

2003

TDM900(R) 5PS1-AE2

SUPPLEMENTARY SERVICE MANUAL

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and data for the TDM900 (R) 2003. For complete service information procedures it is necessary to use this Supplementary Service Manual together with the following manual.

TDM900 (N) 2001 SERVICE MANUAL: 5PS1-AE1

TDM900 (R) 2003
SUPPLEMENTARY
SERVICE MANUAL
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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 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.

EAS00004

IMPORTANT INFORMATION

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

The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR

SAFETY IS INVOLVED!

Failure to follow WARNING instructions could result in severe injury or death to the motorcycle operator, a bystander or a person checking or repairing the mo-

torcycle.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage

to the motorcycle.

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

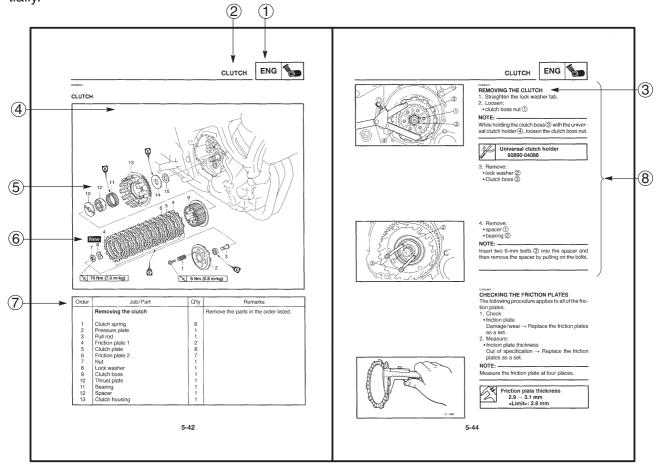
FAS00007

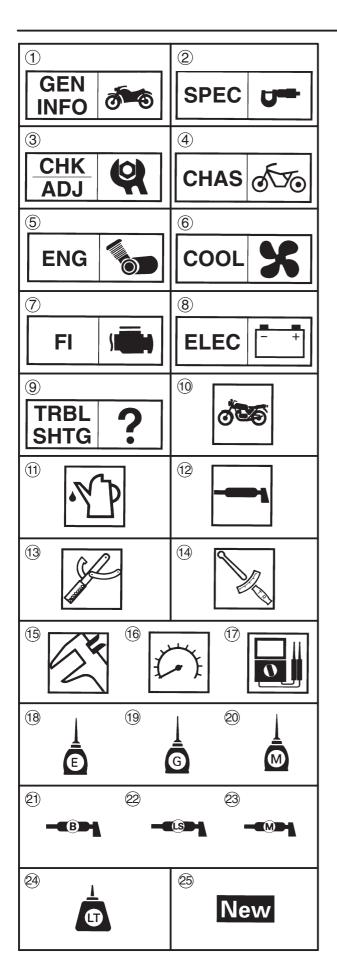
HOW TO USE THIS MANUAL

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.

- 1 The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter.

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





SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑨ indicate the subject of each chapter.

- 1 General information
- 2 Specifications
- 3 Periodic checks and adjustments
- (4) Chassis
- 5 Engine
- 6 Cooling system
- 7 Fuel injection system
- 8 Electrical system
- Troubleshooting

Symbols 10 to 17 indicate the following.

- 10 Serviceable with engine mounted
- (11) Filling fluid
- 12 Lubricant
- 13 Special tool
- (14) Tightening torque
- 15 Wear limit, clearance
- 16 Engine speed
- (17) Electrical data

Symbols ⁽¹⁾8 to ⁽²⁾8 in the exploded diagrams indicate the types of lubricants and lubrication points.

- (18) Engine oil
- 19 Gear oil
- 20 Molybdenum-disulfide oil
- 21) Wheel-bearing grease
- 2 Lithium-soap- based grease
- 23 Molybdenum-disulfide grease

Symbols 4 to 5 in the exploded diagrams indicate the following.

- 24 Apply locking agent (LOCTITE®)
- 25 Replace the part

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GENERAL SPECIFICATIONS/ENGINE SPECIFICATIONS/ **CHASSIS SPECIFICATIONS**





SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Standard	Limit	
Model code	5PS4 (EUR)	•••	
	5PS5 (OCE)	•••	

ENGINE SPECIFICATIONS

Item	Standard	Limit
Throttle bodies		
Model (manufacturer) \times quantity	38EIS (MIKUNI) × 2	•••
Intake vacuum pressure	33 ∼ 36 kPa	•••
Throttle cable free play (at the flange	3 ~ 5 mm	•••
of the throttle grip)		
ID mark	5PS1 10	•••
Throttle valve size	#50	•••

CHASSIS SPECIFICATIONS

Item	Standard	Limit
Front tire		
Tire type	Tubeless	•••
Size	120/70ZR 18 M/C (59W)	•••
Model (manufacturer)	MEZ4 FRONT (METZELER)/	•••
	D220FSTJ (DUNLOP)	
Tire pressure (cold)		
0 ~ 90 kg	225 kPa (2.25 kgf/cm ² , 2.25 bar)	•••
90 ∼ 203 kg	225 kPa (2.25 kgf/cm ² , 2.25 bar)	•••
High-speed riding	225 kPa (2.25 kgf/cm ² , 2.25 bar)	•••
Min. tire tread depth	•••	1.6 mm
Rear tire		
Tire type	Tubeless	•••
Size	160/60ZR 17 M/C (69W)	•••
Model (manufacturer)	MEZ4 (METZELER)/	•••
	D220STJ (DUNLOP)	
Tire pressure (cold)		
0 ~ 90 kg	250 kPa (2.5 kgf/cm ² , 2.5 bar)	•••
90 ~ 203 kg	290 kPa (2.9 kgf/cm ² , 2.9 bar)	•••
High-speed riding	250 kPa (2.5 kgf/cm ² , 2.5 bar)	•••
Min. tire tread depth	•••	1.6 mm

ELECTRICAL

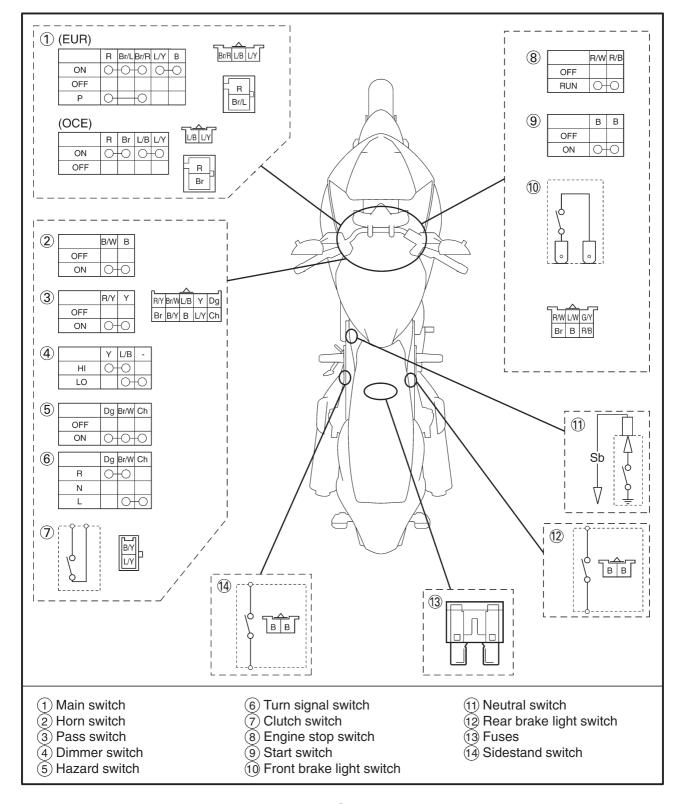
CHECKING THE SWITCHES

Check each switch for damage or wear, proper connections, and also for continuity between the terminals. Refer to "CHECKING SWITCH CONTINUITY".

Damage/wear → Repair or replace.

Improperly connected → Properly connect.

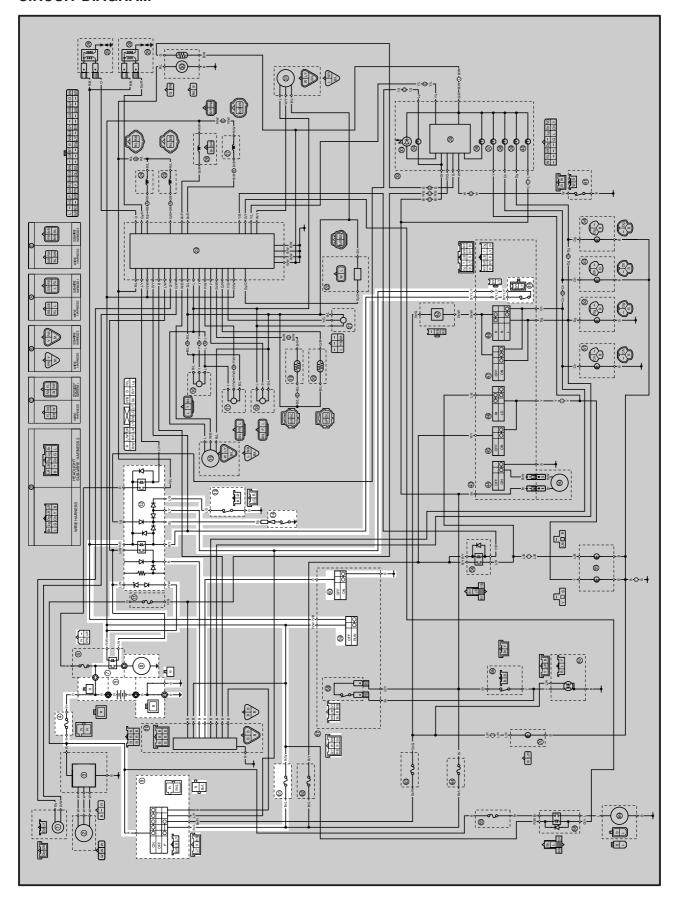
Incorrect continuity reading → Replace the switch.



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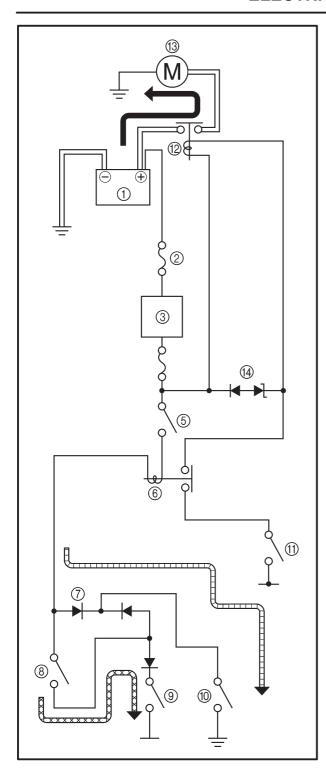
ELECTRIC STARTING SYSTEM CIRCUIT DIAGRAM





- 4 Main fuse5 Battery7 Starter relay8 Starter motor
- 9 Main switch
- 12 Starting circuit cut-off relay13 Sidestand switch
- 14) Neutral switch
- 49 Clutch switch
- 59 Engine stop switch
 60 Start switch
- 61 Ignition fuse





EAS00756

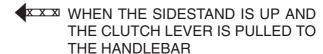
STARTING CIRCUIT CUT-OFF SYSTEM OPERATION

If the engine stop switch is set to "\(\cap\)" and the main switch is set to "ON" (both switches are closed), 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 clutch lever is pulled to the handlebar (the clutch switch is closed) and the sidestand is up (the sidestand switch 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 is 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 pressing the starter switch.





- (1) Battery
- (2) Main fuse
- (3) Main switch
- (4) Ignition fuse
- (5) Engine stop switch
- 6 Starting circuit cut-off relay
- (7) Diode (starting circuit cut-off relay)
- (8) Clutch switch
- (9) Sidestand switch
- 10 Neutral switch
- (11) Start switch
- (12) Starter relay
- (13) Starter motor
- (14) Diode (starting circuit cut-off relay)

ELEC - +

EAS00757

TROUBLESHOOTING

The starter motor fails to turn.

Check:

- 1. main and ignition fuses
- 2. battery
- 3. starter motor
- 4. starting circuit cut-off relay
- 5. diode
- 6. starter relay
- 7. main switch
- 8. engine stop switch
- 9. neutral switch
- 10. sidestand switch
- 11. clutch switch
- 12. start switch
- 13. wiring connections (of the entire starting system)

NOTE: -

- Before troubleshooting, remove the following part(s):
- 1. seat
- 2. fuel tank
- 3. air filter case
- 4. side cowlings
- Troubleshoot with the following special tool(s).



Pocket tester 90890-03132

EAS00738

- 1. Main and ignition fuses
- Check the main and ignition fuses for continuity.

Refer to "CHECKING THE FUSES" in chapter 3. (Manual No.: 5PS1-AE1)

• Are the main and ignition fuses OK?





Replace the fuse(s).

EAS00739

2. Battery

 Check the condition of the battery.
 Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3. (Manual No.: 5PS1-AE1)



Minimum open-circuit voltage 12.8 V or more at 20°C

• Is the battery OK?





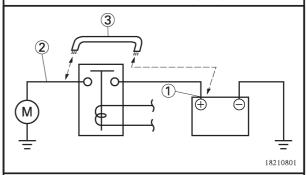
NO

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00758

3. Starter motor

• Connect the positive battery terminal ① and starter motor lead ② with a jumper lead ③.



A WARNING

- A wire that is used as a jumper lead must have at least the same capacity or more as that of the battery lead, otherwise the jumper lead may burn.
- This check is likely to produce sparks, therefore make sure nothing flammable is in the vicinity.
- Does the starter motor turn?





NO

Repair or replace the starter motor.

ELEC

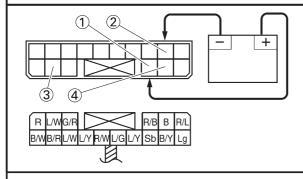
EAS00759

- 4. Starting circuit cut-off relay
- Disconnect the starting circuit cut-off relay from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the starting circuit cut-off relay terminals as shown.

Battery positive terminal → red/black (1) Battery negative terminal →

black/yellow(2)

Tester positive prove → blue/white ③ Tester negative prove → black (4)



 Does the starting circuit cut-off relay have continuity between blue/white and black?



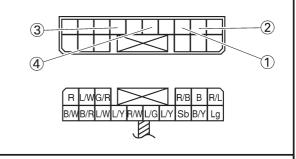


NO

Replace the starting circuit cut-off relay.

- 5. Starting circuit cut-off relay (diode)
- Disconnect the starting circuit cut-off relay from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the starting circuit cut-off relay terminals as shown.
- Measure the starting circuit cut-off relay for continuity as follows.

Tester positive probe → sky blue(1) **Tester negative probe** → black/yellow 2 Tester positive probe → sky blue (1) Continuity Tester negative probe → blue/yellow3 Tester positive probe → blue/green (4) Tester negative probe → blue/yellow3 Tester positive probe → black/vellow (2) Tester negative probe → sky blue 1 Tester positive probe → blue/yellow (3) No conti-Tester negative probe → nuity sky blue 1 Tester positive probe → blue/yellow 3 Tester negative probe → blue/green(4)



NOTE: -

When you switch the tester's positive and negative probes, the readings in the above chart will be reversed.

Are the testing readings correct?





NO

Replace the starting circuit cut-off relay.

ELEC - +

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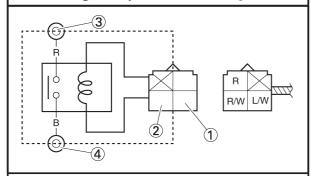
6. Starter relay

- Disconnect the starter relay from the coupler.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the starter relay terminals as shown.

Battery positive terminal \rightarrow red/white \bigcirc Battery negative terminal \rightarrow

blue/white (2)

Tester positive probe → red ③
Tester negative probe → black ④



 Does the starter relay have continuity between red and black?





Replace the starter relay.

EAS00749

7. Main switch

- Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?





Replace the main switch.

EAS0075

8. Engine stop switch

- Check the engine stop switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the engine stop switch OK?





Replace the right handlebar switch.

EAS0075

9. Neutral switch

- Check the neutral switch for continuity.
 Refer to "CHECKING THE SWITCHES".
- Is the neutral switch OK?





Replace the neutral switch.

EAS0075

10. Sidestand switch

- Check the sidestand switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the sidestand switch OK?





Replace the sidestand switch.

EAS0076

11. Clutch switch

- Check the clutch switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the clutch switch OK?





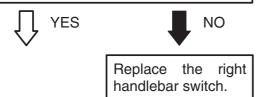
Replace the clutch switch.

ELEC - +

EAS00764

12. Start switch

- Check the start switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the start switch OK?



EAS00766

13. Wiring

- Check the entire starting system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the starting system's wiring properly connected and without defects?

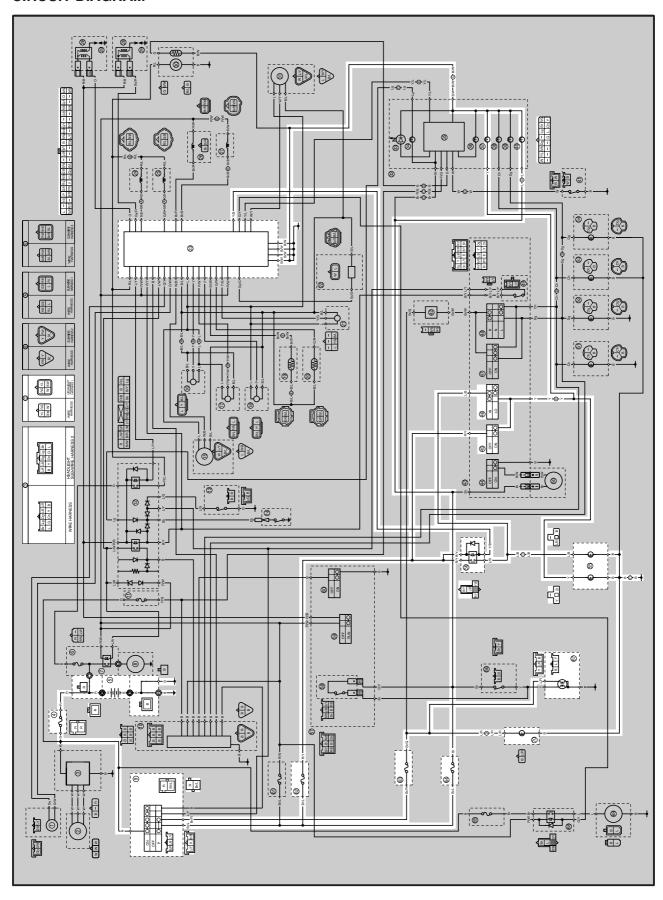


The starting system circuit is OK.

Properly connect or repair the starting system's wiring.



LIGHTING SYSTEM CIRCUIT DIAGRAM



LIGHTING SYSTEM



- 4 Main fuse
 5 Battery
 9 Main switch
- 23 ECU
- 37 High beam indicator light
- 40 Meter light
- 45) Pass switch
- 46 Dimmer switch
- 55 Headlight
- 56 Headlight relay 62 Headlight fuse
- 63 Hazard light fuse
- 64 Signaling system fuse
- 67 Tail/brake light
 70 Auxiliary light

LIGHTING SYSTEM



EAS00781

TROUBLESHOOTING

Any of the following fail to light: headlight, high beam indicator light, taillight, auxiliary light or meter light.

Check:

- 1. main, signaling system and headlight fuses
- 2. battery
- 3. main switch
- 4. headlight relay
- 5. dimmer switch
- 6. pass switch
- 7. wiring connections (of the entire lighting system)

NOTE

- Before troubleshooting, remove the following part(s):
- 1. fuel tank
- 2. front cowling
- 3. rear cowling
- Troubleshoot with the following special tool(s).



Pocket tester 90890-03132

EAS0073

- 1. Main, signaling system and headlight fuses
- Check the main, signaling system and headlight fuses for continuity.
 Refer to "CHECKING THE FUSES" in chapter 3. (Manual No.: 5PS1-AE1)
- Are the main, parking lighting and headlight fuses OK?





Replace the fuse(s).

EAS00739

Battery

 Check the condition of the battery.
 Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3. (Manual No.: 5PS1-AE1)



Minimum open-circuit voltage 12.8 V or more at 20°C

• Is the battery OK?





- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity.
 Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?





NO

Replace the main switch.

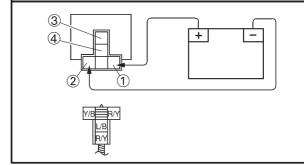
4. Headlight relay

- Disconnect the headlight relay from the wire harness
- Connect the pocket tester ($\Omega \times$ 1) and battery (12 V) to the headlight relay terminal as shown.
- Check the headlight relay for continuity.

Battery positive terminal \rightarrow red/yellow \bigcirc Battery negative terminal \rightarrow

yellow/black (2)

Tester positive probe → red/yellow ③
Tester negative probe → blue/black ④



LIGHTING SYSTEM

ELEC - +

• Dose the headlight relay have continuity between red/yellow and green/blue?



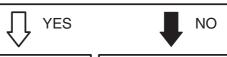
Replace the head-light relay.

NO

EAS00787

7. Wiring

- Check the entire lighting system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the lighting system's wiring properly connected and without defects?



Check the condition of each of the lighting system's circuits.
Refer to "CHECK-ING THE LIGHTING SYSTEM".

Properly connect or repair the lighting system's wiring.

EAS0078

5. Dimmer switch

- Check the dimmer switch for continuity.
 Refer to "CHECKING THE SWITCHES".
- Is the dimmer switch OK?

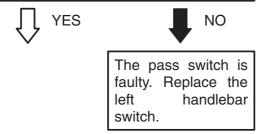


The dimmer switch is faulty. Replace the left handlebar switch.

EAS00786

6. Pass switch

- Check the pass switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the pass switch OK?



TROUBLESHOOTING

FAULTY LIGHTING SYSTEM

HEADLIGHT DOES NOT COME ON

- Wrong headlight bulb
- Too many electrical accessories
- Hard charging
- Incorrect connection
- Improperly grounded circuit
- Poor contacts (main or dimmer switch)
- Headlight relay
- Burnt-out headlight bulb

HEADLIGHT BULB BURNT OUT

- Wrong headlight bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded circuit
- Faulty main switch
- Faulty dimmer switch
- Faulty headlight relay
- Headlight bulb life expired

WIRING DIAGRAM (EUR)

- (1) Crankshaft position sensor
- 2 A.C magneto
- (3) Rectifier/regulator
- (4) Main fuse
- (5) Battery
- (6) Fuel injection system fuse
- (7) Starter relay
- (8) Starter motor
- (9) Main switch
- 10 Alarm
- (11) Buck up fuse
- (12) Starting circuit cut-off relay
- 13 Sidestand switch
- (14) Neutral switch
- (15) Cylinder identification sensor
- (16) Throttle position sensor
- 17 Intake air pressure sensor
- (18) Atmospheric pressure sensor
- (19) Intake air temperature sensor
- 20 Coolant temperature sensor
- 21) Lean angle cut-off relay
- 22 O₂ sensor
- **23 ECU**
- 24 Injector (#1)
- 25 Injector (#2)
- 26 Al system solenoid
- 27) Intake solenoid
- 28 Ignition coil
- 29 Spark plug
- 30 Fuel pump
- (31) Speed sensor
- 32 Meter assembly
- 33 Oil level warning light
- 34 Neutral indicator light
- 35 Multi-function meter
- 36 Engine trouble warning light
- (37) Hi beam indicator light
- 38 Left turn signal indicator light
- 39 Right turn signal indicator light
- 40 Meter light
- (41) Oil level switch
- 42 Turn signal relav
- 43 Left handlebar switch
- 44) Horn switch
- 45 Pass switch
- 46 Dimmer switch
- 47) Hazard switch
- 48 Turn signal switch
- 49 Clutch switch
- 60 Horn
- (51) Rear turn signal light (left)
- 52 Rear turn signal light (right)
- 53 Front turn signal light (left)
- (54) Front turn signal light (right)
- (55) Headlight
- 56 Headlight relay
- (57) Right handlebar switch
- 58 Front brake light switch
- 59 Engine stop switch
- 60 Start switch
- (61) Ignition fuse

- 62 Headlight fuse
- 63 Hazard fuse
- 64 Signaling system fuse
- 65 Radiator fan motor fuse
- 66 Rear brake light switch
- 67) Tail/brake light
- (68) Radiator fan relay
- 69 Radiator fan motor
- 70 Auxiliary light

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 Skv blue

W White

Y Yellow B/L Black/Blue

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

G/B Green/Black

G/R Green/Red

G/W Green/White

G/Y Green/Yellow

Gy/G ... Gray/Green Gy/R ... Gray/Red

L/B Blue/Black

L/G Blue/Green

L/R Blue/Red

L/W Blue/White

L/Y Blue/Yellow

P/W Pink/White

R/B Red/Black R/G Red/Green

R/L Red/Blue

R/W Red/White

R/Y Red/Yellow

W/B White/Black

W/Y White/Yellow

Y/B Yellow/Black Y/G Yellow/Green

Y/L Yellow/Blue

WIRING DIAGRAM (OCE)

- (1) Crankshaft position sensor
- 2 A.C magneto
- 3 Rectifier/regulator
- (4) Main fuse
- (5) Battery
- (6) Fuel injection system fuse
- (7) Starter relay
- (8) Starter motor
- 9 Main switch
- 10 Buck up fuse
- (11) Starting circuit cut-off relay
- (12) Sidestand switch
- 13 Neutral switch
- (14) Cylinder identification sensor
- 15) Throttle position sensor
- 16 Intake air pressure sensor
- (17) Atmospheric pressure sensor
- 18 Intake air temperature sensor
- (19) Coolant temperature sensor
- 20 Lean angle cut-off switch
- 21 O₂ sensor
- 22 ECU
- 23 Injector (#1)
- 24 Injector (#2)
- 25) Al system solenoid
- 26 Intake solenoid
- 27 Ignition coil
- 28 Spark plug
- 29 Fuel pump
- 30 Speed sensor
- (31) Meter assembly
- 32 Oil level warning light
- 33 Neutral indicator light
- (34) Multi function meter
- 35 Engine trouble warning light
- 36 Hi beam indicator light
- 37 Left turn signal indicator light
- (38) Right turn signal indicator light
- 39 Meter light
- 40 Oil level switch
- (41) Turn signal relay
- 42 Left handlebar switch
- 43 Horn switch
- 44) Pass switch
- 45 Dimmer switch
- 46 Turn signal switch
- 47 Clutch switch
- 48 Horn
- 49 Rear turn signal light (left)
- 60 Rear turn signal light (right)
- (51) Front turn signal light (left)
- (52) Front turn signal light (right)
- 53 Headlight
- 54 Headlight relay
- 55 Right handlebar switch
- 56 Front brake light switch
- 57 Engine stop switch
- 58 Start switch
- 59 Ignition fuse
- 60 Headlight fuse
- (61) Signaling system fuse

- 62 Radiator fan motor fuse
- 63 Radiator fan relay
- 64 Radiator fan motor
- 65 Auxiliary light
- 66 Rear brake light switch
- (67) Tail/brake light

COLOR CODE

B Black
Br Brown
Ch . . . Chocolate
Dg . . . Dark green
G . . . Green
Gv . . . Grav

Gy Gray L Blue

Lg Light green
O Orange
P Pink

R Red Sb Sky blue

W White Y Yellow

B/L Black/Blue B/W Black/White

B/Y Black/Yellow Br/B Brown/Black Br/L Brown/Blue

Br/R . . . Brown/Red Br/W . . . Brown/White

G/B Green/Black G/R Green/Red

G/W . . . Green/White

G/Y ... Green/Yellow Gy/G ... Gray/Green

Gy/R ... Gray/Red L/B Blue/Black

L/G Blue/Green L/R Blue/Red

L/W Blue/White

L/Y Blue/Yellow

P/W Pink/White R/B Red/Black

R/G Red/Green

R/L Red/Blue R/W Red/White

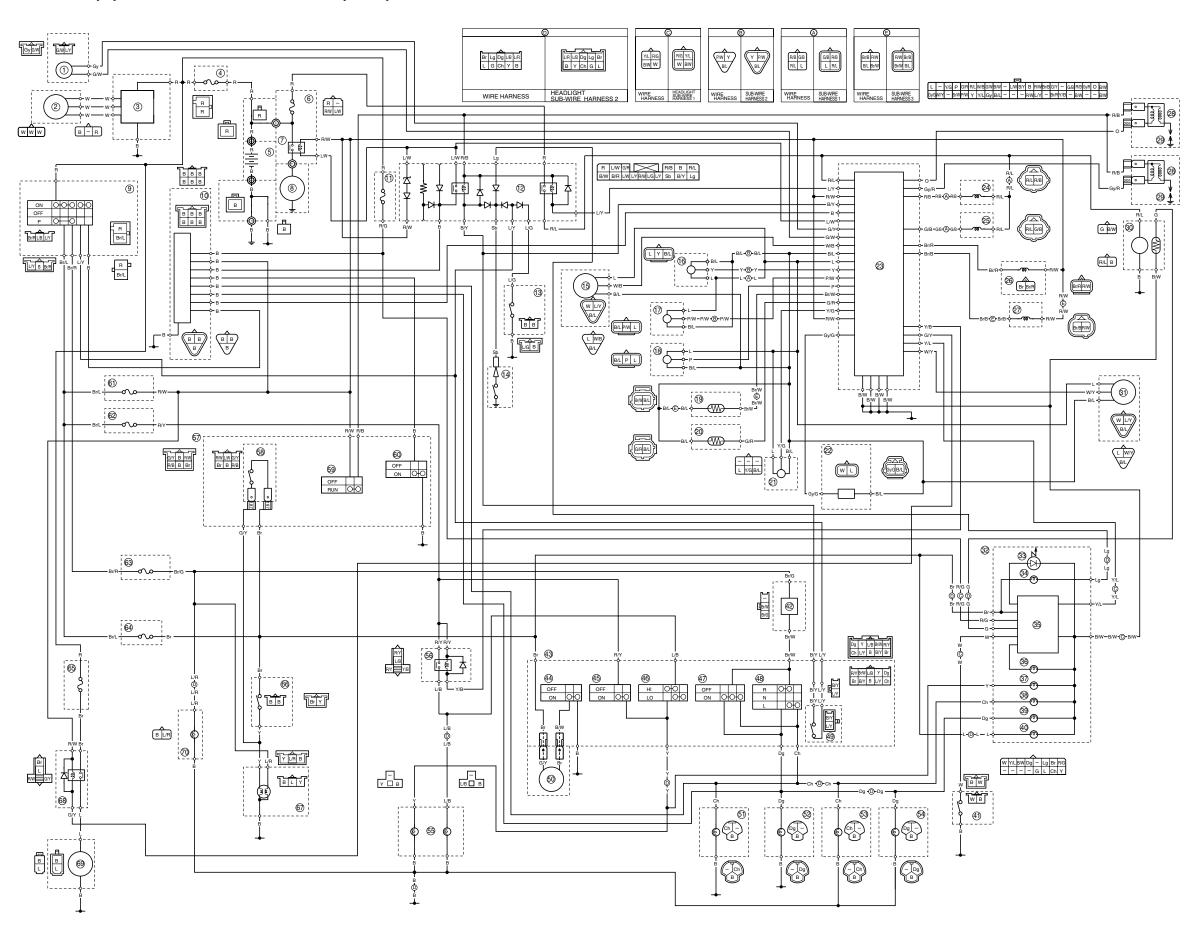
R/Y Red/Yellow W/Y White/Yellow

Y/B Yellow/Black Y/G Yellow/Green

Y/L . . . Yellow/Blue



TDM900 (R) 2003 WIRING DIAGRAM (EUR)



TDM900 (R) 2003 WIRING DIAGRAM (OCE)

