



**KRAMER**  
MOTORCYCLES

## OWNER'S MANUAL

### GP2-890RR

(Model Year 2024)



# Introduction

Dear Krämer Customer,

We want to congratulate you on purchasing a Krämer GP2-890RR series motorcycle. The GP2-890RR is equipped with class-leading specifications, including the best power-to-weight ratio in the category, with 138 hp on-tap and a ready-to-race weight of 142 kg (313 lbs). As the highest evolution of the critically regarded GP2 platform, the RR-spec brings traction control and wheelie control to the offering, along with improved aerodynamics and refined chassis characteristics.

Propelling the Krämer GP2-890RR to the front of the pack is an 889cc parallel-twin motor from KTM, which produces 138hp (101 kW) at 10,100 rpm and 100 Nm (74 lbs-ft) of torque at 8,200 rpm. An increased redline of 11,500 rpm comes to the GP2-890RR as well, thanks to new lightweight engine internals and advanced engine management software.

Making no compromises, the Krämer GP2-890RR is engineered to take you to the peak of performance - entering new dimensions on the race track!

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

THIS VEHICLE IS SOLD AS IS, NO WARRANTY.



**KRÄMER**  
MOTORCYCLES

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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.

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

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:

### 2024 Krämer GP2-890RR

Version: GP2-890RR-2023-11-28

Enter the serial numbers of your vehicle:

Dealer's Stamp

Vehicle identification number

\_\_\_\_\_

Engine number

\_\_\_\_\_

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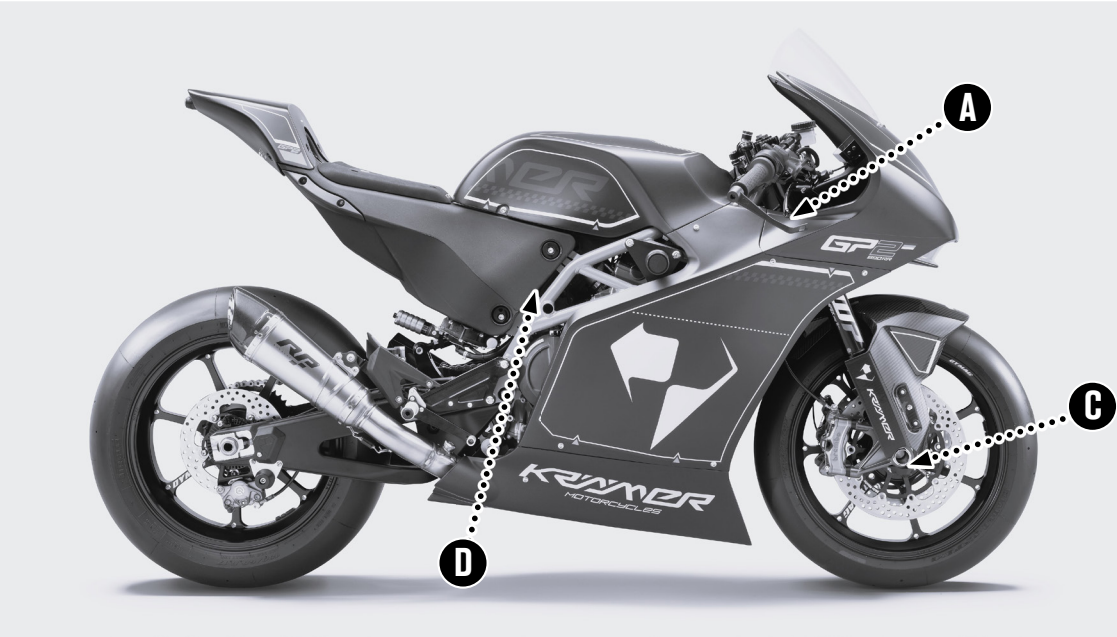
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# Usage and Setup

## 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.



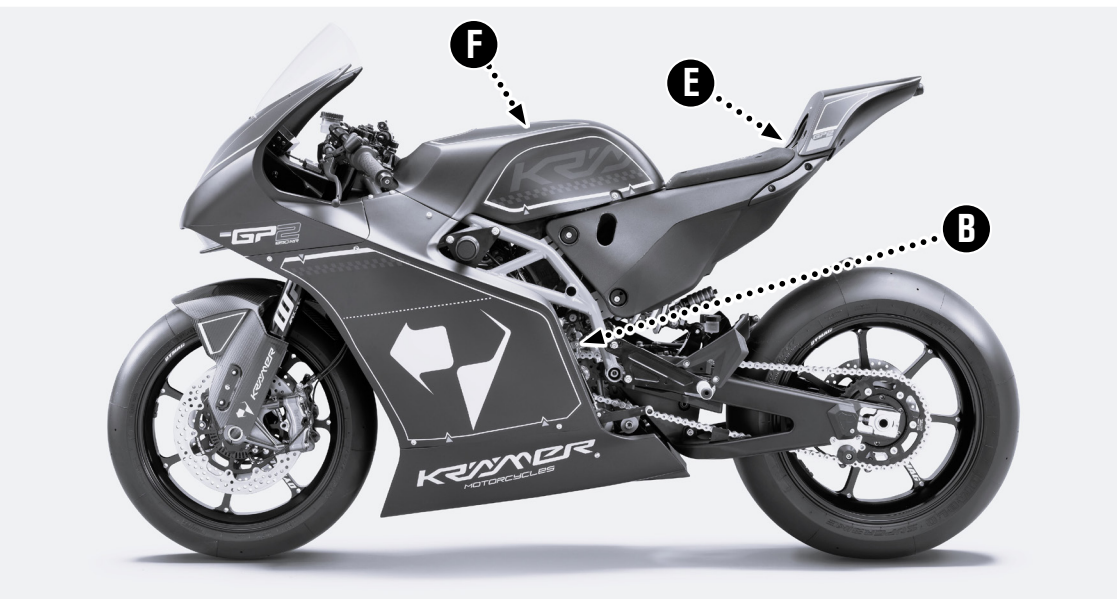
*Right Side View*

## 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** Intake Cover/Air Filter Box



*Left Side View*

## Control Components

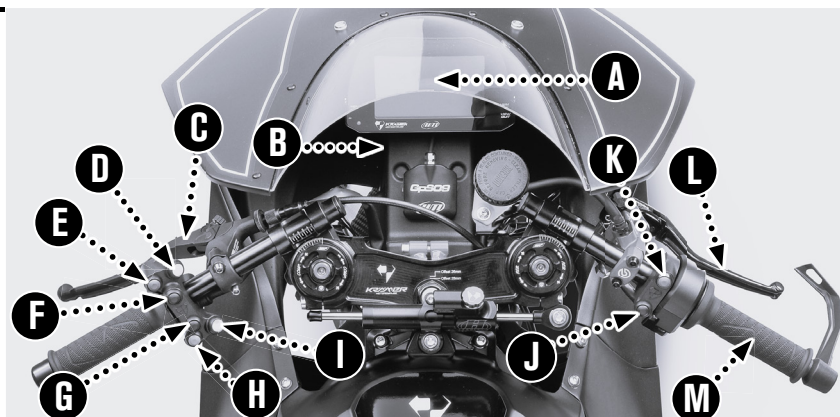
### Hand Controls

- A** Dashboard
- B** Main Switch  
(behind fairing support)
- C** Clutch Lever
- D** Suspension zero front\*
- E** Workmode selector
- F** Trimmer +
- G** Trimmer -
- H** Trimmer context  
(Traction control,  
Wheelie control or  
Engine brake)
- I** Pit limiter /  
Suspension zero rear\*
- J** Start Button
- K** Ignition/Kill Switch
- L** Front Brake Lever
- M** Throttle

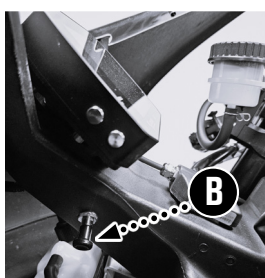
### Foot Controls

- N** Shift Lever
- O** Rear Brake Lever

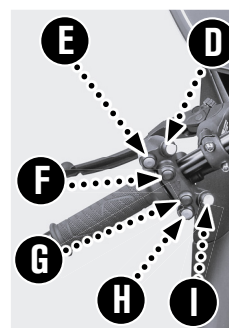
\* only for bikes equipped with suspension travel sensors



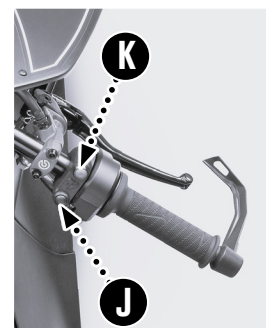
Hand Controls



Main Switch



Engine Performance Controls



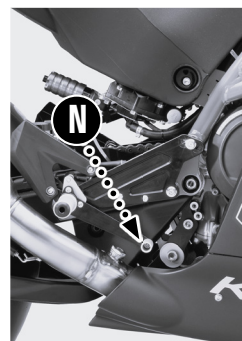
Startup/Shutdown Controls

## Start Up Procedure

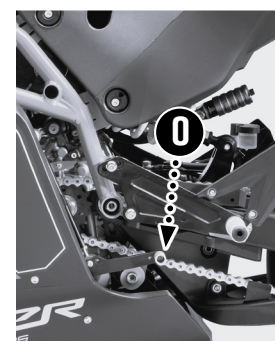
1. Pull the Main Switch **B**, located on the back side of dashboard/fairing support, to the ON position.
2. Press Ignition/Kill Switch **K**, wait 5 seconds for fuel pump to pressurize.
3. Press START button **J**

## Shut Down Procedure

1. Press the Ignition/Kill Switch **K**
2. Press Main switch **B** to OFF position



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. 32] and general condition.
- Bleed the front brakes [See pg. 19].

### 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 10500 rpm.

### After the first day

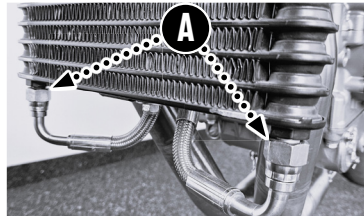
- Change engine oil and filters.

## Pre-Ride Inspection

- **Check safety critical screws for correct torque [See pg. 32]**
- **Check engine oil level** - Oil level to be located between the “maximum” and “minimum” indicators [See pg. 9].
- **Check coolant level** - Coolant should be visible at the bottom of the radiator fill fitting when the radiator cap is removed [See pg. 13].
- **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.

- **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. 10]
- **Inspect suspension components** (forks, rear shock, linkage) for leaks, excessive wear, or any looseness [See pg. 21].
- **Let the engine run up to 80°C (176°F)**, during which the throttle should not be turned.
- **Check the oil cooler connections <sup>A</sup> for outcoming oil drops.** (a thin oil film is acceptable)



### 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.

## Post-Race Service

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

- Remove and clean the fairing [See pg. 15]
- Thoroughly clean the motorcycle (frame, tank, swingarm, fenders and rims)
- Replace engine oil and oil filters [See pg. 9]
- Bleed the front and rear brake [See pg. 19]
- Perform chain maintenance [See pg. 10]

## Post-Crash Inspection

1. Remove the entire fairing (including the Intake Cover/Air Filter Box) [See pg. 15].
2. Disassemble the air filter and check for any blemishes/dirt within the air filter box and air filter [See pg. 11].
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. 21].  
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. Check the speed sensors and sensor rings for any damages.
7. Clean and lubricate the chain [See pg. 10].
8. Check the coolant level [See pg. 13].
9. Check the engine oil level [See pg. 9].  
After crash the oil level may appear low, start engine, run for 15 seconds, stop engine, and check level.

### Typical crash damage to inspect:

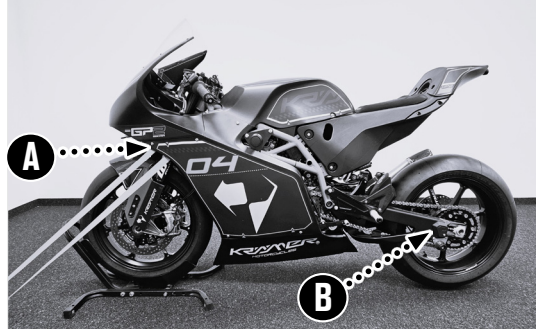
- Front forks
- Handlebars
- Crash pads
- Crash pad frame mounting plates
- Rear set
- Shift & brake linkages
- Debris trapped between the linkages

## Transporting / Loading

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

### Recommended Tie-Down Points

- FRONT:** Attach a soft-tie loop straps on the lower triple tree (exemplary shown in the pictures). 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.
- REAR:** Attach a tie-down strap around the rear swingarm **B** and tighten the strap sideward.



## Raising the Motorcycle on Lift Stands

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



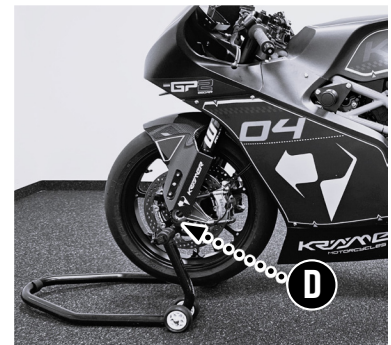
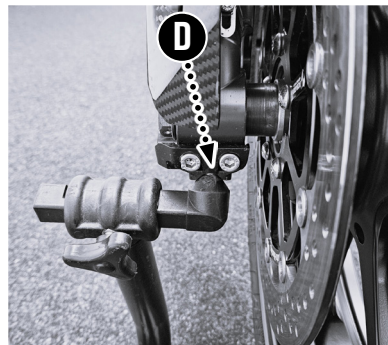
### CAUTION!

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

The windshield can amplify the sun's radiant heat.

### Lifting the rear (always raise rear first)

- The motorcycle is equipped with lifting spools **C**. Insert the lift stand into the groove of the lifting spools.
- Press down on the rear handle of the stand raising the rear of the motorcycle.



*Positioning of two-pin Stand*

### Lifting the front

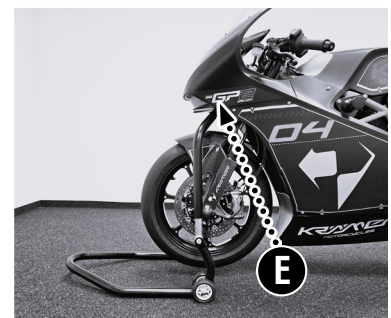
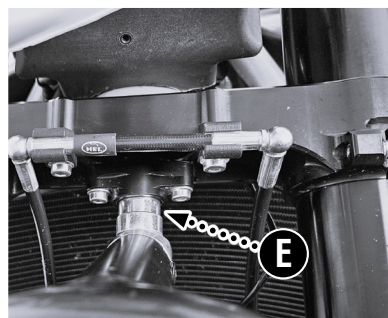
The motorcycle is equipped to lift the front with a two-pin stand and also with a head-lift stand.

#### Two-pin stand

- Position the pins of the two-pin stand right under the fork legs. The holding fixtures **D** are placed in the middle between the pinch bolts one each side. Make sure the pins fit into their holding fixtures before lifting.
- Press down on the front handle of the stand, raising the front of the motorcycle.

#### Head-lift stand

- Position the pin of the lift stand into the hole on the lower triple clamp **E** of the front forks.
- Press down on the front handle of the stand, raising the front of the motorcycle.



*Positioning of head-lift stand*

## 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 empty. See "Fuel Tank Draining Procedure" on page 16.
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 [See pg. 13].
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.

### Removing from Storage

1. Fill coolant, if drained for freezing temperature storage conditions [See pg. 13].
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. 29.

## Kramer Motorcycles Onlineshop

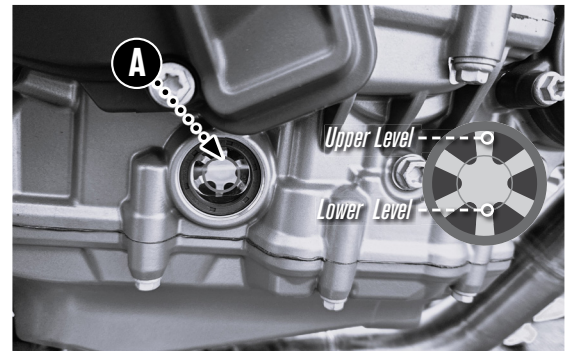
If any part of your GP2-890RR needs to be replaced because of wear or damage, spare parts can be found in the Kramer Motorcycles Onlineshop:

[www.kmc-shop.com](http://www.kmc-shop.com)

## Checking the Engine Oil Level

Check the engine oil level at normal engine operating temperature.

- Stand the motorcycle upright on a level surface.
- Start engine and warm to normal operating temperature. Turn off the engine, wait one minute before checking the level.
- Check the engine oil in the sight glass window **A**. The level must be between the lower and upper markings beside the window.
- 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

- Raise the rear of the motorcycle on a rear lift stand [See pg. 7].
- Remove the right side fairing and lower fairing [See pg. 15].
- Start the engine and warm it to normal operating temperature.
- Remove the safety wire.
- Place a drain container under the engine.
- Remove the oil filler cap **B** from the clutch cover.
- Remove the oil drain plugs **C** along with the magnets, the o-rings, and the oil screens.
- Completely drain the engine oil.
- Inspect the magnets, o-rings and the oil screens** for any metal shavings, and thoroughly clean the plugs, screens, and magnets.

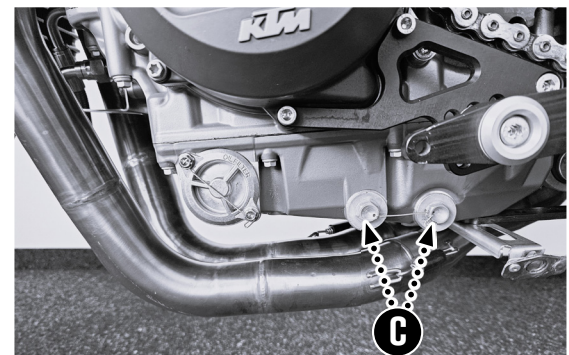
### Oil Filter Changing

- Remove the screws from the oil filter cover **D**, and remove cover with the o-ring.
- Pull out the filter. Allow the remaining engine oil to drain.
- Thoroughly clean the parts and sealing surfaces.

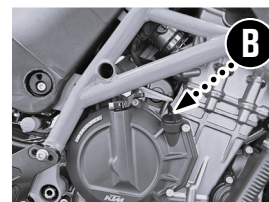
- Insert the new oil filter.
- Coat the o-ring with oil, position the oil filter cover, and reinstall the cover screws.
- Torque the cover screws – 6 Nm (4.4 lb-ft).

### Oil Changing

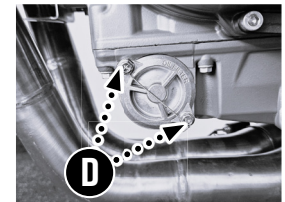
- Drain the oil
- Change the oil filter
- Install the oil drain plugs **C**, the magnets, the o-rings and the oil screens.
- Tighten the oil screen plugs **C** – 15 Nm (11.1 lb-ft).
- Fill up engine oil at filler **B** – 3.2 L. (3.4 qt.) of **Motorex 15W/50 Racing Pro 4T** oil.
- Install and tighten the filler plug **B**.
- Let the engine run for approx. 30 seconds, check thoroughly for leaks.
- Check the engine oil level **A** and add oil if necessary.
- Rewire the locking safety wire following the instructions on pg. 32.



Oil Filter, Drain Plugs with Screens and Magnets (L.H. side of engine)



Oil Filler



Oil Filter Screws



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

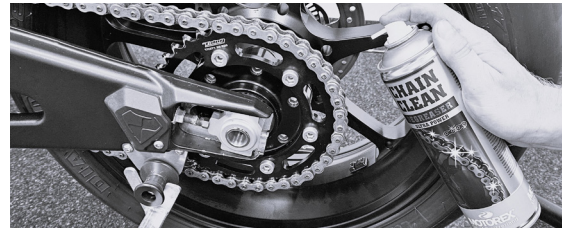
## Chain Cleaning / Lubrication

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. 10].

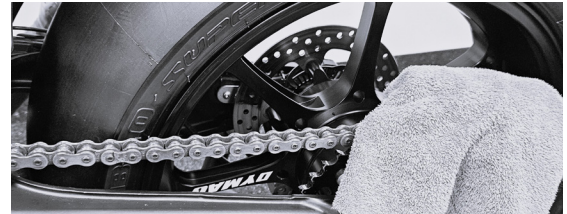


### CAUTION! Pinch Hazard

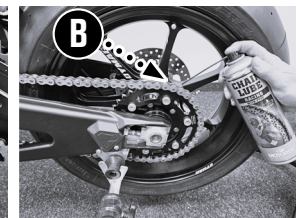
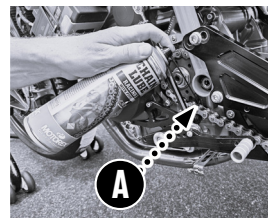
Be careful not to pinch fingers between chain and sprockets.



Spray Chain Cleaner



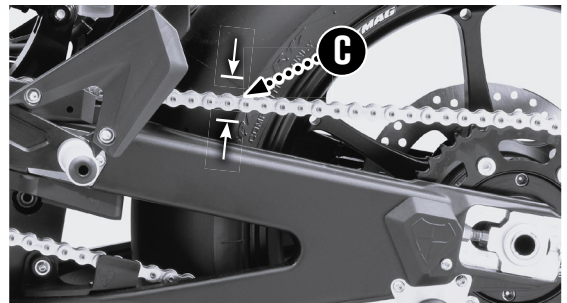
Wipe Cleaner Dry



Spray Chain Lubricant

## Checking the Chain Tension

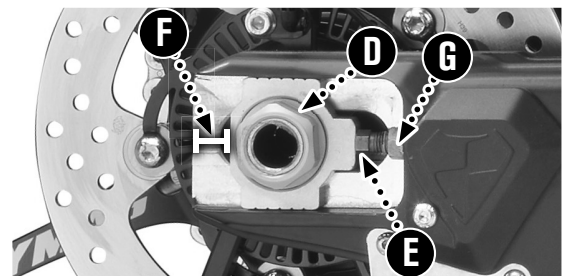
1. Raise the rear of the motorcycle on a lift stand [See pg. 7].
2. Check that the shift lever is in neutral position.
3. Rotate the wheel and measure at the chain mid-point between sprockets at various points of the chain. The specified vertical chain tension **C** is 30-35 mm (1.18-1.38 in). If the chain tension varies strongly at several points, the chain should be replaced.



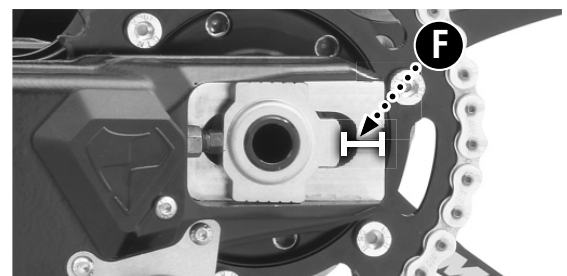
Chain tension measurement

## 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 position.
3. Loosen the jam nuts **G** on the adjuster screws on both sides of the swingarm.
4. Loosen the axle nut **D**.
5. Turn the adjuster screw **E** until the vertical chain tension **C** is 30-35 mm (1.18-1.38 in). Measure at the chain mid-point.
6. On both sides, measure and compare the distance **F** 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 **G**.
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 cap lever **A**.
2. Rotate it counter-clockwise 1/4-turn.
3. Lift out 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.

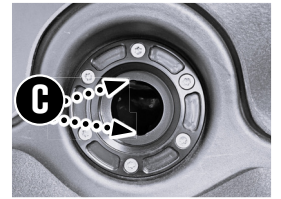
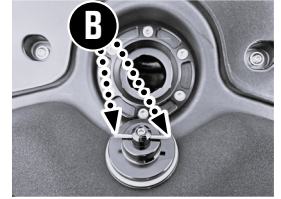
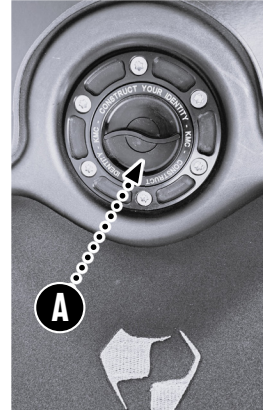


### FIRE HAZARD

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. 15].
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.

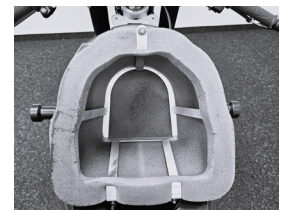
1. Clean and oil the foam air filter element following directions of the reusable foam air filter service kit. (TwinAir BIO line of cleaner, oil and sealant).
2. Clean the air filter support cage.
3. Clean the air filter box.
4. Clean the intake flange and inspect for damage.
5. Reinstall the air filter.



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. 29

## Engine Modes / Workmodes

- NOTE:** The Engine Mode can be changed at any moment during riding or also standing. Using the Engine Mode selector button **E** three different Engine Modes **A** can be selected. Each mode adjusts the throttle response as well as the engine braking.
- Sun + Arrow Up:** Dry throttle map with more engine braking
- Sun + Arrow down:** Dry throttle map with less engine braking
- Rain:** Wet throttle map with less engine braking and rain specified traction control

## Traction Control

- NOTE:** Traction Control setting can be changed at any moment during riding or also standing. The Traction Control (TC) can be adjusted from minimum to maximum in ten steps overall. The neutral setting is "0", less TC intervention is covered by steps "-1" to "OFF" whereas increased TC intervention is covered by steps "1" to "MAX". To find the preferred setting in both dry and wet conditions, start with "MAX" and then slowly adjust the TC intervention until feeling comfortable.
- Choose to adjust the TC by pressing the Trimmer context button **H**.
  - Use the + / - buttons **F** and **G** to select the preferred TC setting shown by **B**.

## Wheelie Control

- NOTE:** Wheelie Control mode can be changed at any moment during riding or also standing. The Wheelie Control can be adjusted from minimum to maximum in six steps overall ("OFF" to "5"). When turned on, it will reduce the lift of front wheel while hard acceleration.
- Choose to adjust the Wheelie Control by pressing the Trimmer context button **H**.
  - Use the + / - buttons **F** and **G** to select the preferred Wheelie Control setting, the indicator **C** shows whether the Wheelie Control (=AWM eg. Anti Wheelie Mode) is turned on or off.

## Pit Limiter

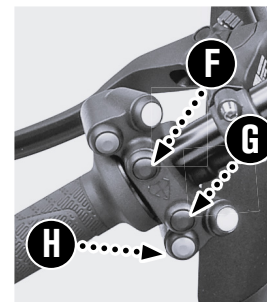
- NOTE:** The Pit Limit mode limits the speed of the motorcycle to 60 km/h (37 mph).
- Before using the Pit Limit mode, make sure that the engine is running.
  - Engage Pit Limit mode by pressing the button **I** on L.H. handlebar for two seconds. Exit Pit Limit mode by pressing the button again.
  - When engaged, the dash logger will display a "PIT LIMITER" message.

## Repack the Muffler

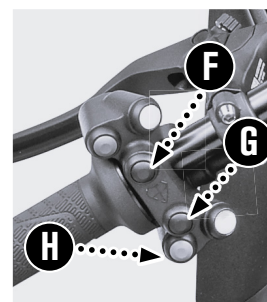
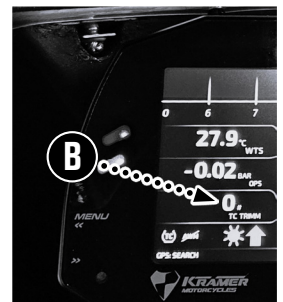
- Every 1.000 km or when it is burned out. The muffler is burned out when the bike is significantly louder than normal. Empty muffler reduces engine performance and can lead to cracks in the exhaust.
- Part Number for the Exhaust Service in the KMC Onlineshop: 320501001S



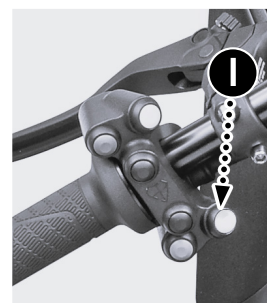
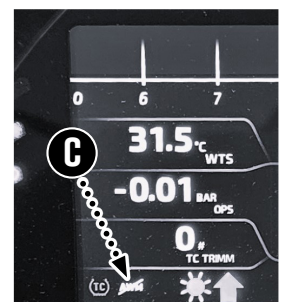
Engine Mode selection



Traction Control setting



Wheelie Control setting



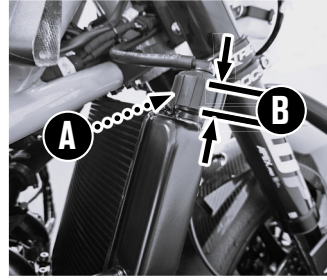
Pit Limiter Button



# Cooling System

## Checking the Coolant Level

1. With the engine cold, position the motorcycle on a level surface.
  2. Remove the front, side and lower fairing [See pg. 15].
  3. Check coolant level of the radiator. Remove radiator cap **A**.
  4. Reinstall the radiator cap.
- Coolant should be visible at the bottom of the radiator fill fitting—35mm (1.38") below the upper edge of filler neck **B**.



*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, side and lower fairing [See pg. 15].
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

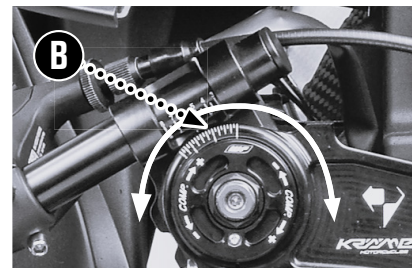
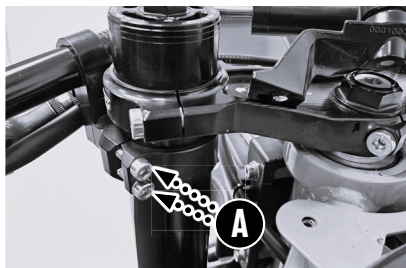
The position of the handlebars is adjustable in both height and angle. Please note that the right and the left handlebar sides mirror each other, and neither should be at a different angle or height.

### Height and Angle Adjustment

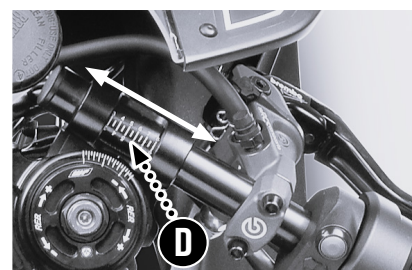
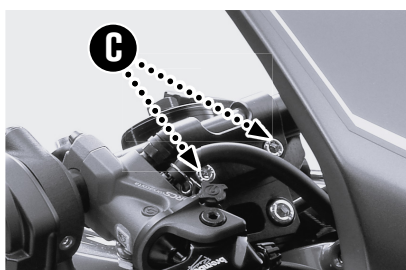
1. Loosen the clamping screws **A** of the clip-ons on both sides.
2. Adjust the height of the handlebars by sliding them up or down on the fork tube. Adjust the angle by rotating around the fork tube. Use the angle marks **B** to ensure that both sides are equal.
3. Swing handlebars from lock to lock, making sure nothing touches or rubs.
4. Tighten the clamping screws **A** 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 **C** of the clip-ons on both sides.
2. Adjust the width of the handlebars. Read the setting marks at the edge of the window **D**. Ensure that both sides are equal.
  - Check the steering for binding and kinked cables or lines.
3. Tighten the clamping screws **C** of the clip-ons alternately until the appropriate torque is attained – 10 Nm (7.4 ft-lb).



Handlebar Height and Angle Adjustment



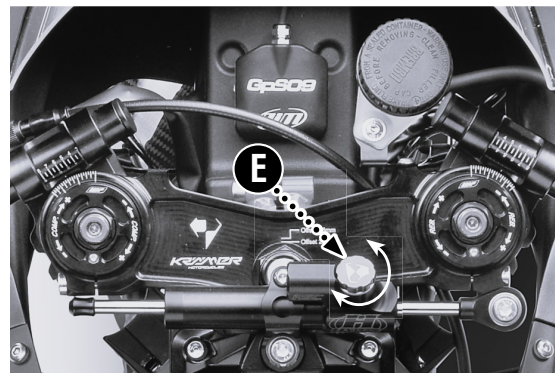
Handlebar Width Adjustment

## 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 **E** 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

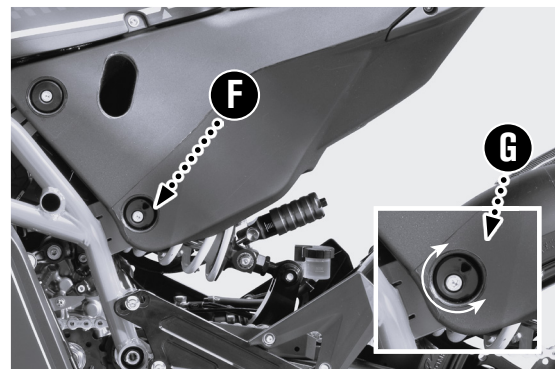
## Seat/Tank Height Adjustment

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

1. Loosen the bottom mount screws **F** on both sides of the tank.
2. Using a 6 mm Allen wrench placed in the triangular hole, turn the eccentric base **G** 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).

\* Loctite®243™



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 Tail Cap

1. Remove the two screws **H** under the tail cap.
2. Remove the two screws **I** on top of the tail cap.
3. Slide the tail cap rearward and upward.

### Remove Front Fender

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

### Remove Lower Fairing

6. Loosen the 1/4-turn fasteners **D** on each side.
7. Remove the three 1/4-turn fasteners **E** on each side.
8. Carefully remove the lower fairing, watch out not to damage the cooling fins of the radiators.

### Remove Side Fairing

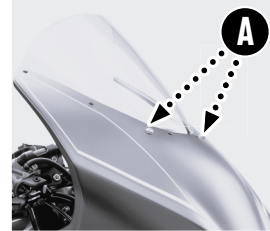
9. Remove the three 1/4-turn fasteners **C** on each side.
10. Remove the two 1/4-turn fasteners **F** on each side.
11. Carefully remove the side fairing.

### Remove Intake Cover/Air Filter Box

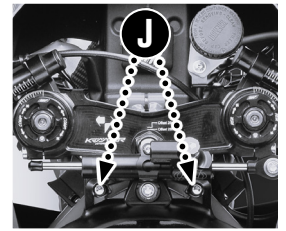
12. Remove the two screws **J** holding the steering damper mount, then turn the steering damper to the side.
13. Remove the screws **B** on each side.
14. Carefully lift the intake cover/air filter box rearward and up.

### Remove Upper Fairing

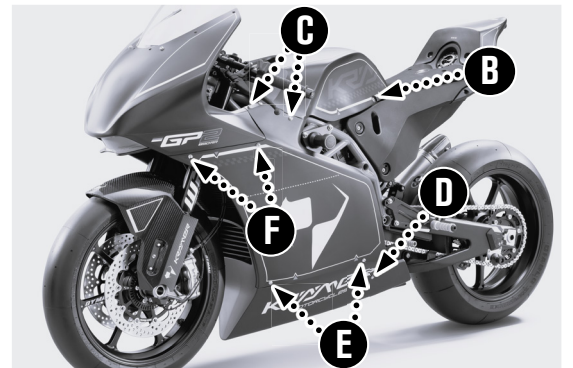
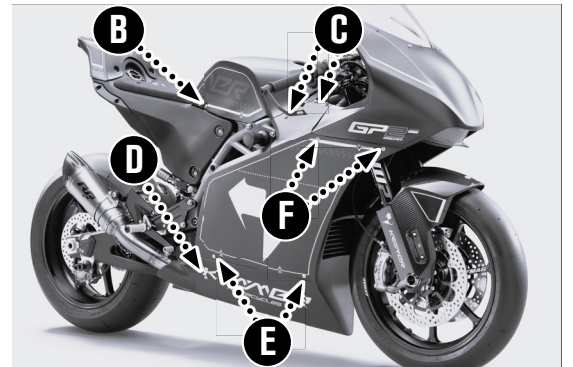
15. Remove the two 1/4-turn fasteners **A** under the windshield.
16. Carefully remove the upper fairing by pulling it forward.



Front Upper Fairing Fastener Locations



Steering Damper Screws



Upper and Lower Fairing Fastener Locations

## Bodywork Installation

Install bodywork in the order of appearance.

### Install Upper Fairing

1. Install the upper fairing by carefully maneuvering around the forks.
2. Install the two 1/4-turn fasteners **A** under the windshield.

### Install Intake Cover/Air Filter Box

3. Position the Intake Cover/Air Filter Box.
4. Finger-tighten the two screws **B** at the rear of each side.
5. Apply blue thread lock\* and install the two screws **J** holding the steering damper mount – 10 Nm (7.4 ft-lb).
6. Torque the screws **B** at the rear of each side – 6-9 Nm (50-80 in-lb).

### Install Side Fairing

7. Position the Side Fairing.
8. Install the two 1/4-turn fasteners **C** including one pin on each side.
9. Install the two 1/4-turn fasteners **F** on each side.

### Install Lower Fairing

10. Carefully maneuver the lower fairing under the bike, watch out not to damage the cooling fins of the oil cooler.
11. Install the six 1/4-turn fasteners **E** – three on each side.
12. Install the two 1/4-turn fasteners **D** – one on each side.

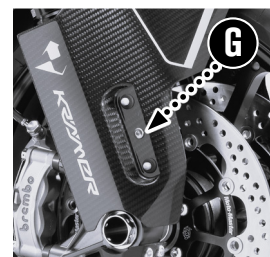
### Install Front Fender

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

### Install Tail Cap

15. Install the two screws **H** under the Tail Cap – 5 Nm (44 in-lb).
16. Install the two screws **I** on top of the Tail Cap – 5 Nm (44 in-lb).

\*Loctite®243™



Front Fender Fastener - R.H.



Front Fender Fastener - L.H.



Tail Cap Fastener Locations



## Fuel Tank Draining Procedure



### CAUTION! Fire Hazard

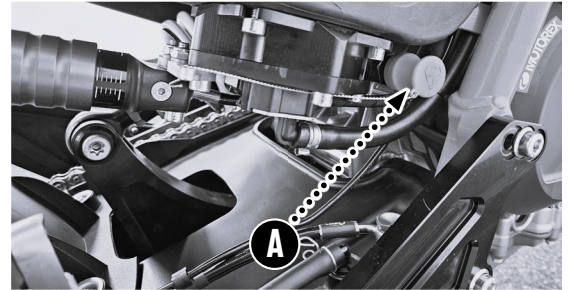
Drain the fuel in a well-ventilated area without any open flame or sparks.

Have a fire extinguisher nearby.

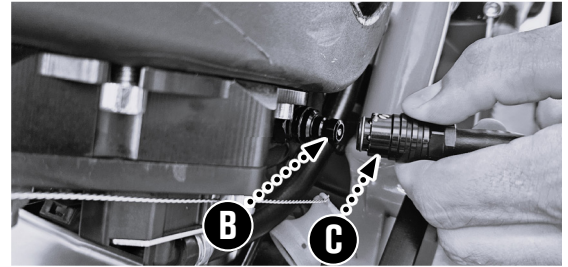
Drain and store fuel in an approved fuel container.

**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. 15].

### NOTE:

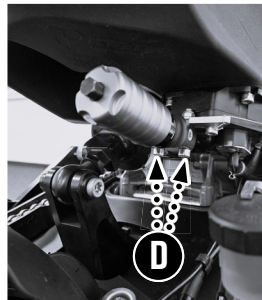
Regularly check the tightness of velocity stacks.

2. Remove the shock adjuster screws **D** and let the adjuster hang to the side.
3. Unplug the fuel pump electrical connector **E**.
4. Remove fuel hose from injection rail.
5. Remove the support bracket screws **F** and the tank mounting screws **G** on both sides.
6. Remove the fuel tank by lifting it towards the rear of the motorcycle.

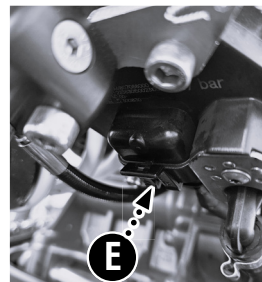
### Installation

7. Position the fuel tank in place.
8. Install and tighten the screws **F** on both sides – 8 Nm (5.9 ft-lb).
9. Install, apply blue thread lock\*, and tighten the screws **G** on both sides – 25 Nm (18.4 ft-lb).
10. Plug in the fuel pump electrical connector **E**.
11. Install fuel hose on the injection rail.
12. Mount the shock preload adjuster, install and tighten the shock preload adjuster screws **D** – 10 Nm (7.4 ft-lb)

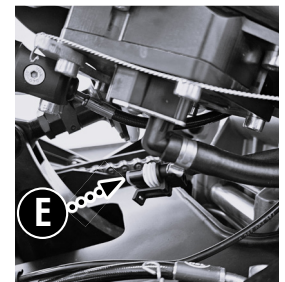
\* Loctite®243™



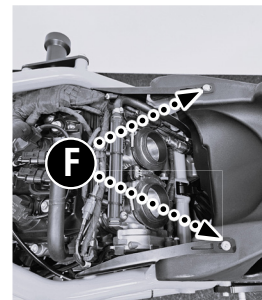
Shock Preload Adjuster Screws



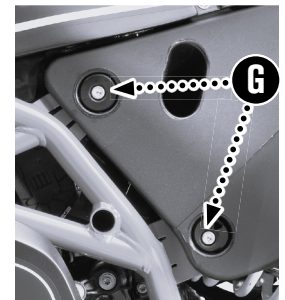
Fuel Pump Connector



Fuel Pump Connector (unplugged)



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

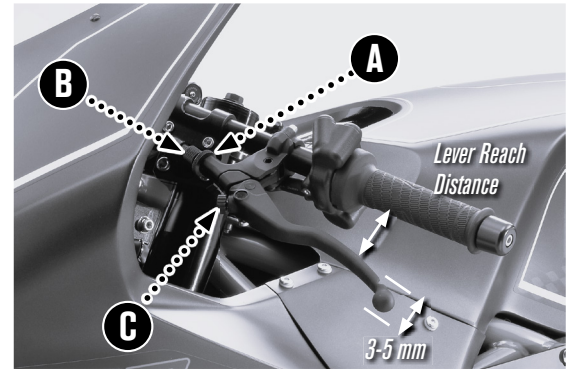
1. Position the handlebar straight ahead.
2. Loosen lock nut **A**.
3. Turn the adjusting barrel **B** to adjust the clutch lever free play. 3-5mm is the specified amount of free play.
4. Tighten the lock nut **A**.

**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 to reach the lever comfortably and ensure proper clutch engagement.



## Front Brake Lever Response and Travel Distance

### Adjusting Front Braking Response

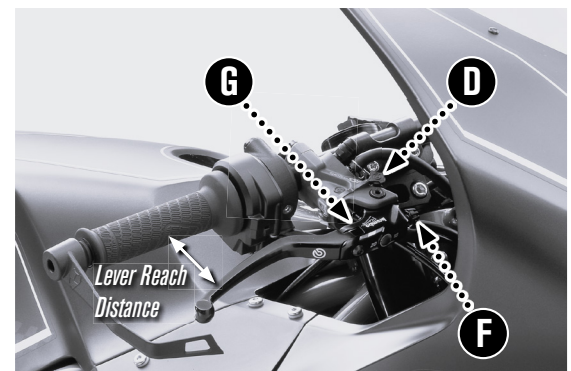
1. Use the adjustment knob **I** to set desired brake response behavior.
  - N = Soft, liner braking
  - S = Sporty braking
  - R = Hard, direct braking

### Adjusting Front Brake Lever Braking Ratio

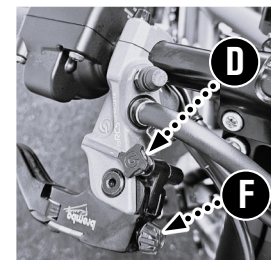
1. Remove the protection cap **E**.
2. Turn the setting screw to the desired braking ratio.
  - 18 = Longer brake lever travel, soft response, and less lever force. Red indicator visible **G**.
  - 20 = Less brake lever travel, hard response, and more lever force. Black indicator visible.
3. Replace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

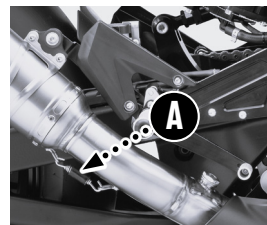
#### Right Side

1. Remove the exhaust muffler retainer spring **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 spring **A**.

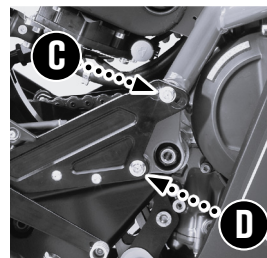
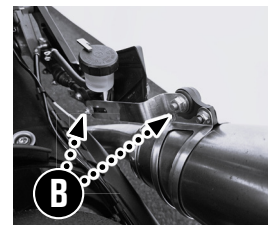
#### Left Side

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].

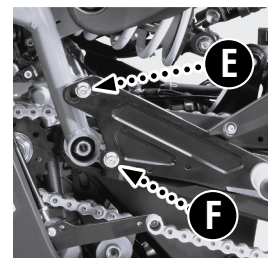
\* *Loctite®243™*



R.H. Side Rearset Adjustment Preparation



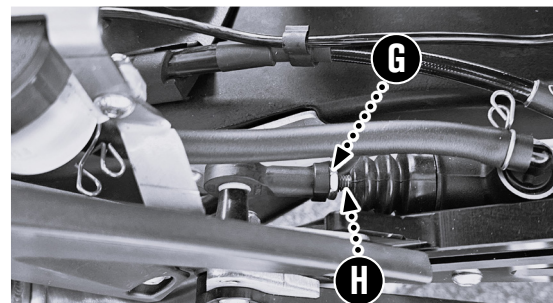
R.H. Side Rearset Adjustment



L.H. Side Rearset Adjustment

### Rear Brake Lever Adjustment

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**.

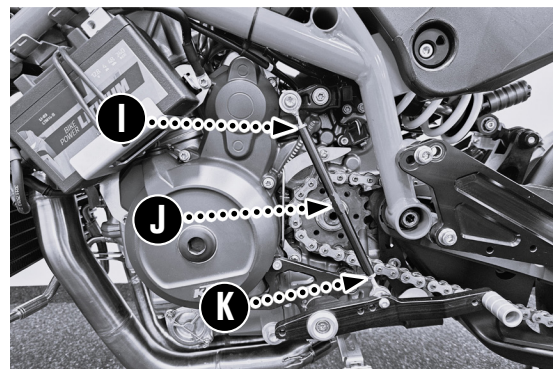


Brake Lever Adjustment – R.H. Side

### 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 8 mm 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).



Shift Lever Height Adjustment

# 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 **A** for wear, cracking, and damage on all brake calipers.
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.

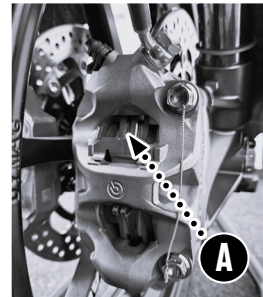
### Brake Fluid Level

#### Checking/Adding Front Brake Fluid Level

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



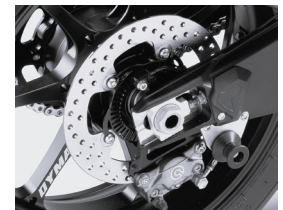
Front Brake Caliper



Rear Brake Caliper



Front Brake Discs



Rear Brake Disc



Front Fluid Reservoir



Rear Fluid Reservoir



Front Fluid Reservoir

## Brake Bleeding

### Bleeding Front Brake Calipers

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

#### SPECIAL NOTES:

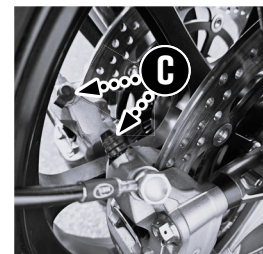
- Bleed each caliper individually using the bleed screw **C**.
- Bleed brake lever at the bleed screw **D**.

### Bleeding Rear Brake Caliper

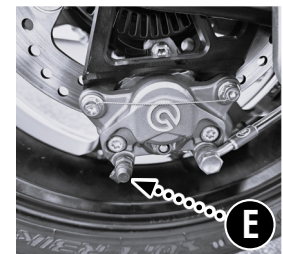
Use standard manual or vacuum bleeding procedures to bleed the brake caliper.

#### SPECIAL NOTES:

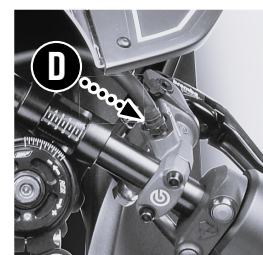
- Remove the rear brake caliper and invert with the bleed screw **E** facing up.
- Raise the caliper to a position where the bleed screw is higher than the master cylinder.
- Place a 6 mm Allen wrench between brake pads to simulate the brake disc.
- Bleed the caliper using standard procedure.
- Remove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



Front Caliper Bleed Screws



Rear Caliper Bleed Screw



Brake Lever Bleed Screw

## Changing the Brake Pads

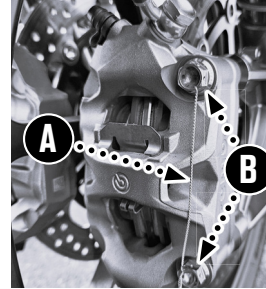
### Front Brake Calipers

1. Position the motorcycle on a rear lift stand.
2. Position the brake reservoir in a horizontal position. Remove 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

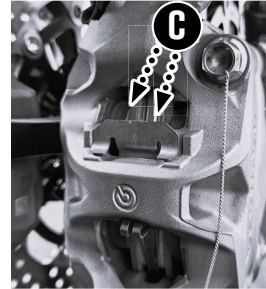
install mounting bolts **B**, but do not tighten them yet.

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 following the instructions on pg. 32.
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*



Front Brake Calipers



Front Brake Reservoir



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

### 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 by turning the reservoir down 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** following the instructions on pg. 32.
14. Press the brake pedal until brake pads contact the brake disc and there is firm resistance on the pedal.
15. If needed, refill brake fluid level to the MAX line.

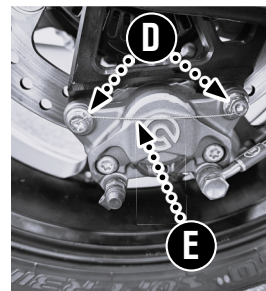
\* *Loctite®243™*    \*\* *White lithium grease*



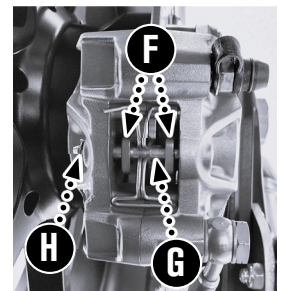
**USE ONLY Motorex Racing Brake Fluid**  
from a new closed container



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 32].

### Rear Suspension

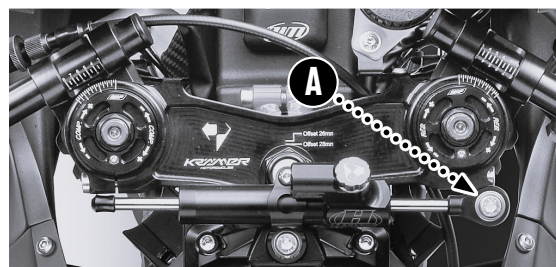
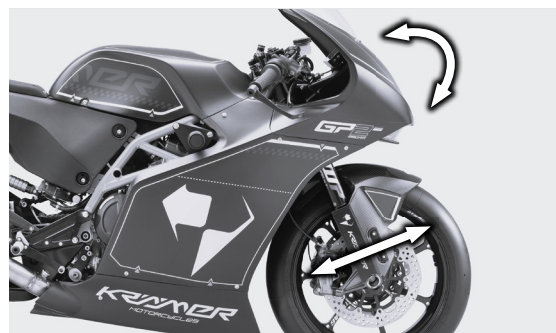
1. Check the full action of the shock absorber by compressing it several times.
2. Inspect the shock absorber assembly for leaks, damage, or loose parts and fasteners.
3. Replace or repair any damaged components.
4. Tighten nuts and bolts to proper torque spec [See pg. 32].

### 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

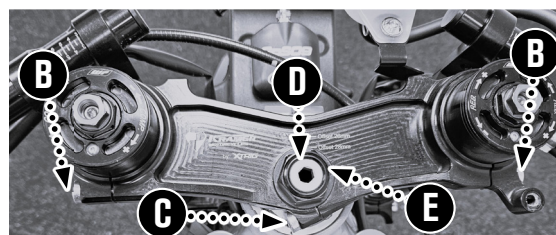
1. Raise the motorcycle under the frame, lifting the front wheel off the ground.
2. Remove the front fairing [See pg. 15].
3. Unbolt steering damper from the top triple clamp **A**.
4. Position the handlebars in the straight-ahead position.
5. Grab the lower fork legs, and push and pull in a forward 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 **A** - 20 Nm (14.8 ft-lb).
9. Reassemble the front fairing [See pg. 15].



Steering Damper on Triple Clamp Screw

## Adjusting the Steering Head Bearing Play

1. Position the motorcycle on a rear lift stand.
2. Remove the front fairing [See pg. 15].
3. Unbolt steering damper from the top triple clamp **A**.
4. Loosen the top clamp bolts **B**.
5. Remove the top yoke bolt **C**.
6. Loosen the counter screw **D** and the steering stem adjusting nut **E**.
7. Tighten the steering stem adjusting nut **E** 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 **C** and torque to 15 Nm (11.1 ft-lb).
10. Tighten bolts **B** 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 **D** to appropriate torque of 20 Nm (14.8 ft-lb).
13. Add Loctite 243 to the screw thread, install and torque the steering damper bolt to the top triple clamp **A** - 20 Nm (14.8 ft-lb).
14. Reassemble the front fairing [See pg. 15].

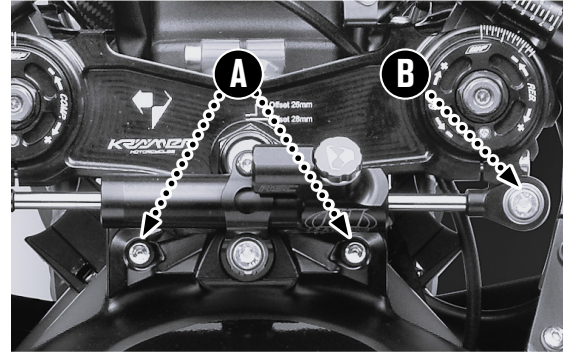


Top Triple Clamp Screws, Top Yoke Screw and Stem Adjusting Nut

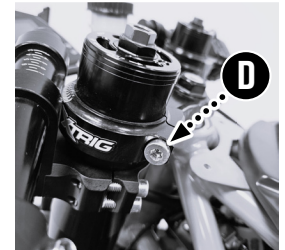
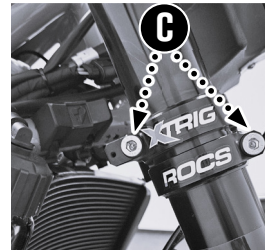
## Changing the Fork Offset

1. Raise the motorcycle under the frame, lifting the front wheel off the ground.
2. Unbolt steering damper screws **A**.
3. Unbolt steering damper screw **B** on the triple clamp.
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 bolt **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 **I** 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 **I** 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 bolt **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. Apply blue thread lock\*, torque screw **B** - 20 Nm (14.8 ft-lb).
19. Check the steering head bearing clearance and readjust if necessary.

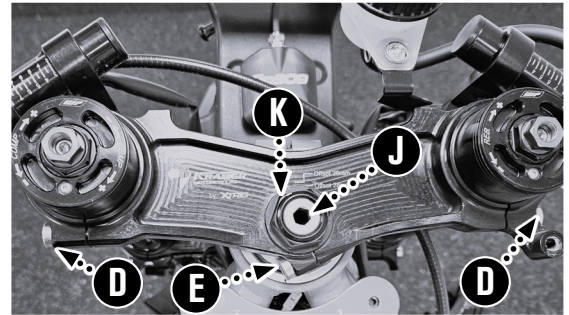
\* Loctite® 243™



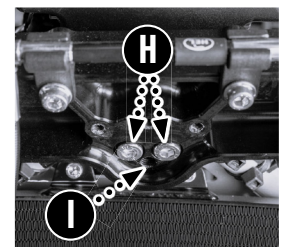
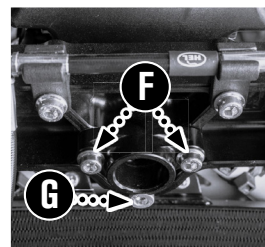
Steering Damper Screws



Top and Bottom Clamp Screws



Adjustable Triple Clamp Top Yoke Bolt and Stem Adjusting Nut



Bottom view of lower triple clamp and steering stem

## Fork Suspension Settings

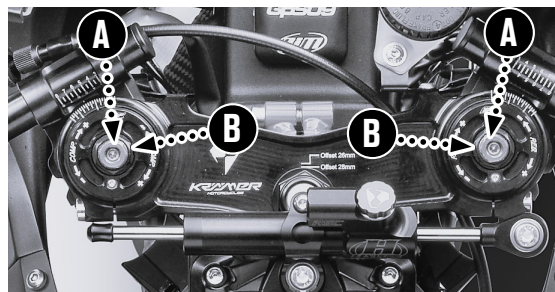
### Adjusting Spring Preload

**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 Spring Preload Guideline:**  
6 clicks (3 mm)

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



Fork Spring Preload

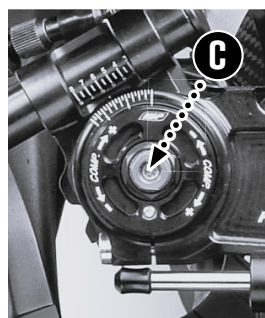
### Adjusting Compression Damping

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

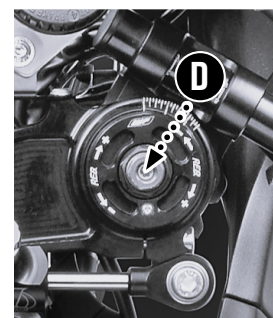
1. On the top of the left fork tube, turn the brass screw **C** to the desired setting.
2. **Zeroing:** Turn the screw as far as possible in a clockwise direction.
3. Turn the screw as many clicks as necessary counterclockwise to the desired setting.

**Initial Compression Damping Guideline:**  
17 clicks

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



Compression Damping (left fork)



Rebound Damping (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 Rebound Damping Guideline:**  
10 clicks

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

## Fork Specifications

Fork	WP Suspension APEX PRO 7543 KMC Spec 1
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 **A** clockwise.
2. Reduce the spring preload by turning the preload knob counterclockwise.

### 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

#### 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 using a 4 mm allen key 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 – 12 mm (0.47 in)

#### 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:**

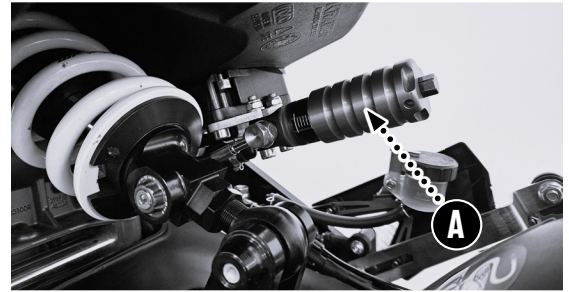
STANDARD – 22 clicks

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

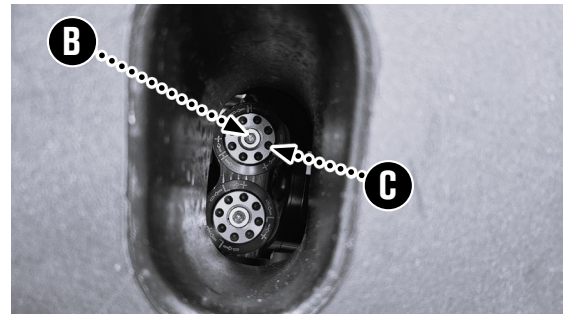
**Initial Guideline:**

STANDARD – 14 clicks

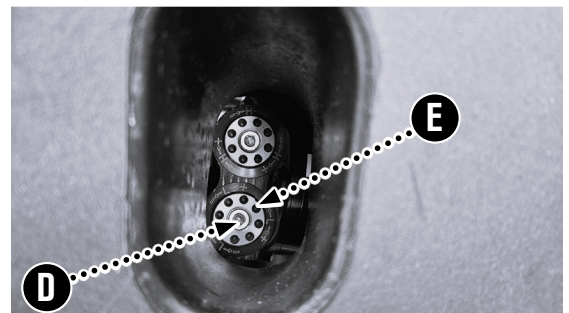
Turning clockwise increases the rebound damping; turning counterclockwise reduces the rebound damping.



Spring Preload Adjuster



High-Speed Compression Adjusting Screw



Low-Speed Compression Adjusting Screw



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

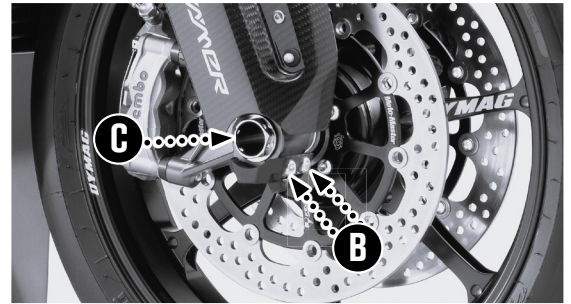
## Front Wheel Removal

1. Raise the motorcycle front and rear on lift stands [See pg. 7].
2. Remove the front fender [See pg. 15].
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. Be careful not to damage the speed sensor and sensor ring **D**.

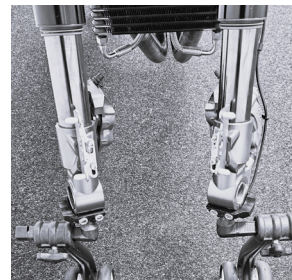
**WARNING! Danger of accidents**  
Damaged brake discs reduce braking.



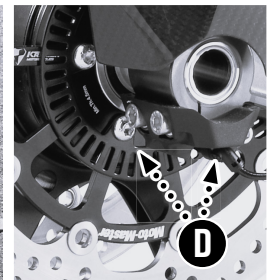
**NOTE:** Don't lay the wheel down on the brake disc as it can cause surface damage or bend the disc.



Front Wheel Axle and Pinch Bolts



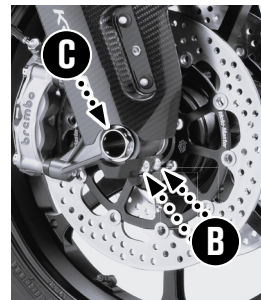
Calipers swing out for wheel removal



Speed sensor and sensor ring

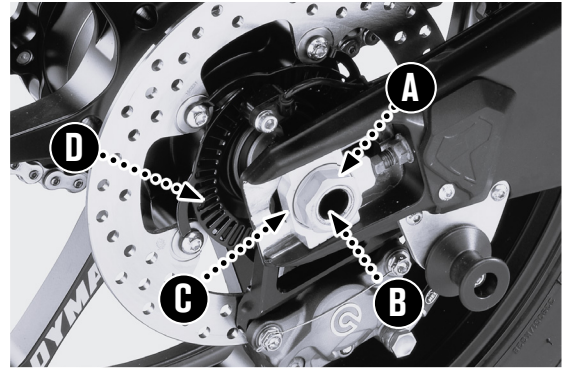
## Front Wheel Installation

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. Take care not to damage the speed sensor or sensor ring **D**. 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 to align the fork legs.
9. Tighten the fork end pinch bolts **B** – 10 Nm (7.4 lb-ft).
10. Install the front fender [See pg. 15].
11. Safety wire as necessary [See pg. 32].



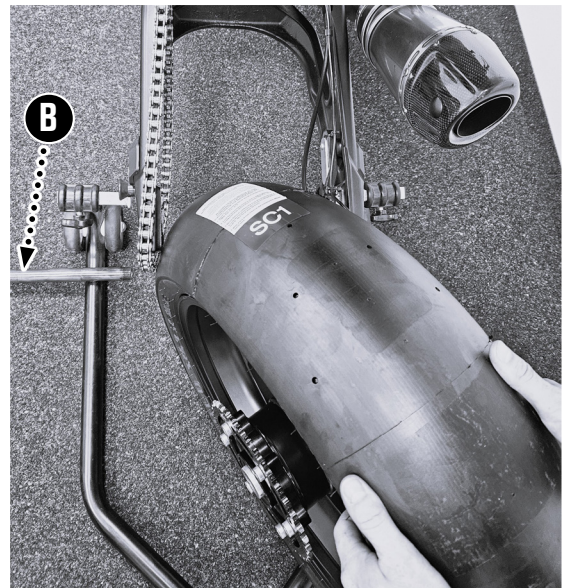
## Rear Wheel Removal

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. Also take care to not hit the speed sensor with the sensor ring **D**.



## 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. Insert the rear wheel like shown in the picture, slightly tilt it to make sure it does not damage the speed sensor or brake caliper while being 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. 10].
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 **A** to power on.

### Switching Off

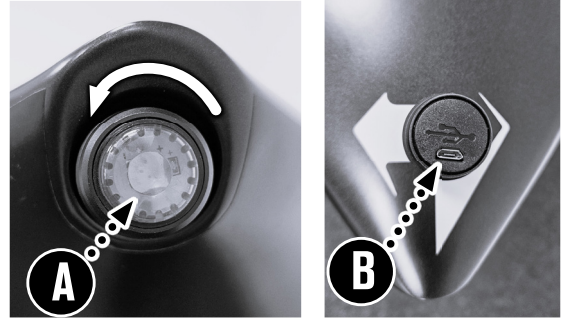
2. Press and hold the tail light lens **A** until it powers off.

### Changing Modes

3. Press the tail light lens **A** 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 **B** to charge for a couple hours. Do not overcharge.
3. Install by placing the tail light in position and rotating it clockwise.



## Fuses

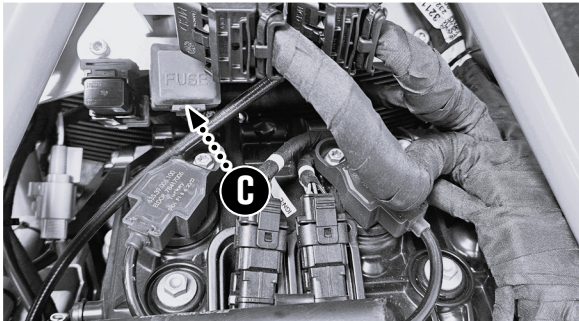
- The **Fuse Box C** is located on the left side of the motorcycle, above the battery. It contains one 10 A fuse, one 2 A fuse, two 5 A fuses plus space for two spare fuses.

**Fuse 1** - 5A DASH-ACQ

**Fuse 2** - 5A Lambda

**Fuse 3** - 2A Clamp 30 Bat. +

**Fuse 4** - 10A ECU

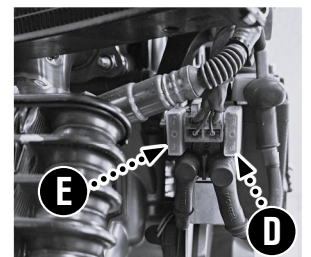
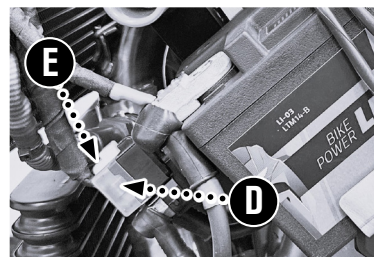


Fuse Box with Cover open

- The **30 A main fuse D** is located on the left side of the battery including a 30 A replacement fuse **E**.

### Changing fuse

1. Turn off power/ignition switch.
2. Remove the left side fairing [See pg. 15].
3. The main fuse is located under the front dust cap at **D**. A spare fuse is located under the rear dust cap at **E**.
4. Replace faulty fuse, place dust caps in place, and reinstall the left side fairing.



Main and spare fuse

## Battery

### Location

The 12 V battery is found behind the left side fairing.

### Charging

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

### BATTERY INFO

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

- Part No: 301153000
- 12.8 V / 4 Ah

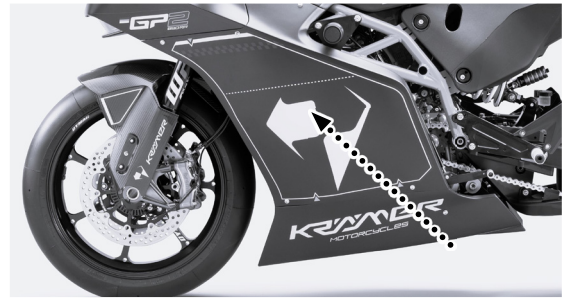
Use a proper lithium rated battery charger to ensure long life.

### Removal

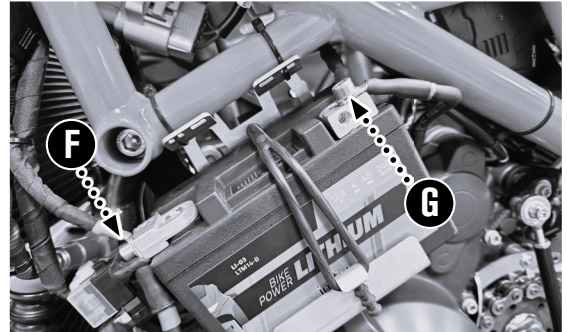
1. Turn off the Main Switch.
2. Remove the left side fairing [See pg. 15].
3. Remove screws **F** and **G**.
4. Remove the battery retainer strap.
5. Lift the battery upward and forward to remove it.

### Installation

1. Put the battery in place.
2. Remount the battery retainer strap.
3. Remount the screws **F** and **G**.
4. Remount the left side fairing.



*Battery Location*



## Wiring Diagram

Visit the link below to download the wiring diagram of the Krämer GP2-890RR.

<https://www.kraemer-motorcycles.com/assets/uploads/downloads/Wiring-Diagram-GP2-890RR-2024.pdf>

Service Schedule

	Every 5 operating hours	Every 10 operating hours	Every 15 operating hours	Every 30 operating hours	Every 60 operating hours	After every race or track day	Every 12 months
Check that the brake linings of the front brake are secured [See pg. 19].	▪	▪	▪	▪	▪	▪	▪
Check that the brake linings of the rear brake are secured [See pg. 19].	▪	▪	▪	▪	▪	▪	▪
Check the brake discs [See pg. 19].	▪	▪	▪	▪	▪	▪	▪
Check the brake lines for damage and tightness.	▪	▪	▪	▪	▪	▪	▪
Check the front brake fluid level [See pg. 19].	▪	▪					
Change the front brake fluid [See pg. 19].		▪					
Check the rear brake fluid level [See pg. 19].	▪	▪					
Change the rear brake fluid [See pg. 19].		▪					
Check the brake pressure on the front and back.	▪	▪	▪	▪	▪	▪	▪
Check the free travel of the clutch lever [See pg. 17].	▪	▪	▪	▪	▪		▪
Change the engine oil and the oil filter, clean the oil screens [See pg. 9].	▪	▪	▪	▪	▪	▪	▪
Check all hoses (e.g. fuel, cooling, bleeder, drainage hoses, etc.) and sleeves for cracking, tightness, and correct routing.	▪	▪	▪	▪	▪	▪	▪
Check the cables for damage and for routing without kinks.		▪					▪
Check the frame.	▪	▪	▪	▪	▪	▪	▪
Check the link fork.	▪	▪	▪	▪	▪	▪	▪
Check the fork bearing for play.		▪					▪
Check the heim joint for play.		▪					▪
Check the shock absorber linkage.		▪					▪
Check the steering head bearing for play [See pg. 21].	▪	▪	▪	▪	▪	▪	▪
Check the wheel bearings for play.	▪	▪	▪	▪	▪	▪	▪
Check the tire condition.	▪	▪	▪	▪	▪	▪	▪
Check the tire pressure [See pg. 6].	▪	▪	▪	▪	▪	▪	▪
Check the chain, rear sprocket, and engine sprocket.	▪	▪	▪	▪	▪	▪	▪
Check the chain tension [See pg. 10].	▪	▪	▪	▪	▪	▪	▪
Grease all moving parts (e.g. hand lever, chain, ...) and check for smooth operation.	▪	▪	▪	▪	▪	▪	▪
Check that the throttle wires are undamaged.		▪					▪
Check the valve clearance.			▪				▪
Check the clutch.		▪					▪
Change the cover seal and radial shaft seal rings of the water pump.				▪			▪
Clean the air filter and change as necessary [See pg. 11].			▪				▪
Check the fuel pressure.				▪			▪
Clean the air filter box.	▪	▪	▪	▪	▪	▪	▪
Check the safety critical screws and nuts for tightness [See pg. 32].	▪	▪	▪	▪	▪	▪	▪
Clean the dust boots of the fork legs.			▪				▪
Check the coolant level [See pg. 13].	▪	▪	▪	▪	▪	▪	▪

	Every 5 operating hours	Every 10 operating hours	Every 15 operating hours	Every 30 operating hours	Every 60 operating hours	After every race or track day	Every 12 months
Check the coolant level in the compensating tank [See pg. 13].	▪	▪	▪	▪	▪	▪	▪
Change the glass fiber yarn filling of the main silencer (approx. every 15 operating hours of if necessary) [See pg. 12].			▪				
Service the fork.				▪	▪	▪	▪
Perform the shock absorber service.				▪	▪	▪	▪
Check the fuel collecting container.	▪	▪	▪	▪	▪	▪	▪
Change the fuel filter.				▪	▪		
Perform minor engine service including removing and installing the engine. (Change the spark plugs. Change the piston, check and measure the cylinder; check the cylinder head. Change the conrod bearing, crankshaft bearing and balancer shaft bearing. 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 crankshaft bearing. Change the spark plugs. Change the clutch linings. Change the piston. Check the transmission and the shift mechanism. Change the cylinder head gasket. Change the transmission bearings in the engine case. Check the oil pressure control valve. Change the oil pumps and check the lubrication system. Change the timing chain, tensioning rail, guide rail and chain adjuster.)					▪		
Final check: Check the vehicle for operating safety and test ride.	▪	▪	▪	▪	▪	▪	▪

▪ Periodic interval

# Technical Data

## GP2 890-RR Specifications

Frame	Trellis frame of steel tubes, powder-coated
Fork	WP Suspension APEX PRO 7543 KMC Spec 1
Shock absorber	WP Suspension APEX PRO 7746
Brake system	
Front	Dual Full-Floating Rotors with Brembo Stylema Calipers
Rear	Single Full-Floating Rotor with Brembo P2 Caliper
Suspension travel	
Front	120 mm (4.72 in)
Rear	140 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	142 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.)

## Fluid Capacities

Engine oil	3.2 L (3.4 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, Air space: 240 mm Motorex Racing Fork Oil
Fuel Tank Capacity	16 L (4.2 US gal) Super unleaded (ROZ 98 / RON 98 / PON 94)

## Engine Specifications

Design	Four-Stroke, Twin-Cylinder, DOHC, 8-Valve, water- and oil-cooled
Power	138 hp (101 kW) @ 10,100 rpm
Torque	100 Nm (74 lbs-ft) @ 8,200 rpm
Displacement	889 cm <sup>3</sup> (54.25 cu in)
Stroke	68.8 mm (2.709 in)
Bore	90.7 mm (3.571 in)
Compression ratio	14.1:1
Idle speed	1,600 ± 200 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	Two-Ring Pankl Piston
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	PASC Slipper Clutch, Cable Actuated
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 Oil cooling by external oil cooler
Starting	Electric starter

## Electrical System

12 V battery	LTM14-B Maintenance-free Lithium-ion battery Battery voltage: 12.8 V Nominal capacity: 4.0 Ah
Fuses	1x 2A, 2x 5A, 1x 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	EJOTALtracs® 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	5 Nm (3.7 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	8 Nm (5.9 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	M8	15 Nm (11.1 ft-lb)*
Connecting Rod Bearing Screw	M8x0.75	1st stage 5 Nm (3.7 ft-lb) 2nd stage 20 Nm (14.8 ft-lb) 3rd stage 90° 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: Observe tightening sequence. 1st stage – 5 Nm (3.7 ft-lb) 2nd stage – 15 Nm (11.1 ft-lb) 3rd stage – 90° 4th stage – 90° Screw support greased/thread oiled
Screw Plug, Cylinder Head Oil Drain	M12x1.5	15 Nm (11.1 ft-lb)
Screw, Rotor	M12x1.5	90 Nm (66.4 ft-lb) Thread greased
Screw Plug, Water Jacket	M16x1.5	20 Nm (14.8 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	20 Nm (14.8 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 ❶	M6	10 Nm (7.4 ft-lb)*
Rear Brake Lever Screw	M6	15 Nm (11.1 lbf ft)*
Rear Brake Lever Stub Screw ❶	M6	10 Nm (7.4 ft-lb)*
Rear Brake Caliper Screw ❶	M8	20 Nm (14.8 ft-lb)**
Rear Brake Disc Screw ❶	M8	25 Nm (18.4 ft-lb)*
Fuel Pump Screw	M6	6 Nm (4.4 ft-lb)
Handlebar Stub Clamp Screw ❶	M6	10 Nm (7.4 ft-lb)
Handlebar Fork Tube Stub Clamp Screw ❶	M6	15 Nm (11.1 t-lb)
Handlebar Stub Screw Clamping Piece on Handlebar Tube Screw ❶	M8	20 Nm (14.8 ft-lb)
Shift Lever Stub Screw ❶	M6	10 Nm (7.4 ft-lb)*
Shift Rod Screw ❶	M6	12 Nm (8.9 ft-lb)*
Shift Rod Linkage Screw ❶	M6	7 Nm (5.2 ft-lb)*
Shift Rod Screw ❶	M8	20 Nm (14.8 ft-lb)*
Shift Shaft Support on Engine Screw ❶	M8	20 Nm (14.8 ft-lb)*
Steering Damper Bracket Screw ❶	M6	15 Nm (11.1 lbf 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 ❶	M8	25 Nm (18.4 ft-lb)*
Fork Stub Screw ❶	M8	15 Nm (11.1 ft-lb)
Front Brake Disc Screw ❶	M8	25 Nm (18.4 ft-lb)*
Front Brake Caliper Screw ❶	M10x1.25	45 Nm (33.2 ft-lb)**
Fuel Tank Fastening Screw ❶	M8	25 Nm (18.4 ft-lb)*
Main Silencer Clamp Screw	M8	18 Nm (13.3 ft-lb)
Steering Damper Bracket on Console Screw ❶	M8	20 Nm (14.8 ft-lb)*
Steering Damper on Triple Clamp Screw ❶	M8	20 Nm (14.8 ft-lb)*
Top Steering Stem Screw ❶	M8	20 Nm (14.8 ft-lb)
Top Triple Clamp Screw ❶	M8	15 Nm (11.1 ft-lb)
Bottom Triple Clamp Screw ❶	M8	15 Nm (11.1 ft-lb)
Banjo Bolt, Brake Line ❶	M10	25 Nm (18.4 ft-lb)
Rear Sprocket Bolt ❶	M10	50 Nm (36.9 ft-lb)*
Deflection Console on Engine Screw	M10	25 Nm (18.4 ft-lb)
Engine Brace on Engine Screw ❶	M10	30 Nm (22.1 ft-lb)*
Engine Brace on Frame Screw ❶	M10	30 Nm (22.1 ft-lb)*
Linkage Lever on Angle Lever Screw	M10	45 Nm (33.2 ft-lb)*
Bottom Shock Absorber Screw ❶	M10x1.25	45 Nm (33.2 ft-lb)*
Top Shock Absorber Screw ❶	M10x1.25	45 Nm (33.2 ft-lb)*
Tension Strut Bearing Screw ❶	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 ❶	M16x1	100 Nm (73.8 ft-lb)**
Steering Head, Top Nut	M25x1.5	15 Nm (11.1 ft-lb)
Rear Wheel Spindle Nut ❶	M25x1.5	100 Nm (73.8 ft-lb)**
Front Wheel Spindle Screw ❶	M29x1.5	60 Nm (44.3 ft-lb)**

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

\* Loctite®243™

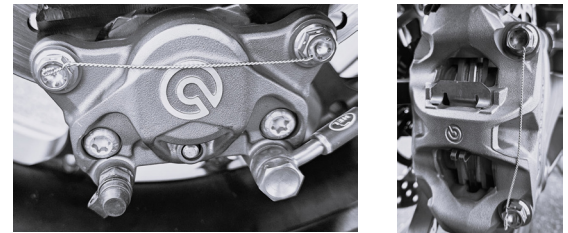
\*\* Long-life white grease

## 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 pliers, 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.



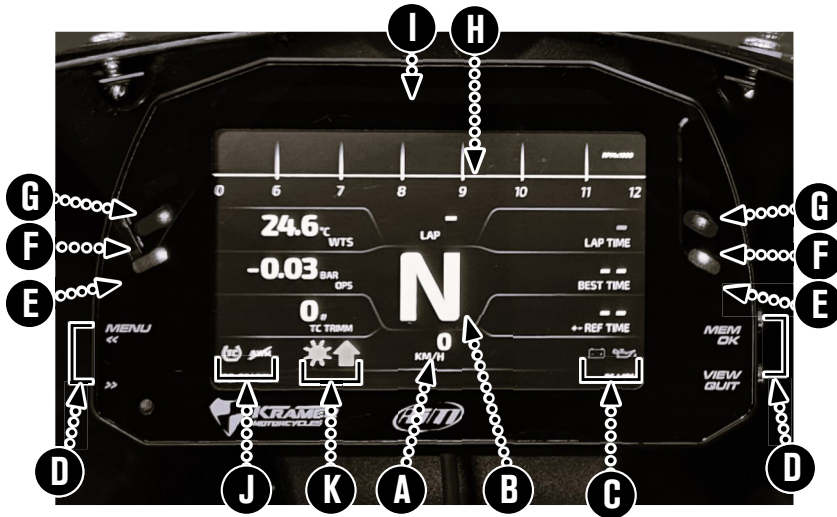
*These images show how proper safety wire is installed - in a manner that, if one bolt were to come loose, it would tighten the other, and vice versa.*



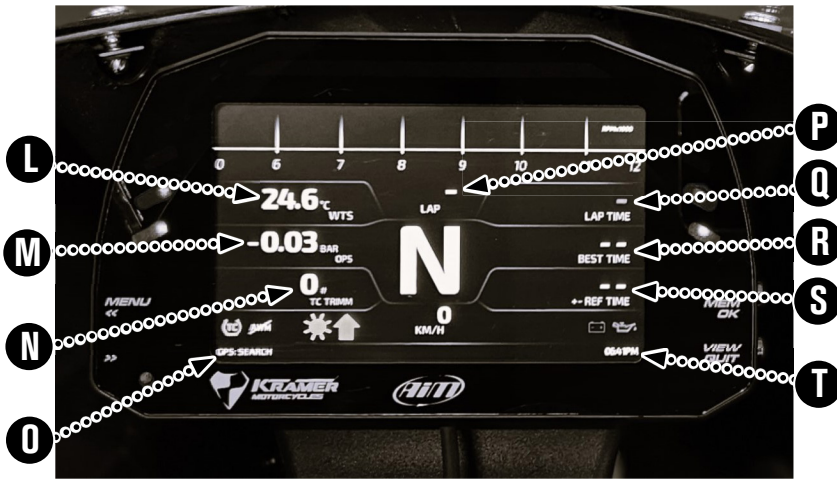
### AIM MXS 1.3 Race GPS with Data Logger

The AIM Compact 5" Color TFT dash logger has been specifically configured for the Krämer GP2-890RR motorcycle. It displays relevant data to the rider and logs data that can be retrieved and analyzed in the AIM Race Studio 3 software.

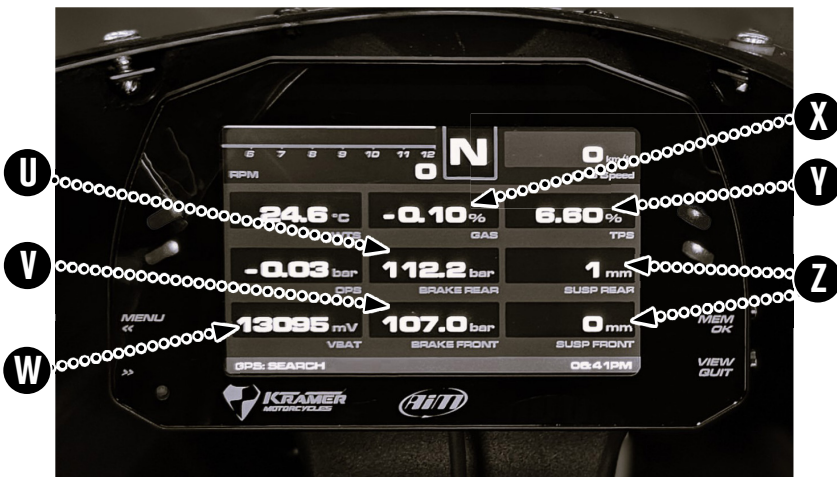
The indicator lamps offer additional information about the operating state of the motorcycle. When the ignition is switched on, all indicator lamps light up briefly.



Main Display Page



Main Display Page



Secondary Display Page

### Dash Logger Indicators Overview

#### Main Display Page

- A** GPS Indicated Speed
- B** Gear Indicator
- C** Operating status indicator lights
  - Charging
  - Oil Pressure
- D** Multi-function Menu buttons are used to enter and navigate the menu area of the dash logger.
- E** Malfunction Indicator lights up yellow if the engine indicator light is active.
- F** Oil pressure warning lights up red if the oil pressure warning lamp is active.
- G** Coolant Temperature warning lamp
  - lights up *blue* if coolant is <70°C (158°F),
  - lights up *red* if coolant is >105°C (221°F),
  - *flashes red* if coolant is >110°C (230°F).
- H** Tachometer
- I** Shift warning light
- J** Rider Aid indicators [See pg. 12]
- K** Engine Mode indicator [See pg. 12]

- L** Water Temperature
- M** Oil Pressure
- N** Traction Control Trimm
- O** GPS State
- P** Lap Number
- Q** Current Lap Time
- R** Best Lap Time
- S** Difference to best Lap Time in current lap
- T** Current time of day

#### Secondary Display Page

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

- U** Brake pressure rear
- V** Brake pressure front
- W** Battery Voltage
- X** Rider Input
- Y** Throttle Opening
- Z** Suspension travel front / rear\*
  - \* only works on bikes equipped with suspension travel sensors

## Dash Logger Menu Configuration Settings

Using the **Multi-function Menu** buttons **D**, press the MENU button to display the sub-menus 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.



[https://www.kraemer-motorcycles.com/assets/uploads/downloads/MX1.2\\_1.3\\_user\\_guide\\_104\\_eng.pdf](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).

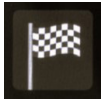
Features to set are:

- **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 1.3 is compatible with the AIM SmartyCam models.

### Lap Time Setup

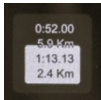


Lap Time Setup

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

The MXS 1.3 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:**

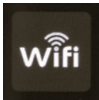
Manually select the track from the internal database. This mode is preferred when multiple track configurations are available nearby. In this case, the dash logger recognizes the racetrack but will need at least one complete track lap to synchronize.

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.

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.

## Wi-Fi Management



*Wi-Fi Management*

### 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 1.3 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:

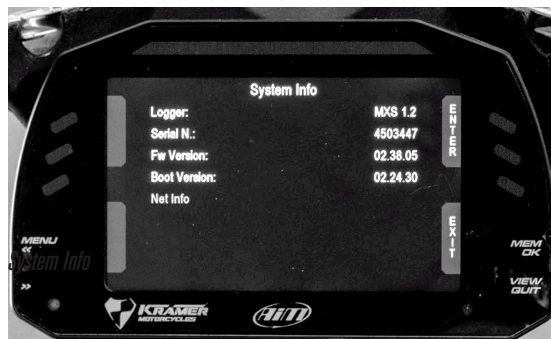
- ON
- AUTO: switches the Wi-Fi on when the vehicle is stopped and automatically switches it off when the dash logger starts recording according to the setting you performed on the "Parameters" page of Race Studio 3 software.
- OFF

**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



*System Info*

This page shows the system information of the MXS 1.3 dash logger displaying:

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

## GPS Search

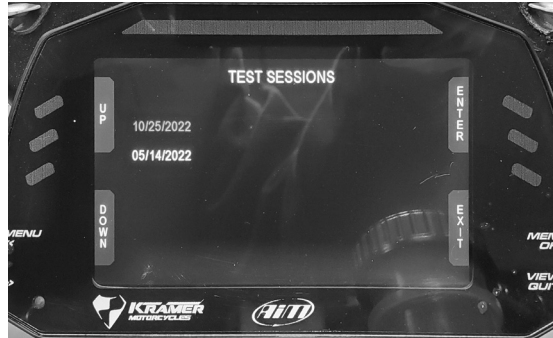


*GPS Page*

Check the connection status of GPS satellites.

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

Sampled Data Recall

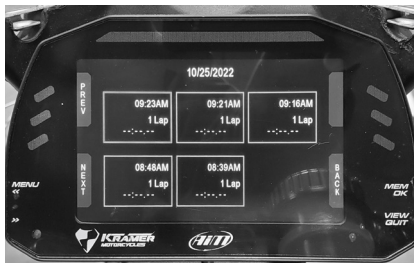


Test Sessions Summary

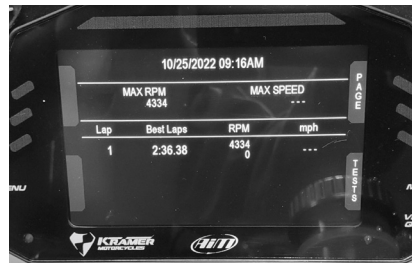
MXS 1.3 dash logger can show up to eight pages of sampled data.

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



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