

To convert the main wheel of the „**Swift S-1**“ to a *Standard 5*“-Tost-hub with mechanical brake the following parts are needed (all parts are available from Güntert + Kohlmetz GmbH):

- 1 TOST 5“ wheel *Standard* 125mm width; 20mm bearing (No. 045400)
- 1 ea. bush p/n **S1 FW-001-1** and p/n **S1 FW-001-2**
- 1 axle p/n **S1 FW-002**
- 1 hollow shaft p/n **S1 FW-003**
- 1 brake torque anchor bracket p/n **S1 FW-004**
- 1 fastener for the brake cable p/n **S1 FW-005**
- 1 flat lock nut M8 SSN 003
- 2 lock nuts (with polyamide insert) M6 DIN 985-8
- clamping bolt 2-37B
- 2 split pins Ø 1,6 x 16 DIN 94
- 2 rivets 4x10 DIN 7337 A
- new brake cable, pre-assembled with swage (Klemmnippel) 2-23B (5 x 7,5)

All work should be undertaken on the derigged glider. The main pins and the floor of the baggage compartment must be removed.

The fuselage should be jacked up high enough in a fuselage shell (for example the fuselage dolly of the trailer), so that the undercarriage is easily accessible.

1 Disassembly of the main wheel

For the links (numbers) see Figure 1 on the following page.

- 1) Detach the brake cable at the main wheel and cut it with a wire cutting pliers. Remove the whole cable from the bowdencable mantle. To do so, unscrew the castle nut at the the airbrake drive arm below the baggage compartement floor. Retain the castle nut and the washer, the parts are needed again to fasten the new brake cable.
- 2) Disconnect the springs at the main wheel doors and the spring (8) of the wheel brake actuator
- 3) Remove the nuts (9), washers and bolts (10) which fasten the wheel axle
- 4) Take out the wheel axle (11) and remove the wheel out of the frame
- 5) Disassemble the axle (11) by turning and knocking with a round timber and remove the wheel downwards out of the suspension.
- 6) Disassemble the adjusting bolt M6x50 for the bowden cable from the front undercarriage rocker. It will be used for the new wheel also.

The spring (8) and the axle (11) can be removed, they aren't used any more. Keep the bolts (10) with accompanying washers, they'll be needed to assemble the new axle.

- 1) push rod end
- 2) handle
- 3) upper end of the bowden cable
- 4) bearing
- 5) front strut
- 6) aft strut
- 7) undercarriage push rod
- 8) retraction spring
- 9) nuts for axle bolts
- 10) axle bolts
- 11) axle
- 12) brake disc
- 13) tyre
- 14) hub nuts
- 15) hub bolts
- 16) hub parts

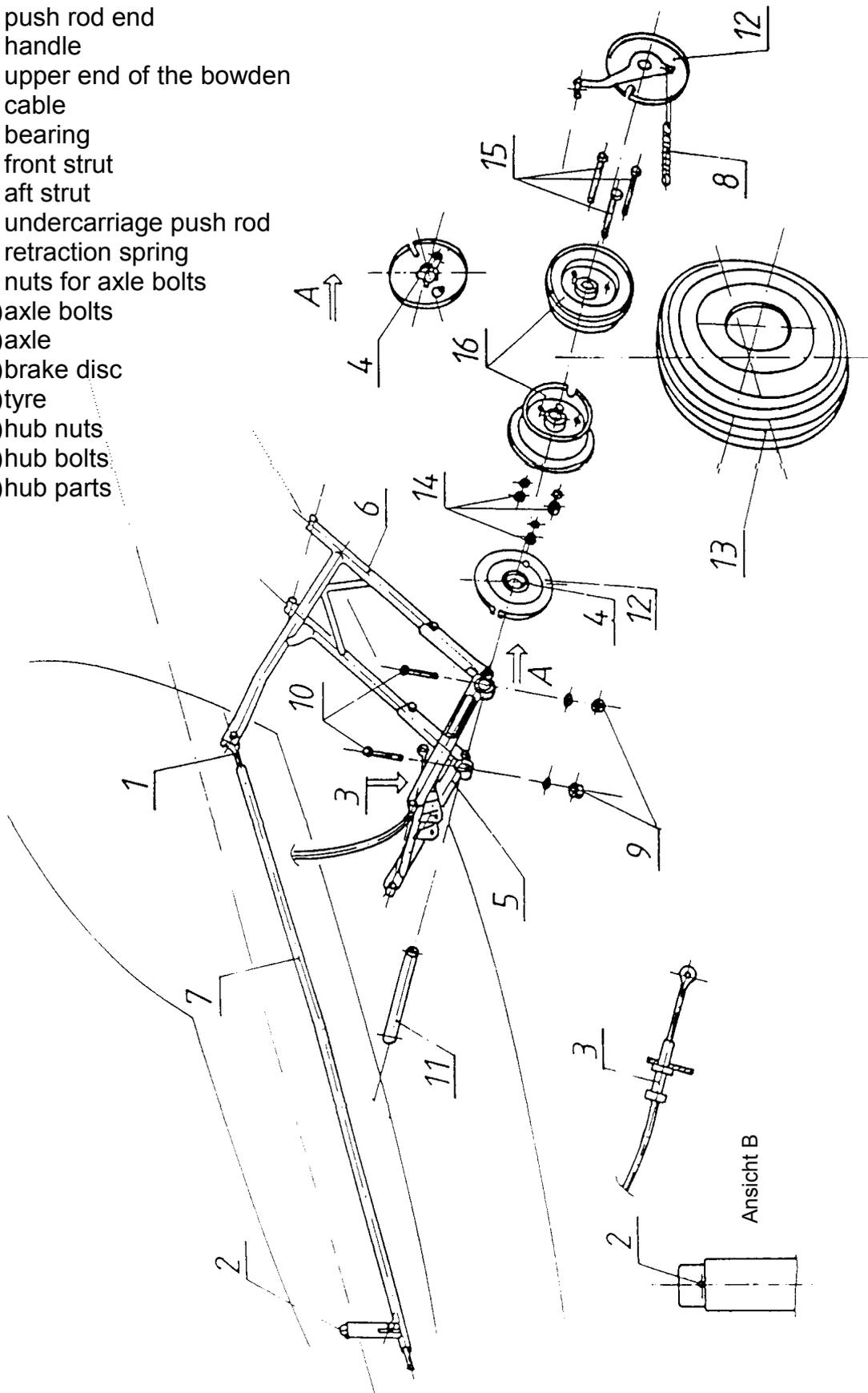


Figure 1: Main undercarriage

2 Assembly of the TOST-hub

- 1) Fasten support bracket **S1 FW-005** on the left lower side of the front undercarriage yoke to the gusset plate, to do so position **S1 FW-005** as shown in Figure 2 and Figure 3, mark the holes for the rivets at the undercarriage yoke and drill the holes with a drill $\varnothing 4,1\text{mm}$ (drill only through the lower sheet of metal!). Rivet **S1 FW-005** with two rivets 4x10 DIN 7337 A. In order to obtain a level seat for S1 FW-005 (in case the welding seam is protruding too far), it might be necessary to insert two washers 4,3 DIN125 in between yoke and **S1 FW-005** as part of the rivet joint.
- 2) Assemble the adjustment bolt M6x50 according to Figure 3.
- 3) The existing bowden cable mantle can be used again, if it isn't damaged. It has to be rerouted to the new position of the adjusting bolt M6x50. If the bowdencable mantle is too short or damaged by sharp bends, it has to be replaced by a new one.
- 4) Check the delivered brake cable if swage 2-23B is positioned with 100mm distance from the center of the thimble. If not, fasten swage 2-23B accordingly. Insert the brake cable into the bowdencable mantle beginning in the baggage compartment and push it fully through the adjusting bolt M6x50. Assemble thimble on the bolt M6 at the airbrake lever with exiting washer 6,4 DIN125 and castle nut M6 DIN937. The thimble must be able to turn easily around the bolt, so don't fasten the castle nut to tight. Secure the castle nut with new split pin 1,6x16 DIN94.
- 5) The braking torque is reacted into the undercarriage yoke by brake shackle plate **S1 FW-004**. For assembly and securing of the sheet metal plate it is necessary to drill a hole $\varnothing 2\text{mm}$ for a split pin into the brake shackle bolt at the front undercarriage-yoke. Push the brake shackle steelplate **S1 FW-004** onto the brake shackle bolt, assemble washer 8,4 DIN125 and split pin 1,6x16 DIN94 zn.
- 6) Grease sleeve **S1 FW-003** and slide it into the hub. Insert the Tost-wheel with the brake shoe to the left from below into the undercarriage yoke. Attach brake shackle plate **S1 FW-004** to brake shackle bolt on hub. Secure with nut M6 SSN003 but do not tighten yet.
- 7) Push sleeves **S1 FW-001-1** (left side as seen from tail) and **S1 FW-001-2** (the longer one - right side as seen from tail) into the axleholes of the undercarriage-yoke, until they are flush with the outer surface approximately. Move the wheel now, until the holes are aligned. Grease axle **S1 FW-002** and insert it carefully from left to right completely until the surfaces of bushes, axle and undercarriage-yoke are flush on the outside.

Now drill a hole through bush and axle on the left side of the undercarriage with a drill $\varnothing 5,8\text{mm}$. Use the existing hole in the yoke as template.

Ream the hole with a reamer 6H7 and insert the existing axle-bolt M6 (10) from top to bottom.



Figure 2: Overview showing the laying of the brake cable

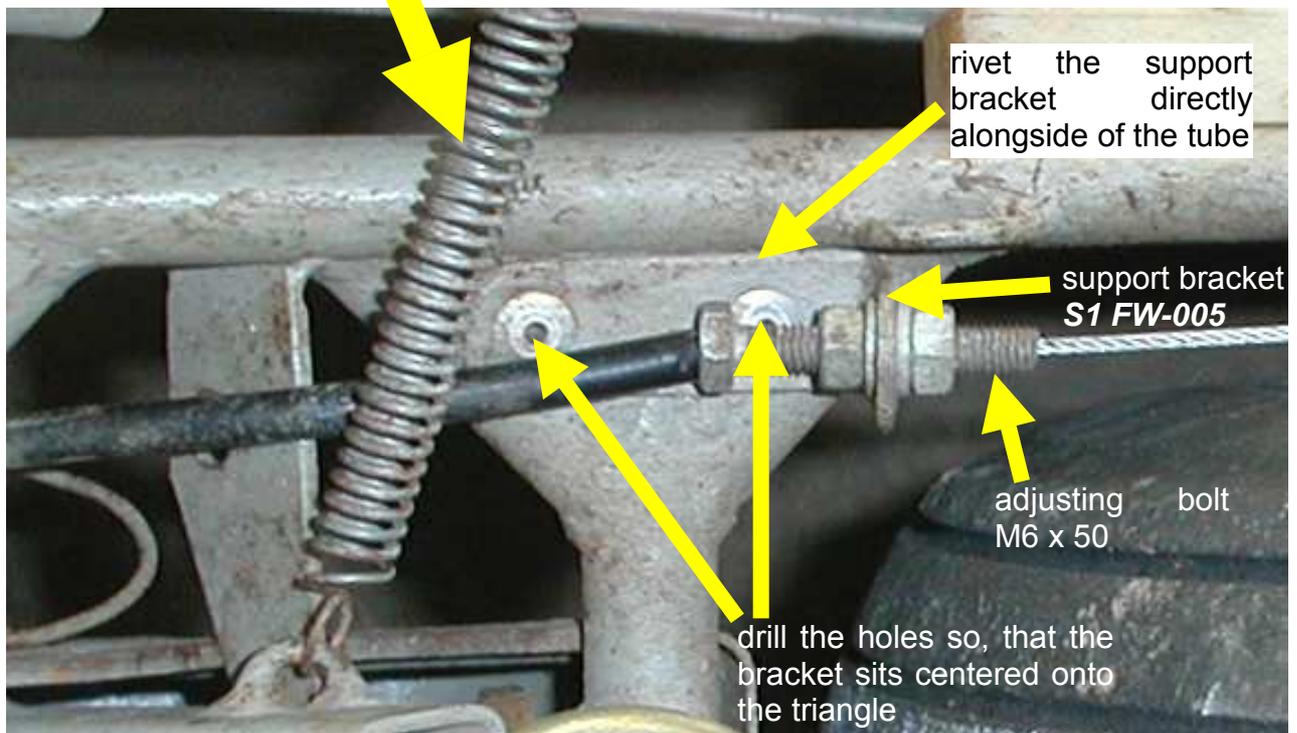


Figure 3: Attachment of the support bracket at the front undercarriage strut

Insert the bush **S1 FW-001-2** into the right side of the undercarriage yoke until the hub touches both bushes without axial play.

Then drill and ream this side also and assemble the existing bolt M6 (10). Check if there is no axial play of the hub and tighten both bolts M6 (10) with washers 6,4 DIN125 and lock nut M6 DIN 980-8.

Also turn tight nut M8 SSN 003 at the brake shackle bolt now.

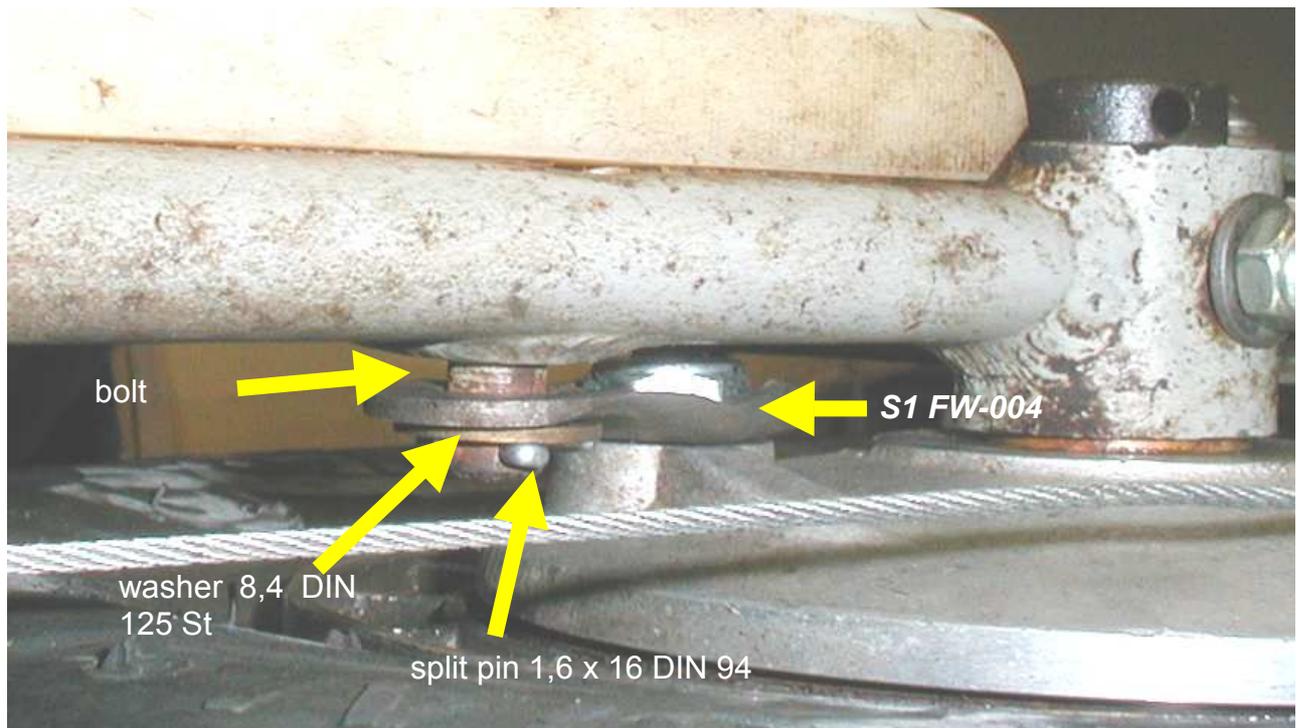


Figure 4: Mount of the brake shackle steelplate (front view)

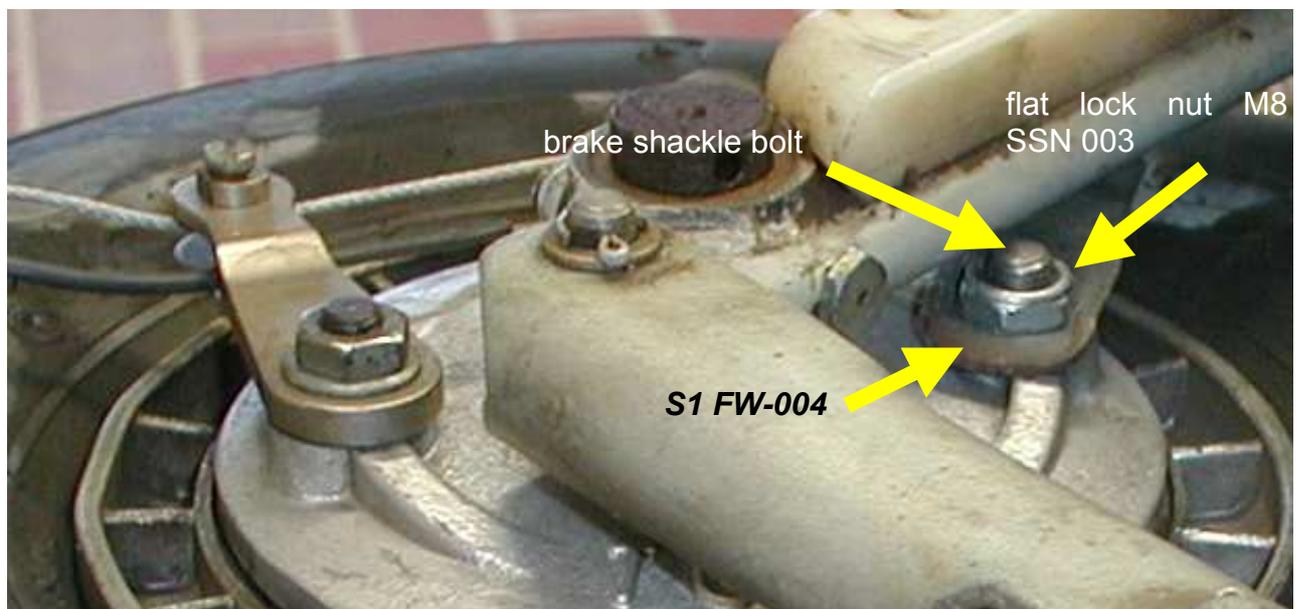


Figure 5: Mount of the brake shackle steelplate (aft view)

8) Adjust brake lever at the hub according to Figure 7.

It should point approximately in extension of the aft undercarriage yoke when not pulled.

If this isn't the case, then disassemble the brake lever and assemble it again in the required position.

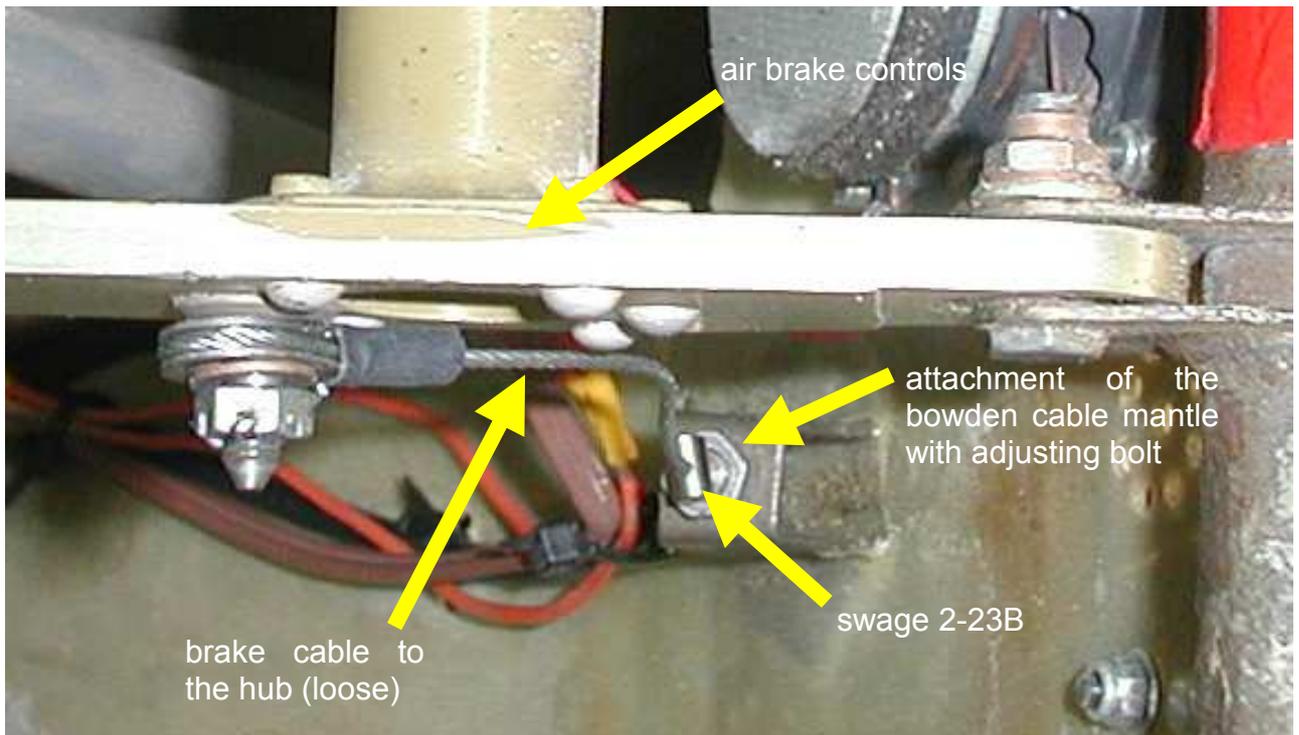


Figure 6: Brake cable behind the back bulkhead (air brakes retracted)

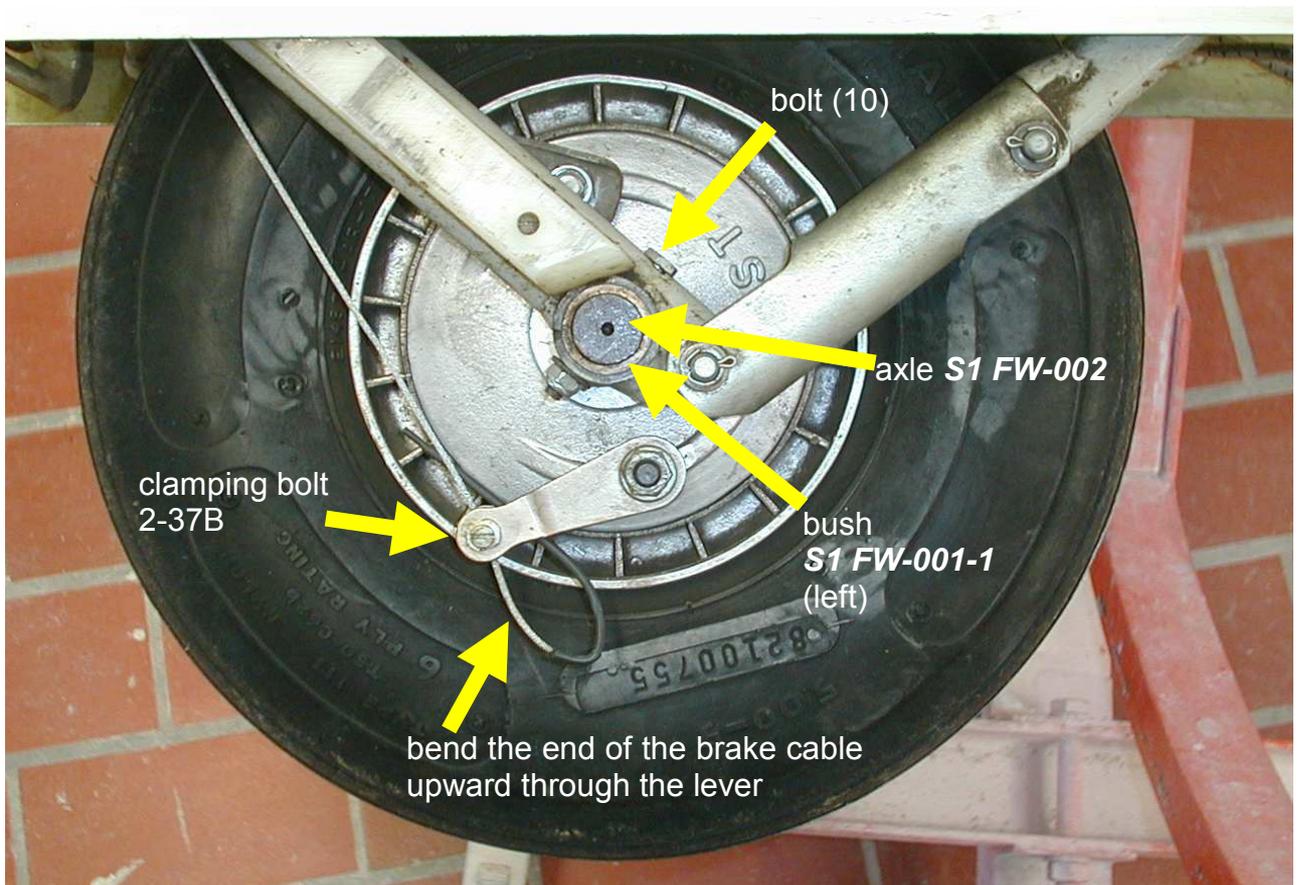


Figure 7: Assembled TOST-wheel

- 9) The brake cable is to be adjusted with the clamping bolt 2-37B at the brake lever so the brake will be engaged, when the airbrake handle in the cockpit will be approximately 20mm in front of the „fully extended“ position. The position has to be checked again when the glider is rigged and must be readjusted then, if necessary.

The end of the cable jutting out should be cut about 100mm behind the clamping bolt. It is advisable to secure the end of the cable by soldering or shrinking on of heat shrinkable tubing against de-twisting of the strands.

To prevent the cable end from touching the ground it has to be bend according to Figure 7 and passed upwards through the brake lever.

3 Check of operation

After finishing the modification, the aircraft has to be assembled and a check of the braking action has to be performed.

To do so push the aircraft backwards with one person at each wing. A third person pulls the air brake handle in the cockpit fully backwards. The wheel brake should stop the aircraft or the main wheel should block.

If the braking action is not sufficient the brake lever at the hub has to be readjusted according to chapter 2 no. 9) (see above), until the braking action is satisfactory. It may be necessary to readjust the actuator shaft joint (toothed) to a new angle.

Finally it has to be checked if the air brakes are fully extend out of the wing when the air brake handle in the cockpit is pulled back as far as possible (see maintenance manual, **Figure 1**). If this isn't the case, then readjust (elongate) the cable to the brake until the airbrakes are fully extended.