YAMAHA

VMX12E
VMX12EC

SUPPLEMENTARY SERVICE MANUAL

LIT-11616-08-77

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and data for the VMX12E/VMX12EC. For complete service information procedures it is necessary to use this Supplementary Service Manual together with the following manual.

VMX12N/VMX12NC SERVICE MANUAL: LIT-11616-04-67
VMX12S/VMX12SC SUPPLEMENTARY SERVICE MANUAL: LIT-11616-04-98
VMX12U/VMX12UC SUPPLEMENTARY SERVICE MANUAL: LIT-I1616-06-08

VMXI2E/VMXI2EC
SUPPLEMENTARY
SERVICE MANUAL
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NOTICE

This manual was written by Yamaha Motor Company Ltd. primarilyfor use by Yamaha dealers and qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so persons using this book to perform maintenance and repairs on Yamaha motorcycles should have a basic understanding of the mechanical concepts and procedures inherent in motorcycle repair technology. Without such knowledge, attempted repairs or service to the motorcycle may render it unfit to use and/or unsafe.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools in necessary to ensure that the motorcycle 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 motorcycle and to conform with federal environmental quality objectives.

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

NOTE:

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

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

⚠ — 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 inspecting 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.

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

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

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

2nd title ② : This title appears on the upper of each page on the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment" the 3rd title appears.)

3rd title ③ : This is a final title.

MANUAL FORMAT

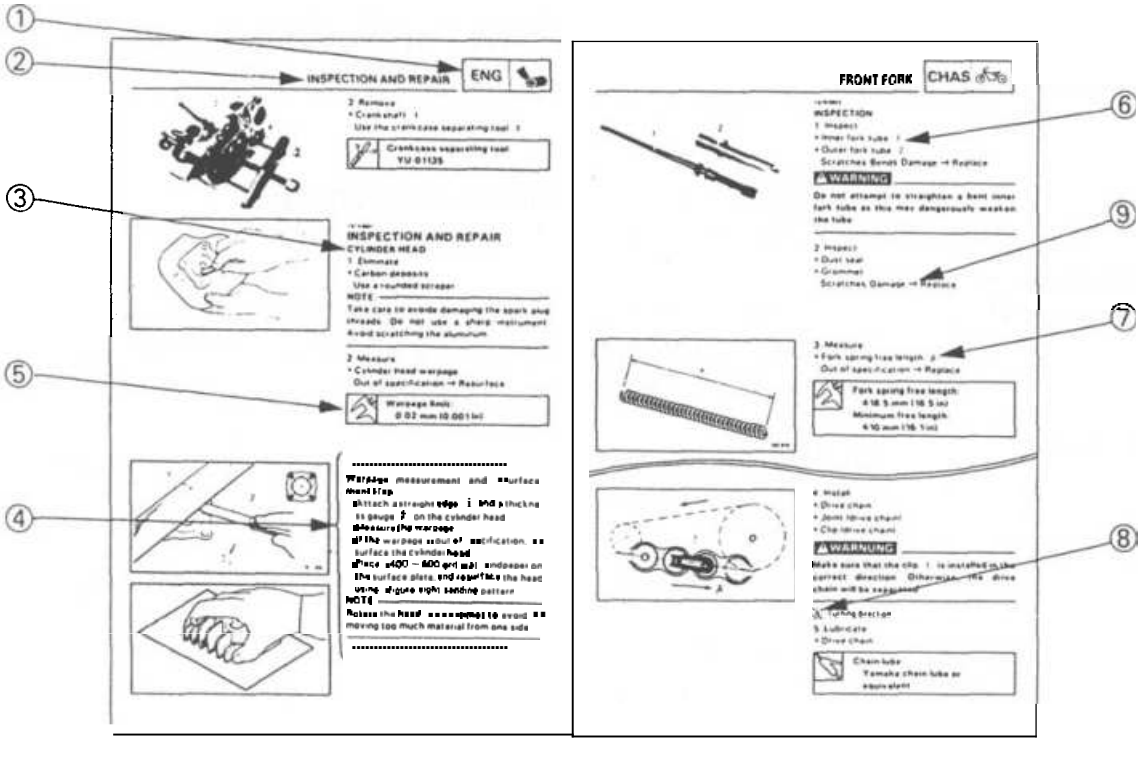
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections. A set of particularly important procedure ④ is placed between a line of asterisks " * " with each procedure preceded by " • ".

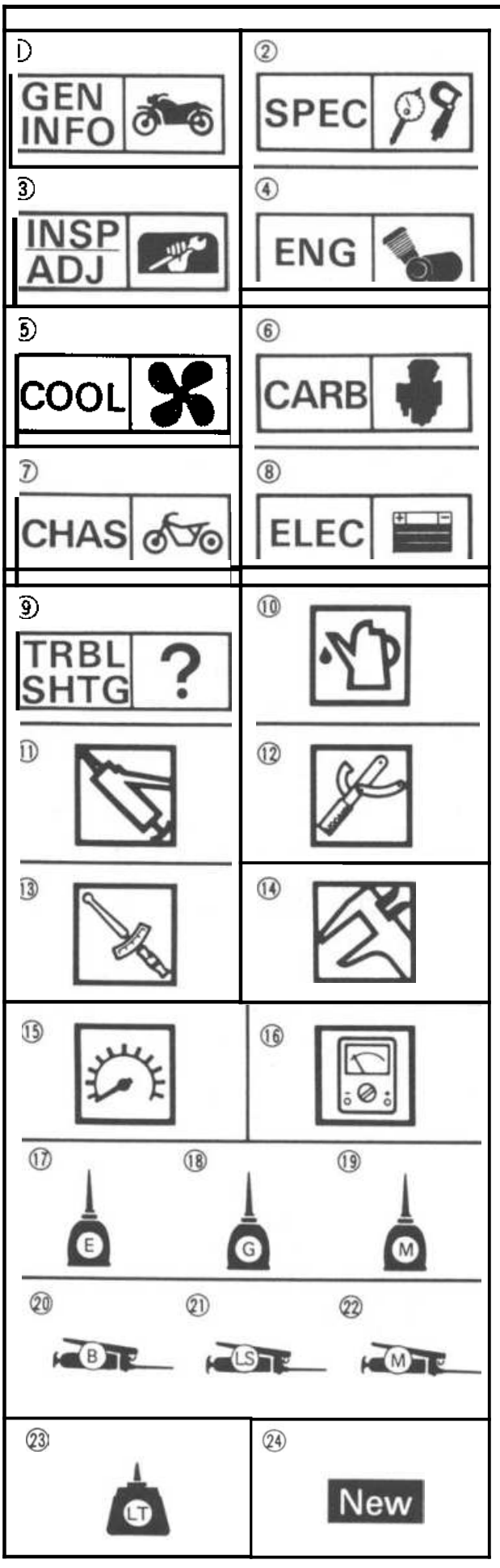
IMPORTANT FEATURES

- Data and a special tool are framed in a box preceded by a relevant symbol ⑤.
- An encircled numeral @indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦, the others being indicated by an alphabetical letter in a box ⑧.
- A condition of a faulty component will precede an arrow symbol and the course of action required the symbol ⑨.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.





ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine
⑤ Cooling system
⑥ Carburetion
⑦ Chassis
⑧ Electrical
⑨ Troubleshooting

Illustrated symbols ⑩ to ⑯ are used to identify the specifications appearing in the text.

⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Ω, V, A

Illustrated symbols ⑰ to ㉔ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑰ Apply engine oil
⑱ Apply gear oil
⑲ Apply molybdenum disufide oil
⑳ Apply wheel bearing grease
㉑ Apply lightweight lithium-soap base grease
㉒ Apply molybdenum disulfide grease
㉓ Apply locking agent (LOCTITE®)
㉔ Use new one

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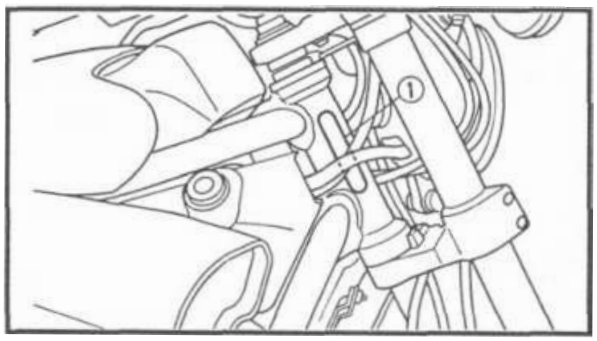
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GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION



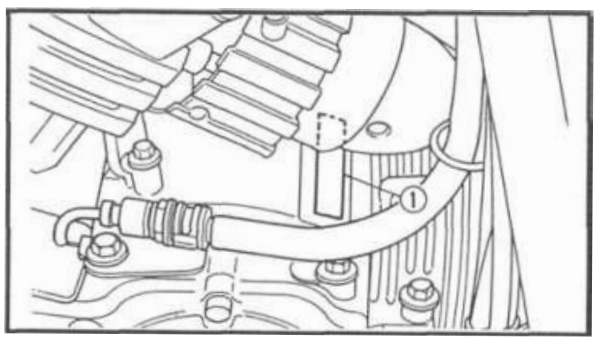
VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the steering head pipe.

Starting serial number:	
VMX12E	JYA2WEE0 * PA035101
VMX12EC	JYA2WEC0 * PA008101

NOTE:

The vehicle identification number is used to identify your motorcycle and may be used to register your motorcycle with the licensing authority in your state.



ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the left side of the engine.

Starting serial number:	
VMX12E	2WE-035101
VMX12EC	2WF-008101

NOTE:

- The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.
- Designs and specifications are subject to change without notice.



SPECIAL TOOLS

The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.
The shape and part number used for the special tool differ by country, *so* two types are provided.

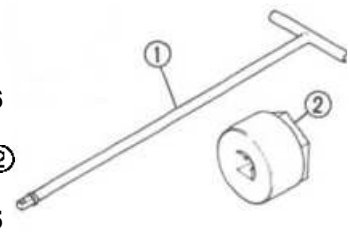
Refer to the list provided to avoid errors when placing an order.

P/N. YM- □□□□□, YU-□□□□□ For USA,
YS- □□□□□ ,YK-□□□□□ California,
ACC-□□□□□ CDN

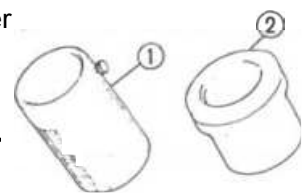
P/N. 90890-□□□□□ For EUR, AUS

FOR CHASSIS SERVICE

1
T-Handle ①
P/N. YM-01326
P/N. 90890-01326
For damper rod holder **(29** mm) ②
P/N. YM-33962
P/N. 90890-01375
These tools are used to loosen and tighten the front fork damper rod holding bolt.



2
Front fork seal driver (weight) ①
P/N. YM-33963
P/N. 90890-01367
Adapter **(43** mm) ②
P/N. YM-8020



SPECIFICATIONS

GENERAL SPECIFICATIONS

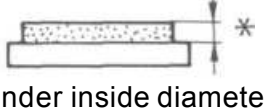
Model	VMX12E	VMX12EC
Model code number: Engine starting number: Vehicle identification number:	3JPC 2WE-035101 JYA2WEE0 * PA035101	3JPD 2WF-008101 JYA2WFC0 * PA008101
Minimum turning radius:	2.900 mm (114 in)	
Carburetor: Type/Manufacturer	BDS 35 x 4/MIKUNI	
Tire: Type Size (F) Size (R) Wear limit	Tubeless 110/90V 18 BRIDGESTONE G525AW/DUNLOP F20 150/90V 15 BRIDGESTONE G526BW/DUNLOP K525 1.0 mm (0.04 in)	
Tire pressure (cold tire): Basic weight: With oil and full fuel tank Maximum load* Cold tire pressure:	 283 kg (624 lb) 216 kg (476 lb) Front	 284 kg (626 lb) 215 kg (474 lb) Rear
Up to 90 kg (198lb) load*	225 kPa (2.25 kg/cm², 32 psi)	225 kPa (2.25 kg/cm², 32 psi)
90 kg (198 lb) *~ Maximum load*	225 kPa (2.25 kg/cm², 32 psi)	250 kPa (2.5 kg/cm², 36 psi)
	* Load is the total weight of cargo, rider, passenger and accessories.	
Electrical: Ignition system Generator system Battery type or model Battery capacity	T.C.I. (digital) A.C. magneto generator YB16AL-A2 12V 16AH	

MAINTENANCE SPECIFICATIONS

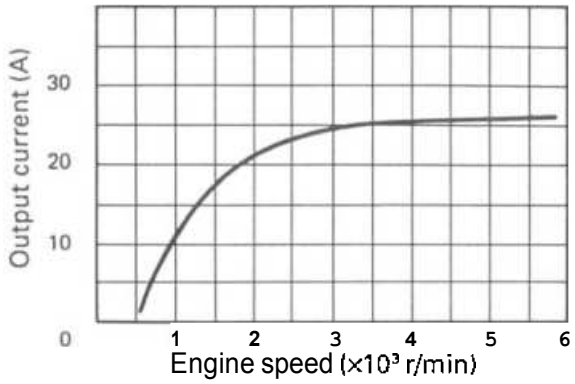
ENGINE

Model		VMX12E	VMX12EC
Carburetor:			
I.D. Mark		1FK01	2WE01
Main jet	(M.J.)	#152.5	←
Main air jet	(M.A.J.)	02.0	←
Jet needle	(J.N.)	5EZ43	5EZ50
Needle jet	(N.J.)	Y-0	←
Pilot jet	(P.J.)	#37.5	←
Pilot air jet	(P.A.J.1)	#90	#100
Pilot screw	(P.S.)	Preset	←
Pilot outlet	(P.O.)	0.9	←
Bypass	(B.P.I)	0.8	←
	(B.P.2)	0.8	←
	(B.P.3)	0.9	←
Valve seat size	(V.S.)	1.5	←
Starter jet	(G.S.1)	#45	←
	(G.S.2)	#0.8	←
Fuel level		15~17 mm (0.59~0.66 in)	←
Engine idling speed		950~1050 r/min	1050~1150 r/min
Vacuum pressure at idling speed		200 mm Hg (7.87 in Hg)	250 mm Hg (9.84 in Hg)

CHASSIS

Model		VMX12E/EC
Front suspension:		
Front fork travel		140 mm (5.51 in)
Fork spring free length		386.5 mm (15.2 in)
<Limit>		381.5 mm (15.0 in)
Collar length		245 mm (9.65 in)
Spring rate:	K1	3.75 N/mm (0.375 kg/mm, 21.0 lb/in)
	K2	4.90 N/mm (0.5 kg/mm, 28.0 lb/in)
Stroke	K1	0 ~ 78 mm (0 ~ 3.07 in)
	K2	78 ~ 140 mm (3.70 ~ 5.51 in)
Optional spring		No.
Oil capacity		619 cm³ (21.8 Imp oz, 20.9 US oz)
Oil level		123 mm (4.8 in)
Oil grade		Yamaha fork oil 10wt or equivalent
Enclosed air pressure (standard)		39.2 kPa (0.4 kg/cm², 5.7 psi)
<Min. ~ Max.>		39.2 ~ 98.1 kPa (0.4 ~ 1.0 kg/cm², 5.7 ~ 14.2 psi)
Front disc brake:		
Type		Dual
Disc outside diameter x thickness		298 x 5.0 mm (11.7 x 0.20 in)
Pad thickness	Inner	5.0 mm (0.20 in)
<Limit>*		0.5 mm (0.02 in)
Pad thickness	Outer	5.0 mm (0.20 in)
<Limit>*		0.5 mm (0.02 in)
		
Master cylinder inside diameter		15.87 mm (0.63 in)
Caliper cylinder inside diameter		33.96 + 30.23 mm (1.33 + 1.19 in)
Brake fluid type		DOT #4 or DOT #3

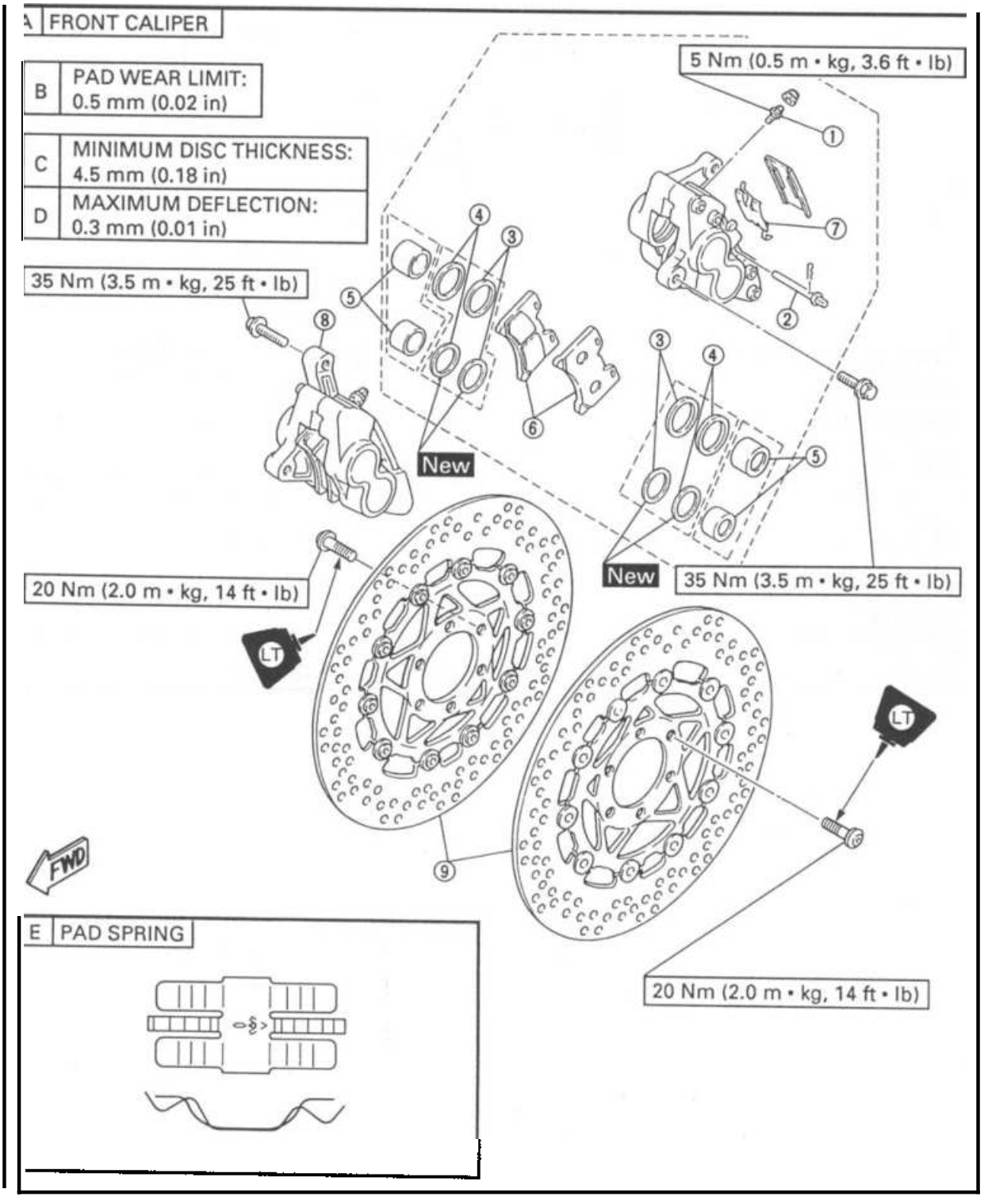
ELECTRICAL

Model	VMX12E/EC
T.C.I.: Pickup coil resistance (color) T.C.I. Unit-model/Manufacturer	 81 ~ 121Ω at 20°C (68°F) (Black – Orange) TID14-93/HITACHI
A.C. magneto: Model/Manufacturer Normal output	 FL130-06/HITACHI 14V, 25A at 5,000 r/min
	
Stater coil resistance	0.26 ~ 0.35Ω at 20°C (White – White)
Starter relay: Model/Manufacturer Amperage rating Coil winding resistance	 MS5D-191/HITACHI 100A 3.9 ~ 4.7Ω at 20°C (68°F)
Flasher relay: Type Model/Manufacturer Self cancelling device Flasher frequency Wattaae	 Semi transister type FX257N/NIPPONDENSO Yes. 75 ~ 95 cycle/min 21w x 2 + 3.4 W
Self cancelling unit: Model/Manufacturer	 FB257H/NIPPONDENSO

CHASSIS

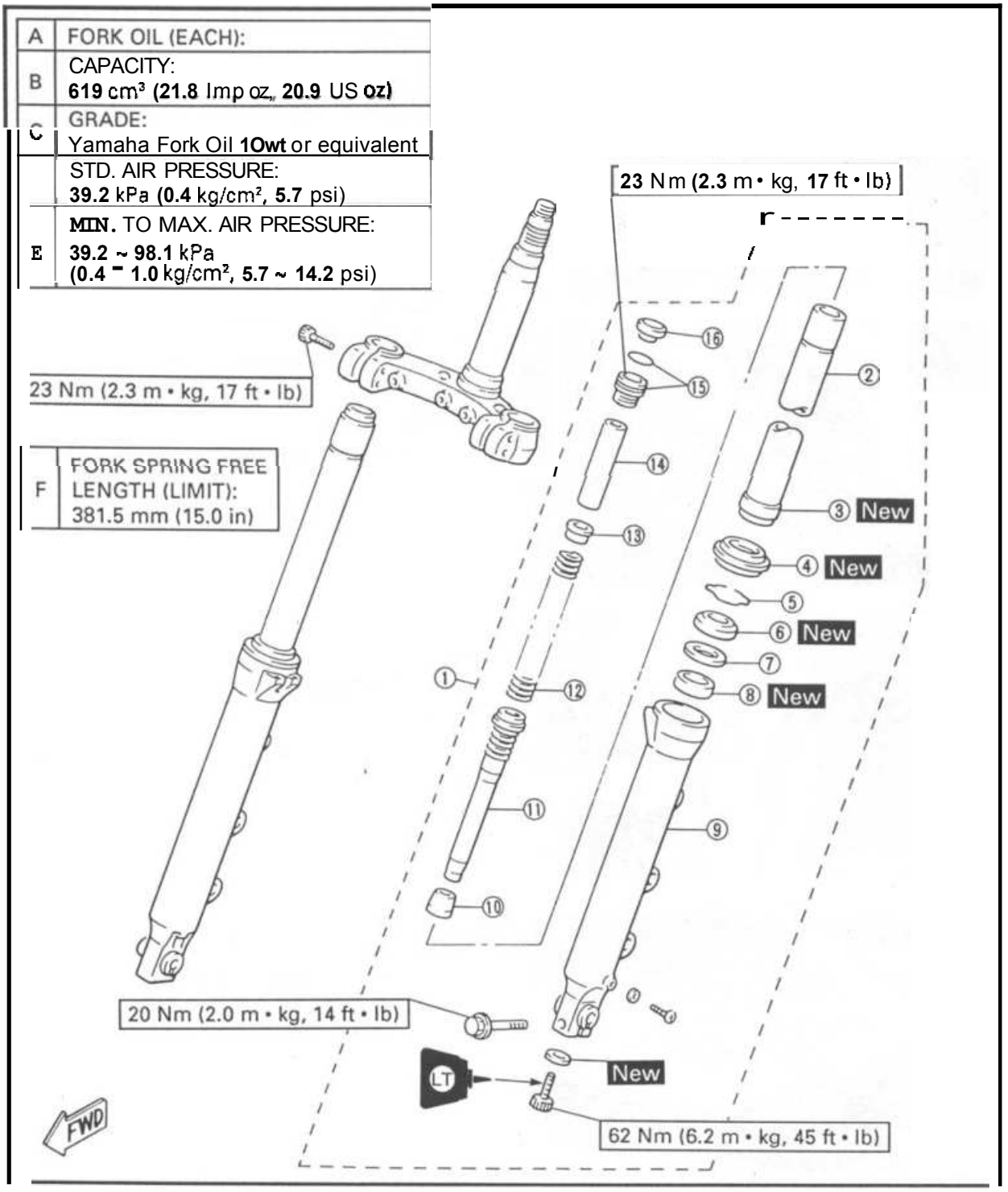
FRONT AND REAR BRAKE

① Air bleed screw
② Retaining pin
③ Dust seal
④ Piston seat
⑤ Piston
⑥ Brake pad
⑦ Pad spring
⑧ Caliper assembly
⑨ Brake disc
☐ The arrow mark on the pad spring must point in the disc rotating direction.



FRONT FORK

① Front fork assembly
② Inner fork tube
③ Piston metal
④ Dust cover
⑤ Retaining clip
⑥ Oil seal
⑦ Seal spacer
⑧ Slide metal
⑨ Outer fork tube
⑩ Oil lock piece
⑪ Damper rod
⑫ Fork spring
⑬ Spring seat
⑭ Collar
⑮ Cap bolt
⑯ Fork cap

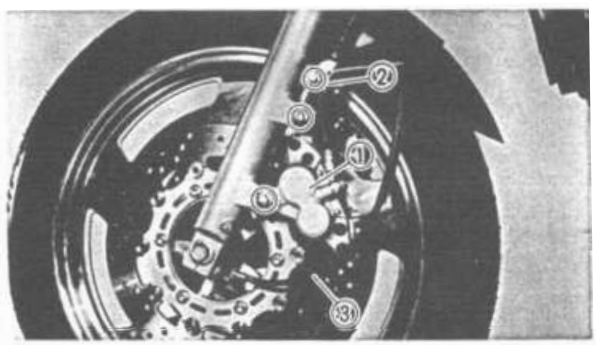


REMOVAL

⚠ WARNING

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

1. Place the motorcycle on a level place.
2. Elevate the front wheel by placing suitable stand under the engine.

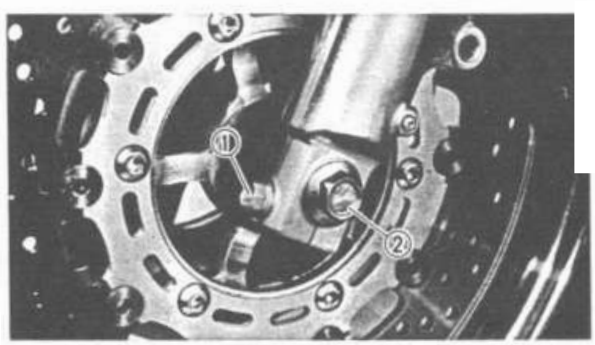


3. Remove:
- Caliper assembly ①
- Brake hose holder ②

4. Disconnect:
- Speedometer cable ③

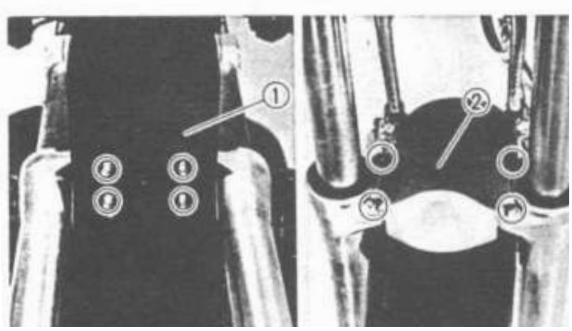
NOTE:

Do not depress the brake lever when the wheel is off the motorcycle otherwise the brake pads will be forced shut.

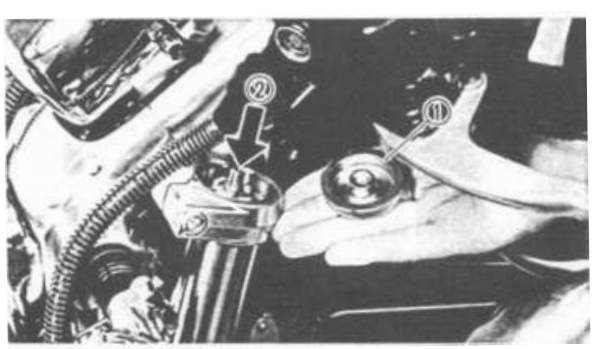


5. Loosen:
- Pinch bolt ① (wheel axle)

6. Remove:
- Wheel axle ②
- Front wheel assembly

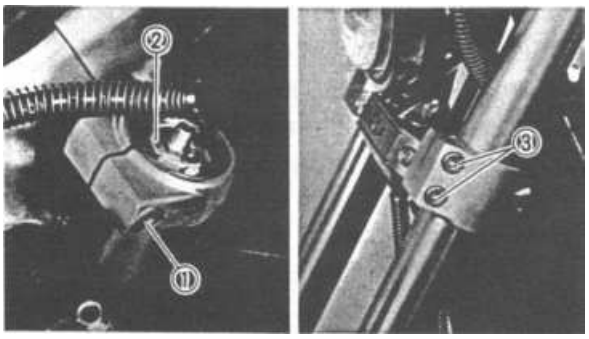


7. Remove:
- Front fender ①
- Fork brace ②



8. Remove:
- Fork cap ①

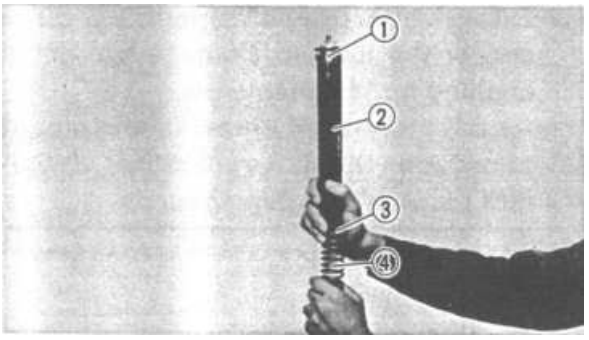
Depress the valve ② until all of the air has been released.



9. Loosen:
- Pinch bolt ① (handle crown)
- Cap bolt ②
- Pinch bolts ③ (under bracket)

⚠ WARNING

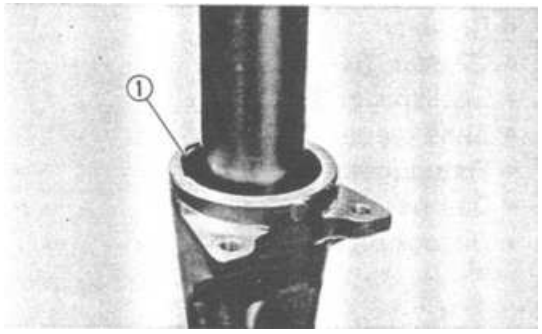
Support the fork before loosening the pinch bolts.



DISASSEMBLY

1. Remove:
- Cap bolt ①
- Spacer ②
- Spring seat ③
- Spring ④

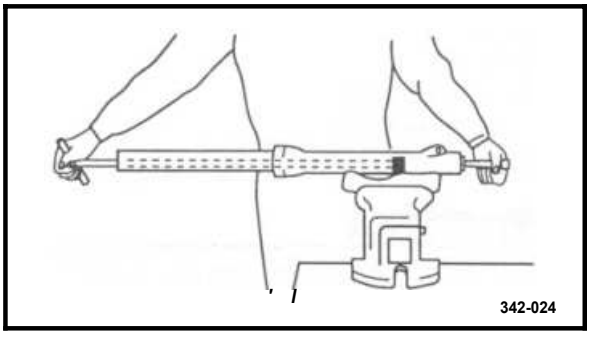
2. Drain:
- Fork oil



3. Remove:
- Dust seal
- Retaining clip ①
  Use a thin slotted head screw driver.

CAUTION:

Take care not to scratch the inner tube.



4. Remove:
- Bolt (damper rod)
- Copper washer

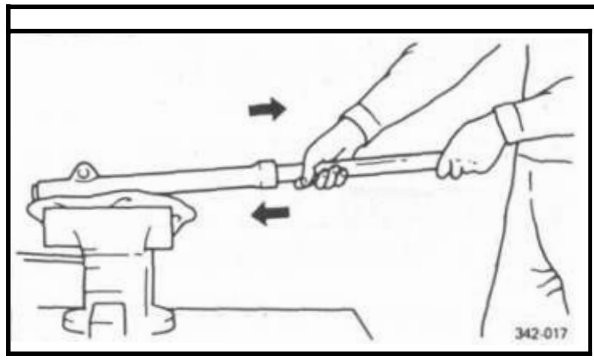
NOTE:

Loosen the bolt (damper rod) while holding the damper rod with the T-handle and holder.



T-handle:
YM-01326
90890-01326
Holder (29 mm):
YM-33962
90890-01375

5. Remove:
- Inner fork tube



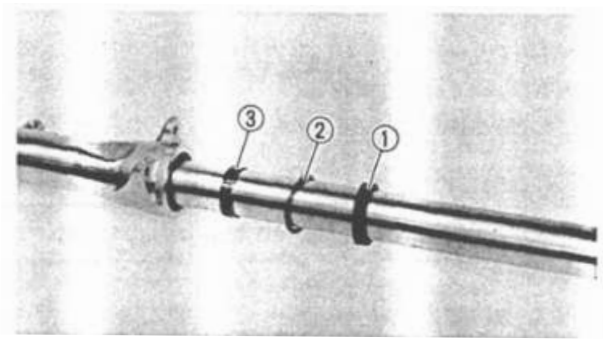
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Removal steps:
- **Hold** the fork leg horizontally.
- Clamp the caliper mounting boss of the outer tube securely in a vise with soft jaws.
- Pull out the inner fork tube from the outer tube by forcefully, but carefully, with drawing the inner tube.

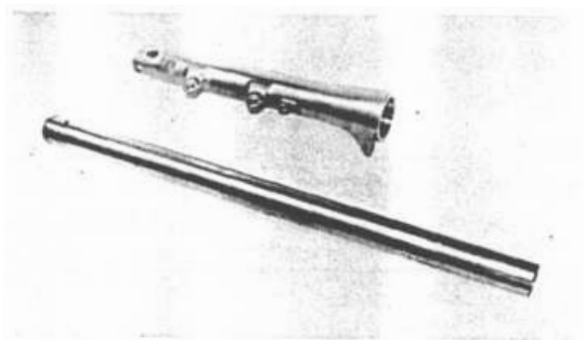
CAUTION:

- Excessive force will damage the oil seal and/or the bushes. Damage oil seal and bushing must be replaced.
- Avoid bottoming the inner tube in the outer tube during the above procedure, as the oil lock piece will be damaged.

****



6. Remove:
- Oil seal ①
- Seal spacer ②
- Slide metal ③
- Piston metal
- Damper rod
- Oil lock piece



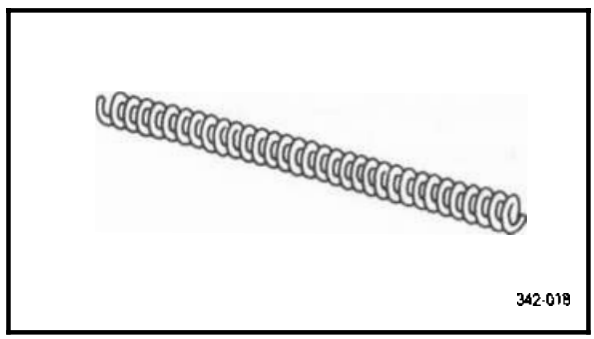
INSPECTION

1. Inspect:
- Inner **fork** tube
- Outer fork tube

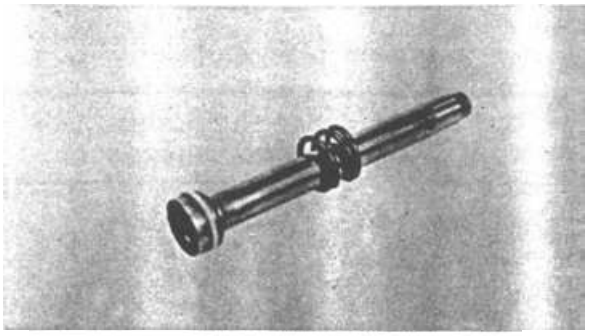
Scratches/Bends/Damage → Replace.

⚠ WARNING

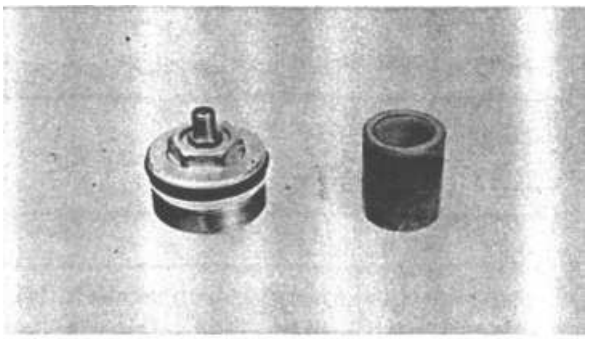
Do not attempt to straighten a bent inner fork tube as this may dangerously weaken the tube.



Fork spring free length (limit):
381.5 mm (15.0 in)



3. Inspect:
- Damper rod
  Wear/Damage → Replace.
  Contamination → Blow out all oil passages with compressed air.



4. Inspect:
- Oil lock piece
- O-ring (cap bolt)
  Wear/Damage → Replace.

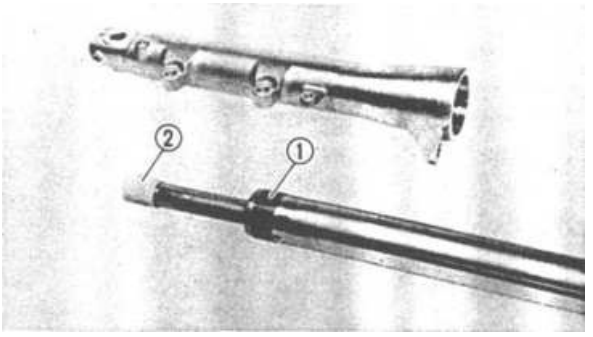
ASSEMBLY
Reverse the "DISASSEMBLY" procedure.
Note the following points.

NOTE:
- In front fork reassembly, be sure to use following new parts.
  * Piston metal
  * Slide metal
  * Oil seal
  * Dust seal
- Make sure that all components are clean before reassembly.

1. Install:
- Damper rod

CAUTION:

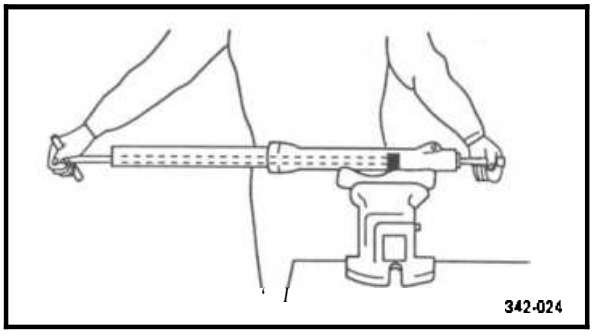
Allow the damper rod to slide slowly down the inner fork tube until it protrudes from the bottom, being careful not to damage the inner fork tube.



2. Lubricate:
- Inner fork tube (outer surface)

Recommended lubricant:
Fork oil 10w or equivalent

3. Install:
- Piston metal ①
- Oil lock piece ②

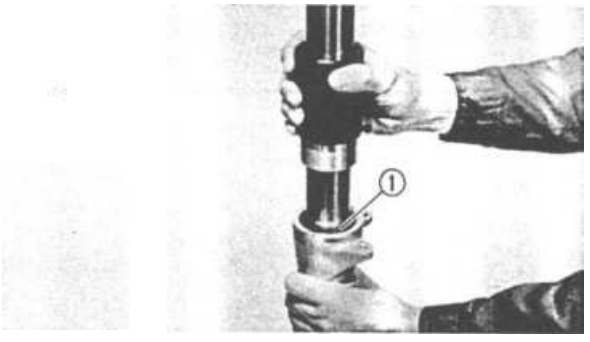


4. Tighten:
- Bolt (damper rod)

Bolt (damper rod):
62 Nm (6.2 m • kg, 45 ft • lb)
LOCTITE®

NOTE:
Tighten the bolt (damper rod) while holding the damper rod with the T-handle and holder.

T-handle:
YM-01326



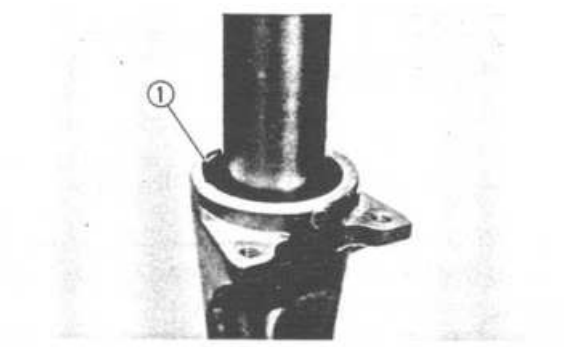
5. Install:
- Slide metal
- Seal spacer
- Oil seal ①

Use the fork seal driver weight and adapter

Fork seal driver weight:
YM-33963
90890-01367
Adapter (43 mm):
YM-8020
90890-01374

NOTE:
Before installing the oil seal, apply the lithium soap base grease onto the oil seal lips.

CAUTION:
Be sure that the oil seal numbered side face upward.



6. Install:
- Retaining clip ①

NOTE:
Fit the retaining clip correctly in the groove in the outer tube.



7. Install:
- Dust seal ①

Use the fork seal driver weight.

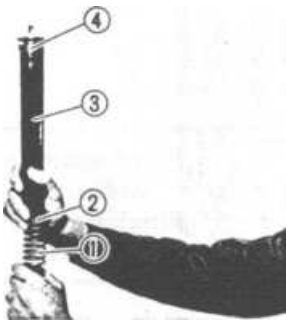
Fork seal driver weight:
YM-33963
90890-01367

8. Fill:
- Fork oil

Each fork
619 cm³
(21.8 Imp oz, 20.9 US oz)
Fork oil 10w or equivalent after filling, slowly pump the fork up and down to distribute oil.

Oil level:
123 mm (4.8 in)
from the top of inner fork tube fully compressed without spring.

NOTE:
Place the front fork on upright position.



9. Install:
- Fork spring ①
- Spring seat ②
- Spacer collar ③
- Cap bolt ④

NOTE:
- Fork spring must be installed with the smaller pitch upward.
- Before installing the cap bolt, apply the grease to the O-ring.
- Temporarily tighten the cap bolt.

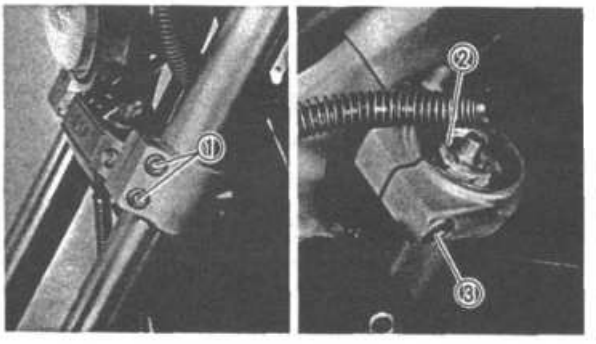
INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:
- Front fork(s)
  Temporary tighten the pinch bolts.

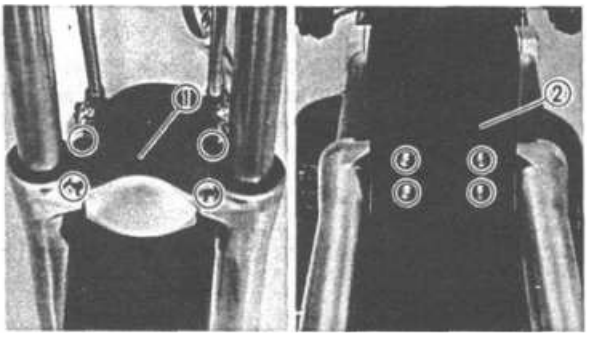
NOTE:

Be sure the inner fork tube end is flush with the top of the handle crown.



2. Tighten
- Pinch bolts ① (under bracket)
- Cap bolt ② (front fork)
- Pinch bolt ③ ,handle crown)

	Pinch bolt (lower bracket): **23 Nm (2.3 m • kg, 17 ft • lb)** **Cap bolt (front fork):** **23 Nm (2.3m • kg, 17 ft • lb)** **Pinch bolt (handle crown):** **23 Nm (2.3 m • kg, 17 ft • lb)**

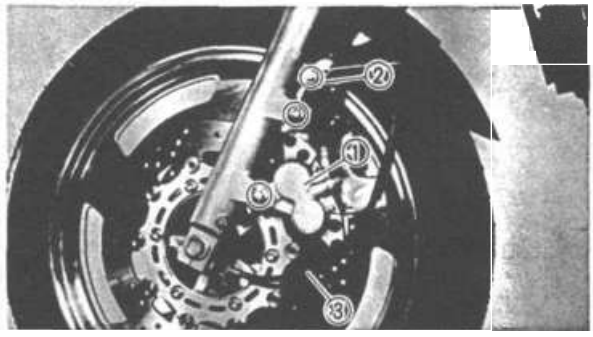


3. Adjust:
- Front fork air pressure
  Refer to FRONT FORK ADJUSTMENT" in the CHAPTER 2.

4. Install:
- Fork brace ①
- Front fender ②

5. Install:
- Front wheel

	Front wheel axle: **60 Nm (6.0 m • kg, 43 ft • lb)** **Pinch bolt (wheel axle):** **20 Nm (2.0 m • kg, 14 ft • lb)**



6. Install:
- Caliper assembly ①
- Brake hose holder ②
- Speedometer cable ③

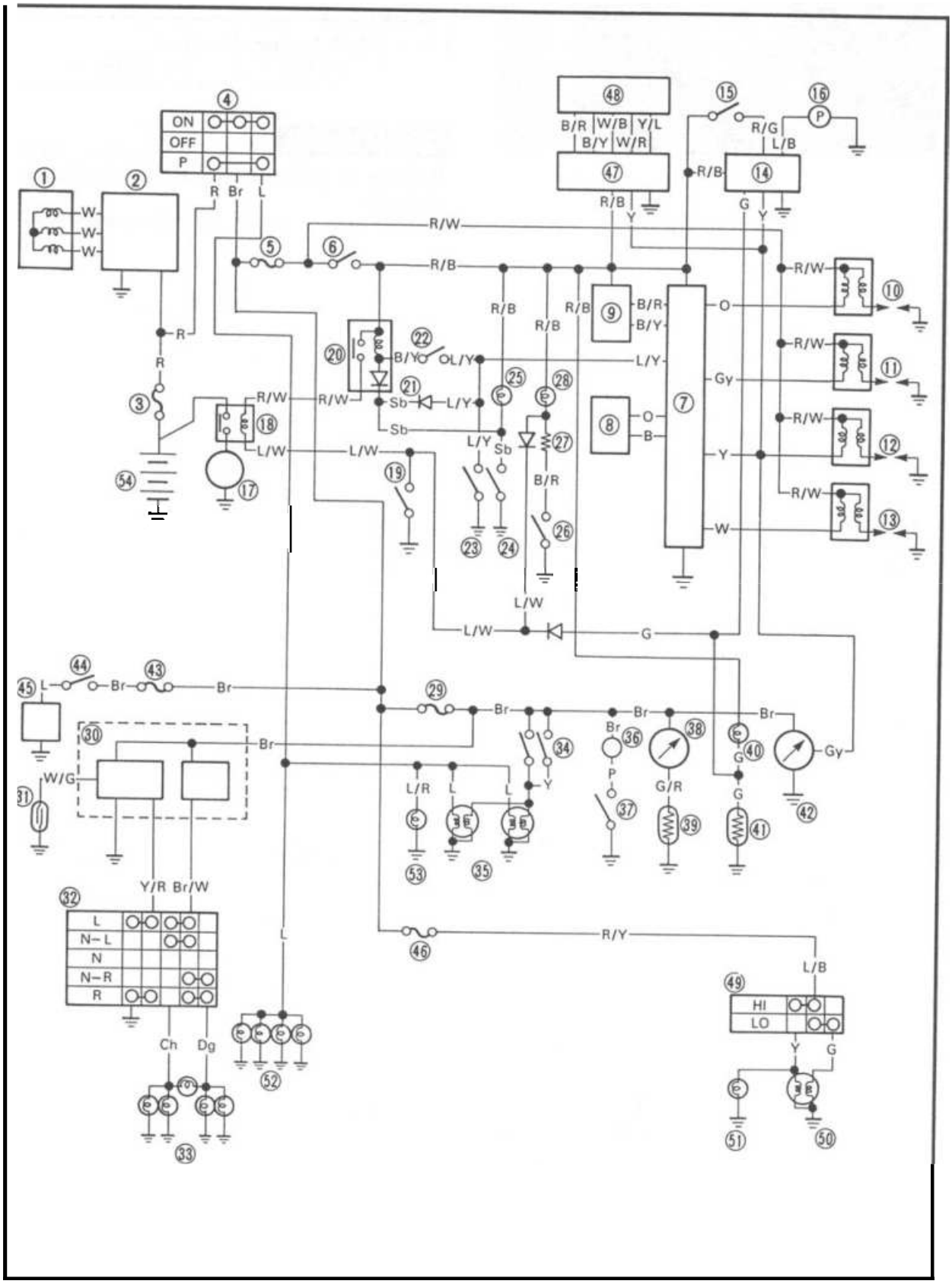
	Bolt (caliper bracket): 35 Nm (3.5 m • kg, 25 ft • lb)

⚠ WARNING

Make sure that the brake hose are routed properly.

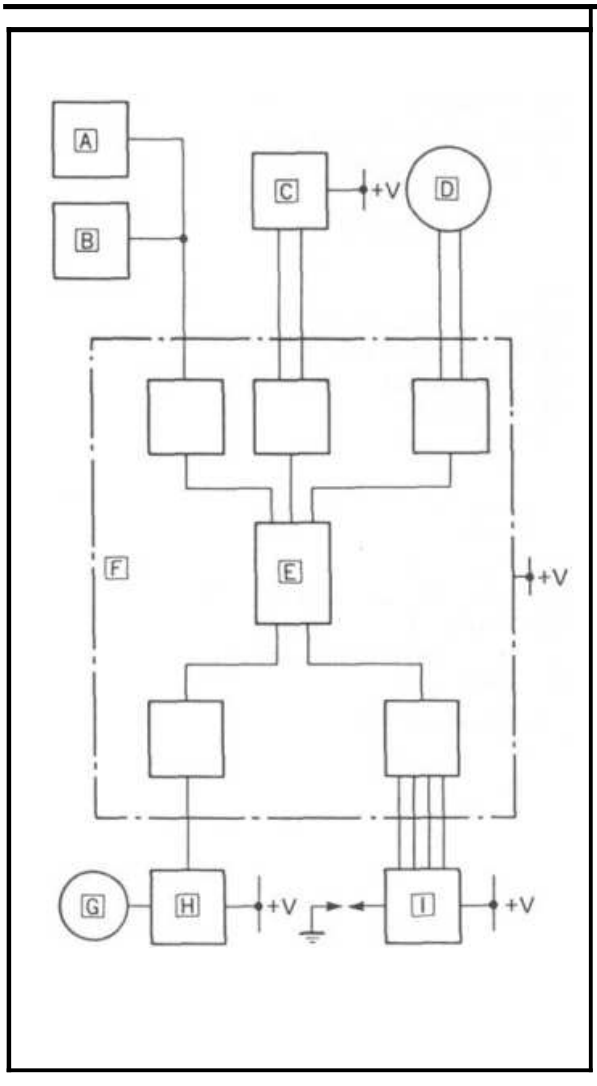
ELECTRICAL

VMX12E/EC CIRCUIT DIAGRAM



① A.C. Magneto generator
② Rectifier/Regulator
③ Main fuse
④ Main switch
⑤ Fuse (IGNITION)
⑥ "ENGINE STOP" switch
⑦ Ignitor unit
⑧ Pick up coil
⑨ Pressure sensor
⑩ Ignition coil **#1**
⑪ Ignition coil **#2**
⑫ Ignition coil #3
⑬ Ignition coil **#4**
⑭ Fuel pump relay
⑮ "FUEL (RESERVE)" switch
⑯ Fuel pump
⑰ Starter motor
⑱ Starter relay
⑲ "START" switch
⑳ Starting circuit cut-off relay
㉑ Diode
㉒ Clutch switch
㉓ Sidestand switch
㉔ Neutral switch
㉕ "NEUTRAL" indicator light
㉖ Oil level gauge
㉗ Diode assembly
㉘ "OIL LEVEL" warning indicator light
㉙ Fuse (SIGNAL)
㉚ Flasher relay
㉛ Reed switch
㉜ "TURN" switch
㉝ "TURN" indicator light
㉞ Front/Rear brake switch
㉟ Tail/Brake light
㊱ Horn
㊲ "HORN" switch
㊳ Temperature meter
㊴ Thermo unit
㊵ "FUEL" indicator light
㊶ Fuel sender unit
㊷ Tachometer
㊸ Fuse (FAN)
㊹ Thermo switch
㊺ Fan motor
㊻ Fuse (HEAD)
㊼ Control unit
㊽ Servo motor
㊾ "LIGHTS" (Dimmer) switch
㊿ Head light
"HIGH BEAM" indicator light
(52) Meter light
(53) Auxiliary light
(54) Battery

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



IGNITION SYSTEM

DIGITAL IGNITION CONTROL SYSTEM

DESCRIPTION

The electronic ignition that sparks the engine is computer controlled and operated **by** the digital CPU (microprocessor). It has a pre-programed ignition advance curve.

This programed advance curve closely matches the spark timing to the engine's ignition requirements. Only one pickup coil is needed to meet the requirements of the digital ignitor unit.

The digital ignitor also includes the control unit for the electric fuel pump.

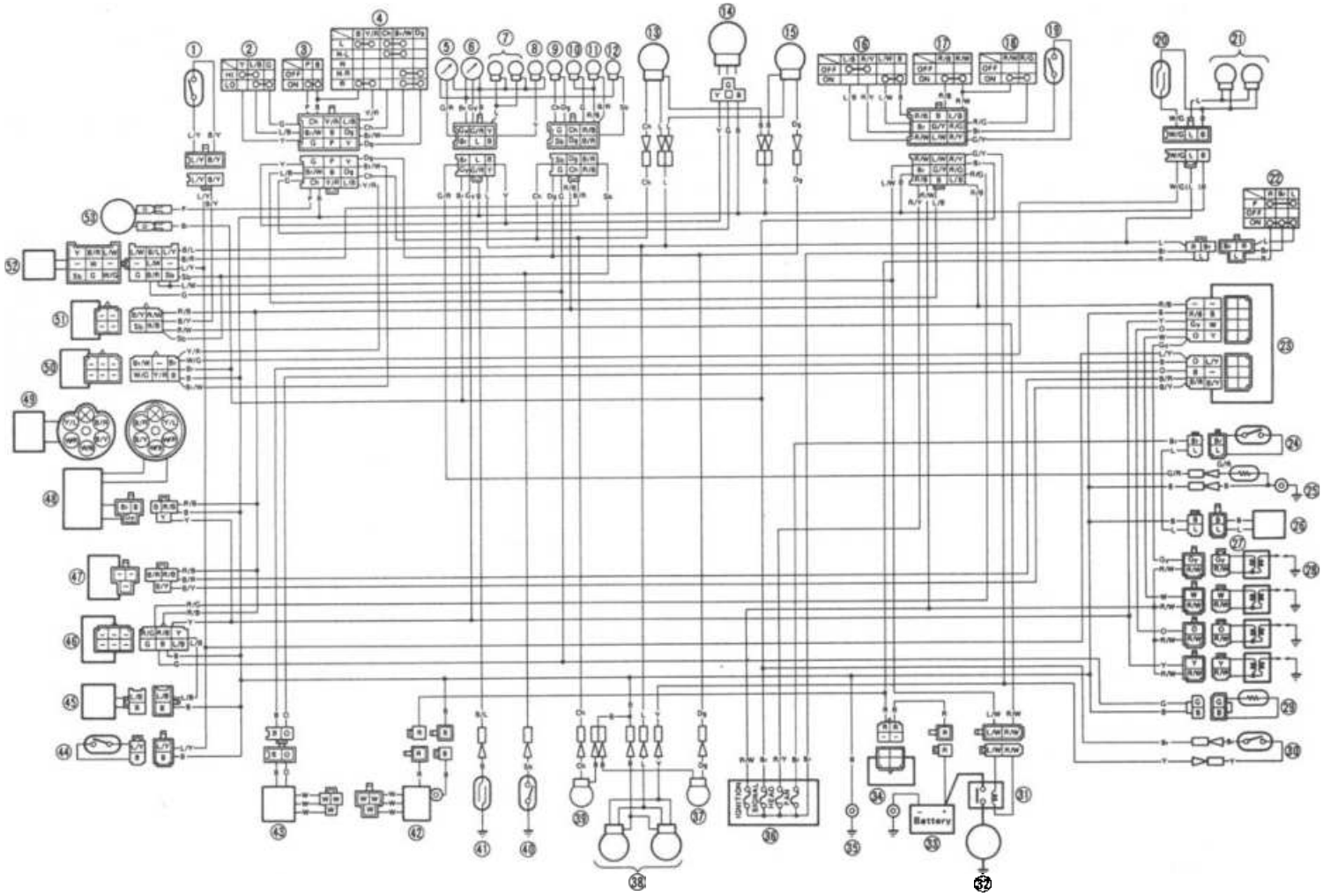
- Clutch switch
- Side stand switch
- C Pressure sensor
- D Pick up coil
- E CPU (microprocessor)
- F Digital ignitor unit
- G Fuel pump
- Fuel pump control relay
- I Ignition coil

OPERATION

The following operations are digitally-performed **by** signal from the pickup coil signal:

1. Determing proper ignition timing.
2. Sensing the engine revolution speed.
3. Determing timing for switching on ignition coil (duty control).
4. Increasing ignition coil primary current for starting the engine.
5. Sensing engine stall.
6. Preventing over-revolution of the engine.

VMX12E/EC WIRING DIAGRAM



1. Clutch switch
2. 'LIGHTS' (Dimmer) switch
3. 'HORN' switch
4. 'TURN' switch
5. Temp. meter
6. Tachometer
7. Meter light
8. "HIGH BEAM'
9. 'TURN'
10. 'FUEL'
11. 'OIL LEVEL'
12. 'NEUTRAL'
13. Front flasher light (L)
14. Headlight
15. Front flasher light (R)
16. 'START' switch
17. 'ENGINE STOP' switch
18. 'FUEL' switch
19. Front brake switch
20. Speedometer
21. Meter light
22. Main switch
23. Ignitor
24. Thermo switch
25. Thermo unit
26. Fan motor
27. Ignition coil
28. Spark plug
29. Fuel sender
30. Rear brake switch
31. Starter relay
32. Starter motor
33. Battery
34. Main fuse
35. Earth
36. Fuse
37. Rear flasher light (R)
38. Tail/Brake light
39. Rear flasher light (L)
40. Neutral switch
41. Oil level gauge
42. Rectifier/Regulator
43. A.C. Magneto/Pick up coil
44. Sidestand switch
45. Fuel pump
46. Control unit
47. Pressure sensor
48. Control unit
49. Servo motor
50. Flasher relay
51. Starting circuit cut off relay
52. Diode ass'y
53. Horn

COLOR CODE

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

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