			Name	**Signature**
Rev.	Date	Subject :		
0	10.May.2015	Initial edition		
1	11.Aug.2015	Update	Rémi BERINGER	

SUMMARY

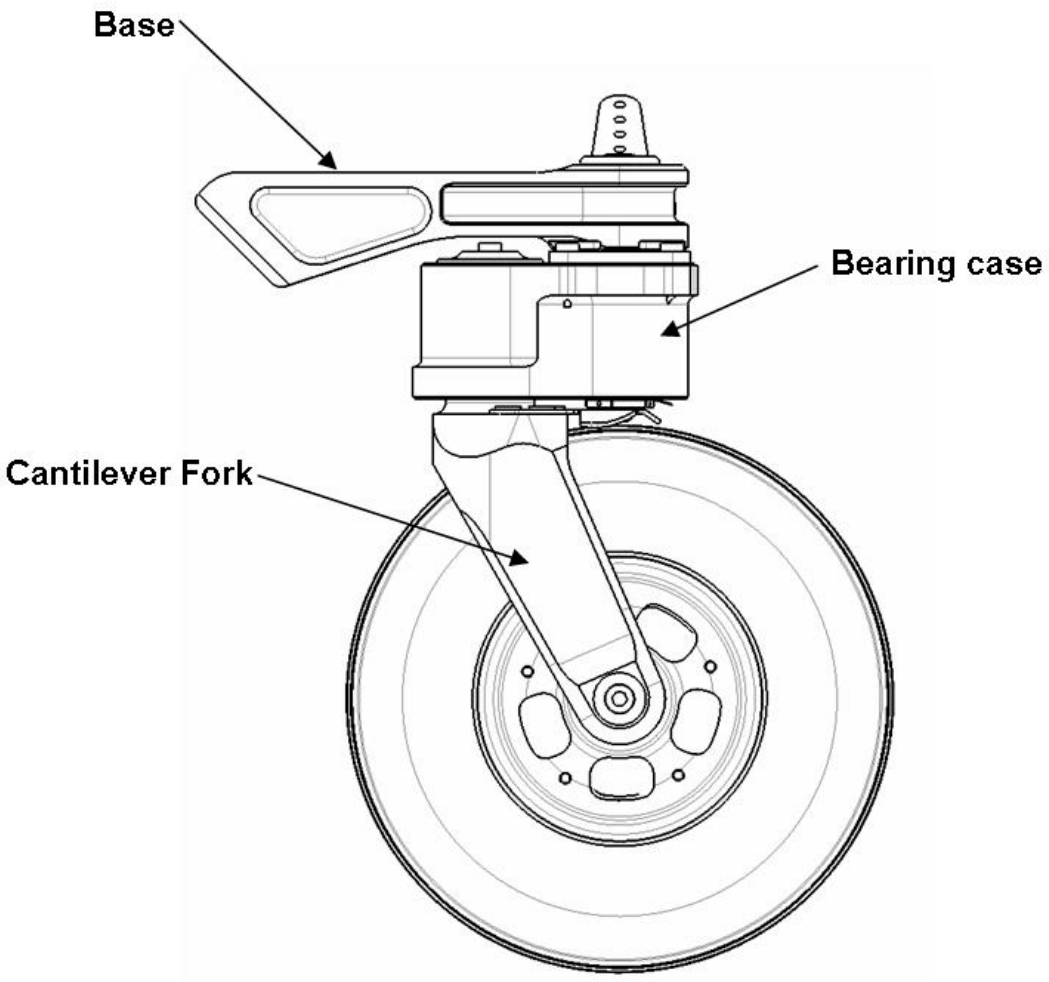
1. GENERAL

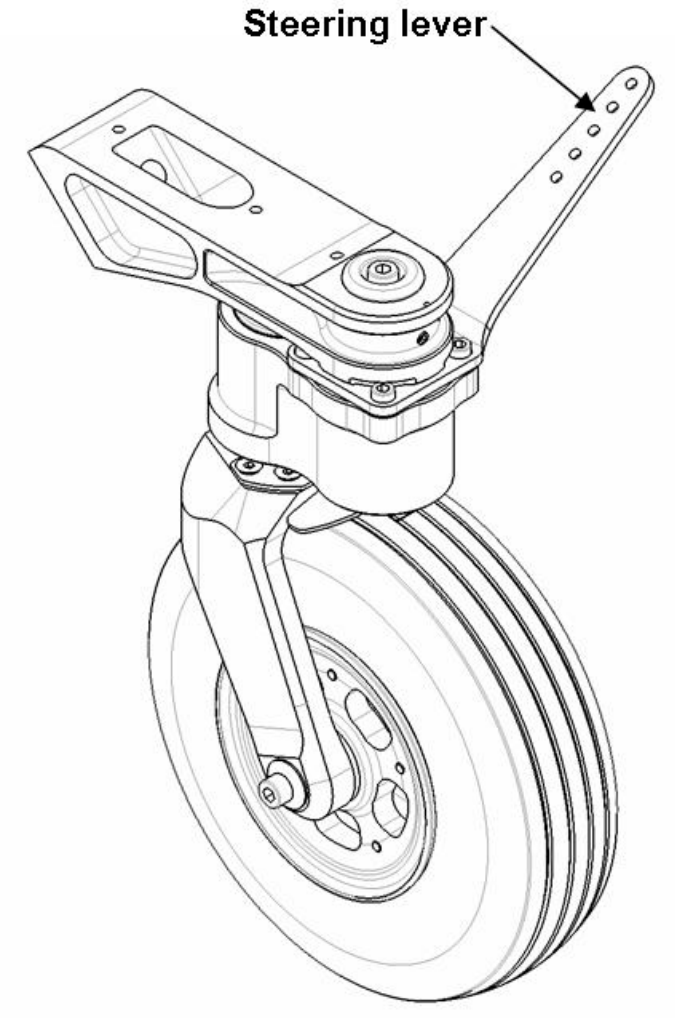
This manual provides the installation procedures for BERINGER tailwheel system.

CAUTION: Substitution of parts by other than originally certified parts may cause failure of the system. BERINGER quality process assures that replacement parts are produced and controlled with the same quality level as originally certified.

WARNING: This system is not a replacement of the Scott tailwheel. The functions are completely different; the handling on the ground is modified. Pilot must train taxiing with a progressive increase of speed for some hours prior to first take-off and landing.

2. DESCRIPTION OF THE EQUIPMENT





The Patented BERINGER system is a steering tailwheel with double pivot and lockable from the cockpit.

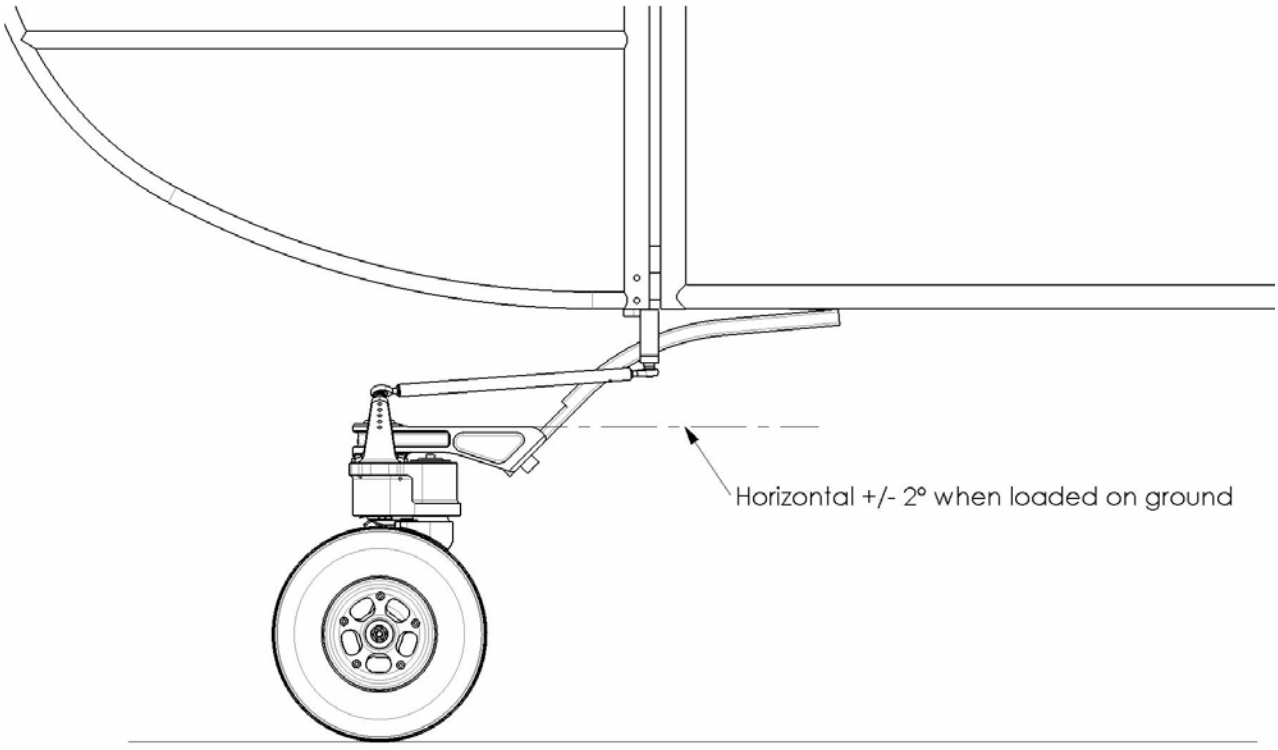
The tailwheel assembly is composed of multiple parts but the 3 main sub-assemblies are:
- the base that is fixed on the tail wheel springs
- the bearing case with his steering lever
- the cantilever fork with the wheel and tire

3. SPECIFICATIONS

Description	Data
Wheel size	3.50-4”
Type	Tubeless
Tire size	2.80/2.50-4”
Tail Wheel rated static load	250 lbs
Tailwheel maximum limit load Vertical	1100 lbs
Tailwheel maximum limit load up and aft through axle at 45°	1100 lbs
Tailwheel maximum limit side load	250 lbs

4. INSTALLATION RECOMMENDATIONS

4.1 Fixation on the tailwheel springs

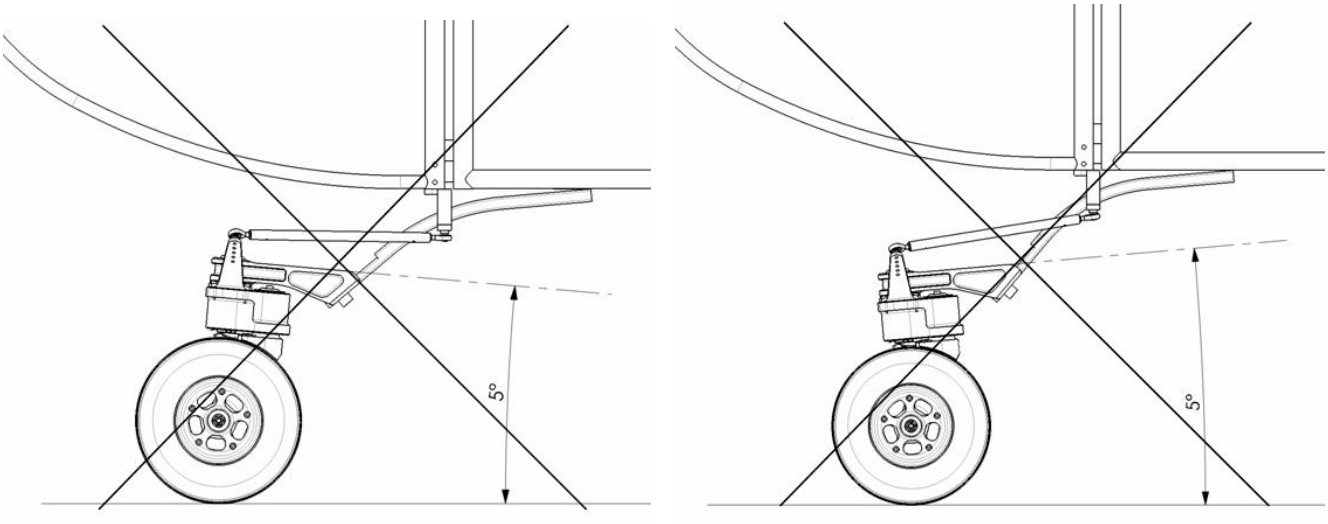


Use the original bolt and nut to bolt the base on the tailwheel springs.

Adjust the settings of the springs to have the upper side of the base horizontal with a tolerance of +/-2°.

The load on tailwheel is varying depending on the aircraft mass and center of gravity so it is important to adjust the position of the tailwheel with a load that is representative of a standard (day to day) use of the aircraft.

The following schemes are examples of loaded tailwheel position that should be avoided:



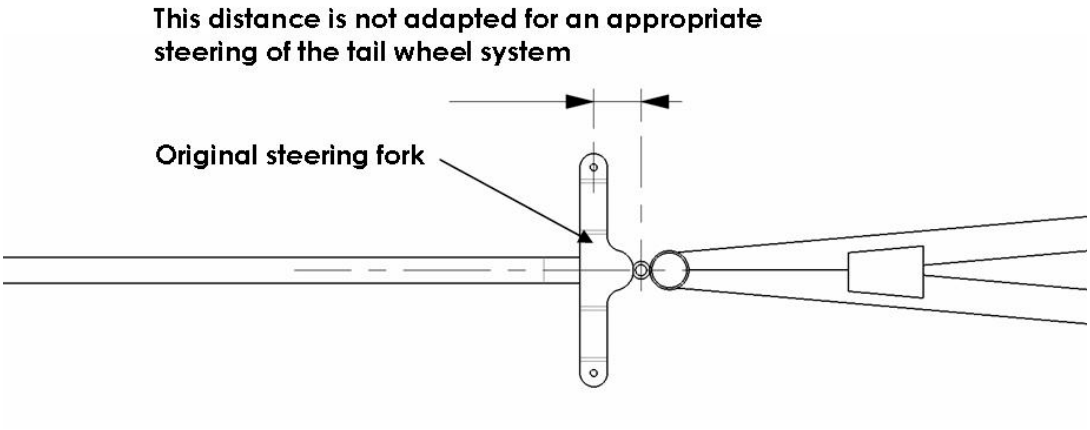
4.2 Steering fork and connecting rod

Most of the time the tailwheel system is actuated by cables and steering springs causing imprecise control.

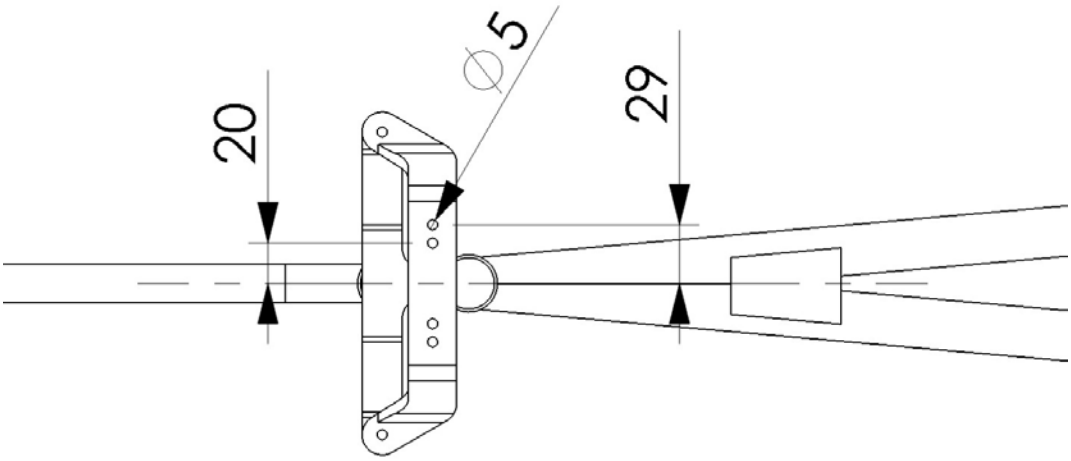
The BERINGER tailwheel is actuated by a single rigid connecting rod between the rudder steering fork and the tailwheel steering lever.

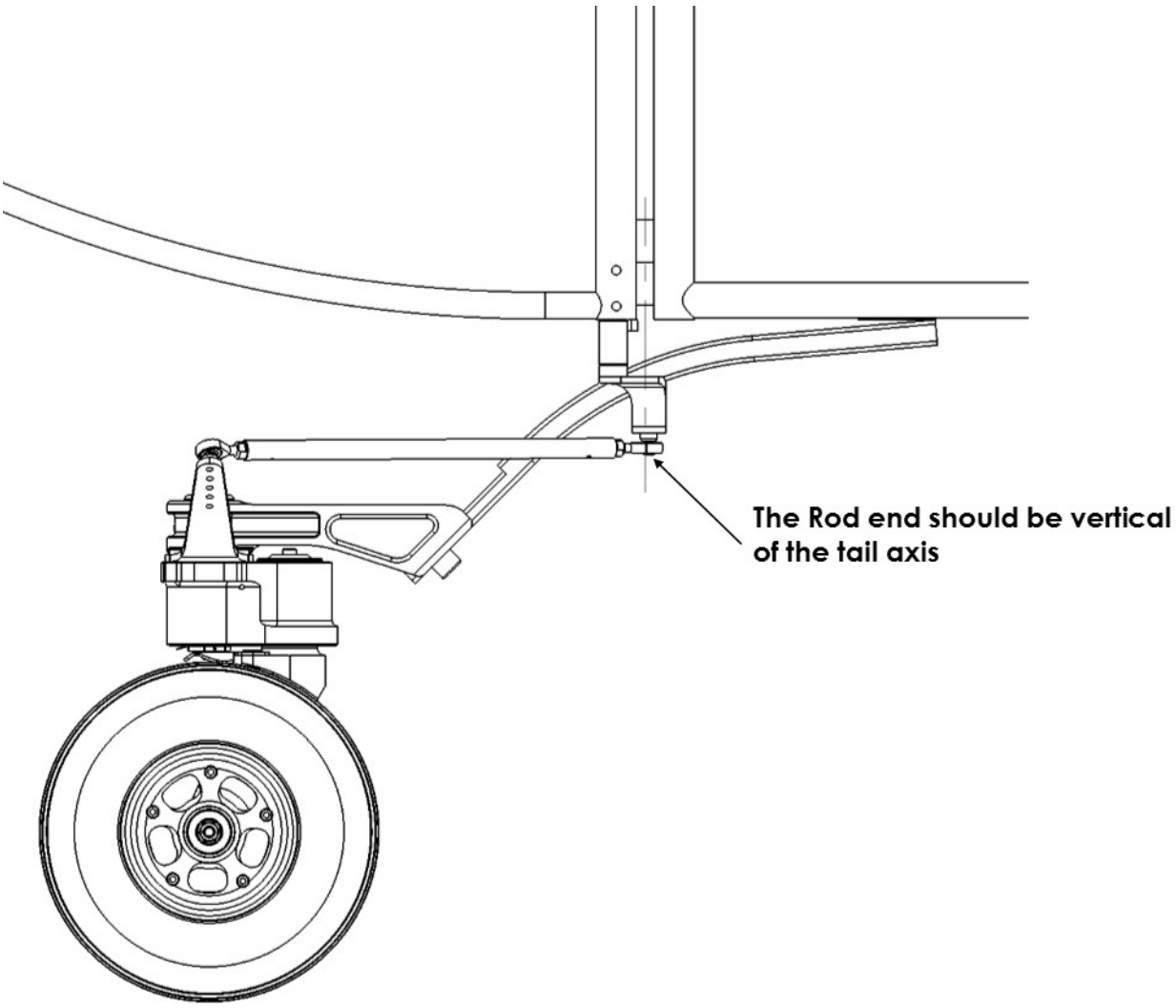
These parts should be well adjusted to have the required functioning of the tail wheel system.

Next are the recommendations to install and adjust the steering fork and rod.



The original steering fork is not adapted and an additional part should be made as per the schema next:





The length of the steering fork should be adapted so that the Tailwheel angle does not exceed 8° on each side for the full stroke of the rudder.

CAUTION: The Tailwheel assembly has a mechanical stop at 20° on each side and must not reduce the stroke of the rudder.

The recommended angle at the Tailwheel is more around 4 to 6° to have a precise steering control.

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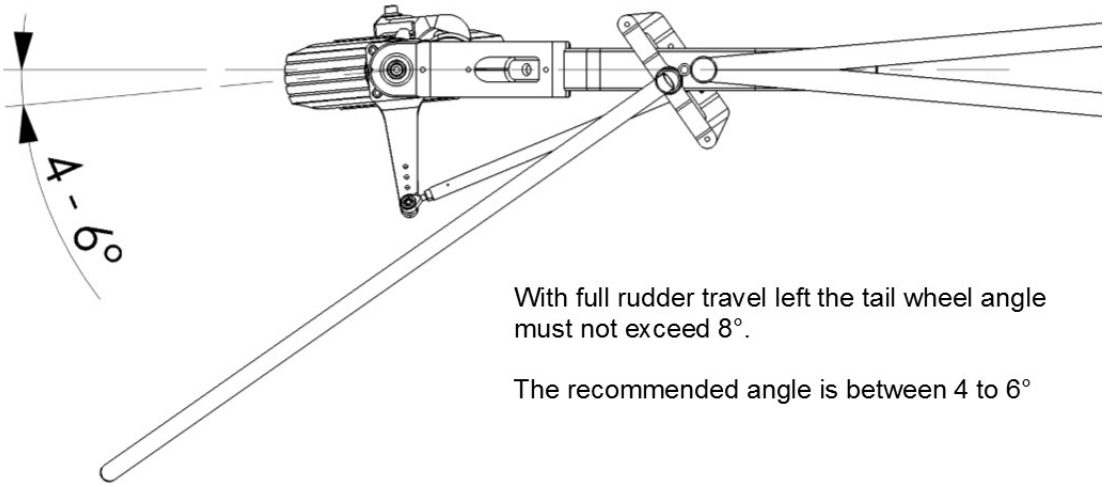

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The recommended angle is between 4 to 6°

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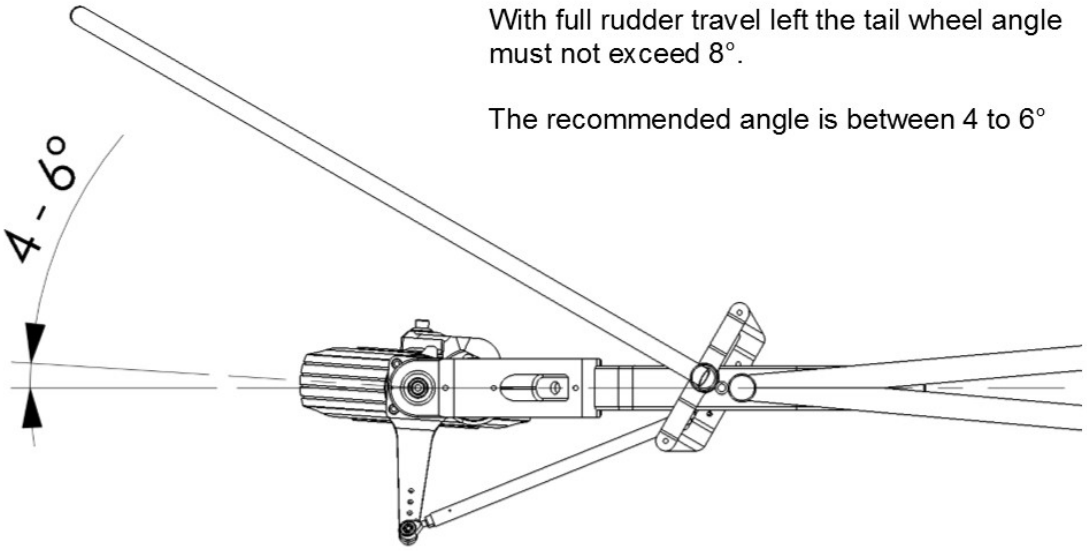
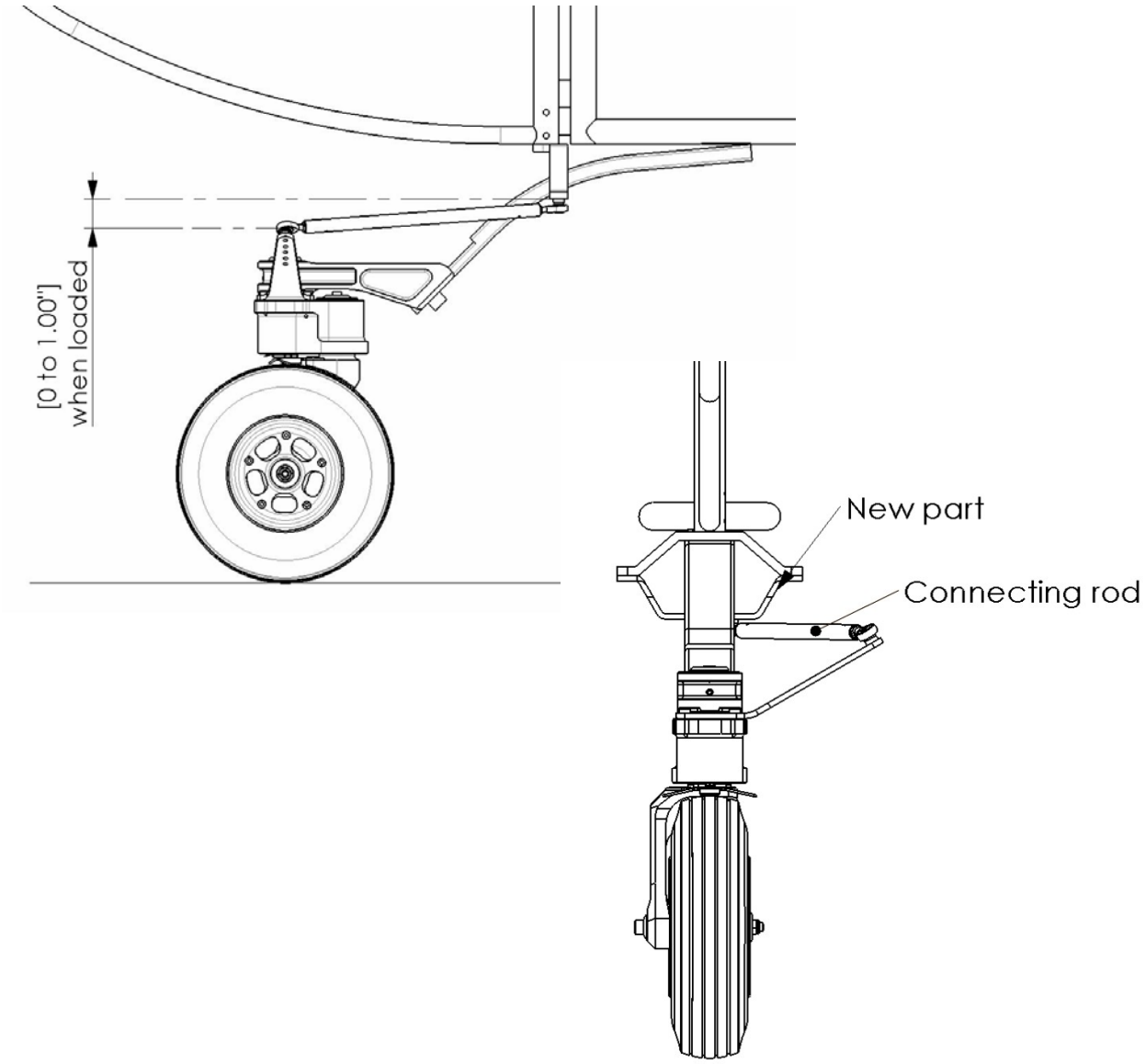


The connecting rod has rod ends on each side.

The steering fork and the steering lever should be also adapted so that the connecting rod is almost horizontal.

The vertical distance between the 2 rod ends should be between 0 to 1”



CAUTION: Make sure that the connecting rod is free of parasite friction over the full stroke of the rudder and even when the Tailwheel is loaded and unloaded.

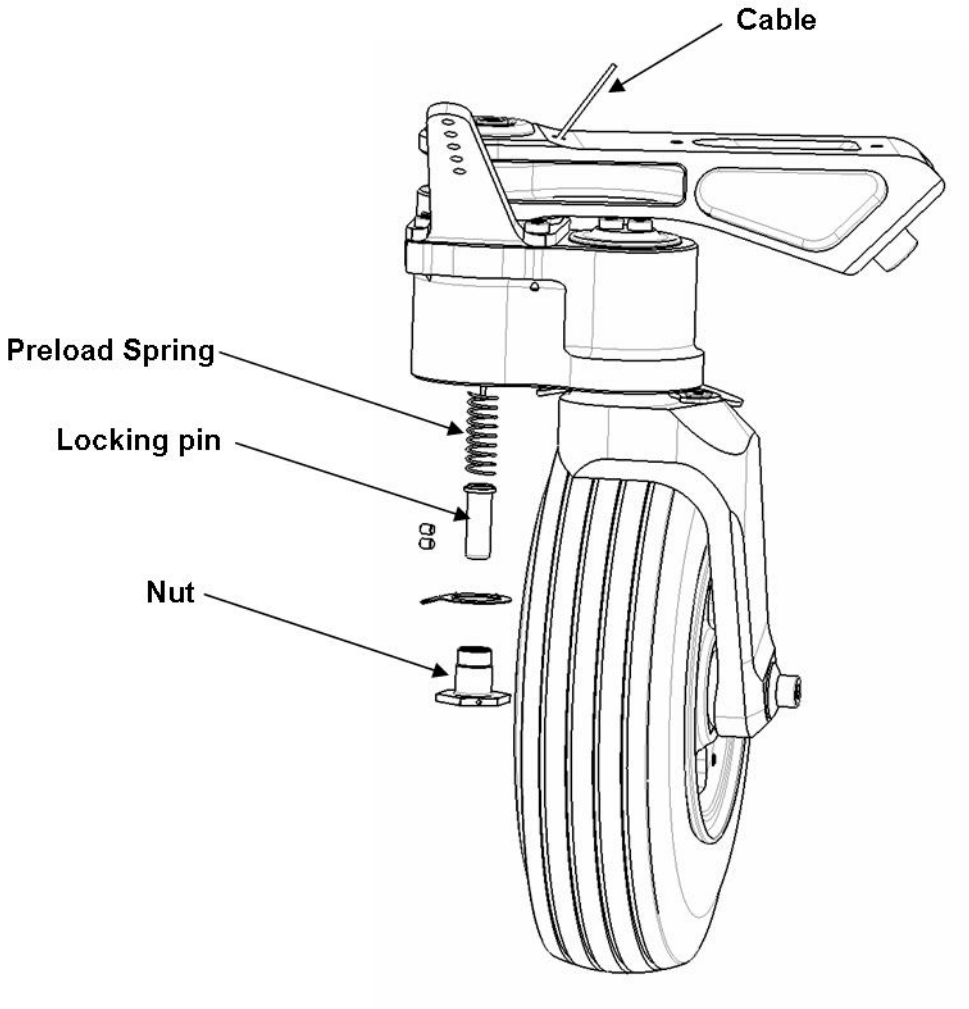
4.3 Locking lever and cable tubing

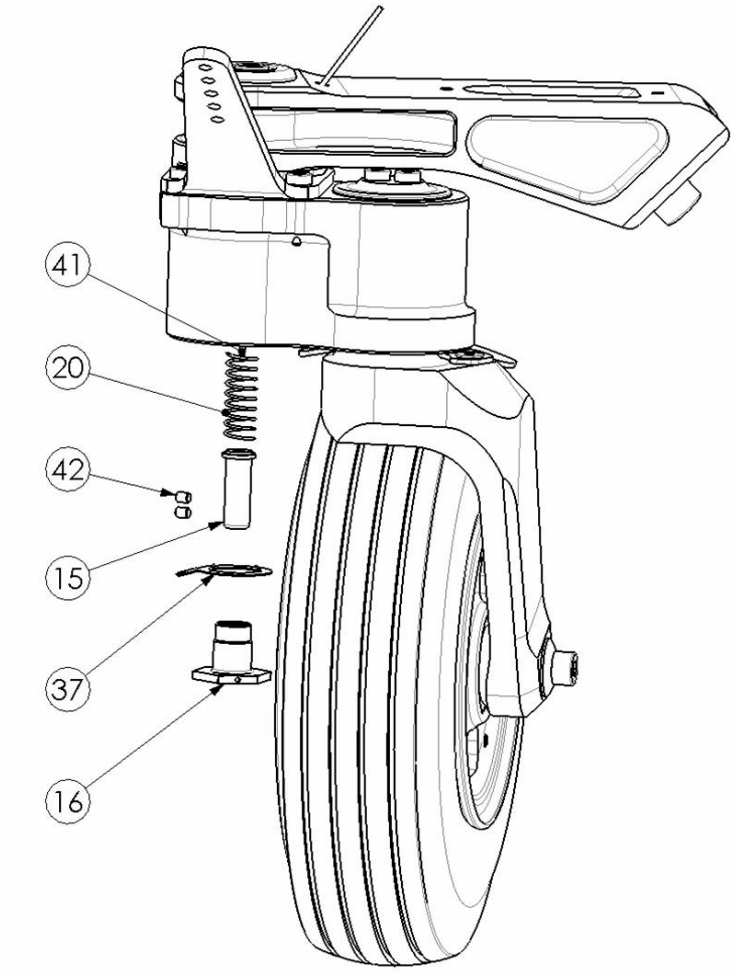
The tailwheel system can be locked and unlocked using a lever in the cockpit.

The lever actuates a cable sliding into a tube that goes from the cockpit to the tailwheel assembly.

The cable is pulling the locking pin.

When the cable is pulled, the locking pin is retracted and allows the free rotation of the wheel around the front axle.
When the cable is released, the preload spring pushes the locking pin down.





41	Cable
20	Spring
42	Screw
15	Locking Pin
37	Securing Washer
16	Nut
REP	**Description**

To install the cable:
- Unlock the wheel and turn it 90° to have access to the nut (16).
- unscrew the nut and remove all the small parts
- insert the cable from the top of the Base
- insert the spring first (around the cable)

- insert the pin and lock the cable with the 2 screws (42). Make sure that the head of the screw does not protrude around the pin. The cable should not protrude outside the pin.
- grease the pin and nut
- place the securing washer and screw the nut
- lock the nut with safety wire

Place the cable along the fuselage and secure it with plastic straps.
Find a place in the cockpit and fix the lever.

Adjust the cable tubing length.
Adjust and fix the cable to the lever, the stroke will be around 0.5”

Indicates the 2 positions “LOCKED” and “UNLOCKED” with stickers as per the pictures next:

5. USER INSTRUCTIONS

The use of the BERINGER tailwheel is different compared to the original system.
Prior to the use of this system the next information should be read carefully.

Pilot must train taxiing with a progressive increase of speed for some hours prior to first take-off and landing.

The tailwheel system has 2 positions:

a) **Locked** : rigid steering with the rudder for: take off, landing

b) **Unlocked** : no steering at all, for static turn with differential brakes

TAILWHEEL POSITION	TYPE OF USE	RISK IF NOT RESPECTED
MUST BE LOCKED	- Take off, landing, in flight	- Shimmy - Loss of control - Ground loop
MUST BE UNLOCKED	- Sharp turn using differential brakes	- inability to perform sharp turn - damage on the tail wheel assembly

It is recommended to lock the tailwheel as often as possible.

CAUTION: To prevent the risk during take off and landing with the tailwheel in “unlocked” position, we recommend checking the tailwheel position before take off and before landing. The aircraft checklist should be updated in this way.

The rigid connection between rudder and tailwheel gives a fine and precise control of the aircraft on ground. During first use the pilot may feel that it is very sensitive compared to the original system. It may take some time to the pilot to be trained to the new system.

CAUTION: Prior to any take off the pilot must take into consideration the new feeling in order to avoid any control loss.

CAUTION: This tailwheel assembly does not increase the crosswind capacity of the aircraft. The maximum crosswind allowed is written in the aircraft flight manual and should be respected.

6. TROUBLESHOOTING

This paragraph provides information necessary to identify, diagnose and correct potential problems which may occur with the tailwheel system.

TROUBLE	PROBABLE CAUSE	CORRECTION
1. lateral control is too sensitive	Tailwheel steering is too direct	Reduce the max. wheel angle
	Pilot action on the rudder is excessive	Apply small corrections to control the aircraft
2. full rudder does not allow sharp turn	Tailwheel steering angle is not enough	Increase the max. tailwheel angle
	Tailwheel is on “locked” position	Unlock the tailwheel
3. There is shimmy on the tailwheel during taxi	Tailwheel is on “unlocked” position	Lock the tailwheel