



YFM45FAS YFM450FAS

5ND2-AE2

SUPPLEMENTARY SERVICE MANUAL

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and data for the YFM45FAS/YFM450FAS. For complete service information procedures it is necessary to use this Supplementary Service Manual together with the following manual.

YFM45FAR/YFM450FAR SERVICE MANUAL: 5ND2-AE1

**YFM45FAS/YFM450FAS
SUPPLEMENTARY
SERVICE MANUAL**
©2003 by Yamaha Motor Co., Ltd.
First edition, March 2003
All rights reserved.
Any reproduction or unauthorized use
without the written permission of
Yamaha Motor Co., Ltd.
is expressly prohibited.

NOTICE

This manual was produced by the Yamaha Motor Company 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, so it is assumed that anyone who uses this book to perform maintenance and repairs on Yamaha machine has a basic understanding of the mechanical ideas and the procedures of machine repair. Repairs attempted by anyone without this knowledge are likely to render the machine 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.

IMPORTANT INFORMATION

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



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 machine operator, a bystander or a person inspecting or repairing the machine.



A CAUTION indicates special precautions that must be taken to avoid damage to the machine.

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

HOW TO USE THIS MANUAL

MANUAL ORGANIZATION

This manual consists of chapters for the main categories of subjects. (See "Illustrated symbols")

1st title ①: This is the title of the chapter with its symbol in the upper right corner of each page.

2nd title ②: This title indicates the section of the chapter and only appears on the first page of each section. It is located in the upper left corner of the page.

3rd title ③: This title indicates a sub-section that is followed by step-by-step procedures accompanied by corresponding illustrations.

EXPLODED DIAGRAMS

To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

1. An easy-to-see exploded diagram ④ is provided for removal and disassembly jobs.
2. Numbers ⑤ are given in the order of the jobs in the exploded diagram. A number that is enclosed by a circle indicates a disassembly step.
3. An explanation of jobs and notes is presented in an easy-to-read way by the use of symbol marks ⑥. The meanings of the symbol marks are given on the next page.
4. A job instruction chart ⑦ accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
5. For jobs requiring more information, the step-by-step format supplements ⑧ are given in addition to the exploded diagram and the job instruction chart.

② CLUTCH ① ENG

CLUTCH

④

⑤

⑥

⑦

Order	Job name/Part name	Q'ty	Remarks
Removing the clutch			
Primary and secondary sheaves			
1	Cover	1	Remove the parts in the order below. Refer to "PRIMARY AND SECONDARY SHEAVES".
2	Clutch housing assembly	1	
3	Gasket/dowel pin	1/2	
4	One-way clutch bearing	1	
5	Nut	1	
6	Clutch carrier assembly	1	
For installation, reverse the removal procedure.			

③ CLUTCH ENG

⑧

REMOVING THE CLUTCH

1. Remove:
 - Clutch housing assembly
 - Gasket
 - Dowel pins

NOTE:
Working in crisscross pattern, loosen each bolt 1/4 of a turn. Remove them after all of them are loosened.
2. Straighten:
 - Punched portion of the nut ①.
3. Remove:
 - Nut ①

NOTE:
Use a clutch holding tool ② to hold the clutch carrier assembly.

Clutch holding tool:
P/N. YM-91042, 90890-04086

CHECKING THE CLUTCH

1. Check:
 - Clutch housing ①
Heat damage/wear/damage → Replace.
 - One-way clutch bearing ②
Chafing/wear/damage → Replace.

NOTE:

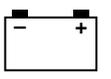
 - Replace the one-way clutch assembly and clutch housing as a set.
 - The one-way clutch bearing ② must be installed with the arrow mark side facing up.

Checking steps:

- Install the one-way clutch bearing and clutch carrier assembly to the clutch housing and hold the clutch carrier assembly.
- When turning the clutch carrier assembly clockwise the clutch carrier assembly should turn freely. If not, the one-way clutch assembly is faulty. Replace it.
- When turning the clutch carrier assembly counterclockwise the clutch housing and clutch carrier assembly should be engaged. If not, the one-way clutch assembly is faulty. Replace it.

4 - 51

4 - 53

① GEN INFO 	② SPEC 	
③ CHK ADJ 	④ ENG 	
⑤ COOL 	⑥ CARB 	
⑦ DRIV 	⑧ CHAS 	
⑨ ELEC 	⑩ TRBL SHTG ?	
⑪ 	⑫ 	
⑬ 	⑭ 	
⑮ 	⑯ 	
⑰ 	⑱ 	
⑲ 	⑳ 	㉑ 
㉒ 	㉓ 	㉔ 
㉕ 	㉖ New	

EB003000

ILLUSTRATED SYMBOLS

Illustrated symbols ① to ⑩ are printed on the top right of each page and indicate the subject of each chapter.

- ① General information
- ② Specifications
- ③ Periodic checks and adjustments
- ④ Engine
- ⑤ Cooling system
- ⑥ Carburetion
- ⑦ Drive train
- ⑧ Chassis
- ⑨ Electrical
- ⑩ Troubleshooting

Illustrated symbols ⑪ to ⑱ are used to identify the specifications appearing in the text.

- ⑪ Can be serviced with engine mounted
- ⑫ Filling fluid
- ⑬ Lubricant
- ⑭ Special tool
- ⑮ Torque
- ⑯ Wear limit, clearance
- ⑰ Engine speed
- ⑱ Ω, V, A

Illustrated symbols ⑲ to ⑳ in the exploded diagrams indicate the types of lubricants and lubrication points.

- ⑲ Apply engine oil
- ⑳ Apply gear oil
- ㉑ Apply molybdenum disulfide oil
- ㉒ Apply wheel bearing grease
- ㉓ Apply lithium-soap-based grease
- ㉔ Apply molybdenum disulfide grease

Illustrated symbols ㉕ to ㉖ in the exploded diagrams indicate where to apply a locking agent ㉕ and when to install a new part ㉖.

- ㉕ Apply the locking agent (LOCTITE®)
- ㉖ Replace

CONTENTS

GENERAL INFORMATION	1
FEATURES	1
OVERRIDE SWITCH (DEACTIVATING THE SPEED LIMITER WHEN THE DIFFERENTIAL IS LOCKED)	1
SPECIFICATIONS	3
GENERAL SPECIFICATIONS	3
MAINTENANCE SPECIFICATIONS	4
ENGINE	4
CHASSIS	4
ELECTRICAL	5
CHASSIS	6
FRONT AND REAR BRAKES	6
REAR BRAKE MASTER CYLINDER	6
STEERING SYSTEM	8
STEERING STEM	8
TIE ROD AND STEERING KNUCKLE	10
ELECTRICAL	13
CHECKING THE SWITCH	13
CHECKING THE SWITCH CONTINUITY	13
SIGNAL SYSTEM	15
CIRCUIT DIAGRAM	15

YFM45FAS/YFM450FAS WIRING DIAGRAM

GENERAL INFORMATION

FEATURES

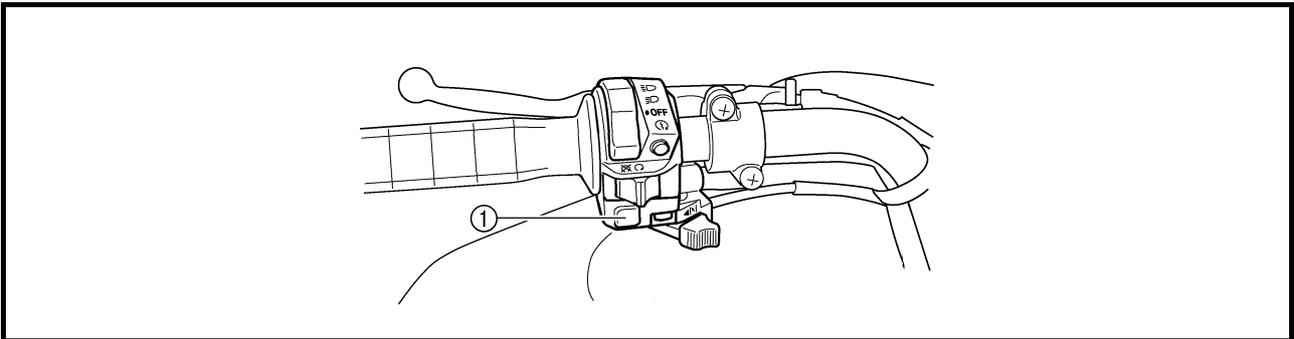
OVERRIDE SWITCH

(DEACTIVATING THE SPEED LIMITER WHEN THE DIFFERENTIAL IS LOCKED)

This model is equipped with a speed limiter system (35 km/h [22 mph]) that operates when the differential is locked and the ATV is traveling forward. If additional engine power is required (e.g., to free the ATV from mud) when the ATV is traveling forward and the differential is locked, the speed limiter can be temporarily deactivated by pressing the override switch.

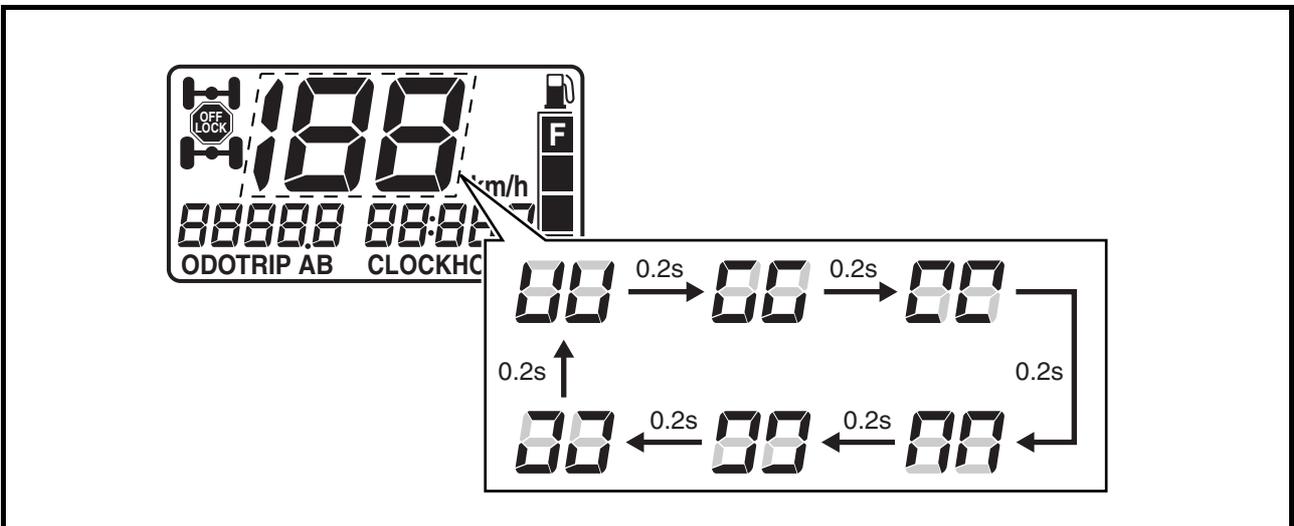
NOTE:

The speed limiter is deactivated only while the override switch is being pressed.



① Override switch

When the override switch is pressed, the segments of the speedometer digits are displayed as follows.



NOTE:

- When the front differential gear is locked and the drive select lever is in the “L”, “H”, “N”, or “P” position, the display changes when the override switch is pressed. (The speedometer display is not displayed at this time.)
- When the front differential gear is not locked or the drive select lever is in the “R” position, the display does not change even if the override switch is pressed.

CAUTION:

If the segments of the speedometer digits show the override display when the override switch is not pressed, the speed limiter system is malfunctioning. Check the override switch and ignition system, and then repair if necessary.



SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Standard
Model code:	5ND7/5ND9: (for CDN) 5NDA: (for Europe) 5NDB: (for Oceania)
Chassis: Frame type Caster angle Camber angle Kingpin angle Kingpin offset Trail Tread (STD) front rear Toe-in	Steel tube frame 4° 1° 11° 0 mm (0 in) 21 mm (0.83 in) 850 mm (33.46 in) 825 mm (32.48 in) 0 ~ 10 mm (0 ~ 0.39 in)

**MAINTENANCE SPECIFICATIONS
ENGINE**

Item	Standard	Limit
Carburetor:		
I. D. mark	5NDC 00	----
Main jet (M.J)	#131.3	----
Main air jet (M.A.J)	#50	----
Jet needle (J.N)	5EP13-55-3	----
Needle jet (N.J)	P-0M	----
Pilot air jet (P.A.J.1)	#80	----
Pilot air jet (P.A.J.2)	1.3	----
Pilot outlet (P.O)	0.95	----
Pilot jet (P.J)	#17.5	----
Bypass 1 (B.P.1)	0.8	----
Bypass 2 (B.P.2)	0.8	----
Bypass 3 (B.P.3)	0.8	----
Pilot screw (P.S)	2-1/2 turns out	----
Valve seat size (V.S)	2.0	----
Starter jet (G.S.1)	#70	----
Starter jet (G.S.2)	0.9	----
Throttle valve size (Th.V)	#90	----
Float height (F.H)	13 mm (0.51 in)	----
Fuel level (F.L)	3.0 ~ 4.0 mm (0.12 ~ 0.16 in)	----
Engine idle speed	1,450 ~ 1,550 r/min	----
Intake vacuum	32 kPa (240 mmHg, 9.45 inHg)	----
Cooling system:		
Radiator core		
Width	300 mm (11.8 in)	----
Height	208 mm (8.19 in)	----
Thickness	26 mm (1.02 in)	----
Radiator cap opening pressure	93.7 ~ 122.6 kPa (0.937 ~ 1.226 kg/cm ² , 13.32 ~ 17.43 psi)	----
Radiator capacity	0.70 L (0.62 Imp qt, 0.74 US qt)	----
Coolant reservoir		
Capacity	0.25 L (0.22 Imp qt, 0.26 US qt)	----
From low to full level	0.15 L (0.13 Imp qt, 0.16 US qt)	----

CHASSIS

Tightening torques

Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m·kg	ft·lb	
Steering stem, pitman arm and frame	M14	190	19.0	140	
Brake hose holder and steering knuckle	M6	7	0.7	5.1	
Brake hose holder and upper front arm	M6	7	0.7	5.1	



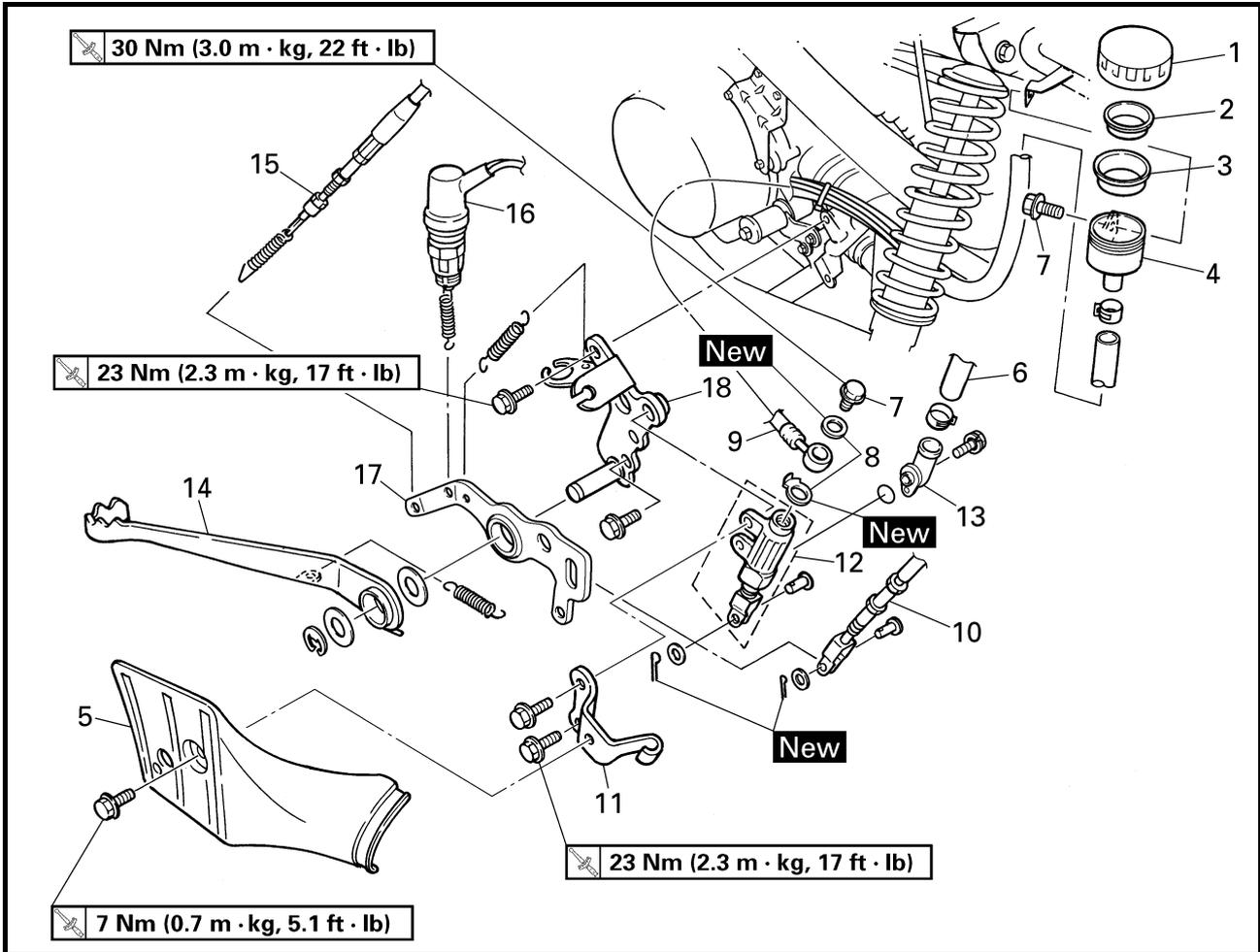
ELECTRICAL

Item	Standard	Limit
Ignition coil:		
Model/manufacture	2JN/YAMAHA	----
Minimum spark gap	6 mm (0.24 in)	----
Primary winding resistance	0.18 ~ 0.28 Ω at 20 °C (68 °F)	----
Secondary winding resistance	6.32 ~ 9.48 kΩ at 20 °C (68 °F)	----
Four-wheel drive relay 1:		
Model/manufacture	G8HN-1C4T-DJ-Y52/OMRON	----
Coil winding resistance	94.5 ~ 115.5 Ω at 20 °C (68 °F)	----
Four-wheel drive relay 2:		
Model/manufacture	G8HN-1C4T-DJ-Y52/OMRON	----
Coil winding resistance	94.5 ~ 115.5 Ω at 20 °C (68 °F)	----
Four-wheel drive relay 3:		
Model/manufacture	ACA12115-1/MATSUSHITA	----
Coil winding resistance	72 ~ 88 Ω at 20 °C (68 °F)	----

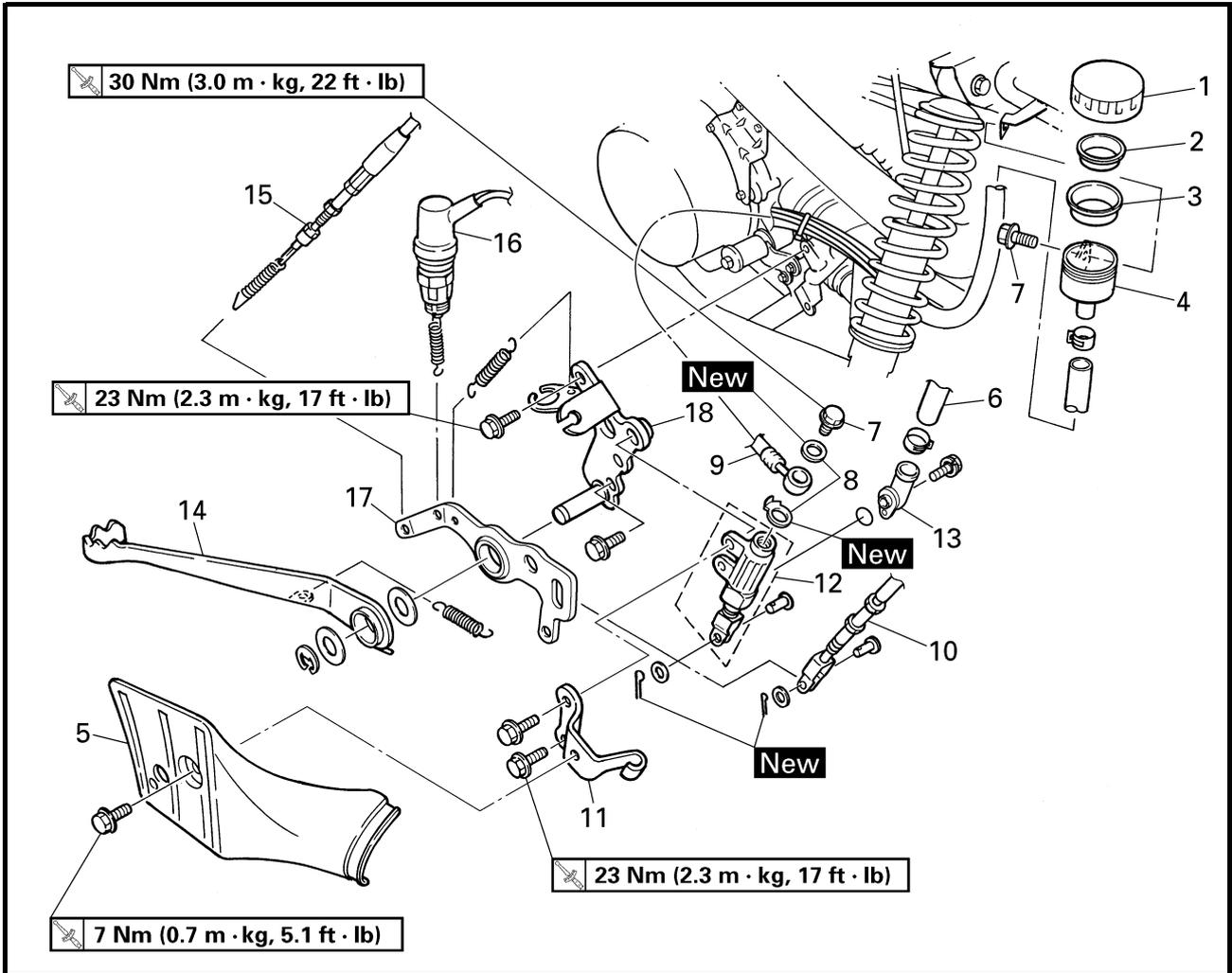
CHASSIS

FRONT AND REAR BRAKES

REAR BRAKE MASTER CYLINDER



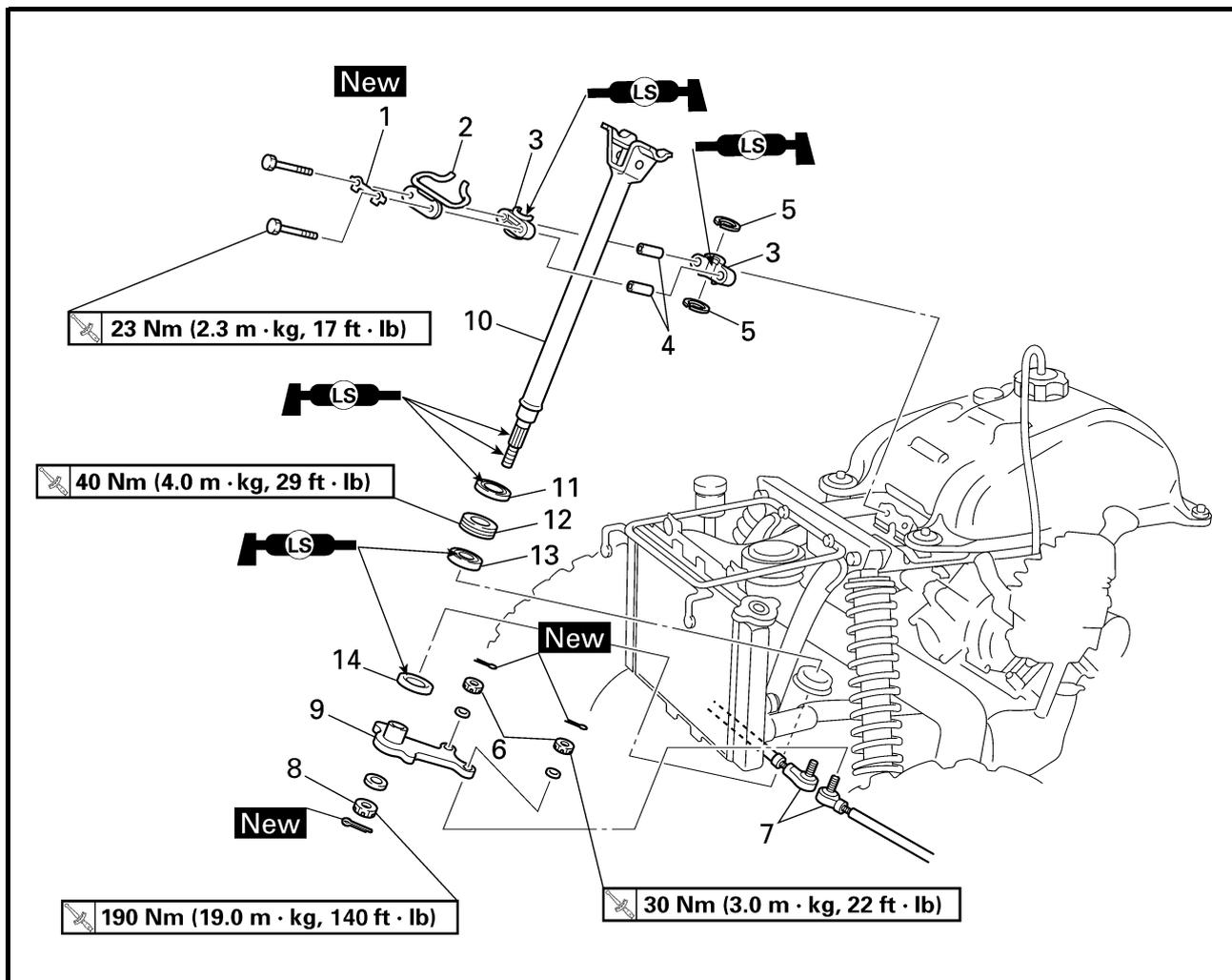
Order	Job name/Part name	Q'ty	Remarks
	Removing the rear brake master cylinder		Remove the parts in the order below.
	Front fender		Refer to "SEAT, CARRIERS, FENDERS AND FUEL TANK" in CHAPTER 3. (Manual No.: 5ND2-AE1)
	Brake fluid		Drain.
1	Brake fluid reservoir cap	1	
2	Brake fluid reservoir diaphragm holder	1	
3	Brake fluid reservoir diaphragm	1	
4	Brake fluid reservoir	1	
5	Brake master cylinder cover	1	
6	Brake fluid reservoir hose	1	
7	Union bolt	1	
8	Copper washer	2	Refer to "INSTALLING THE REAR BRAKE MASTER CYLINDER" in CHAPTER 8. (Manual No.: 5ND2-AE1)
9	Brake hose	1	



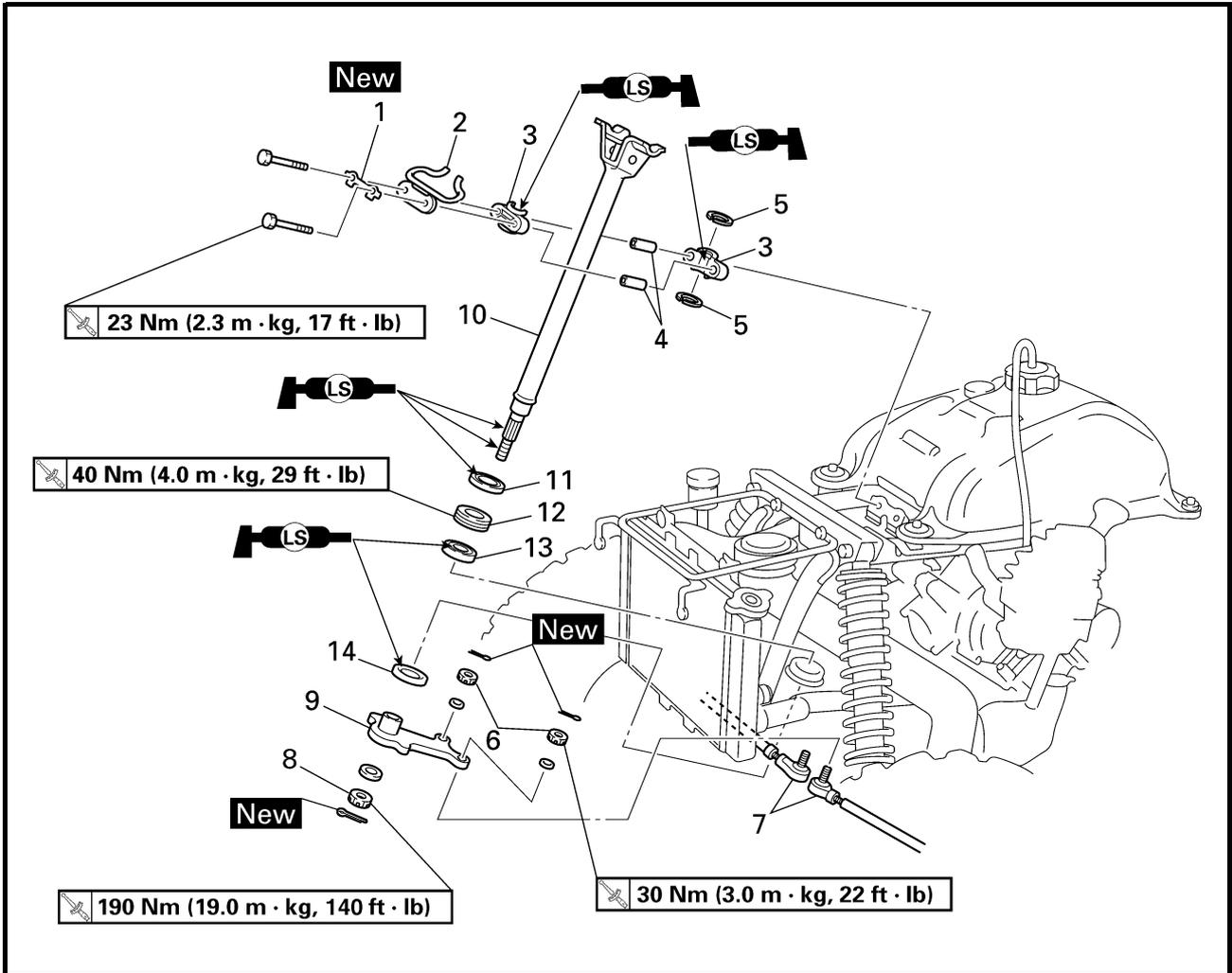
Order	Job name/Part name	Q'ty	Remarks
10	Brake cable	1	Disconnect.
11	Bracket	1	
12	Brake master cylinder	1	
13	Hose joint	1	
14	Brake pedal	1	
15	Select lever control cable	1	Disconnect.
16	Rear brake light switch	1	
17	Bracket	1	
18	Brake master cylinder bracket	1	
			For installation, reverse the removal procedure.

STEERING SYSTEM

STEERING STEM



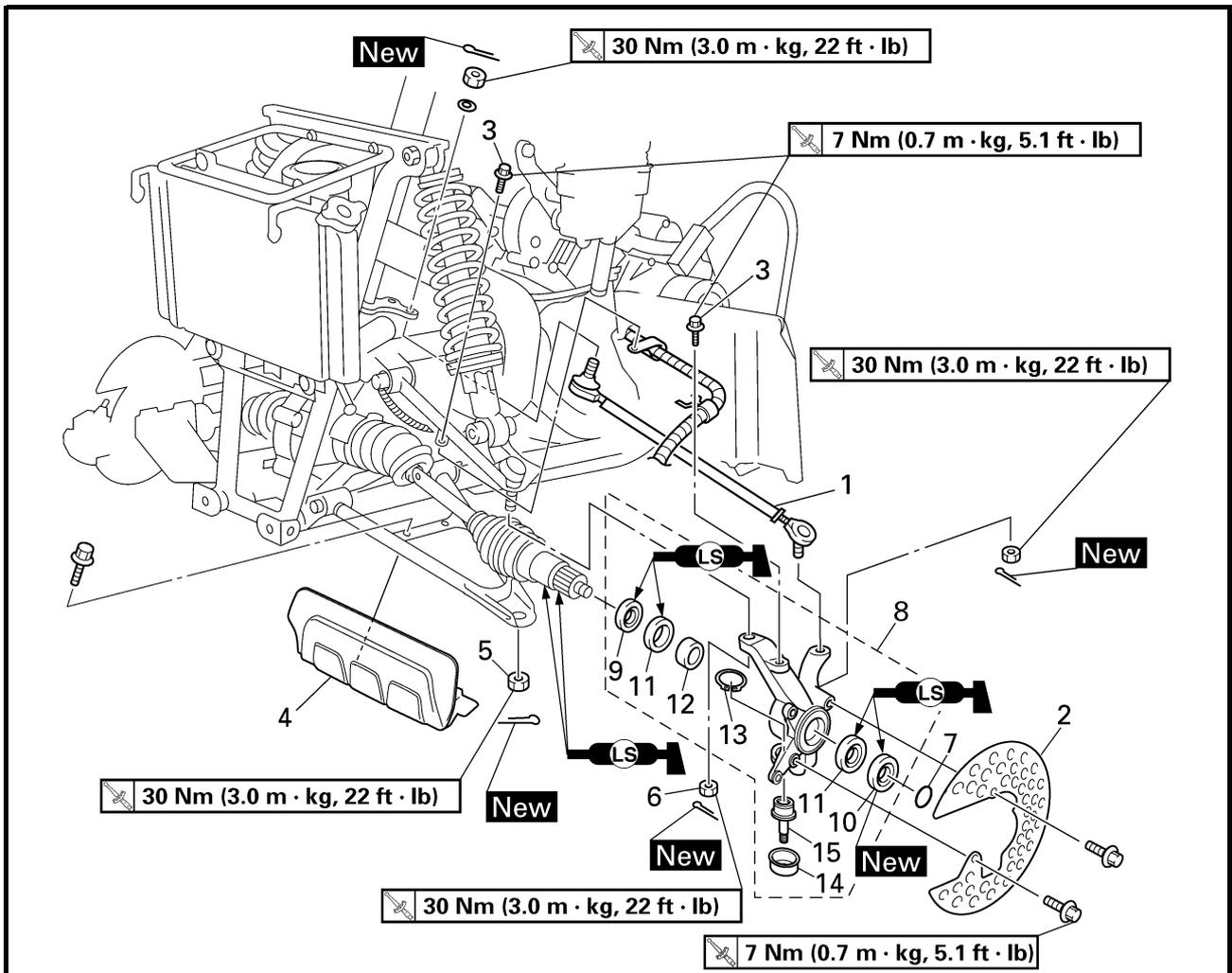
Order	Job name/Part name	Q'ty	Remarks
	Removing the steering stem		
	Handlebar		Remove the parts in the order below. Refer to "HANDLEBAR" in CHAPTER 8. (Manual No.: 5ND2-AE1)
	Seat		Refer to "SEAT, CARRIERS, FENDERS AND FUEL TANK" in CHAPTER 3. (Manual No.: 5ND2-AE1)
	Front fender		
1	Lock washer	1	Refer to "INSTALLING THE CABLE GUIDE" in CHAPTER 8. (Manual No.: 5ND2-AE1)
2	Cable guide	1	
3	Steering stem bushing	2	
4	Collar	2	
5	Oil seal	2	
6	Tie rod end nut	2	
7	Tie rod	2	Disconnect.
8	Steering stem nut	1	
9	Pitman arm	1	
10	Steering stem	1	



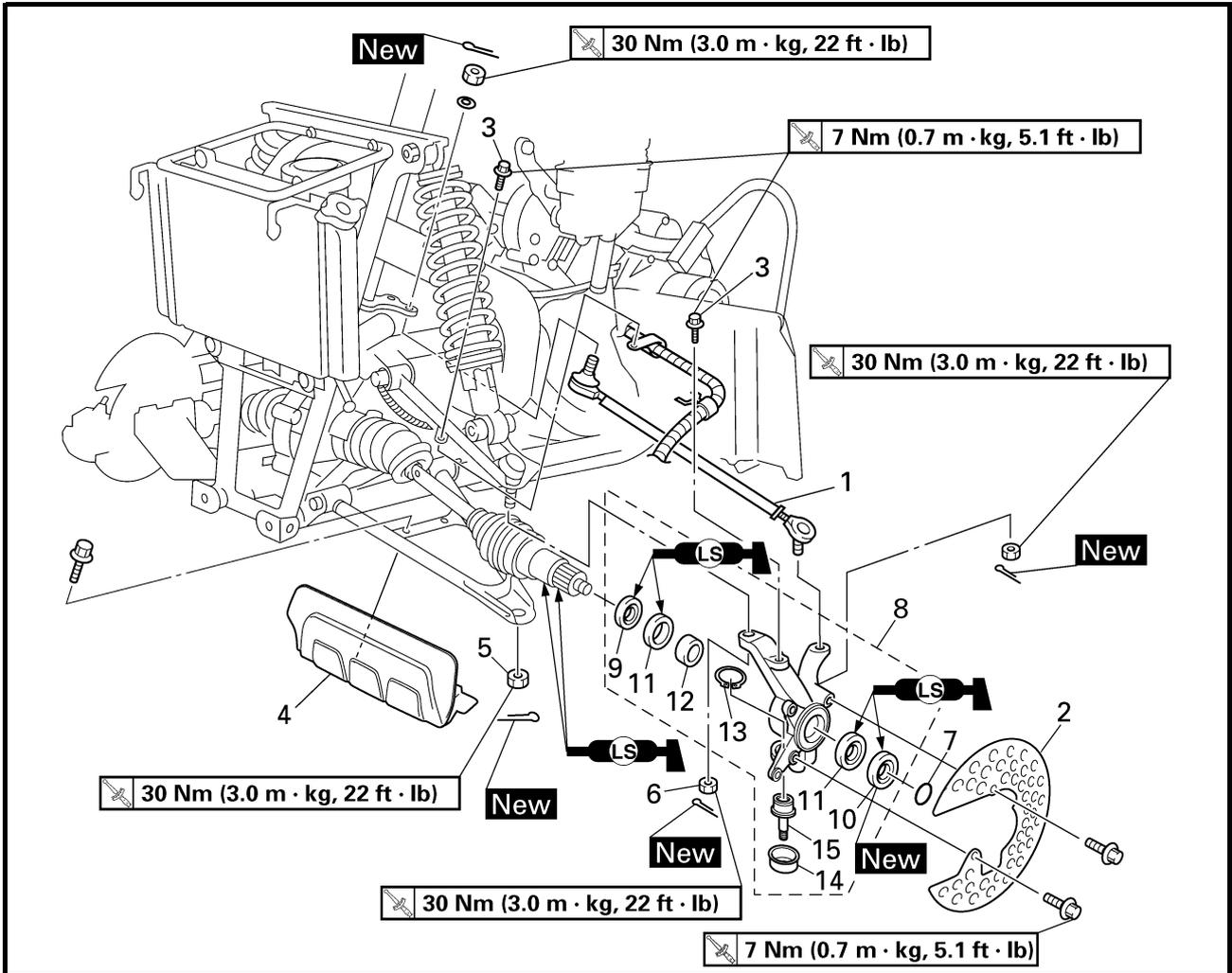
Order	Job name/Part name	Q'ty	Remarks
11	Oil seal	1	Refer to "REMOVING/INSTALLING THE BEARING RETAINER" in CHAPTER 8. (Manual No.: 5ND2-AE1)
12	Bearing retainer	1	
13	Bearing	1	
14	Oil seal	1	
			For installation, reverse the removal procedure.



TIE ROD AND STEERING KNUCKLE



Order	Job name/Part name	Q'ty	Remarks
	Removing the tie rod and steering knuckle		Remove the parts in the order below.
	Front fender		Refer to "SEAT, CARRIERS, FENDERS AND FUEL TANK" in CHAPTER 3. (Manual No.: 5ND2-AE1)
	Front wheel/brake disc		Refer to "FRONT AND REAR WHEELS" in CHAPTER 8. (Manual No.: 5ND2-AE1)
1	Tie rod	1	Refer to "INSTALLING THE TIE ROD" in CHAPTER 8. (Manual No.: 5ND2-AE1)
2	Brake disc guard	1	
3	Brake hose holder bolt	2	
4	Protector	1	
5	Nut	1	
6	Nut	1	



Order	Job name/Part name	Q'ty	Remarks
7	O-ring	1	Refer to "REMOVING THE STEERING KNUCKLE" in CHAPTER 8. (Manual No.: 5ND2-AE1) For installation, reverse the removal procedure.
8	Steering knuckle	1	
9	Oil seal	1	
10	Oil seal	1	
11	Bearing	2	
12	Spacer	1	
13	Circlip	1	
14	Rubber boot	1	
15	Ball joint	1	





ELECTRICAL

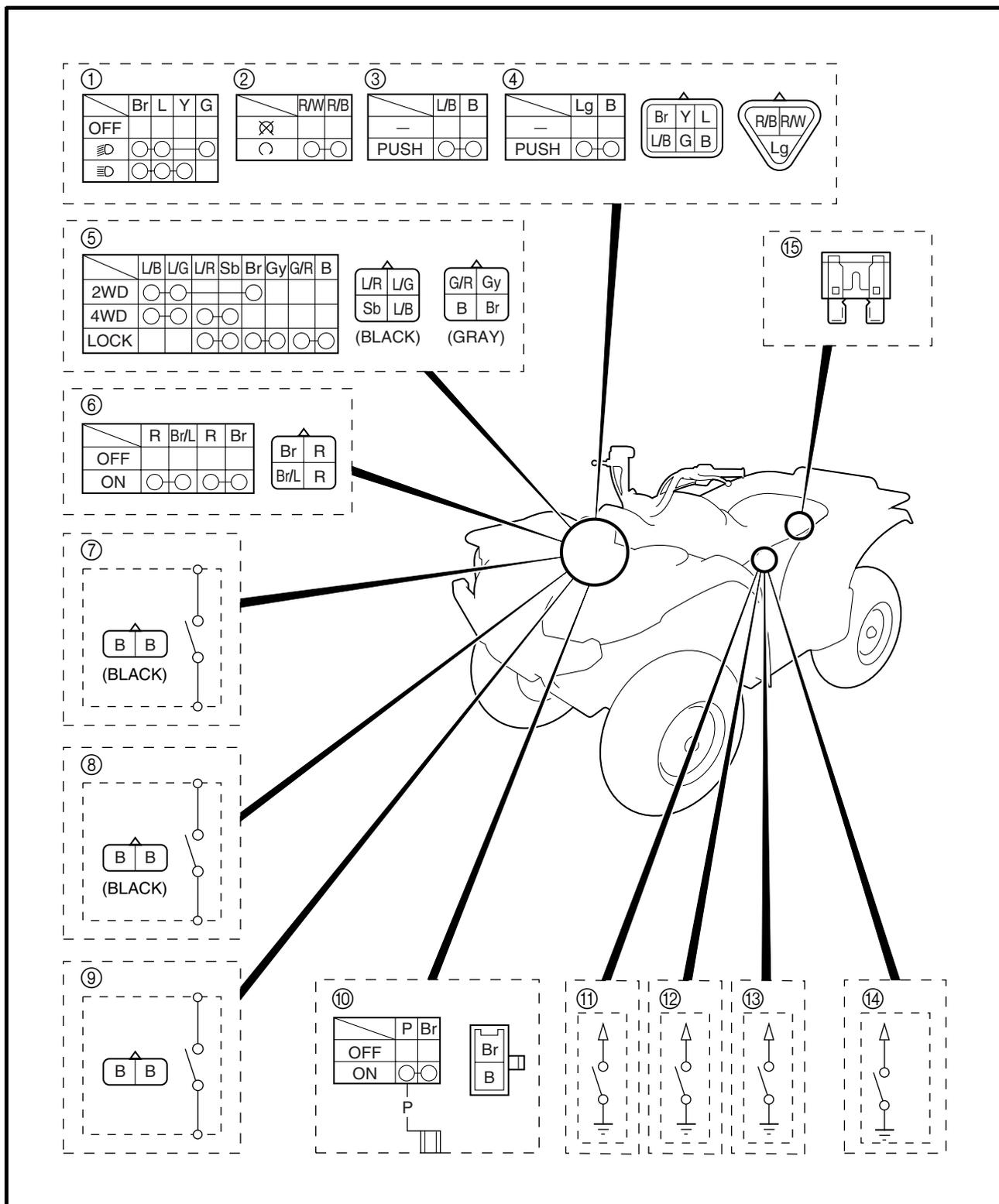
CHECKING THE SWITCH

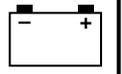
CHECKING THE SWITCH CONTINUITY

Refer to "CHECKING THE SWITCH" in CHAPTER 9 (Manual No.: 5ND2-AE1) and check for continuity between lead terminals.

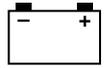
Poor connection, no continuity → Correct or replace.

* The coupler locations are circled.



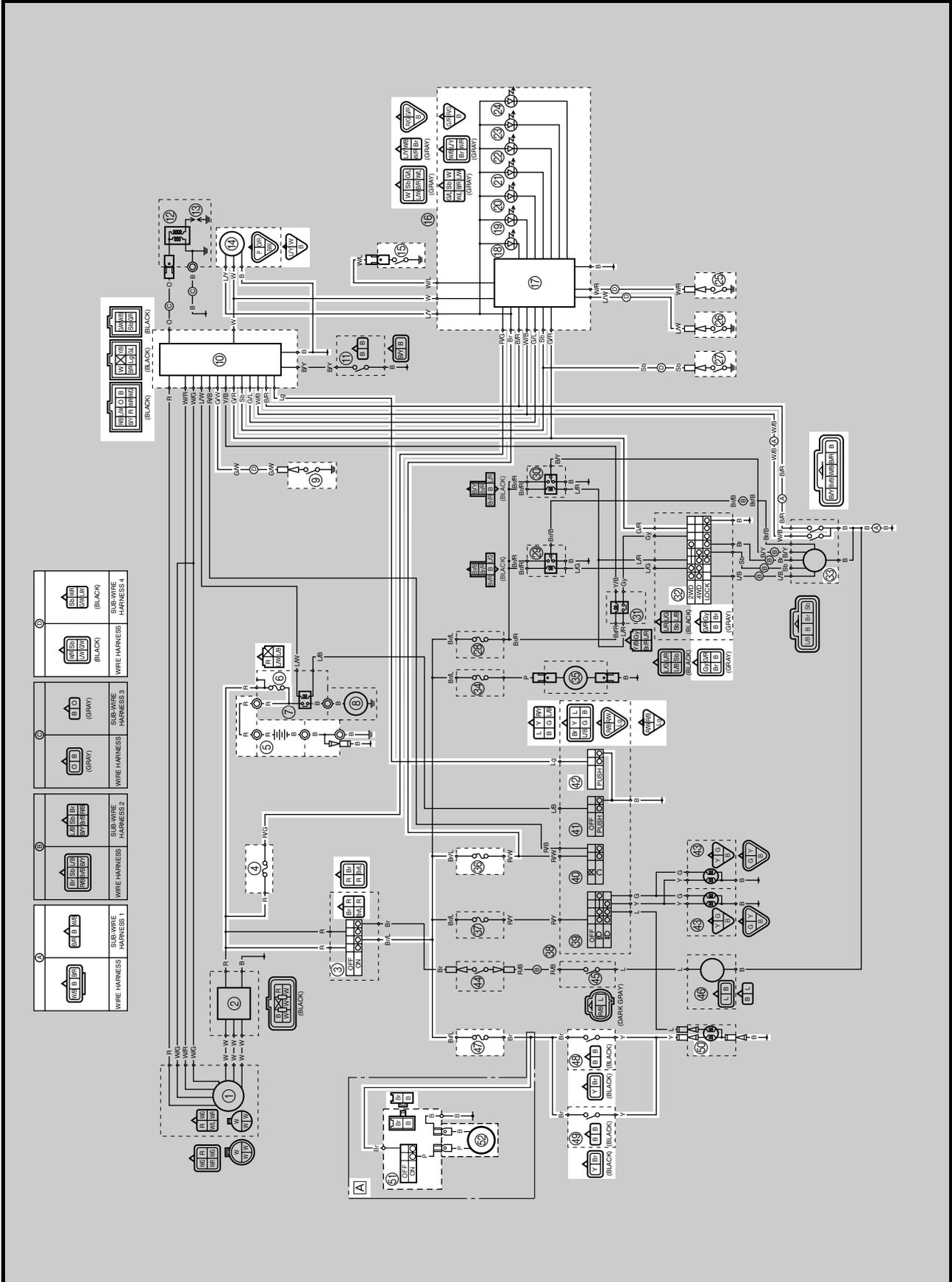


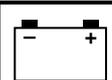
- ① Light switch
- ② Engine stop switch
- ③ Start switch
- ④ Override switch
- ⑤ On-command four-wheel drive switch and differential gear lock switch
- ⑥ Main switch
- ⑦ Rear brake light switch
- ⑧ Front brake light switch
- ⑨ Rear brake switch
- ⑩ Horn switch (for Europe and Oceania)
- ⑪ Reverse switch
- ⑫ Neutral switch
- ⑬ High-range switch
- ⑭ Low-range switch
- ⑮ Fuse



EB806000

SIGNAL SYSTEM
CIRCUIT DIAGRAM





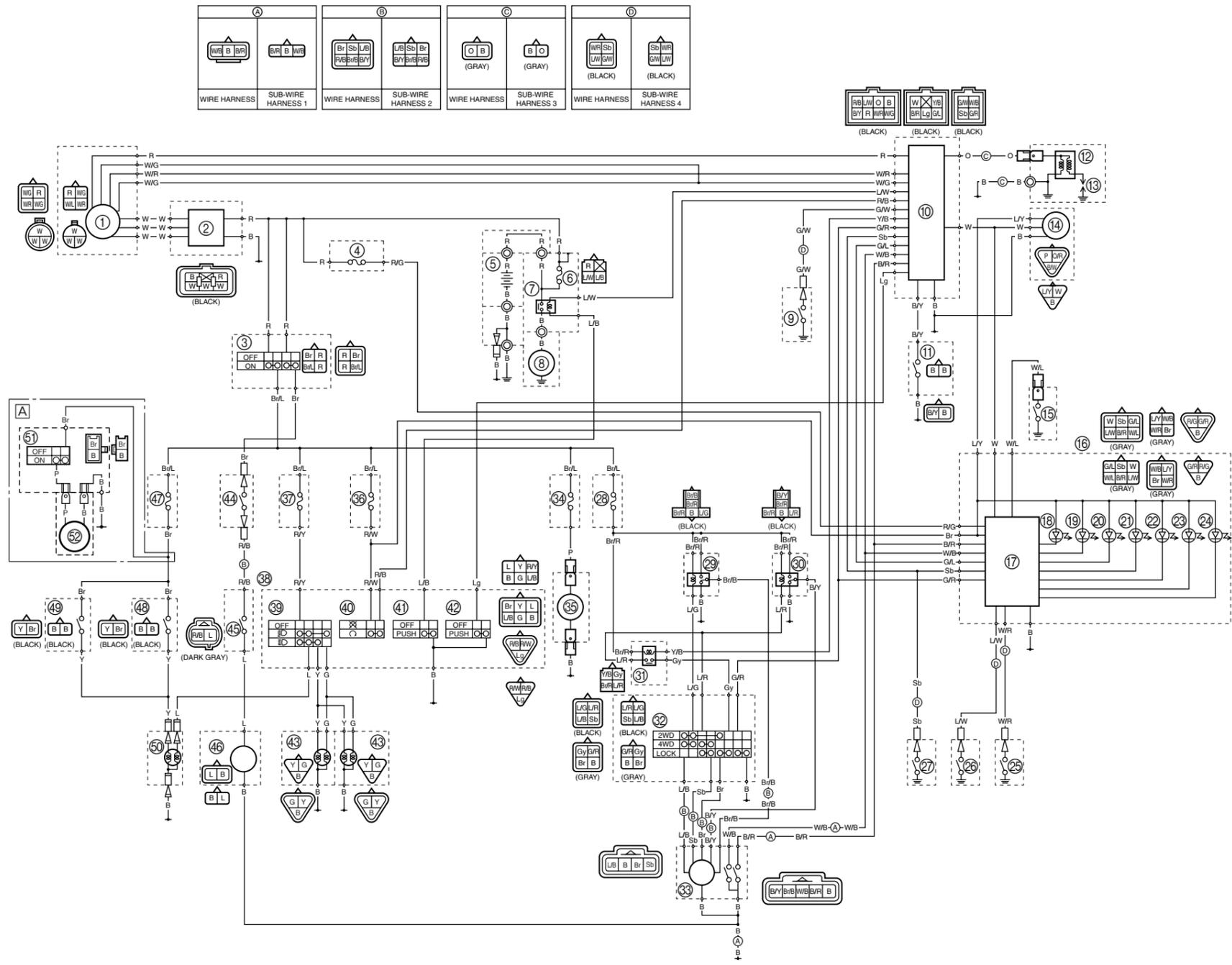
- ③ Main switch
- ④ Backup fuse
- ⑤ Battery
- ⑥ Main fuse
- ⑨ Reverse switch
- ⑩ CDI unit
- ⑭ Speed sensor
- ⑮ Thermo switch 1
- ⑰ Multi-function meter
- ⑱ Differential gear lock indicator light
- ⑲ Coolant temperature warning light
- ⑳ Reverse indicator light
- ㉑ Neutral indicator light
- ㉒ Park indicator light
- ㉓ High-range indicator light
- ㉔ Low-range indicator light
- ㉕ Low-range switch
- ㉖ High-range switch
- ㉗ Neutral switch
- ㉚ On-command four-wheel drive switch and differential gear lock switch
- ㉛ Gear motor
- ㉜ Ignition fuse
- ㉝ Override switch
- ㉞ Signaling system fuse
- ㉟ Front brake light switch
- ㊱ Rear brake light switch
- ㊲ Tail/brake light
- ㊳ Horn switch
- ㊴ Horn

Ⓐ For Europe and Oceania



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

YFM45FAS/YFM450FAS WIRING DIAGRAM



- ① A.C. magneto
- ② Rectifier/regulator
- ③ Main switch
- ④ Backup fuse
- ⑤ Battery
- ⑥ Main fuse
- ⑦ Starter relay
- ⑧ Starter motor
- ⑨ Reverse switch
- ⑩ CDI unit
- ⑪ Rear brake switch
- ⑫ Ignition coil
- ⑬ Spark plug
- ⑭ Speed sensor
- ⑮ Thermo switch 1
- ⑯ Meter assembly
- ⑰ Multi-function meter
- ⑱ Differential gear lock indicator light
- ⑲ Coolant temperature warning light
- ⑳ Reverse indicator light
- ㉑ Neutral indicator light
- ㉒ Park indicator light
- ㉓ High-range indicator light
- ㉔ Low-range indicator light
- ㉕ Low-range switch
- ㉖ High-range switch
- ㉗ Neutral switch
- ㉘ Four-wheel drive fuse
- ㉙ Four-wheel drive relay 1
- ㉚ Four-wheel drive relay 2
- ㉛ Four-wheel drive relay 3
- ㉜ On-command four-wheel drive switch and differential gear lock switch
- ㉝ Gear motor
- ㉞ Auxiliary DC jack fuse
- ㉟ Auxiliary DC jack
- ㊱ Ignition fuse
- ㊲ Headlight fuse
- ㊳ Handlebar switch (left)
- ㊴ Light switch
- ㊵ Engine stop switch
- ㊶ Start switch
- ㊷ Override switch
- ㊸ Headlight
- ㊹ Circuit breaker (fan motor)
- ㊺ Thermo switch 2
- ㊻ Fan motor
- ㊼ Signaling system fuse
- ㊽ Front brake light switch
- ㊾ Rear brake light switch
- ㊿ Tail/brake light
- ① Horn switch
- ② Horn

Ⓐ For Europe and Oceania

COLOR CODE

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