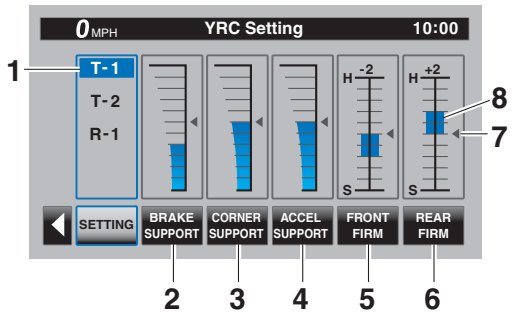
EAS10003

TABLE OF CONTENTS

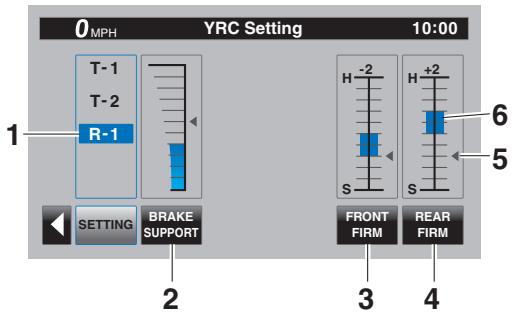
the ERS mode settings.

ERS (YZF-R1M)



1. ERS mode
2. Braking support level
3. Cornering support level
4. Acceleration support level
5. Front overall damping level
6. Rear overall damping level
7. Factory preset level
8. Current level

The ERS consists of three semi-active automatic modes (T-1, T-2, R-1) and three manual setting modes (M-1, M-2, M-3). When an automatic mode is selected, the SCU will adjust the compression and rebound damping forces based on running conditions. For all modes and models, spring preload is physically adjusted by hand.
For track modes T-1 and T-2, the following settings can be adjusted:
BRAKE SUPPORT: reduces nosedive (front-end pitch from braking)
CORNER SUPPORT: increases damping to absorb chassis fluctuations for smooth cornering. Reduce this setting for increased rear wheel grip.
ACCEL SUPPORT: reduces rear-end squat (rear-end pitch due to acceleration)
FRONT FIRM: hardens "H" or softens "S" overall damping of the front suspension
REAR FIRM: hardens "H" or softens "S" overall damping of the rear suspension

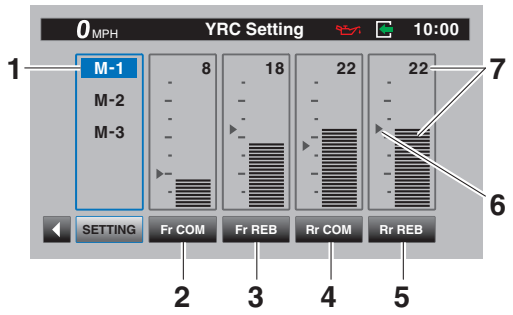


1. ERS mode
2. Braking support level
3. Front overall damping level
4. Rear overall damping level
5. Factory preset level
6. Current level

For the road mode R-1, the following settings can be adjusted:
BRAKE SUPPORT: reduces nosedive (front-end pitch from braking)
FRONT FIRM: hardens "H" or softens "S" overall damping of the front suspension
REAR FIRM: hardens "H" or softens "S" overall damping of the rear suspension

TIP

- T-1 is preset for track use with racing slick tires.
- T-2 is preset for track use with street tires.
- R-1 is preset for road use with street tires.



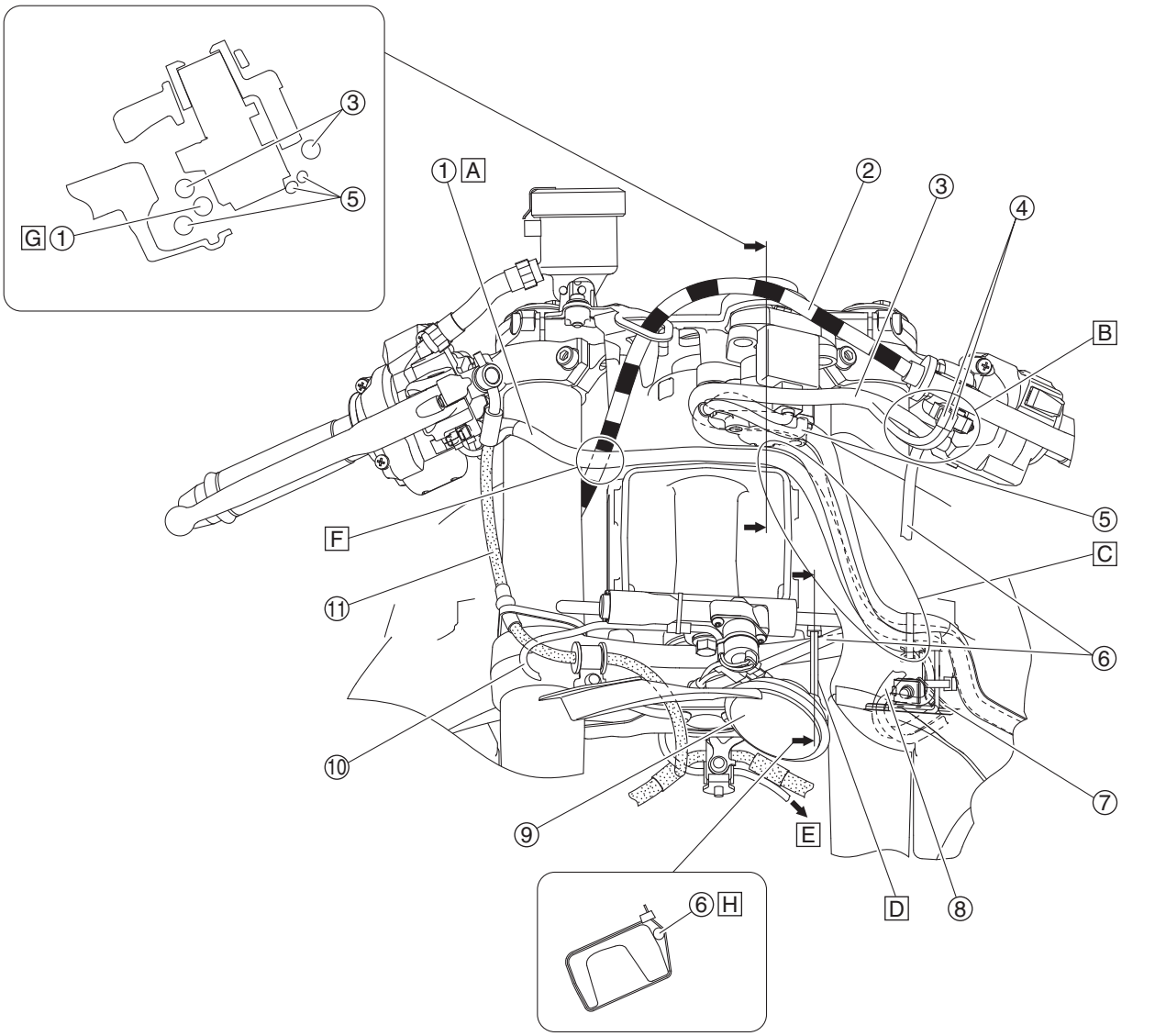
1. ERS mode
2. Front compression damping force
3. Front rebound damping force
4. Rear compression damping force
5. Rear rebound damping force
6. Factory preset level
7. Current level setting

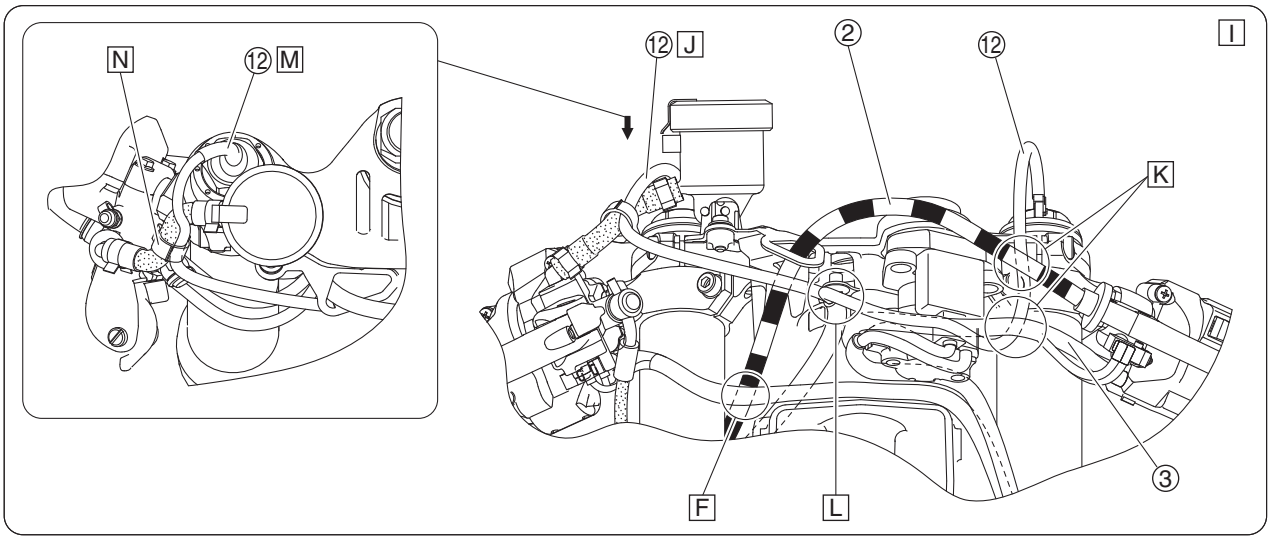
For the manual setting modes M-1, M-2, and M-3, the following settings can be adjusted:
Fr COM: front compression damping
Fr REB: front rebound damping
Rr COM: rear compression damping
Rr REB: rear rebound damping

Starter motor	
Brush overall length limit	5.5 mm (0.22 in)
Brush spring force	4.80–7.20 N (489–734 gf, 17.28–25.92 oz)
Mica undercut (depth)	2.40 mm (0.09 in)
Solenoid	
Steering damper solenoid resistance	49.82–56.18 Ω
Intake solenoid resistance	42.0–48.0 Ω
Fuel injection sensor	
Crankshaft position sensor resistance	189–231 Ω
Cylinder identification sensor output voltage (ON)	4.8 V
Cylinder identification sensor output voltage (OFF)	0.8 V
Intake air temperature sensor resistance	5400–6600 Ω at 0 °C (5400–6600 Ω at 32 °F)
Intake air temperature sensor resistance	289–391 Ω at 80 °C (289–391 Ω at 176 °F)
Coolant temperature sensor resistance	2513–2777 Ω at 20 °C (2513–2777 Ω at 68 °F)
Coolant temperature sensor resistance	210–221 Ω at 100 °C (210–221 Ω at 212 °F)
Fuse(s)	
Main fuse	50.0 A
Headlight fuse	7.5 A
Signaling system fuse	7.5 A
Ignition fuse	15.0 A
Radiator fan motor fuse	15.0 A
Sub radiator fan motor fuse	10.0 A
Hazard fuse	7.5 A
ABS ECU fuse	7.5 A
SCU fuse	7.5 A (YZF-R1M)
Fuel injection system fuse	15.0 A
ABS motor fuse	30.0 A
ABS solenoid fuse	15.0 A
Auxiliary fuse	2.0 A
Backup fuse	7.5 A
Electronic throttle valve fuse	7.5 A

EAS20021
CABLE ROUTING

Handlebar (front view)

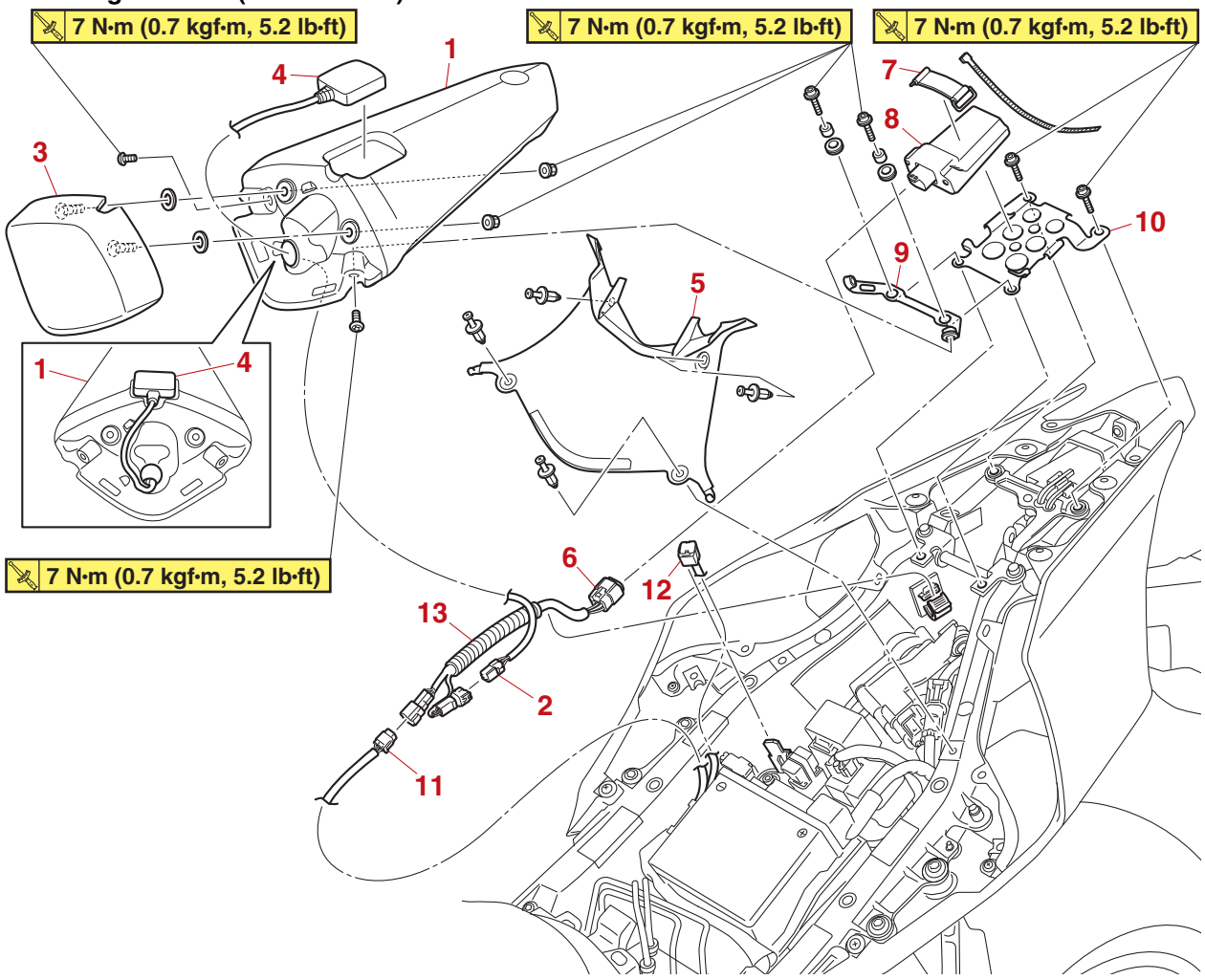




EAS20155

GENERAL CHASSIS (2)

Removing the CCU (for YZF-R1M)



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat/Passenger seat/Battery cover		Refer to "GENERAL CHASSIS (1)" on page 4-1.
1	Passenger seat cover	1	
2	GPS unit coupler	1	Disconnect.
3	Cushion	1	
4	GPS unit	1	
5	Tail cover	1	
6	CCU coupler (sub-wire harness)	1	Disconnect.
7	Band	1	
8	CCU (Communication Control Unit)	1	
9	CCU bracket 1	1	
10	CCU bracket 2	1	
11	Wire harness coupler	1	Disconnect.
12	Yamaha diagnostic tool coupler	1	
13	Sub-wire harness	1	

EAS30183
INTRODUCTION

EWA14101
⚠ WARNING

Disc brake components rarely require disassembly. Therefore, always follow these preventive measures:
- **Never disassemble brake components unless absolutely necessary.**
- **If any connection on the hydraulic brake system is disconnected, the entire brake system must be disassembled, drained, cleaned, properly filled, and bled after reassembly.**
- **Never use solvents on internal brake components.**
- **Use only clean or new brake fluid for cleaning brake components.**
- **Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.**
- **Avoid brake fluid coming into contact with the eyes as it can cause serious injury.**

FIRST AID FOR BRAKE FLUID ENTERING THE EYES:
- **Flush with water for 15 minutes and get immediate medical attention.**

EAS30184
CHECKING THE REAR BRAKE DISC

1. Check:
   - Rear brake disc
     Damage/galling → Replace.
2. Measure:
   - Brake disc runout
     Out of specification → Correct the brake disc runout or replace the brake disc.
     Refer to "CHECKING THE FRONT BRAKE DISCS" on page 4-57.

Brake disc runout limit (as measured on wheel)
0.15 mm (0.0059 in)

3. Measure:
   - Brake disc thickness
     Measure the brake disc thickness at a few different locations.
     Out of specification → Replace.
     Refer to "CHECKING THE FRONT BRAKE DISCS" on page 4-57.

Brake disc thickness limit
4.5 mm (0.18 in)

4. Adjust:
   - Brake disc runout
     Refer to "CHECKING THE FRONT BRAKE DISCS" on page 4-57.

Rear brake disc bolt
27 N·m (2.7 kgf·m, 20 lb·ft)
LOCTITE®

EAS30185
REPLACING THE REAR BRAKE PADS

TIP

When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.

1. Measure:
   - Brake pad wear limit "a"
     Out of specification → Replace the brake pads as a set.

Brake pad lining thickness limit
1.0 mm (0.04 in)

2. Install:
   - Brake pad insulators
   - Brake pad shims
     (onto the brake pads)
   - Brake pad spring
     (into the rear brake caliper)
   - Brake pads

TIP

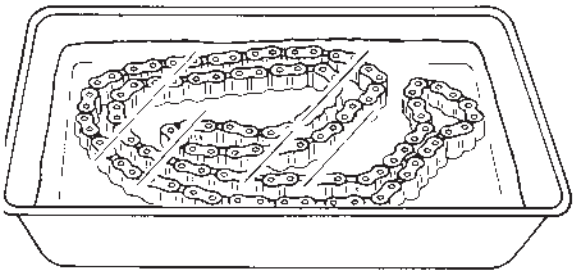
Always install new brake pads, brake pad insulators, brake pad shims, and brake pad spring as a set.

a. Connect a clear plastic hose "1" tightly to the bleed screw "2". Put the other end of the hose into an open container.
b. Loosen the bleed screw and push the brake caliper piston into the brake caliper with your finger.

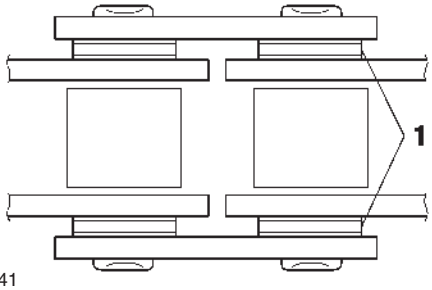
ECA19090

NOTICE

- **This vehicle has a drive chain with small rubber O-rings "1" between the drive chain side plates. Never use high-pressure water or air, steam, gasoline, certain solvents (e.g., benzine), or a coarse brush to clean the drive chain. High-pressure methods could force dirt or water into the drive chain's internals, and solvents will deteriorate the O-rings. A coarse brush can also damage the O-rings. Therefore, use only kerosene to clean the drive chain.**
- **Do not soak the drive chain in kerosene for more than ten minutes, otherwise the O-rings can be damaged.**

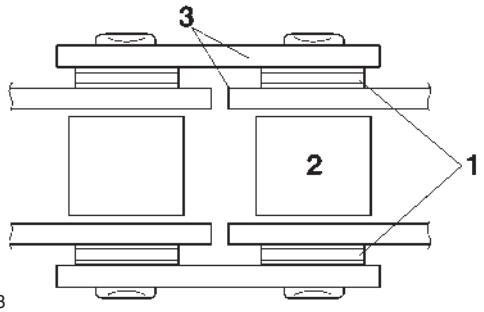


G088940



G088941

4. Check:
   - O-rings "1"
     Damage → Replace the drive chain.
   - Drive chain rollers "2"
     Damage/wear → Replace the drive chain.
   - Drive chain side plates "3"
     Damage/wear/cracks → Replace the drive chain.



G088943

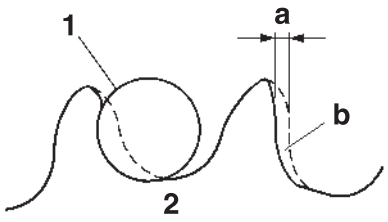
5. Lubricate:
   - Drive chain

Recommended lubricant
Chain lubricant suitable for O-ring chains

EAS30231

CHECKING THE DRIVE SPROCKET

1. Check:
   - Drive sprocket
     More than 1/4 tooth "a" wear → Replace the drive sprocket, the rear wheel sprocket and the drive chain as a set.
     Bent teeth → Replace the drive sprocket, the rear wheel sprocket and the drive chain as a set.



G088904

b. Correct
1. Drive chain roller
2. Drive sprocket

EAS30232

CHECKING THE REAR WHEEL SPROCKET

Refer to "CHECKING AND REPLACING THE REAR WHEEL SPROCKET" on page 4-47.

EAS30233

CHECKING THE REAR WHEEL DRIVE HUB

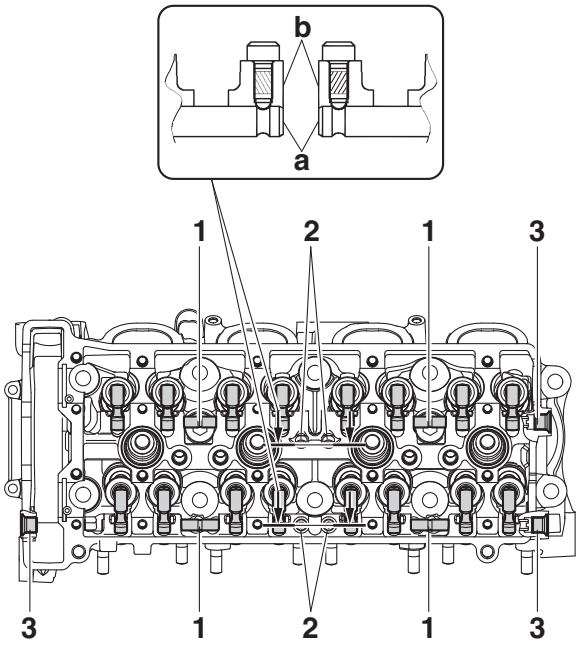
Refer to "CHECKING THE REAR WHEEL DRIVE HUB" on page 4-47.

EAS30234

INSTALLING THE DRIVE CHAIN

1. Install:
   - Drive chain

Rocker arm shaft bolt
6 N·m (0.6 kgf·m, 4.4 lb·ft)
LOCTITE®
Straight plug (rocker arm shaft)
10 N·m (1.0 kgf·m, 7.4 lb·ft)
LOCTITE®



EAS31715
INSTALLING THE TIMING CHAIN COVER

1. Install:
   - Timing chain cover
   - Oil pipe 3
     a. Install new O-rings to the oil pipe.

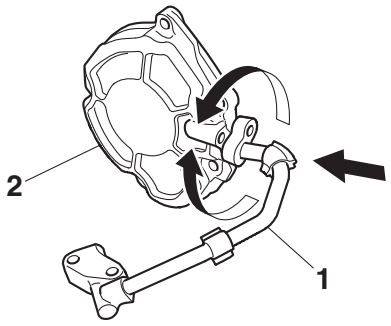
TIP

Apply lithium-soap-based grease evenly on new O-rings.

b. Install the oil pipe "1" to the timing chain cover "2".

TIP

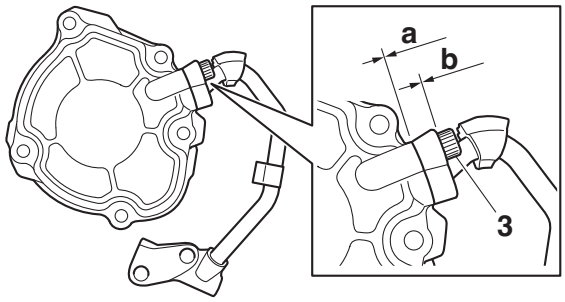
- While turning the oil pipe, install it to the timing chain cover so that the grease applied to the O-rings is distributed.
- If the oil pipe is not turned smoothly, the O-rings might be caught.



c. Install the oil pipe bolt "3" and tighten it temporarily until there is no clearance at "a" (timing chain cover to oil pipe) and "b" (oil pipe to oil pipe bolt).

TIP

Apply locking agent (LOCTITE®) onto the oil pipe bolt.



d. Install the timing chain cover assembly and a new timing chain cover gasket.
e. Install new timing chain cover bolts and tighten them.

Timing chain cover bolt
1st: 6 N·m (0.6 kgf·m, 4.4 lb·ft)
***2nd: 3.0 N·m (0.30 kgf·m, 2.2 lb·ft)**
Specified angle 90°

* Following the tightening order, loosen the bolt one by one and then retighten it to the specific torque and the specific angle.

TIP

Tighten the timing chain cover bolts in the tightening sequence as shown.

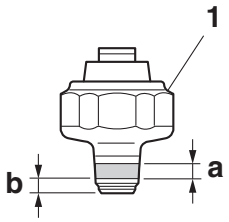
EAS31071
INSTALLING THE OIL PRESSURE SWITCH

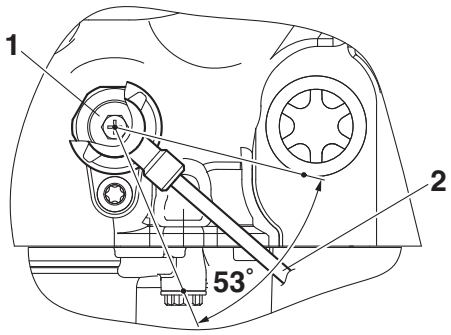
1. Install:
   - Oil pressure switch “1”
   - Oil pressure switch lead “2”

Oil pressure switch
13 N·m (1.3 kgf·m, 9.6 lb·ft)
Oil pressure switch lead bolt
1.8 N·m (0.18 kgf·m, 1.3 lb·ft)

TIP

- Apply Three Bond No. 1215B® to the threads “a” of the oil pressure switch. However, do not apply Three Bond No. 1215B® to the portion “b” of the oil pressure switch.
- Install the oil pressure switch lead so that it is routed within the range shown in the illustration.





EAS31658
INSTALLING THE GEAR POSITION SENSOR

ECA22630

NOTICE

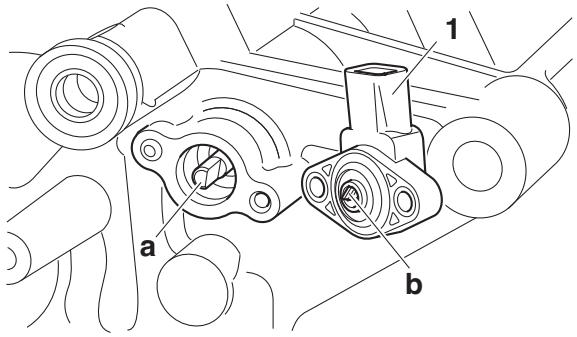
To prevent damage to the gear position sensor, keep magnets (including any pickup tool with a magnet, magnetized screwdrivers, etc.) away from the gear position sensor.

1. Install:
   - O-ring New
   - Gear position sensor “1”

Gear position sensor bolt
4.0 N·m (0.40 kgf·m, 3.0 lb·ft)
LOCTITE®

TIP

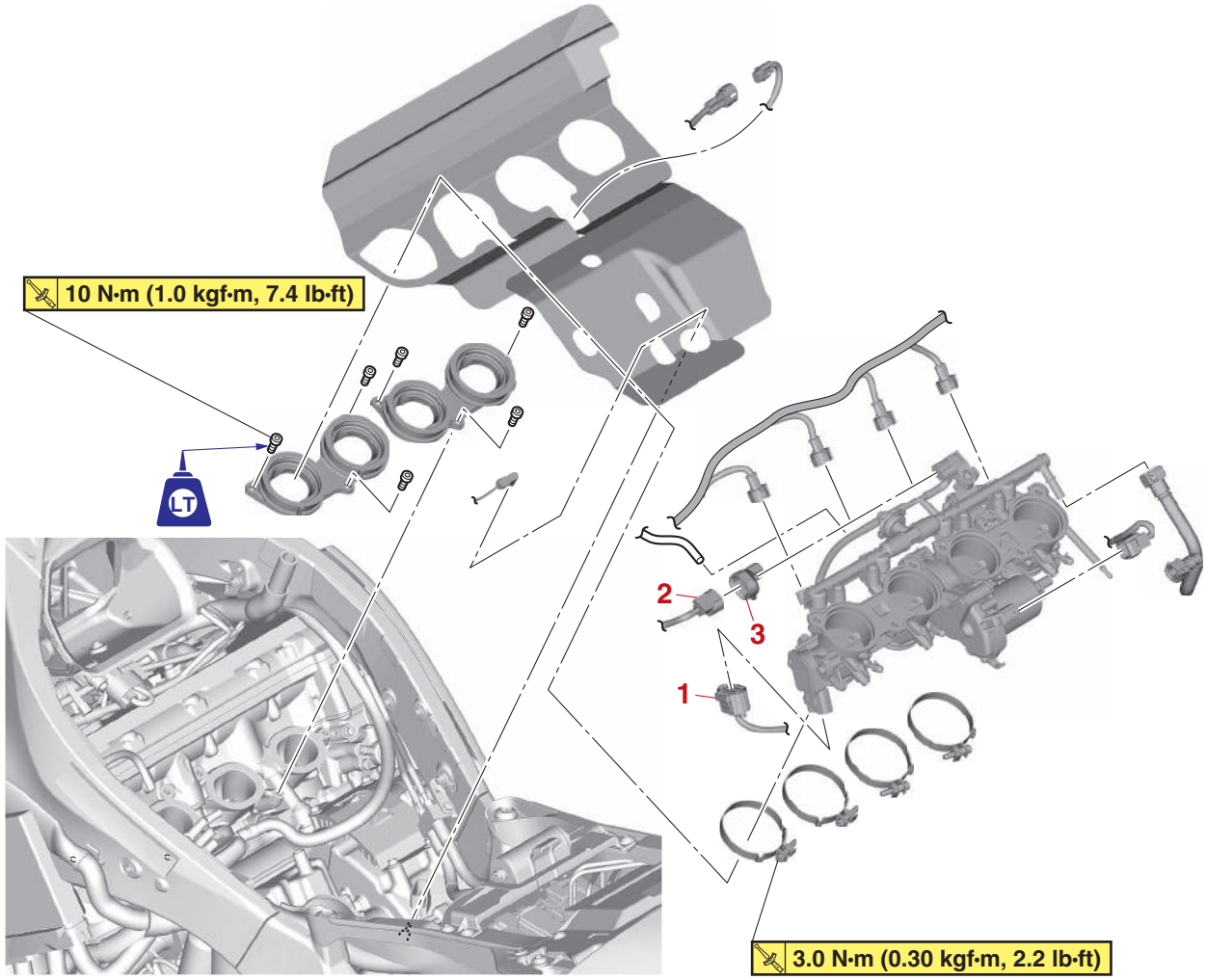
- Lubricate the O-ring with lithium-soap-based grease.
- Fit the end “a” of the shift drum assembly into the opening “b” in the gear position sensor “1”.



EAS20070

THROTTLE BODIES

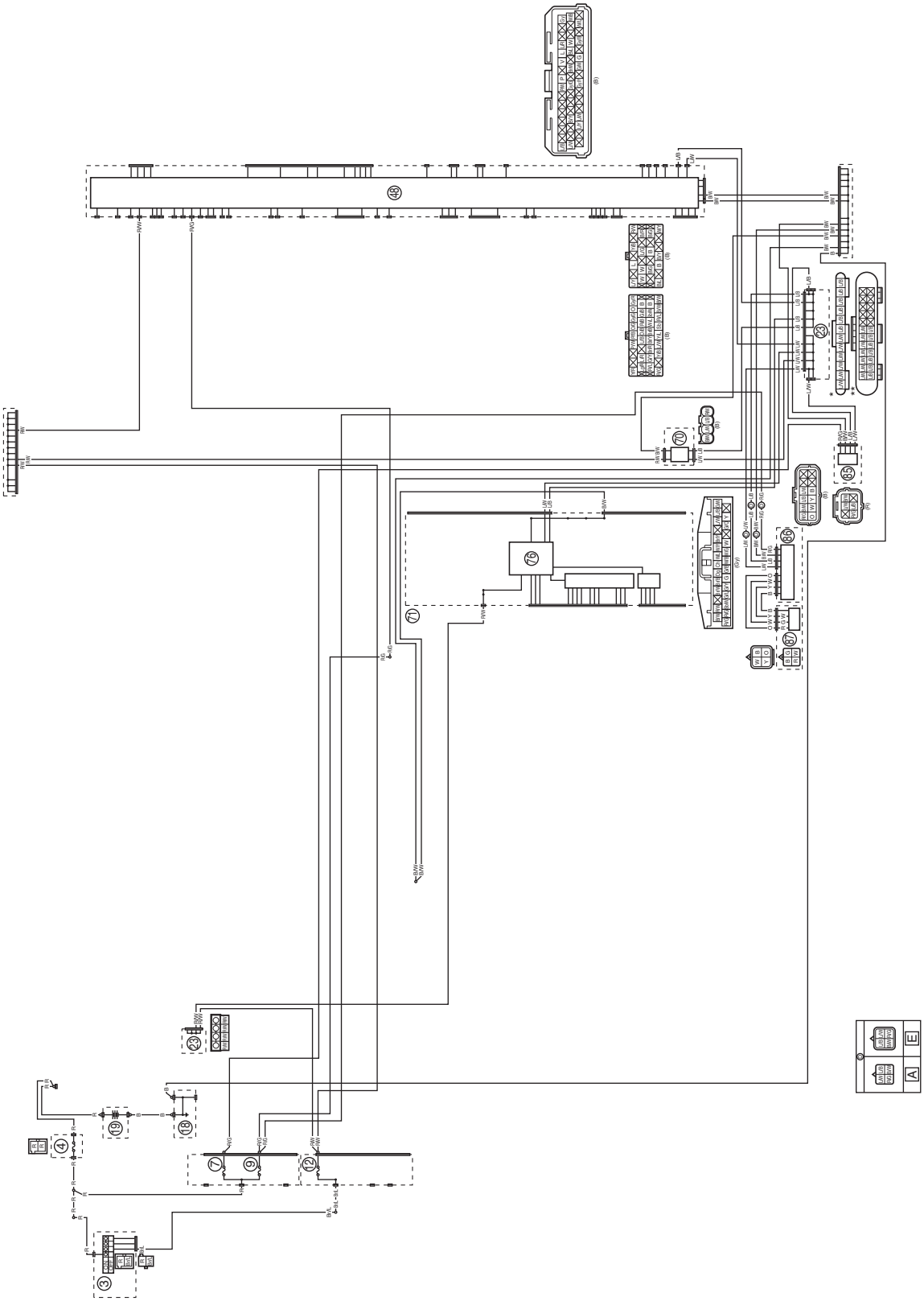
Removing the throttle bodies



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Side cover bracket		Refer to "GENERAL CHASSIS (8)" on page 4-32.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Air filter case		Refer to "AIR FILTER CASE" on page 7-5.
	Canister		Refer to "FUEL TANK" on page 7-1. For California only.
1	Throttle position sensor coupler	1	Disconnect.
2	Intake air pressure sensor coupler	1	Disconnect.
3	Coupler holder	1	

EAS20212
COMMUNICATION CONTROL SYSTEM (for YZF-R1M)

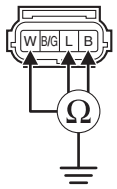
EAS31671
CIRCUIT DIAGRAM



DTC	Symptom	Fail-safe system		Diagnostic code
		Starting the engine	Driving the vehicle	
"P0122, P0123, P0222, P0223, P2135"	[P0122] Throttle position sensor: ground short circuit detected. [P0123] Throttle position sensor: open or power short circuit detected. [P0222] Throttle position sensor: open or ground short circuit detected. [P0223] Throttle position sensor: power short circuit detected. [P2135] Throttle position sensor: output voltage deviation error.	Able/Unable	Able/Unable	D01, D13
"P0132"	O_2 sensor 1: short circuit detected (power short circuit).	Able	Able	—
"P0152"	O_2 sensor 2: short circuit detected (power short circuit).	Able	Able	—
"P0201"	Primary injector #1: malfunction in primary injector #1.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D36
"P0202"	Primary injector #2: malfunction in primary injector #2.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D37
"P0203"	Primary injector #3: malfunction in primary injector #3.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D38
"P0204"	Primary injector #4: malfunction in primary injector #4.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D39
"P0335"	Crankshaft position sensor: no normal signals are received from the crankshaft position sensor.	Unable	Unable	—
"P0340"	Cylinder identification sensor: no normal signals are received from the cylinder identification sensor.	Unable	Able	—
"P0351"	Cylinder-#1 ignition coil: open or short circuit detected in the primary lead of the cylinder-#1 ignition coil.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D30
"P0352"	Cylinder-#2 ignition coil: open or short circuit detected in the primary lead of the cylinder-#2 ignition coil.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D31

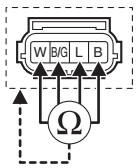
A

1

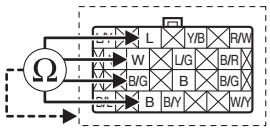


B

1



2



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 4.

4. Installed condition of throttle position sensor.
   • Check for looseness or pinching.
   Refer to "ADJUSTING THE THROTTLE POSITION SENSOR" on page 7-19.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall or adjust the sensor.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 5.

5. Defective throttle position sensor.
   • Check throttle position sensor signal 1.
   • Execute the diagnostic mode. (Code D01)

When the throttle valves are fully closed	11–21
When throttle valves are fully open	96–107

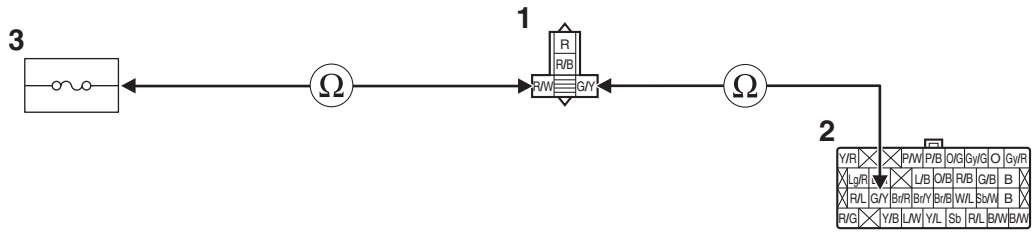
Is check result OK?

YES

→ Go to step 6.

NO

Between radiator fan motor relay and ECU coupler	green/yellow–green/yellow



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

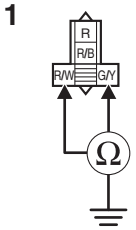
Ground short circuit check “A”

Between radiator fan motor relay “1” and ground	green/yellow–ground red/white–ground

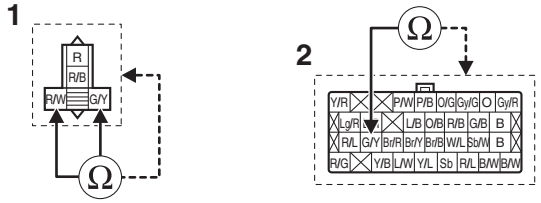
Lines short circuit check “B”

Radiator fan motor relay	green/yellow–any other coupler terminal red/white–any other coupler terminal
ECU coupler “2”	green/yellow–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

EAS20639
P21D1

EAS33119
TROUBLESHOOTING

Item

Secondary injector #3: malfunction in secondary injector #3.

Fail-safe system

- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure

1. Connection of secondary injector #3 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Execute the diagnostic mode. (Code D42)

      Is it hear operating sound?

      YES

      → Go to step 6.

      NO

      → Go to step 2.

2. Defective secondary injector #3.
   - Measure the secondary injector resistance.
     Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

   Is check result OK?

   YES

   → Go to step 3.

   NO

   a. Replace the secondary injector #3.
      Refer to “AIR FILTER CASE” on page 7-5.
   b. Execute the diagnostic mode. (Code D42)

      Is it hear operating sound?

      YES

      → Go to step 6.

      NO

      → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES