YAMAHA 2006

FJR1300AS(V)

SUPPLEMENTARY SERVICE MANUAL

3P6-28197-E1

ET2D21027

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and data for the FJR1300AS(V). For complete service information procedures it is necessary to use this Supplementary Service Manual together with the following manual.

FJR1300A(V) SERVICE MANUAL: 3P6-28197-E0

EAS20040

FJR1300AS(V) 2006
SUPPLEMENTARY SERVICE MANUAL

First edition, February 2006

EAS20070
NOTICE

This manual was produced by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

Yamaha Motor Company, Ltd. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

NOTE:

Designs and specifications are subject to change without notice.

EAS20080
IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following.

⚠ — The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ WARNING — Failure to follow WARNING instructions could result in severe injury or death to the vehicle operator, a bystander or a person checking or repairing the vehicle.

CAUTION: — A CAUTION indicates special precautions that must be taken to avoid damage to the vehicle.

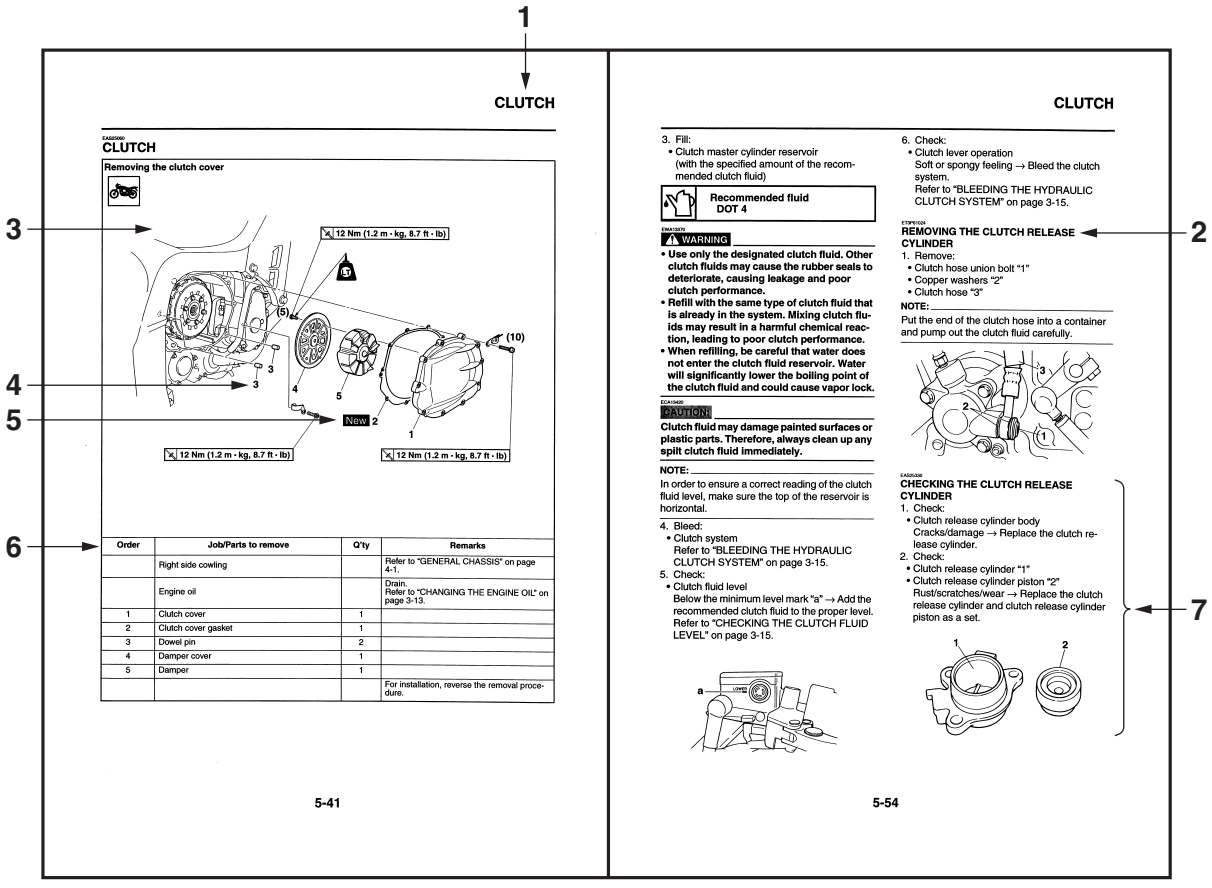
NOTE: — A NOTE provides key information to make procedures easier or clearer.

EAS20090

HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

- The manual is divided into chapters and each chapter is divided into sections. The current section title "1" is shown at the top of each page.
- Sub-section titles "2" appear in smaller print than the section title.
- To help identify parts and clarify procedure steps, there are exploded diagrams "3" at the start of each removal and disassembly section.
- Numbers "4" are given in the order of the jobs in the exploded diagram. A number indicates a disassembly step.
- Symbols "5" indicate parts to be lubricated or replaced.
  Refer to "SYMBOLS".
- A job instruction chart "6" accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
- Jobs "7" requiring more information (such as special tools and technical data) are described sequentially.



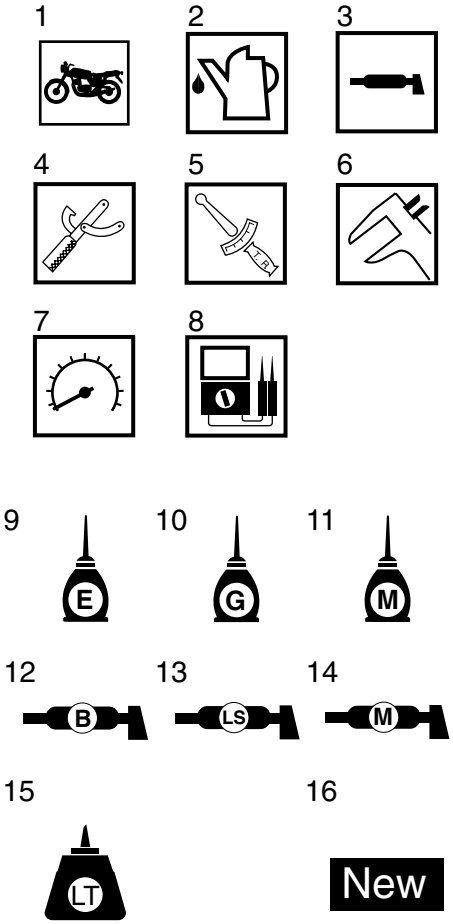
EAS20100

SYMBOLS

The following symbols are used in this manual for easier understanding.

NOTE:

The following symbols are not relevant to every vehicle.



1. Serviceable with engine mounted
2. Filling fluid
3. Lubricant
4. Special tool
5. Tightening torque
6. Wear limit, clearance
7. Engine speed
8. Electrical data
9. Engine oil
10. Gear oil
11. Molybdenum-disulfide oil
12. Wheel-bearing grease
13. Lithium-soap-based grease
14. Molybdenum-disulfide grease
15. Apply locking agent (LOCTITE®)
16. Replace the part

EAS20110

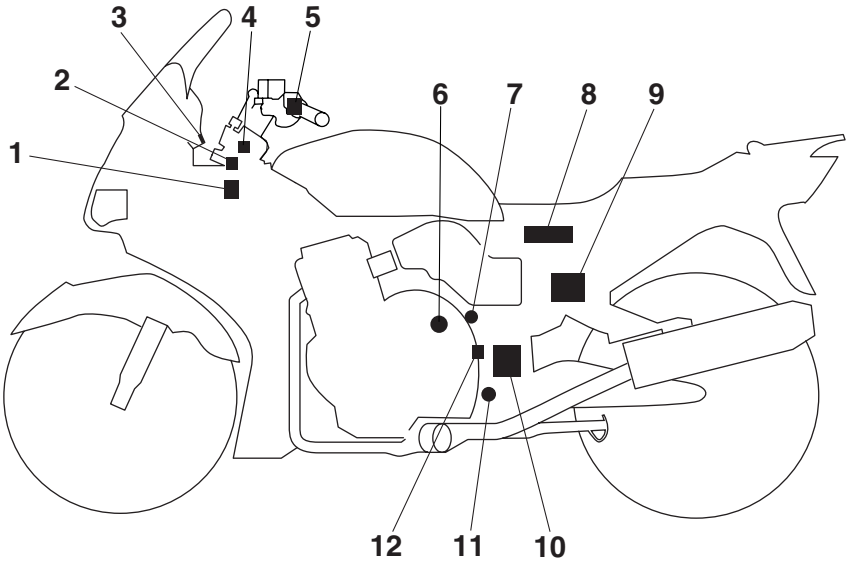
CONTENTS

EAS20170
FEATURES

ET2D21013
OUTLINE OF THE YCC-S (Yamaha Chip Controlled-Shift) SYSTEM

Concept
YCC-S offers more enjoyable and easy riding by eliminating the need for the user to operate the clutch, which also reduces fatigue during long touring.
YCC-S is not an automatic transmission, although it allows the user to shift gears by foot or hand according to preference.
When shifting, a signal is sent to the MCU (motor control unit), which ensures optimum clutch operation, shifting, and engine control. Therefore, the user never needs to operate the clutch, which in turn, reduces fatigue and allows the user to concentrate while riding.
When stopping at traffic lights or in traffic jams, YCC-S operates the clutch instead of the user.

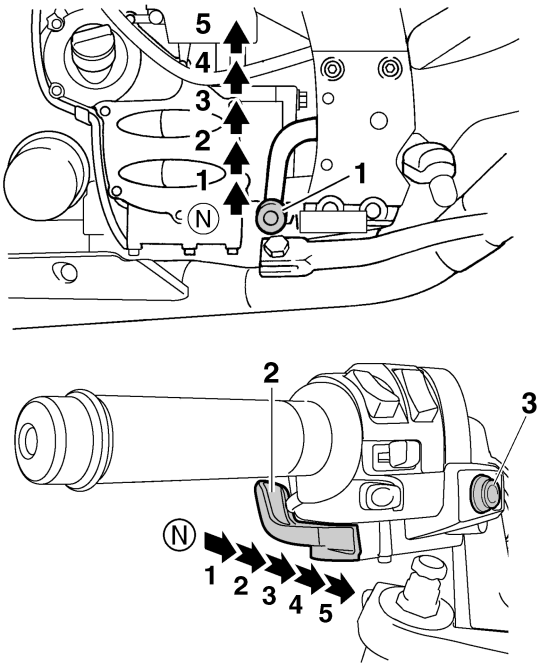
Basic function
To shift gears after starting the engine, the user must use the shift pedal. However, depending on the user's preference, the transmission can be shifted by hand after setting the hand shift select button to "ON".
When the engine is started, the MCU disengages the clutch. A signal is sent to the MCU when the transmission is shifted from neutral to 1st gear by hand or foot. When the throttle is opened, the MCU then engages the clutch according to engine r/min. Clutch engagement is controlled optimally by the MCU. Clutch engagement is not constant in order to provide smooth shifting according to engine requirements and conditions.
The YCC-S system will not shift up if the engine r/min is lower than a specified value. Even if the user shifts up, if the specified value is not met (engine r/min is too low), the YCC-S system will not shift up until the above-mentioned specified value is met.
Likewise, the YCC-S system will not shift down if the specified value is not met (engine r/min is too high).
In this case, the throttle must be closed so that the MCU can disengage the clutch until the specified value is met to prevent the engine from stopping. During this period, a coasting condition will be felt. The user must shift down properly in order for the YCC-S system to provide a smooth stopping condition.
The YCC-S system is constantly performing a self-diagnosis when the engine is running. If any trouble is detected, the MCU automatically stops the YCC-S system and shifting is impossible.



1. YCC-S test coupler
2. YCC-S control relay
3. YCC-S indicator and warning light
4. YCC-S motor control fuse
5. Hand shift switch
6. Gear position sensor
7. Neutral switch
8. MCU (motor control unit)
9. Shift actuator
10. Clutch actuator
11. Foot shift switch
12. YCC-S speed sensor

Shift pattern

This vehicle is equipped with a constant-mesh 5-speed transmission. The gears can be shifted using either the shift pedal “1” or the hand shift switch “2”. The hand shift switch has to be enabled by pressing the hand shift select button “3” prior to being used. The gear positions are shown in the illustration.

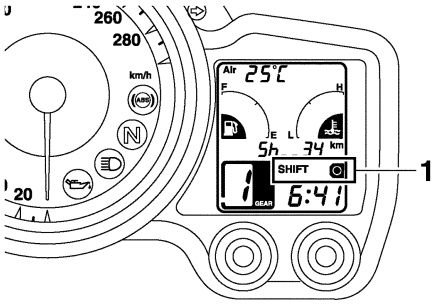


Attention

- Do not turn the main switch to “OFF” while the vehicle is moving, otherwise the electrical systems will be switched off, including the YCC-S system, which may result in loss of control or an accident. Make sure that the vehicle is stopped before turning the main switch to “OFF”.
- The clutch will be engaged for a few seconds after the engine is stopped using the main switch if the transmission is not in neutral. This means that the vehicle cannot be moved by pushing or pulling it. To move the vehicle, turn the main switch to “ON”, and then apply the front or rear brake to disengage the clutch. A click will be heard when the clutch is disengaged.
- Always stop the engine and turn the main switch to “LOCK” when parking the vehicle.

YCC-S indicator and warning light

- The YCC-S system is constantly performing a self-diagnosis.
- The YCC-S system also performs a self-diagnosis when the main switch is turned to “ON”. The YCC-S indicator and warning light “1” come on during this self-diagnosis. After the self-diagnosis is completed, if there were no problems found, the YCC-S indicator and warning light will go off.
- If the YCC-S indicator and warning light come on while riding, stop the vehicle, park it in a safe place, and then contact a Yamaha dealer.
  Because the YCC-S system stops automatically when the YCC-S indicator and warning light come on, it is impossible to shift since clutch operation is stopped. To move the vehicle, turn the main switch to “OFF” and place the vehicle on the centerstand. While rotating the rear wheel, push the shift rod forward and shift the transmission into neutral.

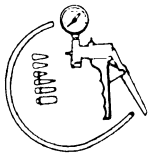
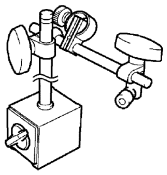
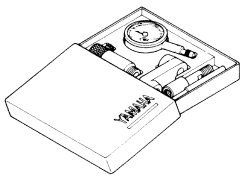
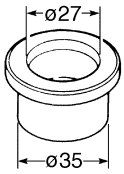
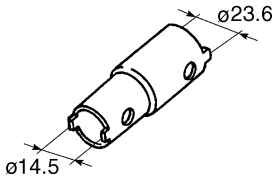


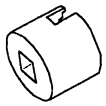
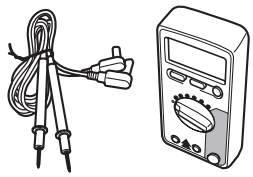
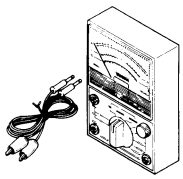
EAS20260
SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country. When placing an order, refer to the list provided below to avoid any mistakes.

NOTE:

- For U.S.A. and Canada, use part number starting with “YM-”, “YU-”, or “ACC-”.
- For others, use part number starting with “90890-”.

Tool name/Tool No.	Illustration	Reference pages
Vacuum/pressure pump gauge set 90890-06756 Mityvac brake bleeding tool YS-42423		32
Magnet base B 90890-06844 Magnetic base stand YU-A8438		33
Dial gauge & stand set 90890-01252		33
Fork seal driver weight 90890-01184		46
Fork seal driver attachment 90890-01186 Replacement 27 mm YM-A9409-1		46
Oil seal installing tool 90890-01512		46
Pivot shaft wrench 90890-01471 Frame spanner socket YM-01471		49

Tool name/Tool No.	Illustration	Reference pages
Pivot shaft wrench adapter 90890-01476		49
Digital circuit tester 90890-03174 Model 88 Multimeter with tachometer YU-A1927		50, 60
Test coupler adapter 90890-03149		95
Pocket tester 90890-03112 Analog pocket tester YU-03112-C		129, 130, 132, 133, 134

EAS20280
GENERAL SPECIFICATIONS

Model	
Model	2D21(Europe except (B)and(F))(ZA) 2D22(B)(F) 2D23(AUS)
Weight	
With oil and fuel	295.0 kg (650 lb)
Maximum load	208 kg (459 lb)

EAS20290
ENGINE SPECIFICATIONS

Clutch	
Clutch type	Wet, multiple-disc
Clutch release method	Hydraulic inner push
Clutch lever free play	1.9–20.7 mm (0.07–0.81 in)
Friction plate thickness	2.90–3.10 mm (0.114–0.122 in)
Wear limit	2.80 mm (0.1102 in)
Plate quantity	9 pcs
Clutch plate thickness	1.90–2.10 mm (0.075–0.083 in)
Plate quantity	8 pcs
Warpage limit	0.10 mm (0.0039 in)
Clutch spring height	6.78 mm (0.27 in)
Minimum height	6.4 mm (0.25 in)
Spring quantity	1 pc
Push rod bending limit	0.370 mm (0.0146 in)
Clutch pressure plate stroke	2.8 mm (0.11 in) or more
Transmission	
Transmission type	Constant mesh 5-speed
Primary reduction system	Spur gear
Primary reduction ratio	75/48 (1.563)
Secondary reduction system	Shaft drive
Secondary reduction ratio	35/37 × 21/27 × 33/9 (2.698)
Operation	Left foot and left hand operation
Gear ratio	
1st	43/17 (2.529)
2nd	39/22 (1.773)
3rd	31/23 (1.348)
4th	28/26 (1.077)
5th	26/28 (0.929)
Main axle runout limit	0.08 mm (0.0032 in)
Drive axle runout limit	0.08 mm (0.0032 in)

EAS20300
CHASSIS SPECIFICATIONS

Tire air pressure (measured on cold tires)	
Loading condition	0–90 kg (0–198 lb)
Front	270 kPa (39 psi) (2.70 kgf/cm²)
Rear	290 kPa (42 psi) (2.90 kgf/cm²)
Loading condition	90–208 kg (198–459 lb)
Front	270 kPa (39 psi) (2.70 kgf/cm²)
Rear	290 kPa (42 psi) (2.90 kgf/cm²)
High-speed riding	
Front	270 kPa (39 psi) (2.70 kgf/cm²)
Rear	290 kPa (42 psi) (2.90 kgf/cm²)

EAS20310
ELECTRICAL SPECIFICATIONS

Gear position sensor	
Output voltage (at neutral position)	0.71–0.91 V
Resistance	4.0–6.0 kΩ
Foot shift switch	
Output voltage	2.4–2.6 V
Resistance	4.0–6.0 kΩ
Grip warmer	
Resistance	1.21–1.48 Ω at 20 °C (68 °F)
Fuses	
Main fuse	50.0 A
Headlight fuse	25.0 A
Signaling system fuse	15.0 A
Ignition fuse	10.0 A
Radiator fan fuse	15.0 A × 2
Auxiliary DC jack fuse	3.0 A
Hazard fuse	10.0 A
Fuel injection system fuse	15.0 A
ABS motor fuse	30.0 A
ABS control unit fuse	10.0 A
YCC-S motor control fuse	30.0 A
Backup fuse	10.0 A
Reserve fuse	30.0 A
Reserve fuse	25.0 A
Reserve fuse	15.0 A
Reserve fuse	10.0 A
Reserve fuse	3.0 A

EAS20320
TIGHTENING TORQUES

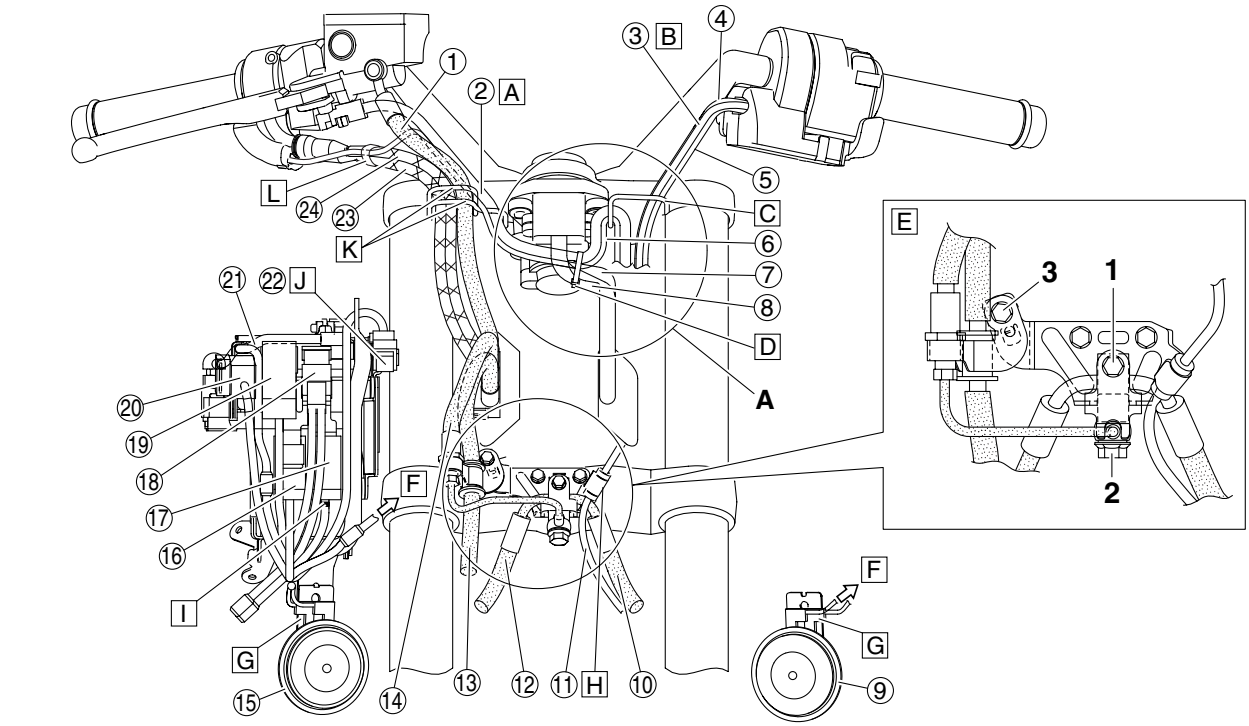
EAS20340
ENGINE TIGHTENING TORQUES

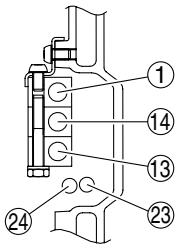
Item	Thread size	Q'ty	Tightening torque	Remarks
Clutch fluid reservoir bolt	M6	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Clutch actuator bracket bolt	M8	2	19 Nm (1.9 m·kg, 13 ft·lb)	
Clutch actuator bracket bolt	M6	3	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Gear position sensor cover	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Gear position sensor screw	M5	2	4 Nm (0.4 m·kg, 2.9 ft·lb)	
Gear position sensor bracket	M5	2	9 Nm (0.9 m·kg, 6.5 ft·lb)	
Shift actuator front bolt	M8	1	20 Nm (2.0 m·kg, 14 ft·lb)	
Shift actuator rear bolt	M8	1	20 Nm (2.0 m·kg, 14 ft·lb)	
Shift rod bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Shift rod bolt	M8	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Shift rod front locknut	M6	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Shift rod rear locknut	M8	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Foot shift switch screw	M5	2	4 Nm (0.4 m·kg, 2.9 ft·lb)	
Front shift arm bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Neutral switch	M10	1	20 Nm (2.0 m·kg, 14 ft·lb)	
YCC-S speed sensor bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	

EAS20350
CHASSIS TIGHTENING TORQUES

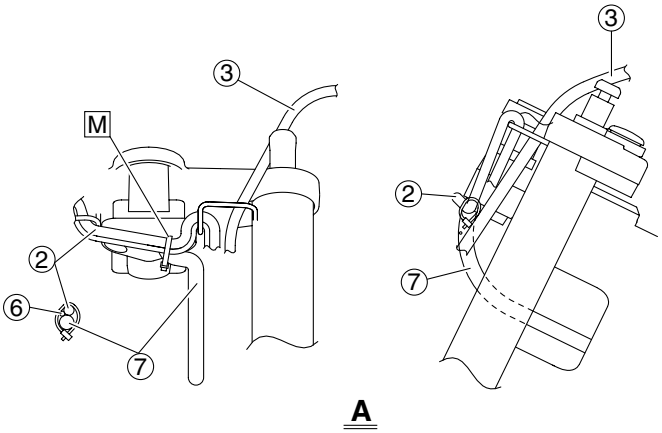
Item	Thread size	Q'ty	Tightening torque	Remarks
Shift pedal bolt	M6	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	LT
Shift pedal pivot bolt	M8	1	16 Nm (1.6 m·kg, 11 ft·lb)	LT
Pivot shaft locknut retainer bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	LT

EAS20430
CABLE ROUTING

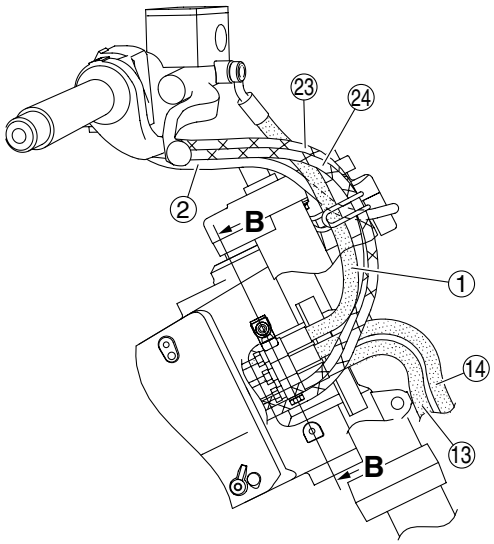




B-B

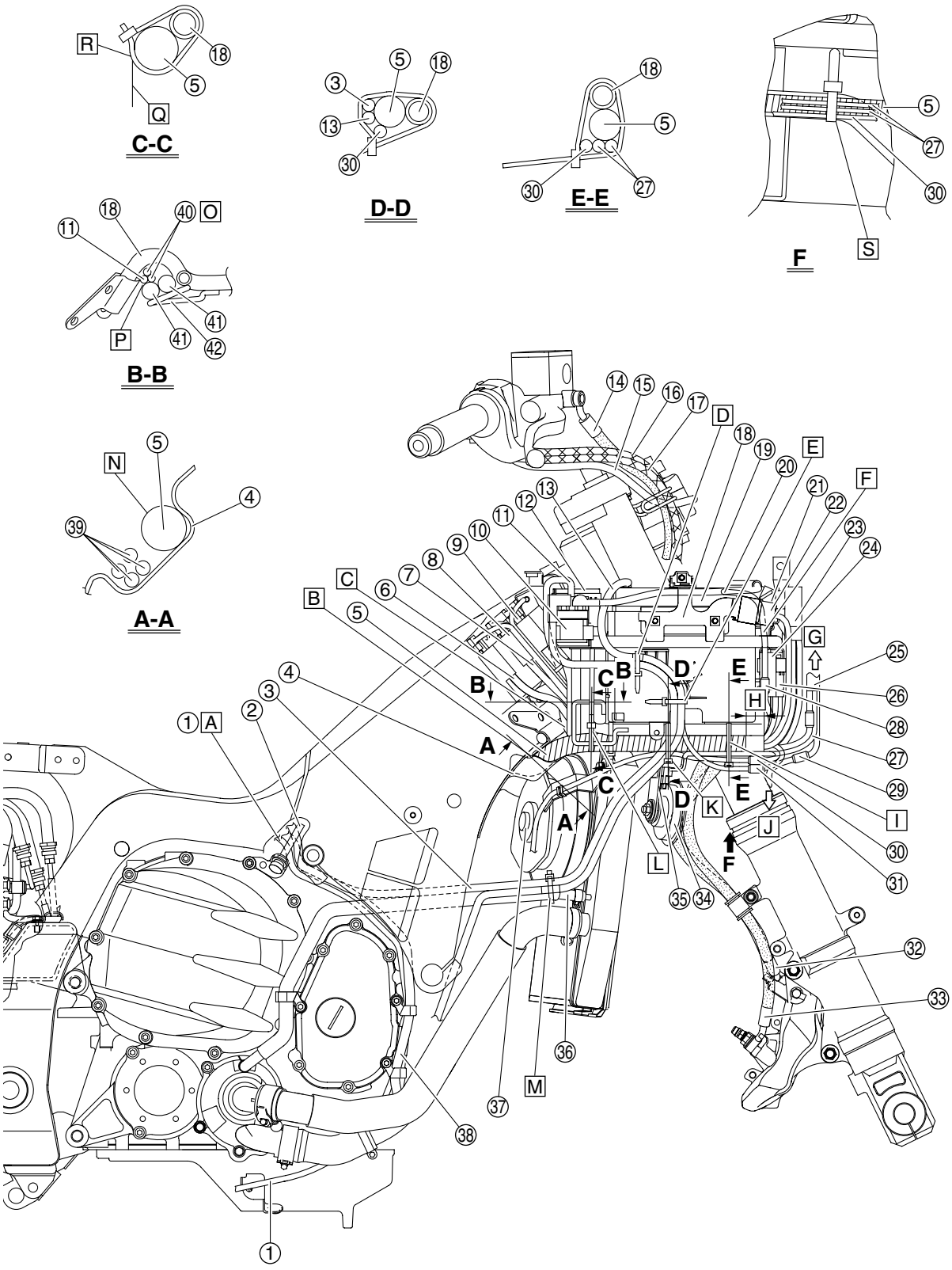


A



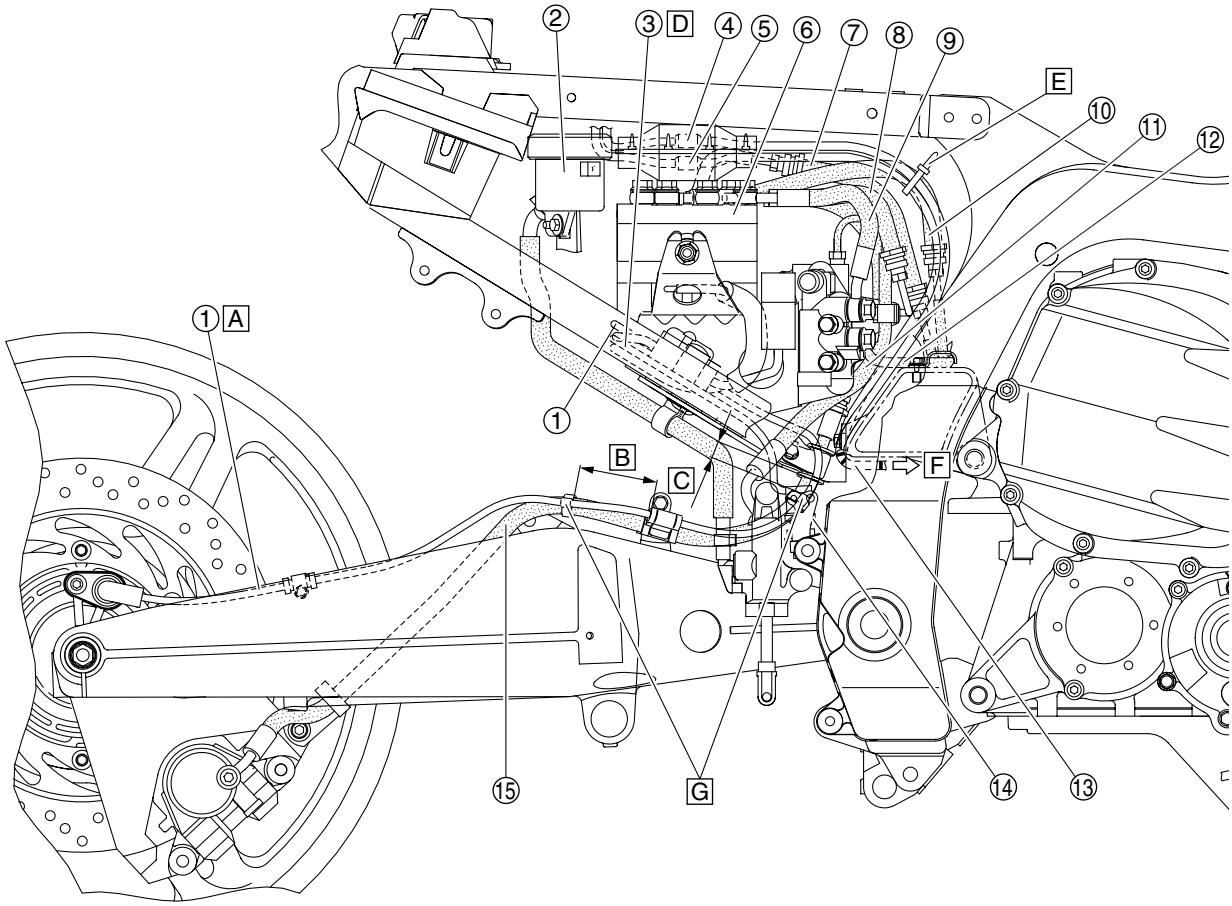
1. Brake hose (front brake master cylinder to hydraulic unit)
2. Right handlebar switch lead
3. Left handlebar switch lead
4. Left grip warmer lead
5. Hand shift switch lead
6. Right grip warmer lead
7. Main switch lead
8. Immobilizer unit lead
9. Left horn (low)
10. Brake hose (hydraulic unit to left front brake caliper)
11. Front wheel sensor lead
12. Brake hose (hydraulic unit to right front brake caliper)
13. Brake hose (metering valve to right front brake caliper)
14. Brake hose (hydraulic unit to front brake calipers)
15. Right horn (high)
16. Headlight (on/off)/grip warmer relay
17. Radiator fan motor relay
18. Main fuse
19. Brake light relay
20. YCC-S control relay
21. Positive battery lead
22. ABS test coupler
23. Throttle cable (accelerator cable)
24. Throttle cable (decelerator cable)

A. Route the right handlebar switch lead and right grip warmer lead under the handlebar.
B. Route the left handlebar switch lead, left grip warmer lead, and hand shift switch lead under the handlebar.
C. Pass the hand shift switch lead, right grip warmer lead, left grip warmer lead, right handlebar switch lead, and left handlebar switch lead through the guide.
D. Fasten the right handlebar switch lead, right grip warmer lead, main switch lead, and immobilizer unit lead with a plastic locking tie.
E. Temporarily tighten the brake hose joint bolt, union bolt, and brake hose holder bolt in the proper tightening sequence as shown. Then, tighten the bolts to the specified torque, making sure to tighten the brake hose joint bolt “1” last.
F. To front cowling wire harness
G. Install the horn L-shaped connectors so that the leads are routed outward.
H. Fasten the grommet on the front wheel sensor lead with the holder.
I. Connect the coupler that has blue tape wrapped around its leads to the radiator fan motor relay.
J. Install the ABS test coupler completely onto the tab on the battery stay.
K. Pass the brake hose (front brake master cylinder to hydraulic unit), right handlebar switch lead, right grip warmer lead, and throttle cables through the guide as shown in the illustration.
L. Fasten the right grip warmer lead to the throttle cables with a plastic locking tie 10 mm (0.39 in) or less from the end of the throttle cable boot. Face the end of the plastic locking tie upward or downward, and then cut off the excess end of the tie.
M. Fasten the right handlebar switch lead, right grip warmer lead, and main switch lead with a plastic locking tie at the location shown in the illustration. Position the buckle of the plastic locking tie under the leads, with the end facing inward, and then cut off the excess end of the tie.


C-C
D-D
E-E
F
B-B
A-A

1. O_2 sensor lead
2. Engine idling speed adjusting cable
3. Starter motor lead
4. Air deflector
5. Wire harness
6. Spark plug lead #4
7. Spark plug lead #1
8. Cylinders-#1/#4 ignition coil
9. Cylinders-#2/#3 ignition coil
10. Starter relay
11. Starter relay lead
12. Fuse box 2
13. Negative battery lead
14. Brake hose (front brake master cylinder to hydraulic unit)
15. Right handlebar switch lead
16. Throttle cable (accelerator cable)
17. Throttle cable (decelerator cable)
18. Battery stay
19. Battery
20. Positive battery lead
21. Main fuse
22. YCC-S control relay
23. Brake light relay
24. Headlight (on/off)/grip warmer relay
25. Front cowling wire harness
26. Radiator fan motor relay
27. Right horn (high) leads
28. Positive battery lead coupler
29. Front right turn signal light lead
30. Right radiator fan motor lead
31. Ground lead coupler
32. Brake hose (hydraulic unit to right front brake caliper)
33. Brake hose (metering valve to right front brake caliper)
34. Right horn (high)
35. Right horn (high) connectors
36. Water pump breather hose
37. Right radiator fan
38. Crankshaft position sensor lead
39. Spark plug leads
40. Ignition coil primary leads
41. Fuse box leads
42. Guide

A. Route the O_2 sensor lead to the inside of the engine idling speed adjusting cable.
B. Make sure that the wire harness and spark plug leads are positioned in the indentation on the right side of the air deflector.
C. Route the spark plug leads to the inside of the battery stay pipe.
D. Fasten the negative battery lead at the blue tape and the starter motor lead to the battery box with a plastic locking tie. Face the end of the plastic locking tie downward. Do not cut off the excess end of the plastic locking tie.
E. Fasten the negative battery lead and starter motor lead to the battery box with a plastic locking tie. Face the end of the plastic locking tie rearward. Do not cut off the excess end of the plastic locking tie.
F. Route the positive battery lead between the battery stay and the battery box.
G. To front cowling wire harness
H. Align the rear end of the right radiator fan motor coupler with the tape on the wire harness as shown in the illustration.
I. Fasten the wire harness, right horn (high) leads, and right radiator fan motor lead with a plastic locking tie, making sure to install the tie on the fan motor lead's protective sleeve. Face the end of the plastic locking tie outward. Do not cut off the excess end of the plastic locking tie.
J. To front right turn signal light
K. Fasten the wire harness, right radiator fan motor lead, negative battery lead, and starter motor lead to the battery stay with a plastic locking tie, making sure to install the tie on the fan motor lead's protective sleeve and to position the tie in front of the air deflector. Face the end of the plastic locking tie outward, and then cut off the excess end of the tie.
L. Fasten the wire harness to the battery stay with a plastic locking tie. Face the end of the plastic locking tie upward, and then cut off the excess end of the tie.
M. Fasten the negative battery lead at the blue tape, starter motor lead, and water pump breather hose with a plastic locking tie, making sure to install the tie around the end of the hose's protective sleeve, and then cut off the excess end of the tie. Do not kink the water pump breather hose and do not face the end of the plastic locking tie downward.
N. Route the wire harness to the outside of the spark plug leads.
O. Route the ignition coil primary leads to the inside of the fuse box leads.
P. Route the fuse box leads, starter relay lead, and ignition coil primary leads between the battery stay and the guide.
Q. Make sure that the wire harness does not protrude to the outside of the guide.
R. Pass the plastic locking tie between the guide and the wire harness.
S. Position the plastic locking tie to the rear of the bend in the battery stay.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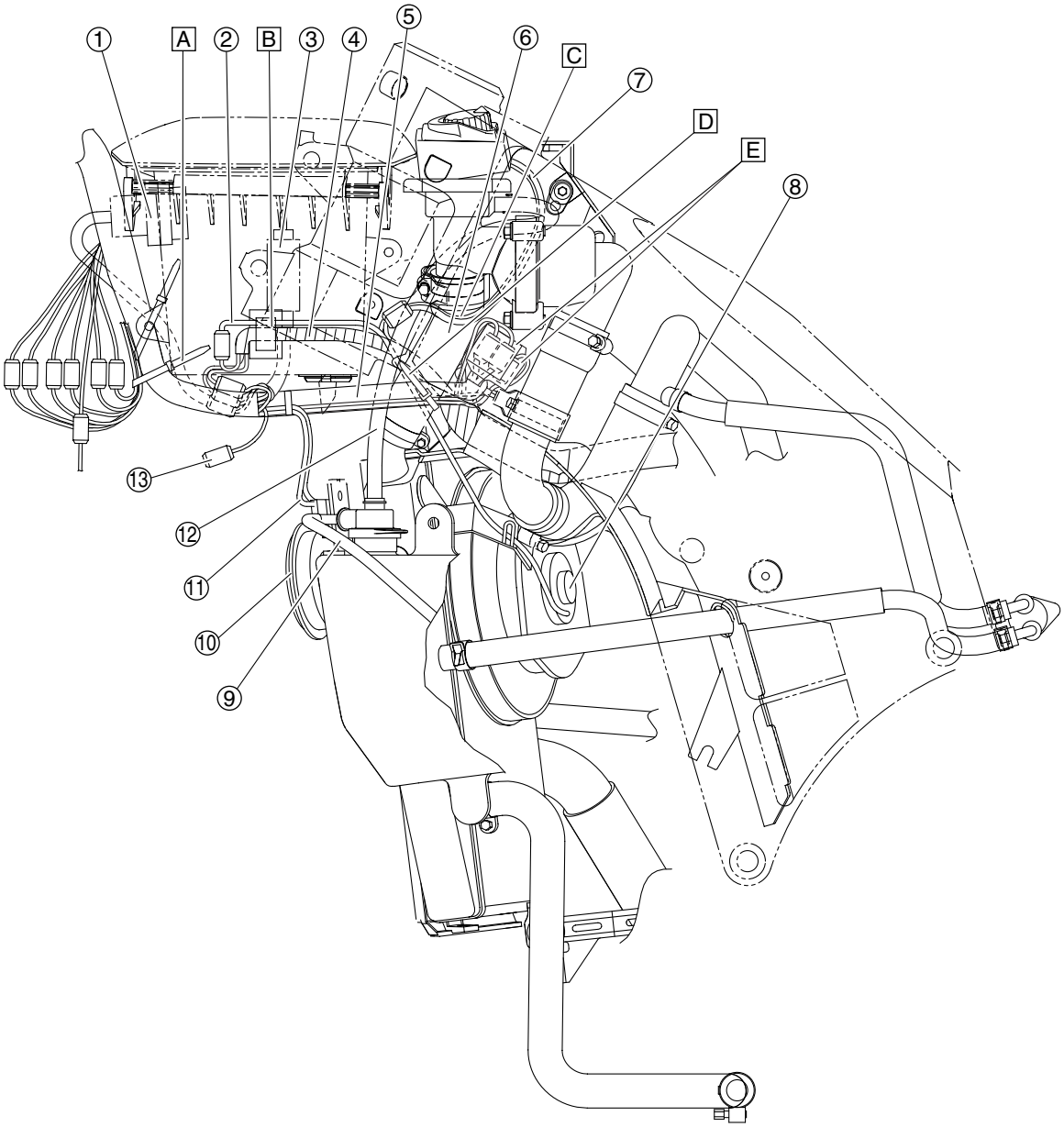
1. Rear wheel sensor lead
2. Rear brake fluid reservoir
3. Rear brake light switch lead
4. Clutch actuator motor lead
5. Clutch actuator sensor lead
6. Hydraulic unit
7. Brake hose (front brake master cylinder to hydraulic unit)
8. Brake hose (hydraulic unit to proportioning valve)
9. Brake hose (hydraulic unit to metering valve)
10. Brake hose (hydraulic unit to front brake calipers)
11. Brake hose (rear brake master cylinder to hydraulic unit)
12. Brake pipe (metering valve to right front brake caliper)
13. Clutch hose
14. Rear brake light switch
15. Brake hose (proportioning valve to rear brake caliper)

A. Route the rear wheel sensor lead to the inside of the swingarm, making sure that the lead does not protrude above the swingarm.
B. 45–55 mm (1.77–2.17 in)
C. 10–20 mm (0.39–0.79 in)
D. Route the rear brake light switch lead under the rear wheel sensor lead.
E. Fasten the clutch actuator motor lead and clutch actuator sensor lead to the brake hose (hydraulic unit to front brake calipers) with the plastic locking tie, making sure to face the end of the tie forward. Do not cut off the excess end of the plastic locking tie.
F. To clutch actuator
G. Fasten the rear wheel sensor lead to the brake hose (proportioning valve to rear brake caliper) with the two holders, making sure that the fastener of each holder faces inward.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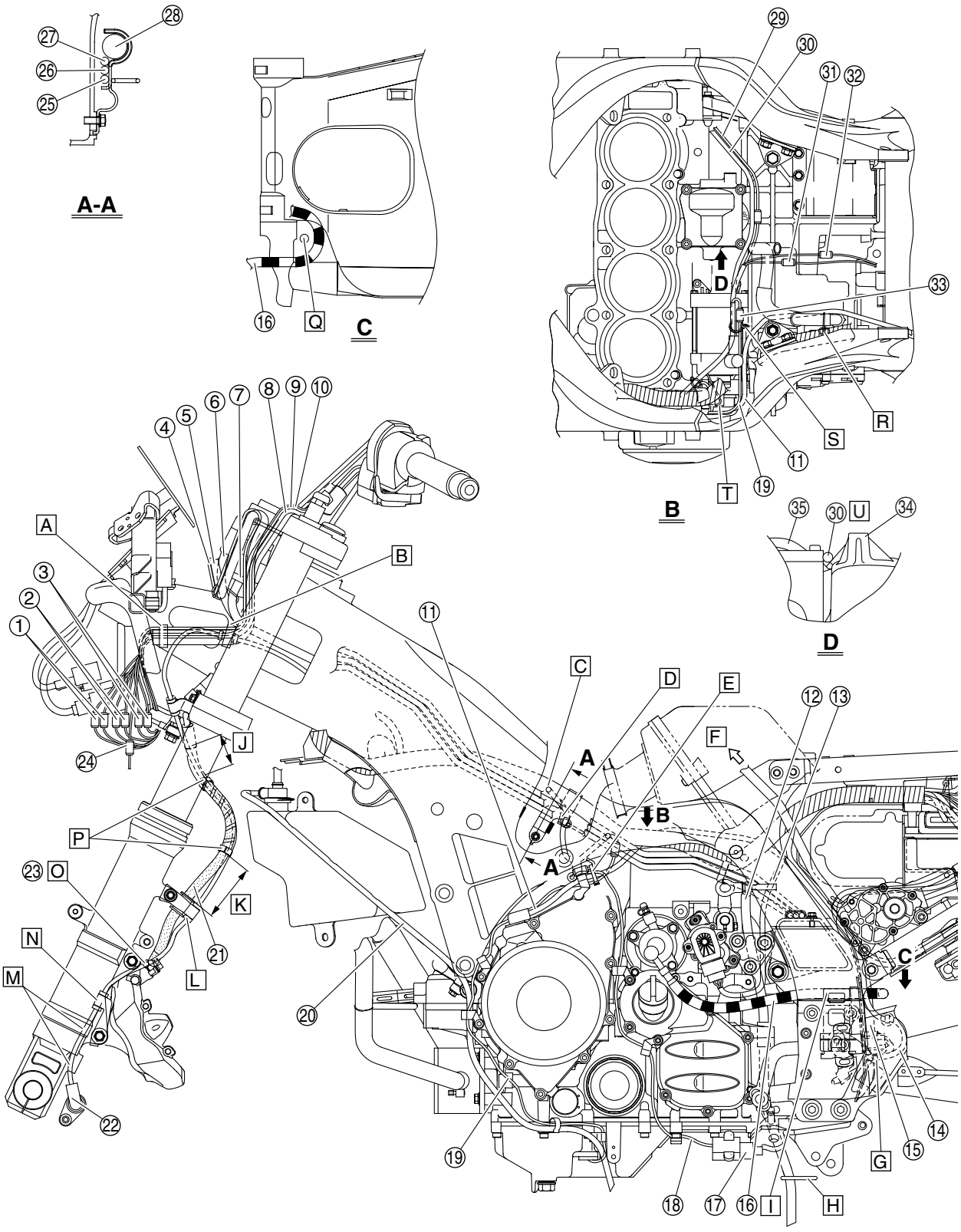
1. Auxiliary DC jack
2. Left radiator fan motor lead
3. Accessory box solenoid
4. Wire harness
5. Front cowling wire harness
6. Radiator inlet hose
7. Grip warmer control unit leads
8. Left radiator fan
9. Coolant reservoir breather hose
10. Left horn (low)
11. Left horn (low) leads
12. Thermostat assembly breather hose
13. Joint coupler

A. Fasten the handlebar switch leads, hand shift switch lead, and grip warmer leads to the front cowling wire harness with a plastic locking tie. Face the end of the plastic locking tie rearward, along the side of the accessory box. Do not cut off the excess end of the plastic locking tie.
B. Fasten the wire harness and left radiator fan motor lead with the holder.
C. Route the grip warmer control unit leads to the outside of the thermostat assembly breather hose.
D. Fasten the front cowling wire harness to the radiator inlet hose with a plastic locking tie, making sure to install the tie on the harness' protective sleeve, and then cut off the excess end of the tie.
E. After connecting the couplers, cover them completely with the cover, and then push them in between the radiator inlet hose and the thermostat inlet hose 2.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1. Grip warmer couplers
2. Hand shift switch coupler
3. Handlebar switch couplers
4. Right grip warmer lead
5. Right handlebar switch lead
6. Immobilizer unit lead
7. Main switch lead
8. Hand shift switch lead
9. Left grip warmer lead
10. Left handlebar switch lead
11. Stator coil lead
12. Air filter case breather hose
13. Gear position sensor lead
14. Foot shift switch lead
15. Fuel tank breather/overflow hose
16. Clutch hose
17. Sidestand switch
18. Sidestand switch lead
19. Oil level switch lead
20. Coolant reservoir breather hose
21. Brake hose (hydraulic unit to left front brake caliper)
22. Front wheel sensor
23. Front wheel sensor lead
24. Front left turn signal light lead
25. Brake pipe (metering valve to right front brake caliper)
26. Brake pipe (hydraulic unit to front brake calipers)
27. Brake pipe (front brake master cylinder to hydraulic unit)
28. Wire harness
29. Crankshaft position sensor lead
30. Starter motor lead
31. Neutral switch coupler
32. YCC-S speed sensor
33. Oil level switch coupler
34. Upper crankcase
35. Rear balancer cover

A. Secure the plastic band by inserting the projection on the band into the hole in the windshield drive unit/meter assembly stay, and then fasten the handlebar switch leads, grip warmer leads and hand shift switch lead with the band, making sure that the end of the band faces down. Do not cut off the excess end of the plastic band.

B. Secure the plastic band by inserting the projection on the band into the hole in the windshield drive unit/meter assembly stay, and then fasten the handlebar switch leads, grip warmer leads, hand shift switch lead and front wheel sensor lead with the band, making sure that the end of the band faces down. Do not cut off the excess end of the plastic band.

C. To oil level switch

D. Fasten the leads (to oil level switch and crankshaft position sensor) that branch off from the wire harness to the guide on the holder with a plastic locking tie, making sure that the end of the tie faces upward. Do not cut off the excess end of the plastic locking tie.

E. Fasten the sidestand switch lead, stator coil lead, and oil level switch lead with a plastic locking tie, making sure to bundle and fasten the sidestand switch lead so that the coupler is positioned to the front of the tie. Face the end of the plastic locking tie outward. Do not cut off the excess end of the plastic locking tie.

F. To fuel tank

G. Pass the fuel tank breather/overflow hose through the guide on the universal joint dust cover.

H. Pass the air filter case breather hose through the guide on the muffler bracket.

I. Fasten the clutch hose with the pivot shaft locknut retainer.

J. 43–53 mm (1.69–2.09 in)

K. 60–70 mm (2.36–2.76 in)

L. Fasten the grommets on the front wheel sensor lead and the brake hose (hydraulic unit to left front brake caliper) with the holder.

M. Route the front wheel sensor lead to the outside of the left front brake caliper lower mounting boss and the boss for the left front fork compression damping force adjusting screw.

N. Fasten the grommet on the front wheel sensor lead with the holder.

O. Route the front wheel sensor lead between the left front brake caliper and the brake hose (hydraulic unit to left front brake caliper).

P. Fasten the front wheel sensor lead to the brake hose (hydraulic unit to left front brake caliper) with the two holders, making sure to position the lead to the inside of the hose.

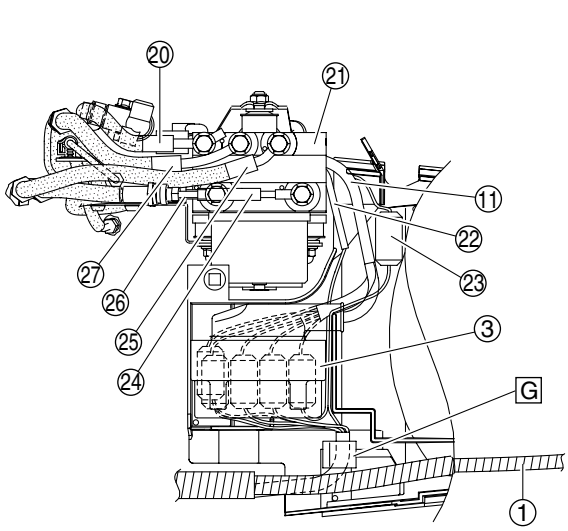
Q. Route the fuel tank breather/overflow hose to the front of the clutch hose, then through the opening between the frame and the swingarm.

R. Face the ends of the clamp to the left, making sure that the lower end contacts the wire harness.

S. Fasten the oil level switch lead and starter motor lead with the clamp.

T. To sidestand switch

U. Route the starter motor lead between the rear balancer cover bolt and the rib on the crankcase.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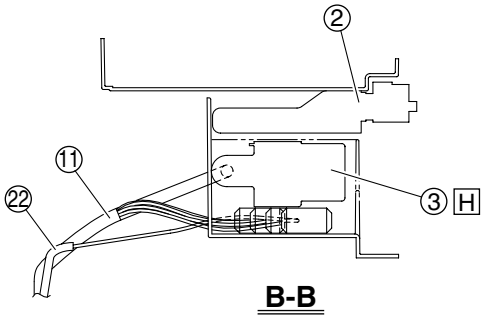
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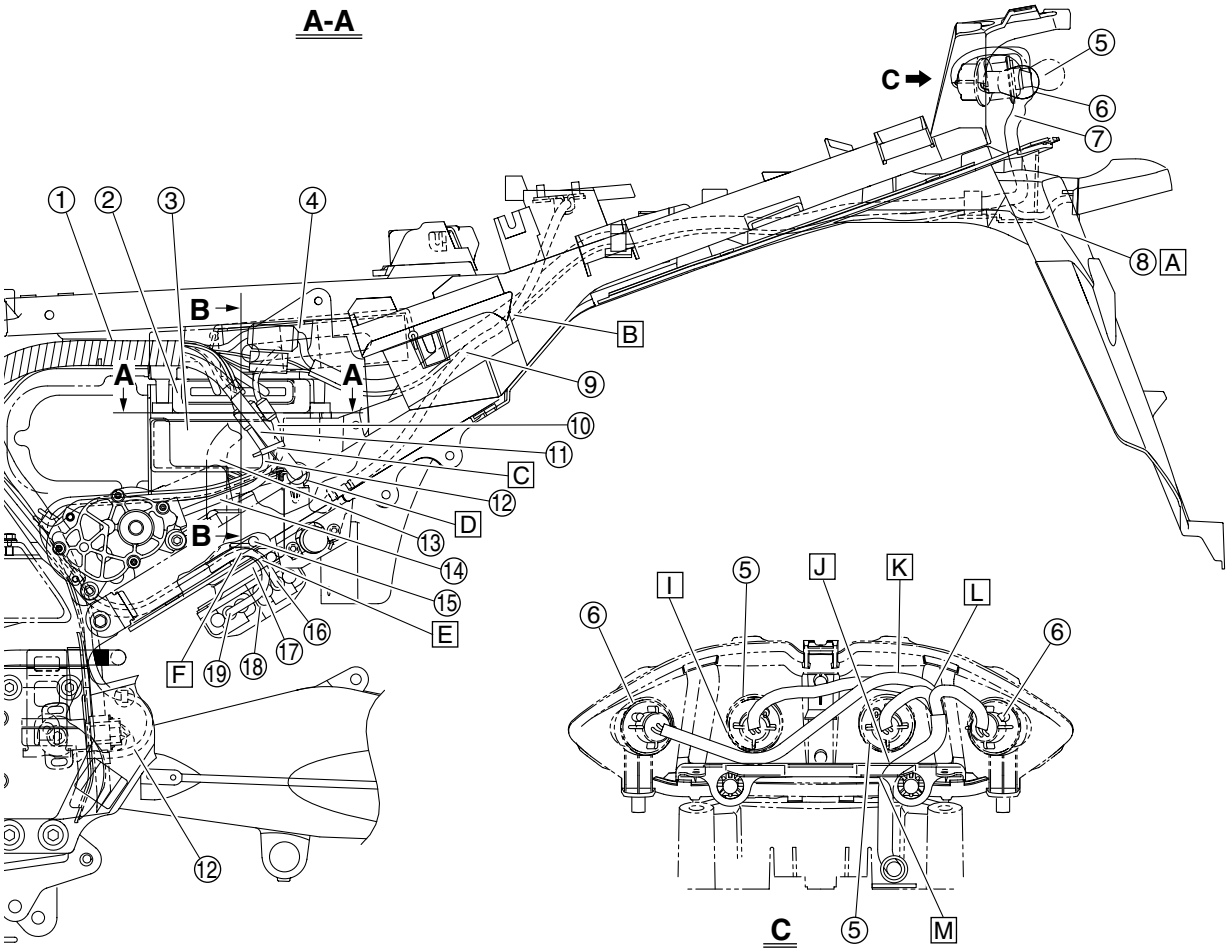
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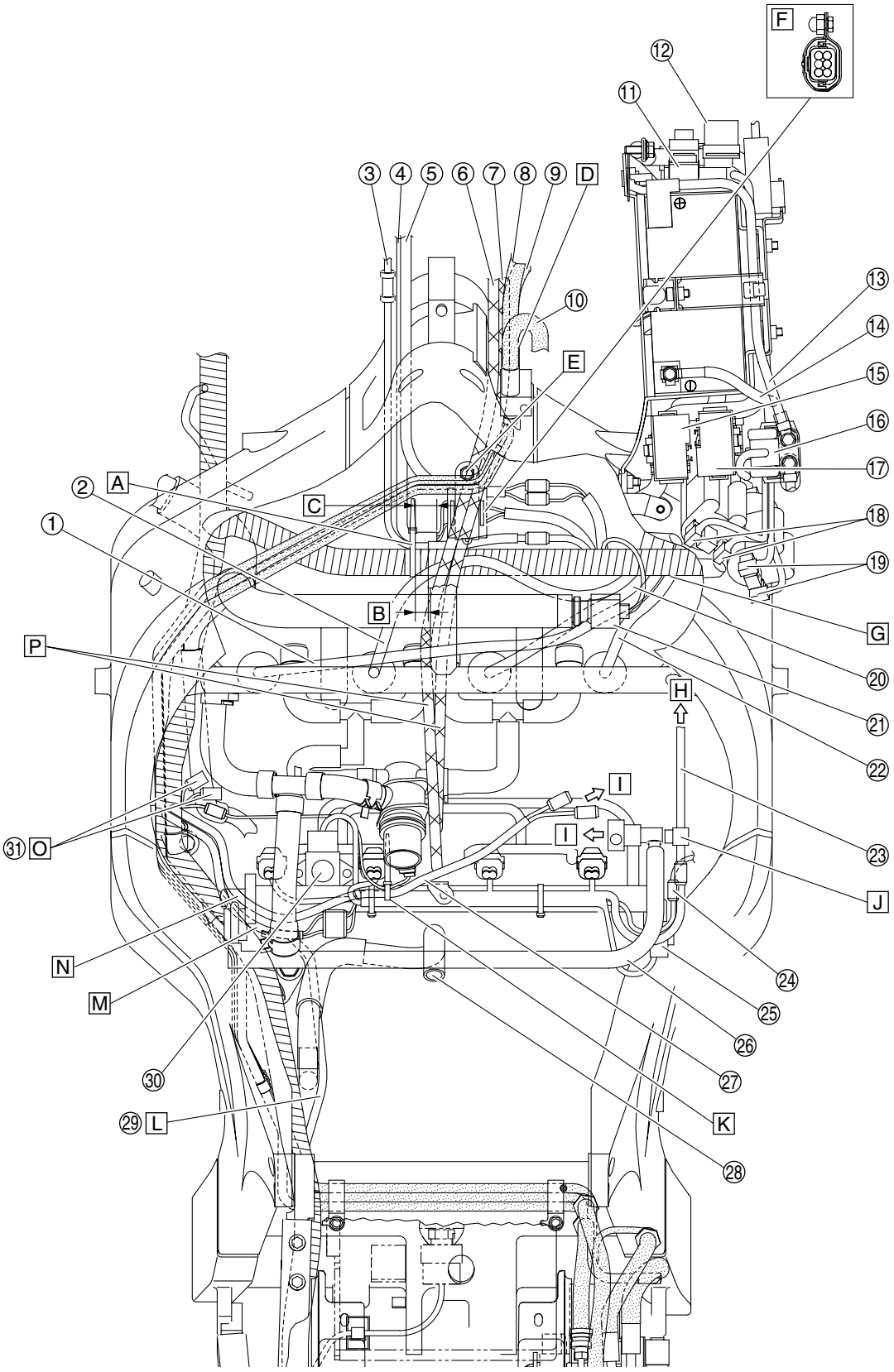
1. Wire harness
2. ECU (engine control unit)
3. ABS ECU (electronic control unit)
4. MCU (motor control unit)
5. Tail/brake light
6. Rear turn signal light
7. Tail/brake light assembly lead
8. License plate light lead
9. Seat lock cable
10. Shift actuator motor lead
11. ABS wire harness
12. Foot shift switch lead
13. Clutch fluid reservoir hose
14. Shift actuator sensor lead
15. Hydraulic unit breather hose
16. Stator coil lead
17. Rear shock absorber spring preload adjusting cable
18. Rectifier/regulator
19. Rectifier/regulator lead
20. Brake hose (hydraulic unit to metering valve)
21. Hydraulic unit
22. Rear wheel sensor lead
23. Rear brake light switch lead
24. Brake hose (front brake master cylinder to hydraulic unit)
25. Brake hose (hydraulic unit to front brake calipers)
26. Brake hose (rear brake master cylinder to hydraulic unit)
27. Brake hose (hydraulic unit to proportioning valve)

A. Pass the license plate light lead through the hole in the rear fender.
B. Route the wire harness to the inside of the seat lock cable.
C. Fasten the shift actuator motor lead, shift actuator sensor lead, and foot shift switch lead to the ABS wire harness with a plastic locking tie, making sure to position the harness to the outside of the other leads. Face the end of the plastic locking tie inward, without cutting off the excess end.
D. Fasten the ABS wire harness with the holder.
E. Route the stator coil lead and rectifier/regulator lead to the outside of the rear shock absorber spring preload adjusting cable and under the hydraulic unit breather hose and clutch fluid reservoir hose.
F. Pass the stator coil lead, rectifier/regulator lead, and hydraulic unit breather hose through the guide on the frame, making sure to route the hose to the outside of the leads.
G. Fasten the leads (to ABS wire harness and rear brake light switch) that branch off from the wire harness with the holder.
H. When installing the ABS ECU, be sure not to pinch the rear wheel sensor lead and ABS wire harness between the ABS ECU and the rear fender.
I. Route the rear right turn signal light lead under the right tail/brake light bulb socket.
J. Route the tail/brake light assembly lead between the left tail/brake light bulb socket and the mounting boss on the tail/brake light assembly.
K. Route the rear right turn signal light lead and right tail/brake light lead over the left tail/brake light bulb socket.
L. Route the leads between the left tail/brake light bulb socket and the rear left turn signal light bulb socket.
M. Route the tail/brake light assembly lead between the tail/brake light assembly and its bracket.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1. Spark plug lead #1
2. Spark plug lead #2
3. Front wheel sensor lead
4. Immobilizer unit lead
5. Main switch lead
6. Throttle cable (accelerator cable)
7. Throttle cable (decelerator cable)
8. Brake hose (hydraulic unit to front brake calipers)
9. Brake hose (metering valve to right front brake caliper)
10. Brake hose (front brake master cylinder to hydraulic unit)
11. Main fuse
12. Brake light relay
13. Positive battery lead
14. Negative battery lead
15. Fuse box 1 (identified by blue tape on lead)
16. Starter relay
17. Fuse box 2
18. Cylinders-#2/#3 ignition coil connectors (white)
19. Cylinders-#1/#4 ignition coil connectors (black)
20. Spark plug lead #3
21. Coolant temperature sensor
22. Spark plug lead #4
23. Cylinder identification sensor lead
24. O_2 sensor coupler
25. Throttle position sensor
26. Fuel hose
27. Fuel pump/fuel sender lead
28. Crankcase breather hose
29. Stator coil lead
30. Intake air pressure sensor
31. Joint couplers

A. Fasten the immobilizer unit lead and front wheel sensor lead to the wire harness with a plastic locking tie, making sure to align the tie with the white tape on the harness. Face the end of the plastic locking tie forward. Do not cut off the excess end of the plastic locking tie.

B. Position the plastic locking tie 0–20 mm (0–0.79 in) from the end of the protective sleeve of the front wheel sensor lead.

C. Position the plastic locking tie 10–30 mm (0.39–1.18 in) from the end of the protective sleeve of the immobilizer unit lead.

D. Route the throttle cables and brake hoses through the right opening in the frame.

E. Install the immobilizer unit coupler holder so that the end with the bolt is facing forward.

F. Install the immobilizer unit coupler cover onto the coupler.

G. Route the wire harness over the spark plug leads.

H. To cylinder identification sensor

I. To fuel tank

J. Fasten the cylinder identification sensor lead with the holder on the throttle body.

K. Fasten the fuel pump/fuel sender lead and air induction system solenoid lead to sub-wire harness with a plastic locking tie, making sure that the end of the tie faces forward. Do not cut off the excess end of the plastic locking tie.

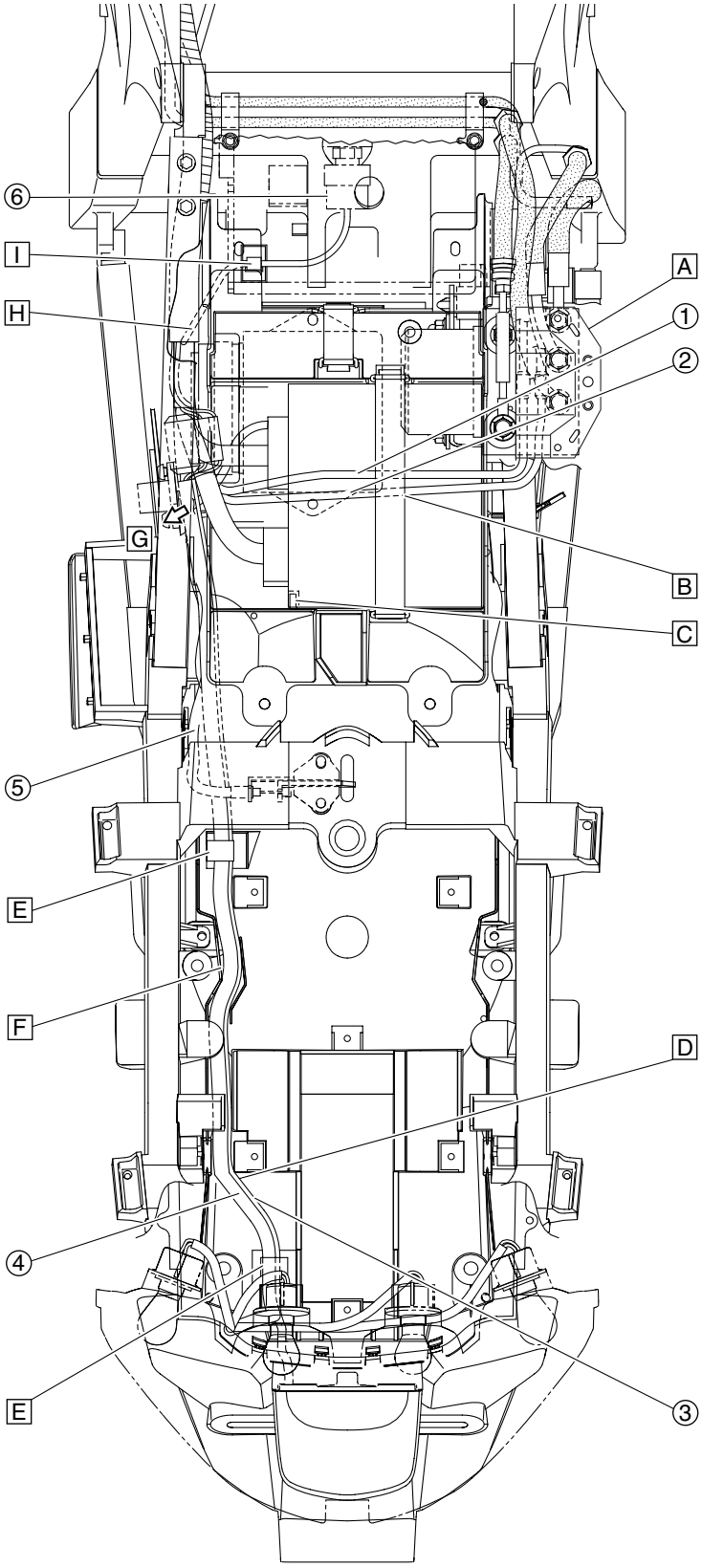
L. Route the stator coil lead to the inside of the engine bracket (top) and under the crankcase breather hose.

M. Route the wire harness (to sub-wire harness) under the fuel hose connector.

N. Route the fuel pump/fuel sender lead under the fuel hose connector.

O. Place the joint couplers in the area shown in the illustration, making sure that they do not protrude above the wire harness.

P. Route the throttle cables over the immobilizer unit lead, main switch lead, spark plug lead #2, and wire harness, and under spark plug lead #1.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1. Clutch actuator motor lead
2. Clutch actuator sensor lead
3. License plate light lead
4. Tail/brake light assembly lead
5. Seat lock cable
6. Intake air temperature sensor

A. Connect the clutch actuator motor lead and clutch actuator sensor lead, install the rubber cover around the leads, and then place the cover between the hydraulic unit and the frame. When closing the rubber cover, make sure that the thick section at the base of each projection (four locations) on one side of the cover is pulled through its corresponding hole on the other side. Face the side of the rubber cover with the projections outward.
B. Fasten the clutch actuator motor lead and clutch actuator sensor lead with the band that is used to secure the MCU (motor control unit).
C. Make sure that the projection on the storage compartment fits into the indentation in the MCU (motor control unit). The MCU should not be resting on top of the projection.
D. Route the tail/brake light assembly lead and license plate light lead between the rib and the U-lock holder on the rear fender, making sure that the leads are not routed on top of the holder.
E. Fasten the tail/brake light assembly lead and license plate light lead with the holder.
F. Route the tail/brake light assembly lead and license plate light lead between the ribs on the rear fender.
G. To shift actuator
H. Route the intake air temperature sensor lead under the wire harness.
I. Fasten the intake air temperature sensor lead to the air filter case with the holder.

EAS20450
PERIODIC MAINTENANCE

EAS20460
INTRODUCTION
This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

EAU17705
PERIODIC MAINTENANCE AND LUBRICATION CHART
NOTE:
- **The annual checks must be performed every year, except if a kilometer-based maintenance is performed instead.**
- From 50000 km, repeat the maintenance intervals starting from 10000 km.
- Items marked with an asterisk should be performed by a -Yamaha dealer as they require special tools, data and technical skills.

NO.		ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1000 km)					ANNUAL CHECK
				1	10	20	30	40	
1	*	**Fuel line**	• Check fuel hoses for cracks or damage.		√	√	√	√	√
2	*	**Spark plugs**	• Check condition. • Clean and regap.		√		√		
			• Replace.			√		√	
3	*	**Valves**	• Check valve clearance. • Adjust.	Every 40000 km					
4	*	**Air filter element**	• Clean.		√		√		
			• Replace.			√		√	
5	*	**YCC-S clutch**	• Check operation, fluid level and vehicle for fluid leakage.	√	√	√	√	√	
6	*	**Front brake**	• Check operation, fluid level and vehicle for fluid leakage.	√	√	√	√	√	√
			• Replace brake pads.	Whenever worn to the limit					
7	*	**Rear brake**	• Check operation, fluid level and vehicle for fluid leakage.	√	√	√	√	√	√
			• Replace brake pads.	Whenever worn to the limit					
8	*	**Brake hoses**	• Check for cracks or damage.		√	√	√	√	√
			• Replace.	Every 4 years					
9	*	**Wheels**	• Check runout and for damage.		√	√	√	√	
10	*	**Tires**	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		√	√	√	√	√
11	*	**Wheel bearings**	• Check bearing for looseness or damage.		√	√	√	√	
12	*	**Swingarm**	• Check operation and for excessive play.		√	√	√	√	
			• Lubricate with lithium-soap-based grease.	Every 50000 km					
13	*	**Steering bearings**	• Check bearing play and steering for roughness.	√	√	√	√	√	
			• Lubricate with lithium-soap-based grease.	Every 20000 km					
14	*	**Chassis fasteners**	• Make sure that all nuts, bolts and screws are properly tightened.		√	√	√	√	√
15		**Sidestand, centerstand**	• Check operation. • Lubricate.		√	√	√	√	√
16	*	**Sidestand switch**	• Check operation.	√	√	√	√	√	√
17	*	**Front fork**	• Check operation and for oil leakage.		√	√	√	√	

NO.		ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1000 km)					ANNUAL CHECK
				1	10	20	30	40	
18	*	Shock absorber assembly	• Check operation and shock absorber for oil leakage.		√	√	√	√	
19	*	Rear suspension relay arm and connecting arm pivoting points	• Check operation.		√	√	√	√	
			• Lubricate with lithium-soap-based grease.			√		√	
20	*	Fuel injection	• Adjust engine idling speed and synchronization.	√	√	√	√	√	√
21		Engine oil	• Change. • Check oil level and vehicle for oil leakage.	√	√	√	√	√	√
22		Engine oil filter cartridge	• Replace.	√		√		√	
23	*	Cooling system	• Check coolant level and vehicle for coolant leakage.		√	√	√	√	√
			• Change.	Every 3 years					
24		Final gear oil	• Check oil level and vehicle for oil leakage. • Change.	√	√	√	√	√	
25	*	Front and rear brake switches	• Check operation.	√	√	√	√	√	√
26		Moving parts and cables	• Lubricate.		√	√	√	√	√
27	*	Throttle grip housing and cable	• Check operation and free play. • Adjust the throttle cable free play if necessary. • Lubricate the throttle grip housing and cable.		√	√	√	√	√
28	*	Muffler and exhaust pipe	• Check the screw clamp for looseness.	√	√	√	√	√	
29	*	Lights, signals and switches	• Check operation. • Adjust headlight beam.	√	√	√	√	√	√

EAU40550

NOTE:

- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake and YCC-S clutch service
  - Regularly check and, if necessary, correct the brake and YCC-S clutch fluid levels.
  - Every two years replace the internal components of the brake master cylinders and calipers as well as YCC-S clutch master and release cylinders, and change the brake and YCC-S clutch fluids.
  - Replace the brake and YCC-S clutch hoses every four years and if cracked or damaged.

EAS20470
ENGINE

EAS20890
CHECKING THE CLUTCH FLUID LEVEL

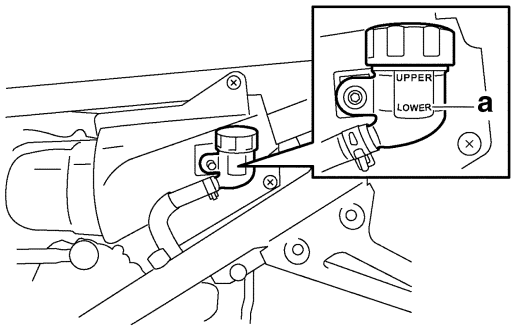
1. Stand the vehicle on a level surface.

NOTE:

Place the vehicle on the centerstand.

2. Remove:
   - Left side cover
     Refer to "GENERAL CHASSIS" in chapter 4. (Manual No.: 3P6-28197-E0)
3. Check:
   - Clutch fluid level
     Below the minimum level mark "a" → Add the recommended clutch fluid to the proper level.

Recommended fluid
DOT 4



EWA13370

WARNING

- **Use only the designated clutch fluid. Other clutch fluids may cause the rubber seals to deteriorate, causing leakage and poor clutch performance.**
- **Refill with the same type of clutch fluid that is already in the system. Mixing clutch fluids may result in a harmful chemical reaction, leading to poor clutch performance.**
- **When refilling, be careful that water does not enter the clutch fluid reservoir. Water will significantly lower the boiling point of the clutch fluid and could cause vapor lock.**

ECA13420

CAUTION:

Clutch fluid may damage painted surfaces or plastic parts. Therefore, always clean up any spilt clutch fluid immediately.

NOTE:

In order to ensure a correct reading of the clutch fluid level, make sure the top of the reservoir is horizontal.

4. Install:
   - Left side cover
     Refer to "GENERAL CHASSIS" in chapter 4. (Manual No.: 3P6-28197-E0)

ET2D21001
BLEEDING THE HYDRAULIC CLUTCH SYSTEM

EWA13000

WARNING

Bleed the hydraulic clutch system whenever:
- **the system was disassembled,**
- **a clutch hose was loosened or removed,**
- **the clutch fluid level is very low,**
- **clutch operation is faulty.**

NOTE:

- Before bleeding the hydraulic clutch system, shift the transmission into neutral to engage the clutch.
- Be careful not to spill any clutch fluid or allow the clutch fluid reservoir to overflow.
- When bleeding the hydraulic clutch system, make sure that there is always enough clutch fluid in the reservoir before pumping out the fluid using the vacuum/pressure gauge set. Ignoring this precaution could allow air to enter the hydraulic clutch system, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the clutch fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.

1. Remove:
   - Air filter case
     Refer to "GENERAL CHASSIS" on page 37.
   - Rear wheel
     Refer to "REAR WHEEL" in chapter 4. (Manual No.: 3P6-28197-E0)
   - Swingarm
     Refer to "SWINGARM" in chapter 4. (Manual No.: 3P6-28197-E0)
2. Bleed:
   - Hydraulic clutch system

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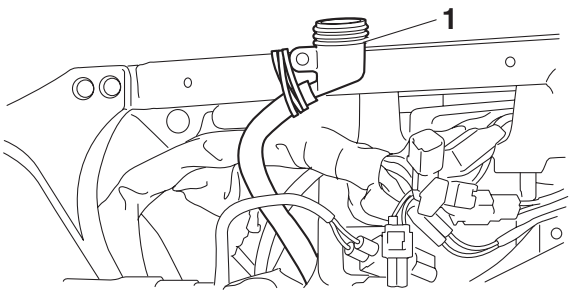
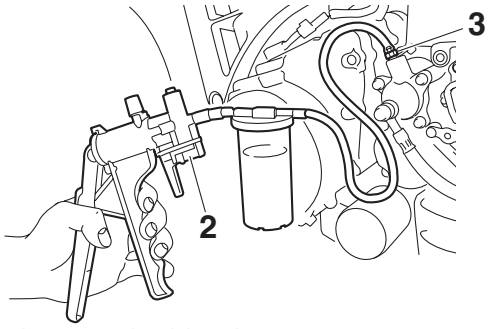
a. Fasten the clutch fluid reservoir "1" to the frame with a suitable strap, etc., as shown in the illustration so that it is not tilted.



b. Turn the main switch to "ON" and check that the transmission is in neutral.
c. Add the recommended clutch fluid to the proper level.
d. Install the clutch fluid reservoir diaphragm.
e. Connect the vacuum/pressure pump gauge set "2" tightly to the bleed screw "3".

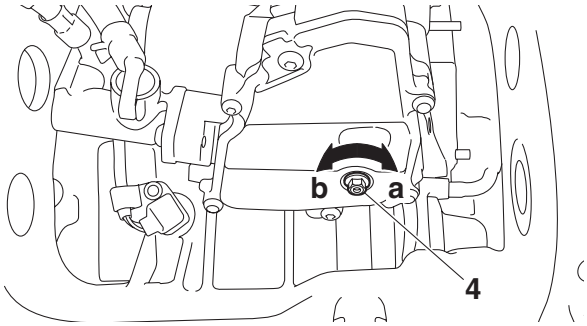
Vacuum/pressure pump gauge set
90890-06756
Mityvac brake bleeding tool
YS-42423



f. Loosen the bleed screw.
g. Pump out the clutch fluid using the vacuum/pressure pump gauge set.
h. Tighten the bleed screw.
i. Disengage the clutch by turning the manual clutch operation bolt "4" in direction "a" until it stops.
j. Loosen the bleed screw and then retighten it.
k. Engage the clutch by turning the manual clutch operation bolt in direction "b" until it stops.

NOTE:

The following illustration shows the manual clutch operation bolt when viewed from the rear of the vehicle with the swingarm removed.



l. Repeat steps (i) to (k) until all of the air bubbles have disappeared from the clutch fluid in the plastic hose of the vacuum/pressure pump gauge set.
m. Tighten the bleed screw to specification.

Bleed screw
6 Nm (0.6 m·kg, 4.3 ft·lb)

n. Manually engage and disengage the clutch 30 times using the manual clutch operation bolt.
o. Add the recommended clutch fluid to the proper level.
Refer to "CHECKING THE CLUTCH FLUID LEVEL" on page 31.

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3. Check:
• Pressure plate stroke

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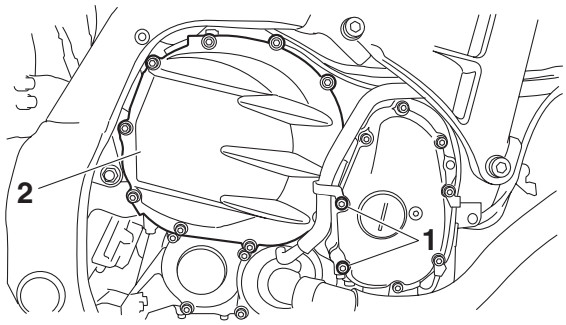
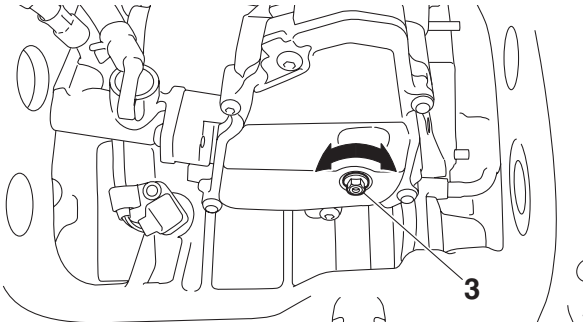
a. Remove the pickup rotor cover bolts "1".
b. Remove the clutch cover "2".
Refer to "CLUTCH" in chapter 5. (Manual No.: 3P6-28197-E0)



c. Manually engage and disengage the clutch using the clutch operation bolt "3" five times, each time for less than 1 second.

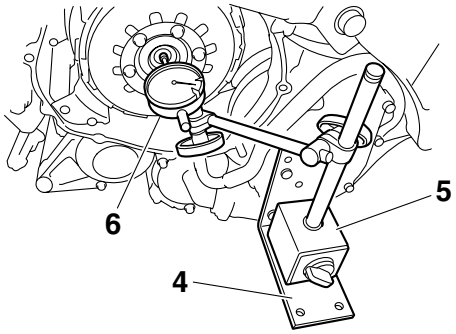
NOTE:

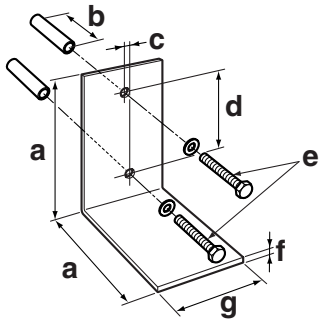
Turn the clutch operation bolt in a continuous motion, without allowing the pressure plate to stop in mid-stroke.



d. Install a suitable bracket "4", the magnet base B "5", and the dial gauge & stand set "6".

Magnet base B
90890-06844
Magnetic base stand
YU-A8438
Dial gauge & stand set
90890-01252





a. 100 mm (3.94 in)
b. 20 mm (0.79 in)
c. 1.5 mm (0.06 in)
d. 64 mm (2.52 in)
e. M6 × 40 mm bolt
f. 5 mm (0.20 in)
g. 60 mm (2.36 in)

e. Disengage the clutch by turning the manual clutch operation bolt.
f. Measure the clutch pressure plate stroke.

Clutch pressure plate stroke
2.8 mm (0.11 in) or more

g. If the pressure plate stroke is out of specification, repeat steps (j) to (l) in the procedure for step "2. Bleed" until clutch pressure plate stroke is within specification.

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4. Install:
   • Swingarm
   Refer to "SWINGARM" in chapter 4. (Manual No.: 3P6-28197-E0)
   • Rear wheel
   Refer to "REAR WHEEL" in chapter 4. (Manual No.: 3P6-28197-E0)
   • Air filter case
   Refer to "GENERAL CHASSIS" on page 37.

ET2D21036
CHECKING THE VEHICLE AFTER BLEEDING THE HYDRAULIC CLUTCH SYSTEM

1. Check:
   • Rear wheel drag torque
   Rear wheel does not rotate/drag torque does not progressively increase in the following order: neutral, 1st gear, and when rear wheel starts to rotate in 1st gear → Check the pressure plate stroke.
   Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.

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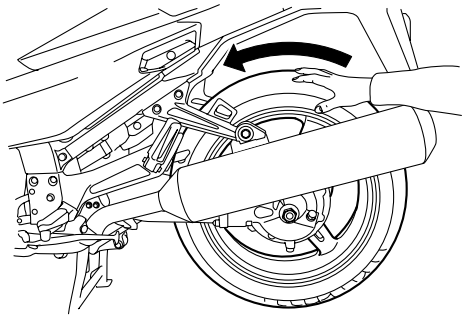
a. Place the vehicle on the centerstand.
b. Turn the main switch to "ON".
c. Shift the transmission into neutral, and then rotate the rear wheel by hand.



d. Shift the transmission into 1st gear, and then rotate the rear wheel by hand.

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2. Check:
   • Shift operation
   Engine stalls → Check the pressure plate stroke.
   Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.

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a. Place the vehicle on the centerstand.

b. Start the engine.
c. Shift the transmission from neutral to 1st gear and back to neutral ten times.
d. Shift the transmission into 1st gear, and then apply the rear brake.

NOTE:

If the engine stalls, restart the engine, let it idle for at least 90 seconds, and then repeat steps (c) and (d).

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3. Check:
   • Starting-off performance of vehicle
   Abnormal vehicle vibration/abnormal starting-off performance/sudden acceleration compared to before the hydraulic clutch system was serviced → Select diagnostic code No. Sh_ _66 in the diagnostic mode and operate the hand shift lever switch (shift up) two times.
   Refer to "Diagnostic code table (Diagnostic code No. Sh_ _66)".

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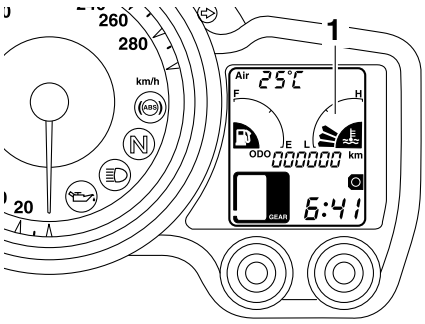
a. Place the vehicle on the centerstand.
b. Start the engine and warm it up until at least three segments appear on the coolant temperature meter "1" as shown in the illustration.



c. Shift the transmission into 1st gear, and then slowly turn the throttle grip and check that the rear wheel rotates.
d. Check that the transmission can be shifted into 2nd gear.
e. Shift the transmission into neutral, and then raise the centerstand.
f. Shift the transmission into 1st gear, and then slowly turn the throttle grip and check the starting-off performance of the vehicle.

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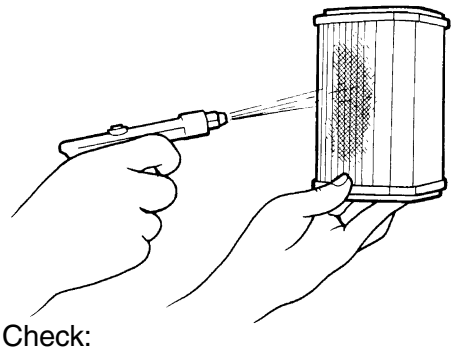
EAS20920
CLEANING THE AIR FILTER ELEMENT

1. Remove:
   • Rider seat
   • Left side cover
   Refer to "GENERAL CHASSIS" on page 37.
   • Shift actuator
   Refer to "SHIFT ACTUATOR AND SHIFT ROD" on page 57.
   • Air filter case cover
   • Air filter element
   Refer to "GENERAL CHASSIS" on page 37.
2. Clean:
   • Air filter element
   Apply compressed air to the outer surface of the air filter element.



3. Check:
   • Air filter element
   Damage → Replace.

EC3P61043

CAUTION:

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect throttle body synchronization, leading to poor engine performance and possible overheating.

4. Install:
   • Air filter element
   • Air filter case cover
   Refer to "GENERAL CHASSIS" on page 37.
   • Shift actuator
   Refer to "SHIFT ACTUATOR AND SHIFT ROD" on page 57.
   • Left side cover
   • Rider seat
   Refer to "GENERAL CHASSIS" on page 37.

NOTE:

When installing the air filter element into the air filter case cover, make sure their sealing surfaces are aligned to prevent any air leaks.

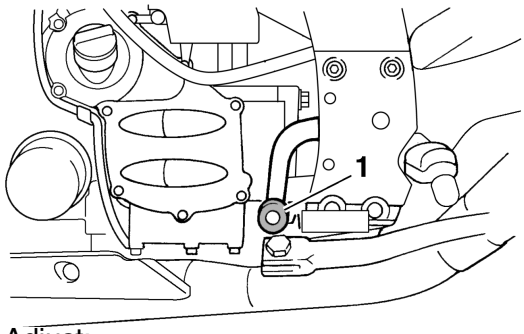
EAS21140
CHASSIS

ET2D21002
ADJUSTING THE SHIFT PEDAL

1. Check:
   • Shift pedal position

NOTE:

The shift pedal “1” can be adjusted to three positions to suit the rider’s preference as shown.



2. Adjust:
   • Shift pedal position

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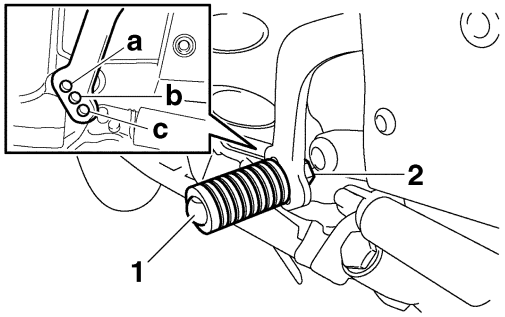
a. Remove the shift pedal “1” by removing the shift pedal bolt “2”.



a. High position
b. Standard position
c. Low position

b. Move the shift pedal to the desired position.
c. Install the shift pedal bolt, and then tighten it to specification.

Shift pedal bolt
7 Nm (0.7 m·kg, 5.1 ft·lb)
LOCTITE®

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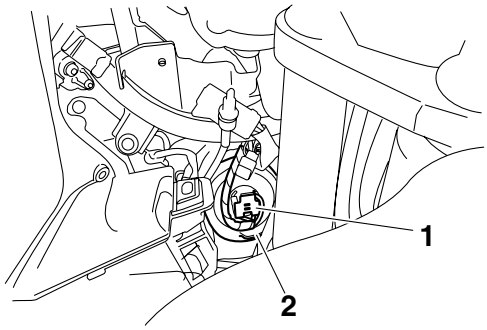
EAS21750
ELECTRICAL SYSTEM

EAS21790
REPLACING THE HEADLIGHT BULBS

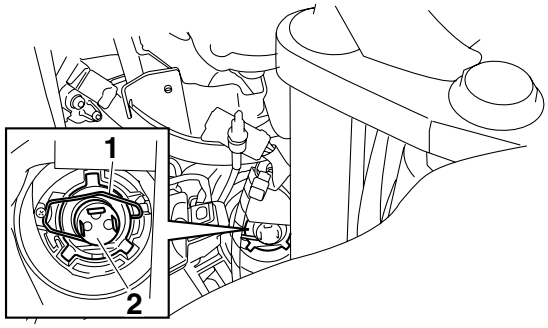
The following procedure applies to both of the headlight bulbs.

1. Remove:
   - Front cowling left inner panel 1
   - Front cowling left inner panel 2
   - Front cowling right inner panel 1
   - Front cowling right inner panel 2

   Refer to "GENERAL CHASSIS" on page 37.
2. Disconnect:
   - Headlight coupler "1"
3. Remove:
   - Headlight bulb cover "2"



4. Detach:
   - Headlight bulb holder "1"
5. Remove:
   - Headlight bulb "2"



EWA13320

WARNING

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

6. Install:
   - Headlight bulb New

   Secure the new headlight bulb with the headlight bulb holder.

ECA13690

CAUTION:

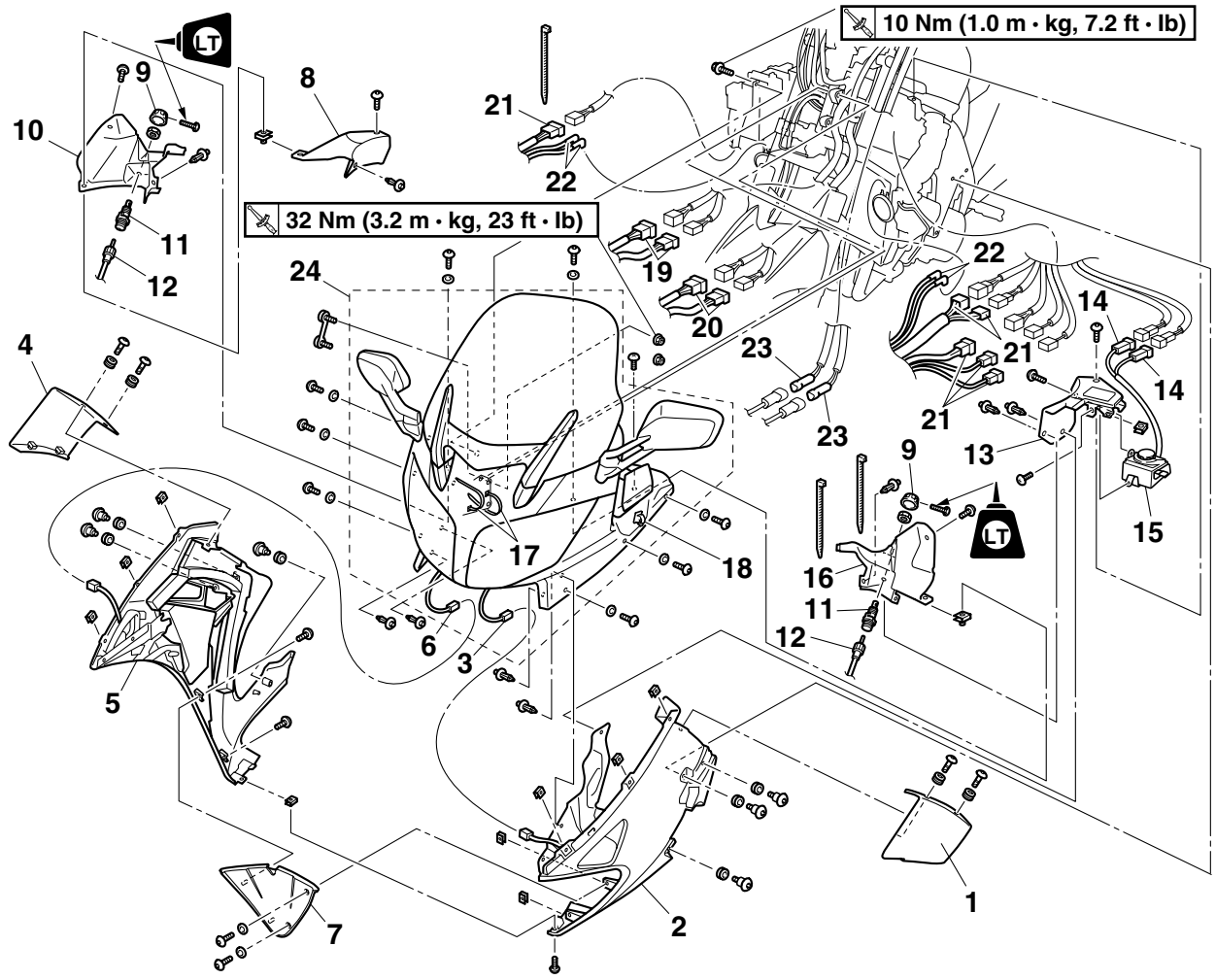
Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

7. Attach:
   - Headlight bulb holder
8. Install:
   - Headlight bulb cover
9. Connect:
   - Headlight coupler
10. Install:
    - Front cowling right inner panel 2
    - Front cowling right inner panel 1
    - Front cowling left inner panel 2
    - Front cowling left inner panel 1

    Refer to "GENERAL CHASSIS" on page 37.

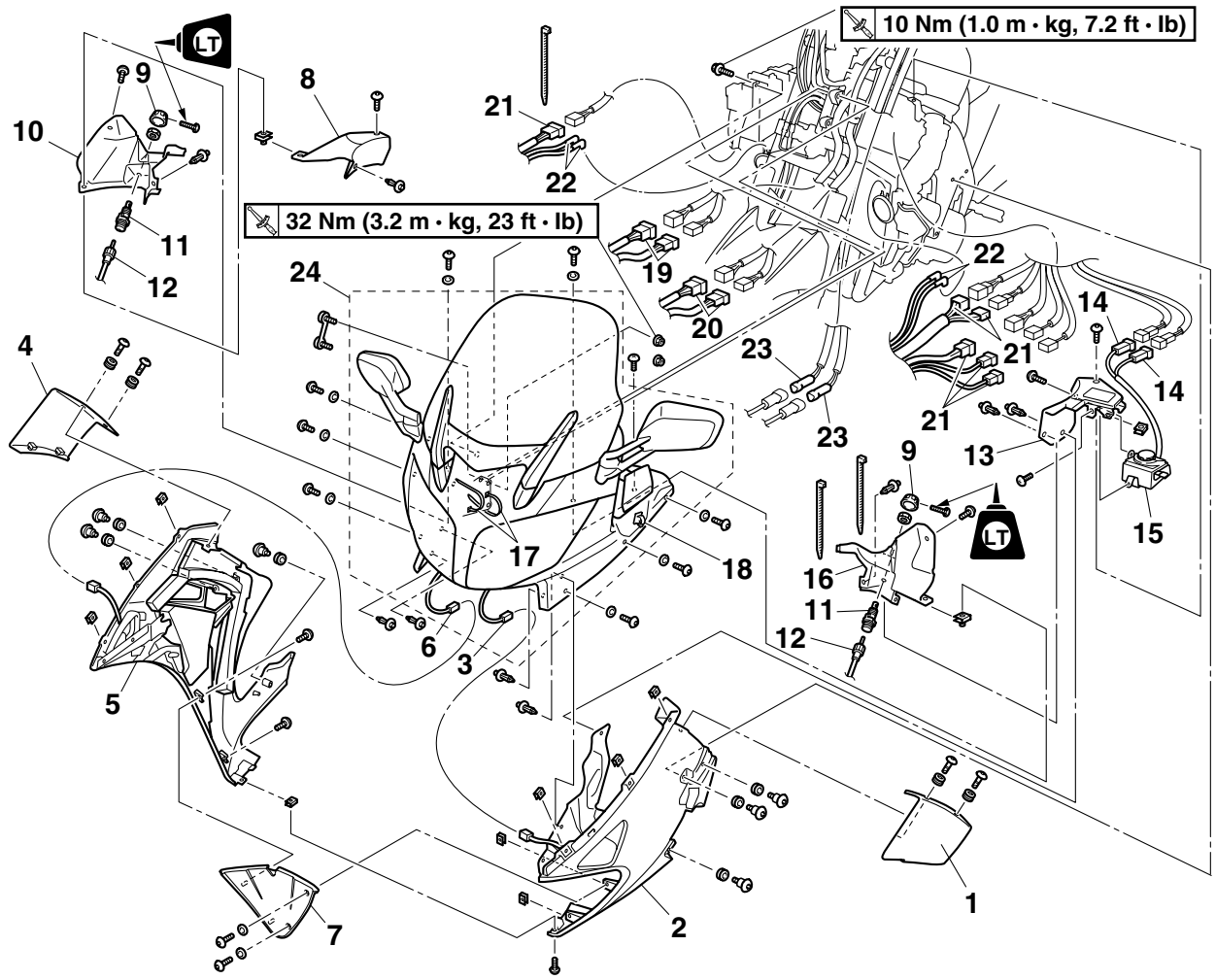
EAS21830
GENERAL CHASSIS

Removing the front cowling assembly



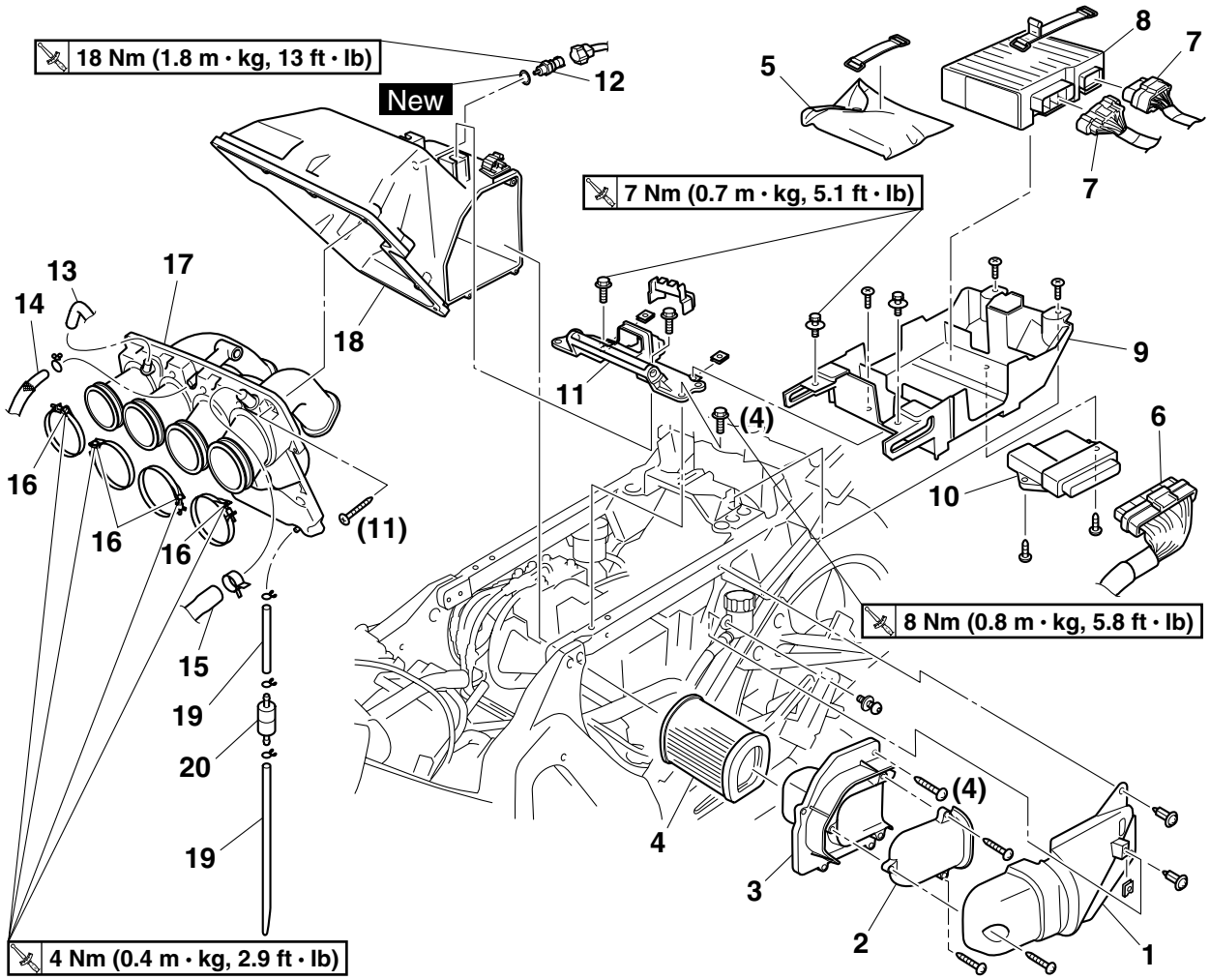
Order	Job/Parts to remove	Q'ty	Remarks
	Open the accessory box lid.		
1	Left side panel	1	
2	Left side cowling	1	
3	Front left turn signal light coupler	1	Disconnect.
4	Right side panel	1	
5	Right side cowling	1	
6	Front right turn signal light coupler	1	Disconnect.
7	Bottom cowling	1	
8	Front cowling right inner panel 1	1	
9	Headlight beam adjusting knob	2	
10	Front cowling right inner panel 2	1	
11	Adjusting knob shaft	2	
12	Headlight beam adjusting cable	2	Disconnect.
13	Front cowling left inner panel 1	1	
14	Grip warmer control unit coupler	2	Disconnect.
15	Grip warmer control unit	1	

Removing the front cowling assembly



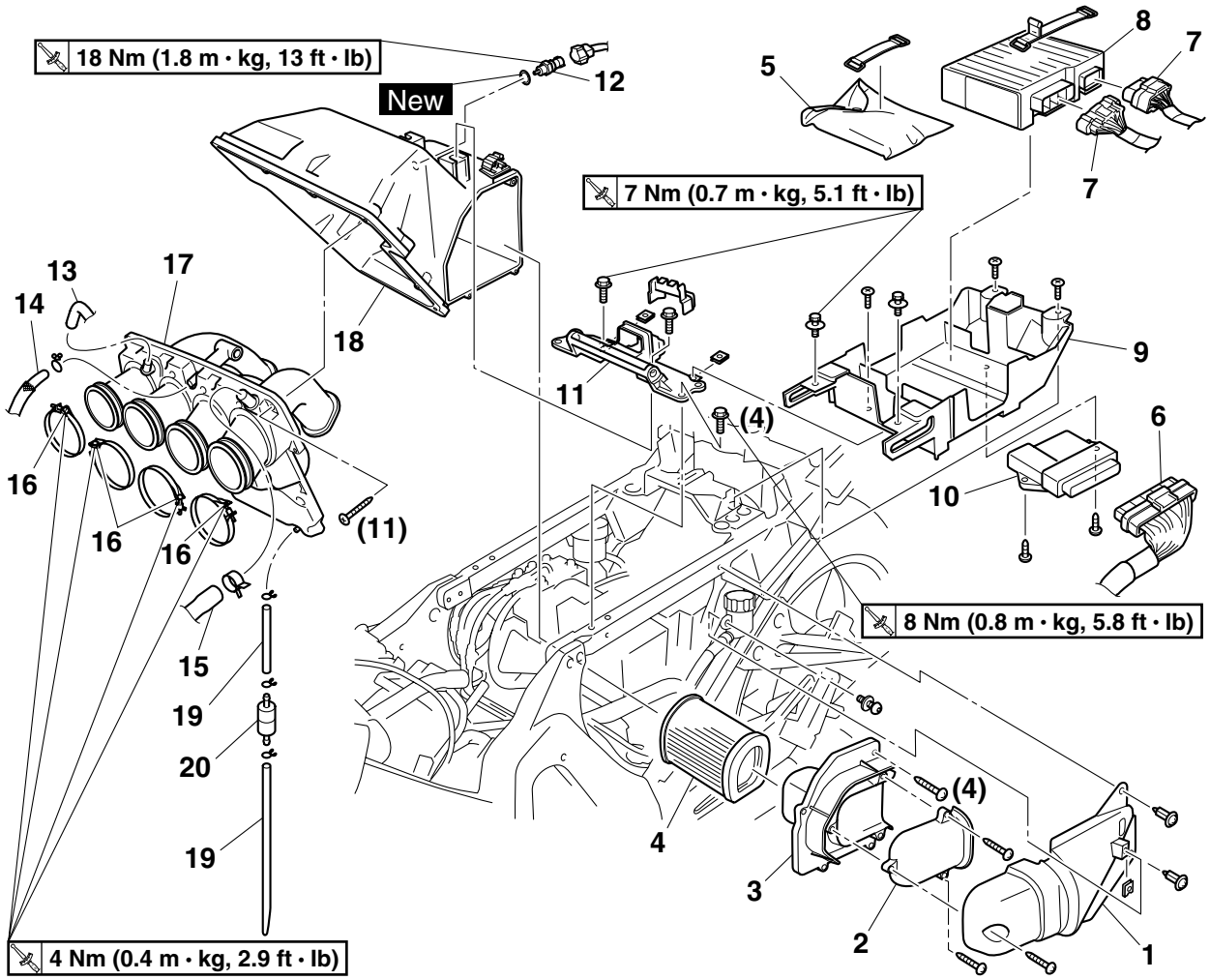
Order	Job/Parts to remove	Q'ty	Remarks
16	Front cowling left inner panel 2	1	
17	Plastic band	2	Disconnect.
18	Plastic holder	1	Disconnect.
19	Handlebar switch coupler	2	Disconnect.
20	Hand shift switch coupler	2	Disconnect.
21	Front cowling wire harness coupler	6	Disconnect.
22	Horn connector	4	Disconnect.
23	Grip warmer coupler	2	Disconnect.
24	Front cowling assembly	1	
			For installation, reverse the removal procedure.

Removing the air filter case



Order	Job/Parts to remove	Q'ty	Remarks
	Left side cover		Refer to "GENERAL CHASSIS" on page 37.
	T-bar		Refer to "GENERAL CHASSIS" in chapter 4. (Manual No.: 3P6-28197-E0)
	Fuel tank		Refer to "FUEL TANK" in chapter 7. (Manual No.: 3P6-28197-E0)
	Shift actuator		Refer to "SHIFT ACTUATOR AND SHIFT ROD" on page 57.
1	Air shroud	1	
2	Air duct	1	
3	Air filter case cover	1	
4	Air filter element	1	
5	Tool kit	1	
6	ECU coupler	1	Disconnect.
7	MCU coupler	2	Disconnect.
8	MCU	1	
9	Storage compartment	1	
10	ECU (engine control unit)	1	
11	Rear lower fuel tank bracket	1	
12	Intake air temperature sensor	1	

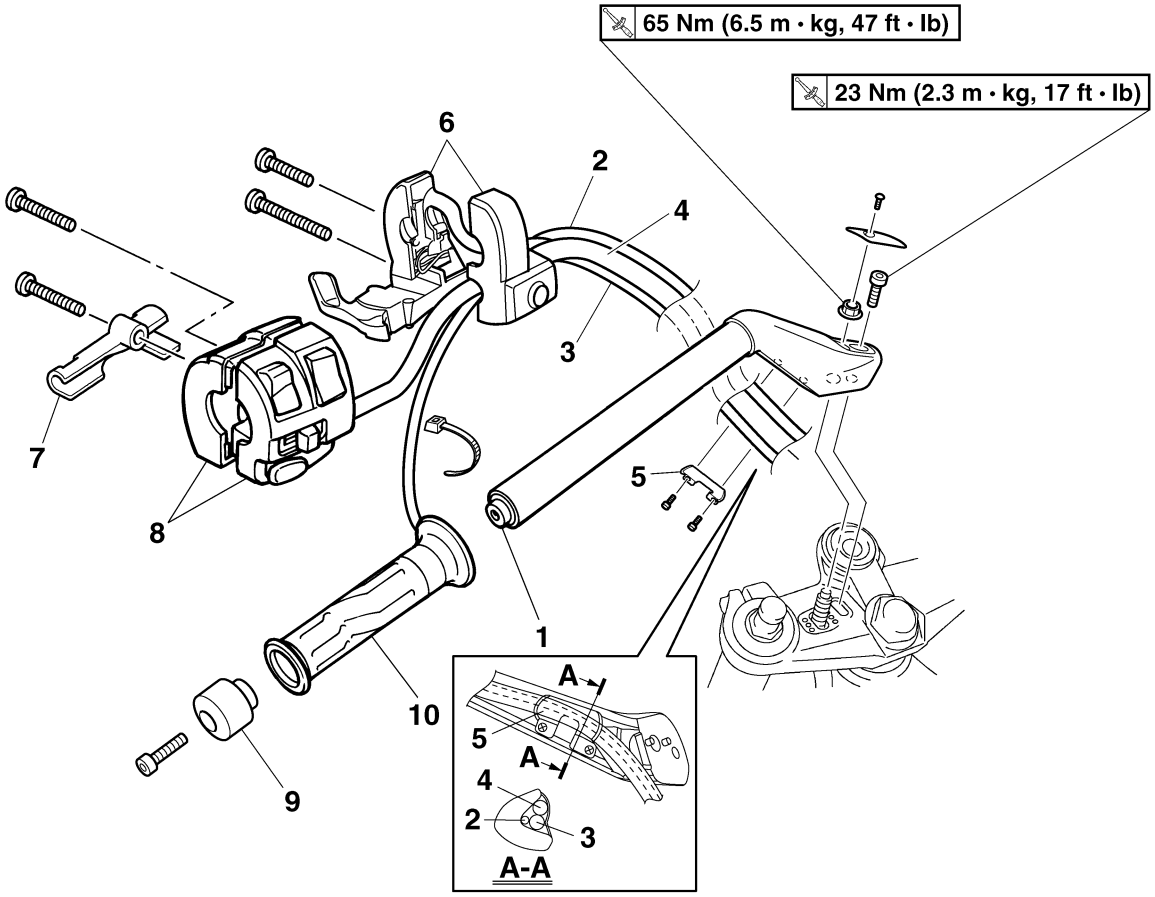
Removing the air filter case



Order	Job/Parts to remove	Q'ty	Remarks
13	Bypass air unit inlet hose	1	Disconnect.
14	Crankcase breather hose	1	Disconnect.
15	Air induction system hose (air filter case joint assembly to 3-way joint)	1	Disconnect.
16	Air filter case joint clamp screw	4	Loosen.
17	Air filter case joint assembly	1	
18	Air filter case	1	
19	Air filter case breather hose	2	
20	Filter assembly	1	
			For installation, reverse the removal procedure.

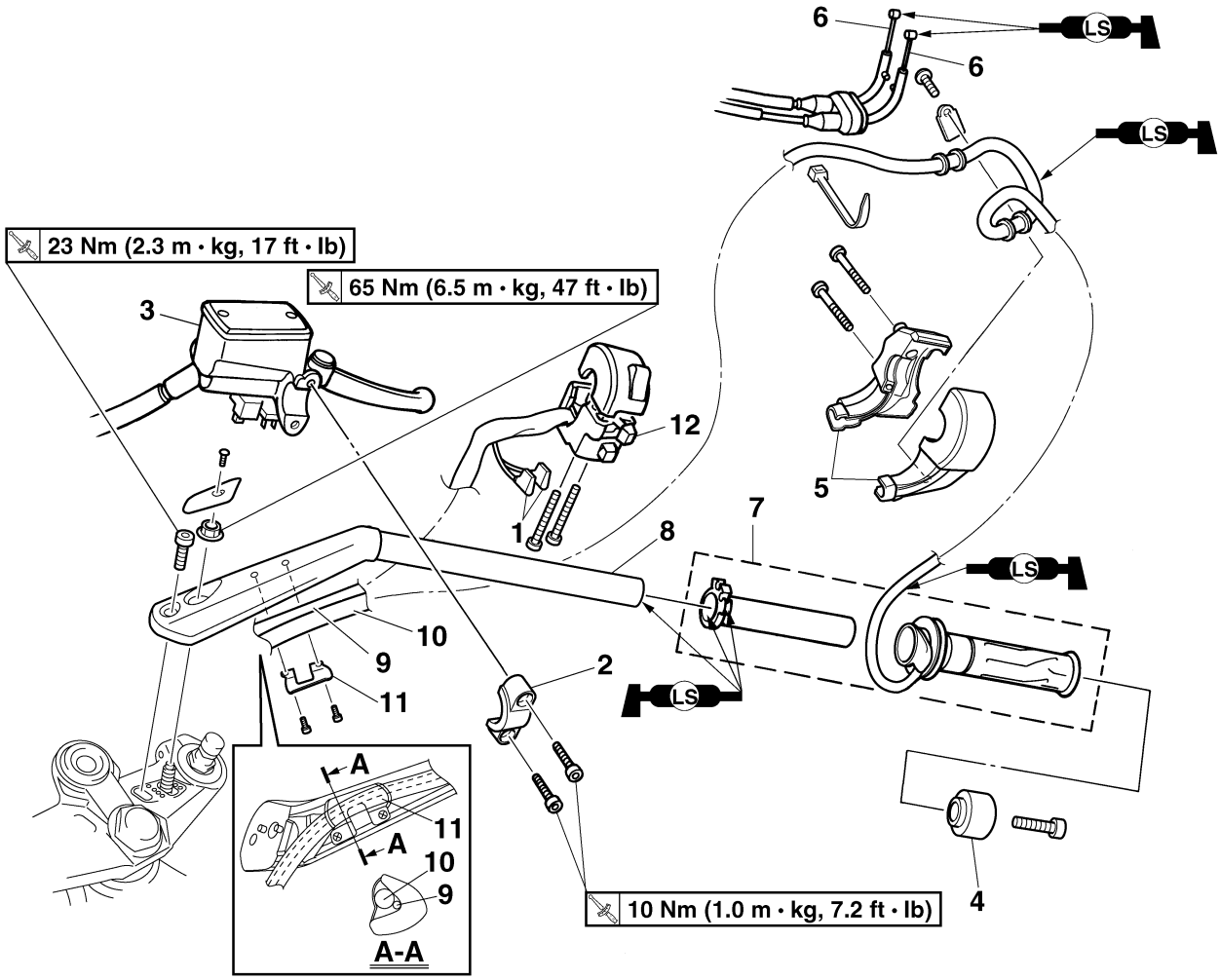
EAS22850
HANDLEBARS

Removing the left handlebar



Order	Job/Parts to remove	Q'ty	Remarks
1	Left handlebar	1	
2	Left grip warmer lead	1	
3	Hand shift switch lead	1	
4	Left handlebar switch lead	1	
5	Lead holder 1	1	
6	Hand shift switch	1	
7	Lead holder 2	1	
8	Left handlebar switch	1	
9	Grip end	1	
10	Handlebar grip	1	
			For installation, reverse the removal procedure.

Removing the right handlebar



Order	Job/Parts to remove	Q'ty	Remarks
1	Front brake light switch connector	2	Disconnect.
2	Front brake master cylinder holder	1	
3	Front brake master cylinder assembly	1	
4	Grip end	1	
5	Throttle cable housing	2	
6	Throttle cable	2	Disconnect.
7	Throttle grip	1	
8	Right handlebar	1	
9	Right grip warmer lead	1	
10	Right handlebar switch lead	1	
11	Lead holder	1	
12	Right handlebar switch	1	
			For installation, reverse the removal procedure.

EAS22900
INSTALLING THE HANDLEBARS

1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

2. Install:
   - Handlebar grip
   - Grip end “1”

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a. Apply a thin coat of rubber adhesive onto the end of the left handlebar.

Recommended adhesive
Three Bond 1530®

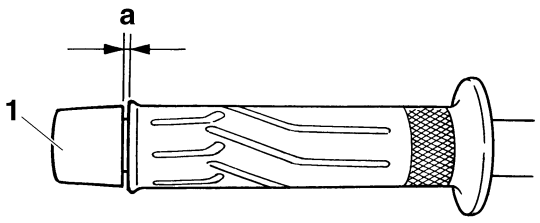
b. Slide the handlebar grip onto the left handlebar.
c. Wipe off any excess rubber adhesive with a clean rag.

EWA13700
⚠ WARNING

Do not touch the handlebar grip until the rubber adhesive has fully dried.

NOTE:

There should be 1–3 mm (0.04–0.12 in) of clearance “a” between the handlebar grip and the grip end.



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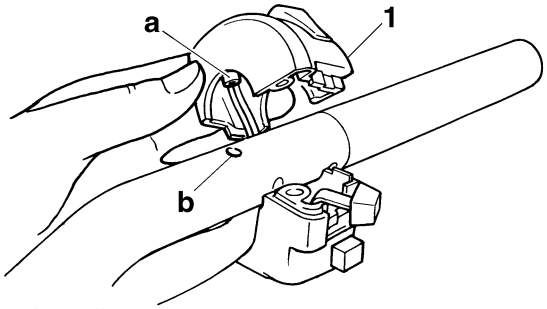
3. Install:
   - Right handlebar switch “1”

NOTE:

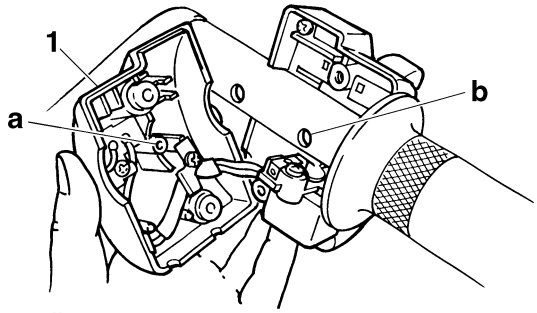
Align the projection “a” on the right handlebar switch with the hole “b” on the right handlebar.



4. Install:
   - Left handlebar switch “1”

NOTE:

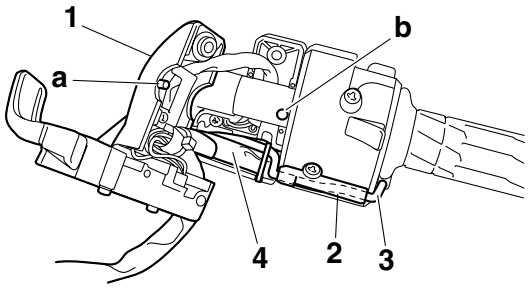
Align the projection “a” on the left handlebar switch with the hole “b” on the left handlebar.



5. Install:
   - Hand shift switch “1”
   - Lead holder 2 “2”

NOTE:

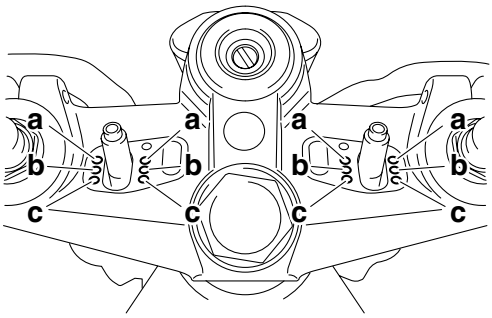
- Align the projection “a” on the hand shift switch with hole “b” on the left handlebar.
- When installing the hand shift switch, route the left grip warmer lead “3” and left handlebar switch lead “4” through the switch as shown in the illustration, making sure to fasten the left grip warmer lead with the lead holder 2.
- After installing the hand shift switch, check that the left grip warmer lead does not interfere with the movement of the hand shift lever.



6. Install:
   - Right handlebar
   - Left handlebar

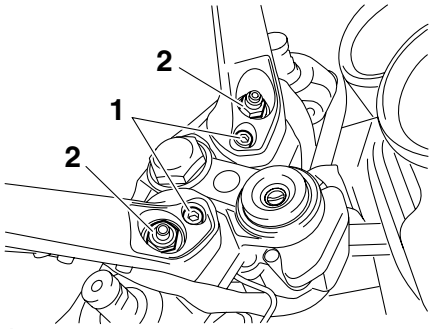
NOTE:

Fit the projections on each handlebar into the holes in the upper bracket, making sure that the handlebars are installed in the same position.



a. Front position
b. Standard position
c. Rear position

7. Install:
   - Handlebar bolts “1” (temporarily)
   - Handlebar nuts “2” (temporarily)



8. Tighten:
   - Handlebar bolts
   - Handlebar nuts

Handlebar bolt
23 Nm (2.3 m·kg, 17 ft·lb)
Handlebar nut
65 Nm (6.5 m·kg, 47 ft·lb)

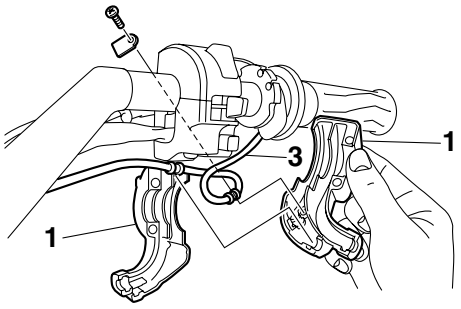
NOTE:

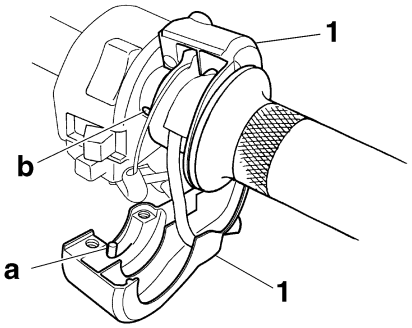
First tighten the bolts, then tighten the nuts.

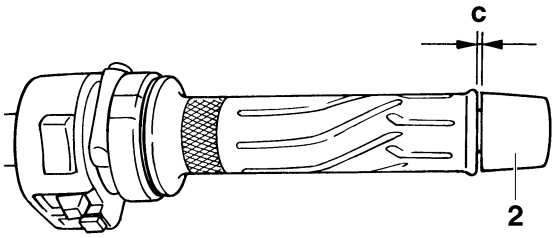
9. Install:
   - Throttle grip
   - Throttle cables
   - Throttle cable housing “1”
   - Grip end “2”

NOTE:

- Make a loop in the right grip warmer lead “3” as shown in the illustration, making sure that the section of the lead from the grip warmer crosses to the rear of the other section of the lead, and route the lead through the throttle cable housing.
- When installing the throttle cable housing, align the projection “a” on the housing with the hole “b” in the right handlebar and be sure not to pinch the right grip warmer lead.
- There should be 1–3 mm (0.04–0.12 in) of clearance “c” between the throttle grip and the grip end.







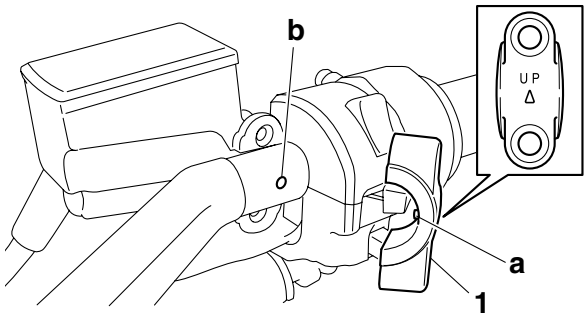
10. Install:
    - Front brake master cylinder assembly
    - Front brake master cylinder holder “1”

Front brake master cylinder holder bolt
10 Nm (1.0 m·kg, 7.2 ft·lb)

NOTE:

- Install the brake master cylinder holder with the “UP” mark facing up.
- Align the projection “a” on the front brake master cylinder with hole “b” on the right handlebar.

• First, tighten the upper bolt, then the lower bolt.



11. Adjust:
• Throttle cable free play
Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3. (Manual No.: 3P6-28197-E0)

Throttle cable free play
3.0–5.0 mm (0.12–0.20 in)

EAS23550
SHAFT DRIVE

EAS23660
INSTALLING THE DRIVE SHAFT AND FINAL DRIVE ASSEMBLY

1. Lubricate:
   • Drive shaft spline (final drive pinion gear side)

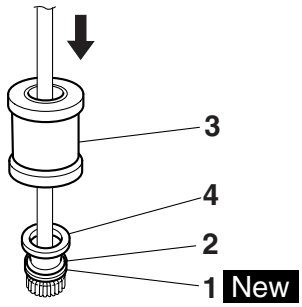
Recommended lubricant
Molybdenum disulfide grease

2. Lubricate:
   • Drive shaft spline (universal joint side)

Recommended lubricant
Lithium-soap-based grease

3. Install:
   • Oil seal “1” New
   • Washer “2”
   (with the fork seal driver weight “3” and fork seal driver attachment “4”)

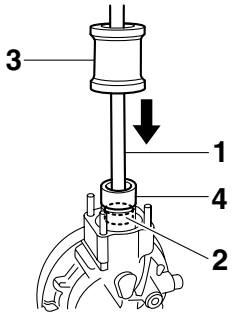
Fork seal driver weight
90890-01184
Fork seal driver attachment
90890-01186
Replacement 27 mm
YM-A9409-1

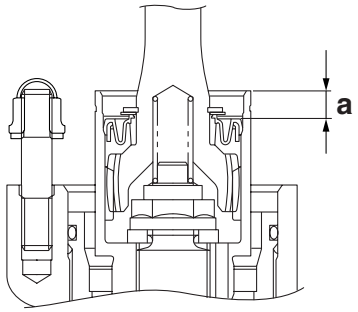


4. Install:
   • Circlip New
5. Install:
   • Drive shaft “1”
   (to the final drive pinion gear)
   • Oil seal “2”
   (to the final gear case with the fork seal driver weight “3” and oil seal installing tool “4”)

Fork seal driver weight
90890-01184
Oil seal installing tool
90890-01512

Installed depth “a”
8.5–10.0 mm (0.33–0.39 in)





6. Install:
   • Universal joint
   • Final drive assembly

NOTE:

Align the drive shaft splines with the driven yoke of the universal joint.

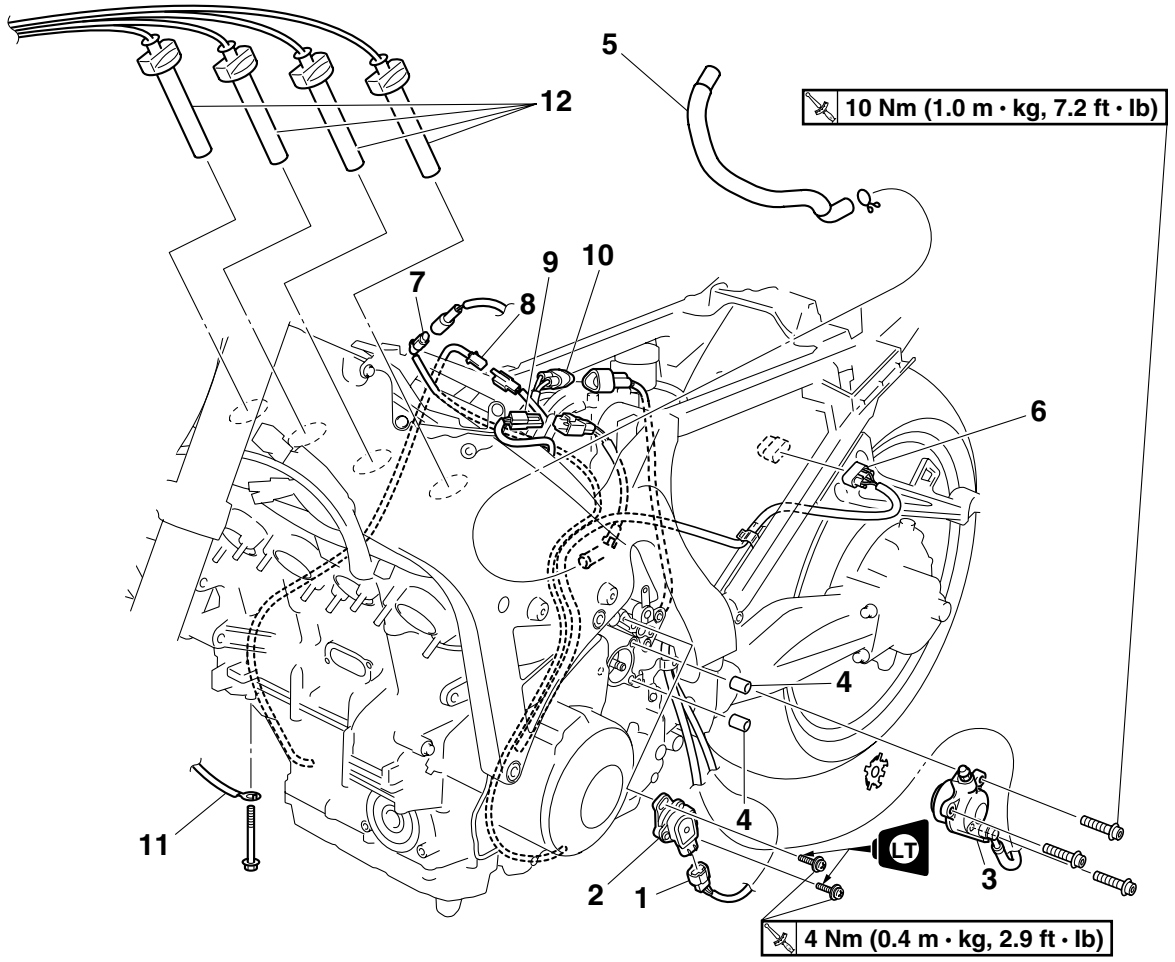
7. Tighten:
   • Final drive assembly nuts

Final gear case nut
42 Nm (4.2 m·kg, 30 ft·lb)

8. Install:
   • Sidestand
   • Left footrest assembly
   Refer to “SHIFT ACTUATOR AND SHIFT ROD” on page 57.
9. Install:
   • Rear wheel
   Refer to “REAR WHEEL” in chapter 4. (Manual No.: 3P6-28197-E0)
10. Fill:
   • Final gear case
   Refer to “CHECKING THE FINAL GEAR OIL LEVEL” in chapter 3. (Manual No.: 3P6-28197-E0)

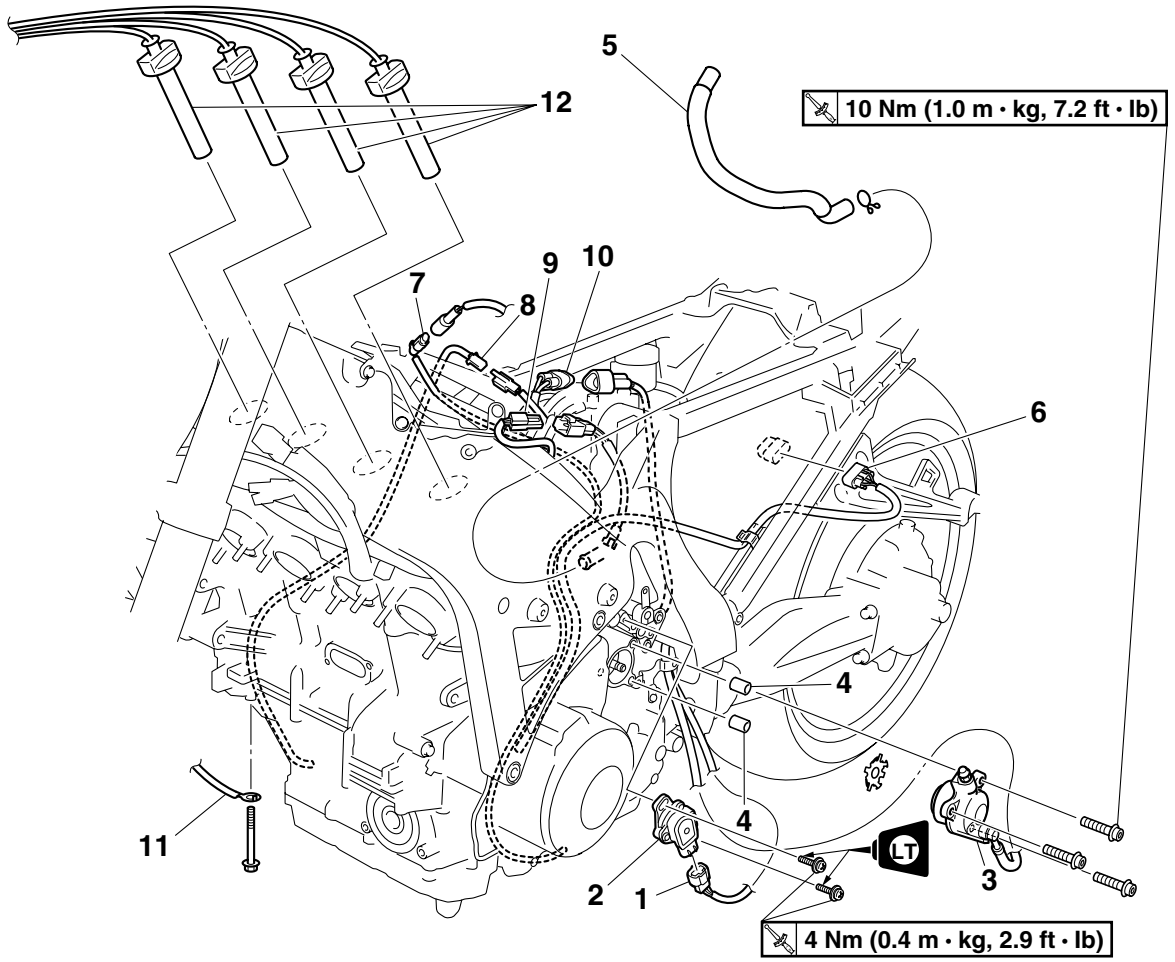
EAS23710
ENGINE REMOVAL

Disconnecting the leads and hoses



Order	Job/Parts to remove	Q'ty	Remarks
	Front fender		Refer to "FRONT WHEEL" in chapter 4. (Manual No.: 3P6-28197-E0)
	Air filter case		Refer to "GENERAL CHASSIS" on page 37.
	Throttle bodies		Refer to "THROTTLE BODIES" in chapter 7. (Manual No.: 3P6-28197-E0)
	Air cut-off valve/Reed valves		Refer to "AIR INDUCTION SYSTEM" in chapter 7. (Manual No.: 3P6-28197-E0)
	Thermostat/Thermostat inlet pipe 1		Refer to "THERMOSTAT" in chapter 6. (Manual No.: 3P6-28197-E0)
	Engine oil/Oil filter cartridge		Drain. Refer to "CHANGING THE ENGINE OIL" in chapter 3. (Manual No.: 3P6-28197-E0)
	Oil cooler		Refer to "OIL COOLER" in chapter 6. (Manual No.: 3P6-28197-E0)
	Water pump		Refer to "WATER PUMP" in chapter 6. (Manual No.: 3P6-28197-E0)
	Starter motor		Refer to "ELECTRIC STARTER" in chapter 5. (Manual No.: 3P6-28197-E0)
	Left footrest assembly/Sidestand		Refer to "SHIFT ACTUATOR AND SHIFT ROD" on page 57.

Disconnecting the leads and hoses

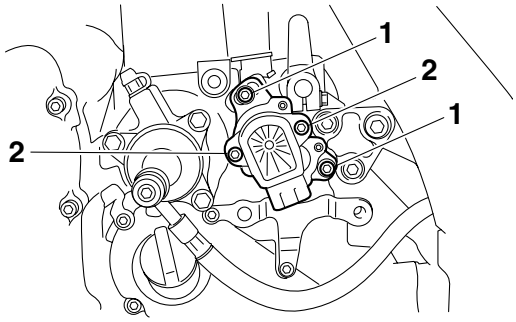


Order	Job/Parts to remove	Q'ty	Remarks
	Gear position sensor cover		Refer to "SHIFT ACTUATOR AND SHIFT ROD" on page 57.
1	Gear position sensor coupler	1	Disconnect.
2	Gear position sensor	1	
3	Clutch release cylinder	1	
4	Dowel pin	2	
5	Crankcase breather hose	1	
6	Stator coil coupler	1	Disconnect.
7	Oil level switch coupler	1	Disconnect.
8	Crankshaft position sensor coupler	1	Disconnect.
9	Neutral switch coupler	1	Disconnect.
10	YCC-S speed sensor coupler	1	Disconnect.
11	Ground lead	1	Disconnect.
12	Spark plug cap	4	
			For installation, reverse the removal procedure.

ET2D21003
REMOVING THE GEAR POSITION SENSOR
1. Disconnect:
   • Gear position sensor coupler
2. Remove:
   • Gear position sensor

NOTE:

Remove only the screws “1” when removing the gear position sensor. Do not remove the screws “2”.

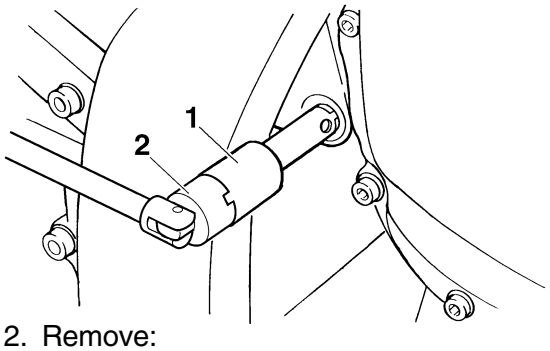


ET3P61023
REMOVING THE ENGINE
1. Loosen:
   • Spacer bolt

NOTE:

Loosen the spacer bolt with the pivot shaft wrench “1” and pivot shaft wrench adapter “2”.

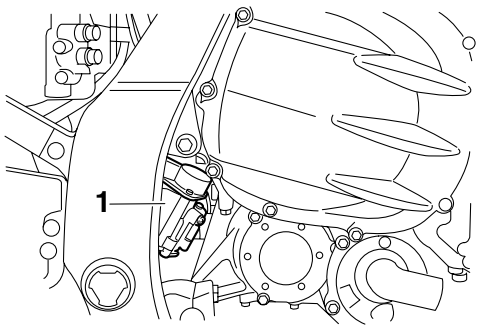
Pivot shaft wrench
90890-01471
Frame spanner socket
YM-01471
Pivot shaft wrench adapter
90890-01476



2. Remove:
   • Engine

NOTE:

Make sure that the engine does not strike the clutch actuator “1” when removing it.



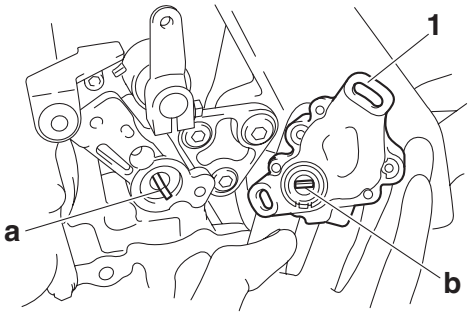
ET2D21004
INSTALLING THE GEAR POSITION SENSOR
1. Connect:
   • MCU coupler
   • ECU coupler
   Refer to “GENERAL CHASSIS” on page 37.
2. Install:
   • Gear position sensor “1”

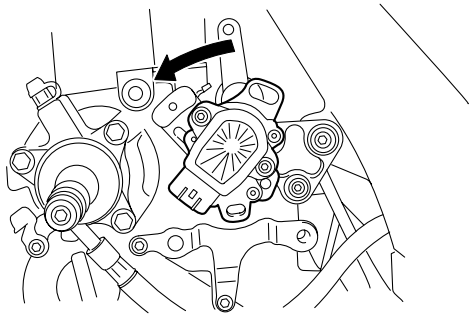
EC2D21002
CAUTION:

Shift the transmission into neutral before installing the gear position sensor, otherwise the sensor may be damaged.

NOTE:

Fit the end “a” of the shift drum assembly into the opening “b” in the gear position sensor “1”, and then rotate the sensor counterclockwise and temporarily install the screws.





3. Adjust:
   • Gear position sensor
   Refer to “ADJUSTING THE GEAR POSITION SENSOR” on page 50.

ET2D21005
ADJUSTING THE GEAR POSITION SENSOR

1. Check:
   • Gear position sensor
   Refer to "CHECKING THE GEAR POSITION SENSOR" on page 132.
2. Adjust:
   • Gear position sensor angle

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a. Connect the gear position sensor coupler to the gear position sensor.
b. Connect the digital circuit tester to the gear position sensor.

• Positive tester probe → yellow "1" • Negative tester probe → black/blue "2"

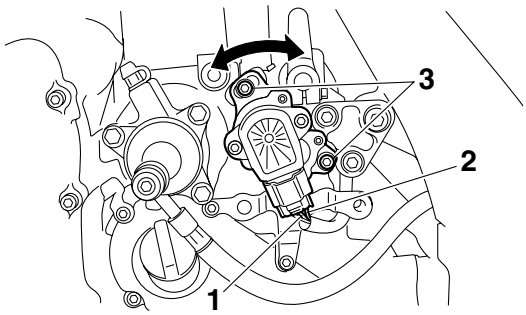
Digital circuit tester
90890-03174
Model 88 Multimeter with tachometer
YU-A1927

c. Turn the main switch to "ON".
d. Measure the gear position sensor voltage.
e. Adjust the gear position sensor angle so that the voltage is within the specified range.

Output voltage (at neutral position)
0.71–0.91 V

f. After adjusting the gear position sensor angle, tighten the gear position sensor screws "3" to specification.

Gear position sensor screw
4 Nm (0.4 m·kg, 2.9 ft·lb)
LOCTITE®



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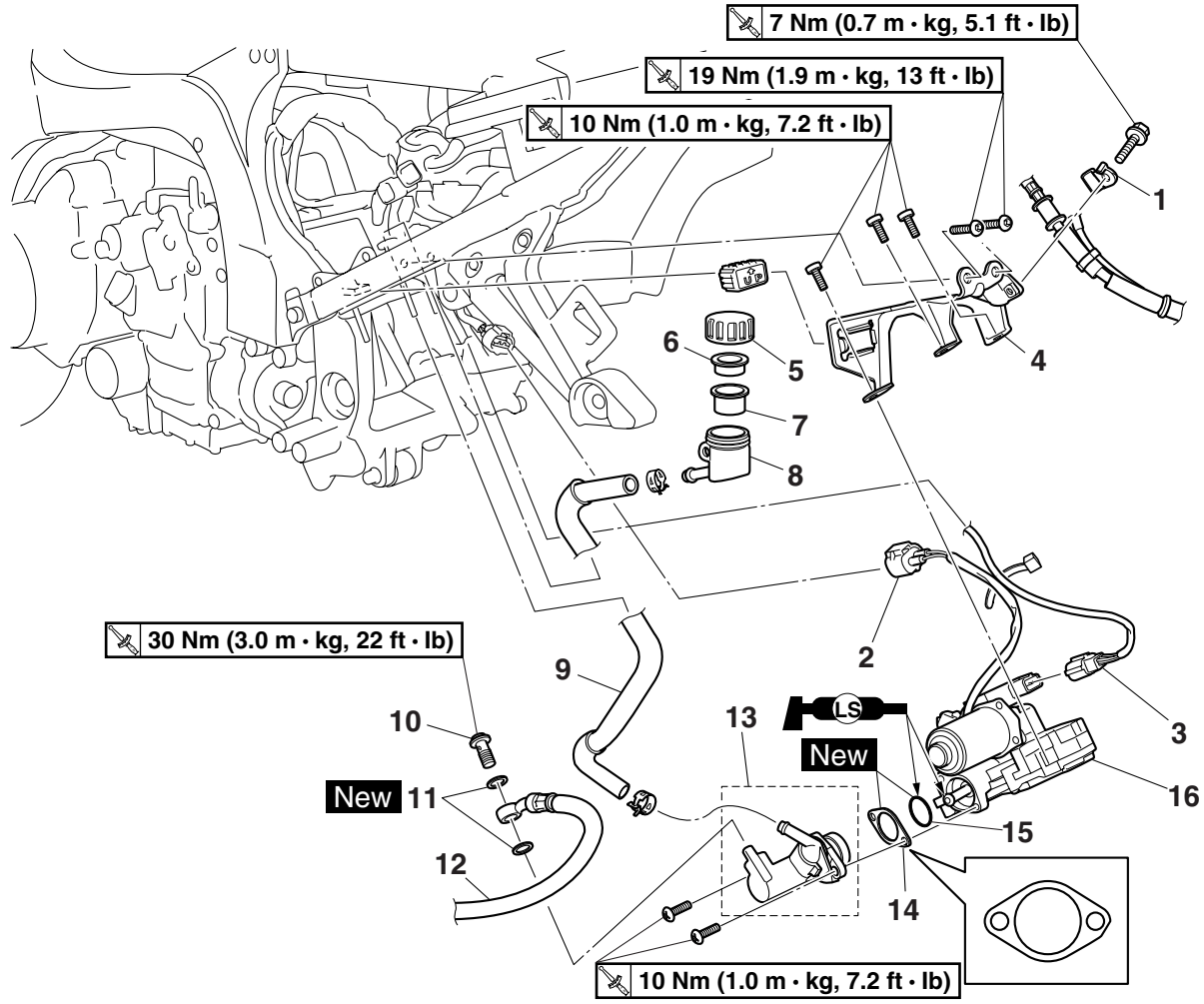
3. Check:
   • Gear position setting
   Refer to "Diagnostic code table (Diagnostic code No. Sh_ _65)".

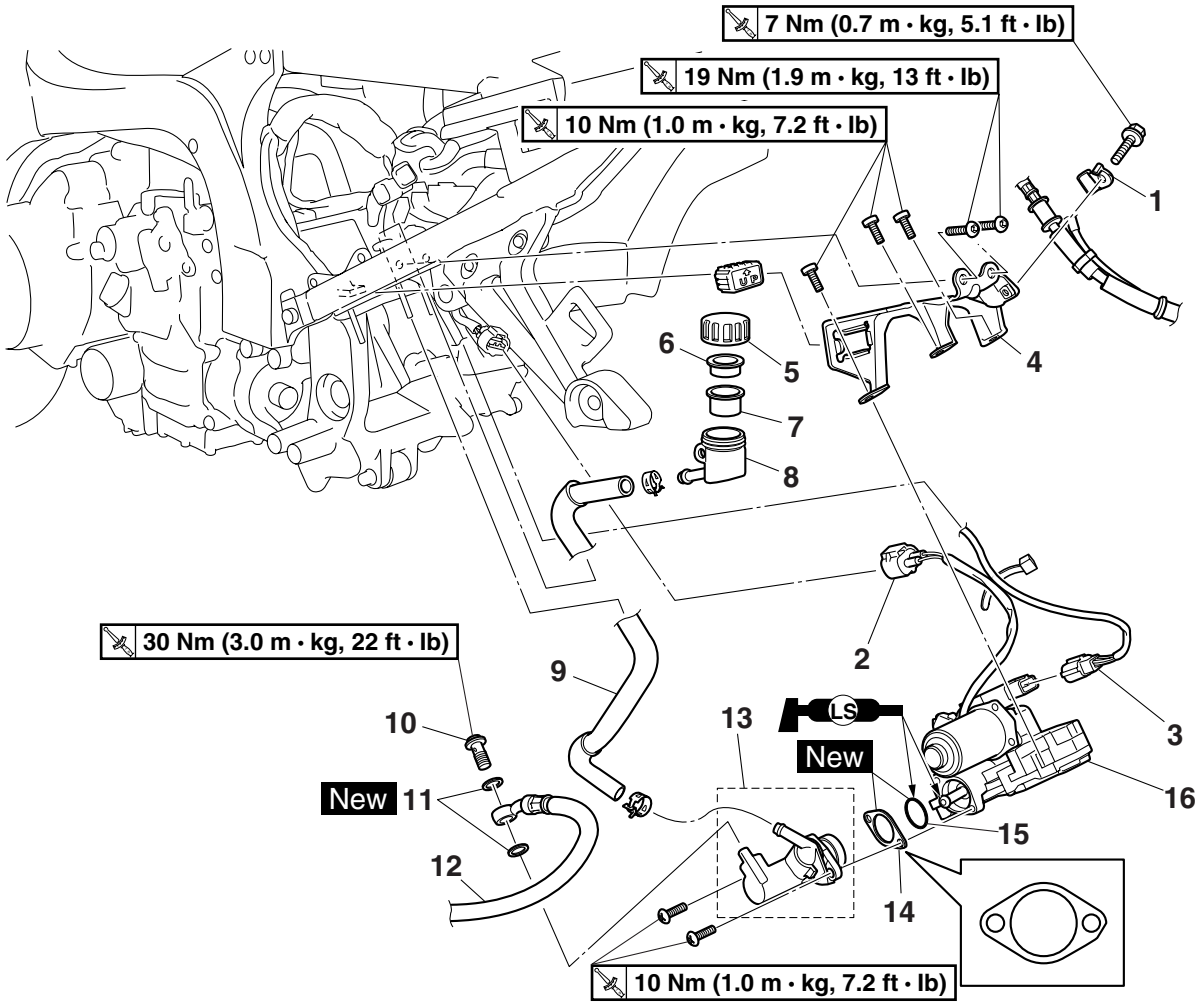
EAS25060
CLUTCH

Removing the clutch actuator and clutch master cylinder



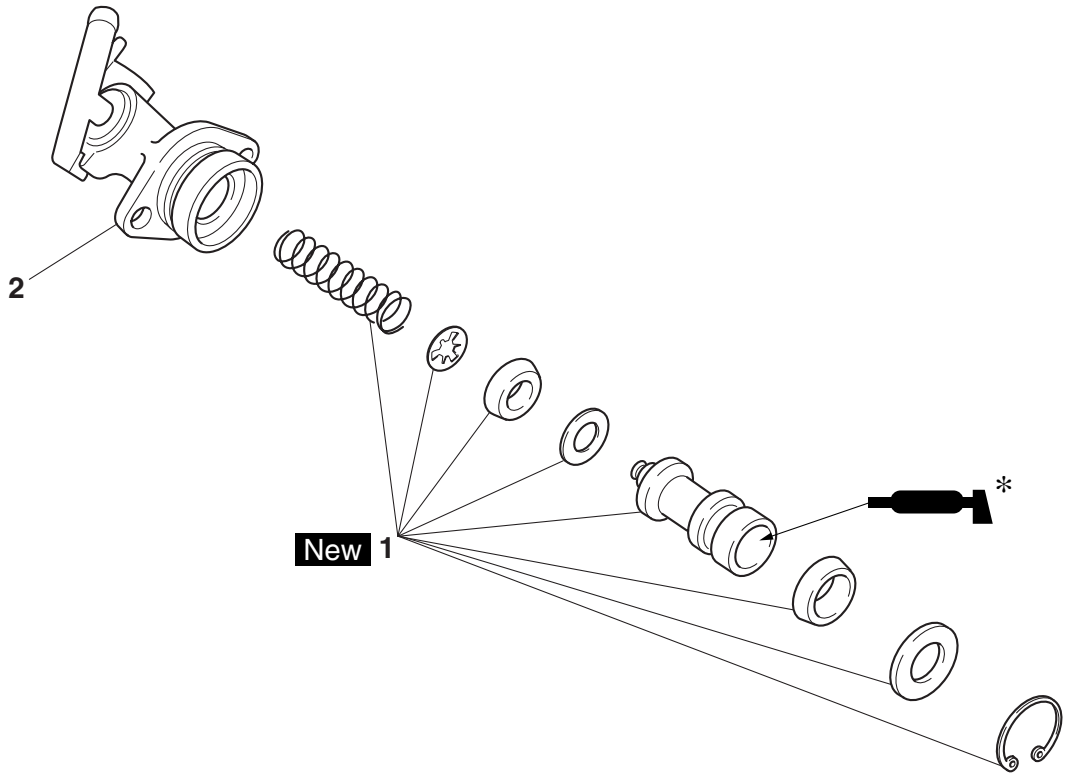
Order	Job/Parts to remove	Q'ty	Remarks
	Clutch fluid		Drain. Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.
	Swingarm		Refer to "SWINGARM" in chapter 4. (Manual No.: 3P6-28197-E0)
1	Rear brake hose/rear wheel sensor lead holder	1	
2	Clutch actuator motor coupler	1	Disconnect.
3	Clutch actuator sensor coupler	1	Disconnect.
4	Clutch actuator bracket	1	
5	Clutch fluid reservoir cap	1	
6	Clutch fluid reservoir diaphragm holder	1	
7	Clutch fluid reservoir diaphragm	1	
8	Clutch fluid reservoir	1	
9	Clutch fluid reservoir hose	1	
10	Clutch hose union bolt	1	
11	Copper washer	2	
12	Clutch hose	1	Disconnect.

Removing the clutch actuator and clutch master cylinder



Order	Job/Parts to remove	Q'ty	Remarks
13	Clutch master cylinder	1	
14	Shim (clutch master cylinder kit)	1	
15	O-ring (clutch master cylinder kit)	1	
16	Clutch actuator	1	
			For installation, reverse the removal procedure.

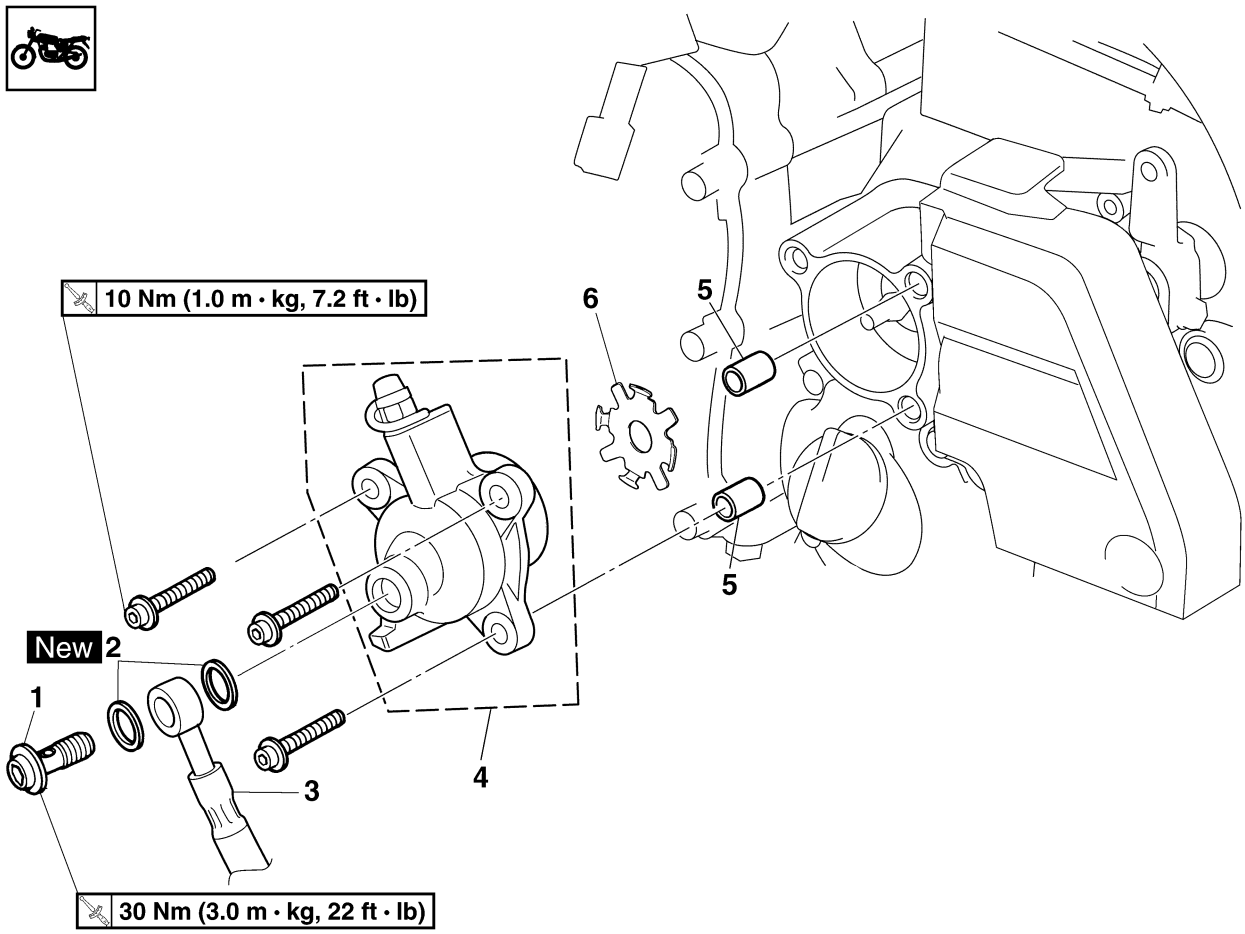
Disassembling the clutch master cylinder



Order	Job/Parts to remove	Q'ty	Remarks
1	Clutch master cylinder kit	1	
2	Clutch master cylinder body	1	
			For assembly, reverse the disassembly procedure.

* Apply silicon grease

Removing the clutch release cylinder



Order	Job/Parts to remove	Q'ty	Remarks
	Clutch fluid		Drain. Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.
1	Clutch hose union bolt	1	
2	Copper washer	2	
3	Clutch hose	1	Disconnect.
4	Clutch release cylinder	1	
5	Dowel pin	2	
6	Plate	1	
			For installation, reverse the removal procedure.

ET2D21037
BREAKING IN THE FRICTION PLATES AFTER REPLACEMENT

1. If the friction plates are replaced, perform the following procedure to break them in.

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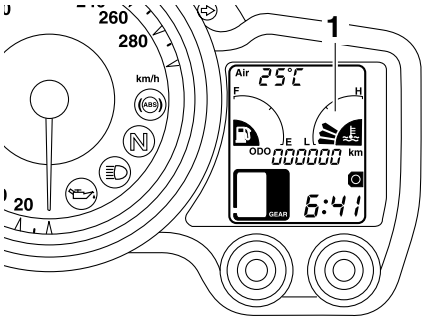
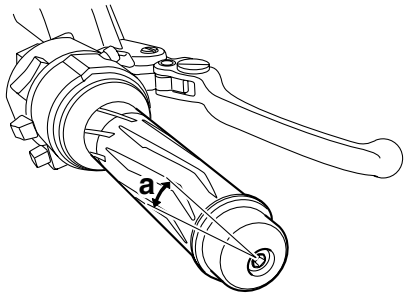
a. Start the engine and warm it up until at least three segments appear on the coolant temperature meter "1" as shown in the illustration.



b. Apply the rear brake forcefully.
c. Shift the transmission into 1st gear.
d. Turn the throttle grip to 1/4 "a" of the fully open position ten times, each time for less than 0.5 second.

NOTE:

It is not unusual for the engine to stall when performing this procedure. If the engine stalls, restart the engine, let it idle for at least 90 seconds, and then repeat steps (b) to (d).



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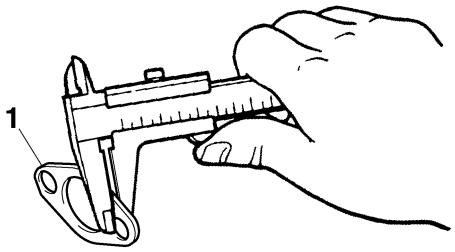
ET2D21038
REPLACING THE CLUTCH MASTER CYLINDER

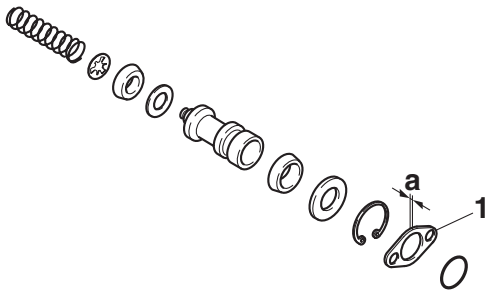
1. Check:
   • Pressure plate stroke
   Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.
2. Measure
   • Shim (clutch master cylinder kit) "1" thickness



3. Replace:
   • Clutch master cylinder kit

NOTE:

The thickness of the new shim "1" is 1.5 mm (0.06 in).



a. 1.5 mm (0.06 in)

4. Bleed:
   • Hydraulic clutch system
   Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.
5. Check:
   • Pressure plate stroke
   Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.
6. Adjust:
   • Clutch engagement point
   Refer to "Diagnostic code table (Diagnostic code No. Sh_ _66)".

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a. If the thickness of the shim installed on the vehicle is 1.0 mm (0.04 in), refer to the following table.

Pressure plate stroke	Action
Pressure plate stroke before replacing the clutch master cylinder kit was 2.90 mm (0.11 in) or more, or the difference in the pressure plate stroke before and after replacing is 0.10 mm (0.004 in) or more	Select diagnostic code No. Sh_ _66 in the diagnostic mode and operate the hand shift lever switch (shift up) three times.
For all other cases	Select diagnostic code No. Sh_ _66 in the diagnostic mode and operate the hand shift lever switch (shift up) one time.

b. If the thickness of the shim installed on the vehicle is 1.5 mm (0.06 in), refer to the following table.

Pressure plate stroke	Action
Pressure plate stroke before replacing the clutch master cylinder kit was 2.90 mm (0.11 in) or more, or the difference in the pressure plate stroke before and after replacing is 0.10 mm (0.004 in) or more	Select diagnostic code No. Sh_ _66 in the diagnostic mode and operate the hand shift lever switch (shift up) two times.
For all other cases	No adjustment is necessary.

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7. Check:
   • Rear wheel drag torque
   Refer to "CHECKING THE VEHICLE AFTER BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 33.
8. Check:
   • Shift operation
   Refer to "CHECKING THE VEHICLE AFTER BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 33.
9. Check:
   • Starting-off performance of vehicle
   Refer to "CHECKING THE VEHICLE AFTER BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 33.

ET2D21039

INSTALLING THE CLUTCH ACTUATOR

1. Install:
   • Clutch actuator
   • Clutch master cylinder
   • Clutch hose
   • Clutch fluid reservoir hose
2. Bleed:
   • Hydraulic clutch system
   Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.
3. Check:
   • Pressure plate stroke
   Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.
4. Adjust:
   • Clutch engagement point
   Refer to "Diagnostic code table (Diagnostic code No. Sh_ _66)".

NOTE:

Adjust the clutch engagement point if the clutch actuator was replaced.

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a. Select diagnostic code No. Sh_ _66 in the diagnostic mode and operate the hand shift lever switch (shift up) until the clutch engagement point is at the maximum setting.

NOTE:

The hand shift select indicator light stops coming on when the maximum setting is reached.

b. Operate the hand shift lever switch (shift down) ten times and check that the hand shift select indicator light comes on.

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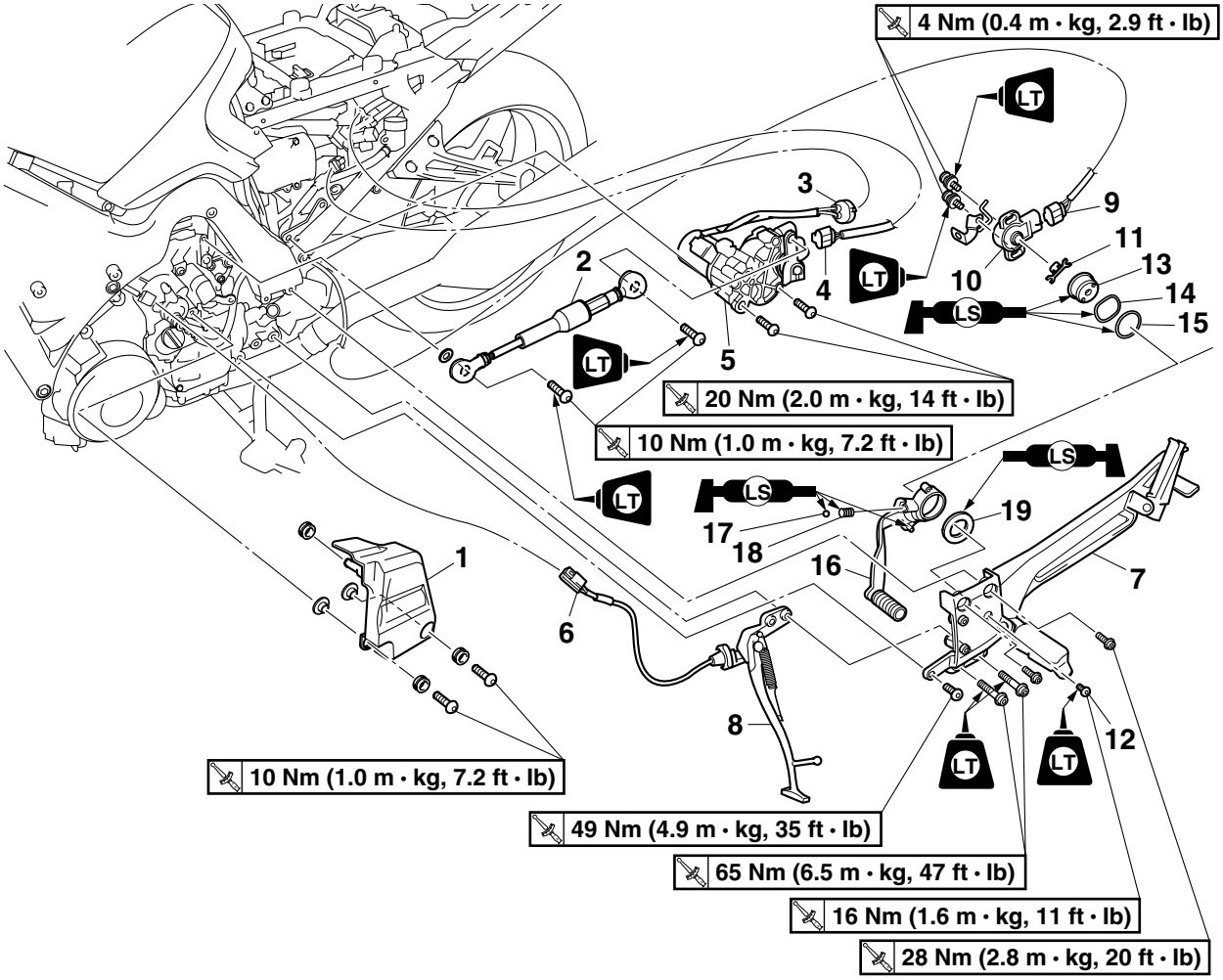
5. Check:
   • Rear wheel drag torque
   Refer to "CHECKING THE VEHICLE AFTER BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 33.
6. Check:
   • Shift operation
   Refer to "CHECKING THE VEHICLE AFTER BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 33.
7. Check:
   • Starting-off performance of vehicle
   Refer to "CHECKING THE VEHICLE AFTER BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 33.

ET2D21006

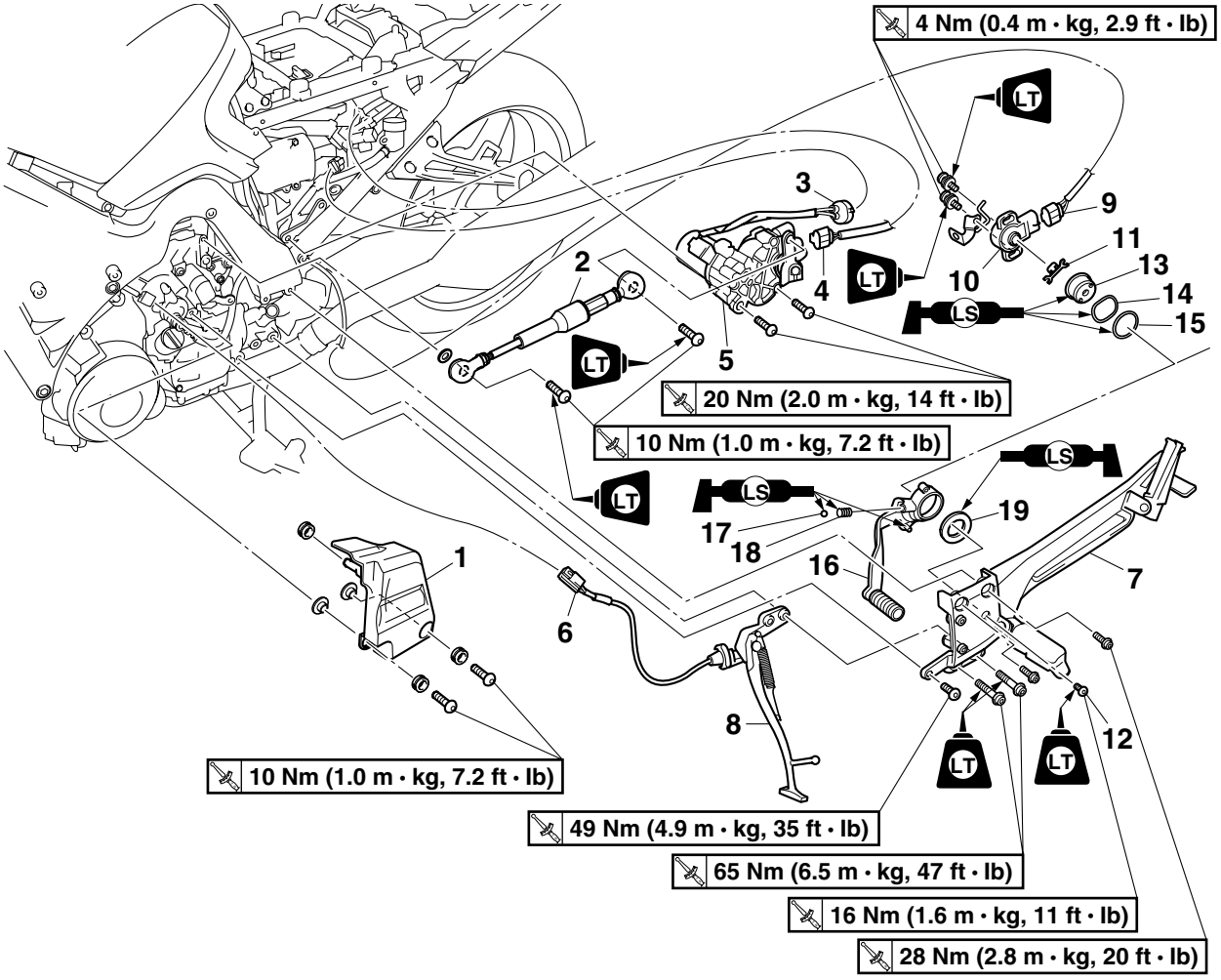
SHIFT ACTUATOR AND SHIFT ROD

Removing the shift actuator, shift rod and foot shift switch



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat/Left side cover		Refer to "GENERAL CHASSIS" in chapter 4. (Manual No.: 3P6-28197-E0)
	Air shroud		Refer to "GENERAL CHASSIS" on page 37.
1	Gear position sensor cover	1	
2	Shift rod	1	
3	Shift actuator sensor coupler	1	Disconnect.
4	Shift actuator motor coupler	1	Disconnect.
5	Shift actuator	1	
6	Sidestand switch coupler	1	Disconnect.
7	Left footrest assembly	1	
8	Sidestand	1	
9	Foot shift switch coupler	1	Disconnect.
10	Foot shift switch	1	
11	Holder	1	
12	Shift pedal pivot bolt	1	
13	Shift pedal pivot	1	

Removing the shift actuator, shift rod and foot shift switch



Order	Job/Parts to remove	Q'ty	Remarks
14	Wave washer	1	
15	Washer	1	
16	Shift pedal	1	
17	Ball	1	
18	Spring	1	
19	Washer	1	
			For installation, reverse the removal procedure.

ET2D21007
REMOVING THE SHIFT ACTUATOR
1. Remove:
   • Shift actuator

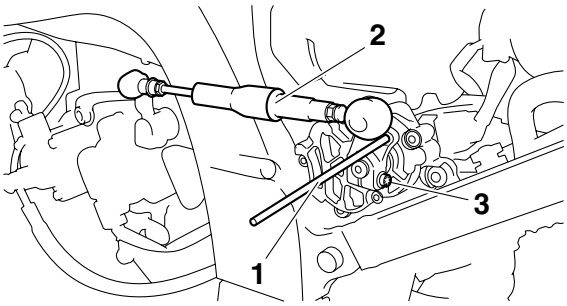
▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Pass a suitable 5 mm diameter rod "1" through the holes in the rear shift arm and shift actuator to secure the shift rod.
b. Remove the shift rod "2".

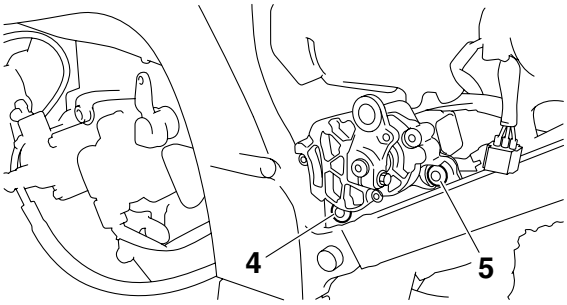
EC2D21001
CAUTION:

Do not loosen the rear shift arm bolt "3" when removing the shift rod, otherwise the rear shift arm and shift actuator could become misaligned, preventing the shift rod from being installed correctly during assembly.

c. Pull out the rod from the holes.



d. Disconnect the shift actuator sensor coupler and shift actuator motor coupler.
e. Remove the shift actuator front bolt "4", and then remove the rear bolt "5".



f. Remove the shift actuator.

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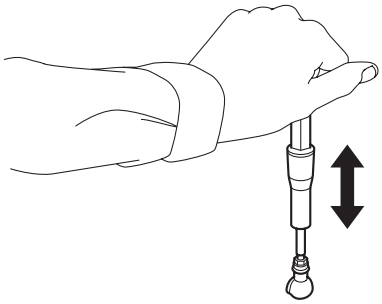
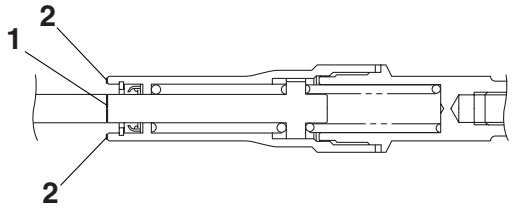
ET2D21008
CHECKING THE SHIFT ROD
1. Check:
   • Shift rod operation
   Rough movement → Replace.



2. Check:
   • Shift rod groove
   Groove and end of rod cover are not aligned → Replace.



1. Shift rod groove
2. End of shift rod cover

3. Check:
   • Shift rod
   Bends → Replace.

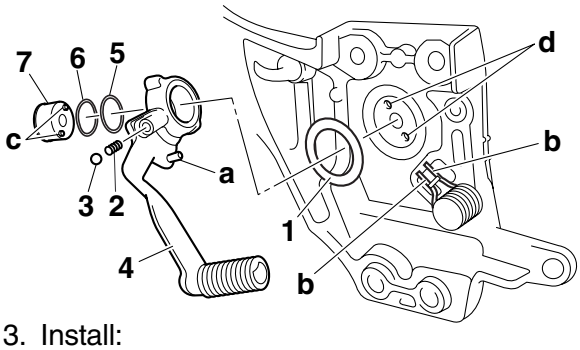
ET2D21009
INSTALLING THE FOOT SHIFT SWITCH
1. Lubricate:
   • Washers
   • Shift pedal pivot
   • Spring
   • Ball
   • Wave washer
   • Shift pedal spring
   • Shift pedal projection

	Recommended lubricant **Lithium-soap-based grease**

2. Install:
   • Washer "1"
   • Spring "2"
   • Ball "3"
   • Shift pedal "4"
   (to the left footrest assembly)
   • Washer "5"
   • Wave washer "6"
   • Shift pedal pivot "7"
   • Shift pedal pivot bolt

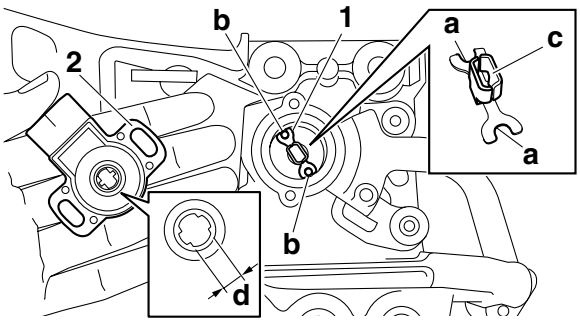
Shift pedal pivot bolt
16 Nm (1.6 m·kg, 11 ft·lb)
LOCTITE®

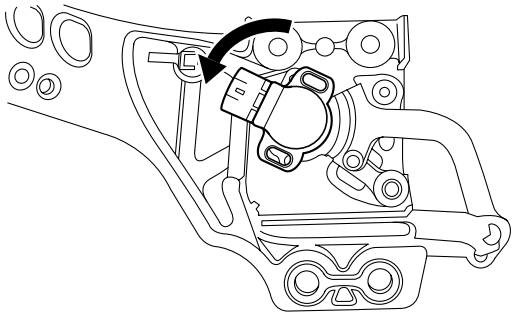
NOTE:
- Position the projection “a” on the shift pedal between the ends “b” of the spring on the left footrest assembly.
- Be sure to fit the projections “c” on the shift pedal pivot into the holes “d” in the left footrest assembly.



3. Install:
   - Holder “1”
   - Foot shift switch “2”

NOTE:
- Be sure to align the cutouts “a” in the holder with the projections “b” on the shift pedal pivot.
- Fit the foot shift switch onto the holder, and then rotate the switch counterclockwise and temporarily install the screws. Be sure to fit the section “c” of the holder into the opening “d” shown in the illustration.





4. Adjust:
   - Foot shift switch
     Refer to “ADJUSTING THE FOOT SHIFT SWITCH” on page 60.

ET2D21010
ADJUSTING THE FOOT SHIFT SWITCH

1. Check:
   - Foot shift switch
     Refer to “CHECKING THE FOOT SHIFT SWITCH” on page 133.
2. Adjust:
   - Foot shift switch angle

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a. Connect the foot shift switch coupler to the foot shift switch.
b. Connect the digital circuit tester to the foot shift switch coupler.

- Positive tester probe → orange “1”
- Negative tester probe → black “2”

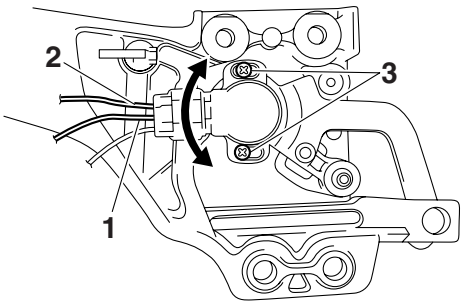
Digital circuit tester
90890-03174
Model 88 Multimeter with tachometer
YU-A1927

c. Turn the main switch to “ON”.
d. Measure the foot shift switch voltage.
e. Adjust the foot shift switch angle so that the voltage is within the specified range.

Output voltage
2.4–2.6 V

f. After adjusting the foot shift switch angle, tighten the foot shift switch screws “3” to specification.

Foot shift switch screw
4 Nm (0.4 m·kg, 2.9 ft·lb)
LOCTITE®



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ET2D21011

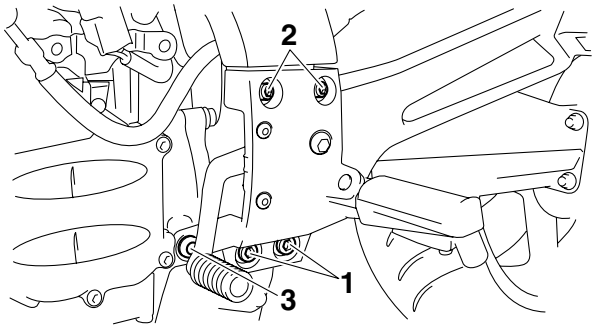
INSTALLING THE LEFT FOOTREST ASSEMBLY

1. Install:
   - Sidestand
   - Left footrest assembly

Left footrest assembly/sidestand bolt
65 Nm (6.5 m·kg, 47 ft·lb)
LOCTITE®
Left footrest assembly bolt (M8)
28 Nm (2.8 m·kg, 20 ft·lb)
Left footrest assembly bolt (M10)
49 Nm (4.9 m·kg, 35 ft·lb)

NOTE:

Install the left footrest assembly/sidestand bolts "1", left footrest assembly bolts (M8) "2" and left footrest assembly bolt (M10) "3" temporarily and then tighten them to the specified torques in the proper tightening sequence as shown.



ET2D21012

INSTALLING THE SHIFT ACTUATOR

1. Install:
   - Shift actuator

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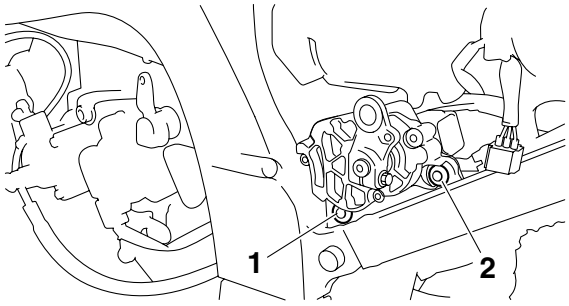
a. Install the shift actuator front bolt "1" temporarily.
b. Tighten the shift actuator rear bolt "2", and then tighten the front bolt "1" to specification.

Shift actuator rear bolt
20 Nm (2.0 m·kg, 14 ft·lb)
Shift actuator front bolt
20 Nm (2.0 m·kg, 14 ft·lb)

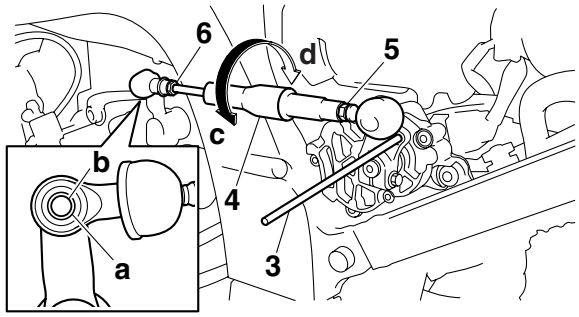


c. Connect the shift actuator motor coupler and shift actuator sensor coupler.
d. Pass a suitable 5 mm diameter rod "3" through the holes in the rear shift arm and shift actuator to secure the shift rod.
e. Install the shift rod "4".

NOTE:

Check that the hole "a" in the shift rod is aligned with the hole "b" in the front shift arm. If the holes are not aligned, loosen the shift rod rear locknut "5" and front locknut "6", and then turn the shift rod to adjust its length.

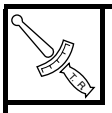
Direction "c"
Shift rod length is increased.
Direction "d"
Shift rod length is decreased.



f. Tighten the shift rod bolts to specification.

Shift rod bolt
10 Nm (1.0 m·kg, 7.2 ft·lb)

g. If the shift rod front locknut and rear locknut were loosened, tighten them to specification.



Shift rod front locknut
7 Nm (0.7 m·kg, 5.1 ft·lb)
Shift rod rear locknut
10 Nm (1.0 m·kg, 7.2 ft·lb)

h. Pull out the rod from the holes.

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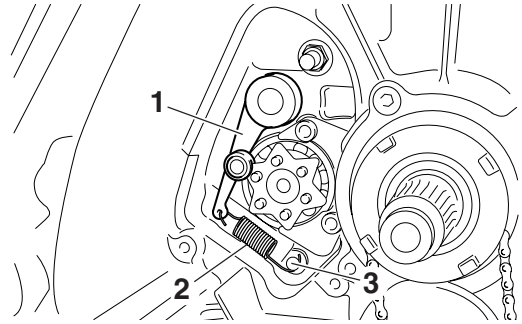
EAS25410
SHIFT SHAFT

EAS25450
INSTALLING THE SHIFT SHAFT

1. Install:
   • Stopper lever “1”
   • Stopper lever spring “2”

NOTE:

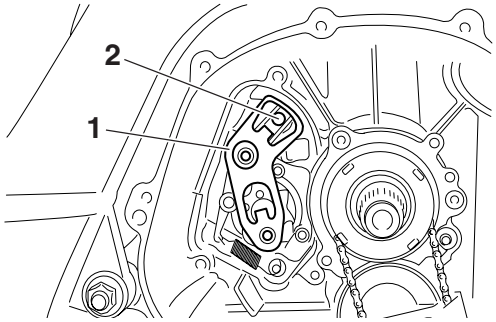
• Hook the ends of the stopper lever spring onto the stopper lever and the crankcase boss “3”.
• Mesh the stopper lever with the shift drum segment assembly.



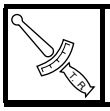
2. Install:
   • Shift shaft “1”

NOTE:

Hook the end of the shift shaft spring onto the shift shaft spring stopper “2”.

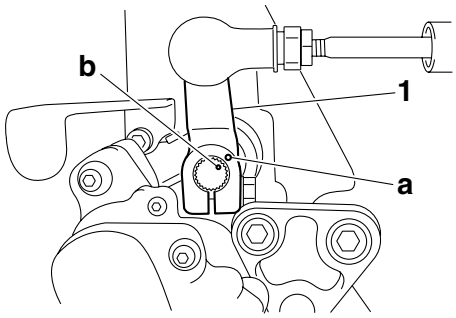


3. Install:
   • Front shift arm “1”

	**Front shift arm bolt** **10 Nm (1.0 m·kg, 7.2 ft·lb)**

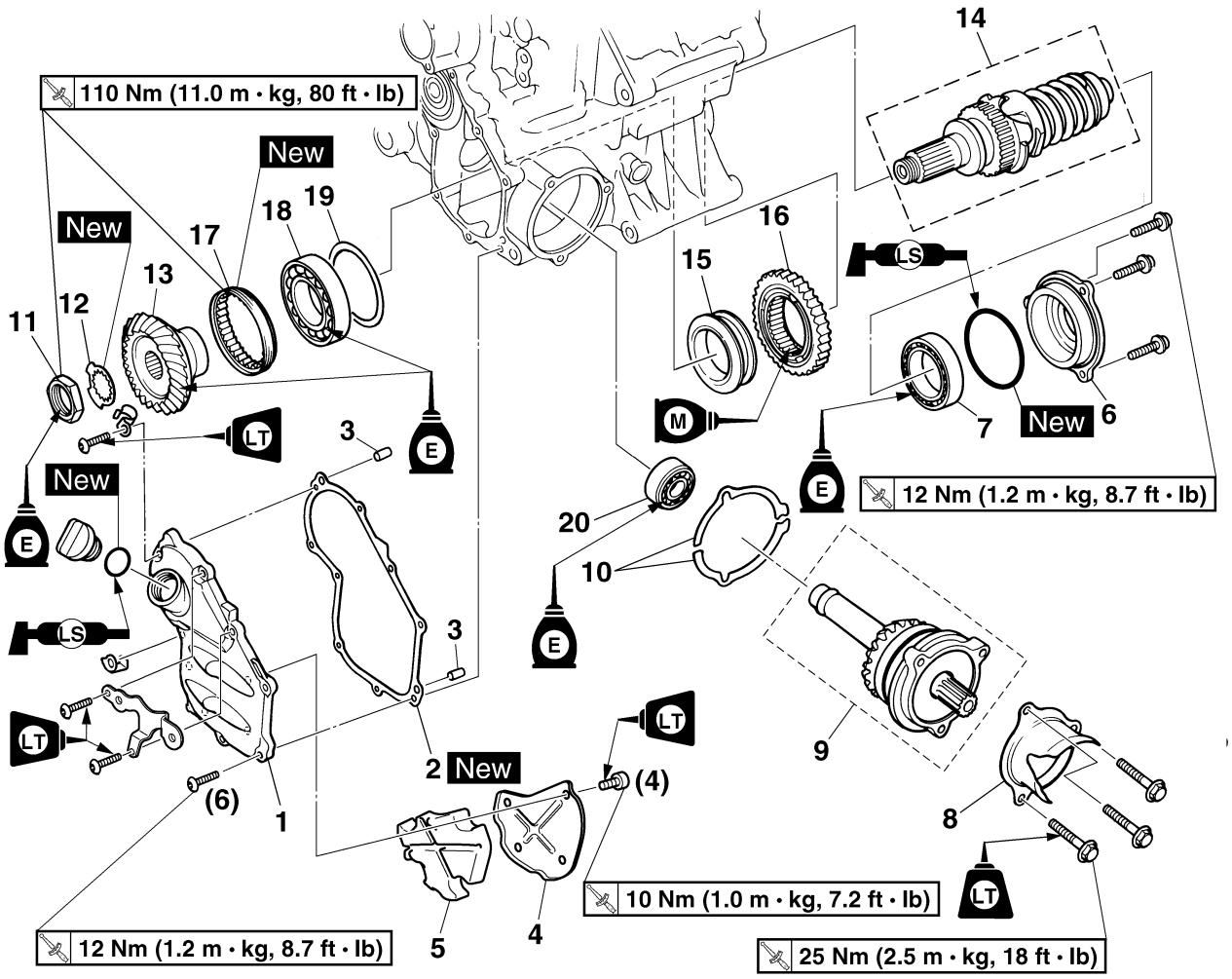
NOTE:

Align the punch mark “a” on the front shift arm with the punch mark “b” on the shift shaft.



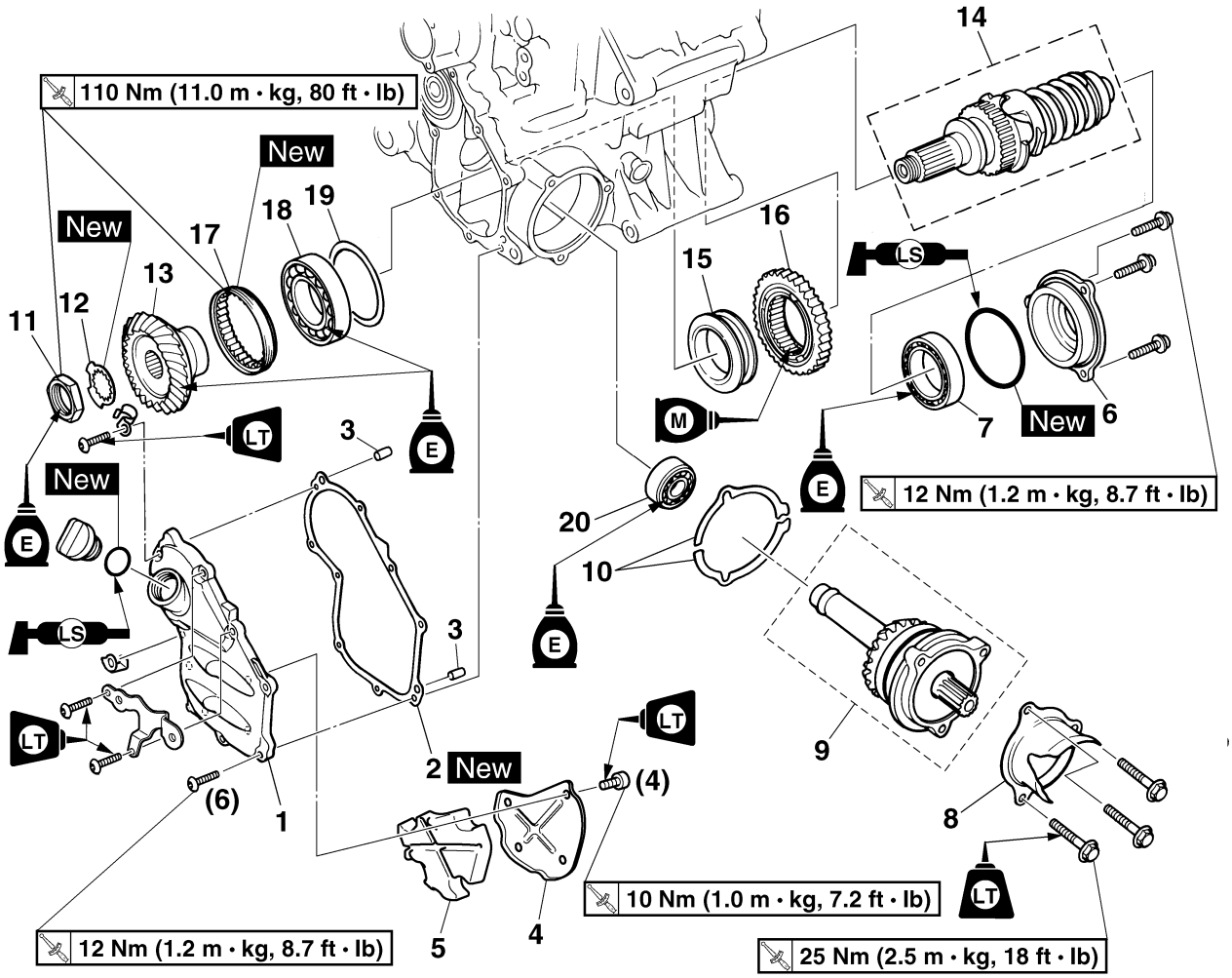
EAS25710
MIDDLE GEAR

Removing the middle gear



Order	Job/Parts to remove	Q'ty	Remarks
	Engine		Refer to "ENGINE REMOVAL" in chapter 5. (Manual No.: 3P6-28197-E0)
	Oil pan/Oil pump		Refer to "OIL PUMP" in chapter 5. (Manual No.: 3P6-28197-E0)
1	Middle gear case cover	1	
2	Middle gear case cover gasket	1	
3	Dowel pin	2	
4	Damper cover	1	
5	Damper	1	
6	Middle drive shaft bearing housing	1	
7	Bearing	1	
8	Middle driven shaft end cover	1	
9	Middle driven shaft assembly	1	
10	Middle driven pinion gear shim		
11	Middle drive pinion gear nut	1	
12	Lock washer	1	
13	Middle drive pinion gear	1	

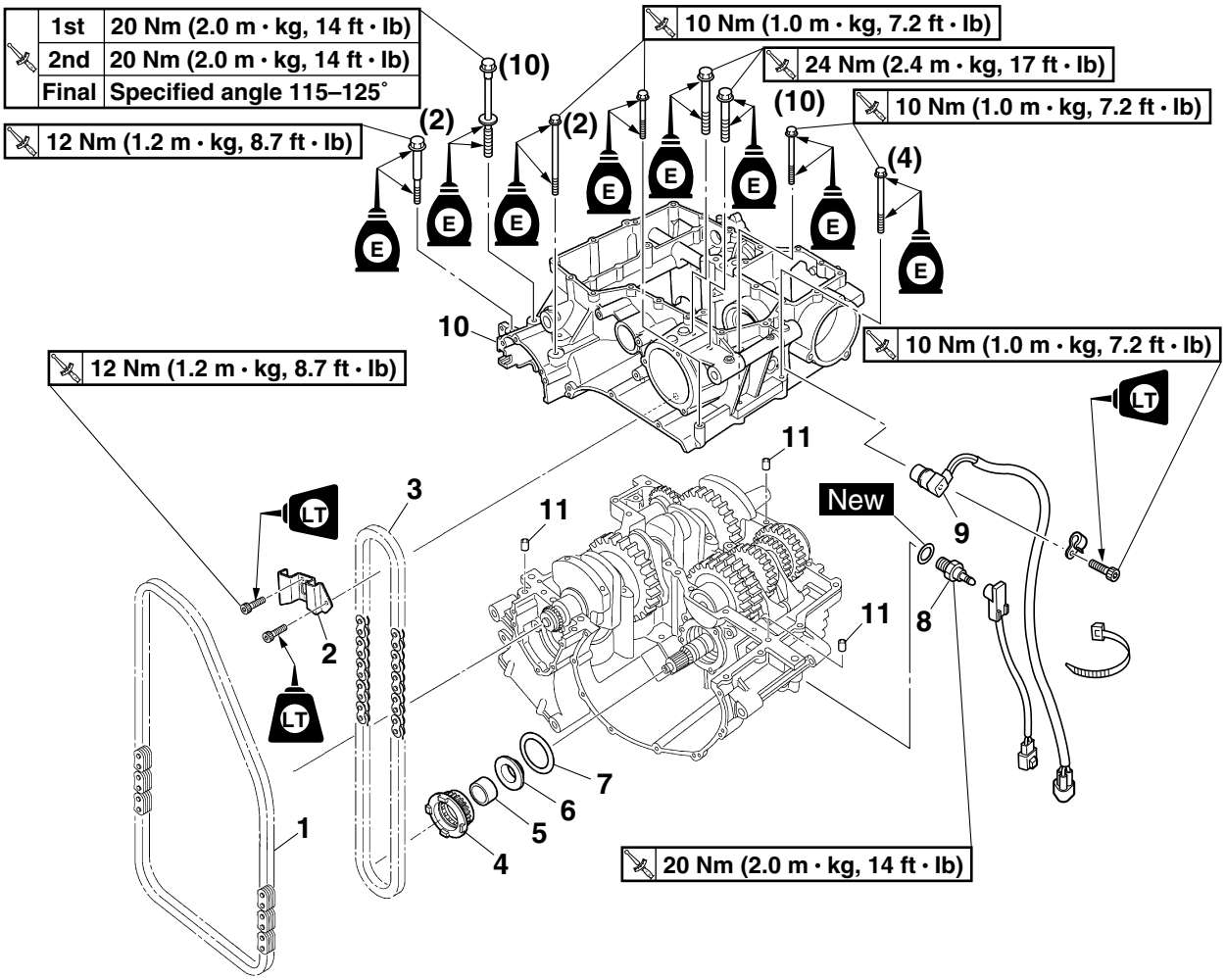
Removing the middle gear



Order	Job/Parts to remove	Q'ty	Remarks
14	Middle drive shaft assembly	1	
15	Spacer	1	
16	Middle driven gear	1	
17	Bearing retainer	1	
18	Bearing	1	
19	Middle drive pinion gear shim		
20	Bearing	1	
			For installation, reverse the removal procedure.

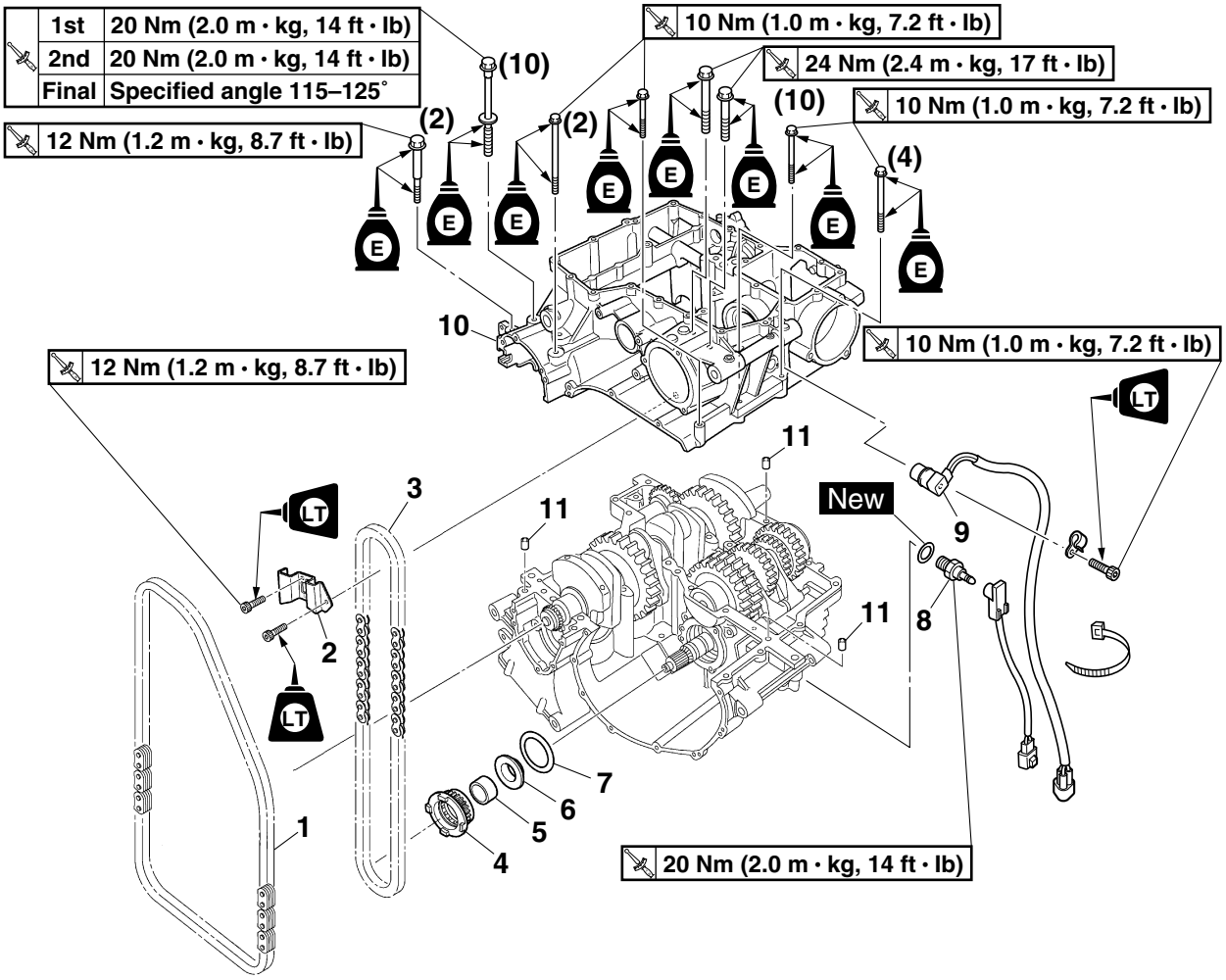
EAS25540
CRANKCASE

Separating the crankcase



Order	Job/Parts to remove	Q'ty	Remarks
	Engine		Refer to "ENGINE REMOVAL" in chapter 5. (Manual No.: 3P6-28197-E0)
	Cylinder head		Refer to "CYLINDER HEAD" in chapter 5. (Manual No.: 3P6-28197-E0)
	Starter clutch		Refer to "GENERATOR AND STARTER CLUTCH" in chapter 5. (Manual No.: 3P6-28197-E0)
	Pickup rotor		Refer to "PICKUP ROTOR" in chapter 5. (Manual No.: 3P6-28197-E0)
	Oil pump		Refer to "OIL PUMP" in chapter 5. (Manual No.: 3P6-28197-E0)
	Middle drive shaft assembly		Refer to "MIDDLE GEAR" in chapter 5. (Manual No.: 3P6-28197-E0)
	Clutch housing		Refer to "CLUTCH" in chapter 5. (Manual No.: 3P6-28197-E0)
1	Timing chain	1	
2	Oil pump drive chain guide	1	
3	Oil pump drive chain	1	
4	Oil pump drive sprocket	1	

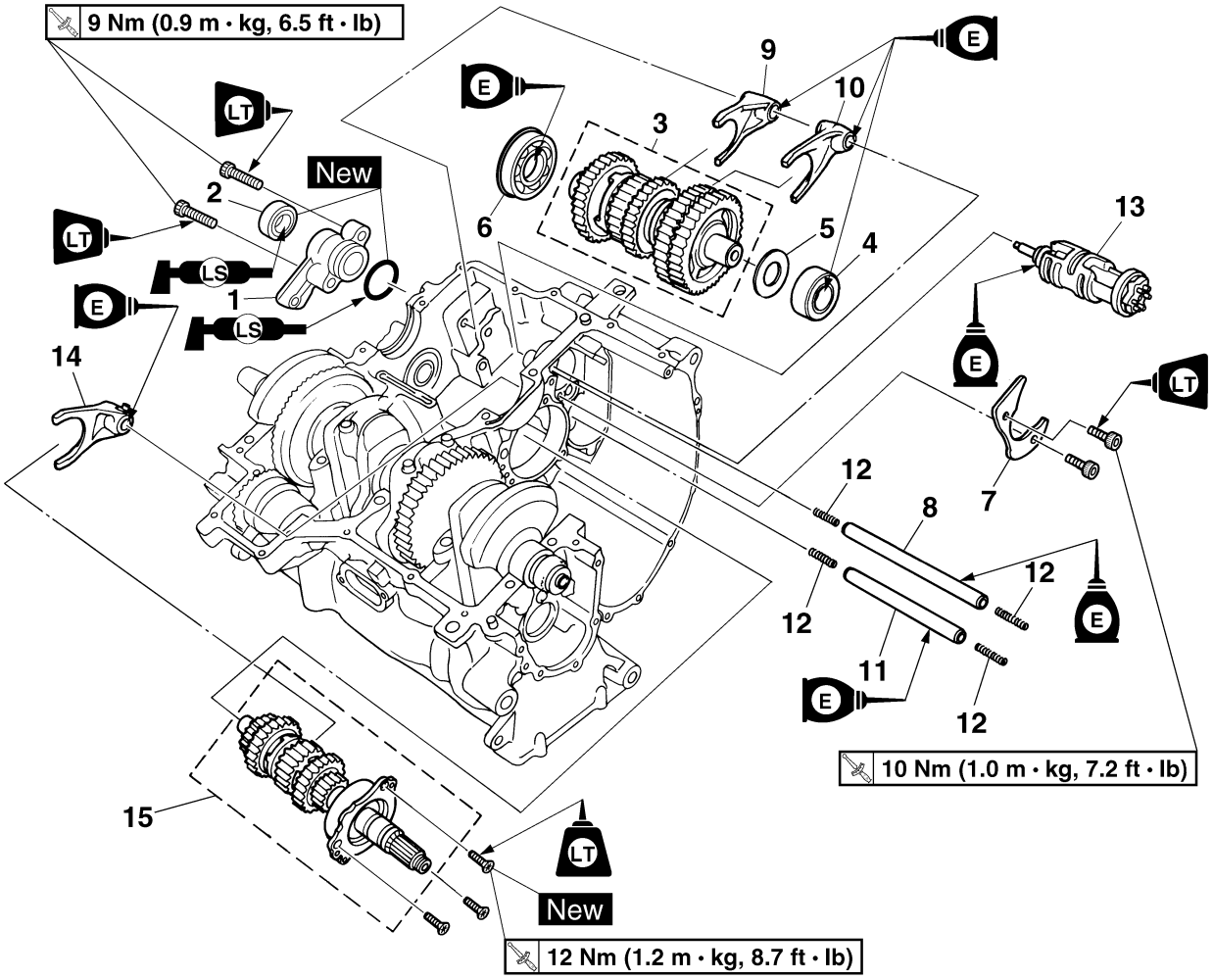
Separating the crankcase



Order	Job/Parts to remove	Q'ty	Remarks
5	Spacer	1	
6	Collar	1	
7	Spring washer	1	
8	Neutral switch	1	
9	YCC-S speed sensor	1	
10	Lower crankcase	1	
11	Dowel pin	3	
			For installation, reverse the removal procedure.

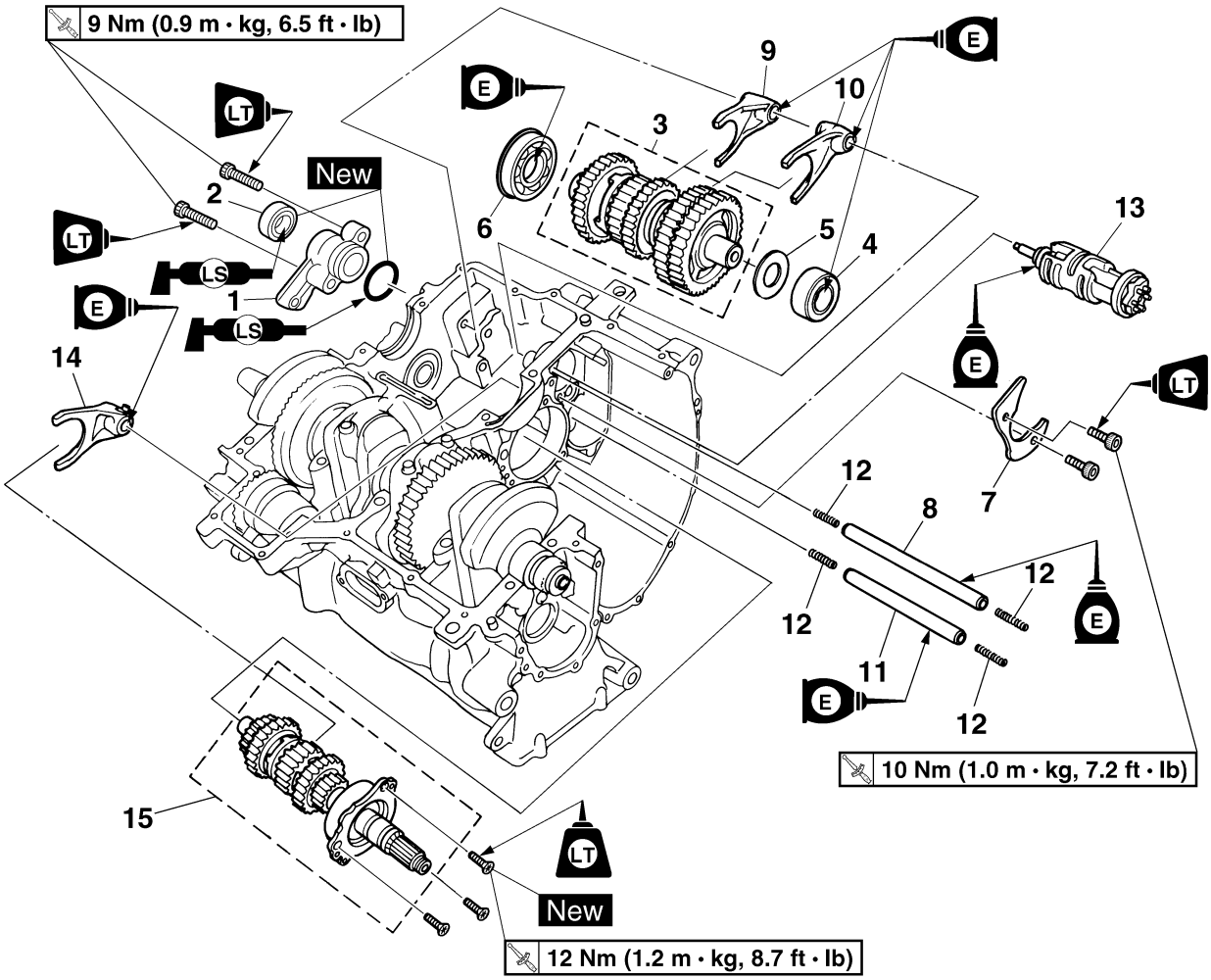
EAS26240
TRANSMISSION

Removing the transmission, shift drum assembly, and shift forks



Order	Job/Parts to remove	Q'ty	Remarks
	Crankcase		Separate. Refer to "CRANKCASE" in chapter 5. (Manual No.: 3P6-28197-E0)
	Stopper lever		Refer to "SHIFT SHAFT" in chapter 5. (Manual No.: 3P6-28197-E0)
1	Gear position sensor bracket	1	
2	Oil seal	1	
3	Drive axle assembly	1	
4	Bearing	1	
5	Washer	1	
6	Bearing	1	
7	Shift drum retainer	1	
8	Long shift fork guide bar	1	
9	Shift fork-L	1	
10	Shift fork-R	1	
11	Short shift fork guide bar	1	
12	Spring	4	

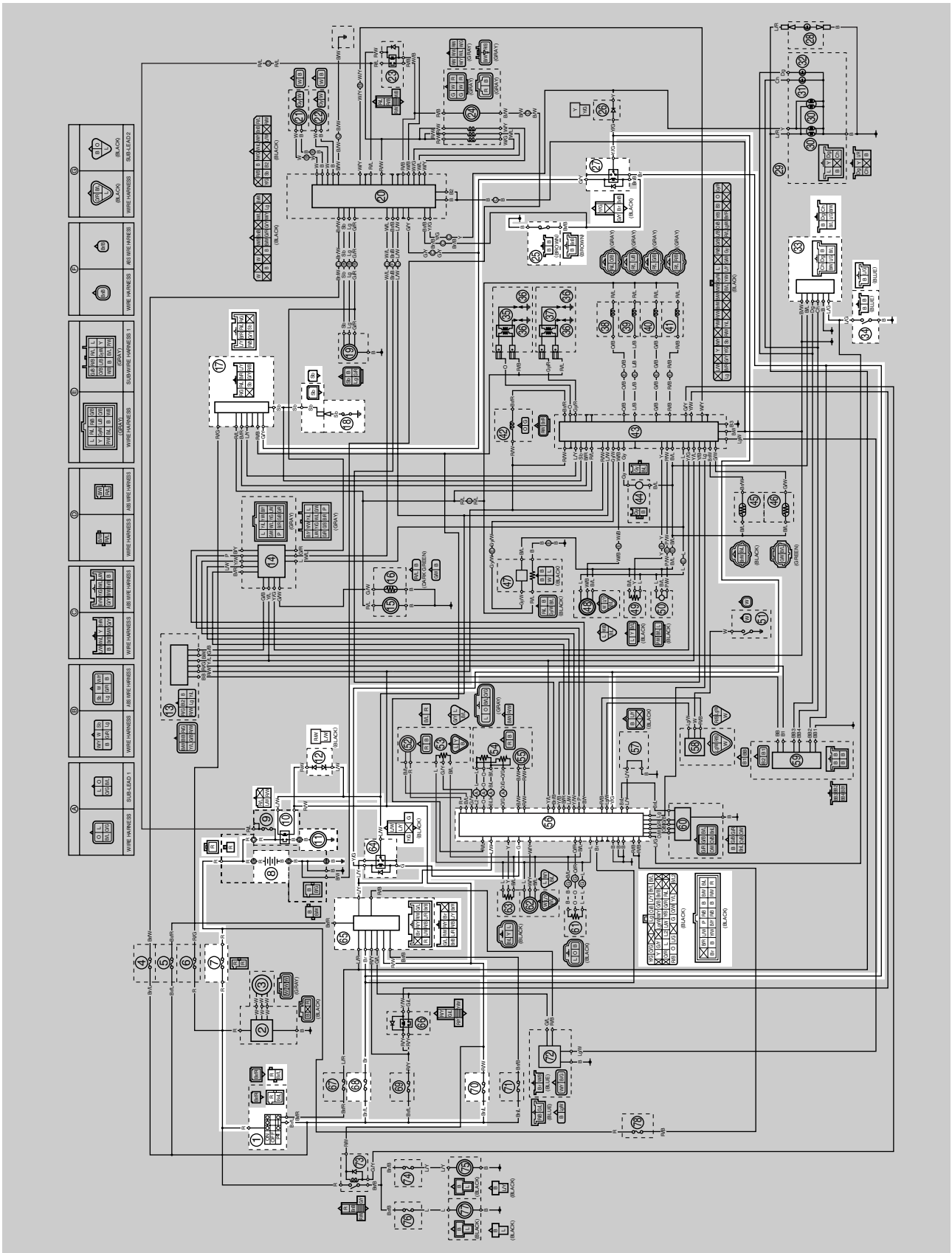
Removing the transmission, shift drum assembly, and shift forks



Order	Job/Parts to remove	Q'ty	Remarks
13	Shift drum assembly	1	
14	Shift fork-C	1	
15	Main axle assembly	1	
			For installation, reverse the removal procedure.

EAS27160
ELECTRIC STARTING SYSTEM

EAS27170
CIRCUIT DIAGRAM (1/2)

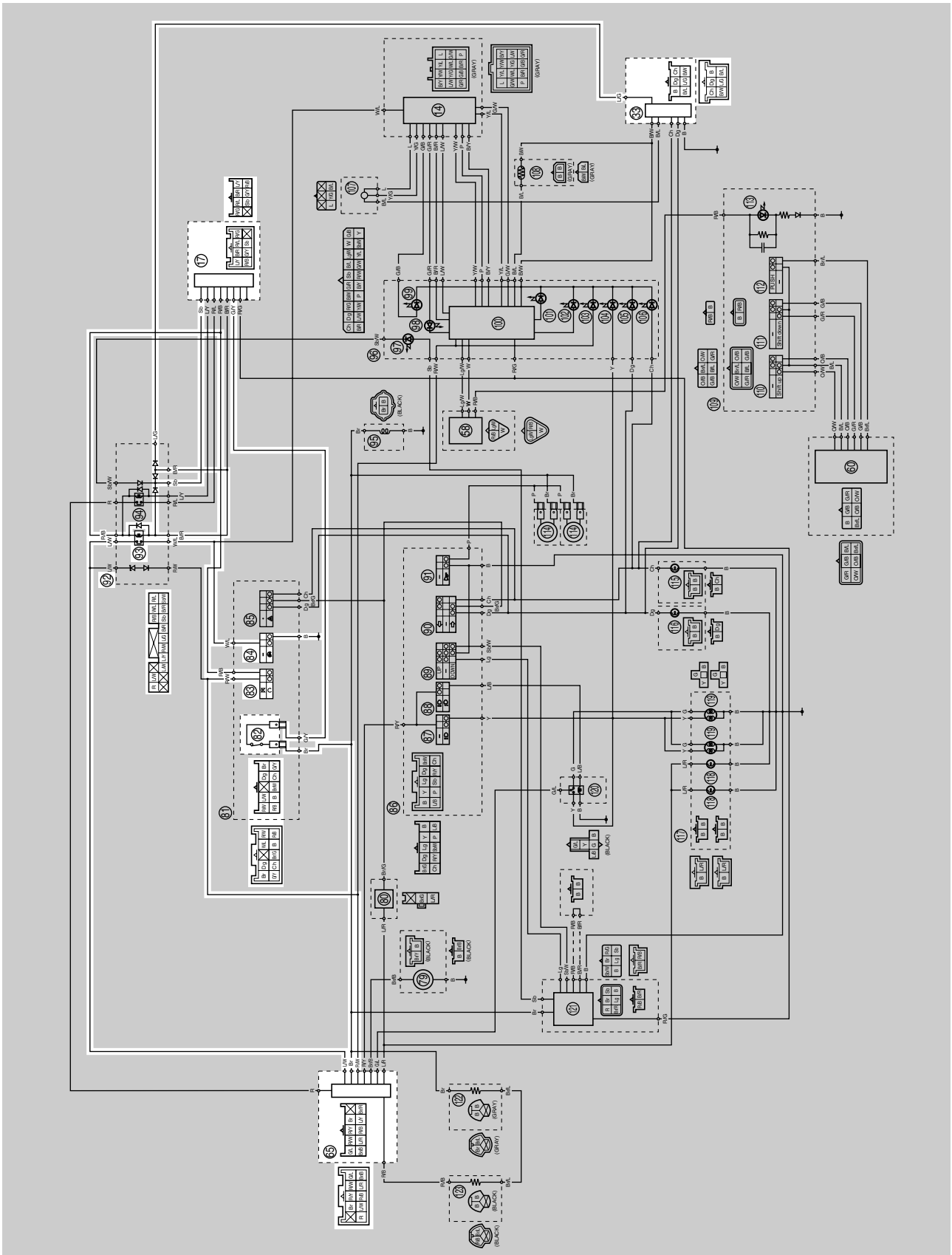


1. Main switch
7. Main fuse
8. Battery
10. Starter relay
11. Starter motor
12. Diode 1
17. Coupler 2 (wire harness–front cowling wire harness)
18. Neutral switch
25. Rear brake light switch
27. Brake light relay
33. Coupler 3 (wire harness–front cowling wire harness)
34. Sidestand switch
56. MCU (motor control unit)
64. YCC-S control relay
65. Coupler 6 (wire harness–front cowling wire harness)
68. Signaling system fuse
70. Ignition fuse

ET3P61003

CIRCUIT DIAGRAM (2/2)

Front cowling wire harness



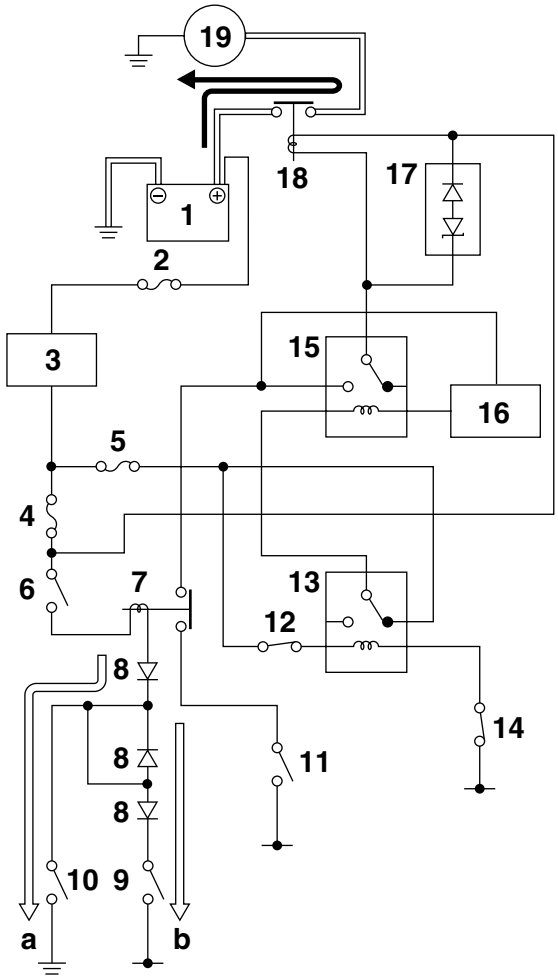
17. Coupler 2 (front cowling wire harness–wire harness)
33. Coupler 3 (front cowling wire harness–wire harness)
65. Coupler 6 (front cowling wire harness–wire harness)
82. Front brake light switch
83. Engine stop switch
84. Start switch
92. Relay unit
93. Starting circuit cut-off relay

EAS27180
STARTING CIRCUIT CUT-OFF SYSTEM OPERATION

If the engine stop switch is set to "○" (the switch circuit is closed), the main switch is turned "ON" (the switch circuit is closed), and the brake lever is squeezed (the front brake light switch circuit is open) or the brake pedal is depressed (the rear brake light switch circuit is open), the starter motor can only operate if at least one of the following conditions is met:

• The transmission is in neutral (the neutral switch is closed).
• The sidestand is up (the sidestand switch circuit is closed).

The starting circuit cut-off relay prevents the starter motor from operating when neither of these conditions has been met. In this instance, the starting circuit cut-off relay stays open so current cannot reach the starter motor. When at least one of the above conditions has been met, the starting circuit cut-off relay is closed and the engine can be started by pushing the start switch "⏀".



a. WHEN THE TRANSMISSION IS IN NEUTRAL
b. WHEN THE SIDESTAND IS UP
1. Battery
2. Main fuse
3. Main switch
4. Ignition fuse
5. Signaling system fuse
6. Engine stop switch
7. Starting circuit cut-off relay
8. Relay unit (diode)
9. Sidestand switch
10. Neutral switch
11. Start switch
12. Front brake light switch
13. Brake light relay
14. Rear brake light switch
15. YCC-S control relay
16. MCU (motor control unit)
17. Diode 1
18. Starter relay
19. Starter motor

EAS27190
TROUBLESHOOTING

The starter motor fails to turn.

NOTE:

• Before troubleshooting, remove the following part(s):
1. Front cowling assembly
2. Fuel tank
3. T-bar
4. Throttle bodies

1. Check the fuses. (Main, signaling system, and ignition) Refer to "CHECKING THE FUSES" in chapter 8. (Manual No.: 3P6-28197-E0)	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 8. (Manual No.: 3P6-28197-E0)	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the starter motor operation. Refer to "CHECKING THE STARTER MOTOR OPERATION" in chapter 8. (Manual No.: 3P6-28197-E0)	OK →	Starter motor is OK. Perform the electric starting system troubleshooting, starting with step 5.
NG ↓		
4. Check the starter motor. Refer to "CHECKING THE STARTER MOTOR" in chapter 5. (Manual No.: 3P6-28197-E0)	NG →	Repair or replace the starter motor.
OK ↓		
5. Check the relay unit (starting circuit cut-off relay). Refer to "CHECKING THE RELAYS" on page 130.	NG →	Replace the relay unit.
OK ↓		
6. Check the relay unit (diode). Refer to "CHECKING THE RELAY UNIT (DIODE)" in chapter 8. (Manual No.: 3P6-28197-E0)	NG →	Replace the relay unit.
OK ↓		

7. Check the starter relay. Refer to “CHECKING THE RELAYS” on page 130.	NG →	Replace the starter relay.
OK ↓		
8. Check the brake light relay. Refer to “CHECKING THE RELAYS” on page 130.	NG →	Replace the brake light relay.
OK ↓		
9. Check the YCC-S control relay. Refer to “CHECKING THE RELAYS” on page 130.	NG →	Replace the YCC-S control relay.
OK ↓		
10. Check the main switch. Refer to “CHECKING THE SWITCHES” on page 127.	NG →	Replace the main switch/immobilizer unit.
OK ↓		
11. Check the engine stop switch. Refer to “CHECKING THE SWITCHES” on page 127.	NG →	Replace the right handlebar switch.
OK ↓		
12. Check the neutral switch. Refer to “CHECKING THE SWITCHES” on page 127.	NG →	Replace the neutral switch.
OK ↓		
13. Check the sidestand switch. Refer to “CHECKING THE SWITCHES” on page 127.	NG →	Replace the sidestand switch.
OK ↓		
14. Check the front brake light switch. Refer to “CHECKING THE SWITCHES” on page 127.	NG →	Replace the front brake light switch.
OK ↓		
15. Check the rear brake light switch. Refer to “CHECKING THE SWITCHES” on page 127.	NG →	Replace the rear brake light switch.
OK ↓		
16. Check the start switch. Refer to “CHECKING THE SWITCHES” on page 127.	NG →	Replace the right handlebar switch.
OK ↓		

17. Check the entire starting system wiring.
Refer to “CIRCUIT DIAGRAM (1/2)” on page 71 and “CIRCUIT DIAGRAM (2/2)” on page 73.

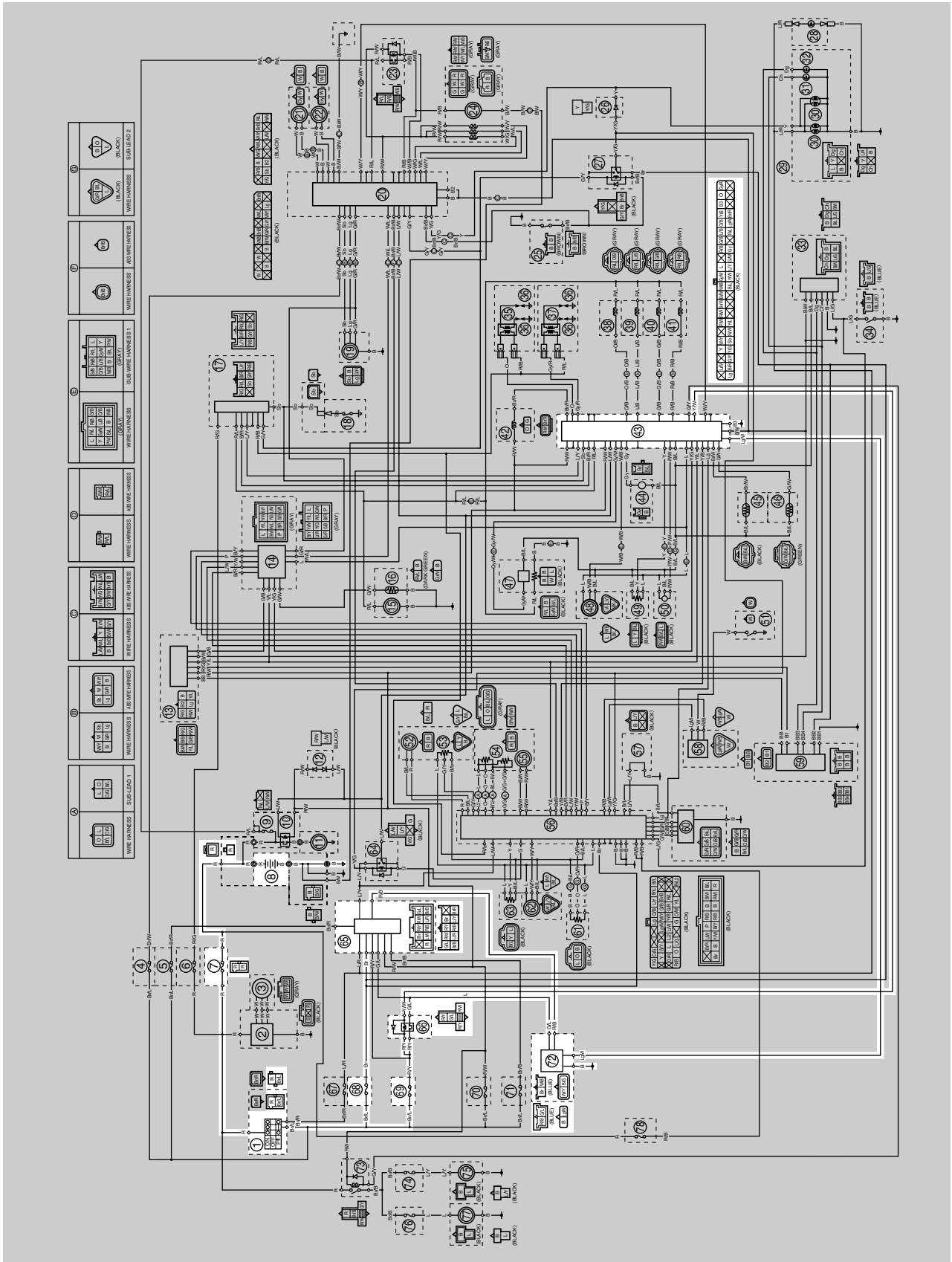
NG → Properly connect or repair the starting system wiring.

OK ↓

Replace the MCU or diode 1.

ET2D21014
GRIP WARMER SYSTEM

ET2D21015
CIRCUIT DIAGRAM (1/2)

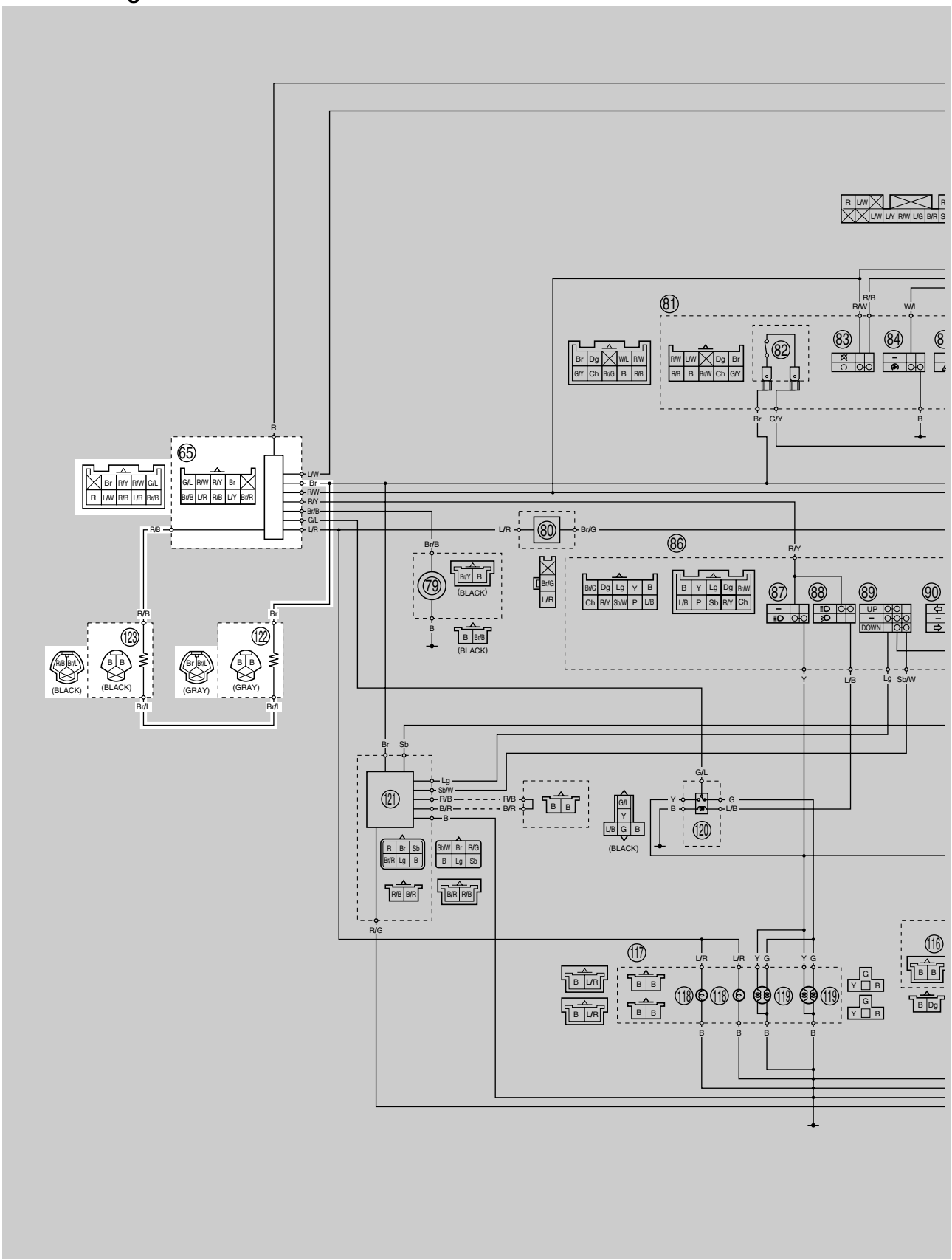


1. Main switch
7. Main fuse
8. Battery
43. ECU (engine control unit)
65. Coupler 6 (wire harness–front cowling wire harness)
66. Headlight (on/off)/grip warmer relay
68. Signaling system fuse
69. Headlight fuse
72. Grip warmer control unit

ET2D21016

CIRCUIT DIAGRAM (2/2)

Front cowling wire harness



65.Coupler 6 (front cowling wire harness–wire harness)
122.Right grip warmer
123.Left grip warmer

ET2D21017

TROUBLESHOOTING

- The grip warmers do not become warm at all.
- The grip warmers are abnormally hot while the engine is idling.
- The grip warmers do not become very warm while the vehicle is traveling.

NOTE:

- Before troubleshooting, remove the following part(s):

1. Front cowling assembly

The grip warmers do not become warm at all.

1. Check the fuses. (Main, signaling system, and headlight) Refer to "CHECKING THE FUSES" in chapter 8. (Manual No.: 3P6-28197-E0)	NG →	Replace the fuse(s).
OK ↓		
2. Check that the engine is started.	NG →	Start the engine.
OK ↓		
3. Check that the headlight is on.	NG →	Replace the headlight (on/off)/grip warmer relay.
OK ↓		
4. Check the grip warmers. Refer to "CHECKING THE GRIP WARMERS" on page 133.	NG →	Replace the grip warmer(s).
OK ↓		
5. Check the entire grip warmer system wiring. Refer to "CIRCUIT DIAGRAM (1/2)" on page 79 and "CIRCUIT DIAGRAM (2/2)" on page 81.	NG →	Properly connect or repair the grip warmer system wiring.
OK ↓		
Replace the grip warmer control unit.		

The grip warmers are abnormally hot while the engine is idling.

1. Check that the grip warmer adjusting knob is set to the "LO" position.	NG →	Adjust the grip warmer temperature using the grip warmer adjusting knob.
OK ↓		

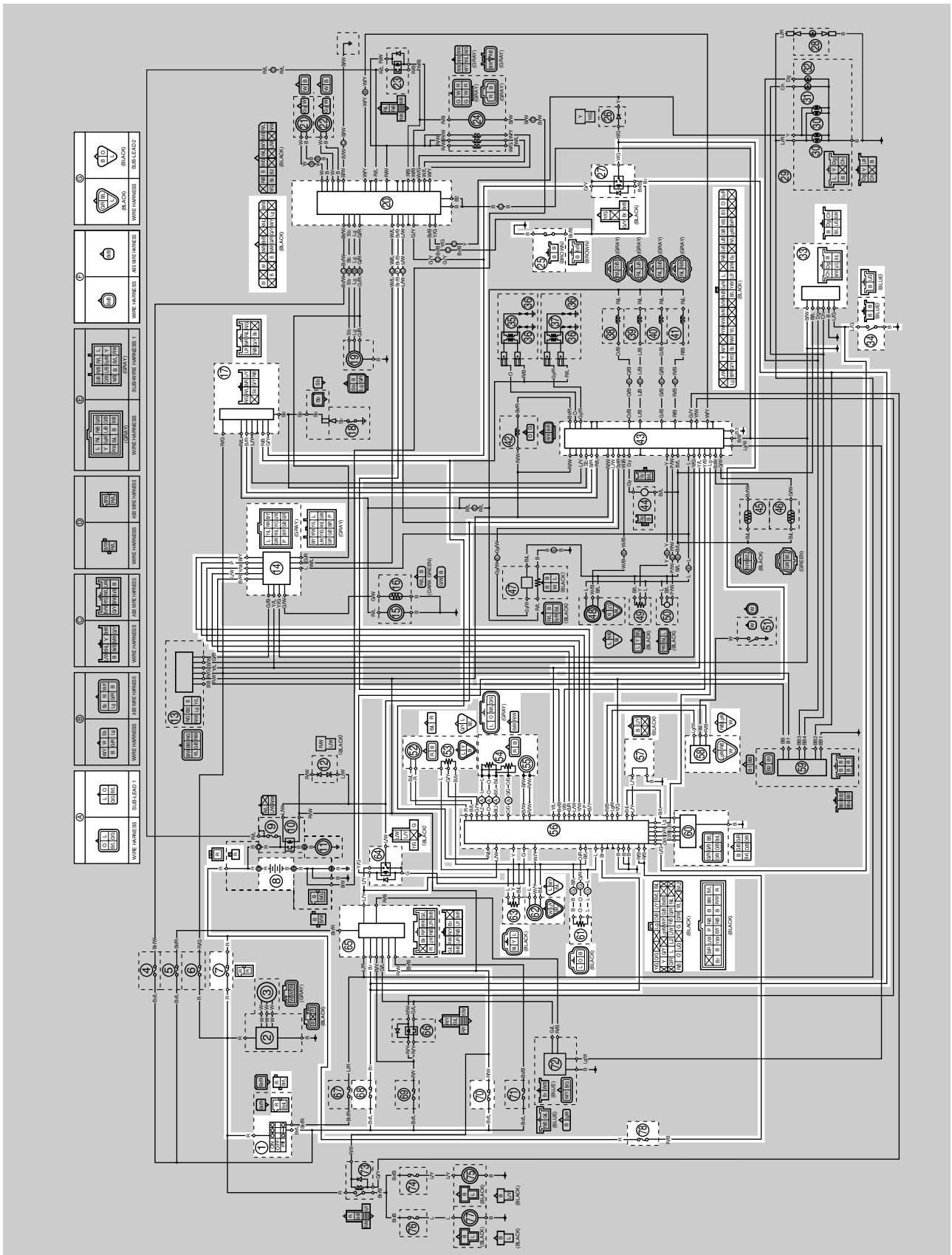
2. Disconnect the grip warmer control unit coupler (white/yellow and black/green) and check that the temperature does not drop while the engine is running.	NG →	Replace the ECU.
OK ↓		
Replace the grip warmer control unit.		

The grip warmers do not become very warm while the vehicle is traveling.

1. Disconnect the ECU coupler and grip warmer control unit coupler (black and light green/white) and check for continuity between the light green/white terminal of the ECU coupler and the light green/white terminal of the grip warmer control unit coupler.	NG →	The wiring system from ECU coupler to the grip warmer control unit coupler (black and light green/white) is faulty and must be repaired.
OK ↓		
2. Check that the grip warmer adjusting knob is set to the “HI” position.	NG →	Adjust the grip warmer temperature using the grip warmer adjusting knob.
OK ↓		
3. Execute the diagnostic mode (Diagnostic code No. 57). Refer to “Actuator operation table (Diagnostic code No.57)” in chapter 8. (Manual No.: 3P6-28197-E0)	NG →	Replace the ECU.
OK ↓		
Replace the grip warmer control unit.		

ET2D21018
YCC-S (Yamaha Chip Controlled-Shift) SYSTEM

ET2D21019
CIRCUIT DIAGRAM (1/2)

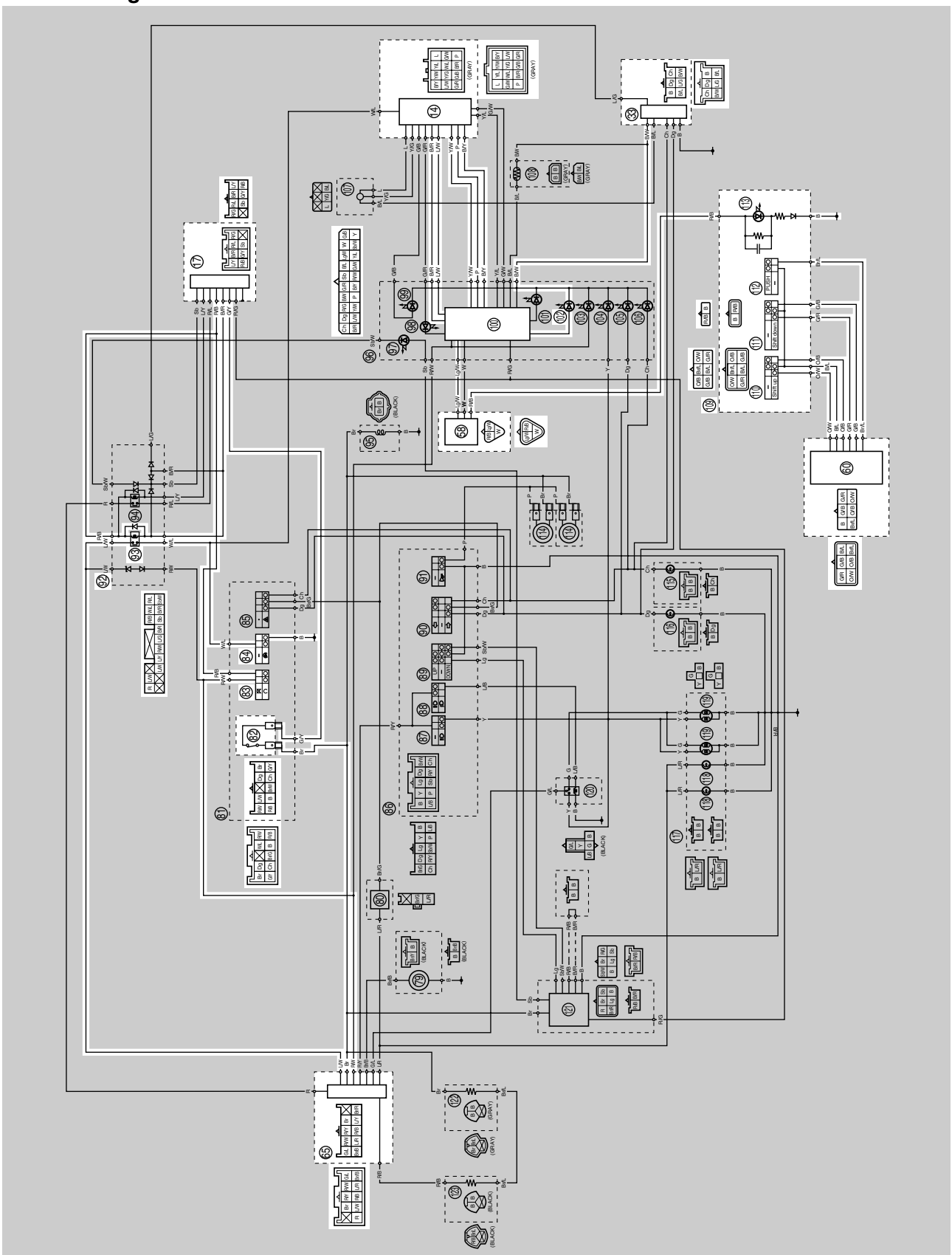


1. Main switch
7. Main fuse
8. Battery
14. Coupler 1 (wire harness–front cowling wire harness)
17. Coupler 2 (wire harness–front cowling wire harness)
20. ABS ECU (electronic control unit)
25. Rear brake light switch
27. Brake light relay
33. Coupler 3 (wire harness–front cowling wire harness)
34. Sidestand switch
43. ECU (engine control unit)
52. Shift actuator motor
53. Shift actuator sensor
54. Clutch actuator sensor
55. Clutch actuator motor
56. MCU (motor control unit)
57. YCC-S test coupler
58. Coupler 4 (wire harness–front cowling wire harness)
60. Coupler 5 (wire harness–front cowling wire harness)
61. Foot shift switch
62. YCC-S speed sensor
63. Gear position sensor
64. YCC-S control relay
65. Coupler 6 (wire harness–front cowling wire harness)
68. Signaling system fuse
70. Ignition fuse
78. YCC-S motor control fuse

ET2D21020

CIRCUIT DIAGRAM (2/2)

Front cowling wire harness



14.Coupler 1 (front cowling wire harness–wire harness)
17.Coupler 2 (front cowling wire harness–wire harness)
33.Coupler 3 (front cowling wire harness–wire harness)
58.Coupler 4 (front cowling wire harness–wire harness)
60.Coupler 5 (front cowling wire harness–wire harness)
65.Coupler 6 (front cowling wire harness–wire harness)
82.Front brake light switch
83.Engine stop switch
84.Start switch
92.Relay unit
93.Starting circuit cut-off relay
100.Multi-function meter
102.Engine trouble warning light
109.Hand shift switch
110.Hand shift lever switch (shift up)
111.Hand shift lever switch (shift down)
112.Hand shift select button
113.Hand shift select indicator light

ET2D21035

TROUBLESHOOTING

- The hand shift select indicator light fails to come on.
- The transmission gear display on the multi-function meter fails to indicate the selected gear.

NOTE:

- Before troubleshooting, remove the following part(s):

1. Front cowling assembly

1. Check the fuses. (Main, ignition and signaling system) Refer to "CHECKING THE FUSES" in chapter 8. (Manual No.: 3P6-28197-E0).	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 8. (Manual No.: 3P6-28197-E0)	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the main switch. Refer to "CHECKING THE SWITCHES" in chapter 8. (Manual No.: 3P6-28197-E0)	NG →	Replace the main switch/immobilizer unit.
OK ↓		
4. Check the entire YCC-S system wiring. Refer to "CIRCUIT DIAGRAM (1/2)" on page 85 and "CIRCUIT DIAGRAM (2/2)" on page 87.	NG →	Properly connect or repair the YCC-S system wiring.
OK ↓		
Check the condition of each of the YCC-S system circuits. Refer to "Checking the YCC-S system".		

Checking the YCC-S system

The hand shift select indicator light fails to come on.

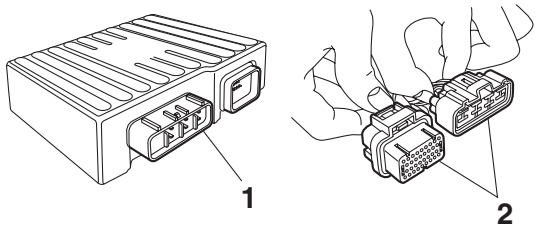
1. Check the hand shift select button. Refer to "CHECKING THE SWITCHES" on page 127.	NG →	Replace the hand shift switch.
OK ↓		
Replace the MCU (motor control unit).		

The transmission gear display on the multi-function meter fails to indicate the selected gear.

1. Check the gear position sensor. Refer to "CHECKING THE GEAR POSITION SENSOR" on page 132 and "ADJUSTING THE GEAR POSITION SENSOR" on page 50.	NG →	Replace the gear position sensor.
OK ↓		
2. Check the gear position setting. Refer to "Diagnostic code table (Diagnostic code No. Sh_ _65)".	NG →	Replace the MCU (motor control unit).
OK ↓		
Replace the meter assembly.		

ET2D21021
MAINTENANCE OF THE MCU

Checking the MCU
1. Check:
   - Terminals "1" of the MCU
     Cracks/damages → Replace the MCU.
   - Terminals "2" of the MCU couplers
     Connection defective, contaminated, come-off → Correct or clean.



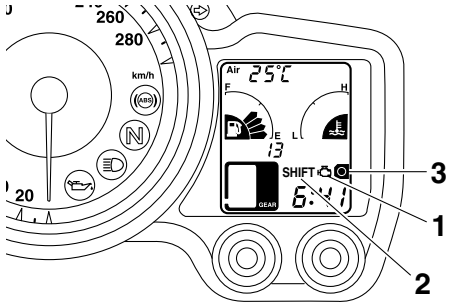
NOTE:

If the MCU couplers are clogged with mud or dirt, clean with compressed air.

ET2D21028
MCU (motor control unit) SELF-DIAGNOSTIC FUNCTION
The MCU (motor control unit) is equipped with a self-diagnostic function in order to ensure that the YCC-S system is operating normally. If this function detects a malfunction in the YCC-S system, it immediately operates the system under substitute characteristics and lights the YCC-S indicator and warning light to alert the rider that a malfunction has occurred in the system. Once a malfunction has been detected, a fault code is stored in the memory of the MCU (motor control unit). After the engine has been stopped, the lowest fault code number appears on the odometer/tripmeter/fuel reserve tripmeter LCD. Once a fault code has been displayed, it remains stored in the memory of the MCU (motor control unit) until it is deleted.

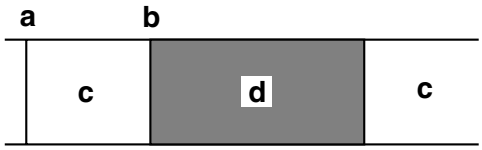
NOTE:

If the engine trouble indicator "1", YCC-S indicator "2", and engine trouble warning light "3" all come on, malfunctions have been detected in both the fuel injection system and the YCC-S system. If this occurs, the fault codes for the fuel injection system take priority over those for the YCC-S system, so only the fuel injection system fault codes will appear in the multi-function display. The fault codes for the YCC-S system will be displayed in the multi-function display after all of the fault codes for the fuel injection system have been deleted using the reinstatement method.



Checking the YCC-S indicator and warning light

The YCC-S indicator and warning light come on for 1.4 seconds after the main switch has been turned to “ON” and they come on while the start switch is being pushed. If the YCC-S indicator and warning light does not come on under these conditions, the warning light (LED) may be defective.



a. Main switch “OFF”
b. Main switch “ON”
c. YCC-S indicator and warning light off
d. YCC-S indicator and warning light on for 1.4 seconds

ET2D21029

SELF-DIAGNOSTIC FUNCTION TABLE

If the MCU (motor control unit) detects an abnormal signal from a sensor while the vehicle is being driven, the MCU (motor control unit) lights the YCC-S indicator and warning light and provides the YCC-S system with alternate operating instructions that are appropriate for the type of malfunction.
When an abnormal signal is received from a sensor, the MCU (motor control unit) processes the specified values that are programmed for each sensor in order to provide the YCC-S system with alternate operating instructions that enable the system to continue operating or stop operating, depending on the conditions.

Self-Diagnostic Function table

Fault code No.	Symptom	Malfunction detecting condition	Able/unable to start	Able/unable to change the shift
Sh_ _11	Too low or too high voltage is supplied to the YCC-S system.	Voltage is below 8 V or above 16 V.	Unable	Unable
Sh_ _12	Malfunction of power cut-off function in MCU (motor control unit)	Faulty power source relay cut-off function is detected during the YCC-S system check when main switch is turned to “ON”.	Unable	Unable

Fault code No.	Symptom	Malfunction detecting condition	Able/unable to start	Able/unable to change the shift
Sh_ _13*	Overcurrent to clutch actuator motor	Detected current in shift actuator motor is too high.	Unable	Unable
Sh_ _14*	Overcurrent to clutch actuator motor	Detected current in clutch actuator motor is too high.	Unable	Unable
Sh_ _15*	Abnormal current is detected in clutch or shift actuator motor drive circuit.	Detected current in clutch actuator motor or shift actuator motor is different from MCU (motor control unit) signals.	Unable	Unable
Sh_ _16*	Malfunction of clutch or shift actuator motor drive circuit in MCU (motor control unit)	Drive circuit in MCU (motor control unit) is not working properly.	Unable	Unable
Sh_ _17*	Detected clutch actuator position is incorrect.	Detected clutch actuator position is different from MCU (motor control unit) signals.	Unable	Unable
Sh_ _18*	Detected shift actuator position is incorrect.	Detected shift actuator position is different from MCU (motor control unit) signals.	Unable	Unable
Sh_ _19*	Output signal of shift actuator sensor is abnormal.	Output signal of shift actuator sensor is below 0.5 V or above 4.5 V.	Unable	Unable
Sh_ _21	Output signal of gear position sensor is abnormal.	Output signal of gear position sensor is below 0.3 V or above 4.7 V.	Unable	Unable
Sh_ _22	Output signal of foot shift switch is abnormal.	Output signal of foot shift switch is below 0.9 V or above 4.1 V.	Able	Able
Sh_ _23	No input signal from sidestand switch.	No signal is received from sidestand switch while vehicle is driven.	Able	Able
Sh_ _25	Error has occurred in actuator drive circuit in MCU (motor control unit) when main switch is turned to “ON”.	Drive circuit error is detected during YCC-S system check when main switch is turned to “ON”.	Unable	Unable
Sh_ _26*	Abnormal clutch movement is detected during check when main switch is turned to “ON”.	Detected clutch motor current when main switch is turned to “ON” is too high.	Unable	Unable
Sh_ _27*	Diagnostic mode is activated at engine start-up.	Diagnostic mode signal is received when vehicle is started (YCC-S test coupler is connected).	Able	Able

Fault code No.	Symptom	Malfunction detecting condition	Able/unable to start	Able/unable to change the shift
Sh_ _31	Engine speed signal is abnormal.	Engine speed signal from ECU does not match multi-function meter engine speed.	Unable	Unable
Sh_ _32*	YCC-S speed sensor signal is abnormal.	YCC-S speed sensor signal does not match multi-function meter vehicle speed.	Unable	Unable
Sh_ _34	TPS (throttle position sensor) signal is abnormal.	TPS (throttle position sensor) signal voltage is too low or too high	Unable	Able
Sh_ _35	Start switch signal is abnormal.	Signal is received from start switch while vehicle is driven.	Able	Able
Sh_ _36	Output signal of clutch actuator sensor is abnormal.	Signals received from clutch actuator sensor 1 and clutch actuator sensor 2 are different or signal voltage is too low or too high.	Unable	Unable
Sh_ _37*	Power supply to clutch or shift actuator motor is abnormal.	Battery voltage is good, but motor terminal voltage is too low.	Unable	Unable
Sh_ _38	Malfunction of hand shift lever switch (shift up or shift down)	Both the on and off circuits of the hand shift lever switch (shift up or shift down) are closed at the same time.	Able	Able
Sh_ _39	Ignition timing retard output signal is abnormal.	Detected ignition retard signal from MCU (motor control unit) to ECU is abnormal.	Able	Able
Sh_ _41	Coolant temperature sensor signal is abnormal.	Coolant temperature sensor signal is too high or too low	Able	Able
Sh_ _42	Communication between ECU and multi-function meter is abnormal.	Error detected in communication signal between ECU and multi-function meter.	Unable	Able
Sh_ _43	Communication between MCU (motor control unit) and ABS ECU is abnormal.	ABS ECU continuously sends signals to activate ABS.	Able	Able
Sh_ _44*	Clutch actuator sensor signal is abnormal.	Clutch is completely engaged, but signal sent from clutch actuator sensor indicates clutch is disengaged.	Unable	Unable
Sh_ _45*	Shift operation and gear position do not match.	Gear position has not changed after shifting by shift actuator (misshift occurs repeatedly).	Unable	Unable
Sh_ _46*	Engine speed and gear position sensor signal do not match while vehicle is driven.	Gear position calculated by MCU (motor control unit) is different from foot shift switch signal.	Unable	Unable

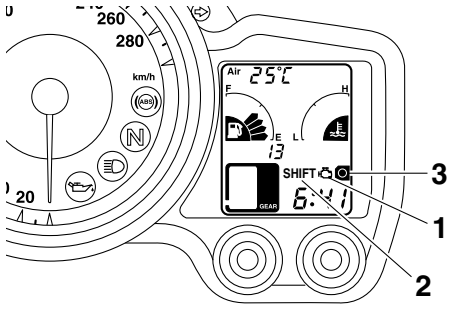
Fault code No.	Symptom	Malfunction detecting condition	Able/unable to start	Able/unable to change the shift
Sh_ _47	Braking signal is not detected while braking.	No braking signal is received by MCU (motor control unit) when vehicle is braking.	Able	Able
Sh_ _48*	Improper engine idling speed adjustment.	Engine speed at engine start-up exceeds the set limit.	Unable	Unable
Sh_ _49*	Engine idling speed is too high when vehicle is started.	Engine speed when vehicle is starting off exceeds the set limit.	Able	Able
Sh_ _51	Shift actuator sensor signal is abnormal.	Shift rod is not in neutral position when shift actuator is not operating.	Unable	Unable
Sh_ _52*	Main switch signal is abnormal.	Main switch “OFF” signal is received even though engine is running.	Able	Able

*If the main switch is turned to “OFF”, the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to “ON”. Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history. Refer to “Diagnostic code table (Diagnostic code No. Sh_ _61)”.

ET2D21030
TROUBLESHOOTING METHOD

NOTE:

If the engine trouble indicator “1”, YCC-S indicator “2”, and engine trouble warning light “3” all come on, malfunctions have been detected in both the fuel injection system and the YCC-S system. If this occurs, the fault codes for the fuel injection system take priority over those for the YCC-S system, so only the fuel injection system fault codes will appear in the multi-function display. The fault codes for the YCC-S system will be displayed in the multi-function display after all of the fault codes for the fuel injection system have been deleted using the reinstatement method.



The YCC-S indicator and warning light come on.

1. Check:
   • Fault code number

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a. Check the fault code number displayed on the meter and diagnostic code Sh_ _61. Refer to “Diagnostic code table (Diagnostic code No. Sh_ _61)”.
b. Identify the faulty system with the fault code. Refer to “Self-Diagnostic Function table”.

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2. Check and repair the probable cause of the malfunction.
   Refer to “TROUBLESHOOTING DETAILS” on page 99.
3. Perform the reinstatement action for the YCC-system.
   Refer to “Reinstatement method” in the appropriate table in “TROUBLESHOOTING DETAILS”.
4. Turn the main switch to “OFF” and back to “ON”, then check that no fault code number is displayed.

NOTE:

If fault codes are displayed, repeat steps (1) to (4) until no fault code number is displayed.

5. Erase the malfunction history in the diagnostic mode. Refer to “Diagnostic code table (Diagnostic code No. Sh_ _62)”.

NOTE:

Turning the main switch to “OFF” will not erase the malfunction history.

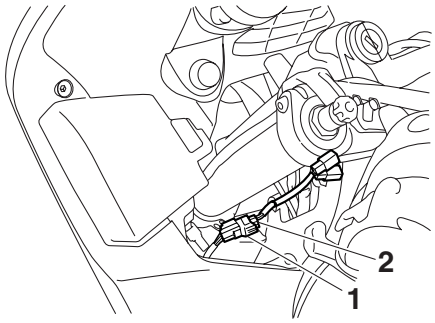
ET2D21031

DIAGNOSTIC MODE

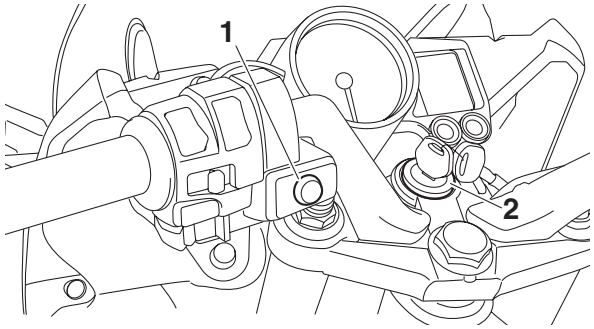
Setting the diagnostic mode

1. Turn the main switch to “OFF”.
2. Remove the front cowling left inner panel 1 to access the YCC-S test coupler “1”.
3. Remove the protective cap from the YCC-S test coupler.
4. Connect the test coupler adapter “2” to the YCC-S test coupler.

	**Test coupler adapter** **90890-03149**



5. Push and hold the hand shift select button “1”, turn the main switch “2” to “ON”, and continue to push the button for 8 seconds or more.



NOTE:

- All displays on the meter disappear except the odometer/tripmeter/fuel reserve tripmeter displays.
- “Sh_ _61” appears on the odometer/tripmeter/fuel reserve tripmeter LCD.

6. Select the diagnostic code number corresponding to the fault code number by pushing the hand shift select button and operating the brake lever (or brake pedal) simultaneously.
7. Turn the main switch to “OFF” to cancel the diagnostic mode.

Diagnostic code table

Diagnostic code No.	Item	Data displayed on meter (reference value)	Checking method
Sh_ _61	Malfunction history code display		
	• No history	Sh_ _61	—
	• History exists	Fault code numbers Sh_ _11–Sh_ _52 • (First displays Sh_ _61 for 6 seconds, and then displays each fault code number that is stored in the malfunction history. If more than one code number is detected, the display alternates every two seconds to show all the detected code numbers. When all of the code numbers have been shown, the display repeats the same process.)	If fault codes are stored in the malfunction history, the hand shift select indicator light will come on.
Sh_ _62	Malfunction history code erasure		
	• No history	Sh_ _62	—
	• History exists	01-09 • First displays Sh_ _62 for 6 seconds, and then displays the total number of malfunctions, including the current malfunction, that have occurred since the history was last erased. • If there are nine or more of fault codes stored in the malfunction history, “09” is displayed.	• If fault codes are stored in the malfunction history, the hand shift select indicator light will come on. To erase the history, set the engine stop switch from “㊋” to “◯”. After the history is erased, the hand shift select indicator light will go off.

Diagnostic code No.	Item	Data displayed on meter (reference value)	Checking method
Sh_ _63	Clutch actuation operation **NOTE:** The checking method for the diagnostic code (Sh_ _63) cannot be performed when any of the following fault codes are detected. Sh_ _11, Sh_ _12, Sh_ _13, Sh_ _15, Sh_ 16, Sh_ _17, Sh_ _25, Sh_ _26, Sh_ _36, Sh_ _37, and Sh_ _44	Sh_ _63	The clutch actuator can be operated in this mode. 1. The hand shift select indicator light comes on when the clutch is engaged. 2. Set the engine stop switch to "○" and push the hand shift select button simultaneously. The clutch will disengage and the hand shift select indicator light will go off. 3. Set the engine stop switch to "○" and push the hand shift select button simultaneously. The clutch will engage and the hand shift select indicator light will come on. 4. If the clutch actuator sensor is malfunctioning, the hand shift select indicator light will flash.
Sh_ _64	Shift actuator operation **NOTE:** The checking method for the diagnostic code (Sh_ _64) cannot be performed when any of the following fault codes are detected. Sh_ _11, Sh_ _12, Sh_ _14, Sh_ _15, Sh_ 16, Sh_ _18, Sh_ _19, Sh_ _25, Sh_ _37, and Sh_ _51	Sh_ _64	The shift actuator can be operated in this mode. 1. Make sure that the transmission is in neutral. 2. Set the engine stop switch to "○" and operate the hand shift lever switch (shift up) simultaneously. The MCU (motor control unit) operates the shift actuator once. The shift actuator is operated once each time two switches are operated. 3. The MCU (motor control unit) detects the signal from the shift actuator sensor. If the signal received after upshifting is correct, the hand shift select indicator light will come on. If the signal received after upshifting in incorrect, the hand shift select indicator light will flash. 4. Set the engine stop switch to "○" and operate the hand shift lever switch (shift down) simultaneously. The MCU (motor control unit) operates the shift actuator once. The shift actuator is operated once each time two switches are operated. 5. The MCU (motor control unit) detects the signal from the shift actuator sensor. If the signal received after downshifting is correct, the hand shift select indicator light will come on. If the signal received after downshifting is incorrect, the hand shift select indicator light will flash.

Diagnostic code No.	Item	Data displayed on meter (reference value)	Checking method
Sh_ _65	Gear position setting	Sh_ _65	The gear position can be set in this mode. 1. Make sure that the transmission is in neutral. 2. Push the start switch. If the gear position sensor output signal is correct for the neutral position, the hand shift select indicator light will come on for 0.5 second. 3. Shift the transmission into 1st gear using the hand shift lever switch (shift up), and then rotate the rear wheel at least 1/2 turn by hand to ensure that the dog completely engages the 1st gear. 4. Push the start switch. If the gear position sensor output signal is correct for the 1st gear position, the hand shift select indicator light will come on for 0.5 second. 5. Repeat steps 3 and 4 for each gear up to the 5th gear and make sure that the hand shift select indicator light comes on for 0.5 second each time the start switch is pushed. 6. Shift the transmission into 4th gear using the hand shift lever switch (shift down), and then rotate the rear wheel at least 1/2 turn by hand to ensure that the dog completely engages the 4th gear. 7. Push the start switch. If the gear position sensor output signal is correct for the 4th gear position, the hand shift select indicator light will come on for 0.5 second. 8. Repeat steps 6 and 7 for each gear down to the 1st gear and make sure that the hand shift select indicator light comes on for 0.5 second each time the start switch is pushed. 9. Shift the transmission into neutral. 10. After the above procedure is completed, all of the gear position data is temporarily stored and ready to be written on EEPROM. 11. Operate the brake lever or brake pedal to write the data on EEPROM. If all of the data has been written successfully on EEPROM, the hand shift select indicator light will come on for 2 seconds. If the data is not written successfully, the hand shift select indicator light will flash.

Diagnostic code No.	Item	Data displayed on meter (reference value)	Checking method
Sh_ _66	Adjust the clutch engagement position	Sh_ _66	This mode adjust the clutch engagement point manually. The clutch engagement point while the vehicle is starting off can be adjusted manually to 21 engine speed settings in this mode. The initial setting of the clutch engagement point varies according to the vehicle. • Hand shift lever switch operation (shift up) To increase the clutch engagement point by approximately 100–150 r/min, operate the hand shift lever switch (shift up) four times. After the switch is operated, the hand shift select indicator light will come on for 0.6 second. • Hand shift lever switch operation (shift down) To decrease the clutch engagement point by approximately 100–150 r/min, operate the hand shift lever switch (shift down) four times. After the switch is operated, the hand shift select indicator light will come on for 0.3 second. To write the changed setting on EEPROM, push the hand shift select button for 0.3 second. After the button is pushed, the hand shift select indicator light will come on for 2 seconds.

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TROUBLESHOOTING DETAILS

This section describes the measures per fault code number displayed on the meter. Select diagnostic code No. Sh_ _61, and then confirm the fault code numbers in the malfunction history. Check and service the items or components that are the probable cause of the malfunction following the order given. After the check and service of the malfunctioning part has been completed, reset the meter display according to the reinstatement method. Then select diagnostic code No. Sh_ _62 in the diagnostic mode to erase the malfunction history.

Fault code No.:

Code number displayed on the meter when the engine failed to work normally. Refer to “Self-Diagnostic Function table”.

Fault code No.	Sh_ _11	Symptom	Too low or too high voltage is supplied to the YCC-S system.

Order	Item/components and probable cause	Check or maintenance job	Reinstatement method
1	Connections • Wire harness MCU (motor control unit) coupler	• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Faulty battery	• Replace or charge the battery. Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 8. (Manual No.: 3P6-28197-E0)	
3	Malfunction in rectifier/regulator	• Replace if detective. Refer to “CHARGING SYSTEM” in chapter 8. (Manual No.: 3P6-28197-E0)	
4	Open or short circuit in wire harness.	• Repair or replace if there is an open or short circuit. • Between battery and main switch coupler. (red–red) • Between main switch coupler and signaling system fuse. (brown/blue–brown/blue) • Between signaling system fuse and MCU (motor control unit) coupler. (brown–brown)	

Fault code No.	Sh_ _12	Symptom	Malfunction of power cut-off function in the MCU (motor control unit).

Order	Item/components and probable cause	Check or maintenance job	Reinstatement method
1	Malfunction in MCU (motor control unit).	Replace the MCU (motor control unit).	Repairing the cause of the malfunction.

Fault code No.	Sh_ _13	Symptom	Over current to clutch actuator motor.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Clutch actuator motor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to "OFF". See NOTE.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between clutch actuator motor coupler and MCU (motor control unit) coupler. (black/white–black/white) (red/white–red/white) • Between battery and YCC-S fuse terminal. (red–red) • Between YCC-S fuse and MCU (motor control unit). (red/black–red/black)	
3	YCC-S fuse		• Replace if defective.	
4	Stuck clutch actuator motor.		• Replace the clutch actuator.	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _14	Symptom	Over current to shift actuator motor.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	• Connections • Wire harness MCU (motor control unit) coupler • Shift actuator motor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to "OFF". See NOTE.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between shift actuator motor coupler and MCU (motor control unit) coupler. (black/blue–black/blue) (red–red) • Between battery and YCC-S fuse terminal. (red–red) • Between YCC-S fuse and MCU (motor control unit). (red/black–red/black)	
3	YCC-S fuse		• Replace if defective.	
4	Stuck shift actuator motor.		• Replace the shift actuator.	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _15	Symptom	Abnormal current is detected in clutch or shift actuator motor drive circuit.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Clutch actuator motor coupler • Shift actuator motor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to "OFF". See NOTE.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between clutch actuator motor coupler and MCU (motor control unit) coupler. (black/white–black/white) (red/white–red/white) • Between shift actuator motor coupler and MCU (motor control unit) coupler. (black/blue–black/blue) (red–red) • Between battery and YCC-S fuse terminal. (red–red) • Between YCC-S fuse and MCU (motor control unit). (red/black–red/black)	
3	YCC-S fuse		• Replace if defective.	
4	Defective clutch or shift actuator motor drive circuit.		• Replace the clutch actuator or shift actuator.	
5	Confirm the operation of the main switch after repairing the malfunction or correcting the cause.		• Execute the diagnostic mode. (Code No. Sh_ _63 and Sh_ _64)	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _16	Symptom	Malfunction of clutch or shift actuator motor drive circuit in the MCU (motor control unit).

Order	Item/components and probable cause	Check or maintenance job	Reinstatement method
1	Connections • Wire harness MCU (motor control unit) coupler • Clutch actuator motor coupler • Shift actuator motor coupler	• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to "OFF". See NOTE.
2	Open or short circuit in wire harness.	• Repair or replace if there is an open or short circuit. • Between clutch actuator motor coupler and MCU (motor control unit) coupler. (black/white–black/white) (red/white–red/white) • Between shift actuator motor coupler and MCU (motor control unit) coupler. (black/blue–black/blue) (red–red)	
3	Malfunction in MCU (motor control unit).	Replace the MCU (motor control unit).	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _17	Symptom	Detected clutch actuator position is incorrect.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Clutch actuator motor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to "OFF". See NOTE.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between clutch actuator motor coupler and MCU (motor control unit) coupler. (black/white–black/white) (red/white–red/white)	
3	Stuck clutch actuator motor or clutch actuator gear		• Replace the clutch actuator.	
4	Confirm the operation of the main switch after repairing the malfunction or correcting the cause.		• Execute the diagnostic mode. (Code No. Sh_ _63)	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _18	Symptom	Detected shift actuator position is incorrect.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Shift actuator motor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to "OFF". See NOTE.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between shift actuator motor coupler and MCU (motor control unit) coupler. (black/blue–black/blue) (red–red)	
3	Stuck shift actuator motor or shift actuator gear		• Replace the shift actuator.	
4	Confirm the operation of the main switch after repairing the malfunction or correcting the cause.		• Execute the diagnostic mode. (Code No. Sh_ _64)	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _19	Symptom	Output signal of shift actuator sensor is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Shift actuator sensor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to "OFF". See NOTE.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between shift actuator sensor coupler and MCU (motor control unit) coupler. (green/yellow–green/yellow) (blue–blue) (black/blue–black/blue)	
3	Defective shift actuator sensor.		• Replace the shift actuator.	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _21	Symptom	Output signal of gear position sensor is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Gear position sensor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between gear position sensor coupler and MCU (motor control unit) coupler. (yellow–yellow) (blue–blue) (black/blue–black/blue)	
3	Defective gear position sensor.		• Adjust or replace if defective. Refer to “ADJUSTING THE GEAR POSITION SENSOR” on page 50 and “CHECKING THE GEAR POSITION SENSOR” on page 132.	
4	Gear position setting		• Execute the diagnostic mode. (Code No. Sh_ _65)	

Fault code No.	Sh_ _22	Symptom	Output signal of foot shift switch is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Foot shift switch coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness and/or sub-lead 2.		• Repair or replace if there is an open or short circuit. • Between foot shift switch coupler and MCU (motor control unit) coupler. (orange/red–orange/black) (blue–blue) (black/blue–black/blue)	
3	Defective foot shift switch.		• Adjust or replace if defective. Refer to “ADJUSTING THE FOOT SHIFT SWITCH” on page 60 and “CHECKING THE FOOT SHIFT SWITCH” on page 133.	

Fault code No.	Sh_ _23	Symptom	No input signal from sidestand switch.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open circuit in wire harness.		• Repair or replace if there is an open circuit. • Between sidestand switch coupler and MCU (motor control unit) coupler. (blue/green–blue/green)	
3	Defective sidestand switch.		• Check and replace if defective. Refer to “CHECKING THE SWITCHES” in chapter 8. (Manual No.: 3P6-28197-E0)	

Fault code No.	Sh_ _25	Symptom	Error has occurred in the actuator drive circuit in MCU (motor control unit) when main switch is turned to “ON”.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Malfunction in MCU (motor control unit).		Replace the MCU (motor control unit).	Replacing the MCU (motor control unit).

Fault code No.	Sh_ _26	Symptom	Abnormal clutch movement is detected during check when main switch is turned to "ON".

Order	Item/components and probable cause	Check or maintenance job	Reinstatement method
1	Clutch fluid	• Check for clutch fluid leakage. • Check the clutch fluid level. Refer to "CHECKING THE CLUTCH FLUID LEVEL" on page 31.	Turning the main switch to "OFF". See NOTE.
2	Air in hydraulic clutch system	• Check the clutch stroke. • Bleed the hydraulic clutch. Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 31.	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _27	Symptom	Diagnosis mode is activated at engine start-up.

Order	Item/components and probable cause	Check or maintenance job	Reinstatement method
1	YCC-S test coupler	• Check that the test coupler adapter is not connected. Refer to "DIAGNOSTIC MODE" on page 95.	Turning the main switch to "OFF". See NOTE.
2	Short circuit in wire harness.	• Repair or replace if there is a short circuit. • Between YCC-S test coupler and MCU (motor control unit) coupler. (blue/yellow–blue/yellow)	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _31	Symptom	Engine speed signal is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Wire harness ECU coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between ECU coupler and MCU (motor control unit) coupler. (yellow/black–yellow/black)	

Fault code No.	Sh_ _32	Symptom	YCC-S speed sensor signal is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • YCC-S speed sensor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to “OFF”. See NOTE.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between YCC-S speed sensor coupler and MCU (motor control unit) coupler. (white/yellow–white/yellow) (blue–blue) (black/blue–black/blue)	
3	Defective YCC-S speed sensor.		• Replace if detective. Refer to “CHECKING THE YCC-S SPEED SENSOR” on page 132.	

NOTE:

If the main switch is turned to “OFF”, the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to “ON”. Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _34	Symptom	TPS (throttle position sensor) signal is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Wire harness ECU coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between ECU coupler and MCU (motor control unit) coupler. (yellow/blue–yellow/blue)	

Fault code No.	Sh_ _35	Symptom	Start switch signal is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Relay unit coupler • Right handlebar switch coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness and/or front cowling wire harness.		• Repair or replace if there is an open or short circuit. • Between right handlebar switch coupler and relay unit coupler. (white/blue–white/blue) • Between relay unit coupler and MCU (motor control unit) coupler. (blue/white–blue/white)	
3	Defective relay unit.		• Check and replace relay unit. Refer to “CHECKING THE RELAYS” in chapter 8. (Manual No.: 3P6-28197-E0)	
4	Defective start switch.		• Check and replace right handlebar switch. Refer to “CHECKING THE SWITCHES” in chapter 8. (Manual No.: 3P6-28197-E0)	

Fault code No.	Sh_ _36	Symptom	Output signal of clutch actuator sensor is abnormal.

Order	Item/components and probable cause	Check or maintenance job	Reinstatement method
1	Connections • Wire harness MCU (motor control unit) coupler • Clutch actuator sensor coupler	• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness and/or sub-lead 1.	• Repair or replace if there is an open or short circuit. • Between clutch actuator sensor coupler and MCU (motor control unit) coupler. (orange–orange) (orange/green–orange/green) (blue–blue) (black/blue–black/blue)	
3	Defective clutch actuator sensor.	• Replace clutch actuator.	

Fault code No.	Sh_ _37	Symptom	Power supply to clutch or shift actuator motor is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Clutch actuator motor coupler • Shift actuator motor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to "OFF". See NOTE.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between clutch actuator motor coupler and MCU (motor control unit) coupler. (black/white–black/white) (red/white–red/white) • Between shift actuator motor coupler and MCU (motor control unit) coupler. (black/blue–black/blue) (red–red)	
3	Defective clutch or shift actuator motor.		• Replace the clutch actuator or shift actuator.	

NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _38	Symptom	Malfunction of hand shift lever switch (shift up or shift down).	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Hand shift switch coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between hand shift switch coupler and MCU (motor control unit) coupler. (orange/white–orange/white) (orange/black–orange/black) (green/red–green/red) (green/black–green/black)	
3	Defective hand shift lever switch (shift up or shift down).		• Replace hand shift switch. Refer to “CHECKING THE SWITCHES” on page 127.	

Fault code No.	Sh_ _39	Symptom	Ignition timing retard output signal is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Wire harness ECU coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between ECU coupler and MCU (motor control unit) coupler. (light green–light green)	

Fault code No.	Sh_ _41	Symptom	Coolant temperature sensor signal is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Wire harness ECU coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between ECU coupler and MCU (motor control unit) coupler. (yellow/blue–yellow/blue)	

Fault code No.	Sh_ _42	Symptom	Communication between ECU and multi-function meter is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • YCC-S speed sensor coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between YCC-S speed sensor coupler and MCU (motor control unit) coupler. (yellow/blue–yellow/blue)	

Fault code No.	Sh_ _43	Symptom	Communication between MCU (motor control unit) and ABS ECU is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • ABS ECU coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between ABS ECU coupler and MCU (motor control unit) coupler. (brown/black–brown/black)	

Fault code No.	Sh_ _44	Symptom	Clutch actuator sensor signal is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Defective clutch actuator sensor.		• Replace clutch actuator.	Turning the main switch to “OFF”. See NOTE.
2	Confirm the operation of the main switch after repairing the malfunction or correcting the cause.		• Execute the diagnostic mode. (Code No. Sh_ _63)	

NOTE:

If the main switch is turned to “OFF”, the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to “ON”. Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _45	Symptom	Shift operation and gear position do not match.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Shift rod		• Check the shift rod pin hole location. • Check the shift rod groove location. • Adjust or replace if defective. Refer to “CHECKING THE SHIFT ROD” on page 59 and “INSTALLING THE SHIFT ACTUATOR” on page 61.	Turning the main switch to “OFF”. See NOTE.
2	Defective shift actuator.		• Replace shift actuator.	
3	Confirm the operation of the main switch after repairing the malfunction or correcting the cause.		• Execute the diagnostic mode. (Code No. Sh_ _64)	

NOTE:

If the main switch is turned to “OFF”, the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to “ON”. Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _46	Symptom	Engine speed and gear position sensor signal do not match while vehicle is driven.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Gear position setting.		• Execute the diagnostic mode. (Code No. Sh_ _65)	Turning the main switch to “OFF”. See NOTE.

NOTE:

If the main switch is turned to “OFF”, the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to “ON”. Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _47	Symptom	Braking signal is not detected while braking.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler • Brake light relay coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Repairing the cause of the malfunction.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between battery and main switch coupler. (red–red) • Between main switch coupler and signaling system fuse. (brown/blue–brown/blue) • Between signaling system fuse and brake light relay coupler. (brown–brown) • Between brake light relay coupler and MCU (motor control unit) coupler. (yellow/green–yellow/green)	
3	Defective brake light relay.		• Replace if defective. Refer to “CHECKING THE RELAYS” in chapter 8. (Manual No.: 3P6-28197-E0)	

Fault code No.	Sh_ _48	Symptom	Improper engine idling speed adjustment.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Engine idling speed		• Check and adjust the engine idling speed. Refer to “ADJUSTING THE ENGINE IDLING SPEED” in chapter 3. (Manual No.: 3P6-28197-E0)	Turning the main switch to “OFF”. See NOTE.
2	Defective fast idle unit.		• Replace the throttle bodies. Refer to “THROTTLE BODIES” in chapter 7. (Manual No.: 3P6-28197-E0)	

NOTE:

If the main switch is turned to “OFF”, the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to “ON”. Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

Fault code No.	Sh_ _49	Symptom	Engine idling speed is too high when vehicle is started.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Clutch operation.		• Check the clutch stroke. Refer to “BLEEDING THE HYDRAULIC CLUTCH SYSTEM” on page 31.	Turning the main switch to “OFF”. See NOTE.
2	Clutch slippage.		• Check the friction plate thickness and replace the friction plates if necessary. Refer to “CHECKING THE FRICTION PLATES” in chapter 5. (Manual No.: 3P6-28197-E0)	

NOTE:

If the main switch is turned to “OFF”, the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to “ON”. Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

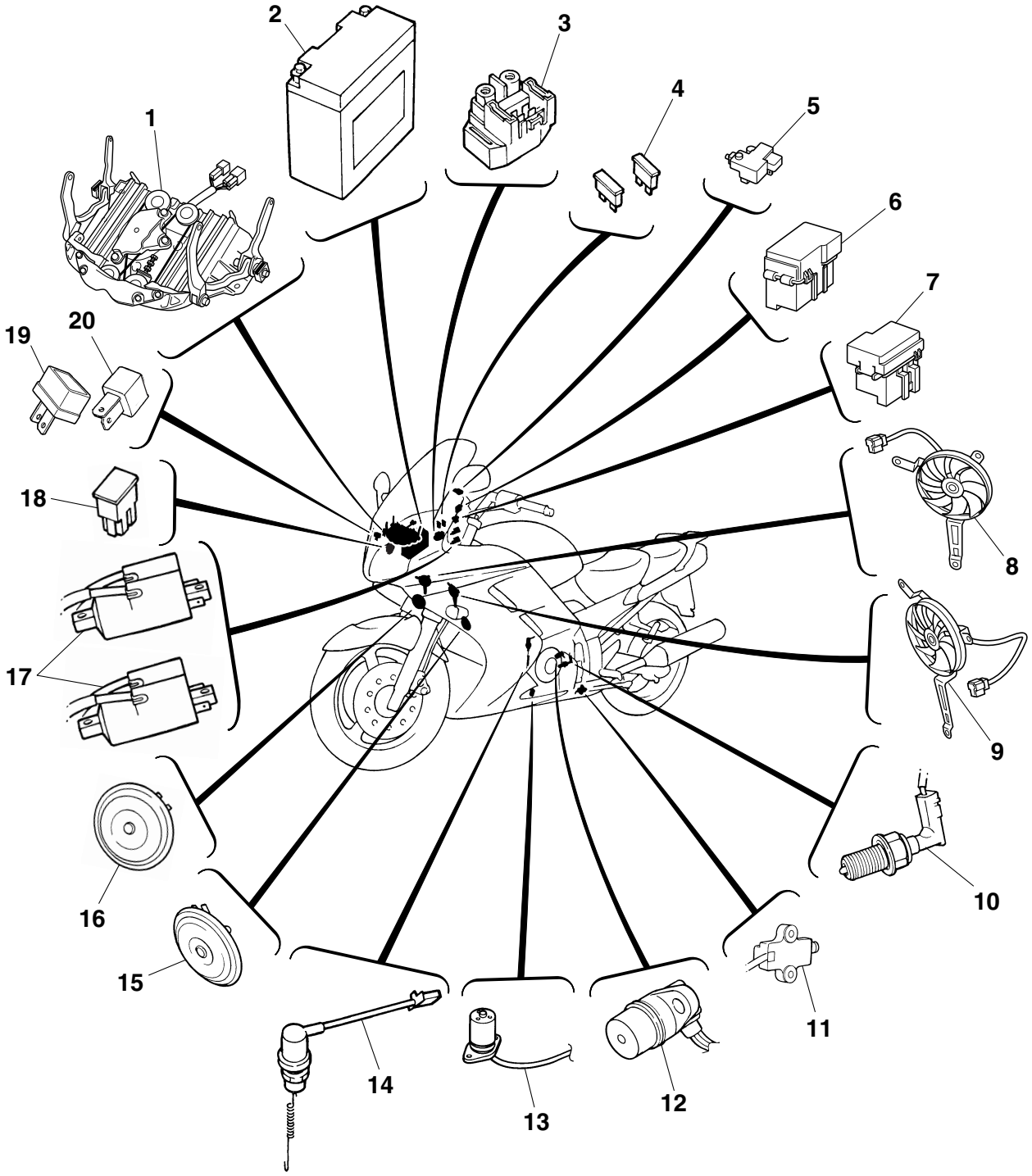
Fault code No.	Sh_ _51	Symptom	Shift actuator sensor signal is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Shift rod		• Check the shift rod pin hole location. • Check the shift rod groove location. • Adjust or replace the shift rod. Refer to “CHECKING THE SHIFT ROD” on page 59 and “INSTALLING THE SHIFT ACTUATOR” on page 61.	Repairing the cause of the malfunction.
2	Defective shift actuator sensor.		• Replace the shift actuator.	
3	Confirm the operation of the main switch after repairing the malfunction or correcting the cause.		• Execute the diagnostic mode. (Code No. Sh_ _64)	

Fault code No.	Sh_ _52	Symptom	Main switch signal is abnormal.	
Order	**Item/components and probable cause**		**Check or maintenance job**	**Reinstatement method**
1	Connections • Wire harness MCU (motor control unit) coupler		• Check the coupler for any pins that may be pulled out. • Check the locking condition of the coupler. • If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch to "OFF". See NOTE.
2	Open or short circuit in wire harness.		• Repair or replace if there is an open or short circuit. • Between battery and main switch coupler. (red–red) • Between main switch coupler and signaling system fuse. (brown/blue–brown/blue) • Between signaling system fuse and MCU (motor control unit) coupler. (brown–brown)	

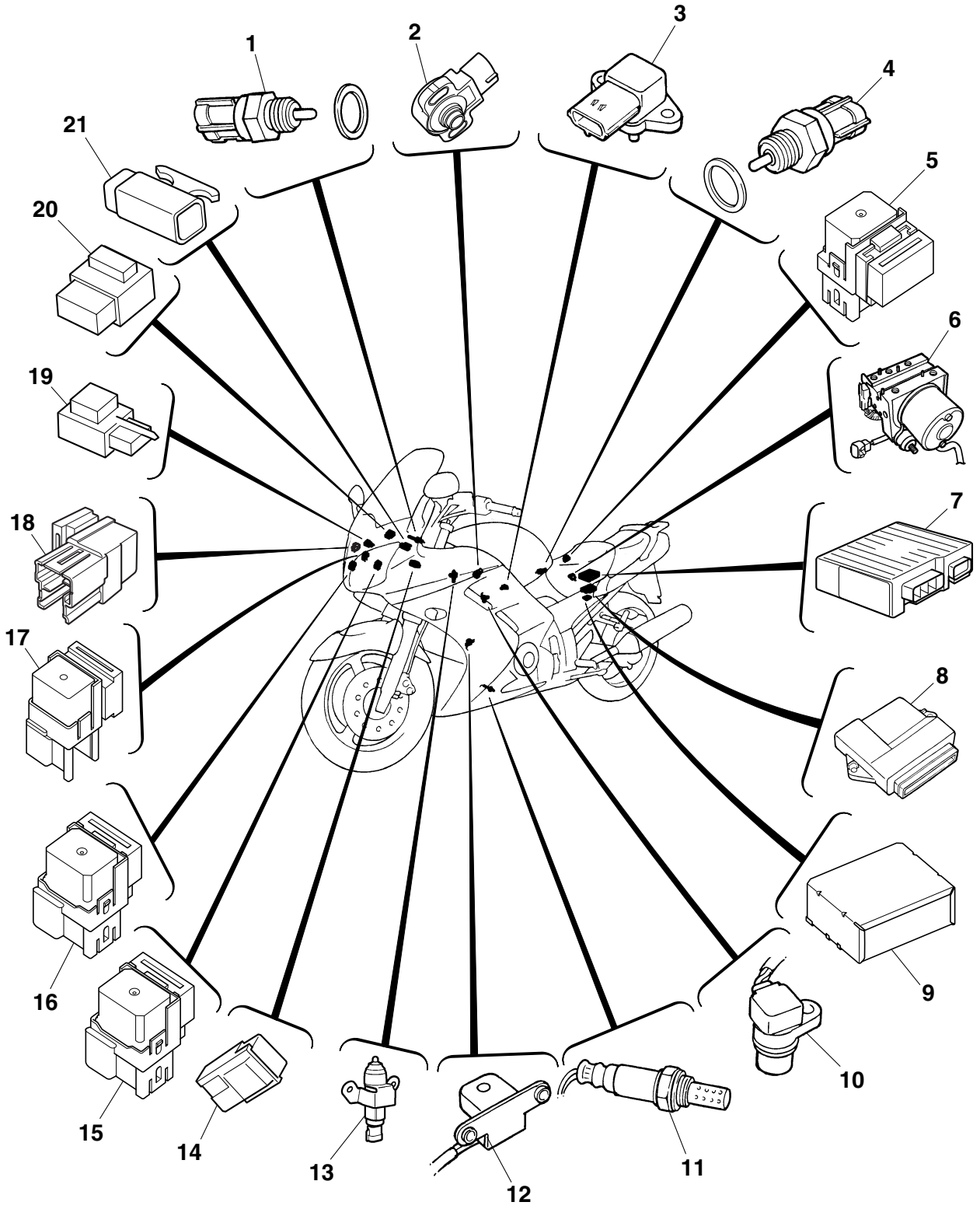
NOTE:

If the main switch is turned to "OFF", the fault code number will disappear from the display and will not be displayed again when the main switch is turned back to "ON". Therefore, use the engine stop switch to stop the engine, not the main switch. If the fault code number has disappeared, activate the diagnostic mode and select diagnostic code No. Sh_ _61. The fault code numbers can be confirmed in the malfunction history.

EAS27970
ELECTRICAL COMPONENTS



1. Windshield drive unit
2. Battery
3. Starter relay
4. ABS motor fuse
5. Front brake light switch
6. Fuse box 2
7. Fuse box 1
8. Right radiator fan motor
9. Left radiator fan motor
10. Neutral switch
11. Sidestand switch
12. YCC-S speed sensor
13. Oil level switch
14. Rear brake light switch
15. Left horn (low)
16. Right horn (high)
17. Ignition coil
18. Main fuse
19. Diode 1
20. Diode 2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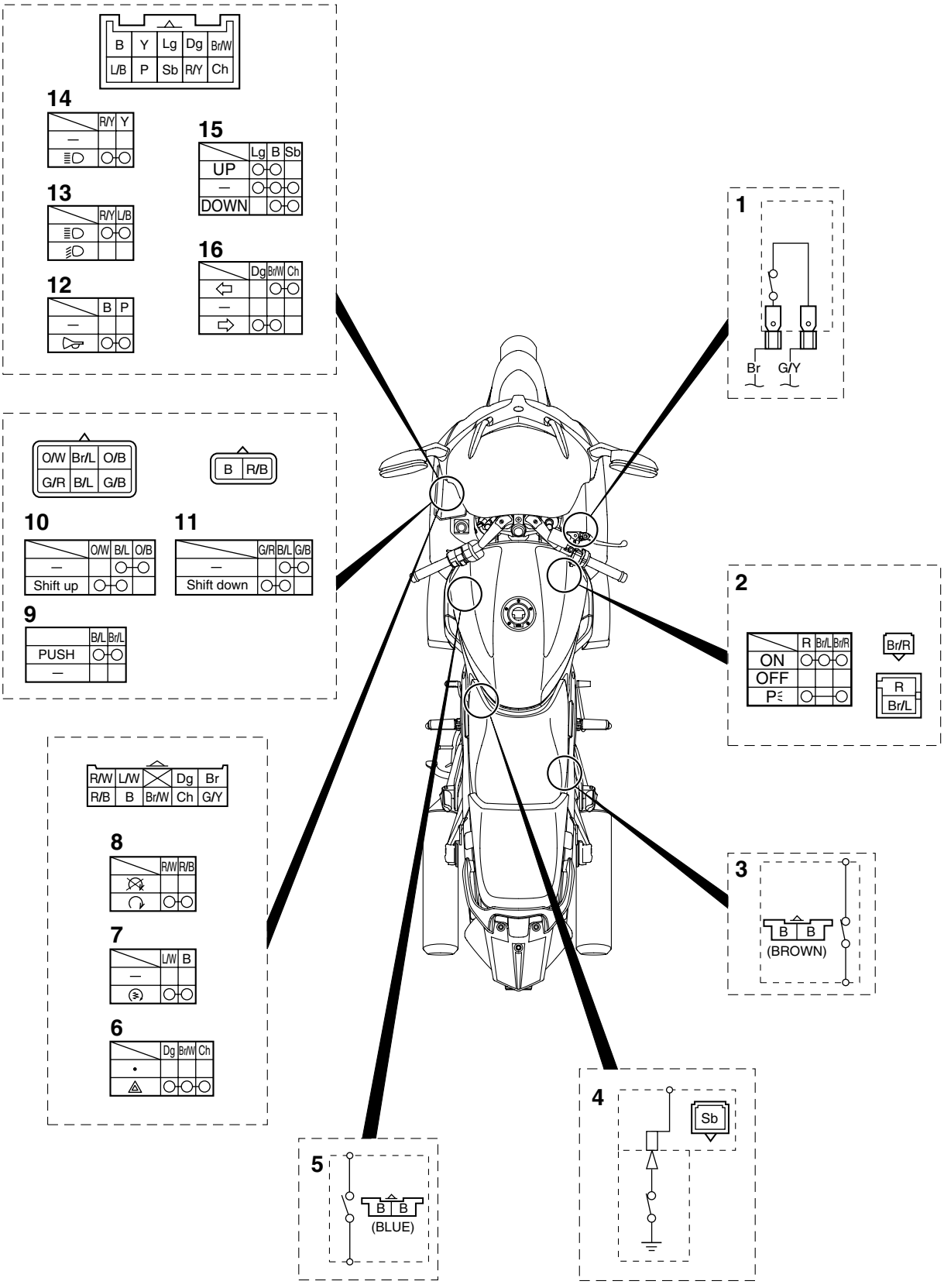
1. Coolant temperature sensor
2. Throttle position sensor
3. Intake air pressure sensor
4. Intake air temperature sensor
5. ABS motor relay
6. Hydraulic unit
7. MCU (motor control unit)
8. ECU (engine control unit)
9. ABS (ECU)
10. Cylinder identification sensor
11. O_2 sensor
12. Crankshaft position sensor
13. Accessory box solenoid
14. Headlight relay (dimmer)
15. Radiator fan motor relay
16. Headlight (on/off)/grip warmer relay
17. Brake light relay
18. YCC-S control relay
19. Turn signal/hazard relay
20. Relay unit
21. Lean angle sensor

EAS27980
CHECKING THE SWITCHES



1. Front brake light switch
2. Main switch
3. Rear brake light switch
4. Neutral switch
5. Sidestand switch
6. Hazard switch
7. Start switch
8. Engine stop switch
9. Hand shift select button
10. Hand shift lever switch (shift up)
11. Hand shift lever switch (shift down)
12. Horn switch
13. Dimmer switch
14. Pass switch
15. Windshield position switch
16. Turn signal switch

Check each switch for continuity with the pocket tester. If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.

ECA14370

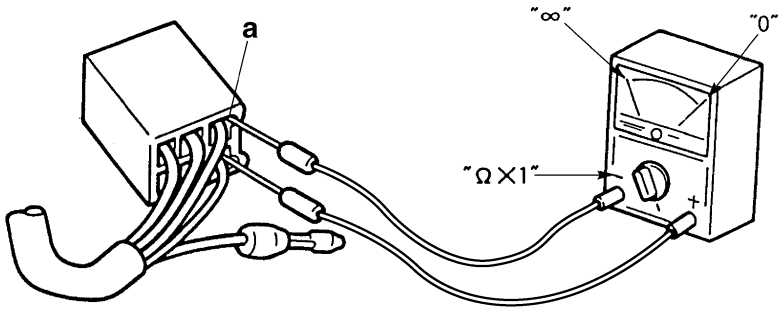
CAUTION:

Never insert the tester probes into the coupler terminal slots "a". Always insert the probes from the opposite end of the coupler, taking care not to loosen or damage the leads.

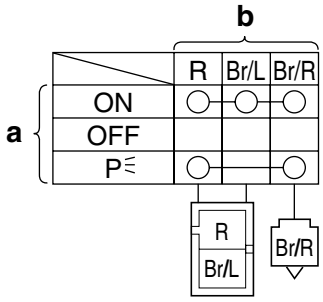
Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

NOTE:

- Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.
- When checking for continuity, switch back and forth between the switch positions a few times.



The switches and their terminal connections are illustrated as in the following example of the main switch.
The switch positions "a" are shown in the far left column and the switch lead colors "b" are shown in the top row.
The continuity (i. e., a closed circuit) between switch terminals at a given switch position is indicated by " ○——○ ". There is continuity between red, brown/blue, and brown/red when the switch is set to "ON" and between red and brown/red when the switch is set to "P≦".



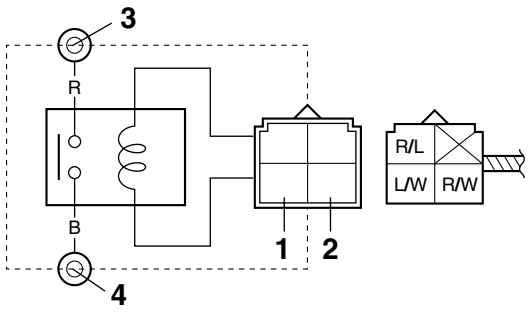
EAS28040
CHECKING THE RELAYS

Check each switch for continuity with the pocket tester. If the continuity reading is incorrect, replace the relay.

Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

1. Disconnect the relay from the wire harness.
2. Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the relay terminals as shown.
   Check the relay operation.
   Out of specification → Replace.

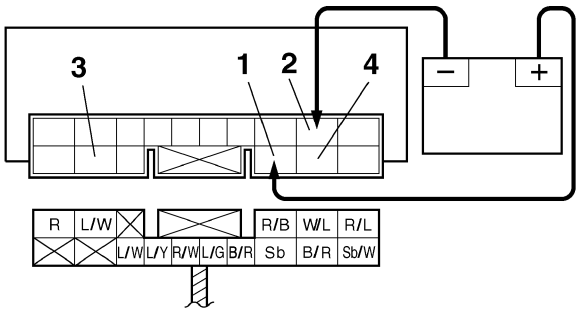
Starter relay



1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
Continuity
(between "3" and "4")

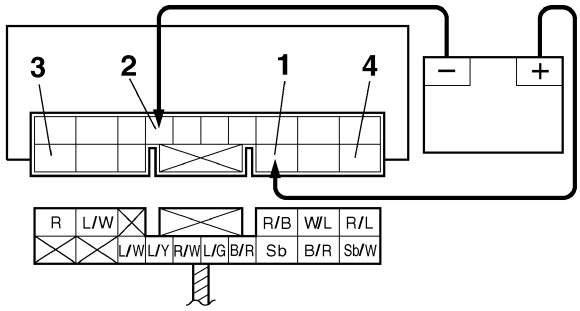
Relay unit (starting circuit cut-off relay)



1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
Continuity
(between "3" and "4")

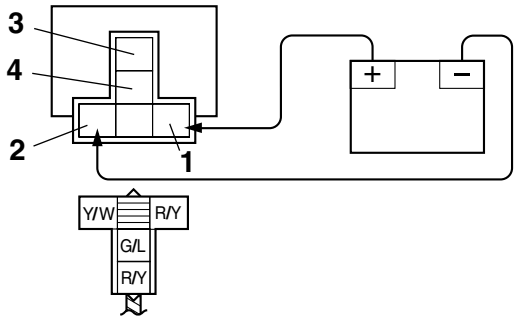
Relay unit (fuel pump relay)



1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
Continuity

Headlight (on/off)/grip warmer relay

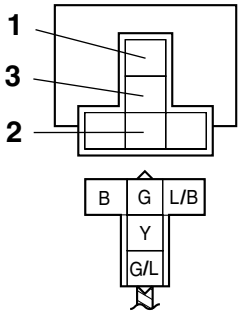


1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
Continuity
(between "3" and "4")

Headlight relay (dimmer)

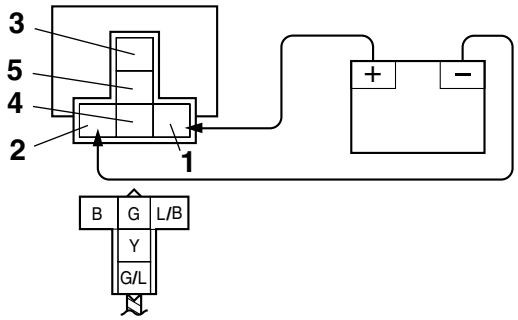
First step:



1. Positive tester probe
2. Negative tester probe
3. Negative tester probe

Result
Continuity
(between "1" and "2")
No continuity
(between "1" and "3")

Second step:

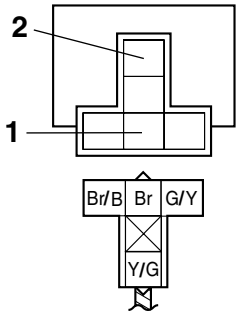


1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe
5. Negative tester probe

Result
No continuity
(between "3" and "4")
Continuity
(between "3" and "5")

Brake light relay

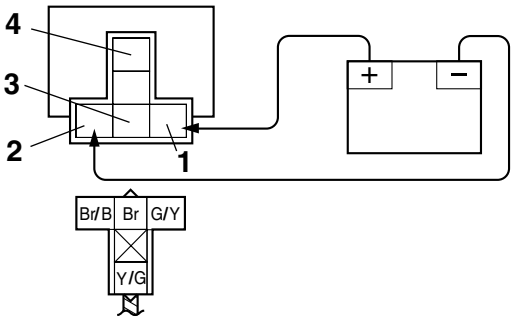
First step:



1. Positive tester probe
2. Negative tester probe

Result
Continuity
(between "1" and "2")

Second step:

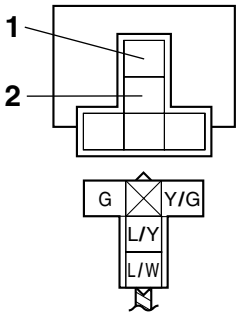


1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
No continuity
(between "3" and "4")

YCC-S control relay

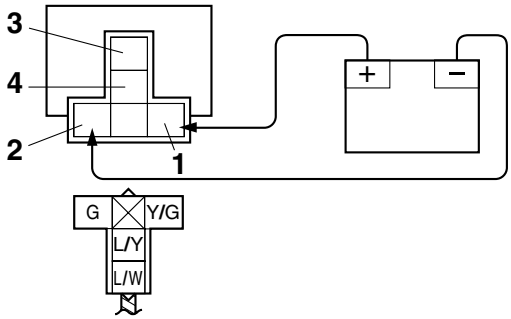
First step:



1. Positive tester probe
2. Negative tester probe

Result
No continuity
(between "1" and "2")

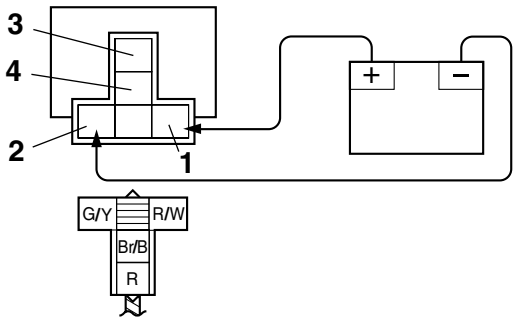
Second step:



1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
Continuity
(between "3" and "4")

Radiator fan motor relay



1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
Continuity
(between "3" and "4")

EAS28240
CHECKING THE YCC-S SPEED SENSOR

1. Check:
   • YCC-S speed sensor output voltage
   Out of specification → Replace.

Output voltage reading cycle
0.6 V to 4.8 V to 0.6 V to 4.8 V

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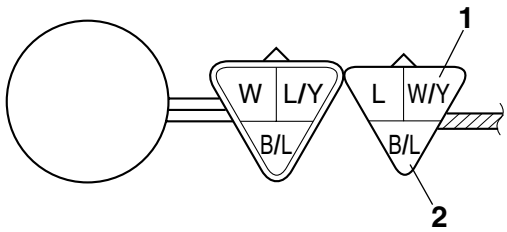
a. Connect the pocket tester (DC 20 V) to the YCC-S speed sensor coupler (wire harness side) as shown.

Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

• Positive tester probe → white/yellow "1"
• Negative tester probe → black/blue "2"



b. Turn the main switch to "ON".
c. Elevate the rear wheel and slowly rotate it.
d. Measure the voltage of white/yellow and black/blue. With each full rotation of the rear wheel, the voltage reading should cycle from 0.6 V to 4.8 V to 0.6 V to 4.8 V.

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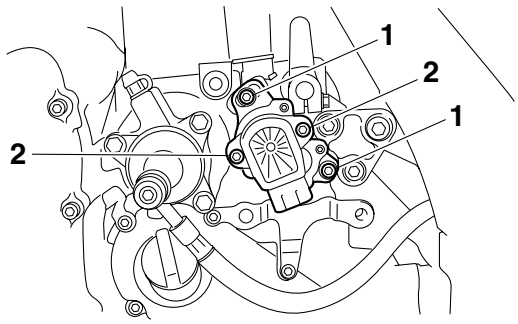
ET2D21022
CHECKING THE GEAR POSITION SENSOR

1. Remove:
   • Gear position sensor

NOTE:

Remove only the screws "1" when removing the gear position sensor. Do not remove the screws "2".



2. Check:
   • Gear position sensor maximum resistance
   Out of specification → Replace the gear position sensor.

Resistance
4.0–6.0 kΩ

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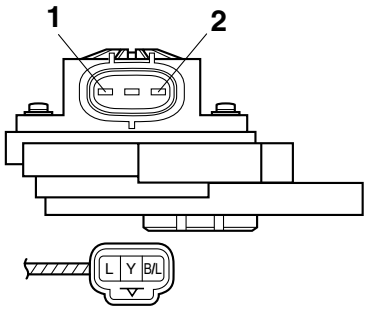
a. Connect the pocket tester (Ω × 1k) to the gear position sensor terminals as shown.

Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

- Positive tester probe → blue "1"
- Negative tester probe → black/blue "2"



b. Measure the gear position sensor maximum resistance.

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3. Install:
   - Gear position sensor
     Refer to "INSTALLING THE GEAR POSITION SENSOR" on page 49.

ET2D21023

CHECKING THE FOOT SHIFT SWITCH

1. Remove:
   - Foot shift switch
2. Check:
   - Foot shift switch maximum resistance
     Out of specification → Replace the foot shift switch.

Resistance
4.0–6.0 kΩ

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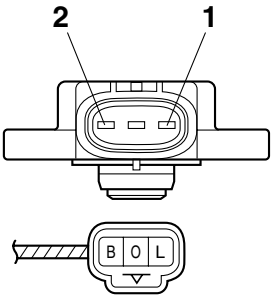
a. Connect the pocket tester (Ω × 1k) to the foot shift switch terminals as shown.

Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

- Positive tester probe → blue "1"
- Negative tester probe → black/blue "2"



b. Measure the foot shift switch maximum resistance.

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3. Install:
   - Foot shift switch
     Refer to "INSTALLING THE FOOT SHIFT SWITCH" on page 59.

ET2D21024

CHECKING THE GRIP WARMERS

The following procedure applies to both of the grip warmers.

1. Check:
   - Grip warmer resistance
     Out of specification → Replace the grip warmer.

Grip warmer resistance
1.21–1.48 Ω at 20 °C (68 °F)

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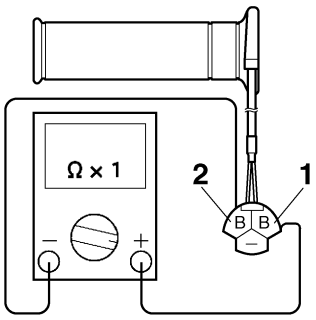
a. Disconnect the grip warmer coupler from the front cowling wire harness.
b. Connect the pocket tester (Ω × 1) to the grip warmer coupler as shown.

Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

- Positive tester probe → black "1"
- Negative tester probe → black "2"



c. Measure the grip warmer resistance.

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ET2D21025

CHECKING THE GRIP WARMER CONTROL UNIT

1. Check:
   • Grip warmer control unit continuity
   Out of specification → Replace.

Grip warmer control unit continuity
On
Continuity
Off
No continuity

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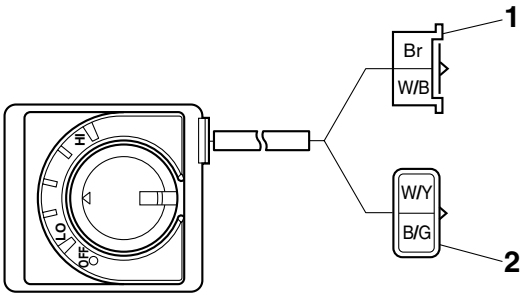
a. Disconnect the grip warmer control unit couplers from the front cowling wire harness.
b. Connect the pocket tester (Ω × 1) to the grip warmer control unit coupler as shown.

Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

• Positive tester probe → brown "1"
• Negative tester probe → black/green "2"



c. Measure the grip warmer control unit resistance.

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ET2D21026

CHECKING THE DIODE 2

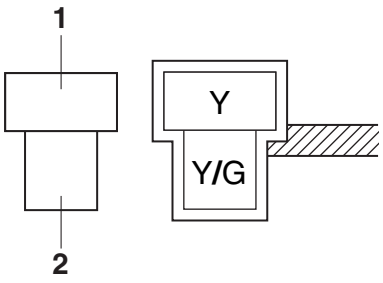
1. Check:
   • Diode 2
   Out of specification → Replace.

Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

NOTE:

The pocket tester and the analog pocket tester readings are shown in the following table.

Continuity
Positive tester probe → yellow "1"
Negative tester probe → yellow/green "2"
No continuity
Positive tester probe → yellow/green "2"
Negative tester probe → yellow "1"



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a. Remove the diode 2 from the wire harness.
b. Connect the pocket tester (Ω × 1) to the diode 2 terminals as shown.
c. Check the diode 2 for continuity.
d. Check the diode 2 for no continuity.

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EAS28740
WIRING DIAGRAM

FJR1300AS(V) 2006

1. Main switch
2. Rectifier/regulator
3. AC magneto
4. ABS ECU fuse
5. Fuel injection system fuse
6. Backup fuse (odometer, clock, immobilizer system, and windshield drive system)
7. Main fuse
8. Battery
9. ABS motor fuse
10. Starter relay
11. Starter motor
12. Diode 1
13. Immobilizer unit
14. Coupler 1 (wire harness–front cowling wire harness)
15. Fuel pump
16. Fuel sender
17. Coupler 2 (wire harness–front cowling wire harness)
18. Neutral switch
19. ABS test coupler
20. ABS ECU (electronic control unit)
21. Front wheel sensor
22. Rear wheel sensor
23. ABS motor relay
24. Hydraulic unit
25. Rear brake light switch
26. Diode 2
27. Brake light relay
28. License plate light
29. Taillight assembly
30. Tail/brake light
31. Rear left turn signal light
32. Rear right turn signal light
33. Coupler 3 (wire harness–front cowling wire harness)
34. Sidestand switch
35. Cylinders-#1/#4 ignition coil
36. Spark plug
37. Cylinders-#2/#3 ignition coil
38. Injector #4
39. Injector #3
40. Injector #2
41. Injector #1
42. Air induction system solenoid
43. ECU (engine control unit)
44. Crankshaft position sensor
45. Intake air temperature sensor
46. Coolant temperature sensor
47. O_2 sensor
48. Cylinder identification sensor
49. Throttle position sensor
50. Intake air pressure sensor
51. Oil level switch
52. Shift actuator motor
53. Shift actuator sensor
54. Clutch actuator sensor
55. Clutch actuator motor
56. MCU (motor control unit)
57. YCC-S test coupler
58. Coupler 4 (wire harness–front cowling wire harness)
59. Anti-theft alarm (OPTION)
60. Coupler 5 (wire harness–front cowling wire harness)
61. Foot shift switch
62. YCC-S speed sensor
63. Gear position sensor
64. YCC-S control relay
65. Coupler 6 (wire harness–front cowling wire harness)
66. Headlight (on/off)/grip warmer relay
67. Hazard lighting fuse
68. Signaling system fuse
69. Headlight fuse
70. Ignition fuse
71. Auxiliary DC jack fuse
72. Grip warmer control unit
73. Radiator fan motor relay
74. Left radiator fan motor fuse
75. Left radiator fan motor
76. Right radiator fan motor fuse
77. Right radiator fan motor
78. YCC-S motor control fuse
79. Auxiliary DC jack
80. Turn signal/hazard relay
81. Right handlebar switch
82. Front brake light switch
83. Engine stop switch
84. Start switch
85. Hazard switch
86. Left handlebar switch
87. Pass switch
88. Dimmer switch
89. Windshield position switch
90. Turn signal switch
91. Horn switch
92. Relay unit
93. Starting circuit cut-off relay
94. Fuel pump relay
95. Accessory box solenoid
96. Meter assembly
97. Neutral indicator light
98. ABS warning light
99. Immobilizer system indicator light
100. Multi-function meter
101. Oil level warning light
102. Engine trouble warning light
103. Meter light
104. High beam indicator light
105. Right turn signal indicator light
106. Left turn signal indicator light
107. Lean angle sensor
108. Thermistor
109. Hand shift switch
110. Hand shift lever switch (shift up)
111. Hand shift lever switch (shift down)
112. Hand shift select button
113. Hand shift select indicator light
114. Horn
115. Front left turn signal light
116. Front right turn signal light
117. Headlight assembly
118. Auxiliary light
119. Headlight
120. Headlight relay (dimmer)
121. Windshield drive unit
122. Right grip warmer
123. Left grip warmer

EAS28750
COLOR CODE

B	Black
Br	Brown
Ch	Chocolate
Dg	Dark green
G	Green
Gy	Gray
L	Blue
Lg	Light green
O	Orange
P	Pink
R	Red
Sb	Sky blue
W	White
Y	Yellow
B/G	Black/Green
B/L	Black/Blue
B/R	Black/Red
B/W	Black/White
B/Y	Black/Yellow
Br/B	Brown/Black
Br/G	Brown/Green
Br/L	Brown/Blue
Br/R	Brown/Red
Br/W	Brown/White
Br/Y	Brown/Yellow
G/B	Green/Black
G/L	Green/Blue
G/R	Green/Red
G/W	Green/White
G/Y	Green/Yellow
Gy/R	Gray/Red
Gy/W	Gray/White
L/B	Blue/Black
L/G	Blue/Green
L/R	Blue/Red
L/W	Blue/White
L/Y	Blue/Yellow
Lg/W	Light green/White
O/B	Orange/Black
O/G	Orange/Green
O/R	Orange/Red
O/W	Orange/White

P/W	Pink/White
R/B	Red/Black
R/G	Red/Green
R/L	Red/Blue
R/W	Red/White
R/Y	Red/Yellow
Sb/W	Sky blue/White
W/B	White/Black
W/G	White/Green
W/L	White/Blue
W/Y	White/Yellow
Y/B	Yellow/Black
Y/G	Yellow/Green
Y/L	Yellow/Blue
Y/W	Yellow/White

YAMAHA MOTOR CO., LTD.
2500 SHINGAI IWATA SHIZUOKA JAPAN

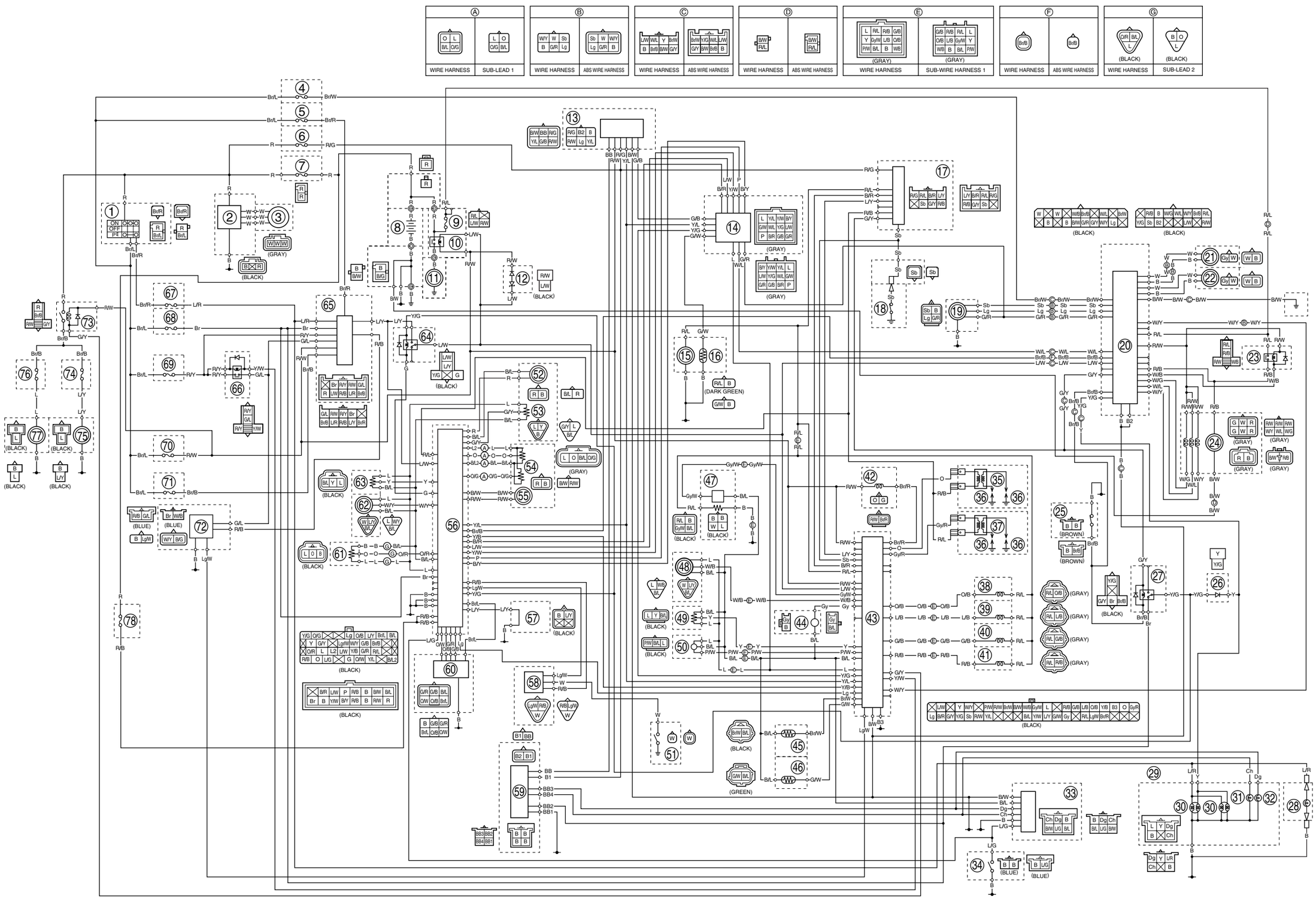
FJR1300AS(V) 2006
WIRING DIAGRAM (1/2)

FJR1300AS(V) 2006
SCHÉMA DE CÂBLAGE (1/2)

FJR1300AS(V) 2006
SCHALTPLAN (1/2)

FJR1300AS(V) 2006
SCHEMA ELETTRICO (1/2)

FJR1300AS(V) 2006
DIAGRAMA ELÉCTRICO (1/2)



FJR1300AS(V) 2006
WIRING DIAGRAM (2/2)
Front cowling wire harness

FJR1300AS(V) 2006
SCHÉMA DE CÂBLAGE (2/2)
Faisceau de fils au carénage avant

FJR1300AS(V) 2006
SCHALTPLAN (2/2)
Frontverkleidungs-Kabelbaum

FJR1300AS(V) 2006
SCHEMA ELETTRICO (2/2)
Cablaggio elettrico del cupolino

FJR1300AS(V) 2006
DIAGRAMA ELÉCTRICO (2/2)
Mazo de cables del carenado delantero