YAMAHA

2026

# OWNER'S MANUAL
# MANUEL DU PROPRIÉTAIRE
# BEDIENUNGSANLEITUNG
# USO E MANUTENZIONE
# MANUAL DEL PROPIETARIO

# YZ450F

⚠ Read this manual carefully before operating this vehicle.

⚠ Il convient de lire attentivement ce manuel avant la première utilisation du véhicule.

⚠ Bitte lesen Sie diese Bedienungsanleitung sorgfältig durch, bevor Sie das Fahrzeug in Betrieb nehmen.

⚠ Leggere attentamente questo manuale prima di utilizzare questo veicolo.

⚠ Lea este manual atentamente antes de utilizar este vehículo.

*YZ450F*
*YZ450FT*

D03-28199-50

⚠ **Read this manual carefully before operating this vehicle. This manual should stay with this vehicle if it is sold.**

⚠ **Il convient de lire attentivement ce manuel avant la première utilisation du véhicule. Le manuel doit être remis avec le véhicule en cas de vente de ce dernier.**

⚠ **Bitte lesen Sie diese Bedienungsanleitung sorgfältig durch, bevor Sie das Fahrzeug in Betrieb nehmen. Diese Bedienungsanleitung muss, wenn das Fahrzeug verkauft wird, beim Fahrzeug verbleiben.**

⚠ **Leggere attentamente questo manuale prima di utilizzare questo veicolo. Questo manuale dovrebbe accompagnare il veicolo se viene venduto.**

⚠ **Lea este manual atentamente antes de utilizar este vehículo. Este manual debe acompañar al vehículo si este se vende.**

YAMAHA

2026

# OWNER'S MANUAL

# YZ450F

⚠ Read this manual carefully before operating this vehicle.

## *YZ450F*
## *YZ450FT*

D03-28199-50-E0

⚠ **Read this manual carefully before operating this vehicle. This manual should stay with this vehicle if it is sold.**

**For Canada**

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power Wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure of low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposures have not found any biological effects.
Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research. COMMUN.CONT.UNIT ASSY. (T722-A00) has been tested and found to comply with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules.

**Reporting safety defects (For Canada)**

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform Transport Canada in addition to notifying Yamaha Motor Canada Ltd, Canada. If Transport Canada receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, Transport Canada cannot become involved in individual problems between you, your dealer, or Yamaha Motor Canada Ltd., Canada.
To contact Transport Canada, you may call Defect Investigations and Recall Division at 819-420-4300 or toll free 1-800-333-0510, go to "tc.canada.ca" or email: mvs-sa@tc.gc.ca or write to Transport Canada, 330 Sparks Street Ottawa, ON, K1A 0N5.
You can also obtain other information about motor vehicle safety from "tc.canada.ca".

**For Europe**
Declaration of Conformity:

Hereby, YAMAHA MOTOR CO., LTD declares that the radio equipment type, Communication Control Unit, T722-A00 is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address:
https://global.yamaha-motor.com/eu_doc/

Frequency band: 2.4GHz
The maximum radio frequency power: 50.12mW

Manufacturer:
YAMAHA MOTOR CO., LTD
2500 Shingai, Iwata, Shizuoka, 438-8501 Japan

Importer:
YAMAHA MOTOR EUROPE N.V.
Koolhovenlaan 101, 1119 NC Schiphol-Rijk, 1117 ZN, Schiphol, the Netherlands

**Information of the Lithium-ion battery (BR98)**

Manufacturer:
Trend Power Technology (Changshu) INC.
No.868 Dongnan Avenue, Changshu High_tech Industrial
Development Zone, Jiangsu PRC,CN

Importer: (EU)
YAMAHA MOTOR EUROPE N.V.
Koolhovenlaan 101, 1119 NC Schiphol-Rijk, 1117 ZN, Schiphol, the Netherlands

Importer: (UK)
YAMAHA MOTOR EUROPE N.V., BRANCH UK
Units A2-A3, Kingswey Business Park, Forsyth Road, Woking, Surrey. GU21 5SA. United Kingdom.

**For Ukraine**

Інформація з техніки безпеки
Слід використовувати в тому ж середовищі, що й транспортний засіб.
Слід зберігати та транспортувати за тих же умов, що й транспортний засіб.
Установлення: див. посібник з налаштування.

Частотний діапазон: 2.4 ГГц
Максимальна потужність радіочастотного сигналу: 50.12 мВт

**For Moldova**

Declarație de conformitate:

Prin prezenta, YAMAHA MOTOR CO., LTD declară că tipul de echipamente radio unitate de control al comunicațiilor T722-A00 este în conformitate cu Directiva 2014/53/UE.
Textul integral al declarației UE de conformitate este disponibil la următoarea adresă internet: https://global.yamaha-motor.com/eu_doc/

Importator:
Motodynamics S.A.
Koolhovenlaan 101, 1119 NC Schiphol-Rijk, 1117 ZN, Schiphol, Țările de Jos

**For Serbia**

Упутства
Користите у околини где се користи возило.
Чувајте и преносите под истим условима као и возило.
Инсталација: погледајте водич за подешавање.

Техничке спецификације
Бежичне спецификације: бежични LAN 11b, 11g, 11n
Довод напајања: 12 V батерија

EAM20080

**YZ450F**
**YZ450FT**
**OWNER'S MANUAL**
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**First edition, May 2025**
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**without the written permission of**
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**Printed in Japan.**

EAM20180
# IMPORTANT

Congratulations on your purchase of a Yamaha YZ series. This model is the culmination of Yamaha's vast experience in the production of pacesetting racing machines. It represents the highest grade of craftsmanship and reliability that have made Yamaha a leader.
This manual explains operation, inspection, basic maintenance and tuning of your machine. If you have any questions about this manual or your machine, please contact your Yamaha dealer.

**TIP**

- Yamaha continually seeks advancements in product design and quality. Therefore, while this manual contains the most current product information available at the time of printing, there may be minor discrepancies between your machine and this manual. If you have any questions concerning this manual, please consult your Yamaha dealer.
- This manual is intended for those who have basic knowledge and skill concerning the servicing of Yamaha motorcycles (e.g., Yamaha dealers, service engineers, etc.). Those who have little knowledge and skill concerning servicing are requested not to undertake inspection, adjustment, disassembly, or reassembly only by reference to this manual. It may lead to servicing trouble and mechanical damage.

EWA20270

**⚠ WARNING**

**PLEASE READ THIS MANUAL CAREFULLY AND COMPLETELY BEFORE OPERATING THIS MACHINE. DO NOT ATTEMPT TO OPERATE THIS MACHINE UNTIL YOU HAVE ATTAINED A SATISFACTORY KNOWLEDGE OF ITS CONTROLS AND OPERATING FEATURES AND UNTIL YOU HAVE BEEN TRAINED IN SAFE AND PROPER RIDING TECHNIQUES. REGULAR INSPECTIONS AND CAREFUL MAINTENANCE, ALONG WITH GOOD RIDING SKILLS, WILL ENSURE THAT YOU SAFETY ENJOY THE CAPABILITIES AND THE RELIABILITY OF THIS MACHINE.**

EAM30001
## IMPORTANT MANUAL INFORMATION

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

| | |
|---|---|
| ⚠ | **This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.** |
| **⚠ WARNING** | **A WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.** |
| ***NOTICE*** | **A NOTICE indicates special precautions that must be taken to avoid damage to the vehicle or other property.** |
| **TIP** | A TIP provides key information to make procedures easier or clearer. |

EAM10003

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EAM20168

# SAFETY INFORMATION

Be sure to read this manual carefully and completely in order to operate the machine safely and correctly prior to riding the Yamaha machine, and take care to maintain it properly and operate it safely.

EAM30401

**FOR SAFETY, BE SURE TO OBEY THE FOLLOWING:**

**Be a Responsible Owner**

As the vehicle's owner, you are responsible for the safe and proper operation of your motorcycle.

Motorcycles are single-track vehicles.

Their safe use and operation are dependent upon the use of proper riding techniques as well as the expertise of the operator. Every operator should know the following requirements before riding this motorcycle.

He or she should:

1. Obtain thorough instructions from a competent source on all aspects of motorcycle operation.
2. Observe the warnings and maintenance requirements in this manual.
3. Obtain qualified training in safe and proper riding techniques.
4. Obtain professional technical service as indicated in this manual and/or when made necessary by mechanical conditions.
5. Never operate a motorcycle without proper training or instruction. Take a training course. Beginners should receive training from a certified instructor. Contact an authorized motorcycle dealer to find out about the training courses nearest you.

**Safe Riding**

Perform the pre-operation checks each time you use the vehicle to make sure it is in safe operating condition. Failure to inspect or maintain the vehicle properly increases the possibility of an accident or equipment damage. Refer to "PRE-OPERATION INSPECTION AND MAINTENANCE" on page 3-6 for a list of pre-operation checks.

1. This motorcycle is designed for off-road use only, therefore, it is illegal to operate it on public streets, roads, or highways, even a dirt or gravel one. Off-road use on public lands may be illegal. Please check local regulations before riding.
2. This motorcycle is designed to carry the operator only. No passengers.
3. The failure of motorists to detect and recognize motorcycles in traffic is the predominating cause of automobile/motorcycle accidents. Many accidents have been caused by an automobile driver who did not see the motorcycle. Making yourself conspicuous appears to be very effective in reducing the chance of this type of accident.
   **Therefore:**
   - Wear a brightly colored jacket.
   - Use extra caution when you are approaching and passing through intersections, since intersections are the most likely places for motorcycle accidents to occur.
   - Ride where other motorists can see you. Avoid riding in another motorist's blind spot.
   - Never maintain a motorcycle without proper knowledge. Contact an authorized motorcycle dealer to inform you on basic motorcycle maintenance. Certain maintenance can only be carried out by certified staff.
4. Many accidents involve inexperienced operators.
   - Make sure that you are qualified and that you only lend your motorcycle to other qualified operators.
   - Know your skills and limits. Staying within your limits may help you to avoid an accident.
   - We recommend that you practice riding your motorcycle until you have become thoroughly familiar with the motorcycle and all of its controls.
5. Many accidents have been caused by error of the motorcycle operator. A typical error made by the operator is veering wide on a turn due to excessive speed or under cornering (insufficient lean angle for the speed). Never travel faster than warranted by conditions.
6. Ride cautiously in unfamiliar areas. You may encounter hidden obstacles that could cause an accident.
7. The posture of the operator is important for proper control. The operator should keep both hands on the handlebar and both feet on the operator footrests during operation to maintain control of the motorcycle.
8. Never ride under the influence of alcohol or other drugs.
9. Be sure the transmission is in neutral before starting the engine.

**Protective Apparel**

The majority of fatalities from motorcycle

accidents are the result of head injuries. The use of a safety helmet is the single most critical factor in the prevention or reduction of head injuries.

1. Always wear an approved helmet.
2. Wear a face shield or goggles. Wind in your unprotected eyes could contribute to an impairment of vision that could delay seeing a hazard.
3. The use of a jacket, heavy boots, trousers, gloves, etc., is effective in preventing or reducing abrasions or lacerations.
4. Never wear loose-fitting clothes, otherwise they could catch on the control levers, footrests, or wheels and cause injury or an accident.
5. Always wear protective clothing that covers your legs, ankles, and feet. The engine or exhaust system become very hot during or after operation and can cause burns.

**Avoid Carbon Monoxide Poisoning**

All engine exhaust contains carbon monoxide, a deadly gas. Breathing carbon monoxide can cause headaches, dizziness, drowsiness, nausea, confusion, and eventually death.

Carbon Monoxide is a colorless, odorless, tasteless gas which may be present even if you do not see or smell any engine exhaust. Deadly levels of carbon monoxide can collect rapidly and you can quickly be overcome and unable to save yourself. Also, deadly levels of carbon monoxide can linger for hours or days in enclosed or poorly ventilated areas. If you experience any symptoms of carbon monoxide poisoning, leave the area immediately, get fresh air, and SEEK MEDICAL TREATMENT.

1. Do not run engine indoors. Even if you try to ventilate engine exhaust with fans or open windows and doors, carbon monoxide can rapidly reach dangerous levels.
2. Do not run engine in poorly ventilated or partially enclosed areas such as barns, garages, or carports.
3. Do not run engine outdoors where engine exhaust can be drawn into a building through openings such as windows and doors.

**Genuine Yamaha Accessories**

Choosing accessories for your vehicle is an important decision. Genuine Yamaha accessories, which are available only from a Yamaha dealer, have been designed, tested, and approved by Yamaha for use on your vehicle.

Many companies with no connection to Yamaha manufacture parts and accessories or offer other modifications for Yamaha vehicles. Yamaha is not in a position to test the products that these aftermarket companies produce. Therefore, Yamaha can neither endorse nor recommend the use of accessories not sold by Yamaha or modifications not specifically recommended by Yamaha, even if sold and installed by a Yamaha dealer.

**Aftermarket Parts, Accessories, and Modifications**

While you may find aftermarket products similar in design and quality to genuine Yamaha accessories, recognize that some aftermarket accessories or modifications are not suitable because of potential safety hazards to you or others. Installing aftermarket products or having other modifications performed to your vehicle that change any of the vehicle's design or operation characteristics can put you and others at greater risk of serious injury or death. You are responsible for injuries related to changes in the vehicle.

Keep the following guidelines in mind when mounting accessories.

1. Never install accessories that would impair the performance of your motorcycle. Carefully inspect the accessory before using it to make sure that it does not in any way reduce ground clearance or cornering clearance, limit suspension travel, steering travel or control operation.
   - Accessories fitted to the handlebar or the front fork area can create instability due to improper weight distribution. If accessories are added to the handlebar or front fork area, they must be as lightweight as possible and should be kept to a minimum.
   - Bulky or large accessories may seriously affect the stability of the motorcycle. Wind may attempt to lift the motorcycle, or the motorcycle may become unstable in cross winds.
   - Certain accessories can displace the operator from his or her normal riding position. This improper position limits the freedom of movement of the operator and may limit control ability, therefore, such accessories are not recommended.
2. Use caution when adding electrical accessories. If electrical accessories exceed the capacity of the motorcycle's electrical system, an electric failure could result, which could cause a dangerous loss of lights or engine power.

**Aftermarket Tires and Rims**

The tires and rims that came with your motorcycle were designed to match the performance capabilities and to provide the best combination of handling, braking, and comfort. Other tires, rims, sizes, and combinations may not be appropriate. Refer to “CHECKING THE TIRES” on page 3-30 for tire specifications and more information on replacing your tires.

**Transporting the Motorcycle**

Be sure to observe following instructions before transporting the motorcycle in another vehicle.

1. Remove all loose items from the motorcycle.
2. Check that the fuel cock (if equipped) is in the “OFF” position and that there are no fuel leaks.
3. Point the front wheel straight ahead on the trailer or in the truck bed, and choke it in a rail to prevent movement.
4. Shift the transmission in gear (for models with a manual transmission).
5. Secure the motorcycle with tie-downs or suitable straps that are attached to solid parts of the motorcycle, such as the frame or upper front fork triple clamp (and not, for example, to rubber-mounted handlebars or turn signals, or parts that could break). Choose the location for the straps carefully so the straps will not rub against painted surfaces during transport.
6. The suspension should be compressed somewhat by the tie-downs, if possible, so that the motorcycle will not bounce excessively during transport.

EAM20203
# ABOUT THE BATTERY

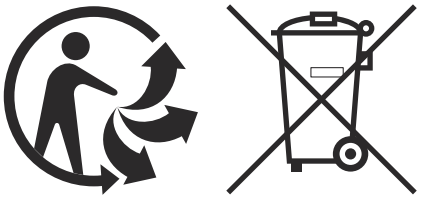
EAM30642
## LITHIUM-ION BATTERY
The lithium-ion battery used in the vehicle features high energy density and has a high voltage (approximately three times that of nickel-cadmium (Ni-Cd) or nickel-hydrogen (Ni-MH) batteries), meaning it can be made both compact and lightweight.
Nickel-cadmium and nickel-hydrogen batteries have a memory effect that causes their capacity to degrade quickly as a result of repeated partial discharging and charging, so that they need to be completely discharged periodically. Lithium-ion batteries can be repeatedly partially charged without needing to be fully discharged.

EAM30644
## LITHIUM-ION BATTERY DEGRADATION
The charge capacity of the lithium-ion battery gradually decreases over time and usage. The rate of capacity degradation varies based on the usage conditions.

**TIP**
- It is not necessary to use up the battery before charging.
- Storing the vehicle in an extremely hot or cold place could degrade the lithium-ion battery capacity more quickly.
- Even if the lithium-ion battery is not used, it discharges and degrades gradually over time.

EAM30643
## RECYCLING THE BATTERY
Lithium-ion batteries can be recycled. If the capacity decreases excessively due to degradation, have a Yamaha dealer replace the battery. Always follow local regulations regarding the disposal of batteries.

For EU countries:
According to the European Guideline 2012/19/EU, electrical devices/tools that are no longer usable must be collected separately and disposed of in an environmentally correct manner.



For FRANCE:

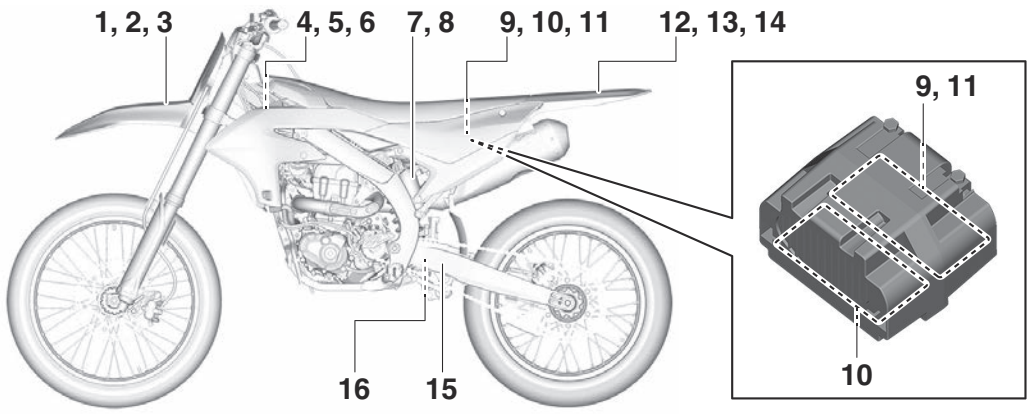



EAM30662
## YAMAHA LITHIUM-ION BATTERY
For handling the YAMAHA lithium-ion battery, refer to the “YAMAHA LITHIUM-ION BATTERY USER’S MANUAL”.

EAM20085

# LOCATION OF IMPORTANT LABELS

Please read the following important labels carefully before operating this vehicle.




## CAN

**1**

Premium unleaded gasoline only.

3FB-2415E-03

**2**

Essence super sans plomb seulernent.

3FB-2415E-13

**3**

THIS VEHICLE IS A COMPETITION MOTORCYCLE AND IS FOR USE EXCLUSIVELY IN CLOSED COURSE COMPETITION AND IS NOT INTENDED FOR USE ON PUBLIC ROADS.

CE VÉHICULE EST UNE MOTOCYCLETTE DE COMPÉTITION DONT L'USAGE EST RÉSERVÉ AUX COMPÉTITIONS EN CIRCUITS FERMÉS ET NON DESTINÉ AUX VOIES PUBLIQUES.

4SR-2416E-02

**4**

MFD. BY YAMAHA MOTOR CO., LTD. **MM / YY** MADE IN JAPAN
COMPETITION MOTORCYCLE
FABRIQUÉ PAR YAMAHA MOTOR CO., LTD. **MM / YY** FABRIQUÉ AU JAPON
MOTOCYCLETTE DE COMPETITION
**********

4SR-21186-01

**5**

CANADA · ISSUED · CANADA · NSVAC · 506 · TRANSPORT ·

CAN ICES-002 / NMB-002

8KM-82377-03

**7**

**⚠WARNING**

This unit contains high pressure nitrogen gas.
Mishandling can cause explosion.
- Read owner's manual for instructions.
- Do not incinerate, puncture or open.

**⚠AVERTISSEMENT**

Cette unité contient de l'azote à haute pression.
Une mauvaise manipulation peut entrainer d'expiosion.
- Voir le manuel d'utilisateur pour les instructions.
- Ne pas brûler ni perforer ni ouvrir.

4AA-22259-70

**9**

**⚠WARNING**

To avoid sparking, burns, fire, and explosion:
- Read owner's manual before use.
- Charge battery only with specified charger.
- Use battery only for specified product – no other use.
- Do not place near fire or immerse in water.
- Do not use battery if it has been dropped, subject to impact, or visibly damaged.
- Do not disassemble or modify the battery, or short across its terminals.

RECYCLE · 1-800-822-8837

**10**

**⚠AVERTISSEMENT**

Pour éviter les étincelles, les brûlures, les incendies et les explosions :
- Lire le manuel du propriétaire avant utilisation.
- Charger la batterie uniquement avec le chargeur spécifié.
- Utiliser la batterie uniquement avec le produit spécifié ; aucune autre utilisation.
- Ne pas placer près du feu ou immerger dans l'eau.
- Ne pas utiliser la batterie si elle est tombée, a reçu un choc ou si elle est visiblement endommagée.
- Ne pas démonter ou modifier la batterie ou court-circuiter ses bornes.

12

**⚠ WARNING**

- BEFORE YOU OPERATE THIS VEHICLE, READ THE OWNER'S MANUAL AND ALL LABELS.
- NEVER CARRY A PASSENGER. You increase your risk of losing control if you carry a passenger.
- NEVER OPERATE THIS VEHICLE ON PUBLIC ROADS. You can collide with another vehicle if you operate this vehicle on a public road.
- ALWAYS WEAR AN APPROVED MOTORCYCLE HELMET, eye protection, and protective clothing.
- EXPERIENCED RIDER ONLY.

5PA-2118K-01

13

**⚠ AVERTISSEMENT**

- LIRE LE MANUEL DU PROPRIETAIRE AINSI QUE TOUTES LES ETIQUETTES AVANT D'UTILISER CE VEHICULE.
- NE JAMAIS TRANSPORTER DE PASSAGER. La conduite avec passager augmente les risques de perte de contrôle.
- NE JAMAIS ROULER SUR DES CHEMINS PUBLICS. Vous pourriez entrer en collision avec un autre véhicule.
- TOUJOURS PORTER UN CASQUE DE MOTOCYCLISTE APPROUVE, des lunettes et des vêtements de protection.
- EXCLUSIVEMENT POUR L'USAGE D'UN CONDUCTEUR EXPERIMENTE.

5PA-2118K-11

15

**TIRE INFORMATION**

Cold tire normal pressure should be set as follows.
FRONT : 100kPa, {1.00kgf/cm²}, 15psi
REAR : 100kPa, {1.00kgf/cm²}, 15psi

3RV-21668-A1

16

**INFORMATION SUR LES PNEUS**

La pression des pneus à froid doit normalement être réglée comme suit.
AVANT : 100kPa, {1.00kgf/cm²}, 15psi
ARRIERE : 100kPa, {1.00kgf/cm²}, 15psi

3RV-21668-B1

**EUR**

6

UK CA CE
YAMAHA MOTOR CO, LTD,
2500 SHINGAI,
IWATA, SHIZUOKA, JAPAN

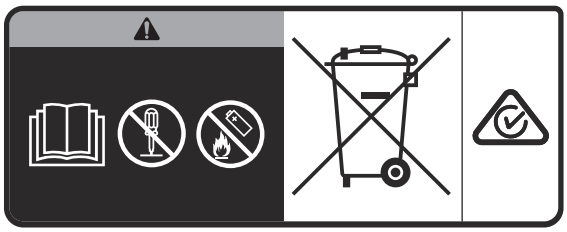
BN6-211AA-10

8

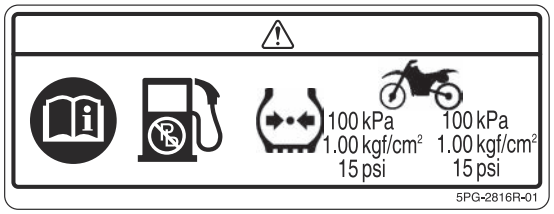


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11



14



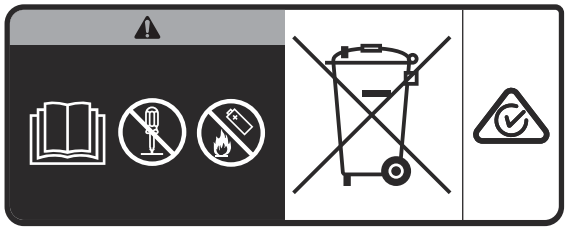

5PG-2816R-01

**AUS, NZL, ZAF**

**8**



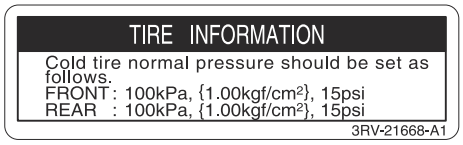

**11**



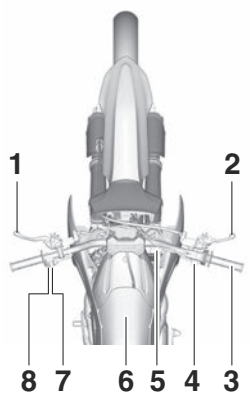
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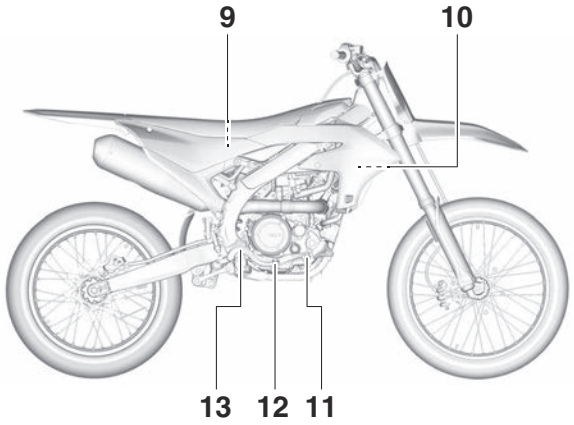


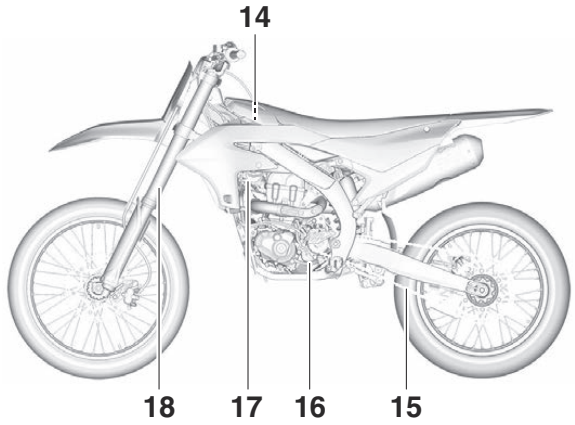

**15**



EAM20086
# DESCRIPTION



1. Clutch lever
2. Front brake lever
3. Throttle grip
4. Starter switch
5. Radiator cap
6. Fuel tank cap
7. Engine stop switch
8. Multi-function button
9. Fuel tank
10. Radiator
11. Coolant drain bolt
12. Oil level check window
13. Rear brake pedal
14. Air filter
15. Drive chain
16. Shift pedal
17. Starter knob
18. Front fork

**TIP**

Designs and specifications of the vehicle are subject to change without notice. Therefore, please note that the descriptions in this manual may be different from those for the vehicle you have purchased.

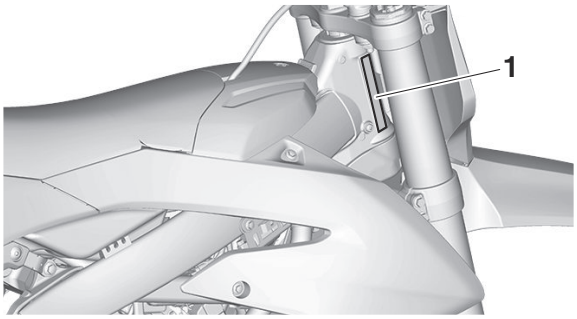
EAM20087
# IDENTIFICATION

There are two significant reasons for knowing the serial number of your vehicle:

1. When ordering parts, you can give the number to your Yamaha dealer for positive identification of the model you own.
2. If your vehicle is stolen, the authorities will need the number to search for and identify your vehicle.

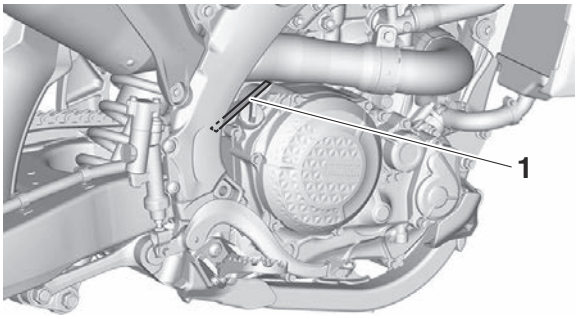
EAM30002
## VEHICLE IDENTIFICATION NUMBER

The vehicle identification number "1" is stamped into the right side of the frame.




EAM30003
## ENGINE SERIAL NUMBER

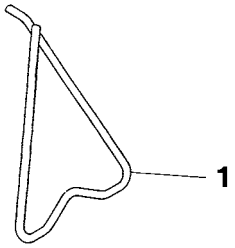
The engine serial number "1" is stamped into the elevated part of the right-side of the engine.



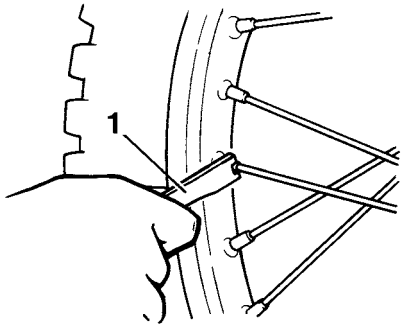
EAM20088
# INCLUDED PARTS

EAM30190
## SIDESTAND
This sidestand "1" is used to support only the machine when standing or transporting it.

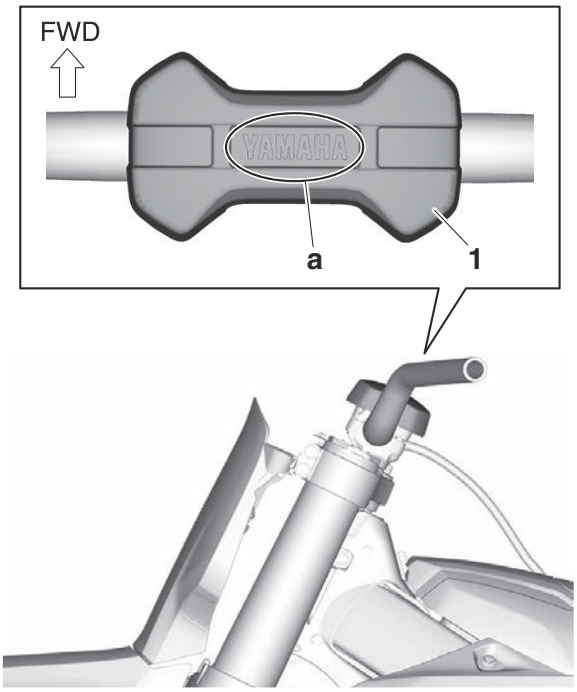
EWA20260
**⚠ WARNING**
- **Never apply additional force to the sidestand.**
- **Remove this sidestand before starting out.**



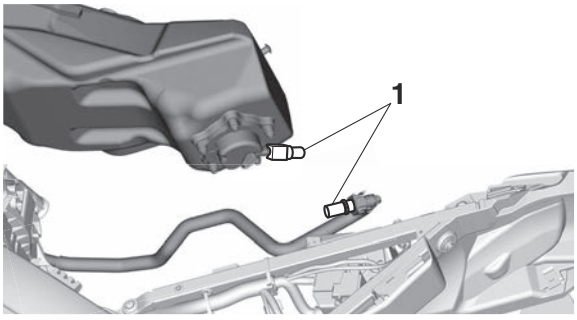

EAM30005
## NIPPLE WRENCH
The nipple wrench "1" is used to tighten the spoke.



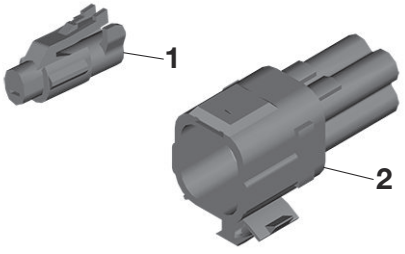

EAM30006
## HANDLEBAR PROTECTOR
Install the handlebar protector "1" so that the mark "a" is facing the direction shown in the illustration.




EAM30007
## FUEL HOSE JOINT COVER
The fuel hose joint covers "1" are used to prevent mud, dust, and other foreign materials from entering the inside when the fuel hose is disconnected.




EAM30653
## COUPLER (1P) AND COUPLER (4P)
The coupler (1P) "1" and coupler (4P) "2" should be connected so that after removing the CCU, neither mud nor dust enters the couplers (on the side of the wire harness) that have been connected to the CCU sub-lead.



EAM30443
## POWER TUNER
By downloading the Power Tuner app to your smartphone and wirelessly connecting to the CCU wireless network, you can adjust various vehicle settings.

EWA20460
**⚠ WARNING**

**• Do not operate the engine in a closed area. The exhaust gas is poisonous.**
**• Never let flames near the servicing area.**

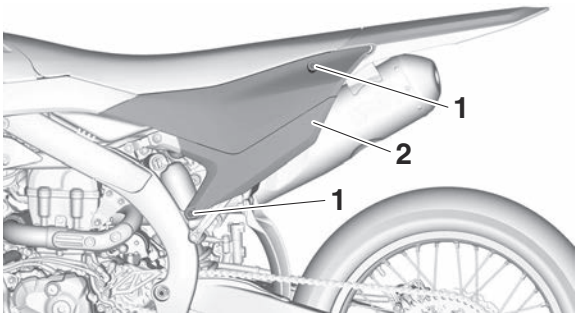
ECA26050
***NOTICE***

**• This application is designed for adjusting the settings on a standard vehicle. In case the engine specifications (muffler, compression ratio, etc.) have been changed, the performance may not match to the actual settings.**
**• Do not run the engine with the smartphone carried with you. Otherwise, the smartphone could be damaged.**

**TIP**
- Download the Power Tuner app from the Google© or Apple© store.
- For details about handling the smartphone, read the owner's manual of the smartphone.

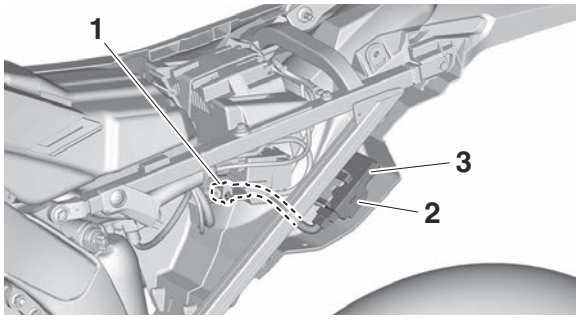
**Before connecting to the CCU wireless network (in case of initial use of the Power Tuner app)**

1. Remove the bolts and side cover (left).

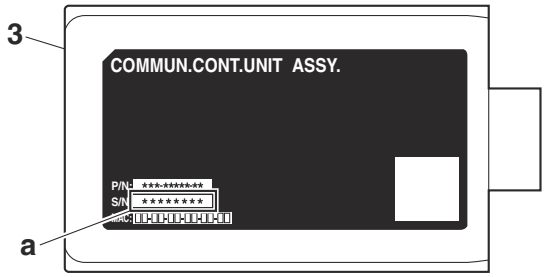



1. Bolt
2. Side cover (left)

2. Remove the CCU and record the CCU serial number.




1. CCU coupler
2. Holder
3. CCU (Communication Control Unit)




3. CCU (Communication Control Unit)
a. CCU serial number

3. Install the removed CCU and side cover (left).

**Connecting to the CCU wireless network**

ECA26060
***NOTICE***

**The CCU (Communication Control Unit) uses weak radio waves. The CCU may not work in the following situations.**
**• The CCU is placed in a location exposed to strong radio waves or other electromagnetic noise**
**• There are facilities nearby that are emitting strong radio waves (TV or radio towers, power plants, broadcasting stations, airports, etc.)**
**• You are carrying or using communication equipment such as radios or mobile phones in close proximity of the CCU**
**• The CCU is in contact with or covered by a metallic object**
**• Other vehicles equipped with a CCU are nearby**
**In such situations, move the CCU to another location and perform the operation again.**

1. Turn on the smartphone.
2. For two minutes after the starter switch is pressed or while the engine is running (the

CCU is activated), input the CCU serial number into your smartphone and establish a wireless connection.

**TIP**

If the ECU has been activated while the engine is stopped:
In case of map 1, the indicator light on the handlebar switch (left) will blink light in blue once every 4 seconds.
In case of map 2, the indicator light on the handlebar switch (left) will light in blue.

3. Activate the Power Tuner app.

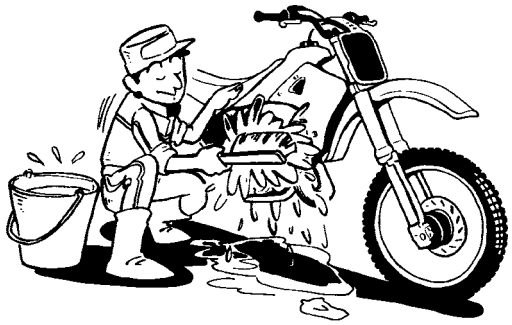
**TIP**

If the CCU wireless network cannot be detected, operate the starter switch again.

EAM20089
# IMPORTANT INFORMATION

EAM30009
## PREPARATION FOR REMOVAL AND DISASSEMBLY

1. Before the jobs, completely remove mud, dust, and the like in order to prevent the entry of them into the inside during the jobs.
   Refer to “CARE” on page 1-24.



2. During disassembly, check and measure the required parts, and make a record of them so that you may refer to the record when installing them. Moreover, arrange gears, cylinders, pistons, and other parts for each section so as not to confuse or lose them.



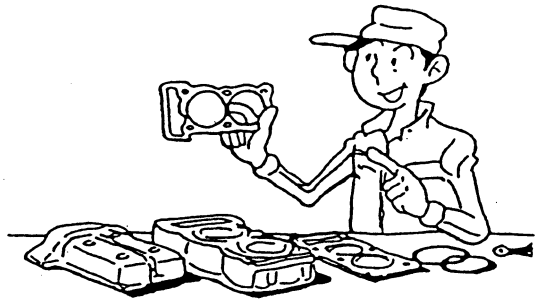
3. During disassembly, clean each of the parts, and store them in trays for each section.
4. Flammable. Keep servicing areas away from any source of fire.
5. During servicing, take special care not to receive an injury or a burn on the engine, the exhaust pipe, the silencer, or the like.
6. If coolant is left adhered to the chassis, paint and plating will be damaged. Therefore, rinse it out with water in good time.

EWA18970
**⚠ WARNING**

**Coolant is potentially harmful and should be handled with special care.**
- **If it enters your eyes, wash it away with water enough and then get medical attention**
- **If it splashes on your skin or clothes, quickly wash it away with water and then with soapy water.**
- **If it is swallowed, immediately induce vomiting and get medical attention.**

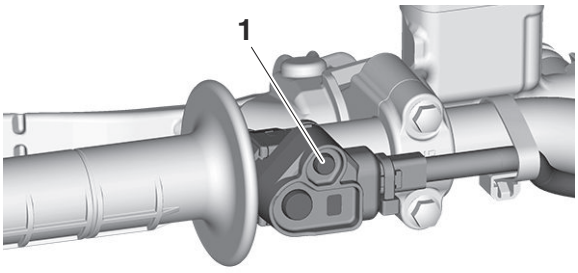
EAM30010
## REPLACEMENT PARTS

Make sure that the parts and grease or oil to be used for repair of the vehicle, including periodic replacement parts, are new YAMAHA genuine parts and recommended parts.
Do not use any used parts, because these may not be genuine though they have similar appearances or because the quality may be changed by aging.



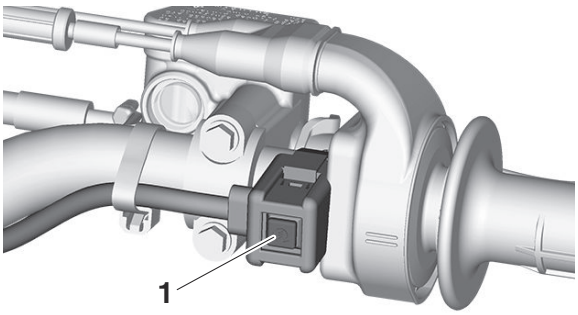
EAM20181
# INSTRUMENT AND CONTROL FUNCTIONS

EAM30182
## ENGINE STOP SWITCH
The engine stop switch "1" is located on the left handlebar. Continue pushing the engine stop switch till the engine comes to a stop.




EAM30663
## STARTER SWITCH
The starter switch "1" is located on the right handlebar. Push this switch to crank the engine with the starter.

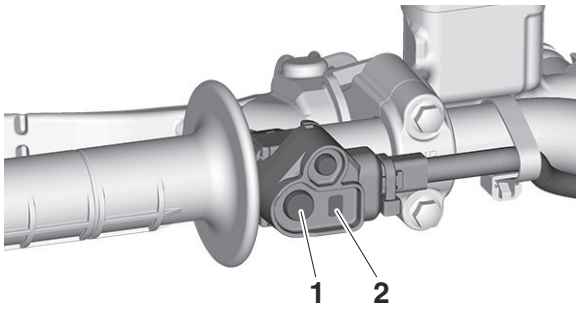
**TIP**
- When the starter switch is pushed, the indicator light on the handlebar switch (left) may illuminate orange for approx. 2 seconds as a self-check, but this is not a malfunction.
- Indicator light on the handlebar switch (left) flashes orange → Check or replace any faulty electrical part(s).
  Have a Yamaha dealer check the electrical system.
- Indicator light on the handlebar switch (left) blinks in blue twice → The engine has been cranked while the ECU was locked.
  Have a Yamaha dealer check the electrical system.

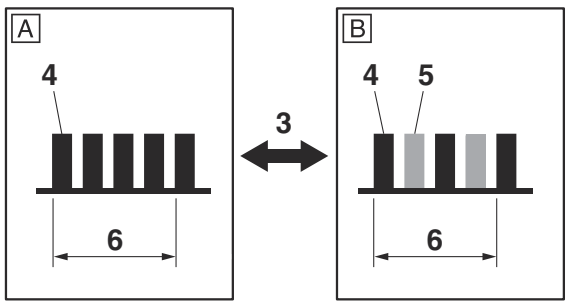



EAM30626
## LAUNCH CONTROL SYSTEM
When the launch control system is operated, the ignition timing is delayed to reduce slipping at the rear wheel which occurs when the vehicle accelerates from a stationary position.
This can be used to starting off in a stable manner on a slippery road surface.
However, the effect may not be adequate depending on the rider's operations and road surface conditions.

**How to operate**
1. Put the gear into the neutral position.
2. Start the engine.
3. Push the multi-function button "1" for more than one second to turn on the launch control system.

**TIP**
- When the launch control system is turned on, it automatically enters Rev. clip mode, and then the indicator light "2" will flash.
- The map change can be changed even when the launch control system is operating.
- When the indicator light flashes alternately purple and blue, map 2 is selected.
- If the engine speed reaches the set rev limit speed, the indicator light will blink about 4 times per second.



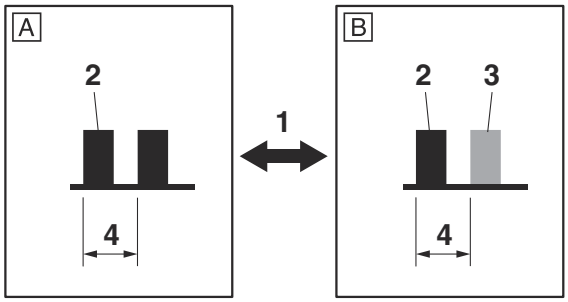




A. Map 1
B. Map 2

3. Push the multi-function button
4. Purple
5. Blue
6. Approx. 1 second (4 flashes/second)

4. Put the gear into the 1st or 2nd gear for starting off.

**TIP**
- When starting off, the system automatically controls the launch.
- The map change can be changed even when the launch control system is operating.
- When the indicator light flashes alternately purple and blue, map 2 is selected.

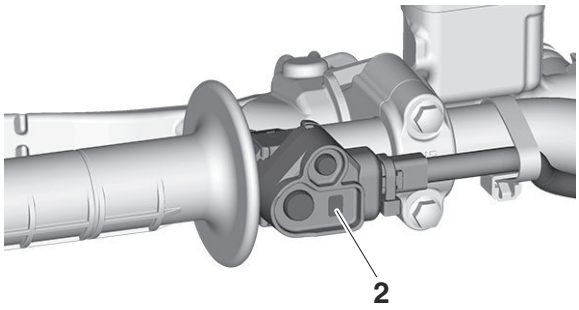



A. Map 1
B. Map 2

1. Push the multi-function button
2. Purple
3. Blue
4. 1 second (1 flash/second)

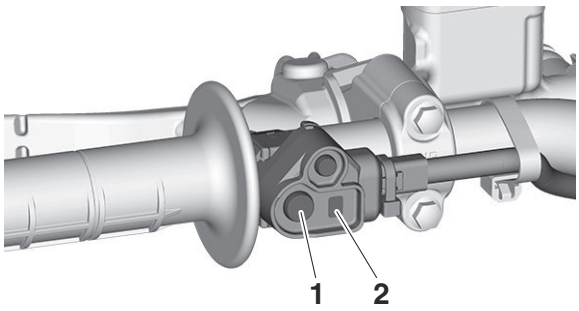
5. After starting off, the launch control system will turn off automatically when the gear is shifted into the 3rd gear.
   The launch control system will also turn off when the engine is stopped or the gear is shifted into the 3rd gear or higher.

**TIP**
- When the launch control system is turned off, the indicator light "2" will stop flashing.
- In case the map 1 is set, the indicator light blinks in blue once every 4 seconds if the ECU has been activated while the engine is stopped even if the launch control system is off.
- Indicator light on the handlebar switch (left) flashes orange → Check or replace any faulty electrical part(s).
  Have a Yamaha dealer check the electrical system.
- Indicator light on the handlebar switch (left) blinks in blue twice → The engine has been cranked while the ECU was locked.
  Have a Yamaha dealer check the electrical system.



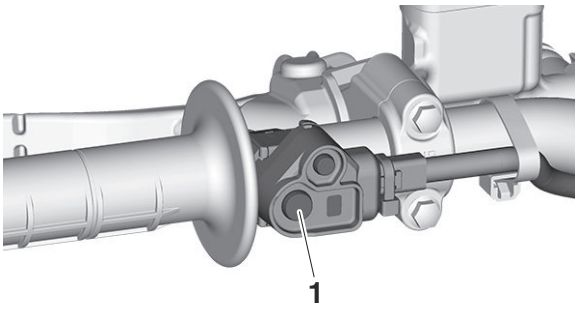

EAM30664
### LAP TIME MEASUREMENT
Lap time records can be measured by activating from the Power Tuner app.
When the multi-function button "1" is pressed, the indicator light "2" will blink in blue and the measurement will start.

**TIP**
- When pressing the multi-function button "1" again, the indicator light "2" will blink in blue and shift to the next lap time.
- Map change cannot be changed while in lap time measurement.
- Measurement results can be received and saved on the app.
- After the ECU has shut down, the lap time measurement will finish.




EAM30665
### MAP CHANGE
Push the multi-function button "1" to change between map 1 and map 2.

**TIP**
Indicator light on the handlebar switch (left) flashes orange → Check or replace any faulty electrical part(s).
Have a Yamaha dealer check the electrical system.

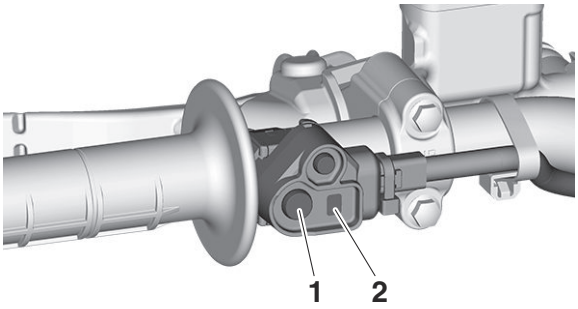



**To change the map**

1. Shift to neutral.
2. Start the engine.
3. Push the multi-function button “1”.

**TIP**

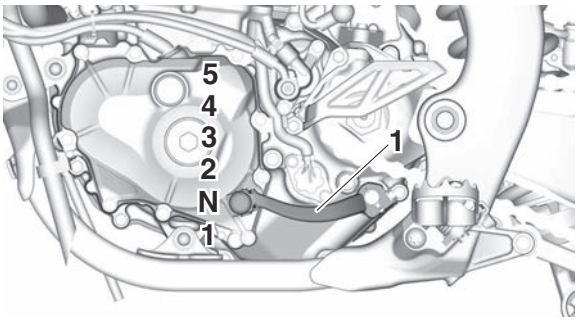
- As shipped from the factory, map 1 and 2 are the same.
- You must use the Power Tuner app to adjust the map settings.
- When the indicator light “2” illuminates blue, map 2 is selected.




EAM30185

## SHIFT PEDAL

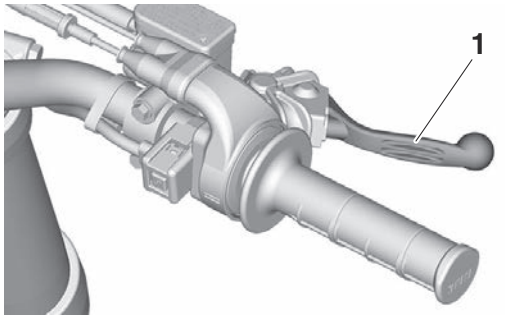
The shift pedal “1” has adopted a method of 1 down & 4 ups (press-down & kick-ups).
Press it down for N (neutral) to 1st, and kick it up for 2nd to 5th.




EAM30188

## FRONT BRAKE LEVER

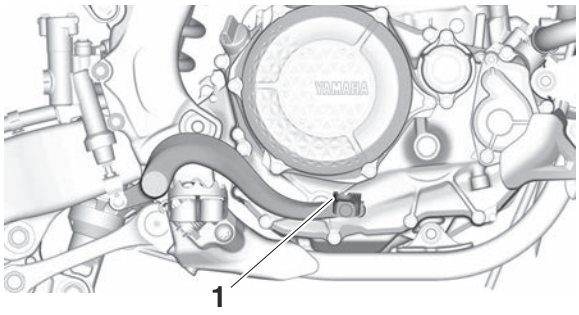
The front brake lever “1” is located on the right handlebar. Pull it toward the handlebar to activate the front brake.




EAM30189

## REAR BRAKE PEDAL

The rear brake pedal “1” is in the right of the chassis. Press down on the brake pedal to activate the rear brake.




EAM30444

## STARTER KNOB

Starting a cold engine requires a larger amount of intake air, which is supplied by the starter knob “1”.
Pushing the knob toward “a” turns ON the starter, resulting in a larger angle of throttle valve.

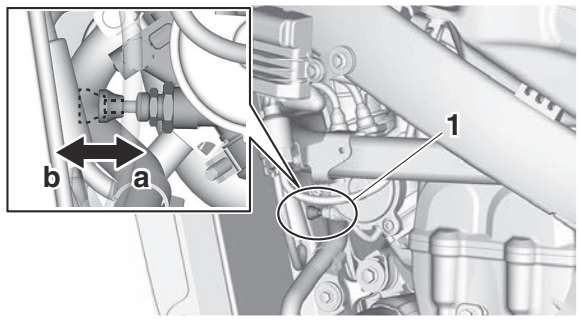
**TIP**

When operating the throttle grip in the closing direction, the starter knob “1” moves in the direction “b” as shown and returns to its original position.

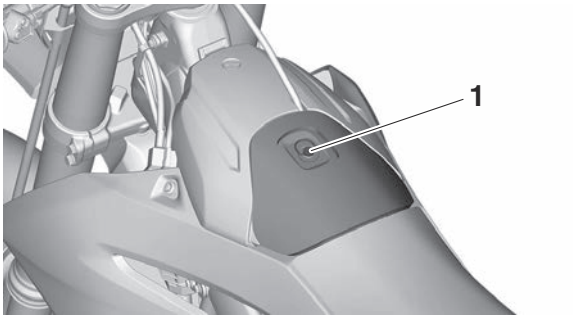
EWA20470

**WARNING**

**While handling the starter knob, take care not to burn yourself on exhaust pipes.**

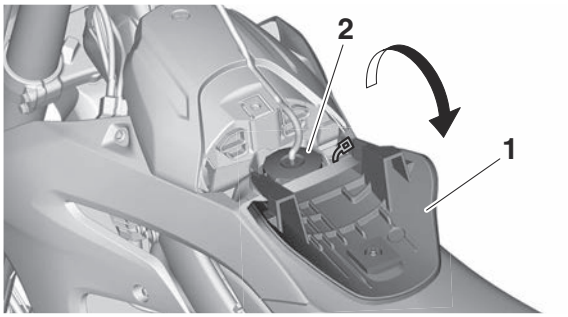


EAM30192
## FUEL TANK CAP
Fuel tank cap is located under the sub-seat.
1. Loosen:
   • Quick fastener "1"




2. Remove the sub-seat "1" to open the fuel tank cap "2".

**TIP**
- When installing the sub-seat, make sure that the plastic band is not twisted.
- When installing the sub-seat, push down the quick fastener, rotate it, and then secure the sub-seat with the quick fastener.




EAM30666
## ECU LOCK FUNCTION
The vehicle is not equipped with a physical key.
The ECU lock function locking the ECU from the Power Tuner app can immobilize the vehicle.
The lock condition can be checked from the Power Tuner app.

**TIP**
- The lock status cannot be checked from the vehicle without attempting to start the engine.
- If an attempt is made to start the engine while the ECU is locked, the indicator light on the handlebar switch (left) blinks in blue twice.
- When starting the engine, if only the starter motor is turning but the engine does not crank, this might be due to the ECU being locked. Continuing to starting the engine in this state could cause the battery to run flat.

### Setting of the ECU management password
From the Power Tuner app, the password can be set for the ECU using 8 to 20 letters including (upper and lower case), numbers, and symbols.

**TIP**
- For security reasons, it is recommended to set a password consisting of 10 digits or more, including 3 kinds of letters or more.
- If the password is not set from the Power Tuner app, for example if a smartphone is not used, there is a risk that someone could set a password without your permission.
- If you forget the password, the ECU needs to be replaced for a fee. Please do not forget the password.

### ECU lock and unlock, password removal
When the password meets the password input requirements from the Power Tuner app, locking or unlocking the ECU and removal of the password is possible.
Anyone who does not know the password cannot start the engine if the ECU is locked.

**TIP**
- Anyone who does not know the password, including the YAMAHA dealer, cannot remove or change the password.
- When the vehicle is transferred to another person, the password should be removed before the transfer.

EAM20123
# STARTING AND BREAK-IN

EAM30193
## FUEL
Always use the recommended fuel as stated below. Also, be sure to use new gasoline the day of a race.

**Recommended fuel**
**Unleaded gasoline (E10 acceptable)**
**Octane number (R+M)/2**
**91 or higher**
**Fuel tank capacity**
**6.2 L (1.6 US gal, 1.4 Imp.gal)**

ECA24180
***NOTICE***
**Use only unleaded gasoline. The use of leaded gasoline will cause severe damage to the engine internal parts such as valves, piston rings, and exhaust system, etc.**

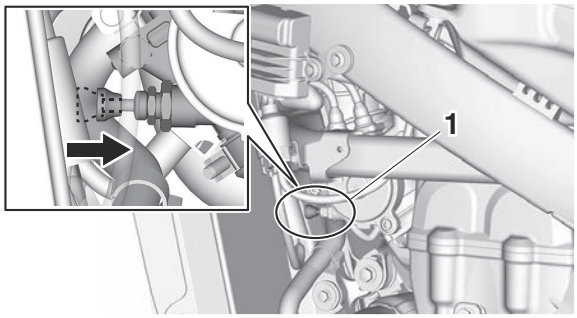
**TIP**
Your Yamaha engine has been designed to use unleaded gasoline with a pump octane number [(R+M)/2] of 91 or higher, or a research octane number of 95 or higher. If knocking (or pinging) occurs, use a gasoline of a different brand.

EWA19010
**⚠ WARNING**
- **For refueling, be sure to stop the engine and use enough care not to spill any fuel. Also be sure to avoid refueling close to a fire.**
- **Refuel after the engine, exhaust pipe, etc. have cooled off.**

### Gasohol (For Canada)
There are two types of gasohol: gasohol containing ethanol and that containing methanol. Gasohol containing ethanol can be used if the ethanol content does not exceed 10 %. Gasohol containing methanol is not recommended by Yamaha because it can cause damage to the fuel system or vehicle performance problems.

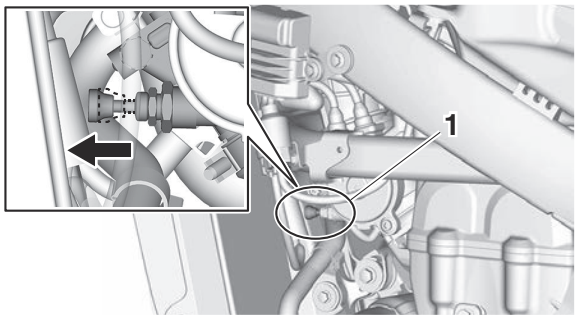
EAM30196
## STARTING A COLD ENGINE
1. Press the shift pedal to neutral.
2. Push the starter knob "1" completely.

**TIP**
- When the ambient temperature is 15 °C (59 °F) or below, use the starter knob.
- Do not operate the throttle grip when operating the starter knob.




3. Start the engine by pushing the starter switch.
   If the engine fails to start when using the starter switch, release it, wait a few seconds, and then try again.
   Each starting attempt should be as short as possible to preserve the battery. Do not crank the engine more than 10 seconds on any one attempt.
4. When the engine starts running, warm this up one or two minutes at a steady speed (of 3000 to 5000 r/min), and then return the starter knob to its original position.

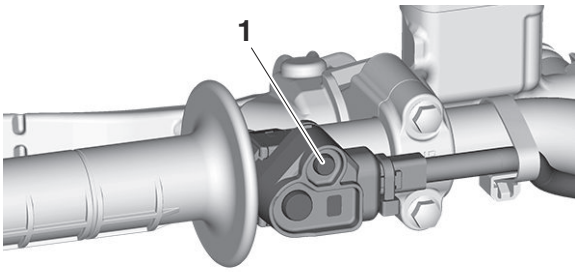
**TIP**
When operating the throttle grip in the closing direction, the starter knob "1" moves in the direction as shown and returns to its original position.




EWA19030
**⚠ WARNING**
**Since exhaust gas contains harmful ingredients, do not start or warm it up at an illventilated place or a closed narrow place.**

5. To stop the engine, push the engine stop switch "1".

**TIP**
Continue pushing the engine stop switch till the engine comes to a full stop.




EAM30197

## STARTING A WARM ENGINE

Follow the same procedure as for starting a cold engine with the exception that the starter is not required when the engine is warm.

**TIP**

If the engine fail to start, fully open the throttle grip and push the starter switch few seconds to clear the engine of the rich air-fuel mixture retained in it.

EAM30198

## BREAK-IN PROCEDURES

A break-in is important so that rotating portion, sliding surfaces, and mounted areas may fit one another, and that the rider may become accustomed to the machine.

ECA25811

***NOTICE***

**Before running, do maintenance on the air filter element.**

1. After warming up the engine, drive it for about 20 minutes at a throttle opening of 1/2 or less.

**TIP**

This model is equipped with an engine autostop system. The engine stops automatically if left idling for 7 minutes. If the engine stops, push the starter switch to restart the engine.

2. Make a pit stop, and check mounted areas for looseness, oil leaks, or other problems.
3. Then, drive it for about 40 minutes at a throttle opening of 3/4 or less.
4. Make a pit stop again, and thoroughly check mounted areas for looseness, oil leaks, or other problems. Thorough checks and adjustments are required in particular for stretch of cables, free play of the brake, stretch of the drive chain, looseness of the spoke, and so on.

ECA25821

***NOTICE***

**After a break-in or after each race, always check the points shown in "TORQUE-CHECK POINTS" for tightening torques and retighten them.**

**Also when the following parts are replaced, a break-in is required.**

- **Cylinder and Crankshaft: A break-in is required for about an hour.**
- **Piston, Piston ring, Valve, Camshaft, and Gear: A break-in is required for about 30 minutes at a throttle opening of 1/2 or less.**

**Observe the condition of the engine carefully during a break-in.**

**For checkpoints for a break-in, see "MAINTENANCE AFTER BREAK-IN". If any problem is found, immediately stop the engine and make a checkup.**

EAM30468

## ENGINE STARTING PRECAUTION

Make sure the transmission is in neutral or be sure to pull the clutch lever before pressing the starter switch.

EWA23110

**⚠ WARNING**

**If the clutch lever is not pulled and the starter switch is pressed with the transmission in gear, the starter motor will cause the rear wheel to spin, which may cause injury.**

EAM20124
# MAINTENANCE AFTER BREAK-IN

After a break-in, perform careful maintenance to get ready for the next practice or race.
Refer to “PRE-OPERATION INSPECTION AND MAINTENANCE” on page 3-6.

EAM30199
## MAJOR MAINTENANCE

1. For the engine
   - Leaks around the engine
     Check for pressure leaks from the cylinder head or the cylinder, oil leaks from the crankcase or the case cover, leaks from the coolant system, and other leaks.
   - Check that the valve, the cylinder head, the cylinder, the piston, and the piston ring fit one another, and that contact between the valve and the cylinder head, and that between the cylinder and the piston are correct.
   - Engine oil change
     Drain the oil, and check for dirt and foreign materials such as metal chips. (If any foreign material is mixed, disassemble and check the crankcase.)
     Pour the specified amount of the recommended oil.
   - Clutch
     Check for clutch fluid leaks.
   - Generator
     Check for looseness in mounted areas of the generator rotor and the stator coil assembly.
     Check that the connector is not being disconnected.
   - Silencer
     Check the main body and stay for cracks. Check for leaks.
   - Mounting bolts and nuts
     Check for looseness in mounted areas of parts, as well as engine mounting bolts and engine brackets.
2. For the chassis
   - Check welds and mounted areas of the frame, the swingarm, the link, the bracket, and so on, for looseness and cracks.
   - Wheel(s)
     Check the wheel for runout. Check the spoke for looseness.
   - Brake(s)
     Check the brake disc mounting bolt for looseness.
     Check that the reservoir contains the specified amount of brake fluid. Check for leaks.
   - Cable
     Grease and adjust cables.
   - Drive chain
     Lubricate the drive chain and adjust its tension.
   - Fuel tank
     Clean the inside of the fuel tank. Check for leaks.
   - Suspension
     Check for oil leaks in the front fork or the rear shock absorber. Check that the mounted conditions are good.
   - Sprocket
     Check for looseness in the sprocket mounted on the rear wheel.
   - Mounting bolts and nuts
     Check mounted areas for looseness.

ECA25831
***NOTICE***

**After a break-in or before each race, always check the points shown in “TORQUE-CHECK POINTS” for tightening torques and retighten them.**

   - Greasing and oiling
     Always grease or oil the specified points.

EAM30195
## AIR FILTER MAINTENANCE

Apply the Yamaha foam air filter oil or other quality foam air filter oil to the element. (Excess oil in the element may adversely affect engine starting.) Refer to “CLEANING THE AIR FILTER ELEMENT” on page 3-13.

EAM20125
# TORQUE-CHECK POINTS

| | | | | |
|---|---|---|---|---|
| Frame construction | | | | Fuel tank to frame |
| | | | | Frame to rear frame |
| | | | | Frame to engine protector |
| Engine mounting | | | | Frame to engine |
| | | | | Engine bracket to engine |
| | | | | Engine bracket to frame |
| Seat | | | | Seat to rear fender |
| Steering | | Steering stem to handlebar | | Steering stem to frame |
| | | | | Steering stem to upper bracket |
| | | | | Upper bracket to handlebar |
| Suspension | Front | Steering stem to front fork | | Front fork to upper bracket |
| | | | | Front fork to lower bracket |
| | Rear | Link | | Assembly of links |
| | | | | Link to frame |
| | | | | Link to rear shock absorber |
| | | | | Link to swingarm |
| | | Mounting of rear shock absorber | | Rear shock absorber and frame |
| | | Mounting of swingarm | | Tightening of pivot shaft |
| Wheel(s) | | Mounting of wheel | Front | Tightening of wheel axle |
| | | | | Tightening of axle holder |
| | | | | Tightening of spoke nipple |
| | | | Rear | Tightening of wheel axle |
| | | | | Wheel to rear wheel sprocket |
| | | | | Tightening of spoke nipple |
| Brake(s) | | | Front | Brake caliper to front fork |
| | | | | Brake disc to wheel |
| | | | | Tightening of union bolt |
| | | | | Brake master cylinder to handlebar |
| | | | | Tightening of bleed screw |
| | | | | Tightening of brake hose holder |
| | | | Rear | Brake pedal to frame |
| | | | | Brake disc to wheel |
| | | | | Tightening of union bolt |
| | | | | Brake master cylinder to frame |
| | | | | Tightening of bleed screw |

| | |
|---|---|
| Clutch | Tightening of union bolt |
| | Clutch master cylinder to handlebar |
| | Tightening of bleed screw |
| Fuel system | Fuel pump to fuel tank |
| Shift pedal | Shift pedal to shift shaft |
| Plastic cover | Tightening of front fender |
| | Tightening of fork leg protector |
| | Tightening of shroud |
| | Tightening of side cover |
| | Tightening of rear fender |
| | Tightening of mud flap |
| | Tightening of rear brake caliper cover |

**TIP**

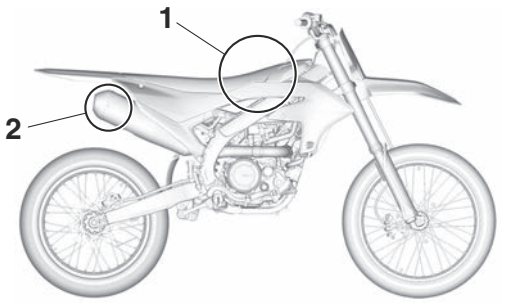
Concerning the tightening torque, refer to “TIGHTENING TORQUES” on page 2-9.

EAM20126
# MOTORCYCLE CARE AND STORAGE

EAM30200
## CARE
While the open design of a motorcycle reveals the attractiveness of the technology, it also makes it more vulnerable. Rust and corrosion can develop even if high-quality components are used. A rusty exhaust pipe may go unnoticed on a car, however, it detracts from the overall appearance of a motorcycle. Frequent and proper care does not only comply with the terms of the warranty, but it will also keep your motorcycle looking good, extend its life and optimize its performance.

### Before cleaning
**TIP**
Be sure to confirm that the vehicle is completely cooled.

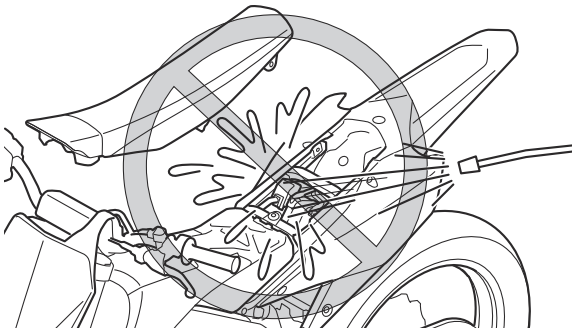
1. Block or cover the following parts with suitable measures.
   - Air duct "1"
     (other gaps around shrouds and seats)
   - Muffler outlet "2"




2. Make sure that all caps and covers as well as all electrical couplers and connectors, including the spark plug cap, are tightly installed.
3. Remove extremely stubborn dirt, like oil burnt onto the crankcase, with a degreasing agent and a brush, but never apply such products onto seals, gaskets, sprockets, the drive chain and wheel axles. Always rinse the dirt and degreaser off with water.

### Cleaning
ECA26730
***NOTICE***

- **Avoid using strong acidic wheel cleaners, especially on spoked wheels. If such products are used on hard-to-remove dirt, do not leave the cleaner on the affected area any longer than instructed. Also, thoroughly rinse the area off with water, immediately dry it, and then apply a corrosion protection spray.**
- **Improper cleaning can damage plastic parts (such as cowlings, panels, windshields, headlight lenses, meter lenses, etc.) and the mufflers. Use only a soft, clean cloth or sponge with water to clean plastic. However, if the plastic parts cannot be thoroughly cleaned with water, diluted mild detergent with water may be used. Be sure to rinse off any detergent residue using plenty of water, as it is harmful to plastic parts.**
- **Do not use any harsh chemical products on plastic parts. Be sure to avoid using cloths or sponges which have been in contact with strong or abrasive cleaning products, solvent or thinner, fuel (gasoline), rust removers or inhibitors, brake fluid, antifreeze or electrolyte.**
- **For motorcycles equipped with a windshield: Do not use strong cleaners or hard sponges as they will cause dulling or scratching. Some cleaning compounds for plastic may leave scratches on the windshield. Test the product on a small hidden part of the windshield to make sure that it does not leave any marks. If the windshield is scratched, use a quality plastic polishing compound after washing.**
- **When cleaning using either a high-pressure cleaning machine or a water hose, do not direct the water jet toward the following areas:(Otherwise, it could cause either damage due to the water pressure or malfunction due to water entry.)**
  **Wheels or swing arm bearings**
  **Fork seals or brake seals**
  **Electrical parts, such as couplers, switches, battery, etc.**
  **Muffler or hoses**
  **Air cleaner intake port**
- **Do not clean using a water jet with the seat or cover removed.**



After normal use

Remove dirt with warm water, a mild detergent, and a soft, clean sponge, and then rinse thoroughly with clean water. Use a toothbrush or bottlebrush for hard-to-reach areas. Stubborn dirt and insects will come off more easily if the area is covered with a wet cloth for a few minutes before cleaning.

After riding in the rain, near the sea or on salt-sprayed roads

Since sea salt or salt sprayed on roads during winter are extremely corrosive in combination with water, carry out the following steps after each ride in the rain, near the sea or on salt-sprayed roads.

**TIP**

Salt sprayed on roads in the winter may remain well into spring.

1. Clean the motorcycle with cold water and a mild detergent, after the engine has cooled down.
   ***NOTICE:*** **Do not use warm water since it increases the corrosive action of the salt.**
2. Apply a corrosion protection spray on all metal, including chrome- and nickel-plated, surfaces to prevent corrosion.

**After cleaning**

1. Dry the motorcycle with a chamois or an absorbing cloth.
2. Immediately dry the drive chain and lubricate it to prevent it from rusting.
3. Use a chrome polish to shine chrome, aluminum and stainless- steel parts, including the exhaust system. (Even the thermally induced discoloring of stainless- steel exhaust systems can be removed through polishing.)
4. To prevent corrosion, it is recommended to apply a corrosion protection spray on all metal, including chrome- and nickel-plated, surfaces.
5. Use spray oil as a universal cleaner to remove any remaining dirt.
6. Touch up minor paint damage caused by stones, etc.
7. Wax all painted surfaces.
8. Let the motorcycle dry completely before storing or covering it.

EWA19050

**WARNING**

**Contaminants on the brakes or tires can cause loss of control.**

- **Make sure that there is no oil or wax on the brakes or tires.**
- **If necessary, clean the brake discs and brake linings with a regular brake disc cleaner or acetone, and wash the tires with warm water and a mild detergent. Before riding at higher speeds, test the motorcycle's braking performance and cornering behavior.**

ECA24240

***NOTICE***

- **Apply spray oil and wax sparingly and make sure to wipe off any excess.**
- **Never apply oil or wax to any rubber and plastic parts, but treat them with a suitable care product.**
- **Avoid using abrasive polishing compounds as they will wear away the paint.**

**TIP**

- Consult a Yamaha dealer for advice on what products to use.
- Washing, rainy weather or humid climates can cause the headlight lens to fog. Turning the headlight on for a short period of time will help remove the moisture from the lens.

EAM30201

## STORAGE

### Short-term

Always store your motorcycle in a cool, dry place and, if necessary, protect it against dust with a porous cover. Be sure the engine and the exhaust system are cool before covering the motorcycle.

ECA24250

***NOTICE***

- **Storing the motorcycle in a poorly ventilated room or covering it with a tarp, while it is still wet, will allow water and humidity to seep in and cause rust.**
- **To prevent corrosion, avoid damp cellars, stables (because of the presence of ammonia) and areas where strong chemicals are**

**stored.**

**Long-term**

Before storing your motorcycle for several months:

1. Follow all the instructions in the “CARE” on page 1-24.
2. Fill up the fuel tank and add fuel stabilizer (if available) to prevent the fuel tank from rusting and the fuel from deteriorating.
3. Perform the following steps to protect the cylinder, piston rings, etc. from corrosion.
   a. Remove the spark plug cap and spark plug.
   b. Pour a teaspoonful of engine oil into the spark plug bore.
   c. Install the spark plug cap onto the spark plug, and then place the spark plug on the cylinder head so that the electrodes are grounded. (This will limit sparking during the next step.)
   d. Turn the engine over several times with the starter. (This will coat the cylinder wall with oil.)
   e. Remove the spark plug cap from the spark plug, and then install the spark plug and the spark plug cap. **WARNING! To prevent damage or injury from sparking, make sure to ground the spark plug electrodes while turning the engine over.**
4. Lubricate all control cables and the pivoting points of all levers and pedals as well as of the sidestand/centerstand.
5. Check and, if necessary, correct the tire air pressure, and then lift the motorcycle so that both of its wheels are off the ground. Alternatively, turn the wheels a little every month in order to prevent the tires from becoming degraded in one spot.
6. Cover the muffler outlet with a plastic bag to prevent moisture from entering it.
7. Remove the battery and fully charge it. Store it in a cool, dry place and charge it once a month. Do not store the battery in an excessively cold or warm place [less than 0 °C (32 °F) or more than 65 °C (149 °F)]. For more information on storing the battery, “CHECKING AND CHARGING THE BATTERY” on page 7-1.

**TIP**

Make any necessary repairs before storing the motorcycle.

# SPECIFICATIONS

**GENERAL SPECIFICATIONS**.....2-1

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**TIGHTENING TORQUES**.....2-9
GENERAL TIGHTENING TORQUE SPECIFICATIONS..... 2-9
ENGINE TIGHTENING TORQUES.....2-10
CHASSIS TIGHTENING TORQUES.....2-13

EAM20127
# GENERAL SPECIFICATIONS

| | |
|---|---|
| **Model** | |
| Model | D031 (CAN)<br>D032 (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)<br>D034 (AUS, NZL, ZAF)<br>D036 (CAN)<br>D037 (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)<br>D039 (AUS, NZL, ZAF) |
| **Dimensions** | |
| Overall length | 2175 mm (85.6 in) |
| Overall width | 825 mm (32.5 in) |
| Overall height | 1275 mm (50.2 in) |
| Seat height | 965 mm (38.0 in) |
| Wheelbase | 1475 mm (58.1 in) |
| Ground clearance | 345 mm (13.58 in) |
| **Weight** | |
| Curb weight | 110 kg (243 lb) |

EAM20128
# ENGINE SPECIFICATIONS

| | |
|---|---|
| **Engine** | |
| Combustion cycle | 4-stroke |
| Cooling system | Liquid cooled |
| Valve train | DOHC |
| Displacement | 450 $cm^3$ |
| Number of cylinders | Single cylinder |
| Bore × stroke | 97.0 × 60.8 mm (3.82 × 2.39 in) |
| Compression ratio | 13.0 : 1 |
| Starting system | Electric starter |
| **Fuel** | |
| Recommended fuel | Unleaded gasoline (E10 acceptable) |
| Octane number (RON) | 95 |
| Fuel tank capacity | 6.2 L (1.6 US gal, 1.4 Imp.gal) |
| **Engine oil** | |
| Recommended brand | YAMALUBE |
| SAE viscosity grades | 10W-40, 10W-50, 15W-40, 20W-40 or 20W-50 |
| Recommended engine oil grade | API service SG type or higher, JASO standard MA |
| Lubrication system | Dry sump |
| Engine oil quantity | |
| Oil change | 0.94 L (0.99 US qt, 0.83 Imp.qt) |
| With oil filter removal | 0.96 L (1.01 US qt, 0.84 Imp.qt) |
| Quantity (disassembled) | 1.20 L (1.27 US qt, 1.06 Imp.qt) |
| **Cooling system** | |
| Coolant quantity | |
| Radiator (including all routes) | 1.03 L (1.09 US qt, 0.91 Imp.qt) |
| **Spark plug(s)** | |
| Manufacturer/model | NGK/LMAR8G |
| Spark plug gap | 0.7–0.8 mm (0.028–0.031 in) |
| **Valve** | |
| Valve clearance (cold) | |
| Intake | 0.10–0.17 mm (0.0039–0.0067 in) |
| Exhaust | 0.15–0.22 mm (0.0059–0.0087 in) |
| **Clutch** | |
| Clutch type | Wet, multiple-disc |
| Friction plate 1 thickness | 2.12–2.28 mm (0.083–0.090 in) |
| Wear limit | 2.02 mm (0.080 in) |
| Plate quantity | 4 pcs |
| Friction plate 2 thickness | 2.12–2.28 mm (0.083–0.090 in) |
| Wear limit | 2.02 mm (0.080 in) |
| Plate quantity | 4 pcs |
| Clutch plate 1 thickness | 1.35–1.45 mm (0.053–0.057 in) |
| Plate quantity | 7 pcs |
| Warpage limit | 0.10 mm (0.004 in) |
| Clutch plate 2 thickness | 0.93–1.07 mm (0.037–0.042 in) |
| Plate quantity | 2 pcs |
| Warpage limit | 0.10 mm (0.004 in) |
| Clutch spring free height | 4.59 mm (0.18 in) |

| | |
|---|---|
| Clutch spring free height limit | 4.36 mm (0.17 in) |
| Push rod bending limit | 0.10 mm (0.004 in) |
| **Drivetrain** | |
| Primary reduction ratio | 2.481 (67/27) |
| Transmission type | Constant mesh 5-speed |
| Gear ratio | |
| 1st | 2.000 (28/14) |
| 2nd | 1.625 (26/16) |
| 3rd | 1.350 (27/20) |
| 4th | 1.136 (25/22) |
| 5th | 1.000 (21/21) |
| Secondary reduction ratio | 3.846 (50/13) (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)<br>3.923 (51/13) (AUS, CAN, NZL, ZAF) |
| Final drive | Chain |
| **Air filter** | |
| Air filter element | Wet element |
| Air filter oil grade | Yamaha foam air filter oil or other quality foam air filter oil |
| **Idling condition** | |
| Engine idling speed | 1900–2100 r/min |
| Coolant temperature | 70–80 °C (158–176 °F) |
| Throttle grip free play | 3.0–6.0 mm (0.12–0.24 in) |

EAM20129
# CHASSIS SPECIFICATIONS

| | |
|---|---|
| **Chassis** | |
| Caster angle | 27.1 ° (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)<br>27.5 ° (AUS, CAN, NZL, ZAF) |
| Trail | 121 mm (4.8 in) (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)<br>123 mm (4.8 in) (AUS, CAN, NZL, ZAF) |
| **Front wheel** | |
| Wheel type | Spoke wheel |
| Rim size | 21x1.6 |
| **Rear wheel** | |
| Wheel type | Spoke wheel |
| Rim size | 19x2.15 |
| **Front tire** | |
| Type | With tube |
| Size | 80/100-21 51M |
| Manufacturer/model | DUNLOP/MX33 |
| **Rear tire** | |
| Type | With tube |
| Size | 120/80-19 63M |
| Manufacturer/model | DUNLOP/MX33 |
| **Tire air pressure (measured on cold tires)** | |
| Front | 100 kPa (1.00 kgf/cm$^2$, 15 psi) |
| Rear | 100 kPa (1.00 kgf/cm$^2$, 15 psi) |
| **Front brake** | |
| Type | Hydraulic single disc brake |
| Brake pad lining thickness limit | 1.0 mm (0.04 in) |
| Specified brake fluid | DOT 4 |
| **Rear brake** | |
| Type | Hydraulic single disc brake |
| Brake pad lining thickness limit | 1.0 mm (0.04 in) |
| Specified brake fluid | DOT 4 |
| **Clutch** | |
| Specified brake and clutch fluid | DOT 4 |
| **Front suspension** | |
| Type | Telescopic fork |
| Spring | Coil spring |
| Shock absorber | Hydraulic damper |

| | |
|---|---|
| Wheel travel | 310 mm (12.2 in) |
| Fork spring free length limit | 492.0 mm (19.37 in) |
| Inner tube bending limit | 0.2 mm (0.01 in) |
| Recommended oil | Yamaha Suspension Oil S1 |
| Quantity (left) | 486.0 $cm^3$ (16.43 US oz, 17.14 Imp.oz) (AUS, CAN, NZL, ZAF)<br>516.0 $cm^3$ (17.45 US oz, 18.20 Imp.oz) (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR) |
| Quantity (right) | 486.0 $cm^3$ (16.43 US oz, 17.14 Imp.oz) (AUS, CAN, NZL, ZAF)<br>516.0 $cm^3$ (17.45 US oz, 18.20 Imp.oz) (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR) |
| Rebound damping | |
| Adjusting system | Mechanical adjustable type |
| Unit for adjustment | Click |
| Adjustment value from the start position (Soft) | 20 |
| Adjustment value from the start position (STD) | 13 (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)<br>9 (AUS, CAN, NZL, ZAF) |
| Adjustment value from the start position (Hard) | 0 |
| Compression damping | |
| Adjusting system | Mechanical adjustable type |
| Unit for compression damping adjustment | Click |
| Adjustment value from the start position (Soft) | 20 |
| Adjustment value from the start position (STD) | 12 (AUS, CAN, NZL, ZAF)<br>14 (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR) |
| Adjustment value from the start position (Hard) | 0 |

**Rear suspension**

| | |
|---|---|
| Type | Swingarm (link suspension) |

| | |
|---|---|
| Spring | Coil spring |
| Shock absorber | Gas-hydraulic damper |
| Wheel travel | 295 mm (11.6 in) |
| Spring preload | |
| Adjusting system | Mechanical adjustable type |
| Adjustment value (Soft) | 1.5 mm (0.06 in) |
| Adjustment value (STD) | 7.0 mm (0.28 in) |
| Adjustment value (Hard) | 18.0 mm (0.71 in) |
| Rebound damping | |
| Adjusting system | Mechanical adjustable type |
| Unit for adjustment | Click |
| Adjustment value from the start position (Soft) | 30 |
| Adjustment value from the start position (STD) | 10 (AUS, CAN, NZL, ZAF)<br>13 (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR) |
| Adjustment value from the start position (Hard) | 0 |
| Compression damping | |
| Adjusting system | Mechanical adjustable type |
| Fast compression damping | |
| Unit for adjustment | Turn |
| Adjustment value from the start position (Soft) | 2 |
| Adjustment value from the start position (STD) | 1+1/2 (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)<br>1+1/4 (AUS, CAN, NZL, ZAF) |
| Adjustment value from the start position (Hard) | 0 |
| Slow compression damping | |
| Unit for adjustment | Click |
| Adjustment value from the start position (Soft) | 20 |
| Adjustment value from the start position (STD) | 12 (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)<br>8 (AUS, CAN, NZL, ZAF) |
| Adjustment value from the start position (Hard) | 0 |

**Drive chain**

| | |
|---|---|
| Size | 520 |

| | |
|---|---|
| Chain type | Non-sealed type |
| Number of links | 114 |
| Drive chain slack (Maintenance Stand) | 50.0–60.0 mm (1.97–2.36 in) |
| 15-link length limit | 242.9 mm (9.56 in) |

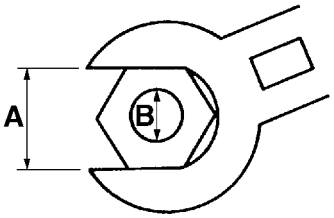
EAM20130
# ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Battery** | |
| Model | BR98 |
| Voltage, capacity | 12 V, 2.4 Ah (5 HR) |
| **Fuse(s)** | |
| Main fuse | 15.0 A |
| Spare fuse | 15.0 A |

EAM20131
# TIGHTENING TORQUES

EAM30205
## GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.




A. Distance between flats
B. Outside thread diameter

| A (nut) | B (bolt) | General tightening torques | | |
|---|---|---|---|---|
| | | N·m | kgf·m | lb·ft |
| 10 mm | 6 mm | 6 | 0.6 | 4.4 |
| 12 mm | 8 mm | 15 | 1.5 | 11 |
| 14 mm | 10 mm | 30 | 3.0 | 22 |
| 17 mm | 12 mm | 55 | 5.5 | 41 |
| 19 mm | 14 mm | 85 | 8.5 | 63 |
| 22 mm | 16 mm | 130 | 13.0 | 96 |

EAM30203
## ENGINE TIGHTENING TORQUES

**TIP**

△- marked portion shall be checked for torque tightening after break-in or before each race.

| Item | Thread size | Q'ty | Tightening torques | Remarks |
|---|---|---|---|---|
| Camshaft cap bolt | M6 | 8 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) |  |
| Spark plug | M10 | 1 | 13 N·m (1.3 kgf·m, 9.6 lb·ft) | |
| Oil passage plug (cylinder head) | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) |  |
| Cylinder head bolt | M10 | 4 | See TIP. |  |
| Cylinder head bolt | M6 | 2 | 12 N·m (1.2 kgf·m, 8.9 lb·ft) |  |
| Cylinder head cover bolt | M6 | 3 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Cylinder head stud bolt (exhaust pipe) | M6 | 3 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Stud bolt (cylinder head cover) | M6 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) |  |
| Cylinder head cover breather plate bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) |  |
| Oil nozzle (cylinder head) | M6 | 1 | 3.0 N·m (0.30 kgf·m, 2.2 lb·ft) | |
| Cylinder bolt | M6 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Balancer driven gear nut | M14 | 1 | 50 N·m (5.0 kgf·m, 37 lb·ft) | Use a lock washer. |
| Timing chain guide stopper plate (exhaust side) | M6 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) |  |
| Timing chain tensioner cap bolt | M6 | 1 | 6 N·m (0.6 kgf·m, 4.4 lb·ft) | |
| Timing chain tensioner bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Coolant drain bolt | M6 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Radiator hose clamp screw | M6 | 8 | 1.5 N·m (0.15 kgf·m, 1.1 lb·ft) | |
| Radiator bolt | M6 | 4 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Radiator pipe joint bolt | M6 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Water pump housing cover bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Oil pump assembly bolt | M5 | 2 | 5 N·m (0.5 kgf·m, 3.7 lb·ft) |  |
| Oil pump cover bolt | M4 | 1 | 6 N·m (0.6 kgf·m, 4.4 lb·ft) |  |
| Oil strainer bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) |  |
| Throttle cable cover bolt | M5 | 1 | 3.5 N·m (0.35 kgf·m, 2.6 lb·ft) | |
| Throttle body joint bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Throttle body joint clamp screw | M5 | 1 | 3.0 N·m (0.30 kgf·m, 2.2 lb·ft) | |
| Air filter case joint clamp screw | M5 | 1 | 3.0 N·m (0.30 kgf·m, 2.2 lb·ft) | |
| Air filter case bolt | M6 | 3 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Air filter case bracket bolt | M6 | 4 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |

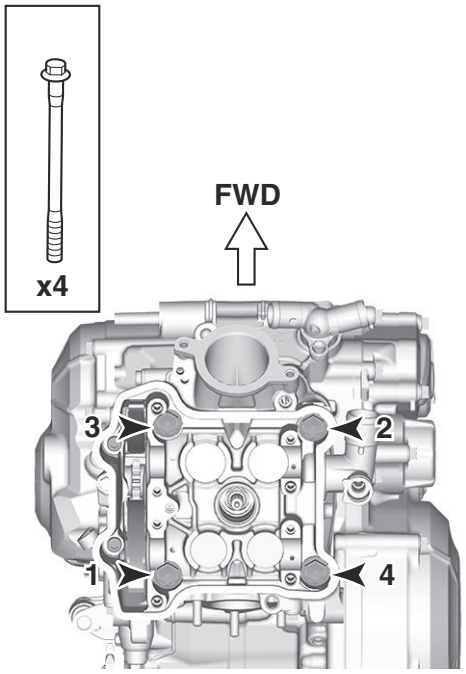
| Item | Thread size | Q'ty | Tightening torques | Remarks |
|---|---|---|---|---|
| Intake air temperature sensor screw | M5 | 1 | 1.5 N·m (0.15 kgf·m, 1.1 lb·ft) | |
| Clutch hose union bolt | M10 | 2 | 30 N·m (3.0 kgf·m, 22 lb·ft) | △ |
| Clutch master cylinder holder bolt | M6 | 2 | 9 N·m (0.9 kgf·m, 6.6 lb·ft) | |
| Clutch master cylinder reservoir cap screw | M4 | 2 | 1.5 N·m (0.15 kgf·m, 1.1 lb·ft) | |
| Clutch lever pivot bolt | M6 | 1 | 6 N·m (0.6 kgf·m, 4.4 lb·ft) | |
| Clutch lever pivot nut | M6 | 1 | 6 N·m (0.6 kgf·m, 4.4 lb·ft) | |
| Locknut (clutch lever position) | M6 | 1 | 5 N·m (0.5 kgf·m, 3.7 lb·ft) | |
| Exhaust pipe nut | M6 | 3 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Exhaust pipe protector screw | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | LT |
| Exhaust pipe bracket bolt | M8 | 1 | 20 N·m (2.0 kgf·m, 15 lb·ft) | |
| Silencer bolt (front) | M8 | 1 | 30 N·m (3.0 kgf·m, 22 lb·ft) | |
| Silencer bolt (rear) | M8 | 1 | 30 N·m (3.0 kgf·m, 22 lb·ft) | |
| Exhaust pipe clamp bolt | M8 | 2 | 16 N·m (1.6 kgf·m, 12 lb·ft) | |
| Oil nozzle (crankcase) | M5 | 1 | 0.5 N·m (0.05 kgf·m, 0.37 lb·ft) | |
| Oil nozzle bolt | M6 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | LT |
| Engine oil drain bolt (crankcase) | M10 | 1 | 20 N·m (2.0 kgf·m, 15 lb·ft) | |
| Engine oil drain bolt (oil tank) | M6 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Crankcase bolt | M6 | 9 | 12 N·m (1.2 kgf·m, 8.9 lb·ft) | |
| Crankshaft end accessing screw | M36 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | E |
| Timing mark accessing screw | M14 | 1 | 6 N·m (0.6 kgf·m, 4.4 lb·ft) | E |
| Drive sprocket cover bolt | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Crankcase bearing cover plate screw | M8 | 4 | 30 N·m (3.0 kgf·m, 22 lb·ft) | LT |
| Bearing plate cover bolt (left side of the drive axle) | M6 | 2 | 12 N·m (1.2 kgf·m, 8.9 lb·ft) | LT |
| Plate bolt | M6 | 4 | 12 N·m (1.2 kgf·m, 8.9 lb·ft) | LT |
| Clutch cover bolt | M6 | 6 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Crankcase cover bolt (left) | M6 | 8 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Crankcase cover bolt (right) | M6 | 10 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Oil filter element cover bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Bolt (holder) | M6 | 2 | 12 N·m (1.2 kgf·m, 8.9 lb·ft) | LT |
| Primary drive gear nut | M20 | 1 | See TIP. | M |
| Bolt (pressure plate 1) | M6 | 6 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | E |
| Clutch boss nut | M20 | 1 | 75 N·m (7.5 kgf·m, 55 lb·ft) | Stake. E |

| Item | Thread size | Q'ty | Tightening torques | Remarks |
|---|---|---|---|---|
| Clutch release cylinder bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Clutch release cylinder bleed screw | M6 | 1 | 5 N·m (0.5 kgf·m, 3.7 lb·ft) | |
| Drive sprocket nut | M20 | 1 | 90 N·m (9.0 kgf·m, 66 lb·ft) | Use a lock washer. |
| Segment bolt | M8 | 1 | 30 N·m (3.0 kgf·m, 22 lb·ft) | |
| Shift guide bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Stopper lever bolt | M6 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Shift pedal bolt | M6 | 1 | 12 N·m (1.2 kgf·m, 8.9 lb·ft) | △ |
| Generator rotor nut | M12 | 1 | 65 N·m (6.5 kgf·m, 48 lb·ft) | |
| Stator coil screw | M5 | 3 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Crankshaft position sensor bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Gear position switch bolt | M5 | 2 | 3.5 N·m (0.35 kgf·m, 2.6 lb·ft) | |
| Rectifier/regulator bolt | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Ignition coil bolt | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Starter motor bolt | M6 | 1 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | |
| Nut (holder) | M6 | 1 | 8 N·m (0.8 kgf·m, 5.9 lb·ft) | |
| Throttle position sensor screw | M5 | 1 | 3.5 N·m (0.35 kgf·m, 2.6 lb·ft) | |
| Intake air pressure sensor screw | M6 | 1 | 3.5 N·m (0.35 kgf·m, 2.6 lb·ft) | |

**TIP**

**Cylinder head bolt**

Tighten all the cylinder head bolts evenly in the tightening order to 36 N·m (3.6 kgf·m, 27 lb·ft). Remove the one bolt according to the tightening order. When doing so, do not loosen the other bolts. Retighten the bolt to 18 N·m (1.8 kgf·m, 13 lb·ft), and then tighten it further to reach the specified angle (90°). Remove the remaining bolts one by one in the same manner and retighten them. Finally, tighten all the bolts to reach the specified angle (60°). Total tightening angle: 90° + 60° = 150° (The first and second time, be sure to apply molybdenum disulfide grease to the bolt threads and seats as well as to both sides of the plain washers.)




**TIP**

**Primary drive gear nut**

1. Thoroughly clean the threaded portion of the crankshaft, contact surface of the washer, and threaded portion and contact surface of the primary drive gear nut to remove the oil.
2. Apply molybdenum disulfide grease to the threaded portion of the crankshaft, the contact surface of the washer, and contact surface and threaded portion of the primary drive gear nut.
3. Tighten the primary drive gear nut 170 N·m (17 kgf·m, 125 lb·ft).

EAM30204

## CHASSIS TIGHTENING TORQUES

**TIP**

△- marked portion shall be checked for torque tightening after break-in or before each race.

| Item | Thread size | Q'ty | Tightening torques | Remarks |
|---|---|---|---|---|
| Upper bracket pinch bolt | M8 | 4 | 21 N·m (2.1 kgf·m, 15 lb·ft) | △ |
| Lower bracket pinch bolt | M8 | 4 | 21 N·m (2.1 kgf·m, 15 lb·ft) | △ |
| Steering stem nut | M24 | 1 | 145 N·m (14.5 kgf·m, 107 lb·ft) | △ |
| Upper handlebar holder bolt | M8 | 4 | 28 N·m (2.8 kgf·m, 21 lb·ft) | △ |
| Lower handlebar holder nut | M10 | 2 | 40 N·m (4.0 kgf·m, 30 lb·ft) | △ |
| Handlebar switch screw (left) | M4 | 1 | 1.3 N·m (0.13 kgf·m, 0.95 lb·ft) | |
| Starter switch | M3 | 1 | 0.5 N·m (0.05 kgf·m, 0.37 lb·ft) | |
| Lower ring nut | M28 | 1 | See TIP. | △ |
| Damper assembly (front fork) | M51 | 2 | 30 N·m (3.0 kgf·m, 22 lb·ft) | |
| Inner tube and adjuster | M22 | 2 | 55 N·m (5.5 kgf·m, 41 lb·ft) | |
| Base valve (front fork) | M42 | 2 | 28 N·m (2.8 kgf·m, 21 lb·ft) | |

| Item | Thread size | Q'ty | Tightening torques | Remarks |
|---|---|---|---|---|
| Adjuster (damper assembly) | M12 | 2 | 29 N·m (2.9 kgf·m, 21 lb·ft) | |
| Bleed screw (front fork) | M5 | 2 | 1.3 N·m (0.13 kgf·m, 0.95 lb·ft) | |
| Screw (adjuster knob) | M4 | 2 | 0.6 N·m (0.06 kgf·m, 0.44 lb·ft) | |
| Front fork protector bolt | M6 | 6 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Brake hose holder bolt | M6 | 2 | 9 N·m (0.9 kgf·m, 6.6 lb·ft) | △ |
| Screw (throttle cable housing) | M5 | 2 | 3.8 N·m (0.38 kgf·m, 2.8 lb·ft) | |
| Front brake master cylinder holder bolt | M6 | 2 | 9 N·m (0.9 kgf·m, 6.6 lb·ft) | △ |
| Front brake master cylinder reservoir cap screw | M4 | 2 | 1.5 N·m (0.15 kgf·m, 1.1 lb·ft) | |
| Front brake lever pivot bolt | M6 | 1 | 6 N·m (0.6 kgf·m, 4.4 lb·ft) | |
| Front brake lever pivot nut | M6 | 1 | 6 N·m (0.6 kgf·m, 4.4 lb·ft) | |
| Locknut (front brake lever position) | M6 | 1 | 5 N·m (0.5 kgf·m, 3.7 lb·ft) | |
| Front brake hose union bolt | M10 | 2 | 30 N·m (3.0 kgf·m, 22 lb·ft) | △ |
| Front brake caliper bolt | M8 | 2 | 28 N·m (2.8 kgf·m, 21 lb·ft) | △ |
| Front brake pad pin | M10 | 1 | 17 N·m (1.7 kgf·m, 13 lb·ft) | |
| Front brake pad pin plug | M10 | 1 | 2.5 N·m (0.25 kgf·m, 1.8 lb·ft) | |
| Front brake caliper bleed screw | M8 | 1 | 5 N·m (0.5 kgf·m, 3.7 lb·ft) | △ |
| Front wheel axle nut | M18 | 1 | 115 N·m (11.5 kgf·m, 85 lb·ft) | △ |
| Front wheel axle pinch bolt | M8 | 4 | 21 N·m (2.1 kgf·m, 15 lb·ft) | △ |
| Front brake disc bolt | M6 | 6 | 12 N·m (1.2 kgf·m, 8.9 lb·ft) | △/ |
| Rear brake disc bolt | M6 | 6 | 12 N·m (1.2 kgf·m, 8.9 lb·ft) | △/ |
| Footrest bracket bolt | M10 | 4 | 55 N·m (5.5 kgf·m, 41 lb·ft) |  |
| Rear brake pedal bolt | M8 | 1 | 26 N·m (2.6 kgf·m, 19 lb·ft) | △ |
| Rear brake pedal adjusting locknut | M6 | 1 | 6 N·m (0.6 kgf·m, 4.4 lb·ft) | |
| Rear brake master cylinder bolt | M6 | 2 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | △ |
| Rear brake master cylinder reservoir cap bolt | M4 | 2 | 1.5 N·m (0.15 kgf·m, 1.1 lb·ft) | |
| Rear brake hose union bolt | M10 | 2 | 30 N·m (3.0 kgf·m, 22 lb·ft) | △ |
| Rear brake caliper bleed screw | M8 | 1 | 5 N·m (0.5 kgf·m, 3.7 lb·ft) | △ |
| Rear brake pad pin | M10 | 1 | 17 N·m (1.7 kgf·m, 13 lb·ft) | |
| Rear brake pad pin plug | M10 | 1 | 2.5 N·m (0.25 kgf·m, 1.8 lb·ft) | |
| Rear wheel axle nut | M22 | 1 | 135 N·m (13.5 kgf·m, 100 lb·ft) | △ |
| Drive chain puller locknut | M8 | 2 | 21 N·m (2.1 kgf·m, 15 lb·ft) | |
| Rear wheel sprocket nut | M8 | 6 | 42 N·m (4.2 kgf·m, 31 lb·ft) | △ |
| Nipple (spoke) | — | 72 | 2.5 N·m (0.25 kgf·m, 1.8 lb·ft) | △ |
| Rear brake caliper protector bolt | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |

| Item | Thread size | Q'ty | Tightening torques | Remarks |
|---|---|---|---|---|
| Engine mounting bolt (upper side) | M10 | 2 | 45 N·m (4.5 kgf·m, 33 lb·ft) | △ |
| Engine mounting bolt (front side) | M10 | 1 | 55 N·m (5.5 kgf·m, 41 lb·ft) | △ |
| Engine mounting bolt (lower side) | M10 | 1 | 53 N·m (5.3 kgf·m, 39 lb·ft) | △ |
| Engine bracket bolt (upper side) | M8 | 4 | 34 N·m (3.4 kgf·m, 25 lb·ft) | △ |
| Engine bracket bolt (front side) | M8 | 2 | 34 N·m (3.4 kgf·m, 25 lb·ft) | △ |
| Rear frame bolt | M8 | 4 | 38 N·m (3.8 kgf·m, 28 lb·ft) | △ |
| Engine guard bolt (right side) | M6 | 1 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Pivot shaft nut | M16 | 1 | 75 N·m (7.5 kgf·m, 55 lb·ft) | △/ LS |
| Rear shock absorber assembly upper nut | M10 | 1 | 56 N·m (5.6 kgf·m, 41 lb·ft) | △ |
| Rear shock absorber assembly lower nut | M10 | 1 | 53 N·m (5.3 kgf·m, 39 lb·ft) | △ |
| Relay arm nut (swingarm side) | M14 | 1 | 70 N·m (7.0 kgf·m, 52 lb·ft) | △ |
| Connecting arm nut (relay arm side) | M14 | 1 | 80 N·m (8.0 kgf·m, 59 lb·ft) | △ |
| Connecting arm nut (frame side) | M14 | 1 | 80 N·m (8.0 kgf·m, 59 lb·ft) | △ |
| Drive chain tensioner bolt (lower side) | M8 | 1 | 16 N·m (1.6 kgf·m, 12 lb·ft) | |
| Bolt (drive chain support) | M6 | 1 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Drive chain support nut | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Drive chain guide bolt | M5 | 3 | 4.0 N·m (0.40 kgf·m, 3.0 lb·ft) | |
| Fuel tank bolt (front side) | M6 | 2 | 8 N·m (0.8 kgf·m, 5.9 lb·ft) | △ |
| Screw (fuel tank) | M6 | 1 | 4.0 N·m (0.40 kgf·m, 3.0 lb·ft) | |
| Fuel pump bolt | M5 | 5 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Screw (fuel inlet pipe) | M5 | 2 | 3.5 N·m (0.35 kgf·m, 2.6 lb·ft) | |
| Seat set bracket screw | M6 | 1 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Seat bolt | M6 | 2 | 13 N·m (1.3 kgf·m, 9.6 lb·ft) | △ |
| Side cover bolt (left) | M6 | 1 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Center side cover bolt (left) | M6 | 1 | 9.5 N·m (0.95 kgf·m, 7.0 lb·ft) | |
| Side cover bolt (right) | M6 | 1 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Center side cover bolt (right) | M6 | 1 | 9.5 N·m (0.95 kgf·m, 7.0 lb·ft) | |
| Shroud bolt (frame) | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Shroud bolt (air filter case) | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Shroud bolt (fuel tank) | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Shroud bolt (radiator guard) | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Front fender bolt | M6 | 4 | 10 N·m (1.0 kgf·m, 7.4 lb·ft) | △ |
| Rear fender bolt (front side) | M6 | 4 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Rear fender bolt (rear side) | M6 | 2 | 16 N·m (1.6 kgf·m, 12 lb·ft) | △ |

| Item | Thread size | Q'ty | Tightening torques | Remarks |
|---|---|---|---|---|
| Screw (mud flap) | — | 2 | 1.3 N·m (0.13 kgf·m, 0.95 lb·ft) | △ |
| Number plate bolt | M6 | 1 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | △ |
| Frame ground bolt (negative battery lead) | M6 | 1 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Ignition coil bracket bolt | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |
| Starter relay bolt | M6 | 2 | 3.5 N·m (0.35 kgf·m, 2.6 lb·ft) | |
| Battery box bolt | M6 | 2 | 7 N·m (0.7 kgf·m, 5.2 lb·ft) | |

**TIP**

**Lower ring nut**

1. First, tighten the lower ring nut approximately 38 N·m (3.8 kgf·m, 28 lb·ft) by using the steering nut wrench, then loosen the lower ring nut one turn.
2. Retighten the lower ring nut 7 N·m (0.7 kgf·m, 5.2 lb·ft).

# PERIODIC CHECKS AND ADJUSTMENTS


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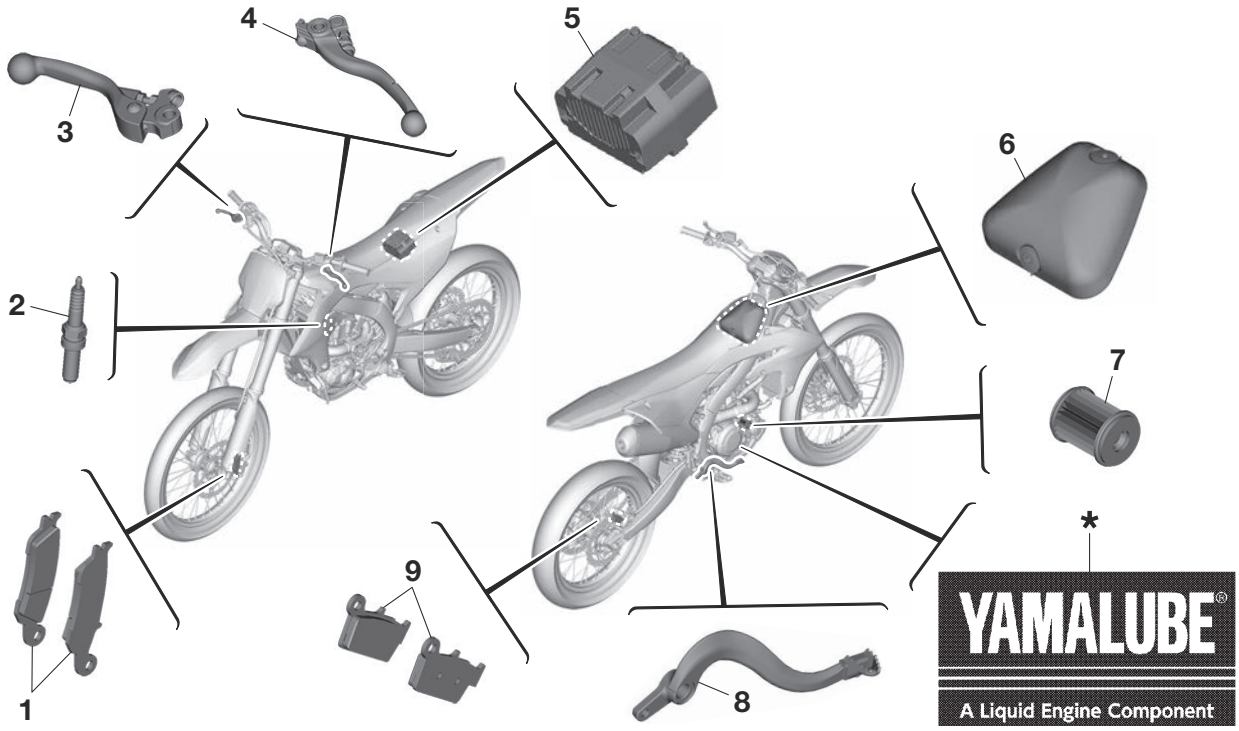
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EAM20202
## SERVICING PARTS

Regularly check or replace the servicing parts shown in the illustration.




* Engine oil, lubricants & greases, care products.

| Ref. No. | Part No. | Part name in parts catalog | Q'ty |
|---|---|---|---|
| 1 | B2W-25805-00 | BRAKE PAD KIT | 1 |
| 2 | 94701-00434 | PLUG, SPARK (NGK LMAR8G) | 1 |
| 3 | B2W-83922-00 | LEVER 2 | 1 |
| 4 | D03-83912-00 | LEVER 1 | 1 |
| 5 | BR9-82100-B9 * | BATTERY ASSY (4S1P) | 1 |
| | BR9-82100-D9 ** | BATTERY ASSY | |
| 6 | BHR-14451-00 | ELEMENT, AIR CLEANER | 1 |
| 7 | 5D3-13440-02 | ELEMENT ASSY, OIL CLEANER | 1 |
| 8 | BHR-27200-00 | PEDAL, BRAKE | 1 |
| 9 | 1C3-W0046-50 | BRAKE PAD KIT 2 | 1 |

* For ALB, AND, AUS, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, NZL, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR, ZAF
** For CAN

**TIP**

The part number is subject to change. In that case, order the part from a Yamaha dealer by stating the identification number of your vehicle.

EAM20157
# MAINTENANCE INTERVALS

EAM30369
## MAINTENANCE INTERVALS
ECA25871
***NOTICE***

**• After a break-in or before each race, always check the points shown in "TORQUE-CHECK POINTS" for tightening torques and retighten them.**
**• Periodic inspection is essential in making full use of the machine performance. The life of parts varies significantly according to the environment in which the machine runs (e.g., rain, dirt, etc.). Therefore, earlier inspection is required by reference to the list below.**

**TIP**

Items marked with an asterisk should be performed by a Yamaha dealer as they require special tools, data and technical skills.

| No. | | Item | Routine | After break-in | Every race (about 2.5 hours) | Every third race (about 7.5 hours) | Every fifth race (about 12.5 hours) | As required |
|---|---|---|---|---|---|---|---|---|
| 1 | * | Valve | • Check the valve clearances. | √ | | √ | | |
| | | | • Check the valve seats and the valve faces for wear. | | | | √ | |
| | | | • Replace. | | | | | √ |
| 2 | * | Valve spring | • Check the free length. | | | | √ | |
| | | | • Replace. | | | | | √ |
| 3 | * | Valve lifter | • Check for scratches and wear. | | | | √ | |
| | | | • Replace. | | | | | √ |
| 4 | * | Camshaft | • Inspect the camshaft surface.<br>• Inspect the decompression system. | | | | √ | |
| | | | • Replace. | | | | | √ |
| 5 | * | Timing chain | • Check for damage and sticking. | | | | | √ |
| | | | • Replace. | | | | √ | √ |
| 6 | * | Timing chain tensioner | • Replace. | | | | √ | √ |
| 7 | * | Camshaft sprocket | • Check for wear on the teeth and for damage. | | | | √ | |
| | | | • Replace. | | | | | √ |
| 8 | * | Piston | • Inspect crack. | | | | | √ |
| | | | • Inspect carbon deposits and eliminate them. | | | | | √ |
| | | | • Replace the piston, piston pin, piston pin clip, and piston ring all as a set. | | | | √ | √ |
| 9 | * | Piston ring | • Check the end gap of the piston ring. | | | | | √ |
| | | | • Replace the piston, piston pin, piston pin clip, and piston ring all as a set. | | | | √ | √ |
| 10 | * | Piston pin | • Inspect. | | | | | √ |
| | | | • Replace the piston, piston pin, piston pin clip, and piston ring all as a set. | | | | √ | √ |

| No. | | Item | Routine | After break-in | Every race (about 2.5 hours) | Every third race (about 7.5 hours) | Every fifth race (about 12.5 hours) | As required |
|---|---|---|---|---|---|---|---|---|
| 11 | * | Cylinder head | • Check the coolant passages for corrosion.<br>• Inspect carbon deposits and eliminate them.<br>• Check for warpage, and replace the gasket. | | | | √ | |
| 12 | * | Cylinder | • Inspect score marks. | | | | √ | |
| | | | • Inspect wear. | | | | | √ |
| 13 | | Engine oil | • Check the engine oil amount. | | √ | | | √ |
| | | | • Replace. | √ | | √ | | |
| 14 | | Oil filter element | • Replace. | √ | | | √ | |
| 15 | * | Clutch | • Adjust lever position. | √ | √ | | | |
| | | | • Lubricate pivot point. | √ | √ | | | |
| | | | • Check fluid leakage. | √ | √ | | | |
| | | | • Check fluid level. | Every 45 hours | | | | √ |
| | | | • Retighten release cylinder bolts, master cylinder bolts and union bolts. (Check for tightening torques.) | √ | √ | | | |
| | | | • Inspect housing, friction plate, clutch plate and spring. | √ | √ | | | |
| | | | • Replace. | | | | | √ |
| | | | • Replace clutch fluid. | Every four years | | | | √ |
| 16 | * | Transmission | • Inspect. | | | | | √ |
| | | | • Replace bearings. | | | | | √ |
| 17 | * | Shift fork, shift drum, guide bar | • Inspect wear. | | | | | √ |
| 18 | * | Nut (generator rotor) | • Check for tightening torques. | √ | | | √ | |
| 19 | * | Exhaust pipe, silencer, protector | • Check for exhaust leaks, and tightening torques. | √ | √ | | | |
| | | | • Clean. | | | | √ | |
| | | | • Replace fiver. (When the exhaust sound becomes louder or when a performance drop is felt.) | | | √ | | √ |
| 20 | * | Crankshaft | • Inspect and clean. | | | | √ | √ |
| 21 | * | Throttle body | • Inspect. | | | | | √ |
| 22 | | Air filter | • Clean and lubricate. | √ | √ | | | |
| | | | • Replace. | | | | | √ |
| 23 | | Spark plug | • Check the electrodes and the terminals for wear. | √ | | √ | | |
| | | | • Replace. | | | | | √ |
| 24 | * | Cooling system | • Check coolant level and leakage. | √ | √ | | | |
| | | | • Check radiator cap operation. | | | | | √ |
| | | | • Check radiator cap attached. | √ | √ | | | |
| | | | • Change the coolant. | Every two years | | | | √ |
| | | | • Inspect hoses. | | √ | | | |

| No. | | Item | Routine | After break-in | Every race (about 2.5 hours) | Every third race (about 7.5 hours) | Every fifth race (about 12.5 hours) | As required |
|---|---|---|---|---|---|---|---|---|
| 25 | * | Engine guard | • Replace. | | | | | √ |
| 26 | * | Frame | • Clean and inspect. | √ | √ | | | |
| 27 | * | Fuel tank, fuel pump | • Inspect. | √ | | √ | | |
| 28 | * | Fuel hose | • Inspect. | | | | | √ |
| | | | • Replace. | Every four years | | | | √ |
| 29 | * | Front fork leg(s) | • Clean. | √ | √ | | | |
| | | | • Inspect and adjust. | √ | √ | | | |
| | | | • Replace oil. | √ | | | √ | |
| | | | • Replace oil seal. | | | | | √ |
| | | | • Clean and grease oil seals and dust seals. | √ | √ | | | √ |
| 30 | | Protector guide | • Replace. | | | | | √ |
| 31 | * | Rear shock absorber | • Inspect and adjust. | √ | √ | | | |
| | | | • Grease pillow balls and bearings. (After rain ride) | | | √ | | √ |
| | | | • Check for tightening torques. | √ | √ | | | |
| 32 | * | Brake(s) | • Adjust lever position and pedal position. | √ | √ | | | |
| | | | • Lubricate pivot point. | √ | √ | | | |
| | | | • Check brake disc surface. | √ | √ | | | |
| | | | • Check fluid level and leakage. | √ | √ | | | |
| | | | • Retighten brake disc bolts, caliper bolts, master cylinder bolts and union bolts. (Check for tightening torques.) | √ | √ | | | |
| | | | • Replace pads. | | | | | √ |
| | | | • Replace brake fluid. | Every one year | | | | √ |
| 33 | * | Swingarm | • Inspect, lube and retighten. | √ | √ | | | |
| 34 | * | Relay arm, connecting rod | • Inspect, lube and retighten. | √ | √ | | | |
| 35 | * | Steering head | • Inspect free play and retighten. (Check for tightening torques.) | √ | √ | | | |
| | | | • Clean and lube. (After rain ride) | | | | √ | |
| | | | • Replace bearings. | | | | | √ |
| 36 | * | Tire, wheels | • Inspect air pressure, wheel run-out, tire wear and spoke looseness. | √ | √ | | | |
| | | | • Retighten sprocket bolt. | √ | √ | | | |
| | | | • Check the bearing. | | | √ | | |
| | | | • Replace bearings. | | | | | √ |
| | | | • Lubricate. | | | √ | | |
| 37 | * | Drive chain | • Clean, lubricate, slack, alignment. | √ | √ | | | |
| | | | • Replace. | | | | | √ |
| 38 | * | Drive chain guide | • Inspect wear. | | √ | | | |

| No. | | Item | Routine | After break-in | Every race (about 2.5 hours) | Every third race (about 7.5 hours) | Every fifth race (about 12.5 hours) | As required |
|---|---|---|---|---|---|---|---|---|
| 39 | * | Drive chain guide and drive chain support | • Replace. | | | | | √ |
| 40 | | Cables | • Routing (Connection) | √ | √ | | | |
| | | | • Check and grease. | √ | √ | | | |
| | | | • Check throttle cables on the throttle body for dirt and wear. | √ | √ | | | |
| 41 | | Brake pedal, footrest | • Lubricate. | √ | √ | | | |
| 42 | * | Outside nuts and bolts | • Retighten. | √ | √ | | | |
| 43 | * | Battery | • Check terminal for looseness and corrosion. | | | | | √ |

EAM20134
# PRE-OPERATION INSPECTION AND MAINTENANCE

Before riding for break-in operation, practice or a race, make sure the machine is in good operating condition.
Before using this machine, check the following points.

EAM30209
## GENERAL INSPECTION AND MAINTENANCE

| Item | Inspect | Page |
|---|---|---|
| Coolant | Check that coolant is filled up to the radiator cap.<br>Check the cooling system for leakage. | 3-18, 3-18, 3-18 |
| Fuel | Check that a fresh gasoline is filled in the fuel tank.<br>Check the fuel line for leakage. | 1-19 |
| Engine oil | Check that the oil level is correct. Check the crankcase and oil line for leakage. | 3-9, 3-10 |
| Gear shifter and clutch | Check that gears can be shifted correctly in order and that the clutch operates smoothly. | 3-11 |
| Throttle grip/Housing | Check that the throttle grip operation and free play are correctly adjusted. Lubricate the throttle grip and housing, if necessary. | 3-8, 3-31 |
| Brakes | Check the play of front brake and effect of front and rear brake. | 3-20, 3-20, 3-20, 3-21, 3-21, 3-21, 3-22, 3-22 |
| Drive chain | Check drive chain slack and alignment. Check that the drive chain is lubricated properly. | 3-23, 4-31, 4-31, 4-32, 4-32, 4-32 |
| Wheels | Check for excessive wear and tire pressure. Check for loose spokes and have no excessive play. | 3-30, 3-30, 3-30 |
| Steering | Check that the handlebar can be turned smoothly and have no excessive play. | 3-24 |
| Front forks and rear shock absorber | Check that they operate smoothly and there is no oil leakage. | 3-25, 3-26, 3-27, 3-27, 3-30 |
| Cables (wires) | Check that the throttle cables move smoothly. Check that they are not caught when the handlebars are turned or when the front forks travel up and down. | — |
| Exhaust pipe | Check that the exhaust pipe is tightly mounted and has no cracks. | 3-16 |
| Rear wheel sprocket | Check that the rear wheel sprocket tightening bolt is not loose. | 4-5, 4-5, 4-5 |
| Lubrication | Check for smooth operation. Lubricate if necessary. | 3-31, 3-31, 3-31, 3-31 |
| Bolts and nuts | Check the chassis and engine for loose bolts and nuts. | 1-22 |
| Lead connectors | Check that the stator coil assembly, ECU and ignition coil are connected tightly. | — |
| Settings | Is the machine set suitably for the condition of the racing course and weather or by taking into account the results of test runs before racing? Are inspection and maintenance completely done? | 9-1, 9-1, 9-1, 9-2, 9-2, 9-3, 9-3, 9-4, 9-4, 9-6, 9-7 |

**TIP**
Perform usual maintenance enough so that, in the race course, a confirmation of that and simple setting adjustments may only be left, in order to get enough time to use effectively.

EAM20135
# ENGINE

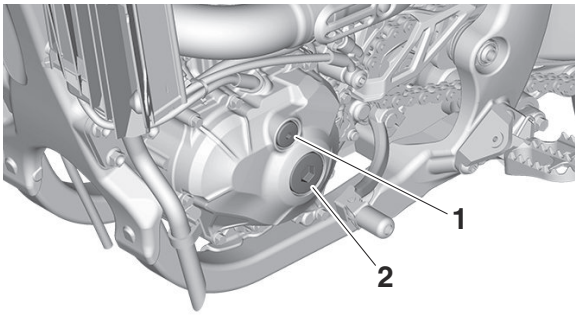
EAM30226
## ADJUSTING THE VALVE CLEARANCE

**TIP**

- This section is intended for those who have basic knowledge and skill concerning the servicing of Yamaha motorcycles (e.g., Yamaha dealers, service engineers, etc.). Those who have little knowledge and skill concerning servicing are requested not to undertake inspection, adjustment, disassembly, or reassembly only by reference to this manual. It may lead to servicing trouble and mechanical damage.
- Make sure that the valve clearance is checked or adjusted while the engine is cold (at room temperature).
- While the valve clearance is checked or adjusted, make sure that the piston is positioned in the top dead center (TDC).

1. Remove:
   - Seat
   - Side cover (left/right)
   - Shroud (left/right)
   - Fuel tank

   Refer to "FUEL TANK" on page 6-1.
2. Remove:
   - Spark plug
   - Cylinder head cover
3. Remove:
   - Timing mark accessing screw "1"
   - Crankshaft end accessing screw "2"
   - O-ring

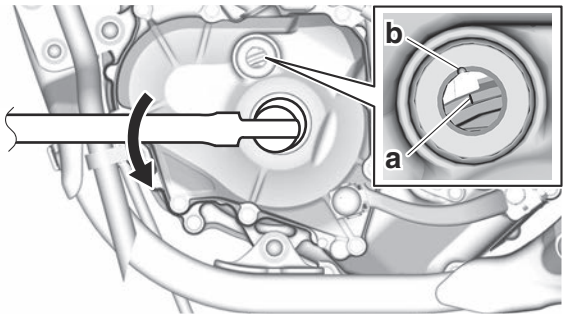



4. Check:
   - Valve clearance

   Out of specification → Regulate.

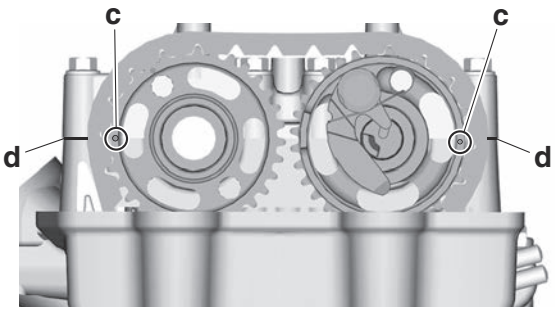
**Valve clearance (cold)**
**Intake**
**0.10–0.17 mm (0.0039–0.0067 in)**
**Exhaust**
**0.15–0.22 mm (0.0059–0.0087 in)**

a. Turn the crankshaft counterclockwise with a wrench.
b. Align the top dead center (TDC) mark "a" on the generator rotor with the alignment mark "b" on the crankcase cover.




**TIP**

Check that the alignment marks "c" on the camshaft sprockets are aligned with the edge of the camshaft cap surfaces "d".

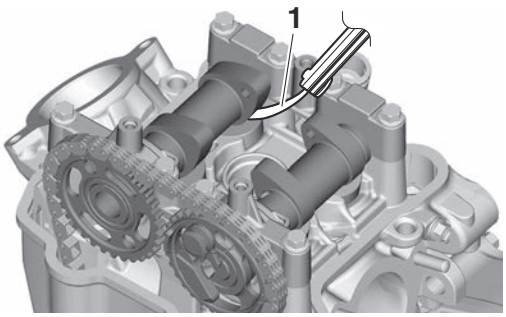



c. Measure the valve clearance using a thickness gauge "1".

**Thickness gauge**
**90890-03268**
**Feeler gauge set**
**YU-26900-9**

**TIP**

Record the measured reading if the clearance is incorrect.



EAM30412
## CHECKING THE ENGINE IDLING SPEED

**TIP**
- Because the air pressure is lower at high altitudes, the air-fuel mixture will become richer. If the idling speed is low, turn the idle screw clockwise to increase the speed before the adjustment.
- Before adjusting the engine idling speed, make sure that the air filter element is not clogged, the engine compression is proper, and the throttle grip free play is proper.
- Adjust the engine idling speed with the starter knob pulled in completely.

1. Start the engine, and warm this up until the oil has reached the specified temperature.
2. Measure the coolant temperature using the Yamaha diagnostic tool.

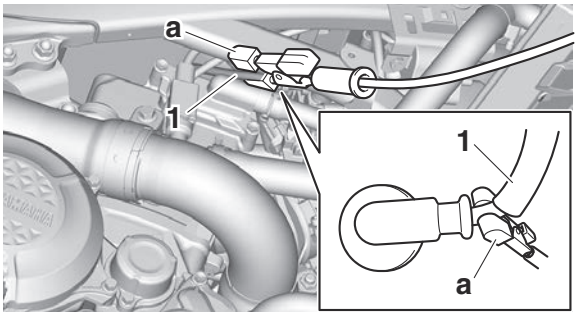
**Yamaha diagnostic tool USB**
**90890-03274**
**Yamaha diagnostic tool (A/I)**
**90890-03273**

**Coolant temperature**
**70–80 °C (158–176 °F)**

3. Install:
   - Digital tachometer

**Digital tachometer**
**90890-06760**
**Digital tachometer**
**YU-39951-B**

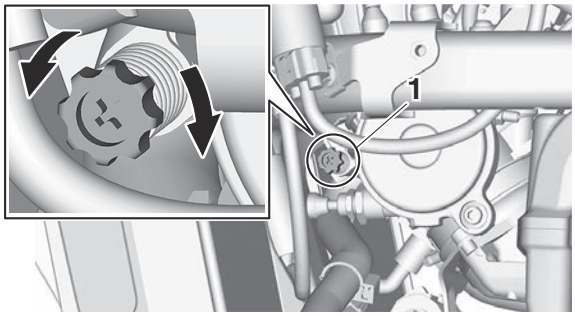
**TIP**
Get the high tension cord "1" of the ignition coil pinched in the detector "a" of the digital tachometer.




4. Measure:
   - Engine idling speed
     Out of specification → Regulate.

**Engine idling speed**
**1900–2100 r/min**

5. Adjust:
   - Engine idling speed
     a. Turn the idle screw "1" to make an adjustment.

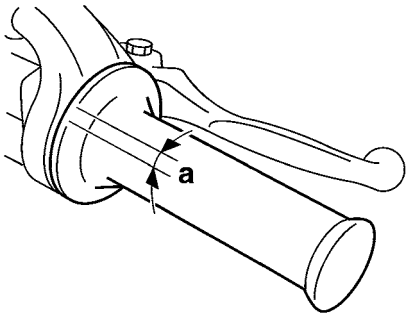



EAM30475
## CHECKING THE THROTTLE GRIP

**TIP**
Prior to adjusting throttle grip free play, the engine idling speed should be adjusted.

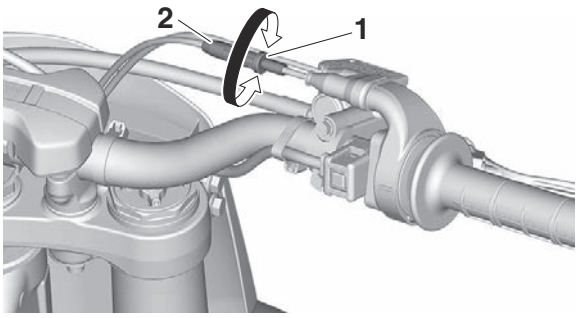
1. Check:
   - Throttle grip free play "a"
     Out of specification → Regulate.

**Throttle grip free play**
**3.0–6.0 mm (0.12–0.24 in)**




2. Adjust:
   - Throttle grip free play
     a. Loosen the locknut "1".
     b. Turn the adjuster "2" until the specified throttle grip free play is obtained.
     c. Tighten the locknut.

EWA18470
**⚠ WARNING**
**After adjusting the throttle grip free play, start the engine and turn the handlebar to the right and to the left to ensure that this does not cause the engine idling speed to change.**




EAM30254
## CHECKING THE SPARK PLUG

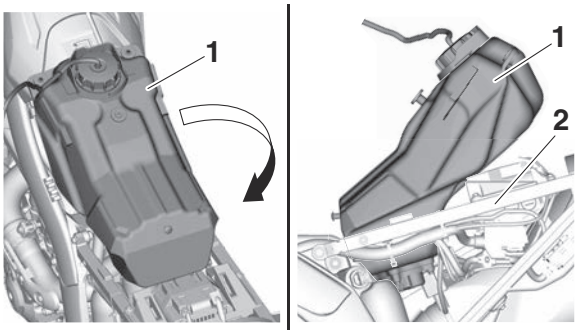
1. Remove:
   - Seat
   - Side cover (left/right)
   - Shroud (left/right)
   - Fuel tank "1"
     Refer to "FUEL TANK" on page 6-1.

ECA24400
***NOTICE***

**Do not use too much force to pull the hose.**

**TIP**

Remove the fuel tank, turn this 180° clockwise, and put it in the frame "2" as shown.




2. Remove:
   - Spark plug cap
   - Spark plug

ECA24410
***NOTICE***

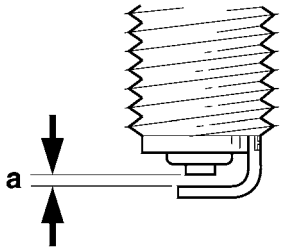
**In order not to allow the dirt accumulated around the spark plug to drop from the spark plug hole into the cylinder, clean it before removing the spark plug.**

3. Check:
   - Spark plug type
     Wrong type → Replace.

| | |
|---|---|
| | **Manufacturer/model**<br>**NGK/LMAR8G** |

4. Check:
   - Electrode
     Damage/wear → Replace the spark plug.
   - Insulator
     Abnormal color → Replace the spark plug.
     Normal color is medium-to-light tan.
5. Clean:
   - Spark plug
     (with a spark plug cleaner or a wire brush)
6. Measure:
   - Spark plug gap "a"
     Out of specification → Adjust the spark plug gap.

| | |
|---|---|
| | **Spark plug gap**<br>**0.7–0.8 mm (0.028–0.031 in)** |




7. Install:
   - Spark plug

| | |
|---|---|
| | **Spark plug**<br>**13 N·m (1.3 kgf·m, 9.6 lb·ft)** |

**TIP**

Before installing the spark plug, clean the spark plug and gasket surface.

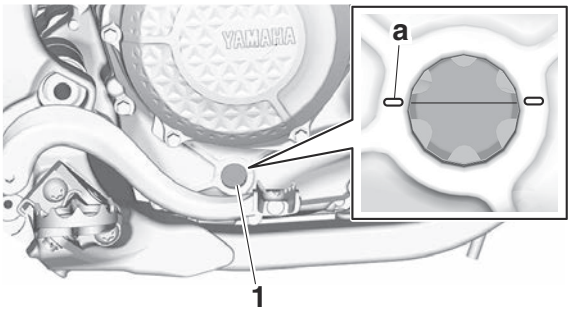
8. Install:
   - Spark plug cap
   - Fuel tank
   - Shroud (left/right)
   - Side cover (left/right)
   - Seat
     Refer to "GENERAL CHASSIS" on page 4-1.

EAM30224
## CHECKING THE ENGINE OIL LEVEL

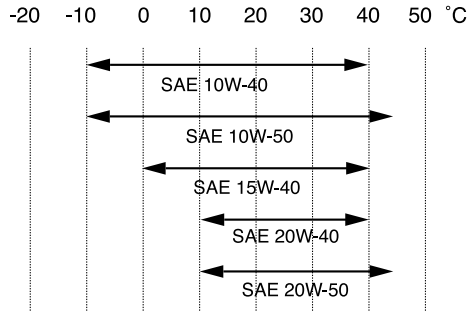
1. Start the engine and warm it up for ten minutes until the engine oil has reached a normal temperature of 60 °C (140 °F), and then turn the engine off.
2. Stand the vehicle upright on a level surface.
3. Start the engine, wait for ten seconds, turn the engine off, and then wait a few minutes.
4. Check:
   - Engine oil level
     The engine oil level should be between the

minimum level (lower edge of the oil check window "1") and the maximum level mark "a".
Below the minimum level → Add the recommended engine oil to the proper level.

**TIP**
Before checking the engine oil level, wait a few minutes until the oil has settled.




**Recommended brand**
**YAMALUBE**
**SAE viscosity grades**
**10W-40, 10W-50, 15W-40, 20W-40 or 20W-50**
**Recommended engine oil grade**
**API service SG type or higher, JASO standard MA**



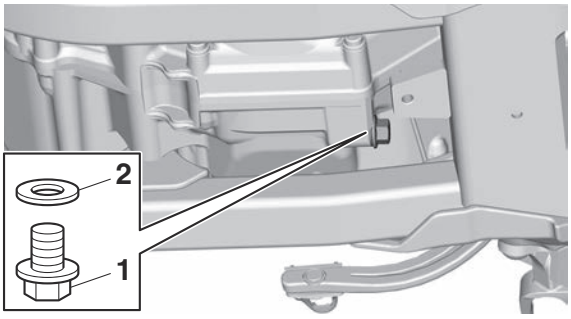

ECA13361
***NOTICE***
- **Engine oil also lubricates the clutch and the wrong oil types or additives could cause clutch slippage. Therefore, do not add any chemical additives or use engine oils with a grade of "CD" or higher and do not use oils labeled "ENERGY CONSERVING II".**
- **Do not allow foreign materials to enter the crankcase.**

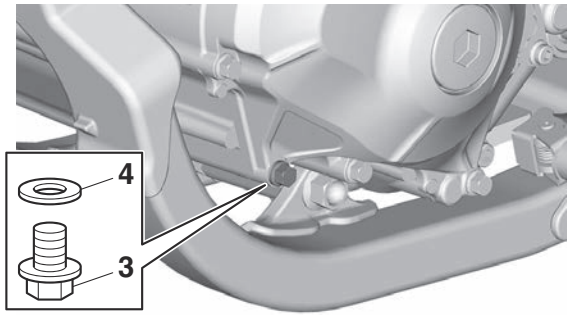
5. Start the engine, warm it up for several minutes, and then turn it off.
6. Check the engine oil level again.

**TIP**
Before checking the engine oil level, wait a few minutes until the oil has settled.

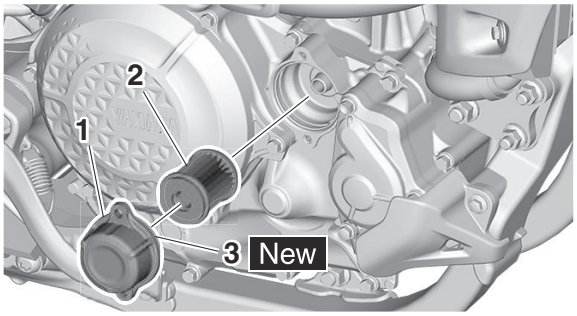
EAM30225
## CHANGING THE ENGINE OIL

1. Stand the vehicle upright on a level surface.
2. Start the engine, warm it up for several minutes, and then turn it off.
3. Place a container under the engine oil drain bolts.
4. Remove:
   - Oil filler cap
     (along with the O-ring)
5. Remove:
   - Engine oil drain bolt (crankcase) "1"
     (along with the gasket "2")
   - Engine oil drain bolt (oil tank) "3"
     (along with the gasket "4")




6. Drain:
   - Engine oil
     (completely from the oil tank and crankcase)
7. If the oil filter element is also to be replaced, perform the following procedure.
   a. Remove the oil filter element cover "1", oil filter element "2".
   b. Replace the new O-ring "3".




c. Install the new oil filter element and the oil filter element cover.

| | |
|---|---|
| | **Oil filter element cover bolt**<br>**10 N·m (1.0 kgf·m, 7.4 lb·ft)** |

8. Install:
   - Engine oil drain bolt (oil tank) (along with the gasket New)
   - Engine oil drain bolt (crankcase) (along with the gasket New)

| | |
|---|---|
| | **Engine oil drain bolt (oil tank)**<br>**10 N·m (1.0 kgf·m, 7.4 lb·ft)**<br>**Engine oil drain bolt (crankcase)**<br>**20 N·m (2.0 kgf·m, 15 lb·ft)** |

9. Fill:
   - Crankcase (with the specified amount of the recommended engine oil)

| | |
|---|---|
| | **Engine oil quantity**<br>**Oil change**<br>**0.94 L (0.99 US qt, 0.83 Imp.qt)**<br>**With oil filter removal**<br>**0.96 L (1.01 US qt, 0.84 Imp.qt)**<br>**Quantity (disassembled)**<br>**1.20 L (1.27 US qt, 1.06 Imp.qt)** |

10. Install:
    - Engine oil filler cap (along with the O-ring New)
11. Check:
    - Oil level
      Refer to "CHECKING THE ENGINE OIL LEVEL" on page 3-9.
12. Check:
    - Engine oil pressure
      a. Start the engine.

EWA19130

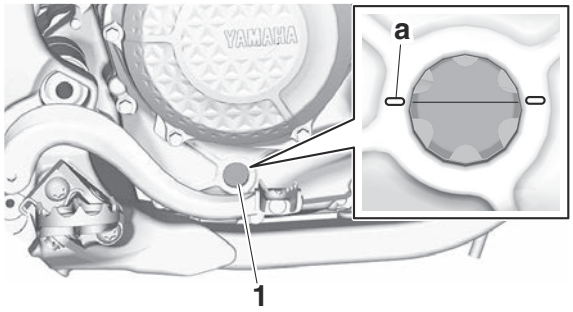
**⚠ WARNING**

**Always keep the engine idling speed during the checkup without increasing the engine speed.**

b. Look at the oil level check window "1", and then make sure that the engine oil flows and that the engine oil level decreases.

**TIP**

Check the engine oil level while the engine is at idling speed.




a. Maximum level mark

ECA26740

***NOTICE***

**If the engine oil level does not decrease after the engine has been started, immediately turn the engine off. Otherwise, the engine could seize.**

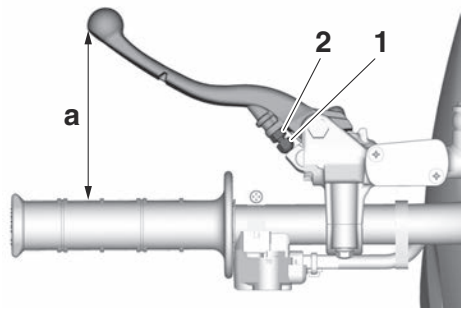
c. If the engine oil level does not decrease at the specified level mark, check the engine oil system for leaks, and the engine oil passages and oil pump for damage.
d. Check the oil pressure again.

EAM30370

## ADJUSTING THE CLUTCH LEVER POSITION

1. Adjust:
   - Clutch lever position (distance "a" from the handlebar grip to the clutch lever)
     a. While pushing the clutch lever forward, turn the clutch lever adjusting bolt "1" until the clutch lever is in the desired position.
     b. Tighten the locknut (clutch lever position) "2" to specification.

| | |
|---|---|
| | **Locknut (clutch lever position)**<br>**5 N·m (0.5 kgf·m, 3.7 lb·ft)** |




EAM30667
## CHECKING THE CLUTCH FLUID

**TIP**
- When changing the clutch fluid, it is recommended to also replace the friction plate and clutch plate.
- The clutch fluid level rises as the wear on the friction plate increases.

1. Stand the vehicle on a level surface.

**TIP**
Place the vehicle on a suitable stand.

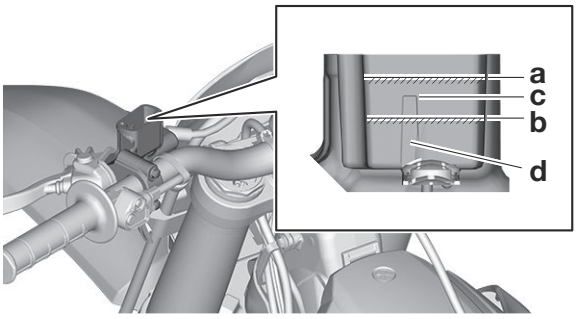
2. Check:
   - Clutch fluid level
     The clutch fluid level is above the baseline → Check the friction plate for wear.
     Refer to "CLUTCH" on page 5-2.
     The clutch fluid level is under the baseline → Check the hydraulic clutch system for leakage.

EWA13370
**WARNING**
- **Use only the designated clutch fluid. Other clutch fluids may cause the rubber seals to deteriorate, causing leakage and poor clutch performance.**
- **Refill with the same type of clutch fluid that is already in the system. Mixing clutch fluids may result in a harmful chemical reaction, leading to poor clutch performance.**
- **When refilling, be careful that water does not enter the clutch fluid reservoir. Water will significantly lower the boiling point of the clutch fluid and could cause vapor lock.**

ECA13420
***NOTICE***
**Clutch fluid may damage painted surfaces or plastic parts. Therefore, always clean up any spilt clutch fluid immediately.**

**TIP**
- In order to ensure a correct reading of the clutch fluid level, make sure the top of the reservoir is horizontal.
- Adjust the clutch fluid level with the baseline.
- Make sure that clutch fluid does not overflow when the diaphragm is set and the cap is attached.
- Wipe off any adhered clutch fluid.

**Specified brake and clutch fluid**
**DOT 4**




a. The clutch fluid level is above the baseline.
b. The clutch fluid level is under the baseline.
c. Baseline
d. Raised portion

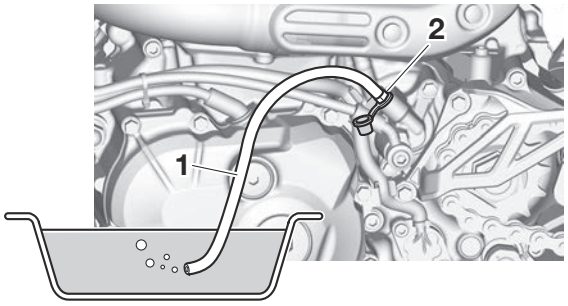
EAM30668
## BLEEDING THE HYDRAULIC CLUTCH SYSTEM

EWA13000
**WARNING**
**Bleed the hydraulic clutch system whenever:**
- **the system was disassembled,**
- **a clutch hose was loosened or removed,**
- **the clutch fluid level is very low,**
- **clutch operation is faulty.**

**TIP**
- Be careful not to spill any clutch fluid or allow the clutch master cylinder reservoir to overflow.
- When bleeding the hydraulic clutch system, make sure there is always enough clutch fluid before applying the clutch lever. Ignoring this precaution could allow air to enter the hydraulic clutch system, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the clutch fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.

1. Bleed:
   - Hydraulic clutch system
     a. Add the specified clutch fluid to the proper level.

b. Install the clutch master cylinder reservoir diaphragm.
c. Connect a clear plastic hose "1" tightly to the bleed screw "2", and place a container under the vinyl hose end on one side.




d. Slowly squeeze the clutch lever several times.
e. Fully squeeze the clutch lever without releasing it.
f. Loosen the bleed screw.
g. Tighten the bleed screw and then release the clutch lever.
h. Repeat steps (d) to (g) until all of the air bubbles have disappeared from the clutch fluid in the clear plastic hose.
i. Tighten the bleed screw to specification.

**Clutch release cylinder bleed screw**
**5 N·m (0.5 kgf·m, 3.7 lb·ft)**

j. Add the specified clutch fluid to the proper level.
Refer to "CHECKING THE CLUTCH FLUID" on page 3-12.

EWA13010

**⚠ WARNING**

**After bleeding the hydraulic clutch system, check the clutch operation.**

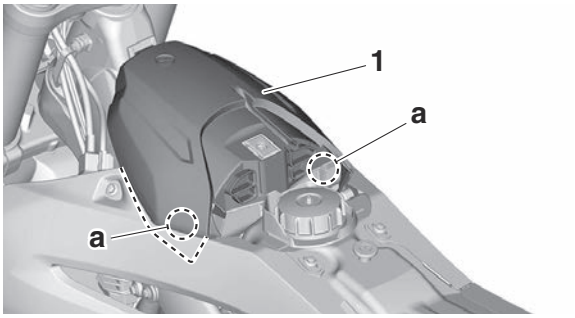
EAM30219

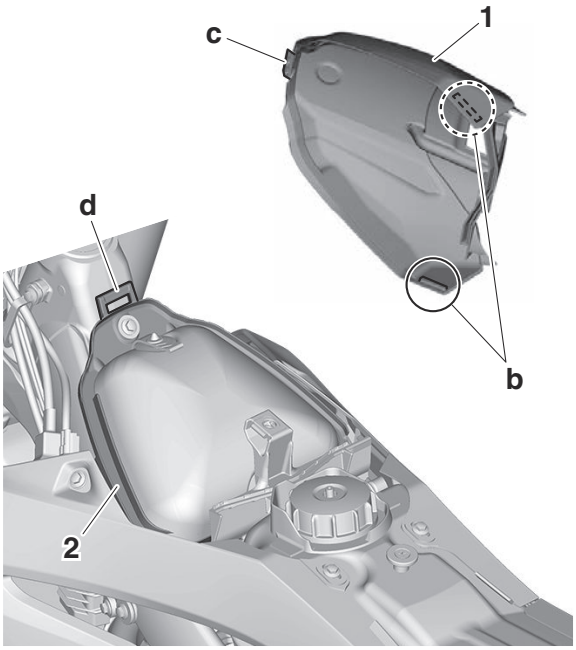
## CLEANING THE AIR FILTER ELEMENT

1. Remove:
   - Sub-seat
     Refer to "FUEL TANK CAP" on page 1-18.
   - Air filter case cover "1"

**TIP**

To remove the air filter case cover:
- Raise the air filter case cover rear side while pushing the side "a" of the air intake duct from inside to unhook the ribs "b" on both sides of the air filter case cover from the air filter case "2".
- Slide the air filter case cover to the rear of the vehicle to remove the projection "c" from the hole "d" in the air filter case.

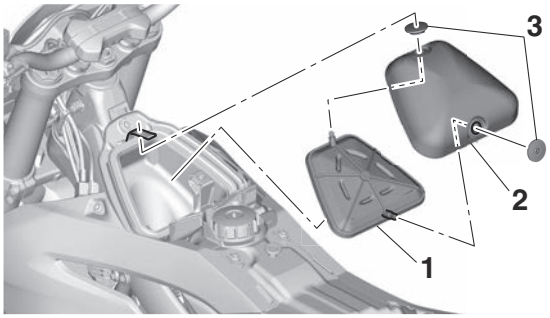


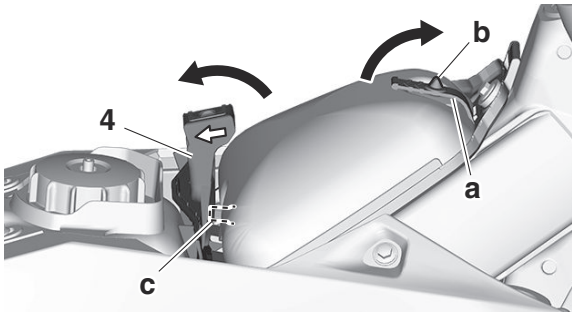




2. Remove:
   - Air filter element guide "1"
   - Air filter element "2"
     (from the air filter element guide)
   - Seal "3"
     (from the air filter element)

**TIP**

To remove the air filter element:
- Release the band "a" from the projection "b", and then move the air filter case assembly bracket "4" in the direction of the arrow to release the projection "c".
- Remove the air filter element and the air filter element guide as a set.




3. Wash:
   - Air filter element
     a. After washing the element with air filter cleaner or kerosene, squeeze and dry it completely.

EWA19110

**⚠ WARNING**

**Do not use gasoline or organic (acid/alkaline) volatile oil for washing.**

ECA24280

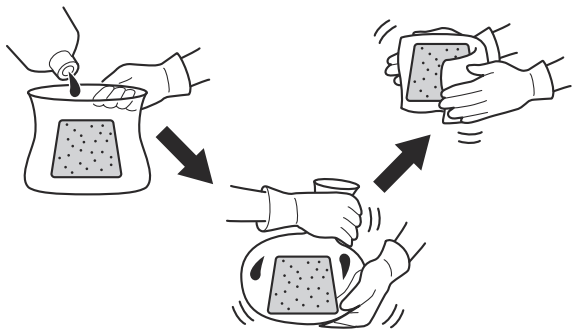
***NOTICE***

**Do not twist the element when squeezing the element.**

4. Check:
   - Air filter element
     Damage → Replace.
5. Apply:
   - Yamaha foam air filter oil or other quality foam air filter oil
     a. Put the air filter element into a plastic bag and drip the filter oil into the bag.
     b. With the element inside the bag, rub it thoroughly so that the element is evenly permeated with the oil.
     c. Wrap the element in a clean cloth, rub the element gently, and wipe off any excess oil.

**TIP**

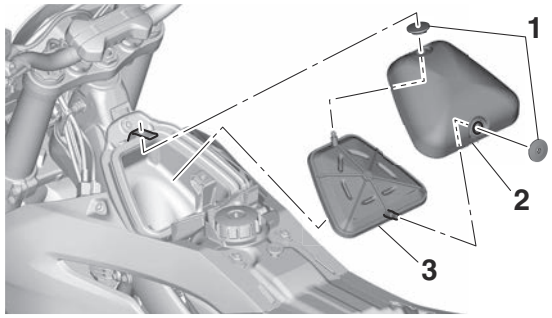
- The element should be permeated with oil so that it is wet but not dripping.
- When replacing the element, permeate the element in oil by using the same procedure as when cleaning.

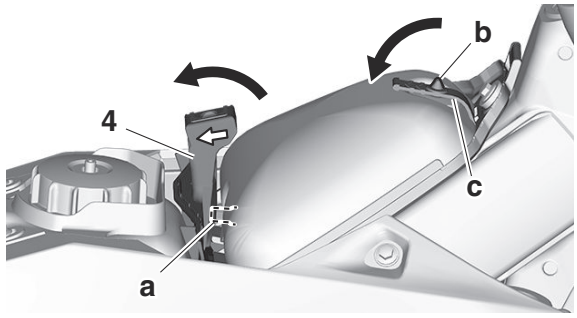


6. Install:
   - Air filter case assembly bracket (if removed)
   - Seal "1" (to the air filter element)
   - Air filter element "2" (to the air filter element guide)
   - Air filter element guide "3"

**TIP**

- Apply lithium-soap-based grease on the entire seal lips when installing the air filter element guide.
- To install the air filter element:
  - Move the air filter case assembly bracket "4" to the rear of the vehicle.
  - Set the projection "a" on the air filter element guide to the air filter case assembly bracket and insert the projection "b" on the air filter element guide to the band "c".



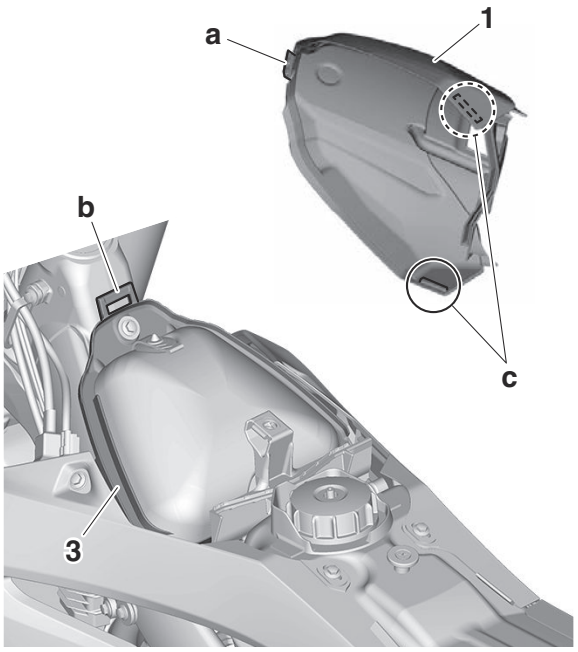



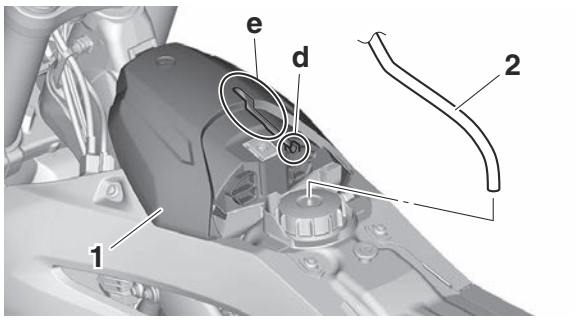

7. Install:
   - Air filter case cover "1"

• Fuel tank breather hose “2”
(to the air filter case cover)

**TIP**

- To install the air filter case cover:
  - Insert the projection “a” on air filter case cover to the hole “b” in the air filter case “3”.
  - Push the rear side of the air filter case cover to hook the ribs “c” to the air filter case.
- Insert the fuel tank breather hose end with the protector into the steering shaft hole.
- Fit the other end of the fuel tank breather hose into the projection on the fuel tank cap.
- Route the fuel tank breather hose through the guide “d”, and then fit it into the groove “e” in the air filter case cover.



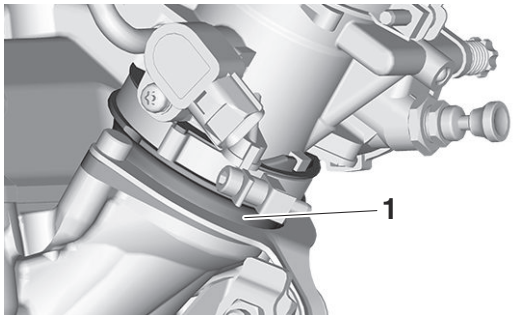




8. Install:
   • Sub-seat

EAM30335

## CHECKING THE THROTTLE BODY JOINT

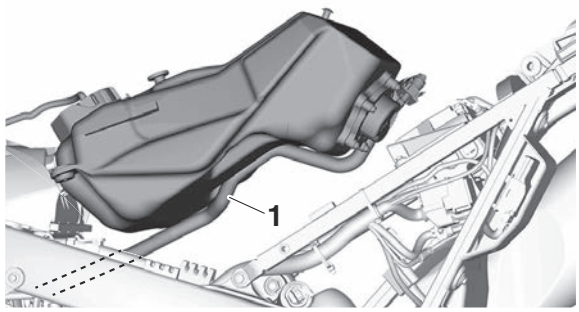
1. Check:
   • Throttle body joint “1”
   Crack/damage → Replace.




EAM30222

## CHECKING THE FUEL LINE

1. Remove:
   • Seat
   • Side cover (left/right)
   • Shroud (left/right)
   • Fuel tank
   Refer to “FUEL TANK” on page 6-1.
2. Check:
   • Fuel hose “1”
   Crack/damage → Replace.
   Loose connection → Connect properly.




3. Install:
   • Fuel tank
   Refer to “FUEL TANK” on page 6-1.
   • Shroud (left/right)
   • Side cover (left/right)
   • Seat
   Refer to “GENERAL CHASSIS” on page 4-1.

EAM30476

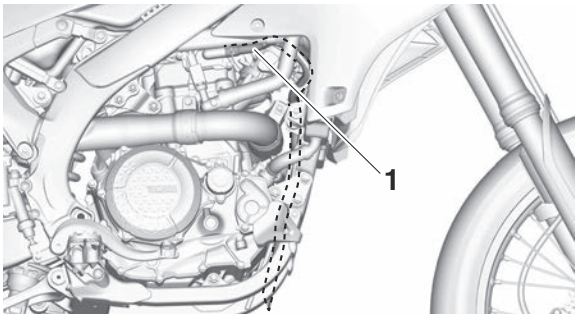
## CHECKING THE CYLINDER HEAD BREATHER HOSE

1. Check:
   • Breather hose “1”
   Crack/damage → Replace.
   Loose connection → Connect properly.

ECA14920

***NOTICE***

**Make sure the cylinder head breather hose is routed correctly.**




EAM30221
## CHECKING THE EXHAUST SYSTEM

1. Remove:
   - Exhaust pipe 1
   - Exhaust pipe 2

   Refer to "EXHAUST SYSTEM" on page 5-1.
2. Remove:
   - Exhaust pipe protector
3. Check:
   - Exhaust pipe 1
   - Exhaust pipe 2
   - Silencer

   Crack/damage → Replace.
4. Check:
   - Silencer fiber

   Damage → Replace.
5. Replace:
   - Silencer fiber

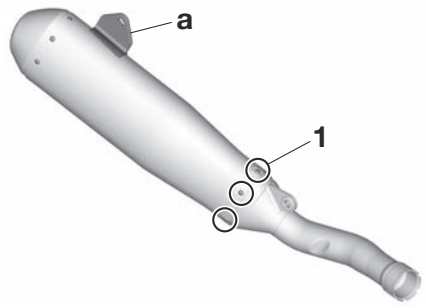
   a. Remove the rivets "1" and silencer body "2".

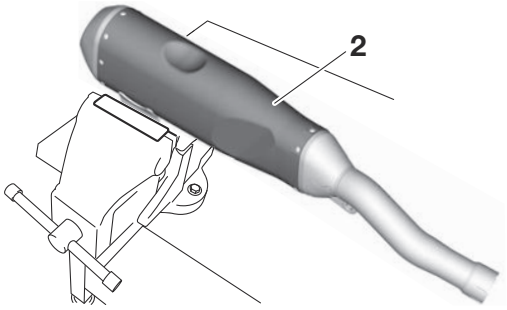
ECA25800
***NOTICE***

**Do not hit the silencer stay "a" as it may do damage to the silencer.**

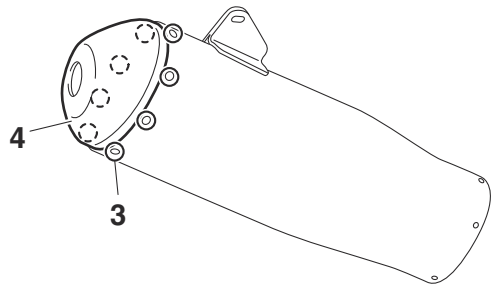
**TIP**

Remove the inner pipe while holding the silencer in place with a vise etc.

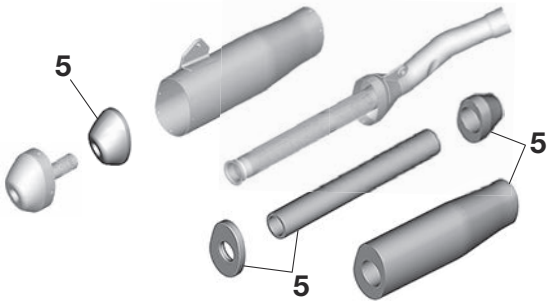


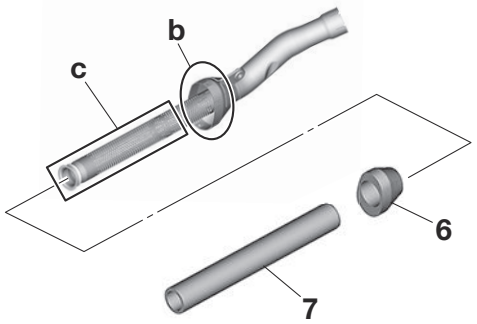

b. Remove the rivets "3" and silencer cap "4".




c. Replace the fiber inserts "5".



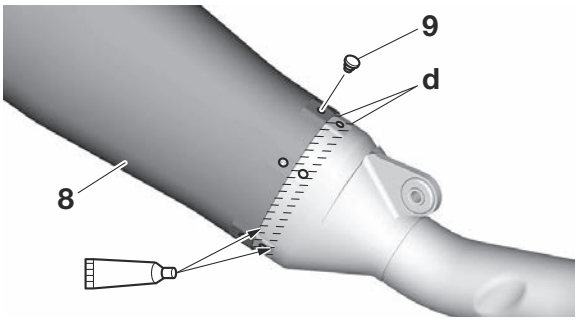

d. Install the fiber insert "6" to the part "b".
e. Twist the fiber insert "7" onto the inner pipe "c".




f. Install the silencer body "8" and rivets "9".

**TIP**

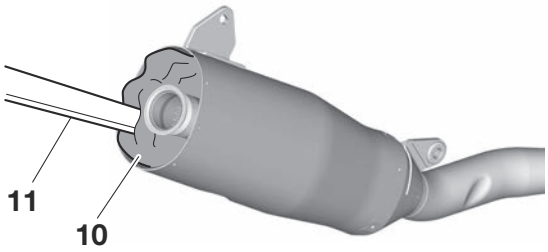
Apply heat-resistant sealant to the areas "d" shown, making sure that there are no gaps in the beads of sealant.




g. Install the fiber "10".

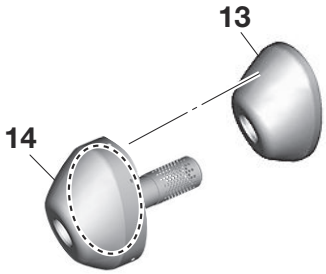
**TIP**

Stuff the fiber into the silencer body by using a flat board "11".




h. Install the fiber insert "12" to the inner pipe.
i. Install the fiber insert "13" to the inside of the silencer cap "14".

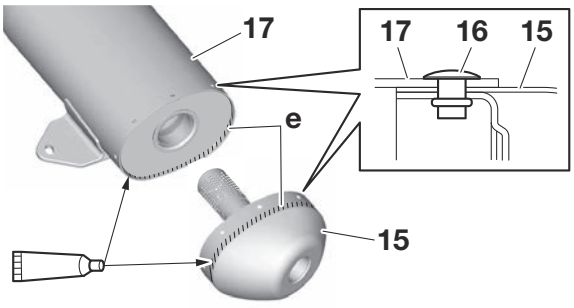


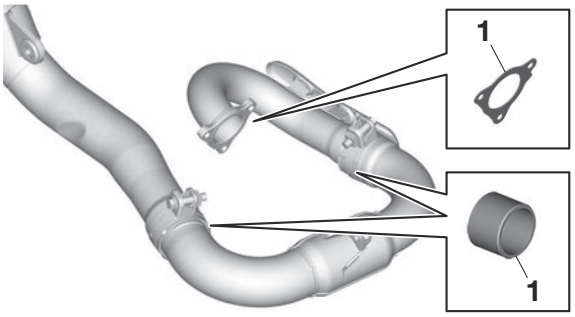

j. Install the silencer cap "15" and rivet "16".

**TIP**

- Apply heat-resistant sealant to the areas "e" shown, making sure that there are no gaps in the beads of sealant.
- Take care not to allow the fiber out of place when installing the silencer body "17".

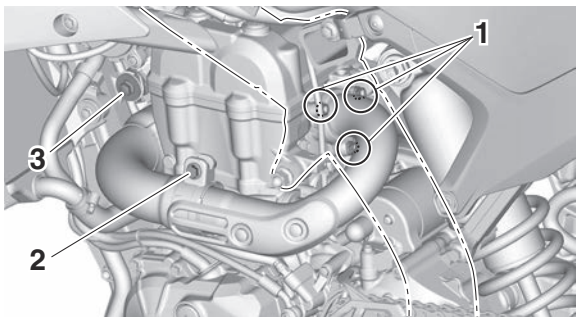


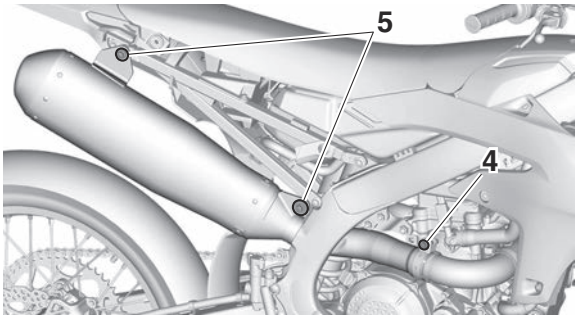

6. Check:
   - Gasket "1"
     Damage → Replace.




7. Check:
   - Tightening torques

**Exhaust pipe nut "1"**
**10 N·m (1.0 kgf·m, 7.4 lb·ft)**
**Exhaust pipe clamp bolt "2"**
**16 N·m (1.6 kgf·m, 12 lb·ft)**
**Exhaust pipe bracket bolt "3"**
**20 N·m (2.0 kgf·m, 15 lb·ft)**
**Exhaust pipe clamp bolt "4"**
**16 N·m (1.6 kgf·m, 12 lb·ft)**
**Silencer bolt "5"**
**30 N·m (3.0 kgf·m, 22 lb·ft)**






8. Install:
   • Exhaust pipe protector

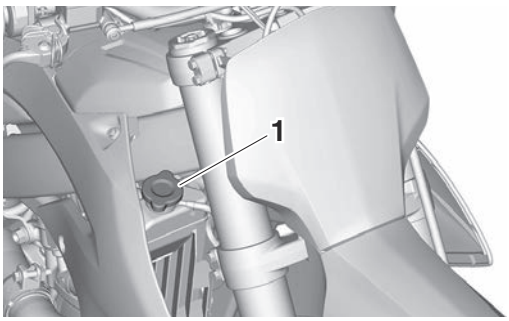
| | |
|---|---|
| | **Exhaust pipe protector screw**<br>**10 N·m (1.0 kgf·m, 7.4 lb·ft)**<br>**LOCTITE®** |

EAM30210
## CHECKING THE COOLANT LEVEL

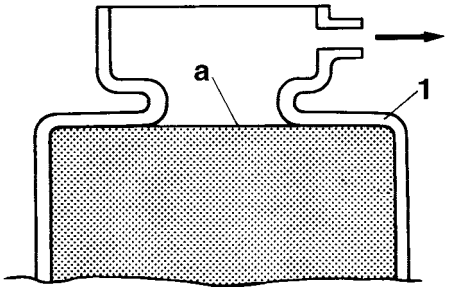
EWA13030
**⚠ WARNING**

**A hot radiator is under pressure. Therefore, do not remove the radiator cap when the engine is hot. Scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:**
**Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise toward the detent to allow any residual pressure to escape. When the hissing sound has stopped, press down on the radiator cap and turn it counterclockwise to remove.**

1. Stand the vehicle upright on a level surface.
2. Remove:
   • Radiator cap "1"




3. Check:
   • Coolant level
   Maximum level "a" or below → Add coolant up to the maximum level.




1. Radiator

ECA24260
***NOTICE***

- **Adding water instead of coolant lowers the antifreeze content. If, therefore, water is used instead of coolant, check, and if necessary, adjust the antifreeze concentration.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**

4. Start the engine, warm this up for several minutes, and then stop it.
5. Check:
   • Coolant level

**TIP**
Before checking the coolant level, wait a few minutes until the coolant has settled.

EAM30211
## CHECKING THE COOLING SYSTEM

1. Remove:
   • Seat
   • Side cover (left/right)
   • Shroud (left/right)
2. Check:
   • Radiator
   • Radiator hose
   Crack/damage → Replace.
3. Install:
   • Shroud (left/right)
   • Side cover (left/right)
   • Seat
   Refer to "GENERAL CHASSIS" on page 4-1.

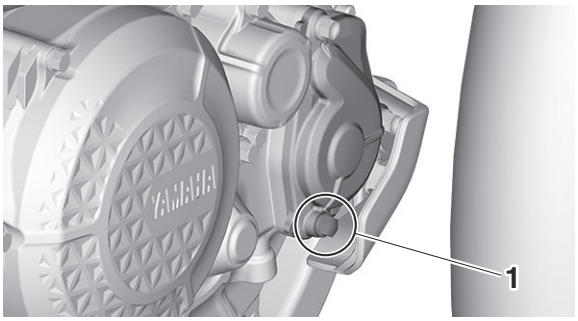
EAM30212
## CHANGING THE COOLANT

EWA13030
**⚠ WARNING**

**A hot radiator is under pressure. Therefore, do not remove the radiator cap when the engine is hot. Scalding hot fluid and steam may be blown out, which could cause serious**

**injury. When the engine has cooled, open the radiator cap as follows:**
**Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise toward the detent to allow any residual pressure to escape. When the hissing sound has stopped, press down on the radiator cap and turn it counterclockwise to remove.**

1. Place a container under the engine.
2. Remove:
   • Coolant drain bolt "1"
   • Copper washer




3. Remove:
   • Radiator cap
   Slowly loosen the radiator cap to drain coolant.

**TIP**
When the radiator cap is loosened, coolant will gush out transversely; therefore, bring the container near to the outlet.

4. Thoroughly flush the cooling system with clean tap water.
5. Install:
   • Copper washer New
   • Coolant drain bolt

| | |
|---|---|
| | **Coolant drain bolt**<br>**10 N·m (1.0 kgf·m, 7.4 lb·ft)** |

6. Pour coolant.

| | |
|---|---|
| | **Recommended coolant**<br>**High quality ethylene glycol antifreeze containing anti-corrosion for aluminum engine**<br>**Radiator (including all routes)**<br>**1.03 L (1.09 US qt, 0.91 Imp.qt)**<br>**Coolant mixing ratio**<br>**1:1 (Coolant:Water)** |

EWA13040
**⚠ WARNING**
**• If coolant splashes in your eyes, thoroughly wash them with water and consult a doctor.**
**• If coolant splashes on your clothes, quickly wash it away with water and then with soap and water.**
**• If coolant is swallowed, induce vomiting and get immediate medical attention.**

ECA13481
***NOTICE***
**• Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant, check, and if necessary, correct the antifreeze concentration of the coolant.**
**• Use only distilled water. However, if distilled water is not available, soft water may be used.**
**• If coolant comes into contact with painted surfaces, immediately wash them with water.**
**• Do not mix different types of antifreeze.**

7. Install:
   • Radiator cap
8. Start the engine, warm this up for several minutes, stop it, and then wait for it to cool down.
9. Check:
   • Coolant level
   Refer to "CHECKING THE COOLANT LEVEL" on page 3-18.

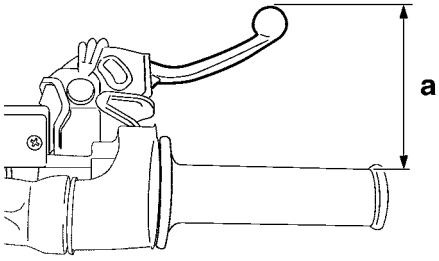
EAM20136
# CHASSIS

EAM30479
## ADJUSTING THE FRONT DISC BRAKE

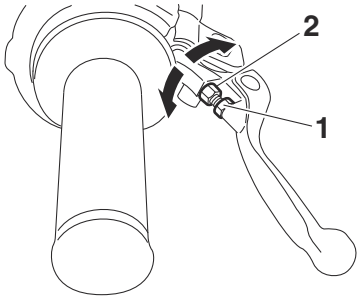
**TIP**
There should be no free play at the brake lever end.

1. Check:
   • Brake lever position "a"

| | |
|---|---|
| | **Brake lever position**<br>**100 mm (3.94 in)**<br>**Extent of adjustment**<br>**86–105 mm (3.39–4.13 in)** |




2. Remove:
   • Brake lever cover
3. Adjust:
   • Brake lever position
   a. Loosen the locknut "1".
   b. Turn the adjusting bolt "2" until the specified brake lever position is obtained.




   c. Tighten the locknut.

| | |
|---|---|
| | **Locknut**<br>**5 N·m (0.5 kgf·m, 3.7 lb·ft)** |

EWA13050
**⚠ WARNING**

**A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. Before the vehicle is operated, the air must be removed by bleeding the brake system. Air in the brake system will considerably reduce braking performance.**

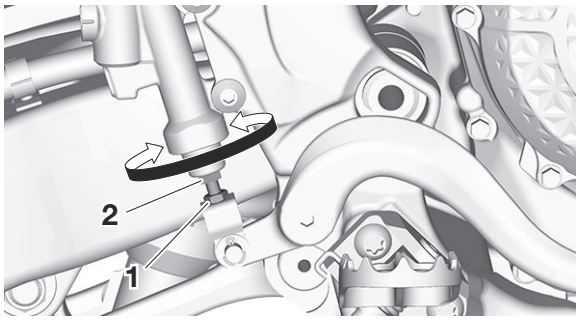
ECA13490
***NOTICE***

**After adjusting the brake lever position, make sure there is no brake drag.**

4. Install:
   • Brake lever cover

EAM30480
## ADJUSTING THE REAR DISC BRAKE

1. Adjust:
   • Brake pedal position
   a. Loosen the locknut "1".
   b. Turn the adjusting bolt "2" until the brake pedal is in the correct position.




   c. Tighten the locknut.

| | |
|---|---|
| | **Locknut**<br>**6 N·m (0.6 kgf·m, 4.4 lb·ft)** |

EWA19150
**⚠ WARNING**

**A soft or spongy feeling in the brake pedal can indicate the presence of air in the brake system. Before running, bleed the brake system. Air in the brake system will cause braking performance to be reduced.**

ECA13510
***NOTICE***

**After adjusting the brake pedal position, make sure there is no brake drag.**

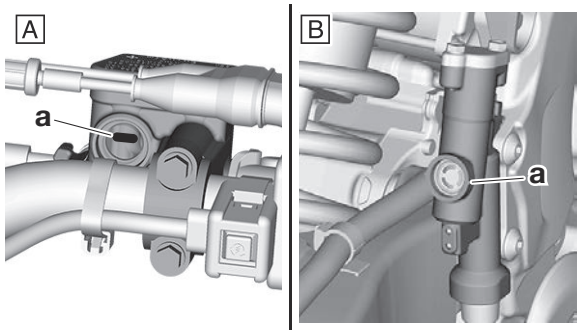
EAM30234
## CHECKING THE BRAKE FLUID LEVEL

1. Stand the vehicle upright on a level surface.

**TIP**
In order to ensure a correct reading of the brake fluid level, make sure that the top of the brake fluid reservoir is horizontal.

2. Check:
   • Brake fluid level
   The minimum level mark "a" or below → Add.

**Specified brake fluid**
**DOT 4**




A. Front brake
B. Rear brake

EWA13090

**⚠ 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 fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

ECA13540

***NOTICE***

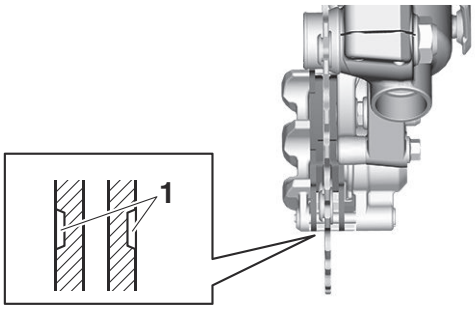
**Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.**

EAM30231

## CHECKING THE FRONT BRAKE PADS

The following procedure applies to all of the brake pads.

1. Operate the brake.
2. Check:
   - Front brake pad
     Wear indicator grooves "1" almost touch the brake disc → Replace the brake pads as a set.
     Refer to "FRONT BRAKE" on page 4-7.

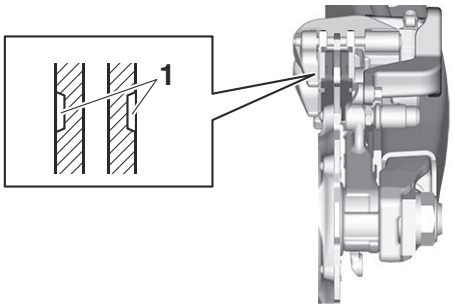



EAM30232

## CHECKING THE REAR BRAKE PADS

The following procedure applies to all of the brake pads.

1. Operate the brake.
2. Check:
   - Rear brake pad
     Wear indicator grooves "1" almost touch the brake disc → Replace the brake pads as a set.
     Refer to "REAR BRAKE" on page 4-9.



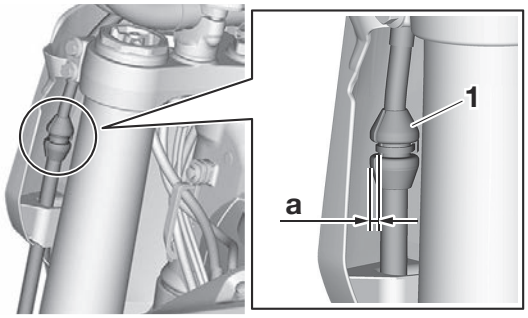

EAM30478

## CHECKING THE FRONT BRAKE HOSE

1. Check:
   - Brake hose
     Cracks/damage/wear → Replace.
2. Check:
   - Brake hose clamp
     Loose connection → Tighten the clamp bolt.
3. Stand the vehicle upright and apply the front brake several times.
4. Check:
   - Brake hose
     Brake fluid leaks → Replace the damaged brake hose.
5. Check:
   - Protector "1"
     Out of specification → Replace.

**TIP**

The protector reaches the limit of its use when it is worn down to the same height "a" as of the plastic locking tie circumference.




EAM30498
## CHECKING THE REAR BRAKE HOSE
1. Check:
   • Brake hose
   Cracks/damage/wear → Replace.
2. Check:
   • Brake hose holder
   Loose connection → Tighten the holder bolt.
3. Hold the vehicle upright and apply the rear brake several times.
4. Check:
   • Brake hose
   Brake fluid leakage → Replace the damaged hose.

EAM30499
## CHECKING THE BRAKE OPERATION
1. Check:
   • Brake operation
   Brake not working properly → Check the brake system.

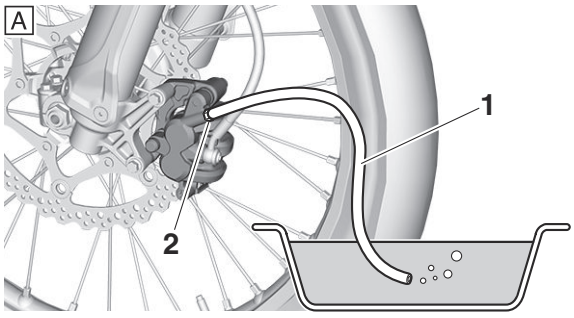
**TIP**
Drive on the dry road, operate the front and rear brakes separately and check to see if the brakes are operating properly.

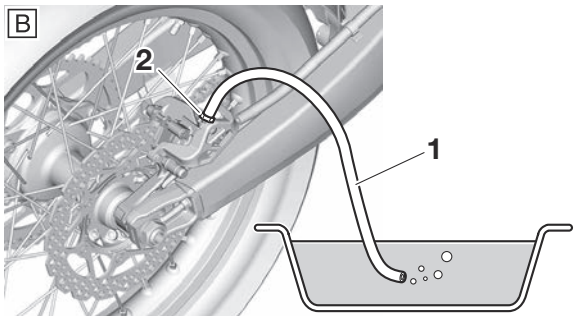
EAM30477
## BLEEDING THE HYDRAULIC BRAKE SYSTEM
EWA19140
**⚠ WARNING**
**Bleed the brake system whenever:**
- **The system is disassembled.**
- **A brake hose is loosened, disconnected, or replaced.**
- **The brake fluid level is very low.**
- **Brake operation is faulty.**

1. Remove:
   • Brake master cylinder cap
   • Reservoir diaphragm
   • Reservoir float (front brake)
   • Protector (rear brake)

**TIP**
- Be careful not to spill any brake fluid or allow the reservoir to overflow.
- Make sure that there is enough brake fluid before applying the brake. Ignoring this precaution could allow air to enter the brake system, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.

2. Bleed the brake system.
   a. Fill the reservoir to the proper level with the recommended brake fluid.
   b. Install the reservoir diaphragm.
   c. Connect the plastic hose “1” to the bleed screw “2” securely, and place a container under the end of the plastic hose.




A. Front
B. Rear

   d. Slowly apply the brake several times.
   e. Fully pull the brake lever or fully press down the brake pedal and hold it in position.
   f. Loosen the bleed screw.

**TIP**
Loosening the bleed screw will release the pressure in the brake caliper and cause the brake lever to contact the throttle grip or the brake pedal to fully extend.

   g. Tighten the bleed screw and then release

the brake lever or brake pedal.

h. Repeat steps (d) to (g) until all of the air bubbles have disappeared from the brake fluid in the plastic hose.

**TIP**

During the procedure, keep adding brake fluid to the reservoir.

ECA24320

***NOTICE***

- **Wipe off any brake fluid on the brake discs, tires, wheels, etc.**
- **Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.**

i. Tighten the bleed screw.

| | |
|---|---|
| | **Bleed screw**<br>**5 N·m (0.5 kgf·m, 3.7 lb·ft)** |

j. Pour brake fluid to the reservoir up to the specified level.
Refer to "CHECKING THE BRAKE FLUID LEVEL" on page 3-20.

EWA13110

**⚠ WARNING**

**After bleeding the hydraulic brake system, check the brake operation.**

EAM30481

## DRIVE CHAIN SLACK

ECA13550

***NOTICE***

**A drive chain that is too tight will overload the engine and other vital parts, and one that is too loose can skip and damage the swingarm or cause an accident. Therefore, keep the drive chain slack within the specified limits.**

### Checking the drive chain slack

1. Use a maintenance stand to raise the rear wheel off the ground.

EWA13120

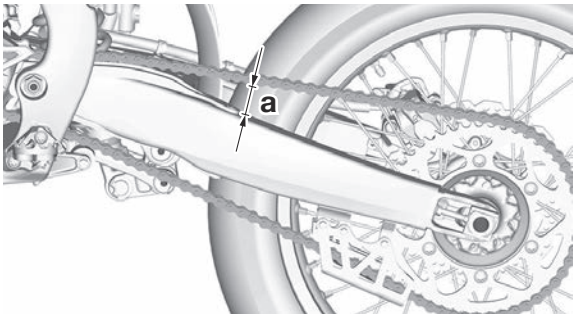
**⚠ WARNING**

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

2. Shift the transmission into the neutral position.
3. Pull the drive chain up above the drive chain guide installation bolt with a force of about 50 N (5.0 kgf, 37 lbf).
4. Check:
   - Drive chain slack "a"
     Out of specification → Regulate.

**TIP**

Measure drive chain slack between the drive chain guide and the bottom of the chain as shown.




| | |
|---|---|
| | **Drive chain slack (Maintenance Stand)**<br>**50.0–60.0 mm (1.97–2.36 in)** |

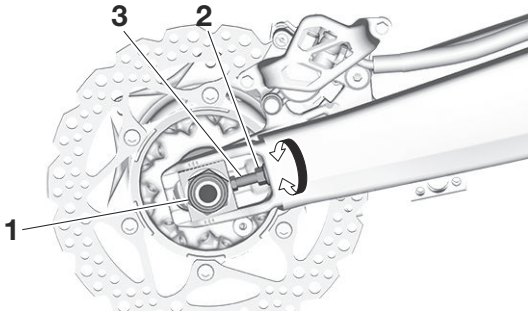
### Adjusting the drive chain slack

EWA13120

**⚠ WARNING**

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

1. Adjust:
   - Drive chain slack
     a. Loosen the wheel axle nut "1".
     b. Loosen both locknuts "2".
     c. Turn the adjusting bolt "3" until the specified drive chain slack is obtained.




**TIP**

- To maintain the proper wheel alignment, adjust both sides evenly.
- Push the rear wheel forward to make sure that there is no clearance between the swingarm end plates and the ends of the swingarm.

d. Tighten the wheel axle nut.

| | |
|---|---|
| | **Wheel axle nut**<br>**135 N·m (13.5 kgf·m, 100 lb·ft)** |

e. Tighten the drive chain puller locknut.

| | |
|---|---|
| | **Drive chain puller locknut**<br>**21 N·m (2.1 kgf·m, 15 lb·ft)** |

EAM30247

## CHECKING AND ADJUSTING THE STEERING HEAD

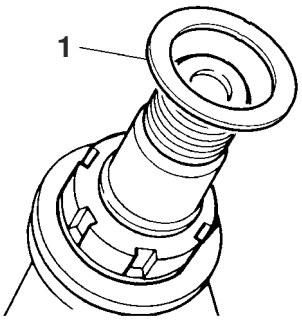
1. Use a maintenance stand to raise the front wheel off the ground.

EWA13120

**⚠ WARNING**

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

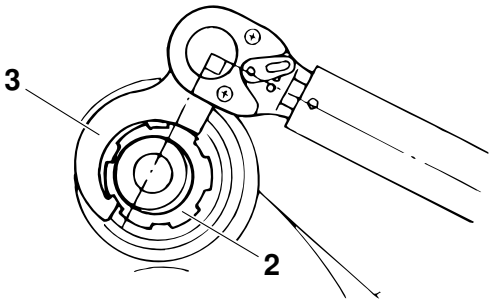
2. Check:
   - Steering head
     Grasp the bottom of the front fork legs and gently rock the front fork.
     Blinding/looseness → Adjust the steering head.
3. Remove:
   - Handlebar
   - Upper bracket
4. Adjust:
   - Steering head
     a. Remove the washer "1".




     b. After loosening the ring nut "2" with a steering nut wrench "3", tighten it to the specified torque.

**TIP**

- Set the torque wrench at a right angle to the steering nut wrench.
- Move the steering to the left and right a couple of times to check that it moves smoothly.




| | |
|---|---|
| | **Steering nut wrench**<br>**90890-01403**<br>**Exhaust flange nut wrench**<br>**YU-A9472** |
| | **Ring nut (initial tightening torque)**<br>**38 N·m (3.8 kgf·m, 28 lb·ft)** |

     c. Turn the front fork to the right and left a few times, and make sure that the steering rotates smoothly. If it does not turn smoothly, remove the lower bracket and check the upper and lower bearings.
     Refer to "STEERING HEAD" on page 4-26.
     d. Loosen the ring nut fully turn and then tighten it to specification with a steering nut wrench.

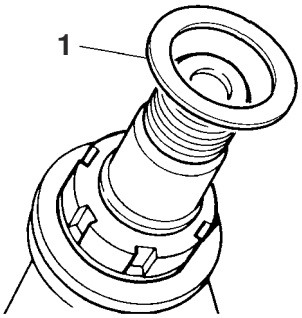
EWA13140

**⚠ WARNING**

**Do not overtighten the lower ring nut.**

| | |
|---|---|
| | **Ring nut (final tightening torque)**<br>**7 N·m (0.7 kgf·m, 5.2 lb·ft)** |

     e. Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the lower bracket and check the upper and lower bearings.
     Refer to "STEERING HEAD" on page 4-26.
     f. Install the washer "1".




5. Install:
   • Upper bracket
   • Handlebar
   Refer to "HANDLEBAR" on page 4-11.

EAM30502
## LUBRICATING THE STEERING HEAD

1. Lubricate:
   • Upper bearing
   • Lower bearing
   • Bearing race

| | |
|---|---|
| | **Recommended lubricant**<br>**Lithium-soap-based grease** |

EAM30338
## CHECKING THE FRONT FORK LEGS

1. Stand the vehicle upright on a level surface.

EWA13120
**⚠ WARNING**

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

2. Check:
   • Inner tube
   Damage/scratches → Replace.
   • Front fork leg
   Oil leaks between inner tube and outer tube → Replace the oil seal.
3. Hold the vehicle upright and apply the front brake.
4. Check:
   • Front fork operation
   Push down hard on the handlebar several times and check if the front fork rebounds smoothly.
   Unsmooth operation → Correct or replace.
   Refer to "FRONT FORK" on page 4-15.

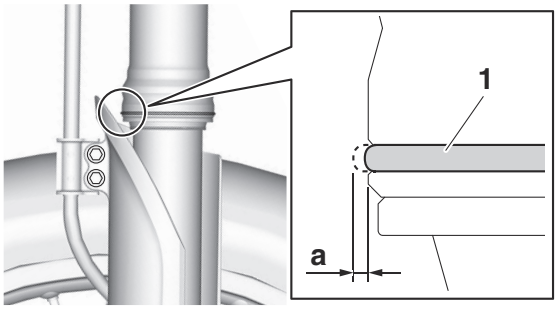
**TIP**

If any damage is found or the front fork does not operate smoothly, have a Yamaha dealer check or repair it.

5. Check:
   • Protector guide "1"
   Out of specification → Replace.

**TIP**

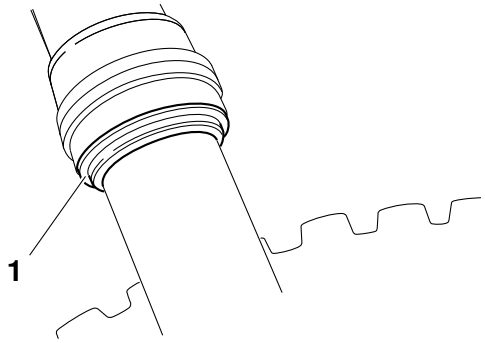
The protector guide reaches the limit of its use when it is worn down to the same height "a" as of the outer tube circumference.




6. Remove:
   • Protector
   • Dust seal "1"

ECA24330
***NOTICE***

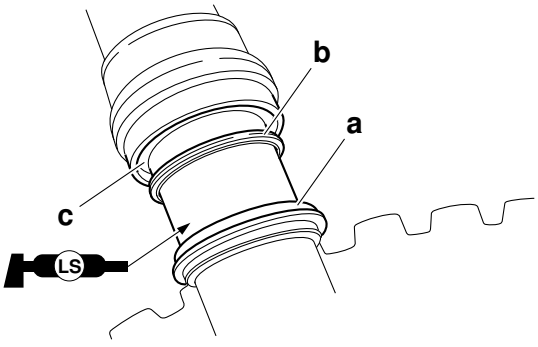
**Be careful not to damage the dust seal and the inner tube by a driver.**




7. Clean:
   • Dust seal "a"
   • Scraper "b"
   • Oil seal "c"

**TIP**

- Clean the dust seal, scraper and oil seal after every run.
- Apply lithium-soap-based grease on the inner tube.



EAM30239
## ADJUSTING THE FRONT FORK LEGS
EWA19180
**WARNING**

- **Always adjust the left and right front forks evenly. If this is not done, the vehicle may have poor stability.**
- **Securely support the vehicle so that there is no danger of it falling over.**

### Rebound damping
ECA24340
***NOTICE***

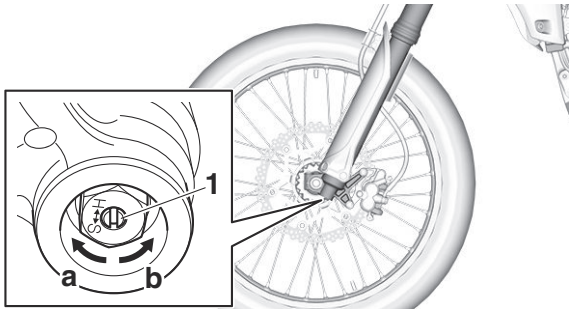
**Do not turn the adjuster forcibly beyond its adjusting range.**

1. Adjust:
   - Rebound damping
     a. Turn the adjuster "1" in the direction of "a" or "b" to make an adjustment.

**Direction "a"**
**Rebound damping is increased (suspension is harder).**
**Direction "b"**
**Rebound damping is decreased (suspension is softer).**

**Rebound damping**
**Minimum (soft)**
**20 click(s) in direction "b"***
**Standard**
**13 click (s) in direction "b"* (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)**
**9 click (s) in direction "b"* (AUS, CAN, NZL, ZAF)**
**Maximum (hard)**
**0 click(s) in direction "b"***
***With the adjusting screw fully turned in direction "a"**

**TIP**
Although the total number of clicks of a damping force adjusting mechanism may not exactly match the above specifications due to small differences in production, the actual number of clicks always represents the entire adjusting range. To obtain a precise adjustment, it would be advisable to check the number of clicks of each damping force adjusting mechanism and to modify the specifications as necessary.




### Compression damping
ECA24350
***NOTICE***

**Do not turn the adjuster forcibly beyond its adjusting range.**

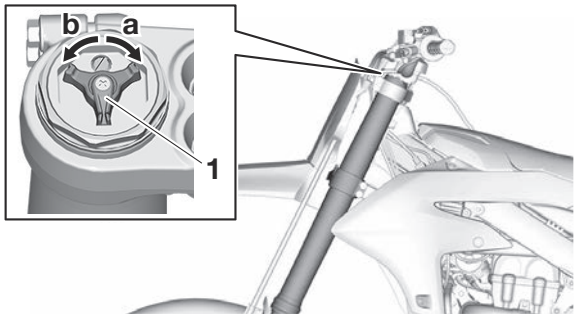
1. Adjust:
   - Compression damping
     a. Turn the adjuster "1" in the direction of "a" or "b" to make an adjustment.

**Direction "a"**
**Compression damping is increased (suspension is harder).**
**Direction "b"**
**Compression damping is decreased (suspension is softer).**

**Compression damping**
**Minimum (soft)**
**20 click(s) in direction "b"***
**Standard**
**12 click(s) in direction "b"* (AUS, CAN, NZL, ZAF)**
**14 click(s) in direction "b"* (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)**
**Maximum (hard)**
**0 click(s) in direction "b"***
***With the adjusting screw fully turned in direction "a"**

**TIP**
Although the total number of clicks of a damping force adjusting mechanism may not exactly match the above specifications due to small differences in production, the actual number of clicks always represents the entire adjusting

range. To obtain a precise adjustment, it would be advisable to check the number of clicks of each damping force adjusting mechanism and to modify the specifications as necessary.




**Air bleeding from front fork**

**TIP**

If the front fork initial movement feels stiff during a run, relieve the front fork internal pressure.

1. Use a maintenance stand to raise the front wheel off the ground.

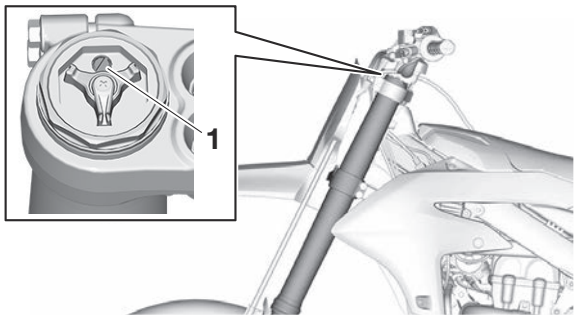
EWA13120

**⚠ WARNING**

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

2. Remove the bleed screw "1" and release the internal pressure from the front fork.
3. Tighten:
   - Bleed screw

| | |
|---|---|
| | **Bleed screw**<br>**1.3 N·m (0.13 kgf·m, 0.95 lb·ft)** |




EAM30482

## CHECKING THE REAR SHOCK ABSORBER ASSEMBLY

1. Stand the vehicle upright on a level surface.

EWA13120

**⚠ WARNING**

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

2. Check:
   - Rear shock absorber assembly
     Gas leaks/oil leaks → Replace the rear shock absorber assembly.
     Refer to "REAR SHOCK ABSORBER ASSEMBLY" on page 4-29.
3. Check:
   - Rear shock absorber assembly smooth action
   - Rear suspension link smooth action
     Sit astride the seat and shake your body up and down several times to check whether the rear shock absorber assembly operates smoothly.
     Unsmooth operation → Correct or replace.

EAM30242

## ADJUSTING THE REAR SHOCK ABSORBER ASSEMBLY

Use a maintenance stand to raise the rear wheel off the ground.

EWA13120

**⚠ WARNING**

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

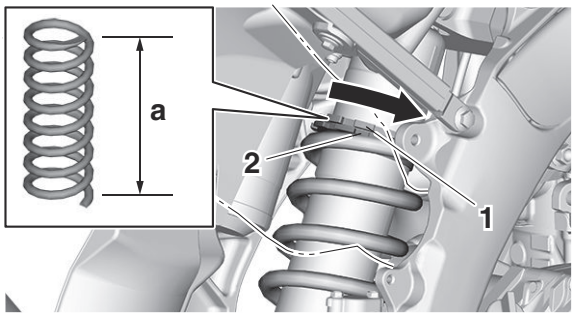
**Spring preload**

ECA24360

***NOTICE***

**Do not turn the adjuster forcibly beyond its adjusting range.**

1. Adjust:
   - Spring preload
     a. Loosen the locknut "1".
     b. Loosen the adjuster "2" until there is some clearance between the spring and the adjuster.
     c. Measure the spring free length "a".

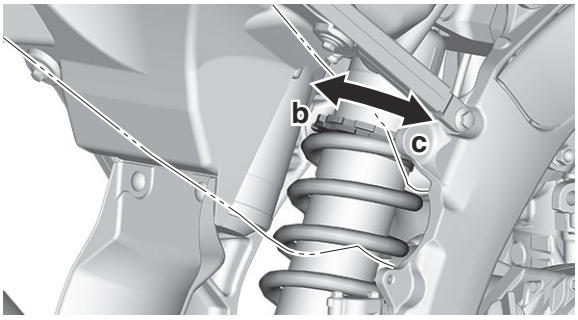



     d. Turn the adjuster in the direction of "b" or "c" to make an adjustment.

**Direction "b"**
**Spring preload is increased (suspension is harder).**
**Direction "c"**
**Spring preload is decreased (suspension is softer).**

**Spring preload adjusting positions**
**Minimum**
**Position in which the spring is turned in 1.5 mm (0.06 in) from its free length.**
**Standard**
**Position in which the spring is turned in 7.0 mm (0.28 in) from its free length.**
**Maximum**
**Position in which the spring is turned in 18.0 mm (0.71 in) from its free length.**

**TIP**
- Be sure to remove all dirt and mud from around the locknut and adjusting ring before adjustment.
- The length of the spring (installed) changes 1.5 mm (0.06 in) per turn of the adjusting ring.




e. Tighten the locknut.

**Rebound damping**

ECA24370

***NOTICE***

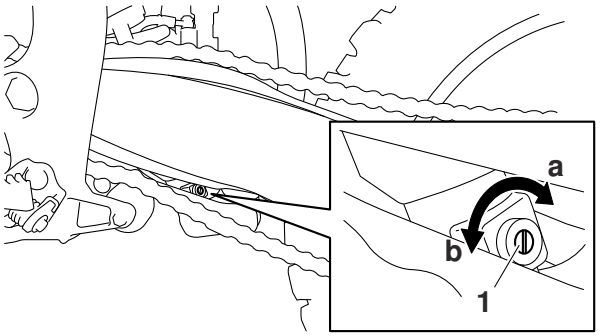
**Do not turn the adjuster forcibly beyond its adjusting range.**

1. Adjust:
   - Rebound damping
     a. Turn the adjuster "1" in the direction of "a" or "b" to make an adjustment.

**Direction "a"**
**Rebound damping is increased (suspension is harder).**
**Direction "b"**
**Rebound damping is decreased (suspension is softer).**

**Rebound damping**
**Minimum (soft)**
**30 click(s) in direction "b"***
**Standard**
**10 click(s) in direction "b"* (AUS, CAN, NZL, ZAF)**
**13 click(s) in direction "b"* (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)**
**Maximum (hard)**
**0 click(s) in direction "a"**
***With the adjusting screw fully turned in direction "a"**

**TIP**
Although the total number of clicks of a damping force adjusting mechanism may not exactly match the above specifications due to small differences in production, the actual number of clicks always represents the entire adjusting range. To obtain a precise adjustment, it would be advisable to check the number of clicks of each damping force adjusting mechanism and to modify the specifications as necessary.




**Compression damping (for fast compression damping)**

ECA24370

***NOTICE***

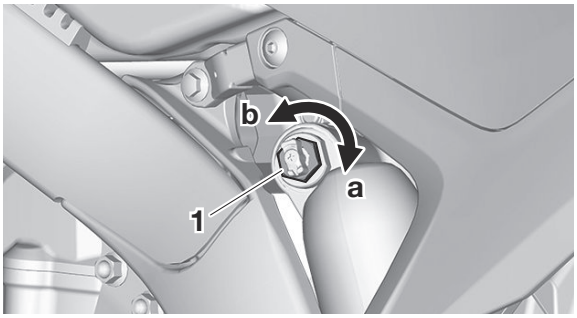
**Do not turn the adjuster forcibly beyond its adjusting range.**

1. Adjust:
   • Compression damping (for fast compression damping)
     a. Turn the adjuster "1" in the direction of "a" or "b" to make an adjustment.

**Direction "a"**
**Compression damping is increased (suspension is harder).**
**Direction "b"**
**Compression damping is decreased (suspension is softer).**

**Fast compression damping**
**Minimum (soft)**
**2 turn(s) in direction "b"***
**Standard**
**1+1/2 turn(s) in direction "b"* (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)**
**1+1/4 turn(s) in direction "b"* (AUS, CAN, NZL, ZAF)**
**Maximum (hard)**
**0 turn(s) in direction "b"***
***With the adjusting screw fully turned in direction "a"**

**TIP**
To obtain a precise adjustment, it is advisable to check the actual total number of turns of the damping force adjusting mechanism. This adjustment range may not exactly match the specifications listed due to small differences in production.




**Compression damping (for slow compression damping)**

ECA24390

***NOTICE***

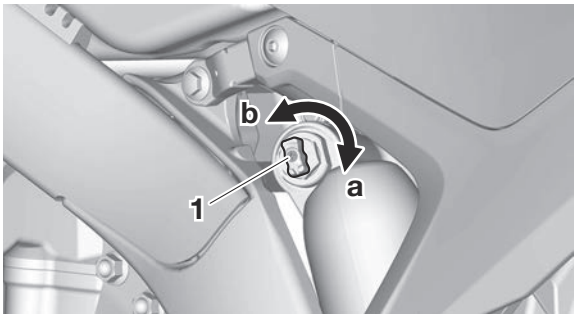
**Do not turn the adjuster forcibly beyond its adjusting range.**

1. Adjust:
   • Compression damping (for slow compression damping)
     a. Turn the adjuster "1" in the direction of "a" or "b" to make an adjustment.

**Direction "a"**
**Compression damping is increased (suspension is harder).**
**Direction "b"**
**Compression damping is decreased (suspension is softer).**

**Slow compression damping**
**Minimum (soft)**
**20 click(s) in direction "b"***
**Standard**
**12 click(s) in direction "b"* (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)**
**8 click(s) in direction "b"* (AUS, CAN, NZL, ZAF)**
**Maximum (hard)**
**0 click(s) in direction "b"***
***With the adjusting screw fully turned in direction "a"**

**TIP**
Although the total number of clicks of a damping force adjusting mechanism may not exactly match the above specifications due to small differences in production, the actual number of clicks always represents the entire adjusting range. To obtain a precise adjustment, it would be advisable to check the number of clicks of each damping force adjusting mechanism and to modify the specifications as necessary.



EAM30240
## CHECKING THE SWINGARM OPERATION
1. Check:
   • Swingarm smooth action
   • Swingarm free play
   Refer to "SWINGARM" on page 4-30.

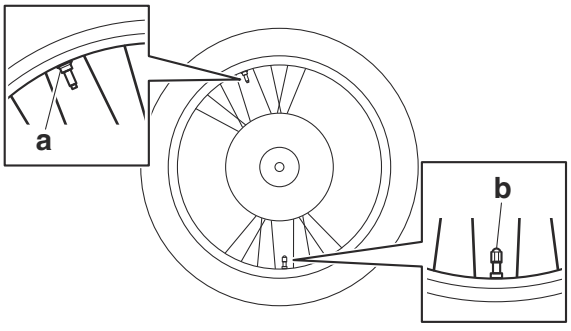
EAM30500
## LUBRICATING THE SWINGARM PIVOT
1. Lubricate:
   • Oil seal
   • Collar

| | |
|---|---|
| | **Recommended lubricant**<br>**Lithium-soap-based grease** |

EAM30243
## CHECKING THE TIRES
1. Measure:
   • Tire pressure
   Out of specification → Regulate.

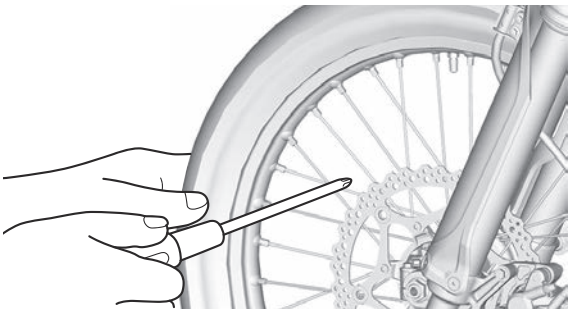
| | |
|---|---|
| | **Tire air pressure (measured on cold tires)**<br>**Front**<br>**100 kPa (1.00 kgf/cm², 15 psi)**<br>**Rear**<br>**100 kPa (1.00 kgf/cm², 15 psi)** |

**TIP**
- Check the tire while it is cold.
- Because if the bead stopper tightening nut is loose when the tire pressure is low, the tire could slip off the rim, thus be sure to check and tighten the bead stopper tightening nut "a".
- If the tire valve stem "b" is found tilted, the tire is considered to be slipping off its position. Correct the tire position.



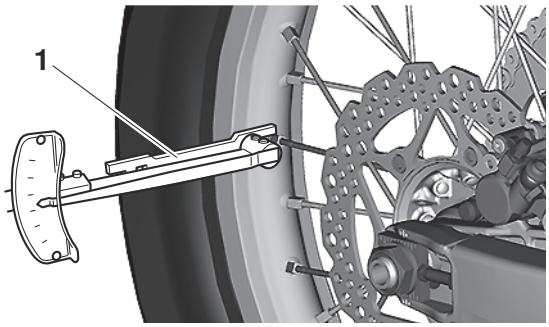

a. Bead stopper tightening nut
b. Tire valve stem

EAM30244
## CHECKING AND TIGHTENING THE SPOKES
1. Check:
   • Spoke
   Bend/damage → Replace.
   Loose → Tighten.
   Tap the spoke with a screwdriver.



**TIP**
A tight spoke will emit a clear, ringing tone; a loose spoke will sound flat.

2. Tighten:
   • Spoke
   (with a spoke nipple wrench "1")




| | |
|---|---|
| | **Spoke nipple wrench (6–7)**<br>**90890-01521**<br>**Spoke nipple wrench (6–7)**<br>**YM-01521** |

| | |
|---|---|
| | **Spoke**<br>**2.5 N·m (0.25 kgf·m, 1.8 lb·ft)** |

**TIP**
- Do not give a half turn (180°) or more for one tightening.
- Make sure that tightening after a break-in is done until the initial looseness in nipples disappears.
- Make sure that tightening is done in stages, not at a time.

EAM30245
## CHECKING THE WHEELS
1. Check:
   • Wheel
   Damage/out-of-round → Replace.

EWA13260
**⚠ WARNING**

**Never attempt to make any repairs to the wheel.**

EAM30253
### CHECKING THE CHASSIS FASTENERS
Make sure that all nuts, bolts, and screws are properly tightened.
Refer to "CHASSIS TIGHTENING TORQUES" on page 2-13.

EAM30248
### CHECKING AND LUBRICATING THE CABLES
The following procedure applies to all of the inner and outer cables.

EWA13270
**⚠ WARNING**

**Damaged outer cable may cause the cable to corrode and interfere with its movement. Replace damaged outer cable and inner cables as soon as possible.**

1. Check:
   • Outer cable
   Damage → Replace.
2. Check:
   • Cable operation
   Rough movement → Lubricate.

| | |
|---|---|
| | **Recommended lubricant**<br>**Engine oil or a suitable cable lubricant** |

**TIP**
Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubricating device.

EAM30483
### LUBRICATING THE BRAKE LEVER
1. Lubricate the pivoting points and metal-to-metal moving parts of the following parts.
   • Brake lever

| | |
|---|---|
| | **Recommended lubricant**<br>**Silicone grease** |

EAM30503
### LUBRICATING THE CLUTCH LEVER
1. Lubricate the pivoting points and metal-to-metal moving parts of the following parts.
   • Clutch lever

| | |
|---|---|
| | **Recommended lubricant**<br>**Lithium-soap-based grease** |

EAM30250
### LUBRICATING THE PEDAL
1. Lubricate the pivoting point and metal-to-metal moving parts of the pedal.

| | |
|---|---|
| | **Recommended lubricant**<br>**Lithium-soap-based grease** |

EAM20137
# ELECTRICAL SYSTEM

EAM30256
## CHECKING AND CHARGING THE BATTERY
Refer to “CHECKING AND CHARGING THE BATTERY” on page 7-1.

EAM30505
## CHECKING THE FUSES
Refer to “CHECKING THE FUSES” on page 7-1.

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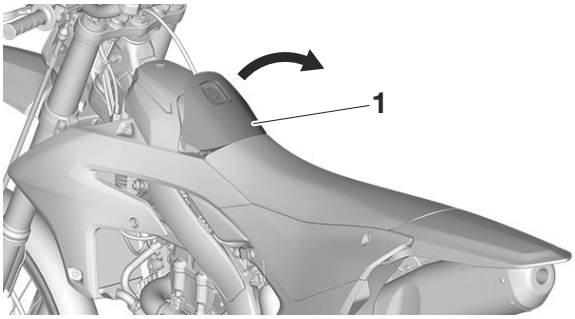
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EAM20094
# GENERAL CHASSIS

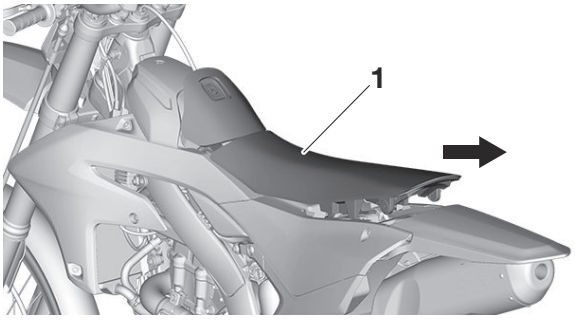
EAM30016
## REMOVING THE SEAT

**TIP**
The sub-seat and the seat are coupled with each other with a plastic band.
When removing the seat, always remove the sub-seat beforehand.

1. Remove:
   • Sub-seat "1"
   Refer to "FUEL TANK CAP" on page 1-18.




2. Remove:
   • Seat "1"

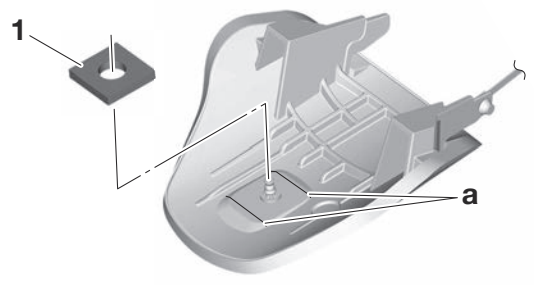



3. Check:
   • Damper "1"
   Damage/wear/detachment → Replace.




4. Replace:
   • Damper "1"

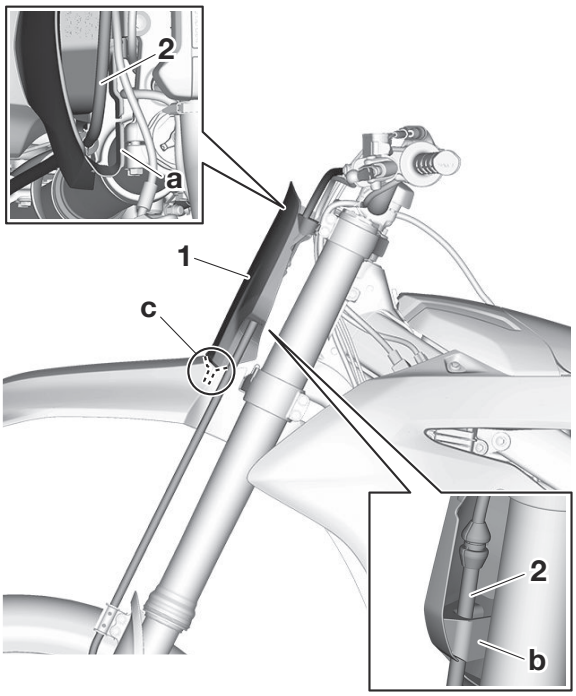
**TIP**
Install a new damper to the original position by aligning it with the scribe line "a".




EAM30371
## REMOVING THE NUMBER PLATE

1. Remove:
   • Bolt (number plate)
   • Number plate "1"

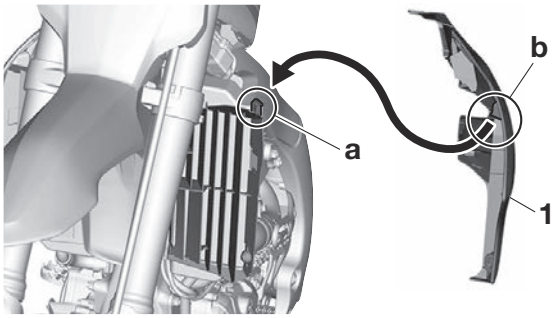
**TIP**
- Remove the brake hose "2" from the upper guide "a" and the lower guide "b" on the number plate.
- The projection "c" on the number plate is inserted into the front fender. Remove the number plate by pulling it off the front fender.




EAM30640
## INSTALLING THE SHROUD

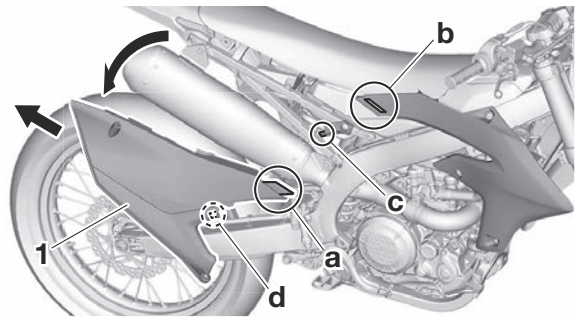
1. Install:
   • Shroud (left "1"/right)

**TIP**
Insert the projection "a" on the radiator guard (left/right) into the hole "b" in the shroud (left/right), install the shroud, and then secure it with the bolts.




EAM30459
## REMOVING THE SIDE COVER
1. Remove:
   • Side cover (right) “1”

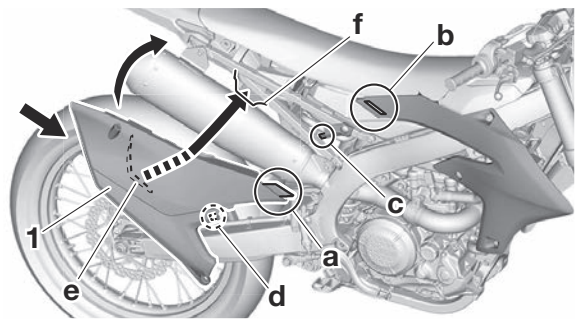
**TIP**
Remove the side cover (right) from the vehicle by removing the bolts and sliding it as shown.




a. Projection (upper)
b. Slot (upper)
c. Projection (lower)
d. Slot (lower)

EAM30460
## INSTALLING THE SIDE COVER
1. Install:
   • Side cover (right) “1”

**TIP**
- Install the side cover (right) by sliding it as shown and secure it with the bolts to fit it to the vehicle.
- Install the side cover (right) so that the rib is located under the rib of the rear fender.

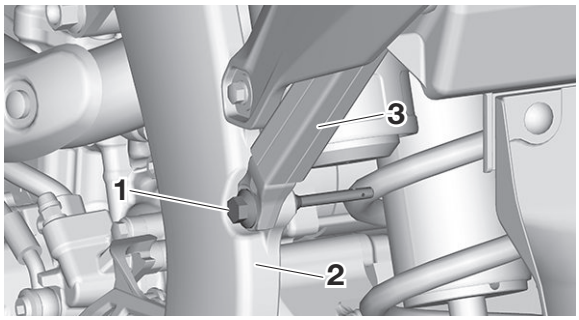



a. Projection (upper)
b. Slot (upper)
c. Projection (lower)
d. Slot (lower)
e. Rib (side cover)
f. Rib (rear fender)

EAM30669
## INSTALLING THE DRIVE CHAIN TENSIONER (UPPER)
1. Install:
   • Rear frame bolt “1”

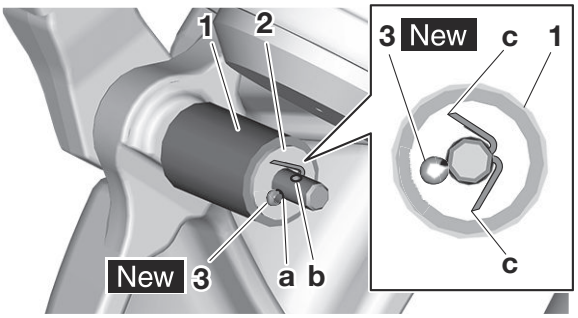
| | |
|---|---|
| | **Rear frame bolt**<br>**38 N·m (3.8 kgf·m, 28 lb·ft)** |

**TIP**
Install the front frame “2” to the rear frame “3” using the rear frame bolt.




2. Install:
   • Drive chain tensioner (upper) “1”
   • Washer “2”
   • Pin “3” New

**TIP**
- When inserting the pin into the pin hole of the rear frame bolt, insert it into the pin hole “a” on the outside of the vehicle. However, if assembly is difficult, it is possible to insert it into the pin hole “b” on the inside of the vehicle.
- The tip of the bent pin should not protrude from the outside diameter of the drive chain tensioner (upper).
- It does not matter if the tip of the pin “c” is away from the rear frame bolt.


1
2
3 New
c
1
New 3
a b
c

EAM20095
# FRONT WHEEL

EAM30017
## REMOVING THE FRONT WHEEL

1. Use a maintenance stand to raise the front wheel off the ground.

EWA13120
**⚠ WARNING**

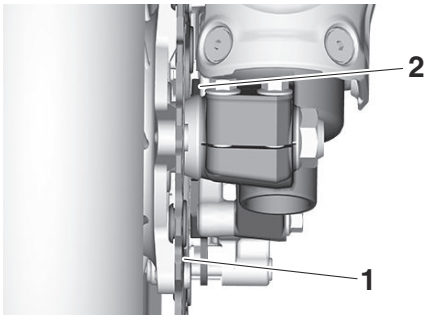
**Securely support the vehicle so that there is no danger of it falling over.**

2. Remove:
   • Front wheel

EAM30617
## INSTALLING THE FRONT WHEEL

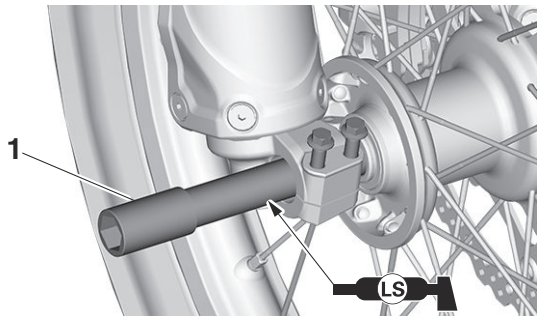
1. Install:
   • Front wheel

**TIP**
Install the brake disc "1" between the brake pads "2" correctly.




2. Install:
   • Front wheel axle "1"

**TIP**
Apply the lithium-soap-based grease to the front wheel axle.

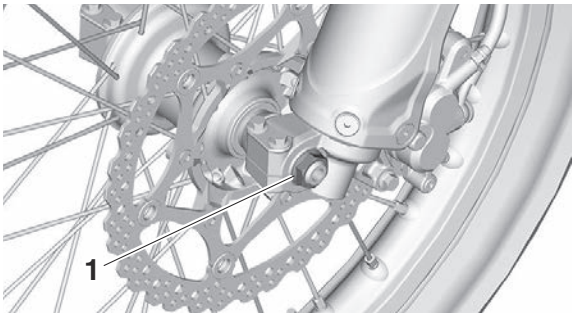



3. Tighten:
   • Front wheel axle nut "1"

| | |
|---|---|
| | **Front wheel axle nut**<br>**115 N·m (11.5 kgf·m, 85 lb·ft)** |

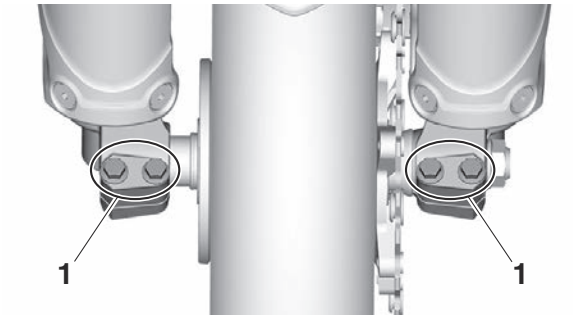
ECA24430
**NOTICE**

**Before tightening the front wheel axle nut, push down hard on the handlebar(s) several times and check if the front fork rebounds smoothly.**




4. Tighten:
   • Front wheel axle pinch bolt "1"

| | |
|---|---|
| | **Front wheel axle pinch bolt**<br>**21 N·m (2.1 kgf·m, 15 lb·ft)** |



EAM20096
# REAR WHEEL

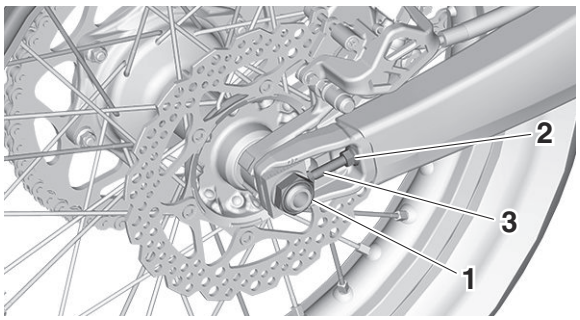
EAM30022
## REMOVING THE REAR WHEEL

1. Use a maintenance stand to raise the rear wheel off the ground.

EWA13120
**⚠ WARNING**

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

2. Remove:
   • Rear wheel axle nut "1"
3. Loosen:
   • Locknut "2"
4. Tighten:
   • Adjusting bolt "3"

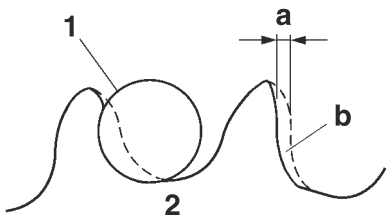



5. Remove:
   • Rear wheel axle
   • Rear wheel

**TIP**
- Push the rear wheel forward and remove the drive chain from the rear wheel sprocket.
- Do not depress the brake pedal with the rear wheel removed.

EAM30025
## CHECKING AND REPLACING THE REAR WHEEL SPROCKET

1. Check:
   • Rear wheel sprocket
   More than 1/4 tooth wear "a" → Replace the rear wheel sprocket and the drive sprocket as a set.
   Bent tooth → Replace the rear wheel sprocket and the drive sprocket as a set.




b. Correct

1. Drive chain roller
2. Rear wheel sprocket

2. Replace:
   • Rear wheel sprocket
   a. Remove the self-locking nuts and the rear wheel sprocket.
   b. Clean the rear wheel drive hub with a clean cloth, especially the surfaces that contact the sprocket.
   c. Install the new rear wheel sprocket.

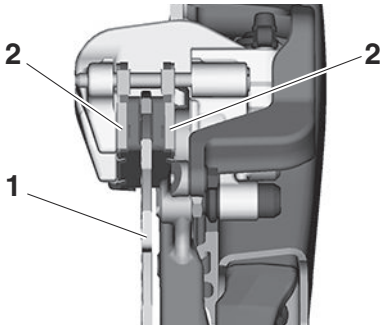
| | |
|---|---|
|  | **Rear wheel sprocket self-locking nut**<br>**42 N·m (4.2 kgf·m, 31 lb·ft)** |

**TIP**
Tighten the self-locking nuts in stages and in a crisscross pattern.

EAM30027
## INSTALLING THE REAR WHEEL

1. Install:
   • Rear wheel

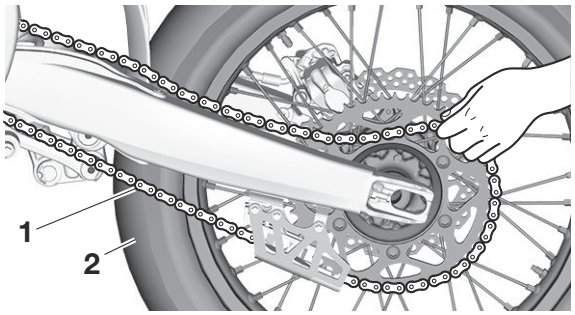
**TIP**
Install the brake disc "1" between the brake pads "2" correctly.




2. Install:
   • Drive chain "1"

**TIP**
Push the rear wheel "2" forward and install the

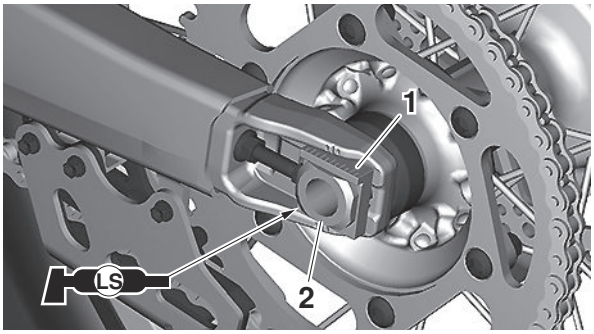
drive chain.




3. Install:
   • Drive chain puller (left) “1”
   • Rear wheel axle “2”

**TIP**

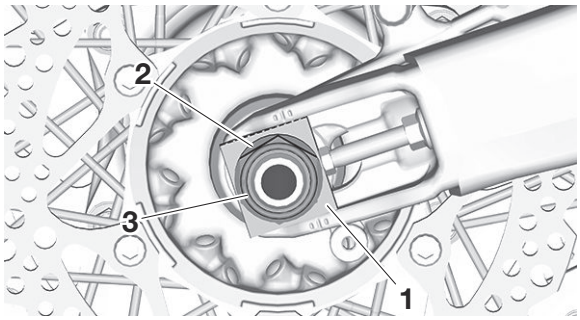
- Install the drive chain puller (left), and insert the rear wheel axle from the left side.
- Apply the lithium-soap-based grease to the rear wheel axle.




4. Install:
   • Drive chain puller (right) “1”
   • Washer “2”
   • Rear wheel axle nut “3”

**TIP**

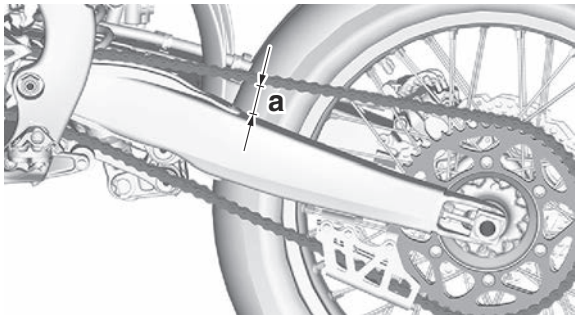
Temporarily tighten the rear wheel axle nut at this point.




5. Adjust:
   • Drive chain slack “a”

**Drive chain slack (Maintenance Stand)**
**50.0–60.0 mm (1.97–2.36 in)**

Refer to “DRIVE CHAIN SLACK” on page 3-23.

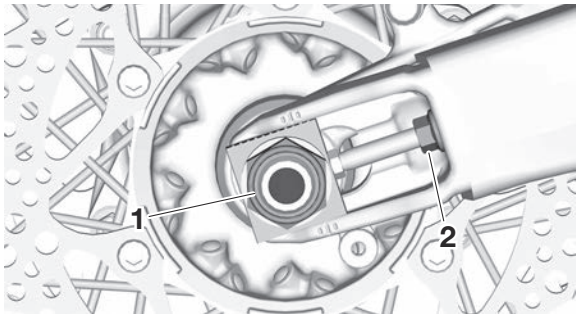



6. Tighten:
   • Rear wheel axle nut “1”

**Rear wheel axle nut**
**135 N·m (13.5 kgf·m, 100 lb·ft)**

   • Locknut “2”

**Locknut**
**21 N·m (2.1 kgf·m, 15 lb·ft)**

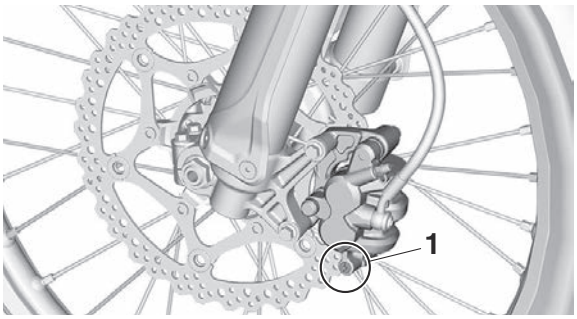


EAM20097
# FRONT BRAKE

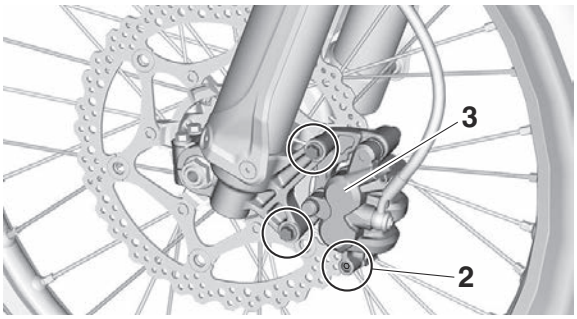
EAM30519
## REPLACING THE FRONT BRAKE PADS

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

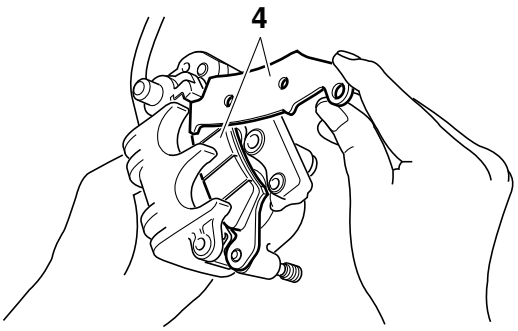
1. Remove:
   • Brake pad
   a. Remove the pad pin plug “1”.




   b. Loosen the pad pin “2”.
   c. Remove the brake caliper “3” from the front fork.

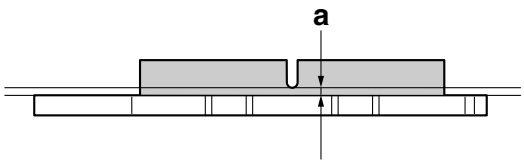



   d. Remove the pad pin and brake pads “4”.



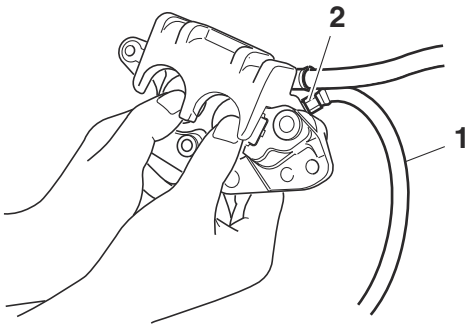

2. Measure:
   • Brake pad wear limit “a”
   Out of specification → Replace the brake pads as a set.

| | |
|---|---|
| | **Brake pad lining thickness limit**<br>**1.0 mm (0.04 in)** |




3. Install:
   • Brake pad
   a. Connect the plastic hose “1” to the bleed screw “2” and place a container under the end of the plastic hose.
   b. Loosen the bleed screw and push the brake caliper piston in.

EWA19160
**⚠ WARNING**
**Do not reuse the drained brake fluid.**

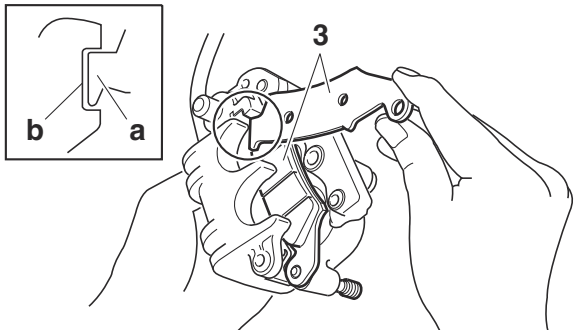



   c. Tighten the bleed screw.

| | |
|---|---|
| | **Bleed screw**<br>**5 N·m (0.5 kgf·m, 3.7 lb·ft)** |

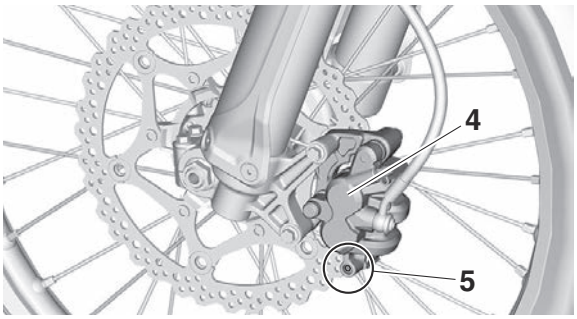
   d. Install the brake pads “3” and the pad pin.

**TIP**
• Install the brake pads with their projections “a” into the brake caliper recesses “b”.
• Temporarily tighten the pad pin at this point.



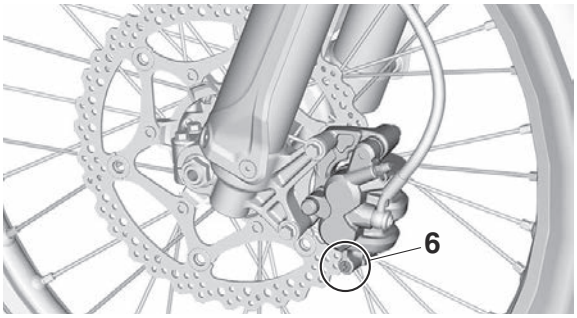

   e. Install the brake caliper “4” and tighten the pad pin “5”.

**Front brake caliper bolt**
**28 N·m (2.8 kgf·m, 21 lb·ft)**
**Pad pin**
**17 N·m (1.7 kgf·m, 13 lb·ft)**




f. Install the pad pin plug "6".

**Pad pin plug**
**2.5 N·m (0.25 kgf·m, 1.8 lb·ft)**



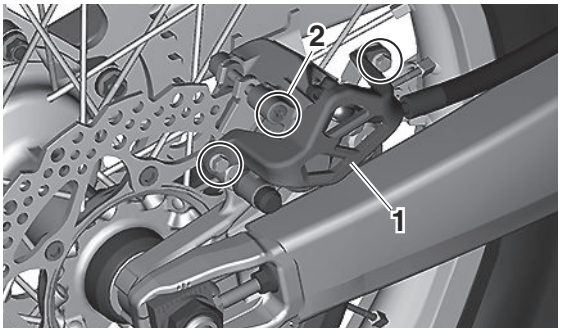

4. Check:
   • Brake fluid level
   Refer to "CHECKING THE BRAKE FLUID LEVEL" on page 3-20.
5. Check:
   • Brake lever operation
   A softy or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" on page 3-22.

EAM20098
# REAR BRAKE

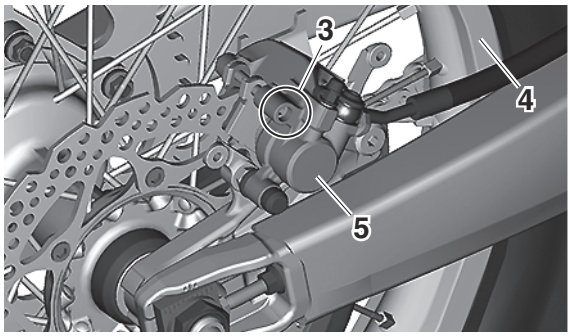
EAM30523
## REPLACING THE REAR BRAKE PADS

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

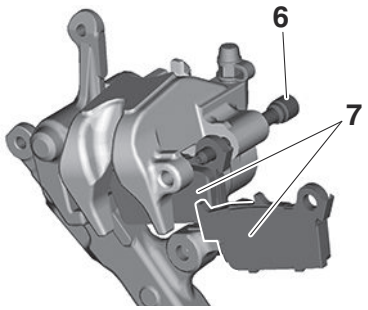
1. Remove:
   • Brake pad
   a. Remove the protector “1” and the pad pin plug “2”.




   b. Loosen the pad pin “3”.
   c. Remove the rear wheel “4” and the brake caliper “5”.

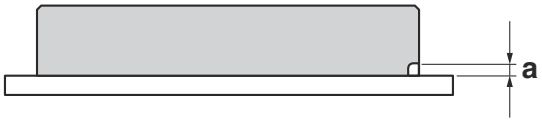



   d. Remove the pad pin “6” and the brake pads “7”.



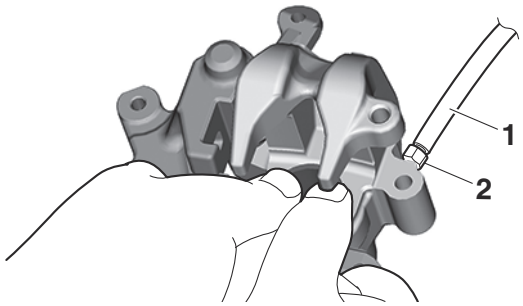

2. Measure:
   • Brake pad wear limit “a”
   Out of specification → Replace the brake pads as a set.

| | |
|---|---|
| | **Brake pad lining thickness limit 1.0 mm (0.04 in)** |




3. Install:
   • Brake pad
   a. Connect the plastic hose “1” to the bleed screw “2” and place a container under the end of the plastic hose.
   b. Loosen the bleed screw and push the brake caliper piston in.

EWA19170
**⚠ WARNING**
**Do not reuse the drained brake fluid.**

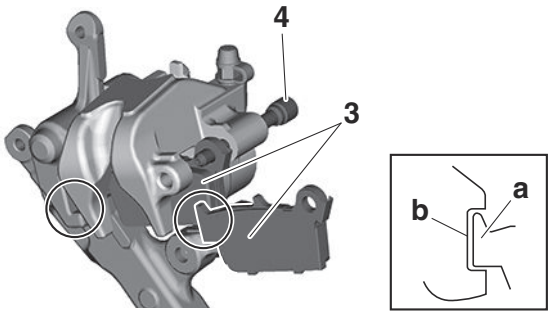



   c. Tighten the bleed screw.

| | |
|---|---|
| | **Bleed screw 5 N·m (0.5 kgf·m, 3.7 lb·ft)** |

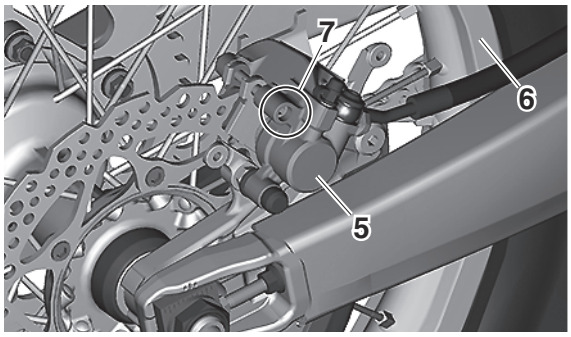
   d. Install the brake pads “3” and the pad pin “4”.

**TIP**
• Install the brake pads with their projections “a” into the brake caliper recesses “b”.
• Temporarily tighten the pad pin at this point.



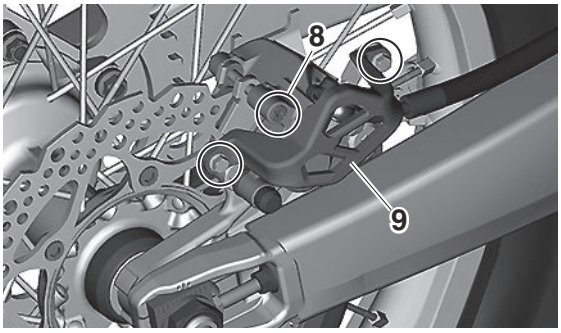

e. Install the brake caliper “5” and the rear wheel “6”.
f. Tighten the pad pin “7”.

| | |
|---|---|
| | **Pad pin**<br>**17 N·m (1.7 kgf·m, 13 lb·ft)** |




g. Install the pad pin plug “8” and the protector “9”.

| | |
|---|---|
| | **Pad pin plug**<br>**2.5 N·m (0.25 kgf·m, 1.8 lb·ft)**<br>**Rear brake caliper protector bolt**<br>**7 N·m (0.7 kgf·m, 5.2 lb·ft)** |




4. Check:
   • Brake fluid level
   Refer to “CHECKING THE BRAKE FLUID LEVEL” on page 3-20.
5. Check:
   • Brake pedal operation
   A softy or spongy feeling → Bleed the brake system.
   Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” on page 3-22.

EAM20099
# HANDLEBAR

EAM30052
## REMOVING THE HANDLEBAR
1. Stand the vehicle upright on a level surface.

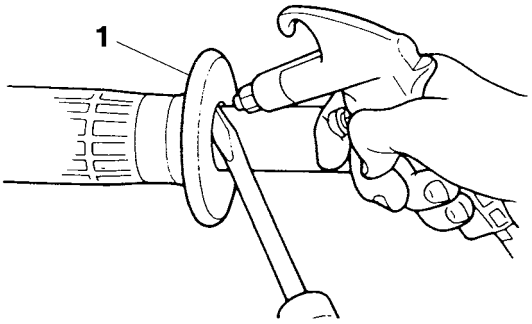
EWA13120
**⚠ WARNING**

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

2. Remove:
   - Grip "1"

**TIP**

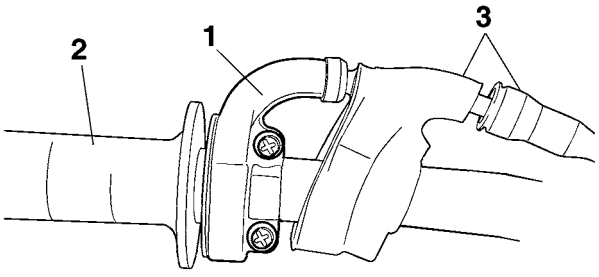
Blow in compressed air between the handlebar or tube guide and the grip. Then remove the grip which has become loose.




3. Remove:
   - Throttle cable housing " 1"
   - Throttle grip "2"

**TIP**

While removing the throttle cable housing, pull back the rubber cover "3".




EAM30053
## CHECKING THE HANDLEBAR
1. Check:
   - Handlebar
     Bends/cracks/damage → Replace.

EWA13690
**⚠ WARNING**

**Do not attempt to straighten a bent handlebar as this may dangerously weaken it.**

EAM30054
## INSTALLING THE HANDLEBAR
1. Stand the vehicle upright on a level surface.

EWA13120
**⚠ WARNING**

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

2. Install:
   - Damper "1"
   - Lower handlebar holder "2" (temporarily)
   - Handlebar "3"
   - Upper handlebar holder "4"

| | |
|---|---|
|  | **Upper handlebar holder bolt 28 N·m (2.8 kgf·m, 21 lb·ft)** |

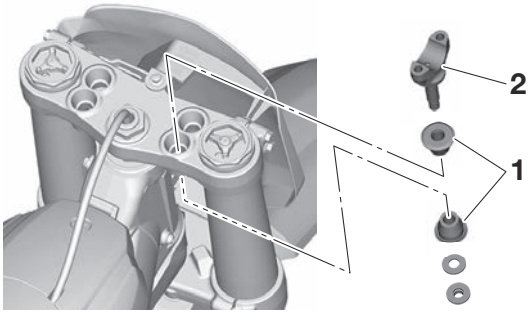
**TIP**

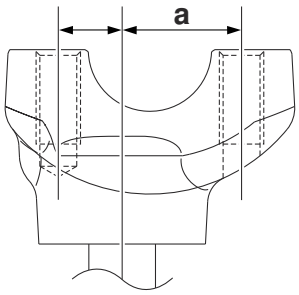
- Install the lower handlebar holders with the side having the longer distance "a" from the mounting bolt center facing towards the front side of the vehicle.
- Installing the lower handlebar holders in the reverse direction allow the front-to-rear offset amount of the handlebar position to be changed.
- Installing the lower handlebar holder holes from the back to the front allows front-to-rear offset amount of the handlebar position to be changed.
- The upper handlebar holders should be installed with the punch marks "b" facing forward.
- When installing the handlebar, make sure that right and left marks "c" are in place identically on both sides.
- Install the handlebar so that the projection "d" of the upper handlebar holders is positioned at the mark on the handlebar as shown.

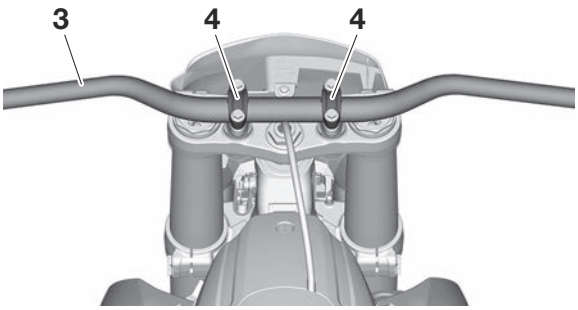
ECA14250

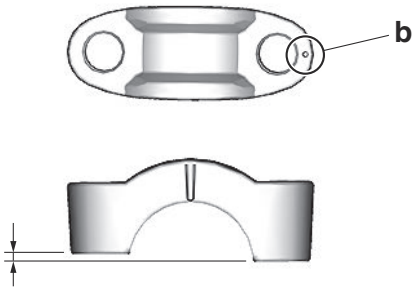
***NOTICE***

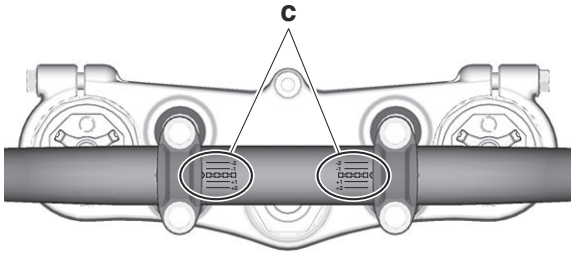
- **First, tighten the bolts on the front side of the handlebar holder, and then on the rear side.**
- **Turn the handlebar all the way to the left and right. If there is any contact with the fuel tank, adjust the handlebar position.**

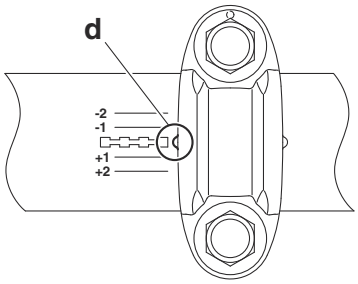


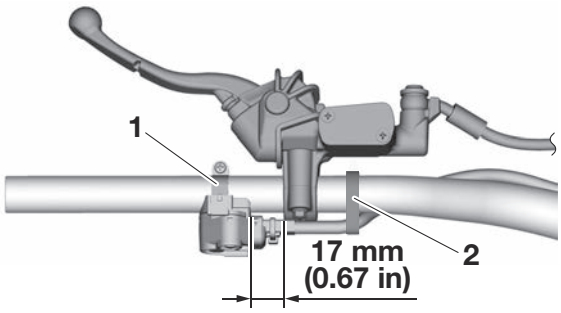

3. Tighten:
   • Lower handlebar holder nut

| | |
|---|---|
| | **Lower handlebar holder nut**<br>**40 N·m (4.0 kgf·m, 30 lb·ft)** |

4. Install:
   • Clutch master cylinder
   Refer to "INSTALLING THE CLUTCH MASTER CYLINDER" on page 5-8.
5. Install:
   • Handlebar switch (left) "1"
   • Clamp "2"

| | |
|---|---|
| | **Handlebar switch (left)**<br>**1.3 N·m (0.13 kgf·m, 0.95 lb·ft)** |

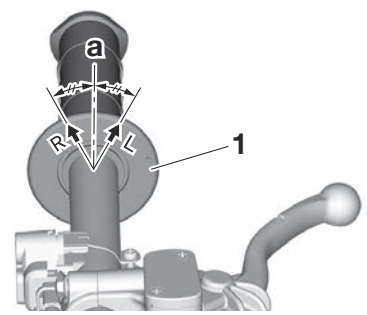
**TIP**
- The handlebar switch (left) "1" should be installed according to the dimensions shown.
- Pass the handlebar switch lead (left) through the middle of the clutch master cylinder holder.




6. Install:
   • Handlebar grip (left) "1"
   a. Slightly coat the handlebar left end with a rubber adhesive.
   b. Install the handlebar grip (left) on the handlebar by pressing the grip from the left side.
   c. Wipe off any excess adhesive with a clean cloth.

**TIP**
Install the handlebar grip (left) to the handlebar so that the line "a" between the two arrow marks

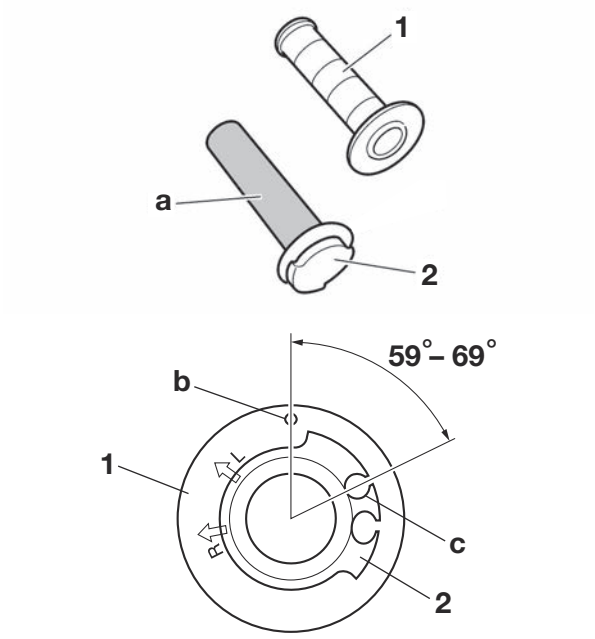
faces straight upward.




7. Adjust:
   • Clutch lever position
   Refer to "ADJUSTING THE CLUTCH LEVER POSITION" on page 3-11.
8. Install:
   • Handlebar grip (right) "1"
   Apply adhesive to the tube guide "2".

**TIP**

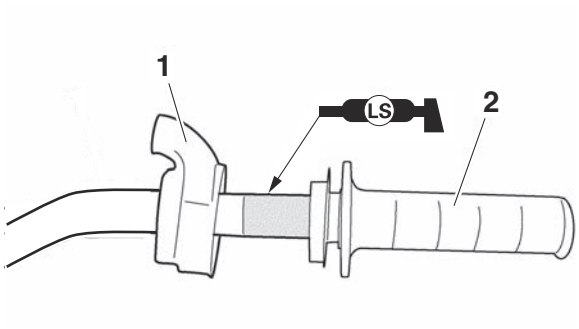
- Before applying the adhesive, wipe off grease or oil on the tube guide surface "a" with a lacquer thinner.
- Install the grip to the tube guide so that the grip match mark "b" and tube guide slot "c" form the angle as shown.




9. Install:
   • Rubber cover "1"
   • Throttle grip "2"

**TIP**

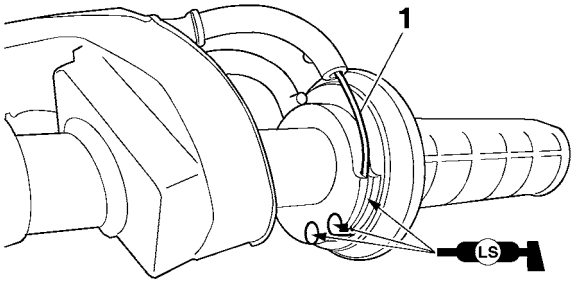
Apply the lithium-soap-based grease on the throttle grip sliding surface.




10. Install:
    • Throttle cable "1"

**TIP**

Slightly coat the end of throttle cable and inside of throttle grip with lithium-soap-based grease. Then, mount the throttle grip onto the handlebar.



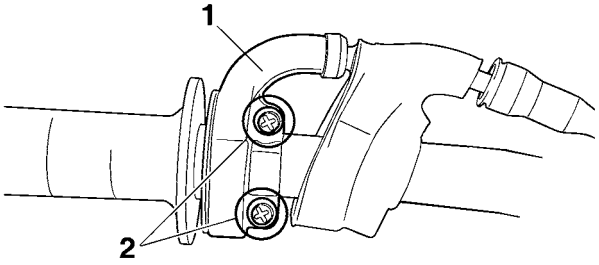

11. Install:
    • Throttle cable housing "1"
    • Screw (throttle cable housing) "2"

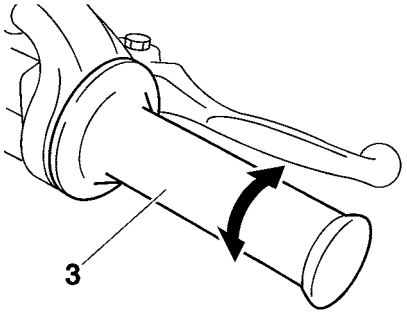
| | |
|---|---|
| | **Screw (throttle cable housing)**<br>**3.8 N·m (0.38 kgf·m, 2.8 lb·ft)** |

EWA19310

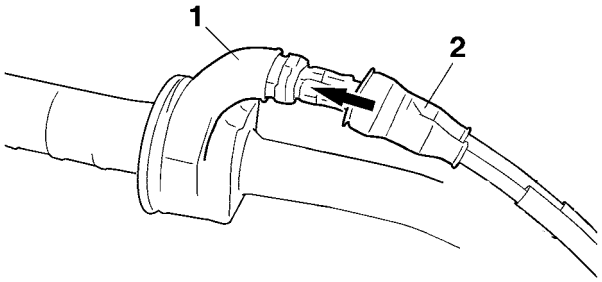
**⚠ WARNING**

**After tightening the throttle cable housing screws, check that the throttle grip "3" moves smoothly. If it does not, retighten the screws for adjustment.**





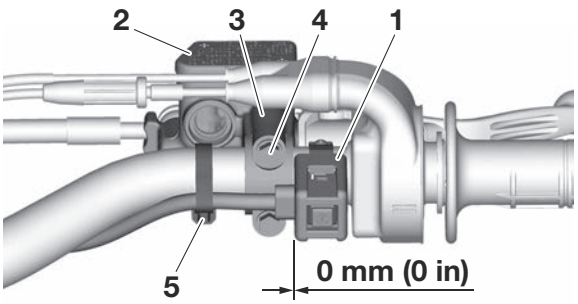

12. Install:
- Rubber cover "1"
- Cover (throttle cable housing) "2"

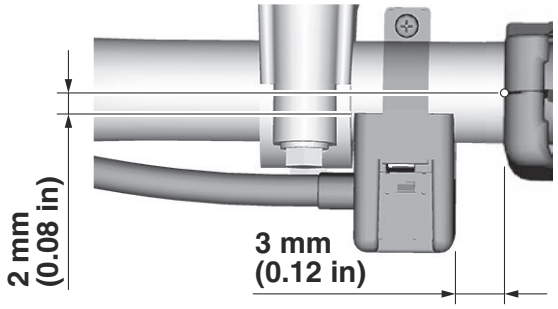



13. Install:
- Starter switch "1"
- Front brake master cylinder assembly "2"
- Front brake master cylinder holder "3"
- Front brake master cylinder holder bolt "4"
- Clamp "5"

**Front brake master cylinder holder bolt**
**9 N·m (0.9 kgf·m, 6.6 lb·ft)**

**TIP**
- Install the front brake master cylinder holder with the "UP" mark facing up.
- Install in order for the top of the front brake master cylinder assembly to be level.
- First, tighten the upper bolt, then the lower bolt.
- Pass the starter switch lead through the middle of the front brake master cylinder holder.




14. Adjust:
- Throttle grip free play
  Refer to "CHECKING THE THROTTLE GRIP" on page 3-8.

**Throttle grip free play**
**3.0–6.0 mm (0.12–0.24 in)**

EAM20100
# FRONT FORK

EAM30055
## REMOVING THE FRONT FORK LEGS

1. Use a maintenance stand to raise the front wheel off the ground.

EWA13120
**⚠ WARNING**

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

**TIP**
Record the adjusting screw setting position before loosening the adjuster and the base valve.

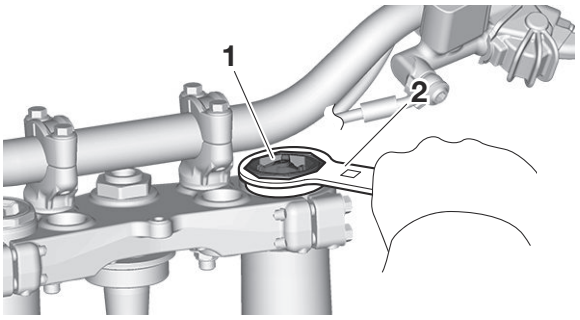
2. Loosen:
   - Upper bracket pinch bolt
   - Damper assembly
   - Lower bracket pinch bolt

EWA20350
**⚠ WARNING**

**Before loosening the upper and lower bracket pinch bolts, support the front fork leg.**

**TIP**
Before removing the front fork leg from the vehicle, loosen the damper assembly "1" with the cap bolt ring wrench "2".

**Cap bolt ring wrench**
**90890-01501**
**Cap bolt ring wrench**
**YM-01501**




3. Remove:
   - Front fork leg

EAM30056
## DISASSEMBLING THE FRONT FORK LEGS

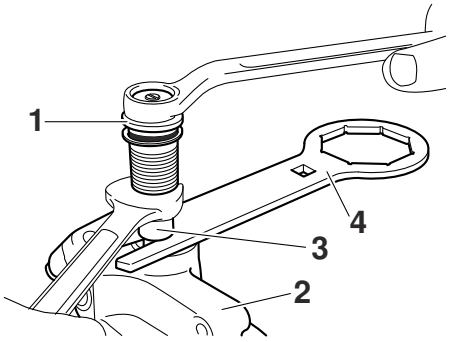
1. Drain:
   - Fork oil
2. Remove:
   - Adjuster "1"
     (from the inner tube)

**TIP**
- While compressing the inner tube "2", set the cap bolt ring wrench "4" between the inner tube and locknut "3".
- Hold the locknut and remove the adjuster.

ECA24520
***NOTICE***

**Do not remove the locknut as the damper rod may go into the damper assembly and not be taken out.**

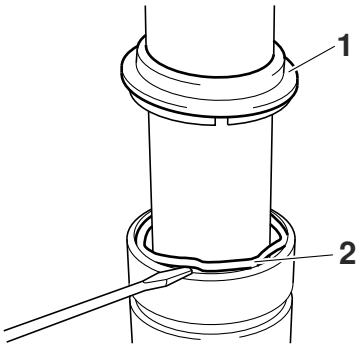
**Cap bolt ring wrench**
**90890-01501**
**Cap bolt ring wrench**
**YM-01501**



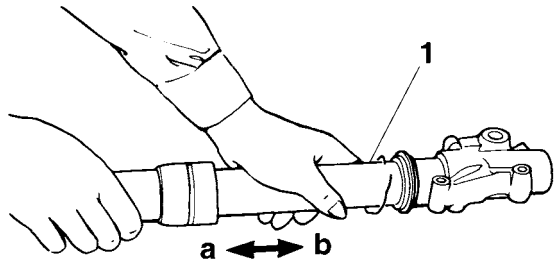

3. Remove:
   - Dust seal "1"
   - Stopper ring "2"
     (with a flat-head screwdriver)

ECA14180
***NOTICE***

**Do not scratch the inner tube.**




4. Remove:
   - Inner tube "1"
     a. Push in slowly "a" the inner tube just before it bottoms out and then pull it back quickly "b".
     b. Repeat this step until the inner tube can be pulled out from the outer tube.

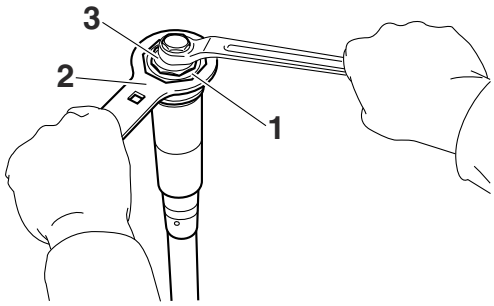



5. Remove:
   • Adjuster knob
   • Base valve "1"
   (from the damper assembly)

**TIP**

- Before loosening the damping force adjuster, record the setting position.
- Unless the damping force adjuster is fully loosened, correct damping characteristic cannot be obtained after installation.
- Hold the damper assembly with the cap bolt ring wrench "2" and use the cap bolt wrench "3" to remove the base valve.

**Cap bolt wrench**
**90890-01911**
**Cap bolt ring wrench**
**90890-01501**
**Cap bolt ring wrench**
**YM-01501**




EAM30057

## CHECKING THE FRONT FORK LEGS

1. Check:
   • Inner tube surface
   Scratches → Repair or replace.
   Use #1000 grit wet sandpaper.
   Damaged oil lock piece → Replace.
   • Inner tube bends
   Out of specification → Replace.
   Use the dial gauge.

**Inner tube bending limit**
**0.2 mm (0.01 in)**

**TIP**

The bending value is shown by one half of the dial gauge reading.

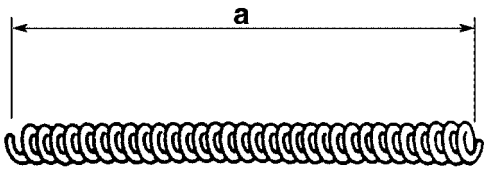
EWA13650

**WARNING**

**Do not attempt to straighten a bent inner tube as this may dangerously weaken it.**

2. Check:
   • Outer tube
   Scratches/wear/damage → Replace.
3. Measure:
   • Fork spring free length "a"
   Out of specification → Replace.

**Fork spring free length limit**
**492.0 mm (19.37 in)**

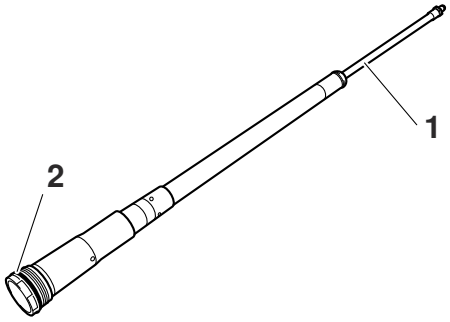



4. Check:
   • Damper assembly "1"
   Bend/damage → Replace.
   • O-ring "2"
   Wear/damage → Replace.

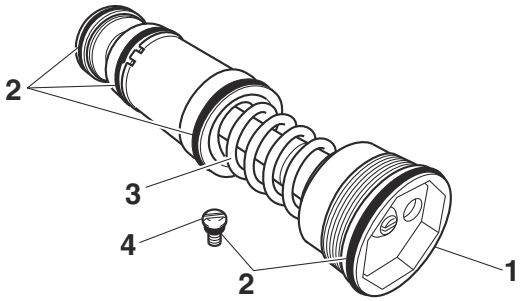
ECA14200

***NOTICE***

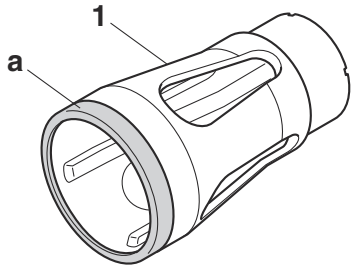
- **The front fork leg has a built-in damper adjusting rod and a very sophisticated internal construction, which are particularly sensitive to foreign material.**
- **When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.**



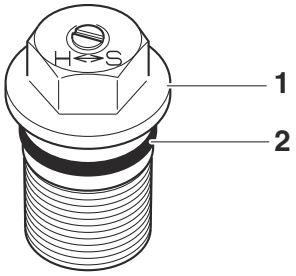

5. Check:
   - Base valve "1"
     Wear/damage → Replace.
     Contamination → Clean.
   - O-ring "2"
     Wear/damage → Replace.
   - Base valve bushing
     Wear/damage → Replace.
   - Fork spring "3"
     Damage/fatigue → Replace the base valve.
   - Bleed screw "4"
     Wear/damage → Replace.



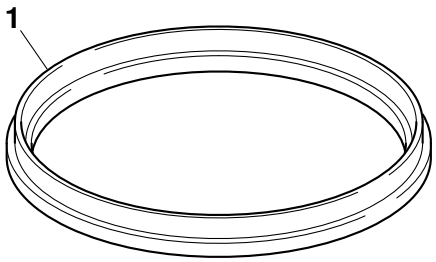

6. Check:
   - Upper spring seat "1"
     (contacting surface "a")
     Wear/damage → Replace.




7. Check:
   - Adjuster "1"
   - O-ring "2"
     Wear/damage → Replace.




8. Check:
   - Scraper "1"
     Damage → Replace.




EAM30058

## ASSEMBLING THE FRONT FORK LEGS

EWA13660

**WARNING**

- **Make sure the oil levels in both front fork legs are equal.**
- **Uneven oil levels can result in poor handling and a loss of stability.**

**TIP**

- When assembling the front fork leg, be sure to replace the following parts:
  - Inner tube bushing
  - Slide metal
  - Oil seal
  - Copper washer
- Before assembling the front fork leg, make sure that all of the components are clean.

1. Stretch the damper assembly fully.
2. Fill:
   - Damper assembly

**Recommended oil**
**Yamaha Suspension Oil S1**
**Standard oil amount**
**216 cm³ (7.30 US oz, 7.62 Imp.oz)**

ECA24530

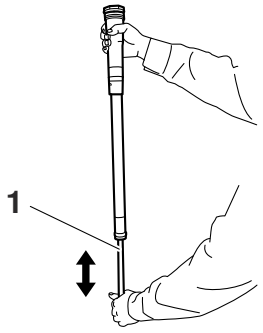
**NOTICE**

- **Be sure to use the recommended oil. Other oils may have an adverse effect on front fork performance.**
- **When disassembling and assembling the front fork leg, take care not to allow any foreign material to enter the front fork.**

3. After filling, pump the damper assembly "1" slowly up and down (about 200 mm (7.9 in) stroke) several times to bleed the damper assembly of air.

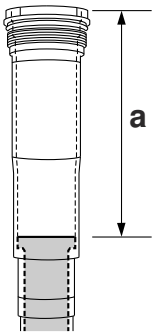
**TIP**

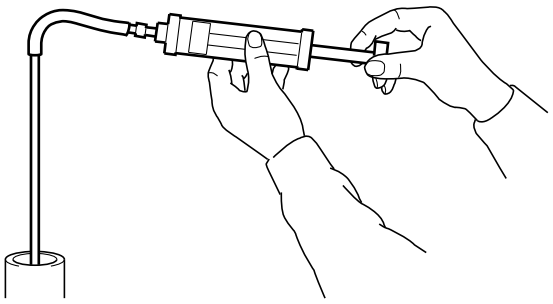
Avoid excessive full stroke. A stroke of 200 mm (7.9 in) or more will cause air to enter. In this case, repeat the steps (1) to (3).




4. Measure:
   - Oil level (left and right) "a"
     Out of specification → Regulate.

**Standard oil level**
**145–148 mm (5.71–5.83 in)**
**From top of fully stretched damper assembly.**

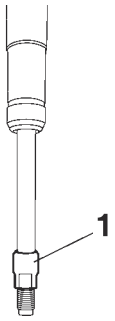


5. Tighten:
   - Locknut "1"

**TIP**

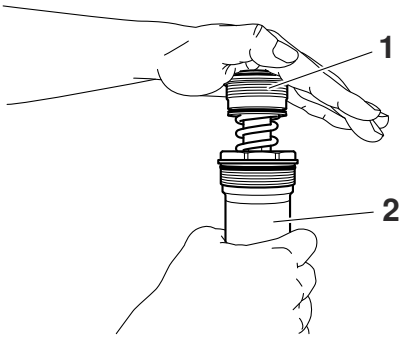
Fully finger tighten the locknut onto the damper assembly.




6. Install:
   - Base valve "1"
     (to the damper assembly "2")

**TIP**

First bring the damper rod pressure to a maximum. Then install the base valve while releasing the damper rod pressure.

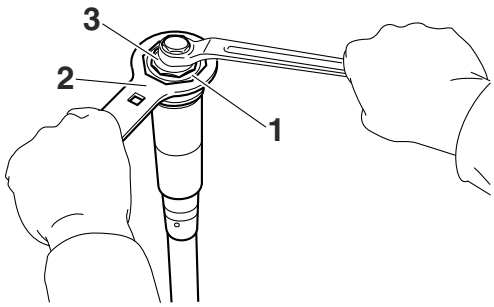



7. Check:
   - Damper assembly
     Not fully stretched → Repeat the steps (1) to (7).
8. Tighten:
   - Base valve "1"
   - Screw (adjuster knob)

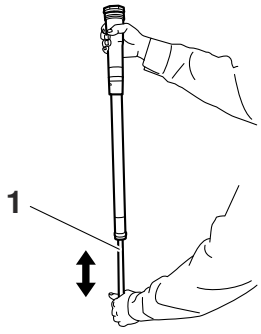
**Base valve**
**28 N·m (2.8 kgf·m, 21 lb·ft)**
**Screw (adjuster knob)**
**0.6 N·m (0.06 kgf·m, 0.44 lb·ft)**

**TIP**
Hold the damper assembly with the cap bolt ring wrench "2" and use the cap bolt wrench "3" to tighten the base valve.

**Cap bolt wrench**
**90890-01911**
**Cap bolt ring wrench**
**90890-01501**
**Cap bolt ring wrench**
**YM-01501**

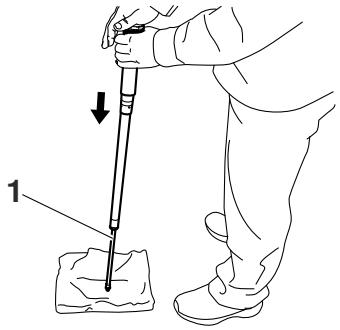



9. After filling, pump the damper assembly "1" slowly up and down more than 10 times to distribute the fork oil.



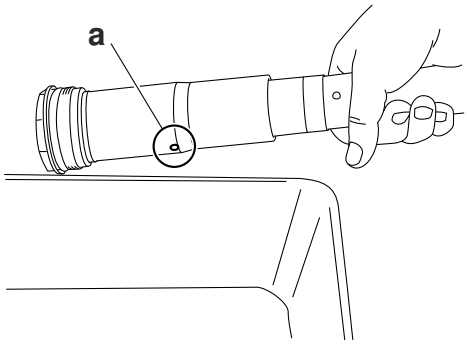

10. While protecting the damper assembly "1" with a cloth and compressing fully, allow excessive oil to overflow on the base valve side.

ECA24540
***NOTICE***
**Take care not to damage the damper assembly.**

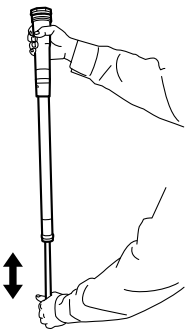



11. Allow the overflowing oil to escape at the hole "a" in the damper assembly.

**TIP**
The overflow measures about 10 $cm^3$ (0.34 US oz, 0.35 Imp.oz).



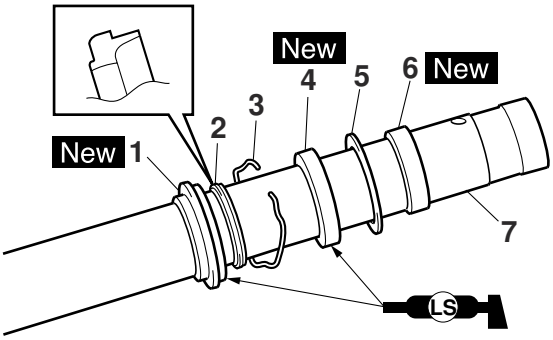

12. Check:
- Damper assembly smooth movement
  Tightness/binding/rough spots → Repeat the steps (1) to (12).

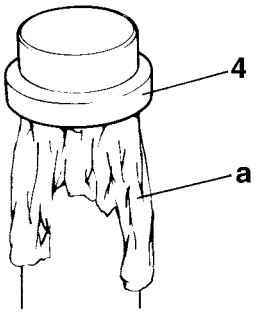


13. Install:
- Dust seal "1" New
- Scraper "2"
- Stopper ring "3"
- Oil seal "4" New
- Washer "5"
- Slide metal "6" New
  (to the inner tube "7")

ECA24550
***NOTICE***
**Make sure that the numbered side of the oil seal faces bottom side.**

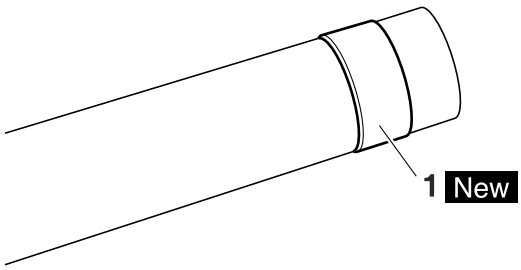
**TIP**
- Apply the lithium-soap-based grease on the dust seal lip and oil seal lip.
- Apply the fork oil on the inner tube.
- Install the scraper to the inner tube as shown in the illustration.
- When installing the oil seal, use vinyl seat "a" with fork oil applied to protect the oil seal lip.



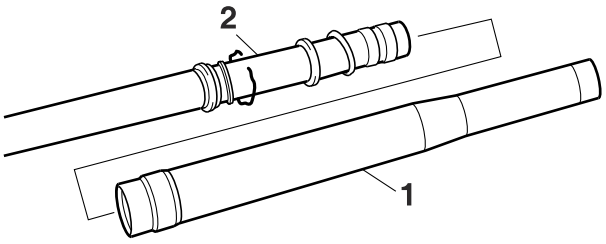




14. Install:
- Piston metal "1" New

**TIP**
Install the piston metal onto the slot on inner tube.



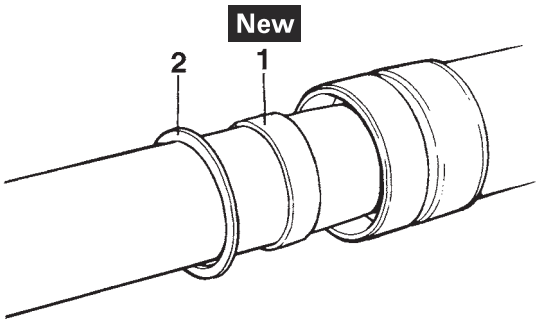

15. Install:
- Outer tube "1"
  (to the inner tube "2")

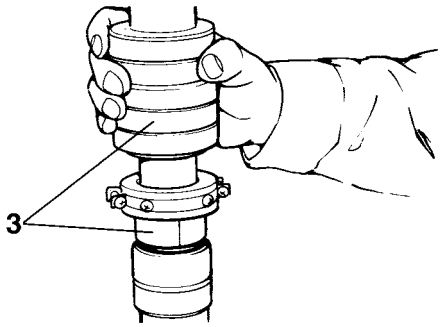



16. Install:
- Slide metal "1" New
- Washer "2"
  (to the outer tube)

**TIP**
Press the slide metal into the outer tube with fork seal driver "3".

| | |
|---|---|
| | **Fork seal driver**<br>**90890-01917**<br>**Fork seal driver (48)**<br>**YM-A0948** |

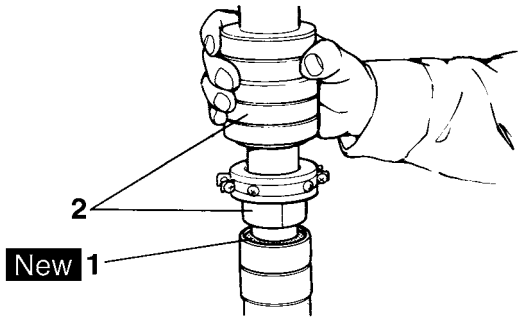



17. Install:
- Oil seal "1" New

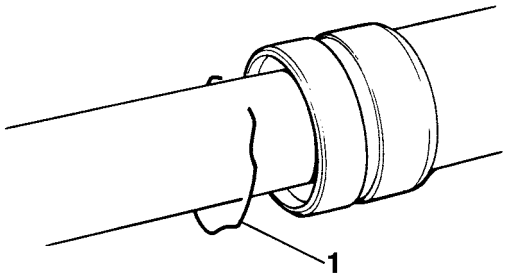
**TIP**
Using a fork seal driver "2", press the oil seal in until the stopper ring groove fully appears.

**Fork seal driver**
**90890-01917**
**Fork seal driver (48)**
**YM-A0948**



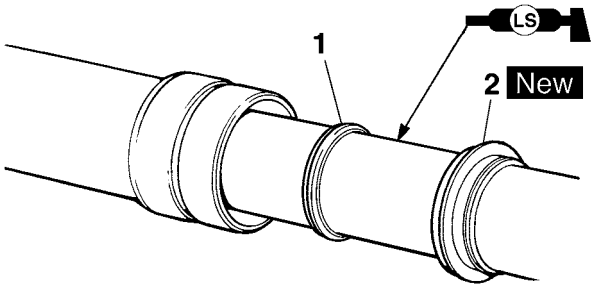

18. Install:
- Stopper ring "1"

**TIP**
Fit the stopper ring correctly in the groove in the outer tube.

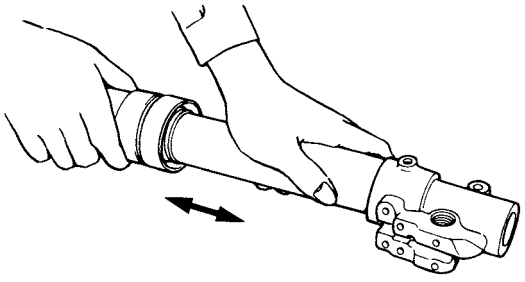



19. Install:
- Scraper "1"
- Dust seal "2" New

**TIP**
Apply lithium-soap-based grease on the inner tube.

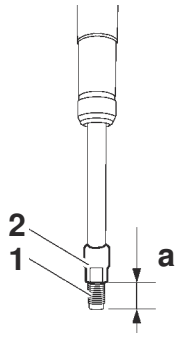



20. Check:
- Inner tube smooth movement
  Tightness/binding/rough spots → Repeat the steps (13) to (20).



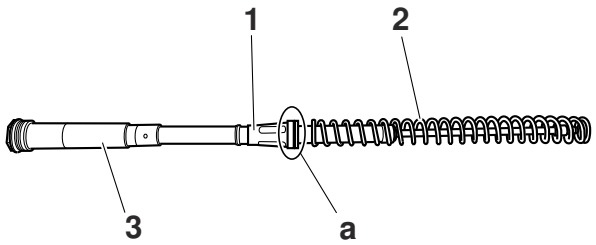
21. Measure:
- Distance "a"
  Out of specification → Turn the locknut to specification.

**Distance "a"**
**16 mm (0.63 in) or more**
**Between the damper assembly "1" bottom and locknut "2" bottom.**




22. Install:
- Upper spring seat "1"
- Fork spring "2"
  (to the damper assembly "3")

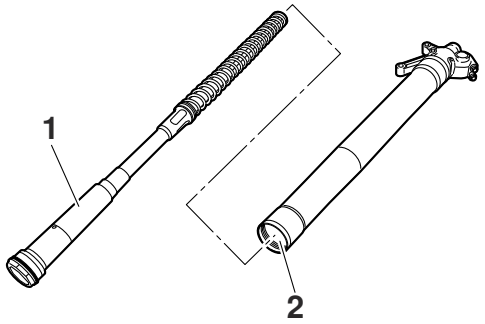
**TIP**
Install the upper spring seat with its larger dia. end "a" facing the fork spring.




23. Install:
- Damper assembly "1"
  (to the inner tube "2")

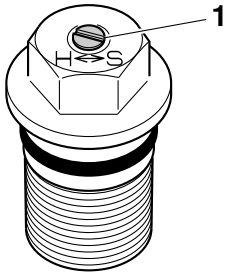
ECA24560
**NOTICE**

**Allow the damper assembly to slide slowly down the inner tube until it contacts the bottom of the inner tube. Be careful not to damage the inner tube.**




24. Loosen:
- Rebound damping force adjuster "1"

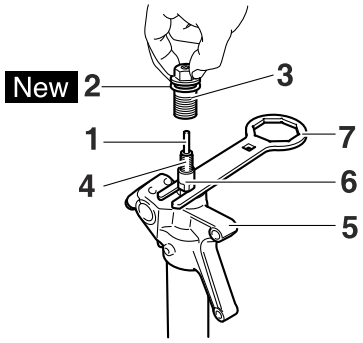
**TIP**
- Before loosening the damping force adjuster, record the setting position.
- Unless the damping force adjuster is fully loosened, correct damping characteristic cannot be obtained after installation.




25. Install:
- Damper adjusting rod "1"
- Copper washer "2" New
- Adjuster "3"
  (to the damper assembly "4")

**TIP**
- While compressing the inner tube "5", set the cap bolt ring wrench "7" between the inner tube and locknut "6".
- Fully finger tighten the adjuster onto the damper assembly.

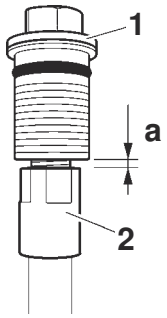
| | |
|---|---|
| | **Cap bolt ring wrench**<br>**90890-01501**<br>**Cap bolt ring wrench**<br>**YM-01501** |




26. Measure:
- Gap "a" between the adjuster "1" and the locknut "2"
  Out of specification → Retighten and readjust the locknut.

| | |
|---|---|
| | **Gap "a" between the adjuster and the locknut**<br>**0.5–1.0 mm (0.02–0.04 in)** |

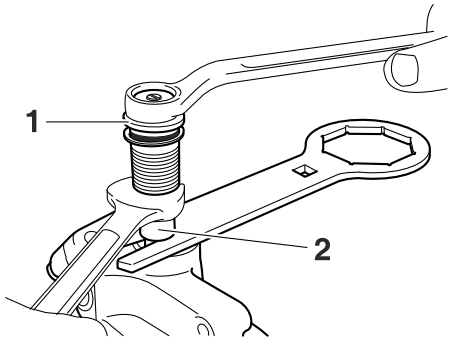
**TIP**
If it is installed with a gap out of specification, correct damping force cannot be obtained.




27. Tighten:
- Adjuster (damper assembly) "1"

| | |
|---|---|
| | **Adjuster (damper assembly)**<br>**29 N·m (2.9 kgf·m, 21 lb·ft)** |

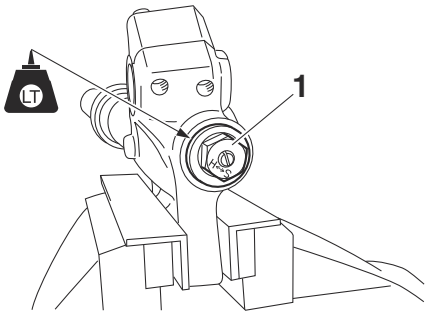
**TIP**
Hold the locknut "2" and tighten the adjuster.




28. Install:
- Adjuster "1"

(to the inner tube)

| | |
|---|---|
| | **Adjuster**<br>**55 N·m (5.5 kgf·m, 41 lb·ft)**<br>**LOCTITE®** |



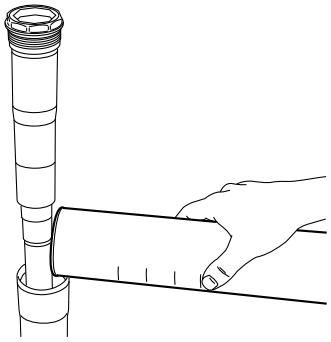

29. Fill:
- Front fork leg

| | |
|---|---|
| | **Recommended oil**<br>**Yamaha Suspension Oil S1**<br>**Standard oil amount**<br>**280.0 cm³ (9.47 US oz, 9.88 Imp.oz) (AUS, CAN, NZL, ZAF)**<br>**310.0 cm³ (10.48 US oz, 10.93 Imp.oz) (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)**<br>**Extent of adjustment**<br>**260–365 cm³ (8.79–12.34 US oz, 9.17–12.87 Imp.oz)** |

ECA24570

***NOTICE***

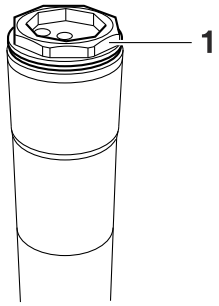
- **Be sure to use the recommended oil. Other oils may have an adverse effect on front fork performance.**
- **When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.**



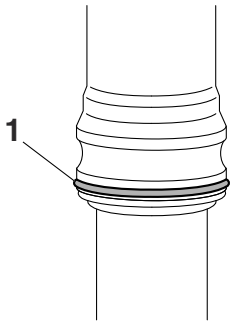
30. Install:
- Damper assembly "1"
(to the outer tube)

**TIP**

Temporarily tighten the damper assembly.




31. Install:
- Protector guide "1"



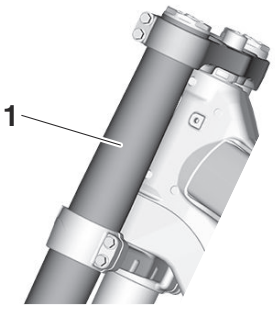

EAM30059

## INSTALLING THE FRONT FORK LEGS

1. Install:
- Front fork "1"

**TIP**

- Temporarily tighten the lower bracket pinch bolts.
- Do not tighten the upper bracket pinch bolts yet.

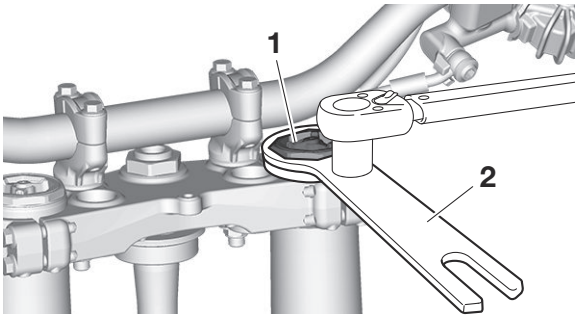



2. Tighten:
- Damper assembly "1"

| | |
|---|---|
| | **Damper assembly**<br>**30 N·m (3.0 kgf·m, 22 lb·ft)** |

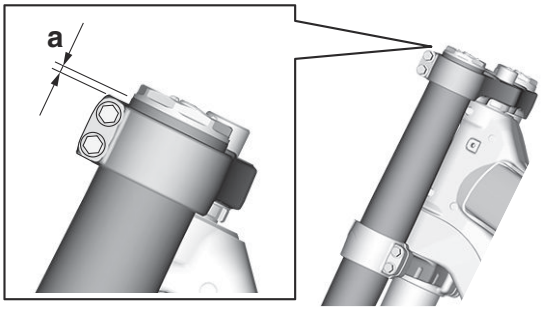
**TIP**
Use the cap bolt ring wrench "2" to tighten the damper assembly.

| | |
|---|---|
| | **Cap bolt ring wrench**<br>**90890-01501**<br>**Cap bolt ring wrench**<br>**YM-01501** |




3. Adjust:
   • Front fork top end "a"

| | |
|---|---|
| | **Front fork top end (standard) "a"**<br>**2 mm (0.1 in) (AUS, CAN, NZL, ZAF)**<br>**5 mm (0.2 in) (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)** |



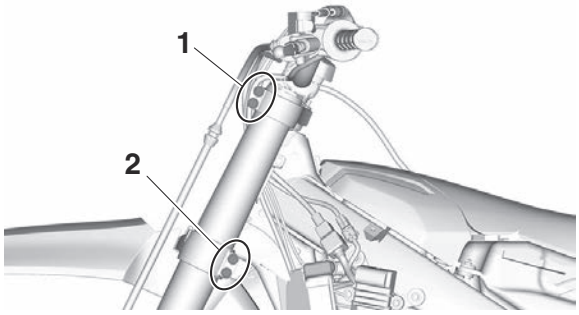

4. Tighten:
   • Upper bracket pinch bolt "1"

| | |
|---|---|
| | **Upper bracket pinch bolt**<br>**21 N·m (2.1 kgf·m, 15 lb·ft)** |

   • Lower bracket pinch bolt "2"

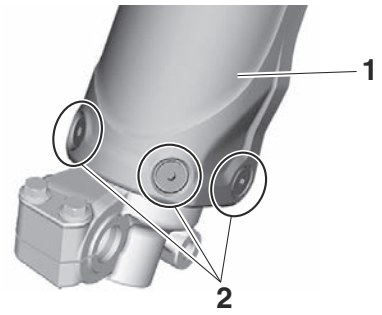
| | |
|---|---|
| | **Lower bracket pinch bolt**<br>**21 N·m (2.1 kgf·m, 15 lb·ft)** |

EWA19320
**WARNING**
**Tighten the lower bracket to specified torque. If torqued too much, it may cause the front fork to malfunction.**



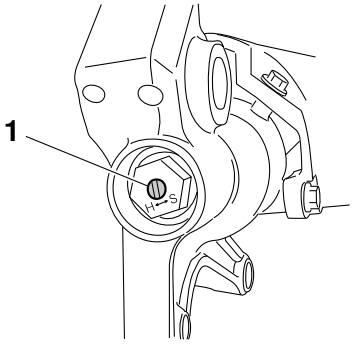

5. Install:
   • Protector "1"
   • Front fork protector bolt "2"

| | |
|---|---|
| | **Front fork protector bolt**<br>**7 N·m (0.7 kgf·m, 5.2 lb·ft)** |



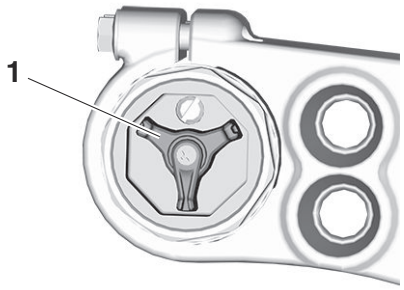

6. Adjust:
   • Rebound damping force

**TIP**
Turn in the damping adjuster "1" finger-tight and then turn out to the originally set position.




7. Adjust:
   • Compression damping force

**TIP**
Turn in the damping adjuster "1" finger-tight and then turn out to the originally set position.


1

EAM20101
# STEERING HEAD

EAM30060
## REMOVING THE LOWER BRACKET
1. Use a maintenance stand to raise the front wheel off the ground.

EWA13120
**⚠ WARNING**

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

2. Remove:
   • Ring nut "1"

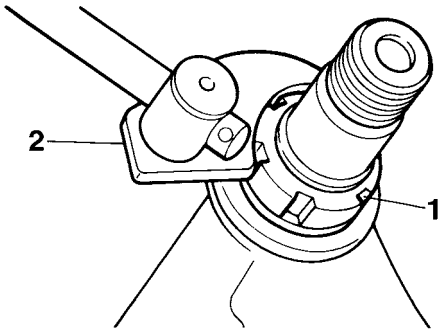
**TIP**
Remove the ring nut with the steering nut wrench "2".



**Steering nut wrench**
**90890-01403**
**Exhaust flange nut wrench**
**YU-A9472**

EWA13730
**⚠ WARNING**

**Securely support the lower bracket so that there is no danger of it falling.**

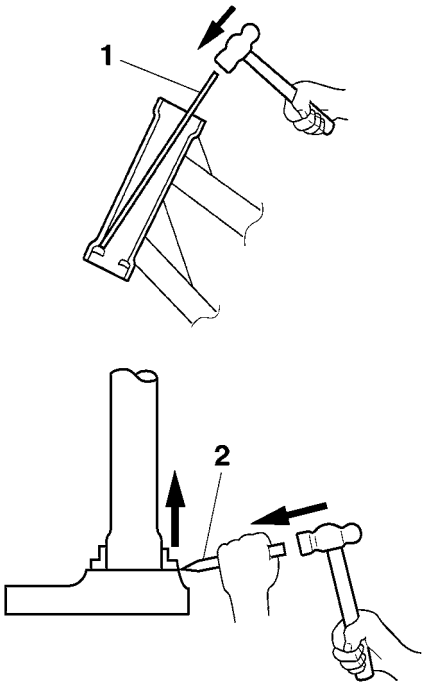



EAM30061
## CHECKING THE STEERING HEAD
1. Wash with kerosene:
   • Bearing
   • Bearing race
2. Check:
   • Bearing
   • Bearing race
   Damage/pitting → Replace.
3. Replace:
   • Bearing
   • Bearing race
   a. Remove the bearing race from the steering head pipe with a long rod "1" and a hammer.
   b. Remove the bearing race from the lower bracket with a chisel "2" and a hammer.
   c. Install a new bearing race.

ECA14270
***NOTICE***

**If the bearing race is not installed properly, the steering head pipe could be damaged.**

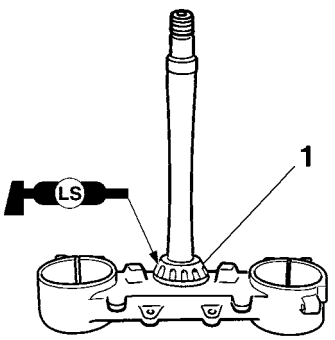
**TIP**
Always replace the bearing and the bearing race as a set.




4. Check:
   • Upper bracket
   • Lower bracket
   (along with the steering stem)
   Bends/cracks/damage → Replace.

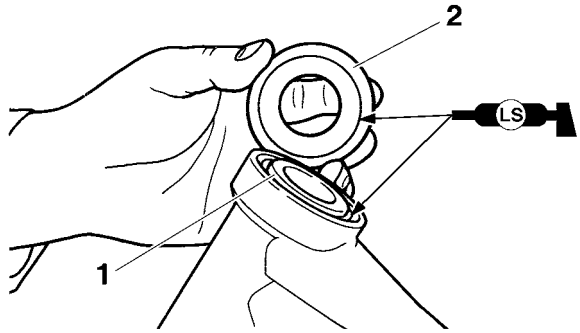
EAM30062
## INSTALLING THE STEERING HEAD
1. Install:
   • Lower bearing "1"

**TIP**
Apply the lithium-soap-based grease on the dust seal lip and bearing inner circumference.



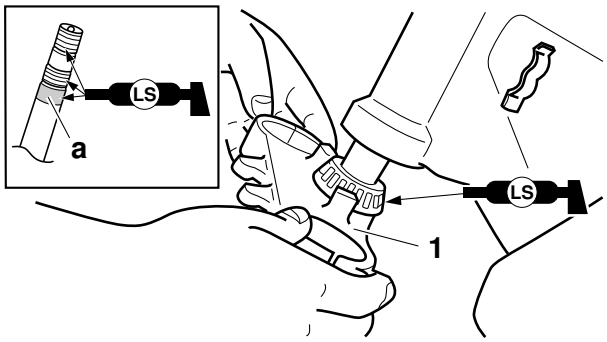
2. Install:
   • Bearing race
   • Upper bearing "1"
   • Bearing race cover "2"

**TIP**
Apply the lithium-soap-based grease on the bearing and bearing race cover lip.




3. Install:
   • Lower bracket "1"

**TIP**
Apply the lithium-soap-based grease on the bearing, the portion "a" and thread of the steering stem.

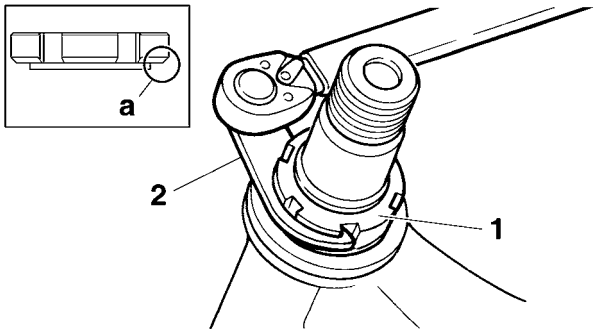



4. Install:
   • Steering ring nut "1"

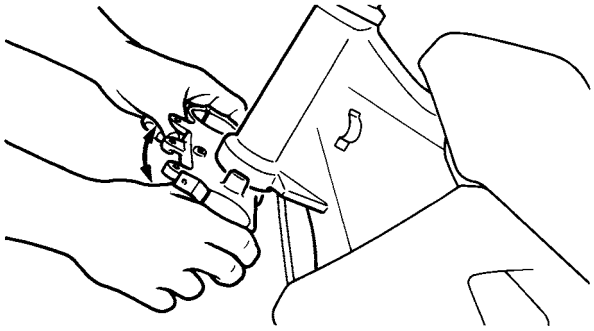
| | |
|---|---|
| | **Steering ring nut**<br>**7 N·m (0.7 kgf·m, 5.2 lb·ft)** |

**TIP**
Install the steering ring nut with its stepped side "a" facing downward.

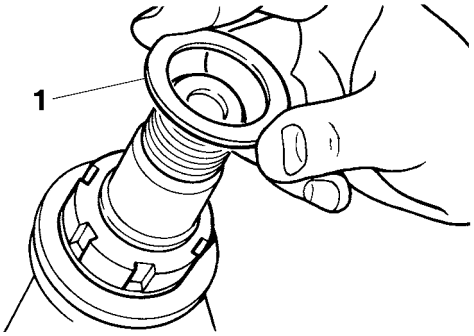
Tighten the steering ring nut with a steering nut wrench "2".
Refer to "CHECKING AND ADJUSTING THE STEERING HEAD" on page 3-24.




5. Check the steering stem by turning this lock to lock. If there is any binding, remove the steering stem and check the steering bearing.

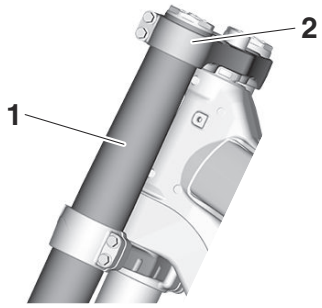


6. Install:
   • Washer "1"




7. Install:
   • Front fork "1"
   • Upper bracket "2"

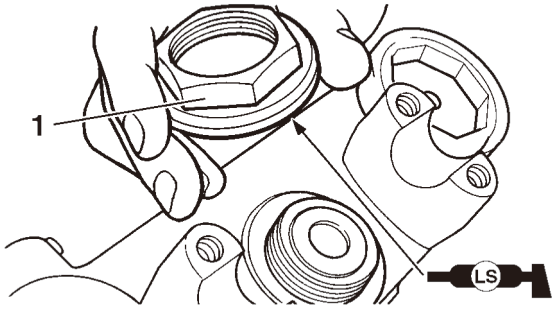
**TIP**
- Temporarily tighten the lower bracket pinch bolts.
- Do not tighten the upper bracket pinch bolts yet.




8. Install:
   • Steering stem nut “1”

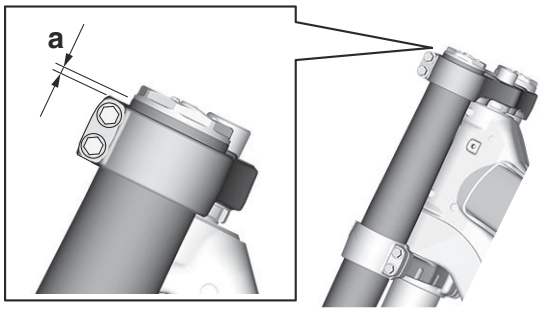
| | |
|---|---|
| | **Steering stem nut**<br>**145 N·m (14.5 kgf·m, 107 lb·ft)** |

**TIP**
Apply the lithium-soap-based grease to the contact surface of the steering stem nut when installing.




9. After tightening the nut, check the steering for smooth movement. If not, adjust the steering by loosening the steering ring nut little by little.
10. Adjust:
   • Front fork top end “a”

| | |
|---|---|
| | **Front fork top end (standard) “a”**<br>**2 mm (0.1 in) (AUS, CAN, NZL, ZAF)**<br>**5 mm (0.2 in) (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)** |



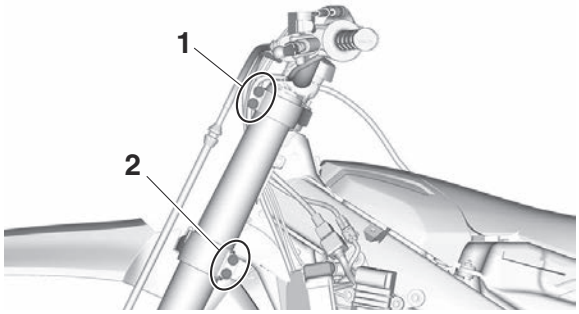

11. Tighten:
   • Upper bracket pinch bolt “1”

| | |
|---|---|
| | **Upper bracket pinch bolt**<br>**21 N·m (2.1 kgf·m, 15 lb·ft)** |

   • Lower bracket pinch bolt “2”

| | |
|---|---|
| | **Lower bracket pinch bolt**<br>**21 N·m (2.1 kgf·m, 15 lb·ft)** |

EWA19330
**WARNING**
**Tighten the lower bracket to specified torque. If torqued too much, it may cause the front fork to malfunction.**



EAM20102
# REAR SHOCK ABSORBER ASSEMBLY

EAM30065
## REMOVING THE REAR SHOCK ABSORBER ASSEMBLY

1. Use a maintenance stand to raise the rear wheel off the ground.

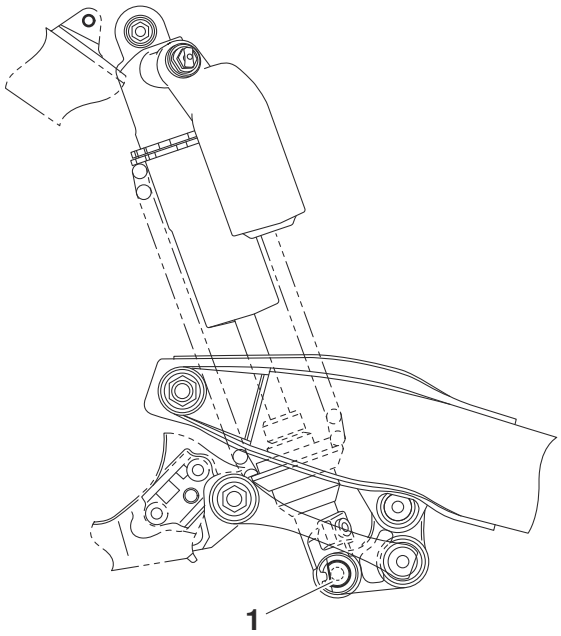
EWA13120
**⚠ WARNING**

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

2. Remove:
   - Rear shock absorber assembly lower bolt "1"

**TIP**

While removing the rear shock absorber assembly lower bolt, hold the swingarm so that it does not drop down.




3. Remove:
   - Rear shock absorber assembly upper bolt
   - Rear shock absorber assembly

EAM30067
## CHECKING THE REAR SHOCK ABSORBER ASSEMBLY

1. Check:
   - Rear shock absorber rod
     Bends/damage → Replace the rear shock absorber assembly.
   - Rear shock absorber
     Gas leaks/oil leaks → Replace the rear shock absorber assembly.
   - Spring
     Damage/wear → Replace.
   - Spring guide
     Damage/wear → Replace.
   - Bearing
     Damage/wear → Replace.
   - Bolt
     Bends/damage/wear → Replace.

EAM20103
# SWINGARM

EAM30071
## REMOVING THE SWINGARM

1. Use a maintenance stand to raise the rear wheel off the ground.

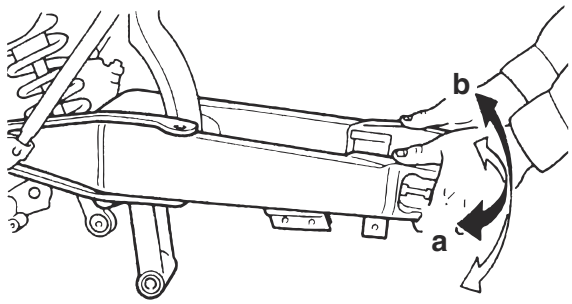
EWA13120
**⚠ WARNING**

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

2. Measure:
   - Swingarm side play
   - Swingarm vertical movement
   a. Measure the tightening torque of the pivot shaft nut.

| | |
|---|---|
| | **Pivot shaft nut**<br>**75 N·m (7.5 kgf·m, 55 lb·ft)** |

   b. Check the swingarm side play “a” by moving the swingarm from side to side. If the swingarm has side-to-side play, check the bushings, the bearings, and the collars.
   c. Check the swingarm vertical movement “b” by moving the swingarm up and down.
   If swingarm vertical movement is not smooth or if there is binding, check the bushings, the bearings, and the collars.



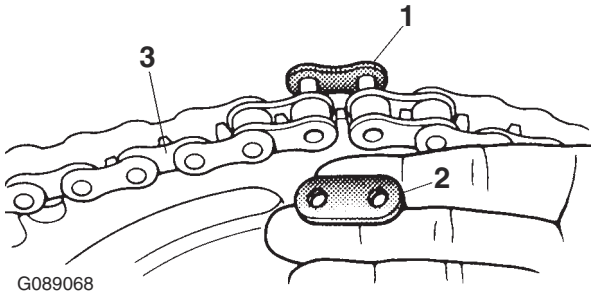
EAM20104
# CHAIN DRIVE

EAM30075
## REMOVING THE DRIVE CHAIN
1. Stand the vehicle on a level surface.

EWA13120
**⚠ WARNING**

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

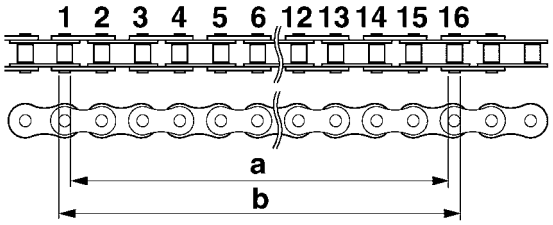
2. Remove:
   - Master link clip
   - Master link "1"
   - Master link plate "2"
   - Drive chain "3"



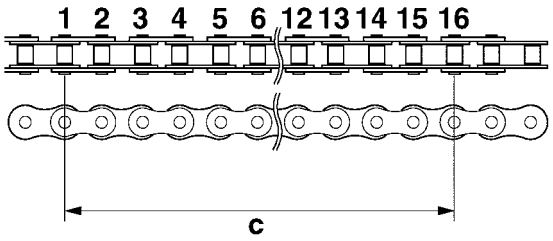

EAM30076
## CHECKING THE DRIVE CHAIN
1. Measure:
   - 15-link section of the drive chain
     Out of specification → Replace the drive chain.

| | |
|---|---|
| | **15-link length limit**<br>**242.9 mm (9.56 in)** |

   a. Measure the length "a" between the inner sides of the pins and the length "b" between the outer sides of the pins on a 15-link section of the drive chain as shown in the illustration.

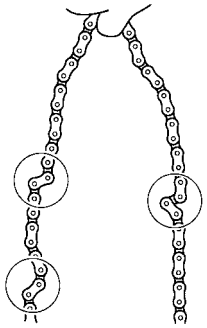



   b. Calculate the length "c" of the 15-link section of the drive chain using the following formula.
      Drive chain 15-link section length "c" = (length "a" between pin inner sides + length "b" between pin outer sides)/2

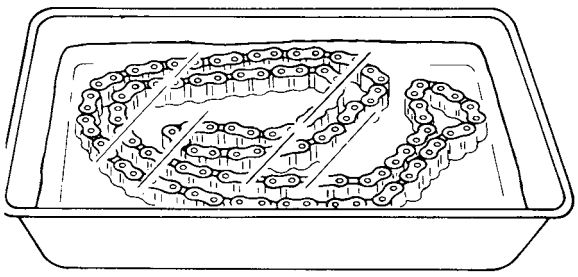



**TIP**
- When measuring a 15-link section of the drive chain, make sure that the drive chain is taut.
- Perform this procedure 2–3 times, at a different location each time.

2. Check:
   - Drive chain
     Stiffness → Clean, lubricate, or replace.

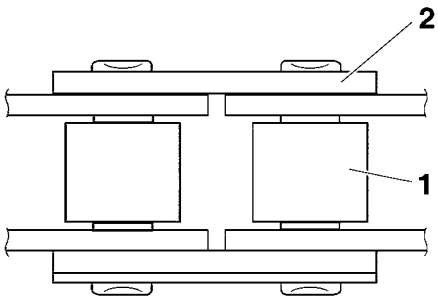


3. Clean:
   - Drive chain
     a. Wipe the drive chain with a clean cloth.
     b. Put the drive chain in kerosene and remove any remaining dirt.
     c. Remove the drive chain from the kerosene and completely dry it.



4. Check:
   - Drive chain roller "1"
     Damage/wear → Replace the drive chain.
   - Drive chain side plate "2"

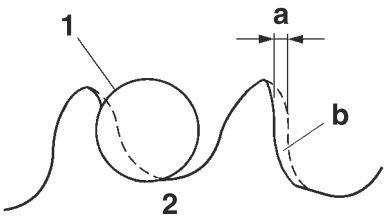
Damage/wear → Replace the drive chain.




5. Lubricate:
   • Drive chain

EAM30077
### CHECKING THE DRIVE SPROCKET

1. Check:
   • Drive sprocket
   More than 1/4 tooth wear "a" → Replace the drive sprocket and the rear wheel sprocket as a set.
   Bent tooth → Replace the drive sprocket and the rear wheel sprocket as a set.




b. Correct

1. Drive chain roller
2. Drive sprocket

EAM30078
### CHECKING THE REAR WHEEL SPROCKET

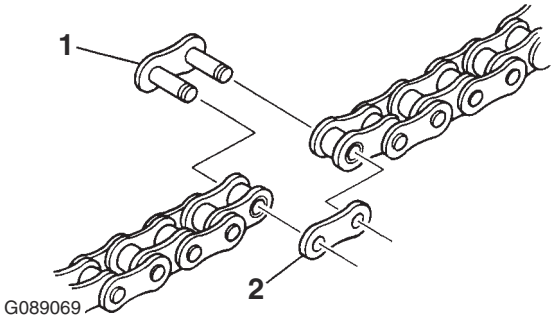
Refer to "CHECKING AND REPLACING THE REAR WHEEL SPROCKET" on page 4-5.

EAM30079
### INSTALLING THE DRIVE CHAIN

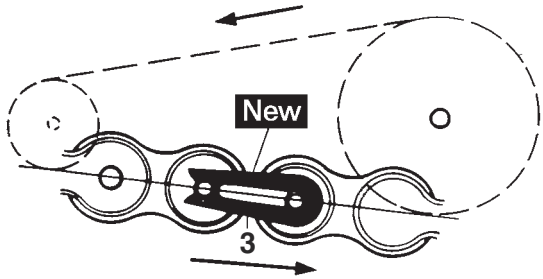
1. Install:
   • Master link "1"
   • Master link plate "2"
   • Master link clip "3" New

EWA20250
**⚠ WARNING**

**When installing the joint clip, always keep the direction as shown in the figure.**




G089069




G089070

2. Lubricate:
   • Drive chain
3. Install:
   • Drive sprocket
   • Lock washer New
   • Drive sprocket nut

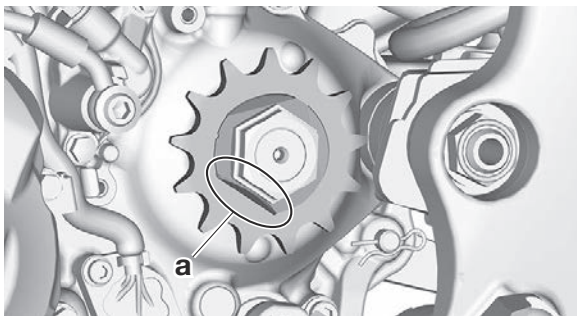
| | |
|---|---|
| | **Drive sprocket nut**<br>**90 N·m (9.0 kgf·m, 66 lb·ft)**<br>**LOCTITE®** |

ECA14300
***NOTICE***

**Never install a new drive chain onto worn drive chain sprockets; this will dramatically shorten the drive chain's life.**

**TIP**

After the drive sprocket nut has been tightened to specification, firmly bend the lock washer tabs "a" along the flat of the drive sprocket nut.




4. Adjust:
   • Drive chain slack
   Refer to "DRIVE CHAIN SLACK" on page

3-23.



**Drive chain slack (Maintenance Stand)**
**50.0–60.0 mm (1.97–2.36 in)**

ECA24590

***NOTICE***

**A drive chain that is too tight will overload the engine and other vital parts, and one that is too loose can skip and damage the swingarm or cause an accident. Therefore, keep the drive chain slack within the specified limits.**

# ENGINE

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INSTALLING THE EXHAUST PIPE AND MUFFLER..... 5-1

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REMOVING THE CLUTCH..... 5-2
CHECKING THE FRICTION PLATES..... 5-2
CHECKING THE CLUTCH PLATES..... 5-2
CHECKING THE CLUTCH SPRING..... 5-2
CHECKING THE COLLAR..... 5-3
CHECKING THE PRESSURE PLATE..... 5-3
CHECKING THE PUSH ROD..... 5-3
CHECKING THE PRIMARY DRIVE GEAR..... 5-3
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CHECKING THE CLUTCH RELEASE CYLINDER..... 5-9
INSTALLING THE CLUTCH RELEASE CYLINDER..... 5-10

EAM20199
# EXHAUST SYSTEM

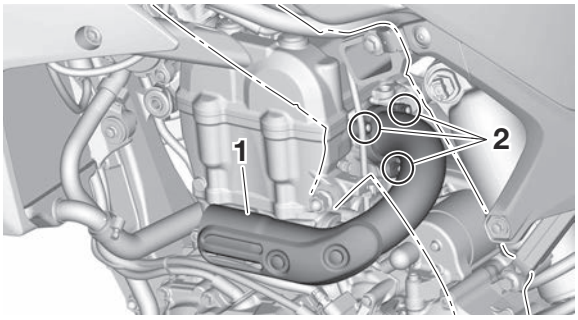
EAM30167
## INSTALLING THE EXHAUST PIPE AND MUFFLER

1. Install:
   - Gasket New
   - Exhaust pipe 1 “1”
   - Exhaust pipe nut “2”

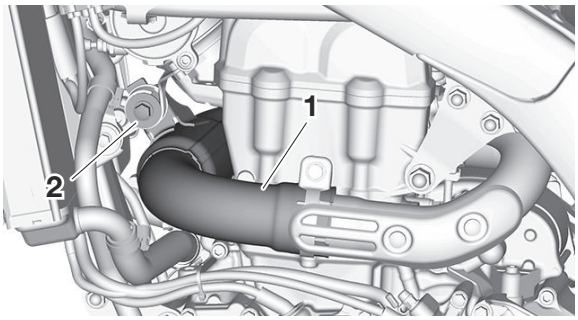
| | |
|---|---|
| | **Exhaust pipe nut**<br>**10 N·m (1.0 kgf·m, 7.4 lb·ft)** |

**TIP**

First temporarily tighten all nuts to 7 N·m (0.7 kgf·m, 5.2 lb·ft). Then retighten them to 10 N·m (1.0 kgf·m, 7.4 lb·ft).

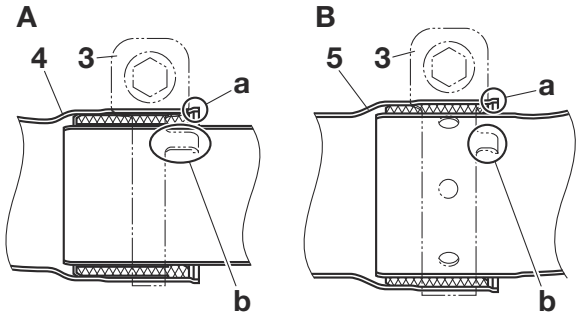



2. Install:
   - Exhaust pipe 2 clamp
   - Exhaust pipe 2 “1”
   - Exhaust pipe bracket bolt “2”




**TIP**

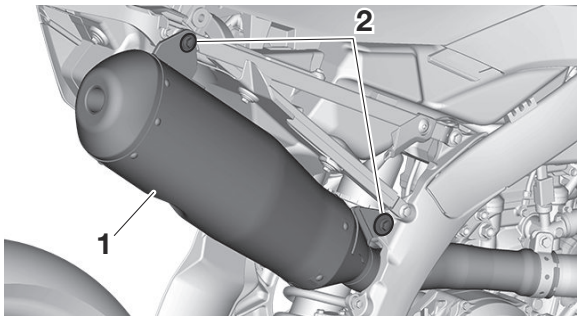
Make sure that the clamp “3” does not ride on the projection “a” on the exhaust pipe “4” or silencer “5”. Be sure to insert the projection “b” into the slot in the exhaust pipe (or silencer).




A. Exhaust pipe 1 and exhaust pipe 2
B. Exhaust pipe 2 and silencer

3. Install:
   - Silencer clamp
   - Silencer “1”
   - Silencer bolt “2”

| | |
|---|---|
| | **Silencer bolt**<br>**30 N·m (3.0 kgf·m, 22 lb·ft)** |




4. Tighten:
   - Exhaust pipe bracket bolt

| | |
|---|---|
| | **Exhaust pipe bracket bolt**<br>**20 N·m (2.0 kgf·m, 15 lb·ft)** |

   - Exhaust pipe 2 clamp

| | |
|---|---|
| | **Exhaust pipe clamp bolt (exhaust pipe 2 clamp)**<br>**16 N·m (1.6 kgf·m, 12 lb·ft)** |

   - Silencer clamp

| | |
|---|---|
| | **Exhaust pipe clamp bolt (silencer clamp)**<br>**16 N·m (1.6 kgf·m, 12 lb·ft)** |

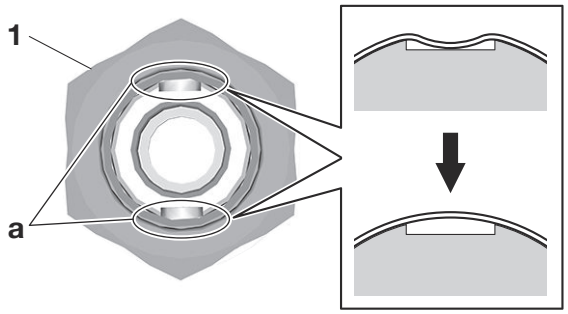
**TIP**

Tighten while checking that their front and rear joints are inserted in position.

EAM20111
# CLUTCH

EAM30108
## REMOVING THE CLUTCH
1. Loosen:
   - Clutch boss nut “1”
     a. Raise the staked part “a” of the clutch boss nut as shown in the illustration.

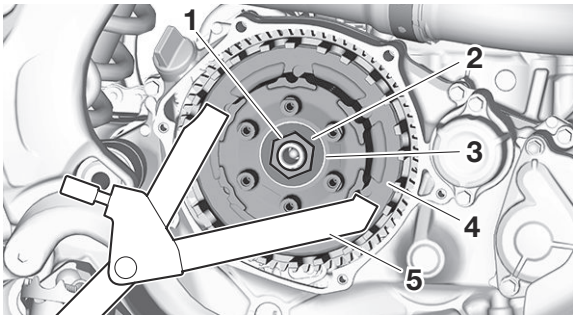
**TIP**
- When raising the staked part, take care not to affect the threaded part where the nut will be attached.
- Make sure that the staked part is fully raised to the same curvature as before staking.




   b. Loosen the clutch boss nut.
2. Remove:
   - Clutch boss nut “1”
   - Spacer “2”
   - Washer “3”
   - Sleeve “4”
   - Absorber
   - Clutch boss

**TIP**
While holding the sleeve with the clutch holder “5”, loosen the clutch boss nut.

**Clutch holder**
**90890-04199**
**Universal clutch holder**
**YM-91042**




EAM30109
## CHECKING THE FRICTION PLATES
1. Check:
   - Friction plate
     Damage/wear → Replace the friction plates as a set.
2. Measure:
   - Friction plate thickness
     Out of specification → Replace the friction plates as a set.

**TIP**
Measure it at four points on the friction plate.

**Friction plate 1 thickness**
**2.12–2.28 mm (0.083–0.090 in)**
**Wear limit**
**2.02 mm (0.080 in)**
**Friction plate 2 thickness**
**2.12–2.28 mm (0.083–0.090 in)**
**Wear limit**
**2.02 mm (0.080 in)**

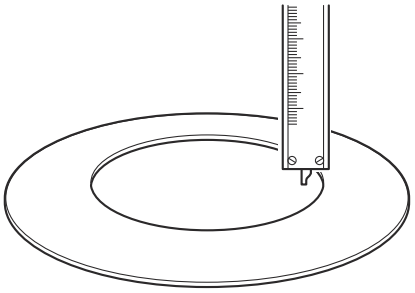
EAM30110
## CHECKING THE CLUTCH PLATES
1. Check:
   - Clutch plate
     Damage → Replace the clutch plates as a set.
2. Measure:
   - Clutch plate warpage
     (with a surface plate and thickness gauge)
     Out of specification → Replace the clutch plates as a set.

**Thickness gauge**
**90890-03268**
**Feeler gauge set**
**YU-26900-9**

**Warpage limit**
**0.10 mm (0.004 in)**

EAM30111
## CHECKING THE CLUTCH SPRING
1. Check:
   - Spring retainer
     Damage → Replace.
2. Check:
   - Clutch spring
     Damage → Replace the clutch spring.
3. Measure:
   - Clutch spring free height
     Out of specification → Replace the clutch spring.

**Clutch spring free height**
**4.59 mm (0.18 in)**
**Clutch spring free height limit**
**4.36 mm (0.17 in)**



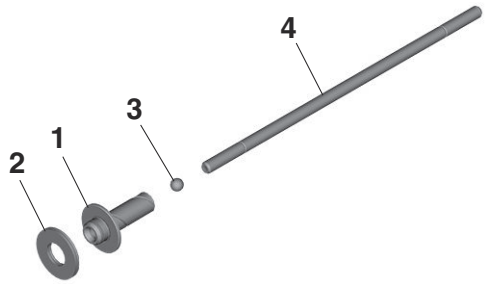
EAM30629
## CHECKING THE COLLAR
1. Check:
   - Collar "1"
     Damage/pitting/wear → Replace the collars as a set.

**TIP**
Pitting on the collar will cause erratic clutch operation.




EAM30114
## CHECKING THE PRESSURE PLATE
1. Check:
   - Pressure plate
     Crack/damage → Replace.

EAM30484
## CHECKING THE PUSH ROD
1. Check:
   - Push rod 1 "1"
   - Bearing "2"
   - Ball "3"
   - Push rod 2 "4"
     Cracks/damage/wear → Replace.



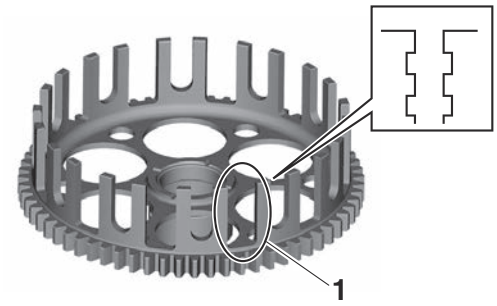

2. Measure:
   - Push rod 2 bending limit
     Out of specification → Replace.

**Push rod bending limit**
**0.10 mm (0.004 in)**

EAM30117
## CHECKING THE PRIMARY DRIVE GEAR
1. Check:
   - Primary drive gear
     Damage/wear → Replace the primary drive and primary driven gears as a set.
     Excessive noise during operation → Replace the primary drive and primary driven gears as a set.
2. Check:
   - Primary-drive-gear-to-primary-driven-gear free play
     Free play exists → Replace the primary drive and primary driven gears as a set.

EAM30118
## CHECKING THE PRIMARY DRIVEN GEAR
1. Check:
   - Primary driven gear
     Damage/wear → Replace the primary drive and primary driven gears as a set.
     Excessive noise during operation → Replace the primary drive and primary driven gears as a set.
2. Check:
   - Primary driven gear dogs "1"
     Damage/pitting/wear → Deburr the primary driven gear dogs or replace the primary driven gear.

**TIP**
Pitting on the primary driven gear dogs will cause erratic clutch operation.

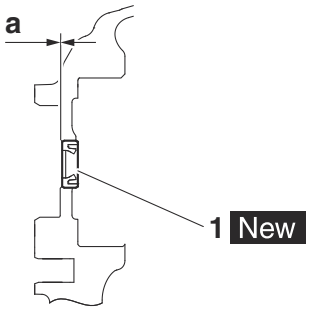



EAM30639

## INSTALLING THE CLUTCH RELEASE

1. Install:
   - Oil seal "1" New

| | |
|---|---|
| | **Installed depth "a"**<br>**0.0–0.5 mm (0.00–0.02 in)** |

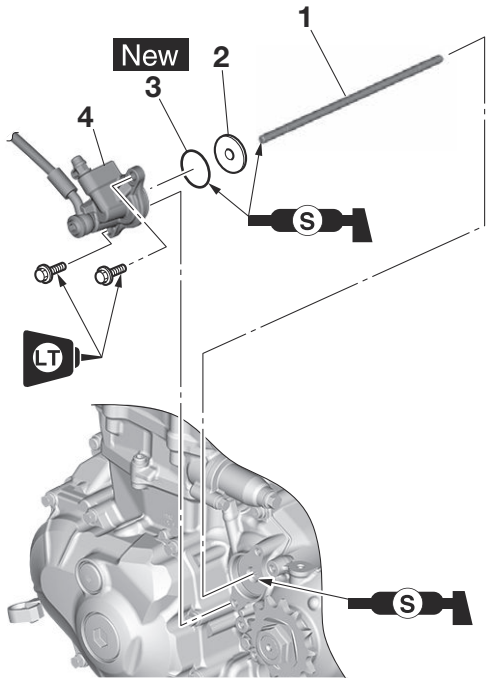



2. Install:
   - Push rod 2 "1"
   - Washer "2"
   - O-ring "3" New
   - Clutch release cylinder assembly "4"

| | |
|---|---|
| | **Clutch release cylinder bolt**<br>**10 N·m (1.0 kgf·m, 7.4 lb·ft)**<br>**LOCTITE®** |

**TIP**

Apply silicone grease on the O-ring, the seal lip and the push rod end.




EAM30121

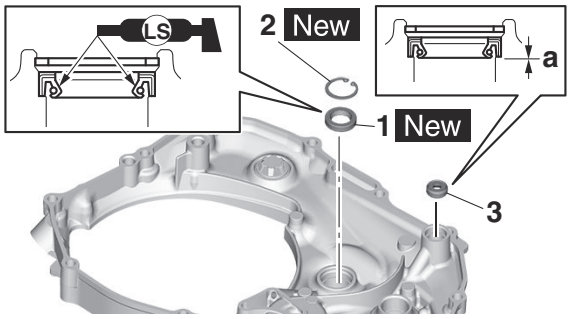
## INSTALLING THE CLUTCH

1. Install:
   - Oil seal "1" New
   - Circlip "2" New
   - Check ball seat "3"

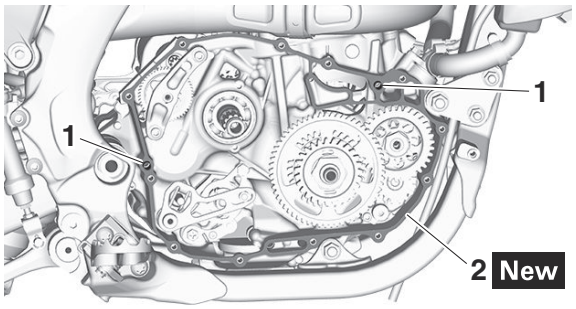
**TIP**

- Apply the lithium-soap-based grease on the oil seal lip.
- Install the oil seal in parallel with its manufacture's marks or numbers facing inward.

| | |
|---|---|
| | **Installed depth "a"**<br>**0 mm (0 in)** |




2. Install:
   - Dowel pin "1"
   - Gasket "2" New

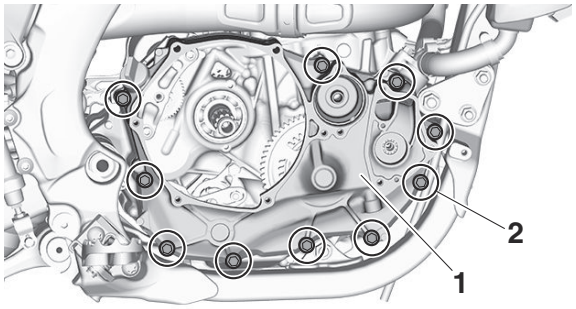



3. Install:
   • Crankcase cover (right) “1”
   • Crankcase cover bolt (right) “2”

| | |
|---|---|
| | **Crankcase cover bolt (right)**<br>**10 N·m (1.0 kgf·m, 7.4 lb·ft)** |

**TIP**

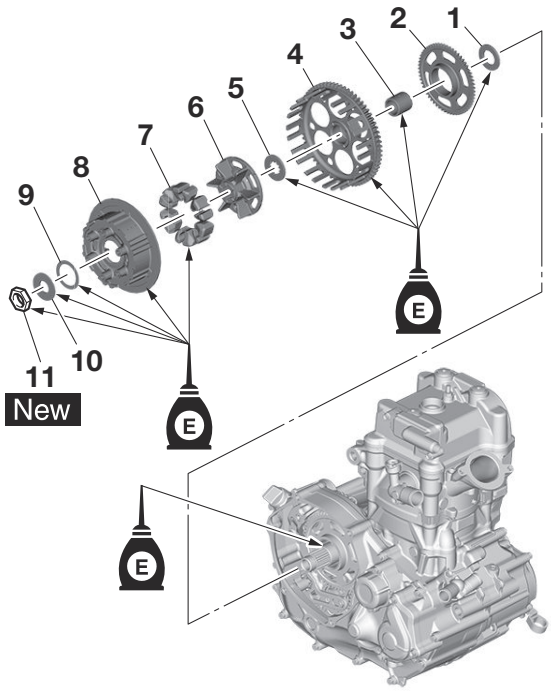
Tighten the crankcase cover bolts (right) in stages and in a crisscross pattern.




4. Install:
   • Washer “1”
   • Idle gear “2”
   • Collar “3”
   • Primary driven gear “4”
   • Washer “5”
   • Clutch boss “6”
   • Absorber “7”
   • Sleeve “8”
   • Washer “9”
   • Spacer “10”
   • Clutch boss nut “11” New

**TIP**

- Apply engine oil to the main axle.
- Apply engine oil to the contact surfaces of the washer “1”.
- Apply engine oil to the inner surface of the collar “3”.
- Apply engine oil to the inner surface and the contact surfaces of the primary driven gear “4”.
- Apply engine oil to the contact surfaces of the washer “5”.
- Apply engine oil to the absorber “7”.
- Apply engine oil to the inner surface and the contact surfaces of the sleeve “8”.
- Apply engine oil to the contact surfaces of the washer “9”.
- Apply engine oil to the contact surfaces of the spacer “10”.
- Apply the engine oil on the threads and contact surface of the clutch boss nut “11”.
- Do not tighten the clutch boss nut “11” with the washer “9” caught in the stepped portion of the spacer “10”.




5. Tighten:
   • Clutch boss nut “1” New

| | |
|---|---|
| | **Clutch boss nut**<br>**75 N·m (7.5 kgf·m, 55 lb·ft)** |

ECA24660

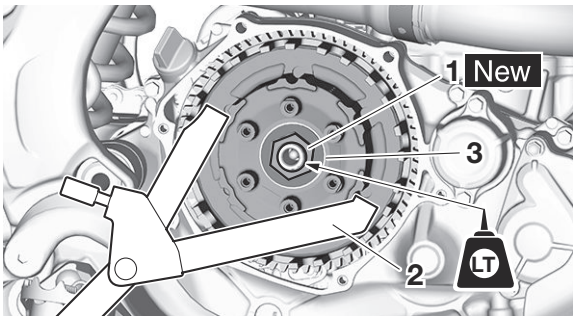
***NOTICE***

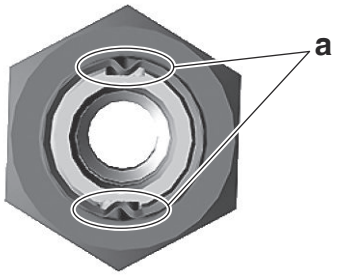
**Make sure to tighten to specification; otherwise, it may damage the other part that is fastened together.**

**TIP**

- Use the clutch holder “2” to hold the sleeve.
- After tightening the clutch boss nut, make sure that the washer “3” can rotate freely.
- Stake the clutch boss nut at cutouts “a” in the main axle. Take care not to affect the threaded part where the nut will be attached.

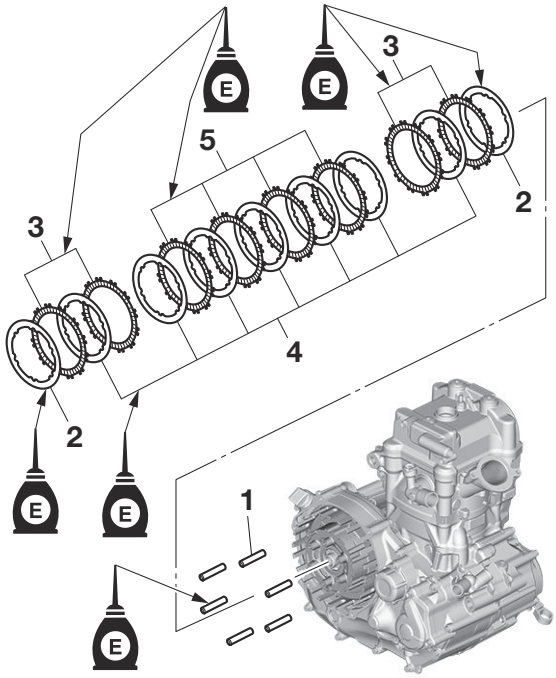
**Clutch holder**
**90890-04199**
**Universal clutch holder**
**YM-91042**



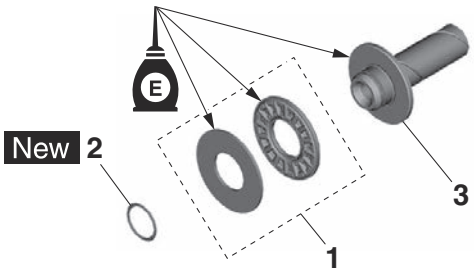

6. Install:
   - Collar "1"
   - Clutch plate 2 (thickness: 1.0 mm (0.04 in)) "2"
   - Friction plate 2 (painted) "3"
   - Clutch plate 1 (thickness: 1.4 mm (0.06 in)) "4"
   - Friction plate 1 (unpainted) "5"

**TIP**
- The friction plate 2 has blue paint on one pawl head on the outer circumference with the pawls.
- Install the clutch plates and friction plates alternately on the sleeve, starting with a clutch plate and ending with a clutch plate.
- From the clutch boss side, install the friction plates and clutch plates in the order of the illustrations.
- Apply the engine oil on the collars, friction plates, and clutch plates.



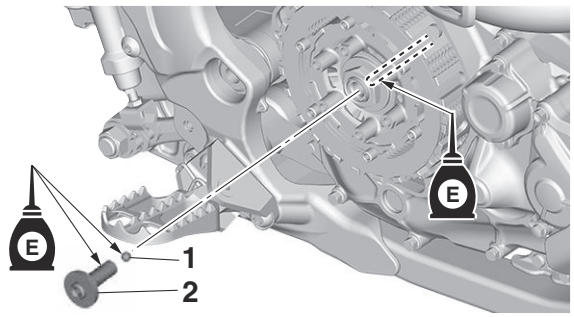

7. Install:
   - Bearing "1"
   - Circlip "2" New
     (to the push rod 1 "3")

**TIP**
Apply the engine oil on the bearing and push rod 1.

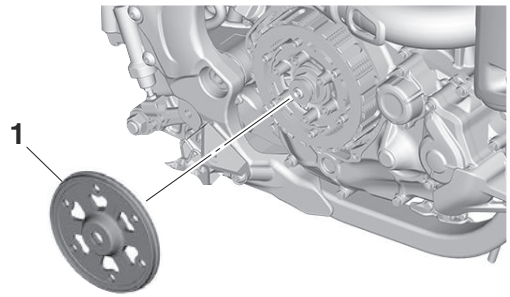



8. Install:
   - Ball "1"
   - Push rod 1 "2"

**TIP**
Apply the engine oil on the push rod 1 and ball.




9. Install:
   • Pressure plate 2 “1”

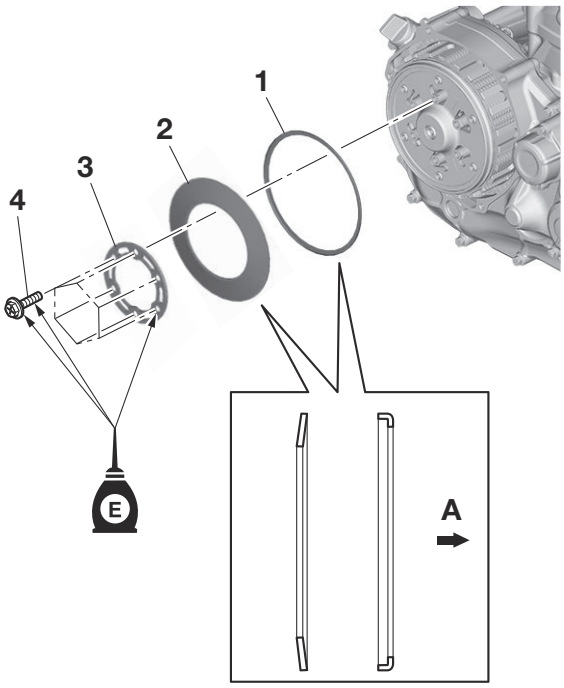



10. Install:
   • Spring retainer “1”
   • Clutch spring “2”
   • Pressure plate 1 “3”
   • Bolt (pressure plate 1) “4”

| | |
|---|---|
| | **Bolt (pressure plate 1)**<br>**10 N·m (1.0 kgf·m, 7.4 lb·ft)** |

**TIP**

- Apply the engine oil on the threads and contact surface of the bolts, and contact surface of the pressure plate 1.
- First temporarily tighten all bolts to 4.0 N·m (0.40 kgf·m, 3.0 lb·ft) in a crisscross pattern. Then retighten them to 10 N·m (1.0 kgf·m, 7.4 lb·ft) in a crisscross pattern.



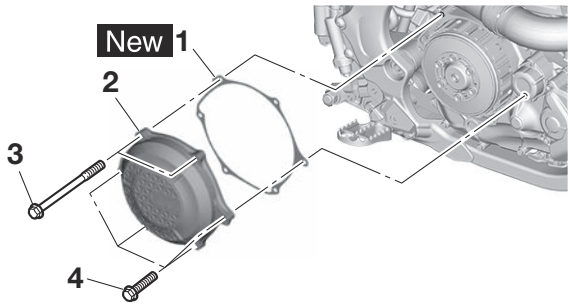

A. Engine side

11. Install:
   • Gasket “1” New
   • Clutch cover “2”
   • Clutch cover bolt (long) “3”
   • Clutch cover bolt (short) “4”

| | |
|---|---|
| | **Clutch cover bolt**<br>**10 N·m (1.0 kgf·m, 7.4 lb·ft)** |

**TIP**

Tighten the bolts in stages and in a crisscross pattern.




EAM30670

## DISASSEMBLING THE CLUTCH MASTER CYLINDER

ECA13840

***NOTICE***

- **Clutch components rarely require disassembly.**
- **Therefore, always follow these preventive measures:**

- **Never disassemble clutch components unless absolutely necessary.**
- **If any connection on the hydraulic clutch system is disconnected, the entire clutch system must be disassembled, drained, cleaned, properly filled, and bled after reassembly.**
- **Never use solvents on internal clutch components.**
- **Use only clean or new clutch fluid for cleaning clutch components.**
- **Clutch fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt fluid immediately.**
- **Avoid clutch fluid coming into contact with the eyes as it can cause serious injury.**
- **First aid for clutch fluid entering the eyes:**
- **Flush with water for 15 minutes and get immediate medical attention.**

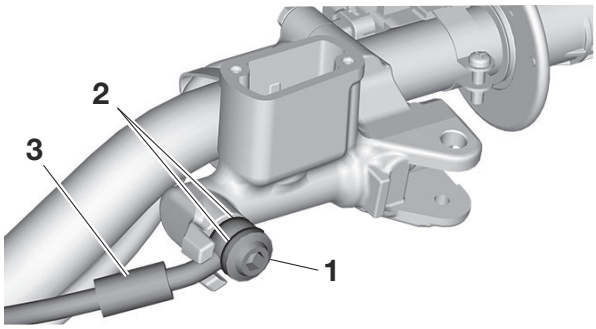
**TIP**

Before disassembling the clutch master cylinder, drain the clutch fluid from the entire clutch system.

1. Remove:
   - Clutch hose union bolt "1"
   - Copper washer "2"
   - Clutch hose "3"

**TIP**

To collect any remaining clutch fluid, place a container under the master cylinder and the end of the clutch hose.




EAM30671

## CHECKING THE CLUTCH MASTER CYLINDER

1. Check:
   - Clutch master cylinder body
     Cracks/damage → Replace the clutch master cylinder.
   - Clutch fluid delivery passage
     (clutch master cylinder body)
     Obstruction → Blow out with compressed air.
2. Check:
   - Clutch master cylinder
   - Clutch master cylinder kit
     Rust/scratches/wear → Replace the clutch master cylinder and clutch master cylinder kit as a set.
3. Check:
   - Clutch master cylinder reservoir
     Cracks/damage → Replace.
   - Clutch master cylinder reservoir diaphragm
     Damage/wear → Replace.
4. Check:
   - Clutch hose
     Cracks/damage/wear → Replace.

EAM30672

## ASSEMBLING THE CLUTCH MASTER CYLINDER

EWA13340

**WARNING**

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

| | |
|---|---|
| | **Specified brake and clutch fluid**<br>**DOT 4** |

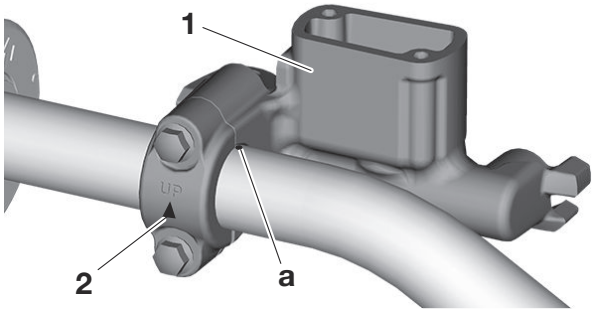
EAM30673

## INSTALLING THE CLUTCH MASTER CYLINDER

1. Install:
   - Clutch master cylinder "1"
   - Clutch master cylinder holder "2"

**TIP**

- Install the clutch lever holder with the "UP" mark facing up.
- Align the end of the clutch lever holder with the paint mark "a" on the left handlebar.
- First, tighten the upper bolt, then the lower bolt.




2. Install:
   • Copper washer "1" New
   • Clutch hose "2"
   • Clutch hose union bolt "3"

| | |
|---|---|
| | **Clutch hose union bolt 30 N·m (3.0 kgf·m, 22 lb·ft)** |

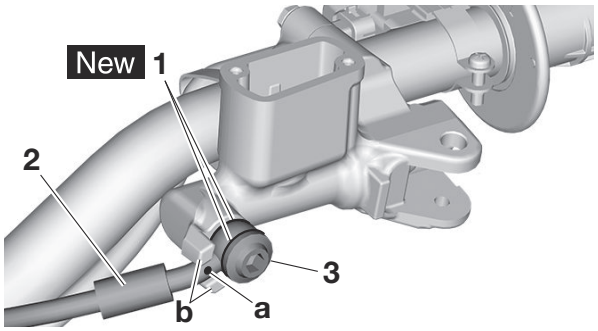
EWA18510

**⚠ WARNING**

**Proper clutch hose routing is essential to insure safe vehicle operation.**

**TIP**

- When installing the clutch hose to the clutch master cylinder, the white paint dot "a" on the clutch pipe should point to the front side of the vehicle as shown, and then align it with the protrusion "b" on the clutch master cylinder.
- Turn the handlebars to the left and to the right to make sure the clutch hose does not touch other parts (e.g., wire harness, cables, leads). Correct if necessary.




3. Fill:
   • Clutch master cylinder reservoir
   (with the specified amount of the specified brake and clutch fluid)

| | |
|---|---|
| | **Specified brake and clutch fluid DOT 4** |

EWA17270

**⚠ WARNING**

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

ECA13420

***NOTICE***

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

**TIP**

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

4. Bleed:
   • Clutch system
   Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 3-12.
5. Check:
   • Clutch fluid level
   Refer to "CHECKING THE CLUTCH FLUID" on page 3-12.
6. Check:
   • Clutch lever operation
   Soft or spongy feeling → Bleed the clutch system.
   Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 3-12.

EAM30674

## REMOVING THE CLUTCH RELEASE CYLINDER

1. Remove:
   • Clutch hose union bolt
   • Copper washer
   • Clutch hose

**TIP**

Put the end of the clutch hose into a container and pump out the clutch fluid carefully.

EAM30675

## CHECKING THE CLUTCH RELEASE CYLINDER

1. Check:
   • Clutch release cylinder body

Cracks/damage → Replace the clutch release cylinder.

EAM30676
### INSTALLING THE CLUTCH RELEASE CYLINDER

1. Install:
   - Copper washer "1" New
   - Clutch hose "2"
   - Clutch hose union bolt "3"

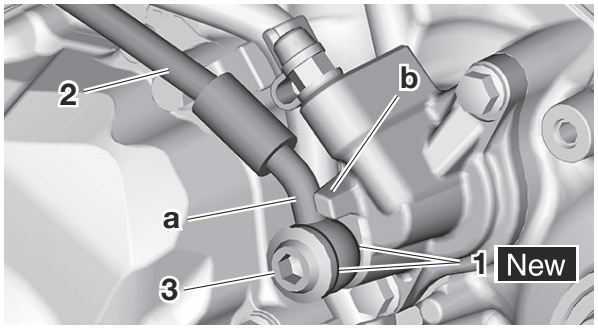
| | |
|---|---|
| | **Clutch hose union bolt 30 N·m (3.0 kgf·m, 22 lb·ft)** |

EWA18510
**⚠ WARNING**

**Proper clutch hose routing is essential to insure safe vehicle operation.**

ECA18370
***NOTICE***

**When installing the clutch hose onto the clutch release cylinder, make sure the pipe "a" touches the projection "b" on the clutch release cylinder body.**




2. Fill:
   - Clutch master cylinder reservoir
     (with the specified amount of the specified brake and clutch fluid)

| | |
|---|---|
| | **Specified brake and clutch fluid DOT 4** |

EWA17270
**⚠ WARNING**

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

ECA13420
***NOTICE***

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

**TIP**

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

3. Bleed:
   - Clutch system
     Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 3-12.
4. Check:
   - Clutch fluid level
     Refer to "CHECKING THE CLUTCH FLUID" on page 3-12.
5. Check:
   - Clutch lever operation
     Soft or spongy feeling → Bleed the clutch system.
     Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 3-12.

# FUEL SYSTEM

**FUEL TANK**..... 6-1
REMOVING THE FUEL TANK.....6-1
INSTALLING THE FUEL TANK.....6-1

EAM20140
# FUEL TANK

EAM30263
## REMOVING THE FUEL TANK
1. Extract the fuel in the fuel tank through the fuel tank cap with a pump.
2. Remove:
   - Seat
   - Side cover (left/right)
   - Shroud (left/right)

   Refer to "GENERAL CHASSIS" on page 4-1.
3. Disconnect:
   - Fuel pump coupler
   - Fuel hose

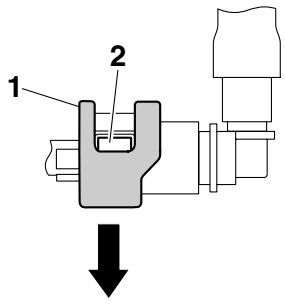
EWA19370
**⚠ WARNING**

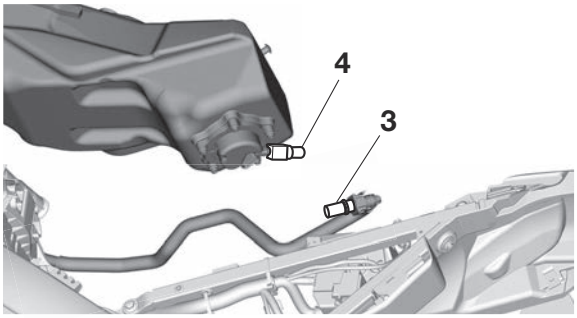
**Cover the fuel hose connection with a cloth when disconnecting it. This is because residual pressure in the fuel hose could cause fuel to spurt out when the hose is removed.**

ECA24710
***NOTICE***

**Make sure that the fuel hose is disconnected by hand. Do not forcefully disconnect the hose with tools.**

**TIP**
- To remove the fuel hose, slide the fuel hose connector cover "1" on the end of the hose in the direction of the arrow shown, press the two buttons "2" on the sides of the connector, and then remove the hose.
- Before removing the hose, place a few cloths in the area under where it will be removed.
- To prevent sand, dust, and other foreign materials from entering the fuel pump, install the included fuel hose joint cover 1 "3" and the fuel hose joint cover 2 "4" onto the disconnected fuel hose and the fuel pump.




4. Remove:
   - Fuel tank

**TIP**

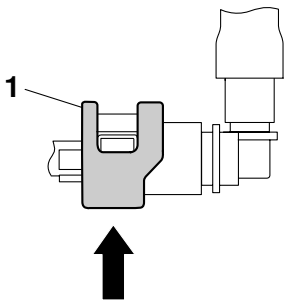
Do not set the fuel tank down on the installation surface of the fuel pump. Be sure to lean the fuel tank against a wall or the like.

EAM30267
## INSTALLING THE FUEL TANK
1. Install:
   - Fuel tank
2. Connect:
   - Fuel hose

ECA24740
***NOTICE***

- **Connect the fuel hose securely, and check that the orientation of the installed fuel hose holder is correct.**
- **Take care not to kink or pinch the fuel hose.**

**TIP**
- Insert the fuel hose into the fuel pipe securely until you hear a "click".
- Slide the fuel hose connector cover "1" at the hose end in the direction of the arrow.




3. Connect:
   - Fuel pump coupler
4. Install:
   - Shroud (left/right)
   - Side cover (left/right)
   - Seat

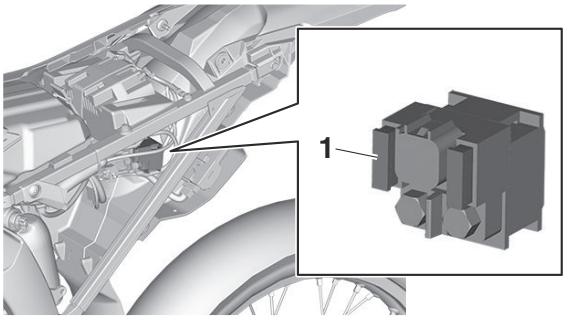
   Refer to "GENERAL CHASSIS" on page 4-1.

# ELECTRICAL SYSTEM

**ELECTRICAL COMPONENTS**..... 7-1
CHECKING THE FUSES.....7-1
CHECKING AND CHARGING THE BATTERY..... 7-1

EAM20147
# ELECTRICAL COMPONENTS

EAM30290
## CHECKING THE FUSES
The following procedure applies to all of the fuses.
1. Remove:
   • Seat
   • Side cover (left)
   Refer to "GENERAL CHASSIS" on page 4-1.
2. Check:
   • Fuse "1"




   a. Connect the digital circuit tester to the fuse and check the continuity.

**TIP**
Set the digital circuit tester selector to "Ω".

**Digital circuit tester (CD732)**
**90890-03243**
**Model 88 Multimeter with tachometer**
**YU-A1927**

   b. If the digital circuit tester indicates "O.L", replace the fuse.
3. Replace:
   • Fuse
   a. Install a new fuse of the correct amperage rating.
   b. Push the starter switch to verify if the electrical circuit is operational.
   c. If the fuse immediately blows again, have a Yamaha dealer check the electrical system.

| Fuses | Amperage rating | Q'ty |
|---|---|---|
| Main | 15 A | 1 |
| Spare | 15 A | 1 |

EWA13310
**WARNING**
**Never use a fuse with an amperage rating other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting and ignition systems to malfunction and could possibly cause a fire.**

4. Install:
   • Side cover (left)
   • Seat

EAM30291
## CHECKING AND CHARGING THE BATTERY
EWA20430
**WARNING**
**To avoid sparking, burns, fire, and explosion:**
- **Charge battery only with specified charger.**
- **Use battery only for specified product – no other use.**
- **Do not place near fire or immerse in water.**
- **Do not use battery if it has been dropped, subject to impact, or visibly damaged.**
- **Do not disassemble or modify the battery, or short across its terminals.**

ECA26041
***NOTICE***
**To prevent damage to the battery and battery malfunction:**
- **Be sure to charge the battery using only the specified battery charger. Do not use a charger designed for lead-acid batteries. Otherwise, the battery could be damaged, such as from a long period of excessive current or voltage exceeding 16 V.**
- **Avoid excessive current discharge, such as pressing the starter switch for a long time. Wait for more than 10 seconds before attempting to start again. Charge the battery again as soon as possible. A long state of discharge below 10 V will damage the battery.**
- **Do not use the specified battery charger to charge a battery other than the lithium-ion battery. Otherwise, the battery or charger could be damaged.**
- **Be careful not to drop the battery or subject it to strong impacts.**
- **Avoid charging the battery at high temperatures of 65 °C (149 °F) or more or low temperatures under 0 °C (32 °F). A control feature preventing battery charging and discharging will temporarily intervene. The battery will discharge at 65 °C (149 °F) or more or low temperatures under -10 °C (14**

**°F).**
- **If the battery is charged between 0 °C (32 °F)and 10 °C (50 °F), battery charging may stop halfway without the battery becoming fully charged even when the specified battery charger is used. If this occurs, disconnect the battery charger, and then resume charging again.**

**TIP**

This model uses a lithium-ion battery. When new, the battery is supplied in sleep mode to minimize current discharging until first-time use. In the sleep mode, a voltage as low as approximately 0.1 V can be measured if voltage measurement is performed. As such the battery cannot be used, but this is not a malfunction. By activating the battery as follows, the sleep mode will be canceled and the battery can be used normally.

**Charging (activation) steps**

1. Remove:
   - Seat

   Refer to "GENERAL CHASSIS" on page 4-1.
2. Disconnect:
   - Battery lead

   (from the battery terminals)

ECA13700

***NOTICE***

**First, disconnect the negative battery lead, and then the positive battery lead.**

3. Remove:
   - Battery
4. Connect the battery charger (special tool) to the battery.



**Lithium battery charger**
**90890-05376**
**Lithium battery charger**
**DBY-ACC51-70-02**

**TIP**

- For instructions on charging and handling the battery charger, refer to the battery charger's instruction manual.
- Once battery charging starts, the sleep mode is canceled.

5. Charge the battery until it is fully charged.
6. Install:
   - Battery
7. Connect:
   - Battery lead

   (to the battery terminals)

ECA26980

***NOTICE***

**First, connect the positive battery lead, and then the negative battery lead.**

8. Check:
   - Battery terminal

   Dirt → Clean with a wire brush.
   Loose connection → Connect properly.
9. Lubricate:
   - Battery terminal



**Recommended lubricant**
**Dielectric grease**

10. Install:
    - Seat

**Checking the battery**

ECA26080

***NOTICE***

**The battery has a limited service life. If the battery cannot be charged or it is determined that the battery cannot be used after checking the battery, it should be replaced. When replacing the battery, be sure to use a Yamaha genuine lithium-ion battery.**

**TIP**

Do not check the battery at high temperature of 65 °C (149 °F) or more or low temperatures below 10 °C (50 °F). Otherwise, the control feature preventing battery charging and discharging will temporarily intervene.

1. Check:
   - Battery
   a. If the battery is hot, wait until the battery has cooled down to the ambient temperature.
   b. Measure the voltage between the battery terminals.

      13.25 V or more → The battery is normal. Checking is finished.
      Less than 13.25 V → Go to step (c).
   c. Connect the battery charger (special tool) to the battery and charge it.



**Lithium battery charger**
**90890-05376**
**Lithium battery charger**
**DBY-ACC51-70-02**

**TIP**

For instructions on charging and handling the battery charger, refer to the battery charger's instruction manual.

d. If the battery is hot, wait until the battery has cooled down to the ambient temperature.
e. Measure the voltage between the battery terminals.
   13.25 V or more → The battery is normal. Checking is finished.
   10 V or more and less than 13.25 V → Perform from step (c) again.
   Less than 10 V → Replace the battery.

**TIP**

Before replacing the battery, make sure that the battery temperature is proper (temperature not more than 65 °C (149 °F) or less than 0 °C (32 °F)). Otherwise, wait until the battery temperature is proper and perform the procedure from step (c) again.

# TROUBLESHOOTING

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EAM20148
# TROUBLESHOOTING

EAM30309
## GENERAL INFORMATION

**TIP**

- Troubleshooting information provided here does not cover all the trouble symptoms, possible causes, and remedial actions. Some items may not apply depending on the model. Use this information as a guide and quick reference matrix when performing basic troubleshooting. Refer to the each chapter for detailed information on checking, adjustment, and replacement.
- The following guide for troubleshooting represent quick and easy procedures for checking these vital systems yourself. However, should your motorcycle require any repair, take it to a Yamaha dealer, whose skilled technicians have the necessary tools, experience, and know-how to service the motorcycle properly.

EAM30509
## TROUBLESHOOTING OF ENGINE (fault code not detected)

**TIP**

If a fault code is detected, have a Yamaha dealer check the electrical system.

### Engine does not crank.

| Symptom | Possible cause | Actions |
|---|---|---|
| Starter motor does not operate | Have a Yamaha dealer check the electrical system. | |
| Starter motor operates, but the engine does not crank. | Starter clutch malfunction | Replace the starter clutch. |
| | Improper oil grade (starter clutch slipping) | Change to recommended engine oil. |
| | Stuck piston or seized crankshaft | Disassemble and check the engine. Replace defective parts. |

### Engine will not start or is difficult to start, but it cranks.

| Symptom | Possible cause | Actions |
|---|---|---|
| Spark plug does not produce a spark | Have a Yamaha dealer check the electrical system. | |
| Fuel not supplied | — | Measure the fuel pressure. |
| | Empty fuel tank | Fill the fuel tank with fuel. |
| | Clogged fuel tank cap breather hole | Clean the fuel tank cap. |
| | Clogged or damaged fuel hose | Clean, repair, or replace the fuel hose. |
| | Fuel leakage | Check the fuel passage. Repair or replace as necessary. |
| | Clogged fuel pump | Clean or replace the fuel pump. |
| | Cracks or damage in fuel pump | Replace the fuel pump. |
| | Fuel pump malfunction | Have a Yamaha dealer check the electrical system. |
| | Failed or clogged fuel injector | Replace the fuel injector. |
| | ECU failure | Replace the ECU. |

| Symptom | Possible cause | Actions |
|---|---|---|
| — | Water or foreign material in fuel, degraded fuel | Change fuel. |
| | Loose spark plug | Tighten the spark plug to the specified torque. |
| | Loose cylinder head or cylinder | Tighten bolts or nuts on cylinder head and cylinder to the specified torque. |
| | Damaged cylinder head gasket | Replace the cylinder head gasket. |
| | Incorrect valve timing | Adjust the valve timing. |
| | Incorrect valve clearance | Adjust the valve clearance. |
| | Worn valve guide | Replace the valve guide. |
| | Bent, damaged, or stuck valve | Replace the valve. |
| | Poor contact between valve and valve seat | Reface the valve-to-valve-seat contact. |
| | Fatigued or broken valve spring | Replace the valve spring. |
| | Worn, damaged, or stuck piston ring | Replace the piston and piston rings as a set. |
| | Seized or damaged piston | Replace the piston and piston rings as a set. |
| | Worn or damaged cylinder bore | Replace the cylinder, piston, and piston rings as a set. |

**Incorrect idling speed or mid-to-high speed**

| Symptom | Possible cause | Actions |
|---|---|---|
| Spark plug does not produce a spark | Incorrect spark plug gap | Adjust the spark plug gap. |
| | Worn or damaged spark plug | Replace the spark plug. |
| | Defective spark plug cap | Replace the spark plug cap. |
| | Defective ignition coil | Replace the ignition coil. |
| | ECU failure | Replace the ECU. |
| Low fuel pressure | — | Measure the fuel pressure. |
| | Fuel leakage | Check the fuel passage. Repair or replace as necessary. |
| | Clogged fuel pump | Clean or replace the fuel pump. |
| | Cracks or damage in fuel pump | Replace the fuel pump. |
| | Fuel pump malfunction | Have a Yamaha dealer check the electrical system. |
| Fuel not supplied | Failed or clogged fuel injector | Replace the fuel injector. |
| | ECU failure | Replace the ECU. |

| Symptom | Possible cause | Actions |
|---|---|---|
| — | Worn camshaft lobe | Replace the camshaft. |
| | Water or foreign material in fuel, degraded fuel | Change fuel. |
| | Contaminated throttle body or clogged internal passage | Clean the throttle body. |
| | Incorrectly adjusted throttle cable | Adjust the throttle grip free play. |
| | Incorrectly adjusted idling speed (idle screw) | Adjust the idle screw. |
| | Incorrect throttle position sensor angle | Adjust the throttle position sensor angle. |
| | Incorrect acceleration position sensor angle | Adjust the acceleration position sensor angle. |
| | Faulty ECU | Replace the ECU. |
| | Clogged vacuum hose | Clean the vacuum hose. |
| | Cracks and damage in vacuum hose | Replace the vacuum hose. |
| | Damaged throttle body joint | Replace the throttle body joint. |
| | Loose throttle body joint | Tighten the throttle body joint bolts to the specified torque. |
| | Clogged air filter element | Clean or replace the air filter element. |
| | Incorrect oil level (high) | Adjust the oil level to the specified level. |

**Excessive noise from engine**

| Symptom | Possible cause | Actions |
|---|---|---|
| Noise heard from around cylinder head | Incorrect valve clearance (too wide) | Adjust the valve clearance. |
| | Fatigued or broken valve spring | Replace the valve spring. |
| | Worn or damaged camshaft lobe | Replace the camshaft. |
| | Worn or damaged valve lifter | Replace the valve lifter and cylinder head as a set. |
| | Worn or damaged camshaft journal | Replace the camshaft. |
| | Worn or damaged cylinder head (camshaft journal) | Replace the cylinder head. |
| Noise heard from around timing chain | Worn or damaged timing chain | Replace the timing chain and camshaft sprocket as a set. |
| | Worn or damaged camshaft sprocket | Replace the timing chain and camshaft sprocket as a set. |
| | Worn or damaged timing chain guide | Replace the timing chain guide. |
| | Cracked, damaged, or faulty timing chain tensioner | Replace the timing chain tensioner. |

| Symptom | Possible cause | Actions |
|---|---|---|
| Noise heard from around piston | Worn or damaged piston ring | Replace the piston and piston rings as a set. |
| | Worn or damaged piston | Replace the piston and piston rings as a set. |
| | Worn piston (piston pin hole) | Replace the piston and piston pin as a set. |
| | Worn or damaged piston pin | Replace the piston pin. |
| | Worn or damaged cylinder bore | Replace the cylinder, piston, and piston rings as a set. |
| | Carbon buildup in piston head and combustion chamber | Clean the piston head and combustion chamber. |
| Noise heard from around crankshaft | Worn or damaged crankshaft journal or crank pin | Replace the crankshaft. |
| | Cracked, worn, or damaged balancer shaft | Replace the balancer drive gear and balancer shaft as a set. |
| | Worn or damaged balancer drive gear | Replace the balancer drive gear and balancer shaft as a set. |
| | Worn or damaged big end bearing | Replace the big end bearing. |
| | Worn or damaged crankshaft journal bearing | Replace the crankshaft journal bearing. |
| | Worn or damaged balancer shaft journal bearing | Replace the balancer shaft journal bearing. |

EAM30510

## TROUBLESHOOTING OF CLUTCH

### Manual clutch

| Symptom | Possible cause | Actions |
|---|---|---|
| Clutch slippage | Improperly assembled clutch | Reassemble the clutch. |
| | Improperly assembled clutch master cylinder | Reassemble the clutch master cylinder. |
| | Improperly assembled clutch release cylinder | Reassemble the clutch release cylinder. |
| | Incorrect clutch fluid level | Adjust the clutch fluid level to the specified level. |
| | Damaged clutch hose | Replace the clutch hose. |
| | Loose union bolt | Tighten the union bolt to the specified torque. |
| | Loose clutch spring | Tighten the pressure plate bolts to the specified torque. |
| | Fatigued clutch spring | Replace the clutch spring. |
| | Warped pressure plate | Replace the pressure plate. |
| | Worn friction plate | Replace the friction plates as a set. |
| | Warped or worn clutch plate | Replace the clutch plates as a set. |
| | Damaged clutch release cylinder | Replace the clutch release cylinder. |
| | Incorrect oil level | Adjust the engine oil level to the specified level. |
| | Incorrect oil viscosity (low) | Change to recommended engine oil. |
| | Deteriorated oil | Change to recommended engine oil. |

| Symptom | Possible cause | Actions |
|---|---|---|
| Clutch drags | Air in hydraulic clutch system | Bleed the hydraulic clutch system. |
| | Fluid leakage from hydraulic clutch system | Check the hydraulic clutch system and repair or replace faulty parts as necessary. |
| | Faulty clutch spring | Replace the clutch spring. |
| | Warped pressure plate | Replace the pressure plate. |
| | Swollen friction plate | Replace the friction plates as a set. |
| | Warped clutch plate | Replace the clutch plates as a set. |
| | Bent pull rod (outer pull type) | Replace the pull rod. |
| | Worn pull rod tooth (outer pull type) | Replace the pull rod and pull lever shaft as a set. |
| | Bent push rod (inner push type) | Replace the push rod. |
| | Damaged or worn collars | Replace the collars. |
| | Seized primary driven gear bushing | Replace the primary driven gear. |
| | Damaged clutch release cylinder | Replace the clutch release cylinder. |
| | Incorrect oil level | Adjust the engine oil level to the specified level. |
| | Incorrect oil viscosity (high) | Change to recommended engine oil. |
| | Deteriorated oil | Change to recommended engine oil. |
| Clutch noise | Damaged or worn primary driven gear | Replace the primary drive gear or crankshaft, and the primary driven gear as a set. |
| | Loose clutch boss nut | Tighten the clutch boss nut to the specified torque. |
| | Fatigued absorber | Replace the absorber. |
| | Worn clutch housing bearing | Replace the clutch housing bearing. |
| | Worn pressure plate bearing | Replace the pressure plate bearing. |

EAM30511

## TROUBLESHOOTING OF TRANSMISSION

| Symptom | Possible cause | Actions |
|---|---|---|
| Difficult or impossible to shift transmission gear | Clutch drags | Refer to “Clutch drags”. |
| | Improperly adjusted shift rod | Adjust the shift rod installation length. |
| | Bent shift shaft | Replace the shift shaft. |
| | Foreign object in a shift drum groove | Remove foreign object from shift drum groove. |
| | Damaged shift drum | Replace the shift drum. |
| | Seized shift fork | Replace the shift fork and shift fork guide bar as a set. |
| | Bent shift fork guide bar | Replace the shift fork guide bar. |
| | Foreign object between transmission gears | Remove foreign object from transmission gears. |
| | Seized transmission gear | Replace the seized gear and the axle as a set. |
| | Improperly assembled transmission | Reassemble the transmission axle assembly. |
| Jumps out of gear | Incorrect shift pedal position | Adjust the shift pedal position. |
| | Improperly returned stopper lever | Replace the stopper lever spring. |
| | Bent or worn shift fork | Replace the shift fork. |
| | Shift drum incorrect axial play | Replace the shift drum. |
| | Worn shift drum groove | Replace the shift drum. |
| | Worn transmission gear dog | Replace the transmission gear. |
| Transmission noise | Damaged or worn transmission gear | Replace the transmission gear. |
| | Worn main axle spline | Replace the main axle. |
| | Worn drive axle spline | Replace the drive axle. |
| | Worn bearing | Replace the bearing. |

EAM30512

## TROUBLESHOOTING OF COOLING SYSTEM

| Symptom | Possible cause | Actions |
|---|---|---|
| Overheating | Carbon buildup in piston head and combustion chamber | Clean the piston head and combustion chamber. |
| | Clogged engine cooling water passages | Check and clean the engine cooling water passages. |
| | Incorrect oil level | Adjust the oil level to the specified level. |
| | Incorrect oil viscosity | Change to recommended engine oil. |
| | Inferior oil quality | Change to recommended engine oil. |
| | Low coolant level | Add recommended coolant to the specified level. |
| | Damaged or leaking radiator | Replace the radiator. |
| | Faulty radiator cap | Replace the radiator cap. |
| | Clogged radiator fin | Clean the radiator fin. |
| | Bent or damaged radiator fin | Repair the radiator fin or replace the radiator. |
| | Damaged or faulty water pump | Replace the water pump. |
| | Damaged hoses or pipes | Replace the hose or pipe. |
| | Improperly connected hoses or pipes | Connect the hoses and pipes properly. |
| | Damaged throttle body joint | Replace the throttle body joint. |
| | Loose throttle body joint | Tighten the throttle body joint bolts to the specified torque. |
| | Clogged air filter element | Clean or replace the air filter element. |
| | Brake drags | Check the brake system and repair or replace faulty parts as necessary. |
| | Incorrect spark plug gap | Adjust to the specified spark plug gap. |
| | Incorrect spark plug heat range | Replace the spark plug with the one of the specified type. |
| | Faulty ECU | Replace the ECU. |
| Noise from water pump | Contact between the water pump housing cover and impeller | Disassemble the water pump and replace faulty parts. |
| | Worn water pump housing bearing | Replace the water pump housing bearing. |

EAM30513
## TROUBLESHOOTING OF BRAKE

| Symptom | Possible cause | Actions |
|---|---|---|
| Poor performance of disc brake | Worn brake pad | Replace the brake pads as a set. |
| | Worn or deflected brake disc | Replace the brake disc. |
| | Air in hydraulic brake system | Bleed the hydraulic brake system. |
| | Brake fluid leakage | Check the hydraulic brake system and repair or replace faulty parts as necessary. |
| | Incorrect brake fluid level (low) | Add brake fluid to the specified level. |
| | Stuck brake caliper piston | Replace the caliper piston seal. |
| | Stuck brake caliper and slide pin | Lubricate the caliper slide pin. |
| | Loose union bolt | Tighten the union bolt to the specified torque. |
| | Damaged brake hose and brake pipe | Replace the brake hose and brake pipe. |
| | Oil or grease on the brake disc or brake pad | Clean the brake disc or brake pad. |
| | Insufficient lubrication of brake lever or brake pedal pivot | Lubricate the brake lever or brake pedal pivot. |

EAM30514
## TROUBLESHOOTING OF SUSPENSION

| Symptom | Possible cause | Actions |
|---|---|---|
| Front fork is hard | Bent or damaged inner tube | Replace the inner tube. |
| | Bent or damaged outer tube | Replace the outer tube. |
| | Damaged or worn slide metal | Replace the slide metal. |
| | Bent or damaged damper rod | Replace the damper rod. |
| | Bent wheel axle | Replace the wheel axle. |
| | Incorrect oil viscosity (high) | Change to recommended fork oil. |
| | Incorrect oil level (high) | Adjust to the specified oil level. |
| | Improperly adjusted spring preload (hard) | Adjust the spring preload. |
| | Improperly adjusted rebound damping (hard) | Adjust the rebound damping. |
| | Improperly adjusted compression damping (hard) | Adjust the compression damping. |

| Symptom | Possible cause | Actions |
|---|---|---|
| Front fork is soft | Fatigued or broken fork spring | Replace the fork spring. |
| | Incorrect oil viscosity (low) | Change to recommended fork oil. |
| | Incorrect oil level (low) | Adjust to the specified oil level. |
| | Improperly adjusted spring preload (soft) | Adjust the spring preload. |
| | Improperly adjusted rebound damping (soft) | Adjust the rebound damping. |
| | Improperly adjusted compression damping (soft) | Adjust the compression damping. |
| Leaking oil from front fork | Bent, damaged, or corroded inner tube | Replace the inner tube. |
| | Cracked or damaged outer tube | Replace the outer tube. |
| | Improperly installed oil seal | Replace the oil seal. |
| | Damaged oil seal lip | Replace the oil seal. |
| | Incorrect oil level (high) | Adjust to the specified oil level. |
| | Loose damper rod assembly bolt | Tighten the damper rod assembly bolt to the specified torque. |
| | Damaged damper rod assembly bolt copper washer | Replace the damper rod assembly bolt copper washer. |
| | Cracked or damaged cap bolt O-ring | Replace the cap bolt O-ring. |
| Rear suspension is hard | Bent or damaged rear shock absorber rod | Replace the rear shock absorber. |
| | Bent swingarm pivot shaft | Replace the swingarm pivot shaft. |
| | Damaged or worn swingarm bearing or bushing | Replace the swingarm bearing or bushing. |
| | Damaged or worn relay arm bearing | Replace the relay arm bearing. |
| | Damaged or worn connecting arm bearing | Replace the connecting arm bearing. |
| | Improperly adjusted rear shock absorber spring preload (hard) | Adjust the spring preload. |
| | Improperly adjusted rear shock absorber rebound damping (hard) | Adjust the rebound damping. |
| | Improperly adjusted rear shock absorber compression damping (hard) | Adjust the compression damping. |

| Symptom | Possible cause | Actions |
|---|---|---|
| Rear suspension is soft | Oil leaking from rear shock absorber | Replace the rear shock absorber. |
| | Gas leaking from rear shock absorber | Replace the rear shock absorber. |
| | Fatigued or damaged rear shock absorber spring | Replace the rear shock absorber. |
| | Improperly adjusted rear shock absorber spring preload (soft) | Adjust the spring preload. |
| | Improperly adjusted rear shock absorber rebound damping (soft) | Adjust the rebound damping. |
| | Improperly adjusted rear shock absorber compression damping (soft) | Adjust the compression damping. |
| Oil leaking from rear shock absorber | Bent, damaged, or corroded rear shock absorber rod | Replace the rear shock absorber. |
| | Damaged oil seal lip | Replace the rear shock absorber. |

EAM30515
## TROUBLESHOOTING OF STEERING/HANDLING

| Symptom | Possible cause | Actions |
|---|---|---|
| Handlebar wobble | Loose lower ring nut | Tighten the lower ring nut to the specified torque. |
| | Worn bearing or bearing race | Replace the bearing and bearing race as a set. |
| | Warped front fork | Repair or replace the front fork. |
| | Bent front wheel axle | Replace the front wheel axle. |
| | Incorrect tire pressure | Adjust to the specified tire pressure. |
| | Worn, deformed, or incorrect tire | Replace the tire. |
| Heavy steering | Lower ring nut is tightened too tight | Tighten the lower ring nut to the specified torque. |
| | Bent lower bracket | Replace the lower bracket. |
| | Broken bearing or bearing race | Replace the bearing and bearing race as a set. |
| | Incorrect tire pressure | Adjust to the specified tire pressure. |
| Front wheel vibration | Loose spoke | Tighten the spoke and adjust the runout. |
| | Damaged or worn wheel bearing | Replace the wheel bearing. |
| | Worn, deformed, or incorrect tire | Replace the tire. |
| | Loose wheel axle or wheel axle nut | Tighten the wheel axle or wheel axle nut to the specified torque. |
| | Loose wheel axle pinch bolt | Tighten the wheel axle pinch bolt to the specified torque. |
| | Incorrect front fork oil level | Adjust to the specified front fork oil level. |

| Symptom | Possible cause | Actions |
|---|---|---|
| Rear wheel vibration | Loose spoke | Tighten the spoke and adjust the runout. |
| | Damaged or worn wheel bearing | Replace the wheel bearing. |
| | Worn, deformed, or incorrect tire | Replace the tire. |
| | Loose wheel axle nut | Tighten the wheel axle nut to the specified torque. |
| | Loose swingarm pivot shaft | Tighten the swingarm pivot shaft to the specified torque. |
| | Bent or damaged swingarm | Replace the swingarm bearing. |
| | Damaged or worn swingarm bearing or bushing | Replace the swingarm bearing or bushing. |

EAM30516

## TROUBLESHOOTING OF CHARGING SYSTEM

| Symptom | Possible cause | Actions |
|---|---|---|
| Battery is not charged | Have a Yamaha dealer check the electrical system. | |

# TUNING

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EAM20119
# CHASSIS

EAM30168
## SELECTION OF THE SECONDARY REDUCTION RATIO (SPROCKET)

**Secondary reduction ratio = Number of rear wheel sprocket teeth/Number of drive sprocket teeth**

**Secondary reduction ratio**
**3.846 (50/13) (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)**
**3.923 (51/13) (AUS, CAN, NZL, ZAF)**

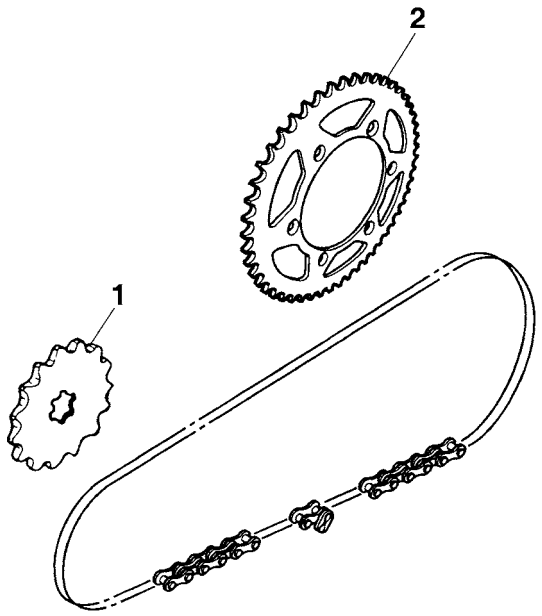
<Requirement for selection of secondary gear reduction ratio>
- It is generally said that the secondary gear ratio should be reduced for a longer straight portion of a speed course and should be increased for a course with many corners. Actually, however, as the speed depends on the ground condition of the day of the race, be sure to run through the circuit to set the machine suitable for the entire course.
- In actuality, it is very difficult to achieve settings suitable for the entire course and some settings may be sacrificed. Thus, the settings should be matched to the portion of the course that has the greatest effect on the race result. In such a case, run through the entire course while making notes of lap times to find the best balance; then, determine the secondary reduction ratio.
- If a course has a long straight portion where a machine can run at maximum speed, the machine is generally set such that it can develop its maximum revolutions toward the end of the straight line, with care taken to avoid the engine over-revving.

**TIP**
Riding technique varies from rider to rider and the performance of a machine also vary from machine to machine. Therefore, do not imitate other rider's settings from the beginning but choose your own setting according to the level of your riding technique.

EAM30169
## DRIVE AND REAR WHEEL SPROCKETS SETTING PARTS

| Part name | | Type | Part number |
|---|---|---|---|
| Drive sprocket "1" | (STD) | 13T | 9383E-13233 |
| Rear wheel sprocket "2" | | 47T | 17D-25447-50 |
| | | 48T | 17D-25448-50 |
| | | 49T | B2W-25449-00 |
| | (STD)*1 | 50T | B2W-25450-00 |
| | (STD)*2 | 51T | B2W-25451-00 |
| | | 52T | 17D-25452-50 |

*1: For D032, D037
*2: For D031, D034, D036, D039




EAM30170
## TIRE PRESSURE
Tire pressure should be adjusted to suit the road surface condition of the circuit.

**Standard tire pressure**
**100 kPa (1.00 kgf/cm$^2$, 15 psi)**

- Under a rainy, a muddy, a sandy, or a slippery condition, the tire pressure should be lower for a larger area of contact with the road surface.

**Extent of adjustment**
**60–80 kPa (0.60–0.80 kgf/cm², 9–12 psi)**

- Under a stony or a hard road condition, the tire pressure should be higher to prevent a flat tire.

**Extent of adjustment**
**100–120 kPa (1.00–1.20 kgf/cm², 15–18 psi)**

EAM30171

## FRONT FORK SETTING

The front fork setting should be made depending on the rider's feeling of an actual run and the circuit conditions.
The front fork setting includes the following three factors:

1. Setting of air spring characteristics
   - Change the fork oil amount.
2. Setting of spring preload
   - Change the spring.
3. Setting of damping force
   - Change the compression damping force.
   - Change the rebound damping force.
   The spring acts on the load and the damping force acts on the cushion travel speed.

EAM30172

## CHANGE IN AMOUNT AND CHARACTERISTICS OF FORK OIL

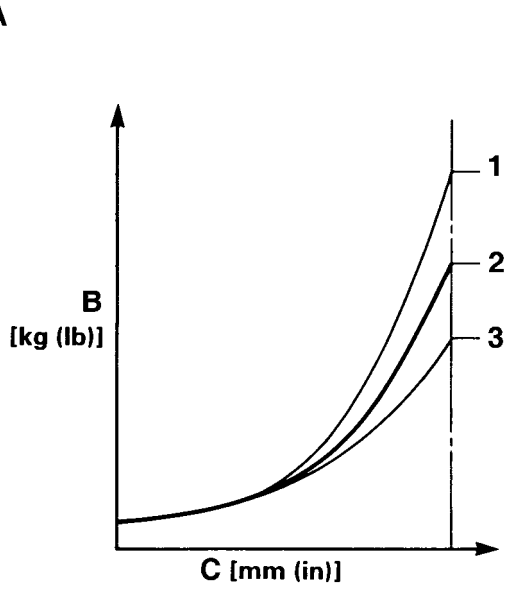
Damping characteristic near the final stroke can be changed by changing the fork oil amount.

EWA19190

**⚠ WARNING**

**Adjust the oil amount in 5 cm³ (0.2 US oz, 0.2 Imp.oz) increments or decrements. Too small oil amount causes the front fork to produce a noise at full rebound or the rider to feel some pressure on his hands or body. Alternatively, too large oil amount will cause the air spring characteristics to have a tendency to be stiffer with the consequent deteriorated performance and characteristics. Therefore, adjust the front fork within the specified range.**

**Recommended oil**
**Yamaha Suspension Oil S1**
**Standard oil amount**
**280.0 cm³ (9.47 US oz, 9.88 Imp.oz) (AUS, CAN, NZL, ZAF)**
**310.0 cm³ (10.48 US oz, 10.93 Imp.oz) (ALB, AND, AUT, BEL, BGR, BIH, CHE, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ISR, ITA, KVX, LIE, LTU, LUX, LVA, MCO, MDA, MKD, MNE, NLD, NOR, POL, PRT, ROM, SRB, SVK, SVN, SWE, TUR, UKR)**
**Extent of adjustment**
**260–365 cm³ (8.79–12.34 US oz, 9.17–12.87 Imp.oz)**




A. Air spring characteristics in relation to oil amount change
B. Load
C. Stroke

1. Max. oil amount
2. Standard oil amount
3. Min. oil amount

EAM30173

## SETTING OF SPRING AFTER REPLACEMENT

As the front fork setting can be easily affected by the rear suspension, take care so that the front and the rear are balanced (in position etc.) when setting the front fork.

1. Use of soft spring
   • Change the rebound damping force.
   Turn out one or two clicks.
   • Change the compression damping force.
   Turn in one or two clicks.

**TIP**

Generally a soft spring gives a soft riding feeling. Rebound damping tends to become stronger and the front fork may sink deeply over a series of gaps.

2. Use of stiff spring
   • Change the rebound damping force.
   Turn in one or two clicks.
   • Change the compression damping force.
   Turn out one or two clicks.

**TIP**

Generally a stiff spring gives a stiff riding feeling. Rebound damping tends to become weaker, resulting in lack of a sense of contact with the road surface or in a vibrating handlebar.

EAM30174

## FRONT FORK SETTING PARTS

• Front fork spring

| STD Spring rate N/mm | 5.0 *1<br>5.1 *2 |
|---|---|

| Type | Spring rate N/mm | Part number | I.D. mark (slits) |
|---|---|---|---|
| SOFT | 4.5 | BR9-23141-20 | I-II |
| ↑ | 4.6 | BR9-23141-30 | I-III |
| | 4.7 | BR9-23141-40 | I-IIII |
| | 4.8 | BR9-23141-50 | I-IIIII |
| | 4.9 | BR9-23141-60 | II-II |
| ↓ | 5.0 | BR9-23141-70 | II-III |
| STIFF | 5.1 | BR9-23141-80 | II-IIII |

*1: For D031, D034, D036, D039
*2: For D032, D037

**TIP**

The I.D. mark (slits) is proved on the end of the spring.

EAM30175

## REAR SUSPENSION SETTING

The rear shock absorber setting should be made depending on the rider's feeling of an actual run and the circuit conditions.

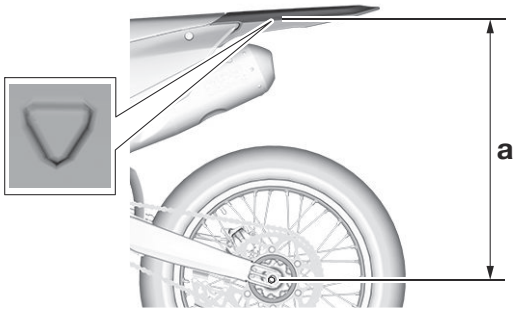
The rear suspension setting includes the following two factors:

1. Setting of spring preload
   • Change the set length of the spring.
   • Change the spring.
2. Setting of damping force
   • Change the rebound damping force.
   • Change the compression damping force.

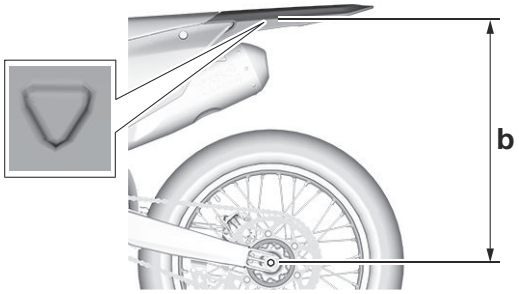
EAM30176

## CHOOSING SET LENGTH

1. Place a stand or a block under the engine to put the rear wheel above the floor, and measure the length "a" between the rear wheel axle center and "△" mark of rear fender.




2. Remove the stand or block from the engine and, with a rider astride the seat, measure the sunken length "b" between the rear wheel axle center and "△" mark of rear fender.



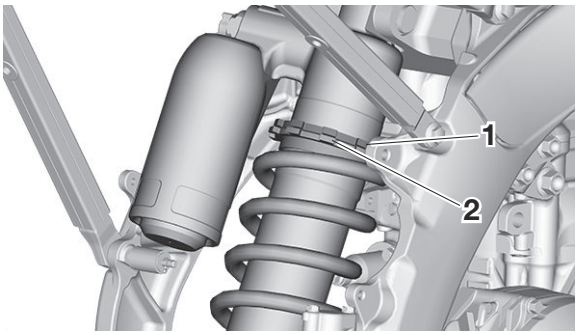

3. Loosen the locknut "1" and make adjustment by turning the adjuster "2" to achieve the standard figure from the subtraction of the length "b" from the length "a".

**Standard figure**
**90–100 mm (3.5–3.9 in)**

**TIP**

• If the machine is new and after it is broken in, the same set length of the spring may change because of the initial fatigue, etc. of the spring. Therefore, be sure to make reevaluation.
• If the standard figure cannot be achieved by adjusting the adjuster and changing the set length, replace the spring with an optional one

and make readjustment.




EAM30177

## SETTING OF SPRING AFTER REPLACEMENT

After replacement, be sure to adjust the spring to the set length [sunken length 90–100 mm (3.5–3.9 in)] and set it.

1. Use of soft spring
   - Adjust to decrease rebound damping force to compensate for less spring load. Run with the rebound damping force adjuster one or two clicks turned out, and readjust it to suit your preference.
2. Use of stiff spring
   - Adjust to increase rebound damping force to compensate for greater spring load. Run with the rebound damping force adjuster one or two clicks turned in, and readjust it to suit your preference.

**TIP**

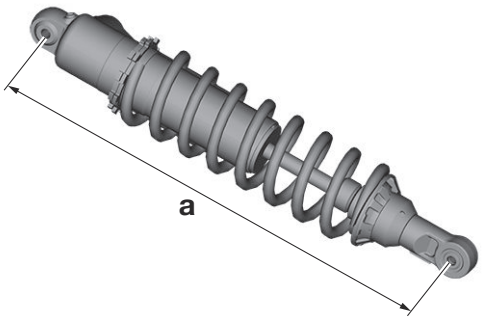
Adjusting the rebound damping force will be followed more or less by a change in the compression damping force. For correction, adjust to decrease compression damping force.

EWA19200

**⚠ WARNING**

**When using a rear shock absorber other than currently installed, use the one whose overall length "a" does not exceed the standard as it may result in faulty performance. Never use one whose overall length is greater than standard.**

| | |
|---|---|
| | **Length "a" of standard shock 460.5 mm (18.1 in)** |




EAM30178

## REAR SHOCK ABSORBER SETTING PARTS

- Rear shock spring "1"

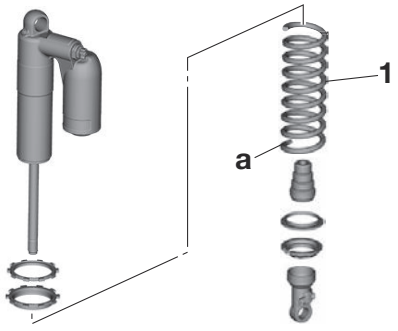
| STD Spring rate N/mm | 56 *1<br>58 *2 |
|---|---|

| Type | Spring rate N/mm | Part number | I.D. mark |
|---|---|---|---|
| SOFT | 52 | BR9-22212-00 (Blue) | Yellow |
| ↑ | 54 | BR9-22212-10 (Blue) | Pink |
| | 56 | BR9-22212-A0 (Silver) | White |
| ↓ | 58 | BR9-22212-B0 (Silver) | Gold |
| STIFF | 60 | BR9-22212-40 (Blue) | Brown |

*1: For D031, D034, D036, D039
*2: For D032, D037

**TIP**

- The I.D. mark "a" is marked at the end of the spring.
- Spring specification varies according to the color of I.D. marks.




- Spring preload adjusting positions



**Spring preload adjusting positions**
**Minimum**
**Position in which the spring is turned in 1.5 mm (0.06 in) from its free length.**
**Standard**
**Position in which the spring is turned in 7.0 mm (0.28 in) from its free length.**
**Maximum**
**Position in which the spring is turned in 18.0 mm (0.71 in) from its free length.**

**TIP**
For the spring preload adjustment, refer to "ADJUSTING THE REAR SHOCK ABSORBER ASSEMBLY" on page 3-27.

EAM30179

## SUSPENSION SETTING (FRONT FORK)

**TIP**

- If any of the following symptoms is experienced with the standard position as the base, make resetting by reference to the adjustment procedure given in the same chart.
- Before any change, set the rear shock absorber sunken length to the standard figure 90–100 mm (3.5–3.9 in).

| Symptom | Section | | | | Check | Adjust |
|---|---|---|---|---|---|---|
| | Jump | Large gap | Medium gap | Small gap | | |
| Stiff over entire range | √ | √ | √ | | Compression damping force | Turn adjuster counterclockwise (about 2 clicks) to decrease damping. |
| | | | | | Oil amount | Decrease oil amount by about 5–10 $cm^3$ (0.2–0.3 US oz, 0.2–0.4 Imp.oz). |
| | | | | | Spring | Replace with soft spring. |
| Unsmooth movement over entire range | √ | √ | √ | √ | Outer tube Inner tube | Check for any bends, dents, other noticeable scars, etc. If any, replace affected parts. |
| | | | | | Slide metal | Replace with a new one for extended use. |
| | | | | | Piston metal | Replace with a new one for extended use. |
| | | | | | Lower bracket tightening torque | Retighten to specified torque. |
| Poor initial movement | | | | √ | Rebound damping force | Turn adjuster counterclockwise (about 2 clicks) to decrease damping. |
| | | | | | Oil seals | Apply grease in oil seal wall. |
| Soft over entire range, bottoming out | √ | √ | | | Compression damping force | Turn adjuster clockwise (about 2 clicks) to increase damping. |
| | | | | | Oil amount | Increase oil amount by about 5–10 $cm^3$ (0.2–0.3 US oz, 0.2–0.4 Imp.oz). |
| | | | | | Spring | Replace with stiff spring. |
| Stiff toward stroke end | √ | | | | Oil amount | Decrease oil amount by about 5 $cm^3$ (0.2 US oz, 0.2 Imp.oz). |
| Soft toward stroke end, bottoming out | √ | | | | Oil amount | Increase oil amount by about 5 $cm^3$ (0.2 US oz, 0.2 Imp.oz). |
| Stiff initial movement | √ | √ | √ | √ | Compression damping force | Turn adjuster counterclockwise (about 2 clicks) to decrease damping. |

| Symptom | Section | | | | Check | Adjust |
|---|---|---|---|---|---|---|
| | Jump | Large gap | Medium gap | Small gap | | |
| Low front, tending to lower front posture | | | √ | √ | Compression damping force | Turn adjuster clockwise (about 2 clicks) to increase damping. |
| | | | | | Rebound damping force | Turn adjuster counterclockwise (about 2 clicks) to decrease damping. |
| | | | | | Balance with rear end | Set sunken length for 95–100 mm (3.7–3.9 in) when one passenger is astride seat (lower rear posture). |
| | | | | | Oil amount | Increase oil amount by about 5 $cm^3$ (0.2 US oz, 0.2 Imp.oz). |
| "Obtrusive" front, tending to upper front posture | | | √ | √ | Compression damping force | Turn adjuster counterclockwise (about 2 clicks) to decrease damping. |
| | | | | | Balance with rear end | Set sunken length for 90–95 mm (3.5–3.7 in) when one passenger is astride seat (upper rear posture). |
| | | | | | Spring | Replace with soft spring. |
| | | | | | Oil amount | Decrease oil amount by about 5–10 $cm^3$ (0.2–0.3 US oz, 0.2–0.4 Imp.oz). |

EAM30180

## SUSPENSION SETTING (REAR SHOCK ABSORBER)

**TIP**

- If any of the following symptoms is experienced with the standard position as the base, make resetting by reference to the adjustment procedure given in the same chart.
- Adjust the rebound damping in 2-click increments or decrements.
- Adjust the low compression damping in 1-click increments or decrements.
- Adjust the high compression damping in 1/6 turn increments or decrements.

| Symptom | Section | | | | Check | Adjust |
|---|---|---|---|---|---|---|
| | Jump | Large gap | Medium gap | Small gap | | |
| Stiff, tending to sink | | | √ | √ | Rebound damping force | Turn adjuster counterclockwise (about 2 clicks) to decrease damping. |
| | | | | | Spring set length | Set sunken length for 90–100 mm (3.5–3.9 in) when one passenger is astride seat. |
| Spongy and unstable | | | √ | √ | Rebound damping force | Turn adjuster clockwise (about 2 clicks) to increase damping. |
| | | | | | Low compression damping | Turn adjuster clockwise (about 1 click) to increase damping. |
| | | | | | Spring | Replace with stiff spring. |

| Symptom | Section | | | | Check | Adjust |
|---|---|---|---|---|---|---|
| | Jump | Large gap | Medium gap | Small gap | | |
| Heavy and dragging | | | √ | √ | Rebound damping force | Turn adjuster counterclockwise (about 2 clicks) to decrease damping. |
| | | | | | Spring | Replace with soft spring. |
| Poor road gripping | | | | √ | Rebound damping force | Turn adjuster counterclockwise (about 2 clicks) to decrease damping. |
| | | | | | Low compression damping | Turn adjuster clockwise (about 1 click) to increase damping. |
| | | | | | High compression damping | Turn adjuster clockwise (about 1/6 turn) to increase damping. |
| | | | | | Spring set length | Set sunken length for 90–100 mm (3.5–3.9 in) when one passenger is astride seat. |
| | | | | | Spring | Replace with soft spring. |
| Bottoming out | √ | √ | | | High compression damping | Turn adjuster clockwise (about 1/6 turn) to increase damping. |
| | | | | | Spring set length | Set sunken length for 90–100 mm (3.5–3.9 in) when one passenger is astride seat. |
| | | | | | Spring | Replace with stiff spring. |
| Bouncing | √ | √ | | | Rebound damping force | Turn adjuster clockwise (about 2 clicks) to increase damping. |
| | | | | | Spring | Replace with soft spring. |
| Stiff travel | √ | √ | | | High compression damping | Turn adjuster counterclockwise (about 1/6 turn) to decrease damping. |
| | | | | | Spring set length | Set sunken length for 90–100 mm (3.5–3.9 in) when one passenger is astride seat. |
| | | | | | Spring | Replace with soft spring. |

EAM20212

YAMAHA LITHIUM-ION BATTERY USER'S MANUAL

YAMAHA

English

# User's manual

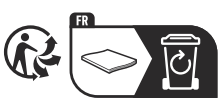
## - YAMAHA Lithium Ion Battery -

- **Please read all user's manual before use the YAMAHA batteries and chargers for safety.**
- **Be sure to observe the following in order to avoid burns or other injury from fluid leakage, overheating, fire or explosion.**
- **Please contact the place of purchase for information on installation and adjustment of the products which are not found in the user's manual.**
- **The following instructions must be observed at all times in order to prevent personal injury and physical damage to equipment and surroundings.**
- **WARNING: Risk of Fire. Never Disassemble. No User Serviceable Parts.**

**Manufacturer:**
Trend Power Technology (Changshu) INC.
No.868 Dongnan Avenue, Changshu High_tech Industrial
Development Zone, Jiangsu PRC,CN

**Importer: (EU)**
YAMAHA MOTOR EUROPE N.V.
Koolhovenlaan 101, 1119 NC Schiphol-Rijk, 1117 ZN, Schiphol, the Netherlands

**Importer: (UK)**
YAMAHA MOTOR EUROPE N.V., BRANCH UK
Units A2-A3, Kingswey Business Park, Forsyth Road, Woking, Surrey. GU21 5SA. United Kingdom.




**BNK-2819W-00**

**⚠ Battery safety instructions and warnings.**

- Only use the designated charger and follow the specified charging conditions when charging the battery. Otherwise it may cause overheating, bursting, or ignition of the battery.
- Do not leave the battery near sources of heat such as heaters, vehicle or any dangerous place.
- Do not heat the battery or throw it into fire.
- Do not deform, modify, disassemble or apply solder directly to the battery.
- Do not connect the (+) and (-) terminals and other terminals with metallic objects. Do not carry or store the battery together with metallic objects such as necklaces or hairpins. Because it could cause short-circuits, overheating, burns or other injury.
- Do not place the battery into the water, and do not allow the battery terminals to get wet. Otherwise it may cause overheating, bursting, or ignition of the battery.
- Do not puncture, crush or will damage the battery.
- If any liquid leaking from the battery gets into your eyes, skin or clothes, immediately wash the affected area thoroughly with clean water, and seek medical advice immediately. The battery liquid would damage your eyes and body.
- If the battery does not charge by the charger in 1 minute, please unplug the charger cable and plug again, if still not working please contact the place of purchase immediately.
- Do not use the battery if it has any external damage.
- Do not use the battery if leakages, discoloration, deformation or any other abnormalities occur.
- Do not recharge the battery in wet or very humid places, or outdoors.
- Do not insert or remove the plug while it is wet. Otherwise it may cause electric shocks. If there is water leaking out of the plug, dry it thoroughly before inserting it.
- Do not store in direct sunlight or in places (such as inside cars) where the heat can become excessive. Keep away from heat and open flames. This may result in battery leakage.
- Use both hands when handling the product to avoid the dangerous and injury.
- If an error occurs during discharge or charging, stop using the battery immediately and refer to the user's manual. If you are not sure, consult the place of purchase.
- Do not clean the battery with high pressure water spray.
- Do not use alcohol, solvents or abrasive cleaner to clean the battery or charger. Please use a dry or slightly damp cloth.
- This battery is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the battery system by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the battery & charger.
- If the battery exploded, please contact firefighters immediately, and please cautiously remove other batteries if possible, evacuate all persons from immediate area of fire, and use plenty of cold water (min. 10 times pack weight) to put out the fire before the rescue.
- Do not expose battery systems to strong mechanical impacts.
- Products with broken seals shall not be used and shall be immediately forwarded for appropriate recycling.

### ⚠ Charging condition and safety instructions.

- The battery is not fully charged at the time you purchase. Before riding, be sure to charge the battery until it is fully charged.
- Please only use YAMAHA charger to charge the battery pack.
- Be sure the charge port and plugs are always clean and dry before connecting the charger.
- Never use the charger which you suspect is damaged or know to be broken.
- Do not disassemble or modify the battery charger.
- Do not use any non-approval male connector insert the battery connector and charger, especially with metal or conductive materials.
- Do not allow the battery charger to get wet, and using it while it is wet, don't tough or hold it with wet hand to avoid an electric shock.
- Do not use the charger when it is covered with a cloth or other material.
- Do not touch the metallic parts of the device or the power plug on the AC adapter or other parts if there is a lightning storm.
- Do not use the charger to charge the battery outdoor or in the environments with high humidity, and please avoid exposure to rain or wind.
- In order to prevent the cable from being damaged, please do not hold the charger cable only when carrying it and avoid wrapping cable around the main body during storage.
- Please always remove the battery from vehicle before washing the vehicle with water or any kinds of liquid material.
- Please wait for an hour if you would like to charge the battery after riding, due to the battery temperature might be too high.
- Recommend to charge the battery in an area with a smoke detector.
- It is not recommended to have the battery pack connected permanently to the charger.

### ⚠ Recycle

- Battery packs, accessories and packaging should be sorted for environmental friendly recycling.
- Lithium ion batteries are recyclable, valuable resources. For information on used batteries, follow the rules in your area. If you are not sure, consult the place of purchase.
- Electronic devices that are no longer usable and defective/drained batteries must be collected separately and recycled in an environmentally friendly manner.
- Do not touch severely damaged batteries with your bare hands – electrolyte may escape and cause skin irritation. Store the defective battery in a safe location outdoors. Cover the terminals if necessary and inform your dealer. They will help you to dispose of it properly.



### ⚠ Pack storage condition.

- Store the battery in a safe place away from reach of infants and pets.
- If the battery is stored in temperatures which are outside these ranges, then it may cause fire, injury.
- Do not store battery at below temperatures below -10 °C or above 60 °C.
- Store the battery in cool indoor places where they do not become exposed to direct sunlight or rain. If the storage temperature is low or high, the performance of the battery is reduced, and its available time will be shorter. When you use the battery after a long storage period, be sure to charge it before use.
- Temperature above 70 °C may result in battery leakage and rupture.

**⚠ Assembly battery condition.**

- Please do not use the battery immediately after shipment. The battery can be used after charging it with the designated charger. Be sure to charge it before use.
- Please always switch off the battery and the system when you insert or remove the battery from system.

**⚠ Pack operation condition.**

- The operating temperature ranges for the battery are given below. Do not use the battery in temperatures outside these ranges. If the battery is used in temperatures which are outside these ranges, then it may cause fire, injury.
- Only use the battery during discharge temperature range: -10 °C–65 °C
- Only charge the battery it during charging temperature range: -10 °C–60 °C
- The battery must be charged in an ambient temperature, on a non-flammable and dry surface, away from any sources of heat, humidity or flammable materials.
- If the battery has been charged in a low temperature environment (0 °C or below), the maximum riding distance per full charge becomes shorter. This is due to a characteristic of the battery. If the battery is charged at room temperature, the battery becomes normal again.

**⚠ Warranty void condition.**

- Charge the battery at least every 3 months to approximately 70 % capacity, even when the battery is not in use.
- For replacement information, please contact the place of purchase.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- The life of the battery will vary depending on factors such as the storage method, the usage conditions, the surrounding environment and the characteristics of the individual battery pack.
- If the battery has become completely empty, charge it as soon as possible. If the battery is left uncharged, it may cause the battery to deteriorate and become unusable.
- Please do not disassemble the battery or other relates parts, including label, or improper human operation, it may cause the battery lost warranty.

EAM20149

# WIRING DIAGRAM

**YZ450F/YZ450FT 2026**

1. AC magneto
2. Rectifier/regulator
3. Battery
4. Fuse
5. Starter relay
6. Starter motor
7. Diode 1
8. Throttle position sensor
9. Intake air pressure sensor
10. Crankshaft position sensor
11. Intake air temperature sensor
12. Coolant temperature sensor
13. ECU (Engine Control Unit)
14. Ignition coil
15. Spark plug
16. Fuel injector
17. Fuel pump
18. CCU (Communication Control Unit)
19. Gear position switch
20. Handlebar switch (left)
21. Indicator light
22. Multi-function button
23. Engine stop switch
24. Handlebar switch (right)
25. Starter switch
26. Frame ground
27. Engine ground

A. Wire harness
B. CCU sub-lead

EAM30323

## COLOR CODE

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



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(E)




Original instructions
Notice originale
Originalbetriebsanleitung
Istruzioni originali
Manual original

YAMAHA

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(E, F, G, H, S)

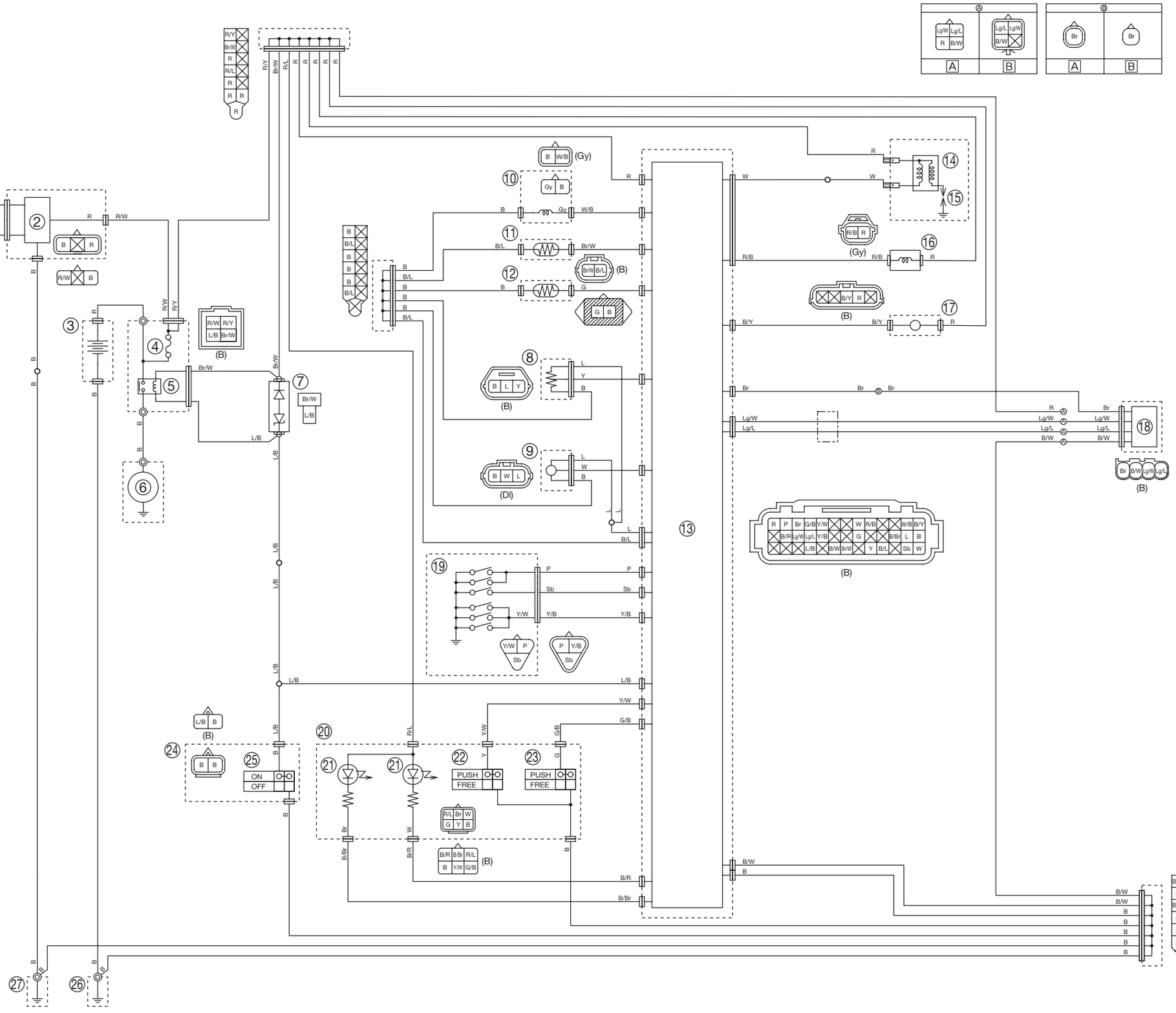
**YZ450F/YZ450FT 2026**
**WIRING DIAGRAM**

**YZ450F/YZ450FT 2026**
**SCHÉMA DE CÂBLAGE**

**YZ450F/YZ450FT 2026**
**SCHALTPLAN**

**YZ450F/YZ450FT 2026**
**SCHEMA ELETTRICO**

**YZ450F/YZ450FT 2026**
**DIAGRAMA ELÉCTRICO**



**YZ450F/YZ450FT 2026**
**WIRING DIAGRAM**

**YZ450F/YZ450FT 2026**
**SCHÉMA DE CÂBLAGE**

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**YZ450F/YZ450FT 2026**
**DIAGRAMA ELÉCTRICO**

