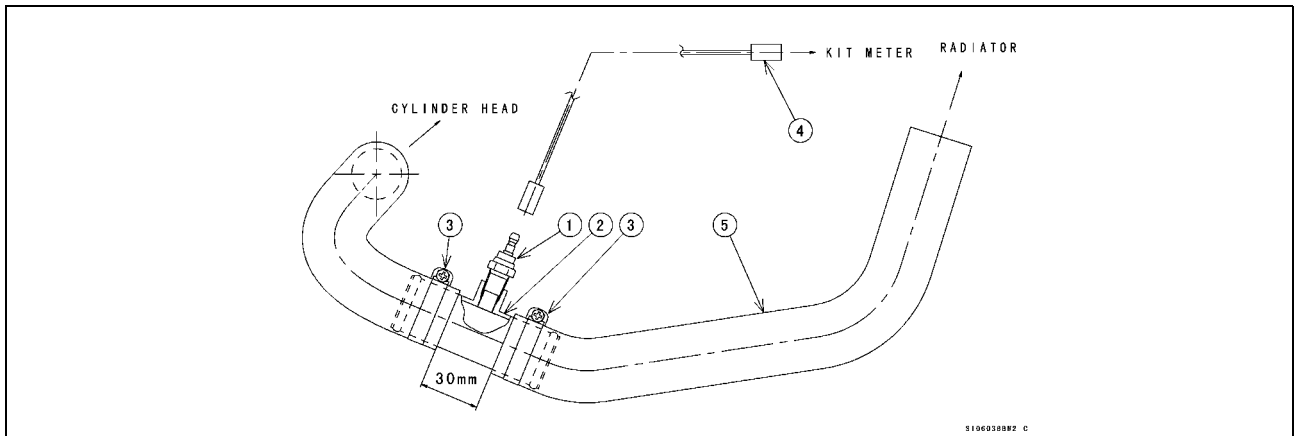


## Crankshaft Main Journal and Con-rod Big End Bushings

- Crankshaft Main Journal Bushings: Use original bushings.  
Con-rod Big End Bushings: Use kit bushings (Size colors are same as original).

## Water Temperature Sensor

The original water temperature sensor installed in the cylinder head must be remain and connected to the main harness because the electronic control unit (E.C.U.) needs the output signal from the original water temperature sensor. The optional tachometer is equipped with a water temperature display. Install the optional water temperature sensor to the optional water pipe and connect the sensor and the optional meter unit with the optional harness. Apply a non-permanent locking agent to the thread of the water temperature sensor. Divide the original water hose between the cylinder head and the radiator and insert the water pipe equipped with the water temperature sensor.

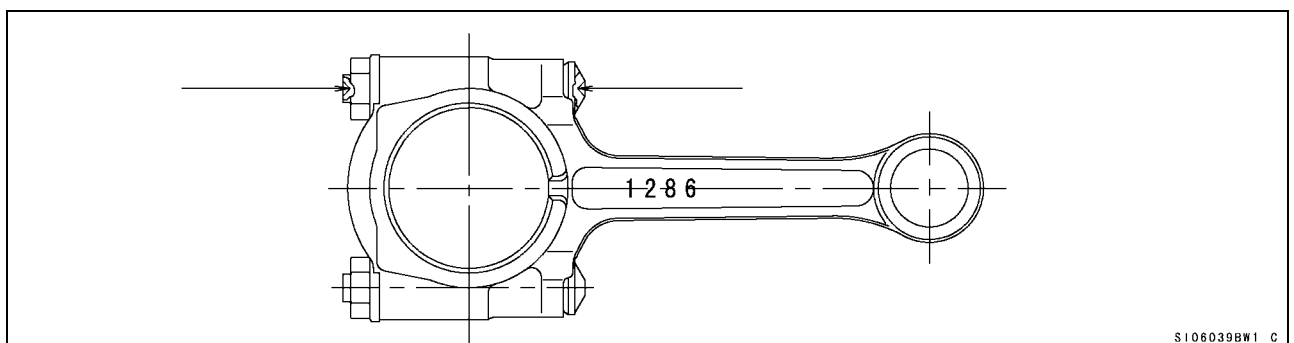


1. Sensor: 21176-1099
2. Water Pipe: 39192-0011
3. Clamp: 92170-1035
4. Lead Wire: 26011-1779
5. Original Water Hose

## Connecting Rod Bolts

Use the original connecting bolts and nuts.

The original connecting rod bolt has recesses at both ends to measure its length and determine the bolt stretch.



- Install the original bolts into the connecting rod.
- Before every tightening, use a point micrometer to measure the length of the bolts and record the values to find the bolt stretch.
- Apply a small amount of molybdenum disulfide grease to the threads of bolts.
- Tighten the big end nuts at the torque of 20 N·m (2.0 kgf·m) or less.
- Check the length of the bolts and find the bolt stretch.

Bolt Length after tightening – Bolt Length before tightening = Stretch

### Bolt Stretch

**Usable Range: 0.210 ~ 0.250 mm (0.00827 ~ 0.00984 in.)**

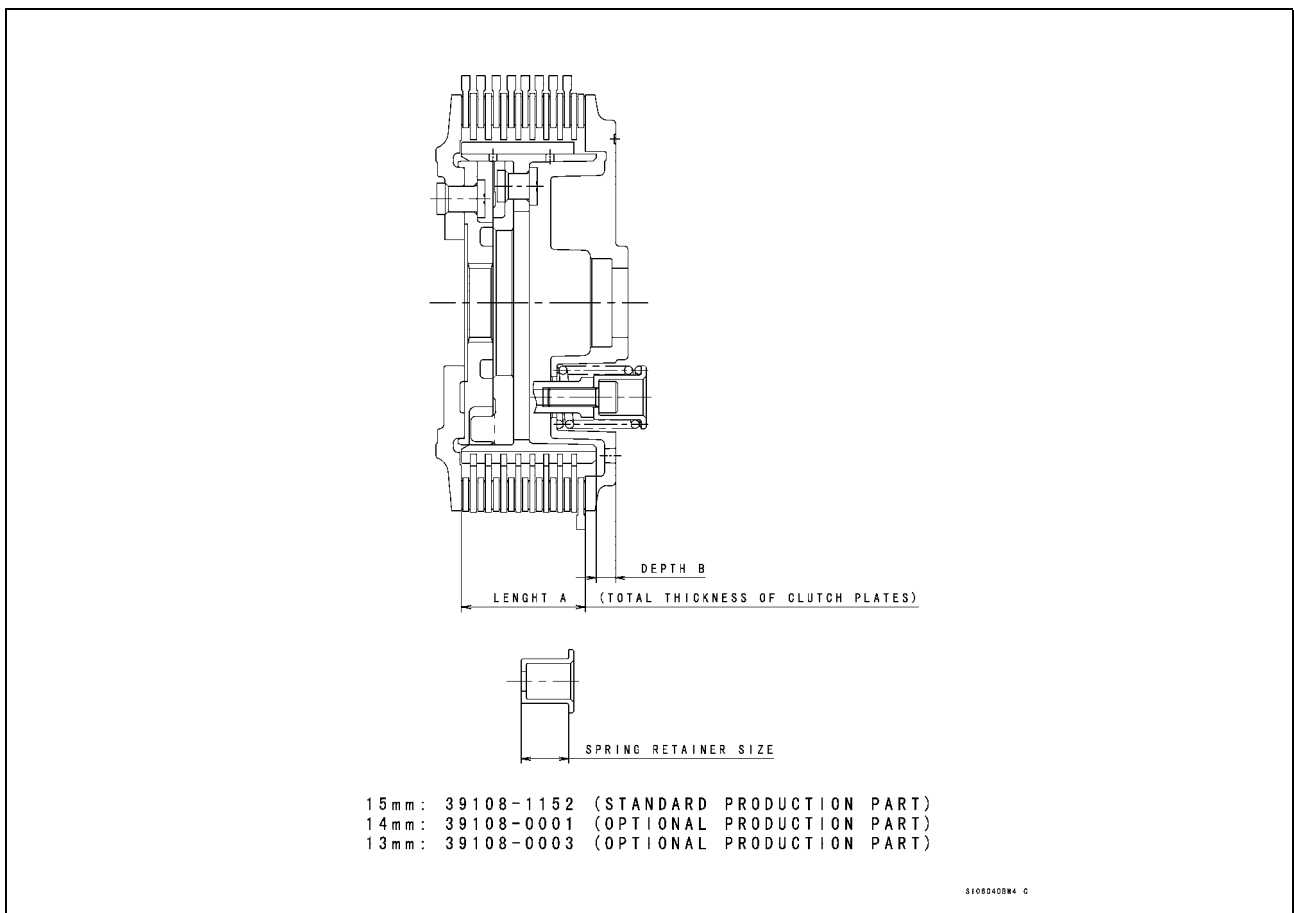
- Turn the big end nuts more until the bolt stretch reaches the usable range.

### NOTE

- *Replace the original bolts with new ones if they have already been tightened 2 times.*
- If a point micrometer is not available, tighten the nuts according to the Ninja ZX-6R/ZX-6RR Service Manual (15 N·m + 120°).

### Clutch Adjustment (Back-Torque Limiter Setting)

The Ninja ZX-6RR engine is equipped with the Kawasaki back-torque limiter mechanism in the clutch. The back-torque limiter works to reduce the chance of rear wheel hop caused by engine braking during hard braking and down shifting. The back-torque limiter operating condition can be changed by changing the total thickness of clutch plates and changing the number of leaf springs. Try different settings and select the best.

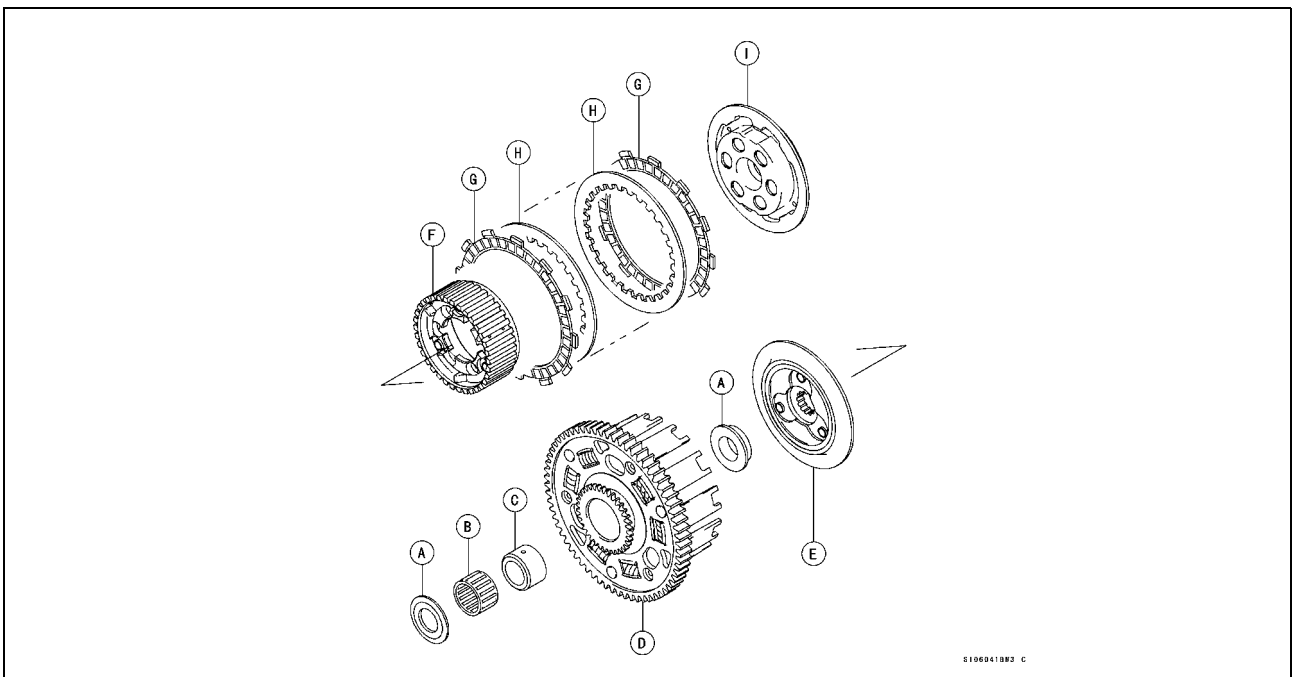




- The standard setting of length [A], total thickness of clutch plates shown below, becomes about 39.2 mm (Supposed combination of steel plates is t1.6 × 5 pcs. + t2.0 × 3 pcs.). For this setting the effective stroke of clutch spring plate during the back-torque limiter operation is adjusted between 0.05 and 0.35 mm. By increasing the effective stroke the back-torque limiter causes more slip. The effective stroke increases by decreasing the length [A]. The length [A] between 38.0 and 39.2 mm is available by changing the combination of the steel plates. Replace one steel plate with a thinner one and try the setting. If the operation of the back-torque limiter is not enough replace other steel plates one by one.

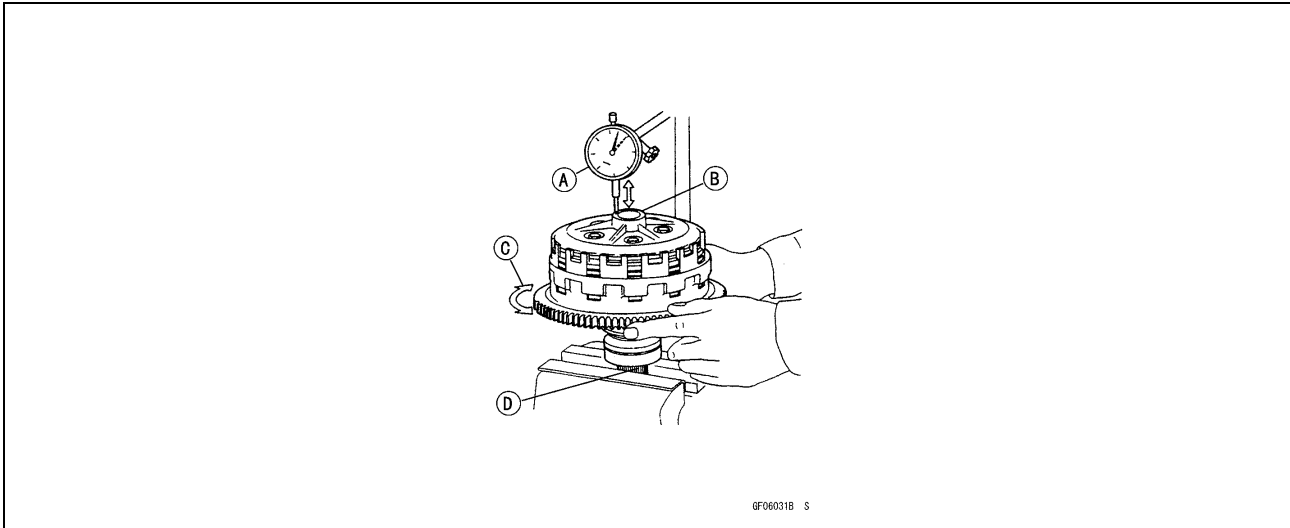
Thickness (mm)	Part Number
1.4	13089-1126
1.6	13089-013
2.0	13089-1073

- For precise setting the measurement of the effective stroke of clutch spring plate is recommended.
  - Remove oil from clutch plates.
  - Hold an extra drive shaft in a vise and install the following clutch parts on the shaft.



- [A] Spacers
- [B] Needle Bearing
- [C] Bushing
- [D] Clutch Housing
- [E] Clutch Hub
- [F] Sub Clutch Hub
- [G] Friction Plates
- [H] Steel Plates
- [I] Spring Plate

- Engage the cam followers (Clutch Hub) with the cams (Sub Clutch Hub).
  - To measure the effective stroke of clutch spring plate, set a dial gauge [A] against the raised center [B] of the clutch spring plate.
  - Move the clutch housing gear back and forth [C]. The difference between the highest and lowest gauge readings is the amount of the effective stroke of clutch spring plate.
- [D] Drive Shaft



- After installing the clutch to the engine, measure and record the depth [B] shown below, the length from the clutch spring plate to the top surface of the sub clutch hub, using a caliper or a depth gauge. Manage the depth [B] to adjust the effective stroke after that, because the friction disks would be worn and the length [A] would change. The decrease of the depth [B] from the initial setting shows the increase of the effective stroke of clutch spring plate from the value initially measured.
- When decreasing the length [A], total thickness of clutch plates, use the optional spring retainers (provided as optional production parts) to keep the preload of clutch springs according to the table below. If you have clutch slip during acceleration use shorter spring retainers by 1 mm to increase preload of clutch springs.
- When decreasing the length [A], total thickness of clutch plates, use the optional shim (provided as optional production part) to keep the position of clutch release lever according to the table below.
- The standard setting of the number of leaf springs is four. By decreasing the number of the leaf springs the sub clutch hub operates easily and pushes the clutch operating plate causing more slip. Two types of nuts are available for the number of leaf springs, two and three. They are provided as optional production parts. The number of leaf springs affects all over the operation of the back-torque limiter but especially the beginning of the operation.

### Standard Selection of Spring Retainers

Total Thickness of Clutch Plates	Size of Spring Retainers	Remarks
Approx. 39.2 mm	15 mm	Original Setting
38.8 ~ 39.2 mm	15 mm	P/No. 39108-1152
38.0 ~ 38.8 mm	14 mm	P/No. 39108-0001
~ 38.0 mm	13 mm	P/No. 39180-0003

### Standard Selection of Shim

Total Thickness of Clutch Plates	Size of Spring Retainers	Remarks
Approx. 39.2 mm	0.6 mm	Original Setting
38.7 ~ 39.2 mm	0.6 mm	P/No. 92025-1755
38.2 ~ 38.7 mm	0.4 mm	P/No. 92025-1756
37.8 ~ 38.2 mm	—	Without Shim

### Transmission

- Remove the three steel balls (600A0500) from the output shaft assembly. This is done to start easily the engine with the second gear.
- Take kit and optional transmission gears are available to be closer to each gear ratio.

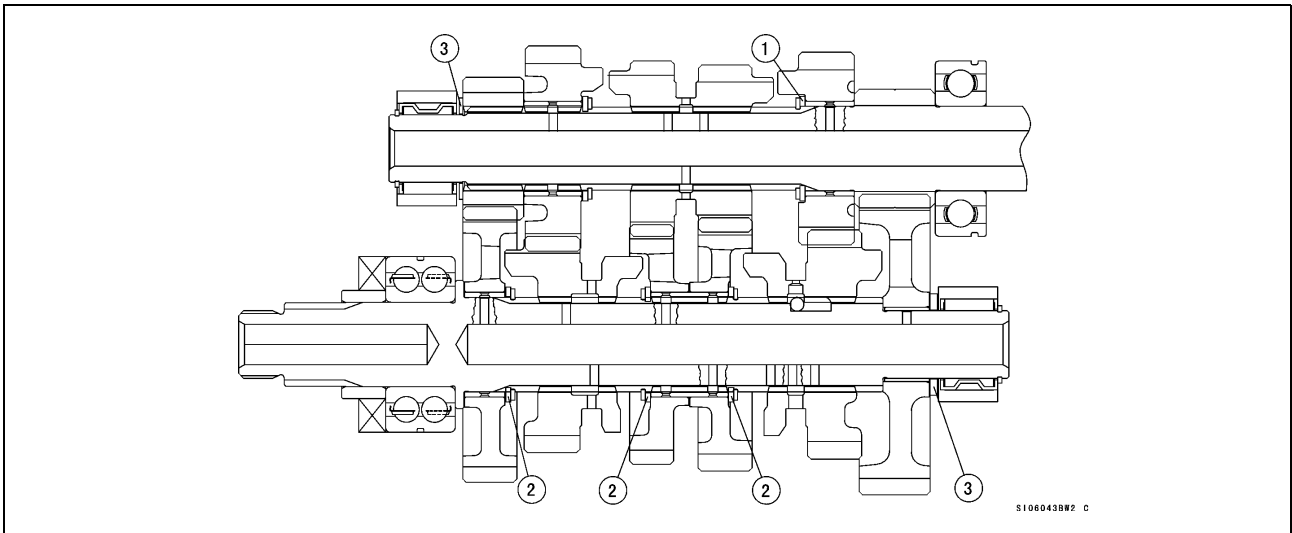
### Transmission Shimming

By using washers with various thickness, keep the axial clearance between 0.3 mm and 0.4 mm, to prevent the inclination of gears and to keep smooth gear-shifting.

	Thickness	Part No.	
Spline washer (input)	1.5 mm	92200-1239	Original
	1.7mm	92200-1534	Kit
Spline washer (output)	1.5 mm	92200-1240	Original
	1.7 mm	92200-1535	kit
Plane washer	0.7 mm	92022-1026	Production part
	1.0 mm	92022-112	Original (input)
	1.2 mm	92200-1536	Kit
	1.4 mm	92022-223	Production part
	1.5 mm	92200-1375	Production part
	2.3 mm	92200-1238	Original (output)

### Plane Washer combination (example)

1.0 = 1.0	2.1 = 0.7 + 1.4	2.8 = 1.4 + 1.4
1.2 = 1.2	2.2 = 1.0 + 1.2	2.9 = 1.4 + 1.5
1.4 = 1.4	2.3 = 2.3	3.0 = 1.5 + 1.5
1.5 = 1.5	2.4 = 1.0 + 1.4	3.2 = 1.0 + 1.0 + 1.2
1.7 = 0.7 + 1.0	2.5 = 1.0 + 1.5	3.3 = 1.0 + 2.3
1.9 = 0.7 + 1.2	2.6 = 1.2 + 1.4	3.4 = 1.0 + 1.0 + 1.4
2.0 = 1.0 + 1.0	2.7 = 1.2 + 1.5	3.5 = 1.0 + 1.0 + 1.5

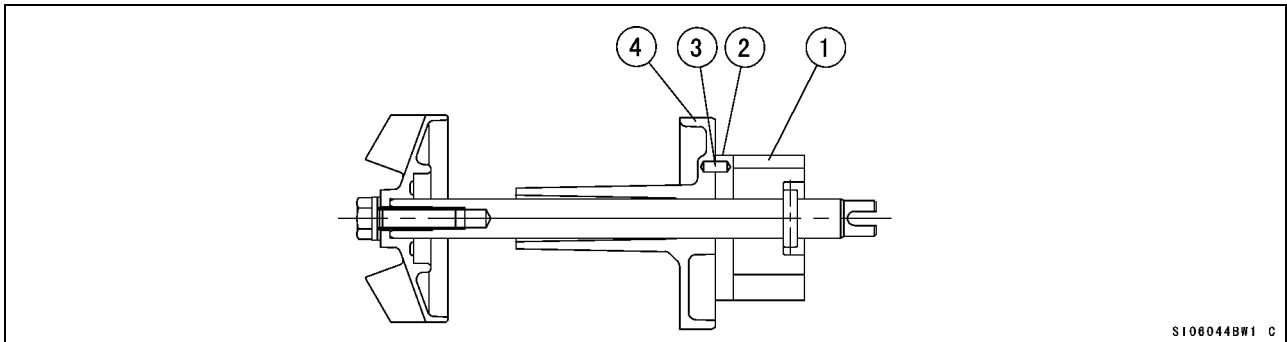


1. Spline washer (input)
2. Spline washer (output)
3. Plane washer

### Oil Pump

The optional oil pump rotors are thinner than the original ones, reduce mechanical friction loss and improve the engine performance at high RPM.

- When installing the optional rotors, install the spacer between the pump cover and the rotors.



1. Rotors: 16154-1125
2. Spacer: 92026-1579
3. Dowel Pin: 551A0306
4. Pump Cover: 16142-1166

### Alternator (Optional Parts)

To quicken response by reducing the flywheel mass and to reduce the weight, use the optional alternator rotor.

- Select using the optional alternator rotor or original rotor.

## Alternator Cover (Optional Parts)

To increase the lean-angle of the machine, use the optional alternator cover.

### NOTE

○ When using the optional alternator cover, use the optional alternator.

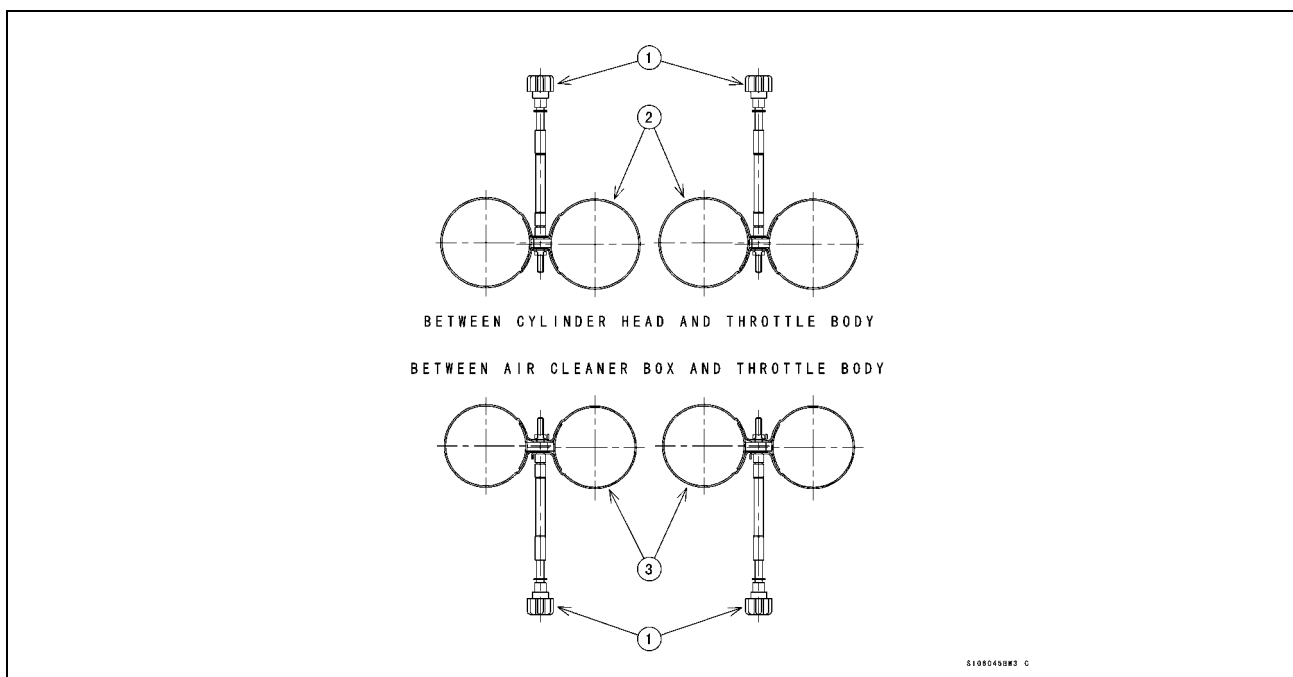
## Cover Gaskets

The optional cover gaskets are available.

They are made from “metal-foam” and made easy to scrap.

## Assembly of Throttle Body Clamps and Air Funnel Clamps

Replace the original bolts of the clamps used for the throttle body assembly holders and air funnels with the optional screws, which enable quick maintenance.



1. Optional Screws (Part No. 92172-0081)
2. Original Clamps
3. Original Clamps

## Ducts (Air Funnels)

The optional air funnels are available. The optional funnels are shorter than the original ones and improves engine performance in high RPM.

### Standard Setting

	#1 and #4 cylinders	#2 and #3 cylinders
Air Funnels	Optional funnels, L=10.8 mm (21.3 mm long)	Optional funnels, L=50.8 mm (61.3 mm long)
Part No.	14073-0009	14073-0010

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## Frame Parts Installation

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### Throttle Parts (Optional Parts)

The following throttle cases, grip and reels are available as optional parts. These optional parts quicken throttle response to the twist grip.

#### 1) Throttle Case

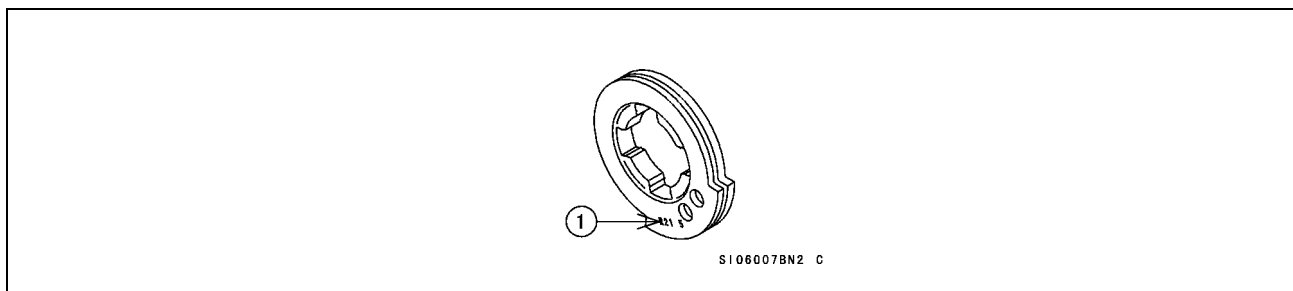
Parts	P/No.
Throttle Case, Upper	32099-0004
Throttle Case, Lower	32099-0005
Bolts (2)	120S0625
Grip, Right	46075-1143

#### 2) Throttle Reels

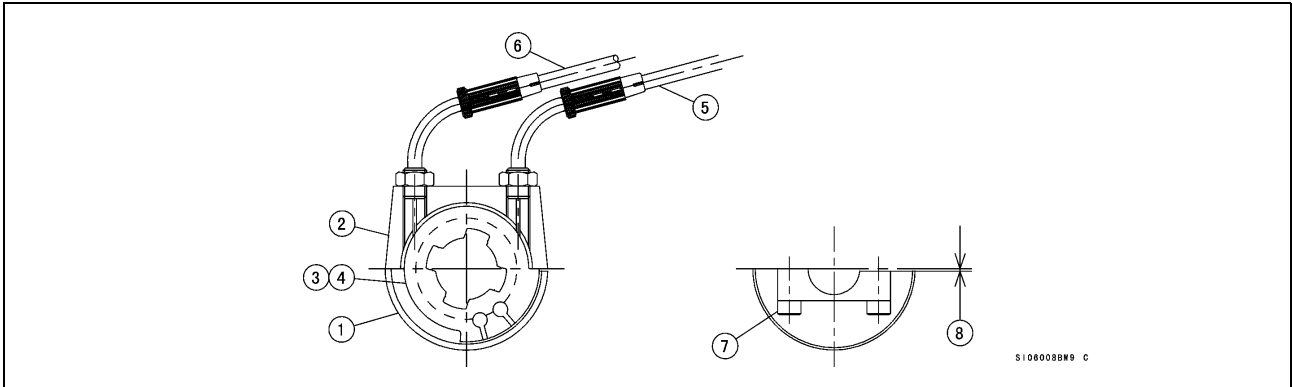
Two types are available.

P/No.	I.D. Mark	Twist Grip Turn Angle to Full Throttle
59101-0001	R21.5	60°
59101-0002	R20.0	65°

Throttle Reel Travel Angle.....Effective angle excluding throttle cable free play.



1. Identification Mark



1. Upper Case: 32099-0004
2. Lower Case: 32099-0005
3. Reel, 60°: 59101-0001
4. Reel, 65°: 59101-0002
5. Throttle Cable, Acceleration: 54012-0050
6. Throttle Cable, Deceleration: 54012-0051
7. Bolt: 120S0625
8. Install the upper case and lower case which mating clearance backward.

### 3) Throttle Cables

The throttle cables are also available as optional parts, use these parts when the above optional throttle reel is used.

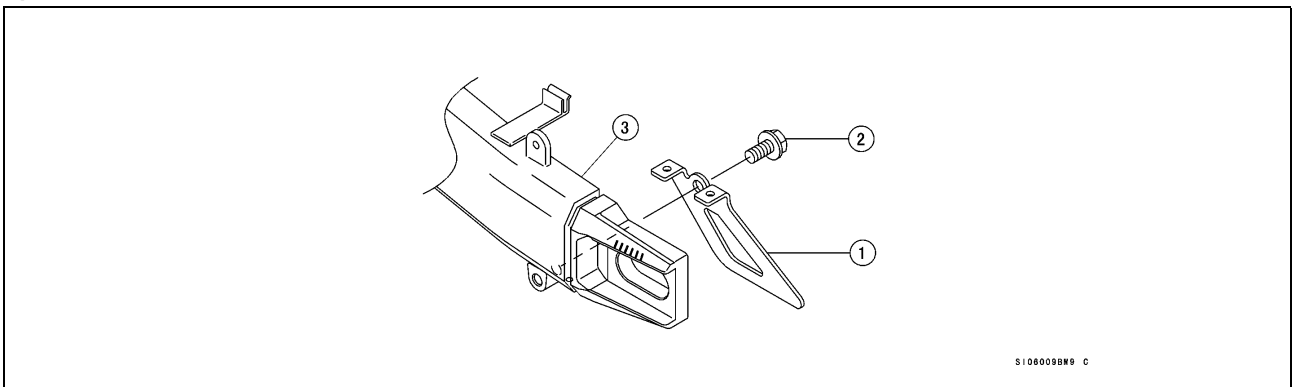
Parts	P/No.
Throttle Cable, Acceleration	54012-0050
Throttle Cable, Deceleration	54012-0051

## Final Drive Parts (Optional Parts)

### 1) Drive Chain

#520 Joint endless drive chain is available as an optional parts.

### 2) Chain Guard



1. Guard: 55020-0028
2. Bolt: 130J1020
3. Swingarm (Left Side)

## Brake Pads (Optional Parts)

The front and rear brake pads for racing use are available. The front pads are for higher braking force, and the rear pads are for higher braking force.

### Front Brake Pads

P/No.	Mark	Braking Force
43082-0005	F9633	High
Original	C93ZM	↓ Low

### Rear Brake Pads

P/No.	Mark	Braking Force
43082-1220	C93G	High
43082-1192	C93	↓ Low
Original	FO GG	Low

## Steering Damper (Optional Parts)

The steering damper is useful at high speeds to prevent handlebar vibration.

The steering damper should be installed to do not the steering handle movement stop by the steering damper itself at the fully locket position both left and right side.

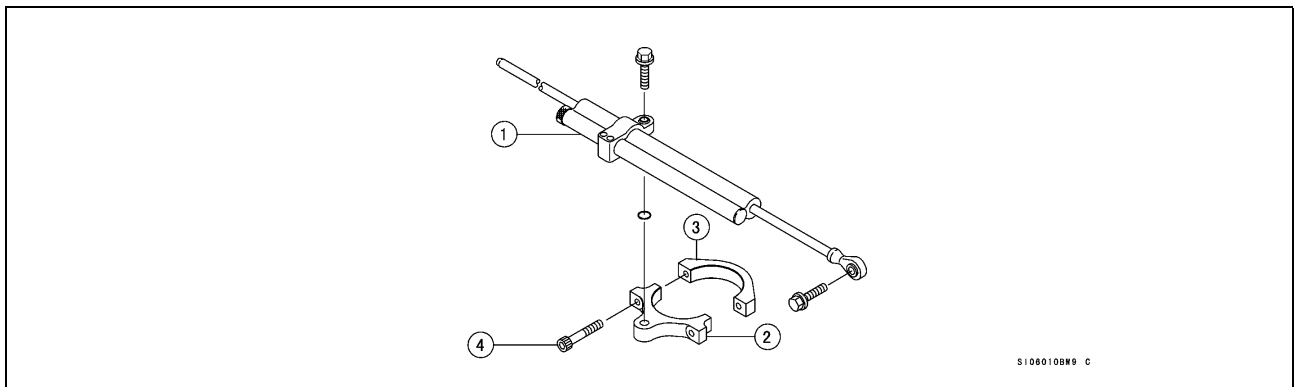
### 1) Recommended Steering Damper

OHLINS SD1005

- Set the steering damper to the holder as shown.

### 2) Stroke(s)

SD1005: 120 mm

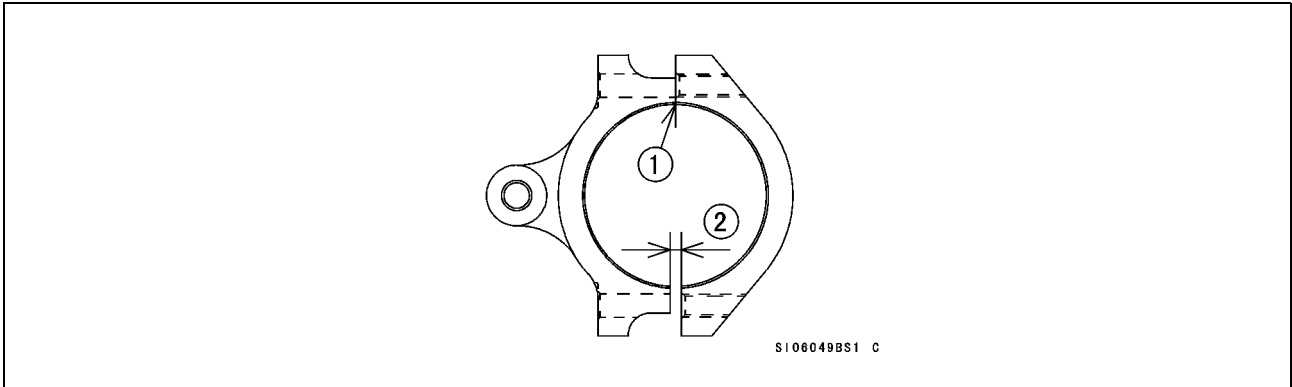


1. Steering Damper: OHLINS SD1005
2. Holder: 13280-0011
3. Holder: 13280-0012
4. Bolt, Socket: 120P0635

### NOTE

- The holder's one side mating surface are shifted from center about 1.5 mm to ensure tightening force.
- Install the holder properly shown below to avoid steering damper operation stick.





1. No Gap
2. Gap (3 mm or less)

### 3) Damper Adjuster

Standard Position: 8th click [1st click (harder) is fully clockwise click]

Usable Range: 1st to 12 ~ 17th click

### Seat and Pivot Height Adjustment

- Loosen the nut (1) and insert the spacer (2) as required.
- Tighten the nut (1) to 59 N·m (6.0 kgf·m, 43 ft·lb) of torque.
- When changing the pivot height, adjust the spring preload of the rear shock absorber.
- When changing the pivot height adjust the spring length. It is better way to adjust the spring length at one time and test ride.
- One turn of the spring adjusting nut changes the spring length by 1.5 mm.

### Rear Suspension Condition of Seat and Pivot Height Adjustment

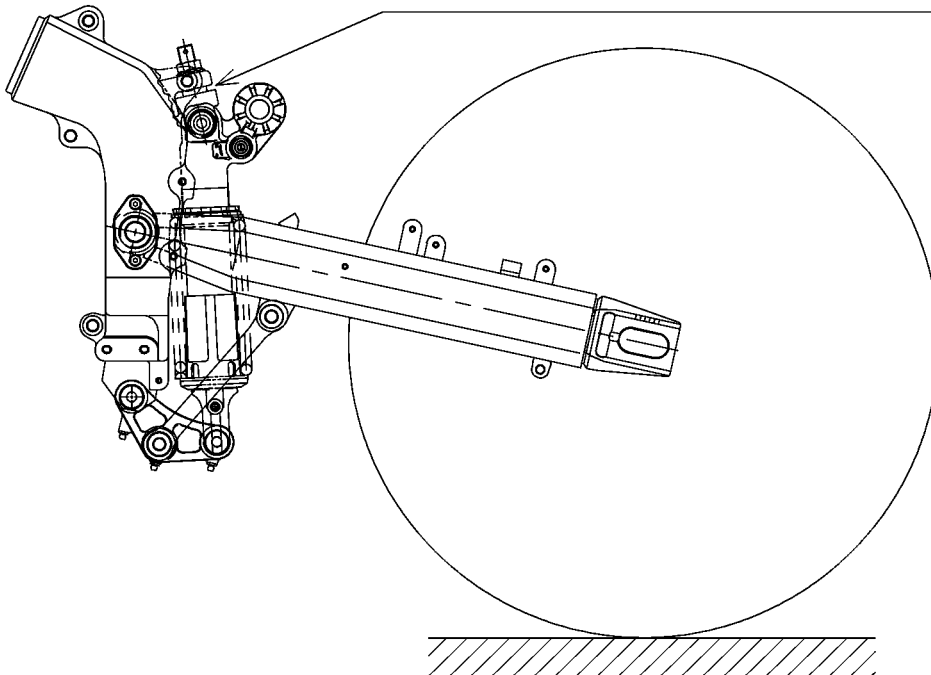
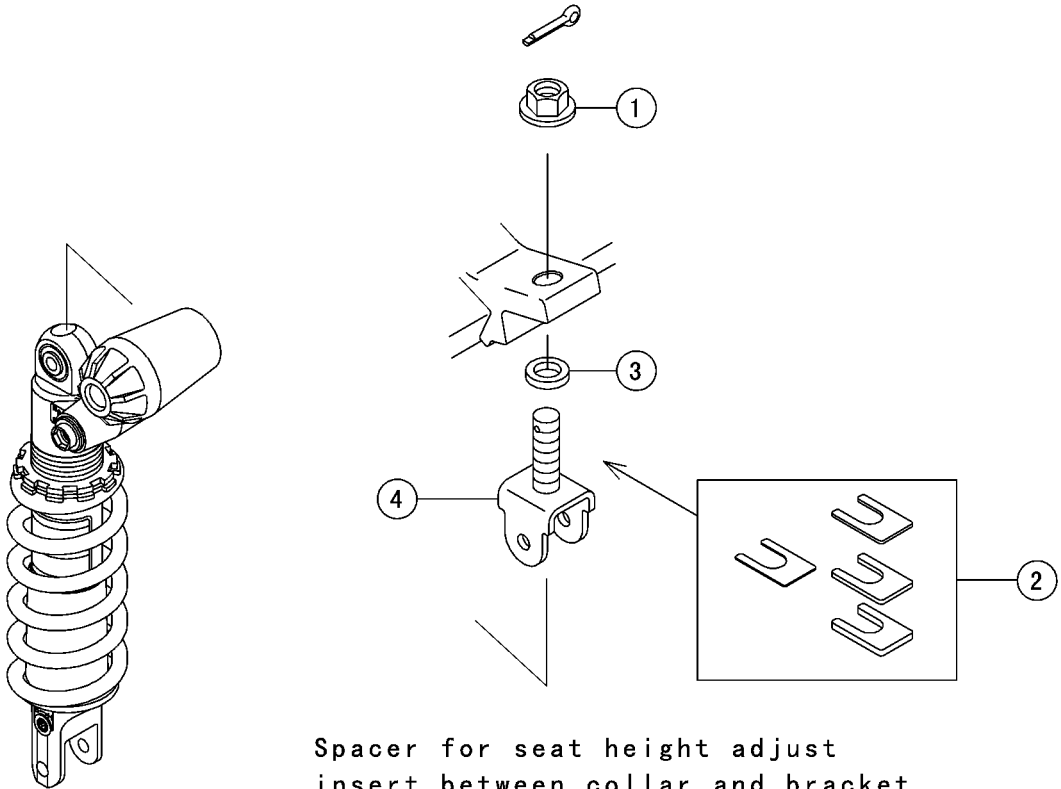
- When the seat height adjusts spacer applied, the rear suspension should be softened.
- The higher pivot height goes up the traction feeling, the lower pivot height goes down the traction feeling.

## Seat Height Adjustment

Spacer Set: 92026-1586

- 1. Nut
- 2. Spacer
- 3. Collar
- 4. Bracket

P/No.	Quantity	Thickness
92026-1582	1	1.0mm
92026-1583	1	2.0mm
92026-1584	1	3.2mm
92026-1585	2	4.5mm



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## Pivot Height Adjustment

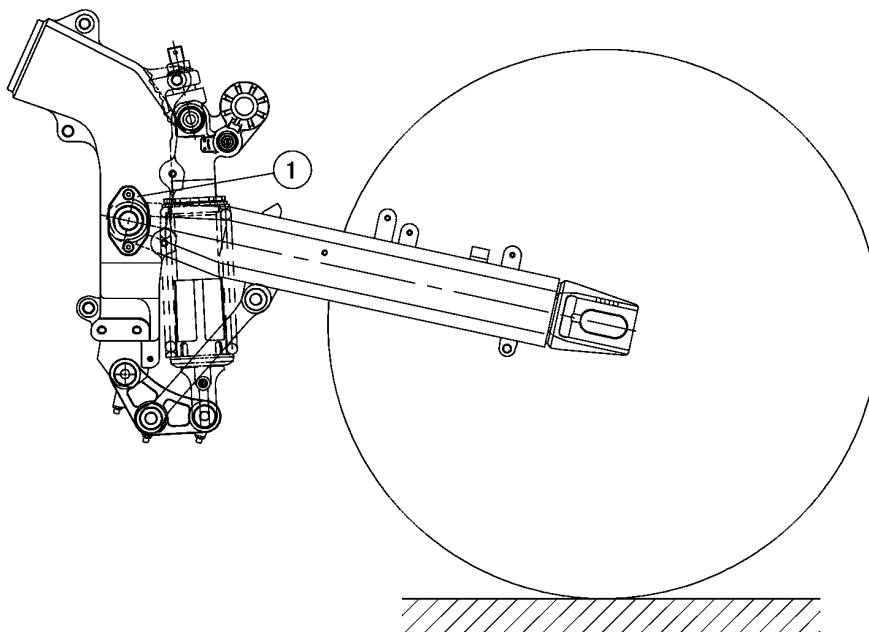
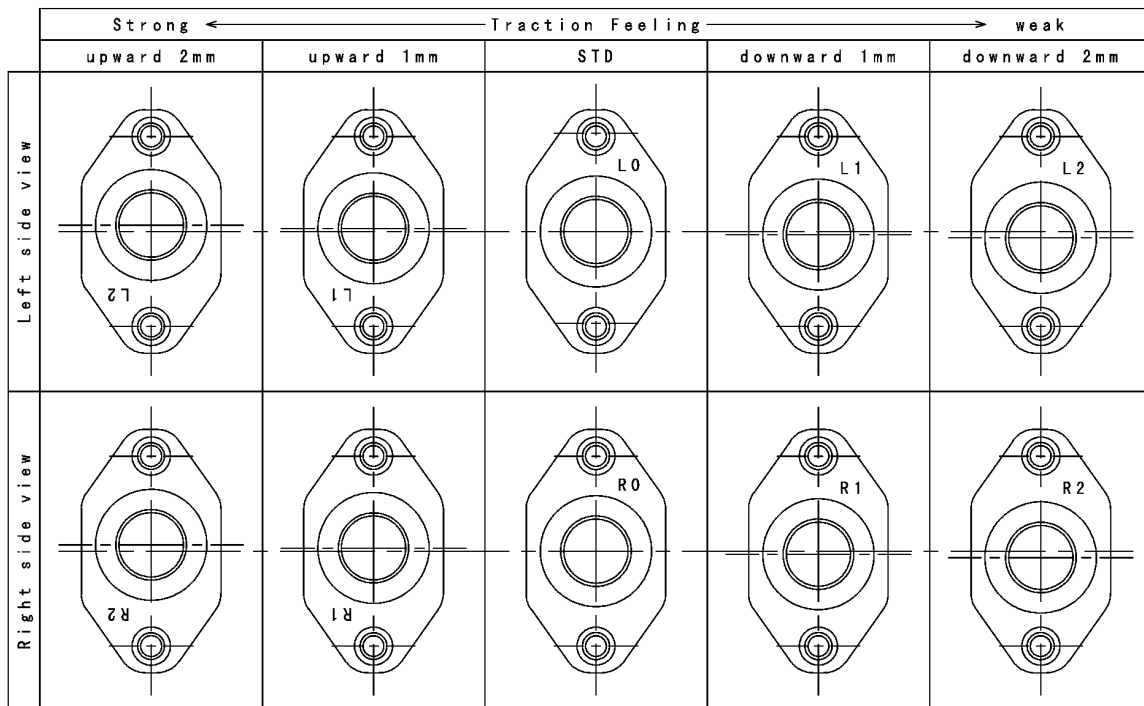
The two kind of offset collar can change the traction feeling. Use the same offset amount collar both left and right side.

Collar Identification

1. Collar

P/No.	ID Mark	Offset	direction
92152-0042	L1	1mm	LH
92152-0043	R2	1mm	RH
92152-0044	L2	2mm	LH
92152-0045	R2	2mm	RH

The collar installation direction and traction feeling



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## Front Fork Springs (Optional Parts)

The optional front fork springs are available for racing.

### 1) Front Fork Specifications

Items	Original
Rebounded damping setting (Upper)	8th
Compression damping setting (Lower)	8th
Fork oil	KAYABA KHL 15-10
Fork oil level	101 mm
Oil lock	Oil lock piece
Oil seal	---
Spring length	248 mm
Spring constant	8.25 N/mm
Spacer length	100 mm
Sub spring stroke	30 mm

### 2) Front Fork Spring

P/No.	A × B × C (mm)	Number of Wiring	Spring Constant
Original	4.5 × 27.3 × 248	15.15	K = 8.25 N/mm
44026-0022	4.4 × 24.0 × 248	14.14	K = 8.00 N/mm
44026-0023 (STD)	4.5 × 24.0 × 248	14.70	K = 8.50 N/mm
44026-0024	4.5 × 24.0 × 248	14.28	K = 8.75 N/mm

A: Coil Diameter

B: Spring Inside Diameter

C: Spring Free Length

### 3) Front Fork Spring Replacement

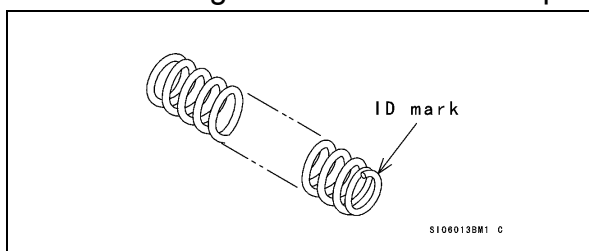
Replace the main spring referring to the Fork Oil Change section of the base Service Manual.

#### NOTE

○ Install the optional springs facing the smaller spring end diameter side downward.

### Identification Mark

The following ID marks are on the springs.

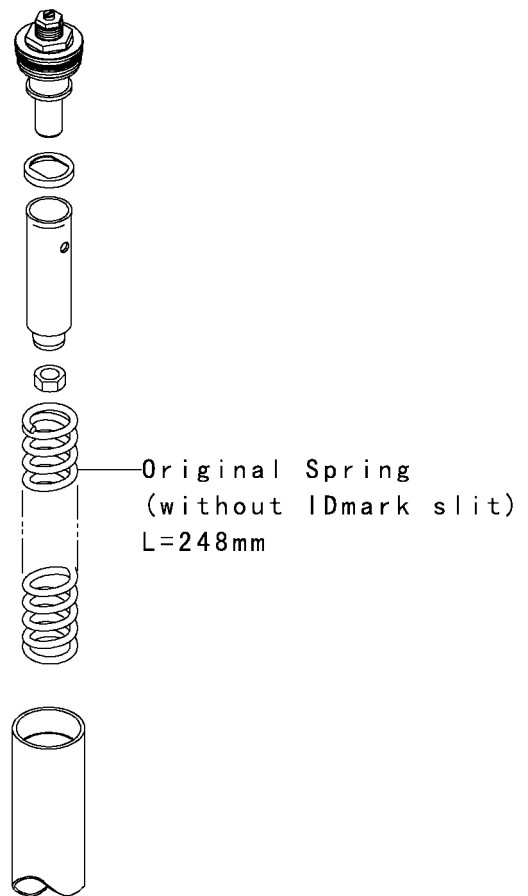
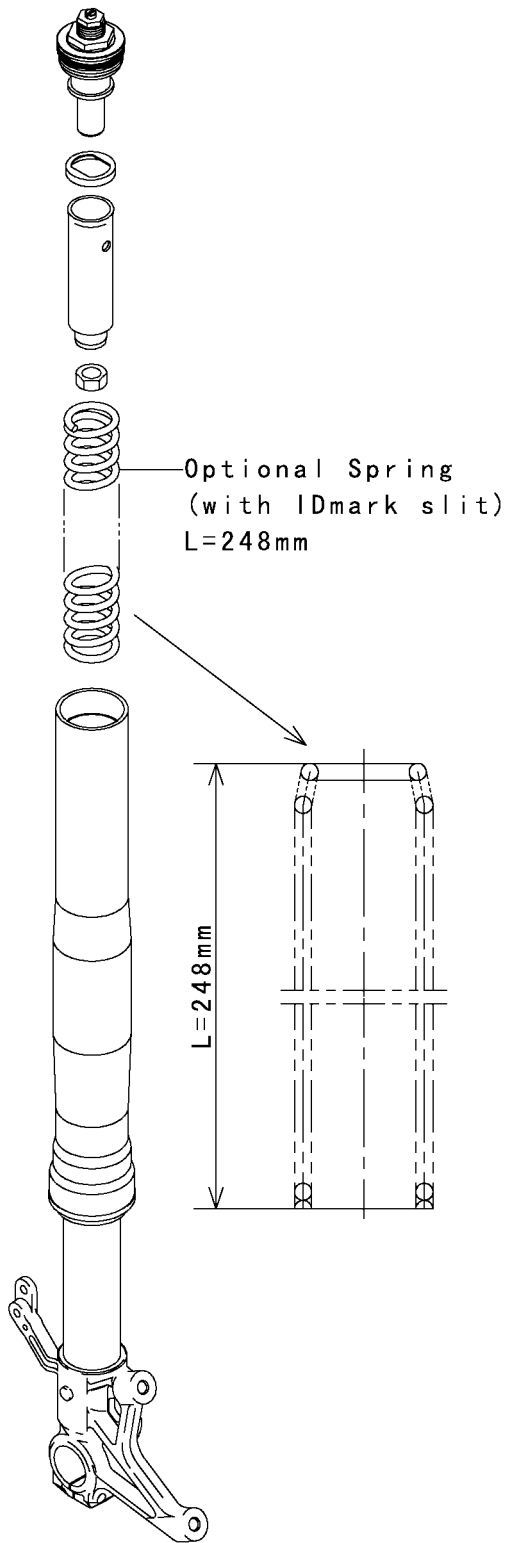


Spring	ID Mark (Smaller diameter end side)
44026-0022 (K = 8.00)	One slit
44026-0023 (K = 8.50)	Two slit
44026-0024 (K = 8.75)	Three slit

# Fork Spring Installation

Optional

Original



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## Electric Parts Installation

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### Battery

- Use the original battery or a battery with 12 V 7 Ah or more capacity.

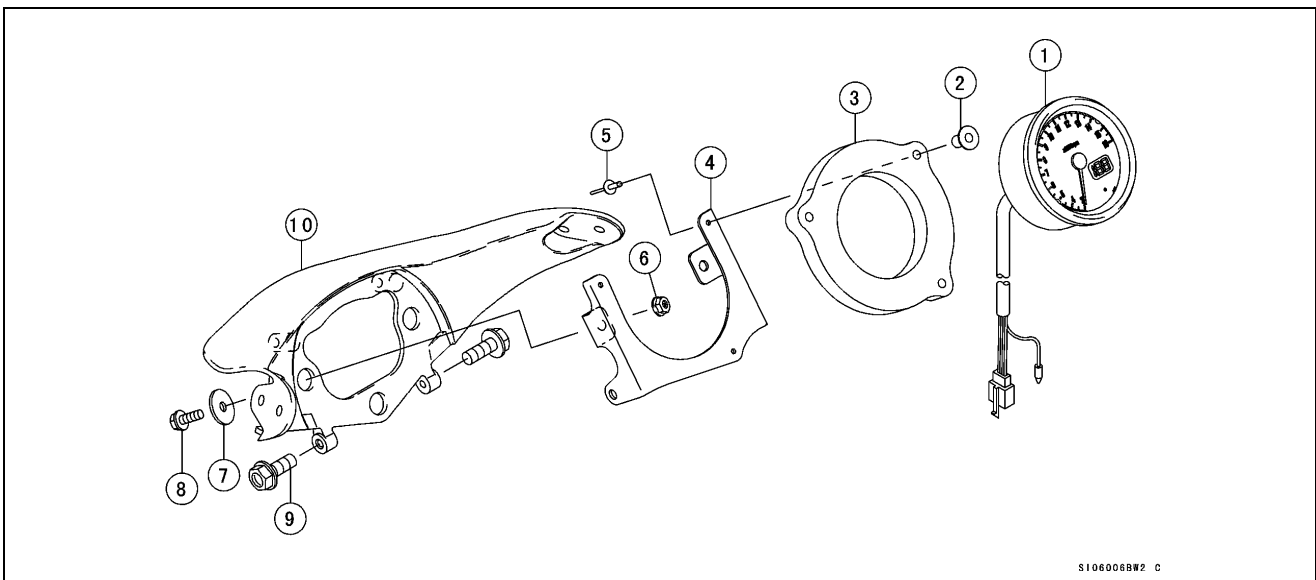
### Main Harness and Sub Harness (Optional Parts)

Main harness and sub harness are available for racing use as optional parts. Select one of them in accordance with your race regulation.

Main Harness (with Optional Meter): 26030-0038

Sub Harness (with Original Meter and Original Main Harness): 26030-0039

### Meter (Optional Parts) Installation



1. Tachometer with Water Temperature Gauge (Optional): 25031-1142
2. Collar (Optional): 92152-0058
3. Damper (Optional): 92161-0053
4. Bracket (Optional): 11053-0220
5. Rivet (Optional): 92039-1106
6. Nut (Optional): 92015-1233
7. Washer (Optional): 92022-1690
8. Bolt (Optional): 130J0616
9. Bolt (Original): 92153-0416
10. Bracket (Original): 11053-1074

- Insert the three collars [2] into the damper [3].
- Insert the rivet [5] from the backside of the bracket [4] and fix them.
- Install the bracket [4] to the original bracket [10].

### Main Harness Combination Parts Table

Use the optional main harness or sub harness with the following parts as a set.

Parts	Main harness 26030-0038	Sub Harness 26030-0039
Meter Assembly (Original)	x	
Tachometer with Water Temperature Gauge (Optional)		x
Water Temperature Gauge Lead (Optional)		x
Water Temperature Sensor (Optional)		x

#### Note

○ When using the sub harness no optional parts required.

### Removal Parts

When using the optional main harness, the following original parts are not required.

Original Main Harness

Meter Assembly

Left Handlebar Switches

License Light

Rear Brake Light Switch

Turn Signal Relay

Side Stand Switch

Ignition Switch

Junction Box

Headlight, Tail/Brake Light

Front Right Turn Signal Light

Front Left Turn Signal Light

Rear Right Turn Signal Light

Rear Left Turn Signal Light

Horn

Speed Sensor Lead (when using the optional main harness: 26030-0038)

Neutral Switch

### Optional Meter

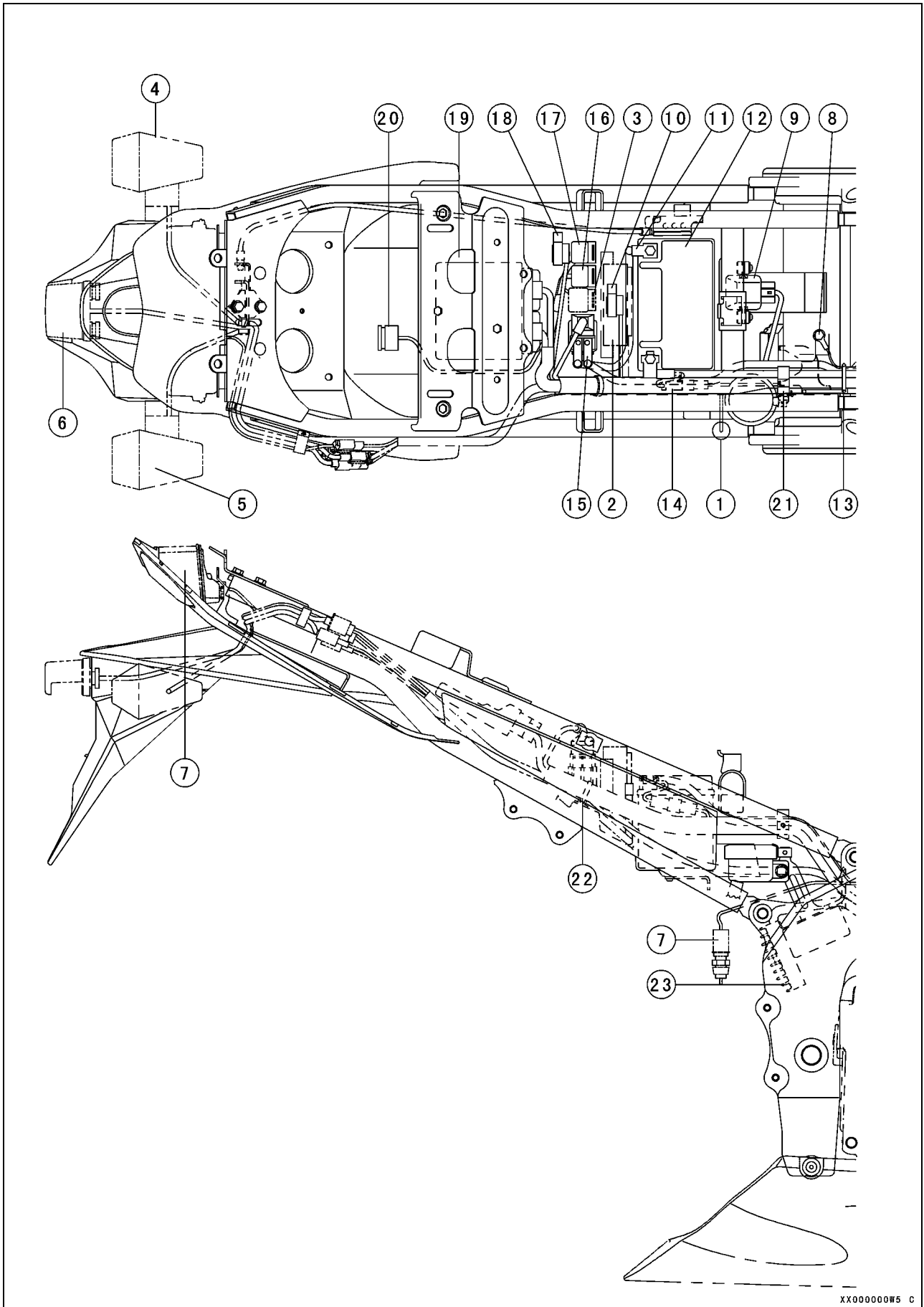
When using the optional tachometer with the water temperature gauge, the optional main harness is required with following optional parts.

Tachometer with the Water Temperature Gauge: 25031-1142

Water Temperature Gauge Lead: 26011-1779

Water Temperature Sensor: 21176-1099

# Wiring Routing



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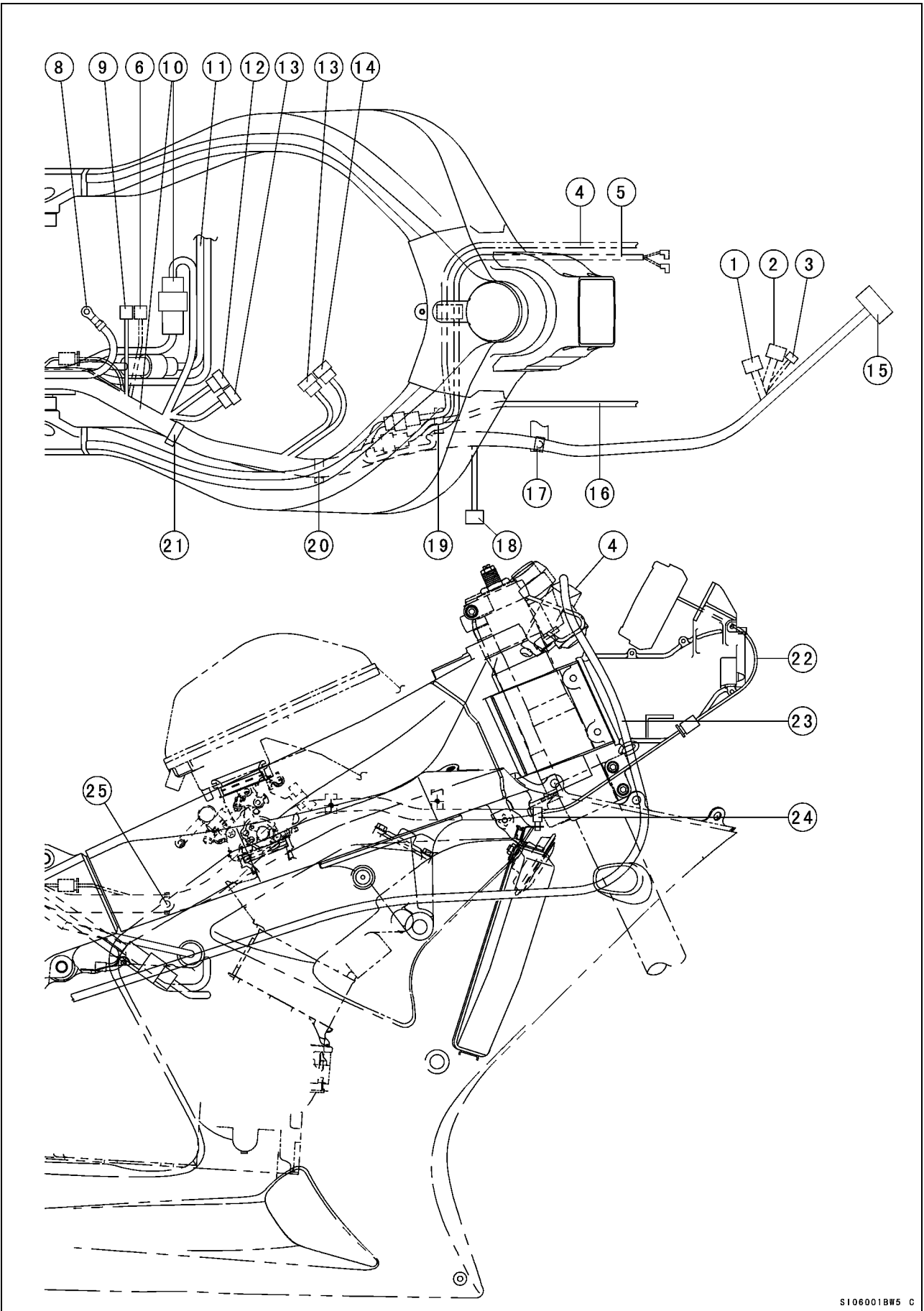


**Removal Parts**

1. Rear Brake Light Switch
2. Junction Box
3. Turn Signal Relay
4. Rear Left Turn Signal Light
5. Rear Right Turn Signal Light
6. License Light
7. Tail Light

**Other Parts**

8. Frame Ground
9. Vehicle Down Sensor
10. Fuse 10 A
11. Battery (+) Lead
12. Battery
13. Run the Main Harness, Battery (-) Lead and Starter Motor Lead inside the Fixing Bracket of the rear Brake Reservoir Tank.
14. Ground Lead Connector
15. Starter Relay
16. ECU Main Relay (2) (Brown)
17. ECU Main Relay (1) (Black)
18. Fuse 15 A
19. ECU (Electronic Control Unit)
20. Interface Box
21. Clamp
22. Clamp
23. Regulator



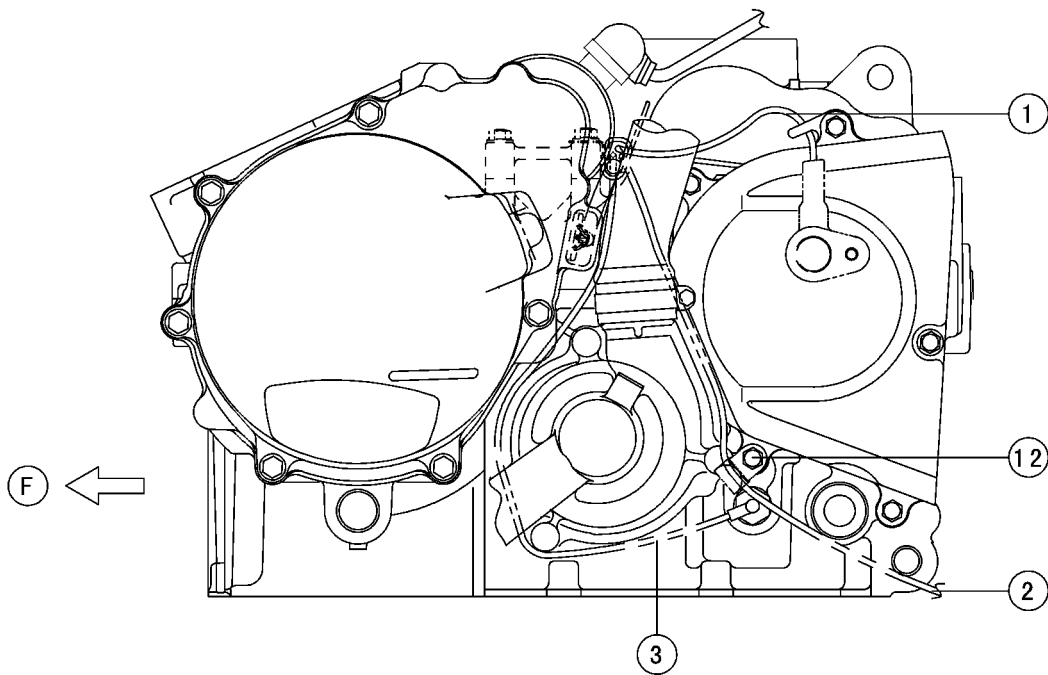
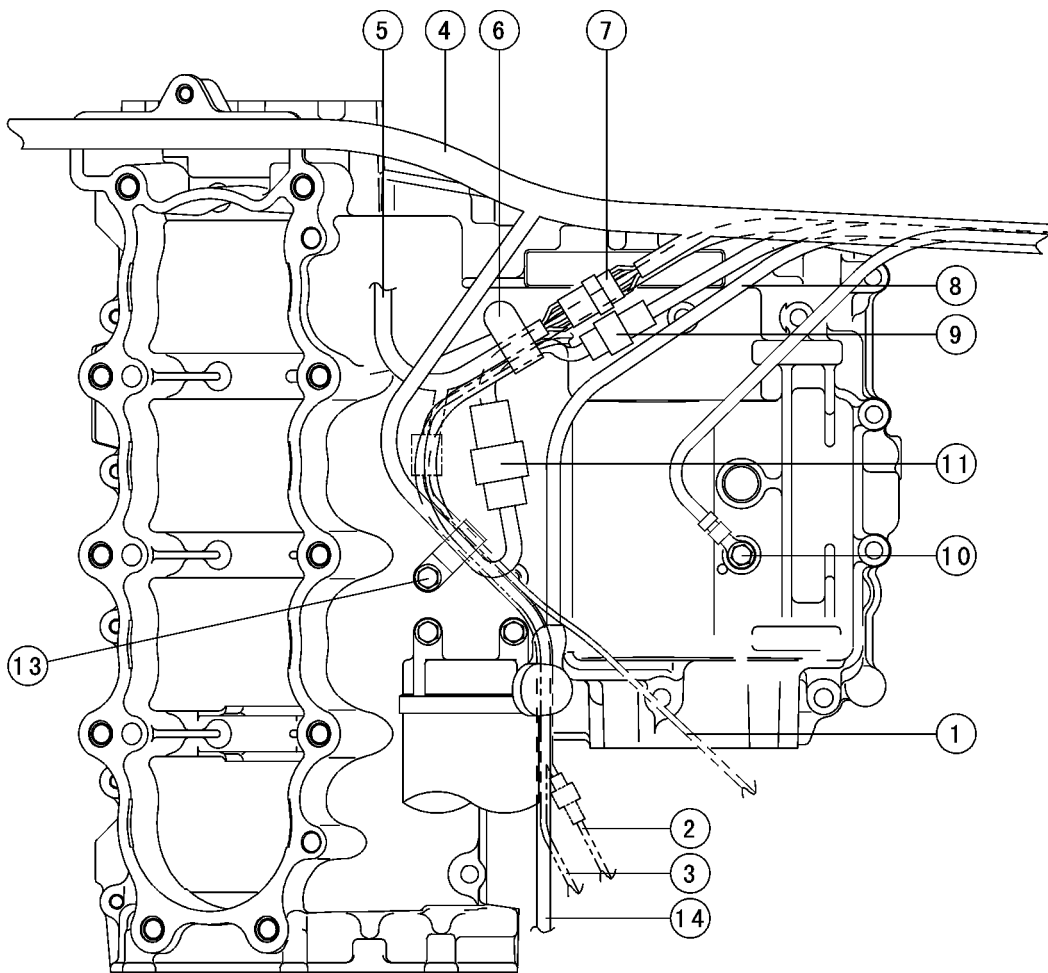
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**Removal Parts**

1. Left Switch Housing
2. Headlight
3. Front Left Turn Signal Light
4. Ignition Switch
5. Horn
6. Speed Sensor Lead
7. Front Right Turn Signal Light

**Other Parts**

8. Battery (-) Lead
9. To Side Stand Switch/Neutral Switch, etc.
10. Connectors (Regulator)
11. Starter Motor Lead
12. Fuel Pump Lead
13. Sensor Harness Lead
14. Ignition Harness Lead
15. Meter Lead
16. Right Handlebar Switch Lead
17. Clamp
18. Camshaft Position Sensor
19. Clamp the Right Handlebar Switch Lead. The connector is behind the clamp.
20. Clamp
21. Clamp
22. Meter Lead
23. Clutch Cable
24. Clamp
25. Clamp



F. Front

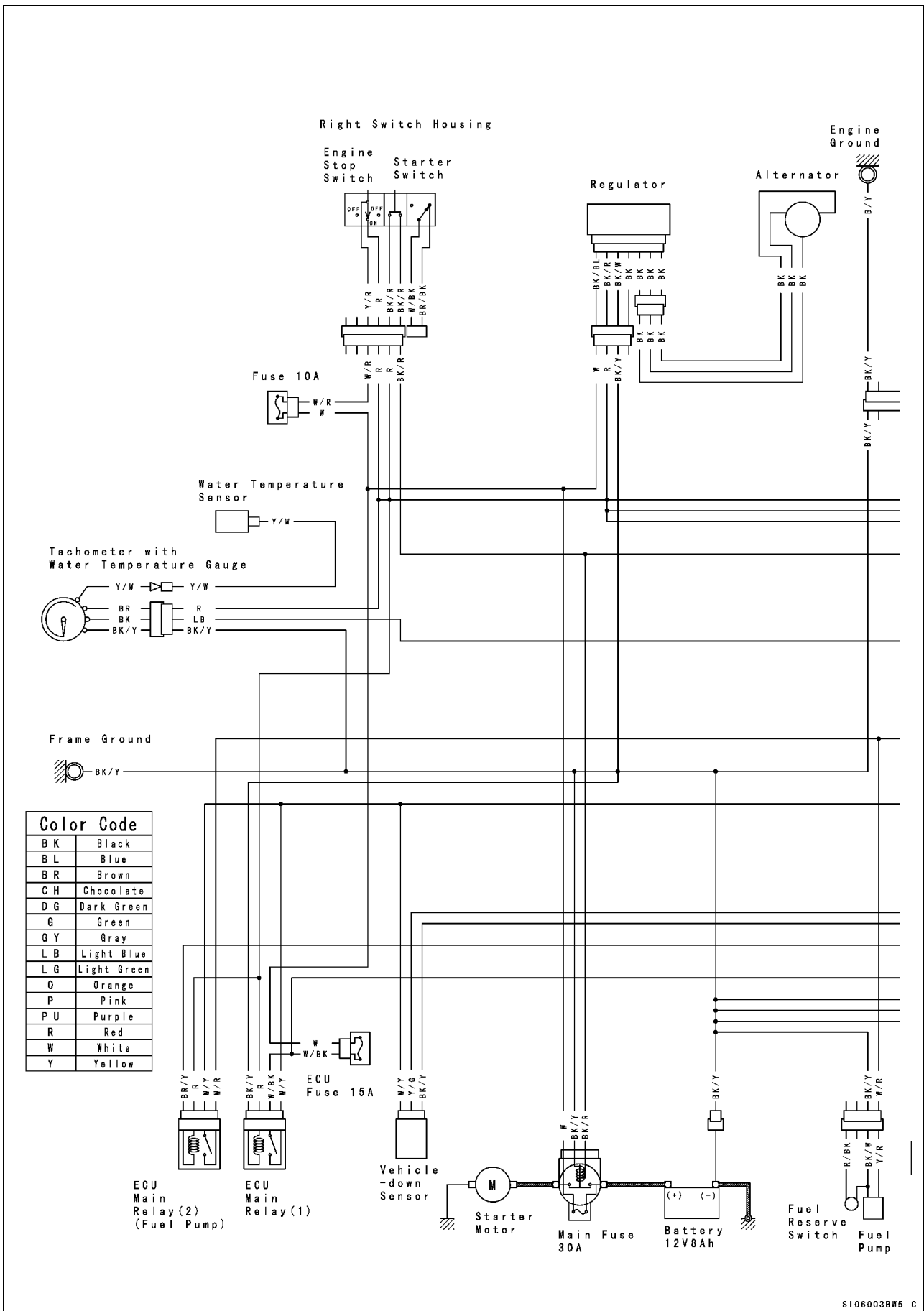
**Removal Parts**

1. Speed Sensor Lead
2. Side Stand Switch
3. Neutral Switch

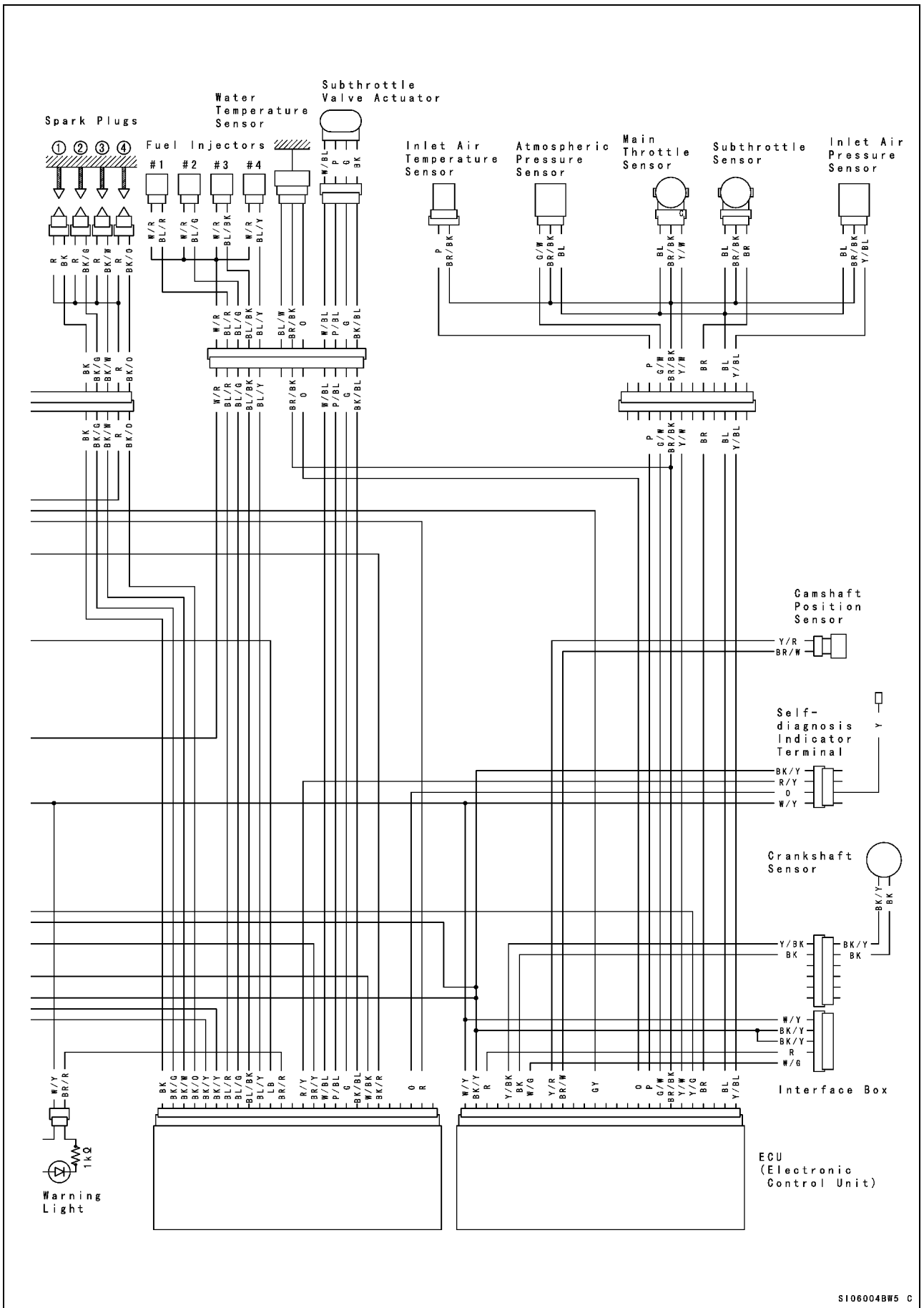
**Other Parts**

4. Main Harness
5. Crankshaft Sensor
6. Clamp
7. Engine Sub Harness Lead
8. Starter Motor Lead
9. Regulator (Black)
10. Battery (-) Lead
11. Regulator (White)
12. Clamp
13. Clamp
14. Alternator

# Wiring Diagram (with Optional Meter)

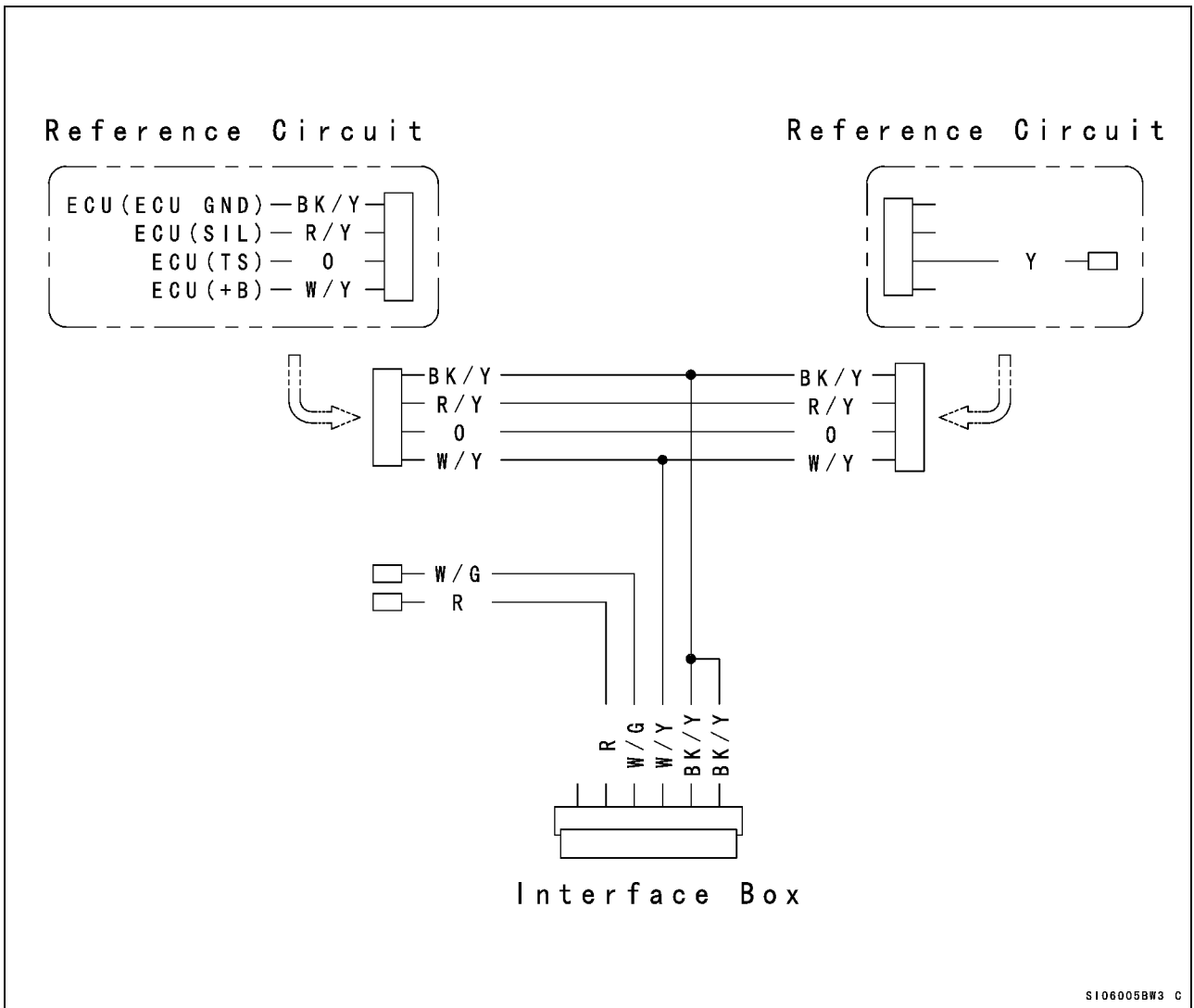


S106003BW5 C



S1060048W5 C

# Wiring Diagram (with Original Meter Assembly)



S106005BW3 C



# Racing Kit Parts List

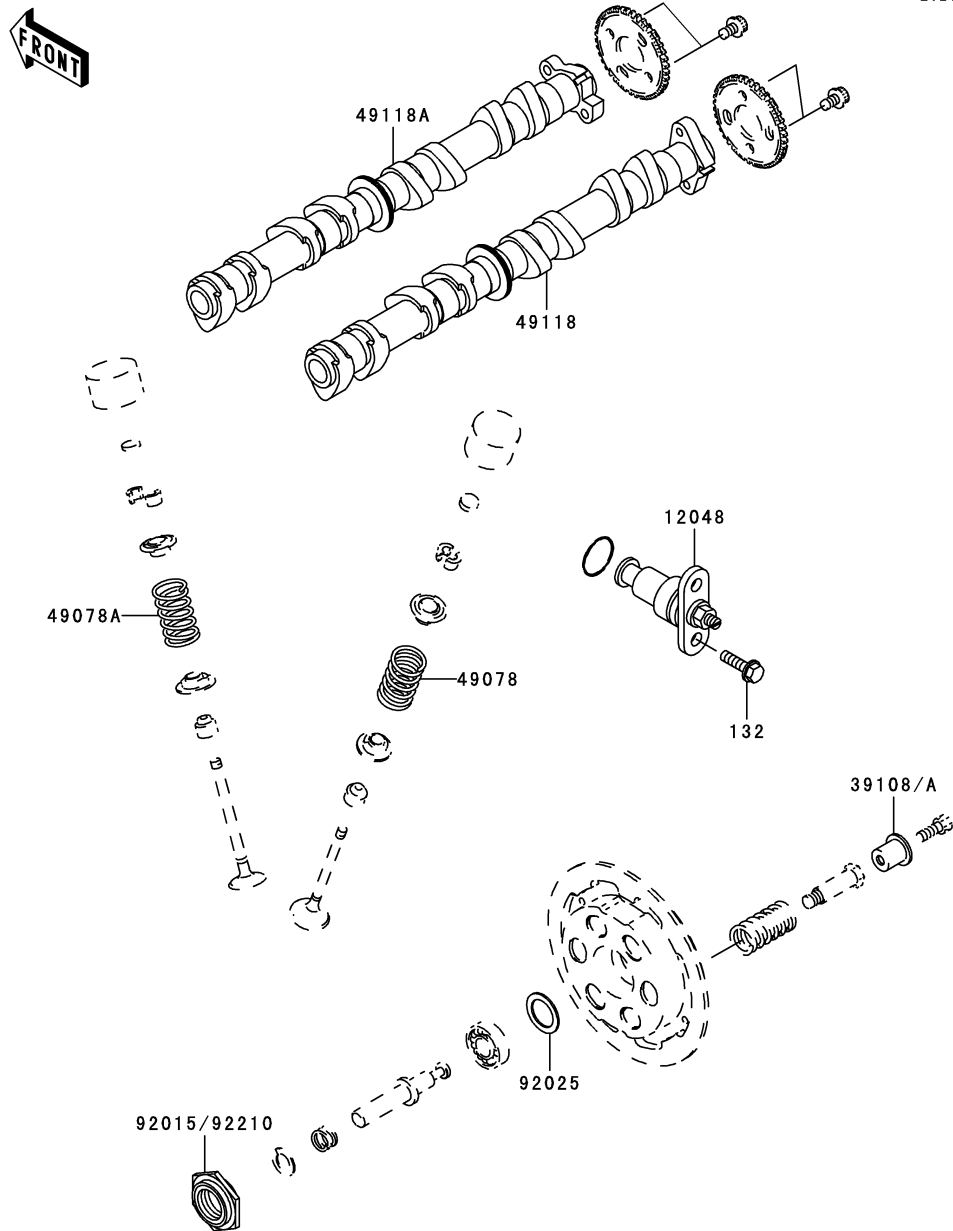
This catalog covers:  
**'03 ZX600-KR1 Engine**

GRID NO.

**B-3**

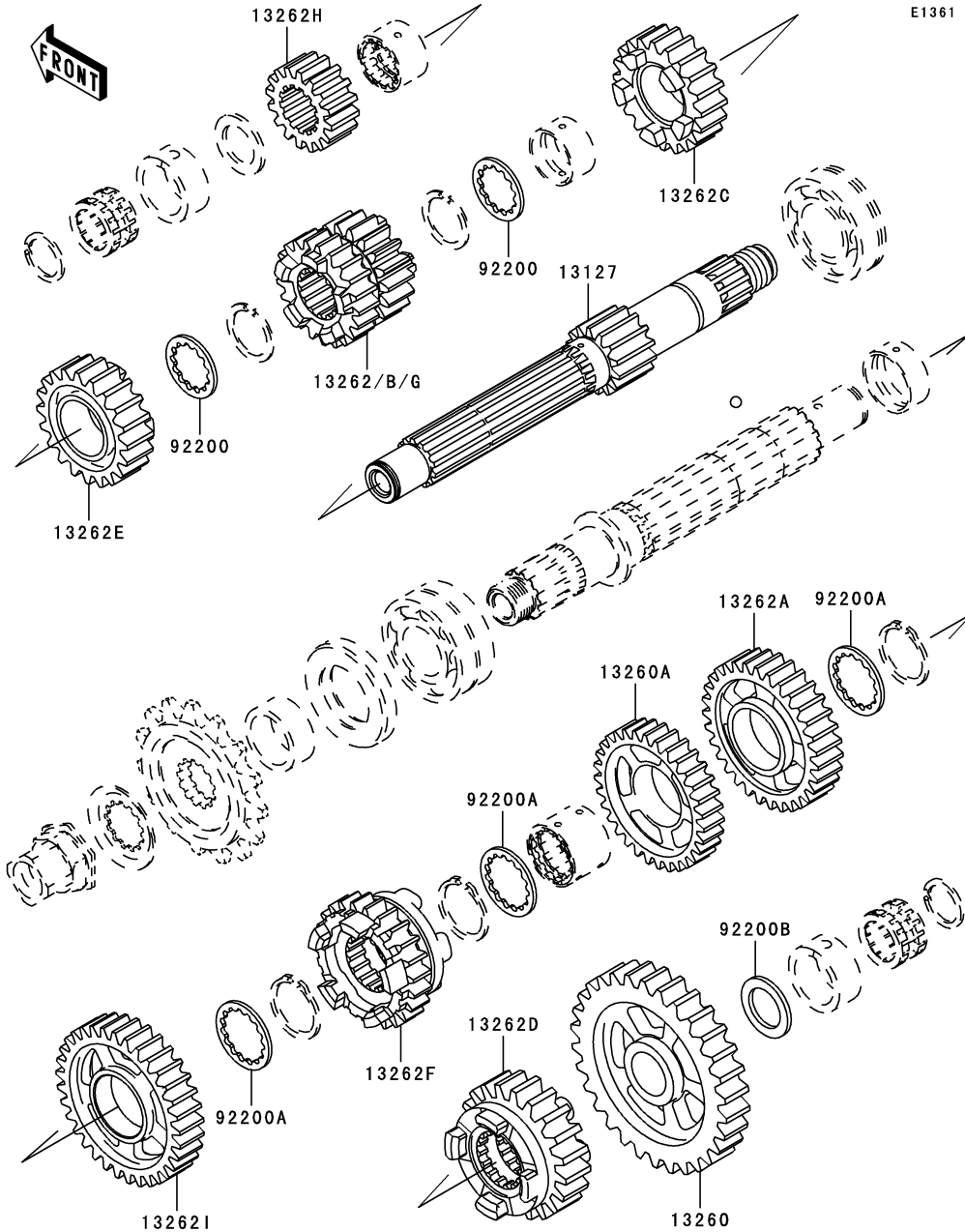
This grid covers:  
**Valve(s)/Camshaft(s)**

E1211



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600	
				'03	KR1
12048	12048-1175 (OPTION)	TENSIONER-ASSY		1	
39108	39108-0001 (OPTION)	RETAINER-SPRING,14MM		6	
39108A	39108-0003 (OPTION)	RETAINER-SPRING,13MM		6	
49078	49078-0005 (OPTION)	SPRING-ENGINE VALVE,INLET		8	
49078A	49078-0006 (OPTION)	SPRING-ENGINE VALVE,EXHAUST		8	
49118	49118-0006 (OPTION)	CAMSHAFT-COMP,INLET		1	
49118A	49118-0007 (OPTION)	CAMSHAFT-COMP,EXHAUST		1	
92015	92015-1929 (OPTION)	NUT,2 LEAF-SPRING		1	
92025	92025-1756 (OPTION)	SHIM,T=0.4		1	
92210	92210-0088 (OPTION)	NUT,3 LEAF-SPRING		1	
132	132J0620 (OPTION)	BOLT-FLANGED-SMALL		2	

E1361



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600	
				'03	KR1
13127	13127-0005 (OPTION)	SHAFT-TRANSMISSION INPUT,16T		1	
13260	13260-1619 (OPTION)	GEAR,OUTPUT,LOW,39T		1	
13260A	13260-1994 (OPTION)	GEAR,OUTPUT 4TH,29T		1	
13262	13262-0037 (OPTION)	GEAR,INPUT 3RD&4TH,21T&20T		1	
13262A	13262-0038 (OPTION)	GEAR,OUTPUT 3RD,35T		1	
13262B	13262-0039 (OPTION)	GEAR,INPUT 3RD&4TH,21T&21T		1	
13262C	13262-0045 (OPTION)	GEAR,INPUT 5TH,21T		1	
13262D	13262-0046 (OPTION)	GEAR,OUTPUT 5TH,28T		1	
13262E	13262-0048 (OPTION)	GEAR,INPUT 6TH,22T		1	
13262F	13262-0049 (OPTION)	GEAR,OUTPUT 6TH,27T		1	
13262G	13262-0051 (OPTION)	GEAR,INPUT 3RD&4TH,21T&22T		1	
13262H	13262-0091 (OPTION)	GEAR,INPUT 2ND,19T		1	
13262I	13262-0092 (OPTION)	GEAR,OUTPUT 2ND,37T		1	
92200	92200-1534 (OPTION)	WASHER,INPUT,T=1.7		AR	
92200A	92200-1535 (OPTION)	WASHER,OUTPUT,T=1.7		AR	
92200B	92200-1536 (OPTION)	WASHER,T=1.2		AR	

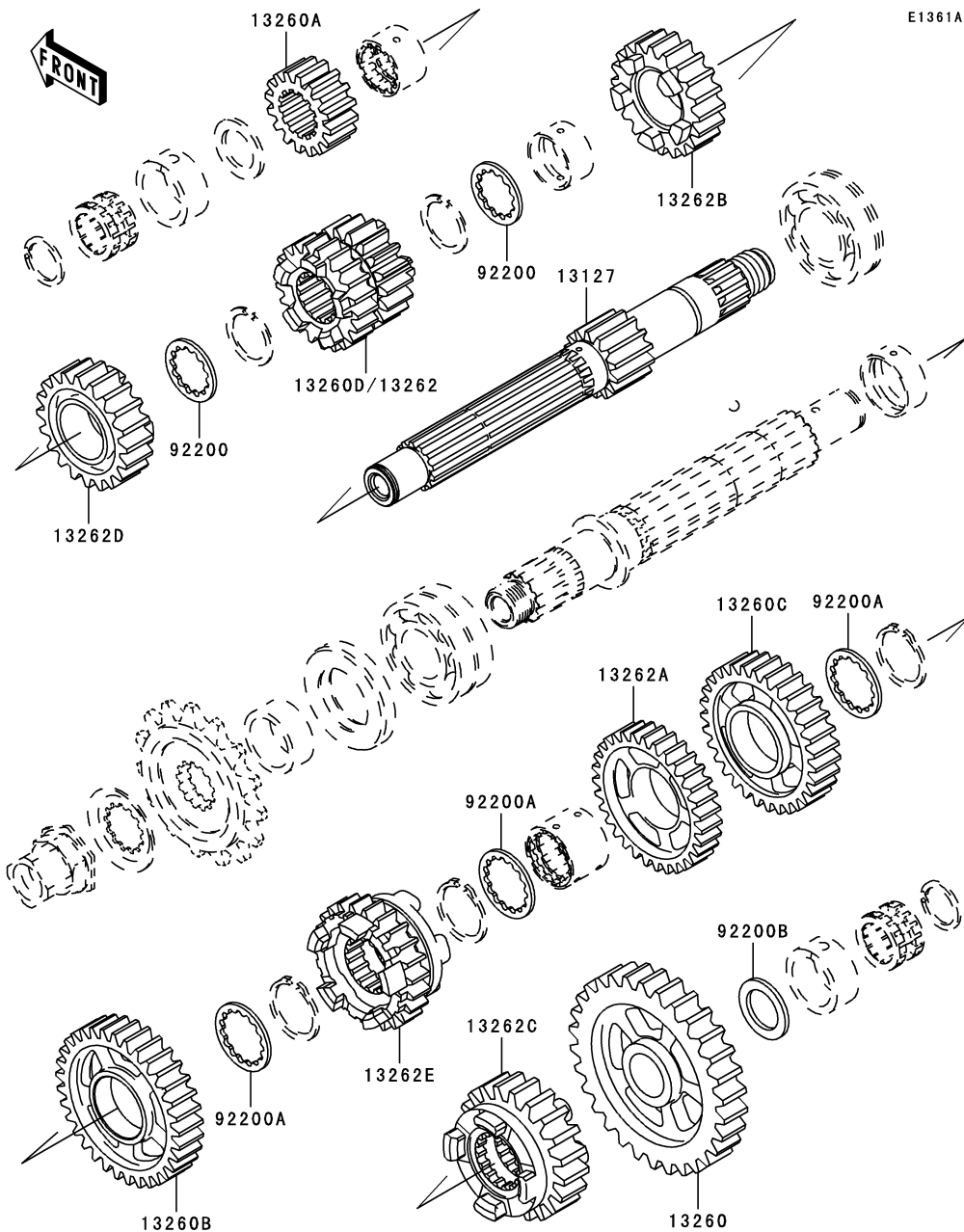
This catalog covers:  
**'03 ZX600-KR1 Engine**

GRID NO.

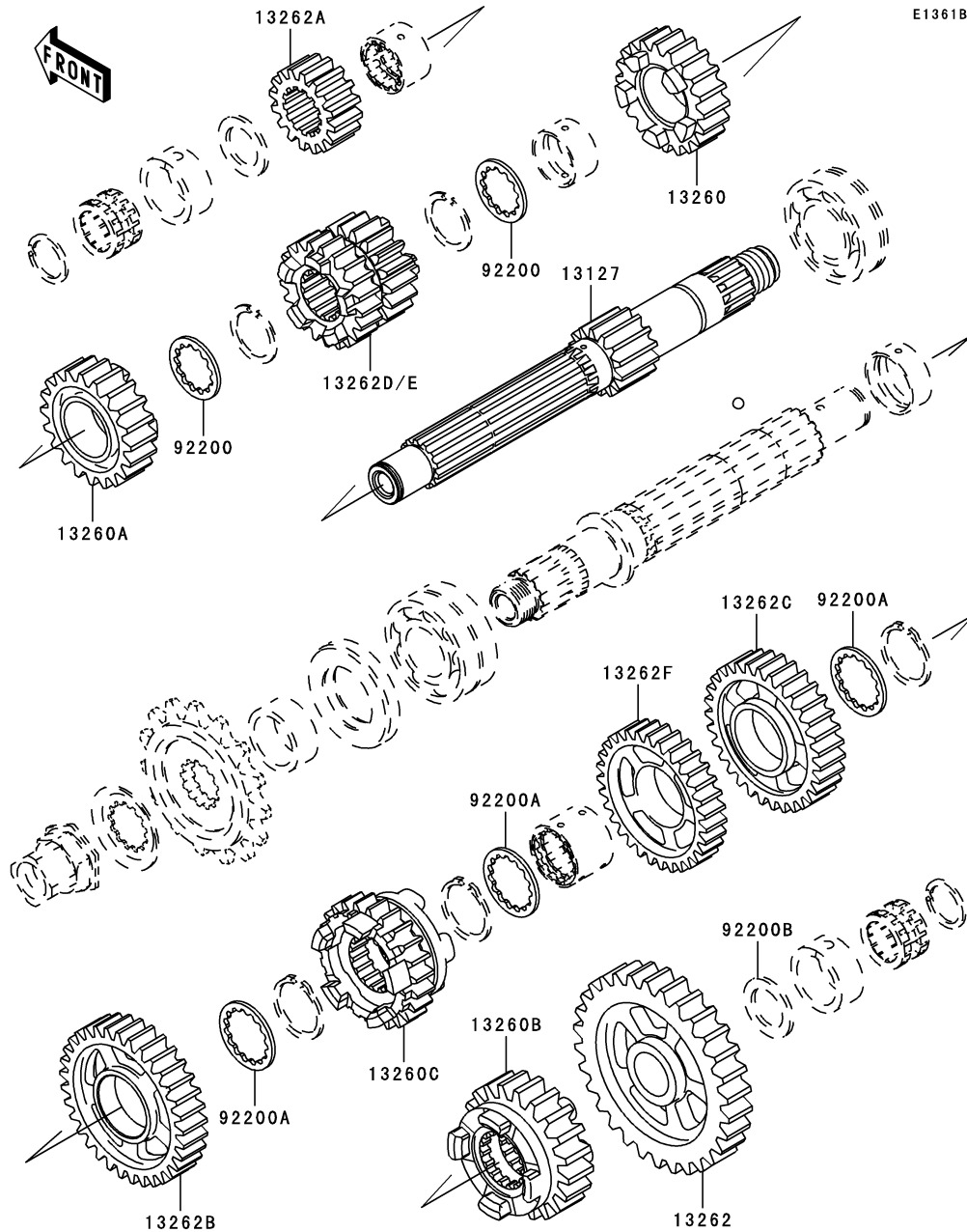
**B-5**

This grid covers:  
**Transmission(TYPE-B)**

E1361A



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600	
				'03	KR1
13127	13127-0006 (OPTION)	SHAFT-TRANSMISSION INPUT,14T		1	
13260	13260-1543 (OPTION)	GEAR,OUTPUT LOW,35T		1	
13260A	13260-1987 (OPTION)	GEAR,INPUT 2ND,18T		1	
13260B	13260-1992 (OPTION)	GEAR,OUTPUT 2ND,37T		1	
13260C	13260-1993 (OPTION)	GEAR,OUTPUT 3RD,31T		1	
13260D	13260-1998 (OPTION)	GEAR,INPUT 3RD&4TH,18T&20T		1	
13262	13262-0040 (OPTION)	GEAR,INPUT 3RD&4TH,18T&22T		1	
13262A	13262-0044 (OPTION)	GEAR,OUTPUT 4TH,33T		1	
13262B	13262-0045 (OPTION)	GEAR,INPUT 5TH,21T		1	
13262C	13262-0047 (OPTION)	GEAR,OUTPUT 5TH,29T		1	
13262D	13262-0048 (OPTION)	GEAR,INPUT 6TH,22T		1	
13262E	13262-0050 (OPTION)	GEAR,OUTPUT 6TH,28T		1	
92200	92200-1534 (OPTION)	WASHER,INPUT,T=1.7			AR
92200A	92200-1535 (OPTION)	WASHER,OUTPUT,T=1.7			AR
92200B	92200-1536 (OPTION)	WASHER,T=1.2			AR



E1361B

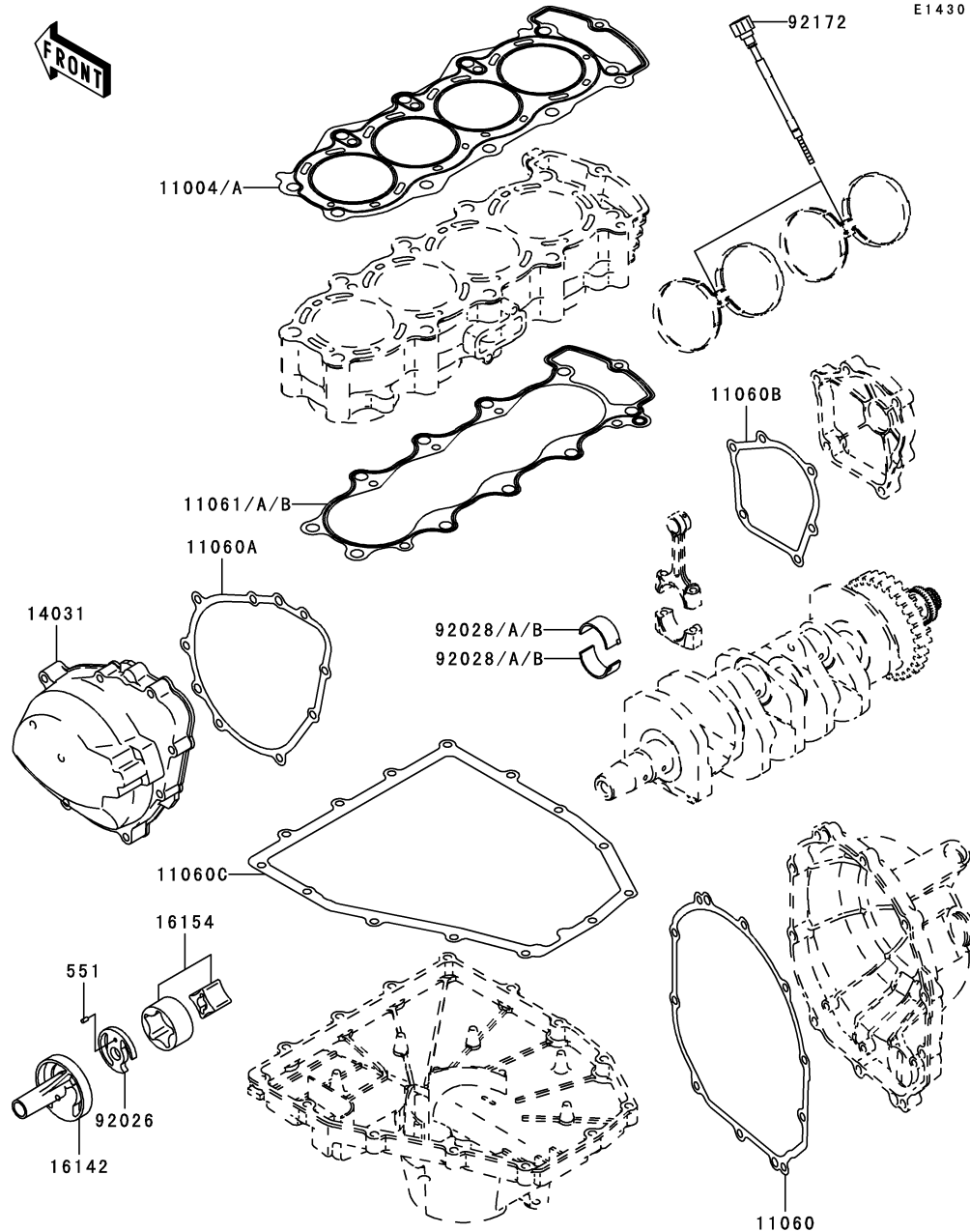
Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600	
				'03	KR1
13127	13127-0010 (OPTION)	SHAFT-TRANSMISSION INPUT,17T		1	
13260	13260-1989 (OPTION)	GEAR,INPUT 5TH,22T		1	
13260A	13260-1990 (OPTION)	GEAR,INPUT TOP,26T		1	
13260B	13260-1995 (OPTION)	GEAR,OUTPUT 5TH,28T		1	
13260C	13260-1996 (OPTION)	GEAR,OUTPUT TOP,30T		1	
13262	13262-0034 (OPTION)	GEAR,OUTPUT LOW,40T		1	
13262A	13262-0035 (OPTION)	GEAR,INPUT 2ND,17T		1	
13262B	13262-0036 (OPTION)	GEAR,OUTPUT 2ND,32T		1	
13262C	13262-0038 (OPTION)	GEAR,OUTPUT 3RD,35T		1	
13262D	13262-0041 (OPTION)	GEAR,INPUT 3RD&4TH,22T&20T		1	
13262E	13262-0043 (OPTION)	GEAR,INPUT 3RD&4TH,22T&21T		1	
13262F	13262-0090 (OPTION)	GEAR,OUTPUT 4TH,35T		1	
92200	92200-1534 (OPTION)	WASHER,INPUT,T=1.7		AR	
92200A	92200-1535 (OPTION)	WASHER,OUTPUT,T=1.7		AR	
92200B	92200-1536 (OPTION)	WASHER,T=1.2		AR	

This catalog covers:  
**'03 ZX600-KR1 Engine**

GRID NO.

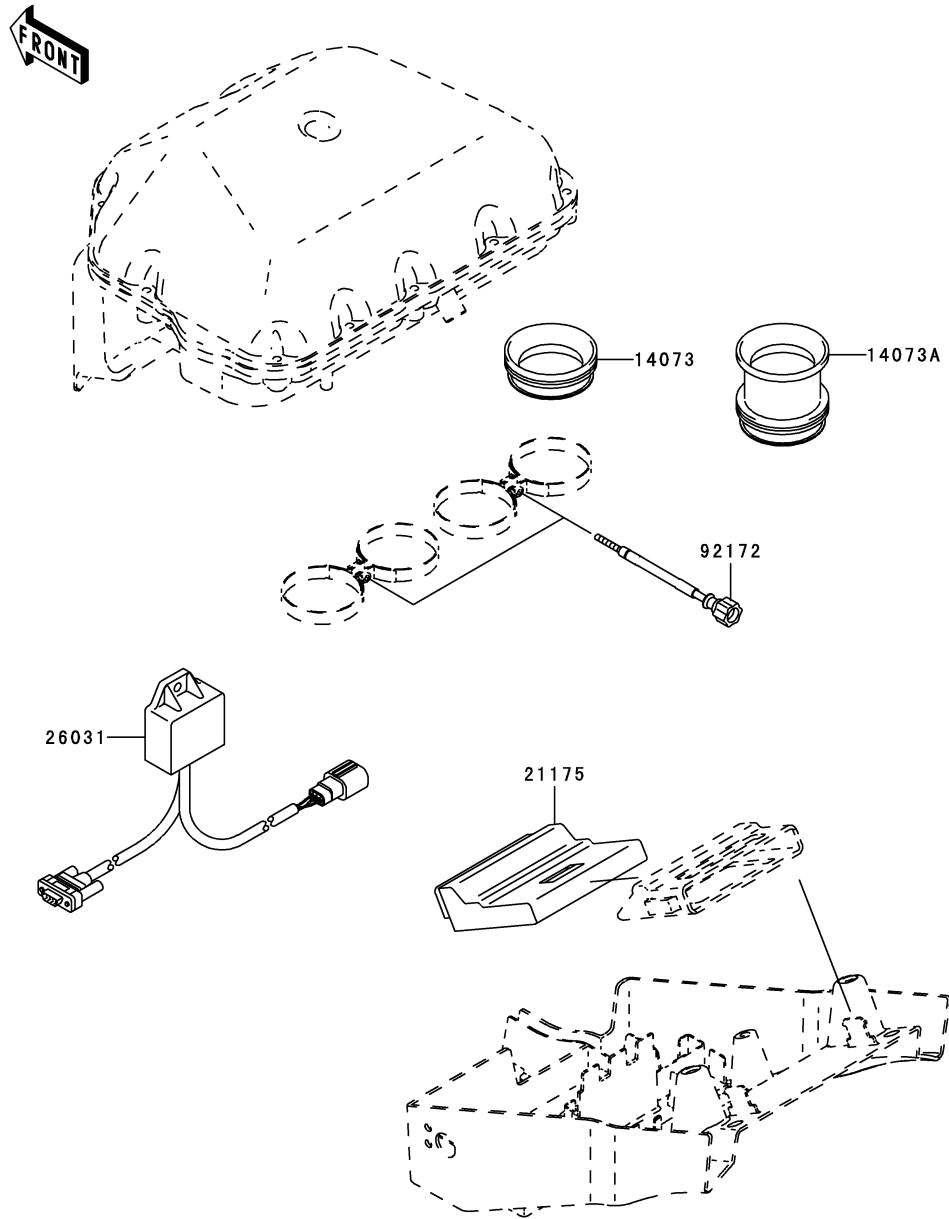
**B-7**

This grid covers:  
**Engine Cover(s)**



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600		
				'03		
11004	11004-0004 (OPTION)	GASKET-HEAD,T=0.55				1
11004A	11004-0005 (OPTION)	GASKET-HEAD,T=0.65				1
11060	11060-1989 (OPTION)	GASKET,CLUTCH COVER				1
11060A	11060-1990 (OPTION)	GASKET,GENERATOR COVER				1
11060B	11060-1991 (OPTION)	GASKET,PLUSING COIL COVER				1
11060C	11060-1992 (OPTION)	GASKET,OIL PAN				1
11061	11061-0033 (OPTION)	GASKET,CYLINDER BASE,T=0.20				1
11061A	11061-0036 (OPTION)	GASKET,CYLINDER BASE,T=0.15				1
11061B	11061-0037 (OPTION)	GASKET,CYLINDER BASE,T=0.25				1
14031	14031-0007 (OPTION)	COVER-GENERATOR				1
16142	16142-1166 (OPTION)	COVER-PUMP				1
16154	16154-1125 (OPTION)	ROTOR-PUMP				1
92026	92026-1579 (OPTION)	SPACER				1
92028	92028-1976 (OPTION)	BUSHING,BLACK				AR
92028A	92028-1977 (OPTION)	BUSHING,BROWN				8
92028B	92028-1978 (OPTION)	BUSHING,PINK				AR
92172	92172-0081 (OPTION)	SCREW,THROTTLE-BODY HOLDER				2
551	551A0306 (OPTION)	PIN-DOWEL,3X6				1

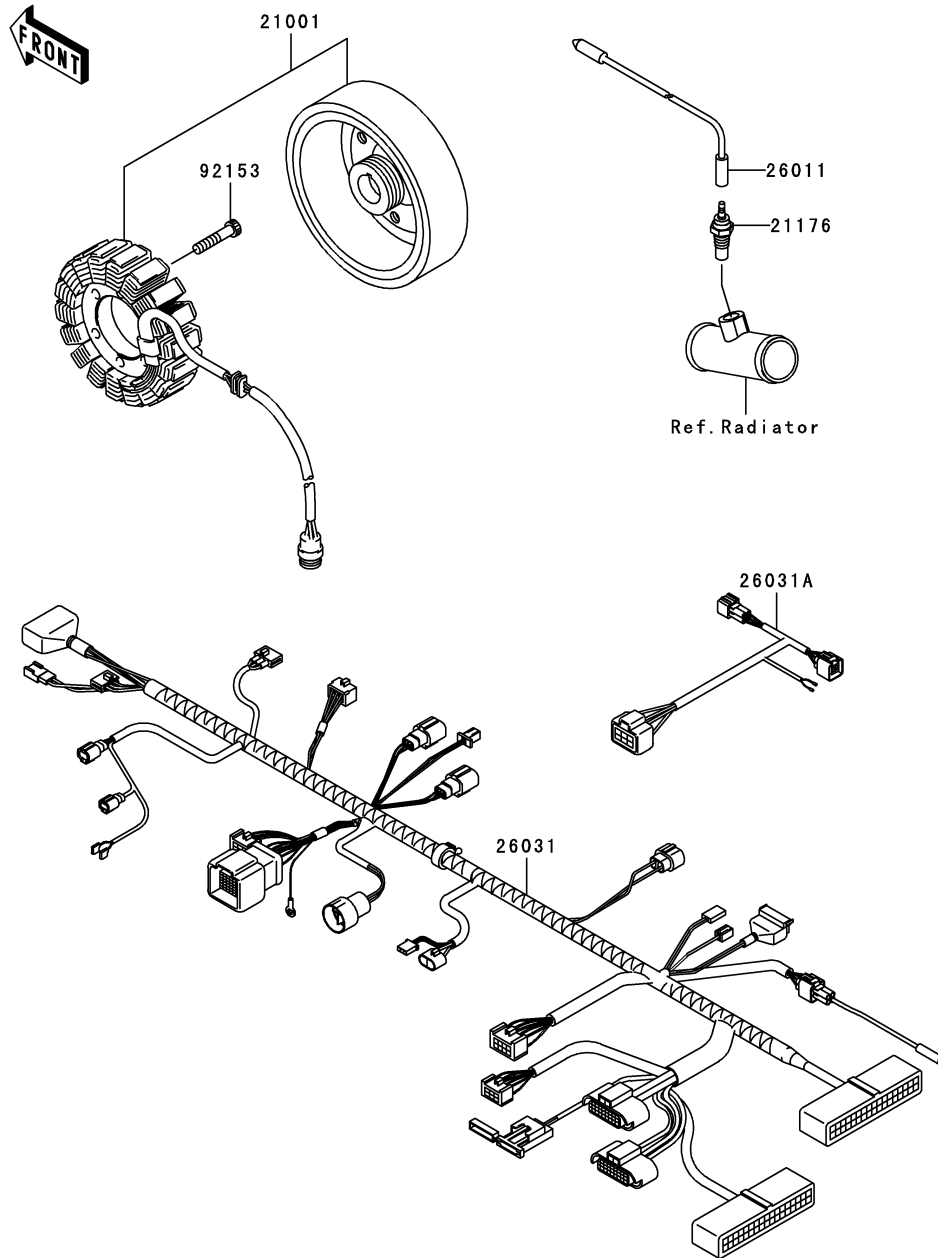
E1530



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600	
				'03	KR1
14073	14073-0009 (OPTION)	DUCT,L=10.8	AR		
14073A	14073-0010 (OPTION)	DUCT,L=50.8	AR		
21175	21175-0009 (OPTION)	CONTROL UNIT-ELECTRONIC	1		
26031	26031-0025 (OPTION)	HARNESS,INTERFACE BOX	1		
92172	92172-0081 (OPTION)	SCREW,THROTTLE-BODY HOLDER	2		

E1810

Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600	
				'03	KR1
21001	21001-0003 (OPTION)	GENERATOR		1	
21176	21176-1099 (OPTION)	SENSOR		1	
26011	26011-1779 (OPTION)	WIRE-LEAD		1	
26031	26031-0038 (OPTION)	HARNESS,KIT METER		1	
26031A	26031-0039 (OPTION)	HARNESS,STD HARNESS		1	
92153	92153-0386 (OPTION)	BOLT,STARTER		4	



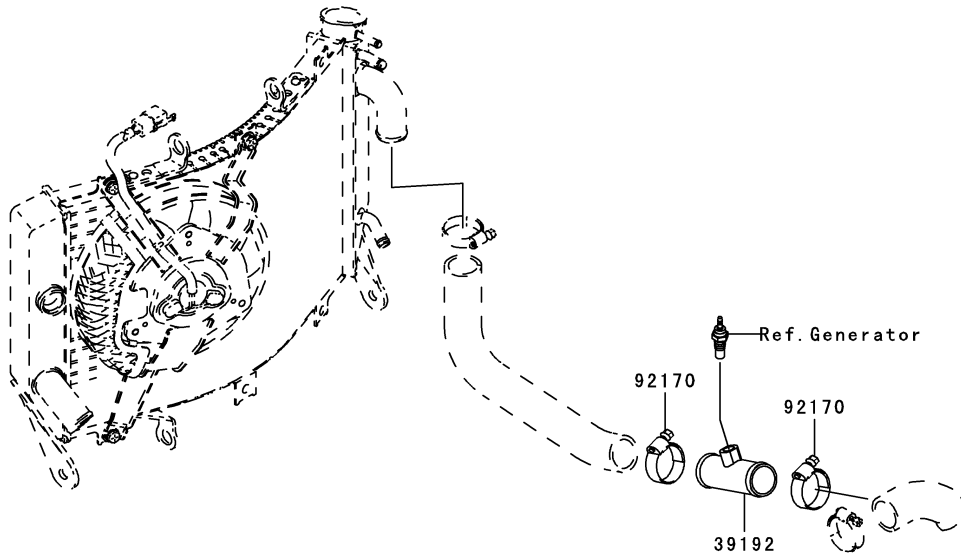


This catalog covers:  
**'03 ZX600-KR1 Engine**

GRID NO. **B-10** This grid covers:  
**Radiator**

E3032

Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600			
				'03			
39192	39192-0011 (OPTION)	PIPE-WATER		1			
92170	92170-1035 (OPTION)	CLAMP,COOLING HOSE		2			



This catalog covers:

'03 ZX600-KR1 Chassis

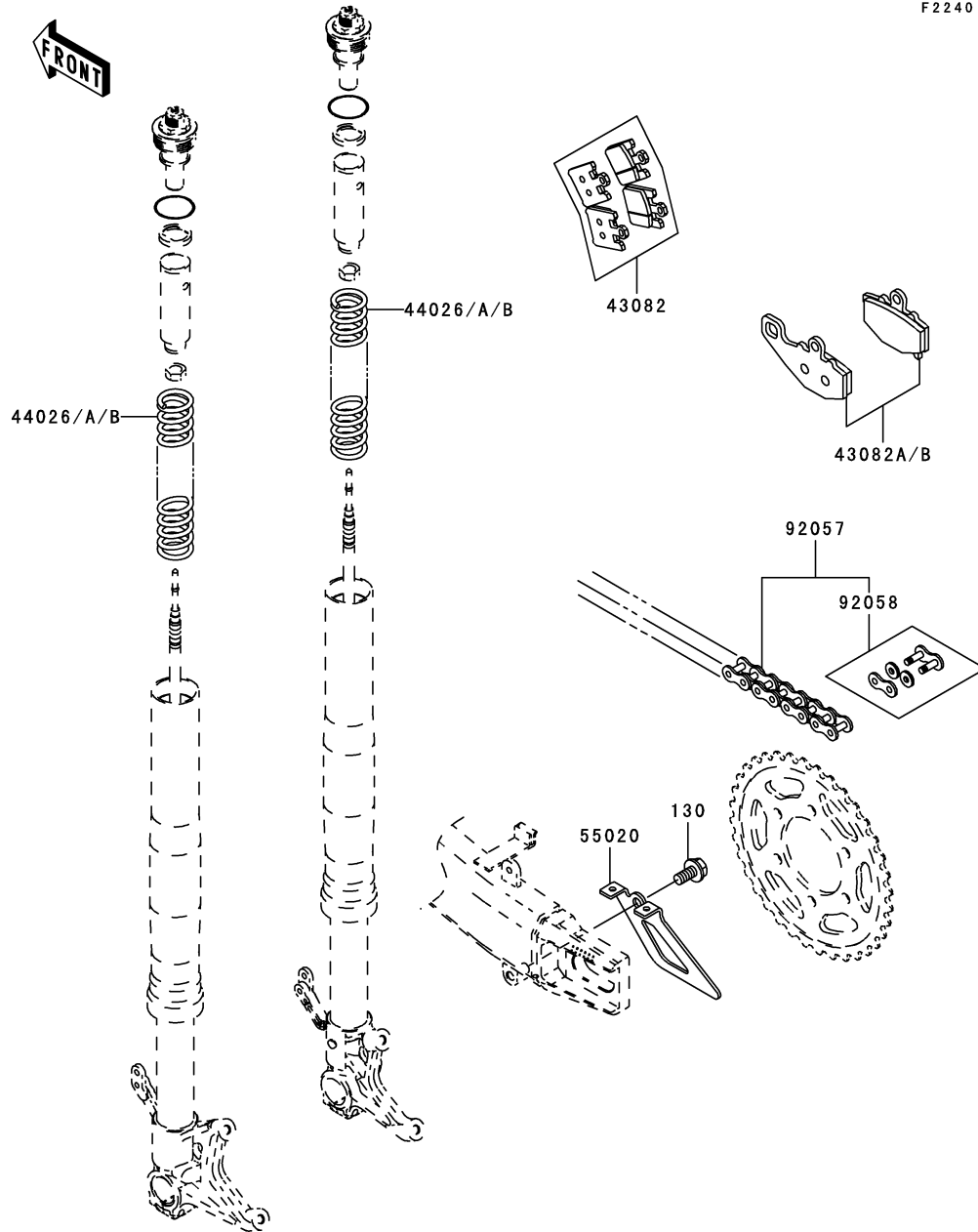
GRID NO.

**C-3**

This grid covers:

**Rear Hub**

F2240



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600			
				'03			
43082	43082-0005 (OPTION)	PAD-ASSY-BRAKE,FR,F9633		2			
43082A	43082-1192 (OPTION)	PAD-ASSY-BRAKE,RR,C93		1			
43082B	43082-1220 (OPTION)	PAD-ASSY-BRAKE,RR,C93G		1			
44026	44026-0022 (OPTION)	SPRING-FRONT FORK,K=8.00N/MM		2			
44026A	44026-0023 (OPTION)	SPRING-FRONT FORK,K=8.50N/MM		2			
44026B	44026-0024 (OPTION)	SPRING-FRONT FORK,K=8.75N/MM		2			
55020	55020-0028 (OPTION)	GUARD,CHAIN		1			
92057	92057-1529 (OPTION)	CHAIN,DRIVE,120L(#520)		1			
92058	92058-1090 (OPTION)	JOINT-CHAIN,DRIVE(#520)		1			
130	130J1020 (OPTION)	BOLT-FLANGED,10X20		1			

This catalog covers:

'03 ZX600-KR1 Chassis

GRID NO.

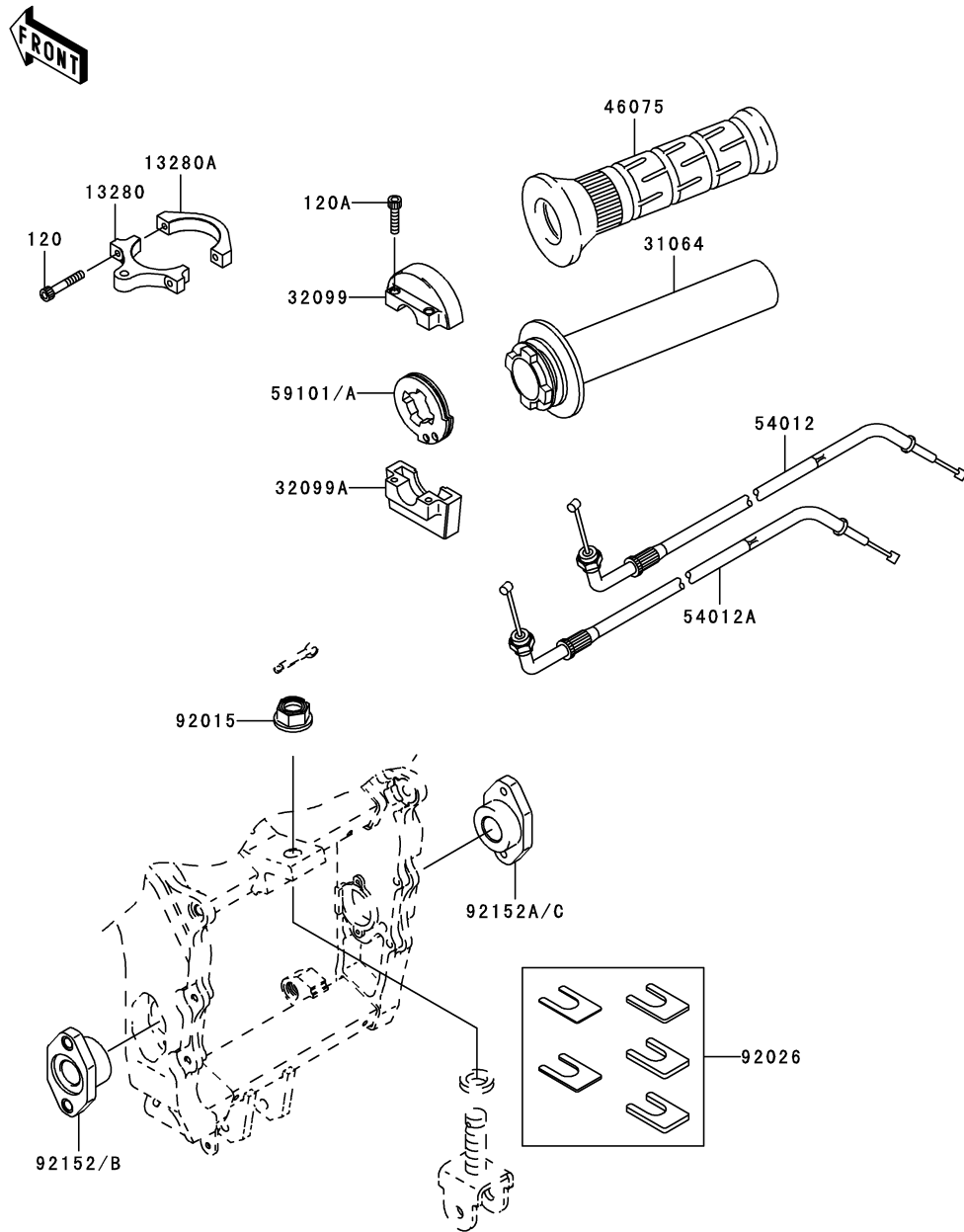
**C-4**

This grid covers:

**Handlebar**

F2310

Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600			
				'03			
				KR1			
13280	13280-0011	HOLDER,STEERING DAMPER (OPTION)		1			
13280A	13280-0012	HOLDER,STEERING DAMPER (OPTION)		1			
31064	31064-1151	PIPE-COMP,GRIP (OPTION)		1			
32099	32099-0004	CASE,UPP (OPTION)		1			
32099A	32099-0005	CASE,LWR (OPTION)		1			
46075	46075-1143	GRIP,THROTTLE (OPTION)		1			
54012	54012-0050	CABLE-THROTTLE,OPENING (OPTION)		1			
54012A	54012-0051	CABLE-THROTTLE,CLOSING (OPTION)		1			
59101	59101-0001	REEL,R21.5,60DEG (OPTION)		1			
59101A	59101-0002	REEL,R20.0,65DEG (OPTION)		1			
92015	92015-1316	NUT,FLANGED,16MM (OPTION)		1			
92026	92026-1586	SPACER,SET (OPTION)		1			
92152	92152-0042-458	COLLAR,PIVOT,LH,1MM,P.SILVER (OPTION)		1			
92152A	92152-0043-458	COLLAR,PIVOT,RH,1MM,P.SILVER (OPTION)		1			
92152B	92152-0044-458	COLLAR,PIVOT,LH,2MM,P.SILVER (OPTION)		1			
92152C	92152-0045-458	COLLAR,PIVOT,RH,2MM,P.SILVER (OPTION)		1			
120	120P0635	BOLT-SOCKET,6X35 (OPTION)		2			
120A	120S0625	BOLT-SOCKET,6X25,BLACK (OPTION)		2			



This catalog covers:

'03 ZX600-KR1 Chassis

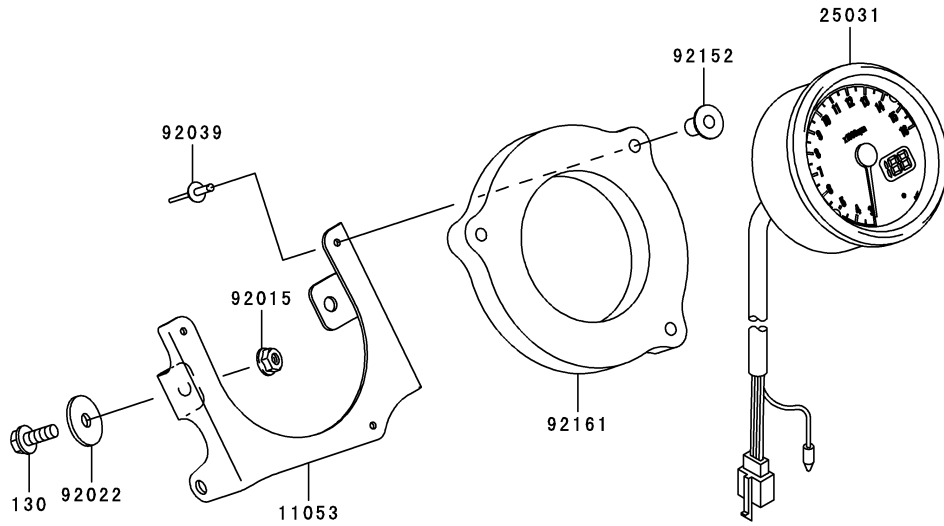
GRID NO.

**C-5**

This grid covers:

**Meter(s)**

F2530



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600			
				'03			
11053	11053-0220 (OPTION)	BRACKET,METER		1			
25031	25031-1142 (OPTION)	METER-ASSY		1			
92015	92015-1233 (OPTION)	NUT,FLANGED,6MM,BLACK		2			
92022	92022-1690 (OPTION)	WASHER,6.5X24X2		2			
92039	92039-1106 (OPTION)	RIVET		3			
92152	92152-0058 (OPTION)	COLLAR		3			
92161	92161-0053 (OPTION)	DAMPER		1			
130	130J0616 (OPTION)	BOLT-FLANGED,6X16,BLACK		2			



**KAWASAKI HEAVY INDUSTRIES, LTD.**  
Consumer Products & Machinery Company

**Part No. 99929-1627-01**