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## **GATES Carbon Drive Crank Check Tool**

### **User manual**

Thank you for choosing the Carbon Drive equipment. These tools will ensure the correct function of the carbon drive system.

On the following pages a testing method will be introduced to show how to check the correct position of the Bottom Bracket (BB) tube in relation to the dropouts, radial and axial run out of your BB-crank-sprocket system.

Please read this manual carefully before you start with the first measurements.

*If you have any additional questions about the measurement procedure feel free to contact us. [info@carbondrive.net](mailto:info@carbondrive.net) .*



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**Fig 1: Crank Check Tool with frame**

## Basics

### The BB-tube position

The position of the BB-tube in relation of the dropouts is required to ensure a secure and carefree system. Among the frame stiffness and the angular measurement, the BB-tube position is very important for the usability of the Gates Carbon Drive System with the frame.

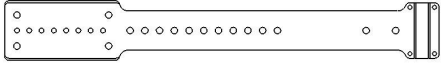


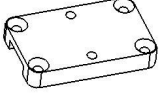
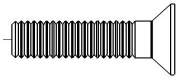
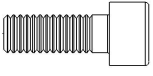
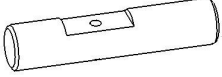
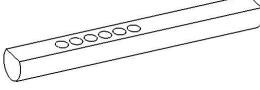
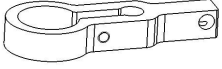
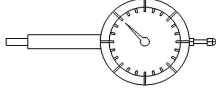
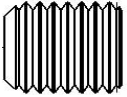

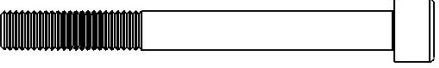
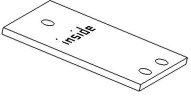
### The radial run out

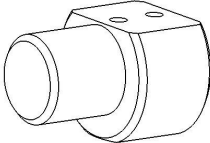
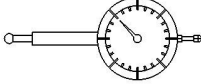
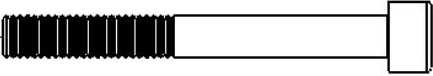
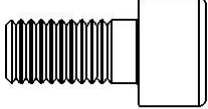
Important attention should be paid to the radial run out. The belt can jump over the teeth (“ratcheting”), run off and/or the system can be block if the radial run out is too high.

### The axial run out

The axial run out is also an important parameter for a secure and carefree system. If the axial run out is too high it may cause a worse degree of efficiency, noises and/or the belt can run off.

## Part list

No.	Quantity	Description	Darstellung
01	1	Crank check base	
02	1	GFA-dropout-unit-adapter-135mm	
03	2	crank_check_washer	
04	1	crank_check_cap	
05	4	Hexagon socket countersunk head screw DIN 7991 - M5 x 20	
06	2	Hexagon socket head cap screw DIN 912 M6 x 16	
07	1	crank_check_ic_holder_1	
08	1	crank_check_hold_down_clamp	
09	2	indicating_calliper_clamp	
10	1	indicating_calliper_without_head	
11	2	Hexagon socket set screw DIN 913 - M5 x 6	
12	2	Hexagon socket head cap screw DIN 912 M6 x 25	
13	1	Hexagon socket head cap screw DIN 912 M8 x 80	
14	2	BB-Plate	

15	1	crank_check_ic_holder_2	
16	1	indicating_calliper	
17	2	Hexagon socket head cap screw DIN 912 M6 x 55	
18	4	Hexagon socket head cap screw DIN 912 M5 x 10	

**Excel1: Part list**

The measurement device is already pre-assembled. To make individual adjustments please use the following tools. (Tools are not included):

**1x 6mm Allen key**

**1x 5mm Allen key**

**1x 4mm Allen key**

**1x 3mm Allen key**

**1x 2,5mm Allen key**



Tip!

It is useful to fix the frame in an assembly stand for better handling of the measurement device.

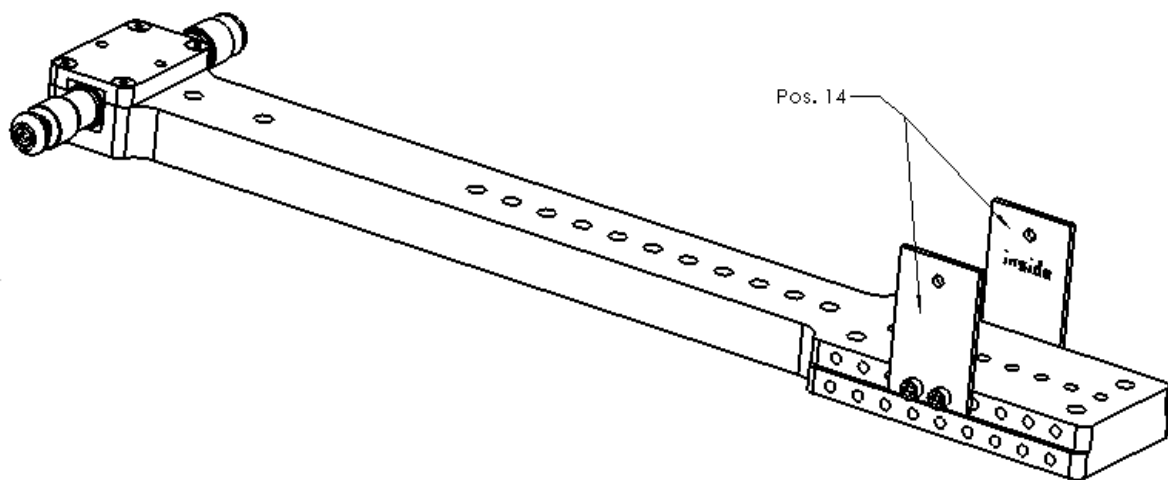
## The BB-tube position

The measurement of the BB-tube position is a procedure to check if the frame is suited for the Gates Carbon Drive System.

It is an additional measurement procedure to the “GATES angular frame tolerances measurement”.

The measurement procedure can only be used with a final assembled frame. The BB-thread must be tapped and the face of the BB milled.

The measurement device should be built up as shown in the following picture:



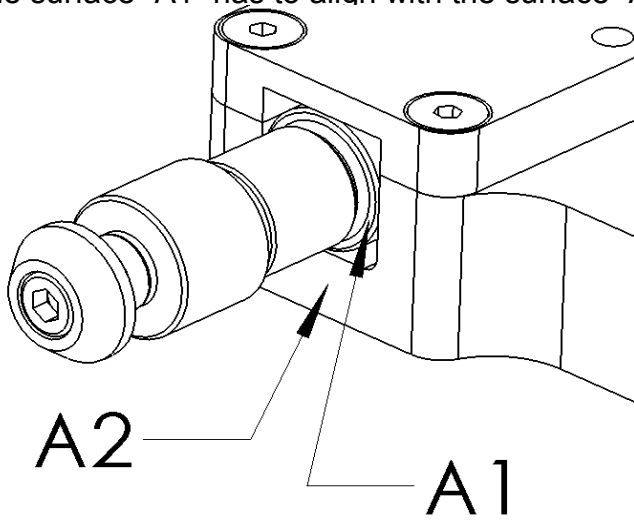
**Fig. 2: BB-tube position**

The two “BB-Plates” (Pos.1) must be fixed in relation to the chain stay length of the frame.

If the BB-tube is 73mm, the “BB-Plates” must be fixed on the bottom position of the “crank check base”.

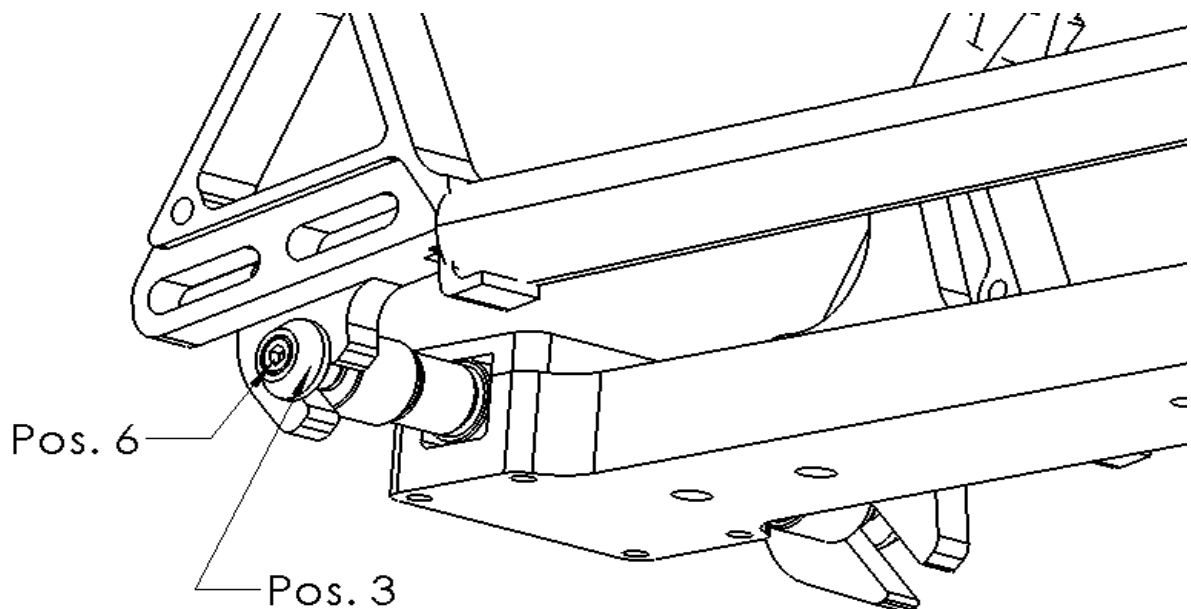
The position of the “GFA-dropout-unit-adapter-135mm” is important.

The surface “A1” has to align with the surface “A2”:



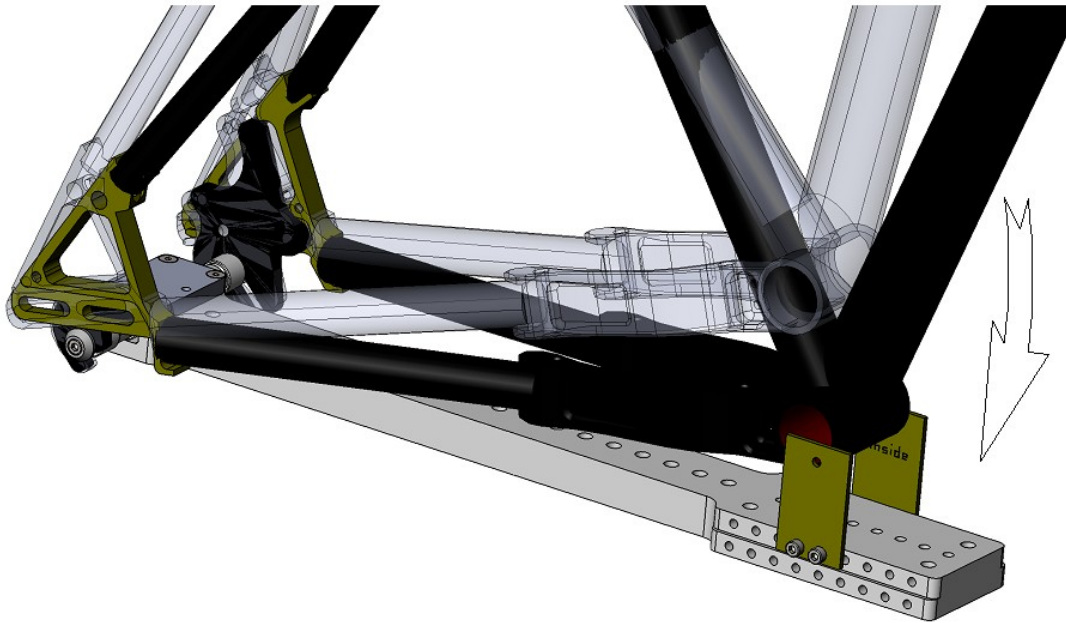
**Fig. 3: Orientation of the “GFA-dropout-unit-adapter-135mm”**

Now the frame is to be fixed with the “crank\_check\_washer” (Pos.3) and the “Hexagon socket head cap screw DIN 912 M6 x 16” (Pos.6) on both sides. The frame should be twistable around the fixed axle.



## Checking:

The frame is free to move between the two “BB-Plates“:



**Fig. 5: The moving frame**

## Two scenarios results:

1. The frame fits between the two plates → The frame has qualified for the Gates Carbon Drive system.
2. The BB-tube hits one of the two plates → Problems may be caused during the adjustment of the belt line. If the distance is too high, the frame has not qualified for the system.

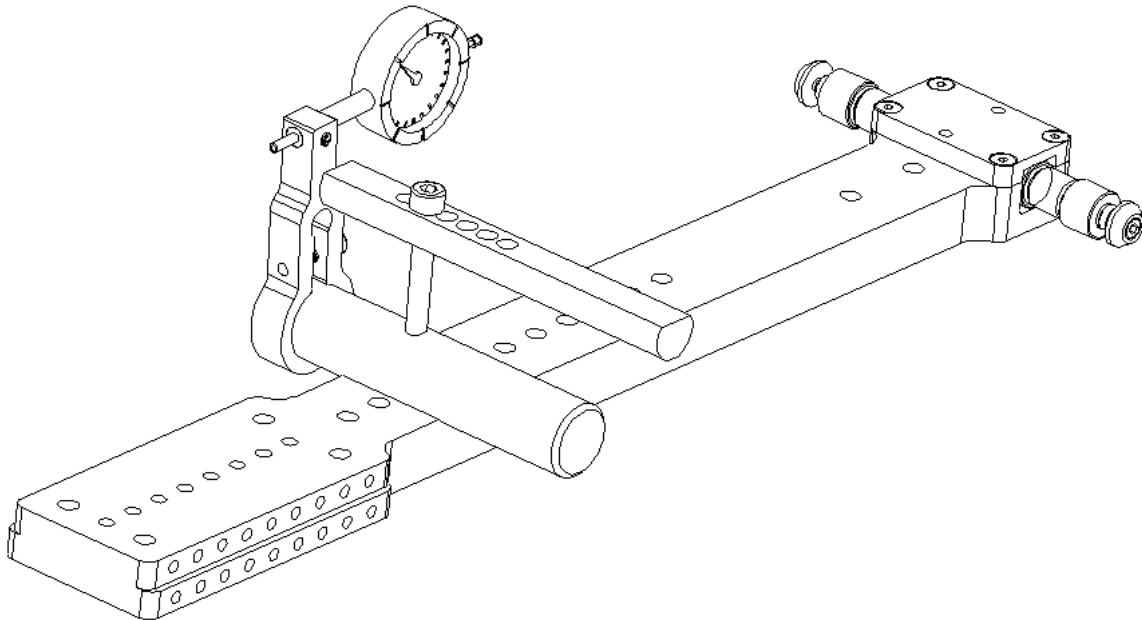
## Troubleshooting:

- a) Small differences: The belt line can be adjusted with washers. (please check the “Belt Ruler“ manual).
- b) Bigger differences: You can re-adjust the frame. But you have to pay attention for the parallelism of the BB-tube and the rear axle (please check the “Angular measurement“ manual).

## The radial run out

The measurement of the radial run out is a procedure to check if the frame is suited for the Gates Carbon Drive System.

The measurement device should be built up like the following picture:

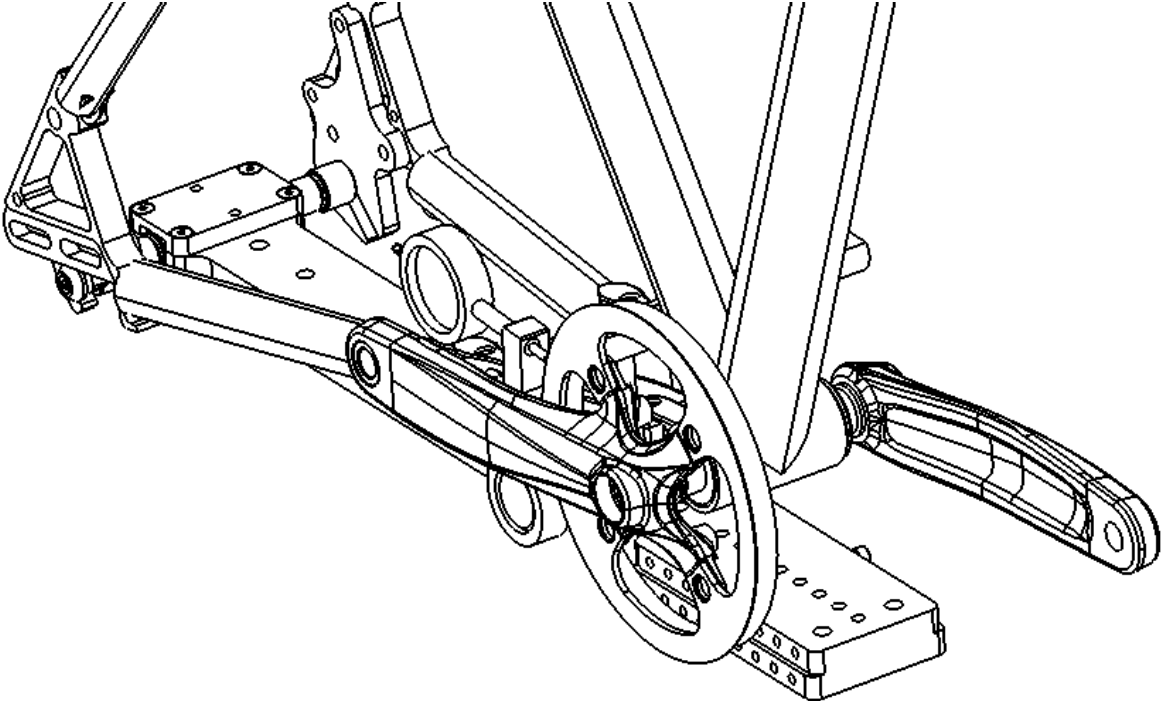


**Fig 6: radial run out device**

The scale of indicating caliper points to the frame. (Attention: The crank arm should not hit the indicating caliper!).

Please unscrew the top of the indicating caliper. So you can measure a Sprocket with a maximum radial run out.

The measurement has to be made with a final assembled frame. The bottom bracket, cranks and front sprocket need to be fitted to the frame as well. (Please refer to the user manual of the crank arm manufacture) The frame must be fixed as shown in the following sketch:



**Fig 7: radial run out measurement**

The frame must be fixed with the “crank check hold down clamp” (8) and the “crank check ic holder” (7).

**The indicating caliper must be adjusted so that the scale is 50% used.**

This allows for the rest of the available measurement range to be used.

Measurement:

The cranks must be rotated 360°. Please monitor the needle of the indicating caliper. The difference of the maximum and the minimum is the radial run out of the system. The calculated value have to be less than **0,25mm**.

Minimum value	Maximum value	Amount (difference)

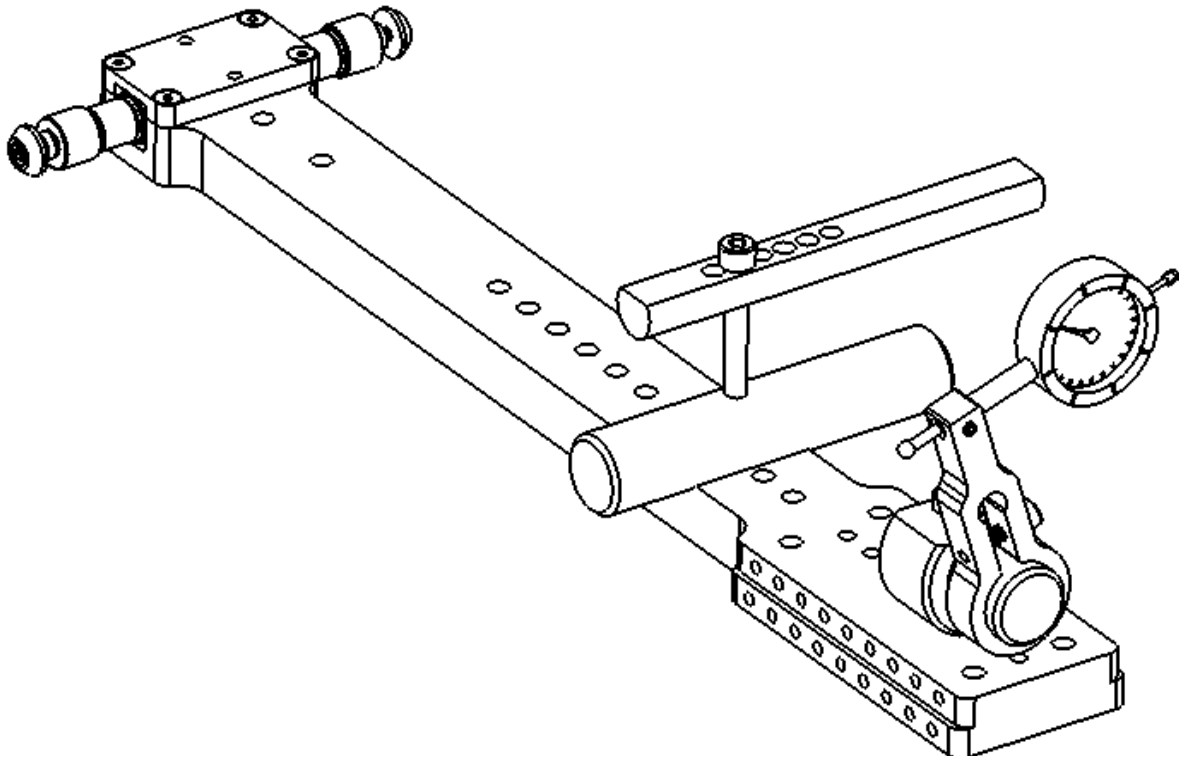
Troubleshooting (Value > 0.25mm):

1. Check the clamping torque of the sprocket screws. Are screws all tightened equal?
2. Check the area between sprocket and the crank. Does the front sprocket fit to the crank? (dirt, swarf,...)
3. If you are using washers, check the number of the assembled washers. Do all the washers have the same thickness?

## The axial run out

The measurement of the axial run out is a procedure to check if the frame is suited for the Gates Carbon Drive System.

The measurement device should be built up like the following picture:

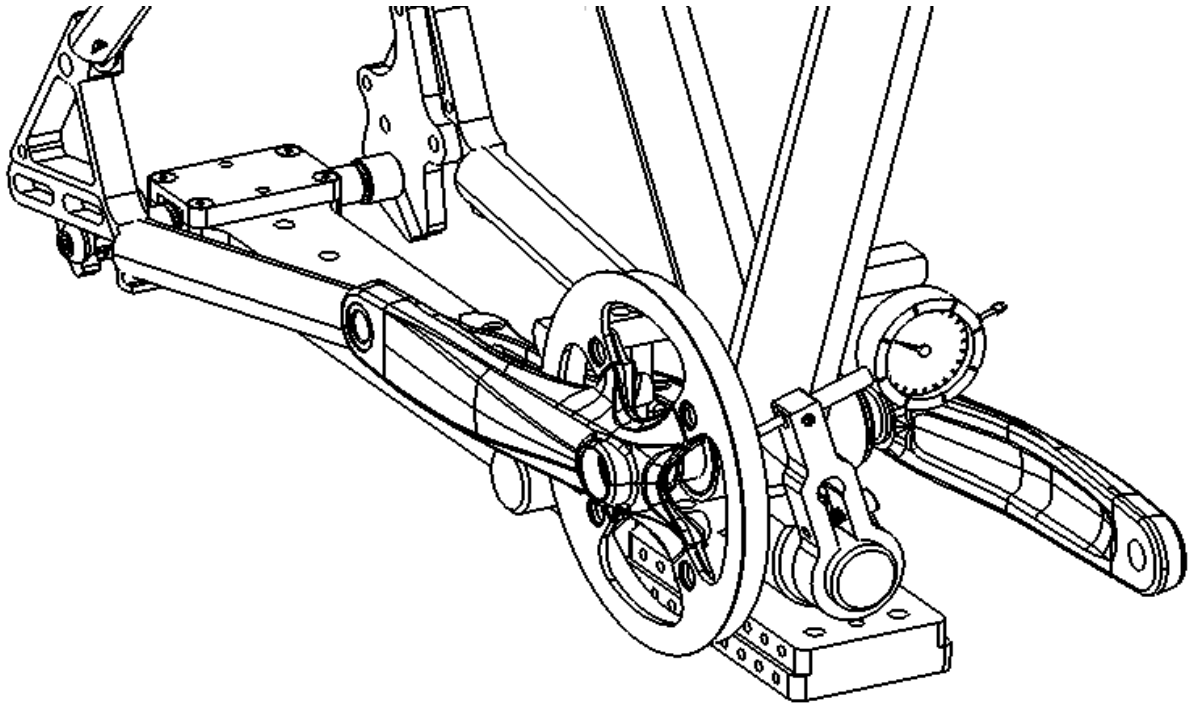


**Fig 8: axial run out device**

The top of the indicating caliper should be used for the measurement.

The measurement has to be made with a final assembled frame. The bottom bracket, cranks and front sprocket need to be fitted to the frame as well. (Please refer to the user manual of the crank arm manufacture)

The frame is to be fixed as shown in the following sketch:



**Fig 9: axial run out measurement**

The frame is to be fixed with the “crank check hold down clamp” (8) and the “crank check ic holder” (7).

**The indicating caliper must be adjusted so that the scale is 50% used.**

This allows for the rest of the available measurement range to be used.

**Measurement:**

The cranks must be rotated 360°. Please monitor the needle of the indicating caliper.

The difference of the maximum and the minimum is the axial run out of the system.

The calculated value have to be less than **0,25mm**.

Minimum value	Maximum value	Amount (difference)

### Troubleshooting (Value > 0.25mm):

1. Check the clamping torque of the sprocket screws. Are screws all tightened equally?
2. Does the front sprocket fit to the crank? (dirt, swarf,...)
3. Check the area between sprocket and the crank. If you are using washers, check the number of the assembled washers. Do all the washers have the same thickness?



#### Important!

The radial and the axial run out can be found parallel!

The sum of both should be less than 0,5mm!

Our manufacturing methods are complex and the quality controls are high.

However, if you will find a sprocket with a bigger radial or axial run out, please photograph this indicating caliper with the max. and min. values and contact us: [info@carbondrive.net](mailto:info@carbondrive.net) .