



AIRWORTHINESS DIRECTIVE

- TYPES AFFECTED:** Motor Glider Grob 109 from serial No. 6001 to 6159 inclusive
Motor Glider Grob 109B from serial No. 6200 to 6317 inclusive
- SUBJECT:** Inspection/replacement of main undercarriage legs.
- BACKGROUND:** Overseas experience has required the issue of Grob TM 817-19 which requires the inspection and replacement of main undercarriage legs.
- ACTION REQUIRED:** In accordance with TM 817-19 which constitutes part of this AD -
- (a) Carry out Instruction 1 and 2 before next flight
 - (b) Carry out Instruction 3 until the incorporation of Instruction 4.
 - (c) Carry out Instruction 4 at next Form 2 inspection or before.
- IMPLEMENTATION:** Actions (a), (b) and (c) to be carried out by a DoA 1109 Inspector authorised for C. of A. Powered Sailplanes, any type & must be recorded in the airframe logbook.
- MATERIALS:** As listed in TM 817-19, obtainable from E. Schneider Pty. Ltd., Two Wells Road, Gawler S.A. 5118.
- WEIGHT AND BALANCE:** - No influence.
- COMPLIANCE:** The requirements of this Airworthiness Directive are mandatory. This airworthiness Directive is issued pursuant to Air Navigation Regulations under the delegated authority of the Secretary of the Department of Aviation.

Issued by:

Chief Technical Officer,
Airworthiness

24.2.1986

For and on behalf of:

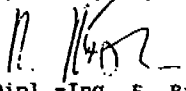
GLIDING FEDERATION OF AUSTRALIA

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Technical Information		Motorglider GROB G 109 GROB G 109 B		
TM 817-19				
2.	Instruction: Inspection of the undercarriage legs for cracks in the region of the boreholes.			
2.1	- The edge of the leg has to be inspected for cracks close by the 3 boreholes (for G 109 see under point 1.2; for G 109 B under point 1.3). In case of an overstress the small stem between borehole and edge breaks first. - The examination has to be done with a good magnifying glass. If need be, rests of dirt have to be removed previously. The place in question has to be inspected also from the undercarriage inside. In case of doubt the foot-board or the break line has to be screwed off temporarily for better access or a specialist has to be consulted for the application of a colour penetrating - crack test method.			
2.3	- If no cracks are found it has to be continued according to instruction 3.			
2.4	- If cracks are found, instruction 4 has to be carried out before next start.			
3.	Instruction: Repetition of instruction 2:			
3.1	- Until realization of instruction 4 the crack-test according to instruction 2 has to be repeated all 25 flight hours as well as after hard landings.			
3.2	- If cracks are found, instruction 4 has to be carried out before next start.			
3.3	- Until exchange of the legs it is recommended to be careful with the undercarriage as much as possible, that is to taxi slowly, to avoid uneven airports and hard landings.			
4.	Instruction: Exchange of the legs no. 109-5000.01 (with boreholes) for the legs no. 109 B-5000.01 (without boreholes).			
4.1	- The necessary material (see below) has to be ordered from the manufacturer with the attached order form.			
4.2	- The exchange has to be carried out according to repair instruction			
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		Technical Information TM 817-19		Motorglider GROB G 109 GROB G 109 B
Subject:	Inspection and exchange of the legs of the main landing gear			
Effectivity:	Motorglider GROB G 109 from serial number 6001 to 6159 inclusive. Motorglider GROB G 109 B from serial number 6200 to 6317 inclusive.			
Accomplishment:	- Instruction 1 and instruction 2 before next start - Instruction 3 until realization of instruction 4 - Instruction 4 not later than 31. Oct. 85			
Reason:	During operation of the motorgliders G 109 and G 109 B sporadically fractures of the undercarriage legs occurred. Caused by an overstress during hard landings, probably incipient cracks arisen in the region of the boreholes of the legs, which finally led to the failure by fatigue. As a precaution all legs will be exchanged for such without boreholes.			
Instructions:	1. <u>Instruction: Inspection of the undercarriage legs for existing boreholes.</u> 1.1 - Before realization of the instruction the undercarriage-leg-linings are to be screwed off. 1.2 - If the 3 boreholes for the mounting of the foot-board and the brake lines exist at the G 109, instruction 2 has to be carried out. (Sporadically, the foot-boards were fastened by a clamping joint). If no boreholes exist, further instructions are inapplicable. 1.3 - If the 2 boreholes for the mounting of the brake lines as well as one free borehole exist at the G 109 B, instruction 2 has to be performed. (Sporadically, the brake lines were fastened by clamp straps). If no boreholes exist, further instructions are inapplicable. 1.4 - After realization of all instructions the undercarriage-leg-linings have to be screwed on again. Meanwhile it can be flown without linings.			
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	Technical Information TM 817-19	Motorglider GROB G 109 GROB G 109 B		
no. 817-19. This repair instruction is component part of the present technical information and will be distributed with the material. Material: for G 109 and G 109 B 2 undercarriage legs no. 109 B-5000.01 4 nuts LN 9348-M6 8 nuts LN 9348-M8 8 nuts LN 9348-M10 2 Parker- flexible fuel tubing, 50 mm long, slotted besides 1 repair instruction no. 817-19 1 drawing no. 109-5100/5101 "undercarriage" for G 109 (edition: 18.03.85) or 1 drawing no. 109 B-5101/5102 "under-carriage" for G 109 B (edition: 18.03.85) additionally for G 109: 2 stops no. 109-5206 2 sheet metals no. 109-5205.03 4 countersunk screws DIN 963-M6x12/8.8 galvanized 4 fillister head screws DIN 6912-M6x35/8.8 galvanized 4 discs LN 9025-6,4 4 nuts LN 9348-M6 2 Parker flexible fuel tubings 50 mm long, slotted Weight and Balance: No influence Remarks: The proper execution of the instructions by a competent person has to be certified in the log-book by an authorized inspector class 3. Mattsies, March, 18, 1985 ri-on  LBA approved on - 8.03.86 signed Dipl.-Ing. R. Rischer P.S.: In case you have sold your motorglider meanwhile, we ask you kindly to give this information immediately to the new owner and to let us know his address and the serial number.				
Datum	ersetzt Ausgabe vom	Bearbeitung	Musterprüfer	Seite



Repair Instruction no. 817-19 to TM 817-19

Motorglider
GROB G 109
GROB G 109 B

The repair instruction belongs to instruction 4 of the technical information TM 817-19 and includes the exchange of the undercarriage legs no. 109-5000.01 (with boreholes) against legs no. 109 B-5000.01 (without boreholes) at the undercarriage. The drawing no. 109-5100/5101 respectively no. 109 B-5101/5102 is component part of this repair instruction.

Material: According to TM 817-19
additionally - locking wire
- fabric tape (for example
Tesa-tape no. 4651)

Tools: 1 set of screw-drivers (different widths)
1 set of engineers' wrenches (SW3 to SW17)
1 set of inbus keys
1 twist drill ϕ 6,5
1 countersink chamfer tool 90°
1 torque wrench with different inserts
1 flat-nose plier
1 side cutting plier
1 set of files

Operating Sequence: The "consecutive numbers" of drawing no. 109-5100/5101 respectively no. 109 B-5101/5102 are indicated in parentheses.

1. - Before starting to work remove the wings completely from the fuselage and put them aside.

Note: It is recommended to commit the assembled condition well to memory before disassembly of any parts or to make notes or sketches in order to facilitate the assembly. Also small parts, for example screws, should be marked exactly.

2. - Jack up the fuselage in the front so that the main wheels are lifted a little from the ground. Best to put under a stabil stand with broad support which is well padded, in the region of the fire wall. (Caution, that the cowling will not be crushed). Additionally the fuselage has to be supported and fixed in the region of the tailwheel that the tailskid doesn't roll away and will be unburdened.
3. - Remove both seats inclusive the back-rests in order to make the undercarriage fittings accessible.



Repair Instruction no. 817-19
to TM 817-19

Motorglider
GROB G 109
GROB G 109 B

4. - Remove all undercarriage linings (15). Store up cover (13) and sleeve (8). At the G 109 unscrew additionally foot-board (17).

Caution: The brake system must not be opened at any place. It has to be proceeded exactly according to instruction, otherwise later a bleeding will be necessary.

5. - Loosen two clips at the undercarriage leg for fasting of the brake line.
6. - Remove locking wire (39) and unscrew the 2 screws (44). Take off brake assembly (43) and assemble again provisionally with screws(44) in order to protect the piston.

Caution: On no account operate brakes in this condition. Otherwise the piston falls out and later the brake system has to be filled and bled again.

7. - Brake line (19), flexible brake tubing (45) and brake assembly (43) remain in this condition at the fuselage until assembly at the new undercarriage.
8. - Now loosen the 4 undercarriage clamping nuts (29) on both sides in the cockpit and take out the screws (34) and (35).
9. - Take off complete undercarriages from the fuselage. The following works have to be performed at both undercarriages. Pay attention that right and left side are built up mirror-inverted.
- 10.- Pull out rod (6) and cover (13) from the axle (11) and take off wheel (40, 41, 42).
- 11.- Loosen screw bond (22, 30, 36) between axle (11) and undercarriage leg (1) and take off brake saddle (12) plate (9) and mounting frame (14).

The following points 12 to 14 are only valid for the G 109 and can be omitted at the G 109 B.

- 12.- The old stop dog (16) has not to be unscrewed from the old undercarriage leg (1), it is needed not any longer.
- 13.- As preparation for the assembly of the old foot-board (17) at the new undercarriage an additional new borehole ($\varnothing$ 6,5 mm with 90°-depression) has to be installed. See section C-C.



Repair Instruction no. 817-19
to TM 817-19

Motorglider
GROB G 109
GROB G 109 B

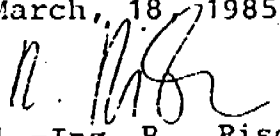
- 14.- Now install the new stop dog (16) and the new sheet metal (25) at the new undercarriage leg (1) according to section C-C by the aid of the new screwing (27, 28, 31). Right and left has to be distinguished. Push upwards the loose mounted unit as far as possible (app. 155 mm from the upper knee) and then tighten it strongly. Later, if need be, the position has to be corrected a little during adjustment of the undercarriage leg lining.
- 15.- For G 109 and G 109 B the axle (11) has to be screwed with the new undercarriage leg (1). In doing so, the brake saddle (12), the plate (9) and the mounting frame (14) have to be stringed in the correct order. Pay attention that right and left undercarriage are mirror-inverted. See drawing no. 109-5100/5101 respectively no. 109 B-5101/5102. The screws (36) and the discs (22) with new stop nuts M8 (30), which are tightened with a torque of 16 Nm, are used.
- 16.- Push wheel (40, 41, 42) on the axle, put on 2 covers (13), insert rod (6) and fasten with new stop-nut M6 (28).
- 17.- Now the prepared undercarriages left and right have to be mounted at the fuselage. To that belong the screws (34) and (35), the discs (24), the sleeves (4), the frame (2) and new stop-nuts M10 (29), which are screwed up in the cockpit and tightened with a torque of 32 Nm.
- 18.- The following operations serve to fasten the brake system at the new undercarriage. As preparation, at the G 109 the brake line (19) in the region of the new foot-board has to be equipped with a bend so that it doesn't rub at the new screw (27). See drawing no. 109-5100/5101.
- 19.- Now remove again the screws (44) at the brake assembly (43), push the brake assembly on the saddle (12), assemble the brake assembly again and connect with the screws (44). Finally, the locking wire (39) is installed.
- 20.- Push hose parts (7) on the brake line (19) according to drawing.
- 21.- Fasten flexible brake tubing (45) and brake line (19) with 2 layers of fabric tape (54) at the undercarriage leg (1).
- 22.- It is recommended to consult the inspector for acceptance before mounting the linings.

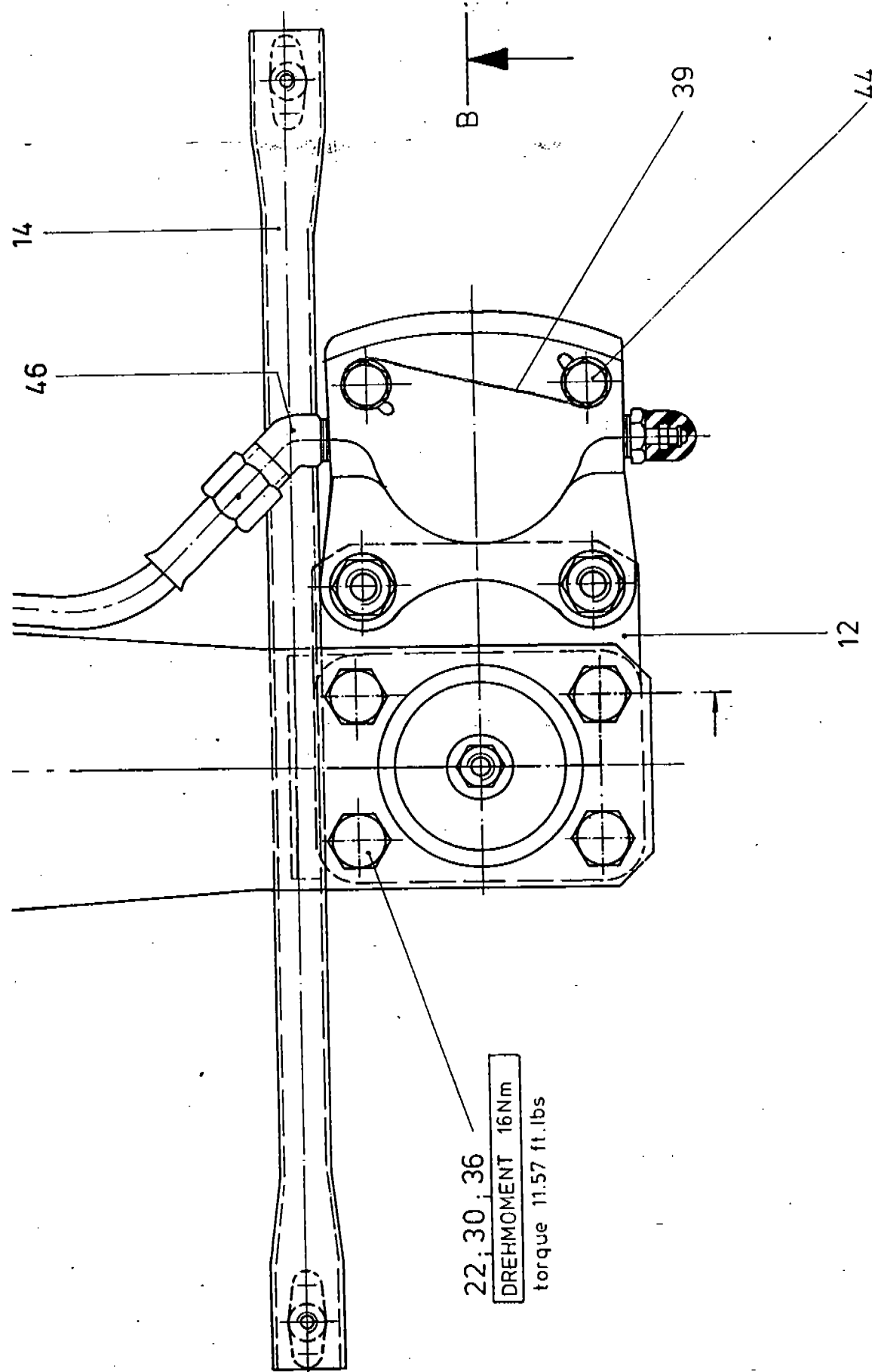
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- 23.- Mount again all undercarriage linings (15) inclusive sleeve (8) and third cover (13). Pay attention to the free movement of the wheels. At the G 109 the sectors in the outer undercarriage leg lining have to be extended and carefully adjusted. Cut additional recesses for the new nuts (28) in the inner lining.
- 24.- Finally, at the G 109 the foot-boards (17) have to be fastened with the screws (32).
- 25.- After the acceptance, also in the interior of the fuselage, put in again the seats inclusive back-rests.
- 26.- Let down fuselage.
- 27.- Mount wings.
- 28.- Taxying test with control of function of the brake installation.
- 29.- Have proper execution of the TM 817-19 certified in the logbook by an authorized inspector, class 3.

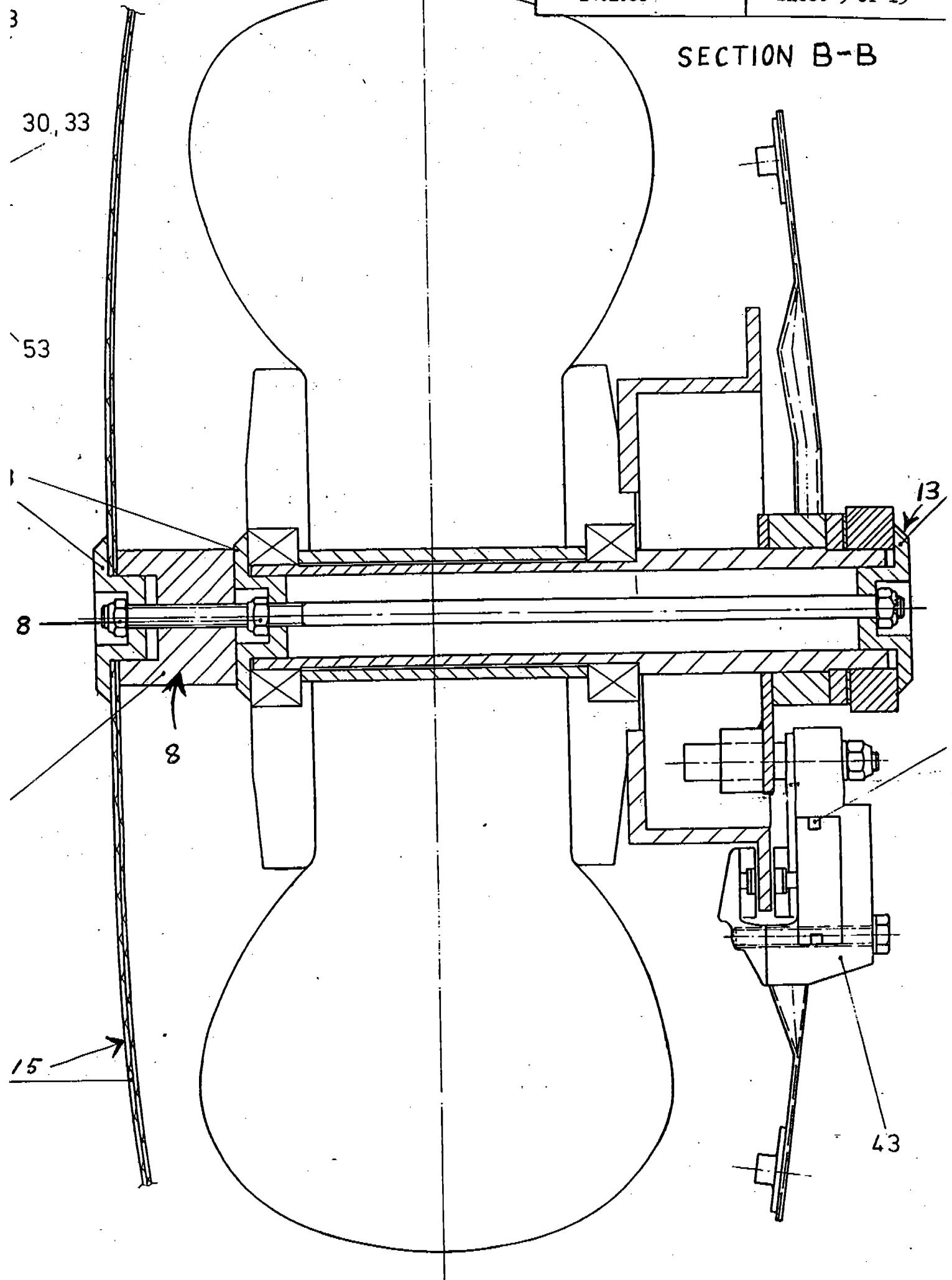
Caution: We point out that at the next weighing after the exchange of the undercarriage legs the measures "a" and "b" have to be measured anew (compare Flight Manual page 25 and 26). Concerning these measures there may arise little displacements due to the reconstruction. In the course of the TM 817-19, however, no weighing is necessary.

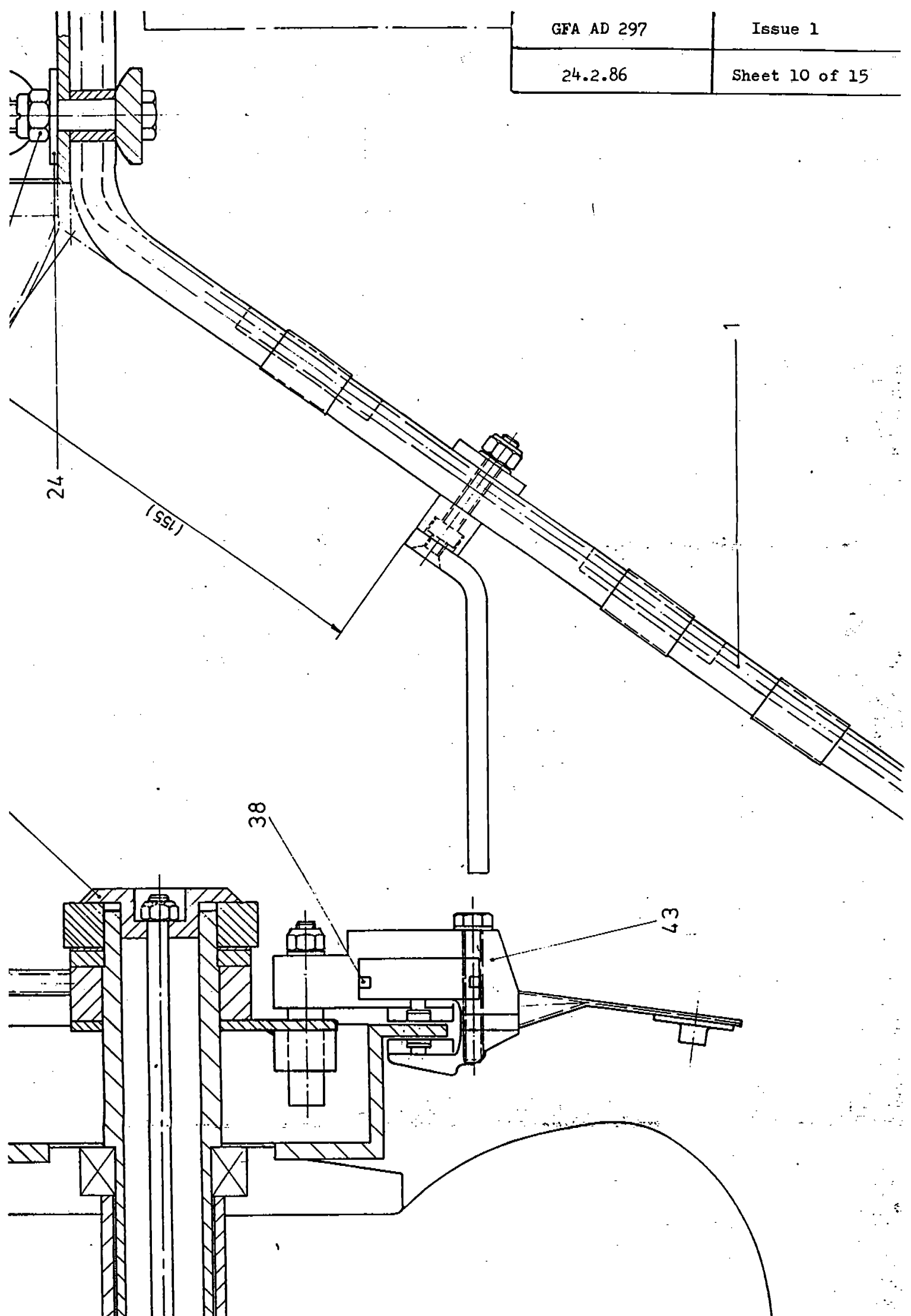
Mattsies, March, 18, 1985
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signed Dipl.-Ing. R. Rischer



SECTION B-B





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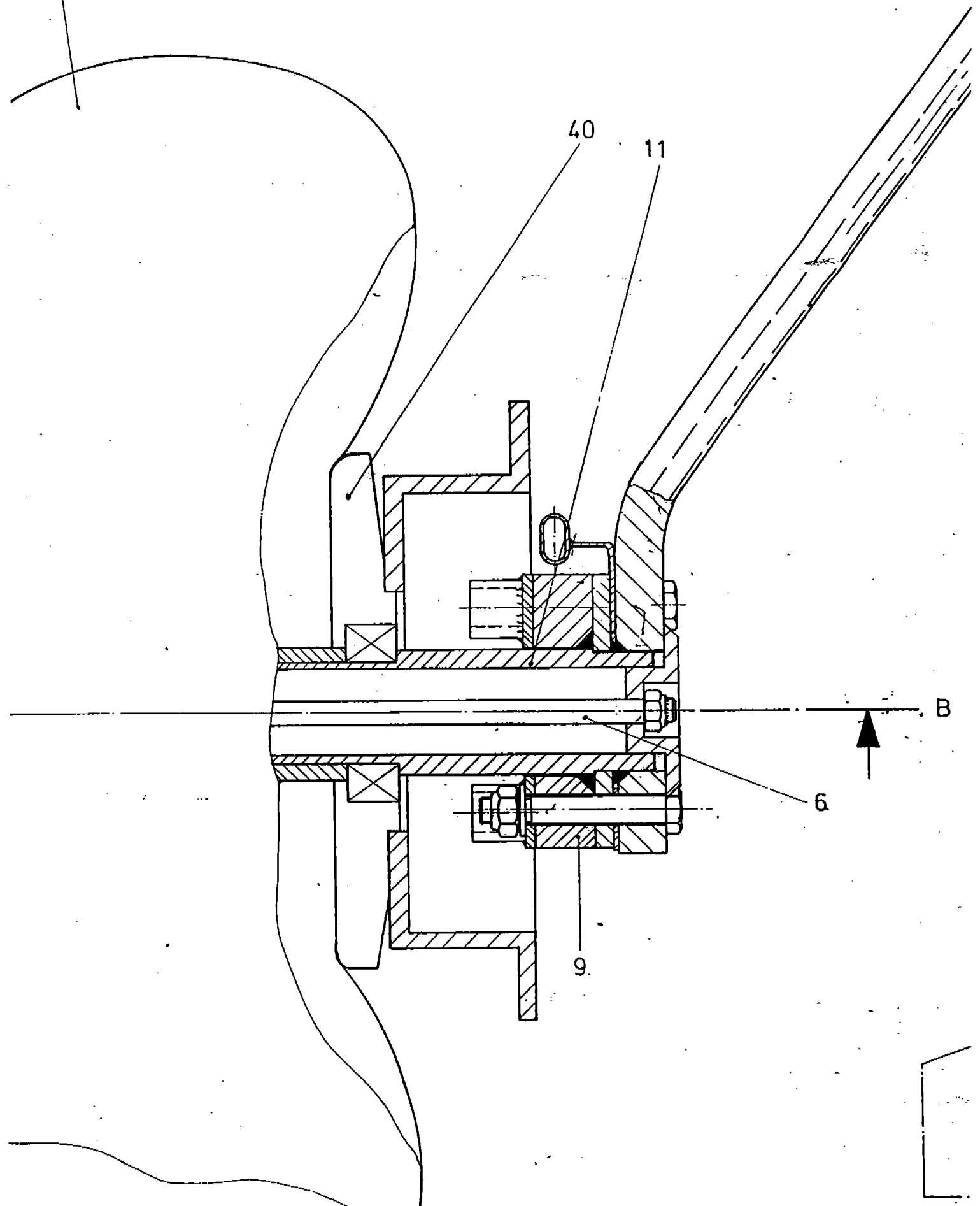
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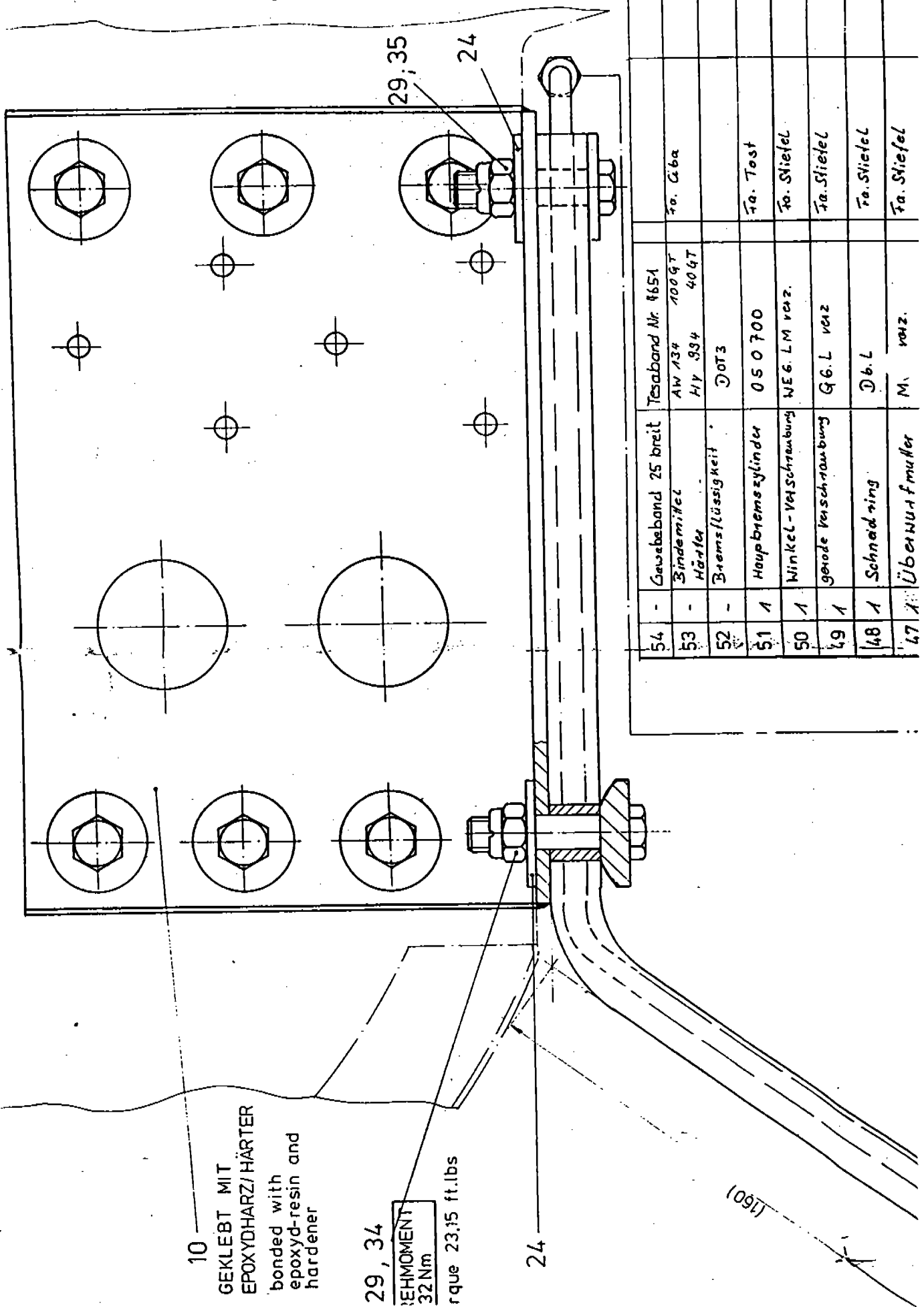
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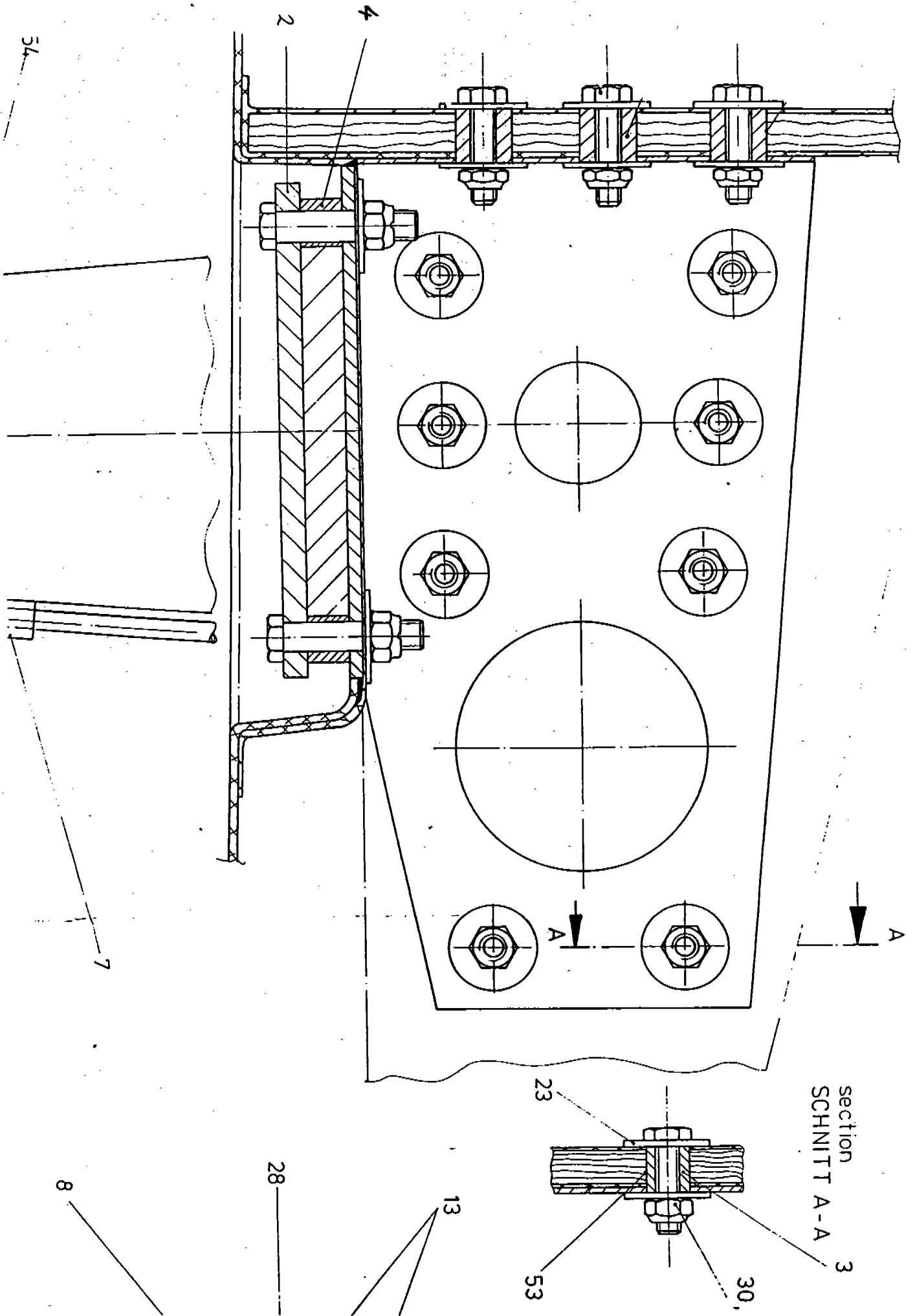
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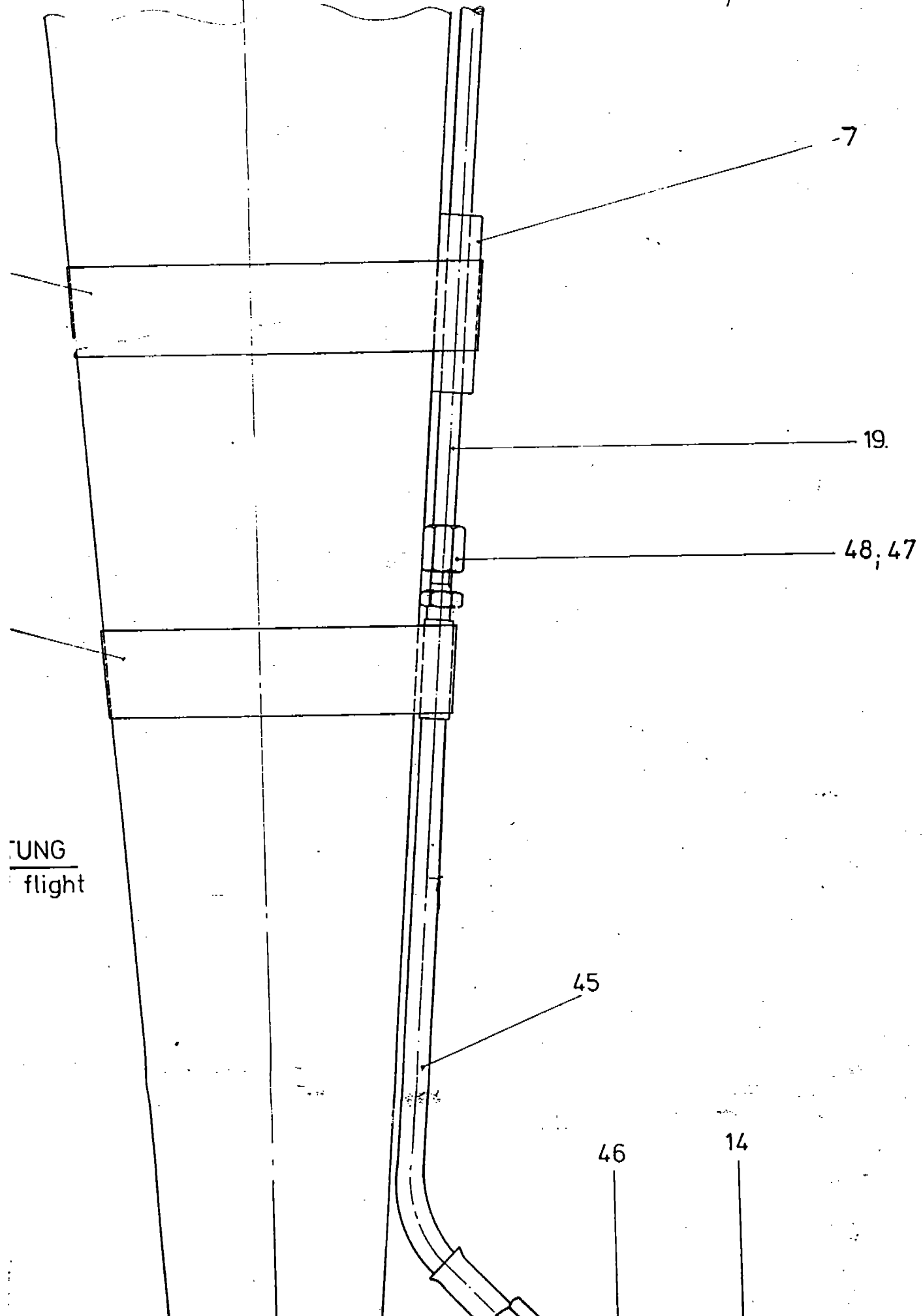






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section
SCHNITT C-C

