YAMAHA

XV17AS(C)
XV17ASS(C)
XV17ATS(C)

SUPPLEMENTARY SERVICE MANUAL

LIT-11616-17-09 4WM-28197-E1

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and data for the XV17AS(C)/XV17ASS(C)/XV17ATS(C). For complete service information procedures it is necessary to use this Supplementary Service Manual together with the following manual.

XV16AL/XV16ALC/XV16ATL/XV16ATLC SERVICE MANUAL:
LIT-11616-12-56 (4WM-28197-E0)

XV17AS(C)/XV17ASS(C)/XV17ATS(C)
SUPPLEMENTARY
SERVICE MANUAL

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LIT-11616-17-09

EAS00003

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.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the vehicle will operate as designed. If there is any question about a service procedure, it is imperative that you contact a Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from his vehicle and to conform with federal environmental quality objectives.

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.

This Service Manual contains information regarding periodic maintenance to the emission control system. Please read this material carefully.

NOTE:
Designs and specifications are subject to change without notice.

EAS00004

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 motorcycle operator, a bystander or a person checking or repairing the motorcycle.

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.

EAS00007

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.

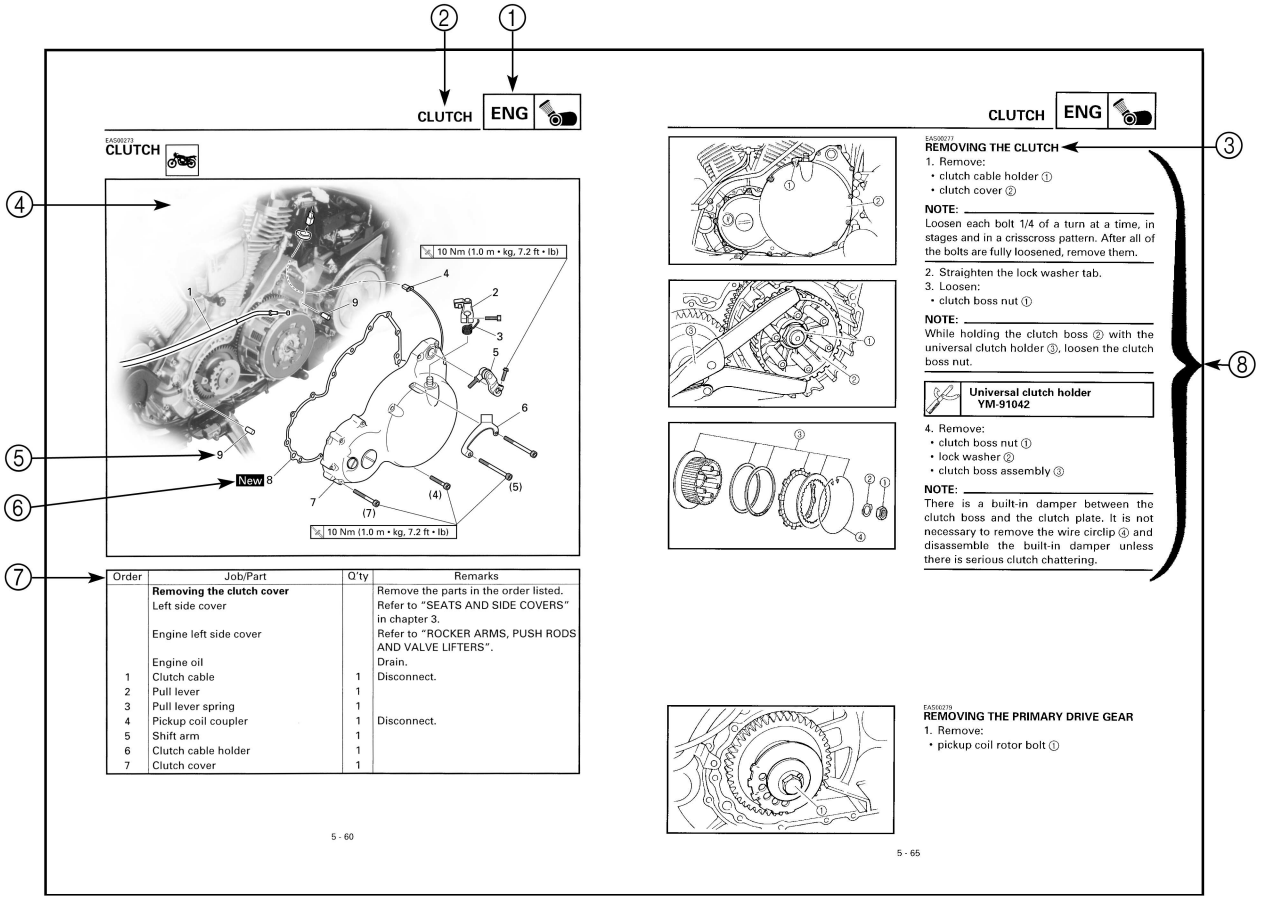
⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.

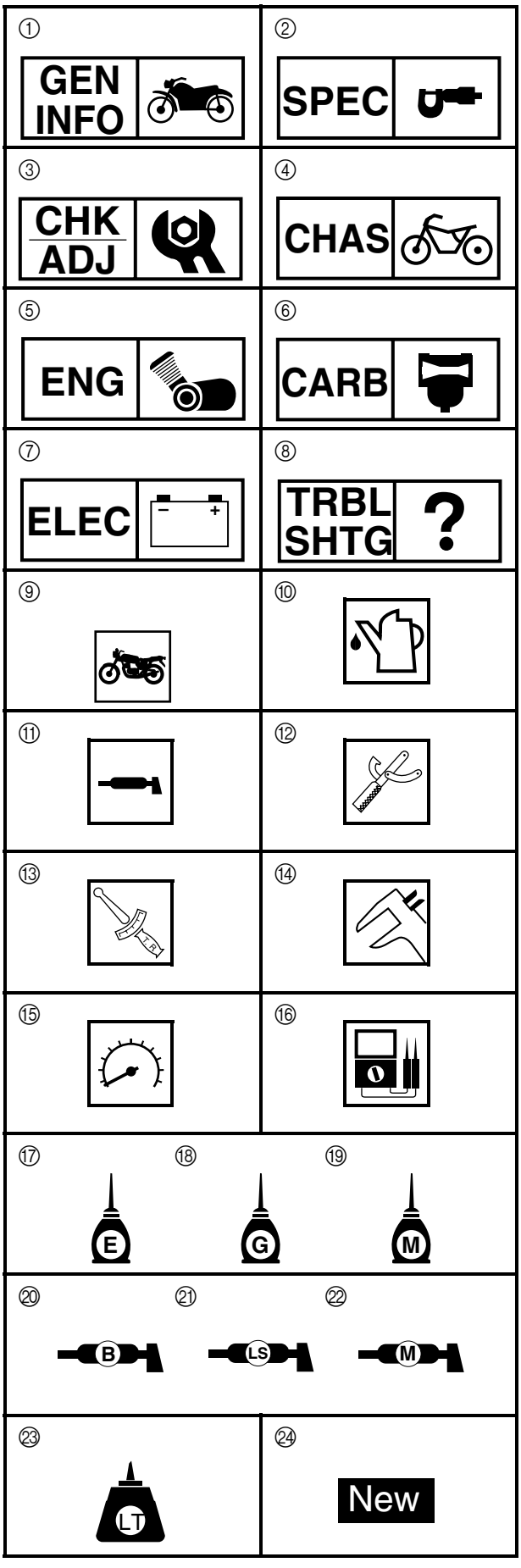
⑥ Symbols indicate parts to be lubricated or replaced.

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 ⑧ indicate the subject of each chapter.

① General information
② Specifications
③ Periodic checks and adjustments
④ Chassis
⑤ Engine
⑥ Carburetor
⑦ Electrical system
⑧ Troubleshooting

Symbols ⑨ to ⑯ indicate the following.

⑨ Serviceable with engine mounted
⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening torque
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Electrical data

Symbols ⑰ to ㉒ in the exploded diagrams indicate the types of lubricants and lubrication points.

⑰ Engine oil
⑱ Gear oil
⑲ Molybdenum disulfide oil
⑳ Wheel bearing grease
㉑ Lithium-soap-based grease
㉒ Molybdenum disulfide grease

Symbols ㉓ to ㉔ in the exploded diagrams indicate the following.

㉓ Apply locking agent (LOCTITE®).
㉔ Replace the part.

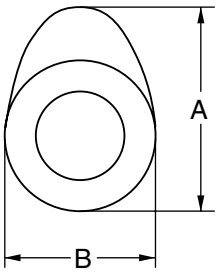
CONTENTS

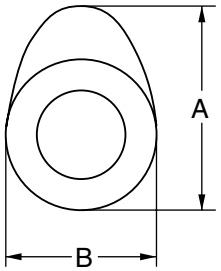
SPECIFICATIONS

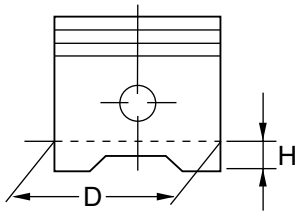
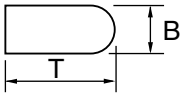
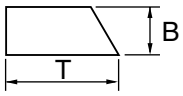
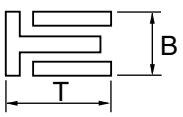
GENERAL SPECIFICATIONS

Item	Standard	Limit
Model code	5VN1 (XV17A for USA)	----
	5VN2 (XV17A for California)	----
	5VN6 (XV17A for CDN)	----
	5VR1 (XV17AS for USA)	----
	5VR2 (XV17AS for California)	----
	5VR3 (XV17AS for CDN)	----
	5VP1 (XV17AT for USA)	----
	5VP2 (XV17AT for California)	----
	5VP3 (XV17AT for CDN)	----
	5VP4 (XV17AT for Hawaii)	----
Dimensions		
Overall length	2,500 mm (98.4 in)	----
Overall width	980 mm (38.6 in)	----
Overall height	1,140 mm (44.9 in) (XV17A/XV17AS)	----
	1,500 mm (59.1 in) (XV17AT)	----
Seat height	710 mm (28.0 in)	----
Wheelbase	1,688 mm (66.5 in)	----
Minimum ground clearance	145 mm (5.71 in)	----
Minimum turning radius	3,200 mm (126 in)	----
Weight		
Wet (with oil and a full fuel tank)	334 kg (736 lb) (XV17A/XV17AS)	----
	349 kg (769 lb) (XV17AT)	----
Dry (without oil and fuel)	312 kg (688 lb) (XV17A/XV17AS)	----
	327 kg (721 lb) (XV17AT)	----
Maximum load (total of cargo, rider, passenger, and accessories)	194 kg (428 lb) (XV17A/XV17AS)	----
	179 kg (395 lb) (XV17AT)	----

ENGINE SPECIFICATIONS

Item	Standard	Limit
Engine		
Engine type	Air-cooled, 4-stroke, OHV	----
Displacement	1,670 cm^3	----
Cylinder arrangement	V-type 2-cylinder	----
Bore × stroke	97 × 113 mm (3.82 × 4.45 in)	----
Compression ratio	8.36 : 1	----
Engine idling speed	850 ~ 950 r/min	----
Vacuum pressure at engine idling speed	43.3 kPa (325 mm Hg, 12.8 in Hg)	----
Standard compression pressure (at sea level)	1,200 kPa (12.0 kgf/cm^2, 171 psi) at 200 r/min	----
Camshafts		
Drive system	Gear drive	----
Crankcase hole inside diameter	25.000 ~ 25.021 mm (0.9843 ~ 0.9851 in)	----
Camshaft cover hole inside diameter	28.000 ~ 28.021 mm (1.1024 ~ 1.1032 in)	----
Camshaft journal diameter (crankcase side)	24.937 ~ 24.950 mm (0.9818 ~ 0.9823 in)	----
Camshaft journal diameter (camshaft cover side)	27.967 ~ 27.980 mm (1.1011 ~ 1.1016 in)	----
Camshaft to crankcase clearance	0.050 ~ 0.084 mm (0.0020 ~ 0.0033 in)	----
Camshaft to camshaft cover clearance	0.020 ~ 0.054 mm (0.0008 ~ 0.0021 in)	----
Camshaft intake cam dimensions 		
Measurement A (front cylinder)	38.242 ~ 38.342 mm (1.5056 ~ 1.5095 in)	38.142 mm (1.5017 in)
(rear cylinder)	38.241 ~ 38.341 mm (1.5055 ~ 1.5095 in)	38.141 mm (1.5016 in)
Measurement B	31.977 ~ 32.077 mm (1.2589 ~ 1.2629 in)	31.877 mm (1.2550 in)

Item	Standard	Limit
Camshaft exhaust cam dimensions 		
Measurement A	38.236 ~ 38.336 mm (1.5054 ~ 1.5093 in)	38.136 mm (1.5014 in)
Measurement B	32.013 ~ 32.113 mm (1.2604 ~ 1.2643 in)	31.913 mm (1.2564 in)
Rocker arms, rocker arm shafts		
Rocker arm inside diameter	18.000 ~ 18.018 mm (0.7087 ~ 0.7094 in)	18.036 mm (0.7101 in)
Rocker arm shaft outside diameter	17.976 ~ 17.991 mm (0.7077 ~ 0.7083 in)	----
Rocker arm to rocker arm shaft clearance	0.009 ~ 0.042 mm (0.0004 ~ 0.0017 in)	0.08 mm (0.003 in)
Valve lifters		
Valve lifter outside diameter	22.962 ~ 22.974 mm (0.9040 ~ 0.9045 in)	----
Valve lifter case inside diameter	23.000 ~ 23.021 mm (0.9055 ~ 0.9063 in)	----
Valve lifter-to-valve lifter case clearance	0.026 ~ 0.059 mm (0.0010 ~ 0.0023 in)	----
Valve push rods		
Valve push rod length 1	288.25 ~ 288.75 mm (11.348 ~ 11.368 in)	----
Valve push rod length 2	290.25 ~ 290.75 mm (11.427 ~ 11.447 in)	----
Valve push rod runout	0.3 mm (0.012 in)	----
Cylinders		
Bore	97.000 ~ 97.010 mm (3.8189 ~ 3.8193 in)	----
Maximum taper	----	0.05 mm (0.0016 in)
Maximum out of round	----	0.05 mm (0.0016 in)

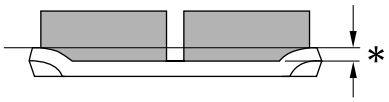
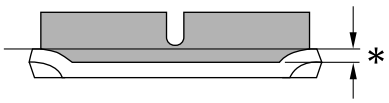
Item	Standard	Limit
Pistons		
Piston-to-cylinder clearance	0.025 ~ 0.050 mm (0.001 ~ 0.002 in)	0.15 mm (0.006 in)
Diameter D	96.960 ~ 96.975 mm (3.8173 ~ 3.8179 in)	----
		
Height H	5 mm (0.20 in)	----
Piston pin bore (in the piston)		
Diameter	22.004 ~ 22.015 mm (0.8663 ~ 0.8667 in)	22.045 mm (0.8679 in)
Offset	1.0 mm (0.04 in)	----
Piston pins		
Outside diameter	21.991 ~ 22.000 mm (0.8658 ~ 0.8661 in)	21.971 mm (0.8650 in)
Piston pin-to-piston pin bore clearance	0.004 ~ 0.024 mm (0.00016 ~ 0.00094 in)	0.074 mm (0.0029 in)
Piston rings		
Top ring		
		
Ring type	Barrel	----
Dimensions (B × T)	1.2 × 3.8 mm (0.047 × 0.150 in)	----
End gap (installed)	0.30 ~ 0.45 mm (0.012 ~ 0.018 in)	0.65 mm (0.026 in)
Ring side clearance	0.03 ~ 0.08 mm (0.0012 ~ 0.0031 in)	0.12 mm (0.0047 in)
2nd ring		
		
Ring type	Taper	----
Dimensions (B × T)	1.2 × 3.8 mm (0.047 × 0.150 in)	----
End gap (installed)	0.30 ~ 0.45 mm (0.012 ~ 0.018 in)	0.8 mm (0.031 in)
Ring side clearance	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)	0.12 mm (0.0047 in)
Oil ring		
		
Dimensions (B × T)	2.5 × 3.4 mm (0.098 × 0.134 in)	----
End gap (installed)	0.2 ~ 0.7 mm (0.008 ~ 0.028 in)	----

Item	Standard	Limit
Transmission		
Transmission type	Constant mesh, 5-speed	----
Primary reduction system	Spur gear	----
Primary reduction ratio	72/47 (1.532)	----
Secondary reduction system	Belt drive	----
Secondary reduction ratio	35/32 × 70/32 (2.393)	----
Operation	Left-foot operation	----
Gear ratios		
1st gear	38/16 (2.375)	----
2nd gear	30/19 (1.579)	----
3rd gear	29/25 (1.160)	----
4th gear	29/32 (0.906)	----
5th gear	21/28 (0.750)	----
Maximum main axle runout	----	0.08 mm (0.003 in)
Maximum drive axle runout	----	0.08 mm (0.003 in)
Fuel pump		
Pump type	Electrical	----
Model (manufacturer)	UC-Z10C (MITSUBISHI)	----
Output pressure	15 ~ 20 kPa (0.15 ~ 0.20 kgf/cm^2, 2.13 ~ 2.84 psi)	----
Carburetor		
Model (manufacturer) × quantity	BSR40 (MIKUNI) × 1	----
Throttle cable free play (at the flange of the throttle grip)	4 ~ 6 mm (0.16 ~ 0.24 in)	----
ID mark	5VN1 00	----
	5VN2 10 (for California)	----
Main jet	#182.5	----
Main air jet	#60	----
Jet needle	6HDC26-1	----
Needle jet	X-2M	----
Pilot air jet 1	#100	----
Pilot air jet 2	2.0	----
Pilot outlet	1.1	----
Pilot jet	#35	----
Bypass 1	0.9	----
Bypass 2	1.0	----
Bypass 3	0.9	----
Valve seat size	2.0	----
Starter jet 1	0.65	----
Starter jet 2	0.7	----
Butterfly valve size	#110	----
Fuel level (above the float chamber mating surface)	4.0 ~ 5.0 mm (0.16 ~ 0.20 in)	----

CHASSIS SPECIFICATIONS

Item	Standard	Limit
Front wheel		
Wheel type	Cast wheel	----
	Spoke wheel (XV17A for CDN)	----
Rim		
Size	16M/C × MT3.00	----
Material	Aluminum	----
	Steel (XV17A for CDN)	----
Wheel travel	140 mm (5.51 in)	----
Wheel runout		
Maximum radial wheel runout	----	1 mm (0.04 in)
	----	2 mm (0.08 in) (XV17A for CDN)
Maximum lateral wheel runout	----	0.5 mm (0.02 in)
	----	2 mm (0.08 in) (XV17A for CDN)
Rear wheel		
Wheel type	Cast wheel	----
	Spoke wheel (XV17A for CDN)	----
Rim		
Size	16M/C × MT3.50	----
Material	Aluminum	----
	Steel (XV17A for CDN)	----
Wheel travel	110 mm (4.33 in)	----
Wheel runout		
Maximum radial wheel runout	----	1 mm (0.04 in)
	----	2 mm (0.08 in) (XV17A for CDN)
Maximum lateral wheel runout	----	0.5 mm (0.02 in)
	----	2 mm (0.08 in) (XV17A for CDN)

Item	Standard		Limit
Front tire			
Tire type	Tubeless		----
	With tube (XV17A for CDN)		----
Size	130/90–16M/C 67H		----
Model (manufacturer)	USA	CDN	
	G703 N (BRIDGESTONE) (XV17A/XV17AS)	G703 F (BRIDGESTONE) (XV17A)	----
	G703 (BRIDGESTONE) (XV17AT)	D404FL (DUNLOP) (XV17A)	----
		G703 N (BRIDGESTONE) (XV17AS)	----
		G703 (BRIDGESTONE) (XV17AT)	----
Tire pressure (cold)			
0 ~ 90 kg (0 ~ 198 lb)	250 kPa (2.5 kg/cm^2, 36 psi)		----
90 kg (198 lb) ~ Maximum load*	250 kPa (2.5 kg/cm^2, 36 psi)		----
High-speed riding	250 kPa (2.5 kg/cm^2, 36 psi)		----
* Load is the total weight of the cargo, rider, passenger and accessories.			
Minimum tire tread depth	----		1.0 mm (0.04 in)
Rear tire			
Tire type	Tubeless		----
	With tube (XV17A for CDN)		----
Size	150/80B16M/C 71H		----
Model (manufacturer)	USA	CDN	
	G702 N (BRIDGESTONE) (XV17A/XV17AS)	G702 (BRIDGESTONE) (XV17A/XV17AT)	----
	G702 (BRIDGESTONE) (XV17AT)	D404 (DUNLOP) (XV17A)	----
		G702 N (BRIDGESTONE) (XV17AS)	----
Tire pressure (cold)			
0 ~ 90 kg (0 ~ 198 lb)	250 kPa (2.5 kg/cm^2, 36 psi)		----
90 kg (198 lb) ~ Maximum load*	280 kPa (2.8 kg/cm^2, 41 psi)		----
High-speed riding	280 kPa (2.8 kg/cm^2, 41 psi)		----
* Load is the total weight of the cargo, rider, passenger and accessories.			
Minimum tire tread depth	----		1.0 mm (0.04 in)

Item	Standard	Limit
Front brakes		
Brake type	Dual-disc brake	----
Operation	Right-hand operation	----
Brake lever free play (lever end)	2 ~ 5 mm (0.08 ~ 0.20 in)	----
Recommended fluid	DOT 4	----
Brake discs		
Diameter × thickness	298 × 5 mm (11.7 × 0.20 in)	----
Minimum thickness	----	4.5 mm (0.18 in)
Maximum deflection	----	0.1 mm (0.004 in)
	----	0.15 mm (0.006 in) (XV17A for CDN)
Brake pad lining thickness * 	5.5 mm (0.22 in)	0.5 mm (0.02 in)
Master cylinder inside diameter	14.0 mm (0.55 in)	----
Caliper cylinder inside diameter	27.00 mm (1.06 in) and 30.20 mm (1.19 in)	----
Rear brake		
Brake type	Single-disc brake	----
Operation	Right-foot operation	----
Brake pedal position (from the top of the brake pedal to the bottom of the rider footrest board)	100 mm (3.9 in)	----
Recommended fluid	DOT 4	----
Brake discs		
Diameter × thickness	320 × 7 mm (12.6 × 0.28 in)	----
Minimum thickness	----	6.5 mm (0.26 in)
Maximum deflection	----	0.15 mm (0.006 in)
Brake pad lining thickness * 	7.0 mm (0.28 in)	0.5 mm (0.02 in)
Master cylinder inside diameter	12.7 mm (0.5 in)	----
Caliper cylinder inside diameter	33.96 mm (1.34 in) and 30.23 mm (1.19 in)	----

Item	Standard	Limit
Drive belt		
Model (manufacturer)	UBD-0681	----
Drive belt slack (on a sidestand)	6 ~ 8 mm (0.24 ~ 0.31 in)	----
Drive belt slack (on a suitable stand)	7 ~ 9 mm (0.28 ~ 0.35 in)	----

ELECTRICAL SPECIFICATIONS

Item	Standard	Limit
System voltage	12 V	----
Ignition system		
Ignition system type	Transistorized coil ignition (digital)	----
Ignition timing	10° BTDC at 900 r/min	----
Advancer type	Throttle position sensor and electrical	----
Pickup coil resistance/color	248 ~ 372 Ω/Gy—B	----
Transistorized coil ignition unit model (manufacturer)	J4T139 (MITSUBISHI)	----
Ignition coils		
Model (manufacturer)	JO447 (DENSO)	----
Minimum ignition spark gap	6 mm (0.24 in)	----
Primary coil resistance	1.32 ~ 1.78 Ω	----
Secondary coil resistance	12 ~ 18 kΩ	----
Bulbs (voltage/wattage × quantity)		
Headlight	12 V 60 W/55 W × 1	----
Tail/brake light	LED	----
Front turn signal/position light	12 V 23 W/8 W × 2	----
Rear turn signal light	12 V 21 W × 2	----
Licence plate light	12 V 5 W × 1	----
Meter light	14 V 0.56 W × 4	----
Neutral indicator light	14 V 1.12 W × 1	----
Turn signal indicator light	14 V 1.12 W × 1	----
High beam indicator light	14 V 1.12 W × 1	----
Fuel level indicator light	LED	----
Engine trouble indicator light	LED	----
Turn signal relay		
Relay type	Semi-transistor	----
Model (manufacturer)	FB257H (DENSO)	----
Self-cancelling device built-in	Yes	----
Turn signal blinking frequency	75 ~ 95 cycles/min.	----
Wattage	23 W × 2 + 3.4 W	----
Fuel sender		
Model (manufacturer)	5VN (NIPPON SEIKI)	----
Resistance	13 ~ 140 Ω at 20 °C (68 °F)	----
Sidestand relay		
Model (manufacturer)	G8R-30Y-X (OMRON)	----
Coil resistance	162 ~ 198 Ω	----
Fuel pump relay model (manufacturer)	G8R-30Y-X (OMRON)	----
Thermo switch model (manufacturer)	5FU (NIPPON THERMOSTAT)	----

TIGHTENING TORQUES

ENGINE TIGHTENING TORQUES

Item	Fastener	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m · kgf	ft · lb	
Cylinder head	Nut	M12	8	60	6.0	43	
Rocker arm base	Bolt	M8	4	24	2.4	17	
Rocker arm base	Bolt	M6	8	10	1.0	7.2	
Front cylinder camshaft end cover	Bolt	M5	2	7	0.7	5.1	
Carburetor joint clamp	Screw	M4	1	4	0.4	2.9	
Exhaust pipe	Nut	M8	4	20	2.0	14	
Muffler	Bolt	M10	2	35	3.5	25	
Muffler clamp	Bolt	M8	2	20	2.0	14	
Generator rotor	Bolt	M12	1	80	8.0	58	
Pickup coil rotor	Bolt	M12	1	100	10.0	72	
Clutch boss	Nut	M20	1	105	10.5	75	Stake
Pull lever	Bolt	M6	1	12	1.2	8.7	
Middle drive gear	Nut	M22	1	100	10.0	72	Use a lock washer.
Drive pulley case	Bolt	M10	3	50	5.0	36	
Drive pulley case	Bolt	M8	4	30	3.0	22	
Drive pulley	Nut	M22	1	100	10.0	72	Use a lock washer.
Shift arm	Bolt	M6	2	14	1.4	10	
Neutral switch	Screw	M6	2	4	0.4	2.9	

CHASSIS TIGHTENING TORQUES

Item	Thread size	Tightening torque			Remarks
		Nm	m · kgf	ft · lb	
Upper bracket and inner tube	M6	18	1.8	13	
Handlebar holder (lower) and handlebar holder (upper)	M8	28	2.8	20	
Throttle cable adjusting nut and locknut	M6	4	0.4	2.9	
Engine mounting:					
Lower front mounting bolt	M12	103	10.3	74	
Lower rear mounting bolt	M12	88	8.8	64	
Transfer gear case stay and frame	M10	72	7.2	52	
Muffler stay and frame	M10	53	5.3	38	
Fuel sender and fuel tank	M6	8	0.8	5.8	
Rear fender side mold and rear fender stay	M8	28	2.8	20	
Sidestand bolt	M10	89	8.9	64	
Sidestand nut	M10	32	3.2	23	
Rear brake fluid reservoir	M6	9	0.9	6.5	
Grip end	M16	23	2.3	17	

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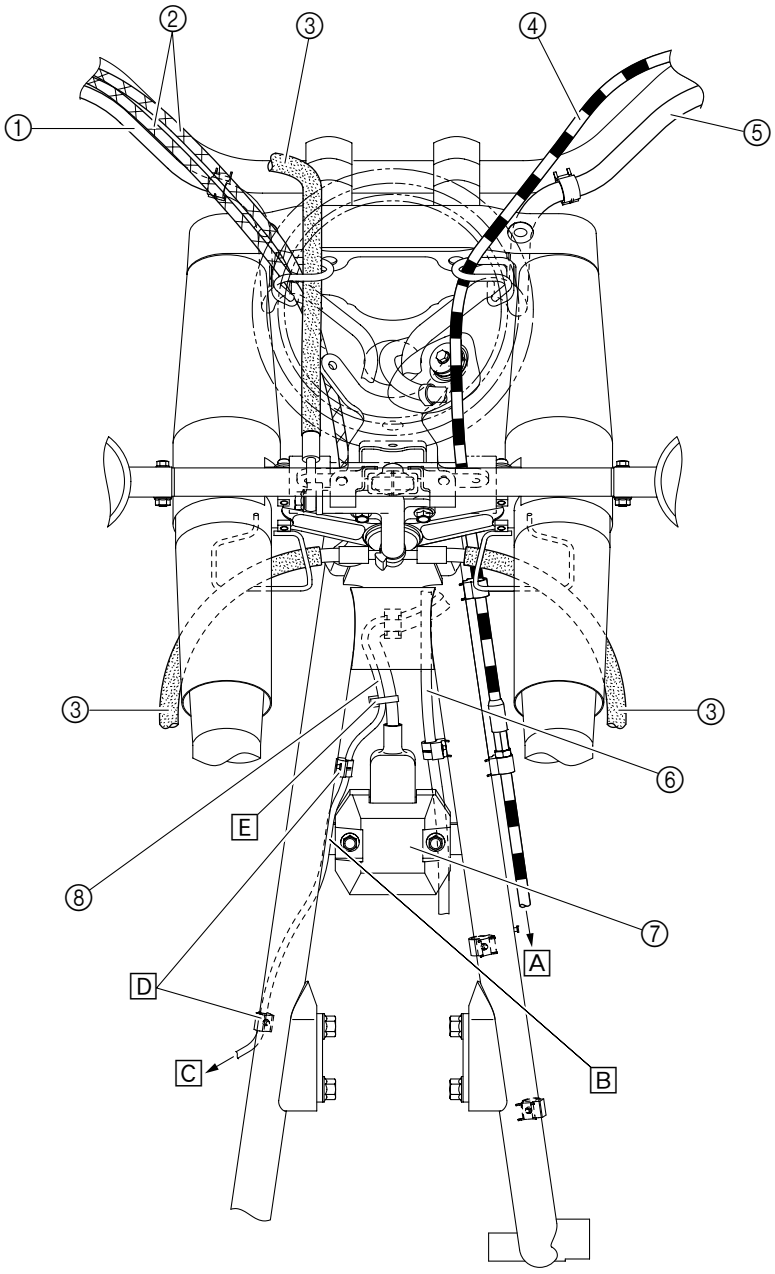
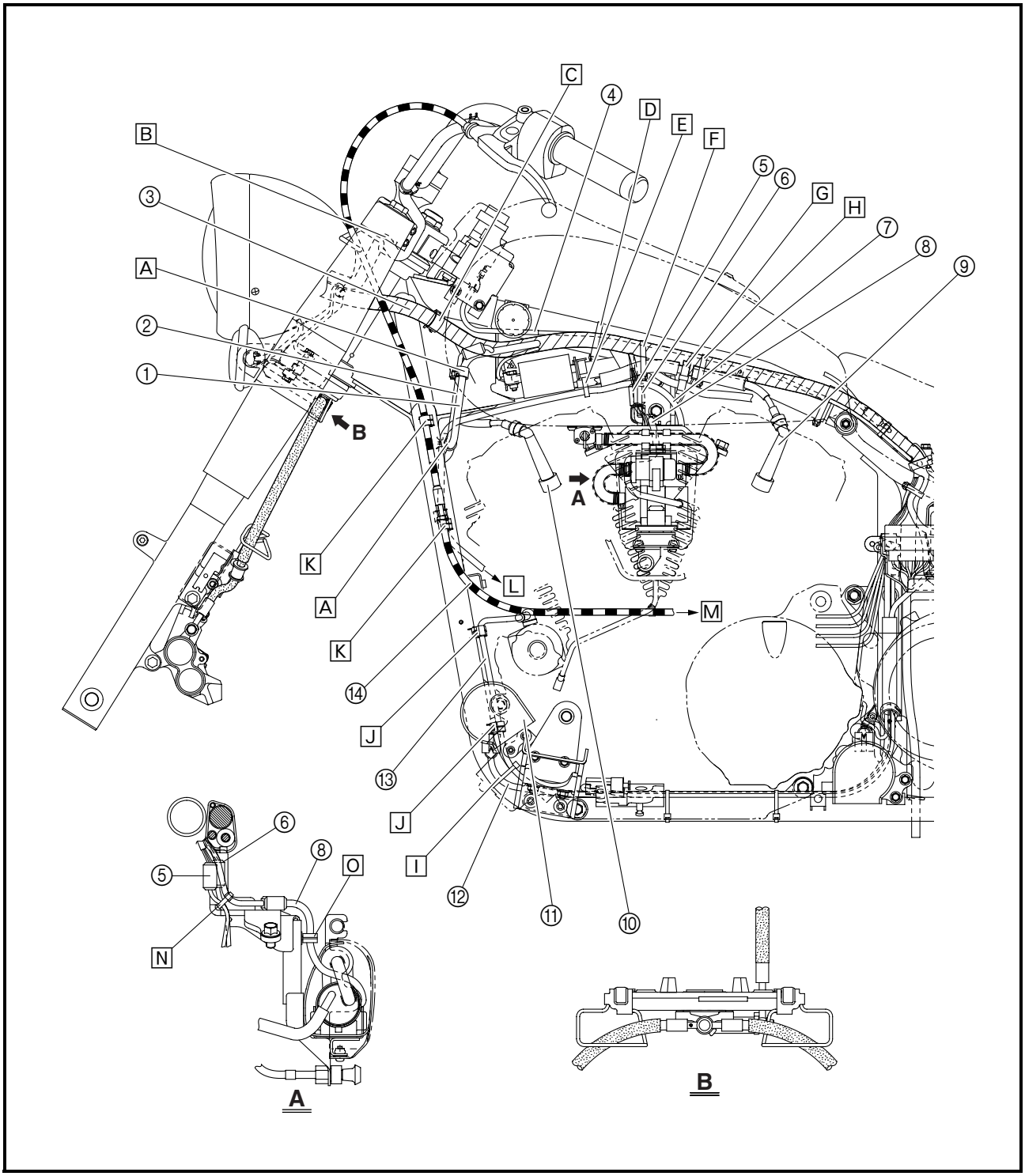
CABLE ROUTING

① Right handlebar switch lead
② Throttle cables
③ Brake hoses
④ Clutch cable
⑤ Left handlebar switch lead
⑥ Air induction system vacuum hose
⑦ Rectifier/regulator
⑧ Rear brake light switch lead

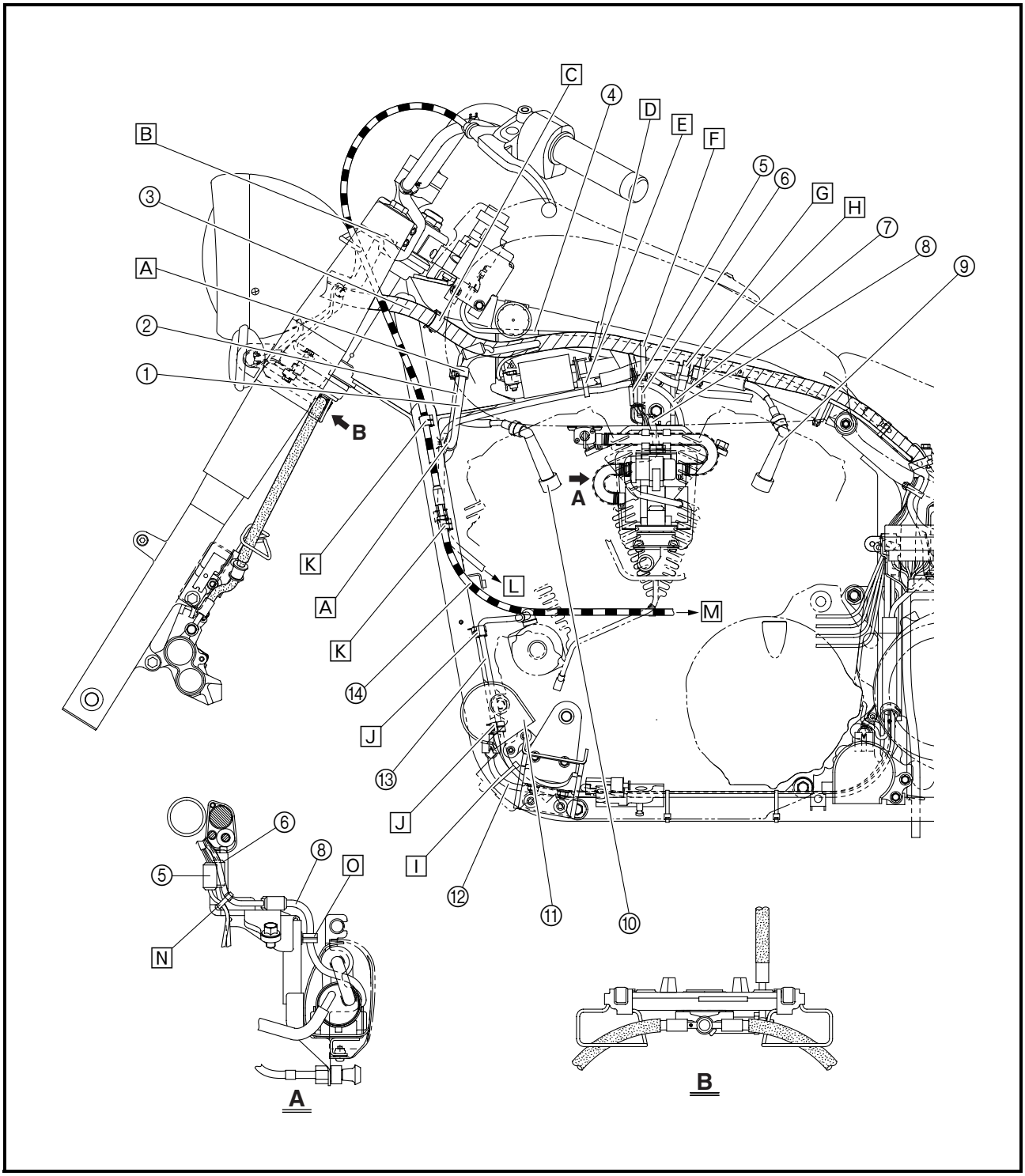
[A] To engine
[B] Route the rear brake light switch lead in front of the rectifier/regulator bracket on the frame.
[C] To rear brake light switch
[D] Fasten the rear brake light switch lead with the plastic holder.
[E] Fasten the rear brake light switch lead and rectifier/regulator lead with the plastic locking tie.



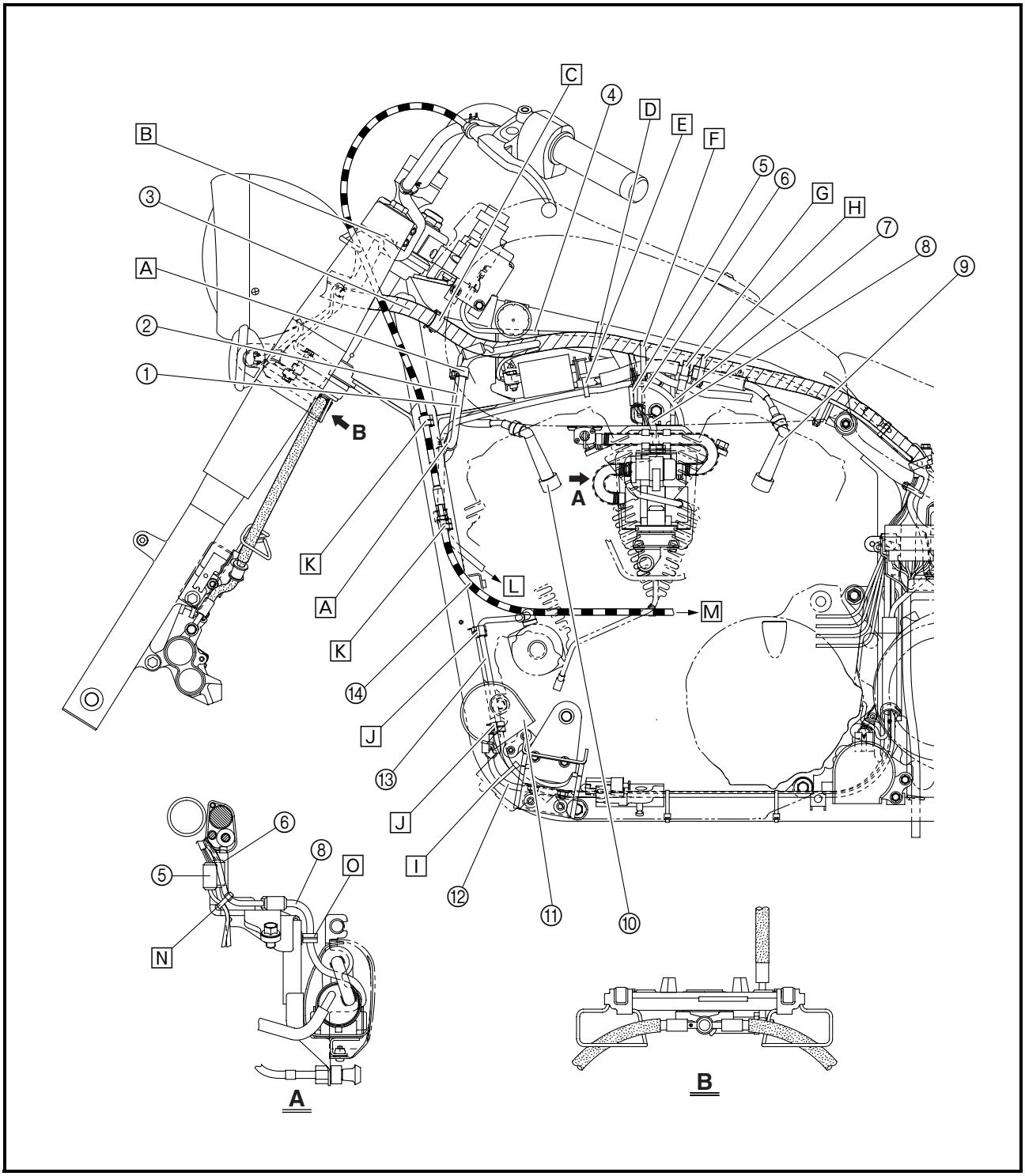
① Rectifier/regulator lead
② Rear brake light switch lead
③ Wire harness
④ Seat lock cable
⑤ Throttle position sensor coupler
⑥ Carburetor heater coupler
⑦ Air induction system vacuum hose
⑧ Fuel pump lead
⑨ Spark plug cap #1
⑩ Spark plug cap #3
⑪ Horn
⑫ Horn lead
⑬ Starter motor lead
⑭ Clutch cable



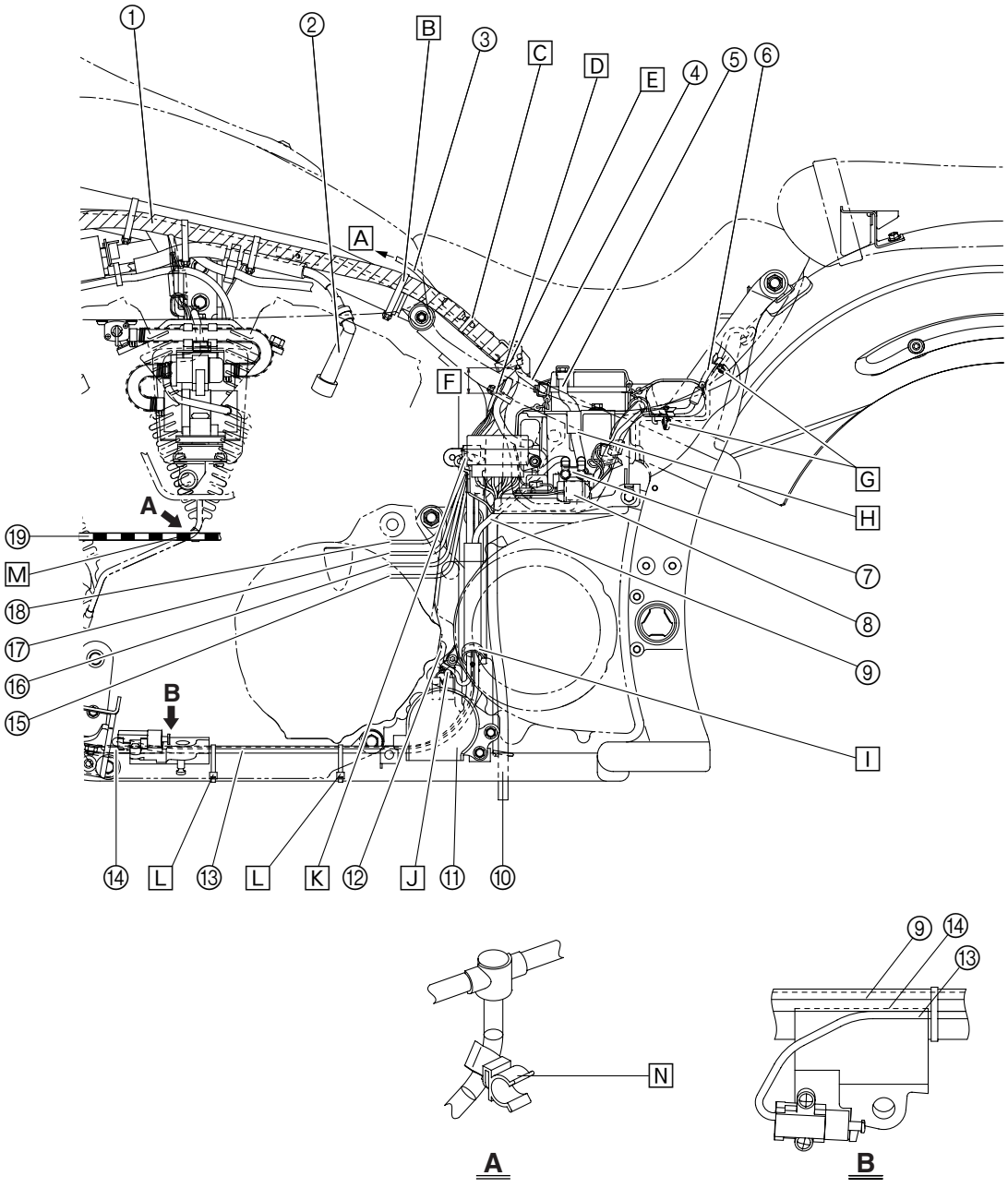
[A] Fasten the rectifier/regulator lead and rear brake light switch lead with the plastic holders.
[B] Pass the left handlebar switch lead through the left brake hose guide and the right handlebar switch lead through the right brake hose guide under the upper bracket.
[C] Fasten the wire harness with the plastic holder.
[D] Fasten the wire harness and seat lock cable to the frame with the plastic band.
[E] Fasten the air induction system vacuum hose and spark plug lead #2 with the plastic holder.
[F] Fasten the wire harness, seat lock cable, spark plug lead #2 and spark plug lead #2 to the engine bracket with the plastic band.
[G] Fasten the spark plug lead #1 and spark plug lead #2 with the plastic holder.
[H] Fasten the wire harness, seat lock cable, and spark plug lead #1 with the plastic band.



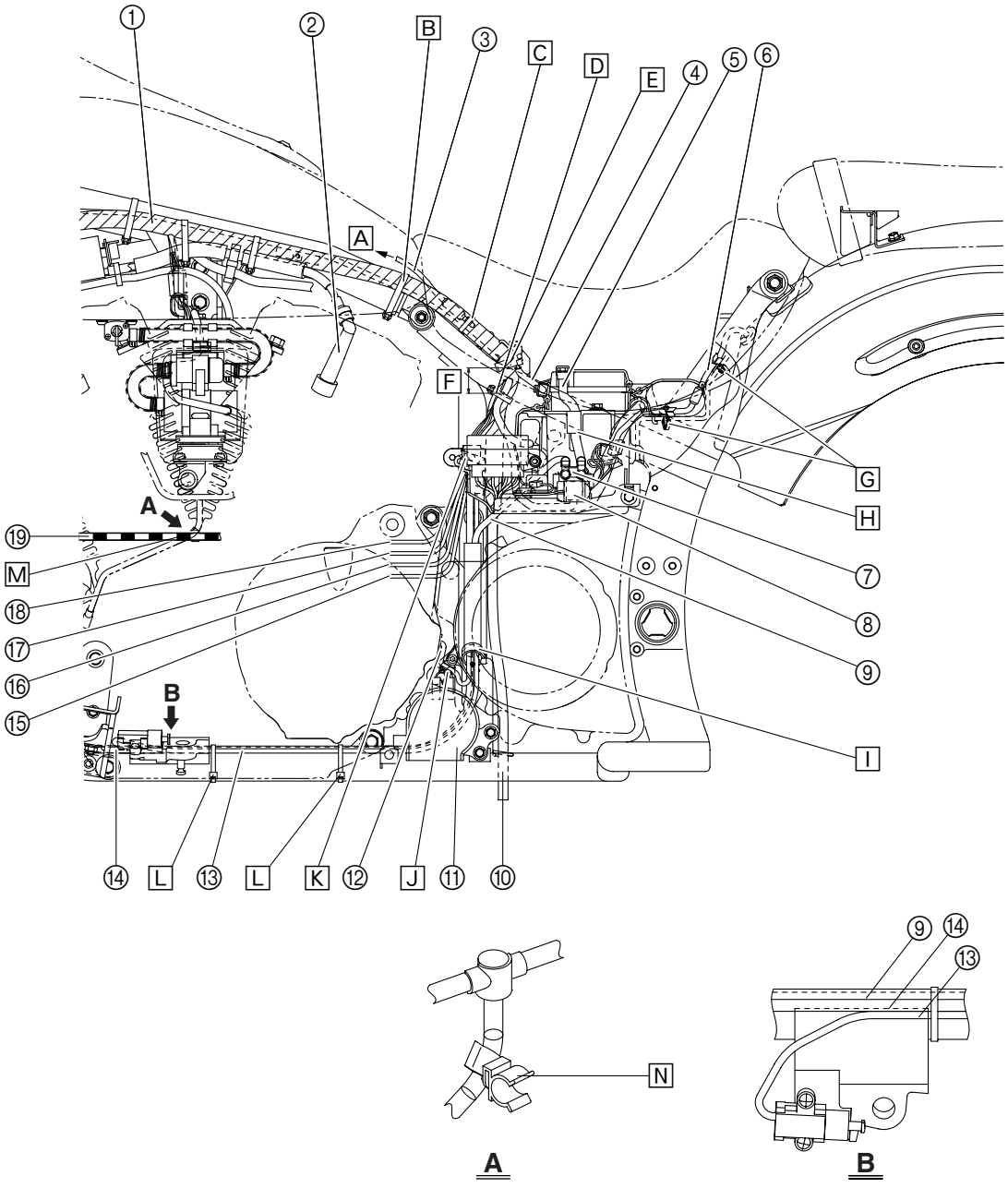
[I] Fasten the horn lead and starter motor lead to the frame with the plastic locking tie.
[J] Fasten the starter motor lead with the plastic holders.
[K] Fasten the clutch cable with the plastic holders.
[L] To air cut-off valve
[M] To engine
[N] Fasten the throttle position sensor lead, carburetor heater lead, and fuel pump lead to the fuel pump bracket with the plastic locking tie.
[O] Fasten the fuel pump lead with the plastic holder.



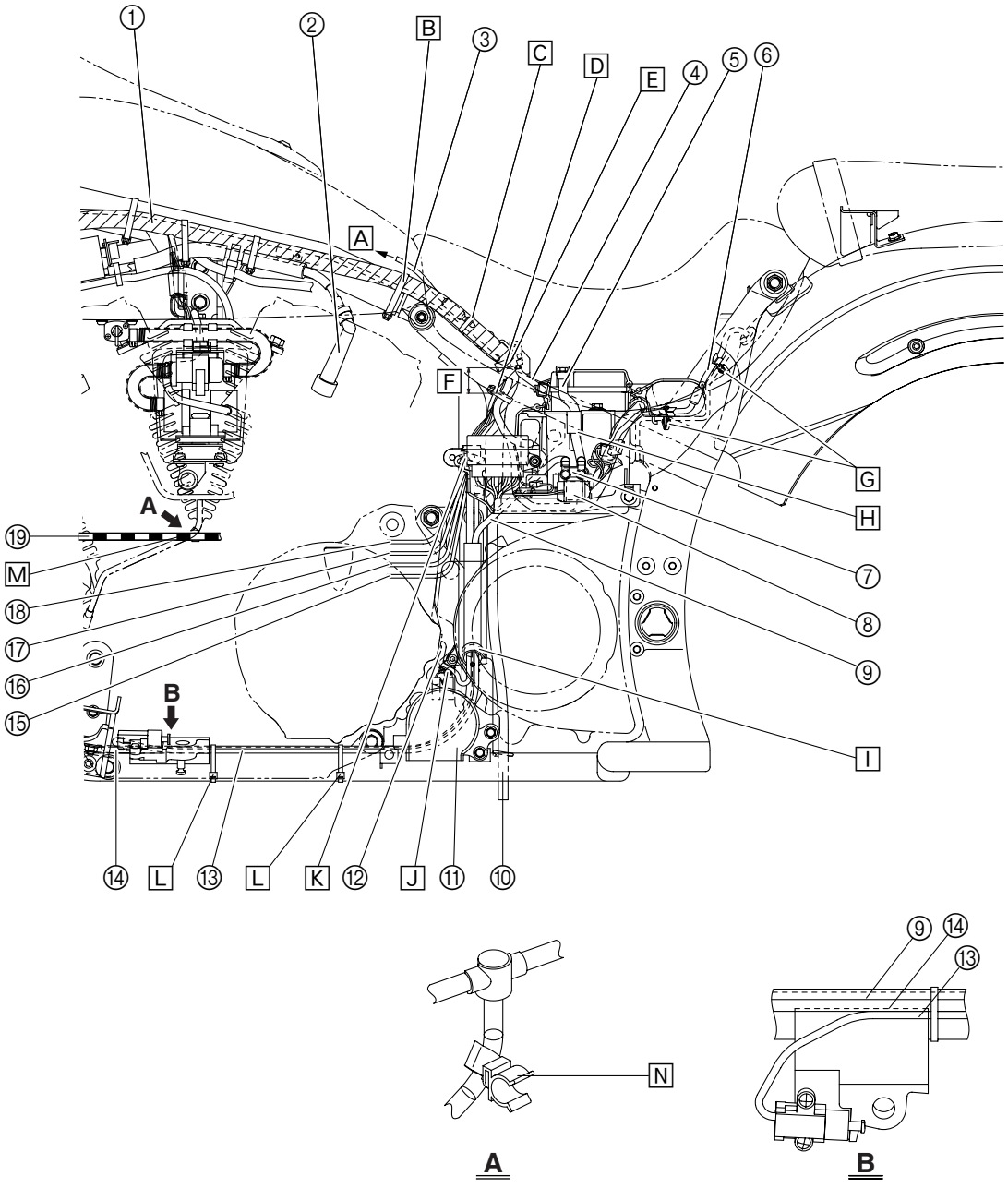
① Wire harness
② Spark plug cap #1
③ Fuel sender lead
④ Negative battery lead
⑤ Positive battery lead
⑥ Tail/brake light lead
⑦ Starter relay
⑧ Thermo switch
⑨ Starter motor lead
⑩ Fuel tank breather hose
⑪ Horn
⑫ Pickup coil lead
⑬ Sidestand switch lead
⑭ Horn lead
⑮ Decompression solenoid lead
⑯ Stator coil lead
⑰ Neutral switch lead
⑱ Speed sensor lead
⑲ Clutch cable



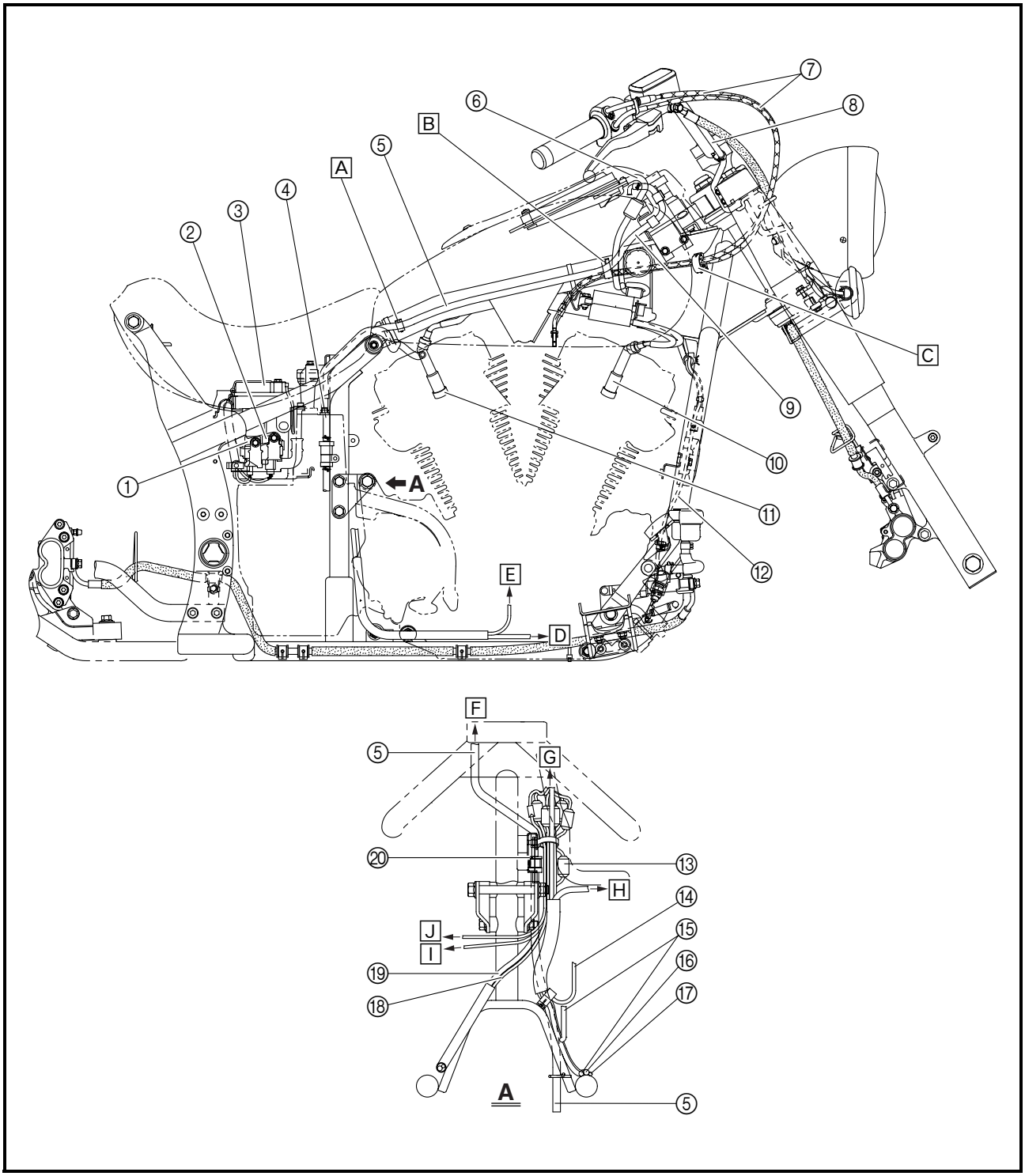
[A] To fuel sender
[B] Fasten the wire harness and seat lock cable to the frame with the plastic band.
[C] Fasten the wire harness, fuel sender lead and seat lock cable with the plastic locking tie.
[D] Fasten the wire harness and all leads that branch off from the wire harness with the plastic band.
[E] Fasten the wire harness and negative battery lead with the plastic holder.
[F] 25 ~ 35 mm (0.98 ~ 1.38 in)
[G] Fasten the tail/brake light lead with the plastic holders.
[H] Pass the positive battery lead through the hole in the battery box.
[I] Fasten the sidestand switch lead, horn lead, starter motor lead, and pickup coil lead with the plastic holder.
[J] Fasten the pickup coil lead with the metal holder.



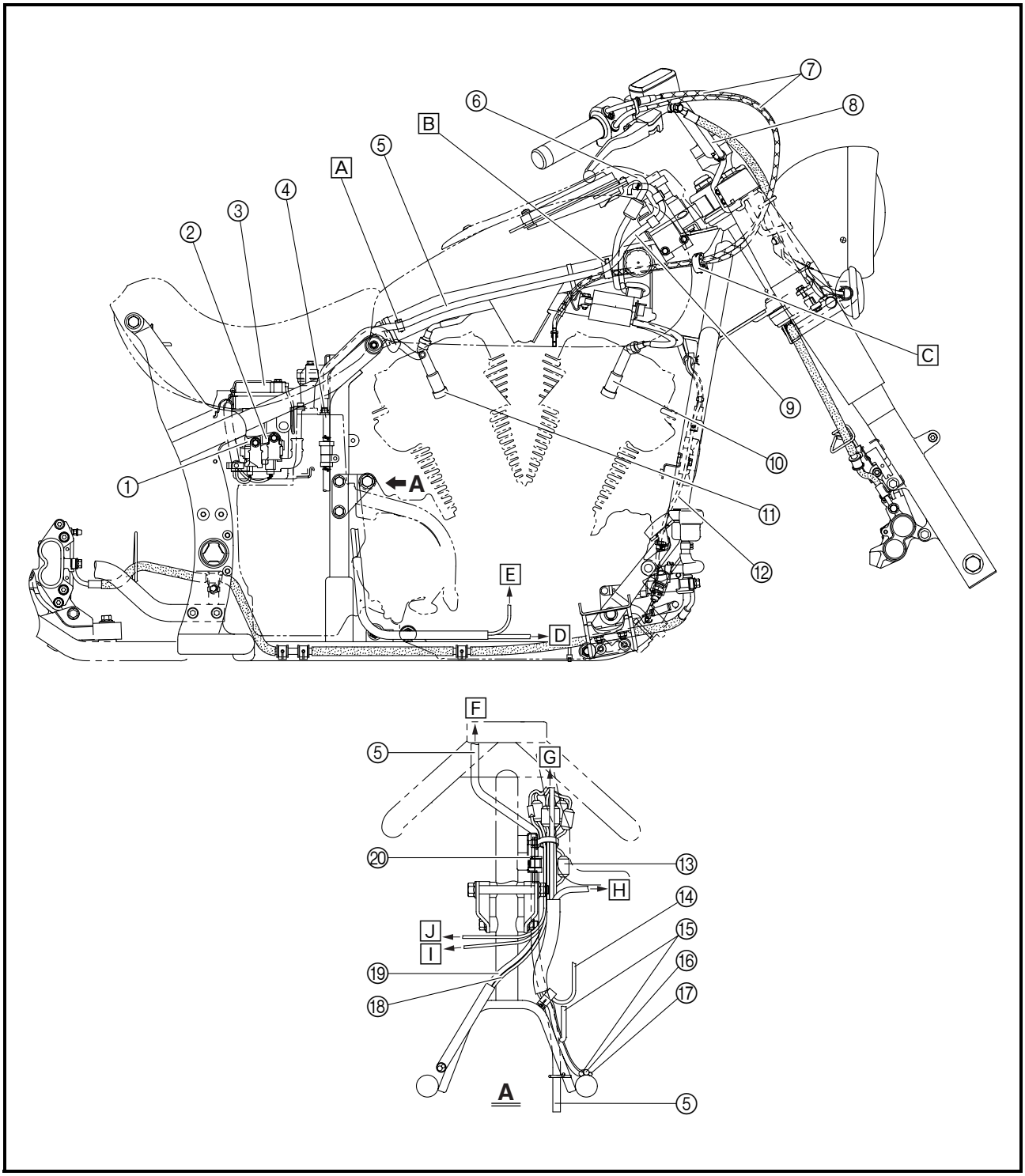
K Fasten the speed sensor lead, decompression solenoid lead, pickup coil lead, neutral switch lead, stator coil lead, sidestand switch lead, and horn lead with the plastic holder.
L Fasten the starter motor lead, sidestand switch lead, and horn lead to the frame with the plastic locking ties.
M Fasten the clutch cable to the oil delivery pipe with the plastic holder.
N Attach the plastic holder to the curved section of the oil delivery pipe.



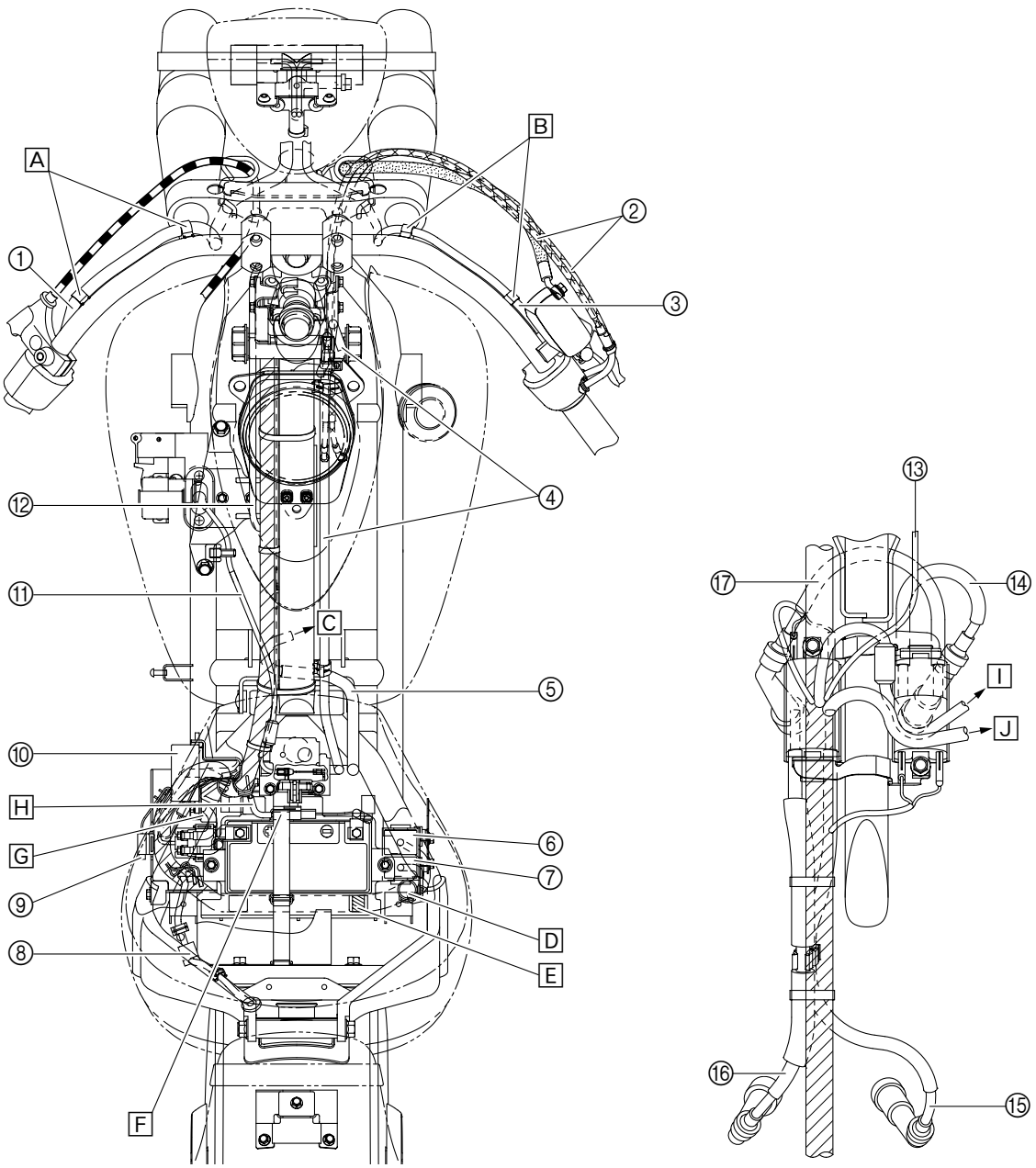
① Turn signal relay
② Relay unit
③ Battery
④ Oil tank breather hose
⑤ Fuel tank breather hose
⑥ Meter assembly lead
⑦ Throttle cables
⑧ Right handlebar switch lead
⑨ Main switch lead
⑩ Spark plug cap #4
⑪ Spark plug cap #2
⑫ Rear brake light switch lead
⑬ Sidestand switch coupler
⑭ Pickup coil lead
⑮ Horn leads
⑯ Starter motor lead
⑰ Sidestand switch lead
⑱ Decompression solenoid lead
⑲ Stator coil lead
⑳ Rollover valve



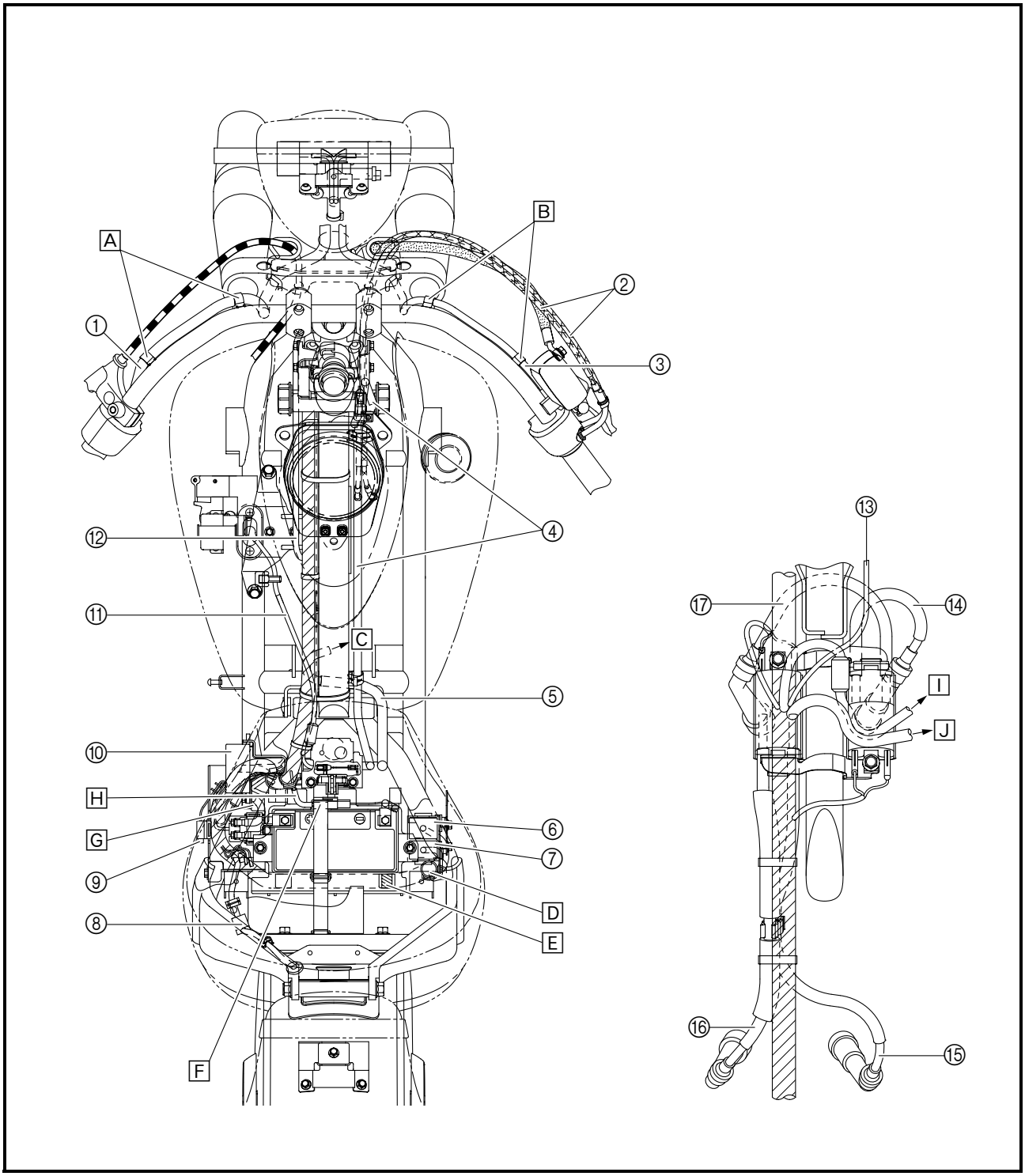
[A] Fasten the fuel tank breather hose with the plastic holder.
[B] Fasten the throttle cables and fuel tank breather hose with the plastic holder.
[C] Fasten the throttle cables with the plastic holder.
[D] To stator coil
[E] To decompression solenoid
[F] To fuel tank
[G] To wire harness
[H] To starter relay
[I] To decompression solenoid
[J] To speed sensor



① Left handlebar switch lead
② Throttle cables
③ Right handlebar switch lead
④ Fuel tank breather hose
⑤ Oil tank breather hose
⑥ Relay unit
⑦ Turn signal relay
⑧ Tail/brake light and rear turn signal light sub-wire harness coupler
⑨ Thermo switch
⑩ Fuse box
⑪ Fuel sender lead
⑫ Air induction system vacuum hose
⑬ Solenoid valve lead (for California)
⑭ Spark plug lead #4
⑮ Spark plug lead #2
⑯ Spark plug lead #1
⑰ Spark plug lead #3

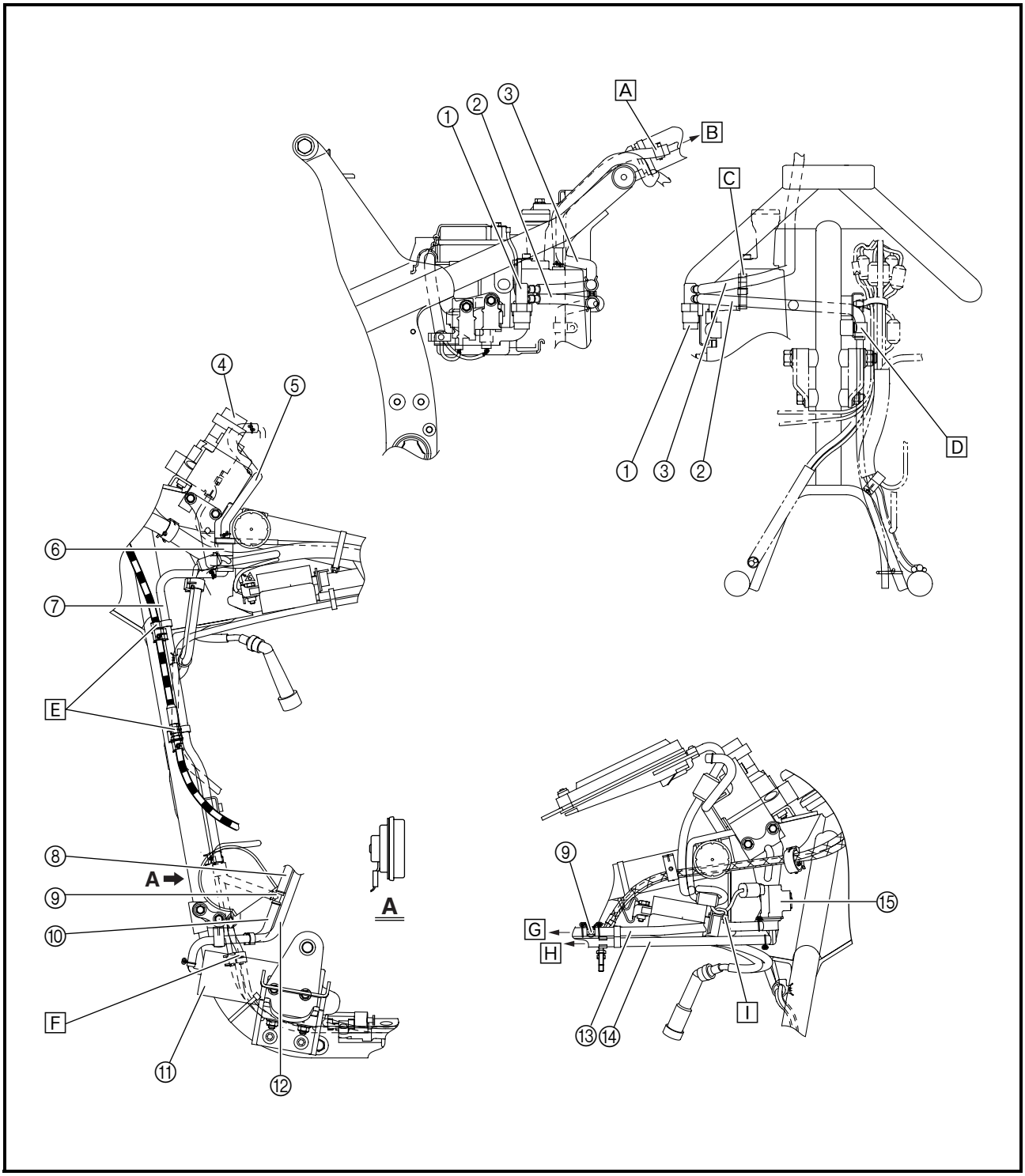


[A] Fasten the left handlebar switch lead with the plastic holders.
[B] Fasten the right handlebar switch lead with the plastic holders.
[C] To engine
[D] Fasten the wire harness with the plastic holder.
[E] Align the yellow tape on the wire harness with the hole in battery box, as shown.
[F] Insert the negative battery lead coupler into the slit in the battery band.
[G] Route the starter motor lead between the battery box and plastic bracket.
[H] Install the sleeve of the negative battery lead between the negative battery lead coupler and plastic holder.
[I] To main switch
[J] To meter assembly

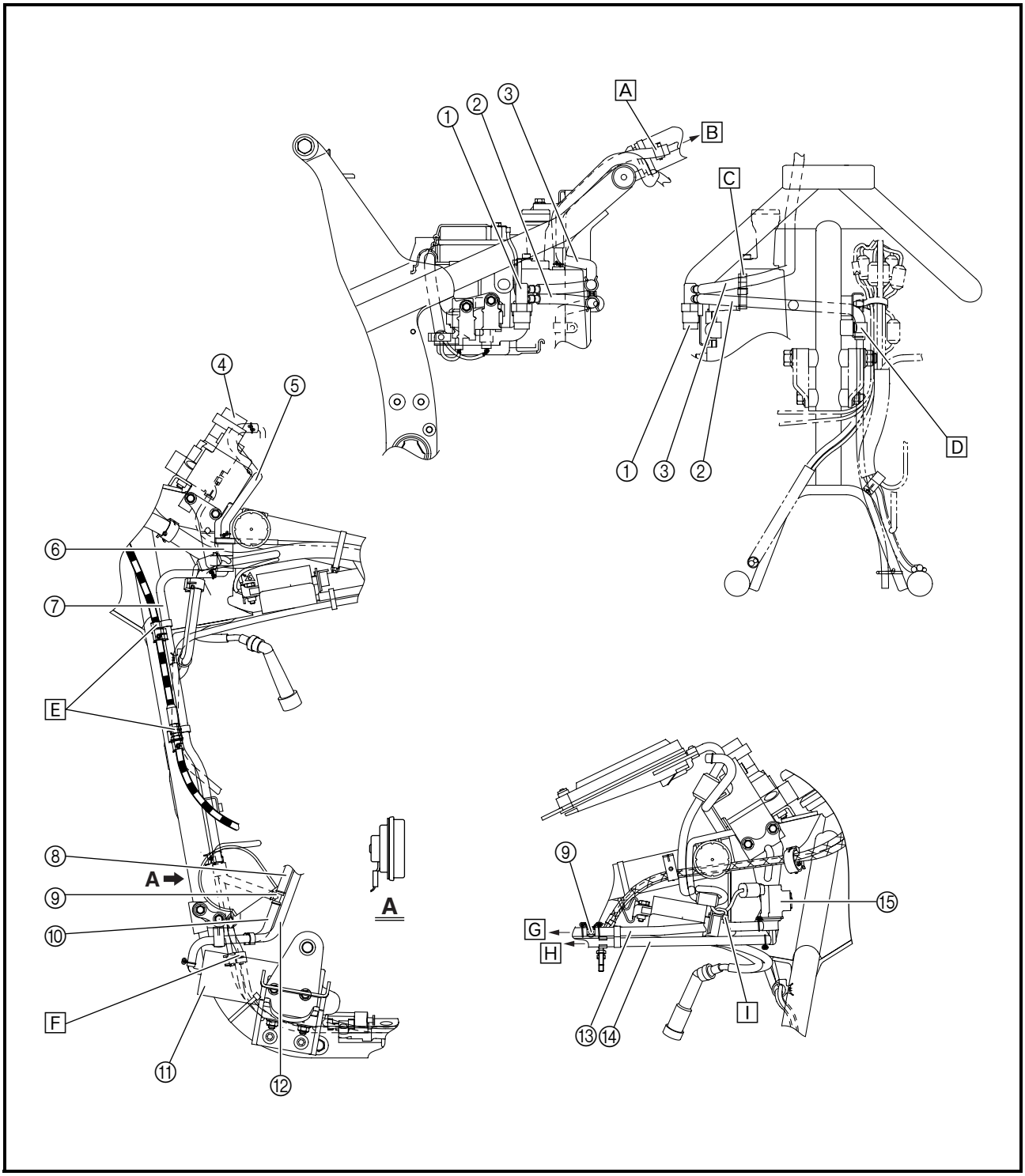


Evaporative emission control system (for California)

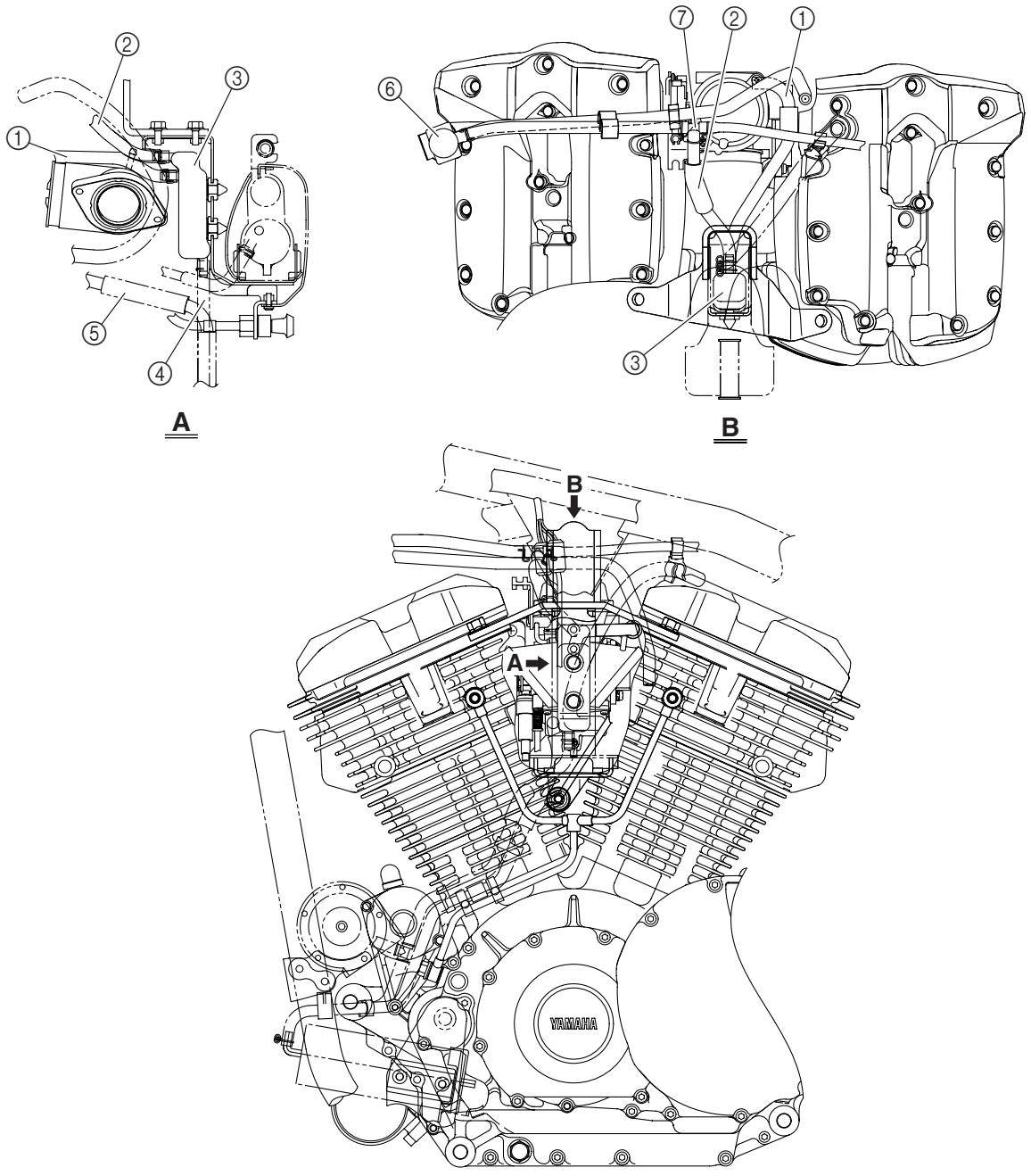
① Compensator
② Compensator breather hose
③ 3-way-joint-to-compensator hose
④ Main switch
⑤ Fuel tank breather hose
⑥ Rollover valve
⑦ Rollover-valve-to-3-way-joint hose
⑧ Surge-tank-to-3-way-joint hose
⑨ 3-way joint
⑩ 3-way-joint-to-charcoal-canister hose
⑪ Charcoal canister
⑫ Carburetor-to-charcoal-canister hose
⑬ Solenoid-valve-to-3-way-joint hose
⑭ Solenoid-valve-to-air-filter-case hose
⑮ Solenoid valve



[A] Fasten the 3-way-joint-to-compensator hose with the plastic holder.
[B] To solenoid valve
[C] Fasten the compensator breather hose and 3-way-joint-to-compensator hose with the plastic holder.
[D] Fasten the compensator breather hose with the plastic holder.
[E] Fasten the clutch cable and rollover-valve-to-3-way-joint hose with the plastic holders.
[F] Fasten the starter motor lead and horn lead with the plastic holder.
[G] To compensator
[H] To air filter case
[I] Fasten the solenoid valve lead to the ignition coil bracket with the plastic locking tie.



① Carburetor-to-surge-tank hose
② 3-way-joint-to-surge-tank hose
③ Surge tank
④ Surge-tank-to-3-way-joint hose
⑤ Carburetor-to-charcoal-canister hose
⑥ Solenoid valve
⑦ 3-way-joint



EAS00036

PERIODIC CHECKS AND ADJUSTMENTS

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.

EAS00037

PERIODIC MAINTENANCE CHART FOR THE EMISSION CONTROL SYSTEM

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1000 km) or 1 month	4000 mi (7000 km) or 6 months	8000 mi (13000 km) or 12 months	12000 mi (19000 km) or 18 months	16000 mi (25000 km) or 24 months	20000 mi (31000 km) or 30 months
1	*	**Fuel line**	• Check fuel hose for cracks or damage. • Replace if necessary.		√	√	√	√	√
2	*	**Fuel filter**	• Replace.						**Replace.**
3		**Spark plugs**	• Check condition. • Adjust gap and clean. • Replace every 8000 mi (13000 km) or 12 months.		√	**Replace.**	√	**Replace.**	√
4	*	**Valve clearance**	• Check and adjust valve clearance when engine is cold.	√	√	√	√	√	√
5	*	**Crankcase breather system**	• Check breather hose for cracks or damage. • Replace if necessary.		√	√	√	√	√
6	*	**Idle speed**	• Check and adjust engine idle speed.	√	√	√	√	√	√
7	*	**Exhaust system**	• Check for leakage. • Tighten if necessary. • Replace gasket(s) if necessary.		√	√	√	√	√
8	*	**Evaporative Emission control system (For California only)**	• Check control system for damage. • Replace if necessary.				√		

* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

GENERAL MAINTENANCE AND LUBRICATION CHART

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1000 km) or 1 month	4000 mi (7000 km) or 6 months	8000 mi (13000 km) or 12 months	12000 mi (19000 km) or 18 months	16000 mi (25000 km) or 24 months	20000 mi (31000 km) or 30 months
1	*	**Air filter element**	• Clean with compressed air. (See NOTE.) • Replace if necessary.		√	√	√	√	√
2	*	**Clutch**	• Check operation. • Adjust or replace cable.	√	√	√	√	√	√
3	*	**Front brake**	• Check operation, fluid level, and for fluid leakage. (See NOTE.) • Replace brake pads if necessary.	√	√	√	√	√	√
4	*	**Rear brake**	• Check operation, fluid level, and for fluid leakage. (See NOTE.) • Replace brake pads if necessary.	√	√	√	√	√	√

GENERAL MAINTENANCE AND LUBRICATION CHART

CHK ADJ

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1000 km) or 1 month	4000 mi (7000 km) or 6 months	8000 mi (13000 km) or 12 months	12000 mi (19000 km) or 18 months	16000 mi (25000 km) or 24 months	20000 mi (31000 km) or 30 months
5	*	**Brake hoses**	• Check for cracks or damage.		√	√	√	√	√
			• Replace. (See NOTE.)	**Every 4 years**					
6	*	**Wheels**	• Check runout and for damage. • Replace if necessary.		√	√	√	√	√
7	*	**Tires**	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		√	√	√	√	√
8	*	**Wheel bearings**	• Check bearings for smooth operation. • Replace if necessary.		√	√	√	√	√
9	*	**Swingarm pivot bearings**	• Check bearing assemblies for looseness. • Moderately repack with lithium-soap-based grease.			√		**Repack.**	
10	*	**Drive belt**	• Check belt tension. • Adjust if necessary.	√	**Every 2500 mi (4000 km)**				
11	*	**Steering bearings**	• Check bearing assembly for looseness. • Moderately repack with lithium-soap-based grease every 16000 mi (25000 km) or 24 months.	√	√	√	√	**Repack.**	√
12	*	**Chassis fasteners**	• Check all chassis fitting and fasteners. • Correct if necessary.		√	√	√	√	√
13		**Brake and clutch lever pivot shafts**	• Apply lithium-soap-based grease (all-purpose grease) lightly.		√	√	√	√	√
14		**Brake and shift pedal pivot shafts**	• Apply lithium-soap-based grease (all-purpose grease) lightly.		√	√	√	√	√
15		**Sidestand pivot**	• Check operation. • Apply lithium-soap-based grease (all-purpose grease) lightly.		√	√	√	√	√
16	*	**Sidestand switch**	• Check operation and replace if necessary.	√	√	√	√	√	√
17	*	**Front fork**	• Check operation and for oil leakage. • Replace if necessary.		√	√	√	√	√
18	*	**Shock absorber assembly**	• Check operation and for oil leakage. • Replace if necessary.		√	√	√	√	√
19	*	**Rear suspension link pivots**	• Apply molybdenum disulfide grease lightly.					√	
20		**Engine oil**	• Change (warm engine before draining).	√	√	√	√	√	√
21	*	**Engine oil filter cartridge**	• Replace.	√		√		√	
22	*	**Transfer case oil**	• Check for leakage. • Change at initial 600 mi (1000 km) or 1 month, and thereafter every 16000 mi (25000 km) or 24 months.	**Change.**		√		**Change.**	
23	*	**Control cables**	• Apply Yamaha chain and cable lube or engine oil 10W-30 thoroughly.	√	√	√	√	√	√
24	*	**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.		√	√	√	√	√

* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

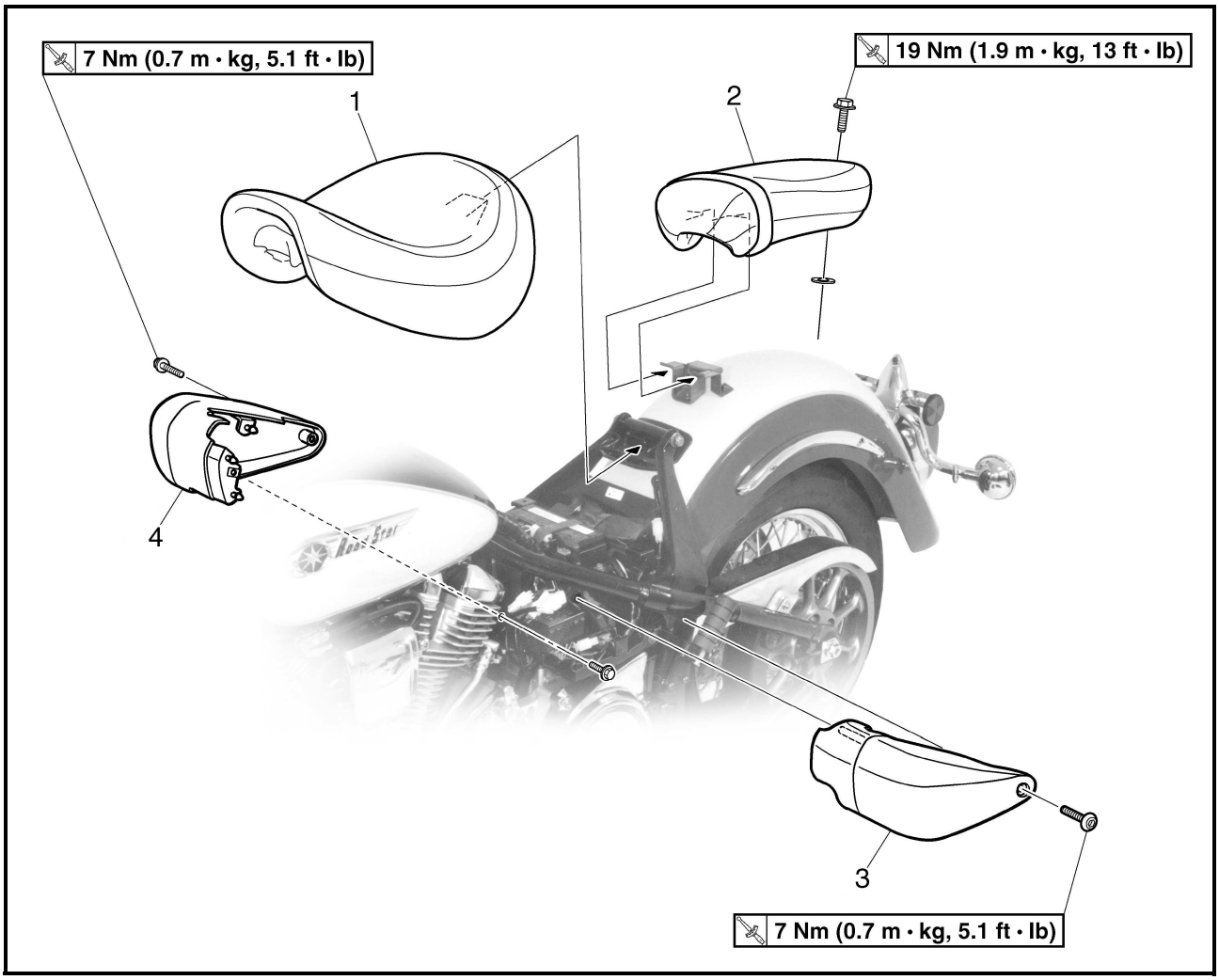
NOTE:

From 24000 mi (37000 km) or 36 months, repeat the maintenance intervals starting from 8000 mi (13000 km) or 12 months.

NOTE:

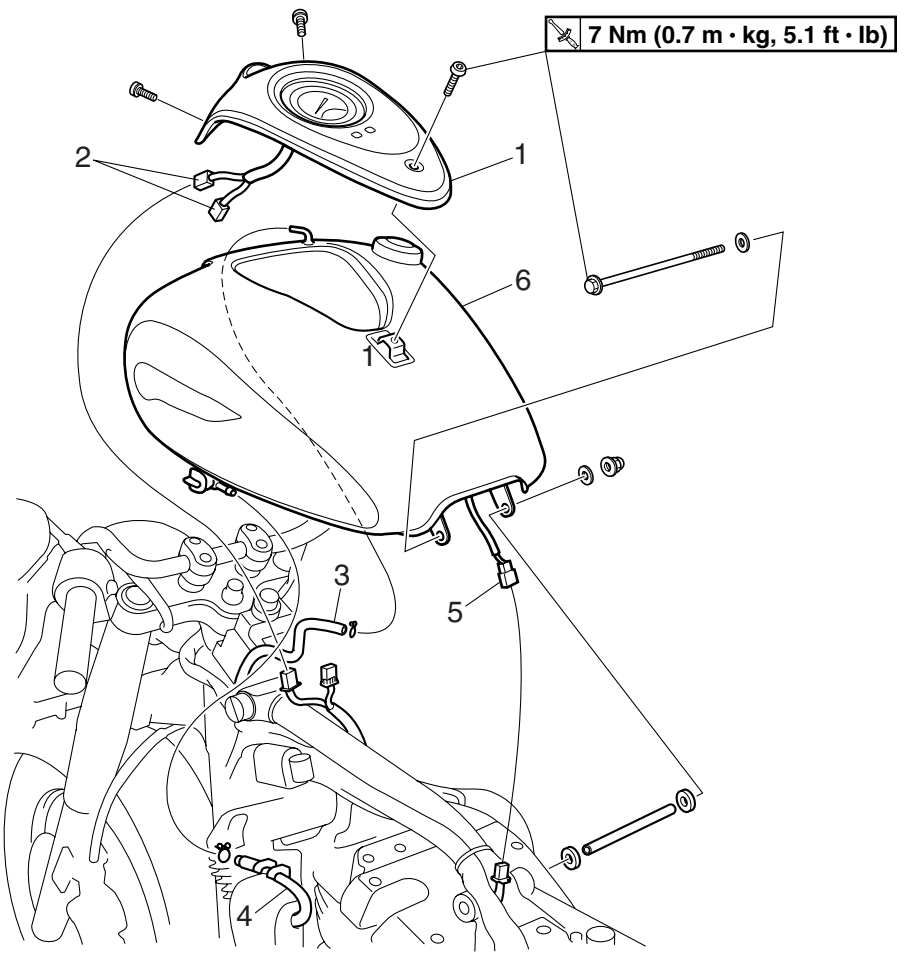
- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake service
  - After disassembling the brake master cylinders and calipers, always change the fluid. Regularly check the brake fluid levels and fill the reservoirs as required.
  - Every two years replace the internal components of the brake master cylinders and calipers, and change the brake fluid.
  - Replace the brake hoses every four years and if cracked or damaged.

SEATS AND SIDE COVERS



Order	Job/Part	Q'ty	Remarks
	Removing the seats and side covers		Remove the parts in the order listed.
1	Rider seat	1	
2	Passenger seat	1	
3	Left side cover	1	
4	Right side cover	1	
			For installation, reverse the removal procedure.

EAS00040
FUEL TANK

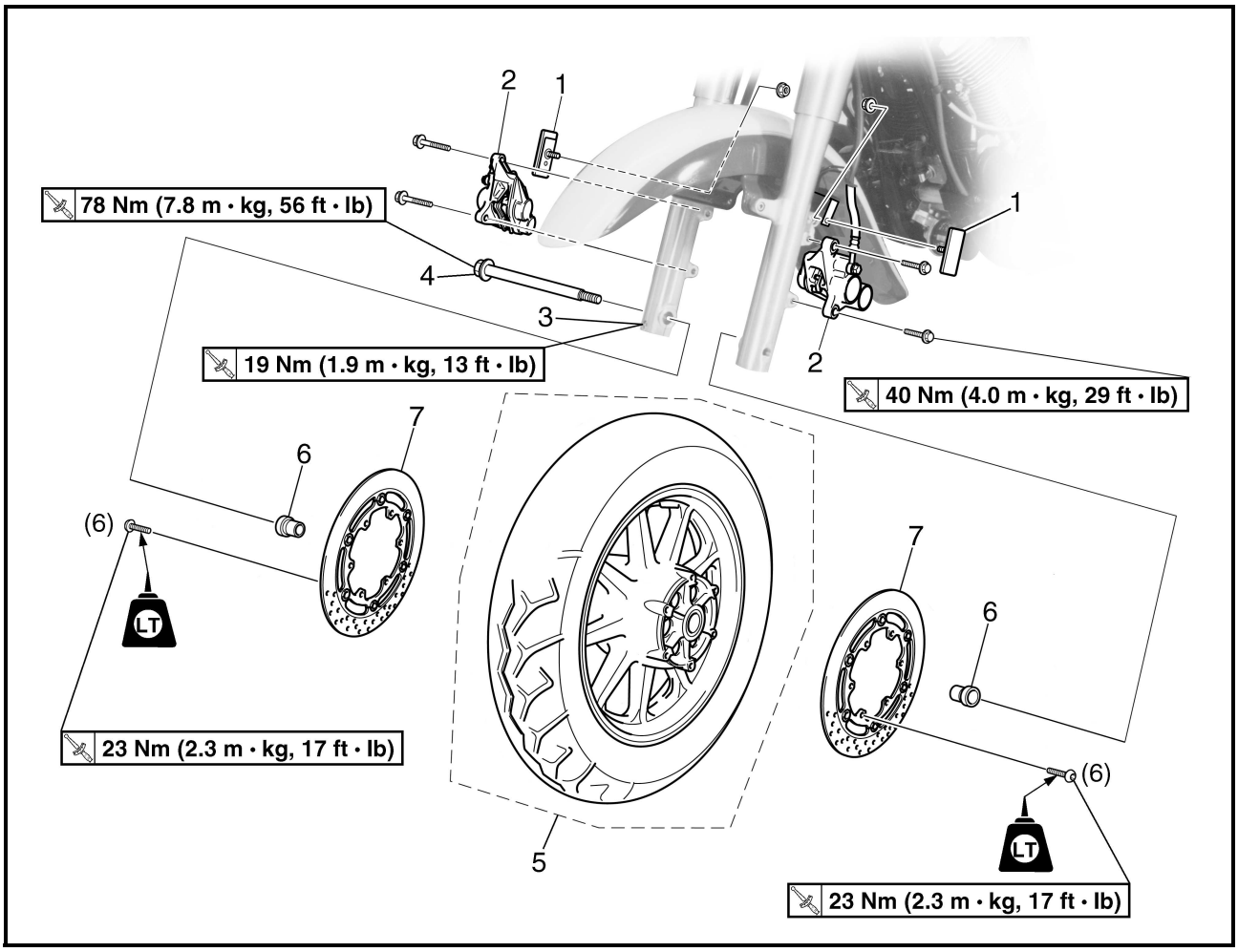


Order	Job/Part	Q'ty	Remarks
	Removing the fuel tank		Remove the parts in the order listed.
	Rider seat		Refer to "SEATS AND SIDE COVERS".
1	Meter assembly	1	
2	Meter assembly coupler	2	Disconnect.
3	Fuel tank breather hose	1	
4	Fuel hose	1	Disconnect.
			NOTE: Before disconnecting the fuel hose, set the fuel cock to "OFF".
5	Fuel sender coupler	1	Disconnect.
6	Fuel tank	1	For installation, reverse the removal procedure.

EAS00514

CHASSIS

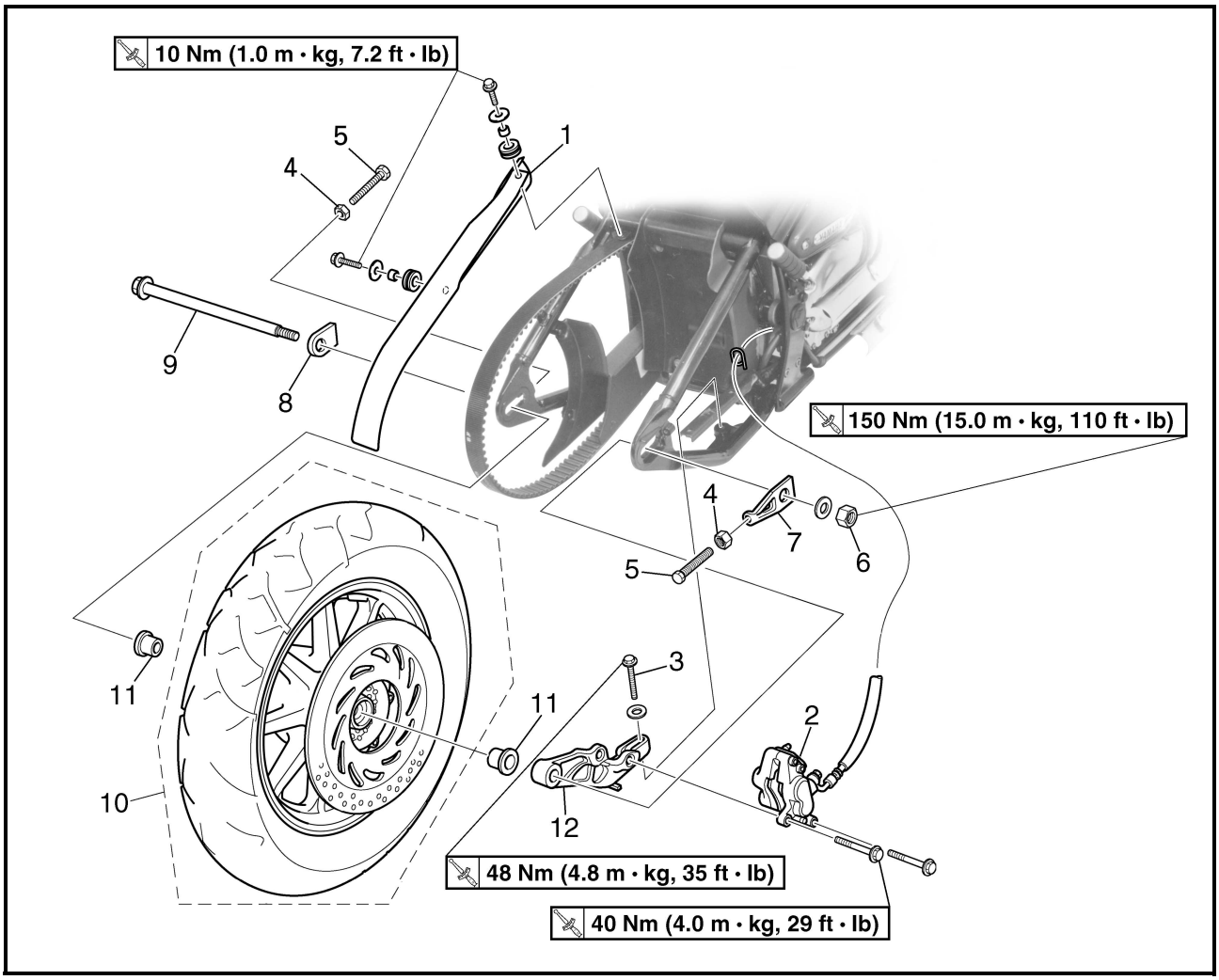
FRONT WHEEL AND BRAKE DISCS



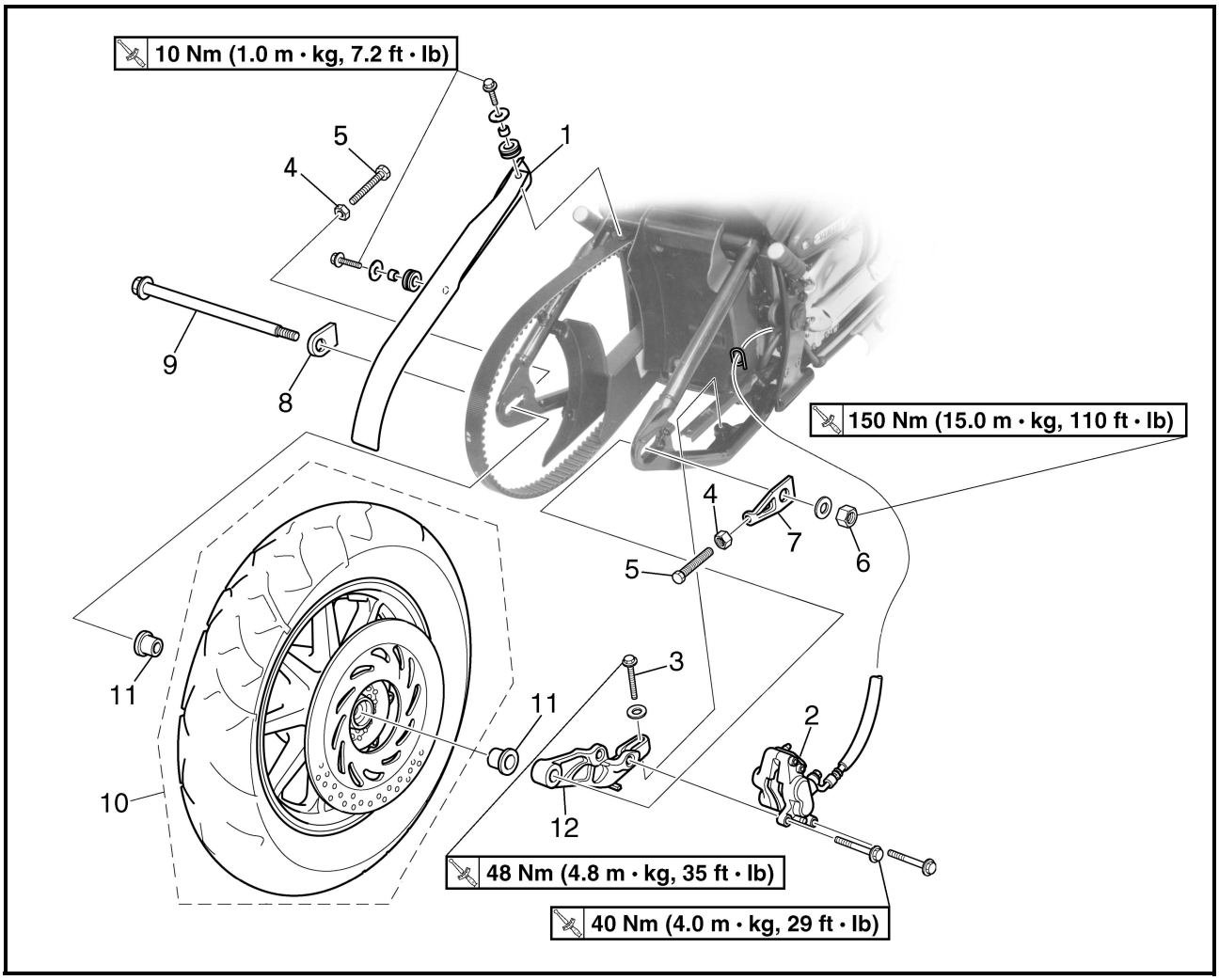
Order	Job/Part	Q'ty	Remarks
	Removing the front wheel and brake discs		Remove the parts in the order listed. **NOTE:** Place the motorcycle on a suitable stand so that the front wheel is elevated.
1	Reflector (left and right)	2	
2	Brake caliper (left and right)	2	
3	Wheel axle pinch bolt	1	Loosen.
4	Front wheel axle	1	
5	Front wheel	1	
6	Collar (left and right)	2	
7	Brake disc (left and right)	2	
			For installation, reverse the removal procedure.

EAS00550

REAR WHEEL, BRAKE DISC AND REAR WHEEL PULLEY



Order	Job/Part	Q'ty	Remarks
	Removing the rear wheel		Remove the parts in the order listed.
			NOTE: Place the motorcycle on a suitable stand so that the rear wheel is elevated.
	Rear fender assembly		Refer to "REAR WHEEL, BRAKE DISC AND REAR WHEEL PULLEY" in chapter 4. (Manual No.: 4WM-28197-E0)
1	Upper drive belt cover	1	
2	Brake caliper	1	
3	Brake caliper bracket bolt	1	
4	Locknut (left and right)	2	Loosen.
5	Adjusting bolt (left and right)	2	Loosen.
6	Wheel axle nut	1	

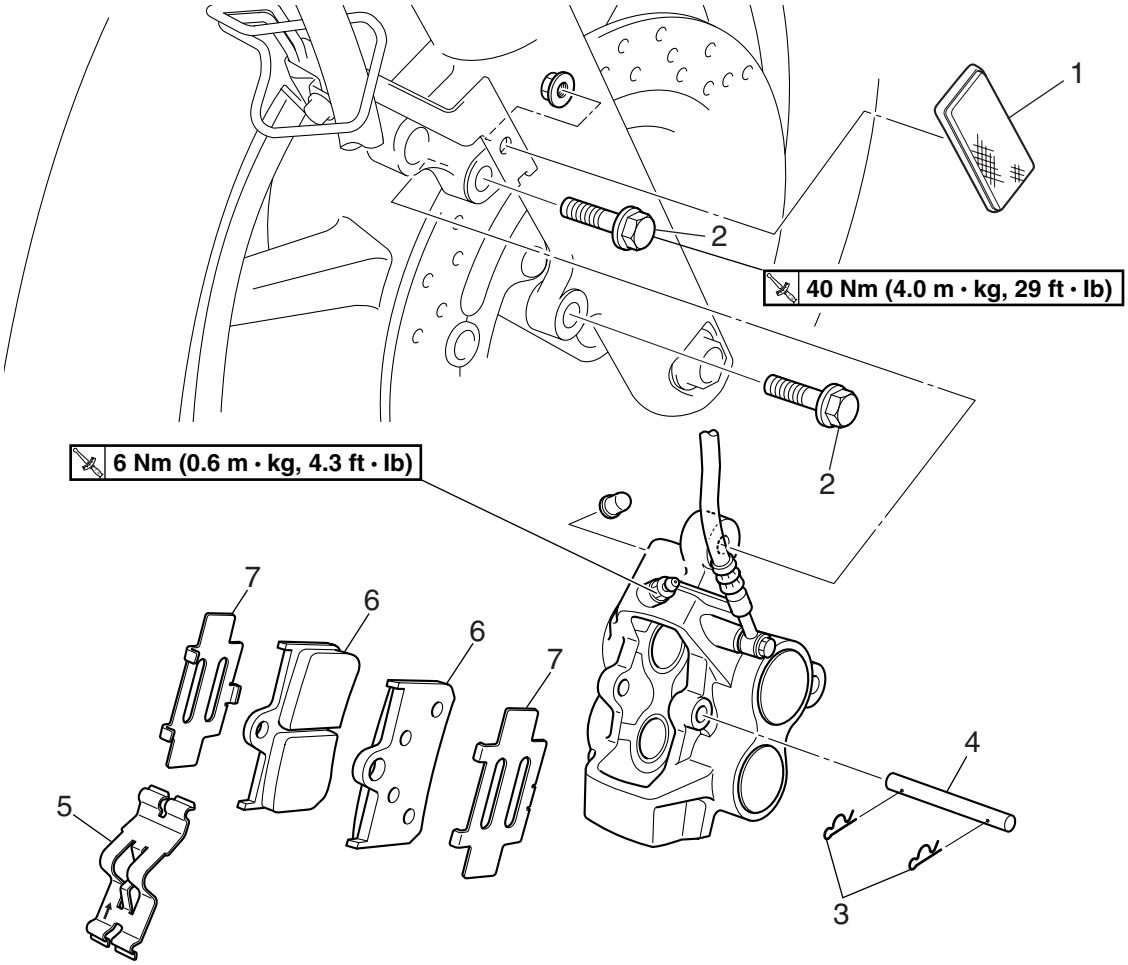


Order	Job/Part	Q'ty	Remarks
7	Right adjusting plate	1	
8	Left adjusting plate	1	
9	Rear wheel axle	1	
10	Rear wheel	1	
11	Collar (left and right)	2	
12	Brake caliper bracket	1	
			For installation, reverse the removal procedure.

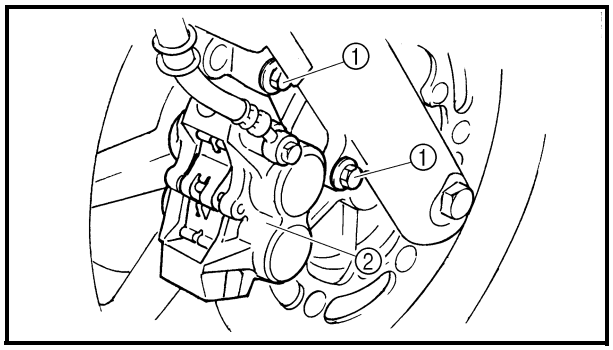
EAS00577

FRONT AND REAR BRAKES

FRONT BRAKE PADS



Order	Job/Part	Q'ty	Remarks
	Removing the front brake pads		Remove the parts in the order listed. The following procedure applies to both of the front brake calipers.
1	Reflector	1	
2	Brake caliper bolt	2	
3	Brake pad clip	2	
4	Brake pad pin	1	
5	Brake pad spring	1	
6	Brake pad	2	
7	Brake pad shim	2	
			For installation, reverse the removal procedure.



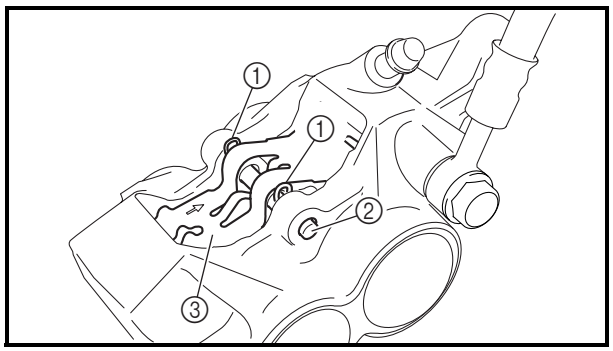
EAS00580
REPLACING THE FRONT BRAKE PADS

The following procedure applies to both brake calipers.

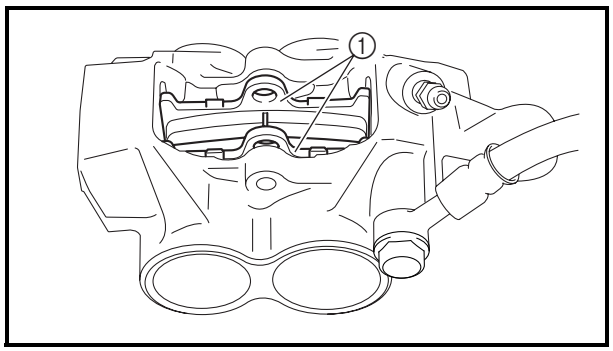
NOTE:

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

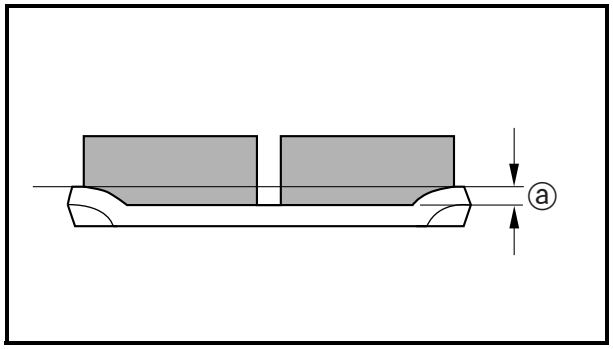
1. Remove:
   - brake caliper bolts ①
   - brake caliper ②



2. Remove:
   - brake pad clips ①
   - brake pad pin ②
   - brake pad spring ③

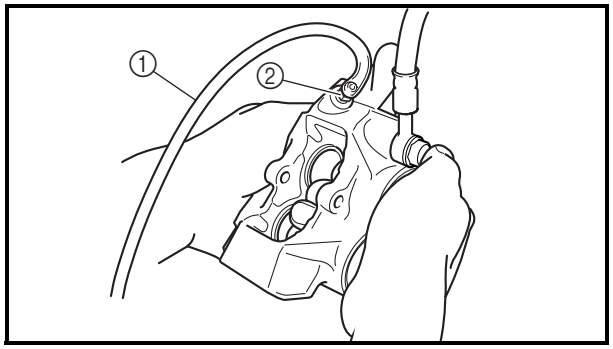


3. Remove:
   - brake pads ①
     (along with the brake pad shims)
   - brake pad shims



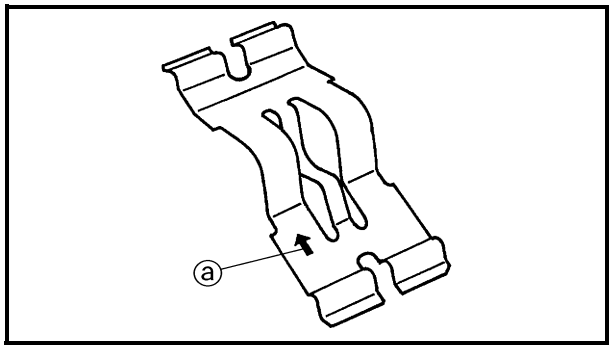
4. Measure:
   - brake pad wear limit ⓐ
     Out of specification → Replace the brake pads as a set.

	Brake pad wear limit **0.5 mm (0.02 in)**



5. Install:
   - brake pad shims
     (onto the brake pads)
   - brake pads
   - brake pad spring

NOTE:
Always install new brake pads and a new brake pad spring as a set.



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

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

d. Install new brake pads and a new brake pad spring.

NOTE:
The arrow ⓐ on the brake pad spring must point in the direction of disc rotation.

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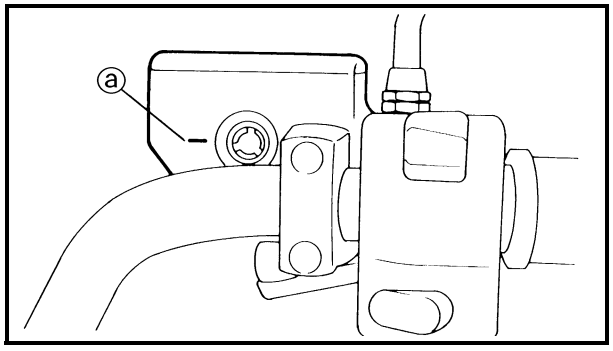


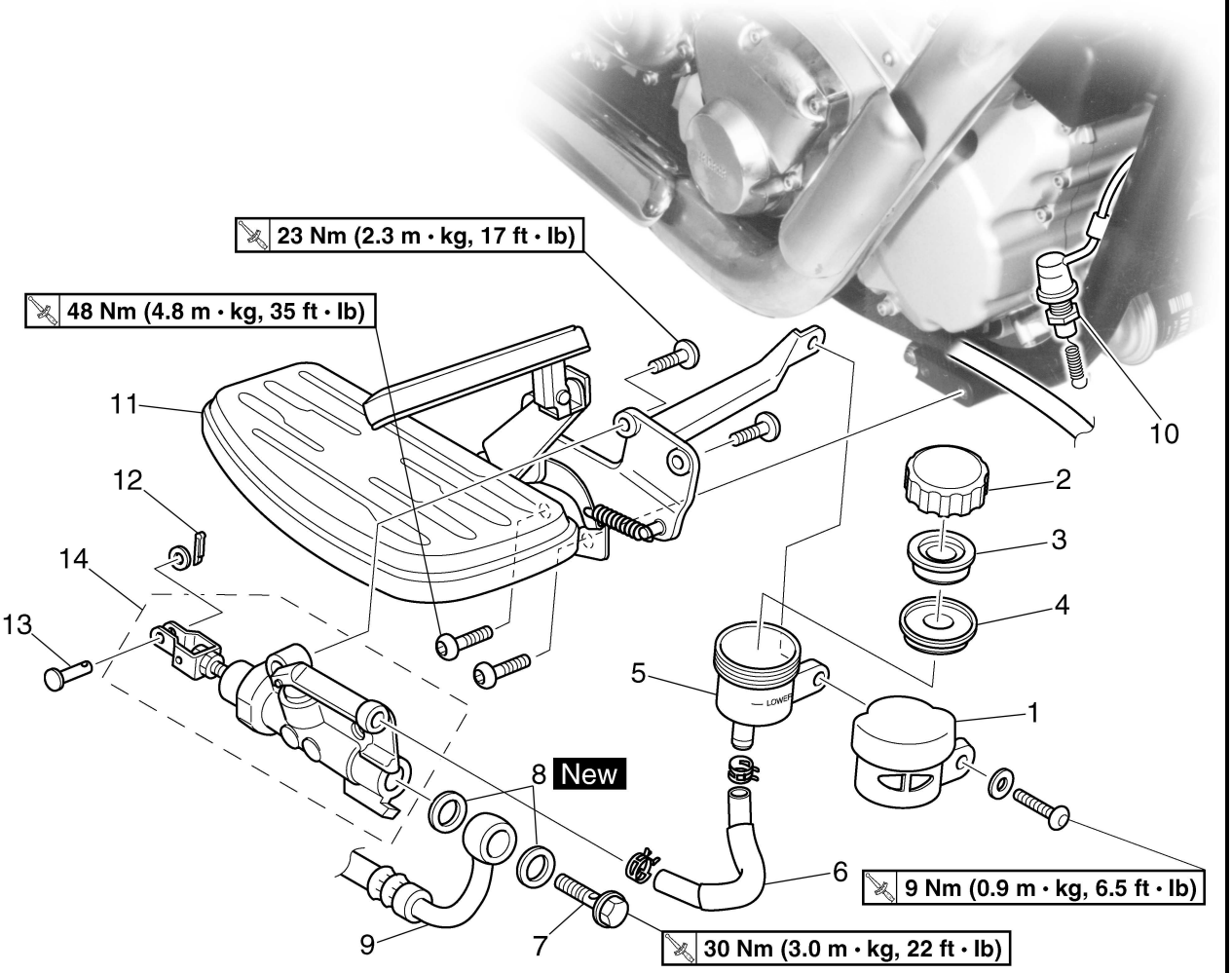
6. Install:
   - brake caliper
   - brake caliper bolts

40 Nm (4.0 m · kg, 29 ft · lb)

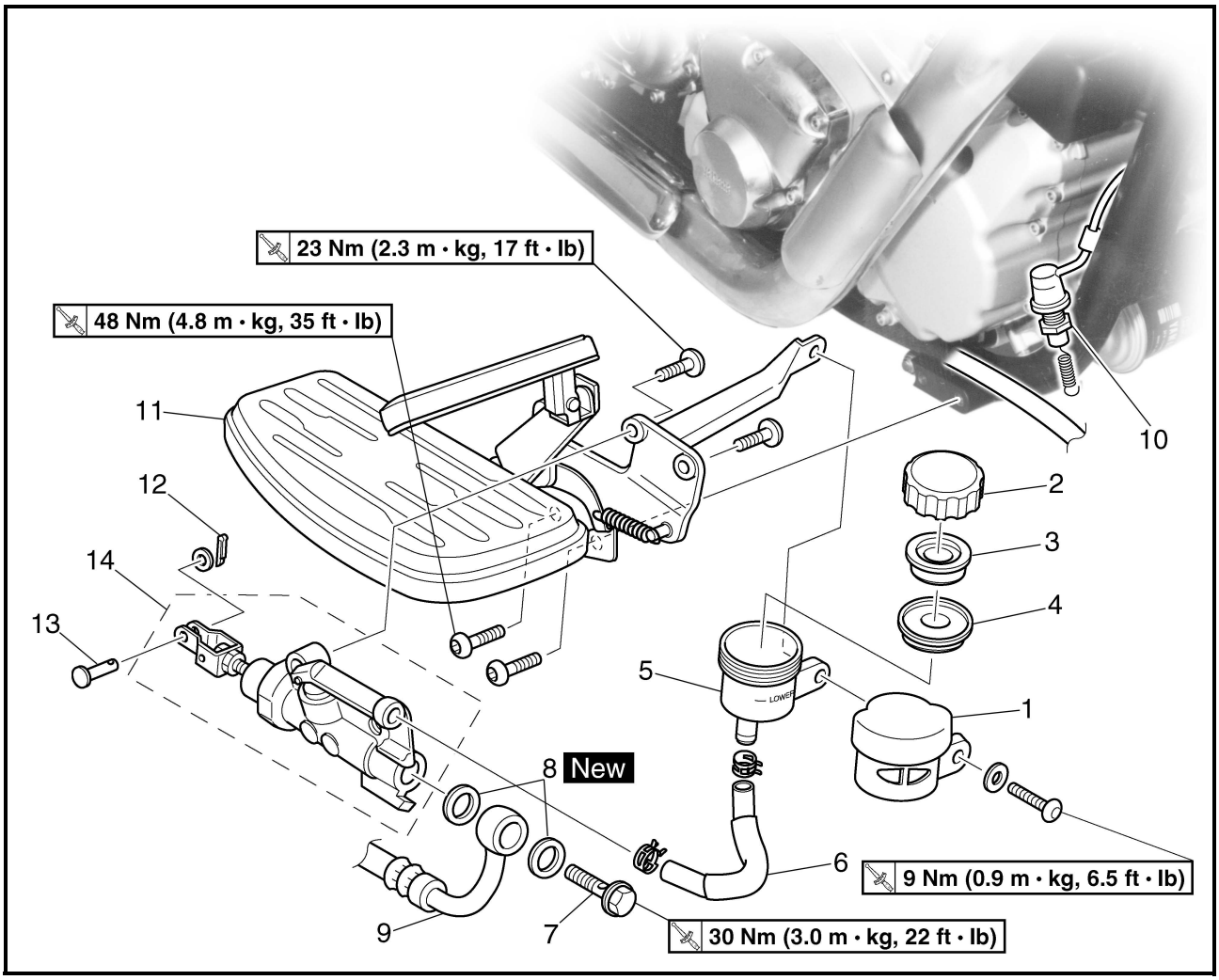
7. Check:
   - brake fluid level
     Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
     Refer to “CHECKING THE BRAKE FLUID LEVEL” in chapter 3.
     (Manual No.: 4WM-28197-E0)
8. Check:
   - brake lever operation
     Soft or spongy feeling → Bleed the brake system.
     Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.
     (Manual No.: 4WM-28197-E0)

EAS00586

REAR BRAKE MASTER CYLINDER



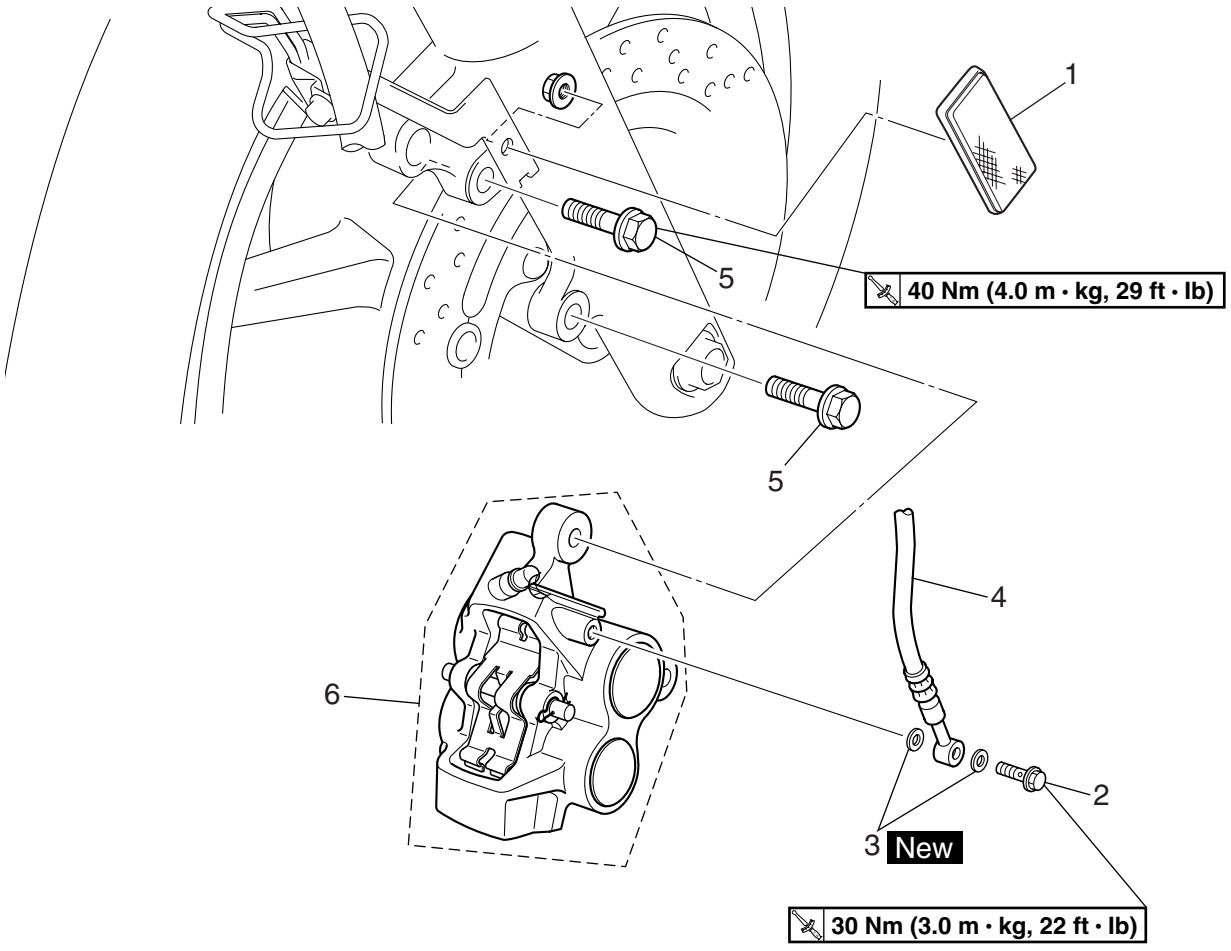
Order	Job/Part	Q'ty	Remarks
	Removing the rear brake master cylinder		Remove the parts in the order listed.
	Brake fluid		Drain.
1	Brake fluid reservoir cover	1	
2	Brake fluid reservoir cap	1	
3	Brake fluid reservoir diaphragm holder	1	
4	Brake fluid reservoir diaphragm	1	
5	Brake fluid reservoir	1	
6	Brake fluid reservoir hose	1	
7	Union bolt	1	
8	Copper washer	2	
9	Brake hose	1	Disconnect.
10	Rear brake light switch	1	Disconnect.



Order	Job/Part	Q'ty	Remarks
11	Left footrest assembly	1	
12	Cotter pin	1	
13	Pin	1	
14	Brake master cylinder	1	
			For installation, reverse the removal procedure.

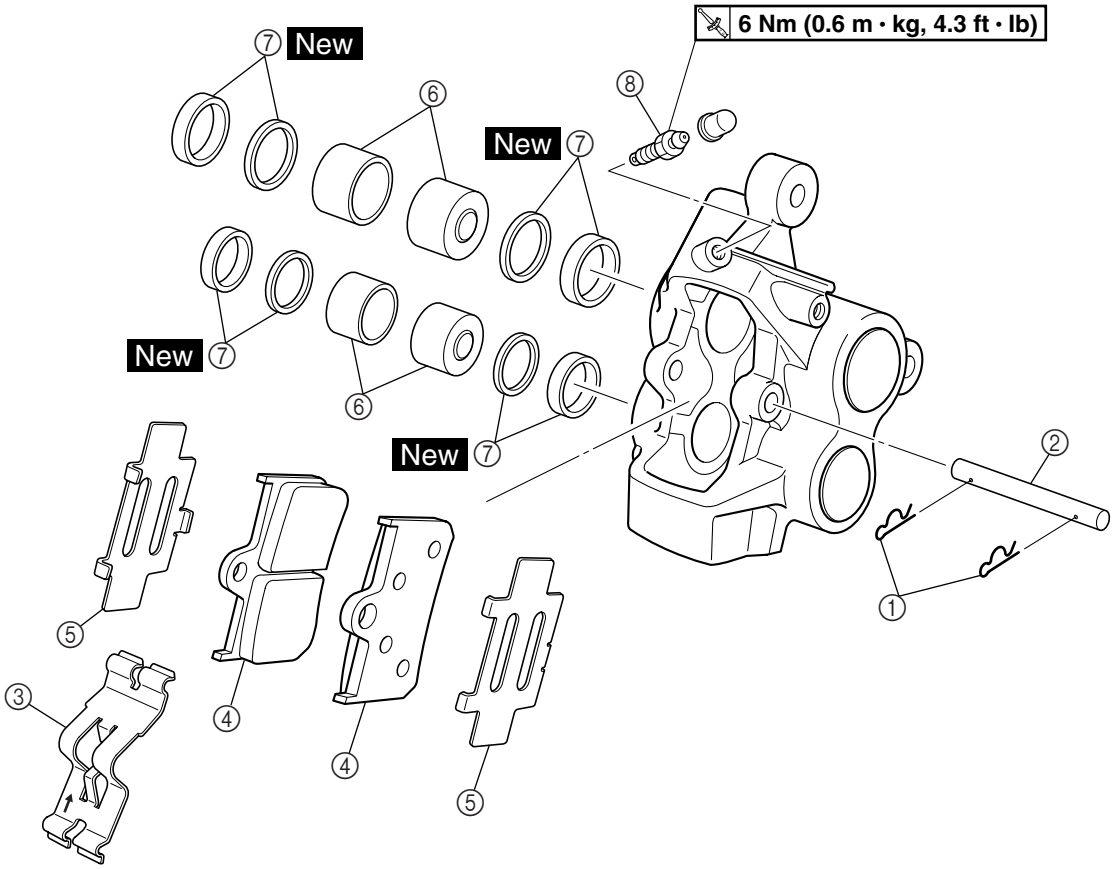
EAS00613

FRONT BRAKE CALIPERS



Order	Job/Part	Q'ty	Remarks
	Removing the front brake calipers		Remove the parts in the order listed. The following procedure applies to both of the front brake calipers.
	Brake fluid		Drain.
1	Reflector	1	
2	Union bolt	1	Disconnect. Refer to "DISASSEMBLING THE FRONT BRAKE CALIPERS" and "ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPERS".
3	Copper washer	2	
4	Brake hose	1	
5	Brake caliper bolt	2	
6	Brake caliper	1	
			For installation, reverse the removal procedure.

EAS00615

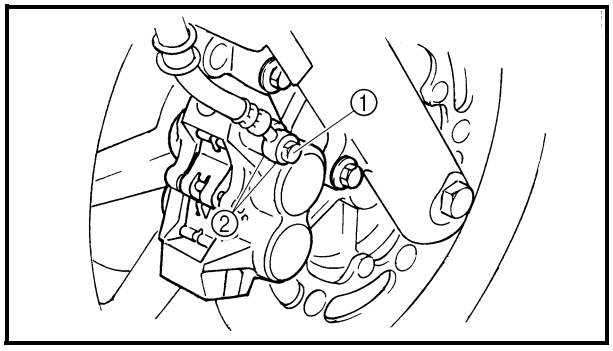


Order	Job/Part	Q'ty	Remarks
	Disassembling the front brake calipers		Remove the parts in the order listed. The following procedure applies to both of the front brake calipers.
①	Brake pad clip	2	
②	Brake pad pin	1	
③	Brake pad spring	1	
④	Brake pad	2	
⑤	Brake pad shim	2	
⑥	Brake caliper piston	4	Refer to "DISASSEMBLING THE FRONT BRAKE CALIPERS".
⑦	Brake caliper piston seal	8	
⑧	Bleed screw	1	
			For assembly, reverse the disassembly procedure.

EAS00625
DISASSEMBLING THE FRONT BRAKE CALIPERS

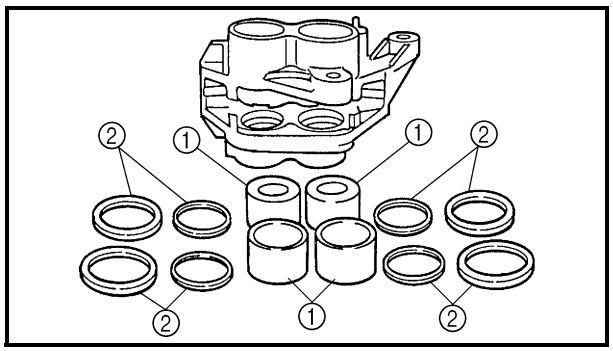
The following procedure applies to both of the brake calipers.

NOTE:
Before disassembling the brake caliper, drain the brake fluid from the entire brake system.



1. Remove:
   - union bolt ①
   - copper washers ②
   - brake hose

NOTE:
Put the end of the brake hose into a container and pump out the brake fluid carefully.



2. Remove:
   - brake caliper pistons ①
   - brake caliper piston seals ②

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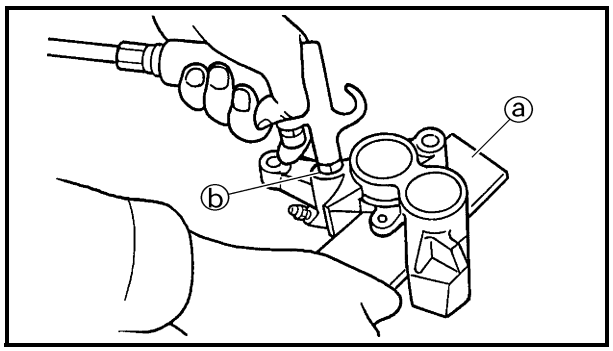
a. Secure the right side brake caliper pistons with a piece of wood ⓐ.
b. Blow compressed air into the brake hose joint opening ⓑ to force out the left side pistons from the brake caliper.

⚠ WARNING

- **Never try to pry out the brake caliper pistons.**
- **Do not loosen the bolts ③.**



c. Remove the brake caliper piston seals.
d. Repeat the previous steps to force out the right side pistons from the brake caliper.

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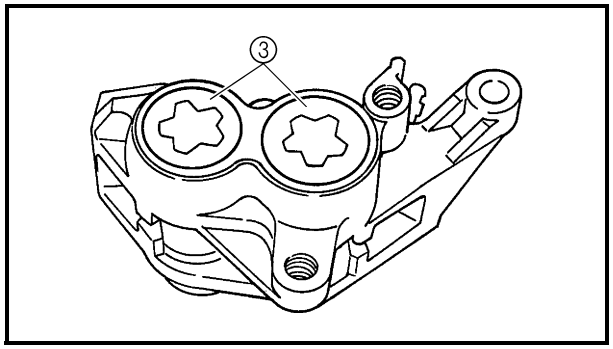
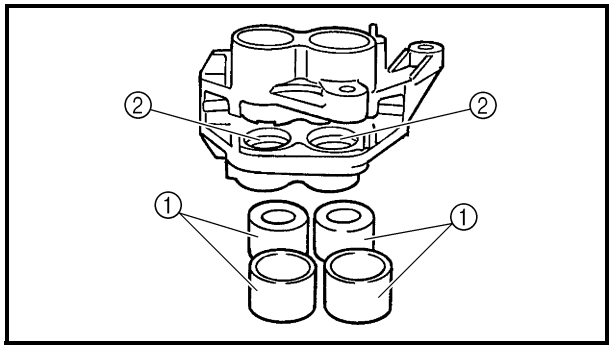


EAS00633
CHECKING THE FRONT BRAKE CALIPERS

Recommended brake component replacement schedule	
Brake pads	**If necessary**
Piston seals	**Every two years**
Brake hoses	**Every four years**
Brake fluid	**Every two years and whenever the brake is disassembled**



1. Check:
   - brake caliper pistons ①
     Rust/scratches/wear → Replace the brake caliper pistons.
   - brake caliper cylinders ②
     Scratches/wear → Replace the brake caliper assembly.
   - brake caliper body
     Cracks/damage → Replace the brake caliper assembly.
   - brake fluid delivery passages
     (brake caliper body)
     Obstruction → Blow out with compressed air.

⚠ WARNING

Whenever a brake caliper is disassembled, replace the brake caliper piston seals.

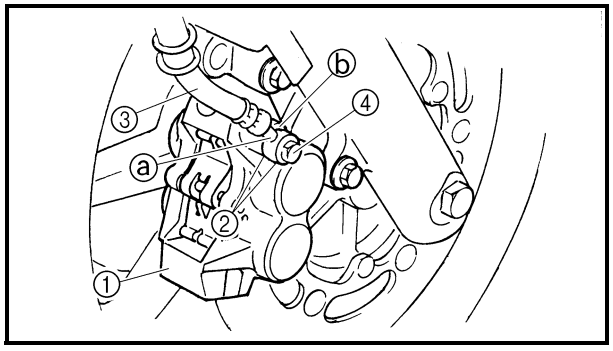
EAS00638
ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPERS

The following procedure applies to both of the brake calipers.

⚠ WARNING

- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components as they will cause the piston seals to swell and distort.**
- **Whenever a brake caliper is disassembled, replace the brake caliper piston seals.**

Recommended brake fluid
DOT 4



1. Install:
   - brake caliper ① (temporarily)
   - copper washers ② New
   - brake hose ③
   - union bolt ④ **30 Nm (3.0 m · kg, 22 ft · lb)**

⚠ WARNING

Proper brake hose routing is essential to insure safe motorcycle operation. Refer to "CABLE ROUTING" in chapter 2.

CAUTION:

When installing the brake hose onto the brake caliper ①, make sure the brake pipe ⓐ touches the projection ⓑ on the brake caliper.

2. Remove:
   - brake caliper
3. Install:
   - brake pads
   - brake pad spring
   - brake caliper bolt

40 Nm (4.0 m · kg, 29 ft · lb)

4. Fill:
   • brake master cylinder reservoir
   (with the specified amount of the recommended brake fluid)

Recommended brake fluid
DOT 4

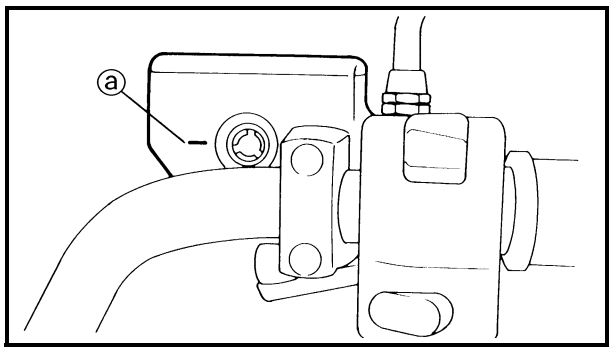
⚠ WARNING

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

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

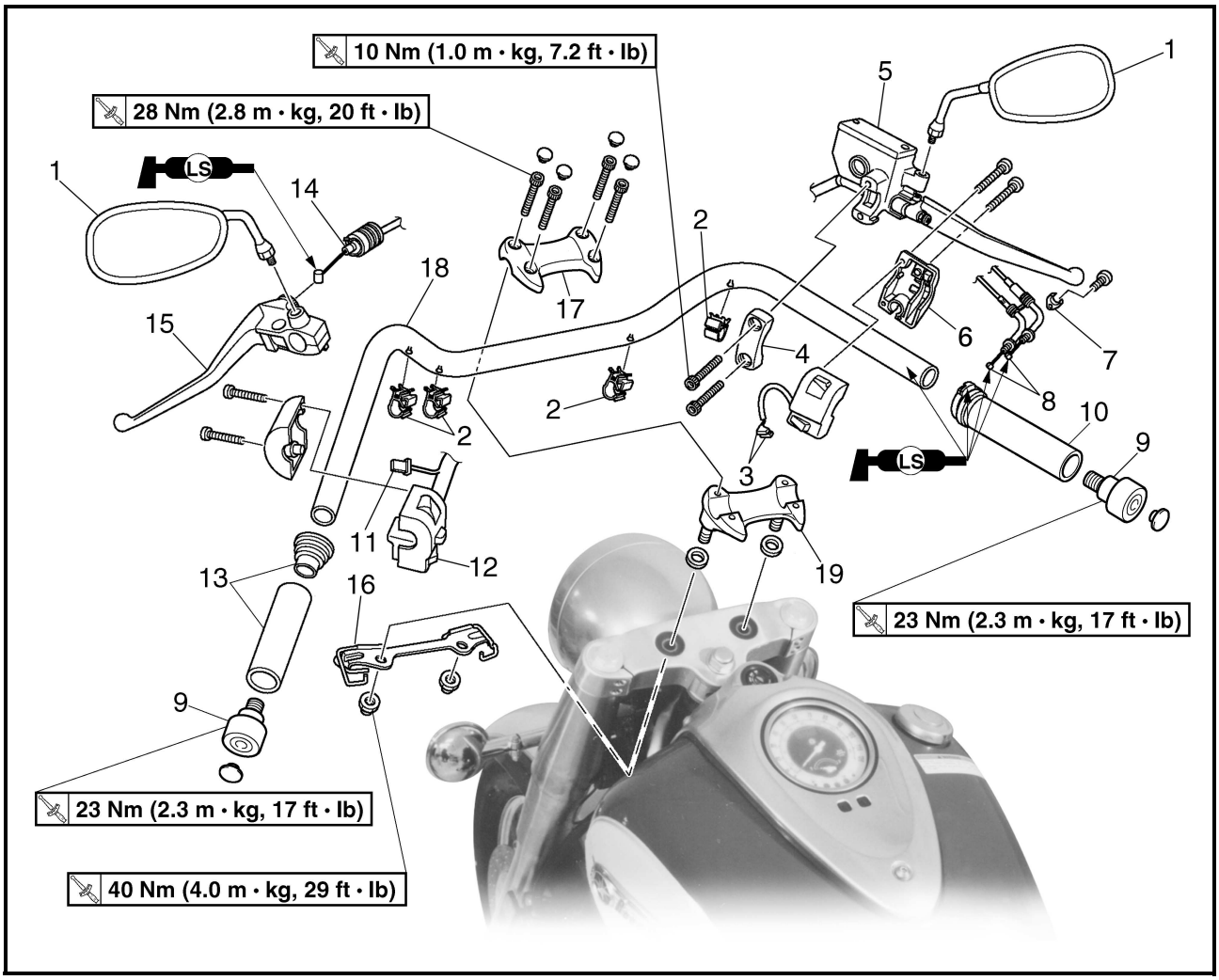
5. Bleed:
   • brake system
   Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.
   (Manual No.: 4WM-28197-E0)



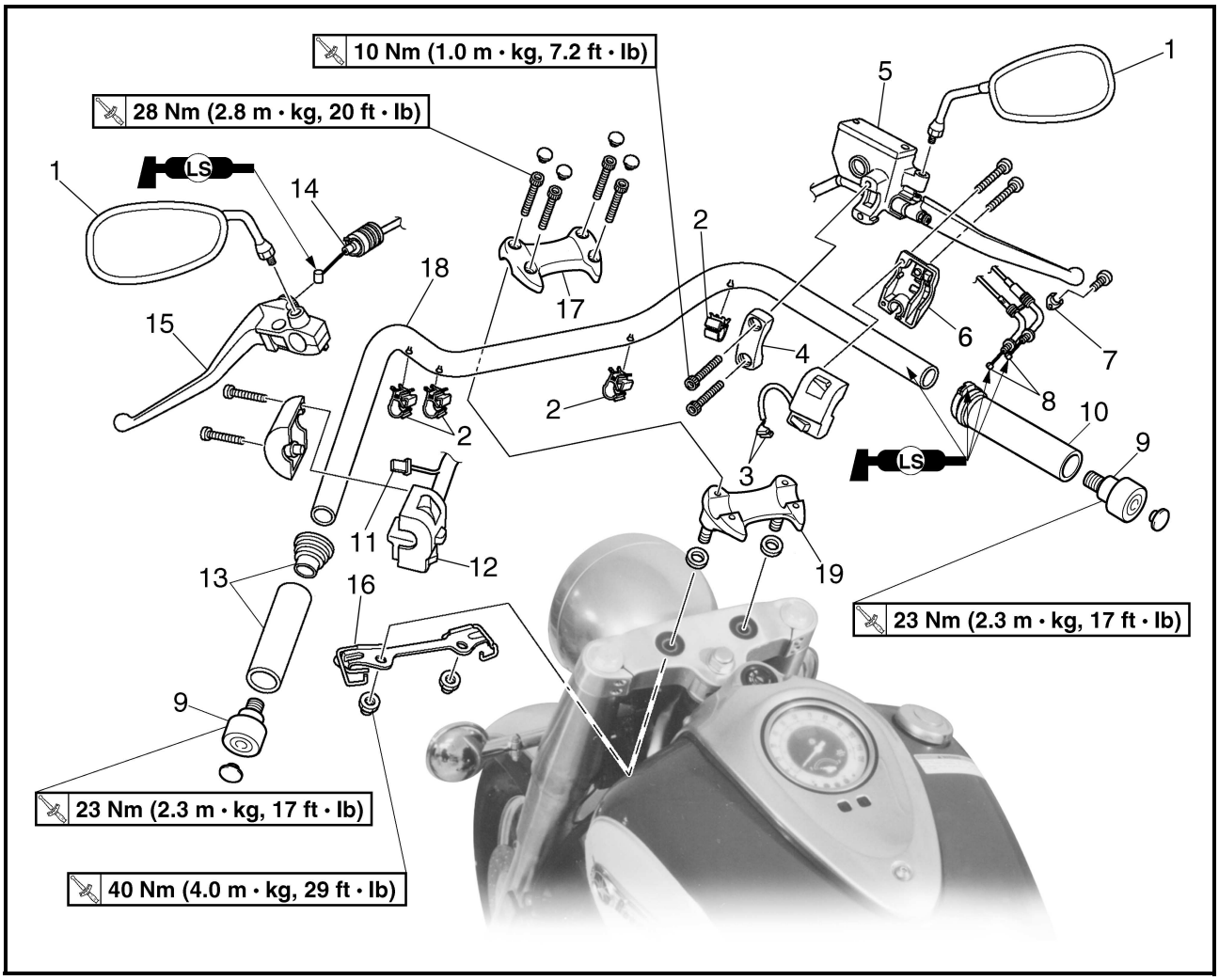
6. Check:
   • brake fluid level
   Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
   Refer to “CHECKING THE BRAKE FLUID LEVEL” in chapter 3.
   (Manual No.: 4WM-28197-E0)

7. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.
   (Manual No.: 4WM-28197-E0)

EAS00664
HANDLEBAR

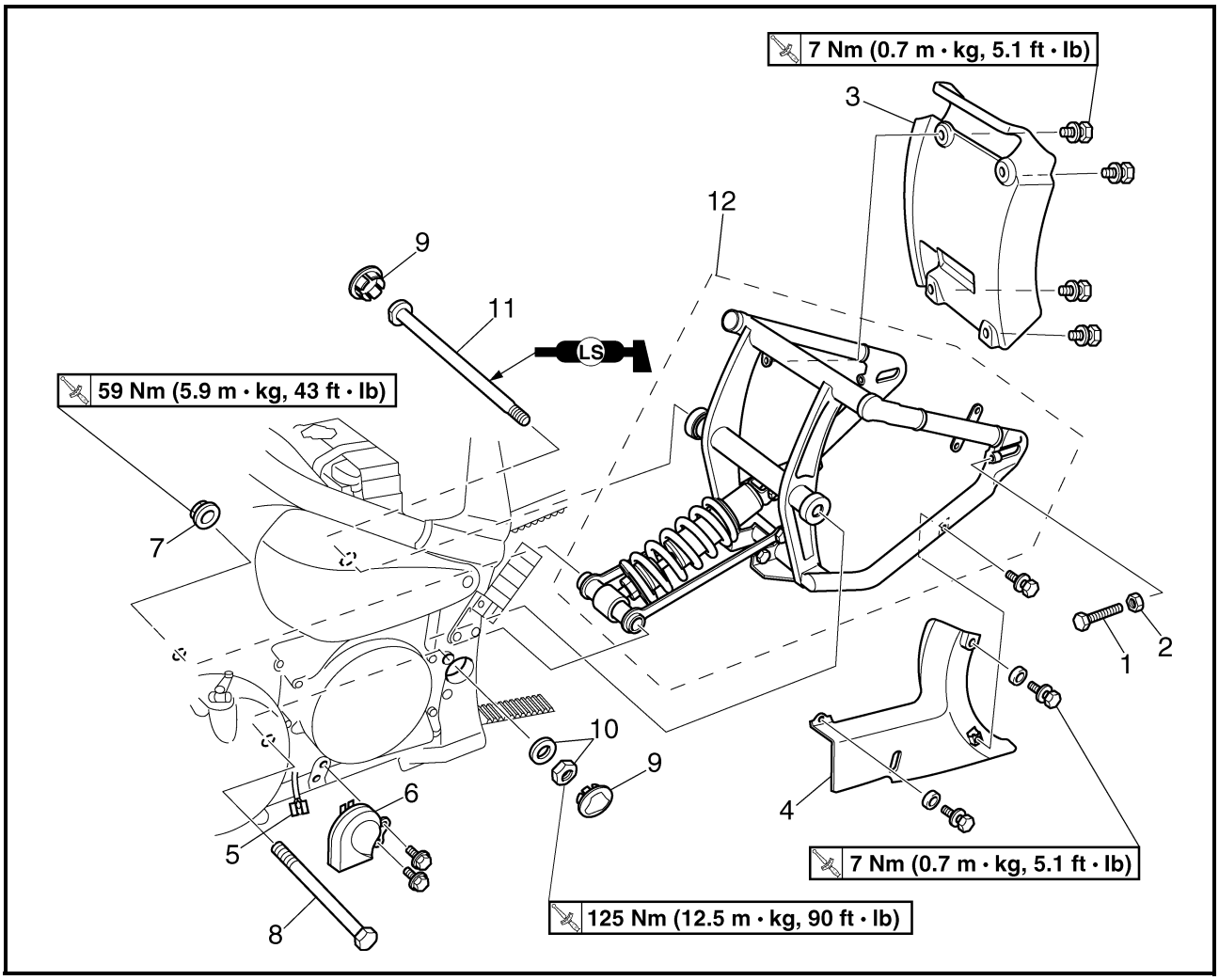


Order	Job/Part	Q'ty	Remarks
	Removing the handlebar		Remove the parts in the order listed.
1	Rear view mirror (left and right)	2	
2	Plastic clamp	4	
3	Front brake light switch connector	2	Disconnect.
4	Brake master cylinder holder	1	
5	Brake master cylinder	1	
6	Right handlebar switch	1	
7	Throttle cable holder	1	
8	Throttle cable	2	Disconnect.
9	Grip end	2	
10	Throttle grip	1	
11	Clutch switch coupler	1	Disconnect.

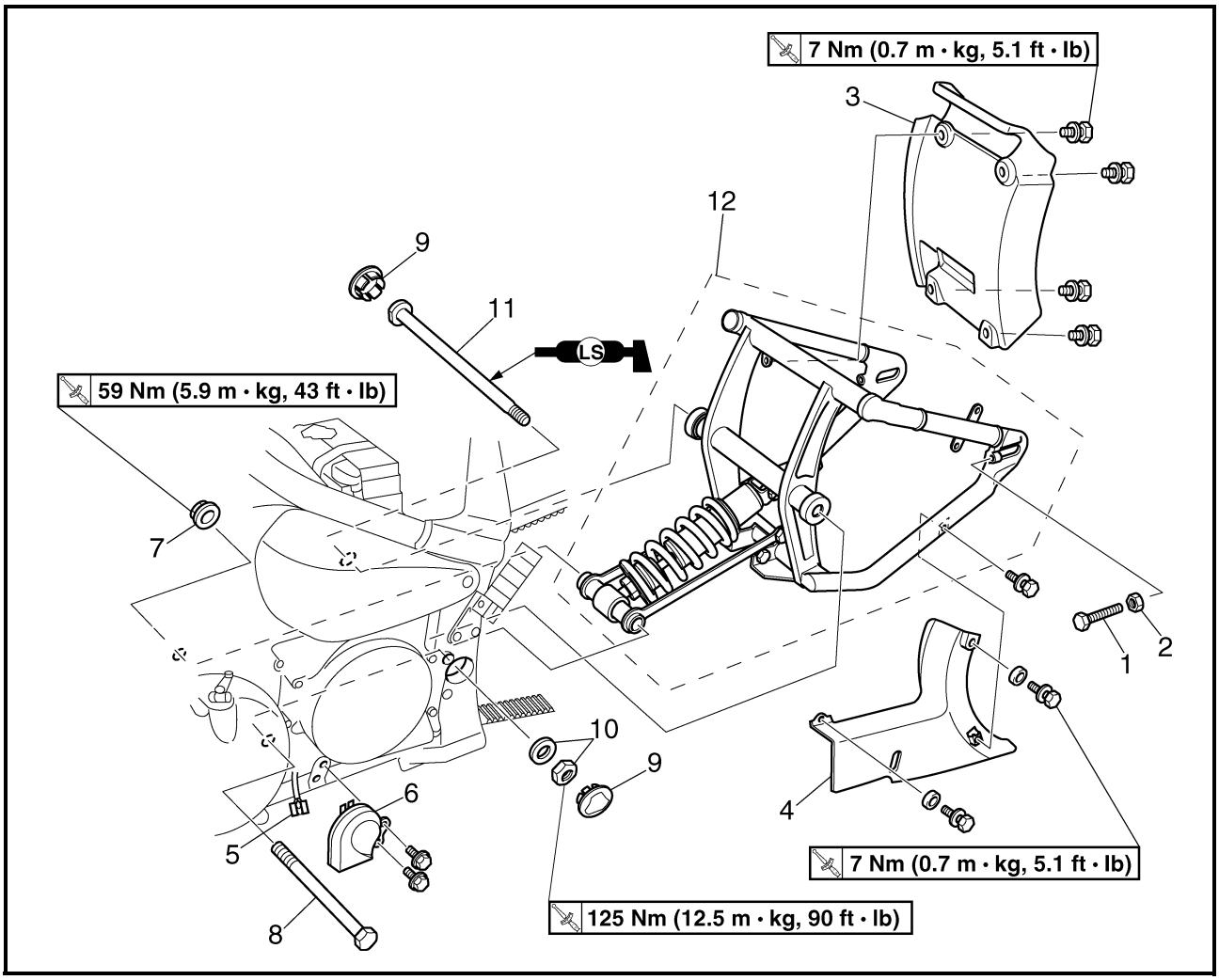


Order	Job/Part	Q'ty	Remarks
12	Left handlebar switch	1	
13	Handlebar grip	1	
14	Clutch cable	1	Disconnect.
15	Clutch lever holder	1	
16	Cable guide	1	
17	Upper handlebar holder	1	
18	Handlebar	1	
19	Lower handlebar holder	1	
			For installation, reverse the removal procedure.

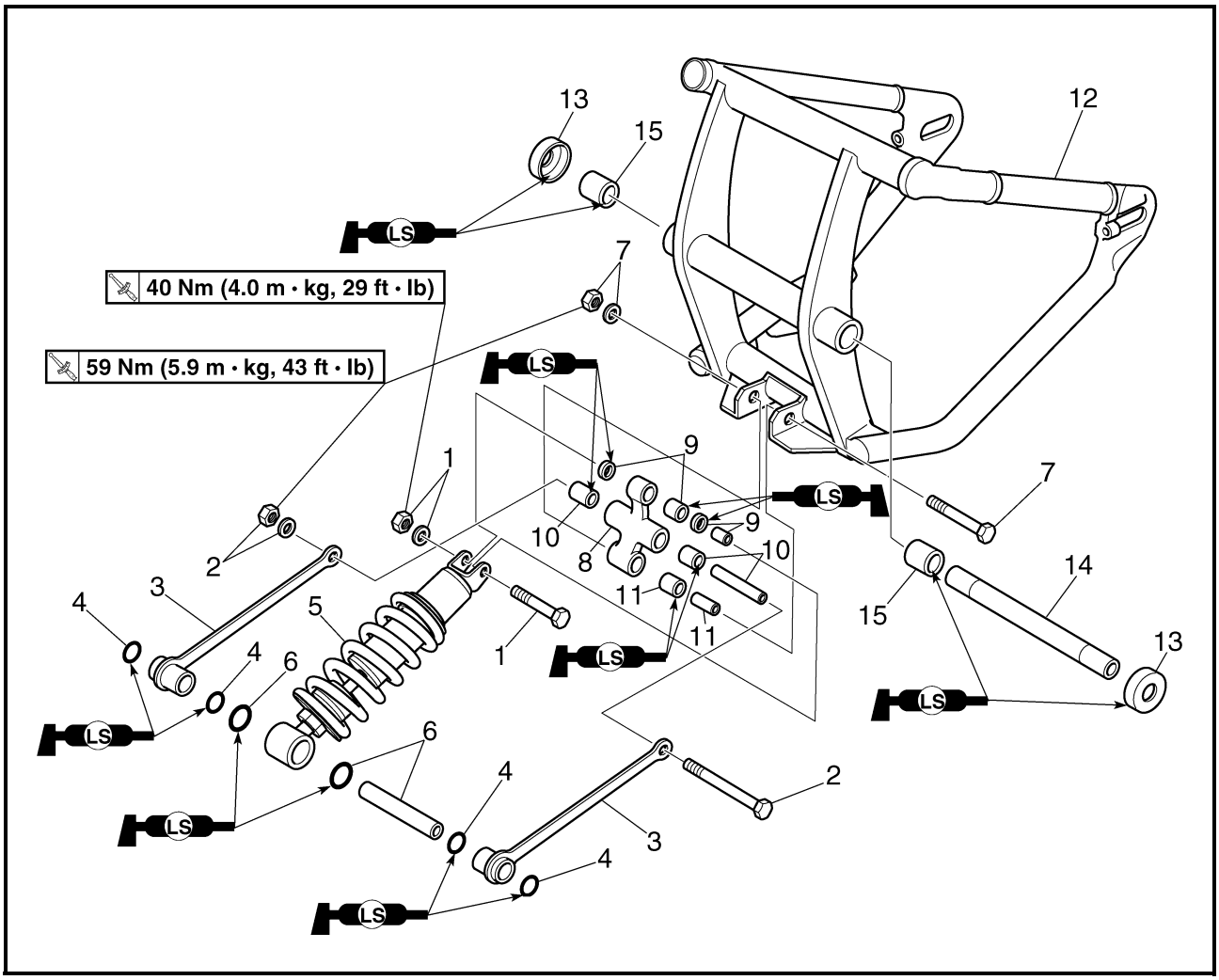
REAR SHOCK ABSORBER AND SWINGARM



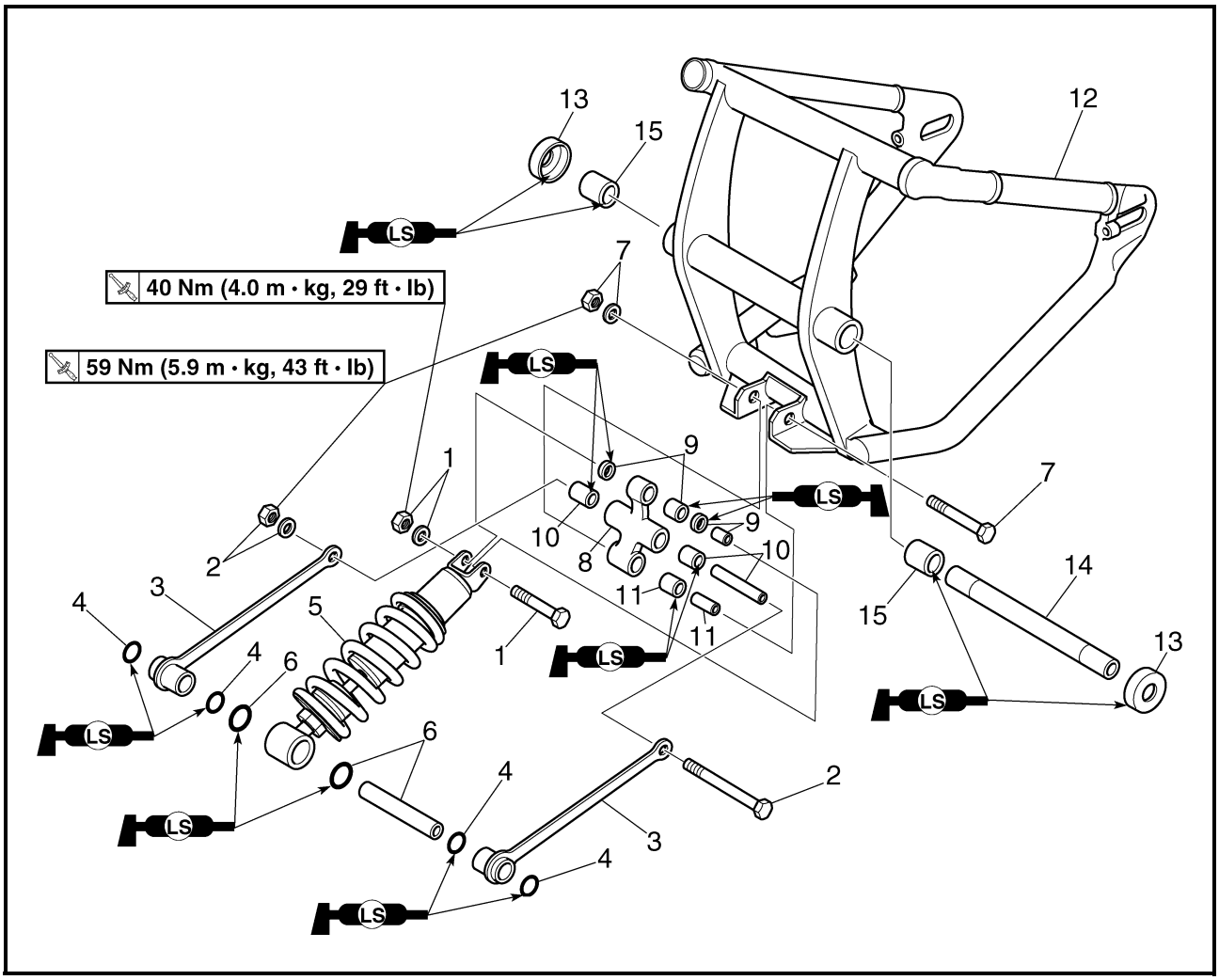
Order	Job/Part	Q'ty	Remarks
	Removing the rear shock absorber and swingarm		Remove the parts in the order listed.
	Rear wheel		Refer to "REAR WHEEL, BRAKE DISC AND REAR WHEEL PULLEY".
1	Adjusting bolt	1	
2	Locknut	1	
3	Mud guard	1	
4	Lower drive belt cover	1	
5	Horn coupler	1	Disconnect.
6	Horn	1	
7	Self-locking nut	1	
8	Bolt (shock absorber-connecting arm-frame)	1	ℓ = 158 mm (6.22 in)
9	Cover (left and right)	2	
10	Pivot shaft nut/washer	1/1	



Order	Job/Part	Q'ty	Remarks
11	Pivot shaft	1	
12	Rear shock absorber and swingarm assembly	1	For installation, reverse the removal procedure.

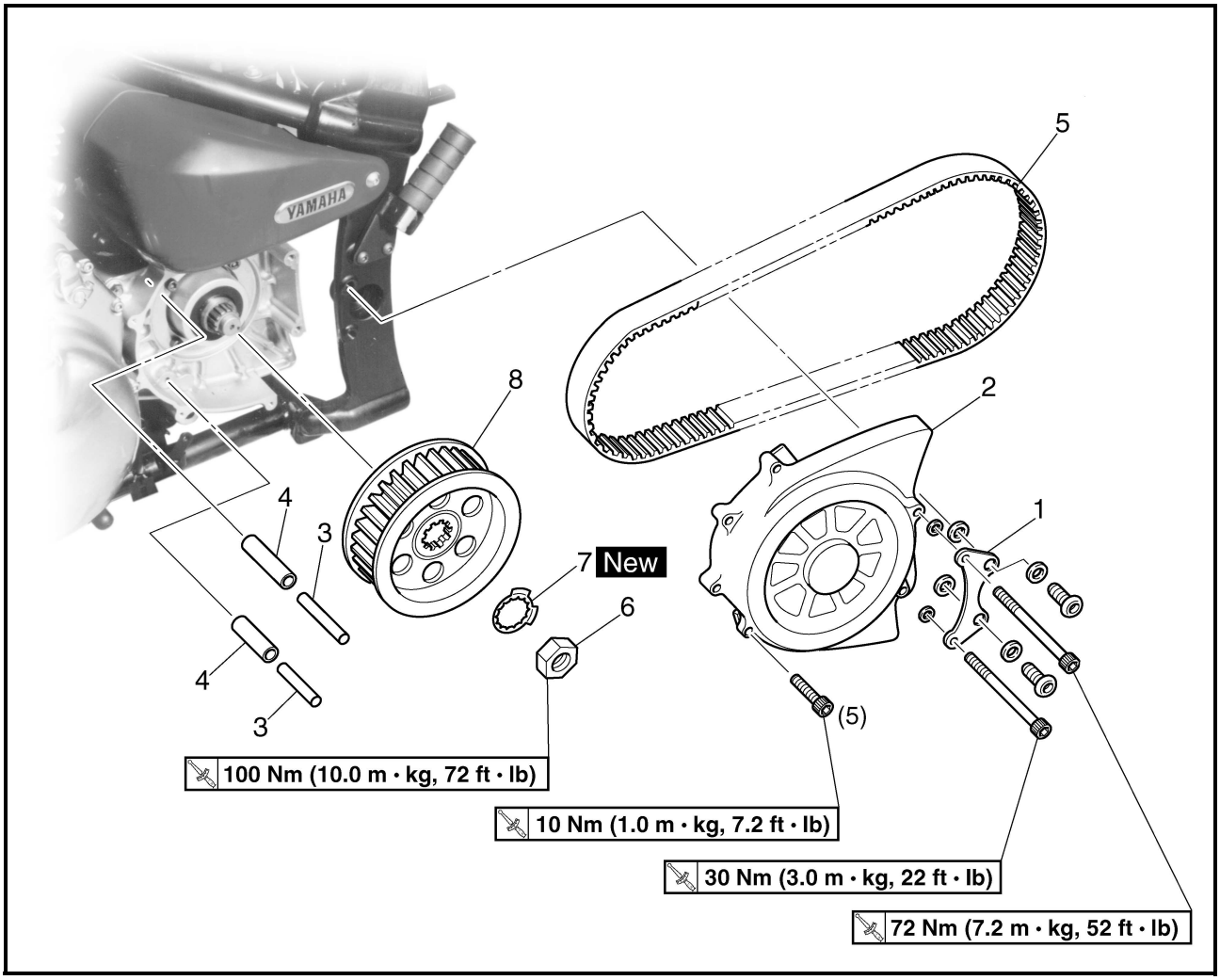


Order	Job/Part	Q'ty	Remarks
	Removing the rear shock absorber and swingarm		Remove the parts in the order listed.
1	Self-locking nut/washer/bolt	1/1/1	Bolt ℓ = 53 mm (2.19 in)
2	Self-locking nut/washer/bolt	1/1/1	Bolt ℓ = 124 mm (4.88 in)
3	Connecting arm	2	
4	O-ring	4	
5	Rear shock absorber	1	
6	Spacer/O-ring	1/2	
7	Self-locking nut/washer/bolt	1/1/1	Bolt ℓ = 77 mm (3.03 in)
8	Relay arm	1	
9	Spacer/oil seal/bearing	1/2/1	
10	Spacer/bearing	1/2	



Order	Job/Part	Q'ty	Remarks
11	Spacer/bearing	1/1	
12	Swingarm	1	
13	Dust cover	2	
14	Spacer	1	
15	Bearing	2	
			For installation, reverse the removal procedure.

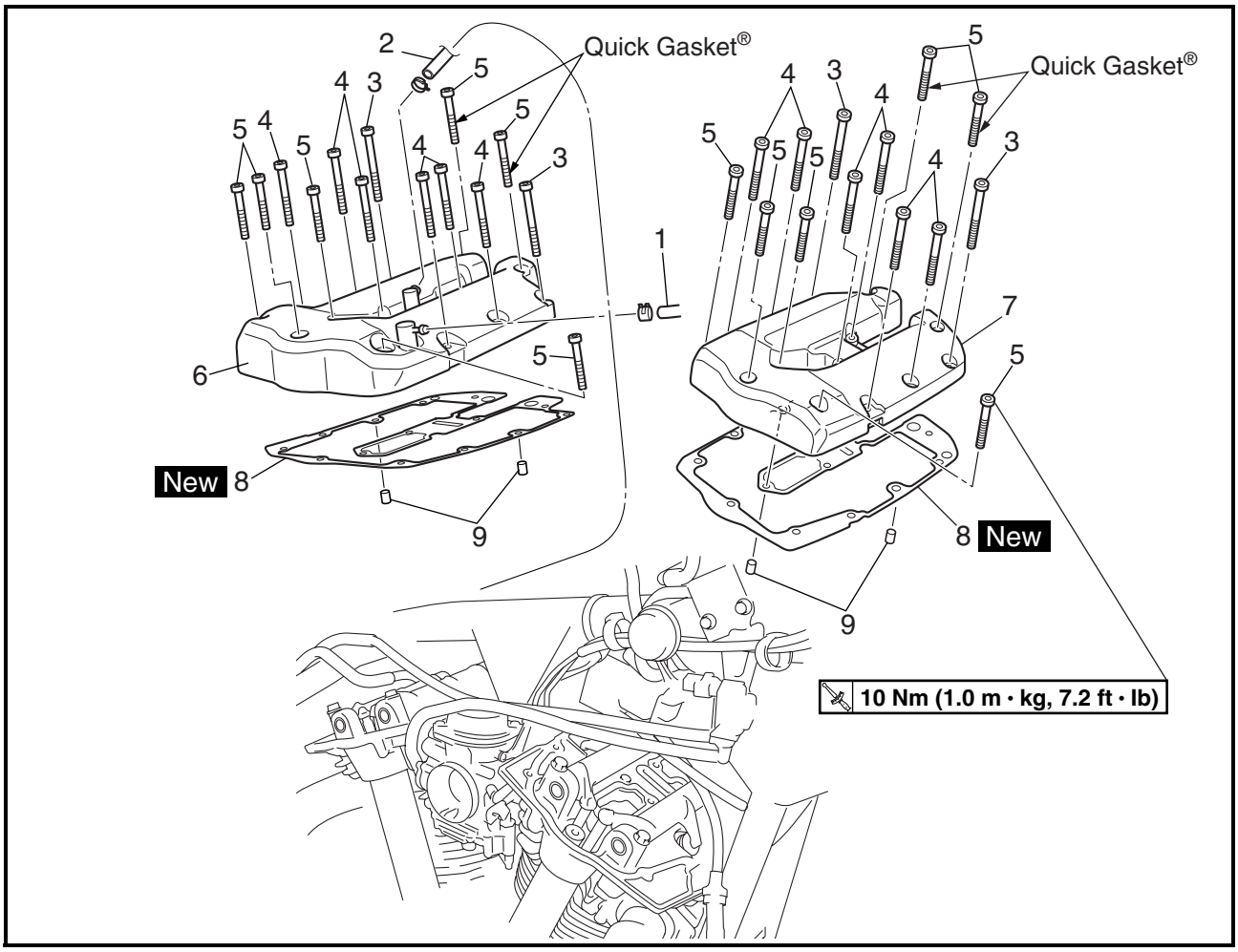
DRIVE BELT AND DRIVE PULLEY



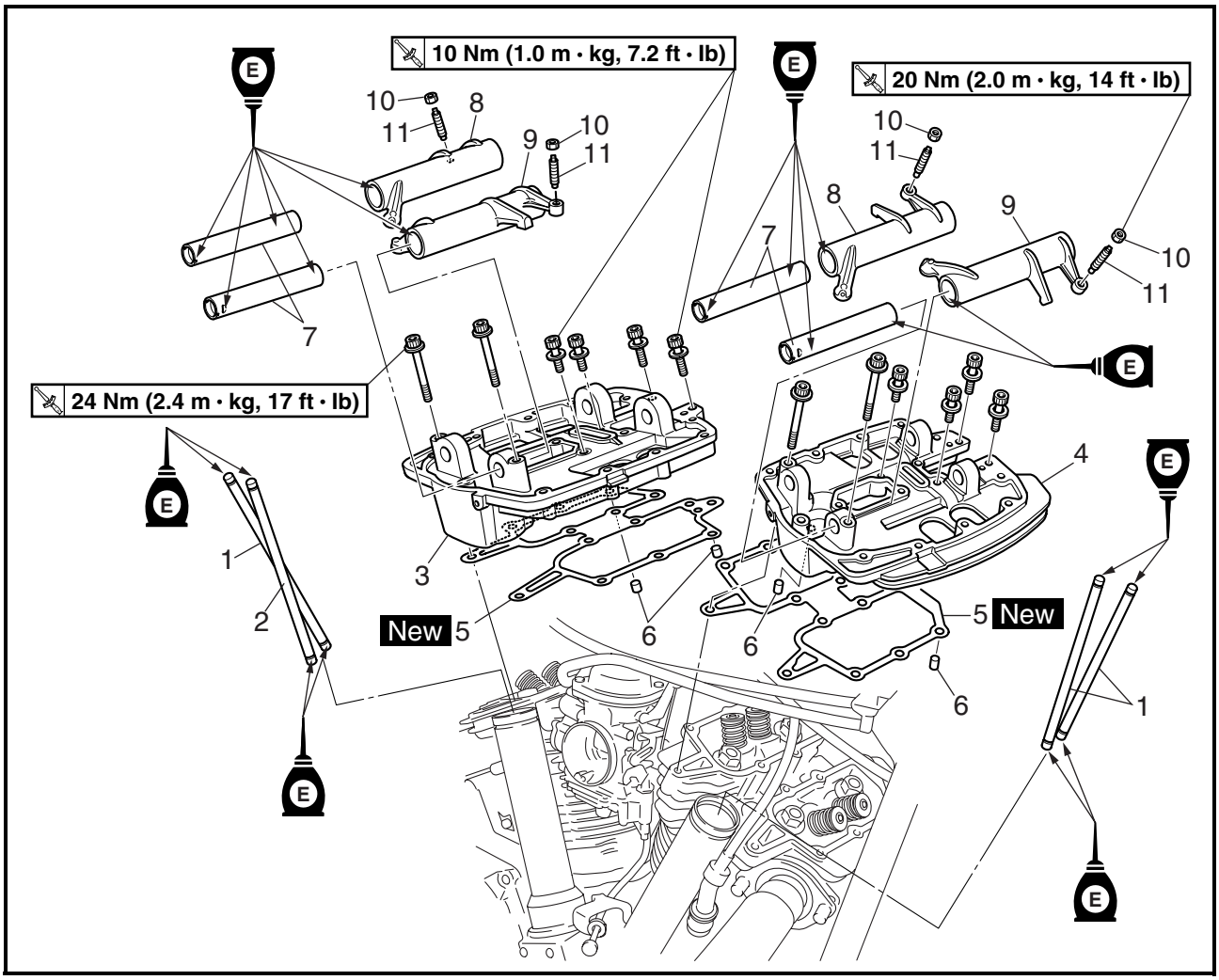
Order	Job/Part	Q'ty	Remarks
	Removing the drive belt and drive pulley		Remove the parts in the order listed.
	Rear wheel		Refer to "REAR WHEEL, BRAKE DISC AND REAR WHEEL PULLEY".
	Rear shock absorber and swingarm assembly		Refer to "REAR SHOCK ABSORBER AND SWINGARM".
1	Drive pulley cover bracket	1	
2	Drive pulley cover	1	
3	Dowel pin	2	
4	Slider	2	
5	Drive belt	1	
6	Drive pulley nut	1	
7	Lock washer	1	
8	Drive pulley	1	
			For installation, reverse the removal procedure.

ENGINE

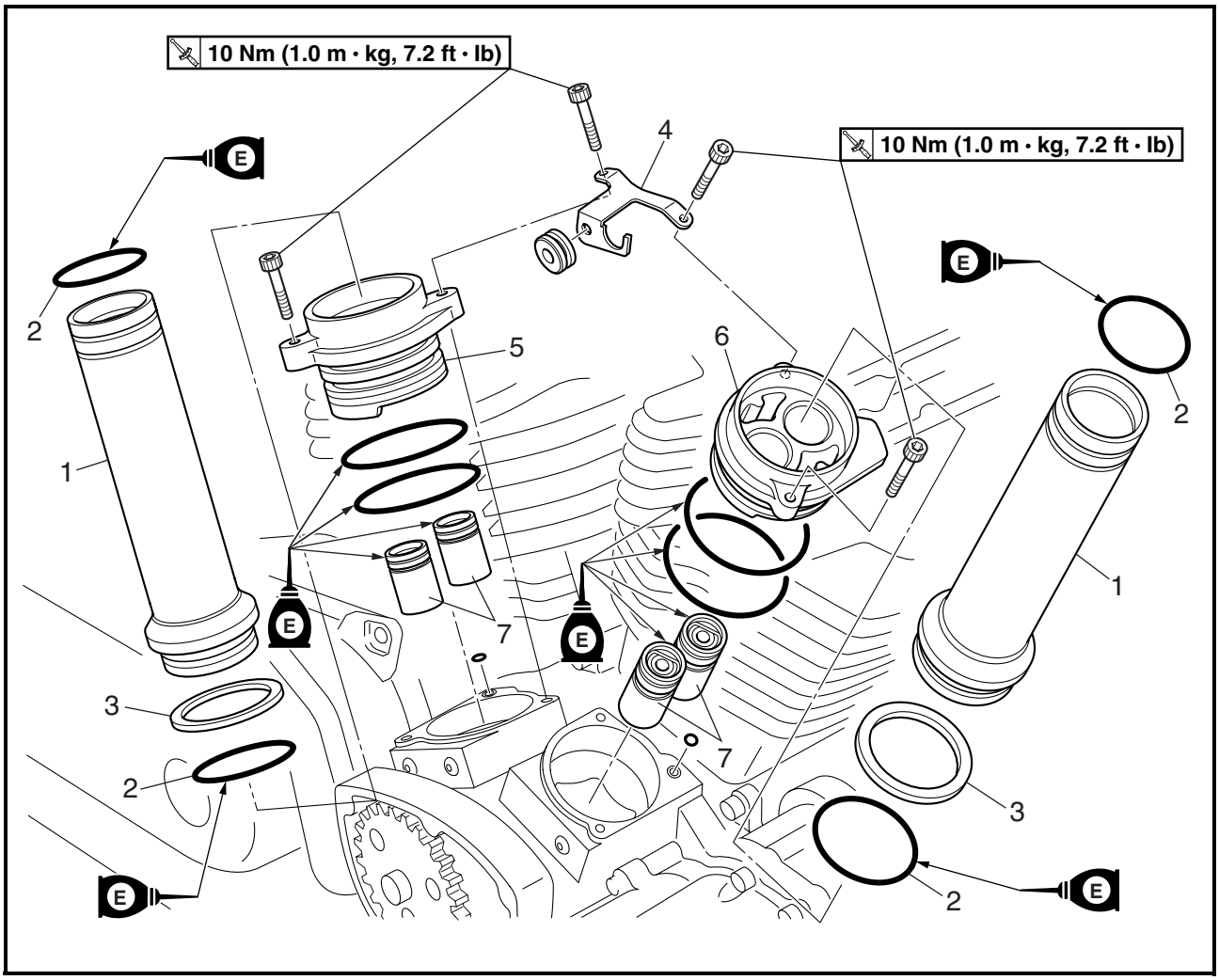
ROCKER ARMS, PUSH RODS AND VALVE LIFTERS



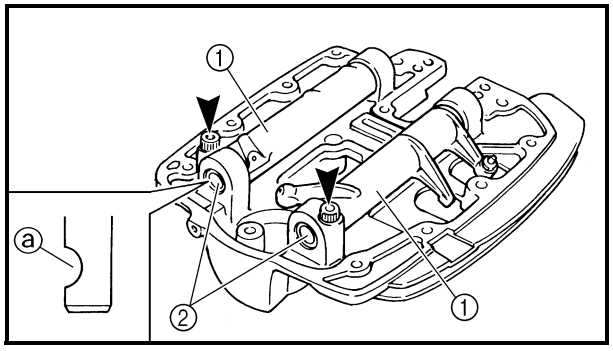
Order	Job/Part	Q'ty	Remarks
	Removing cylinder head covers		Remove the parts in the order listed.
	Engine left side cover Decompression solenoid cover Camshaft sprocket cover		Refer to "ROCKER ARMS, PUSH RODS AND VALVE LIFTERS" in chapter 5. (Manual No.: 4WM-28197-E0)
1	Cylinder head breather hose	1	
2	Oil tank breather hose	1	
3	Bolt	4	ℓ = 60 mm (2.36 in)
4	Bolt	12	ℓ = 50 mm (1.97 in)
5	Bolt	12	ℓ = 40 mm (1.57 in)
6	Rear cylinder head cover	1	
7	Front cylinder head cover	1	Refer to "INSTALLING THE CYLINDER HEAD COVERS".
8	Cylinder head cover gasket	2	
9	Dowel pin	4	
			For installation, reverse the removal procedure.

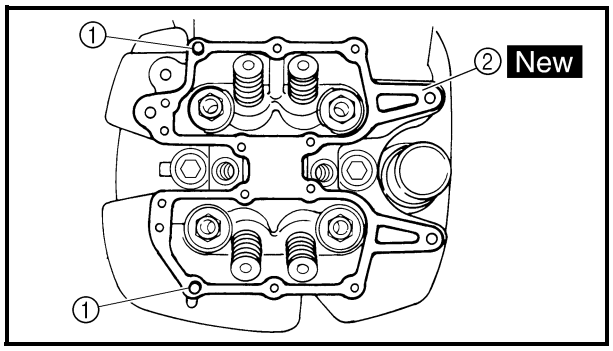


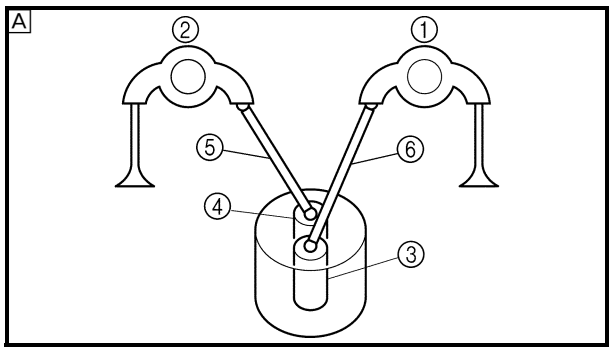
Order	Job/Part	Q'ty	Remarks
	Removing the push rods and rocker arms		Remove the parts in the order listed.
1	Push rod 1	3	ℓ = 288.5 mm (11.358 in) green painting
2	Push rod 2	1	ℓ = 290.5 mm (11.437 in) yellow painting
3	Rear rocker arm base	1	
4	Front rocker arm base	1	
5	Rocker arm base gasket	2	Refer to "REMOVING THE ROCKER ARMS, PUSH RODS AND VALVE LIFTERS" in chapter 5 (Manual No.: 4WM-28197-E0) and "INSTALLING THE ROCKER ARMS AND PUSH RODS".
6	Dowel pin	4	
7	Rocker arm shaft	4	
8	Rocker arm 1	2	
9	Rocker arm 2	2	
10	Locknut	2	
11	Adjusting screw	2	
			For installation, reverse the removal procedure.

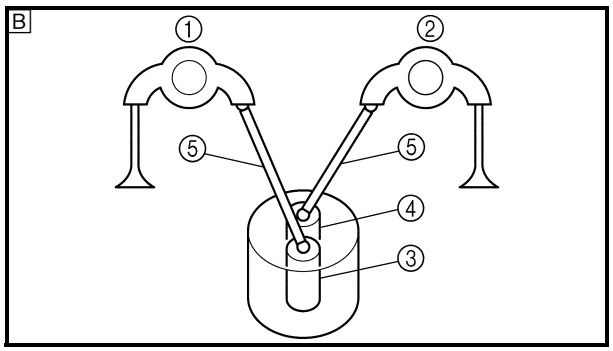


Order	Job/Part	Q'ty	Remarks
	Removing the valve lifters		Remove the parts in the order listed.
1	Push rod cover	2	
2	O-ring	4	
3	Seal	2	
4	Air filter bracket	1	
5	Rear valve lifter case	1	
6	Front valve lifter case	1	
7	Valve lifter	4	Refer to "REMOVING THE ROCKER ARMS, PUSH RODS AND VALVE LIFTERS" in chapter 5 (Manual No.: 4WM-28197-E0) and "INSTALLING THE VALVE LIFTERS AND PUSH ROD COVERS" in chapter 5. (Manual No.: 4WM-28197-E0) For installation, reverse the removal procedure.









INSTALLING THE ROCKER ARMS AND PUSH RODS

The following procedure applies to both cylinders.

1. Install:
   - rocker arms ①
   - rocker arm shafts ②
     (onto rocker arm base)

NOTE:

The thread hole ⓐ of the rocker arm shaft must face to the outside.

2. Install:
   - dowel pins ①
   - rocker arm gasket ② New

3. Install:
   - rocker arm base
     (with rocker arms)
   - push rods

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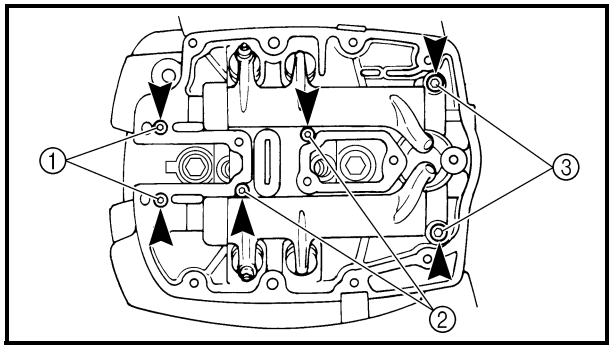
a. Put the rocker arm base on the cylinder head.
b. Install the push rods.

NOTE:

- Be sure to correctly install the push rods between the rocker arms and valve lifters as shown. The illustration is viewed from the right side of the motorcycle.

A Rear cylinder
B Front cylinder
① Intake side rocker arm
② Exhaust side rocker arm
③ Intake valve lifter
④ Exhaust valve lifter
⑤ Push rod 1 ℓ = 288.5 mm (11.358 in) green painting
⑥ Push rod 2 ℓ = 290.5 mm (11.437 in) yellow painting

- The lengths of push rod 1 and push rod 2 are different. Therefore, be sure to install them in the proper position.
- Lubricate the push rod end balls with engine oil.



c. Install the rocker arm base bolts.

NOTE:
Tighten the rocker arm base bolts in stages and in a crisscross pattern.

Rocker arm base bolt ①, ②
10 Nm (1.0 m · kg, 7.2 ft · lb)
Rocker arm base bolt ③
24 Nm (2.4 m · kg, 17 ft · lb)

Bolts ①: M6, ℓ = 40 mm (1.57 in)
Bolts ②: M6, ℓ = 30 mm (1.18 in)
Bolts ③: M8, ℓ = 70 mm (2.76 in)

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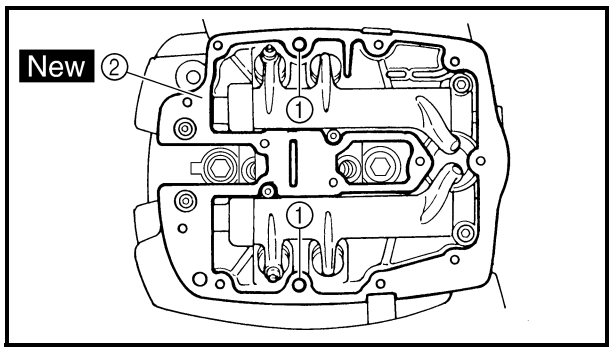
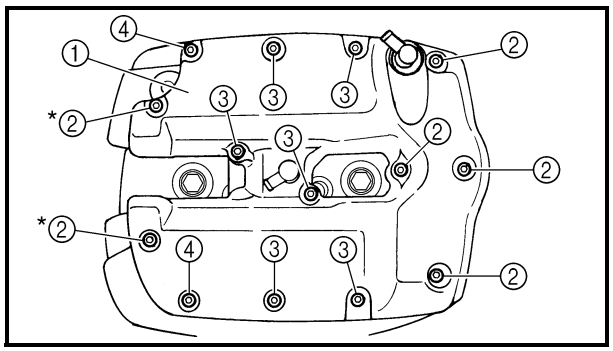


INSTALLING THE CYLINDER HEAD COVERS

The following procedure applies to both cylinders.

1. Install:
   - dowel pins ①
   - cylinder head cover gasket ② New

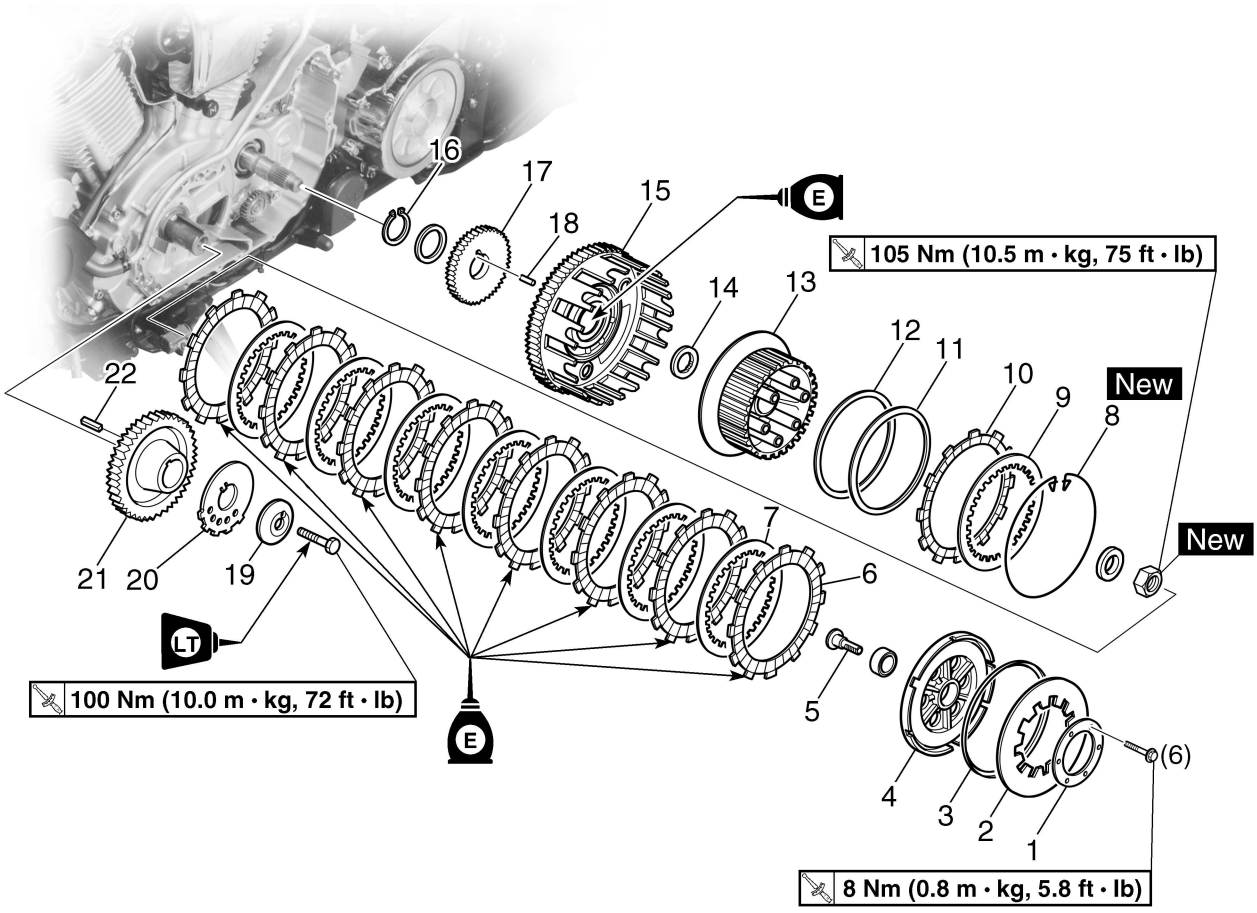


2. Install:
   - cylinder head cover ①

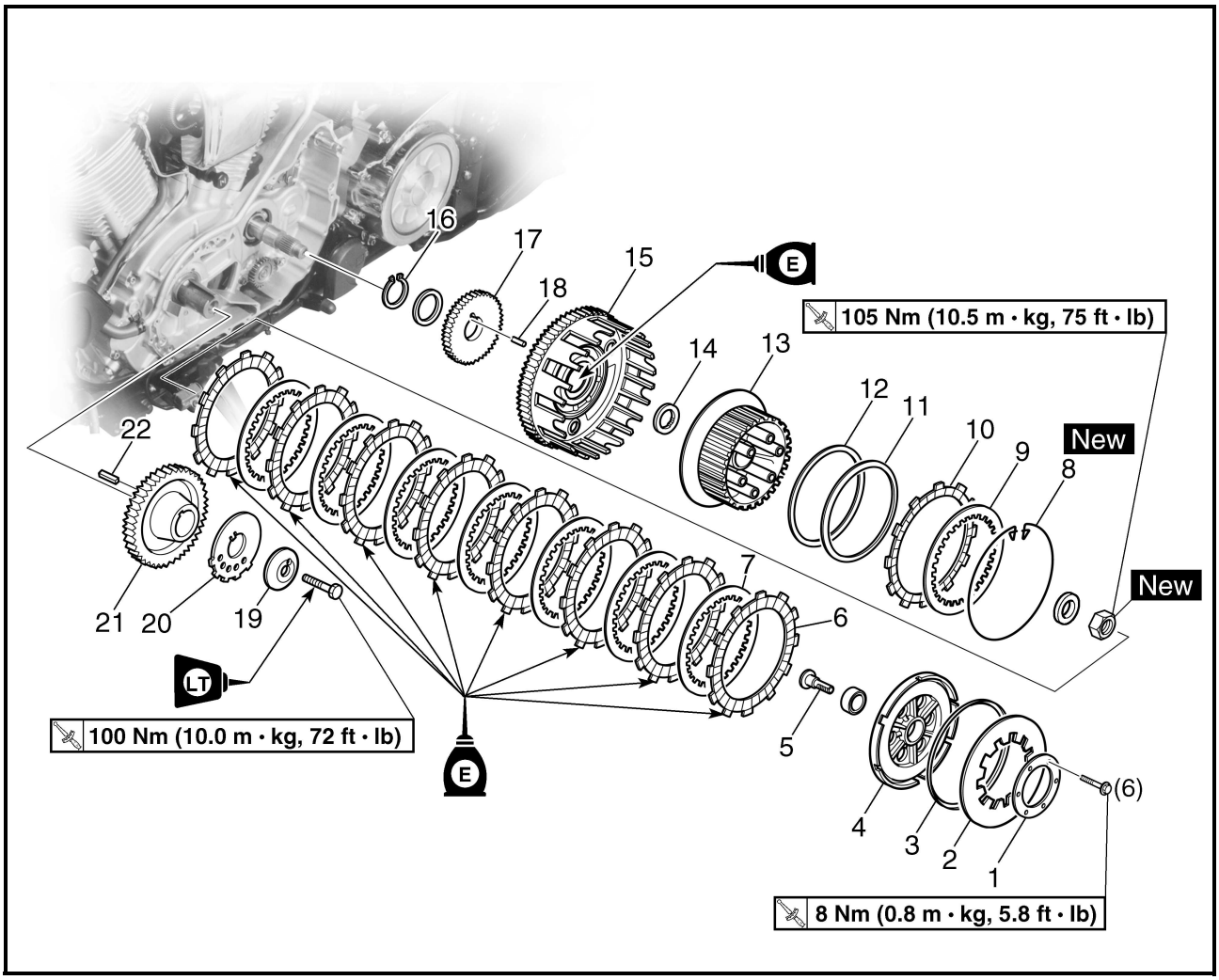
10 Nm (1.0 m · kg, 7.2 ft · lb)

Bolts ②: ℓ = 40 mm (1.57 in)
Bolts ③: ℓ = 50 mm (1.97 in)
Bolts ④: ℓ = 60 mm (2.36 in)
*: Apply Quick Gasket® to the thread.

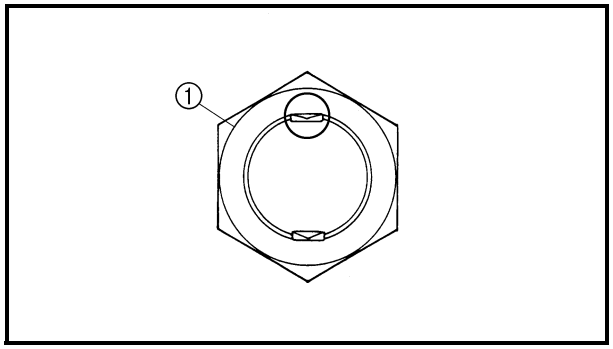
EAS00274
CLUTCH



Order	Job/Part	Q'ty	Remarks
	Removing the clutch		Remove the parts in the order listed.
	Clutch cover		Refer to "CLUTCH" in chapter 5. (Manual No.: 4WM-28197-E0)
	Generator rotor cover		Refer to "GENERATOR AND STARTER CLUTCH" in chapter 5. (Manual No.: 4WM-28197-E0)
1	Clutch spring plate retainer	1	
2	Clutch spring plate	1	
3	Clutch spring plate seat	1	
4	Pressure plate	1	
5	Pull rod	1	
6	Friction plate	8	
7	Clutch plate	7	
8	Wire circlip	1	
9	Clutch plate	1	



Order	Job/Part	Q'ty	Remarks
10	Friction plate	1	
11	Clutch damper spring	1	
12	Clutch damper spring seat	1	
13	Clutch boss	1	
14	Thrust washer	1	
15	Clutch housing	1	
16	Circlip	1	
17	Oil pump drive gear	1	
18	Dowel pin	1	
19	Spacer	1	
20	Pickup coil rotor	1	
21	Primary drive gear	1	
22	Straight key	1	
			For installation, reverse the removal procedure.



INSTALLING THE CLUTCH BOSS NUT

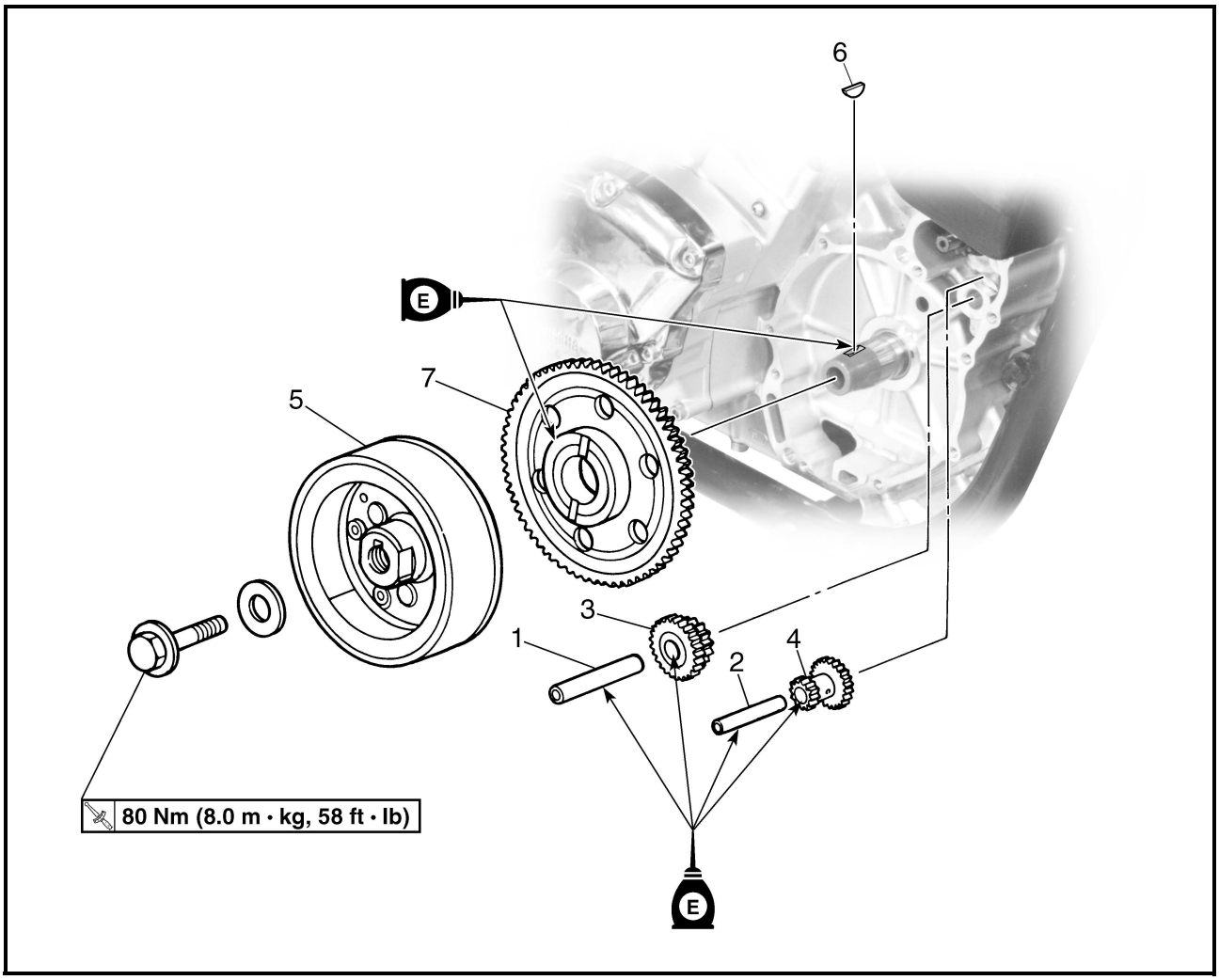
1. Install:
   - washer
   - clutch boss nut ①

105 Nm (10.5 m · kg, 75 ft · lb)

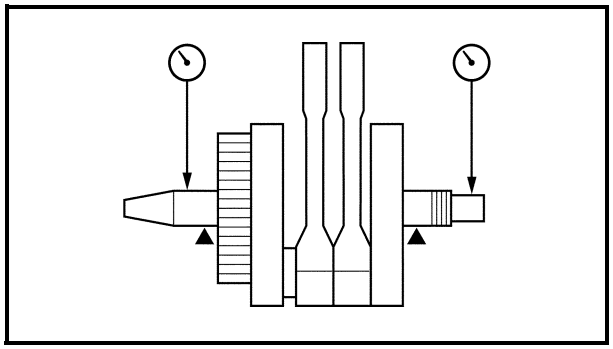
NOTE:

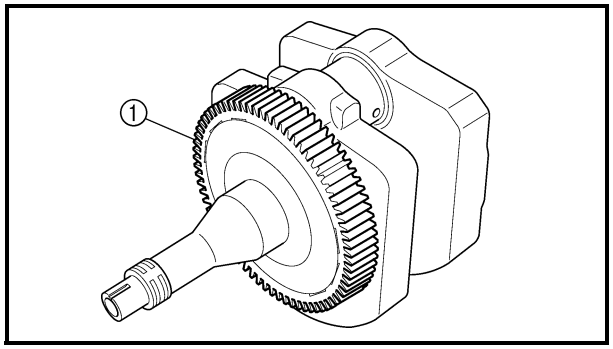
- Install the washer on the main axle with the "OUT" mark facing away from the motorcycle.
- Lock the threads on the clutch boss nut by staking them with a drift punch at the point aligned with the groove in the main axle.

EAS00343
GENERATOR AND STARTER CLUTCH



Order	Job/Part	Q'ty	Remarks
	Removing the generator rotor		Remove the parts in the order listed.
	Generator cover		Refer to "GENERATOR AND STARTER CLUTCH" in chapter 5. (Manual No.: 4WM-28197-E0)
1	Starter clutch idle gear shaft #2	1	
2	Starter clutch idle gear shaft #1	1	
3	Starter clutch idle gear #2	1	
4	Starter clutch idle gear #1	1	
5	Generator rotor	1	
6	Woodruff key	1	
7	Starter clutch gear	1	
			For installation, reverse the removal procedure.





CRANKSHAFT AND CONNECTING RODS

EAS00398

CHECKING THE CRANKSHAFT AND CONNECTING RODS

1. Measure:
   - crankshaft runout
     Out of specification → Replace the crankshaft.

Maximum crankshaft runout
0.04 mm (0.0016 in)

2. Check:
   - crankshaft journal surfaces
   - crankshaft pin surfaces
   - bearing surfaces
     Scratches/wear → Replace the crankshaft and bearings.
   - generator shaft drive gear ①
     Damage/wear → Replace the crankshaft.
3. Measure:
   - crankshaft pin-to-big end bearing clearance
     Out of specification → Replace the big end bearings.

Crankshaft pin-to-big end bearing clearance
0.037 ~ 0.074 mm
(0.0015 ~ 0.0029 in)
<Limit>: 0.09 mm (0.0035 in)

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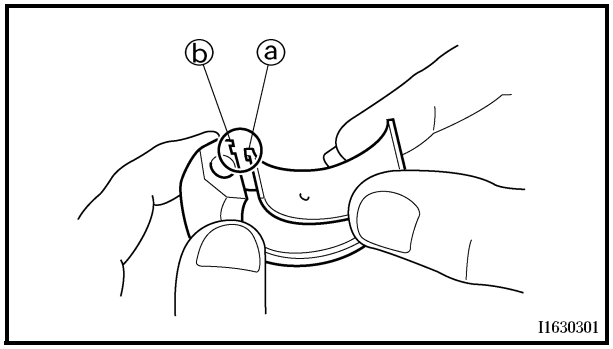
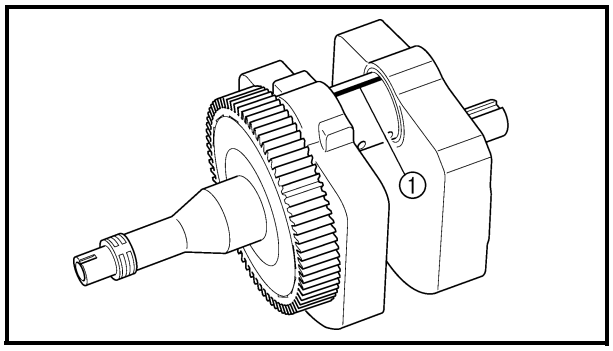
The following procedure applies to all of the connecting rods.

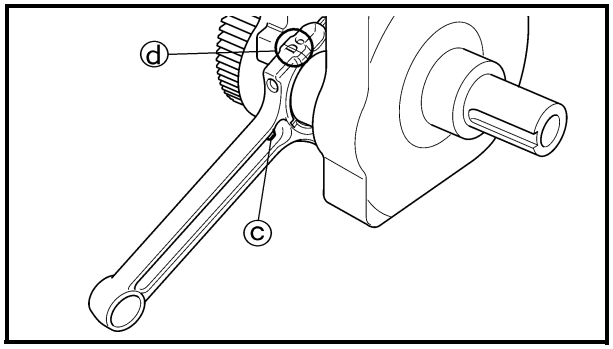
CAUTION:

Do not interchange the big end bearings and connecting rods. To obtain the correct crankshaft pin-to-big end bearing clearance and prevent engine damage, the big end bearings must be installed in their original positions.

a. Clean the big end bearings, crankshaft pins, and the inside of the connecting rod halves.







b. Install the big end upper bearing into the connecting rod and the big end lower bearing into the connecting rod cap.

NOTE:

Align the projections ⓐ on the big end bearings with the notches ⓑ in the connecting rod and connecting rod cap.

c. Put a piece of Plastigauge® ① on the crankshaft pin.

d. Assemble the connecting rod halves.

NOTE:

- Do not move the connecting rod or crankshaft until the clearance measurement has been completed.
- Lubricate the bolt threads and seats with molybdenum disulfide grease.
- Make sure the projection ⓒ on the connecting rod faces towards the left side of the crankshaft.
- Make sure the characters ⓓ on both the connecting rod and connecting rod cap are aligned.

e. Tighten the connecting rod bolts.

⚠ WARNING

- **Replace the connecting rod bolts with new ones.**
- **Clean the connecting rod bolts.**

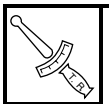
NOTE:

The tightening procedure of the connecting rod bolts is angle controlled, therefore tighten the bolts using the following procedure.

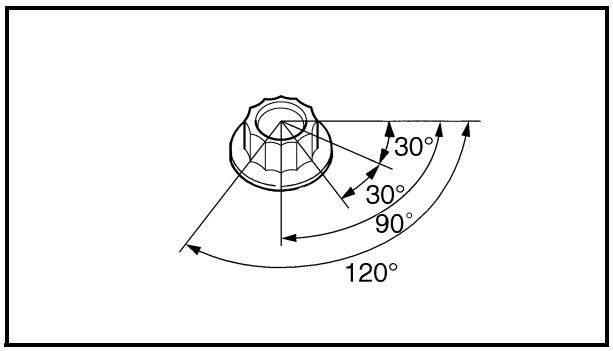
f. Tighten the connecting rod bolts to the specified torque.

Connecting rod bolt
1st
15 Nm (1.5 m · kg, 11 ft · lb)

g. Tighten the connecting rod bolts further to reach the specified angle 90° ~ 120°.



Connecting rod bolts
Final
Specified angle 90° ~ 120°



⚠ WARNING

When a bolt is tightened more than the specified angle, do not loosen them and then retighten them.
Replace the bolt with a new one and perform the procedure again.

CAUTION:

- **Do not use a torque wrench to tighten the bolt to the specified angle.**
- **Tighten the bolt until it is at the specified angle.**

NOTE:

The angle between the corners of the connecting rod bolts is 30°.

h. Remove the connecting rod and big end bearings.
   Refer to "REMOVING THE CONNECTING RODS" in chapter 5.
   (Manual No.: 4WM-28197-E0)
i. Measure the compressed Plastigauge® width ⓔ on each crankshaft pin.
   If the crankshaft-pin-to-big-end-bearing clearance is out of specification, select replacement big end bearings.

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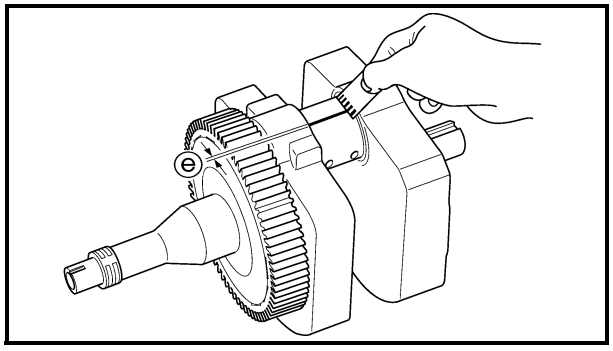

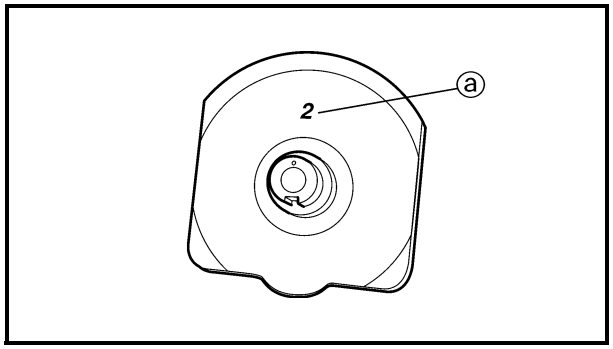

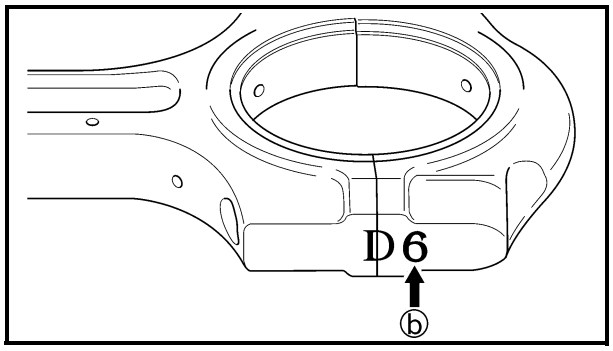

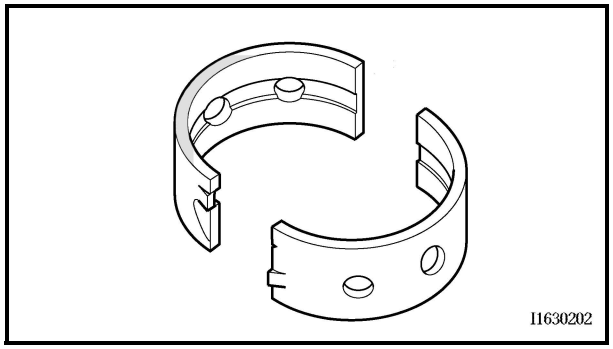

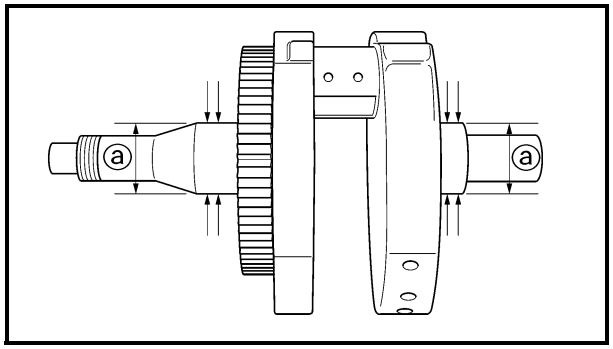

4. Select:
   • big end bearings (P_1 ~ P_2)

NOTE:
- The numbers ⓐ stamped into the crankshaft web and the numbers ⓑ on the connecting rods are used to determine the replacement big end bearing sizes.
- "P_1" ~ "P_2" refer to the bearings shown in the crankshaft illustration.

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For example, if the connecting rod "P_1" and the crankshaft web "P_1" numbers are "6" and "2" respectively, then the bearing size for "P_1" is:

"P_1" (connecting rod) – "P_1" (crankshaft web) = 6 – 2 = 4 (green)

BIG END BEARING COLOR CODE	
1	blue
2	black
3	brown
4	green
5	yellow

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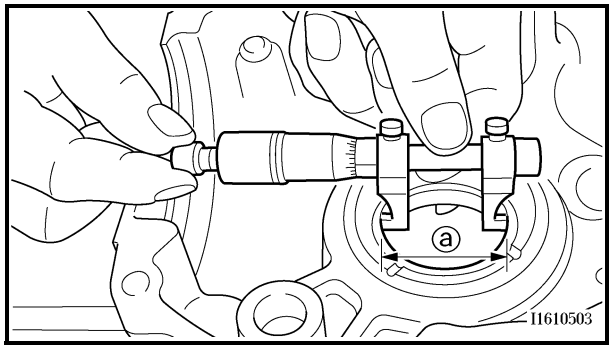
5. Measure:
   • crankshaft journal diameter ⓐ
   Out of specification → Replace the crankshaft.

Crankshaft journal diameter
49.968 ~ 49.980 mm
(1.967 ~ 1.968 in)

NOTE:
Measure the diameter of each crankshaft journal at two places.



6. Measure:
   • crankshaft journal bearing inside diameter ⓐ
   Out of specification → Replace the crankcase assembly.

Crankshaft journal bearing inside diameter
50.01 ~ 50.03 mm
(1.969 ~ 1.970 in)

NOTE:
Measure the inside diameter of each crankshaft journal bearing at two places.

7. Calculate:
   • crankshaft journal-to-crankshaft journal bearing clearance
   Out of specification → Replace the crankshaft and crankshaft journal bearings as a set.

NOTE:
Calculate the clearance by subtracting the crankshaft journal diameter from the crankshaft journal bearing inside diameter.

Crankshaft journal-to-crankshaft journal bearing clearance
0.030 ~ 0.062 mm
(0.0012 ~ 0.0024 in)

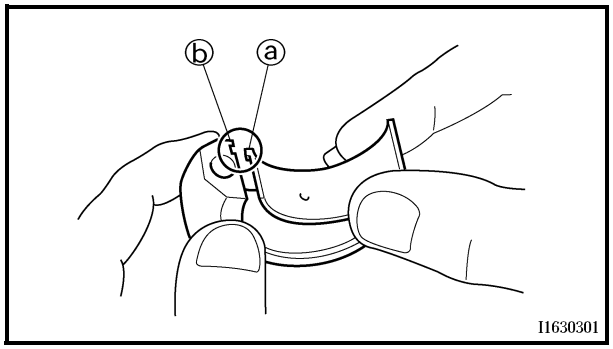
INSTALLING THE CONNECTING RODS

1. Lubricate:
   • bolt threads and seats
   (with the recommended lubricant)

Recommended lubricant
Molybdenum disulfide grease

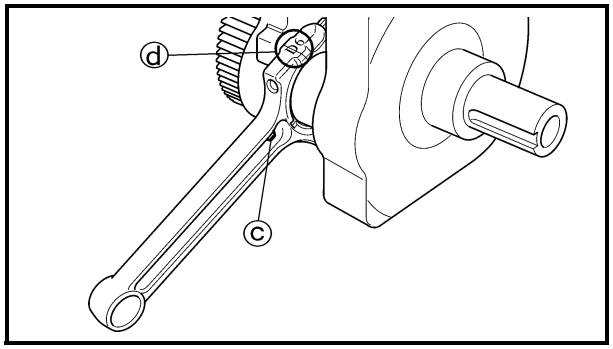
2. Lubricate:
   - crankshaft pins
   - big end bearings
   - connecting rod inner surface
     (with the recommended lubricant)

	Recommended lubricant **Engine oil**



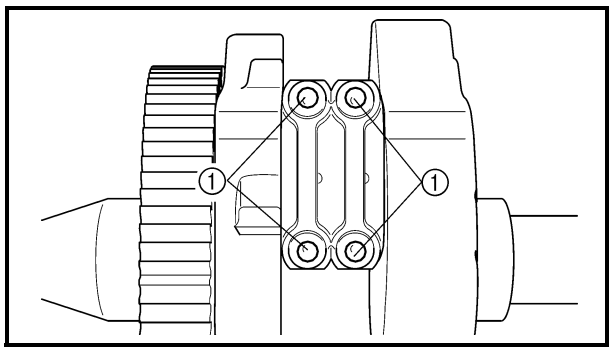
3. Install:
   - big end bearings
   - connecting rods
   - connecting rod caps
     (onto the crankshaft pins)

NOTE:
- Align the projections ⓐ on the big end bearings with the notches ⓑ in the connecting rods and connecting rod caps.
- Be sure to reinstall each big end bearing in its original place.
- Make sure the projection ⓒ on the connecting rods face towards the left side of the crankshaft.
- Make sure the characters ⓓ on both the connecting rod and connecting rod cap are aligned.

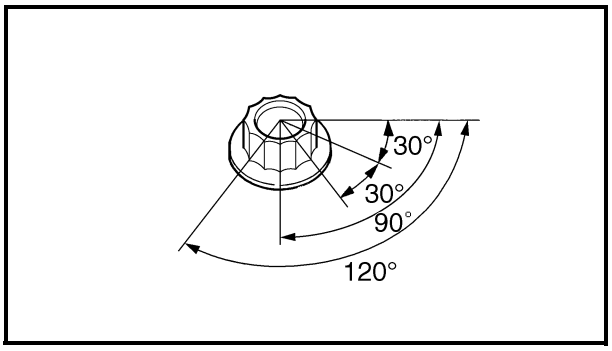


4. Tighten:
   - connecting rod bolts ①

⚠ WARNING
- **Replace the connecting rod bolts with new ones.**
- **Clean the connecting rod bolts.**



NOTE:
The tightening procedure of the connecting rod bolts is angle controlled, therefore tighten the bolts using the following procedure.



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a. Tighten the connecting rod bolts to the specified torque.

Connecting rod bolts
1st
15 mm (1.5 m · kg, 11 ft · lb)

b. Tighten the connecting rod bolts further to reach the specified angle 90° ~ 120°.

Connecting rod bolts
Final
Specified angle 90° ~ 120°

⚠ WARNING

When a bolt is tightened more than the specified angle, do not loosen it and then retighten it.
Replace the bolt with a new one and perform the procedure again.

CAUTION:

- **Do not use a torque wrench to tighten the bolt to the specified angle.**
- **Tighten the bolt until it is at the specified angle.**

NOTE:

The angle between the corners of the connecting rod bolts is 30°.

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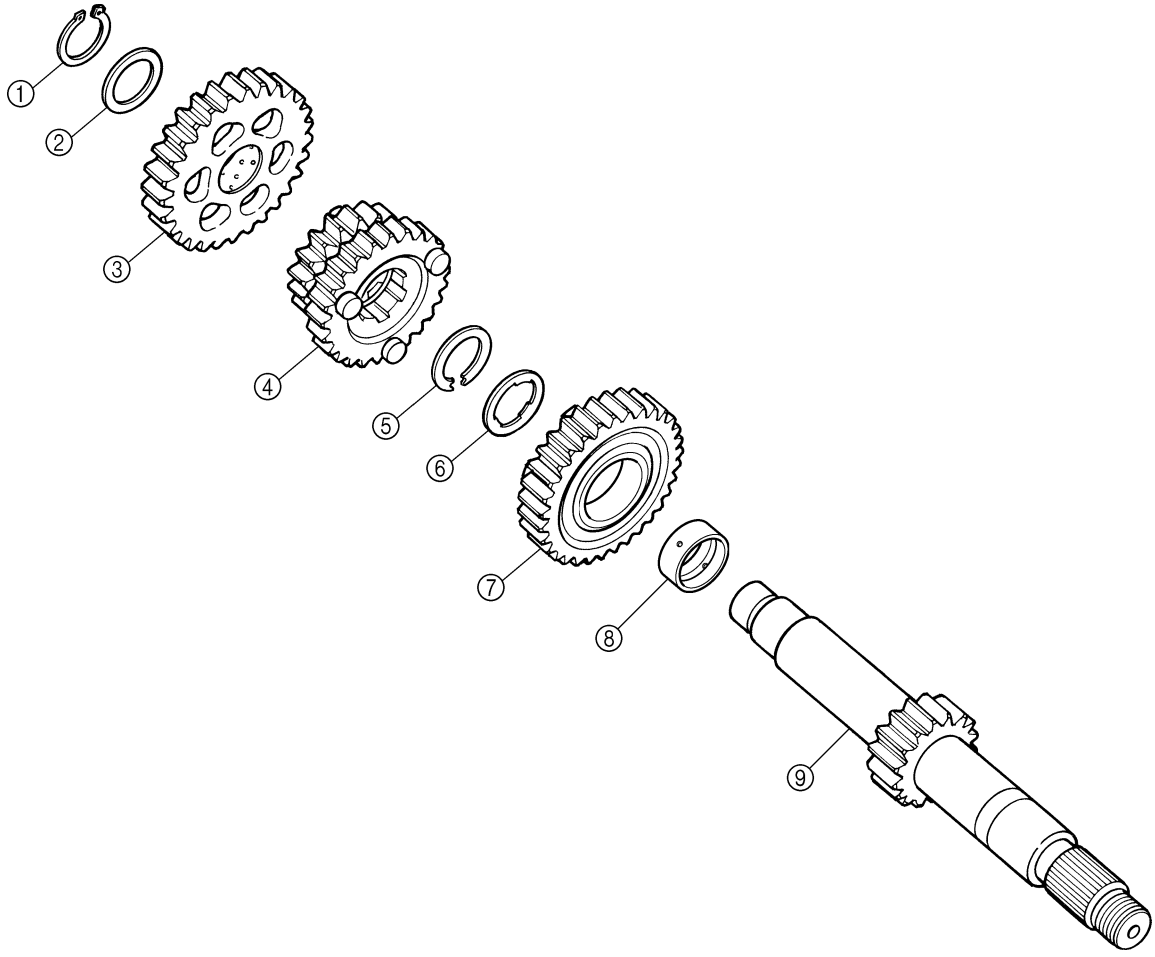
TRANSMISSION



Order	Job/Part	Q'ty	Remarks
	Disassembling the main axle assembly		Remove the parts in the order listed.
	Main axle assembly		Refer to "TRANSMISSION" in chapter 5. (Manual No.: 4WM-28197-E0)
①	Circlip	1	
②	Washer	1	
③	5th pinion gear	1	
④	2nd/3rd pinion gear	1	
⑤	Circlip	1	
⑥	Washer	1	
⑦	4th pinion gear	1	
⑧	Spacer	1	
⑨	Main axle/1st pinion gear	1	
			For assembly, reverse the disassembly procedure.

CARBURETOR

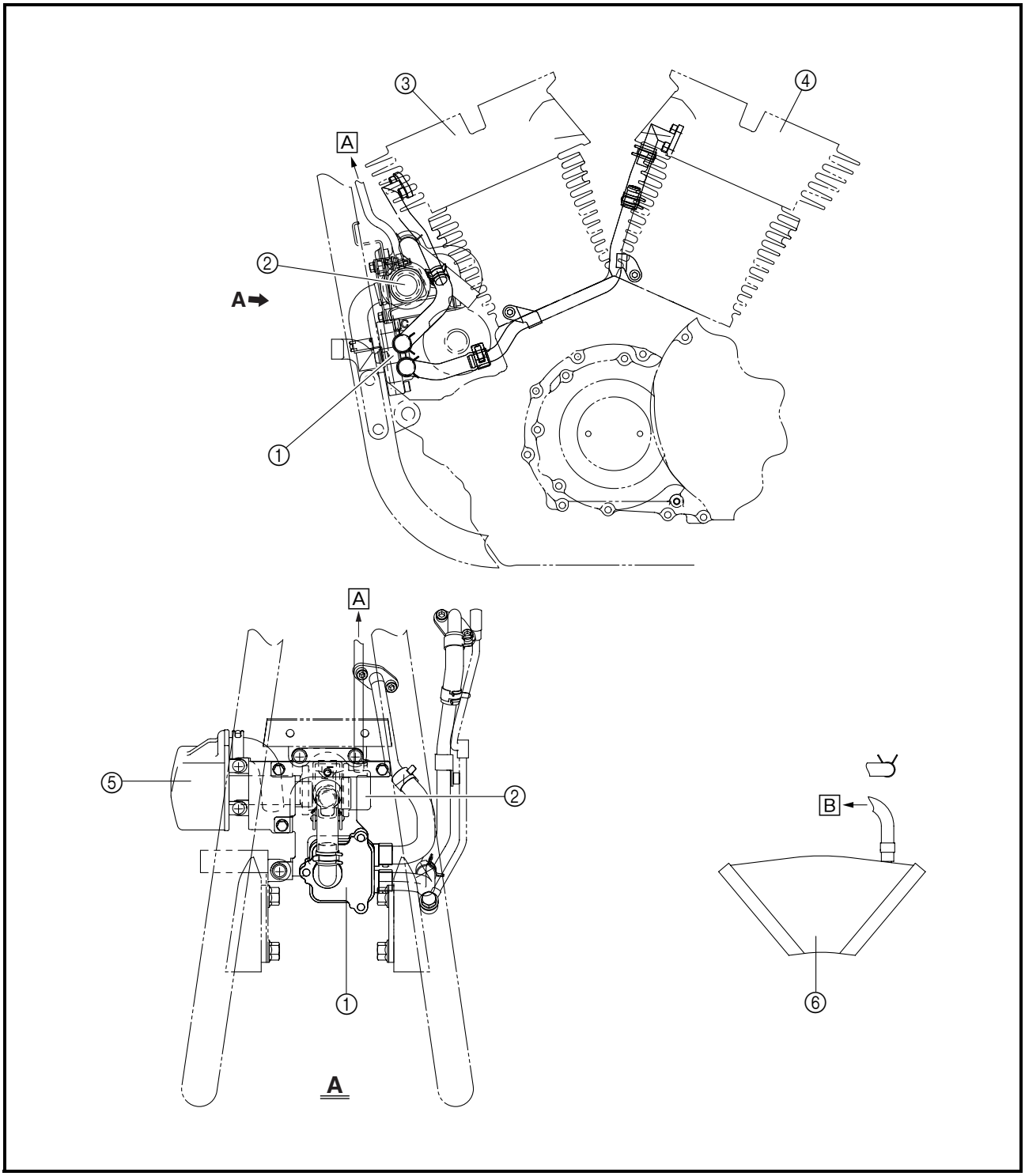
AIR INDUCTION SYSTEM

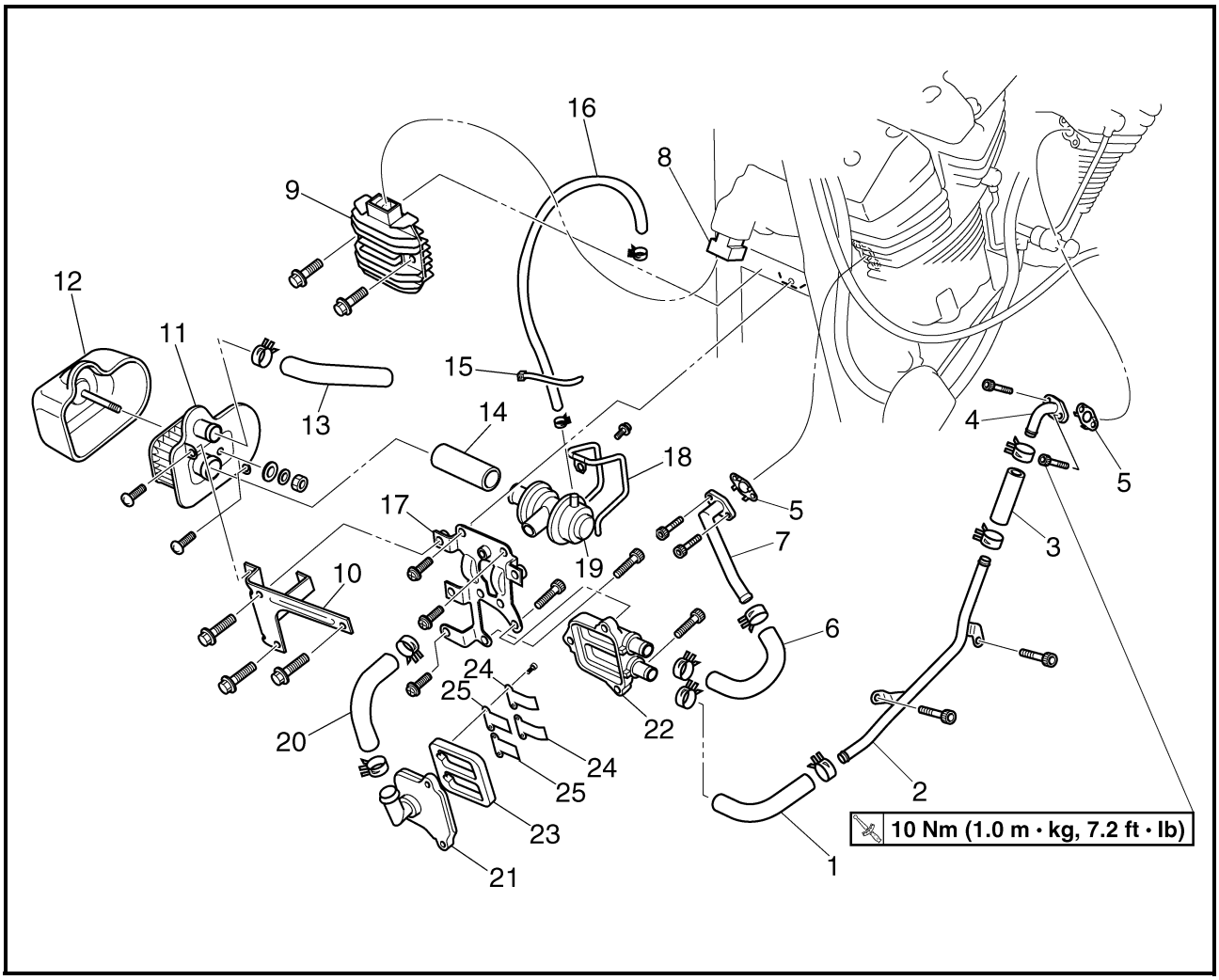
EAS00509

AIR INDUCTION SYSTEM DIAGRAMS

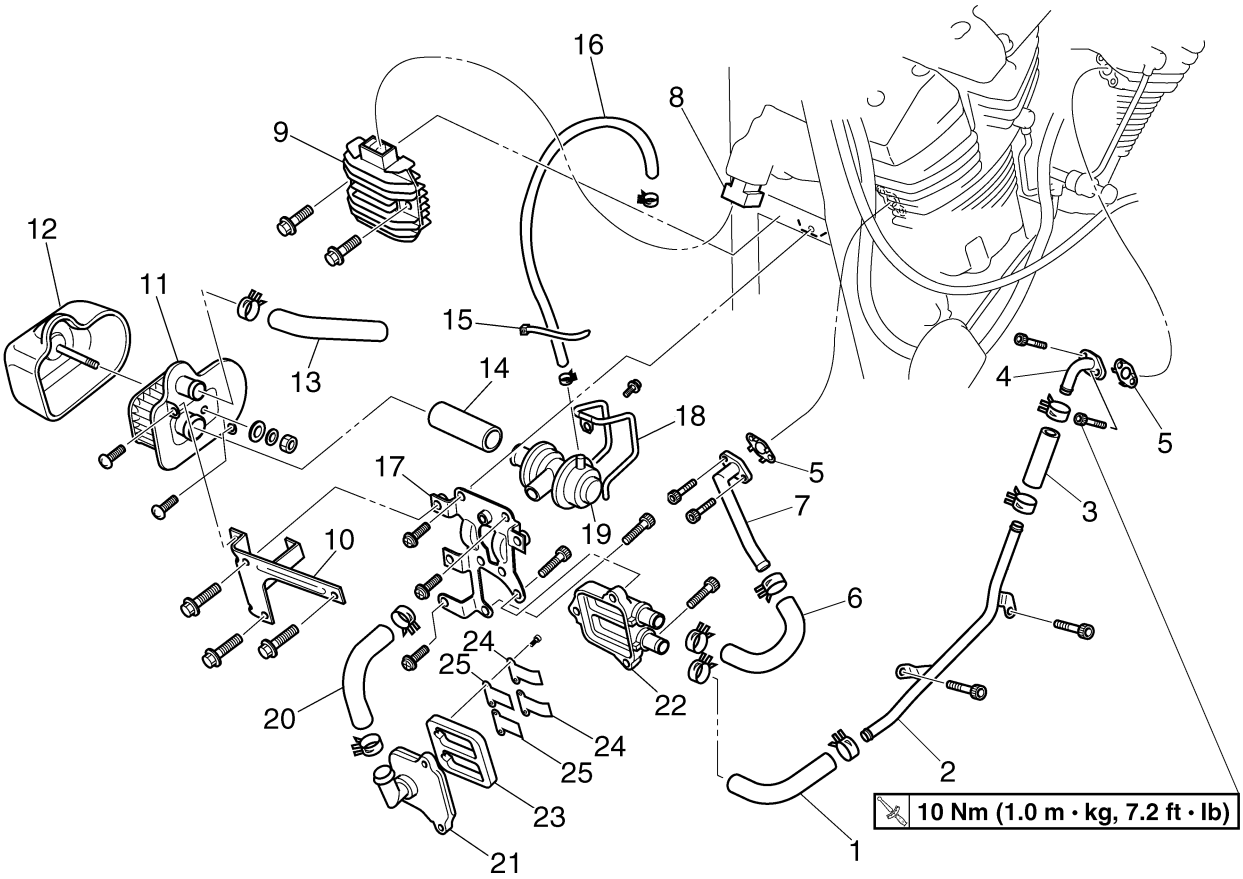
① Reed valve
② Air cut-off valve
③ Front cylinder head
④ Rear cylinder head
⑤ Air cleaner
⑥ Carburetor joint

A To the carburetor joint
B To the air cut-off valve

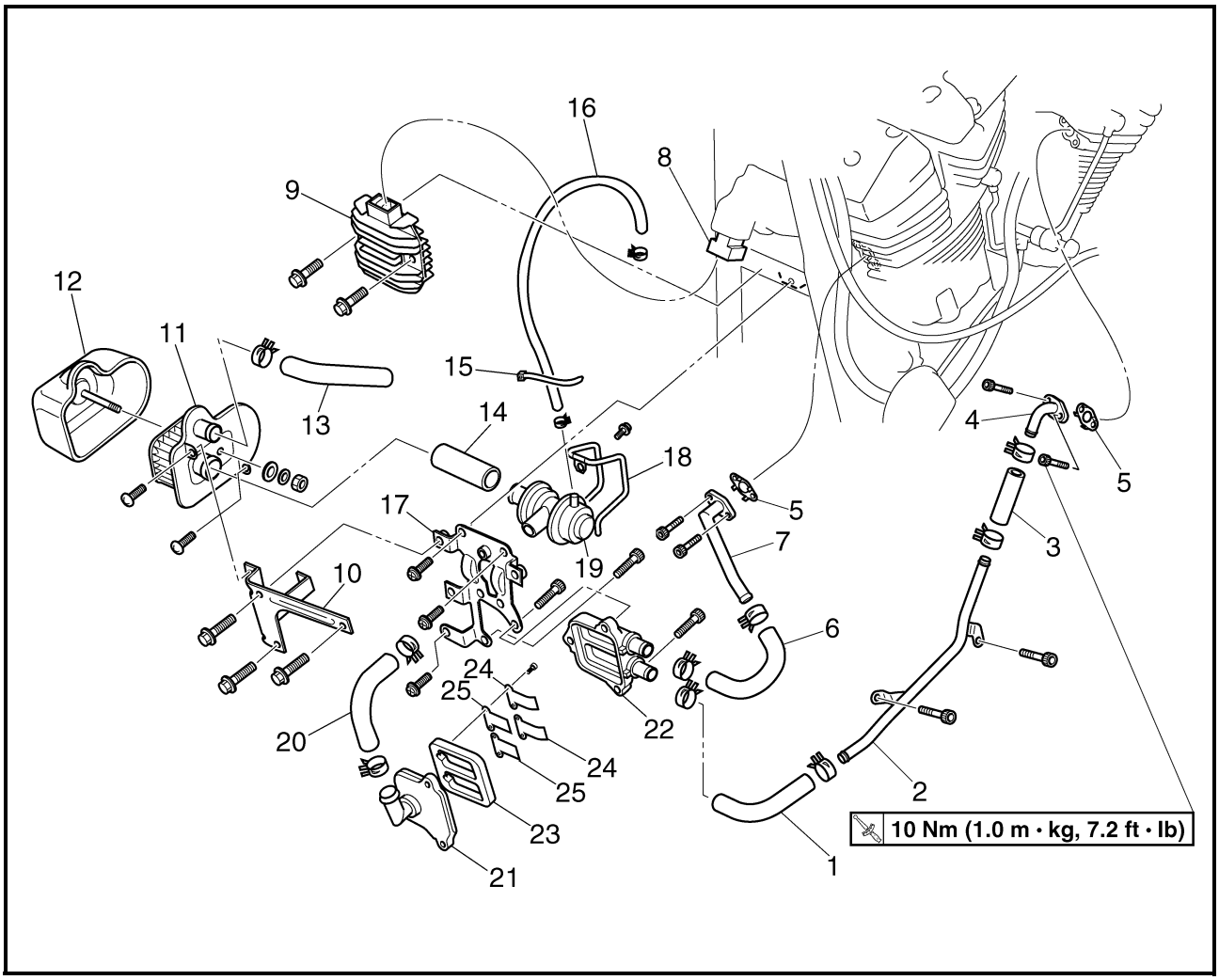




Order	Job/Part	Q'ty	Remarks
	Removing the air induction system		Remove the parts in the order listed.
	Fuel tank		Refer to "FUEL TANK"
	Fuel pump		Refer to "CARBURETOR" in chapter 6. (Manual No.: 4WM-28197-E0)
1	Reed valve case to rear cylinder head hose 1	1	
2	Reed valve case to rear cylinder head pipe 1	1	
3	Reed valve case to rear cylinder head hose 2	1	
4	Reed valve case to rear cylinder head pipe 2	1	
5	Gasket	2	
6	Reed valve case to front cylinder head hose	1	



Order	Job/Part	Q'ty	Remarks
7	Reed valve case to front cylinder head pipe	1	
8	Rectifier/regulator coupler	1	Disconnect.
9	Rectifier/regulator	1	
10	Air filter bracket	1	
11	Air filter	1	
12	Air filter cover	1	
13	Air filter hose	1	
14	Air cut-off valve to air filter hose	1	
15	Plastic locking tie	1	
16	Vacuum hose	1	
17	Bracket	1	
18	Air cut-off valve holder	1	
19	Air cut-off valve	1	



Order	Job/Part	Q'ty	Remarks
20	Air cut-off valve to reed valve cover hose	1	
21	Reed valve cover	1	
22	Reed valve case	1	
23	Reed valve base	1	
24	Reed valve stopper	2	
25	Reed valve	2	
			For installation, reverse the removal procedure.

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

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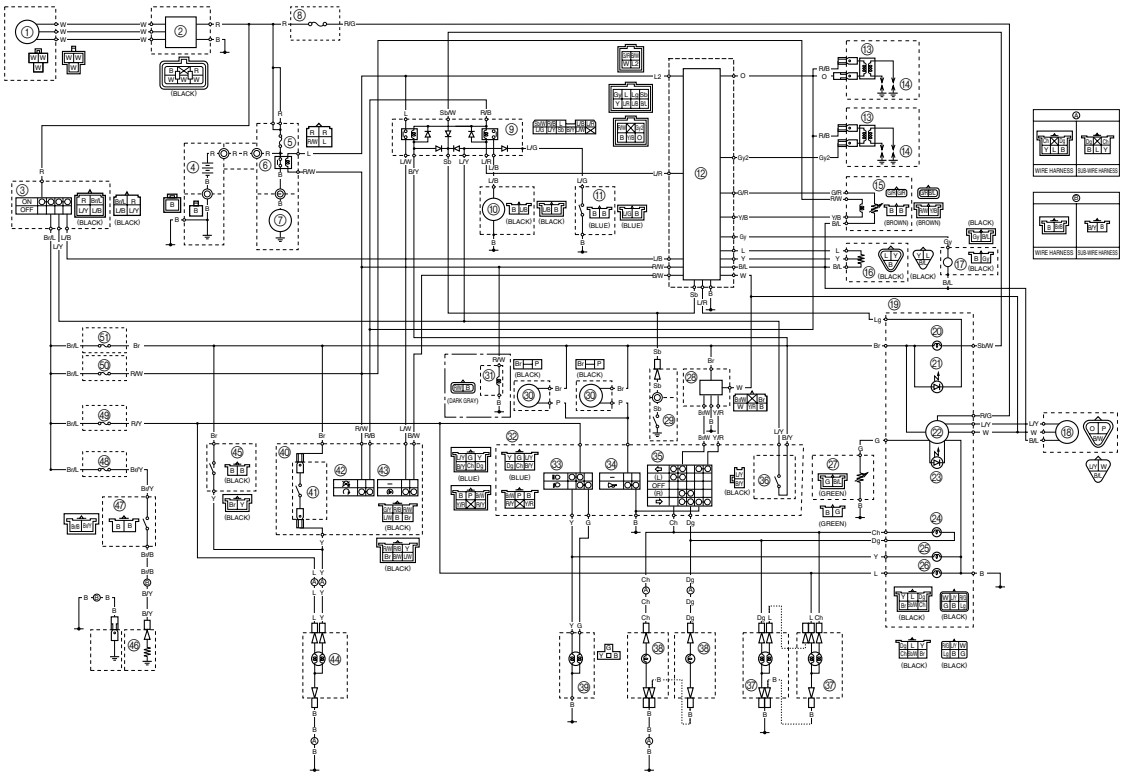
XV17AS(C)/XV17ASS(C)/XV17ATS(C) WIRING DIAGRAM



① Generator
② Rectifier/regulator
③ Main switch
④ Battery
⑤ Main fuse
⑥ Starter relay
⑦ Starter motor
⑧ Backup fuse
⑨ Relay unit
⑩ Fuel pump
⑪ Sidestand switch
⑫ Ignitor unit
⑬ Ignition coil
⑭ Spark plug
⑮ Decompression solenoid
⑯ Throttle position sensor
⑰ Pickup coil
⑱ Speed sensor
⑲ Meter assembly
⑳ Neutral indicator light
㉑ Engine trouble indicator light
㉒ Speedometer assembly (speedometer, combination meter and fuel level meter)
㉓ Fuel level indicator light
㉔ Turn signal indicator light
㉕ High beam indicator light
㉖ Meter light
㉗ Fuel sender
㉘ Turn signal relay
㉙ Neutral switch
㉚ Horn
㉛ Solenoid valve (for California)
㉜ Left handlebar switch
㉝ Dimmer switch
㉞ Horn switch
㉟ Turn signal switch
㊱ Clutch switch
㊲ Front turn signal/position light
㊳ Rear turn signal light
㊴ Headlight
㊵ Right handlebar switch
㊶ Front brake light switch
㊷ Engine stop switch
㊸ Start switch
㊹ Tail/brake light
㊺ Rear brake light switch
㊻ Carburetor heater
㊼ Thermo switch
㊽ Carburetor heater fuse
㊾ Headlight fuse
㊿ Ignition fuse
(51) Signaling system fuse

COLOR CODE

B ..... black	P .....pink	Br/L..... brown/blue	L/Y ..... blue/yellow
Br ..... brown	R .....red	Br/W ..... brown/white	R/B ..... red/black
Ch ..... chocolate	Sb .....sky blue	Br/Y ..... brown/yellow	R/G..... red/green
Dg ..... dark green	W .....white	G/R ..... green/red	R/W ..... red/white
G ..... green	Y .....yellow	G/Y ..... green/yellow	R/Y ..... red/yellow
Gy ..... gray	B/L .....black/blue	L/B .....blue/black	Sb/W ..... Sky blue/white
L ..... blue	B/W.....black/white	L/G.....blue/green	Y/B ..... yellow/black
Lg..... light green	B/Y .....black/yellow	L/R.....blue/red	Y/R ..... yellow/red
O ..... orange	Br/B.....brown/black	L/W .....blue/white	