KREIDLER MOTORCYCLES

# OWNER'S MANUAL
# GP2-890R

(Model Years 2020 - 2024)

# Introduction

Dear Krämer Customer,

We want to congratulate you on purchasing a Krämer GP2-890R series motorcycle. The GP2-890R is the next level and the logical expansion of the Krämer Motorcycles portfolio. Like the strong “EVO2-690” single, the two-cylinder model was developed and built exclusively for use on the racetrack. With 130 hp and 100 Nm of torque and a weight of only 309 lbs (140 kg), the GP2-890R stands for spectacular riding dynamics without overwhelming the rider. Ideal for the most intense enjoyment on the racetrack - and for hunting lap times!

This manual will serve as a guide to keeping your GP2-890R in race-ready shape.

If you have any questions concerning the operation or maintenance of your motorcycle, please consult your Krämer dealer.

THIS VEHICLE IS SOLD AS IS, NO WARRANTY.

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# About This Manual

Use this manual as a guide for proper procedures for this motorcycle’s basic operation, inspection, and maintenance. This manual is intended for professional service technicians and those knowledgeable about appropriate safety training and safe shop practices.

All information, directions, photographs, and specifications included in this manual are based on the most current information at the time of publication. Krämer Motorcycles accepts no liability for delivery options, deviations from illustrations and descriptions, misprints, or other errors. Krämer Motorcycles reserves the right to make changes at any time without notice or obligation.

**This motorcycle is to be raced on a closed course only.** Krämer Motorcycles & Krämer Motorcycles USA are not liable for any injury to riders, mechanics, public, and any damage to the vehicle or property.

This manual is for the following models:

**2020-24 Krämer GP2-890R**

Version: GP2-890R-2023-00

**Enter the serial numbers of your vehicle:**

Vehicle identification number

_____

Engine number

_____

Dealer’s Stamp

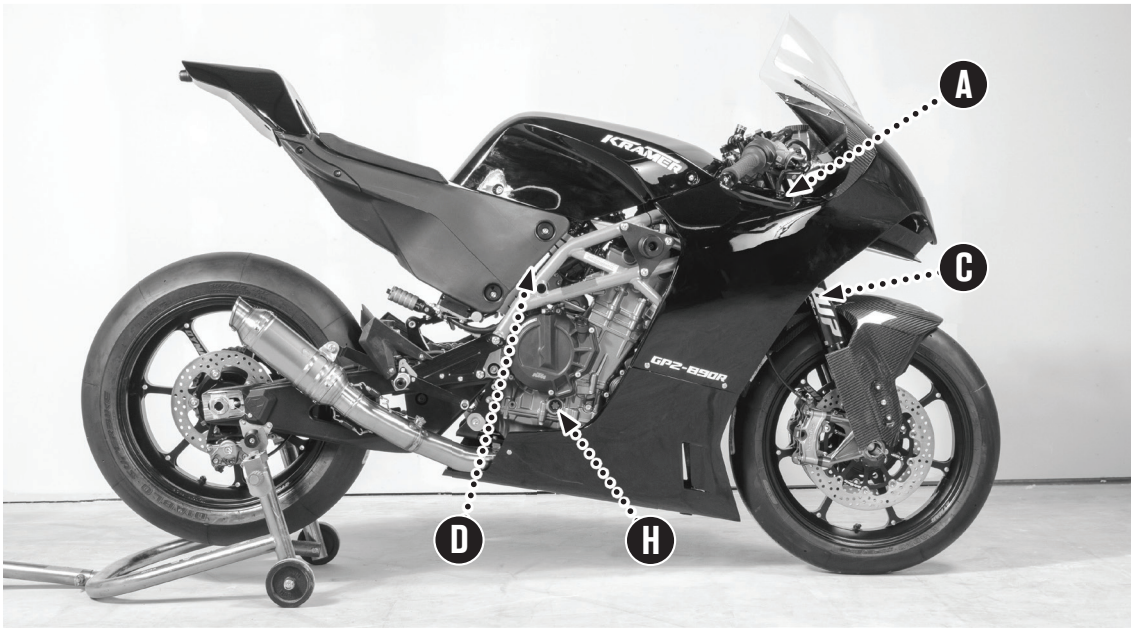
# Table of Contents

# Usage and Setup

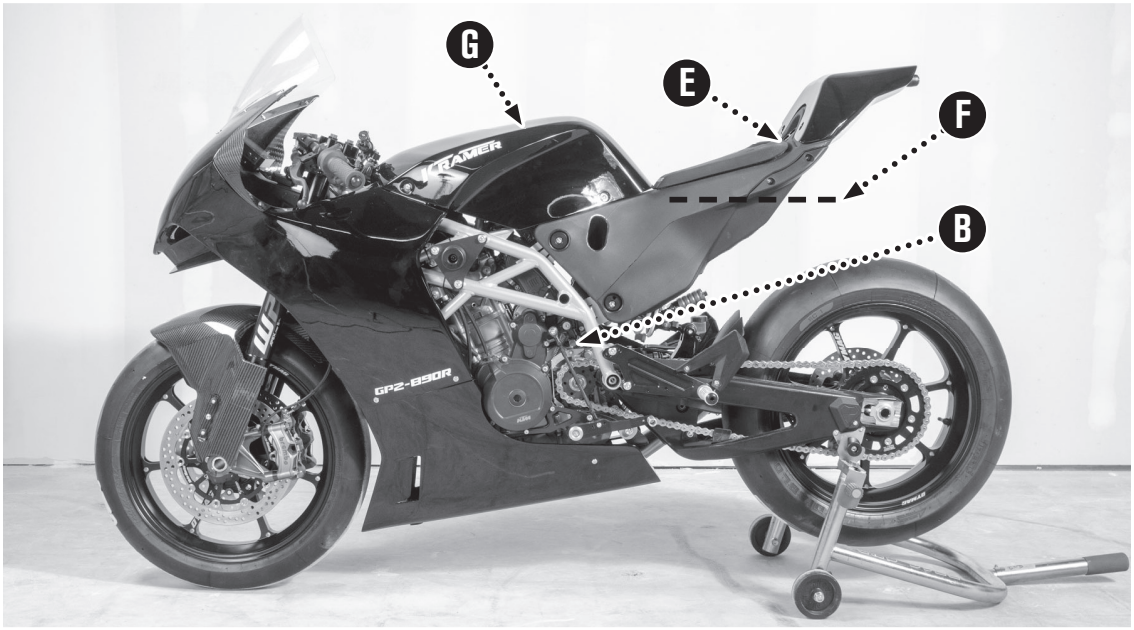
## Identification / Serial Numbers

### Reference Views of Vehicle

NOTE: Instructions, such as right-hand (R.H.) side and left-hand(L.H.) side are from rider position.




*Right Side View*




*Left Side View*

### Serial Numbers

- **A Chassis S/N** – R.H. side steering head.
- **B Engine S/N** – L.H. side of the engine above the sprocket.
- **C Fork S/N** – inside the axle clamp.
- **D Shock S/N** – top section of shock.

### Operating Components

- **E** Fuel Fill
- **F** Recommended Fuel Fill Amount for Racing (9.5 L or 2.5 US gal). On translucent tanks the fuel will show at this level.
- **G** Intake Cover/Air Filter Box
- **H** Oil Level Check

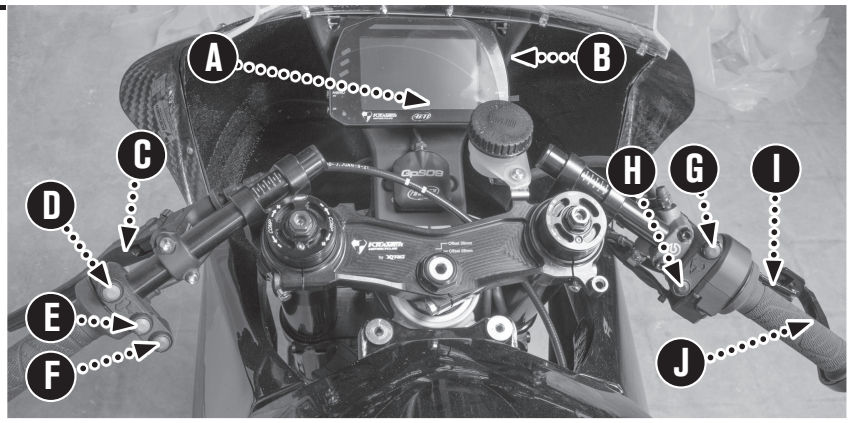
## Control Components

**Hand Controls**

- Ⓐ Dashboard
- Ⓑ Main Switch (behind fairing support)
- Ⓒ Clutch Lever
- Ⓓ Throttle Response
- Ⓔ Engine Braking Effect
- Ⓕ Pit Limiter
- Ⓖ Run/Stop Switch
- Ⓗ Start Button
- Ⓘ Front Brake Lever
- Ⓙ Throttle

**Foot Controls**

- Ⓚ Shift Lever
- Ⓛ Rear Brake Lever



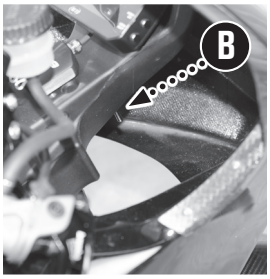

*Hand Controls*

## Start Up Procedure

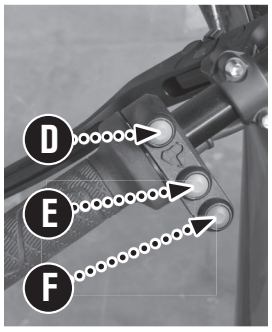
1. Toggle the ignition switch Ⓑ, located on the back side of dashboard/fairing support, to the ON position (Wait 5 seconds for fuel pump to pressurize)
2. Press START button Ⓗ

## Shut Down Procedure

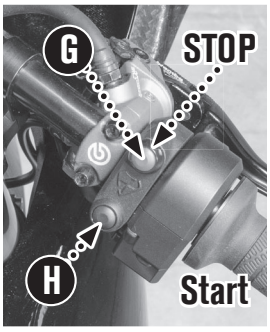
1. Press the Run/Stop Switch Ⓖ
2. Toggle Main switch Ⓑ to OFF position



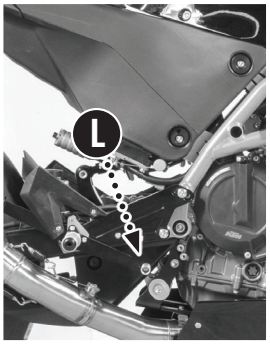

*Ignition Switch*



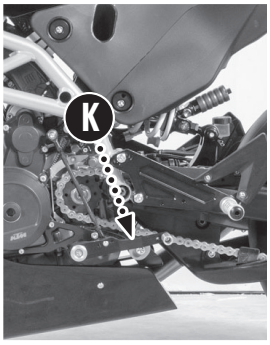

*Engine Performance Controls*




*Start/Stop Switch*




*Rear Brake Lever*




*Shift Lever*

## Vehicle Break-in Procedure

**Following the first outing (15-20 minutes):**

- Screws should be checked for the correct torque [See pg. 30] and general condition.
- Bleed the front brakes [See pg. 18].

**For the first 100 km (62 miles)**

- Do not exceed 70% of full brake pressure.

**For the first 200 km (124 miles)**

- Do not exceed 7500 rpm.

**After 2 hours of run time**

- Change engine oil and filters.

## Pre-Ride Inspection

- **Check safety critical screws for correct torque [See pg. 30]**
- **Check engine oil level** - Oil level to be centered between the "maximum" and "minimum" indicators. [See pg. 8]
- **Check coolant level** - Coolant should be visible at the bottom of the radiator fill fitting when the radiator cap is removed. [See pg. 12]
- **Check tire pressure in warm condition (with tire warmers on)**

  Set to 2.3 bar (33 PSI) in the front tire and 1.65 bar (24 PSI) in the rear (Pirelli Superbike Slick SC1 Tires). Tire temperature should be 75-85°C (167-185°F) while checking. Tire warmers should always be used.

**CAUTION!**

**Danger of scalding**

During motorcycle operation, the coolant gets very hot and is under pressure.

– Do not open the radiator or other cooling system components if the engine or the cooling system are at operating temperature.

– Allow the cooling system to cool down before inspecting or servicing.

- **Check fuel level** - Recommended race fuel amount is approximately 7.0 L (1.85 US gal) per 20 minutes of riding time. Maximum fuel capacity is 16 L (4.2 US gal).
- **Check the chain tension** [See pg. 9]
- **Inspect suspension components** (forks, rear shock, linkages) for leaks, excessive wear, or any looseness. [See pg. 20]
- **Let the engine run up to 176°F (80°C)**, during which the throttle should not be turned.

## Post-Race Service

After each race weekend or 5 hours ride time, whichever comes first:

- Remove and clean the fairing (except front fender) [See pg. 14]
- Thoroughly clean the motorcycle (frame, tank, swingarm, fenders, and rims)
- Check the visual condition and torque of each screw [See pg. 30]
- Replace engine oil and oil filters [See pg. 8]
- Bleed the front brake, rear brake, and the clutch [See pg. 18]
- Perform chain maintenance [See pg. 9]

## Post-Crash Inspection

1. Remove the entire fairing (including the Intake Cover/Air Filter Box). [See pg. 14]
2. Disassemble the air filter box and check for any blemishes/dirt within the air filter box and air filter. [See pg. 10]
3. Thoroughly clean the fairing and all exposed areas of the motorcycle while checking for damage.
4. Replace any damaged parts with new ones.
5. Inspect Suspension. [See pg. 20]
   Loosen the front axle pinch bolts and bottom triple clamp bolts. Compress the front forks several times, to insure functionality, before re-tightening every bolt to the appropriate torque specifications.
6. Clean and lubricate the chain. [See pg. 9]
7. Check the coolant level [See pg. 12]
8. Check the engine oil level [See pg. 8]
   After crash the oil level may appear low, start engine, run for 15 seconds, stop engine, and check level.

**Typical crash damage to inspect:**

**- Front forks**
**- Handlebars**
**- Crash pads**
**- Crash pad frame mounting plates**
**- Rearset**
**- Shift & brake linkages**
**- Debris trapped between the linkages**

## Transporting / Loading

**NOTE:** Use wheel chock to stabilize front wheel.

### Recommended Tie-Down Points

1. **FRONT:** Attach a soft-tie loop straps on the lower triple tree. Lead the loop forward out the lower front fairing (A) attaching to the tie-down straps secured to a solid mounting point in the transport vehicle.
   - Use one on each side of the motorcycle.
   - Tighten straps enough to tension the front forks partially, being careful that the forks are not compressed completely.
2. **REAR:** Attach a tie-down strap around the rear wheel (B) and tighten the strap rearward, preventing the motorcycle from rolling forward.


## Raising the Motorcycle on Lift Stands

**NOTE:** Park the motorcycle on a level, firm surface.

**CAUTION!**

**Don't park the motorcycle in direct sun.**

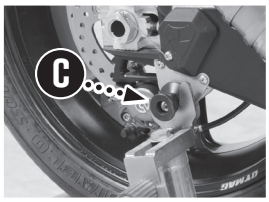
The windshield can amplify the sun's radiant heat.

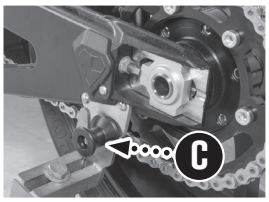
### ▪ Lifting the rear

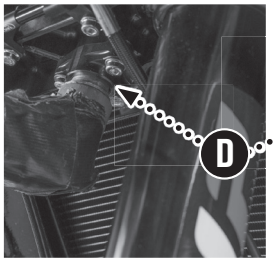
1. The motorcycle is equipped with lifting spools (C). Insert the lift stand into the groove of the lifting spools.
2. Press down on the rear handle of the stand raising the rear of the motorcycle.

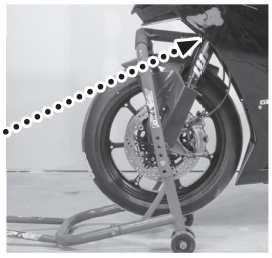
### ▪ Lifting the front (raise rear first)

1. The motorcycle is equipped to lift the front with a pin-style stand.
2. Position the pin of the lift stand into the hole on the lower triple clamp (D) of the front forks.
3. Press down on the front handle of the stand, raising the front of the motorcycle.



## Storage

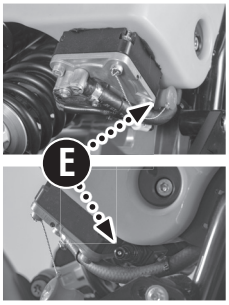
To store the motorcycle for an extended period, take the following actions.

### Before storing the motorcycle:

- Inspect all parts for function and wear.
- If repairs or replacements are necessary, perform the service before storing.

### Preparing for Storage:

1. Drain fuel tank (E) empty. See "Fuel Tank Draining Procedure" on page 15.
2. Clean the motorcycle.
3. Change the engine oil and the oil filter. Clean the oil screens.
4. Check the coolant level and service if necessary with Motul MoCool coolant.
   If the storage area will reach temperatures below 0°C (32°F) drain the coolant completely.
5. Check the tire pressure.
6. Remove the battery from the motorcycle. Store in a safe, warm area, 0°-30°C (32°-85°F), out of direct sun. Keep connected to a lithium rated float charger.
7. Store motorcycle in a dry location with a stable temperature.
8. Raise the motorcycle on the front, and rear lifting stands.




*Fuel Tank Drain - R.H.*

### Removing from Storage

1. Fill coolant, if drained for freezing temperature storage conditions.
2. Install a fully charged battery.
3. Perform pre-ride checks.
4. Lower the motorcycle from the lifting stands.
5. Take for a test ride.

# Maintenance / Service

## Service Schedule

For a detailed listing of service schedule see the chart on pg. 27.

## Krämer Motorcycles Onlineshop

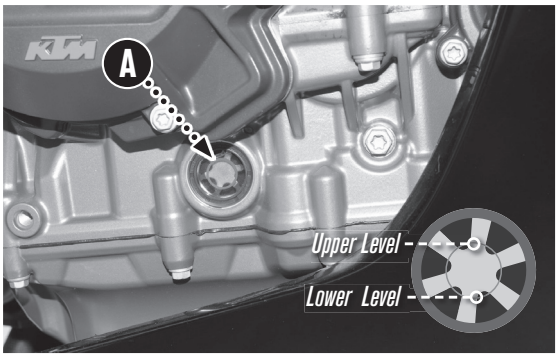
If any part of your GP2-890R needs to be replaced because of wear or damage, spare parts can be found in the Krämer Motorcycles Onlineshop:

***www.kmc-shop.com***

## Checking the Engine Oil Level

**Check the engine oil level at normal engine operating temperature.**

1. Stand the motorcycle upright on a level surface.
2. Start engine and warm to normal operating temperature. (Turn off the engine, wait one minute before checking the level.)
3. Check the engine oil in the sight glass window **A**.
   The level must be between the lower and upper markings beside the window.
4. If needed, add oil, at oil filler **B**, to specified level.




*Oil Level Window (R.H. side of engine)*

## Changing the Engine Oil & Filter, and Cleaning the Oil Screens

### Oil Draining

1. Raise the rear of the motorcycle on a rear lift stand. [See pg. 7]
2. Remove the front fairing. [See pg. 14]
3. Start the engine and warm it to normal operating temperature.
4. Remove the safety wire.
5. Place a drain container under the engine
6. Remove the oil filler cap **B** from the clutch cover.
7. Remove the oil drain plugs **C** along with the magnets, the o-rings, and the oil screens.
8. Completely drain the engine oil.
9. **Inspect the magnets, o-rings, and the oil screens** for any metal shavings, and thoroughly clean the plugs, screens, and magnets.

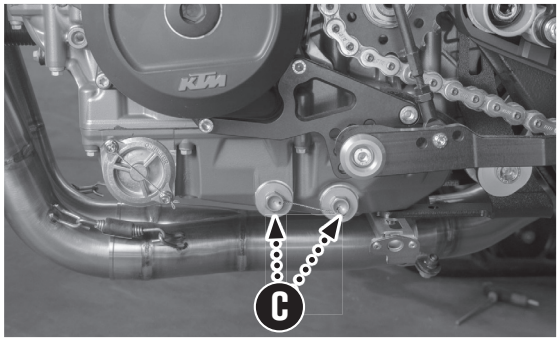
### Oil Filter Changing

1. Remove the screws from the oil filter cover **E**, and remove cover with the o-ring.
2. Pull out the filter. Allow the remaining engine oil to drain.
3. Thoroughly clean the parts and sealing surfaces.
4. Insert the new oil filter.
5. Coat the o-ring with oil, position the oil filter cover, and reinstall the cover screws.
6. Torque the cover screws – 6 Nm (4.4 lb-ft).

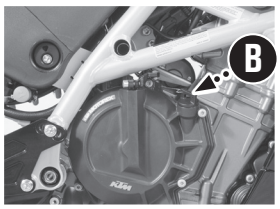
### Oil Changing

1. Drain the oil
2. Change the oil filter
3. Install the oil drain plugs **C**, the magnets, the o-rings, and the oil screens.
4. Tighten the oil screen plugs **C** – 15 Nm (11.1 lb-ft).
5. Fill up engine oil at filler **B** – 2.8 L. (3 qt.) of **Motorex 15W/50 Racing Pro 4T** oil.
6. Install and tighten the filler plug **B**.
7. Let the engine run for approx. 30 seconds, check thoroughly for leaks.
8. Check the engine oil level **A**.
9. Rewire the locking safety wire following the instructions on pg. 30.

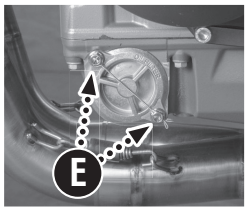
**! Safety wire oil drain plugs C, oil filter cover E, and filler plug B**




*Oil Filter, Drain Plugs with Screens and Magnets – Left Side of Engine*




*Oil Filler*

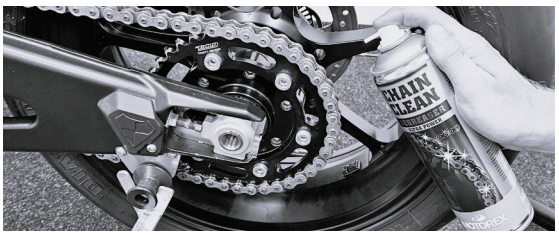



*Oil Filter Screws*

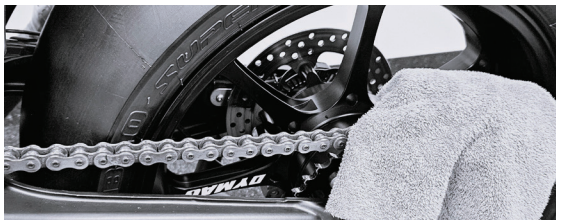
## Chain Cleaning / Lubrication

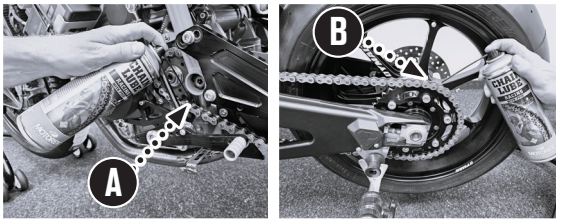
1. Raise the rear of the motorcycle on a lift stand [See pg. 7].
2. Check that the shift lever is in neutral.
3. Spray chain cleaner on the chain while turning the rear tire. Rotate the wheel until the entire chain is sprayed with the cleaner.
4. Let the cleaner soak for approximately 5 minutes.
5. Remove excess cleaner – using a fabric rag (not a paper towel), wipe the chain while rotating the wheel several turns, making sure that the entire chain has run through the rag several times.
6. Let the chain dry to the touch before spraying lubricant.
7. Apply chain lubricant – Carefully spray the lubricant in the front of the chain tunnel in the swingarm **A**, with the spray nozzle facing downwards into the inside of the chain links. Rotate the rear wheel until the entire chain is lubricated. Also lubricate the top of the chain as shown by **B**.
8. Clean the area surrounding the chain – when completing the cleaning and lubrication process, check and clean any residues of any liquids on the rear rim, tire, brake disc, and swingarm.
9. Check the chain tension [See pg. 9].

**CAUTION! Pinch Hazard**
Be careful not to pinch fingers between chain and sprockets.



*Spray Chain Cleaner*

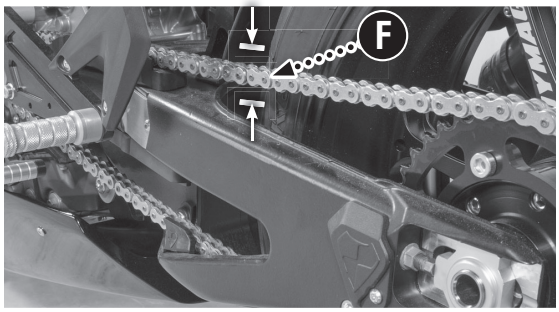

*Wipe Cleaner Dry*



*Spray Chain Lubricant*

## Checking the Chain Tension

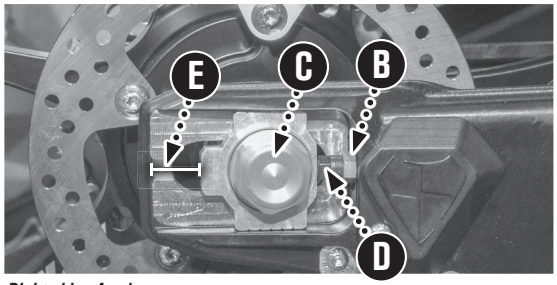
1. Raise the rear of the motorcycle on a lift stand. [See pg. 7]
2. Check that the shift lever is in neutral.
3. Measure at the chain mid-point between sprockets. The specified vertical chain tension **F** is 30-35 mm (1.18-1.38 in.).



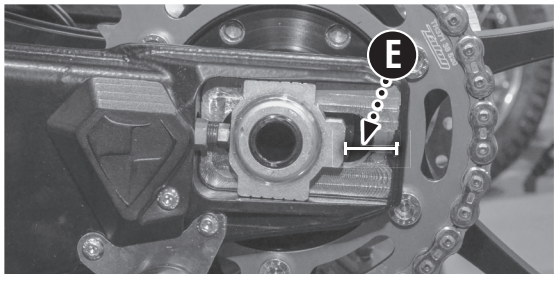
*Chain tension measurement*

## Adjusting the Chain Tension / Rear Axle Alignment

1. Raise the rear of the motorcycle on a lift stand. [See pg. 7]
2. Check that the shift lever is in neutral.
3. Loosen the jam nuts **B** on the adjuster screws on both sides of the swingarm.
4. Loosen the axle nut **C**.
5. Turn the adjuster screw **D** until the vertical chain tension **F** is 30-35 mm (1.18-1.38 in.). Measure at the chain mid-point.
6. On both sides, measure and compare the distance **E** between the swingarm's rear edge and the edge of the adjuster blocks. Fine-tune the adjuster screws until the distance is equal (+/- 1 mm) on both sides.
7. Tighten the adjuster screw jam nuts **B**.
8. Check that the adjuster blocks are fully seated forward against the adjuster screws.
9. While applying forward pressure on the wheel, tighten the axle nut to specified torque – 100 Nm (73.7 ft-lb).



*Right side of swingarm*



*Left side of swingarm*

## Fuel Filler Cap

### Open the Fuel Filler Cap

1. Push down on the cap lever **A**.
2. Rotate it counter-clockwise 1/4-turn.
3. Lift out the cap.

### Close the Fuel Filler Cap

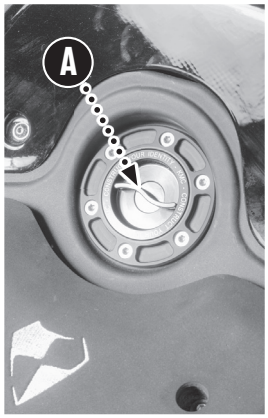
1. Line up the cap retainer pins **B** with slots **C** in the filler neck.
2. Rotate it clockwise, approximately 1/4-turn until it clicks.

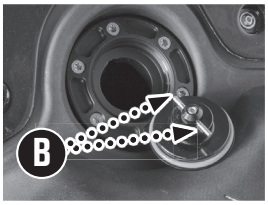
**FIRE HAZARD**

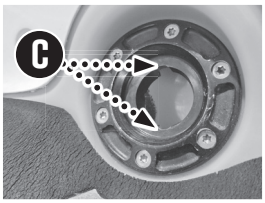
**Fuel is highly flammable.**

The fuel in the fuel tank expands when warm and can escape if overfilled.

- Turn off the engine for refueling
- Do not refuel the vehicle near open flames or lit cigarettes
- Wipe spilled fuel immediately




## Air Filter Servicing

### Removal

1. Remove the Intake Cover/Air Filter Box from the motorcycle [See pg. 14].
2. Open the 1/4-turn fasteners **A** at the front and rear of the air filter.
3. Remove the air filter and inspect.
4. Remove the foam air filter from the filter support cage.

### Installation

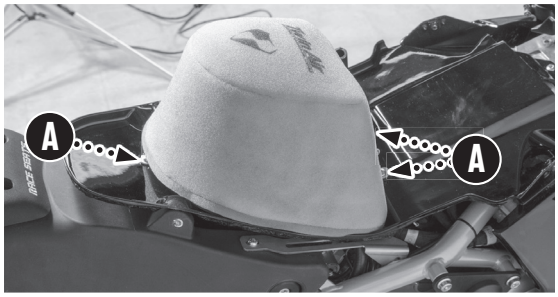
1. Install foam air filter on filter support cage.
2. Grease the air filter rim. (TwinAir BIO Air Filter Sealant)
3. Position the air filter in the air filter box and lock the 1/4-turn fasteners **A** at the front and rear of the air filter.

**FOAM AIR FILTER CLEANER AND OIL (RECOMMENDED)**

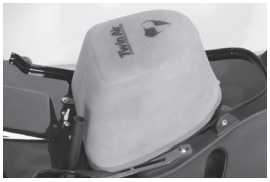
- **TwinAir BIO line of cleaner, oil and sealant.**
- NOTE: The foam air filter is factory oiled with TwinAir BIO biodegradable oil and sealant which are not compatible with petroleum based filter products. To ensure compatibility and engine protection continue using the TwinAir BIO line on the air filter.

### Cleaning the Air Filter.

1. Clean and oil the foam air filter element following directions of the reusable foam air filter service kit. (TwinAir BIO line of cleaner, oil and sealant).
2. Clean the air filter support cage.
3. Clean the air filter box.
4. Clean the intake flange and inspect for damage.
5. Reinstall the air filter.




*Air Filter 1/4-Turn Fasteners*



*Reusable Foam Air Filter*


*Air Filter Support Cage*

# Engine

## Repairs

In case of damage or problems with the engine, please contact your local Krämer Motorcycles dealer.

## Recommended Engine Maintenance

- See Service Schedule on Pg. 27

## Repack the Muffler

- Every 1.000 km or when it is burned out. The muffler is burned out when the bike is significantly louder than normal. Empty muffler reduces engine performance and can lead to cracks in the exhaust.
- Part Number for the Exhaust Service in the KMC Onlineshop: 300501001S

## Throttle Response Modes

- **Sun Symbol** – Extremely direct response
- **Rain Symbol** – Gentle response

1. Throttle response modes are changed with button **B** on L.H. handlebar.
2. Modes can be changed while riding when the throttle grip is closed.
3. A pre-setting **C** can be set while riding. The pre-setting will become active when the throttle grip is closed. The active state is shown in section **D**.

## Engine Braking Modes

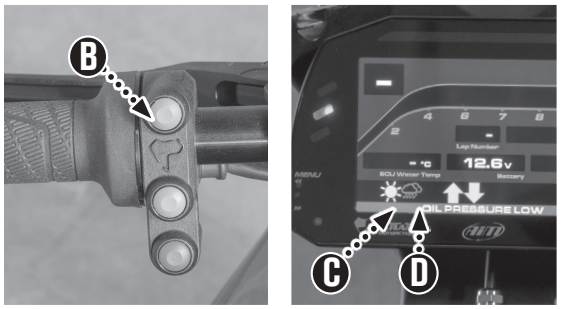
- **Arrow Up** – More engine braking
- **Arrow Down** – Less engine braking

1. Engine Braking modes are changed with button **E** on L.H. handlebar.
2. Modes can be changed while riding when the throttle grip is closed.
3. A pre-setting **F** can be set while riding. The pre-setting will become active when the throttle grip is closed. The active state is shown in section **G**.

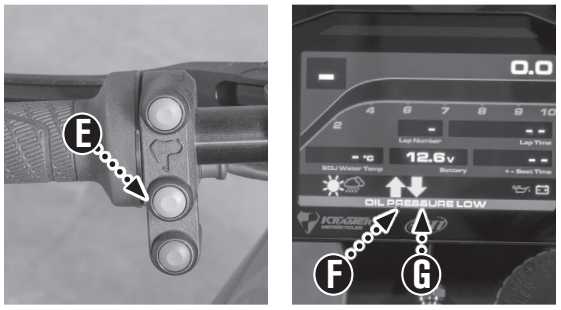
## Pit Limiter Button

- **NOTE:** The Pit Limit mode limits the speed of the motorcycle.

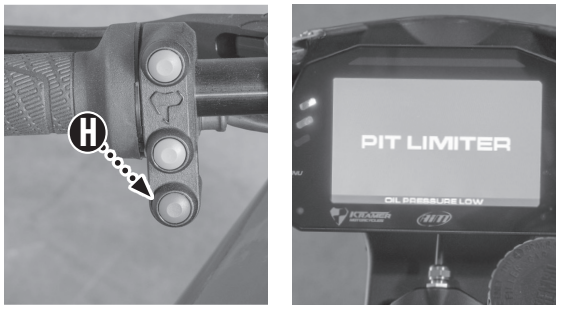
1. Engage Pit Limit mode by pressing the button **H** on L.H. handlebar. Disengage Pit Limit mode by pressing the button again.
2. When engaged, the dash logger will display a "PIT LIMITER" message.




*Throttle Response Modes*




*Engine Braking Modes*



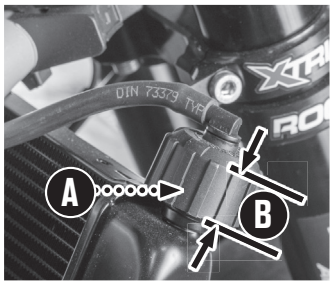

*Pit Limiter Button*

# Cooling System

## Checking the Coolant Level

1. With the engine cold, position the motorcycle on a level surface.
2. Remove the front fairing. [See pg. 14]
3. Check coolant level of the radiator. Remove radiator cap A.

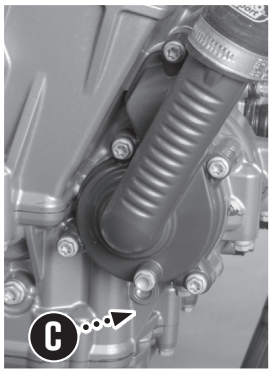
   Coolant should be visible at the bottom of the radiator fill fitting–35mm (1.38") below the upper edge of filler neck B.
4. Reinstall the radiator cap.




*Radiator Fluid Level*

## Draining the Coolant

1. With the engine cold, position the motorcycle on a level surface.
2. If still in place, remove the front fairing. [See pg. 14]
3. Place a suitable container under the engine. Remove the drain screw C.
4. Remove the radiator cap.
5. Completely drain the coolant.
6. Insert and tighten the drain screw C with a new seal ring – 6 Nm (4.4 ft-lb).
7. Install the radiator cap.




*Coolant Drain Plug*

## Filling/Bleeding the Cooling System

1. With the engine cold, remove the radiator cap A.
2. Tilt the vehicle slightly to the right.
3. Completely fill the radiator with coolant. Run the engine until the coolant is no longer visible from the filler neck. Stop the engine and fill in coolant up to the limit again.
4. Repeat Step 3 for two to three times until the coolant level reaches the lower edge of the filler neck.
5. Start and run the engine to operating temperature. Turn off the engine.
6. When the engine is cool, check the coolant level in the compensating tank (located behind the dashboard) and the radiator. Add coolant if necessary.

# Chassis

## Handlebar Adjustment

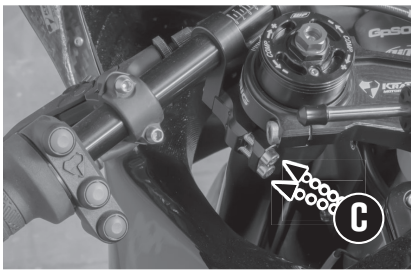
The position of the handlebars is adjustable in both height and angle. Please note that the right and the left handlebar sides mirror each other, and neither should be at a different angle or height.

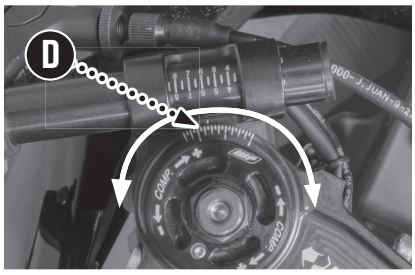
### Height and Angle Adjustment

1. Loosen the clamping screws **C** of the clip-ons on both sides.
2. Adjust the height of the handlebars by sliding up or down on the fork tube. Adjust the angle by rotating around the fork tube. Use the angle marks **D** to ensure that both sides are equal.)
3. Swing handlebars from lock to lock, making sure nothing touches or rubs.
4. Tighten the clamping screws **C** of the clip-ons alternately until the appropriate torque is attained – 10 Nm (7.4 ft-lb).

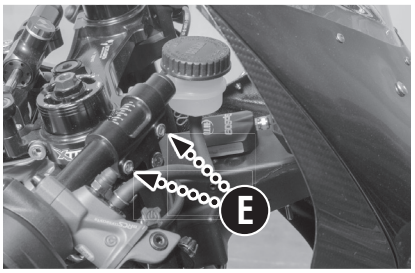
### Width Adjustment (2 positions)

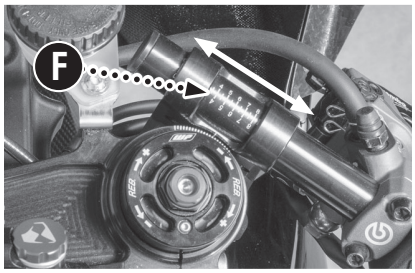
1. Loosen the clamping screws **E** of the clip-ons on both sides.
2. Adjust the width of the handlebars. Read the setting marks at the edge of the window **F**. (Ensure that both sides are equal.)
   - Check the steering for binding and kinked cables or lines.
3. Tighten the clamping screws **E** of the clip-ons alternately until the appropriate torque is attained – 10 Nm (7.4 ft-lb).




*Handlebar Height and Angle Adjustment*




*Handlebar Width Adjustment*

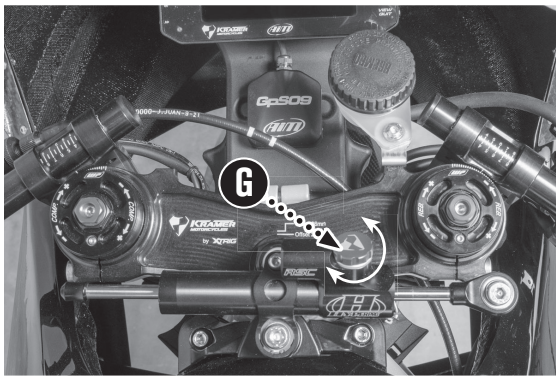
## Steering Damper Setup

Setting the steering damper's firmness is dependent on riding style and track characteristics. In high-speed corners, a higher setting may help keep the motorcycle more stable. However, too high of a setting in tight and twisty sections may cost valuable agility and precision.

### Adjust Damper Firmness

1. Rotate the adjusting knob **G** clockwise to the last detectable click.
2. Adjust to the desired firmness by turning the adjusting knob counter-clockwise.

- **The Adjustment Range** is 1-24 clicks
  The standard is 12 clicks.




*Steering Damper Adjusting Knob*

## Seat/Tank Height Adjustment

The seat height is adjusted by moving the complete seat/tank unit. The height is adjusted by turning the eccentric tank mounts **B**.

1. Loosen the bottom mount screws **A** on both sides of the tank.
2. Using a 6 mm Allen wrench placed in the triangular hole, turn the eccentric base **B** to the desired seat position.
3. Temporarily tighten the left mounting screw.
4. Remove the right mounting screw, apply blue thread lock*, reinsert and tighten to the appropriate torque – 30 Nm (22.1 ft-lb).
5. Remove the left mounting screw, apply blue thread lock*, reinsert and tighten to the appropriate torque – 30 Nm (22.1 ft-lb).

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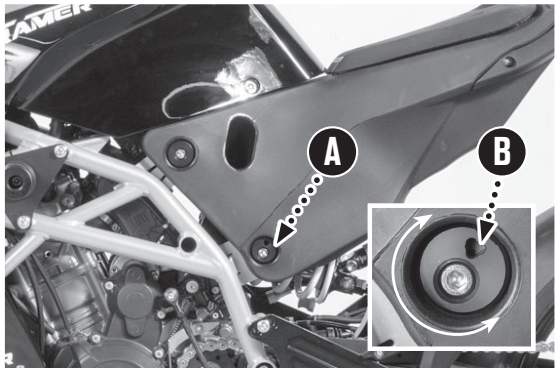



*Fuel Tank Mounting/Height Adjustment Screws*

## Bodywork Removal

Remove the bodywork pieces in the order of appearance. Reinstall the bodywork pieces in reverse order [See below].

### Remove Intake Cover/Air Filter Box

1. Remove the two screws **I** holding the steering damper mount.
2. Remove the two screws **B** at the rear of each side.
3. Remove the two 1/4-turn fasteners **C** on each side.
4. Carefully lift the intake cover/air filter box rearward and up.

### Remove Front Fender

5. Remove the 1/4-turn fasteners **F** on each side.
6. Spread the fender and remove it forward.

### Remove Lower Fairing

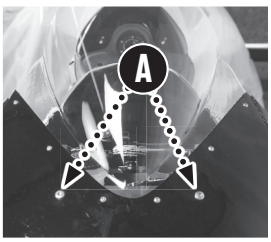
7. Remove the two 1/4-turn fasteners **D** on each side.
8. Remove the four 1/4-turn fasteners **E** on each side.
9. Carefully remove the lower fairing.

### Remove Upper Fairing

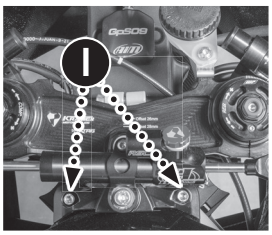
10. Remove the two 1/4-turn fasteners **A** under the windshield.
11. NOTE: If the intake cover/air filter box is not removed, then remove the two 1/4-turn fasteners **C** on each side.
12. Remove the upper fairing by pulling it forward, carefully maneuvering it around the forks.

### Remove Tail Cap

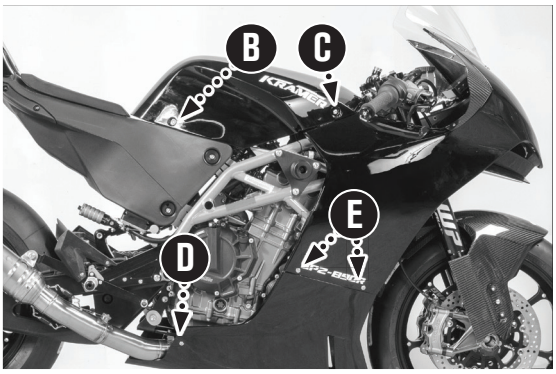
13. Remove the two screws **G** under the tail cap.
14. Remove the two screws **H** on top of the tail cap.
15. Slide the tail cap rearward and upward.

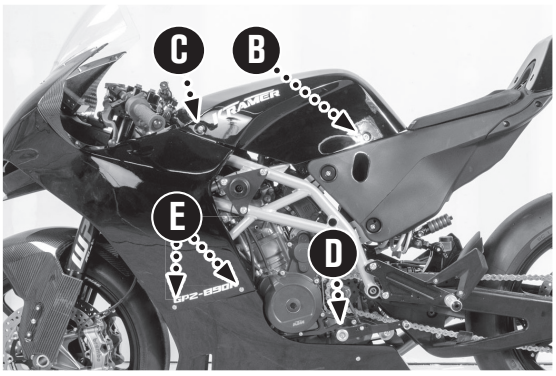



*Front Upper Fairing Fastener Locations*




*Steering Damper Screws*




*Upper and Lower Fairing Fastener Locations*

## Bodywork Installation

Install bodywork in the order of appearance.

**! USE BLUE THREAD LOCK* ON ALL THREADED FASTENERS.**
**Apply to the thread inserts not the screw threads.**

### Install Upper Fairing

1. Turn the handlebar all the way to the left.
2. Install the upper fairing carefully maneuvering around the forks.
3. Install the two 1/4-turn fasteners **A** under the windshield.

### Install Front Fender

4. Spread the fender and install it from the front sliding it rearward.
5. Install the two 1/4-turn fasteners **F** – one on each side.

### Install Lower Fairing

6. Carefully install the lower fairing.
7. Install the four 1/4-turn fasteners **E** – two on each side.
8. Install the two 1/4-turn fasteners **D** – one on each side.

### Install Intake Cover/Air Filter Box

9. Position the Intake Cover/Air Filter Box.
10. Finger-tighten the two screws **B** at the rear of each side.
11. Install the two 1/4-turn fasteners **C** on each side.
12. Install the two screws **I** holding the steering damper mount – 10 Nm (7.4 ft-lb).
13. Torque the two screws **B** at the rear of each side – 6-9 Nm (50-80 in-lb).

**NOTE:**

Regularly check the tightness of velocity stacks.

### Install Tail Cap

14. Slide the tail cap in position.
15. Install the two screws **G** under the tail cap – 5 Nm (44 in-lb).
16. Install the two screws **H** on top of the tail cap – 5 Nm (44 in-lb).

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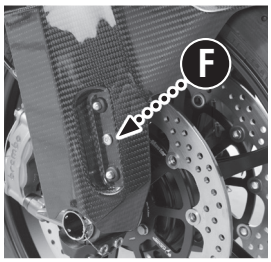
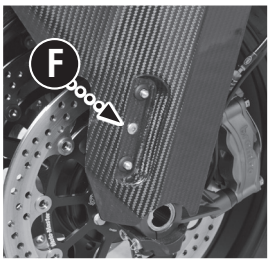
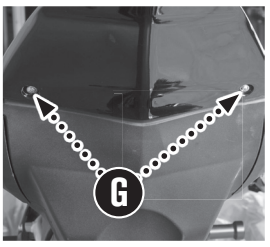
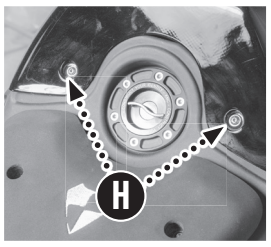



*Front Fender Fasteners - R.H.*




*Front Fender Fasteners - L.H.*




*Tail Cap Fastener Locations*

## Fuel Tank Draining Procedure

**CAUTION! Fire Hazard**

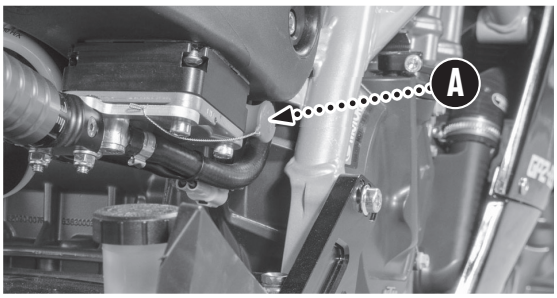
Drain the fuel in a well-ventilated area without any open flame or sparks.

Have a fire extinguisher nearby.

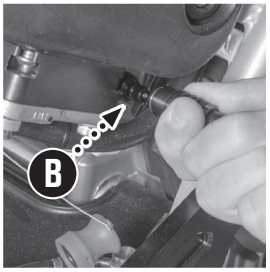
Drain and store fuel in an approved fuel container.

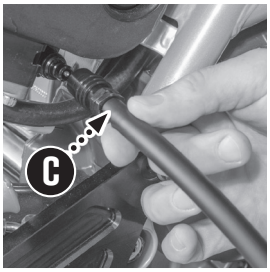
**NOTE:** Before starting the draining procedure, have at the ready a fuel container large enough to hold the amount of fuel remaining in the tank.

1. Remove the fuel cap to allow tank ventilation.
2. Remove the protective red cap (A) from the fuel tank quick-couple drain port (B) on the fuel pump located on the lower right-hand side of the fuel tank.
3. Using the dealer-provided drain hose (C), slide back the collar of the quick-couple fitting, and place it on the drain port. Fuel will start gravity-draining immediately.
4. When the tank is empty, replace fuel cap.
5. Remove drain hose (C), clean, and store.
6. Replace the red protective cap (A).




*Protective Cap on the Fuel Tank Drain Port*




*Attaching the Quick-Couple Drain Hose*

## Fuel Tank Removal/Installation

### Removal

1. Remove the air box cover [See pg. 14].
2. Remove the shock adjuster screws (A) and let the adjuster hang to the side.
3. Unplug the fuel pump electrical connector (C).
4. Remove fuel hose from injection rail.
5. Remove the support bracket screws (E) and the tank mounting screws (F) on both sides.
6. Remove the fuel tank by lifting it towards the rear of the motorcycle.

**NOTE:**

Regularly check the tightness of velocity stacks.

### Installation

7. Position the fuel tank in place.
8. Install and tighten the screws (E) on both sides – 10 Nm (7.4 ft-lb).
9. Install, apply blue thread lock*, and tighten the screws (F) on both sides – 25 Nm (18.4 ft-lb).
10. Plug in the fuel pump electrical connector (C).
11. Install fuel hose on the injection rail.
12. Mount the shock preload adjuster, install and tighten the shock preload adjuster screws (A) – 10 Nm (7.4 ft-lb)

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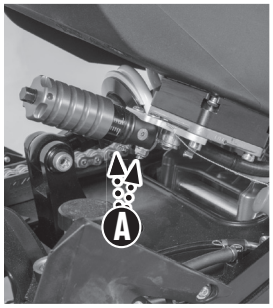
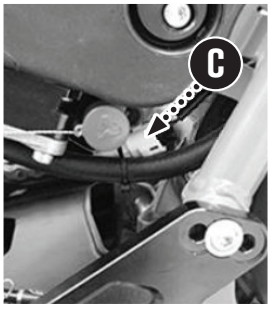
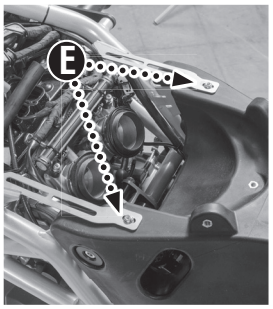


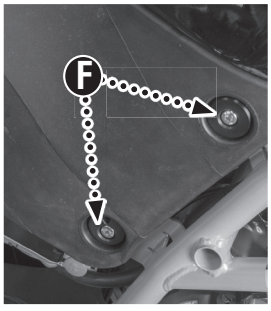

*Shock Preload Adjuster Screws*




*Fuel Pump Connector*




*Fuel Tank Support Bracket Screws*




*Fuel Tank Mounting Screws*

## Clutch Lever Free Play and Reach Distance

### Checking Clutch Lever Free Play

1. Check the clutch lever for smooth operation
2. Position the handlebar to straight-ahead.
3. Move the lever until resistance is felt, determine the amount of play. 3-5mm is the specified amount of free play.

### Adjusting Clutch Lever Free Play

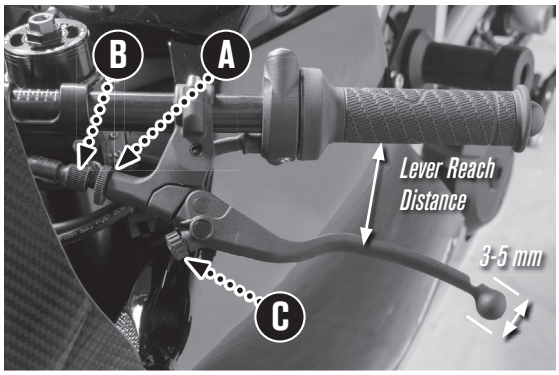
1. Position the handlebar straight ahead.
2. Loosen lock nut **A**.
3. Turn the adjusting barrel **B** to adjust the clutch lever free play. 3-5mm is the specified amount of free play.
4. Tighten the lock nut **A**.

**NOTE: Proper free play is important to prevent clutch damage.**

- No free play could cause the clutch to slip.
- Too much free play could cause incomplete clutch engagement.

### Adjusting Clutch Lever Reach Distance.

1. Position the handlebar straight ahead.
2. Turn the adjustment knob **C** to achieve the proper lever distance from the handlebar for the rider to reach the lever comfortably and ensure proper clutch engagement.




## Front Brake Lever Response and Travel Distance

### Adjusting Front Braking Response

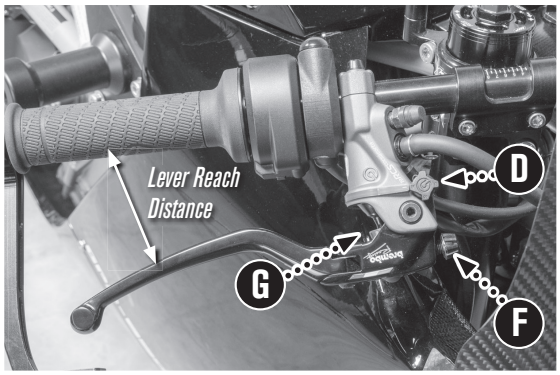
1. Use the adjustment knob **D** to set desired brake response behavior.
   N = Soft, liner braking
   S = Sporty braking
   R = Hard, direct braking

### Adjusting Front Brake Lever Braking Ratio

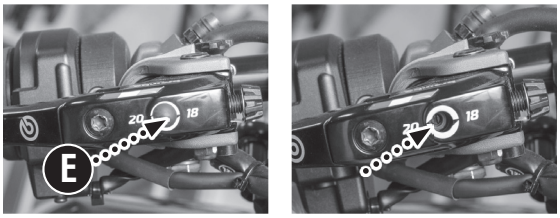
1. Remove the protection cap **E**.
2. Turn the setting screw to the desired braking ratio.
   18 = Longer brake lever travel, soft response, and less lever force. Red indicator visible **G**.
   20 = Less brake lever travel, hard response, and more lever force. Black indicator visible
3. Replace the protection cap **E**.

### Adjusting Front Brake Lever Reach Distance

1. Position the handlebar straight ahead.
2. Turn the adjustment knob **F** to achieve the proper lever distance from the handlebar for the rider to reach the lever comfortably and ensure proper brake engagement.




*Front Braking Response and Lever Reach Distance Adjusting Knobs*




*Front Braking Lever Ratio Adjustment Screw*

## Rearset Setup

The adjustable rearset allows a personalized setting for each rider, with both foot pegs, the shift lever, and the brake lever being adjustable.

## Adjusting the Foot Pegs

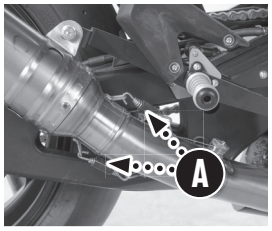
### Right Side

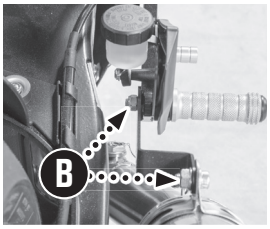
1. Remove the exhaust muffler retainer springs **A**.
2. Loosen the nuts **B**.
3. Loosen the bottom screw **D** of the foot peg carrier.
4. Loosen and remove the top screw **C** so that the carrier can move freely.
5. Position the carrier to the desired location.
6. Apply blue thread lock* and tighten the top screw **C** to the appropriate torque – 25 Nm (18.4 ft-lb).
7. Apply blue thread lock* and tighten the bottom screw **D** to the appropriate torque – 25 Nm (18.4 ft-lb).
8. Tighten the nuts **B** to the appropriate torque – 25 Nm (18.4 ft-lb).
9. Reinstall the exhaust muffler retainer springs **A**.

### Left Side

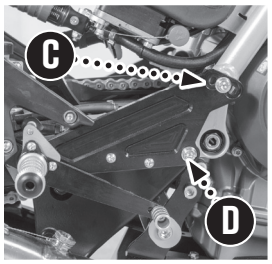
1. Loosen the bottom screw **F** of the foot peg carrier.
2. Loosen and remove the top screw **E** so that the carrier can move freely.
3. Position the carrier to the desired location.
4. Install, apply blue thread lock* and tighten the top screw **E** to the appropriate torque – 25 Nm (18.4 ft-lb).
5. Install, apply blue thread lock* and tighten the bottom screw **F** to the appropriate torque – 25 Nm (18.4 ft-lb).
6. Adjust the position of the shift and brake levers [See below].

** Loctite®243™*

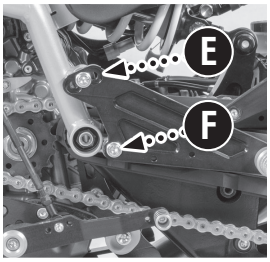



*R.H. Side Rearset Adjustment Preparation*




*R.H. Side Rearset Adjustment*

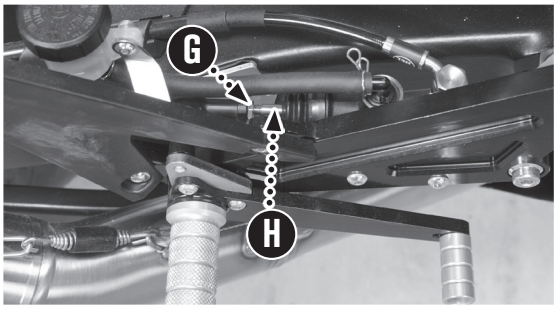



*L.H. Side Rearset Adjustment*

## Rear Brake Lever Adjustment

### Rear Brake Lever Adjustment

1. Loosen the brake rod jam nut **G**.
2. Adjust the length of the brake rod **H** by screwing the rod end bearing in or out of the brake rod until the brake lever is in the desired position.
3. Tighten the jam nut **G**.

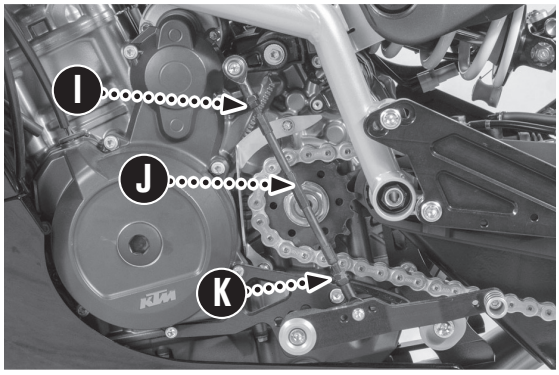



*Brake Lever Adjustment – R.H. Side*

## Shift Lever Height Adjustment

Adjust the shift lever height by changing the shift linkage length.

1. Hold the shift shaft linkage **J** with a wrench and loosen the jam nuts **I** and **K** with a second wrench.
2. Adjust the length of the shift shaft linkage by rotating the shaft.
3. Adjust until the shift lever is in the desired position. Keep a minimum of 8mm of thread inside the linkage rod ends.
4. Tighten the jam nuts **I** and **K** to the appropriate torque – 10 Nm (7.4 ft-lb).



# Brake System

**WARNING! Danger of accidents**
Reduced braking efficiency can be caused by worn brake pads.
– Check the brake pads regularly.
– Change worn brake pads immediately.

NOTE: If the brake pads are not changed in time, the steel brake pads carriers grind on the brake disc. The braking effect is greatly reduced and the brake discs are rendered unserviceable.

## Brake Inspection

### Brake Pads

1. Visually inspect the brake pads for wear, cracking, and damage on all brake calipers **A**.
2. Ensure they have the minimum thickness.

**Minimum thickness 1 mm (≥ 0.04 in)**

If the minimum thickness is less than specified or damage is found, change the brake pads.

### Brake Discs

1. Check the thickness of the brake disc in several places to see if it is within the specified wear tolerance.

**Wear Limit**
**Front ≥ 4.5 mm (≥ 0.18 in)**
**Rear ≥ 4 mm (≥ 0.16 in)**

If the brake disc thickness is less than the specified value, change the brake discs.

**USE ONLY Motorex Racing Brake Fluid**
from a new closed container

### Brake Lines and Master Cylinders

1. Visually inspect the brake lines and master cylinders for leaking and cracking. Replace components if necessary.

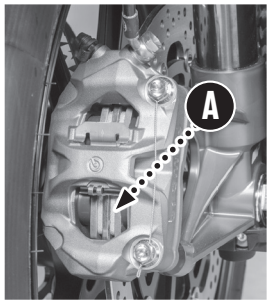
### Brake Fluid Level

#### Checking/Adding Front Brake Fluid Level

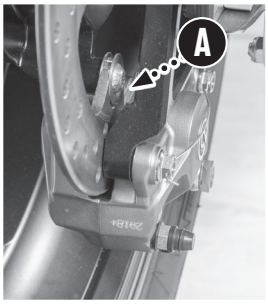
1. Remove the brake fluid reservoir mounting screw **B**.
2. Position the brake fluid reservoir to a horizontal position.
3. Check that the fluid level is between the MIN and MAX markings. Add Motorex Racing brake fluid to the MAX level.
4. Remount the brake fluid reservoir.

#### Checking/Adding Rear Brake Fluid Level

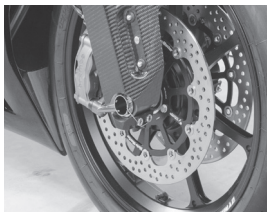
1. Position the motorcycle on rear lift stand.
2. Check that the fluid level is between the MIN and MAX markings. Add Motorex Racing brake fluid to the MAX level.

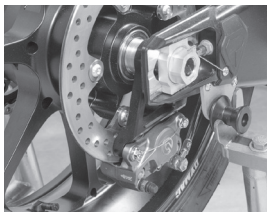


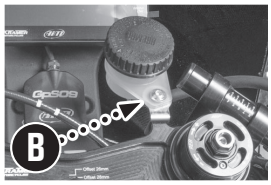
*Front Brake Calipers*

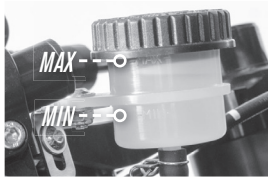


*Rear Brake Calipers*


*Front Brake Disc*


*Rear Brake Disc*



*Front Fluid Reservoir*

*Rear Fluid Reservoir*

## Brake Bleeding

### Bleeding Front Brake Calipers

Use standard manual or vacuum bleeding procedures to bleed the front brake calipers.

SPECIAL NOTES:

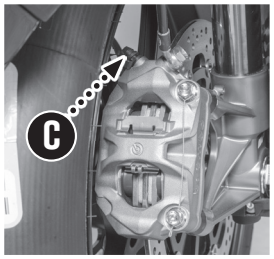
- Bleed each caliper individually using the bleed screw **C**.
- Bleed brake lever at the bleed screw **D**

### Bleeding Rear Brake Caliper

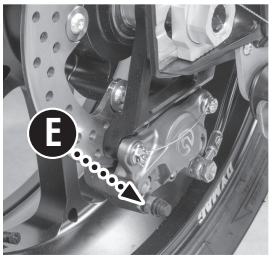
Use standard manual or vacuum bleeding procedures to bleed the brake caliper.

SPECIAL NOTES:

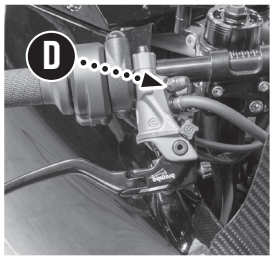
- Remove the rear brake caliper and invert with the bleed screw **E** facing up.
- Raise the caliper to a position where the bleed screw is higher than the master cylinder.
- Place a 6 mm Allen wrench between brake pads to simulate the brake disc.
- Bleed the caliper using standard procedure.
- Remove the Allen wrench and install the caliper back on the motorcycle.



*Front Caliper Bleed Screw*



*Rear Caliper Bleed Screw*



*Brake Lever Bleed Screw*

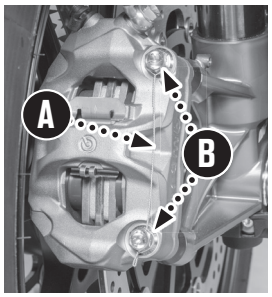
## Changing the Brake Pads

### Front Brake Calipers

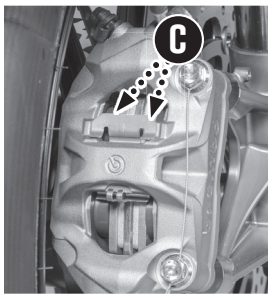
1. Position the motorcycle on a rear lift stand.
2. Position the brake reservoir in a horizontal position. Remove from the mount if needed. Remove brake reservoir cap and membrane.
3. Manually press the brake caliper against the brake disc to retract the caliper piston. Monitor that the fluid in the reservoir doesn't overflow. Remove some if necessary.
4. Remove the locking safety wire **A**.
5. Remove mounting bolts **B**.
6. Remove calipers and spacers from mounts.
7. Remove brake pads **C** from calipers.
8. Clean the brake calipers.
9. Install the new brake pads. Check that the springs is correctly seated.
10. Position calipers and spacers in place and install mounting bolts **B**, but do not tighten them yet.
11. Squeeze the brake lever until brake pads contact the brake disc and there is firm resistance on the lever. Secure the lever in an active position. Check that the brake caliper is straight and aligned.
12. Apply white grease** and tighten the mounting bolts **B** to the appropriate torque – 45 Nm (33.2 ft-lb)
13. Rewire the locking safety wire.
14. If needed, fill the brake fluid level to the MAX line, secure the cap, and remount the brake reservoir.

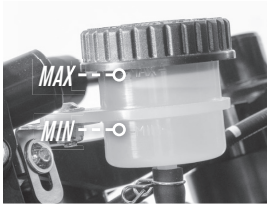
** Loctite®243™ ** White lithium grease*

**USE ONLY Motorex Racing Brake Fluid**
from a new closed container



*Front Brake Calipers*



*Front Brake Reservoir*

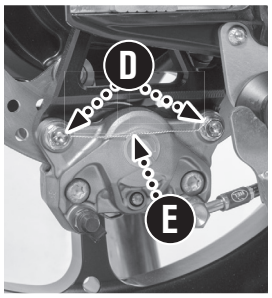
### Rear Brake Caliper

1. Position the motorcycle on a rear lift stand.
2. Remove the locking safety wire **E**.
3. Remove mounting bolts **D**.
4. Remove brake reservoir cap and membrane.
5. Manually press the brake caliper against the brake disc to retract the caliper piston. Monitor that the fluid in the reservoir doesn't overflow. Remove some if necessary.
6. Remove the retaining clip **H**.
7. Remove pin **G**.
8. Remove brake pads **F** and retaining springs.
9. Clean the brake caliper.
10. Install the new brake pads with retaining springs.
11. Replace pin **G** and retaining clip **H**.
12. Position the caliper, apply white grease**, install mounting bolts **D**, and tighten to the appropriate torque – 20 Nm (14.8 ft-lb)
13. Rewire the locking safety wire **E**.
14. Press the brake pedal until brake pads contact the brake disc and there is firm resistance on the pedal.
15. If needed, fill brake fluid level to the MAX line.

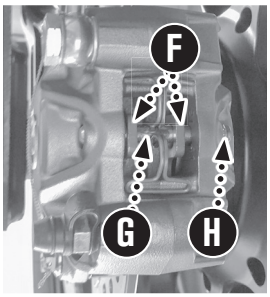
** Loctite®243™ ** White lithium grease*

**USE ONLY Motorex Racing Brake Fluid**
from a new closed container

*Rear Brake Reservoir*



*Rear Brake Caliper*



# Suspension

## Suspension Inspection

### Front Forks

1. Check the full action of the forks by applying the front brake, pushing down on the handlebars, and compressing the forks several times.
2. Inspect the entire fork assembly for leaks, damage, or loose parts and fasteners.
3. Replace or repair any damaged components.
4. Tighten nuts and bolts to proper torque spec. [See "Chassis Torque Chart" on page 30]

### Rear Suspension

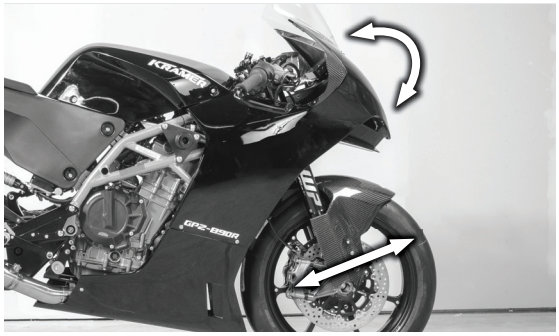
1. Check the full action of the shock absorber by compressing it several times.
2. Inspect the shock absorber assembly for leaks, damage, or loose parts and fasteners.
3. Replace or repair any damaged components.
4. Tighten nuts and bolts to proper torque spec. [See pg. 30]

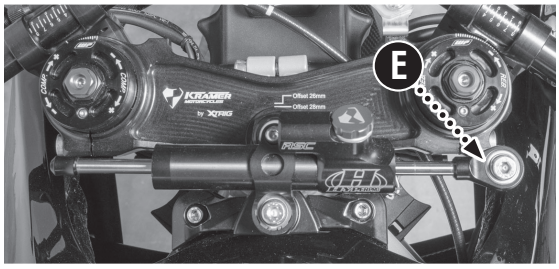
### Swingarm

1. Raise the rear wheel off the ground and support the motorcycle securely.
2. Check for worn swingarm bearings by grabbing the swingarm and attempting to move it side to side.
3. Replace the bearings if any looseness is detected.

## Checking the Steering Head Bearing Play

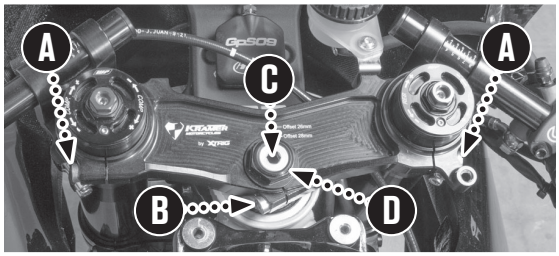
1. Raise the motorcycle under the frame, lifting the front wheel off the ground.
2. Remove the front fairing. [See pg. 14]
3. Unbolt steering damper from the top triple clamp **E**.
4. Position the handlebars in the straight-ahead position.
5. Grab the lower fork legs, and push and pull in a forward and rearward direction.
6. If play is detected, adjust the steering head play [See below]
7. Move the handlebar over the entire steering range. If any roughness or notching is detected, replace the headset bearings.
8. Install and torque the steering damper bolt to the top triple clamp **E** - 20 Nm (14.8 ft-lb).
9. Reassemble the front fairing. [See pg. 14]






## Adjusting the Steering Head Bearing Play

1. Position the motorcycle on a rear lift stand.
2. Remove the front fairing. [See pg. 14]
3. Unbolt steering damper from the top triple clamp **E**.
4. Loosen the top clamp bolts **A**.
5. Remove the top yoke bolt **B**.
6. Loosen the counter screw **C** and the steering stem adjusting nut **D**.
7. Tighten the steering stem adjusting nut **D** to a torque spec of 15 Nm (11.1 lb-ft).
8. Use a plastic hammer to tap lightly on the upper triple clamp.
9. Reinstall bolt **B** and torque to 15 Nm (11.1 ft-lb).
10. Tighten bolts **A** to appropriate torque of 15 Nm (11.1 ft-lb).
11. Check for smooth bearing operation with no free play.
12. Tighten the counter screw **C** to appropriate torque of 20 Nm (14.8 ft-lb).
13. Install and torque the steering damper bolt to the top triple clamp **E** - 20 Nm (14.8 ft-lb).
14. Reassemble the front fairing. [See pg. 14]



## Changing the Fork Offset

1. Raise the motorcycle under the frame, lifting the front wheel off the ground.
2. Unbolt steering damper screws **A**.
3. Temporarily disconnect the damper from the frame.
4. Loosen the four bottom clamp screws **C**. (Two on each side.)
5. Loosen the two top clamp screws **D**. (One on each side.)
6. Loosen the top yoke screw **E**.
7. Remove the screws **F** and the screw **G**, and the lift stand pin bracket.
8. Remove the screws **H** on the lower triple clamp.
9. Separate the lower triple clamp from the conical shaft tube by temporarily installing the screw **G** into the hole **I**. Slowly tighten the screw **G**, pushing down the lower triple clamp.
10. Push the lower triple clamp down approx. 22 mm (0.86 in.), making sure the fork is not compressed in this state.
11. Turn the adjusting nut **K** on the steering stem 180° in a clockwise direction using a 27 mm wrench, changing the head angle offset from one setting to the other. Make sure the counter screw **J** has not loosened during the offset adjustment.
12. Remove the screw **G** from the hole **I** and push up the lower triple clamp to the original position. Apply blue thread lock*, install the two screws **H** back in their original holes, and tighten - 20 Nm (14.8 ft-lb).
13. Position the lift stand pin bracket, install screws **F** and screw **G**, Apply thread lock,* and tighten to 10 Nm (7.4 ft-lb).
14. Tighten the four bottom clamp screws **C** - 15 Nm (11.1 ft-lb).
15. Tighten the two top clamp screws **D**- 15 Nm (11.1 ft-lb).
16. Tighten the top yoke screw **E** - 20 Nm (14.8 ft-lb).
17. Install steering damper bracket. Apply blue thread lock* and tighten screws **A** - 10 Nm (7.4 ft-lb).
18. Install steering damper to top triple clamp. torque screw **B** - 20 Nm (14.8 ft-lb).
19. Check the steering head bearing clearance and readjust if necessary.

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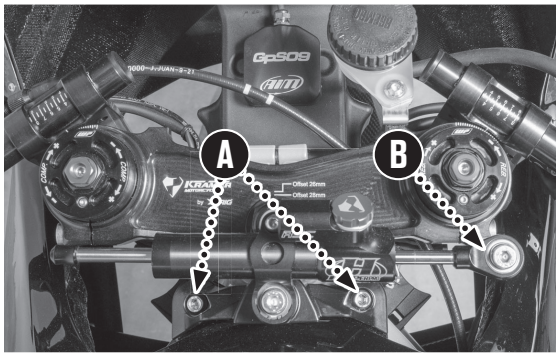
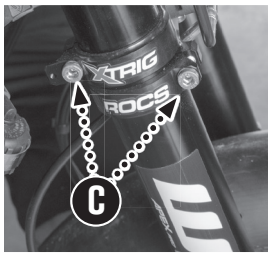
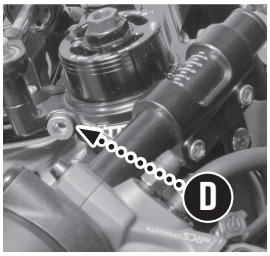
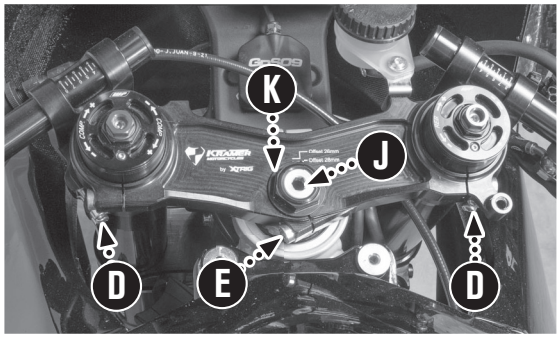



*Steering Damper Screws*

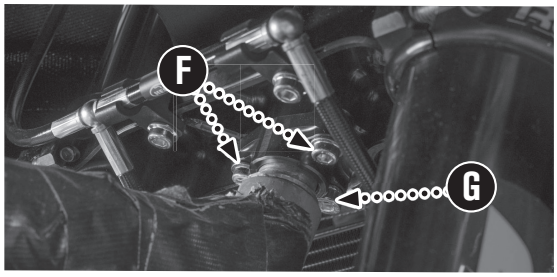


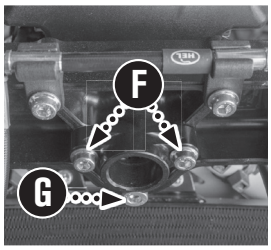

*Top and Bottom Clamp Screws*

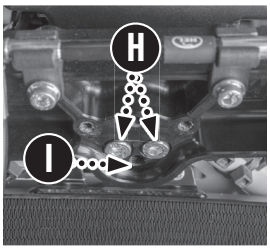



*Adjustable Triple Clamp Top Yoke Screw and Stem Adjusting Nut*




*Bottom Stem Screws*




*Bottom view of lower triple clamp and steering stem.*

## Fork Suspension Settings

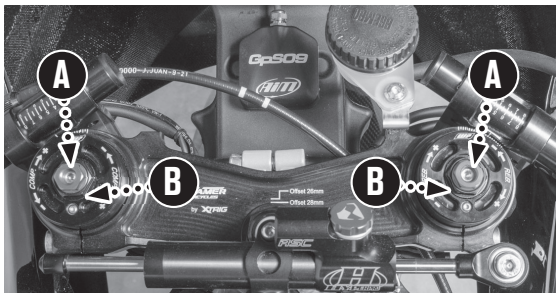
### Adjusting Spring Preload

Preload: The distance the spring is compressed from its free length with the suspension fully extended. It affects the suspension sag.

1. On the top of both fork tubes, turn the hex adjuster **A** equally to the desired setting. Be careful to not loosen the screw caps **B**.
2. **Zeroing:** Turn the screw as far as possible in a counterclockwise direction.
3. Turn the screw counterclockwise to desired setting.

Initial Guideline:
COMFORT – 16 clicks
STANDARD – 18 clicks
SPORT – 22 clicks

Turning clockwise increases the preload.; turning counterclockwise decreases the preload.



*Fork Spring Preload*

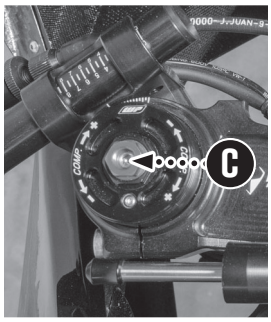
### Adjusting Compression Damping

Compression damping: It controls the rate of suspension compression.

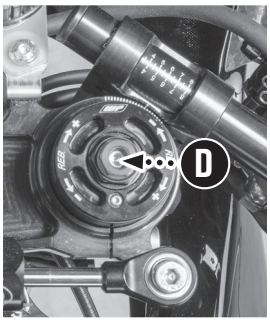
1. On the top of the left fork tube, turn the brass screw **C** to the desired setting.
2. **Zeroing:** Turn the screw as far as possible in a clockwise direction.
3. Turn the screw as many clicks as necessary counterclockwise to the desired setting.

Initial Guideline:
COMFORT – 20 clicks
STANDARD – 16 clicks
SPORT – 12 clicks

Turning clockwise increases the compression damping.; turning counterclockwise decreases the compression damping.



*Compression Dampening (left fork)*



*Rebound Dampening (right fork)*

### Adjusting Rebound Damping

**Rebound damping:** It controls the rate of suspension extension after compression, known as rebound.

1. On the top of the right fork tubes, turn the brass screw **D** to the desired setting.
2. **Zeroing:** Turn the screw as far as possible in a clockwise direction.
3. Turn the screw as many clicks as necessary counterclockwise to the desired setting.

Initial Guideline:
COMFORT – 18 clicks
STANDARD – 16 clicks
SPORT – 12 clicks

Turning clockwise increases the rebound damping.; turning counterclockwise decreases the rebound damping.

## Fork Specifications

| Fork | WP Suspension APEX PRO 7543 |
|---|---|
| Spring length with preload spacer(s) | 260 mm (10.24 in) |
| Spring Rate (Rider Weight) | |
| 55-65 kg (121-143 lb.) | 8.0 N/mm (45.7 lb/in) |
| 65-75 kg (143-165 lb.) | 8.5 N/mm (48.5 lb/in) |
| 75-85 kg (165-187 lb.) | 9 N/mm (51 lb/in) Standard |
| 85-95 kg (187-209 lb.) | 9.5 N/mm (54.2 lb/in) |
| 95-105 kg (209-231 lb.) | 10 N/mm (57.1 lb/in) |
| Fork length | 735 mm (28.94 in) |

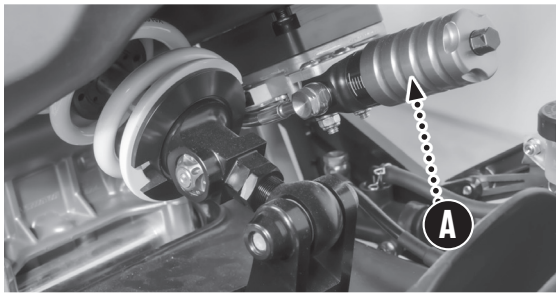
## Rear Shock Suspension Settings

### Adjusting the Spring Preload

**Preload:** It affects the suspension sag. The adjustment knob is on the right hand side under the seat.

1. Increase the spring preload by turning the preload knob clockwise.
2. Reduce the spring preload by turning the preload knob counterclockwise.

Initial Guideline:
STANDARD – 12mm (0.47in)



*Spring Preload Adjuster*

### Adjusting Compression Damping

**Compression damping:** It controls the rate of suspension compression.

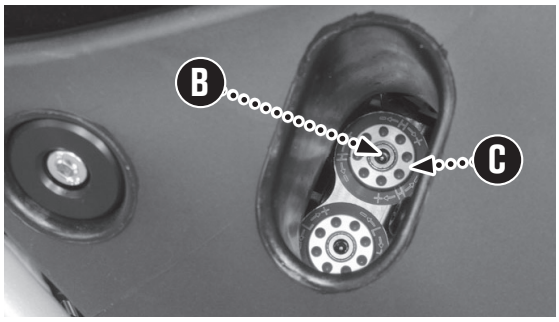
There are two separate setups, "High-Speed" and "Low-Speed". This refers to the speed at which the rear shock is being compressed.

Compression damping screws are accessed through the oval window on the left side of the motorcycle below the tank.

**Low-Speed Compression Damping**

1. Turn the BOTTOM adjusting screw **D** to desired setting. Take care to not loosen the cap **E**.
2. **Zeroing:** Turn the adjusting screw clockwise until it stops.
3. Turn the screw as many clicks as necessary counterclockwise to the desired setting.

Initial Guideline:
STANDARD – 18 clicks
Turning clockwise increases the compression damping; turning counterclockwise reduces the compression damping.

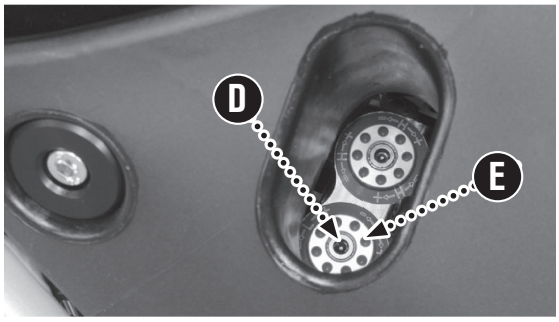


*High-Speed Compression Adjusting Screw*

**High-Speed Compression Damping**

1. Turn the TOP adjusting screw **B** to desired setting. Take care to not loosen the cap **C**.
2. **Zeroing:** Turn adjusting screw counterclockwise until it stops.
3. Turn the screw clockwise as many clicks as necessary to the desired setting.

Initial Guideline:
STANDARD – 22 clicks
Turning clockwise increases the compression damping; turning counterclockwise reduces the compression damping.



*Low-Speed Compression Adjusting Screw*

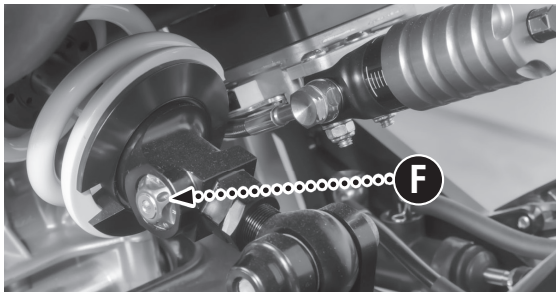
### Adjusting Rebound Damping

**Rebound damping:** It controls the rate of suspension extension after compression, known as rebound.

1. Turn the Rebound damping screw **F**, on the left side of the shock, clockwise until it stops.
2. **Zeroing:** Turn the screw clockwise up to the last perceptible click.
3. Turn the screw counterclockwise as many clicks as necessary to the desired setting.

Initial Guideline:
STANDARD – 14 clicks

Turning clockwise increases the rebound damping; turning counterclockwise reduces the rebound damping.



*Rebound Damping Screw*

## Shock Absorber Specifications

| | |
|---|---|
| Shock Absorber | WP Suspension APEX PRO 7746 |
| Spring Length | 130 mm (5.12 in) |
| Gas Pressure | 10 bar (145 psi) |
| Fitted Length | 299 mm (11.77 in) |
| Spring Rate (Rider Weight) | |
| 55-65 kg (121-143 lb.) | 75 N/mm (428 lb/in) |
| 65-75 kg (143-165 lb.) | 80 N/mm (457 lb/in) |
| 75-85 kg (165-187 lb.) | 84 N/mm (480 lb/in) Standard |
| 85-95 kg (187-209 lb.) | 90 N/mm (514 lb/in) |
| 95-105 kg (209-231 lb.) | 95 N/mm (542 lb/in) |

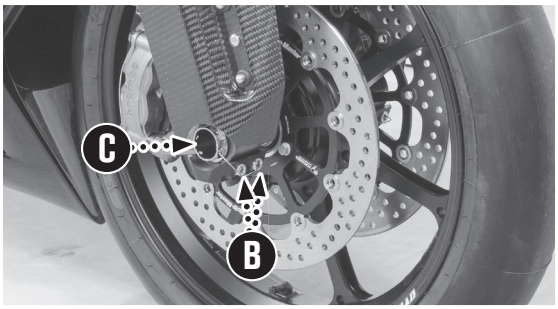
# Wheels

## Front Wheel Removal

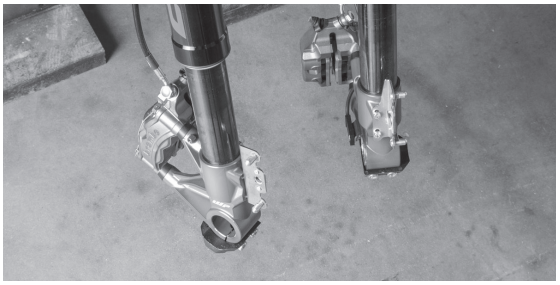
1. Raise the motorcycle front and rear on lift stands. [See pg. 7]
2. Remove the front fender [See pg. 14]
3. Loosen the pinch bolts B on both front forks.
4. Unscrew the axle nut C about six turns and pull the axle out of the axle clamp. While holding the front wheel, withdraw the wheel spindle.
5. Take the front wheel out of the fork and swing the brake calipers outward.

**WARNING! Danger of accidents**
Damage brake discs reduce braking.

NOTE: Don't lay the wheel down on the brake disc as it can cause surface damage or bend the disc.



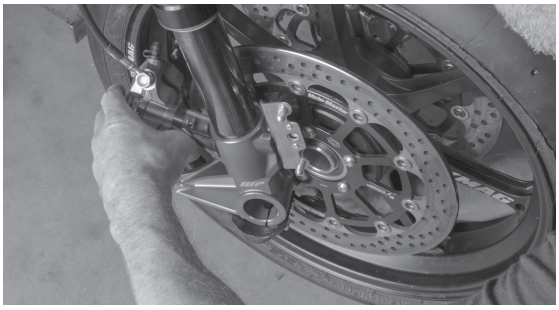
*Front Wheel Axle and Pinch Bolts*

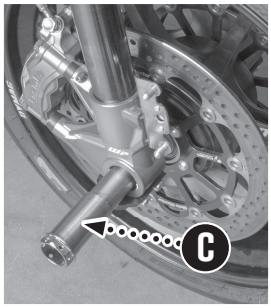

*Calipers swing out for wheel removal*

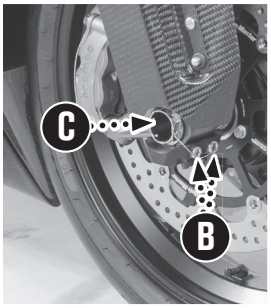
## Front Wheel Installation

1. Clean, inspect, and grease the shaft seals.
2. Clean and grease the thread of the axle C.
3. Apply a thin film of grease on the axle for ease of installation.
4. Lift the front wheel, position it between the fork lowers, fold in the brake calipers, move the wheel rearward while sliding the brake discs into the calipers, and insert the axle through the forks and the wheel.
5. Screw the axle C into place and tighten to 60 Nm (44.3 lb-ft).
6. Operate the hand brake lever repeatedly until the brake pad lining presses up against the brake disc and there is a pressure point.
7. Lower the motorcycle off the lift stands.
8. Pull the front brake and compress the fork powerfully a few times. (Aligns the fork legs.)
9. Tighten the fork end pinch bolts B – 10 Nm (7.4 lb-ft).
10. Install the front fender [See pg. 14]

- Safety wire as necessary. [See pg. 30]

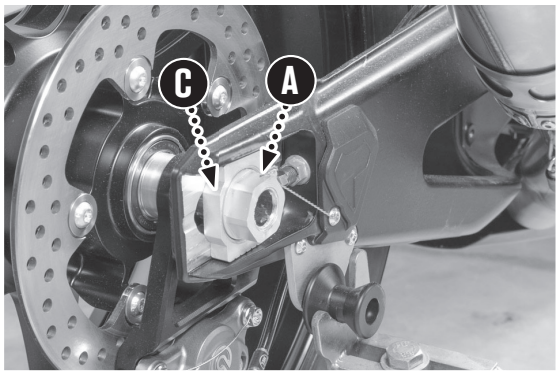




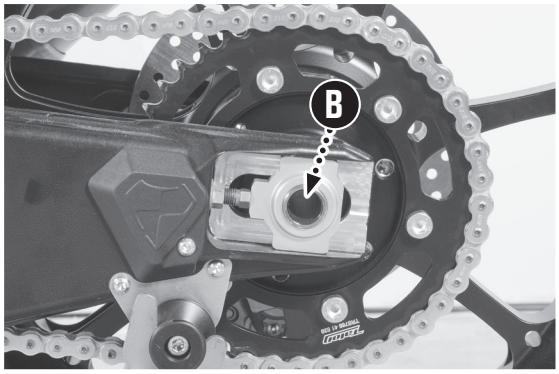
## Rear Wheel Removal

1. Raise the motorcycle front and rear on lift stands. [See pg. 7]
2. Remove the axle nut (A) and the chain adjuster block (C).
3. Hold the rear wheel and remove the axle (B).
4. The wheel will rest on the retention system of the swingarm.
5. Move the rim forward in the swingarm to remove the chain from the sprocket.
6. Lift the rim until the brake disc is no longer between the caliper.
7. Tilt the tire slightly to ensure it does not hit the caliper when removing it.




## Rear Wheel Installation

1. Clean and grease the shaft seals and mating surfaces of the spacer.
2. Clean and grease the thread of the axle (B) and nut.
3. Clean the mating surfaces of the brake caliper support and swingarm.
4. Slightly tilt the rear tire to ensure it does not knock or damage the brake caliper when inserted into the swingarm.
5. Straighten the rim and lower it until the brake disc is inside the caliper.
6. The rim does not have to be supported, as it rests on the brake caliper.
7. Move the rim forward and place a part of the chain on top of the sprocket.
8. Rotate the tire backward until the chain is mounted back on the sprocket correctly.
9. Pull the tire back until it is realigned with the chain adjusters.
10. Insert the axle (B) from the left.
11. Attach the right adjuster block (C) and the axle nut (A) (loosely tightened).
12. Push the tire forward until the adjuster blocks are touching the adjuster screws.
13. Check the chain tension and adjust it if necessary. [See pg. 9]
14. Tighten the axle nut – 100 Nm (73.7 lb-ft).
15. Activate the rear brake several times to ensure there are no faults in the system.




# Electrical

## Tail light Operation

### Switching On

1. Press and hold the tail light lens (G) to power on.

### Switching Off

2. Press and hold the tail light lens (G) until it powers off.

### Changing Modes

3. Press the tail light lens (G) briefly to select one of the light modes– quick flashing, slow flashing, and constant on.

## Charging the Tail light

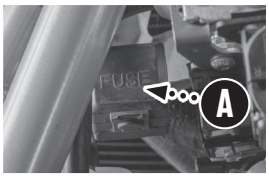
1. Rotate tail light bezel counterclockwise to remove the tail light from the mount.
2. Plug a the mini-USB cable into the connector (H) to charge for a couple hours. Do not overcharge.
3. Install by placing the tail light in position and rotating it clockwise.


# Electrical

## Fuses

- The **Fuse Box** Ⓐ is located on the left side of the motorcycle, above the battery. It contains three 10A fuses and a 5A fuse, plus space for 2 spare fuses.

**Fuse 1** - 10A Ignition Switch
**Fuse 2** - 10A Power Relay
**Fuse 3** - 10A Fuel Pump
**Fuse 4** - 5A ACC2

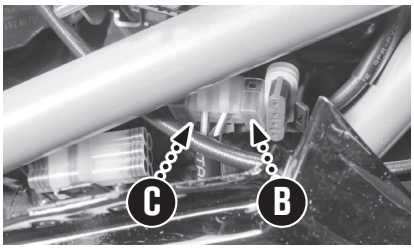



*Fuse Box with Cover Open*

- A **30A main fuse** Ⓑ is on the starter solenoid, located behind the right side of the steering head.

### Changing fuse

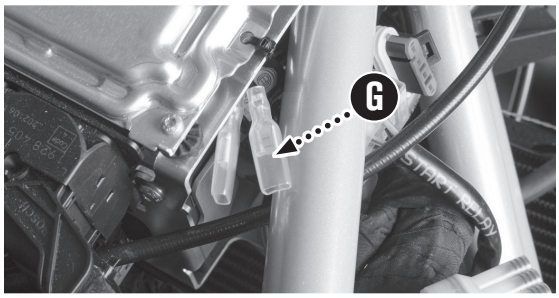
1. Turn off power/ignition switch.
2. Remove the intake cover/air filter box. [See pg. 14]
3. The fuse is located under the front dust cap at Ⓑ. A spare fuse is located under the rear dust cap at Ⓒ.
4. Replace faulty fuse, place dust caps in place, and install the air filter box cover.




*Main Fuse on Starter Solenoid*

## Powered Accessory Leads

Two 12-volt powered accessory leads Ⓖ, which are protected by a 5A fuse, are provided. They are located on the right hand side under the air filter box.




## Battery

### Location

The 12-volt battery is found under the intake cover/air filter box behind the steering head.

### Charging

Use a proper lithium rated battery charger. (Optimate 12.8/13.4V 0.8A charger is recommended.)

**BATTERY INFO**

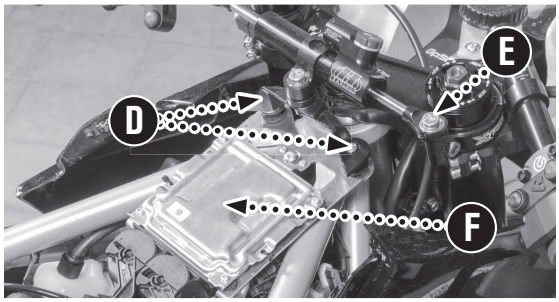
Krämer Motorcycles are factory-equipped with a lightweight **LITHIUM BATTERY**

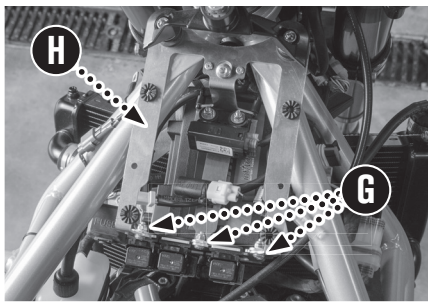
- Part No: 301153000
- 12.8 V / 4 Ah

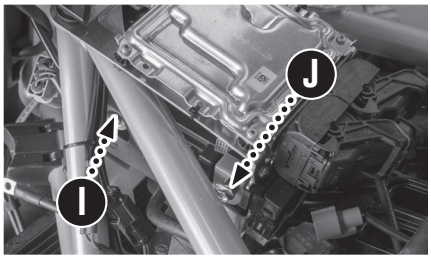
Use a proper lithium rated battery charger to ensure long life.

### Removal/Installation

1. Turn off the power/ignition switch.
2. Remove the intake cover/air filter box. [See pg. 14]
3. Remove screws Ⓓ and Ⓔ. Remove the steering damper.
4. Remove cable tie.
5. Pull upward the engine control unit Ⓕ and hang it to the side.
6. Remove fasteners Ⓖ.
7. Remove mounting bracket Ⓗ.
8. Detach negative cable Ⓘ.
9. Detach positive cable Ⓙ.
10. Lift out the battery.
11. Install in reverse order.



## Service Schedule

| | Every **5** operating hours | Every **10** operating hours | Every **15** operating hours | Every **30** operating hours | Every **50** operating hours | Every **100** operating hours | After **every race** or track day | Every **12 months** |
|---|---|---|---|---|---|---|---|---|
| Program the shift shaft sensor | | ▪ | | ▪ | ▪ | ▪ | | ▪ |
| Change the engine oil and the oil filter, clean the oil screens (See pg. 8) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the brake discs (See pg. 18) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the front brake linings (See pg. 18) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the rear brake linings (See pg. 18) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the brake lines for damage and tightness | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the front brake fluid level. (See pg. 18) | ▪ | | ▪ | | | | | |
| Check the rear brake fluid level. (See pg. 18) | ▪ | | ▪ | | | | | |
| Check the brake lever resistance and travel on front and rear brakes (See pg. 18) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Change the front brake fluid (See pg. 18) | | ▪ | | ▪ | ▪ | ▪ | ▪ | ▪ |
| Change the rear brake fluid (See pg. 18) | | ▪ | | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the heim joint for play | | ▪ | | ▪ | ▪ | ▪ | ▪ | |
| Check the tire condition | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the tire pressure | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the wheel bearings for play | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | |
| Check the chain, rear sprocket, and engine sprocket | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the chain tension (See pg. 9) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Clean the air filter and change as necessary (See pg. 10) | | | ▪ | ▪ | | | | |
| Clean the air filter box (See pg. 10) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | |
| Check that the throttle cables are undamaged, routed without kinks, and set correctly | | ▪ | | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the cables for damage and for routing without kinks | | ▪ | | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the free travel of the clutch lever (See pg. 16) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | | ▪ |
| Check the clutch | | | ▪ | | | | | |
| Change the glass fiber yarn filling of the main silencer (approx. every 15 operating hours of if necessary) (See pg. 11) | | | ▪ | | | | | |
| Clean the dust boots of the fork legs | | | ▪ | ▪ | | | | |
| Check the steering head bearing for play (See pg. 20) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Check the fork bearing for play | | ▪ | | ▪ | ▪ | ▪ | | |
| Service the fork | | | | ▪ | | | | ▪ |
| Check the shock absorber linkage | | ▪ | | ▪ | ▪ | ▪ | ▪ | |
| Perform the shock absorber service | | | | ▪ | | | | ▪ |
| Check the fuel pressure | | | | ▪ | | | | ▪ |
| Check the fuel collecting container | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | |
| Change the fuel filter | | | | ▪ | | | | |
| Check the frame | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | |
| Check the link fork | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | |
| Check the safety critical screws and nuts for tightness (See pg. 30). | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Grease all moving parts (e.g., hand lever, chain, etc.) and check for smooth operation | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | | ▪ |

| | Every **5** operating hours | Every **10** operating hours | Every **15** operating hours | Every **30** operating hours | Every **50** operating hours | Every **100** operating hours | After **every race** or track day | Every **12 months** |
|---|---|---|---|---|---|---|---|---|
| Check the valve clearance | | | | ▪ | | | | |
| Check the coolant level (See pg. 12) | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | |
| Check the coolant over flow reservoir | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | |
| Check all hoses (e.g. fuel, cooling, bleeder, drainage hoses, etc. and sleeves) for cracking, tightness, and correct routing | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |
| Change the cover and shaft seals of the water pump | | | | ▪ | | | | |
| Perform minor engine service, including removing and installing the engine (Change the spark plugs. Check/measure the piston, check/measure the cylinder, and check the cylinder head. Change the cylinder head gasket. Check the camshaft and cam lever. Check the timing assembly. Change the clutch facings.) | | | | | ▪ | ▪ | | |
| Perform major engine service, including removing and installing the engine (Change the valves, valve springs, valve spring seats, valve spring retainer and cam lever. Change the connecting rod, conrod bearing and balancer shaft bearing. Change the piston. Check the transmission and the shift mechanism. Change the cylinder head gasket. Check the oil pressure control valve. Change the oil pumps and check the lubrication system. Change the timing chain, tensioning rail and guide rail.) | | | | | | ▪ | | |
| Final check: Check the vehicle for operating safety and test ride | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ | ▪ |

# Technical Data

## GP2 890-R Specifications

| | |
|---|---|
| Frame | Trellis frame of steel tubes, powder-coated |
| Fork | WP Suspension APEX PRO 7543 |
| Shock absorber | WP Suspension APEX PRO 7746 |
| Brake system | |
| Front | Disc brake with 4-piston brake caliper |
| Rear | Disc brake with single-piston brake caliper, floating |
| Suspension travel | |
| Front | 120 mm (4.72 in) |
| Rear | 120 mm (4.72 in) |
| Brake discs - diameter | |
| Front | 290 mm (11.42 in) |
| Rear | 230 mm (9.06 in) |
| Brake discs - wear limit | |
| Front | 4.5 mm (0.177 in) |
| Rear | 4.0 mm (0.157 in) |
| Tires (Pirelli Superbike Slick SC1) | |
| Front | 120/70 R17 |
| Rear | 180/60 R17 |
| Tire pressure (warm) | |
| Front: 75–85 °C (167–185 °F) | 2.3 bar (33 psi) |
| Rear: 75-85 °C (167-185 °F) | 1.65 bar (24 psi) |
| Secondary ratio | 16:41 |
| Chain | 5/8" x 1/4" (520) |
| Steering head angle | 66.7° ± 1° |
| Wheelbase | 1,400 ± 15 mm (55.12 ± 0.59 in) |
| Seat height, unloaded | 820 mm (32.28 in) |
| Ground clearance, unloaded | 150 mm (5.91 in) |
| Weight without fuel, approx. | 140 kg (309 lb.) |
| Maximum permissible front axle load | 160 kg (353 lb.) |
| Maximum permissible rear axle load | 270 kg (595 lb.) |
| Maximum permissible overall weight | 430 kg (948 lb.) |

## Engine Specifications

| | |
|---|---|
| Design | 2-cylinder parallel-twin 4-stroke engine, water-cooled |
| Displacement | 890 $cm^3$ (54.31 cu in) |
| Stroke | 68.8 mm (2. 709 in) |
| Bore | 90.7 mm (3.571 in) |
| Compression ratio | 13.5:1 |
| Idle speed | 2,300 ± 50 rpm |
| Control | DOHC, 4 valves per cylinder controlled via cam lever, chain drive |
| Valve diameter, intake | 37 mm (1.46 in) |
| Valve diameter, exhaust | 30 mm (1.18 in) |
| Valve play, cold | |
| Intake at: 20 °C (68 °F) | 0.10 – 0.15 mm (0.0039 – 0.0059 in) |
| Exhaust at: 20 °C (68 °F) | 0.15 – 0.20 mm (0.0059 – 0.0079 in) |
| Crankshaft bearing | Slide bearing |
| Connecting rod bearing | Slide bearing |
| Piston pin bearing | Piston pin with bronze coating |
| Pistons | Forged light alloy |
| Piston rings | 1 compression ring, 1 lower compression ring, 1 oil ring with spring expander |
| Engine lubrication | Semi-dry sump lubrication system with two trochoid pumps |
| Primary transmission | 39:75 |
| Clutch | Slipper clutch in oil bath/mechanically operated |
| Transmission | 6-gear transmission, claw shifted |
| Transmission ratio | |
| First gear | 13:37 |
| Second gear | 17:34 |
| Third gear | 20:31 |
| Fourth gear | 22:28 |
| Fifth gear | 24:26 |
| Sixth gear | 23:22 |
| Alternator | 12 V, 400 W |
| Ignition | Contactless controlled fully electronic ignition with digital ignition adjustment |
| Spark plug | NGK LMAR9AI-10 |
| Spark plug electrode gap | 1.0 mm (0.039 in) |
| Cooling | Water cooling, permanent circulation of coolant by water pump |
| Starting | Electric starter |

## Fluid Capacities

| | |
|---|---|
| Engine oil | 2.8 L (3 qt) Motorex 15W/50 Racing Pro 4T |
| Coolant | 1.6 L (1.8 qt) Motul MoCool |
| Brake Fluid | Motorex Racing Brake Fluid |
| Fork Oil | SAE 4, Volume: 500 ml, Motorex Racing Fork Oil |
| Fuel Tank Capacity | 16 L (4.2 US gal) Super unleaded (ROZ 98 / RON 98 / PON 94) |

## Electrical System

| | |
|---|---|
| 12 V battery | LTM14-B |
| | Maintenance-free Lithium-ion battery |
| | Battery voltage: 12.8 V |
| | Nominal capacity: 4.0 Ah |
| Fuses | 1x 5A, 3x 10A, 1x 30A |
| Tail light | LED |

## Engine Torque Chart

| | | |
|---|---|---|
| Water Pump Drain Hole Plug | EJOTALtracs® Plus 60x14 | 8 Nm (5.9 ft-lb)* |
| Bleeder Flange Screw | EEJOTALtracs® 6x12 | 8 Nm (5.9 ft-lb)* |
| Hose Clamp, Intake Flange | M4 | 2.5 Nm (1.84 ft-lb) |
| Nozzle, Engine Vent | M5 | 2 Nm (1.5 ft-lb) |
| Oil Nozzle for Piston Cooling | M5 | 2 Nm (1.5 ft-lb) |
| Oil Nozzle in Cylinder Head | M5 | 2 Nm (1.5 ft-lb) |
| Remaining Screws, Engine | M5 | 6 Nm (4.4 ft-lb) |
| Cam Lever Axial Lock Screw | M5 | 6 Nm (4.4 ft-lb)* |
| Crankshaft Speed Sensor Screw | M5 | 6 Nm (4.4 ft-lb)* |
| Gear Position Sensor Screw | M5 | 6 Nm (4.4 ft-lb)* |
| Oil Filter Cover Screw | M5 | 6 Nm (4.4 ft-lb) |
| Pressure Plate Screw | M5 | 3 Nm (2.2 ft-lb)* |
| Shift Drum Retaining Bracket Screw | M5 | 6 Nm (4.4 ft-lb)* |
| Shift Shaft Sensor Screw | M5 | 6 Nm (4.4 ft-lb)* |
| Thermostat Case Screw | M5 | 6 Nm (4.4 ft-lb)* |
| Balancer Shaft Securing Screw | M5 | 5 Nm (3. 7 ft-lb)* |
| Swing Angle Sensor Screw | M5 | 6 Nm (4.4 ft-lb)* |
| Starter Motor Cable Nut | M6 | 5 Nm (3. 7 ft-lb) |
| Engine Remaining M6 Screws | M6 | 10 Nm (7.4 ft-lb) |
| Alternator Cover Screw | M6x30 | 10 Nm (7.4 ft-lb) |
| Alternator Cover Screw | M6x35 | 10 Nm (7.4 ft-lb) |
| Camshaft Bearing Bridge Screw | M6 | 10 Nm (7.4 ft-lb) |
| Clutch Cable Retaining Bracket Screw | M6 | 10 Nm (7.4 ft-lb)* |
| Clutch Cover Screw | M6 | 10 Nm (7.4 ft-lb) |
| Clutch Release Lever Screw | M6 | 10 Nm (7.4 ft-lb)* |
| Clutch Spring Screw | M6 | 10 Nm (7.4 ft-lb) |
| Cylinder Head Screw | M6 | 10 Nm (7.4 ft-lb) |
| Engine Case Screw | M6x30 | 12 Nm (8.9 ft-lb) |
| Engine Case Screw | M6x60 | 12 Nm (8.9 ft-lb) |
| Freewheel Ring Screw | M6 | 14 Nm (10.3 ft-lb)* |
| Ignition Coil Screw | M6 | 8 Nm (5.9 ft-lb) |
| Locking Lever Screw | M6 | 10 Nm (7.4 ft-lb)* |
| Main Shaft Bearing Support Screw | M6 | 10 Nm (7.4 ft-lb)* |
| Oil Pan Screw | M6x30 | 10 Nm (7.4 ft-lb) |
| Oil Pan Screw | M6x35 | 10 Nm (7.4 ft-lb) |
| Oil Pump Cover Screw | M6 | 10 Nm (7.4 ft-lb)* |
| Oil Pump Unit Screw | M6 | 10 Nm (7.4 ft-lb) |
| Oil/Water Heat Exchanger Screw | M6 | 10 Nm (7.4 ft-lb)* |
| Shift Drum Locating Screw | M6 | 10 Nm (7.4 ft-lb)* |
| Shift Lever Screw | M6 | 14 Nm (10.3 ft-lb)* |
| Shift Shaft Retaining Bracket Screw | M6 | 10 Nm (7.4 ft-lb)* |
| Starter Motor Screw | M6 | 10 Nm (7.4 ft-lb) |
| Stator Screw | M6 | 10 Nm (7.4 ft-lb)* |
| Timing Chain Shaft Screw | M6 | 10 Nm (7.4 ft-lb) |
| Upper Guide Rail Screw | M6 | 8 Nm (5.9 ft-lb)* |
| Valve Cover Screw | M6 | 10 Nm (7.4 ft-lb) |
| Water Pump Cover | M6 | 10 Nm (7.4 ft-lb)* |
| Water Pump Wheel | M6 | 10 Nm (7.4 ft-lb)* |
| Nut, Exhaust Flange | M8 | 15 Nm (11.1 ft-lb)*** |
| Oil Nozzle for Clutch Lubrication | M8 | 5 Nm (3. 7 ft-lb)* |
| Remaining Screws for Engine | M8 | 20 Nm (14.8 ft-lb) |
| Screw Plug, Locking Screw | M8 | 15 Nm (11.1 ft-lb) |
| Engine Case Screw | M8x45 | 25 Nm (18.4 ft-lb) † |
| Engine Case Screw | M8x55 | 25 Nm (18.4 ft-lb) † |
| Engine Case Screw | M8x65 | 25 Nm (18.4 ft-lb) † |
| Engine Case Screw | M8x90 | 25 Nm (18.4 ft-lb) † |
| Knock Sensor Screw | M8 | 20 Nm (14.8 ft-lb) |
| Oil Pump Idler Gear Screw | M8 | 15 Nm (11.1 ft-lb)* |
| Tensioning Rail Screw | M8 | 15 Nm (11.1 ft-lb)* |
| Stud, Exhaust Flange Stud | M8 | 15 Nm (11.1 ft-lb) * |
| Connecting Rod Bearing Screw | M8x0.75 | 1st stage<br>5 Nm (3. 7 ft-lb)<br>2nd stage<br>20 Nm (14.8 ft-lb)<br>3rd stage<br>goo<br>Screw support and thread oiled |
| Spark Plug | M10 | 11 Nm (8.1 ft-lb) |
| Oil Pressure Sensor | M10x1 | 10 Nm (7.4 ft-lb) |
| Screw Plug, Bearing Support | M10x1 | 12 Nm (8.9 ft-lb)* |
| Screw Plug, Cam Lever Axis | M10x1 | 8 Nm (5.9 ft-lb) |
| Screw, Unlocking of Timing Chain Tensioner | M10x1 | 8 Nm (5.9 ft-lb) |
| Coolant Temperature Sensor | M10x1.25 | 10 Nm (7.4 ft-lb) |
| Cylinder Head Screw | M10x1.25 | Tightening sequence:<br>Observe tightening sequence.<br>1st stage – 5 Nm (3. 7 ft-lb)<br>2nd stage – 15 Nm (11.1 ft-lb)<br>3rd stage – 90°<br>4th stage – 90°<br>Screw support greased/thread oiled |
| Screw Plug, Cylinder Head Oil Drain | M12x1.5 | 10 Nm (7.4 ft-lb) |
| Screw, Rotor | M12x1.5 | 90 Nm (66.4 ft-lb)<br>Thread greased |
| Screw Plug, Water Jacket | M16x1.5 | 20 Nm 04.8 ft-lb)* |
| Nut, Engine Sprocket | M20x1.5 | 120 Nm (88.5 ft-lb)* |
| Nut, Inner Clutch Hub | M20x1.5 | 135 Nm (99.6 ft-lb) |
| Plug, Oil Screen | M20x1.5 | 10 Nm (7.38 ft-lb) |
| Plug, Timing Chain Tensioner | M24x1.5 | 25 Nm (18.4 ft-lb) |
| Screw Plug, Alternator Cover | M24x1.5 | 8 Nm (5.9 ft-lb) |

* Loctite®243™

*** Copper paste

† Screw support greased

## Chassis Torque Chart

| | | |
|---|---|---|
| Chassis Remaining M5 Nuts | M5 | 5 Nm (3.7 ft-lb) |
| Chassis Remaining M5 Screws | M5 | 5 Nm (3.7 ft-lb) |
| Chassis Remaining M6 Nuts | M6 | 10 Nm (7.4 ft-lb) |
| Chassis Remaining M6 Screws | M6 | 10 Nm (7.4 ft-lb) |
| Chassis Remaining M8 Screws | M8 | 25 Nm (18.4 ft-lb) |
| Chassis Remaining M10 Nuts | M10 | 45 Nm (33.2 ft-lb) |
| Chassis Remaining M10 Screws | M10 | 45 Nm (33.2 ft-lb) |
| Rear Brake Fluid Reservoir Screw | M5 | 5 Nm (3.7 ft-lb)* |
| Rear Brake Cylinder Screw ❗ | M6 | 10 Nm (7.4 ft-lb)* |
| Rear Brake Lever Screw | M6 | 15 Nm (11.1 l bf ft)* |
| Rear Brake Lever Stub Screw ❗ | M6 | 10 Nm (7.4 ft-lb)* |
| Rear Brake Caliper Screw ❗ | M8 | 20 Nm (14.8 ft-lb)** |
| Rear Brake Disc Screw ❗ | M8 | 25 Nm (18.4 ft-lb)* |
| Fuel Pump Screw | M6 | 6 Nm (4.4 ft-lb) |
| Handlebar Stub Clamp Screw ❗ | M6 | 10 Nm (7.4 ft-lb) |
| Handlebar Fork Tube Stub Clamp Screw ❗ | M6 | 15 Nm (11.1 t-lb) |
| Handlebar Stub Screw Clamping Piece on Handlebar Tube Screw ❗ | M8 | 20 Nm (14.8 ft-lb) |
| Shift Lever Stub Screw ❗ | M6 | 10 Nm (7.4 ft-lb)* |
| Shift Rod Screw ❗ | M6 | 12 Nm (8.9 ft-lb)* |
| Shift Rod Linkage Screw ❗ | M6 | 7 Nm (5.2 ft-lb)* |
| Shift Rod Screw ❗ | M8 | 20 Nm (14.8 ft-lb)* |
| Shift Shaft Support on Engine Screw ❗ | M8 | 20 Nm (14.8 ft-lb)* |
| Steering Damper Bracket Screw ❗ | M6 | 15 Nm (11.1 l bf ft)* |
| Lifting Gear Bracket Screws – front | M6 | 10 Nm (7.8 ft-lb)* |
| Lifting Gear Support Screw – rear | M8 | 25 Nm (18.4 ft-lb)* |
| Footrest Bracket Screw ❗ | M8 | 25 Nm (18.4 ft-lb)* |
| Fork Stub Screw ❗ | M8 | 15 Nm (11.1 ft-lb) |
| Front Brake Disc Screw ❗ | M8 | 25 Nm (18.4 ft-lb)* |
| Front Brake Caliper Screw ❗ | M10x1.25 | 45 Nm (33.2 ft-lb)** |
| Fuel Tank Fastening Screw ❗ | M8 | 25 Nm (18.4 ft-lb)* |
| Main Silencer Clamp Screw | M8 | 18 Nm (13.3 ft-lb) |
| Steering Damper Bracket on Console Screw ❗ | M8 | 20 Nm (14.8 ft-lb)* |
| Steering Damper on Triple Clamp Screw ❗ | M8 | 20 Nm (14.8 ft-lb)* |
| Top Steering Stem Screw ❗ | M8 | 20 Nm (14.8 ft-lb) |
| Top Triple Clamp Screw ❗ | M8 | 15 Nm (11.1 ft-lb) |
| Bottom Triple Clamp Screw ❗ | M8 | 15 Nm (11.1 ft-lb) |
| Banjo Bolt, Brake Line ❗ | M10 | 25 Nm (18.4 ft-lb) |
| Rear Sprocket Bolt ❗ | M10 | 50 Nm (36.9 ft-lb)* |
| Deflection Console on Engine Screw | M10 | 25 Nm (18.4 ft-lb) |
| Engine Brace on Engine Screw ❗ | M10 | 30 Nm (22.1 ft-lb)* |
| Engine Brace on Frame Screw ❗ | M10 | 30 Nm (22.1 ft-lb)* |
| Linkage Lever on Angle Lever Screw | M10 | 45 Nm (33.2 ft-lb)* |
| Bottom Shock Absorber Screw ❗ | M10x1.25 | 45 Nm (33.2 ft-lb)* |
| Top Shock Absorber Screw ❗ | M10x1.25 | 45 Nm (33.2 ft-lb)* |
| Tension Strut Bearing Screw ❗ | M12 | 45 Nm (33.2 ft-lb)* |
| Angle Lever to Link Fork Nut | M14 | 100 Nm (73.8 ft-lb) |
| Tension Strut on Angle Lever Nut | M14x1.5 | 100 Nm (73.8 ft-lb) |
| Swingarm Pivot Nut ❗ | M16x1 | 100 Nm (73.8 ft-lb)** |
| Steering Head, Top Nut | M25x1.5 | 15 Nm (11.1 ft-lb) |
| Rear Wheel Spindle Nut ❗ | M25x1.5 | 100 Nm (73.8 ft-lb)** |
| Front Wheel Spindle Screw ❗ | M29x1.5 | 60 Nm (44.3 ft-lb)** |

❗ Safety critical screws, need to be checked every Pre-Ride Inspection and after every Oil Change

* Loctite®243™

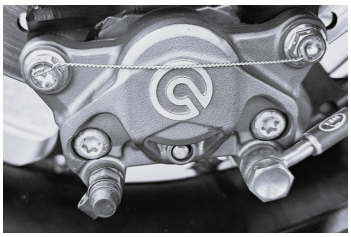
** Long-life white grease

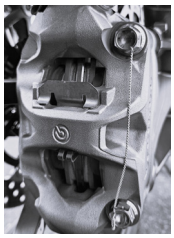
## Safety Wire

Safety wire is installed as an additional measure of protection to keep critical fasteners in place from hard use or vibration.

**For your reference, here are the steps in order:**

1. Drill fasteners or install ones with drilled heads.
2. Loop the wire through the fastener in a direction that pulling on the wire would tighten the fastener.
3. Using safety wire plies, twist the safety wire until its lightly tensioned.
4. Stop a little short of the next bolt or anchor point, and make the last twist by hand to get it to the perfect length.
5. Go into the opposite side of the other fastener, loop the wire through the fastener in a direction that pulling on the wire would tighten the fastener.
6. Leave a 15-20 mm overhang and twist a short amount to tuck in.
7. Snip off end of pigtail and tuck in for safety reasons.
8. Collect snipped part and throw away.

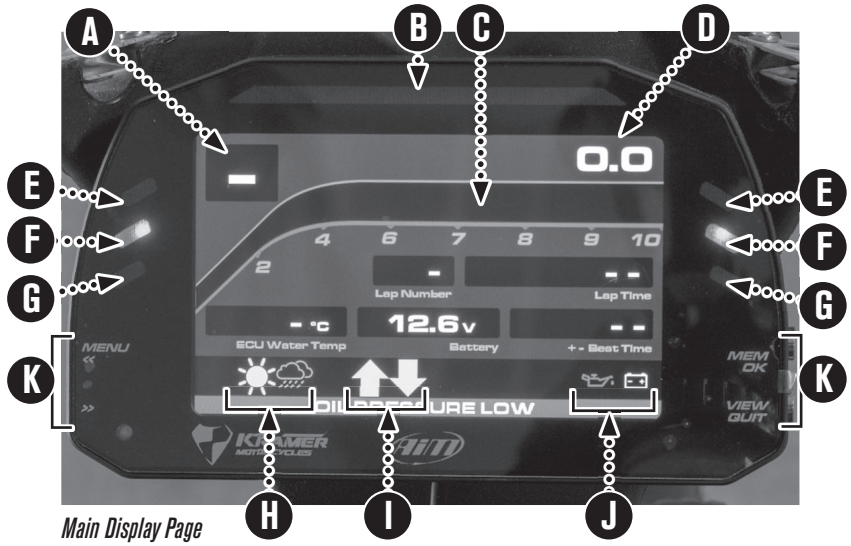




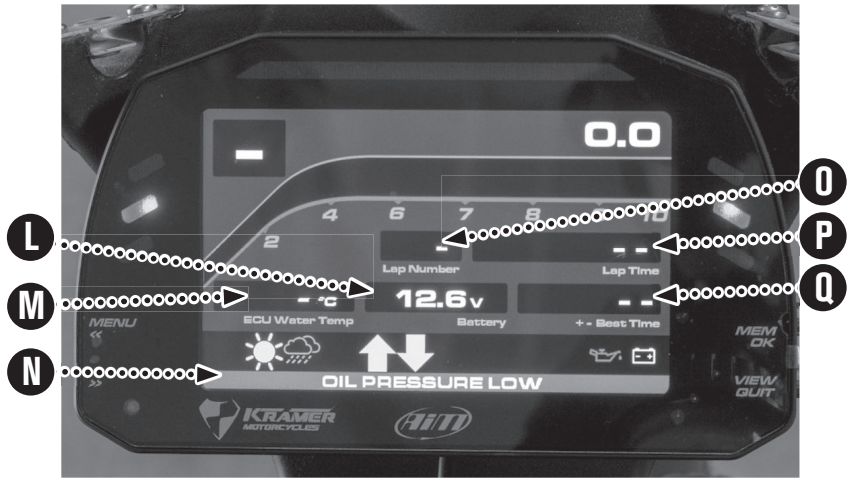
*These images show how proper safety wire is installed - in a manner that, if one bolt were to come loose, it would tighten the other, and vice versa.*

## AIM Compact MXS 1.2 Dash Logger

The AIM Compact 5" Color TFT dash logger has been specifically configured for the Krämer GP2-890R motorcycle. It displays relevant data to the rider and logs data that can be retrieved and analyzed in the AIM Race Studio 3 software.
The indicator lamps offer additional information about the operating state of the motorcycle. When the ignition is switched on, all indicator lamps light up briefly.




*Main Display Page*




*Main Display Page*


*Secondary Display Page*

## Dash Logger Indicators Overview

**Main Display Page**

- **A Gear Indicator**
- **B Shift warning light**
- **C Tachometer**
- **D GPS Indicated Speed**
- **E Coolant temperature warning** lamp
  - lights up *blue* if coolant is <150°F (65°C),
  - lights up *red* if coolant is >221°F (105°C),
  - *flashes red* if coolant is >230°F (110°C).
- **F Oil pressure warning** lights up red if the oil pressure warning lamp is active.
- **G Malfunction indicator** lights up yellow if the engine indicator light is active.
- **H Throttle response** setting (See pg. 15)
- **I Engine braking effect** setting (See pg. 15)
- **J Operating status** indicator lights
  - Charging
  - Oil Pressure
- **K Multi-function Menu buttons** are used to enter and navigate the menu area of the dash logger.

- **L Battery Voltage Meter.**
- **M Coolant Temperature.**
- **N Low Oil Pressure light.**
- **O Lap Number.**
- **P Lap Time.**
- **Q Best Lap Time.**

**Secondary Display Page**

This page is displayed by pressing the **View/Quit** button once.

- **R Altitude**
- **S Battery Voltage**
- **T Odometer Distance 1**
- **U Odometer**
- **V Gear Indicator**
- **X ECU Throttle Position (%)**
- **Y ECU Water Temperature**
- **Z Display Brightness**

## Dash Logger Menu Configuration Settings

Using the **Multi-function Menu** buttons Ⓚ, press the MENU button to display the sub-menues of the configuration page.

Press the NEXT and PREV buttons to navigate this page. Move to desired function setting, then press ENTER to open that setting's page.

Visit the link below for more info on the AIM Dash logger.


***https://www.kraemer-motorcycles.com/assets/uploads/downloads/MX1.2_1.3_user_guide_104_eng.pdf***

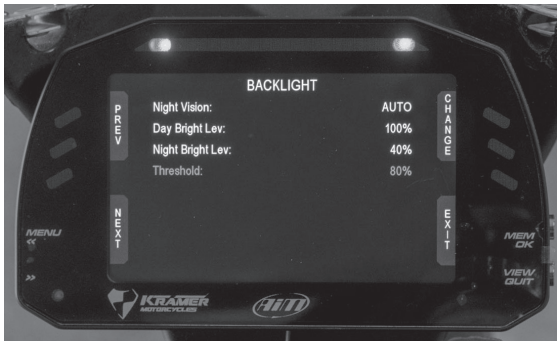
## Set Date and Time


*Date and Time*

Here you can:

- **Set time and date format**
- **Synchronize the date and time** with the data supplied by the connected GPS. In this case, if a nearby racetrack is available and selected, the system will set the date and time of that racetrack. If no racetrack is selected, then the synchronization date and time will need to be set manually. The current time and date are displayed at the bottom of the page.

## Set Backlight

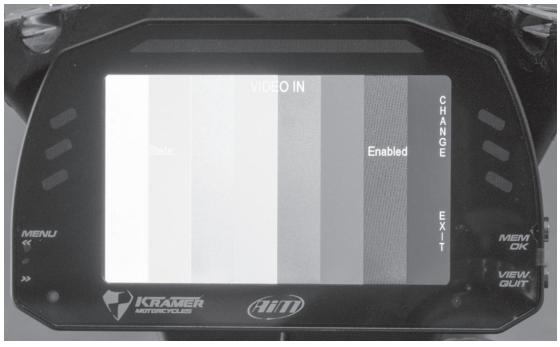



*Backlight*

**The brightness of the display** and LEDs may be adjusted in two ways, depending on the light captured by a dedicated sensor integrated into the dash logger.

- **AUTOMATIC**: The brightness is dimmed if the ambient light is brighter than a defined threshold. You can set day and night brightness levels and the brightness threshold value that switches from day to night mode.
- **MANUAL**: You may choose the brightness of the display and LEDs: 20%, 40%, 60%, 80%, & 100%.

## Set Video Input




*Video In*

**Video In** page manages up to two additional optional back cameras (which cannot be logged).

Features to set are:

- **Input**: Video 1 / Video 2
- **Format**: NTSC/PAL
- **Brightness and Contrast** from 10 to 100%

Use the CHANGE button to set each feature and the NEXT button to scroll the features.

The MXS 1.2 is compatible with the AIM SmartyCam models.

## Lap Time Setup

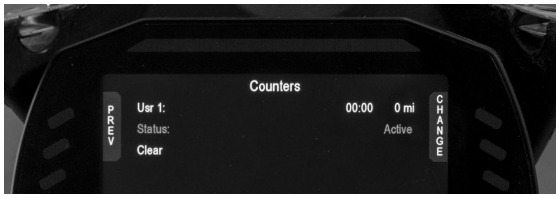

*Lap Time Setup*

The Lap Time **Predictive Reference** is selected on this page.

- Best Lap of Test
- Best Lap of Today
- Previous Lap

## Counters Management

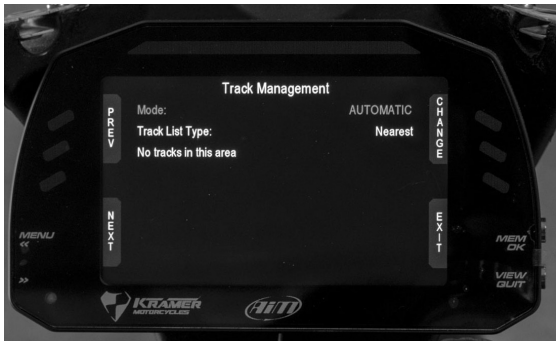

*Counters*




Four user odometers are displayed.
User 1 – User 4, plus a non-resettable System Odometer. All odometers are shown on the configuration software Race Studio 3 too.

Each odometer can be activated/deactivated and/or reset. To manage an odometer select it and press "CHANGE".

## GPS & Tracks




*GPS & Tracks*

MXS series dash logger receives data on the racetrack from the AIM GPS09 Module. This module assists in the calculation of Lap Time, Speed, and Predictive Lap Time. The system needs to know the current racetrack's start/finish line coordinates. MX Strada series comes with a long list of tracks, constantly updated and loaded to your PC when you run Race Studio 3 software, and a connection to the Internet is available.

The MXS 1.2 dash logger series provides two track selection modes: automatic and manual.

**Automatic:**

The dash logger automatically recognizes the racetrack you are riding on, loads the start/finish line and the possible splits coordinates, and calculates lap and split times without an optical/magnetic receiver. In most cases, this is the best mode.

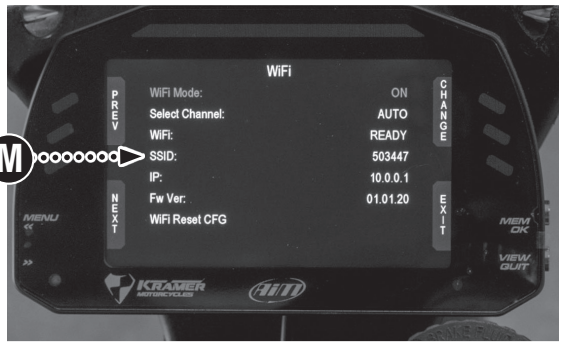
**Manual:**

Manually select the track from the internal database. This mode is preferred when multiple track configurations are available nearby. In this case, the dash logger recognizes the racetrack but will need at least one complete track lap to synchronize.

You can scroll the list of available racetracks choosing among these options:

- **Nearest:** shows only tracks in a 10 km distance.
- **All:** shows all tracks stored in the system in alphabetical order.
- **Custom:** shows only the tracks you have previously created.

## Wi-Fi Management




*Wi-Fi*

### SSID Identification

When connecting to the unit's Wi-Fi signal, you can obtain the Wi-Fi SSID of a specific dash logger. Connecting directly to the dash logger with a PC gives the Race Studio 3 software direct access to retrieve the logged data and configure the MXS 1.2 dash logger.

Here you can manage the Wi-Fi settings, select the channel to be used (expert users only), and reset its configuration.

**Wi-Fi modes are:**

- ON
- AUTO: switches the Wi-Fi on when the vehicle is stopped and automatically switches it off when the dash logger starts recording according to the setting you performed on the "Parameters" page of Race Studio 3 software.
- OFF

**Select Channel function** is for expert users only. Select which Wi-Fi channel to use. Available options are:

- AUTO (default – recommended)
- 1
- 6
- 11

**Wi-Fi reset CFG** resets Wi-Fi configuration and is helpful if you forget your Wi-Fi password.

## System Info


This page shows the system information of the MXS 1.2 dash logger displaying:

- Model Name
- Serial Number
- Firmware Version
- Boot Version
- And information of any attached devices.

## GPS Search


Check the connection status of GPS satellites.

View with page by pressing the **View/Quit** button twice.

## Sampled Data Recall

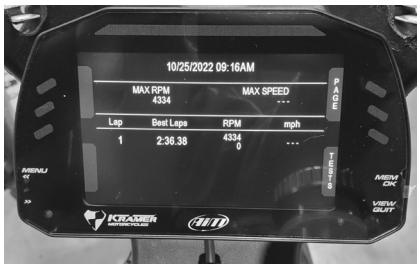

*Test Sessions Summary*

MXS 1.2 dash logger can show up to eight pages of sampled data.

The **Test Session Summary** of collected data is recalled by pressing the MEM/OK button.

- Select a desired date.
- The **Day Summary** page shows the tests with time of the test, number of laps, and best lap of the test. Select the desired test and press ENTER.
- The **Test Session** page shows specific information from the session.


*Day Summary Page*




*Sample of Test Session information*

## Pit Limiter Indicator


*Pit Limiter Indicator*

This page displays when the motorcycle is in Pit Limiter mode.

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