



**KAWASAKI**  
MOTORCYCLES

**OWNER'S MANUAL**

**EV02-690**

**S and R MODELS**

(Model Years 2020 - 2024)



# Introduction

Dear Krämer Customer,

We would like to congratulate you on your purchase of a Krämer EVO2-690 series motorcycle – the most advanced, hand built, supermonos in the world. These motorcycles feature the trusted power of the KTM 690 LC4 power plant, a race focused chassis, fully adjustable front and rear suspension, and the best available components to create competitive light-weight and ultra-light motorcycles.

This manual will serve as a guide to keeping your EVO2-690 in race-ready shape.

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

**THIS VEHICLE IS SOLD AS IS, NO WARRANTY.**



## Krämer Motorcycles

Gewerbepark Lindach B5  
84489 Burghausen  
Germany

info@kraemer-motorcycles.com  
www.kraemer-motorcycles.com

© 2023 Krämer Motorcycles  
All rights reserved.

## About This Manual

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

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

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

This manual is for the following models:

**2020-2024 Krämer EVO2-690S**

**2020-2024 Krämer EVO2-690R**

Version: EVO2-690-2023-00

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

Dealer's Stamp

Vehicle identification number

\_\_\_\_\_

Engine number

\_\_\_\_\_

# Table of Contents

## USAGE AND SETUP

Identification / Serial Numbers	4
Reference Views of Vehicle	4
Serial Numbers	4
Operating Components	4
Control Components	5
Start Up Procedure	5
Shut Down Procedure	5
Vehicle Break-in Procedure	6
Pre-Ride Inspection	6
Post-Race Service	6
Post-Crash Inspection	6
Transporting / Loading	7
Raising the Motorcycle on Lift Stands	7
Storage	8

## MAINTENANCE / SERVICE

Service Schedule	9
Kramer Motorcycles Onlineshop	9
Checking the Engine Oil Level	9
Changing the Engine Oil & Filter, and Cleaning the Oil Screens	9
Chain Cleaning / Lubrication	10
Checking the Chain Tension	10
Adjusting the Chain Tension / Rear Axle Alignment	10
Fuel Filler Cap	11
Air Filter Servicing	11

## ENGINE

Repairs	12
Recommended Engine Maintenance	12
Hydraulic Clutch	12
Engine Map Selector Switch	12

## COOLING SYSTEM

Checking the Coolant Level	13
Draining the Coolant	13
Filling/Bleeding the Cooling System	13

## CHASSIS

Handlebar Adjustment	14
Steering Damper Setup	14
Seat/Tank Height Adjustment	14
Bodywork Removal	15
Bodywork Installation	15
Fuel Tank Draining Procedure	16
Fuel Tank Removal/Installation	16
Clutch Lever Free Play and Reach Distance	17
Front Brake Lever Response and Travel Distance	17
Rearset Setup	18
Adjusting the Foot Pegs	18
Rear Brake Lever Adjustment	18
Shift Lever Height Adjustment	18

## BRAKE SYSTEM

Brake Inspection	19
Brake Bleeding	19
Changing the Brake Pads	20

## SUSPENSION

Suspension Inspection	21
Checking the Steering Head Bearing Play	21
Adjusting the Steering Head Bearing Play	21
Steering Stem Adjustment	22
Changing the Fork Offset	22
Fork Suspension Settings EVO S	23
Adjusting Compression Damping	23
Adjusting Rebound Damping	23
Fork Settings Table EVO S	23
Fork Suspension Settings EVO R	24
Adjusting Spring Preload	24
Adjusting Compression Damping	24
Adjusting Rebound Damping	24
Fork Settings Table EVO R	24
Rear Shock Setup	25
Adjusting Spring Preload	25
Adjusting Compression Damping	25
Adjusting Rebound Damping	25
Shock Absorber Specifications	25
Swing Arm Angle/Ride Height Adjustment	26
Changing Swing Arm Pull Rod Adjustment Insert	26

## WHEELS

Front Wheel Removal	27
Front Wheel Installation	27
Rear Wheel Removal	28
Rear Wheel Installation	28

## ELECTRICAL

Fuses	29
Battery	29
Wiring Diagram	29

## TECHNICAL DATA

EVO2-690 General Specifications	31
S Model Specifications	31
R Model Specifications	31
Fluids Specifications	31
Engine Specifications	31

## TORQUE SPECIFICATIONS

Engine Torque Chart	32
Chassis Torque Chart	33
Safety Wire	33

## DASHBOARD

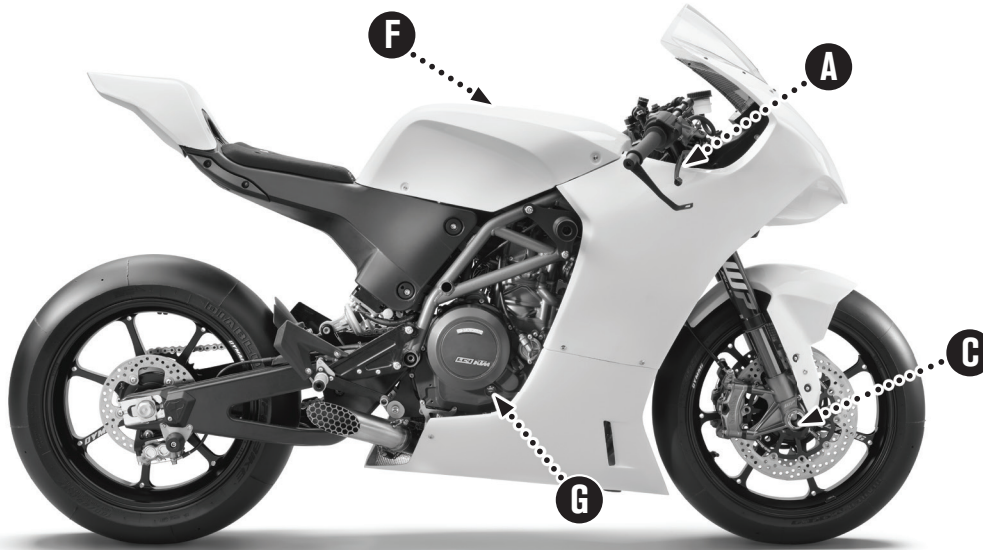
S Model: KOSO RX2N GP Style Meter	34
Setup	34
R Model: AiM MXm LCD Dash Logger	34
Setup	34

# Usage and Set Up

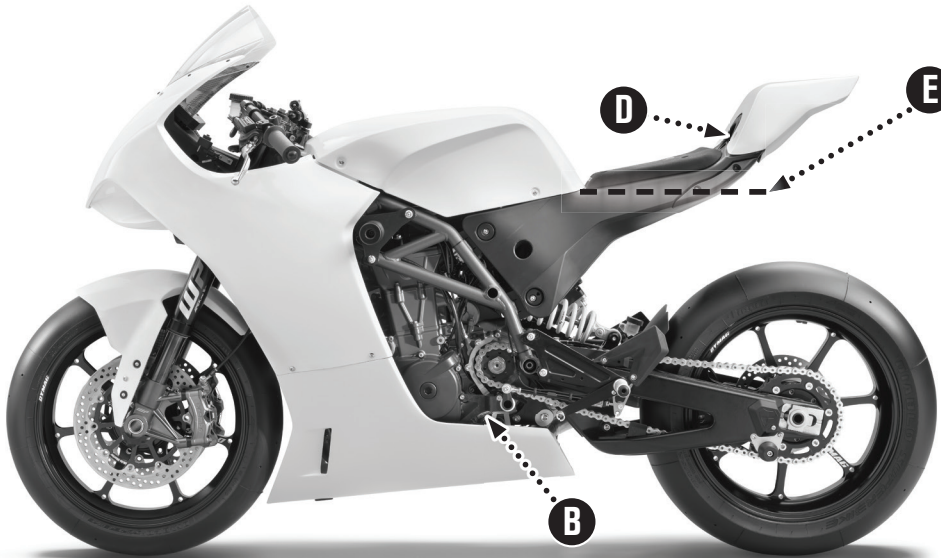
## Identification / Serial Numbers

### Reference Views of Vehicle

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



*Right Side View*



*Left Side View*

## Serial Numbers

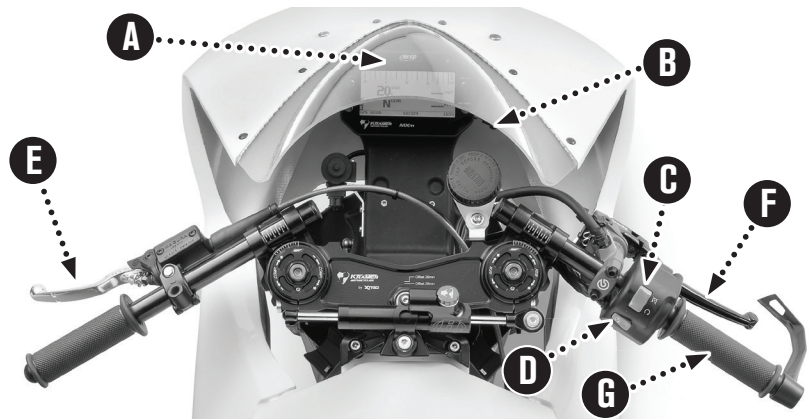
- A** Chassis S/N – R.H. side steering head.
- B** Engine S/N
- C** Fork S/N – inside the axle clamp.

## Operating Components

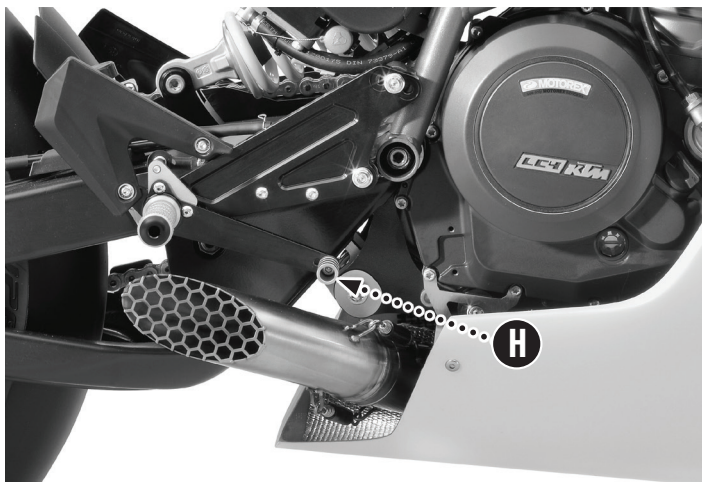
- D** Fuel Fill
- E** Recommended Fuel Fill Amount for Racing (6 L or 1.6 US gal). On translucent tanks the fuel will show at this level.
- F** Intake Cover/Air Filter Box
- G** Oil Level Check

## Control Components

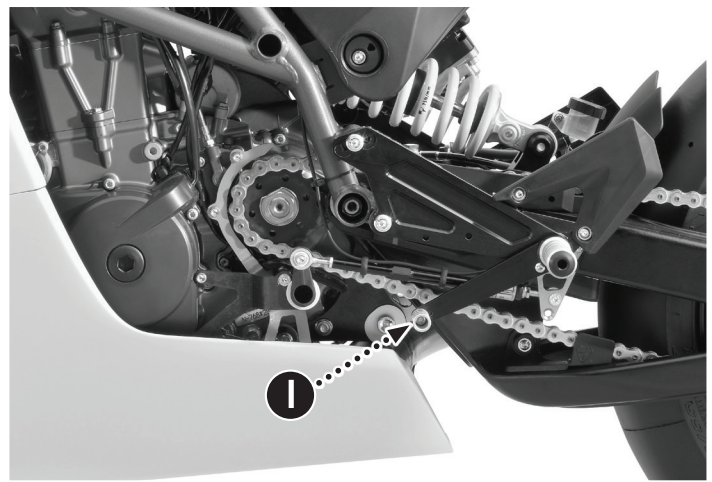
- A** KOSO RX2N (EVO S) / AiM MXm (EVO R)
- B** Main Switch
- C** Run/Stop Switch
- D** Start Button
- E** Clutch Lever
- F** Front Brake Lever
- G** Throttle
- H** Rear Brake Lever
- I** Shift Lever



Hand Controls



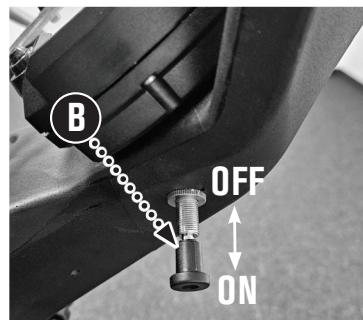
Rear Brake Lever



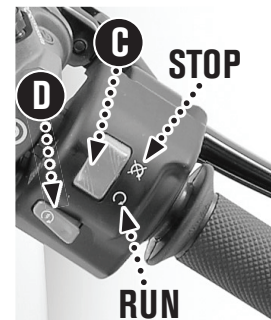
Shift Lever

## Start Up Procedure

1. Pull out main switch **B**, located on the R.H. side of dashboard, to ON position  
(Wait 5 seconds for fuel pump to pressurize)
2. Check that the Run/Stop Switch **C** is in the RUN position
3. Press START button **D**



Main Switch



## Shut Down Procedure

1. Move the Run/Stop Switch **C** to the STOP position
2. Press Main Switch **B** to OFF position

## Vehicle Break-in Procedure

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

- Screws should be checked for the correct torque [See pg. 33] 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 7500 rpm.

### After 2 hours of run time

- Change engine oil and filters.

## Pre-Ride Inspection

- **Check safety critical screws for correct torque** [See pg. 33]
- **Check engine oil level** - Oil level to be centered 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. In the compensating tank, coolant should be centered between the “minimum” and “maximum” indicators [See pg. 13].
- **Check tire pressure** - Set to 2.0 bar (29 PSI) in the front tire and 1.8 Bar (26 PSI) in the rear (on both EVO S and R Models). 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 6.0 L (1.6 US gal) per 20 minutes of riding time. On translucent tanks the level will be even with the Intake Cover/Air Filter Box mounting screw [See pg. 4]. Maximum fuel capacity is 12 L (3.17 US gal.)
- **Check the chain tension** [See pg. 10]
- **Inspect suspension components** (fork, 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.



### 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 old engine oil and oil filters [See pg. 9]
- Bleed the front brake, rear brake [See pg. 19] and the clutch [See pg. 13]
- 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 airbox and check for any blemishes/dirt within the airbox 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. Clean and lubricate the chain [See pg. 10].
7. Check the coolant level [See pg. 13].
8. 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 damages to inspect:

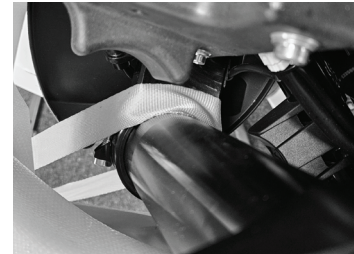
- Front forks
- Handlebars
- Crash pads
- Crash pad frame mounting plates
- Rear set
- Shift & brake linkages
- Debris trapped between the linkages

## Transporting / Loading

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

### Recommended Tie-down Points

- FRONT:** Attach 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 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 front forks partially, being careful that the forks are not compressed completely.
- REAR:** Attach tie-down strap around the 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.

### Lifting the front

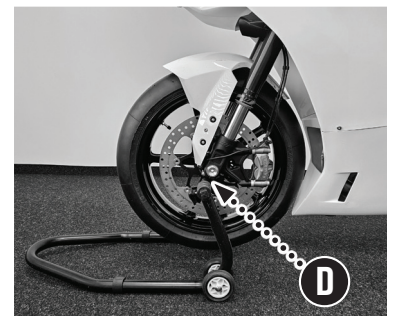
The motorcycle is equipped to lift the front with a two-pin stand and also with a head-lift stand.

#### 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 two-pin Stand



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, the oil filter and 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. 30.

## Krämer Motorcycles Onlineshop

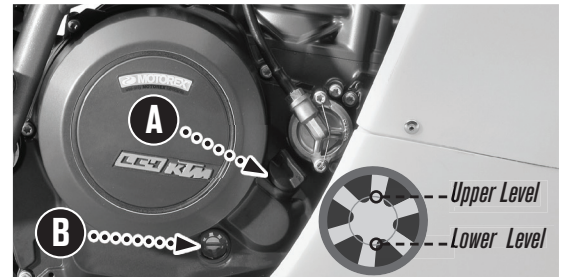
If any part of your EVO2-690 needs to be replaced because of wear or damage, spare parts can be found in the Krämer Motorcycles Onlineshop:

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

## Checking 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 up to normal operating temperature. Turn off the engine, wait one minute before checking the level.
- Check the engine oil in the site glass window **B**. The level must be between the lower and upper markings beside the window.
- If needed, add oil, at oil filler **A**, to specified level.



Oil Filler and Oil Window (R.H. side of engine)

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

### OIL DRAINING PROCEDURE

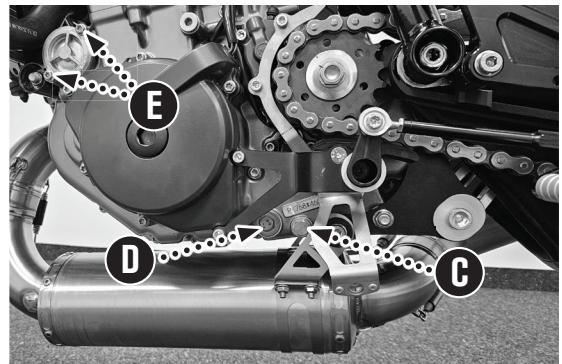
- Stand the motorcycle upright on a level surface.
- Start engine and warm up to normal operating temperature.
- Remove the safety wire from the oil drain plug **G**, oil screen 1 **D**, oil screen 2 **I** and the filler plug **G**.
- Place a drain container under the engine.
- Remove oil filler cap **A** from the clutch cover.
- Remove oil drain plug **C**.
- Completely drain the engine oil.
- Inspect the magnetic tip of the drain plug **C** for any metal shavings and thoroughly clean plug.**
- Install oil drain plug with new crush washer. Tighten to 20 Nm (14.8 lb-ft).



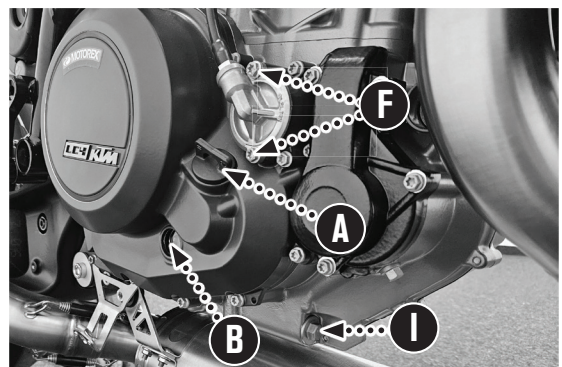
- Torque cover screws – 6 Nm (4.4 lb-ft).
- Repeat steps 10-15 for oil filter **F** on right side of engine.

### OIL SCREENS INSPECTION AND CLEANING

- On left side of engine, remove screw plug with oil screen **D**. Drain the remaining engine oil completely.
- Thoroughly clean the parts and sealing surface.
- On right side of engine remove screw plug with oil screen **I**. Completely draining the remaining engine oil.
- Thoroughly clean the parts and sealing surfaces.
- Position oil screen **D** with the O-rings on a pin wrench.
- Position the pin wrench through the drilled hole of the screw plug in the opposite section of the engine case. Push the oil screen all the way into the engine case.
- Install both oil screen plugs **D** and **I** – 15 Nm (11.1 lb-ft).
- Fill up engine oil at **G** 1.70 L. (1.8 qt.).
- Let the engine run for approx. 30 seconds, check thoroughly for leaks.
- Check engine oil level at **B** and **I**.



Oil Filter, Screen, Drain Plug (L.H. side of engine)



Oil Filter, Filler Plug, Screen, Oil Level Window (R.H. side of engine)

### OIL FILTER CHANGING PROCEDURE

- On left side of engine, remove the screws from the oil filter cover **E**, remove cover with the O-ring.
- Pull out filter.
- Thoroughly clean parts and sealing surface.
- Insert the new oil filter.
- Coat O-ring with oil, position oil filter cover in place, reinstall cover screws.



**Safety wire oil drain plug **G**, oil screen 1 **D**, oil screen 2 **I**, oil filter cover **E**, oil filter cover **F** and filler plug **A** [See pg. 33]**

## Chain Cleaning / Lubrication

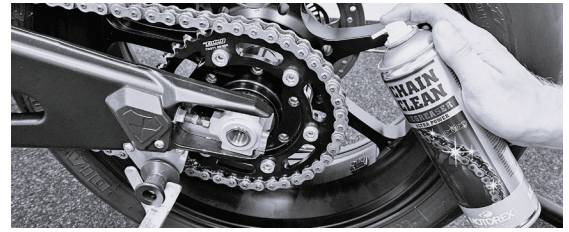
1. Raise the rear of the motorcycle on a lift stand [See pg. 7].
2. Check that the shift lever is in neutral.
3. Spray chain cleaner on the chain while turning the rear tire. Rotate the wheel until the entire chain is sprayed with the cleaner.
4. Let the cleaner soak for approximately 5 minutes.
5. Remove 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].



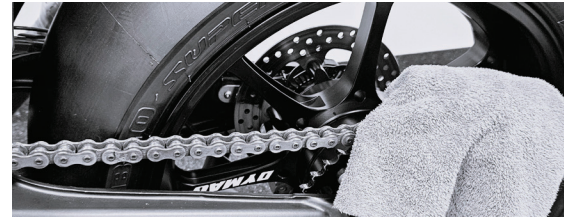
### CAUTION!

#### Pinch Hazard

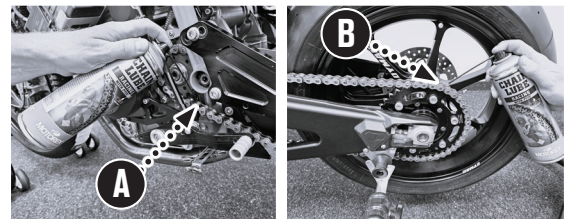
Be careful not to pinch fingers between chain and sprockets.



Spray Chain Cleaner



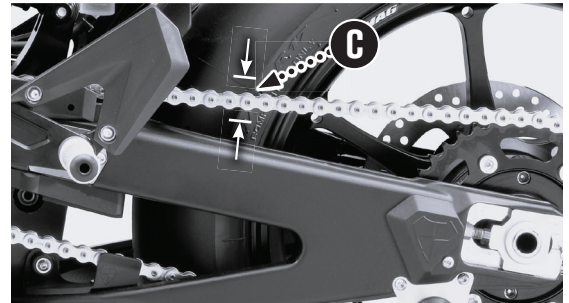
Wipe Cleaner Dry



Spray Chain Lubricant

## Checking the Chain Tension

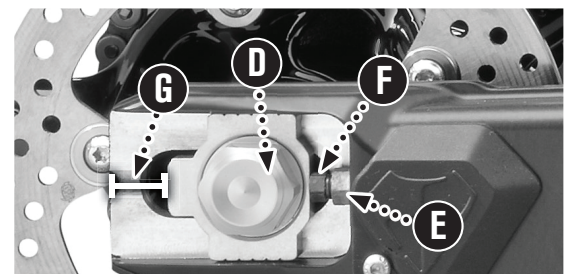
1. Raise the rear of the motorcycle on a lift stand [See pg. 7].
2. Check that the shift lever is in neutral position.
3. Rotate the wheel and measure at the chain mid-point between sprockets at various points of the chain. The specified vertical chain tension **C** is 40-45 mm (1.57-1.77 in). If the chain tension varies strongly at several points, the chain should be replaced.



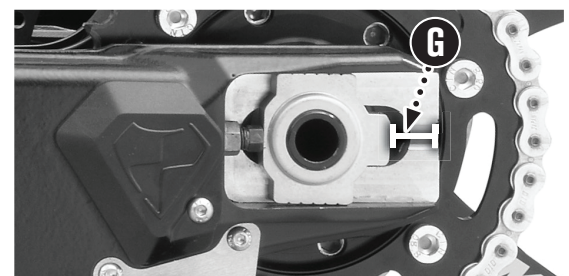
Chain tension measurement

## 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 **E** on the adjuster screws on both sides of the swingarm.
4. Loosen axle nut **D**.
5. Turn the adjuster screw **F** until the vertical chain tension **C** is 40-45 mm (1.57-1.77 in). Measure at the chain mid-point.
6. On both sides, measure and compare the distance **G** 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 **E**.
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 – 90 Nm (66.4 ft-lb).



Right side of swingarm



Left side of swingarm

## Fuel Filler Cap

### Open Fuel Filler Cap

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

### Close Fuel Filler Cap

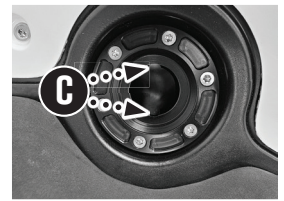
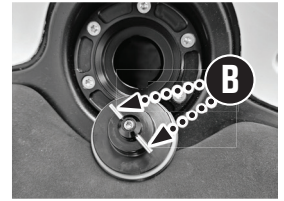
1. Line up the cap retainer pins **B** with slots **C** in the filler neck.
2. Rotate clockwise approximately 1/4 turn until it clicks.



**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



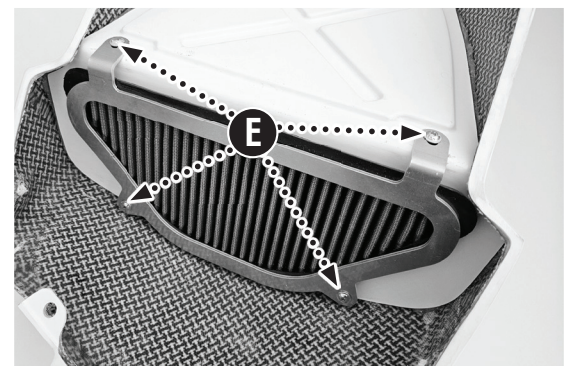
## Air Filter

The filter element is an reusable, high flow cotton air filter, which is designed to be cleaned and reinstalled.

### Removal

1. Remove Intake Cover/Air Filter Box from motorcycle (see "Bodywork Removal" on page 15).
2. Inspect the air box seal **D** for any looseness or damages. Replace it if necessary.
3. Remove the 4 screws **E** on the aluminum air filter retainer.
4. Remove air filter and inspect, replace the air filter, if damaged.
5. Clean and oil filter element following directions of a reusable air filter service kit. Utilizing the DNA Air Filter Service Kit is recommended.

Part Number in the KMC Onlineshop: 101201000



# 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. 30

### Check Valve Clearance

- After first run (200 km) and then every 1.000 km.

### Piston/Cylinder Service

- Recommended Piston and cylinder replacement 5.000 km or 50 h

### 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: 100501001S

## Hydraulic Clutch

### Checking Fluid Level

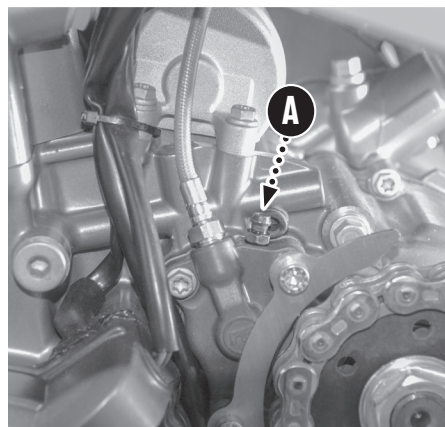
1. Move the clutch fluid reservoir to a horizontal position.
2. Check that the fluid level is between the MIN and MAX markings. Add DOT 5.1 Motorex Racing Brake Fluid to the clutch master cylinder reservoir to MAX level.



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

### Bleeding Slave Cylinder

3. Use standard manual or vacuum bleeding procedures to bleed the hydraulic clutch.
4. The bleeder screw **A** is located on the slave cylinder on the left side of the engine.



## Engine Map Selector Switch

(All R models. Optional on S models)

The map selection switch **A** is located on the Multifunction speedometer console.

It allows the rider to choose the injection mapping most suitable to his/her preference and to the circuit conditions.

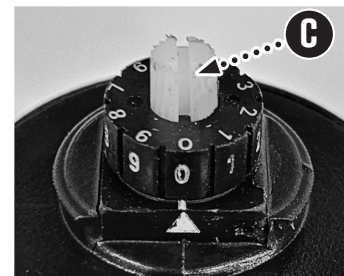
1. Peel back rubber cover **B** on map selector switch.
2. Rotate map switch **C** to select desired map.

Map 0	95 ROZ [pump gas 91/93 oct. (R+M/2) ] engine brake +
-------	---

Map 1	95 ROZ [pump gas 91/93 oct. (R+M/2) ] engine brake -
-------	---

Map 2	100 ROZ [gasoline > 100 oct. (R+M/2) ] engine brake +
-------	--

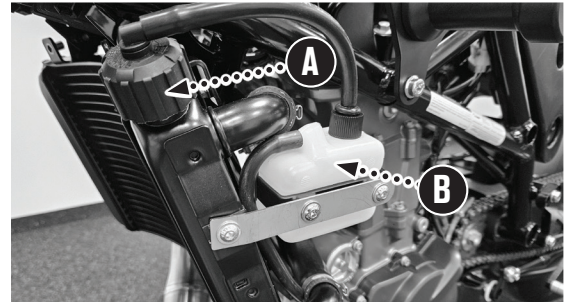
Map 3	100 ROZ [gasoline > 100 oct. (R+M/2) ] engine brake -
-------	--



# Cooling System

## Checking the Coolant Level

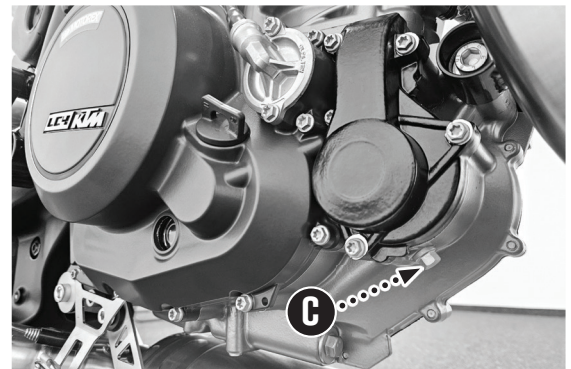
1. With the engine cold, position the motorcycle on a level surface.
2. Remove the front fairing [See pg. 15].
3. Check coolant level of the radiator. Remove radiator cap **A**. Coolant should be visible at the bottom of the radiator fill fitting.
4. Reinstall the radiator cap.
5. Check coolant level in the compensating tank **B**. Coolant should be centered between the "minimum" and "maximum" indicators.
6. If level is too low, add coolant.



Radiator Cap and Coolant Compensating Tank

## Draining the Coolant

1. With the engine cold, position the motorcycle on a level surface.
2. Remove the front 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 screw **C** with a new seal ring – 15 Nm (11.11 ft-lb).
7. Install the radiator cap.



Coolant Drain Plug

## Filling/Bleeding the Cooling System

1. With the engine cold, remove 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. Check the coolant level.
6. Start and run engine to operating temperature. Turn off engine.
7. When engine is cool, check coolant level in compensating tank and radiator. Add coolant if necessary.

# Chassis

## Handlebar Adjustment

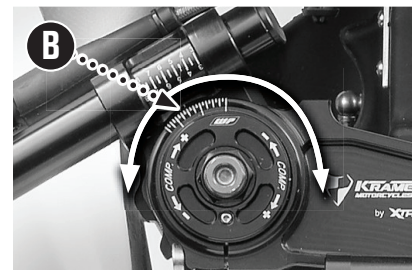
The position of the handlebars is adjustable in both height and angle. Please note that the right and the left handlebar sides mirror each other, and neither should be at a different angle or height.

### Height and Angle Adjustment

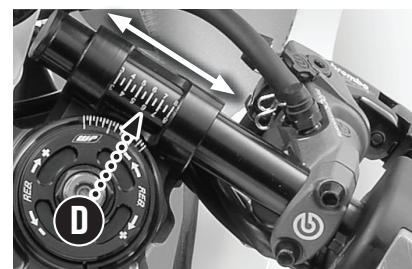
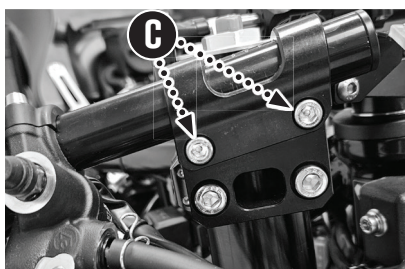
1. Loosen the clamping screws **A** of the clip-ons on both sides.
2. Adjust the height of the handlebars by sliding them up or down on the fork tube. Adjust the angle by rotating around the fork tube. Use the angle marks **B** to ensure that both sides are equal.
3. Swing handlebars from lock to lock, 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



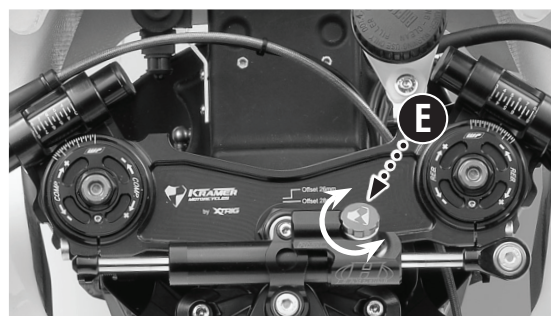
Handlebar Width Adjustment

## Steering Damper Setup

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

### Adjust Damper Firmness

1. Rotate the knob **E** counter-clockwise to decrease the firmness. Rotate the knob clockwise to increase the firmness.



Steering Damper Adjustment 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 thread lock, reinsert and tighten to the appropriate torque – 30 Nm (22.1 ft-lb).
5. Remove the left mounting screw, apply thread lock, reinsert and tighten to the appropriate torque – 30 Nm (22.1 ft-lb).



Eccentric Tank Mounts

## Body Work Removal

Remove the body work pieces in the order of appearance.

### Remove Tail Cap

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

### Remove Intake Cover/Air Filter Box

4. Remove the two screws **E** at the rear of each side.
5. Remove the two 1/4-turn fasteners **F** on each side.
6. Carefully lift Intake Cover/Air Filter Box rearward and up.

### Remove Lower Fairing

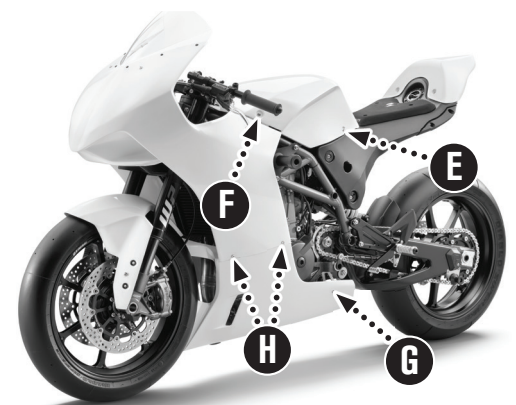
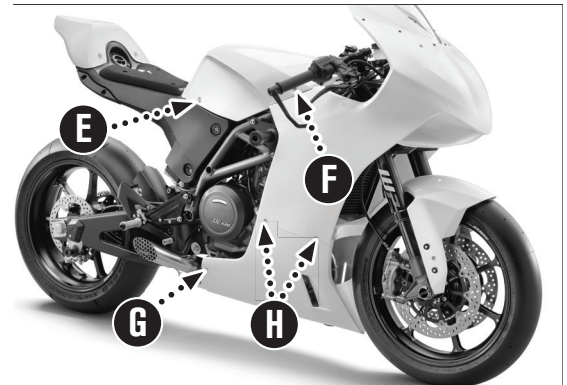
7. Remove the two 1/4-turn fasteners **G** on each side.
8. Remove the four 1/4-turn fasteners **H** on each side.
9. Carefully remove lower fairing.

### Remove Upper Fairing

10. Remove two 1/4-turn fasteners **I** under the windshield.
11. NOTE: If Intake Cover/Air Filter Box is not removed, then remove the two 1/4-turn fasteners **F** on each side.
12. Remove upper fairing by pulling forward, carefully maneuvering around the forks.



Intake Cover/Air Filter Box



Upper and Lower Fairing Fastener Locations

## Body Work Installation

Install body work in the order of appearance.

### Install Upper Fairing

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

### Install Lower Fairing

3. Carefully install lower fairing.
4. Install the four 1/4-turn fasteners **H** – two on each side.
5. Install the two 1/4-turn fasteners **G** – one on each side.

### Install Intake Cover/Air Filter Box

6. Position in place the Intake Cover/Air Filter Box.
7. Finger tighten the two screws **E** at the rear of each side.
8. Install the two 1/4-turn fasteners **F** on each side.
9. Install the two screws **D** holding the steering damper mount – 6-9 Nm (50-80 in-lb).
10. Torque the two screws **E** at the rear of each side – 6-9 Nm (50-80 in-lb).

### Install Tail Cap

11. Slide tail cap in position.
12. Install two screws **J** under the tail cap – 6-9 Nm (50-80 in-lb).
13. Install two screws **K** on top of the tail cap – 6-9 Nm (50-80 in-lb).



Tail Cap Fastener Locations

## Fuel Tank Draining Procedure



### CAUTION! Fire Hazard

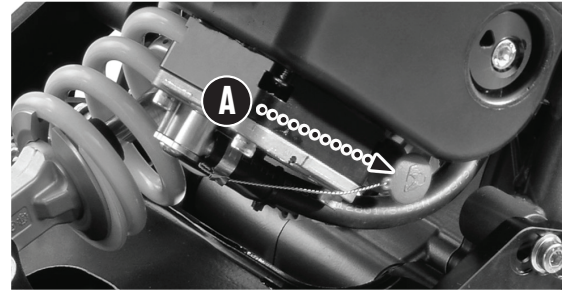
Drain the fuel in a well-ventilated area without any open flame or sparks.

Have a fire extinguisher nearby.

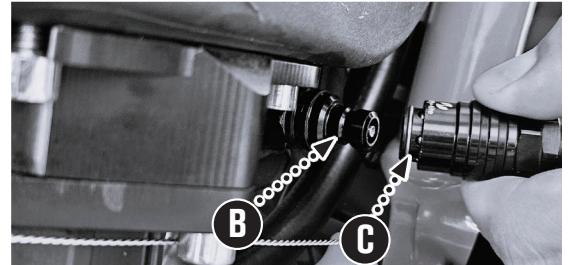
Drain and store fuel in an approved fuel container.

**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

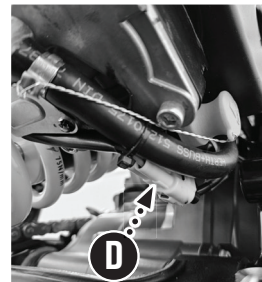
### Removal

1. Make sure that the main switch is in OFF position.
2. Remove the air box cover [See pg. 15].
3. Unplug the fuel pump electrical connector **D**.
4. Remove fuel rail connector **E** 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 – 10 Nm (7.4 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 **D**.
11. Install fuel rail connector **E**, with blue thread lock\*, on the injector – 6 Nm (?? ft-lb).

\* Loctite® 243™



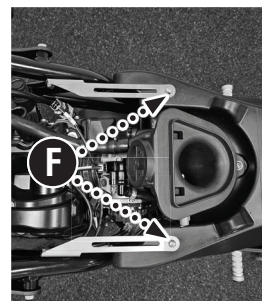
Fuel Pump Connector



Fuel Pump Connector (unplugged)



Fuel Rail Connector Screw



Fuel Tank Support Bracket Screws



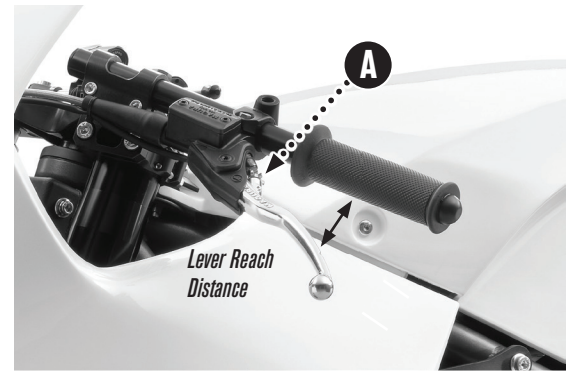
Fuel Tank Mounting Screws



## Clutch Lever Reach Distance

### Adjusting Clutch Lever Reach Distance

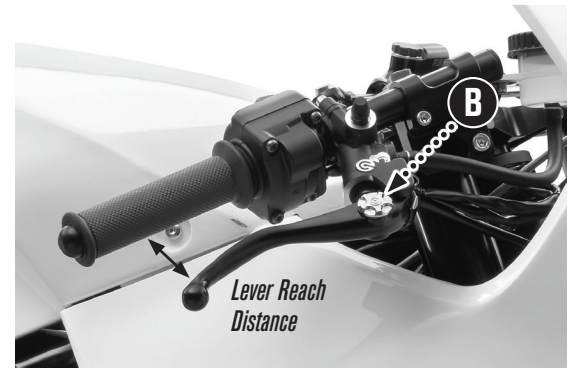
1. Position the handlebar straight ahead.
2. Turn the adjustment knob **A** to achieve the proper lever distance from the handlebar to reach the lever comfortably and ensure proper clutch engagement.



## Front Brake Reach Distance (S Model only)

### Adjusting Front Brake Lever Reach Distance

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



Front Braking Lever Reach Distance Adjusting Knobs

## Front Brake Lever Response and Reach Distance (R Model only)

### Adjusting Front Braking Response

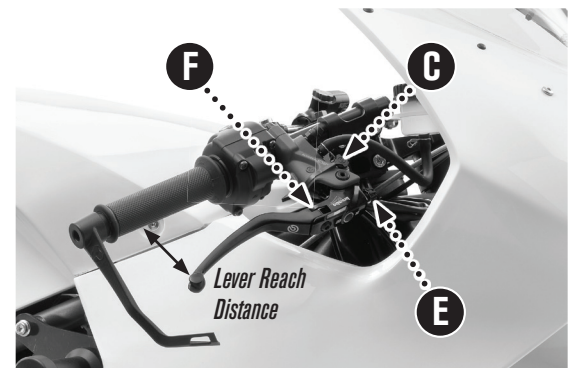
1. Use the adjustment knob **C** to set desired brake response behavior.
  - N = Soft, liner braking
  - S = Sporty braking
  - R = Hard, direct braking

### Adjusting Front Brake Lever Braking Ratio

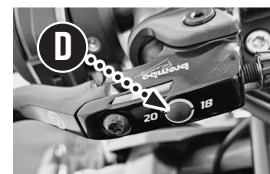
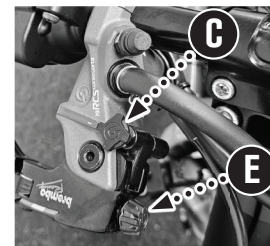
1. Remove the protection cap **D**.
2. Turn the setting screw to the desired braking ratio.
  - 18 = Longer brake lever travel, soft response, and less lever force. Red indicator visible **F**.
  - 20 = Less brake lever travel, hard response, and more lever force. Black indicator visible.
3. Replace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

### Adjusting Front Brake Lever Reach Distance

1. Position the handlebar straight ahead.
2. Turn the adjustment knob **E** 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

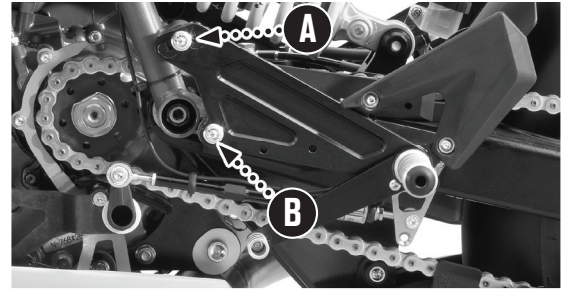
## Rear Set Setup

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

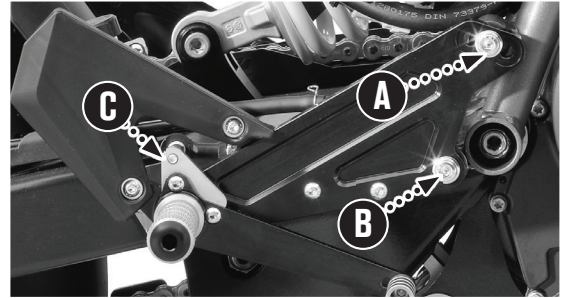
### Adjusting the foot pegs (left and right)

1. Loosen the bottom screw **B** of the foot peg carrier.
2. Loosen the top screw **A** of the foot peg carrier, so the carrier can move freely.

3. Position the carrier to the desired location.
4. Tighten the top screw **A** to the appropriate torque – 25 Nm (18.4 ft-lb).
5. Tighten the bottom screw **B** to the appropriate torque – 25 Nm (18.4 ft-lb).
6. Adjust the position of the shift and brake levers [See below].



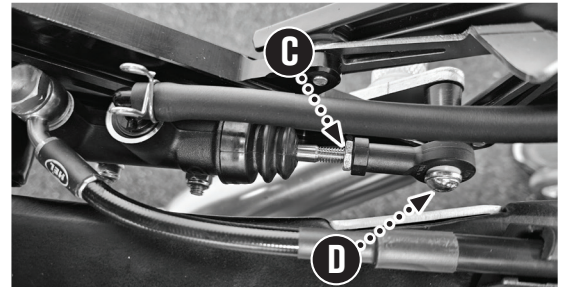
Rear Set Adjustment – L.H. Side



Rear Set Adjustment – R.H. Side

## Brake Lever Adjustment

1. Remove the connecting screw **C** of the brake rod, pay attention not to lose the spacer between the rod end bearing and brake lever.
2. Loosen the brake rod jam nut **D**.
3. Adjust the length of the brake rod by screwing the rod end bearing in or out of the brake rod, until brake lever is in desired position.
4. Tighten the jam nut **D**.
5. Re-attach the connecting screw **C** and the spacer between the brake lever and the rod end bearing. Tighten to appropriate torque – 10 Nm (7.4 ft-lb).



Brake Lever Adjustment – R.H. Side

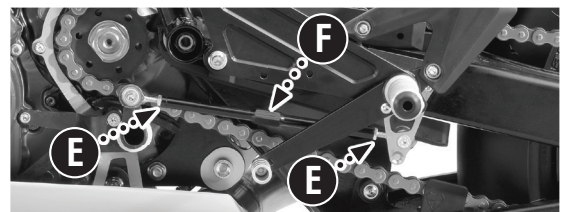
## Shift Lever Height Adjustment

**Non-Quickshift Lever (EVO S)** is adjusted by adjusting the shift rod's length.

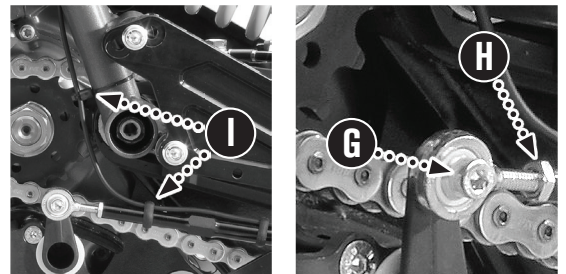
1. Hold the shift shaft **F** in place with wrench and loosen the jam nuts **E** with a second wrench.
2. Adjust the length of the shift shaft by rotating the shaft.
3. Adjust until shift lever is to desired position
4. Tighten jam nuts **E**.

**Quickshift Lever (EVO R)** is adjusted by adjusting the front rod end bearing.

1. Remove screw **G** holding the rod end bearing.
2. Loosen jam nut **H**.
3. Rotate the rod end bearing until shift lever is to desired position.
4. Tighten jam nut **H**.
5. Install screw **G** and tighten to appropriate torque – 10 Nm (7.4 ft-lb).
6. Inspect that the quickshift cable is properly secured **I** away from the chain.



Non-Quickshift Lever Adjustment (S Model)



Quickshift Lever Adjustment (R Model)

**! POTENTIAL QUICKSHIFTER DAMAGE – DO NOT** tighten rear rod end bearing shaft into quickshift sensor.

Loosening jam nut and turning rear rod end bearing too deep into sensor can damage sensor internal components.



# Brake System

## Brake Inspection

### Brake Pads

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

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

#### Wear Limit

**Front ≥ 4.5 mm (≥ 0.18 in)**

**Rear ≥ 3.5 mm (≥ 0.13 in)**

If the brake disk thickness is less than the specified value change the brake disks.

### Brake Lines and Master Cylinders

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

### Brake Fluid Level

1. Position brake fluid reservoir to a horizontal position.
2. Check that the fluid level is between the MIN and MAX markings. Add DOT 5.1 brake fluid to the MAX level.

### 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 disk. The braking effect is greatly reduced and the brake disks are rendered unserviceable.

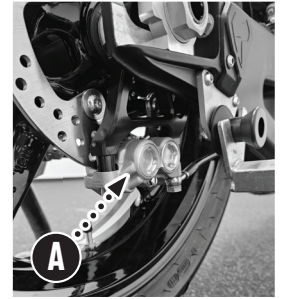


**USE ONLY Motorex Racing Brake Fluid**

from a new closed container



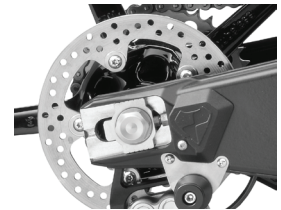
Front Brake Caliper



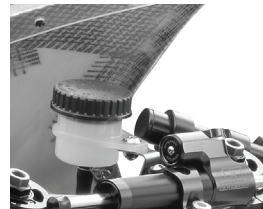
Rear Brake Caliper



Front Brake Disc



Rear Brake Disc



Front Fluid Reservoir



Rear Fluid Reservoir

## Brake Bleeding

### Bleeding Front Brake Calipers

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

#### NOTES:

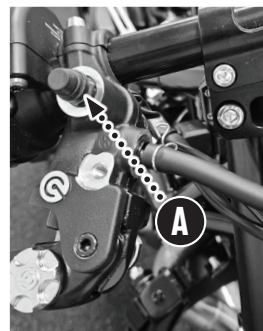
- Bleed brake lever at bleed screw **A**.
- Bleed each caliper individually used bleed screw **B**.

### Bleeding Rear Brake Caliper

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

#### SPECIAL NOTES:

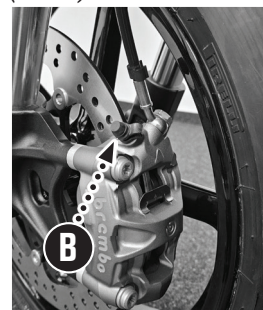
1. Loosen screws **C** to remove rear brake caliper, invert with bleed screw **D** facing up.
2. Raise caliper to a position the bleed screw higher than the master cylinder.
3. Place a 6 mm Allen wrench between brake pads to simulate the brake disk.
4. Bleed caliper using standard procedure.
5. Remove Allen wrench and install caliper back on motorcycle.



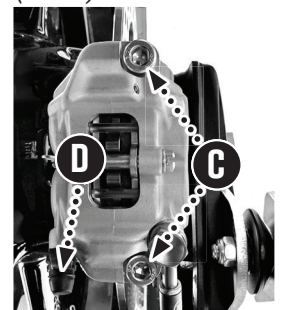
Front Brake Lever Bleed Screw (S Model)



Front Brake Lever Bleed Screw (R Model)



Front Brake Calipers Bleed Screw



Rear Brake Caliper

## Changing the Brake Pads

### 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.

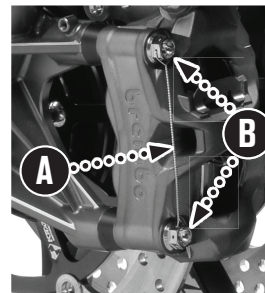
### Front Brake Calipers (S and R Model)

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. ?.
14. If needed, fill the brake fluid level to the MAX line, secure the cap, and remount the brake reservoir.

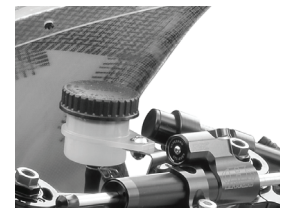
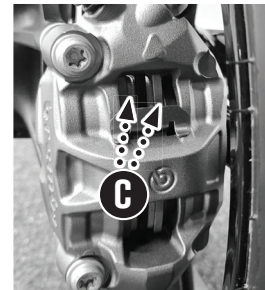
\* *Loctite® 243™*    \*\* *White lithium grease*



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



Front Brake Calipers



Front Brake Reservoir

### Rear Brake Caliper

1. Position the motorcycle on a rear lift stand.
2. Remove mounting bolts **D**.
3. Remove brake reservoir cap and membrane.
4. 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.
5. Remove the retaining clip **F**.
6. Remove pin **G**.
7. Remove brake pads **E** and retaining springs.
8. Clean the brake caliper.
9. Install the new brake pads with retaining springs.
10. Replace pin **G** and retaining clip **F**.
11. Position the caliper, apply white grease\*\*, install mounting bolts **D**, and tighten to the appropriate torque – 20 Nm (14.8 ft-lb).
12. Press the brake pedal until brake pads contact the brake disc and there is firm resistance on the pedal.
13. If needed, refill brake fluid level to the MAX line.

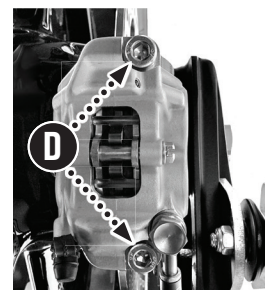
\* *Loctite® 243™*    \*\* *White lithium grease*



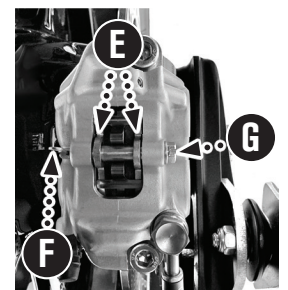
**USE ONLY Motorex Racing Brake Fluid**  
from a new closed container



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 their specified torque [See Chassis Torque Chart on pg. 33].

### Rear Suspension

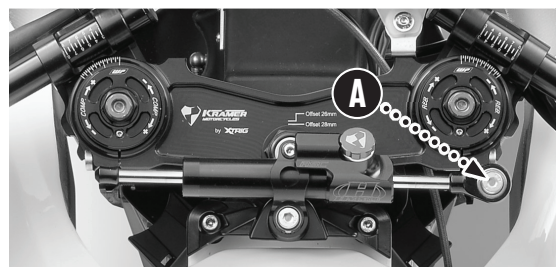
1. Check the full action of the shock absorber by compressing it several times.
2. Inspect the entire shock absorber assembly for leaks, damage or loose parts and fasteners.
3. Replace or repair any damaged components.
4. Tighten nuts and bolts to their specified torque [See Chassis Torque Chart on pg. 33].

### Swingarm

1. Raise 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

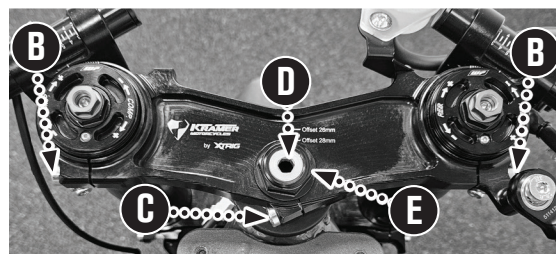
1. Raise the motorcycle under the frame, lifting the front wheel off the ground.
2. Remove the front fairing [See pg. 15].
3. Unbolt steering damper from the top triple clamp **A**.
4. Position the handlebars in the straight-ahead position.
5. Grab the lower fork legs, and push and pull in a forward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

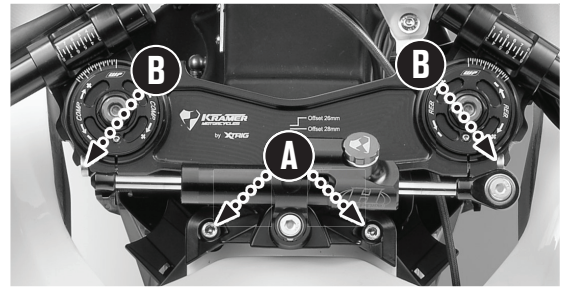
1. Position the motorcycle on a rear lift stand.
2. Remove the front fairing [See pg. 15].
3. Unbolt steering damper from the top triple clamp **A**.
4. Loosen the top clamp bolts **B**.
5. Remove the top yoke bolt **C**.
6. Loosen the counter screw **D** and the steering stem adjusting nut **E**.
7. 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

## Steering Stem Adjustment

1. Raise up the motorcycle under the frame, lifting the front wheel off the ground.
2. Unbolt steering damper screws **A**.
3. Temporarily disconnect damper mount from frame.
4. Loosen top clamp screws **B**.
5. Loosen the top yoke screw **C**.
6. Loosen the counter screw **E**.
7. Tighten steering stem adjusting nut **D** to 20 Nm (14.8 lb-ft). Check for smooth bearing operation with no free play.
8. Turn the counter screw **E** in the adjusting nut **D** and tighten to 10 Nm (7.4 ft-lb).
9. Tighten top clamp screws **B** - 15 Nm (11.1 ft-lb).
10. Tighten the top yoke screw **C** - 20 Nm (14.8 ft-lb).
11. Install steering damper on frame, securing with damper screws **A** - 17 Nm (12.5 ft-lb).

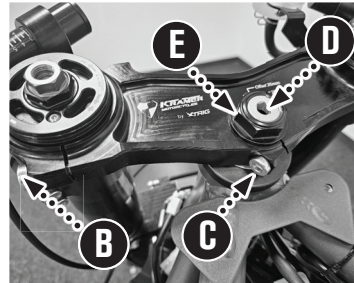


Steering Damper and Top Clamp Screws

## Changing the Fork Offset

1. Raise up 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 **F** (two on each side).
5. Loosen the two top clamp screws **B**.
6. Loosen the top yoke screw **C**.
7. Remove the splash guard **G** by unbolting the screws **H** at the bottom of the stem.
8. Remove screw **I** including the lift stand pin bracket.
9. Remove the screws **K** on the lower triple clamp.
10. Separate the lower triple clamp from the conical shaft tube by temporarily installing the screw **I** into the hole **J**. Slowly tighten the screw **I**, pushing down the lower triple clamp.
11. Push the lower triple clamp down approx. 22 mm (0.86 in), making sure the fork is not compressed in this state.
12. Turn the adjusting nut **E** 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 **D** has not loosened during the offset adjustment.
13. Remove the screw **I** from the hole **J** and push up the lower triple clamp to the original position. Apply blue thread lock\*, install the two screws **K** back in their original holes, and tighten - 20 Nm (14.8 ft-lb).
14. Apply blue thread lock\*, install the screw **I** including the lift stand pin bracket - 10 Nm (7.4 ft-lb).
15. Apply blue thread lock\*, install the splash guard **G** with screws **H** - 10 Nm (7.4 ft-lb).
16. Tighten the four bottom clamp screws **F** - 15 Nm (11.1 ft-lb).
17. Tighten the two top clamp screws **B** - 15 Nm (11.1 ft-lb).
18. Tighten the top yoke screw **C** - 20 Nm (14.8 ft-lb).
19. Install steering damper bracket. Apply blue thread lock\* and tighten screws **A** - 10 Nm (7.4 ft-lb).
20. Install steering damper to top triple clamp. Apply blue thread lock\*, torque screw **B** - 20 Nm (14.8 ft-lb).
21. Check the steering head bearing clearance and readjust if necessary.

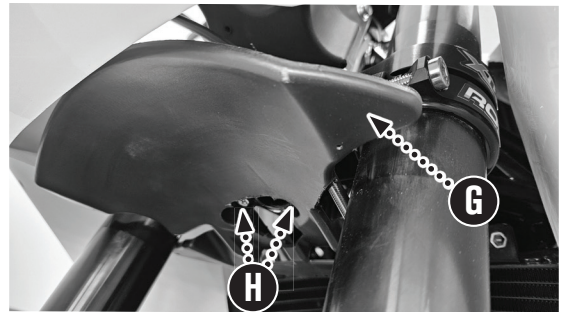
\* Loctite®243™



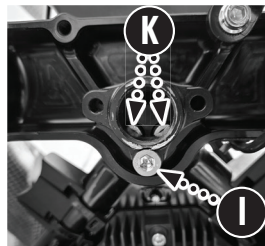
Top Yoke Screw and Stem Adjusting Nut



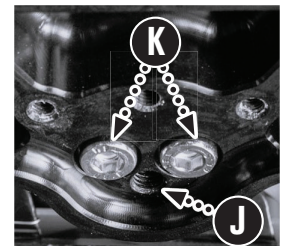
Bottom Clamp Screws



Splash Guard and Bottom Stem Screws



Lift Stand Pin Bracket



## Fork Suspension Settings (S Model only)

### Adjusting Compression Damping

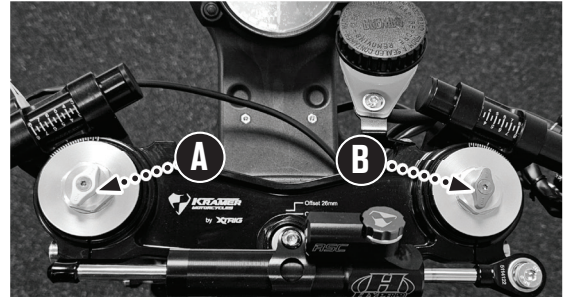
**Compression damping:** It controls the rate of suspension compression.

1. On the top of the left fork tube, the adjuster **A** can be turned to the desired setting.
2. **Zeroing:** Turn the adjuster as far as possible in a counterclockwise direction.
3. Turn the adjuster as many clicks as necessary counter-clockwise.
4. **Default settings:** 15 Clicks.

### Adjusting Rebound Damping

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

1. On the top of the right fork tube, the adjuster **B** can be turned to the desired setting.
2. **Zeroing:** Turn the adjuster as far as possible in a counterclockwise direction.
3. Turn the adjuster as many clicks as necessary counter-clockwise.
4. **Default settings:** 15 Clicks.



*Spring Compression and Rebound Damping*

## Fork Settings Table Evo S (WP APEX 3343 KMC Spec 1)

	Wet	Standard	Race Dry
Compression Damping (clicks open)	18	15	12
Rebound Damping (clicks open)	18	15	15
Front Fork Length	735 mm (28.94 in)		
Spring length with preload spacer(s)	260 mm (10.24 in)		
Spring Rate (Rider Weight)			
65-75 kg (143-165 lb.)	7.5 N/mm (48.5 lb/in)		
75-85 kg (165-187 lb.)	8.0 N/mm (51 lb/in) Standard		
85-95 kg (187-209 lb.)	8.5 N/mm (54.2 lb/in)		

## Fork Suspension Settings (R Model only)

### 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.

Turning clockwise increases the preload; turning counterclockwise decreases the 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.

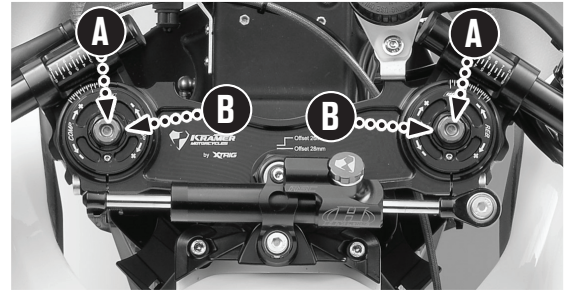
Turning clockwise increases the compression damping; turning counterclockwise decreases the compression damping.

### Adjusting Rebound Damping

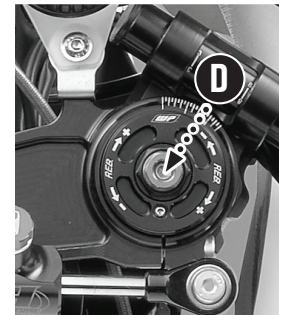
**Rebound damping:** It controls the rate of suspension extension after compression, known as rebound.

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.

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



Fork Spring Preload



Compression Damping (left fork)

Rebound Damping (right fork)

## Fork Settings Table Evo R (WP Suspension APEX PRO 7543)

	Wet	Standard	Race Dry
Spring Preload (clicks clockwise)	16	18	22
Compression Damping (clicks open)	20	16	12
Rebound Damping (clicks open)	18	16	12

Front Fork Length 735 mm (28.94 in)

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) Standard

75-85 kg (165-187 lb.) 9 N/mm (51 lb/in)

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)



## Rear Shock Setup

### 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. Raise rear of motorcycle, lifting the rear wheel off the ground.
2. Unbolt and remove rear shock from motorcycle.
3. Loosen safety screw **B**, on preload adjuster ring **A** two turns, but do not remove.
4. Turn the adjuster ring counter-clockwise until the spring is relieved of tension.
5. **Zeroing:** Snug adjuster ring to spring.
6. Measure distance from ring surface to an edge on shock. Add desired preload distance to this reference measurement (RF) to get total distance to set adjuster ring. [ex. RF=30 mm Preload=5 mm then 30+5=35 mm total distance.]
7. Turn the adjuster ring in a clockwise direction, until you reach the desired preload on the spring.
8. **Default settings:** 5 mm.
9. Tighten the safety screw **B** in the preload adjuster ring - 5 Nm (3.64 ft-lb).
10. Install rear shock.

### 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.

1. Access to compression dampening screw is through the hole in the fuel tank **D** on left-hand side of motorcycle.

#### Compression damping Low Speed:

2. On top of the shock, turn brass screw **E** to desired setting.
3. **Zeroing:** Turn the screw clockwise up to the last perceptible click.
4. Turn the screw counter-clockwise as many clicks as necessary.
5. **Default settings:** 15 Clicks.

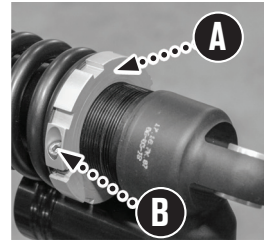
#### Compression damping High Speed:

6. On top of the shock, turn hex screw **F** to desired setting.
7. **Zeroing:** Turn the screw clockwise up to the last perceptible click.
8. Turn the screw counter-clockwise as many complete revolutions as necessary.
9. **Default settings:** 2.5 Revolutions.

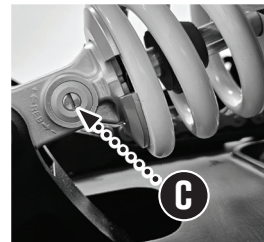
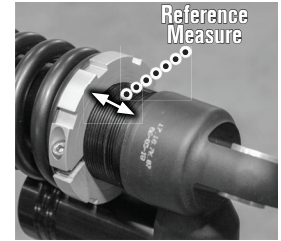
### Adjusting Rebound Damping

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

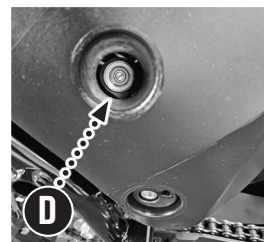
10. On bottom of the shock, turn brass screw **C** to desired setting.
11. **Zeroing:** Turn the screw clockwise up to the last perceptible click.
12. Turn the screw as many clicks as necessary counter-clockwise.
13. **Default settings:** 15 clicks.



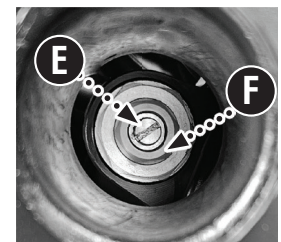
Spring Preload Ring



Rebound Damping Adjuster Screw



Compression Damping Adjuster Screw (Low and High Speed)



## Shock Settings Table (WP Monoshock)

	Wet	Standard	Race Dry
Compression Damping Low Speed (clicks open)	20	15	15
Compression Damping High Speed (turns open)	3	2.5	1.5
Rebound Damping (clicks open)	20	15	15
Spring Preload	5 mm	5 mm	5 mm

Shock Length . . . . . 290 mm Oil Type . . . . . 50180751  
 Stroke . . . . . 63 mm Oil Viscosity . . . . . SAE 2.5

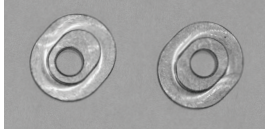
Spring	Riders Weight	Spring Rate	Spring Length
Soft	65 - 75 kg	70	150 mm
Standard	75 - 85 kg	75	150 mm
Hard	85 - 95 kg	80	150 mm

## Swingarm Angle / Ride Height Adjustment

The swingarm angle influences the general balance, the ride height and weight distribution of the motorcycle.

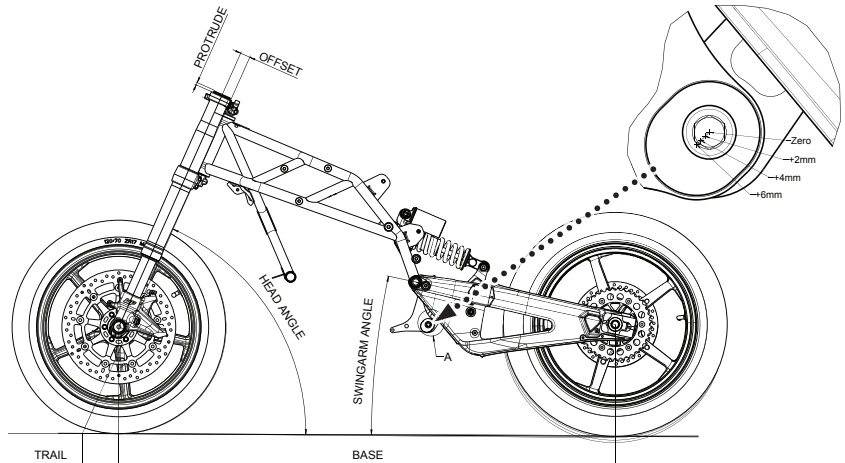
Four settings are available from 0-6 mm. The setting is determined by the position of 2 different adjustment inserts on the swingarm pull rod axle.

- Insert part #100423002 offsets 0 and 6 mm
- Insert part #100423003 offsets 2 and 4 mm



Left: 0 and 6 mm insert  
Right: 2 and 4 mm insert

Utilize the **Chassis Geometry** chart to calculate which adjustment insert and offset attains your desired chassis setup determined by the triple clamp offset of 26 mm or 28 mm.

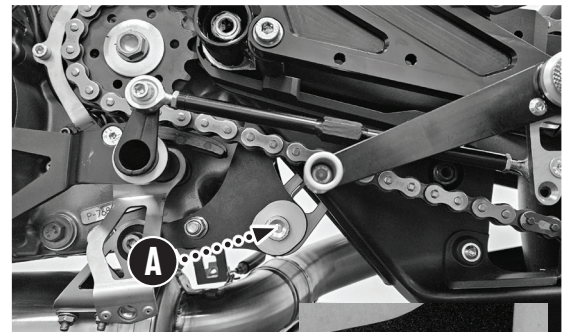


Chassis Geometry HKR Evo2							
Offset 28mm - Protrude 7mm	Position Pull Rod Axle						
	0	Δ	2	Δ	4	Δ	6
Base [mm]	1395.34	-1.52	1393.82	-1.55	1392.27	-1.60	1390.67
Trail [mm]	101.68	-1.68	100.00	-1.67	98.33	-1.67	96.66
SteeringHead [°]	66.20	0.28	66.48	0.28	66.76	0.28	67.04
SwingArm [°]	11.80	0.42	12.22	0.41	12.63	0.42	13.05
Offset 26mm - Protrude 7mm	Position Pull Rod Axle						
	0	Δ	2	Δ	4	Δ	6
Base [mm]	1393.52	-1.51	1392.01	-1.56	1390.45	-1.61	1388.84
Trail [mm]	104.07	-1.69	102.38	-1.68	100.70	-1.67	99.03
SteeringHead [°]	66.17	0.27	66.44	0.28	66.72	0.29	67.01
SwingArm [°]	11.83	0.42	12.25	0.41	12.66	0.42	13.08

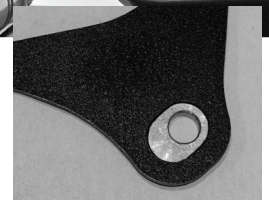
## Changing Swingarm Pull Rod Adjustment Insert

- Raise the rear of the motorcycle on foot peg mounted stands.
- Remove pull rod bolts **A** on each side.
- Remove existing adjustment insert.
- Install adjustment insert in desired position.
- Install and tighten pull rod bolts - 45 Nm (33.2 lb-ft).
- Lower motorcycle off stands.

Ensure that inserts on each side are installed in the same position.



Pull Rod Bolt Location



Suspension linkage plate with pull rod adjustment insert

# Wheels

## Front Wheel Removal

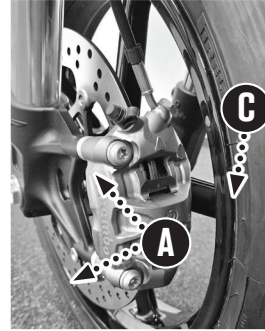
1. Raise motorcycle front and rear on lift stands [See pg. 7].
2. Remove the safety wire from screws **A**, afterwards remove them from (both) brake calipers.
3. Unscrew axle nut **C** about six turns and press your hand on the nut to push the wheel spindle out of the axle clamp. Remove axle nut **C**.
4. Holding the front wheel, withdraw the wheel spindle. Take the front wheel out of the fork.
5. Remove the two axle spacers.

**NOTE: S models have one brake caliper, R models are equipped with two brake calipers.**

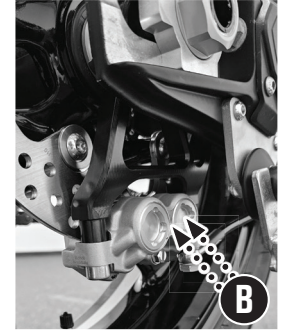
3. Remove the calipers from the brake disk. Support so the caliper is not hanging by the brake lines.
4. Loosen the pinch bolts **B**.

**NOTE: On S models keep track of the loose spacer on both sides of the wheel.**

**NOTE: The R model Dymag wheels have captive spacers.**



*Brake Caliper Screws and Front Wheel Axle*



*Front Axle Pinch Bolts*

## Front Wheel Installation

1. Clean and grease the shaft seals and mating surfaces of the spacer.
2. Insert the wide spacer on the left-hand side (when looking in the direction of travel).
3. Clean axle and axle bolt.
4. Apply thin film of grease on the axle for ease of installation.
5. Lift the rim into position and insert the axle through the forks and the rim.
6. Screw the axle bolt into place and tighten – 45 Nm (33.2 lb-ft).
7. Tighten the left side fork end pinch bolts – 15 Nm (11.1 lb-ft).
8. Position the brake calipers and check that the brake linings are seated correctly.
9. Mount bolts on both brake calipers but do not tighten yet.
10. Operate the hand brake lever repeatedly until the brake lining presses up against the brake disk and there is a pressure point. Strap the hand brake lever in the activated position. (Aligns the brake calipers to disk.)
11. Tighten screws **A** on (both) brake calipers – 45 Nm (33.2 lb-ft).
12. Release the strap holding the hand brake lever.
13. Lower motorcycle off lift stands.
14. Pull the front brake and compress the fork powerfully a few times to align the fork legs.
15. Tighten right side fork end pinch bolts **B** – 15 Nm (11.1 lb-ft).

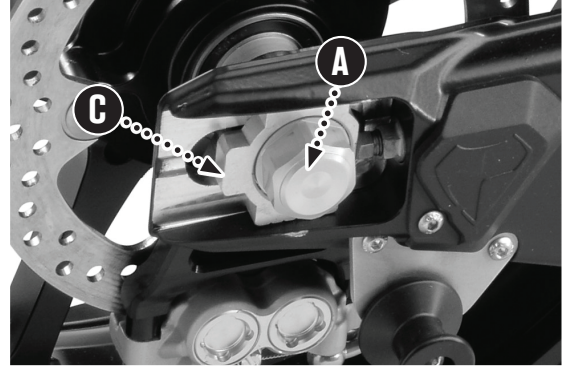
▪ Safety wire as necessary [See pg. 33].

## Rear Wheel Removal

1. Raise motorcycle front and rear on lift stands. [See pg. 7]
2. Remove the axle nut **A** and 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 forwards in the swingarm to remove the chain from the sprocket.
6. Lift the rim until the brake disk is no longer between the caliper.
7. Tilt the tire slightly to insure it does not hit the caliper when removing it.

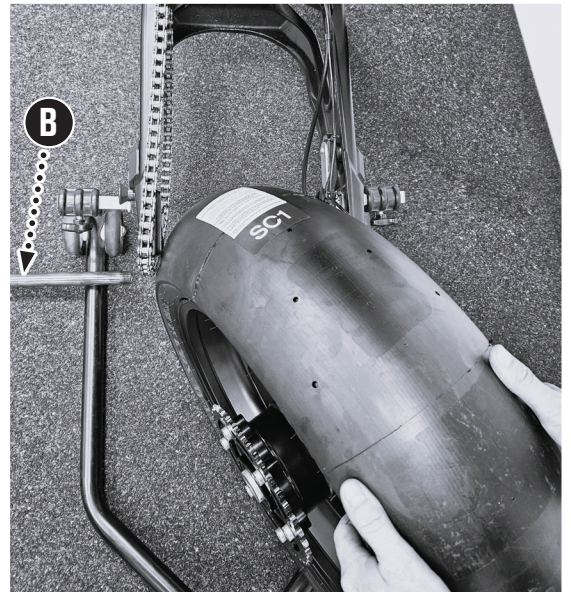
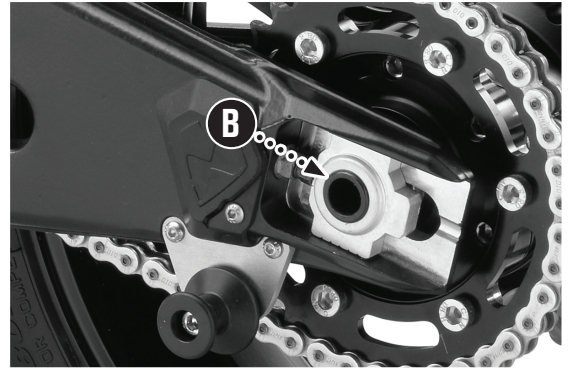
**NOTE: On S models keep track of the loose spacer on both sides of the wheel.**

**NOTE: The R model Dymag wheels have captive spacers.**



## Rear Wheel Installation

1. Clean and grease the shaft seals and mating surfaces of the spacer.
  2. Insert the spacer on the left-hand side of the vehicle.
- NOTE: S models have loose axle spacers. The R model Dymag wheels have captive spacers.**
3. Clean and grease the thread of the wheel spindle and nut.
  4. Clean the mating surfaces of the brake caliper support and swingarm.
  5. Slightly tilt the rear tire to ensure it does not knock or damage the brake caliper when inserted into the swingarm.
  6. Straighten the rim and lower until the brake disk is inside the caliper.
  7. The rim does not have to be supported, as it is resting on the brake caliper.
  8. Move the rim forwards and place a part of the chain on top of the sprocket.
  9. Turn the tire backwards until the chain is mounted back on the sprocket correctly.
  10. Pull the tire back until it is realigned with the chain adjusters.
  11. Insert the axle **B** from the left.
  12. Attach the right adjuster block **C** and the axle nut **A** (loosely tightened).
  13. Push the tire forward until the adjuster blocks are touching the adjuster screws.
  14. Check the chain tension and adjust it if necessary [See pg. 10].
  15. Tighten the axle nut – 90 Nm (66.4 lb-ft).
  16. Activate the rear brake several times to insure there are no faults in the system.



# Electrical

## Fuses

- **Fuse Box **B**** is located on the right side of the motorcycle under the Intake Cover/Air Filter Box **A**. It contains two plugges in 10 A fuses and two spare 10 A fuses.
- **The 30 A main fuse **G**** is on the starter solenoid located behind the right side of the steering head. A spare fuse **H** is placed right next to it.



Intake Cover / Air Filter Box

## Battery

### Location

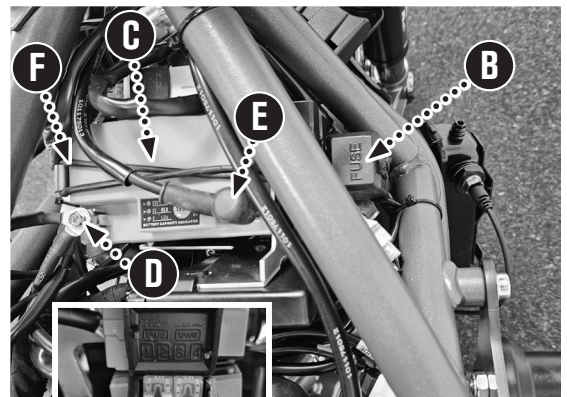
The 12 volt battery **C** is found under the Intake Cover/Air Filter Box **A** behind the steering head.

### Charging

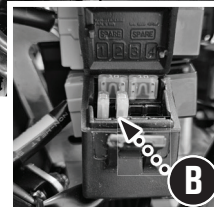
Use a proper lithium rated battery charger. (Optimate 12.8/13.4 0.8 A charger is recommended.)

### Removal/Installation

1. Remove Intake Cover/Air Filter Box [See pg. 15].
2. Detach negative cable **D**.
3. Detach positive cable **E**.
4. Remove rubber retaining strap **F**.
5. Lift battery out.
6. Install in reverse order.



Fuse Box / Battery

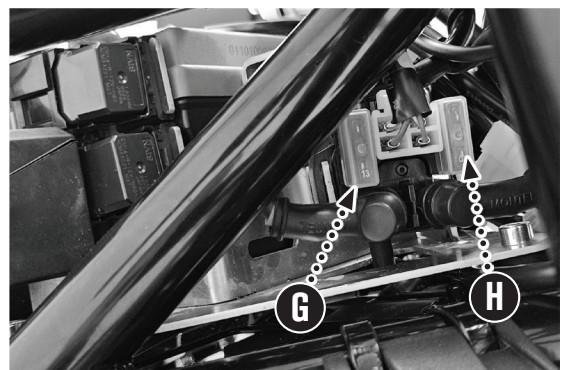


### BATTERY INFO

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

- Part No: 101153000
- 12V / 2.4 Ah

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



Main Fuse on Starter Solenoid

## Wiring Diagram

Visit the link below to download the wiring diagram of the Krämer EVO 690 S and R models.

<https://www.kraemer-motorcycles.com/assets/uploads/downloads/2020-2024-EVO2-690-Wiring-Diagram.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 fluid level of the hydraulic clutch [See pg. 12].	▪	▪	▪	▪	▪	▪	▪
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 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 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. 33].	▪	▪	▪	▪	▪	▪	▪
Check the coolant level [See pg. 13].	▪	▪	▪	▪	▪	▪	▪
Check the coolant level in the compensating tank [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
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

## EVO 690 General Specifications

Weight*	125 Kg (276 lbs)
Weight balance	Front: 55% Rear: 45%
Frame	Trellis frame of steel tubes, powder-coated
Shock absorber	WP Monoshock
Rear Brake	Rotor: Ø 220 mm MotoMaster Caliper: 1x Formula 4-piston

\*including all fluids, except fuel.

## S Model Specifications

Rims	Aluminum cast 3.5"x17" & 5.0"x17"
Tires	Bridgestone Battlax Racing V02 Front: 120/70 R17 Rear: 165/630 R17
Fork	WP APEX 3343 KMC Spec 1
Front Brake	Rotor: 1x Ø 320 mm Brembo semi floating Caliper: 1x Brembo M50 4-piston
Dashboard	KOSO RX2N GP style meter

## R Model Specifications

Rims	Dymag UP7X Aluminium forged 3.5"x17" & 5.5"x17"
Tires	Pirelli Diablo Superbike SC1 Slicks Front: 120/70 R17 Rear: 180/55 R17
Fork	WP Suspension APEX PRO 7543
Front Brake	Rotors: 2x Ø 290 mm MotoMaster fully floating Calipers: 2x Brembo Stylema 4-piston Master Cylinder: Brembo RCS Corsa Corta 19
Dashboard	AiM MXm LCD Dash Logger
Shifting	Quickshifter included
Screws	Safety Wiring included

## Fluids Specifications

Engine oil	1.70 L (1.8 qt) SAE 10W/60
Coolant	1.20 L (1.27 qt) Motul MoCool
Brake Fluid	Motorex Racing Brake Fluid
Fork Oil	SAE 4, Volume: 500 ml, Air space: 110 mm Motorex Racing Fork Oil
Fuel Tank Capacity	12 L (3.17 US gal)

## Engine Specifications

Design	1-cylinder 4-stroke engine, water-cooled
Power	80 hp (59.7 kW)
Torque	74 Nm (54.6 lbs-ft)
Displacement	692.7 cm <sup>3</sup> (42.271 cu in)
Stroke	80 mm (3.15 in)
Bore	105 mm (4.13 in)
Compression ratio	12.7:1
Exhaust	Stainless steel/titan underfloor system
Control	OHC, intake with cam levers, exhaust controlled by rocker arm, chain drive
Valve diameter, intake	42 mm (1.65 in)
Valve diameter, exhaust	34 mm (1.43 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)	0.22 – 0.27 mm (0.0087 – 0.0106 in)
Crankshaft bearing	2 roller bearings
Connecting rod bearing	Slide bearing
Piston pin bearing	Piston pin with DLC coating
Pistons	Forged light alloy
Piston rings	1 compression ring, 1 lower compression ring, 1 oil ring with spring expander
Engine lubrication	Semi-dry sump lubrication system with two trochoid pumps
Primary transmission	36:79
Clutch	APTC™ antihopping clutch in oil bath/hydraulically operated
Transmission	6-gear transmission, claw shifted
Transmission ratio	
1st gear	14:35
2nd gear	16:28
3rd gear	20:27
4th gear	21:23
5th gear	23:22
6th gear	23:20
Fuel/air mixture preparation	Electronic fuel injection
Ignition	Contactless controlled fully electronic ignition with digital ignition adjustment
Alternator	12 V, 300 W
Spark plug – Inside	NGK LKAR9BI-10
Spark plug – Outside	NGK LMAR7DI-10
Spark plug electrode gap	1.0 mm (0.039 in)
Cooling	Water cooling, permanent circulation of coolant by water pump
Idle speed	1,600 ± 100 rpm
Starting	Electric starter, automatic decompression

## Engine Torque Chart

Screw, membrane fixation	M3	2 Nm (1.5 ft-lb)*
Hose clamp, intake flange	M4	2.5 Nm (1.84 ft-lb)
Oil nozzle for clutch lubrication	M4	0.4 Nm (0.3 ft-lb)
Oil nozzle for conrod bearing lubrication	M4	0.8 Nm (0.59 ft-lb)
Locking screw for bearing	M5	6 Nm (4.4 ft-lb)*
Oil nozzle in cylinder head	M5	2 Nm (1.5 ft-lb)
Remaining screws, engine	M5	6 Nm (4.4 ft-lb)
Screw, axial lock of camshaft and balancer shaft	M5	6 Nm (4.4 ft-lb)*
Screw, clutch spring	M5	6 Nm (4.4 ft-lb)
Screw, cover plate for oil return line	M5	6 Nm (4.4 ft-lb)*
Screw, gear sensor	M5	5 Nm (3.7 ft-lb)*
Screw, oil filter cover	M5	6 Nm (4.4 ft-lb)
Screw, oil pump cover	M5	6 Nm (4.4 ft-lb)*
Screw, shift shaft sensor	M5	5 Nm (3.7 ft-lb)*
Chain securing guide	M6	10 Nm (7.4 ft-lb)
Remaining screws, engine	M6	10 Nm (7.4 ft-lb)
Screw, alternator cover	M6x25	10 Nm (7.4 ft-lb)*
Screw, alternator cover	M6x30	10 Nm (7.4 ft-lb)*
Screw, alternator cover (timing chain shaft through-hole)	M6	10 Nm (7.4 ft-lb)*
Screw, camshaft bearing bridge	M6	10 Nm (7.4 ft-lb)
Screw, camshaft bearing support	M6x80	10 Nm (7.4 ft-lb)
Screw, camshaft bearing support	M6x90	10 Nm (7.4 ft-lb)
Screw, clutch cover	M6x25	10 Nm (7.4 ft-lb)
Screw, clutch cover	M6x30	10 Nm (7.4 ft-lb)
Screw, clutch cover	M6x35	10 Nm (7.4 ft-lb)
Screw, clutch cover	M6	10 Nm (7.4 ft-lb)
Screw, clutch slave cylinder	M6x20	10 Nm (7.4 ft-lb)*
Screw, clutch slave cylinder	M6x20	10 Nm (7.4 ft-lb)
Screw, crankshaft speed sensor	M6	10 Nm (7.4 ft-lb)*
Screw, cylinder	M6	10 Nm (7.4 ft-lb)*
Screw, cylinder (timing chain shaft) on housing	M6	10 Nm (7.4 ft-lb)*
Screw, cylinder head	M6	10 Nm (7.4 ft-lb)*
Screw, engine case	M6x25	10 Nm (7.4 ft-lb)
Screw, engine case	M6x30	10 Nm (7.4 ft-lb)
Screw, engine case	M6x70	10 Nm (7.4 ft-lb)
Screw, engine case	M6x80	10 Nm (7.4 ft-lb)
Screw, engine case	M6	10 Nm (7.4 ft-lb)
Screw, engine sprocket cover and slave cylinder of the clutch	M6x35	10 Nm (7.4 ft-lb)
Screw, giude rail	M6x30	10 Nm (7.4 ft-lb)**
Screw, guide rail	M6x20	10 Nm (7.4 ft-lb)*
Screw, ignition coil	M6	10 Nm (7.4 ft-lb)
Screw, locking lever	M6	10 Nm (7.4 ft-lb)*
Screw, resonator	M6	10 Nm (7.4 ft-lb)
Screw, secondary air system cover	M6x12	10 Nm (7.4 ft-lb)*
Screw, shift drum locating	M6	15 Nm (11.1 ft-lb)*
Screw, shift lever	M6	14 Nm (10.3 ft-lb)*
Screw, starter motor	M6	10 Nm (7.4 ft-lb)
Screw, stator	M6	10 Nm (7.4 ft-lb)*
Screw, tensioning rail	M6x30	10 Nm (7.4 ft-lb)**

Screw, thermostat case	M6	10 Nm (7.4 ft-lb)
Screw, timing chain shaft	M6	10 Nm (7.4 ft-lb)
Screw, valve cover	M6	10 Nm (7.4 ft-lb)
Screw, water pump cover	M6	10 Nm (7.4 ft-lb)
Screw, water pump wheel	M6	10 Nm (7.4 ft-lb)*
Intake channel vacuum connection	M6x0.75	2.5 Nm (1.84 ft-lb)**
Oil nozzle for piston cooling	M6x0.75	4 Nm (3 ft-lb)
Nut, exhaust flange	M8	20 Nm (14.8 ft-lb)***
Screw plug, locking screw	M8	15 Nm (11.1 ft-lb)
Screw, rocker arm shaft	M8x40	15 Nm (11.1 ft-lb)
Screw, rocker arm shaft	M8x55	15 Nm (11.1 ft-lb)
Setscrew, camshaft bearing bridge	M8	6 Nm (4.4 ft-lb)*
Stud, exhaust flange	M8	15 Nm (11.1 ft-lb)*
Screw, cylinder head	M10	Tightening sequence: Tighten diagonally, beginning with the rear screw on the timing chain shaft. † 1st stage 15 Nm (11.1 ft-lb) 2nd stage 30 Nm (22.1 ft-lb) 3rd stage 45 Nm (33.2 ft-lb) 4th stage 60 Nm (44.3 ft-lb)
Oil pressure sensor	M10x1	10 Nm (7.4 ft-lb)
Screw plug, oil channel	M10x1	15 Nm (11.1 ft-lb)*
Screw plug, water pump drain hole	M10x1	15 Nm (11.1 ft-lb)
Screw, oil line	M10x1	10 Nm (7.4 ft-lb)
Screw, unlocking for timing chain tensioner	M10x1	8 Nm (5.9 ft-lb)
Spark plug outside	M10x1	11 Nm (8.1 ft-lb)
Spark plug inside	M12x1.25	18 Nm (13.3 ft-lb)
Coolant temperature sensor on the cylinder head	M12x1.5	12 Nm (8.9 ft-lb)
Oil drain plug with magnet	M12x1.5	20 Nm (14.8 ft-lb)
Screw plug, oil pressure control valve	M12x1.5	20 Nm (14.8 ft-lb)
Screw plug, oil channel	M14x1.5	15 Nm (11.1 ft-lb)*
Engine case stud	M16x1.5	25 Nm (18.4 ft-lb)*
Nut, rotor	M18x1.5	100 Nm (73.8 ft-lb)*
Nut, inner clutch hub	M20x1.5	120 Nm (88.5 ft-lb)*
Nut, primary gear wheel	M20LHx1.5	90 Nm (66.4 ft-lb)*
Plug, oil screen	M20x1.5	15 Nm (11.1 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™

\*\* Loctite® 2701™

\*\*\* Copper paste

† Thread greased



## Chassis Torque Chart

Chassis remaining M5 Screws and Nuts	M5	5 Nm (3.7 ft-lb)
Chassis remaining M6 Screws and Nuts	M6	10 Nm (7.4 ft-lb)
Chassis remaining M8 Screws	M8	25 Nm (18.4 ft-lb)
Clip-Ons ❶	M6	10 Nm (7.4 ft-lb)
Exhaust Mount	M6	10 Nm (7.4 ft-lb)
Brake Lever Connection to Master Cylinder ❶	M6	10 Nm (7.4 ft-lb)
Brake Lever Screw ❶	M6	10 Nm (7.4 ft-lb)
Gear Selector ❶	M6	7 Nm (5.2 ft-lb)
Shiftrd ❶	M6	10 Nm (7.4 ft-lb)
Shift Lever Screws ❶	M6	10 Nm (7.4 ft-lb)
Foot Peg ❶	M8	25 Nm (18.4 ft-lb)
Rearset Mount ❶	M8	25 Nm (18.4 ft-lb)
Front Spindle Clamping Screws ❶	M8	10 Nm (7.4 ft-lb)
Top Yoke Screw ❶	M8	15 Nm (11.1 ft-lb)
Bottom Yoke Screw ❶	M8	15 Nm (11.1 ft-lb)
Tank Mounting Screws ❶	M8	30 Nm (22.1 ft-lb)
Exhaust Flange Screw	M8	20 Nm (14.8 ft-lb)
Front Brake Disc Screws ❶	M8	25 Nm (18.4 ft-lb)
Rear Brake Disc Screws ❶	M8	25 Nm (18.4 ft-lb)
Rear Brake Caliper Screws ❶	M8	25 Nm (18.4 ft-lb)
Exhaust Mounting Bracket	M8	18 Nm (13.3 ft-lb)
Banjo Bolts	M8	15 Nm (11.1 ft-lb)
Sprocket Screw – S Model ❶	M8	35 Nm (25.8 ft-lb)
Sprocket Screw – R Model (Dymag) ❶	M10	50 Nm (36.9 ft-lb)
Banjo Bolts	M10	25 Nm (18.4 ft-lb)
Front Brake Caliper Screws ❶	M10x1.25	45 Nm (33.2 ft-lb)**
Engine Mounts Front and Back ❶	M10x1.25	45 Nm (33.2 ft-lb)
Rear Shock Screw ❶	M10x1.25	45 Nm (33.2 ft-lb)
Swingarm Linkage Adjuster Screw ❶	M12	45 Nm (33.2 ft-lb)
Swingarm Spindle Nut ❶	M16	100 Nm (73.8 ft-lb)
Headstock Screw ❶	M25x1.5	15 Nm (11.1 ft-lb)
<i>Before checking the Headstock screw, loosen the top yoke and afterwards re-tighten the top yoke, using the appropriate torque</i>		
Rear Axle Nut ❶	M25x1.5	90 Nm (66.4 ft-lb)
Front Axle ❶	M29x1.5	45 Nm (33.2 ft-lb)

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

\* Loctite®243™

\*\* Long-life white grease

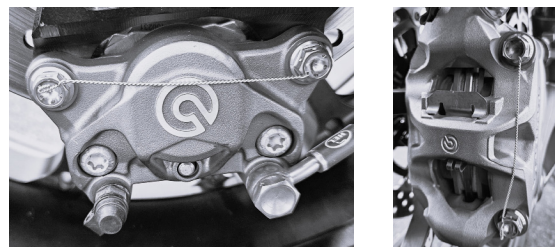
## Safety Wire

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.

**NOTE: Only R Models are prepared for safety wiring.**



*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.*

# Dashboard

## S Model: KOSO RX2N GP Style Meter

This instrument features many different functions, such as speed, odometer, tripmeter, RPM, shift light, temperature, indicator lights and many other functions.

### SET UP

Visit the link below to download the instruction manual of the KOSO RX2N GP Style Meter:

[https://www.kraemer-motorcycles.com/assets/uploads/downloads/Koso\\_RX2N\\_GP\\_style\\_meter\\_manual.pdf](https://www.kraemer-motorcycles.com/assets/uploads/downloads/Koso_RX2N_GP_style_meter_manual.pdf)



## R Model: AiM MXm LCD Dash Logger

The AiM MXm is the dash logger which provides all the info needed by racers: it samples and shows key info like speed, laptimes, RPM, gears, it has a 9 axis inertial platform, multiple math channels and much more.

### SET UP

Visit the link below to download the instruction manual of the AiM MXm LCD Dash Logger:

[https://www.kraemer-motorcycles.com/assets/uploads/downloads/AiM\\_MXm\\_user\\_guide\\_105\\_eng.pdf](https://www.kraemer-motorcycles.com/assets/uploads/downloads/AiM_MXm_user_guide_105_eng.pdf)





**KRÄMER**  
MOTORCYCLES

**Krämer Motorcycles**

Gewerbepark Lindach B5  
84489 Burghausen  
Germany

[info@kraemer-motorcycles.com](mailto:info@kraemer-motorcycles.com)  
[www.kraemer-motorcycles.com](http://www.kraemer-motorcycles.com)

© 2023 Krämer Motorcycles  
All rights reserved.