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PC use for motorcycle diagnostic

MotoSmartLaser User Guide

Before buy, after accident & maintenance: - use excellent instrument for checking the frame of a motorcycle!

Thank you for choosing our instrument. MotoSmartLaser gives your workshop the following options:

- cost-effective motorcycle frame measurement for **front fork, swingarm, headstock deformation**
- an excellent instrument for checking the frame of a motorcycle before you buy it
- perfect rear wheel straight travel adjustment

Contents:

- Plastic carrying case
- Laser module with 3 PCs LR41 battery. Module has CE certification
- 3 PCs spare high power 41mAh Camelion battery
- 3 PC 600 mm measurement rods with fixed conical
- 1 PC 600 mm measurement rod free ends
- 2 PC 180 mm measurement rod for normal axels
- 3x fixable alu. cones dia. 30 mm
- 4x plastic conical dia. 55 mm
- Mirror module
- Protractor with 3PCs AAA battery
- Measuring plate for fault in the steering head stock
- 2 PCs M5 screws with plastic nuts
- Wheelbase tape measure
- CE user manual for laser module
- D 20mm x 5mm neodymium strong magnets

Selectable metric adapters:

- M14x1,5mm thread
- M16x1,5mm thread
- M18x1,5mm thread

OR

Imperial adapters:

- 5/8-18 coll thread
- 5/8-11 coll thread
- 3/4-10 coll thread



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Measurement procedure:

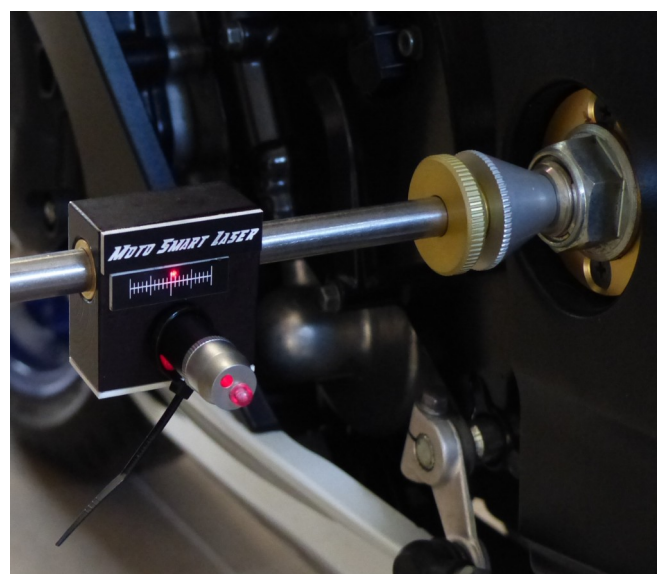
Preparation for measurement:

- 1, Raise the motorcycle at the rear swingarm. In case of single swingarm bike, you will have 2 independent measurement: use front wheel shock for swingarm check, & use single sided rear side stand for front fork OR headstock control.
- 2, Check the touching surface of the cones before inserting measurement rods. In the event of a blow or abrasion, remove the damaged surface with a file.
- 3, In case of solid axels, **you have to take of OEM nut and washer before using threaded adapters! Before fit adapter clean surface!** Axle nuts are geometrically imprecise fasteners and cause measurement errors!

Rear wheel straight-ahead check:

Place measurement rods into the swingarm & rear wheel axle:

- A, Place the laser module on the swingarm shaft
- B, Place the mirror module on the rear axle
- C, Illuminate to the mirror and rotate the mirror & laser module until the laser light reflect back to the faceplate of the laser module.
- D, The reflection should be within +/- 3 division from the centre of the scale. At higher values, this can be adjusted with the chain tension adjustment mechanism. After procedure, check drive chain adjustment!



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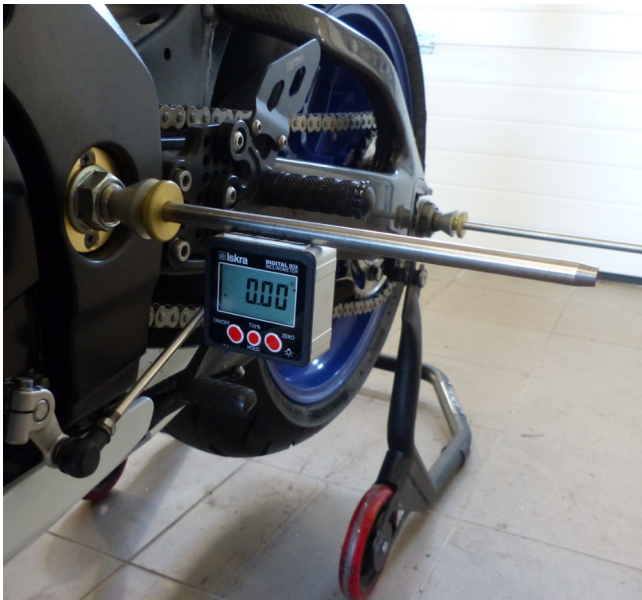
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Swingarm deformation check:

After above condition, you can measure swingarm deformation:

Place protractor to swingarm measurement rod. Switch it on and push zero button. Take a photo picture for measurement sheet! You can import it for customer result proof. Move device to rear axle, and get a real value. Take a photo picture for measurement sheet!

0.0-0.4 degree measurement deviation at rear axle: good/acceptable



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Front fork/steering headstock deformation check:

This measurement gives the sum of the accuracy of the front fork and the frame. If this result is beyond the limit value, then go further measuring of frame neck, it must be decided whether the deformation comes from the fork or the frame neck!

Locate measurement rod into the front axle:

A, Place the mirror module on it.

B, Illuminate the mirror module.

C, For adjustment, 2 conditions must be met: straight running of front wheel & mirror-laser reflection. Move handlebar to get central position. Use your hand palm to extend & detect laser actual laser position!

D, The reflection should be within +/- 2 division from the centre of the scale.

NOTE: If the front tire “springs”, side support it with a heavy external object (such as a battery)

Place protractor to swingarm measurement rod. Switch it on and push zero button. Move device to front axle, and get a real value. Take a photo picture for measurement sheet!

0.0-0.3 degree measurement deviation at rear axle: good/acceptable



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Steering headstock measurement method:

Place 600 mm measurement rod free ends into the neck! In case of welded steering shaft you have to remove front fork, and check frame itself! May you have to remove handlebar, side cowling for this procedure...

A, fit measurement plate to the bottom end of the rod



B, Project to scale

NOTE: measurement plate MUST be parallel with swingarm. It comes if you get minimum result. Note of laser spot. (in this case 40)



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Actually we have 40 result.

Locate measurement plate to the top of measurement rod.



C, Project to scale!



Compare two values!





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If the values differ, push down the front of the bike a few times (compressing the forks), then turn the handlebar from side-to-side a few times. This loosens up the front fork and the head bearings.

Important: The maximum tolerance between the two values is 2mm (which equals 0.23°)

diference	1mm	2mm	3mm	4mm	5mm	6mm	7mm	8mm	9mm
deformati on	0,14 deg	0,23 deg	0,34 deg.	0,45 deg	0,57 deg	0,68 deg	0,8 deg	0,91 deg	1,03 deg

Steering headstock angle, Rake angle measurement:

For correct result ground must be 100% horizontal.

Lift front wheel to the same height than rear one:



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Check ground horizontal level & place protractor to bubble level.

Set protractor to zero:



Place free end measurement rod into the steering headstock. **Note:**
Lower end of headstock axle can not be welded! Remove handlebar if needed.

Place protractor to the measurement rod: fit to position motorcycle centre line.





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Measure the wheelbase of the motorcycle!

You can compare data with the bike specific one. More info:

<https://www.motorcyclespecs.co.za>

Print measurement proof for your customer or insurance Agent!

You can download editable measurement sheet: [Measurement proof](#)

Paste the saved photos into the MotoSmartLaser printing document!

The MotoSmartLaser measurement sheet gives a certificate to the owner or to the expert of the insurance company investigating the damage to the motorcycle.

Our mission: Until now, it was thought that checking the frame of a motorcycle after an accident was a complicated task. We would like to show that **this is not the case!**

Printable Final Measurement proof for Customer



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