Kawasaki

Ninja ZX-6R

2009 Ninja ZX-6R 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.

Base Manual	Part Number
Ninja ZX-6R Motorcycle Service Manual	99924-1417-01

First Edition (1): Nov. 25, 2008

Congratulation on your purchase of racing kit parts for the 2009 Ninja ZX-6R.

IMPORTANT

This manual provides how to install racing kit parts for the 2009 Ninja ZX-6R and how to tune up basically.

As for the basic knowledge, refer to the base Service Manual for the Ninja ZX-6R (P/No. 99924-1417-01).

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-6R 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.

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General Specifications

Item	2009 Ninja ZX-6R Racing
Engine:	
Ignition timing	12.5°BTDC @1 300 r/min (rpm)
Fuel (Recommended)	Racing gasoline
Engine oil (Recommended):	Racing oil
Level	Between upper and lower levels of oil level gauge.
Drive Train:	
Primary drive reduction ratio	1.900 (76/40)

Transmission Gear Table

		STD (Type A)	Type B	Type C	Type D
1st	In	*13127-0068	13127-0055	(13127-0055)	
	Out	*13262-0712	13262-0526	13262-0535	
	Teeth (Out/In)	38/14	37/14	36/14	
	Gear Ratio	2.714	2.643	2.571	
2nd	In	*13262-0744	13262-0527	13262-0536	13262-0677
	Out	13262-0508	13262-0528	13262-0537	13262-0678
	Teeth (Out/In)	33/15	39/18	34/16	36/16
	Gear Ratio	2.200	2.167	2.125	2.25
3rd	In	See Gear Selection	See Gear Selection		
	Out	13262-0509	13262-0683		
	Teeth (Out/In)	37/20	32/17		
	Gear Ratio	1.850	1.882		
4th	In	See Gear Selection	See Gear Selection	See Gear Selection	See Gear Selection
	Out	13262-0510	13262-0530	13262-0684	13262-0685
	Teeth (Out/In)	32/20	33/20	39/23	30/19
	Gear Ratio	1.600	1.650	1.696	1.579
5th	In	*13262-0710	13262-0531	13262-0538	13262-0686
	Out	13262-0380	13262-0532	13262-0539	13262-0687
	Teeth (Out/In)	27/19	30/20	32/22	32/23
	Gear Ratio	1.421	1.500	1.455	1.391
6th	In	*13262-0711	13262-0533	13262-0540	13262-0688
	Out	13262-0582	13262-0534	13262-0541	13262-0689
	Teeth (Out/In)	26/20	32/23	35/26	29/23
	Gear Ratio	1.300	1.391	1.346	1.261

Input 3rd/4th Gear Selection Table

		4th Gear			
		A	B	C	D
3rd Gear	A	*13262-0709	13262-0529		13262-0679
	B	13262-0680	13262-0681	13262-0682	

* The transmission gears marked " * " of '09 model have interchangeability with those of '08 model.

Gear Identification Slit Number Table

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

Racing Kit Service Data

Item	Standard
Cylinder Head, Valves:	
Duration:	
Intake	288°
Exhaust	258°
Camshaft timing (cam lift center):	
Intake	105° (ATDC)
Exhaust	110° (BTDC)
Valve clearance:	
Intake	0.16 mm
Exhaust	0.28 mm
Valve to piston clearance:	
Intake	0.80 mm (Minimum) @12°ATDC
Exhaust	1.40 mm (Minimum) @11°BTDC
Ignition System:	
Spark plugs	NGK R0045Q-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.

FREQENCY / OPERATION	Each Race (300 km)	Every 3 races (1 000 km)	Every 5 races (1 500 km)	Every 10 races (3 000 km)	As Required
Engine					
Clutch plate - - check*	●				
Throttle grip play - - check*	●				
Spark plug - - clean/gap*	●				
Engine oil - - change	●				
Oil filter - - replace	●				
Valve lapping			●		
Cylinder head/valve - - decarbonization			●		
Cylinder - - check*			●		
Piston/cylinder clearance - - check*			●		
Piston, Piston ring, Piston pin - - replace			●		
Crankshaft main bearing - - check*				●	
Connecting rod big end bearing - - check*				●	
Transmission gear, bearing - - check*				●	
Engine sprocket - - check*	●				
Coolant - - change					●
Radiator hoses, connections - - check*	●				
Frame					
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	●				

FREQENCY OPERATION	Each Race (300 km)	Every 3 races (1 000 km)	Every 5 races (1 500 km)	Every 10 races (3 000 km)	As Required
Wheel bearing (rear) - - grease				●	
Swingarm pivot, uni-track linkage - - grease			●		
Swingarm pivot, uni-track linkage - - check*			●		

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

Preparation

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.

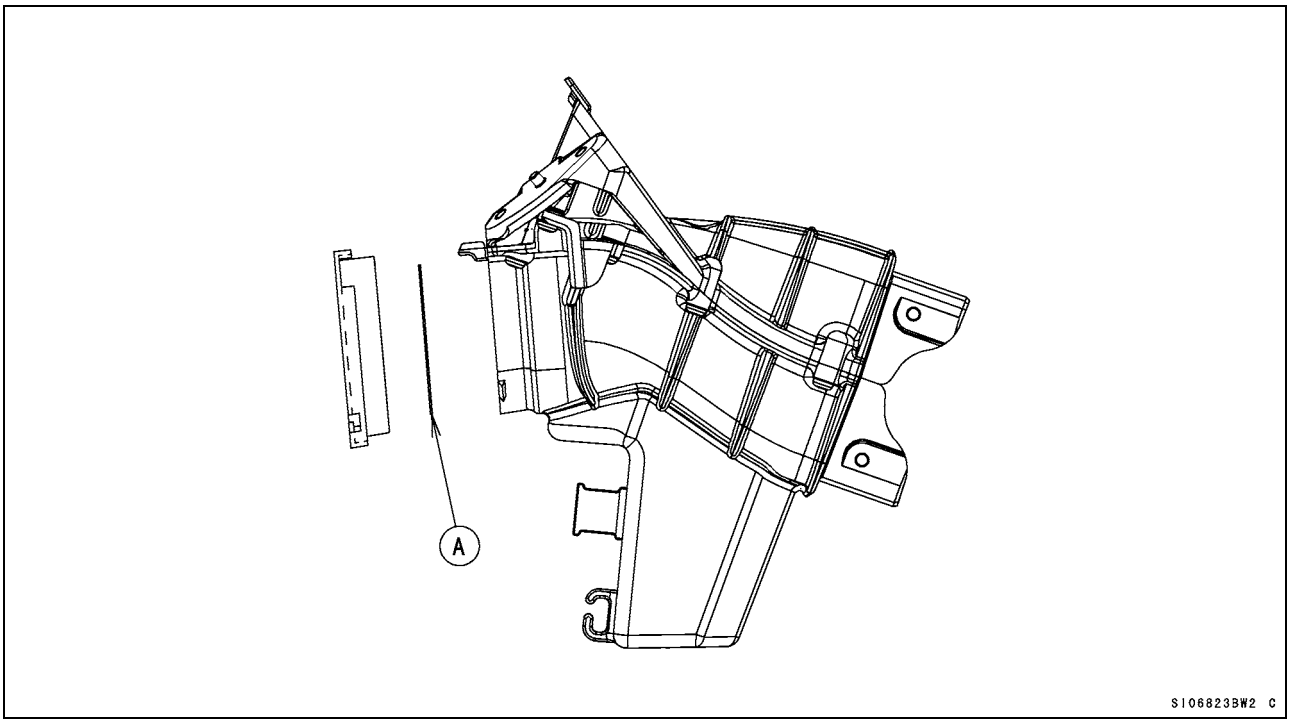
Racing Kit Parts

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.

Engine Parts Installation

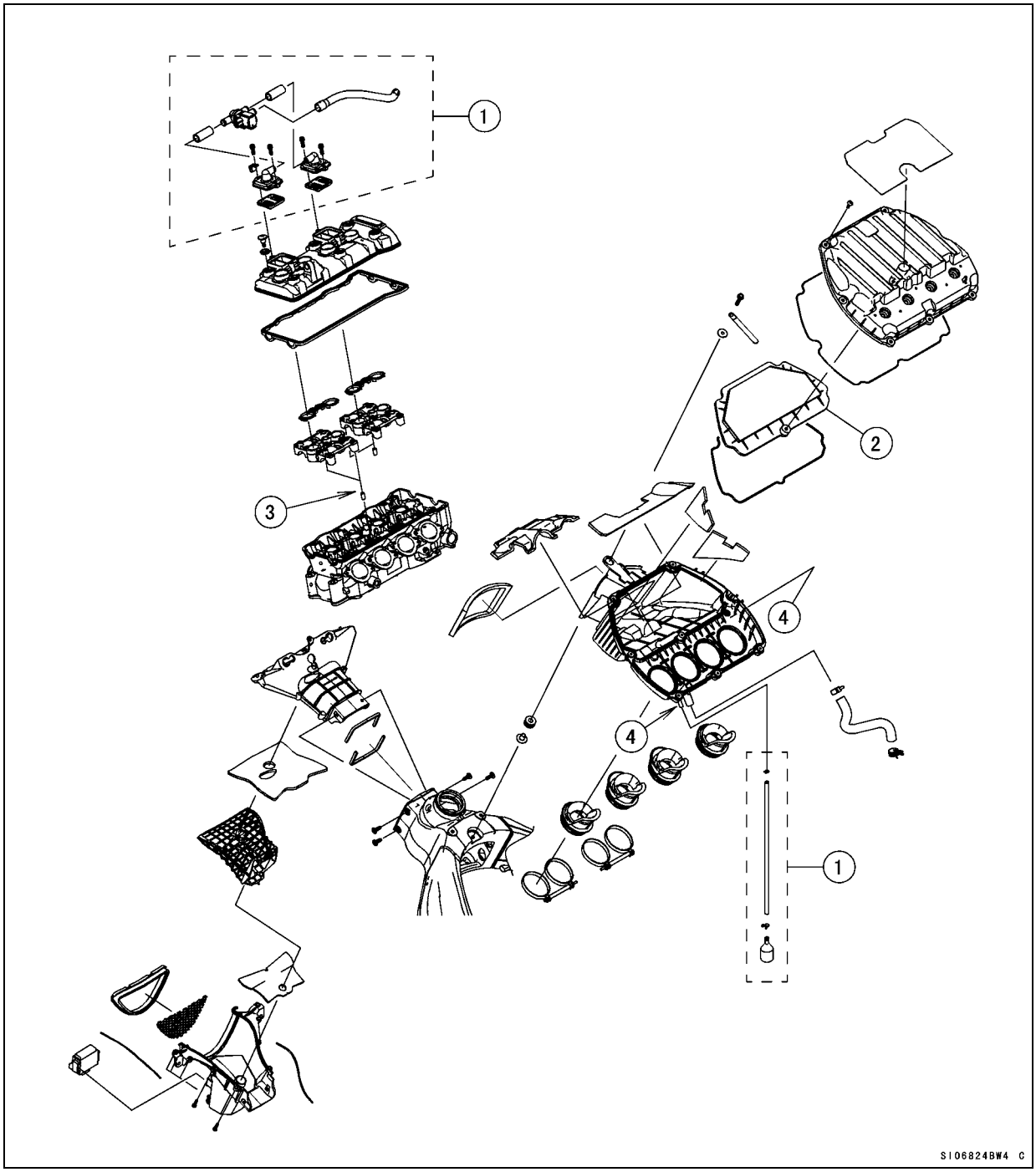
Air Intake Parts

- Remove the wire net of Ram – Air duct intake to reduce the air flow resistance.



A. Wire Net (14037-0089)

- Remove the secondary valves of cylinder head and relational parts, then plug the four holes.
- Remove the oil receiver and plug the hole.
- Remove the air cleaner element or cut the cleaner element off remaining punched plate to reduce the air flow resistance.



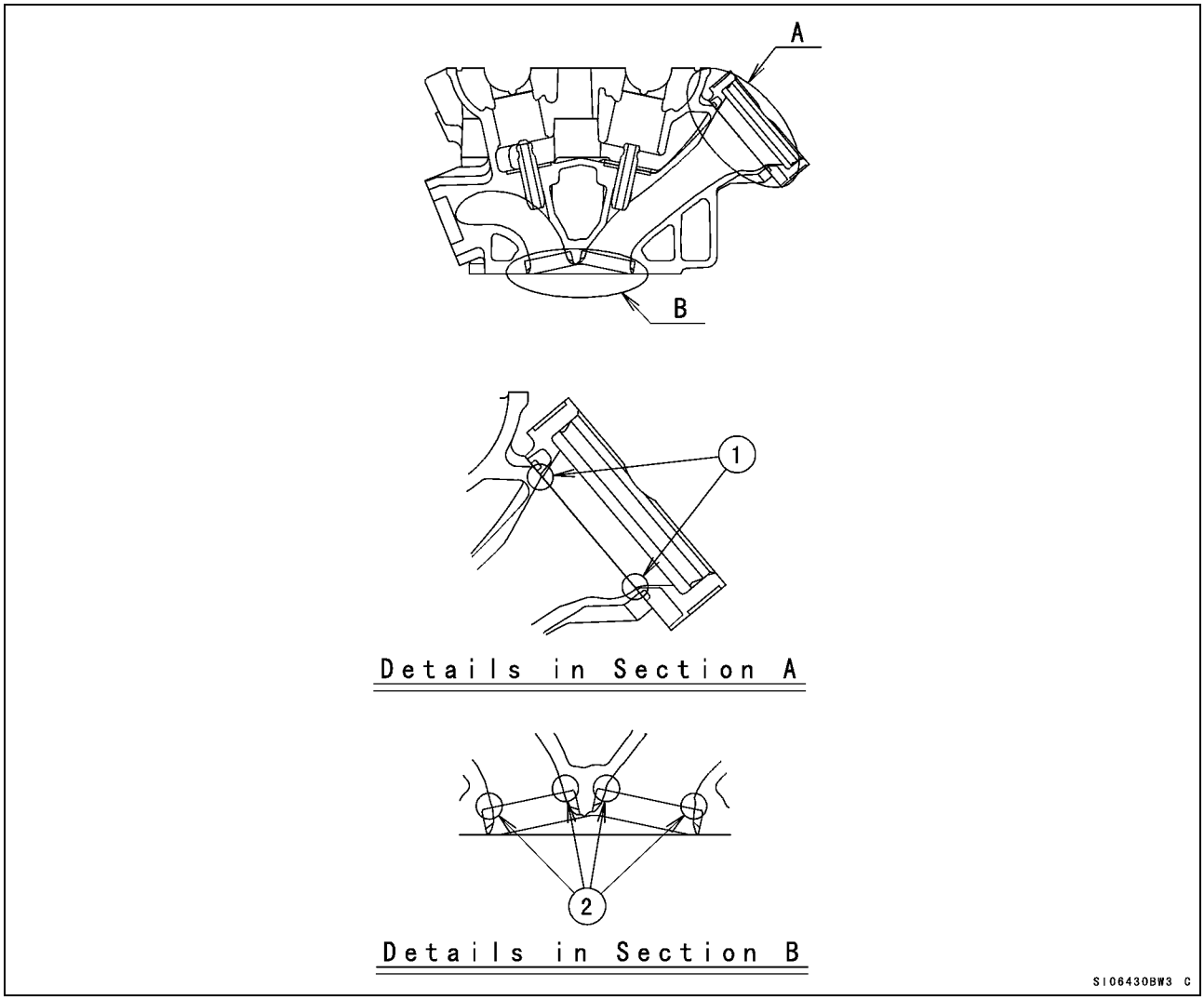
1. Remove the parts.
2. Remove the parts or cut the cleaner element off remaining the punching plate.
3. Secondary Air Passages on Cylinder Head: Plug the holes, or insert the pins (92043-1506) instead of the original pins.
   Output of Secondary Air on Air Cleaner: Plug the hole.
4. Plug the hole.

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 throttle body 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 throttle body 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.
- ● Use the hand grinder.
- ○ Use #200 oil stone for eliminating any stepped portions.
- ○ Use #200 oil stone for smoothing and #300 oil stone for finishing.

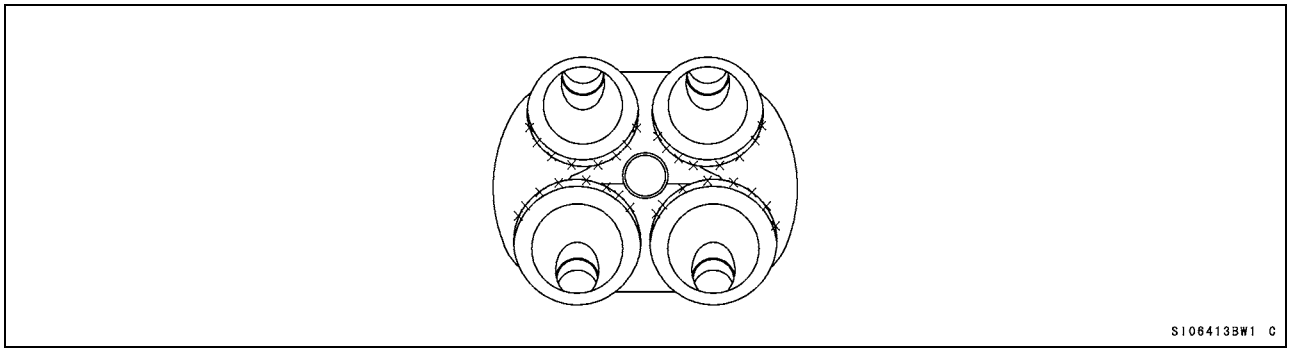
NOTE

- ○ *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.*



1. Stepped Portions of throttle body holder and cylinder head.
2. Stepped Portions of valve seat and cylinder head.

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



XXX. Edges

NOTE

○ *When grinding the cylinder head bottom 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: 0.8 mm, EX: 1.4 mm).*

Camshaft Chain Tensioner

- Replace the cam chain tensioner with the kit to gain the durability.
- Apply the engine oil to the tensioner rod, O-ring and tensioner body, insert them into the tensioner body.

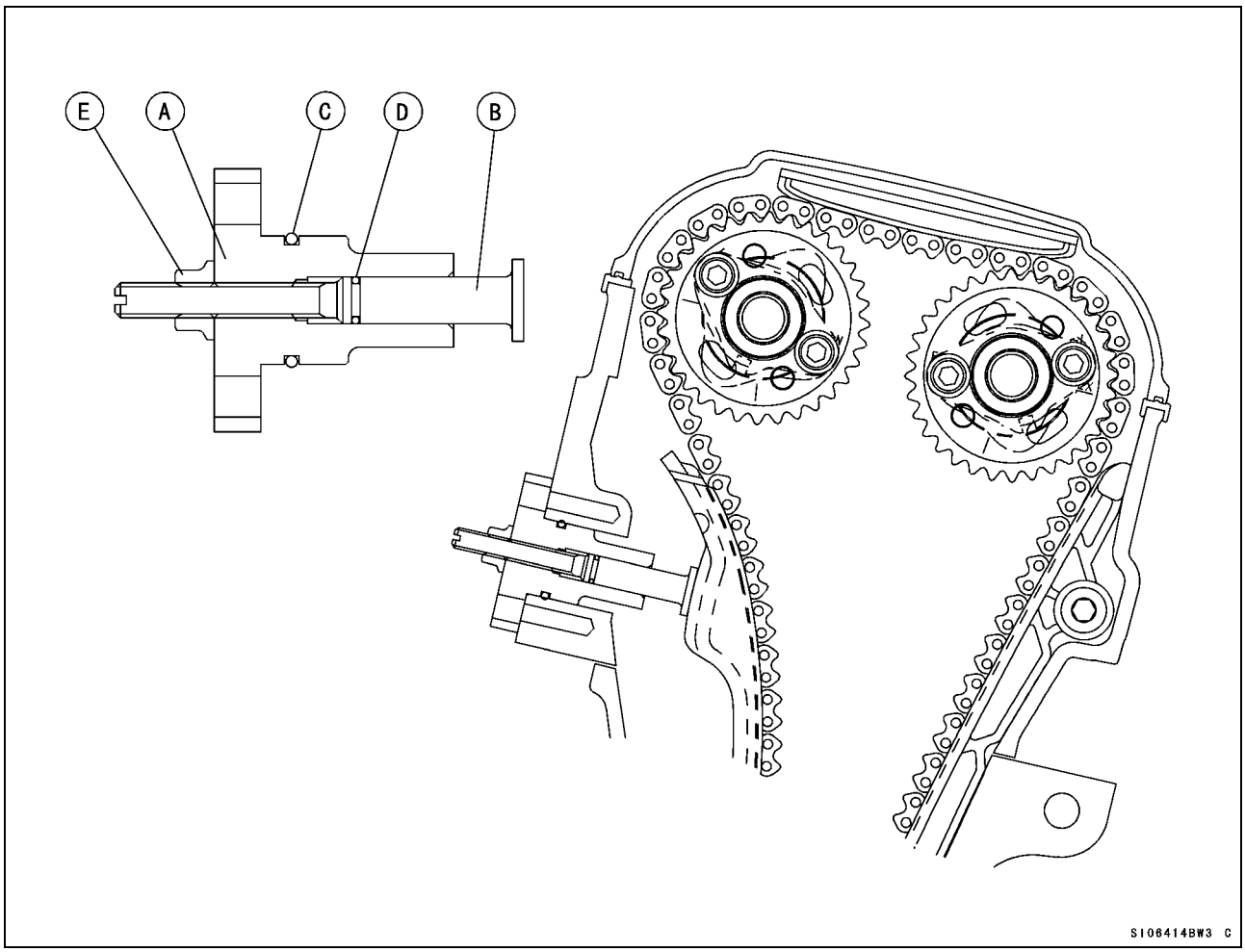
○ Check to see that the tensioner rod turns freely in the body, if not, polish the tensioner rod or fine the female threads in the body with a tap (Diameter × Pitch = 6 mm × 1.0 mm).

- Install the tensioner on the cylinder head with the tensioner rod is fully pushed back.
- Turn the tensioner rod in with a screwdriver until it becomes hard to turn.
- Turn the crankshaft clockwise forcing lightly to the tensioner rod with twisting force to take up any gap and tighten the locknut.
- Tighten the rock nut after adjustment.

NOTE

○ *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.



A. Tensioner
B. Tensioner Rod
C. O-ring
D. O-ring
E. Lock nut

Camshafts, Sprockets

Camshafts, Sprockets:

- Adjust the valve clearance within the specified value, but more performance is expected when adjusted from middle value to upper limit between adjustable range.

Original	Timing	Cam Lift	Valve Clearance
Intake	288°	8.60 mm	0.13 ~ 0.19 mm
Exhaust	258°	7.20 mm	0.24 ~ 0.31 mm

Kit	Timing	Cam Lift	Valve Clearance
Intake 49118-0149	288°	8.60 mm (conformed to FIM regulation)	0.13 ~ 0.19 mm

- If you don't adjust the valve timing for racing, install the camshaft sprocket to the kit camshaft using the round bolt holes and adjust the cam chain timing according to the Ninja ZX-6R Service Manual. If you adjust the valve timing, install the sprocket to the camshaft between the adjustable range of 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 (Valve Timing is the same when the standard camshaft and the kit camshaft are used.)

Timing (cam lift center)	Intake	Exhaust
When round bolt holes are used	105°	110°
Recommended timing for race when long bolt holes are used	107.5°	110°

○ When grinding the cylinder head bottom 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	0.8 mm
Exhaust	1.4 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) and 11° BTDC (Exhaust) of crankshaft timing. At this point, the valve to piston clearance will be minimum.

Valve Springs

The original machine's valve springs should be used

.

Cylinder Compression

- To adjust the cylinder compression, adjust the thickness of the cylinder head gasket and the cylinder base gasket or 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	0.67 ~ 0.85 mm

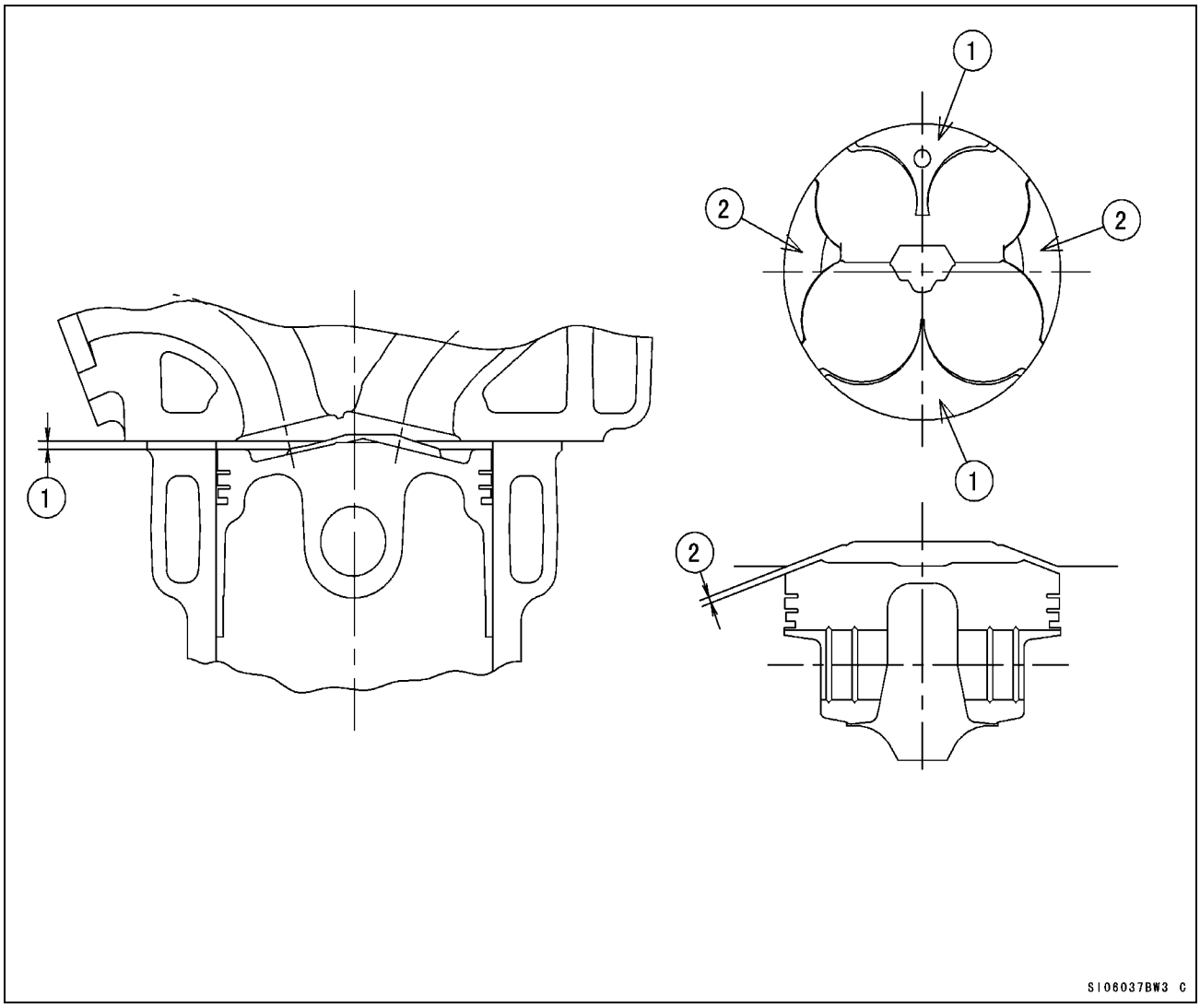
○ The most preferable squish measurement is [1] 0.65 mm/[2] 0.67 mm.

○ Select proper cylinder head gasket and cylinder base gasket.

○ 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	I.D. Color
11004-0071	0.45 mm	KIT	Yellow
11004-0070	0.50 mm	KIT	White
11004-0069	0.55 mm	KIT	Red
11004-0068	0.60 mm	KIT	Blue
11004-0085	0.65 mm	Original	None
11004-0067	0.70 mm	KIT	Green



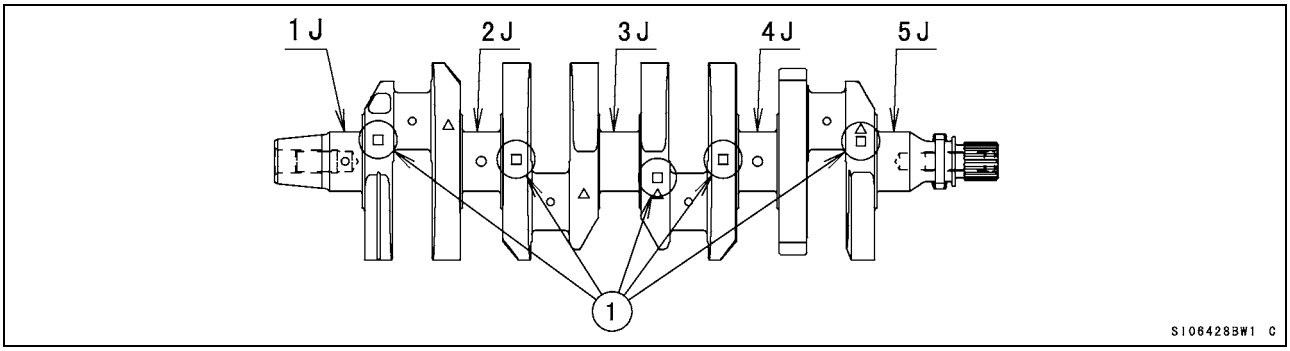
1. Squish, Front/Rear
2. Squish, Left/Right

Crankshaft Main Journal and Connecting Rod Big End Bushings

- To adjust clearance of crankshaft main journal you can select proper bush in accordance with the marks.
- The kit bushings are improved in anti-seizuring characteristics as well as in wear-resistance as compared with the standard bushings.

1) Crankshaft Main Journal

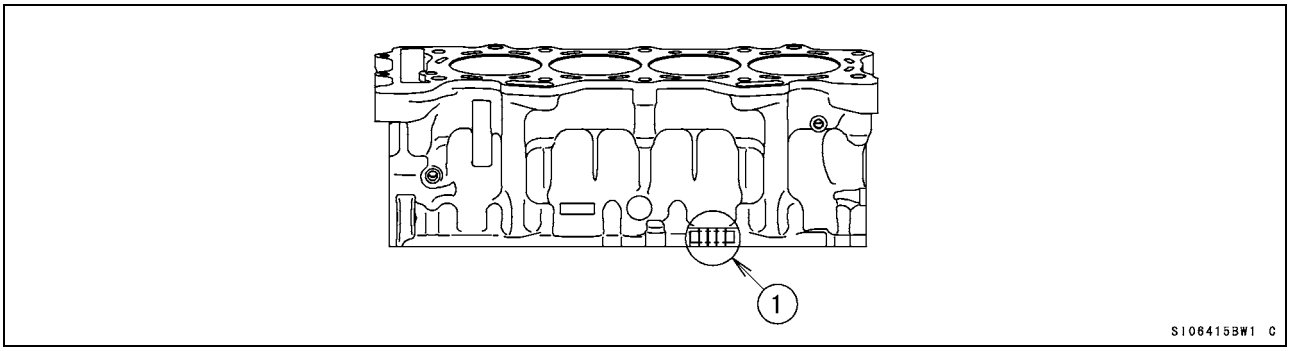
○ Crankshaft Main Journal Diameter



1. Crankshaft Main Journal Diameter Marks

SIZE			
"1" mark	:	over 30.992 mm	within 31.000 mm
None	:	over 30.984 mm	within 30.992 mm

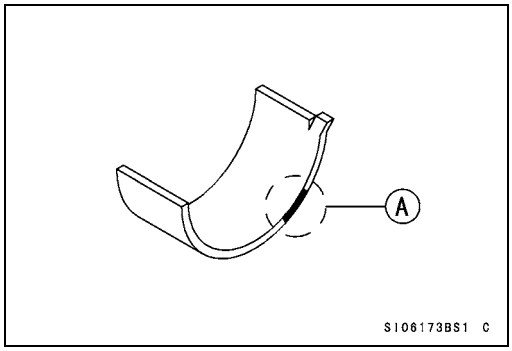
○ Crankcase Main Journal inside Diameter



1. Main Journal Diameter Marks

SIZE			
"○" mark	:	over 34.000 mm	within 34.008 mm
None	:	34.008 mm and over	within 34.016 mm

○ Main Journal Bush



A. Size Color

○ Main Journal Bush

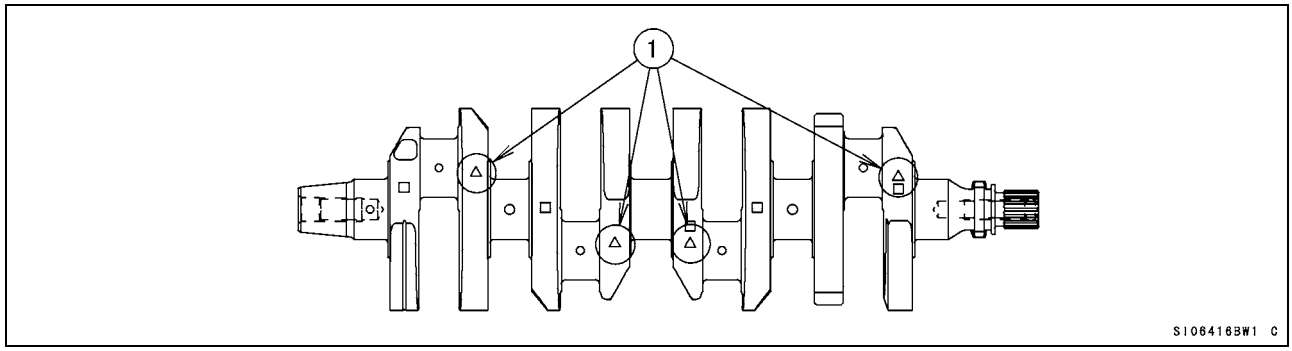
Size Color	Thickness mm	Journal Number	Part Number (STD)	Part Number (KIT)
blue	1.499-1.503	1/5	92139-0245	92139-0269
		2/4	92139-0248	92139-0272
purple		3	92139-0252	92139-0275
black	1.495-1.499	1/5	92139-0246	92139-0270
		2/4	92139-0249	92139-0273
green		3	92139-0252	92139-0276
brown	1.491-1.495	1/5	92139-0247	92139-0271
		2/4	92139-0250	92139-0274
yellow		3	92139-0253	92139-0277

○ Bush Selection Table

Crankcase Inner Diameter	Crankshaft Diameter	Size Color	Journal Number	Part Number (STD)	Part Number (KIT)
○	1	brown	1/5	92139-0247	92139-0271
			2/4	92139-0250	92139-0274
(34.000 mm ~ 34.008 mm)	(30.992 mm ~ 31.000 mm)	yellow	3	92139-0253	92139-0277
○	NONE	black	1/5	92139-0246	92139-0270
			2/4	92139-0249	92139-0273
(34.000 mm ~ 34.008 mm)	(30.984 mm ~ 30.992 mm)	green	3	92139-0252	92139-0276
NONE	1	black	1/5	92139-0246	92139-0270
			2/4	92139-0249	92139-0273
(34.008 mm ~ 34.016 mm)	(30.992 mm ~ 31.000 mm)	green	3	92139-0252	92139-0276
NONE	NONE	blue	1/5	92139-0245	92139-0269
			2/4	92139-0248	92139-0272
(34.008 mm ~ 34.016 mm)	(30.984 mm ~ 30.992 mm)	purple	3	92139-0252	92139-0275

2) Crankpin

○ Crankpin Diameter



1. Crankpin Diameter Marks

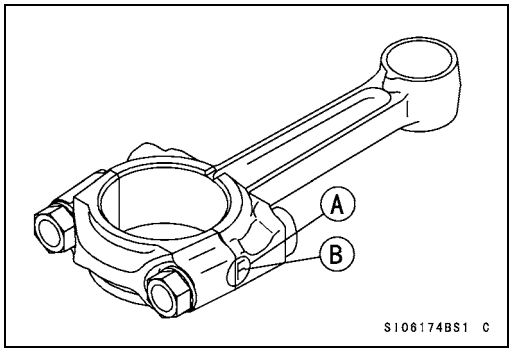
"○" mark	:	over 29.992 mm	within 30.000 mm
None	:	29.984 mm and over	within 29.992 mm

○ Connecting Rod Big End Inside Diameter

Connecting Rod Big End Inside Diameter Marks

"○" mark	:	over 33.008 mm	within 33.016 mm
None	:	33.000 mm and over	within 33.008 mm

A. Inside Diameter Mark
(○ or None)
B. Weight Mark, Alphabet
(G.H etc)



○ Connecting Rod Big End Bushings

Size Color	Thickness mm	Part Number (STD)	Part Number (KIT)
blue	1.485-1.490	92139-0165	92139-0194
black	1.480-1.485	92139-0166	92139-0195
brown	1.475-1.480	92139-0167	92139-0196

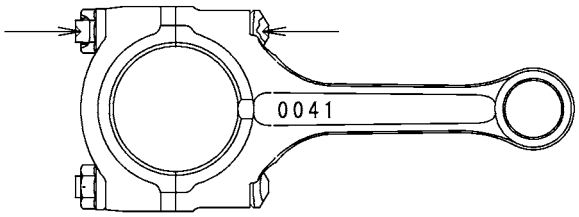
○ Selection Table

Connecting Rod Big End Inside Diameter	Crankpin Diameter Mark	Size Color	Part Number (STD)	Part Number (KIT)
None (33.000 mm ~ 33.008 mm)	○ (29.992 mm ~ 30.000 mm)	brown	92139-0167	92139-0196
None (33.000 mm ~ 33.008 mm)	None (29.984 mm ~ 29.992 mm)	black	92139-0166	92139-0195
○ (33.008 mm ~ 33.016 mm)	○ (29.992 mm ~ 30.000 mm)	black	92139-0166	92139-0195
○ (33.008 mm ~ 33.016 mm)	None (29.984 mm ~ 29.992 mm)	blue	92139-0165	92139-0194

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.



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- 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 11.8 ±2 N·m (1.2 ±0.2 kgf·m): reference
- Check the length of the bolts and find the bolt stretch.

  Bolt Length after tightening – Bolt Length before tightening = Stretch

Bolt Stretch

Usable Range: 0.33 ~ 0.38 mm (0.013 ~ 0.015 in.)

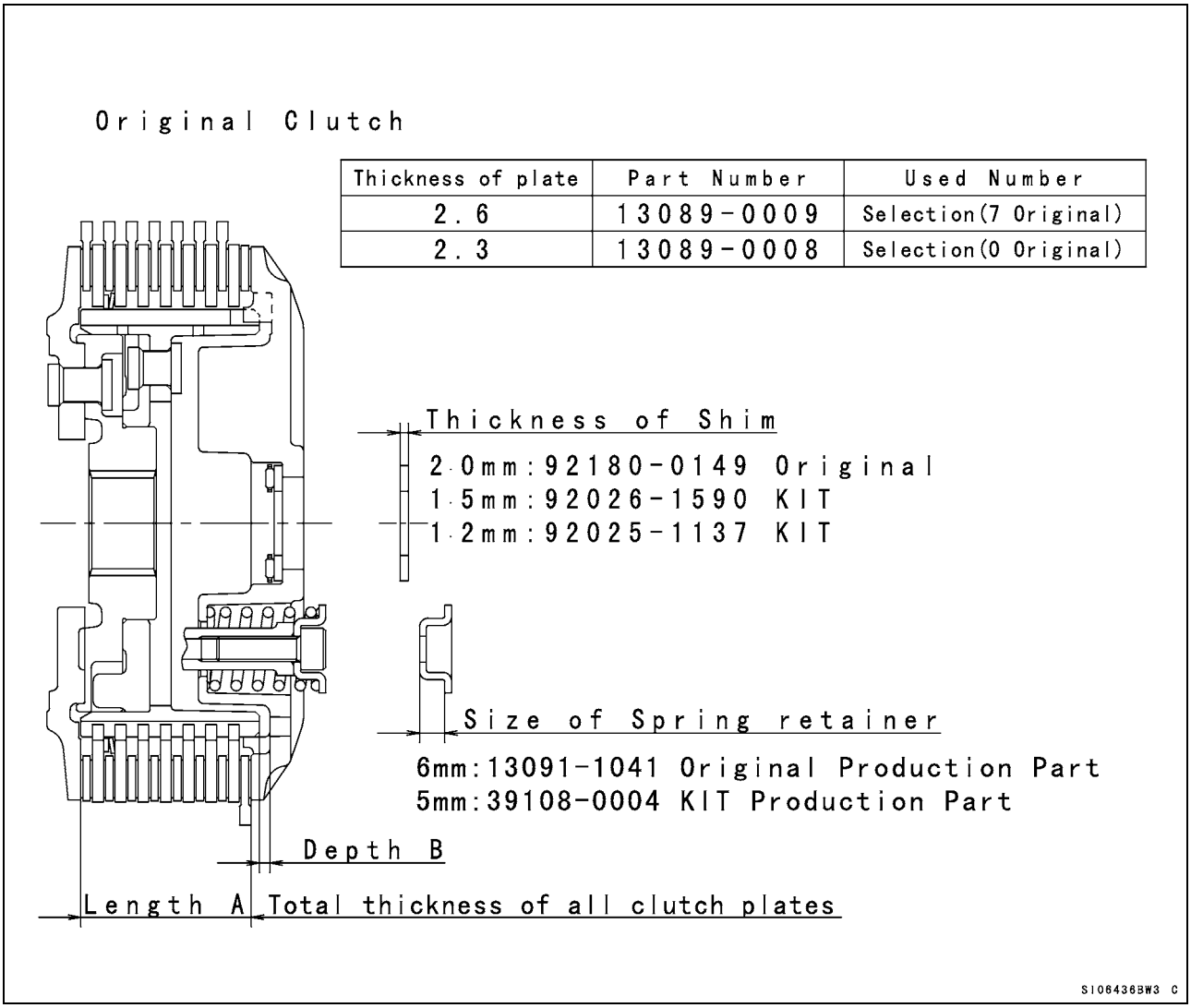
- Turn the big end nuts more until the bolt stretch reaches the usable range.

NOTE

○ *Replace the original bolts with new ones if they have already been tightened up to usable range 2 times.*

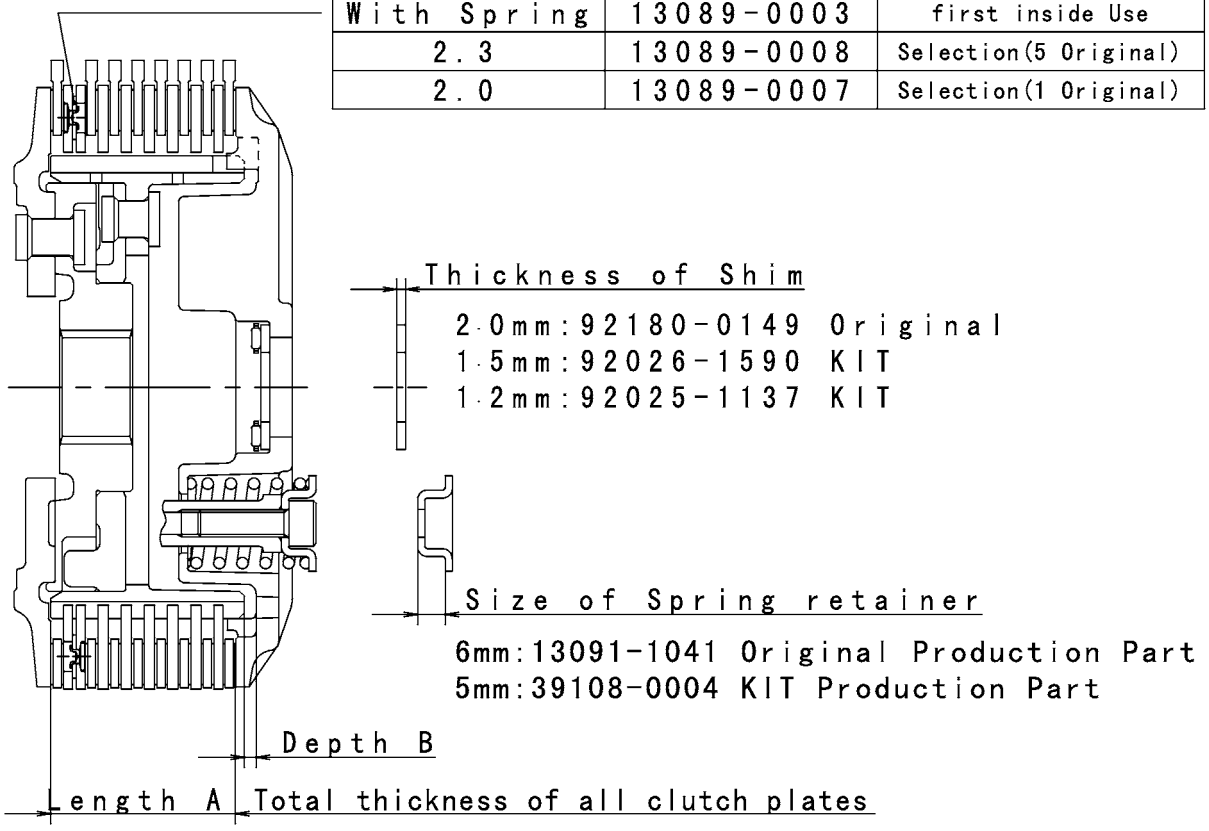
Clutch Adjustment (Back-Torque Limiter Setting)

The Ninja ZX-6R 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.



Race Recommended clutch

Thickness of plate(mm)	Part Number	Used Number
With Spring	13089-0003	first inside Use
2.3	13089-0008	Selection(5 Original)
2.0	13089-0007	Selection(1 Original)



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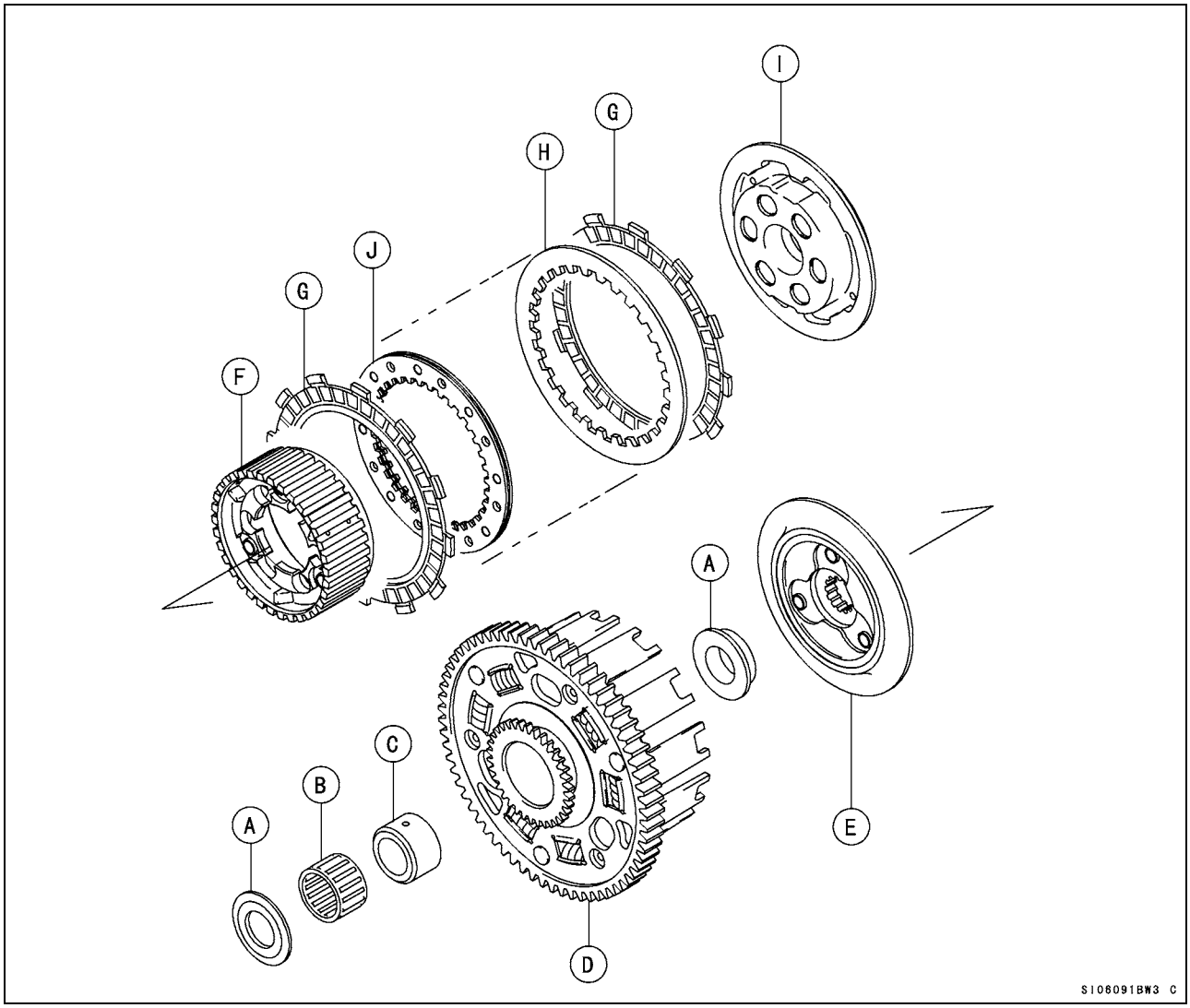
- The standard setting of length [A], total thickness of clutch plates shown in the illastration, becomes about 40.7 mm. For this setting the effective stroke of clutch spring plate during the back-torque limiter operation is adjusted between 0.45 and 0.75 mm. By increasing the effective stroke the back-torque limiter causes more slip. The effective stroke increases by decreasing the length [A]. The length [A] between 39.5 and 40.7 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.

* Steel plates of ZX600K model's are available.

Thickness (mm)	Part Number
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.

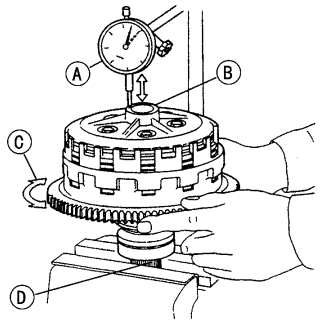
Recommended Clutch



[A] Spacers
[B] Needle Bearing
[C] Bushing
[D] Clutch Outer Casing
[E] Clutch Hub
[F] Sub Clutch Hub
[G] Friction Plates: total 8 pcs.
[H] Steel Plates
[I] Spring Plate
[J] Steel Plate with Spring

- 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



GF06031B S

- After installing the clutch to the engine, measure and record the depth [B] shown in the figure on page 21 and 22. 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] (Total thickness of all clutch plates) 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
40.2 ~ 40.7 mm	6 mm	P/No. 13091-1041 Original Setting
39.5 ~ 40.2 mm	5 mm	P/No. 39108-0004

* If clutch slip is occurred with a retainer of 6 mm, try with a retainer of 5 mm.

Standard Selection of Shim

Total Thickness of Clutch Plates	Size of Shim	Remarks
Approx. 40.7 mm	2.0 mm	P/No. 92180-0149 Original Setting
40.2 mm	1.5 mm	P/No. 92026-1590
39.5 ~ 40 mm	1.2 mm	92025-1137

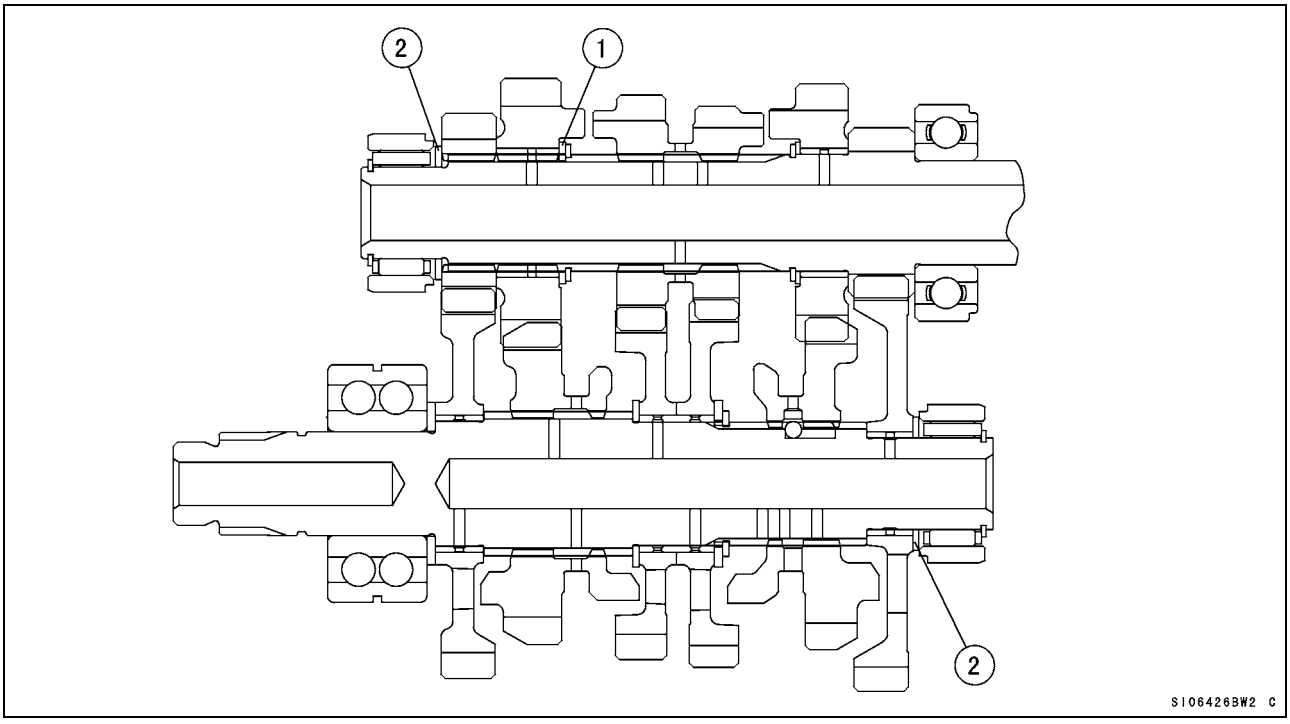
Transmission

- Remove the three steel balls (600A0500) from the output shaft assembly.
- 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 0.5 mm, to prevent the seizure of gears and to keep smooth gear-shifting.

	Thickness	Part No.	
Spline washer (input)	1.6 mm	92200-0050	Original
	1.8mm	92200-0231	Kit
	1.4 mm	92200-0230	Kit
Plane washer (input, output)	1.4 mm	92200-0138	Original
	1.6 mm	92022-212	Production part
	1.8 mm	92202-1722	KIt

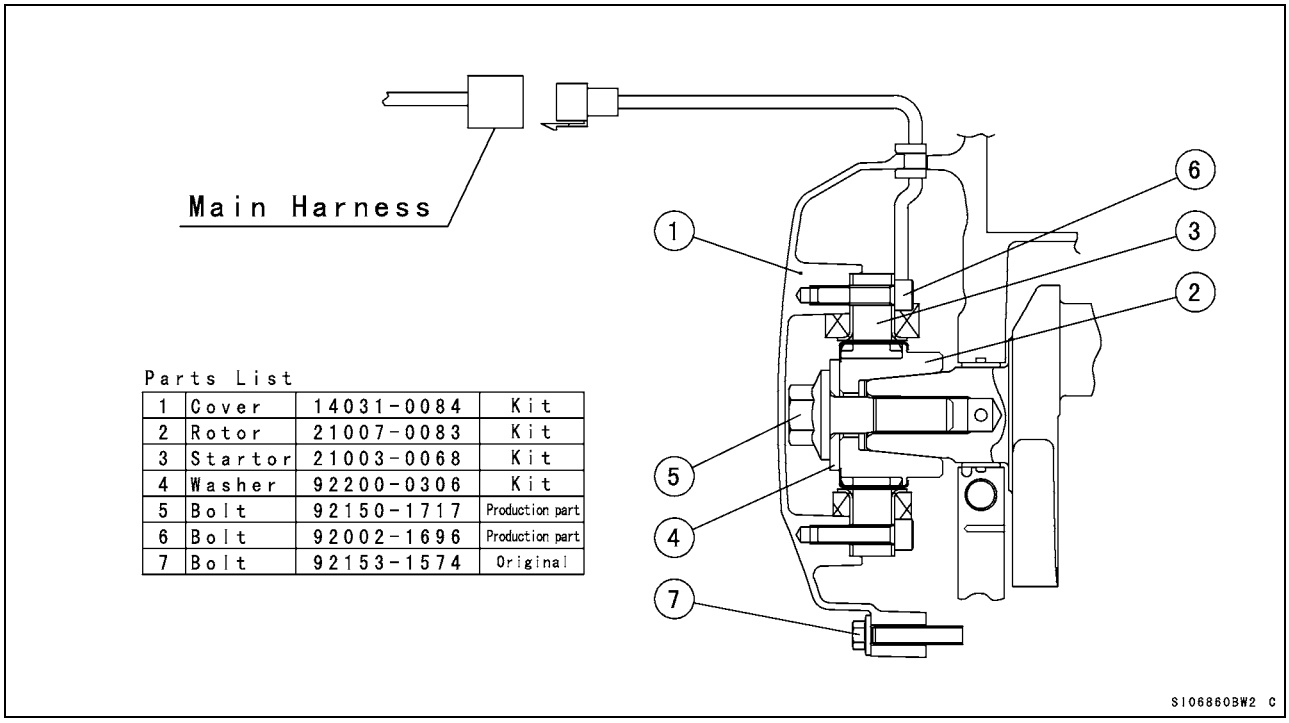


1. Spline washer (input)
2. Plane washer

Generator (Option)

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

- Select using the optional generator or original generator according to the situation.
- Use the optional regulator and optional generator cover set when using the optional generator.
- The output power of the optional generator is 10A/8000 rpm (Original: 30A/5000rpm). The consume current of the racing model in running condition is 7 ~ 8A.
- Installing Option Generator



Parts List

1	Cover	14031-0084	Kit
2	Rotor	21007-0083	Kit
3	Startor	21003-0068	Kit
4	Washer	92200-0306	Kit
5	Bolt	92150-1717	Production part
6	Bolt	92002-1696	Production part
7	Bolt	92153-1574	Original

Generator Cover (Option)

Use the option generator with the optional generator cover.

NOTE

○ *When using the optional generator cover, use the optional generator.*

Cover Gaskets

The optional cover gaskets are available.

They are made from “meta-form” and made easy to exfoliation.

Muffler

With recommended muffler engine performance can be improved.

Recommended muffler: Beet NASSERT-R 1002-B15-00

Web Site : http://www.beet.co.jp/(beetjapan)

* For further information contact the manufacturer of muffler directly.

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.

Cooling System

With recommended radiator engine performance can be improved.

MB MOTORSPORT di Bagatti Marco e Silvio & C. s.a.s.
Via Ugo La Malfa, 3 - 43014 Felegara di Medesano (PR) -
ITALY
Tel.: +39 0525 431593 Fax: +39 0525 431792
P.I. e C.F. IT02424740344
E-mail: mb@mbmotorsport.it
Web site: www.mbmotorsport.it

* For further information contact the manufacturer of radiator directly.

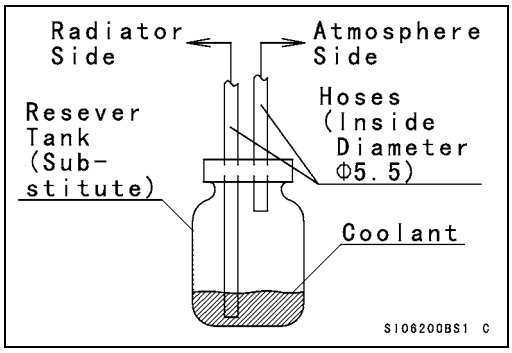
Reserve Tank Installation

When not using the original reserve tank, prepare a suitable substitue.

Reserve Tank should be equipped with a band so as not to affect the running and the handling.

NOTE

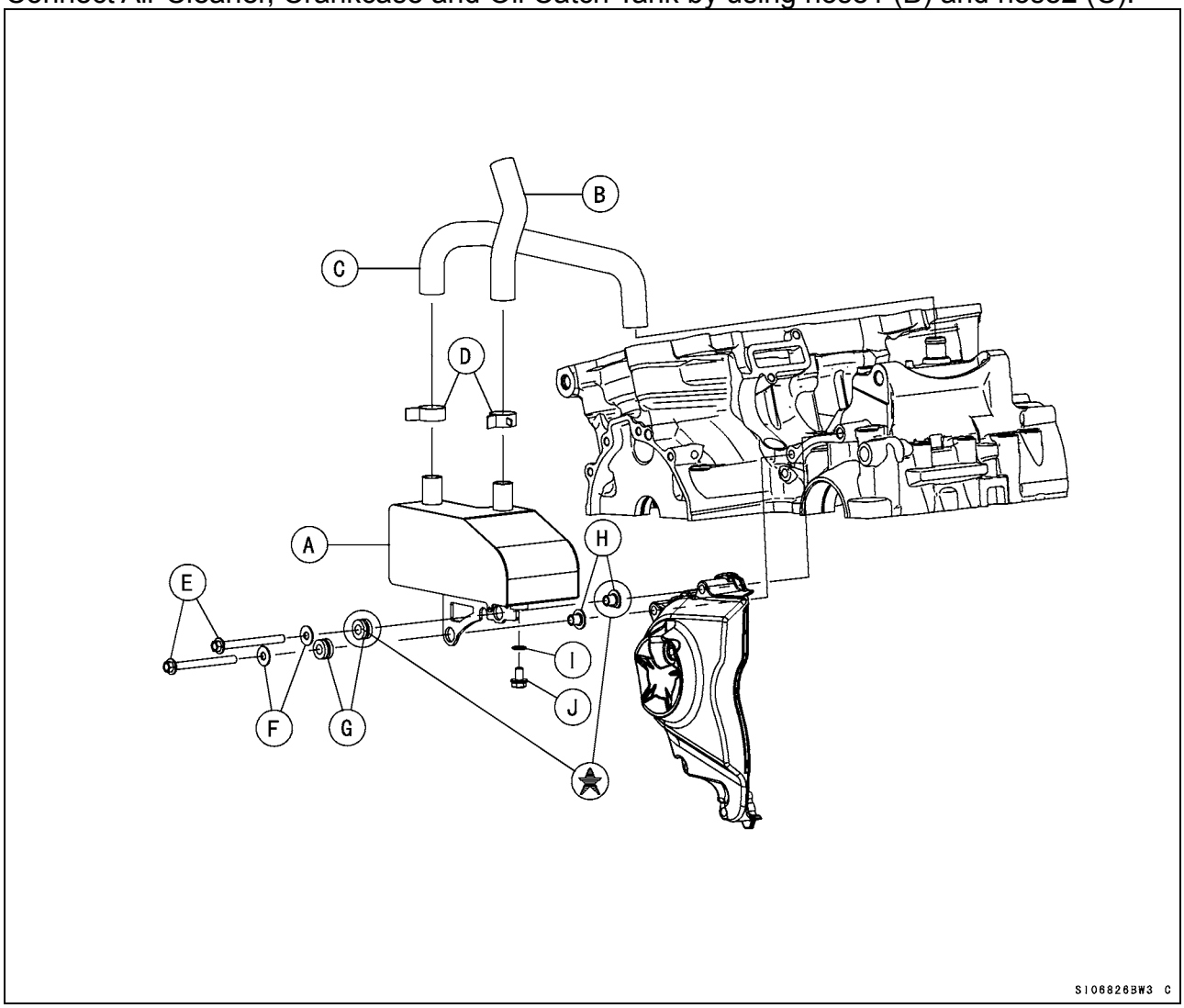
- *Capacity of a reserve tank should be more than 200 cc.*
- *Position of the hose to a reserve tank.*
  * End of the hose to the radiator should be always in the liquid.
  * End of the hose to atmosphere should be always beyond the liquid surface.



Oil Catch Tank Installation

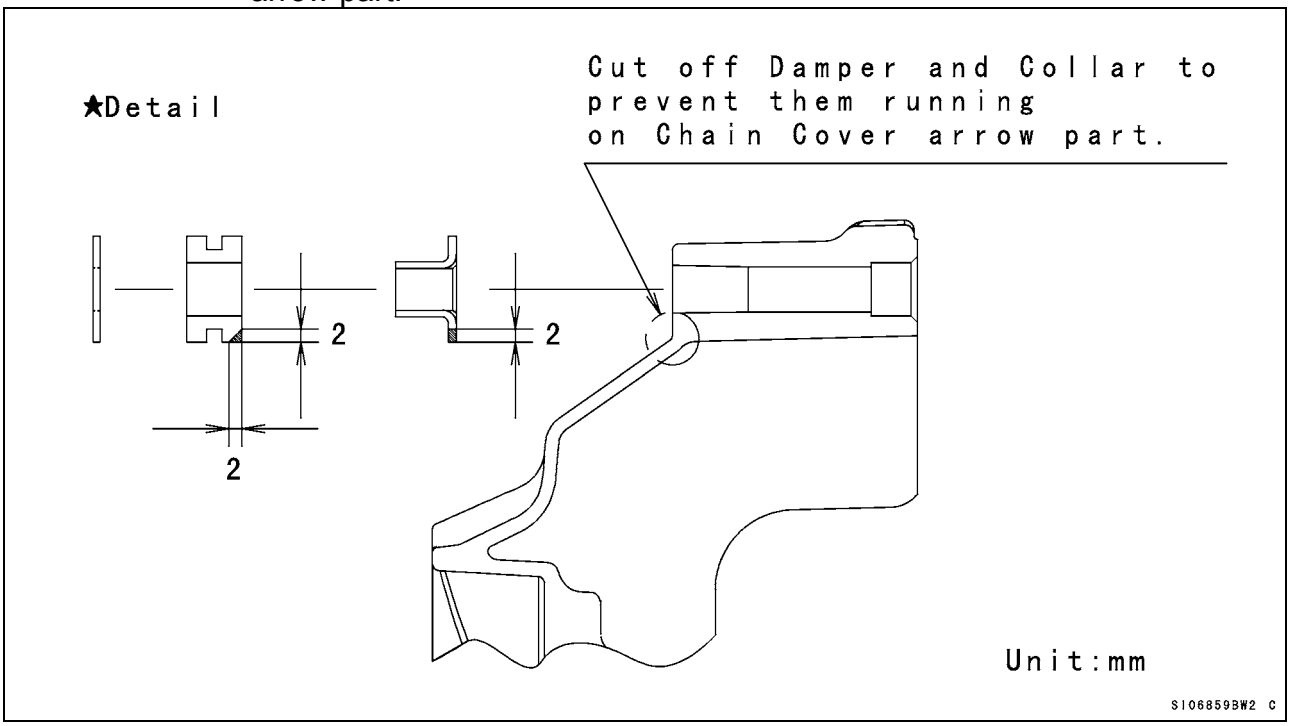
○ Fasten Oil Catch Tank (A) with Chain Cover to Crankcase by using bolt (E). In that case, cut off part marked "★" of Damper and Collar (see next detail).

○ Connect Air Cleaner, Crankcase and Oil Catch Tank by using hose1 (B) and hose2 (C).



A) Oil Catch Tank (52001-0007)
B) Hose1 (Air Cleaner – Oil Catch Tank) (92192-0819)
C) Hose2 (Crankcase – Oil Catch Tank) (92192-0820)
D) Clamp (92170-1060)
E) Bolt (92153-1567)
F) Washer (92200-3712)
G) Dumper (92075-1912)
H) Collar (92152-0237)
I) Washer (92022-304)
J) Drain Bolt (130BD610)

Detail Marked “★”: Cut off Dampers and Collar to prevent them running on Chain Cover arrow part.



Frame Parts Installation

Throttle Parts (Kit)

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 Name	P/No.
Throttle Case, Upper	32099-0046
Throttle Case, Lower	32099-0047
Bolts (2)	120CA0518
Pipe (Grip)	31064-0187

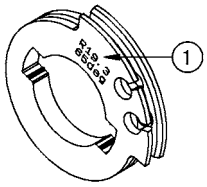
2) Throttle Reels

Tow types are available.

Throttle reel travel angle is marked on each part to identify.

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

P/No.	I.D. Mark	Twist Grip Turn Angle to Full Throttle
59101-0006	R19.3/65 deg	65°
59101-0007	R21.0/60 deg	65°



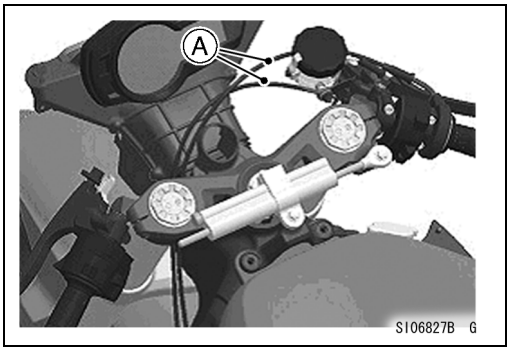
1. Identification Mark

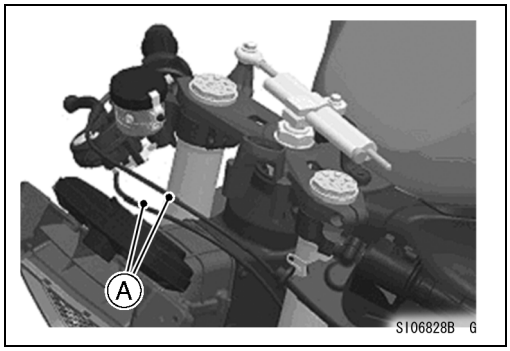
2) Throttle Cable

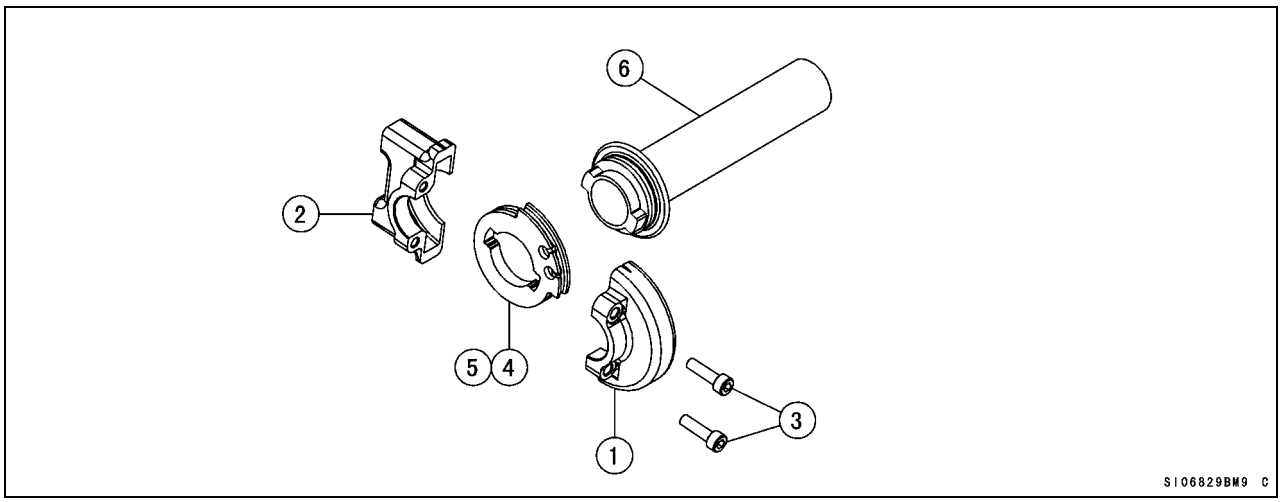
Tow types, accelerator and decelerator cables are available.

Parts Name	P/No.	I.D. Mark
Throttle Cable (Accelerator Side)	54012-0270	12-0270-xxxx
Throttle Cable (Decelerator Side)	54012-0271	12-0271-xxxx

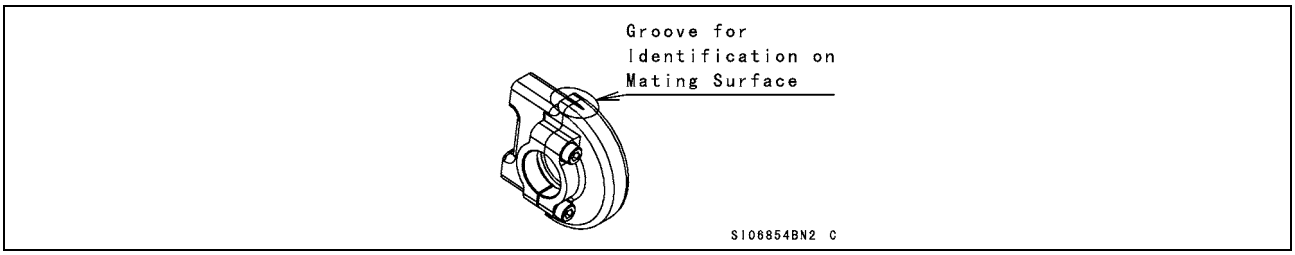
Run the throttle cable [A] to the left side of the frame below.







1. Upper Case: 32099-0046
2. Lower Case: 32099-0047
3. Bolts: 120CA0518
4. Reel (65°): 59101-0006
5. Reel (60°): 59101-0007
6. Throttle Pipe: 31064-0187

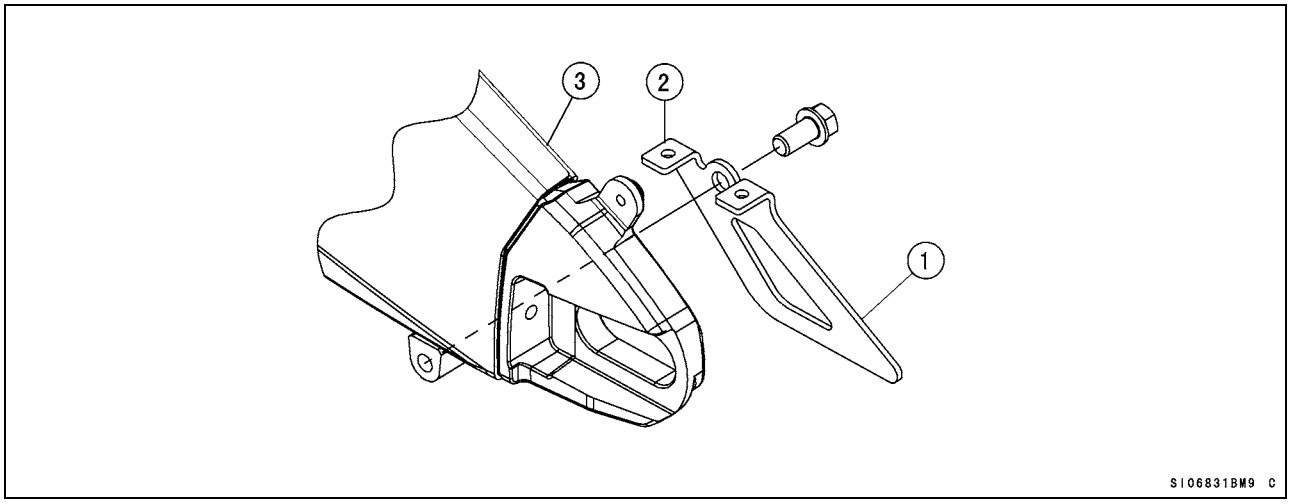


Assemble the throttle cases so that the groove for identification faces upwards (see above).

It is correct to assemble the throttle cases so that the groove side have no clearance and the opposite (lower) side have clearance.

Drive Chain (Kit)

1) Chain Guard



1. Guard: 55020-0028
2. Bolt: 130BA1020
3. Swingarm (Left Side)

Brake Pads (Kit)

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 lower braking force.

Because of higher braking force, replace the front caliper bolts with the kit parts to make the installation of the caliper stronger.

Front Brake Pads

P/No.	Stamp	Braking Force
43082-0074	2508	High
		↕
Original	TT2911HH	Low

Rear Brake Pads

P/No.	I.D. (Stamp)	Braking Force
Original	FO GG	High
43082-1220	with Yellow Paint	↕
43082-1192	without Yellow Paint	Low

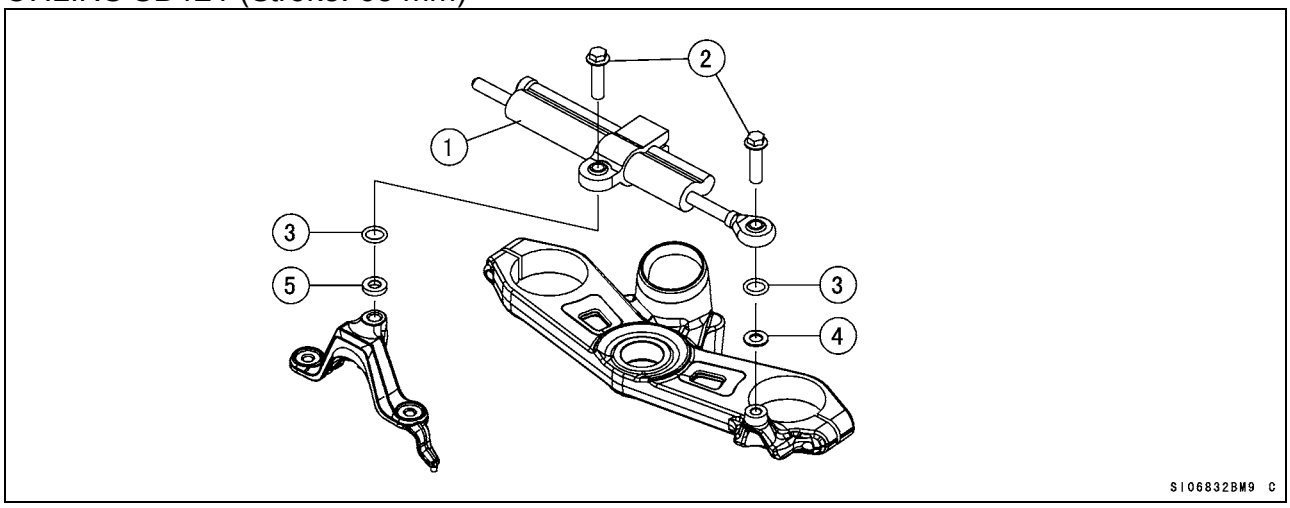
Steering Damper (Kit)

For race usage it is recommended to use racing type steering damper (see next page), since the original damper is mainly designed for street riding or at most sport riding.

When install the racing type steering damper, please make sure that the damper shall not limit the steering angle, as normally stipulated by the race regulations.

1) Recommended Steering Damper

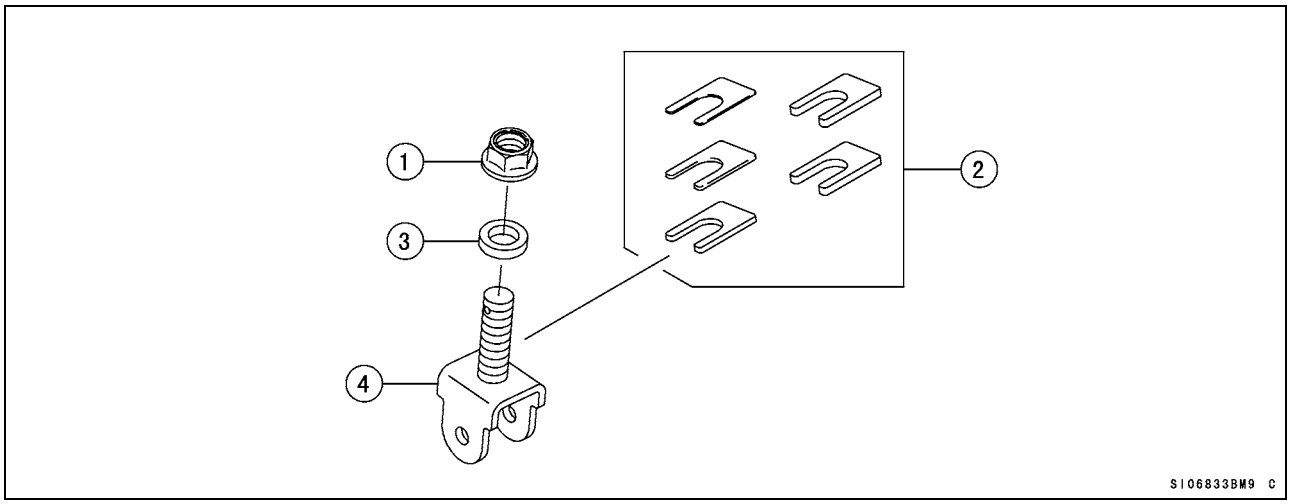
OHLINS SD121 (Stroke: 68 mm)



1. Steering Damper: OHLINS SD121
2. Bolts: 132BA0830
3. O-rings: 670B2012
4. Washer: 410AA0800
5. Collar: 92152-0798

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.



1. Nut: 92015-1316
2. Spacer Set: 92026-1586 (T = 1.0 mm/2.0 mm/3.2 mm/4.5 mm)
3. Spacer: 92026-0140 (Standard T = 4.0 mm)
4. Bracket: 32037-1887 (Standard)

Front Fork Springs (Kit)

The optional front fork springs are available for racing.

1) Front Fork Specifications

Items	Original
Rebounded damping setting	4 turns out from the fully clockwise position
Compression damping setting	5 1/2 turns out from the fully clockwise position
Fork Spring Preload Setting	4 turns in from the fully counterclockwise position
Fork oil	SHOWA SS05
Fork oil level	80 mm
Spring length	235 mm (Free Length)
Spring constant	9.25 N/mm
Sub spring stroke	28 mm

2) Front Fork Spring

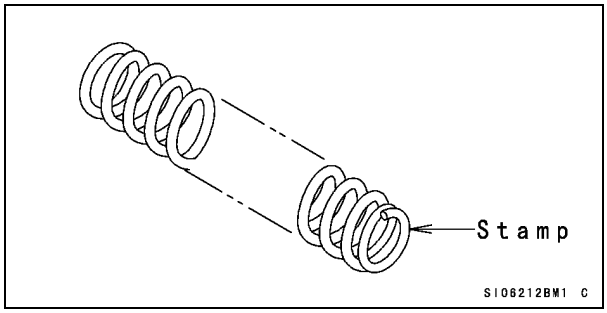
P/No.	Spring Constant
Original	K = 9.25 N/mm
44026-0141	K = 8.75 N/mm
44026-0142	K = 9.75 N/mm

3) Front Fork Spring Replacement

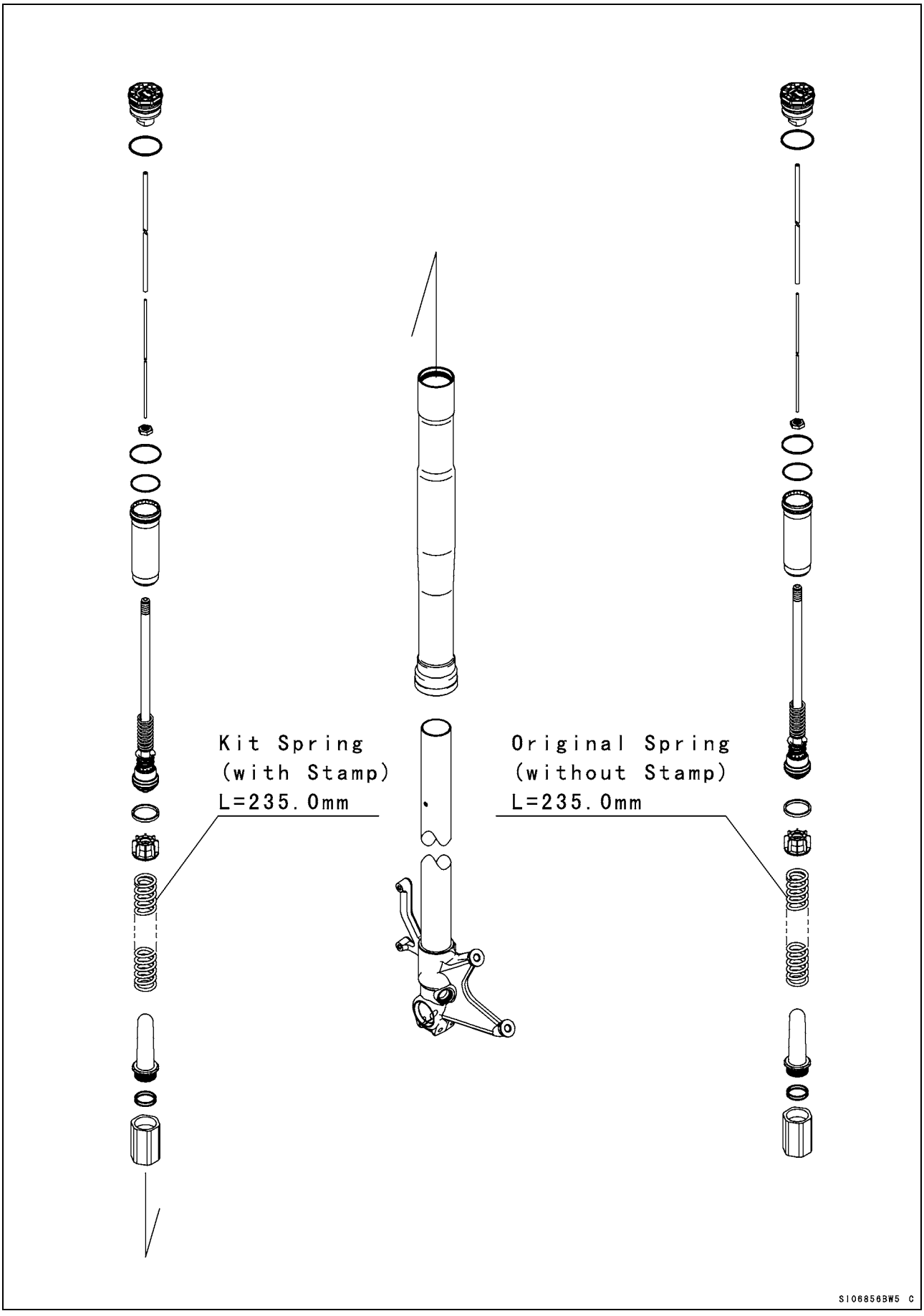
Replace the main spring referring to the Fork Oil Change section of the base Service Manual.

Identification Mark

The spring constant value is stamped on the one side surface of the spring.



Fork Spring Installation



Electric Parts Installation

Battery

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

Main Harness and Sub Harness (Kit)

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 Original Meter and Original Generator/Regulator): 26031-0789
Main Harness (with Original Meter and Kit Generator/Regulator): 26031-0790
Sub Harness (with Original Meter and Original Main Harness): 26031-0327

Main Harness Combination Parts Table

○: need ×: no need.

Part \ Harness	Harness for Original Generator /Regulator 26031-0789	Harness for Kit Generator /Regulator 26031-0790	Sub Harness 26031-0327
Meter Assembly (Original)	○	○	○
Relay Box (Original) 27002-0007	×	×	○
Relay Assembly (Kit) 27002-3703	○	○	×

Notes Concerning Sub Harness (26031-0327) Use

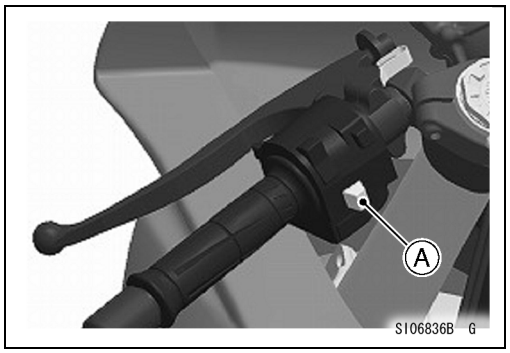
The sub harness (26031-0327) is designed to use Kit ECU with original main harness.

However, such application is possible only with the models WITHOUT the immobilizer system.

To install Kit ECU onto the models WITH immobilizer system, the Kit main harness (26031-0789/0790) is essential. Normally the models with immobilizer system carry "IMMOBILIZER" logo on the key cylinder.

Speed Limit of Pit Road

The turn signal switch [A] on the left handlebar switch works as a speed limit switch of the pit road when the turn signal switch is turned to the left or right.
To stop the speed limit, push the switch in.



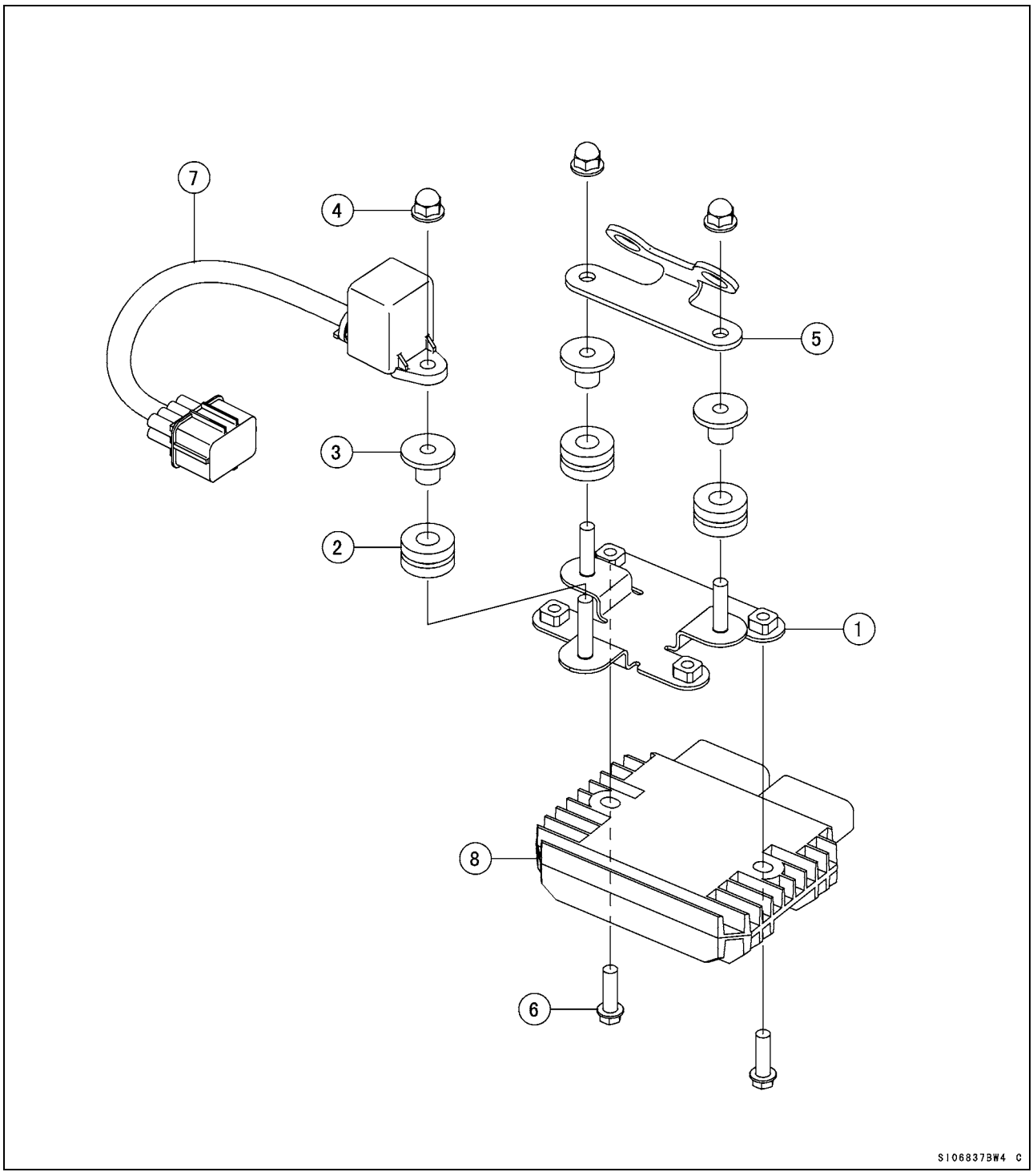
Installation of Brackets for Regulator/Rectifier and Vehicle-down Sensor

Move the regulator/rectifier behind the battery box when the kit main harnesses (26031-0679/0680) are used.

Install the original regulator/rectifier on the two front hole of the bracket when the original regulator/rectifier is used.

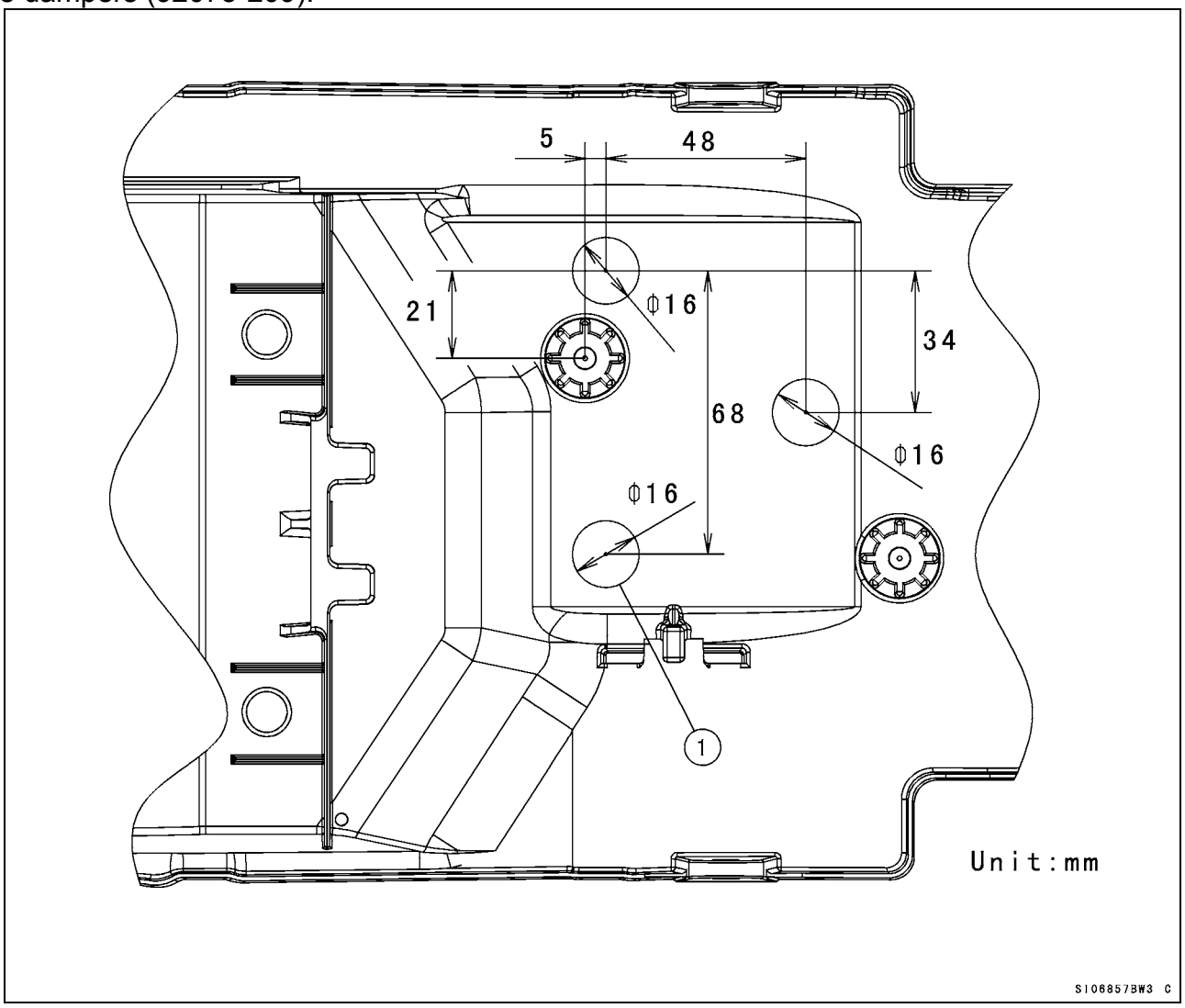
Install the kit regulator/rectifier on the two rear holes of the bracket when the kit regulator/rectifier is used. (The next figure indicates the case where the original regulator/rectifier is used.)

Install the vehicle-down sensor using the kit bracket.



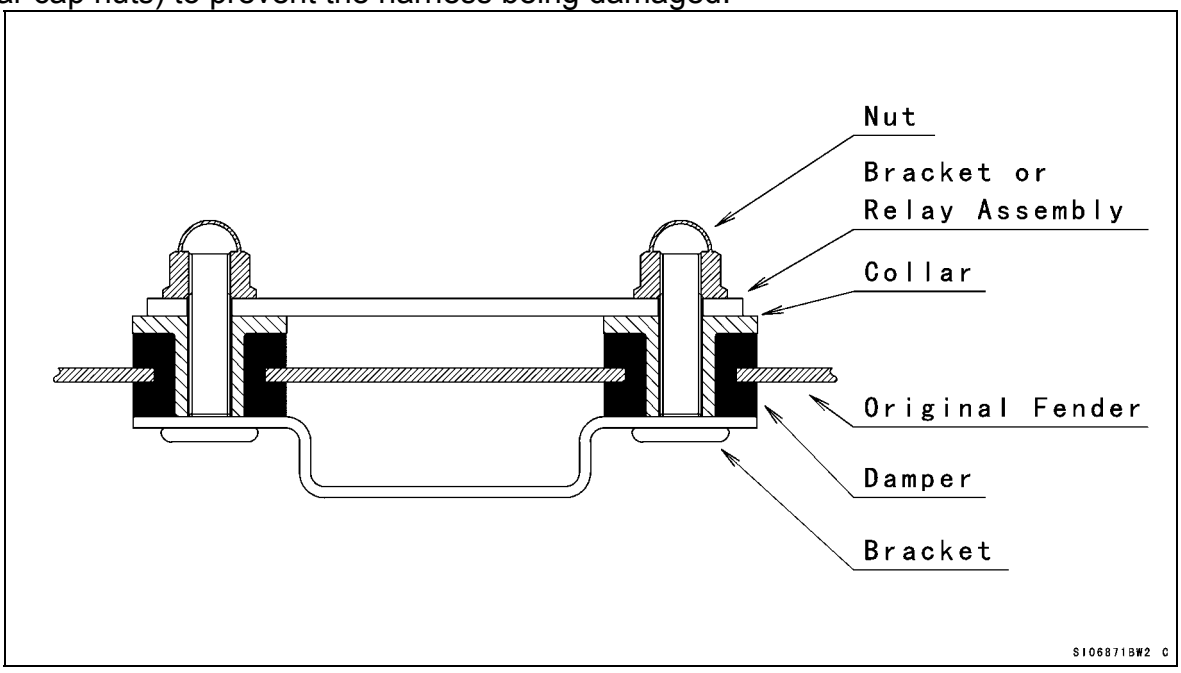
1. Bracket (for Regulator/Rectifier): 11055-1671
2. Dampers: 92075-209
3. Collars: 92152-0091
4. Nuts: 92210-0322
5. Bracket (for Vehicle-down Sensor): 11055-1665
6. Bolts: 132BA0620
7. Relay Assembly: 27002-3703
8. Regulator/Rectifier (Original): 21066-0028
   Regulator/Rectifier (Kit): 21066-0010

When the original fender is used, drill out the three holes of ϕ16 mm as shown and insert the dampers (92075-209).

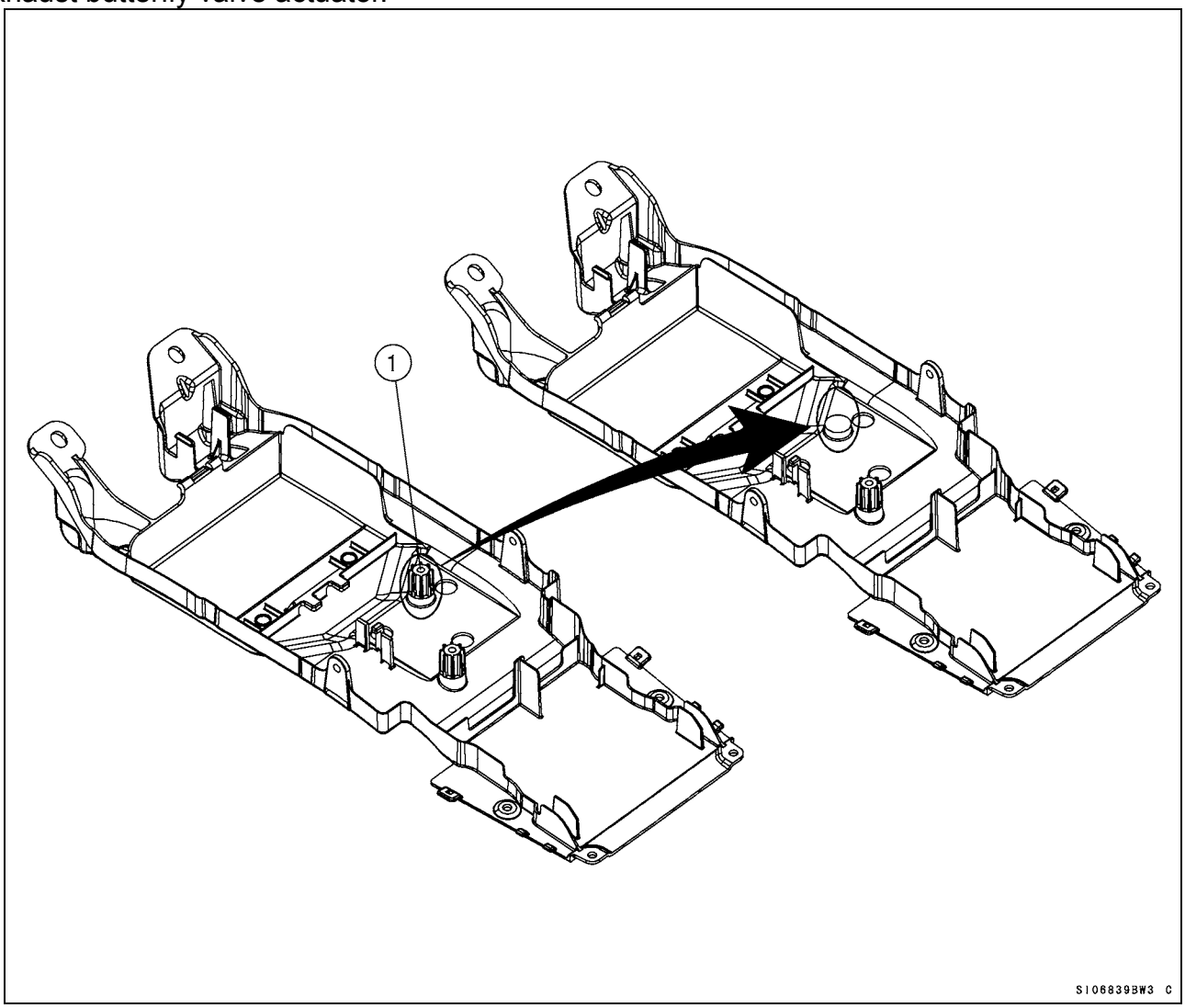


1. ϕ16 mm Hole

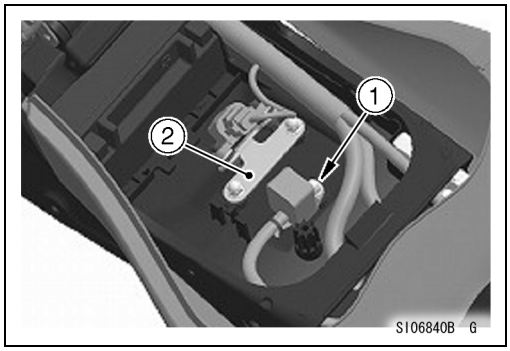
The locations of fender and its related parts are as follows. Use the specified nuts (or similar cap nuts) to prevent the harness being damaged.



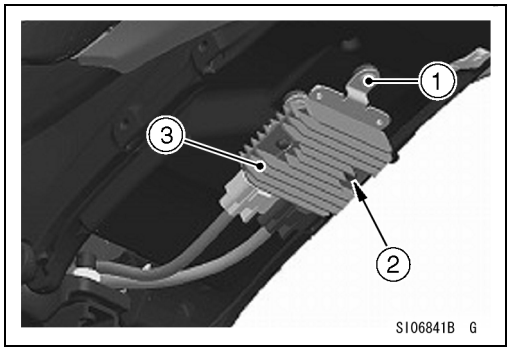
At the same time as processing the hole opening, cut off one mounting boss of the exhaust butterfly valve actuator.



1. Boss

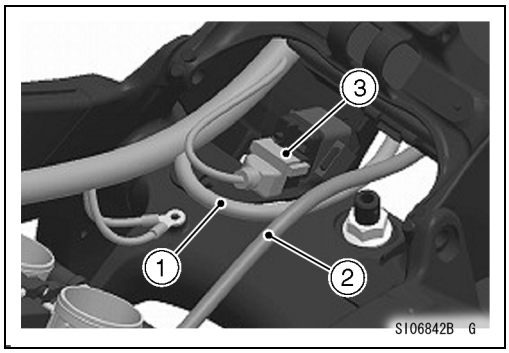


1. Nut: 92210-0322
2. Bracket (for Vehicle-down Sensor): 11055-1655



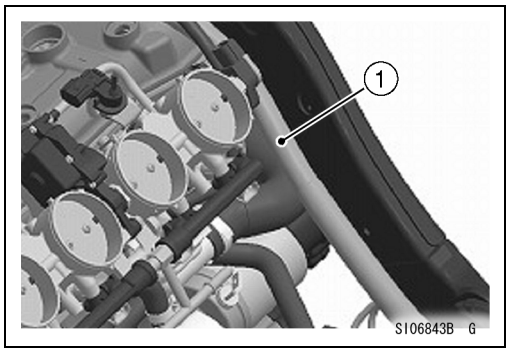
1. Bracket (for Regulator/Rectifier) : 11055-1671
2. Bolt: 132BA0620
3. Regulator/Rectifier (Original): 21066-0028

Run both wirings (wiring from main harness to regulator/rectifier and wiring from generator to regulator/rectifier)in the left side of the starter relay and run them behind the frame.



1. Wiring from Main Harness to Regulator/Rectifier
2. Wiring form Generator to Regulator/Rectifier
3. Starter Relay

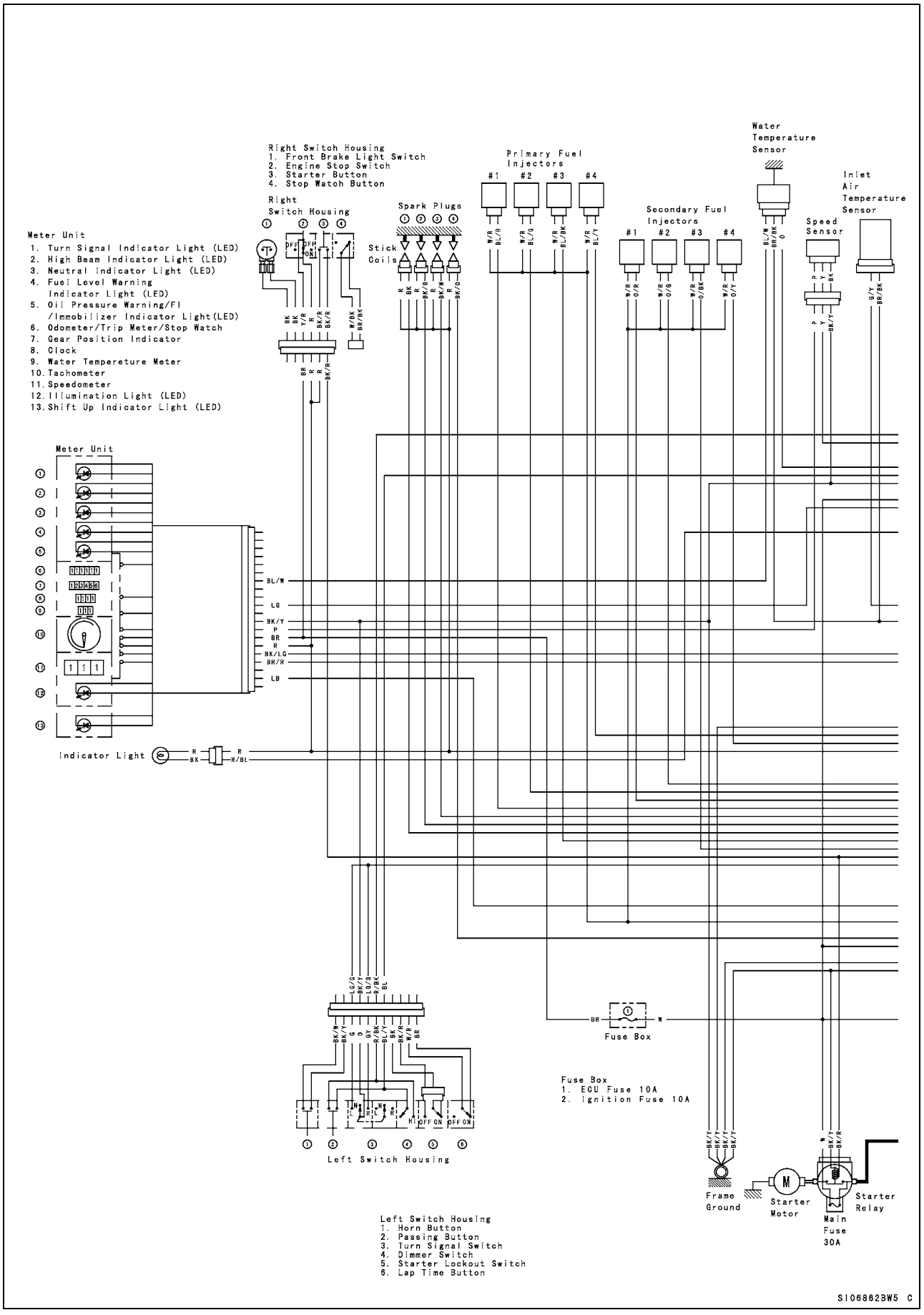
Run the main harness forwards along the inside of the main frame and run it between the throttle body and the main frame.

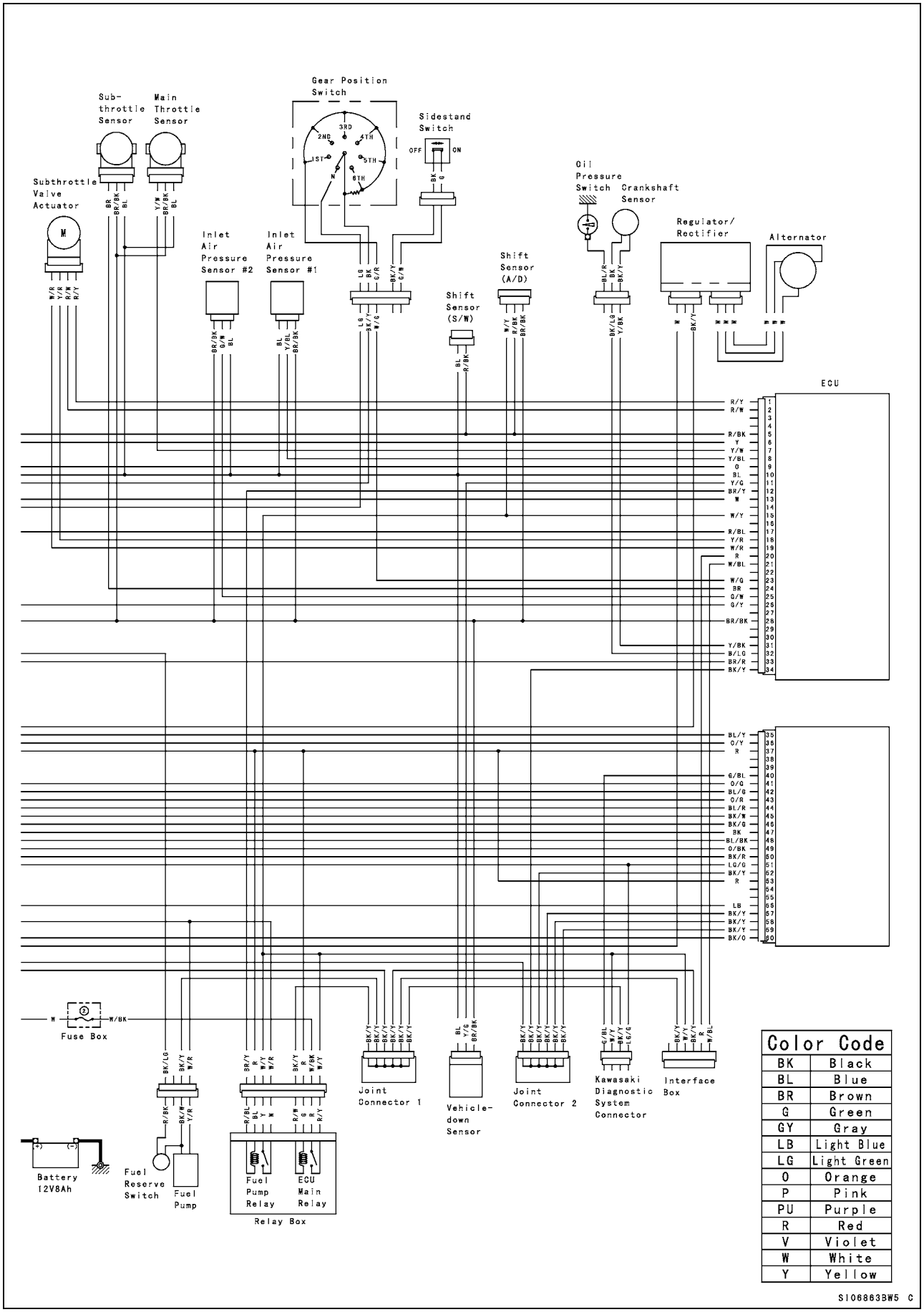


1. Main Harness

Dummy Page

Wiring Diagram (with Original Meter/Original Regulator)

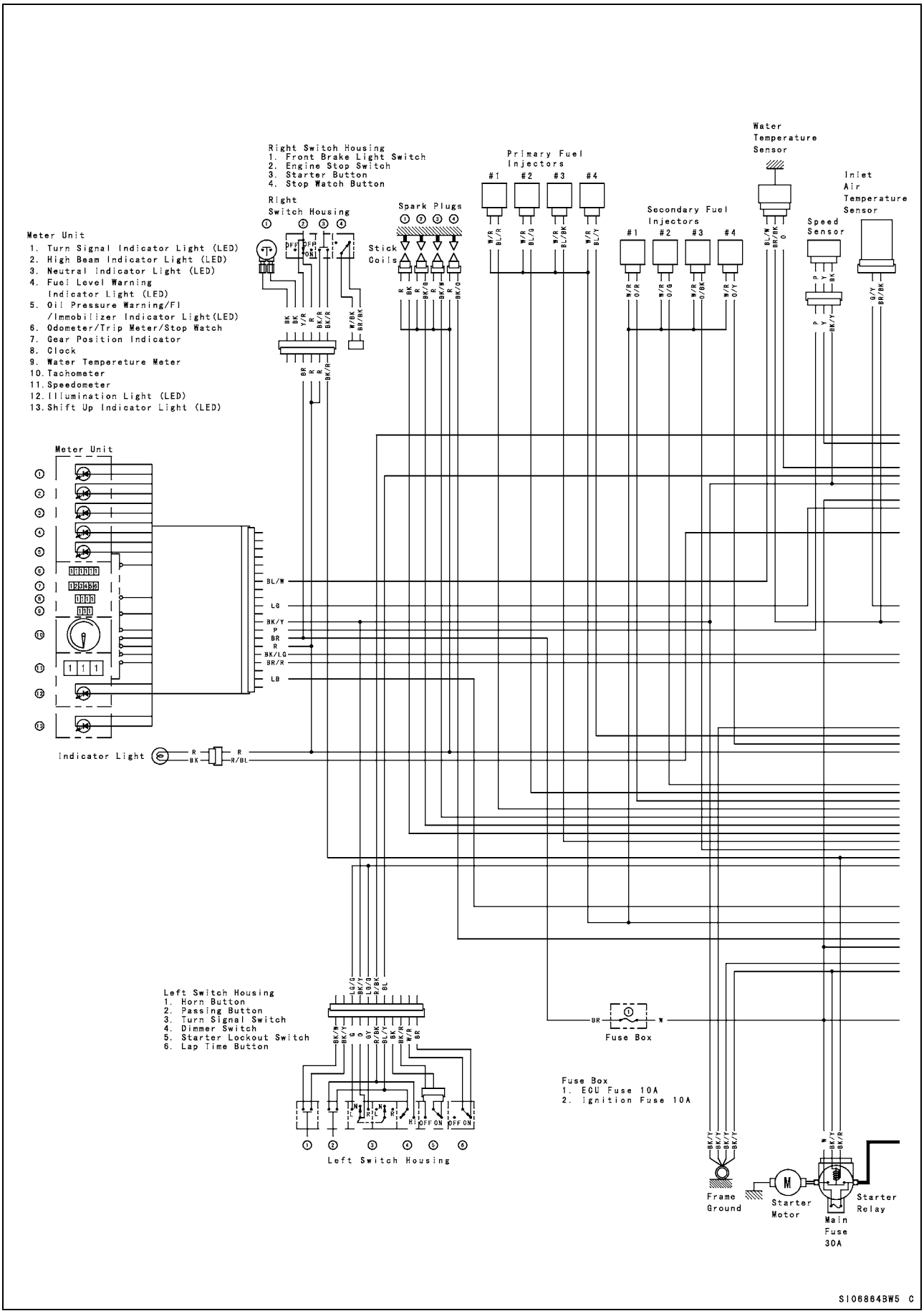


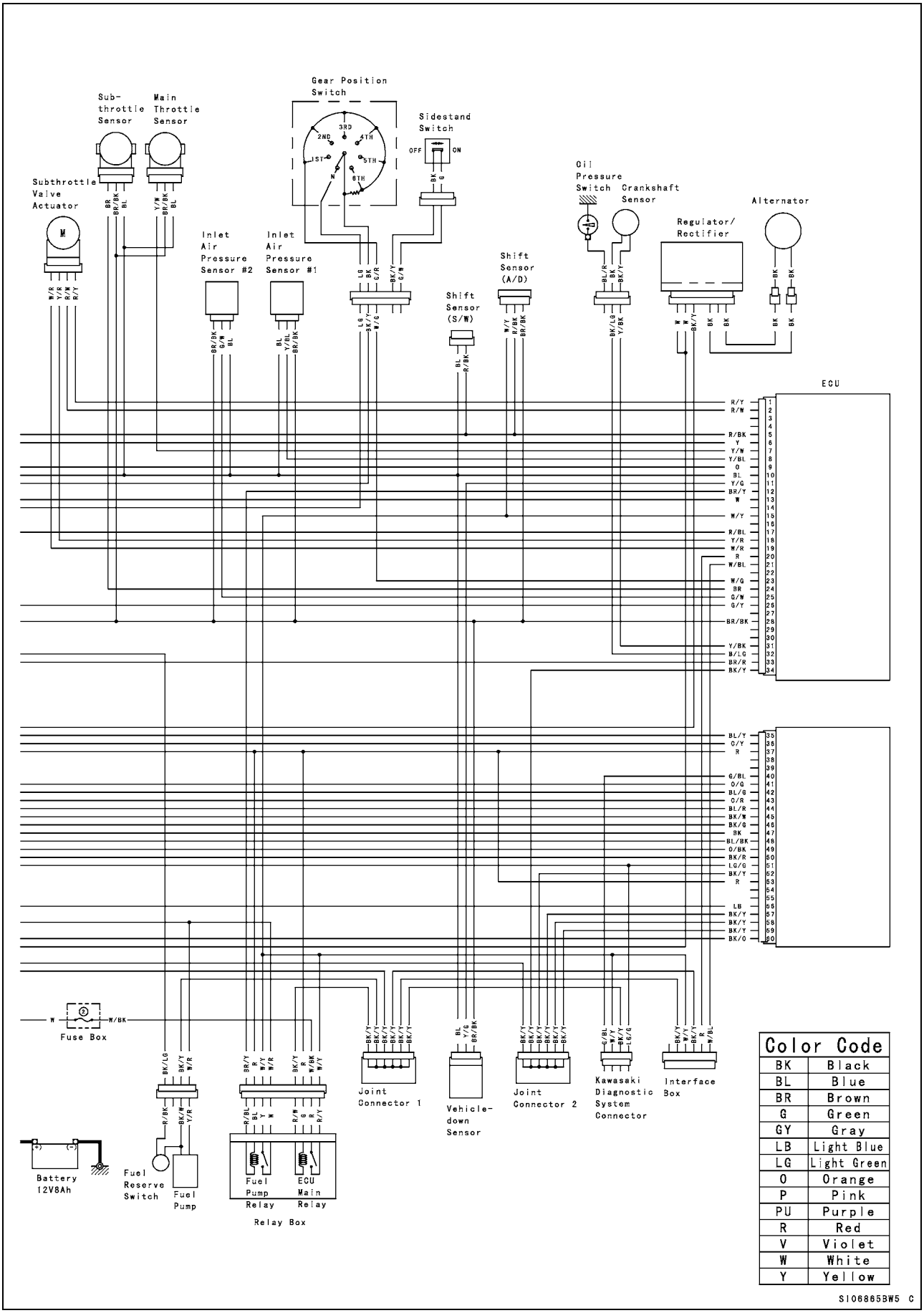


Color Code	
BK	Black
BL	Blue
BR	Brown
G	Green
GY	Gray
LB	Light Blue
LG	Light Green
O	Orange
P	Pink
PU	Purple
R	Red
V	Violet
W	White
Y	Yellow

S106863BW5 C

Wiring Diagram (with Original Meter/Kit Regulator)

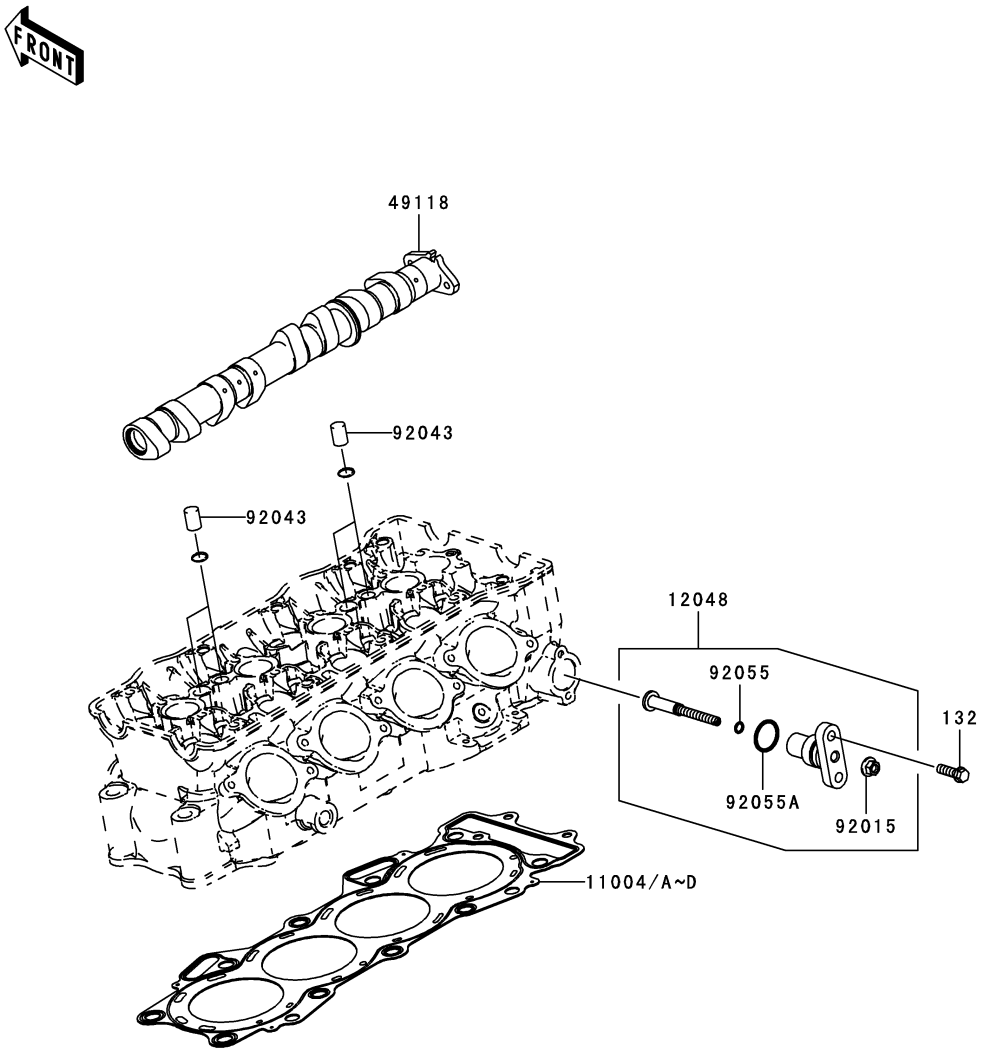



Gear Position Switch
Sub-throttle Sensor
Main Throttle Sensor
Sidestand Switch
Subthrottle Valve Actuator
Oil Pressure Switch
Crankshaft Sensor
Alternator
Regulator/ Rectifier
Inlet Air Pressure Sensor #2
Inlet Air Pressure Sensor #1
Shift Sensor (A/D)
Shift Sensor (S/W)
ECU
Fuse Box
Joint Connector 1
Joint Connector 2
Vehicle-down Sensor
Kawasaki Diagnostic System Connector
Interface Box
Battery 12V8Ah
Fuel Reserve Switch
Fuel Pump
Fuel Pump Relay
ECU Main Relay
Relay Box
Color Code
BK Black
BL Blue
BR Brown
G Green
GY Gray
LB Light Blue
LG Light Green
O Orange
P Pink
PU Purple
R Red
V Violet
W White
Y Yellow
SI06865BW5 C

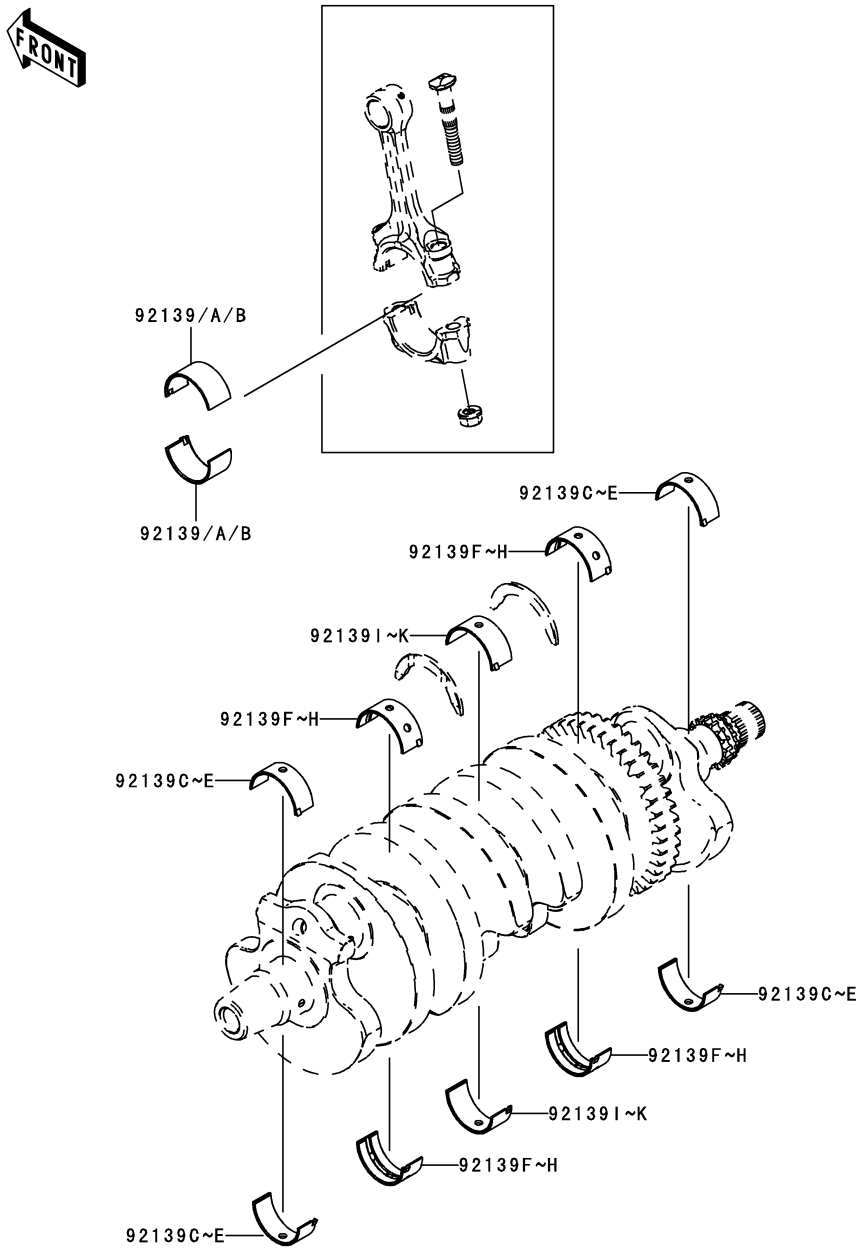
Dummy Page

Racing Kit Parts List

E1121

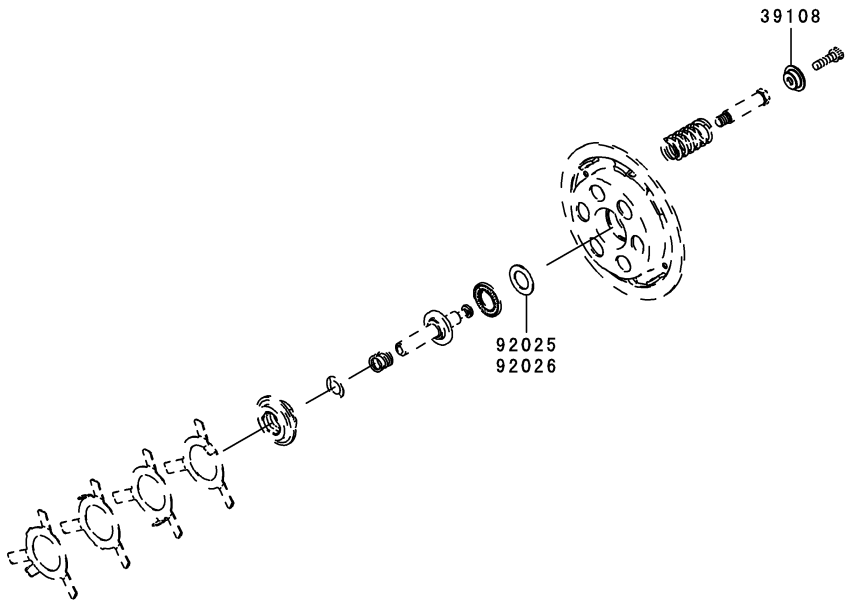


Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	R9FR
11004	11004-0067 (OPTION)	GASKET-HEAD,T=0.70		1	
11004A	11004-0068 (OPTION)	GASKET-HEAD,T=0.60		1	
11004B	11004-0069 (OPTION)	GASKET-HEAD,T=0.55		1	
11004C	11004-0070 (OPTION)	GASKET-HEAD,T=0.50		1	
11004D	11004-0071 (OPTION)	GASKET-HEAD,T=0.45		1	
12048	12048-1175 (OPTION)	TENSIONER-ASSY		1	
49118	49118-0149 (OPTION)	CAMSHAFT-COMP,INTAKE		1	
92015	92015-1078 (OPTION)	NUT,FLANGED,6MM		1	
92043	92043-1506 (OPTION)	PIN,10X14		4	
92055	92055-011 (OPTION)	RING-O,5MM		1	
92055A	92055-086 (OPTION)	RING-O,18.8X1.9		1	
132	132BA0620 (OPTION)	BOLT-FLANGED-SMALL,6X20		2	

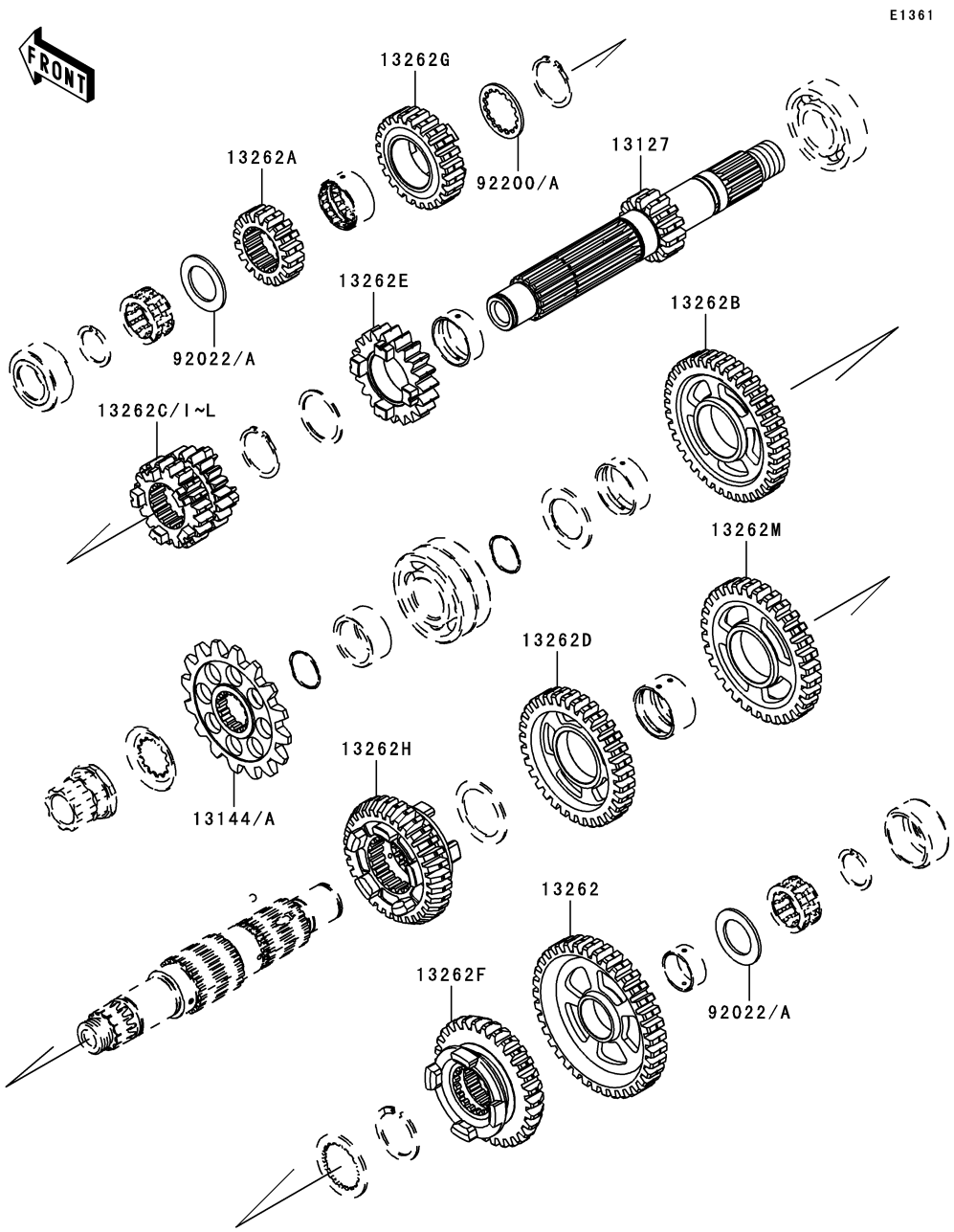


Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	Quantity-ZX600 R9FR
92139	92139-0194 (OPTION)	BUSHING,CONROD,BLUE		AR	
92139A	92139-0195 (OPTION)	BUSHING,CONROD,BLACK		8	
92139B	92139-0196 (OPTION)	BUSHING,CONROD,BROWN		AR	
92139C	92139-0269 (OPTION)	BUSHING,CRANK #1&#5,BLUE		AR	
92139D	92139-0270 (OPTION)	BUSHING,CRANK #1&#5,BLACK		4	
92139E	92139-0271 (OPTION)	BUSHING,CRANK #1&#5,BROWN		AR	
92139F	92139-0272 (OPTION)	BUSHING,CRANK #2&#4,BLUE		AR	
92139G	92139-0273 (OPTION)	BUSHING,CRANK #2&#4,BLACK		4	
92139H	92139-0274 (OPTION)	BUSHING,CRANK #2&#4,BROWN		AR	
92139I	92139-0275 (OPTION)	BUSHING,CRANK #3,BLUE		AR	
92139J	92139-0276 (OPTION)	BUSHING,CRANK #3,BLACK		2	
92139K	92139-0277 (OPTION)	BUSHING,CRANK #3,BROWN		AR	

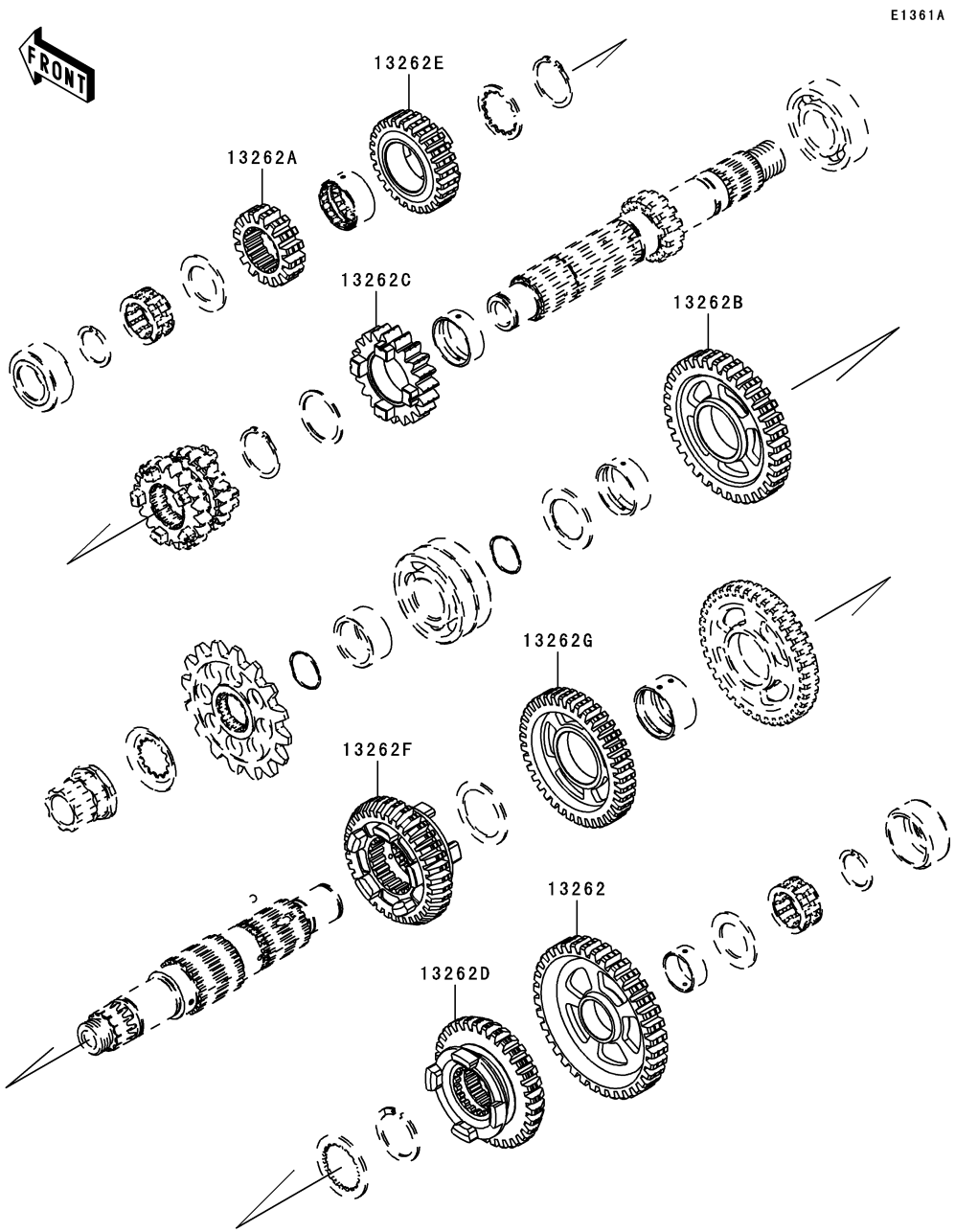
E1350



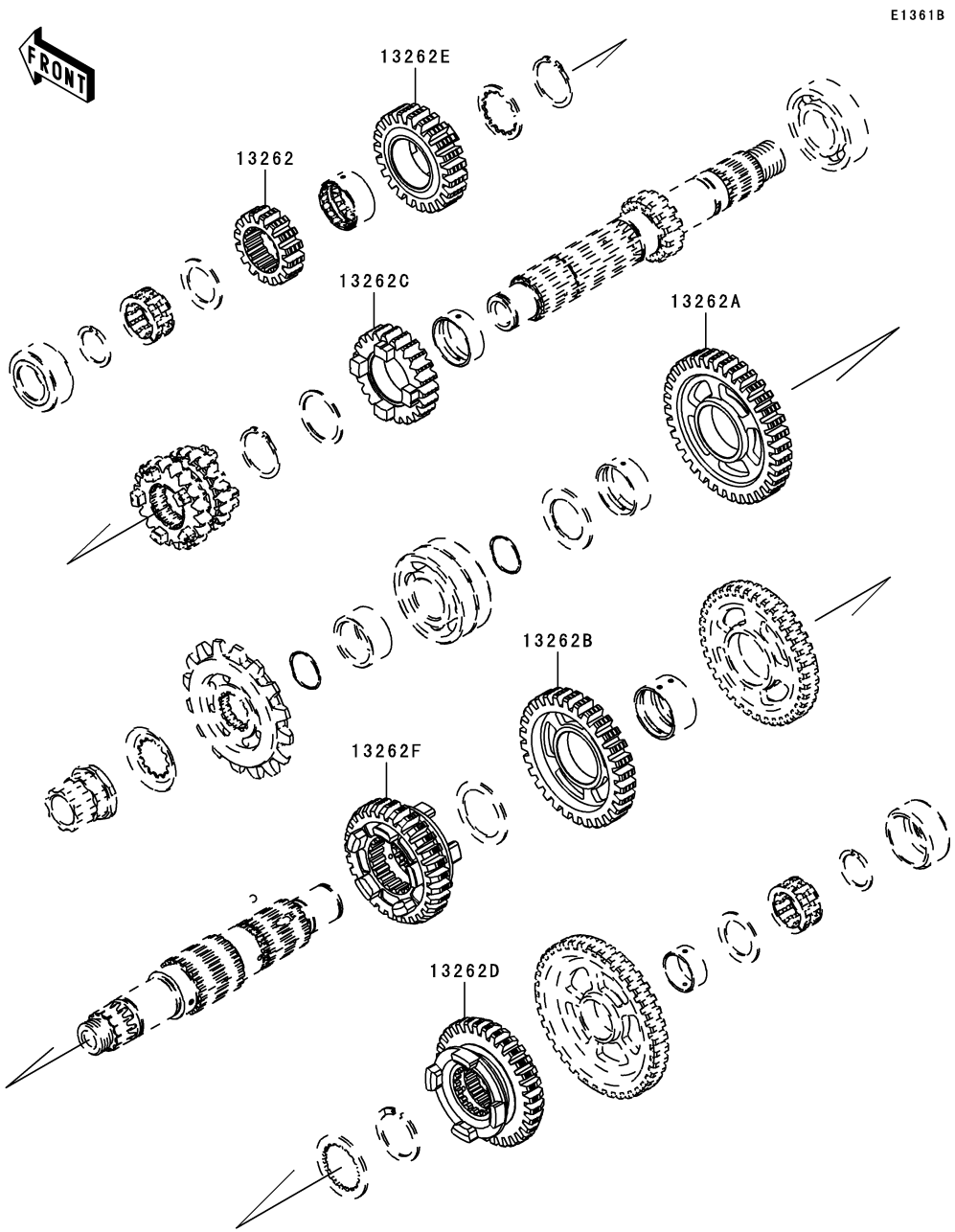
Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	Quantity-ZX600 R9FR
39108	39108-0004 (OPTION)	RETAINER-SPRING,T=5.0(STD-1.0)		6	
92025	92025-1137 (OPTION)	SHIM,15.3X27.5X1.20		1	
92026	92026-1590 (OPTION)	SPACER,T=1.5		1	



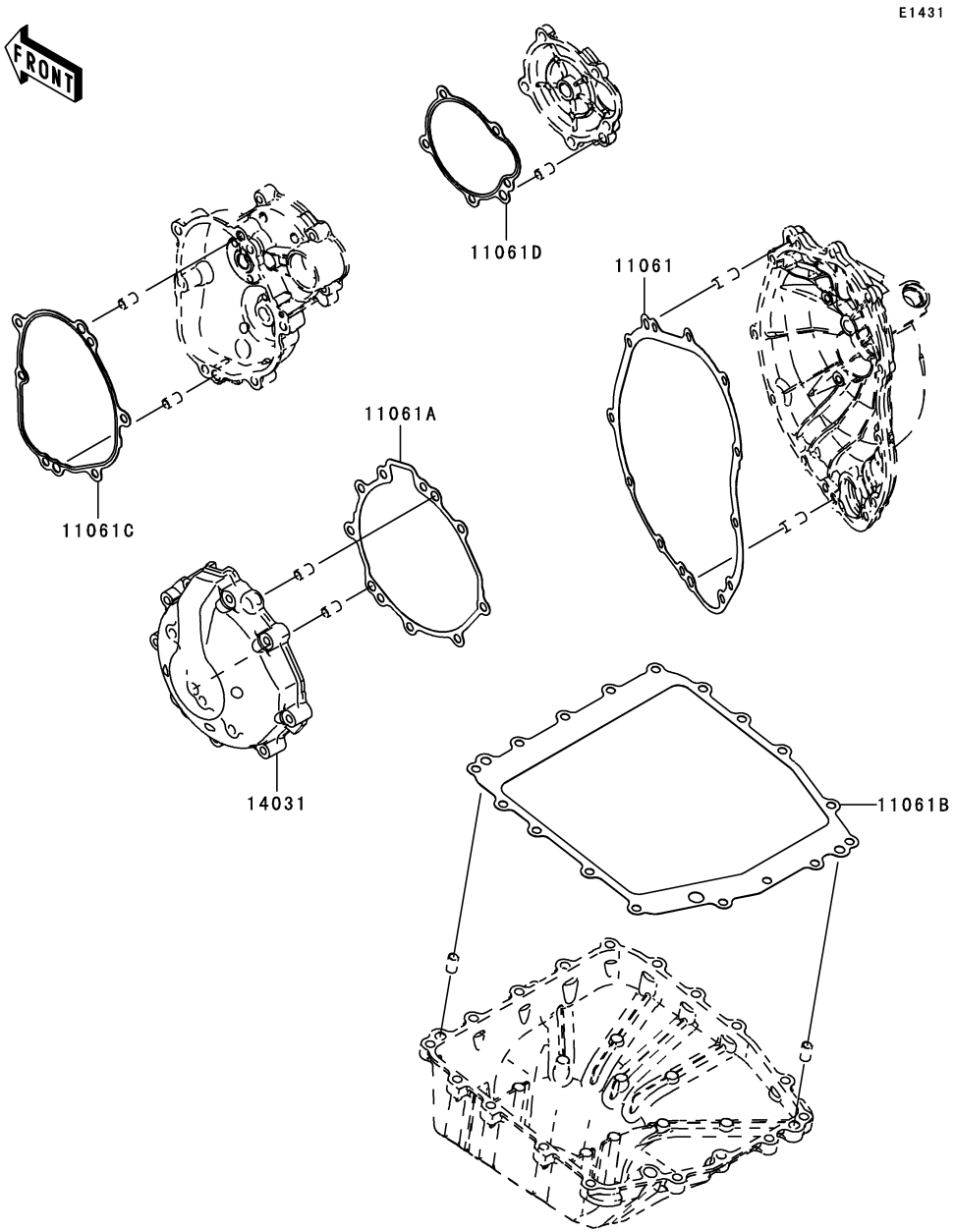
Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	R9FR
13127	13127-0055 (OPTION)	SHAFT-TRANSMISSION INPUT,14T		1	
13144	13144-0047 (OPTION)	SPROCKET-OUTPUT,16T		1	
13144A	13144-0048 (OPTION)	SPROCKET-OUTPUT,15T		1	
13262	13262-0526 (OPTION)	GEAR,OUTPUT LOW,37T		1	
13262A	13262-0527 (OPTION)	GEAR,INPUT 2ND,18T		1	
13262B	13262-0528 (OPTION)	GEAR,OUTPUT 2ND,39T		1	
13262C	13262-0529 (OPTION)	GEAR,INPUT 3RD&4TH,20T&20T		1	
13262D	13262-0530 (OPTION)	GEAR,OUTPUT 4TH,33T		1	
13262E	13262-0531 (OPTION)	GEAR,INPUT 5TH,20T		1	
13262F	13262-0532 (OPTION)	GEAR,OUTPUT 5TH,30T		1	
13262G	13262-0533 (OPTION)	GEAR,INPUT 6TH,23T		1	
13262H	13262-0534 (OPTION)	GEAR,OUTPUT 6TH,32T		1	
13262I	13262-0679 (OPTION)	GEAR,INPUT 3RD&4TH,20T&19T		1	
13262J	13262-0680 (OPTION)	GEAR,INPUT 3RD&4TH,17T&20T		1	
13262K	13262-0681 (OPTION)	GEAR,INPUT 3RD&4TH,17T&20T		1	
13262L	13262-0682 (OPTION)	GEAR,INPUT 3RD&4TH,17T&23T		1	
13262M	13262-0683 (OPTION)	GEAR,OUTPUT 3RD,32T		1	
92022	92022-1722 (OPTION)	WASHER,22.3X35X1.8		AR	
92022A	92022-212 (OPTION)	WASHER,22.3X35X1.6		AR	
92200	92200-0230 (OPTION)	WASHER,28.3X34.0X1.4		AR	
92200A	92200-0231 (OPTION)	WASHER,28.3X34.0X1.8		AR	



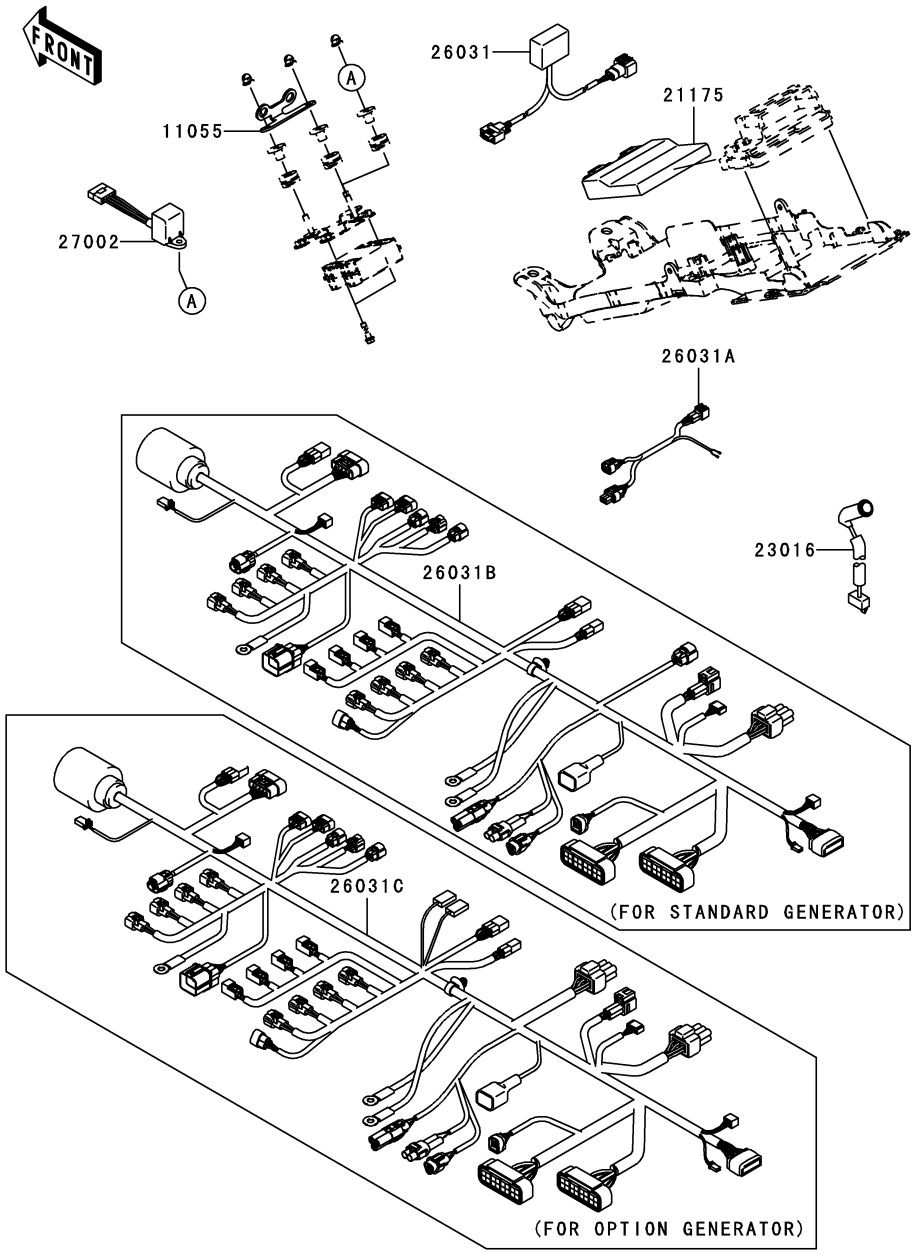
Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	Quantity-ZX600 R9FR
13262	13262-0535 (OPTION)	GEAR,OUTPUT LOW,36T		1	
13262A	13262-0536 (OPTION)	GEAR,INPUT 2ND,16T		1	
13262B	13262-0537 (OPTION)	GEAR,OUTPUT 2ND,34T		1	
13262C	13262-0538 (OPTION)	GEAR,INPUT 5TH,24T		1	
13262D	13262-0539 (OPTION)	GEAR,OUTPUT 5TH.32T		1	
13262E	13262-0540 (OPTION)	GEAR,INPUT 6TH,26T		1	
13262F	13262-0541 (OPTION)	GEAR,OUTPUT 6TH,35T		1	
13262G	13262-0684 (OPTION)	GEAR,OUTPUT 4TH,39T		1	



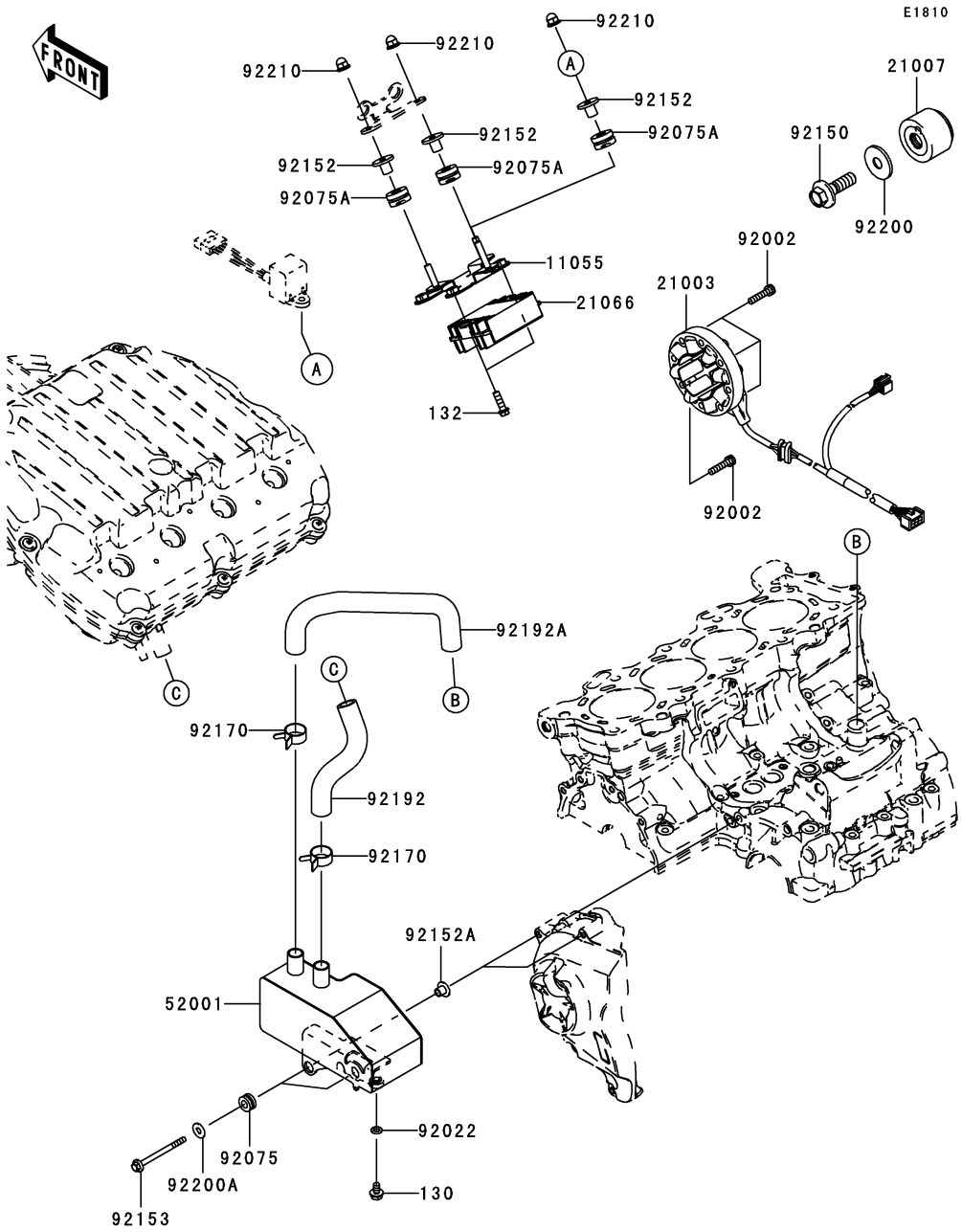
Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	R9FR
13262	13262-0677 (OPTION)	GEAR,INPUT 2ND,16T		1	
13262A	13262-0678 (OPTION)	GEAR,OUTPUT 2ND,36T		1	
13262B	13262-0685 (OPTION)	GEAR,OUTPUT 4TH,30T		1	
13262C	13262-0686 (OPTION)	GEAR,INPUT 5TH,23T		1	
13262D	13262-0687 (OPTION)	GEAR,OUTPUT 5TH,32T		1	
13262E	13262-0688 (OPTION)	GEAR,INPUT 6TH,23T		1	
13262F	13262-0689 (OPTION)	GEAR,OUTPUT 6TH,29T		1	



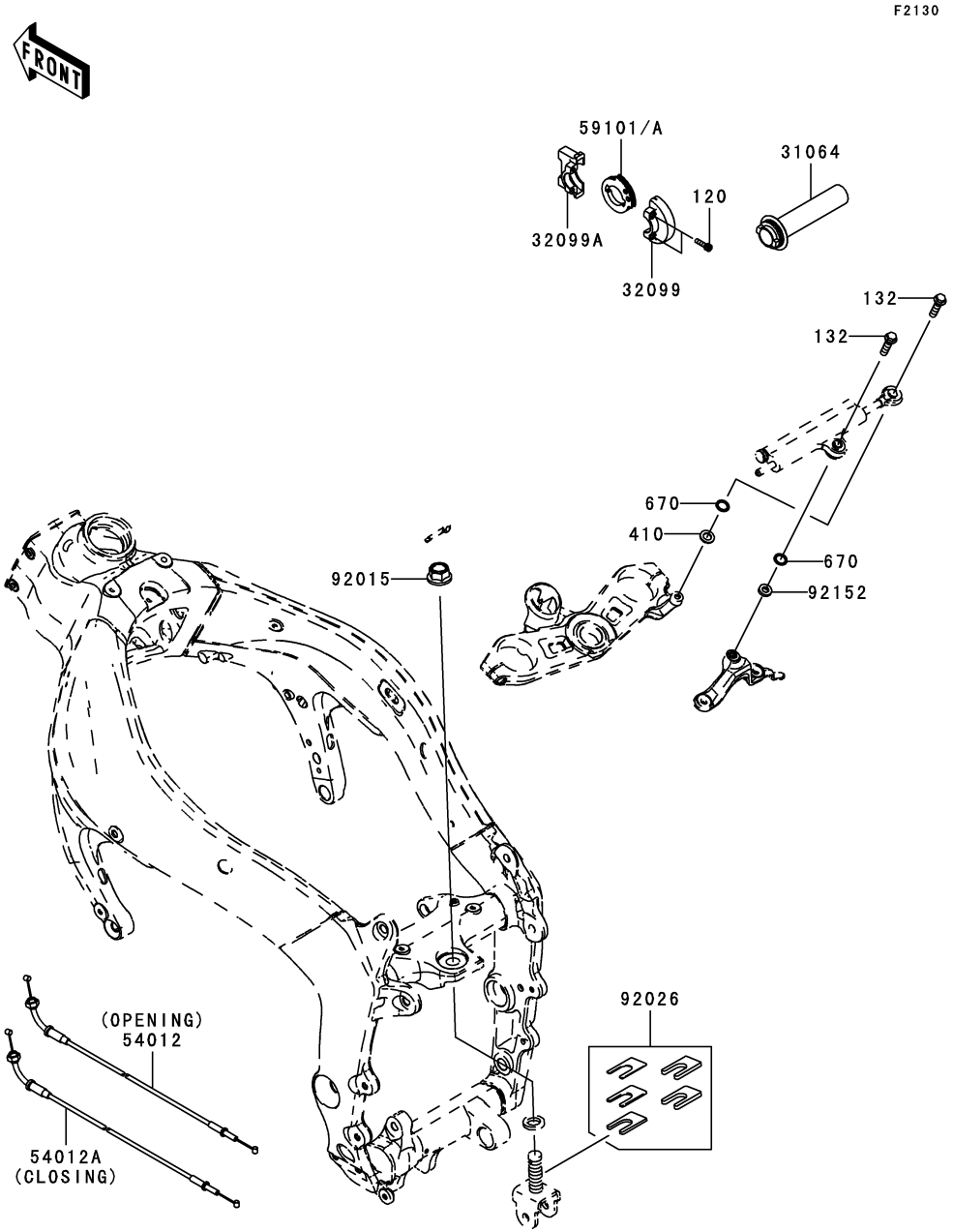
Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	R9FR
11061	11061-0303 (OPTION)	GASKET,CLUTCH COVER		1	
11061A	11061-0304 (OPTION)	GASKET,GENERATOR COVER		1	
11061B	11061-0305 (OPTION)	GASKET,OIL PAN		1	
11061C	11061-0306 (OPTION)	GASKET,LARGE COVER		1	
11061D	11061-0307 (OPTION)	GASKET,SMALL COVER		1	
14031	14031-0084 (OPTION)	COVER-GENERATOR		1	



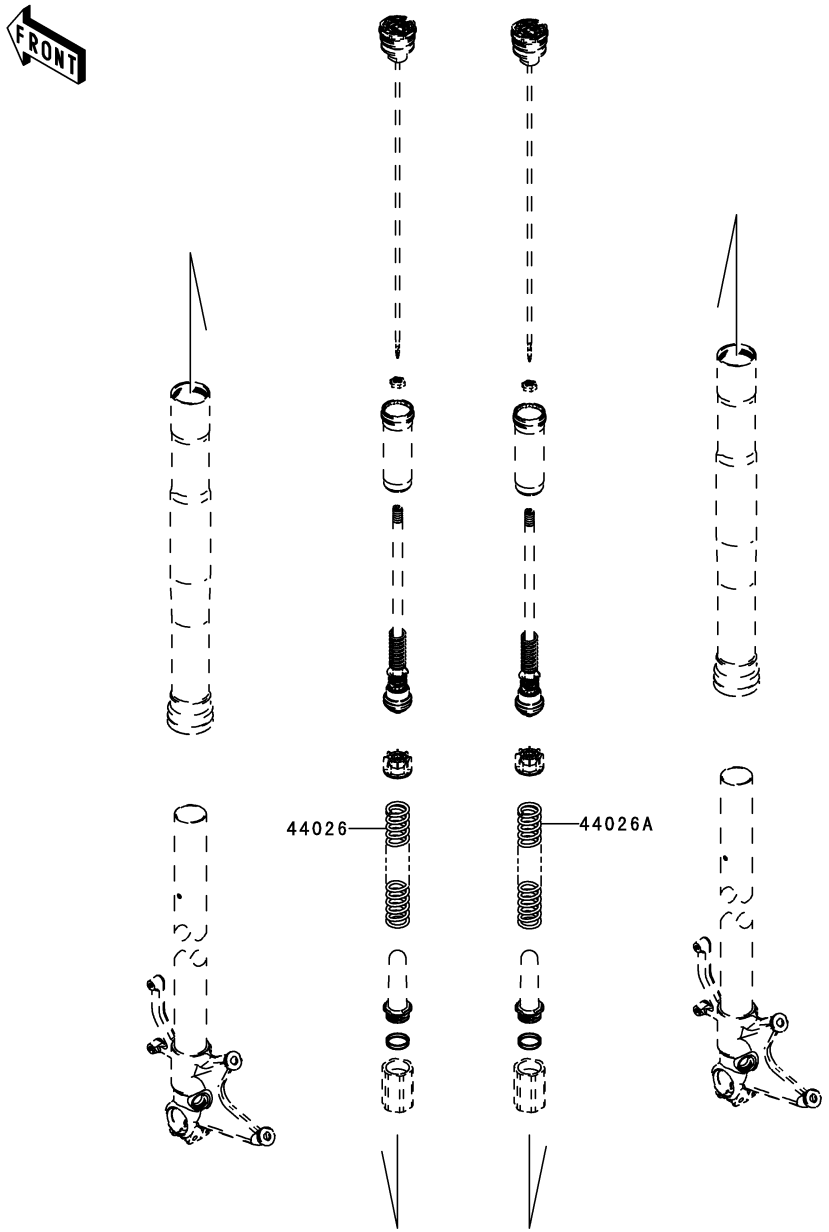
Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	Quantity-ZX600 R9FR
11055	11055-1665 (OPTION)	BRACKET,VDS		1	
21175	21175-0248 (OPTION)	CONTROL UNIT-ELECTRONIC		1	
23016	23016-0006 (OPTION)	LAMP-ASSY,INDICATOR		1	
26031	26031-0240 (OPTION)	HARNESS,INTERFACE BOX		1	
26031A	26031-0327 (OPTION)	HARNESS,SUB,STD METER&HARNESS		1	
26031B	26031-0789 (OPTION)	HARNESS,MAIN,STD GENERATOR		1	
26031C	26031-0790 (OPTION)	HARNESS,MAIN,KIT GENERATOR		1	
27002	27002-3703 (OPTION)	RELAY-ASSY		1	



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09 R9FR
11055	11055-1671 (OPTION)	BRACKET,REGULATOR		1
21003	21003-0068 (OPTION)	STATOR		1
21007	21007-0083 (OPTION)	ROTOR		1
21066	21066-0010 (OPTION)	REGULATOR-VOLTAGE		1
52001	52001-0007 (OPTION)	TANK-OIL		1
92002	92002-1696 (OPTION)	BOLT,SOCKET,6X25		4
92022	92022-304 (OPTION)	WASHER,6.2X11X1		1
92075	92075-1912 (OPTION)	DAMPER		2
92075A	92075-209 (OPTION)	DAMPER		3
92150	92150-1717 (OPTION)	BOLT,12X40		1
92152	92152-0091 (OPTION)	COLLAR		3
92152A	92152-0237 (OPTION)	COLLAR		2
92153	92153-1567 (OPTION)	BOLT-FLANGED,6X65		2
92170	92170-1060 (OPTION)	CLAMP		2
92192	92192-0819 (OPTION)	TUBE,OIL TANK-AIR BOX		1
92192A	92192-0820 (OPTION)	TUBE,CRANKCASE-OIL TANK		1
92200	92200-0306 (OPTION)	WASHER,12X36X3.2		1
92200A	92200-3712 (OPTION)	WASHER,6.5X16X1.0		2
92210	92210-0322 (OPTION)	NUT,CAP,6MM		3
130	130BD0610 (OPTION)	BOLT-FLANGED,6X10		1
132	132BA0620 (OPTION)	BOLT-FLANGED-SMALL,6X20		2



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	R9FR
31064	31064-0187 (OPTION)	PIPE-COMP,GRIP		1	
32099	32099-0046 (OPTION)	CASE,UPP		1	
32099A	32099-0047 (OPTION)	CASE,LWR		1	
54012	54012-0270 (OPTION)	CABLE-THROTTLE,OPENING		1	
54012A	54012-0271 (OPTION)	CABLE-THROTTLE,CLOSING		1	
59101	59101-0006 (OPTION)	REEL,R19.3,65DEG		1	
59101A	59101-0007 (OPTION)	REEL,R21.0,60DEG		1	
92015	92015-1316 (OPTION)	NUT,FLANGED,16MM		1	
92026	92026-1586 (OPTION)	SPACER,SET		1	
92152	92152-0798 (OPTION)	COLLAR,8X16X3.5		1	
120	120CA0518 (OPTION)	BOLT-SOCKET,5X18		2	
132	132BA0830 (OPTION)	BOLT-FLANGED-SMALL,8X30		2	
410	410AA0800 (OPTION)	WASHER-PLAIN-SMALL,8MM		1	
670	670B2012 (OPTION)	O RING,12MM		2	



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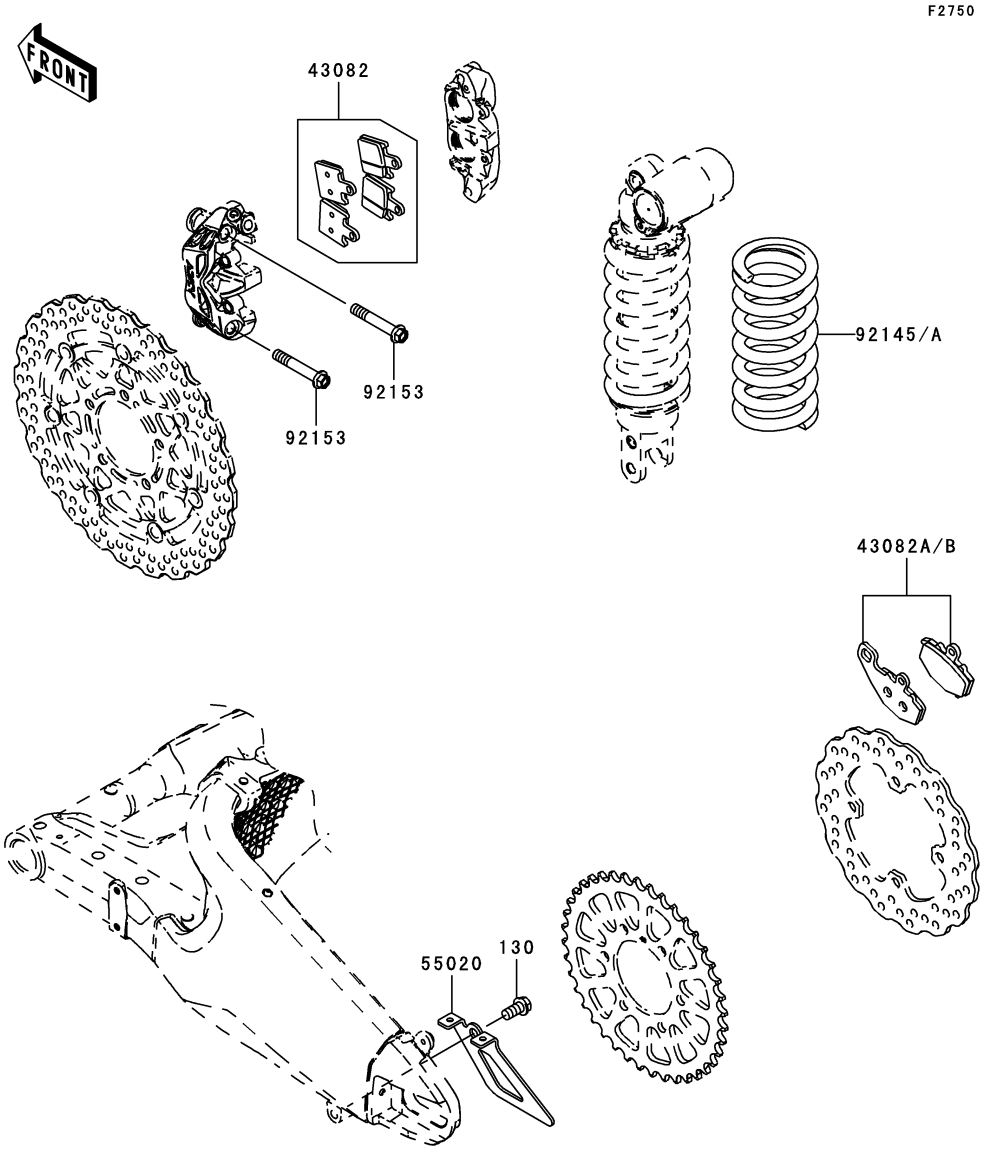
Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09	R9FR
44026	44026-0141 (OPTION)	SPRING-FRONT FORK,K=8.75N/MM		1	
44026A	44026-0142 (OPTION)	SPRING-FRONT FORK,K=9.75N/MM		1	



Ref. No.	Part No.	Description	Spec Code	Quantity-ZX600 '09 R9FR
43082	43082-0074 (OPTION)	PAD-ASSY-BRAKE,FR		1
43082A	43082-1192 (OPTION)	PAD-ASSY-BRAKE,RR,C93		1
43082B	43082-1220 (OPTION)	PAD-ASSY-BRAKE,RR,C93G		1
55020	55020-0028 (OPTION)	GUARD,CHAIN		1
92145	92145-0504 (OPTION)	SPRING,SHOCKABSORBER,K=95N/MM		1
92145A	92145-0506 (OPTION)	SPRING,SHOCKABSORBER,K=105N/MM		1
92153	92153-1777 (OPTION)	BOLT,FLANGED,10X60		4
130	130BA1020 (OPTION)	BOLT-FLANGED,10X20		1

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