SAFETY ALERT

Trim Tab Retrofit CTSW

SA-LTUL-CTSW-06

Repeating Symbols:

Please pay attention to the following symbols throughout this document emphasizing particular information.

- ▲**Warning:** Identifies an instruction, which if not followed may cause serious injury or even death.
- ■ **Caution:** Denotes an instruction which if not followed, may severely damage the aircraft or could lead to suspension of warranty.
- ● **Note:** Information useful for better handling.

1 Planning Information

1.1. Affected Aircraft

Type:	CT
Model:	CTSW 2006
Serial Number:	All aircraft equipped with stabilizer built using Aramid fibers for the stabilizer skin (includes all Ultralight certified aircraft), and equipped with long (full span) Trimtab attached to the Stabilizer.
Applicable Countries:	All where aircraft are operated as Ultralight version (472,5 kg MTOW)

1.2. Concurrent Documents

-none-

1.3. Reason

One CTSW was operated outside the allowed speed range, in combination with too high control surface deflection. The aircraft experienced a structural failure of the stabilizer in flight. The aircraft could continue its flight and land safely. GPS log documented the speed exceeding V_{ne} at the moment of the failure. Accidentally taken video provides noises that could be interpreted as flutter, just prior to the stabilizer failure.

In consequence to the Occurrence Flight Design has conducted repeated ground vibration tests using other test facilities, other test equipment and other evaluation tools than used during ground vibration test when certifying the aircraft. It was found that a flutter mode on the trim tab is possible that was not possible to be detected with the available methods at the initial certification, only the newer analysis methods used today were able to identify the observed effect.

To avoid misunderstanding and difficulties in the interpretation, please consider the following information:

- CT Supralight has a short trim tab and did undergo a complete new ground vibration test during certification using already the new methods at the new test institution in 2009. The aircraft design has been verified to be free from flutter. Therefore, CT Supralight is not affected.
- CTSW aircraft with short trim tab (for example all aircraft delivered to UK) are identical to the newly tested CT Supralight. Therefore, CTSW with short trimtab is not affected.
- CT models preceding CTSW are directly comparable to CTSW with short trim tab. Therefore, CT models preceding CTSW (CT2k, CT) are not affected.
- CTSW aircraft delivered as LSA aircraft (600 kg) are equipped with stabilizers built from significantly stiffer carbon fiber fabric instead of the Aramid fabric used on the more weight sensitive Ultralight aircraft. The increased stiffness of this version shifts flutter limits to higher airspeeds. In addition the V_{NE} of LSA aircraft is below the V_{ne} of the Ultralight version. Therefore CTSW LSA aircraft are not affected.
- CTLS aircraft are of completely different design in the questionable area. CTLS did undergo a complete ground vibration testing at the new test facility in 2007. The aircraft design has been verified to be free from flutter. Therefore, CTLS is not affected.

1.4. Subject

Action 1:

Implementation of a mandatory limitation of the never-exceed speed (V_{ne}) to CTSW aircraft as identified in Chapter 1.1 of this SA.

This limitation of the never-exceed speed is applicable until Action 2 is successfully completed.

This action is identical to the action identified in SA-LTUL-CTSW-04, which is superseded by this document.

Action 2:

Retrofit of the CTSW full-span Trim Tab to the short Trim Tab (See Fig. 1 of an aircraft after retrofit). This retrofit must be completed within the timeframe identified in Chapter 1.5 of this SA.

After successful completion of the retrofit as defined in Chapter 3.5 of this SA, removal of the airspeed limitation that was introduced in Action 1.

Fig. 1

1.5. Compliance

Action 1:

Compliance must be demonstrated prior to next flight.

Action 1 is identical to the action identified in SA-LTUL-CTSW-04, which is superseded by this document. Aircraft that comply with the superseded SA-LTUL-CTSW-04 also comply with this new SA-LTUL-CTSW-06 Action 1.

■ **Caution:** Compliance with the superseded SA-LTUL-CTSW-04 does not result in compliance with Action 2.

Action 2:

Compliance must be shown latest at the next annual inspection of the aircraft. In cases where the annual inspection of the aircraft is within six months from issuing of this SA, showing of compliance may be delayed until six months following the issue date of the SA.

▲**Warning:** Non-compliance with these instructions could result in further damages, personal injuries or death.

1.6. Approval

Not applicable

1.7. Type of Maintenance

Action 1:

Not applicable

Action 2:

heavy

1.8. Personnel Qualifications

National regulations apply.

1.9. Release to Service

Conduct of this SA (Action 1 and Action 2) must be confirmed by an aircraft inspector according to the national applicable regulations for the country of registry of the aircraft.

Conduct of this SA (Action 1 and Action 2) must be logged in the aircraft log book with date and signature of the responsible Person according to national regulations.

Release to Service after conduct of the superseded SA-LTUL-CTSW-04 for an individual aircraft is considered as Release to Service following Action 1 of this new SA-LTUL-CTSW-06.

■ **Caution:** Release to Service with the superseded SA-LTUL-CTSW-04 does not result in Release to Service following Action 2.

1.10. Weight and Balance

Action 1:

Not affected

Action 2:

When SI-LTUL-CTSW-13, Shortening of the CTSW Trim Tab, has been conducted and the total weight change of trim tab and re-balancing of the stabilizer remains below 1 lb (0.45kg), in compliance with FAA publication AC 43.13-1B re-weighing of the aircraft is not required due to this measure alone. In any other cases new weight and balance of aircraft is required.

▲Warning: When this exemption has been used already for earlier maintenance events on the aircraft, or when other maintenance events are conducted in parallel and the weight he individual events add up to more than 0.45 kg (1 lb), re-weighing of the aircraft is required for the sum of the effects.

1.11. References

1. Drawings:

None.

2. Documents:

Latest issues - as applicable for the individual aircraft - of:

[1] Flight- and Maintenance Manual CTSW 2006

[2] SI-LTUL-CTSW-13 (Shortening of the CTSW Trim Tab)

[3] SI-LTUL-CTSW-05 (Removal / Installation of Trim Tab)

1.12. Superseded Documents

[4] Flight Design Safety Alert SA-LTUL-CTSW-04 (Temporary Airspeed Limitation CTSW)

1.13. Contact Details

For further information on conduct of this SA, or to report any Safety of Flight or Service Difficulty issues contact your Distributor responsible for your country. Your Distributor can be located via the Flight Design website: www.flightdesign.com under “Dealer Location”.

In cases where the local distributor is not known or available contact Flight Design GmbH directly: airworthiness@flightdesign.com.

To obtain necessary spare parts and the retrofit kit required by the referenced SI, use the Flight Design template for “SI-LTUL-CTSW-13 Retrofit Kit Order” in the chapter 4.4 of this SA.

2 Resources

Action 1:

Not applicable

Action 2:

All required resources are listed in the referenced Service Instruction [2].

The retrofit kit used for SI [2] can be obtained free of charge from Flight Design using the Flight Design template for "SI-LTUL-CTSW-13 Retrofit Kit Order" in the chapter 4.4 of this SA. Submission can be done by mail, Fax or as scanned copy by e-mail to Flight Design GmbH (see header of this page) or to your national Flight Design Distributor who will forward the information for you.

3 Instructions

Action 1:

3.1 Airspeed Limitation

The never-exceed speed of the affected aircraft is reduced to Vne = 225 km/h.

This new limitation must be displayed in the cockpit and in the aircraft operating relevant manuals.

It is the duty of the operator of the aircraft to ensure that all pilots flying the aircraft are made aware of this limitation.

3.2 Install Placard to the Instrument Panel

Print the following placard in color.

Max. Permissible Airspeed limited to
V_{ne} = 225 km/h
Limitation is mandatory as by Flight Design
SA-LTUL-CTSW-04, until explicit revocation.
Markings on Instruments stating different values are invalid.

Install placard to the instrument panel, in direct vicinity to the airspeed indicator. When the aircraft is indicated with an EFIS, install close to the EFIS in a location, where the pilot must notice it when operating the aircraft.

3.3 Amend Aircraft Flight- and Maintenance Manual

Print amendment page as provided by the Appendix three (3) times.

Add one amendment page each to the following chapters of the Flight- and Maintenance manual, in front of the page where the regular Vne limitation is displayed:

- Chapter 2 – Performance Limitations (section Airspeeds)
- Chapter 5 – Capacities (section Airspeeds)
- Chapter 7 – System Description and Functions (section List of Indications, Markings)

3.4 Documentation

Conduct of this SA, Action 1, must be logged in the aircraft log book with date and signature of the responsible Person conducting the SA. National regulations have to be considered.

Documentation of conduct of the superseded SA-LTUL-CTSW-04 for an individual aircraft is considered as compliant documentation of Action 1 of this new SA-LTUL-CTSW-06.

- **Caution:** Compliance with the superseded SA-LTUL-CTSW-04 does not result in compliance with Action 2.

Action 2:

3.5 Trim tab shortening

All applicable instructions are provided by the referenced Service Instructions [2] and [3].

3.6 Removal of Airspeed Limitation

After successful completion of the trim tab shortening as defined in Chapter 3.5 of this SA, the airspeed limitation required by Action 1 loses validity.

Remove the airspeed limitation placard installed in compliance with Chapter 3.2 of this SA from the instrument panel.

Remove the three amendment pages added in compliance with Chapter 3.3 of this SA from the Aircraft Flight- and Maintenance Manual.

3.7 Documentation

Conduct of this SA, Action 2, must be logged in the aircraft log book with date and signature of the responsible Person conducting the SA. National regulations have to be considered.

4 Appendix

4.1 Changes to Previous Revision

Original Issue – no changes

4.2 Feedback Template Flight Design

No specific feedback required

4.3 Amendment Page to Flight and Maintenance Manual

Amendment page see following page.

4.4 Retrofit kit order form

Amendment to
Flight- and Maintenance Manual CTSW 2006

The Never Exceed Speed (maximum permissible speed) V_{ne} of the aircraft is limited to:

V_{ne} = 225 km/h

This limitation is mandated by Flight Design SA-LTUL-CTSW-06

A placard must be displayed on the instrument panel of the aircraft in the close vicinity to the airspeed indicator or EFIS stating:

Max. Permissible Airspeed limited to
V_{ne} = 225 km/h
Limitation is mandatory as by Flight Design
SA-LTUL-CTSW-04, until explicit revocation.
Markings on Instruments stating different values are invalid.

This page must be inserted to all positions in the Flight and Maintenance Manual where the Never Exceed Speed V_{ne} is defined or quoted.

4.4 Retrofit Kit Order Form

Order Form **SA-LTUL-CTSW-06 Retrofit Kit**	
CTSW serial number:	
Aircraft owner, Name and Address:	
Please send Retrofit kit to this Address:	

Service Instruction

Shortening of the CTSW Trim Tab

SI-LTUL-CTSW-13

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- ● **Note:** Information useful for better handling.

1 Planning Information

1.1 Affected Aircraft

Type:	CT
Model:	CTSW 2006
Serial Number:	All aircraft equipped with Stabilator built using Aramid fibers for the Stabilator skin (includes all Ultralight certified aircraft), and equipped with long (full span) Trim Tab attached to the Stabilator.
Applicable Countries:	All where aircrafts are operated as Ultralight version (472.5 kg MTOW)

1.2 Concurrent Documents

- none -

1.3 Reason

In some cases FD CTSW aircrafts exhibited Trim Tab flutter in the high speed range. As a precautionary measure, Flight Design mandates a temporary limitation of never-exceed speed (V_{NE}) to CTSW aircraft (Safety Alert SA-LTUL-CTSW-06). Analysis for reasons has shown that previous type design of the Trim Tab with short span is free of flutter.

1.4 Subject

Retrofit of the CTSW full-span Trim Tab to the shortened Trim Tab (See Fig. 1-1).

Fig. 1-1

1.5 Compliance

As by the version of SA [1] that is relevant for your aircraft certification basis.

▲**Warning:** Non-compliance with these instructions could result in further damages, personal injuries or death.

1.6 Type of Maintenance

Heavy

1.7 Personnel Qualifications

National maintenance and inspection regulations as applicable for heavy maintenance, composite structure repairs, apply.

Task Specific: Can be completed only by a responsible individual with experience in composite repairs.

1.8 Approval

Not applicable

1.9 Release to Service

Conduct of this modification must be inspected by an aircraft inspector according to the national applicable regulations for the country of registry of the aircraft.

Conduct of this SI must be logged in the aircraft log book with date and signature of the responsible Person according to national regulations.

1.10 Weight and Center of Gravity

When this SI has been conducted and the total weight change of Trim Tab and re-balancing of the Stabilator remains below 1 lb (0.45kg), in compliance with FAA publication AC 43.13-1B re-weighing of the aircraft is not required due to this measure alone.

▲**Warning:** When this exemption has been used already for earlier maintenance events on the aircraft, or when other maintenance events are conducted in parallel and the weight changes of the individual events add up to more than 1 lb (0.45 kg), re-weighing of the aircraft is required for the sum of the effects.

1.11 References

1. Documents:

Latest issues of:

[1] Safety Alert SA-LTUL-CTSW-06

[2] SI-LTUL-CTSW-05 – Removal and Installation of Trim Tab

[3] SI-LTUL-CTSW-04 – Stabilator rear wall stiffening

1.12 Superseded Documents

- none -

1.13 Contact Details

For further information on conduct of this SI, or to report any Safety of Flight or Service Difficulty issues contact your Distributor responsible for your country. Your Distributor can be located via the Flight Design website: www.flightdesign.com under “Dealer Location”.

In cases where the local distributor is not known or available contact Flight Design GmbH directly: airworthiness@flightdesign.com.

1.14 Disclaimer

This Service Instruction has been generated with utmost care. Nevertheless errors and misunderstandings can never be fully excluded. In case of any doubts the applicant of this Service Instruction is requested to contact Flight Design immediately to clarify the issue.

2 Resources

2.1 Workshop Conditions

Keep the workshop clean and free from dust. Remove the grinding dust as it occurs.

The temperature of the workshop should be maintained between 18°C (65°F) and 27°C (77°F) and should not fall under 15°C (59°F). The relative humidity during mixing, applying or curing or resins must not be allowed to rise above 75%. Maintain the workshop temperature as near to 25°C (77°F) as possible during curing.

2.2 Parts

Retrofit kit consisting of the following.

Part number	Description	Q-ty	unit
KE 5520 1021_00	Aluminum Insert Plate – (Fig. 2-1, a)	2	pcs
KD 5520 1070_00	Fiberglass Plate (Fig. 2-1, b)	2	pcs
KD 5520 1071_01	Sandwich Rib (Fig. 2-1, c)	4	pcs
KD 5520 1072_01	End Plate (Fig. 2-1, d)	2	pcs
KD 5520 1073_01	Fiberglass Rib, C-shape – (Fig. 2-1, e)	2	pcs
KE 5520 1051_00	Hinge (Fig. 2-1, f)	2	pcs
C999**6289E**	Self-tapping screw countersunk head SCR-CS-DIN7982-C-H2-A2-3,5x19	14	pcs
C999**6651B**	Blind rivet, mushroom head RIV-MHD-A2/A2-(2,0-4,0)-5,0X8 (for installation of the Hinges to the Stabilator upper skin)	18	pcs
C999**6651A**	Blind rivet, mushroom head RIV-MHD-A2/A2-(4,5-6,5)-4,0X10 (for installation of the Hinges to the Trim Tab wall for Trim Tab without insert plates **or** for closing the holes of the removed Balancing Weight in case if the insert plates for Balancing Weight exist)	6	pcs
C999**6651C**	Blind rivet, mushroom head RIV-MHD-A2/A2-(8,5-10,5)-4,0X14 (for installation of the Hinges to the Trim Tab wall for Trim Tabs with existing insert plates)	6	pcs
C999**6652**	Blind rivet, mushroom head RIV-MHD-A2/A2-(2,5-4,5)-4,0X8 (for closing holes of the removed Balancing Weights in case of the insert plates for Balancing Weight are absent)	6	pcs
C999**3230S**	Mylar Sealing Tape, white, 30 mm with attached Tesafix 6mm (L= 2380 mm) (C9993947N)	2.4	m
C999**6333**	Self-locking nut DIN 985-M5, regular	5	pcs
C999**6334**	Self-locking nut DIN 985-M6, regular	3	pcs
C999**6336**	Self-locking nut DIN 985-M8, regular	2	pcs

C999**7727C**	TY-wraps CV-100 white	1	pcs
C999**7727F**	TY-wraps CV-250 white	4	pcs

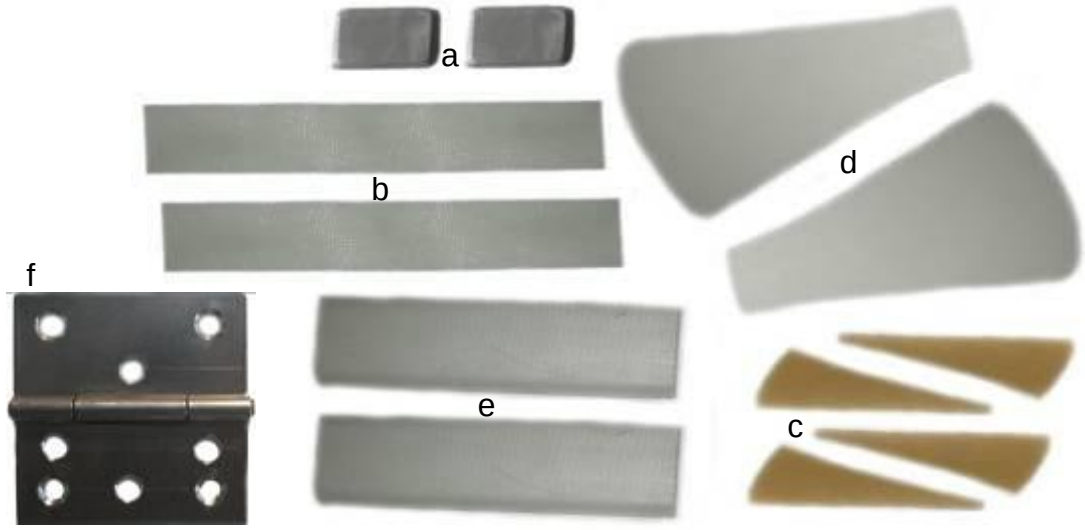


Fig. 2-1

2.3 Materials

1. Glass fabric Interglas 92125 (280 g/sq.m) (manufacturer CS-Interglas AG)
2. Epoxy resin L285 (manufacturer Hexion Specialty Chemicals Stuttgart GmbH)
3. Hardener 285, 286, or 287 (manufacturer Hexion Specialty Chemicals Stuttgart GmbH)
4. Cab-o-sil
5. Cotton flocks
6. Sticky Tape
7. Sandpaper K60
8. Acetone as solvent/cleaner
9. White Acryl
10. Abrasive sponge (Scotch Brite)
11. Glue Tape 389, white, 25 mm x 50 mm (Gewebe-Klebeband 389 25mmx50m Weiss), (L= 2380 mm), Flightdesign part number C9993230G*
12. Anti Peel Adhesive Tape, 12 mm (PVC-Klebeband 12mm), (L= 2380 mm), Flighdesign part number C9993230L**
13. LITOL-24M (Retinax EP 2. Alvania EP-2 (SHELL); Alvania Grease R3 (Petroleum Co, Ltd); Mobilgrease MP, Mobilux 3 (Mobil Oil Corp.); Energrease LS 3 (British Petroleum Co.); Beacom 3 (Esso))

*can be obtained alternatively from:

Buday GmbH
71263 Weil der Stadt - Münklingen Ferdinand-Porsche-Str. 6
Tel : +49 07033 - 3050 0/ 13
Fax: +49 07033 - 3050 50
Gewebe-Klebeband 389 25mmx50m Weiss, p n 3892 550-00

**can be obtained alternatively from:
EBRO
D-76646 Bruchsal Ernst-Blickle-Str 50-52
Tel : +49 7251-300027
Fax: +49 7251-13029
PVC-Klebeband 12mm (Anti Peel Adhesive Tape 12mm)

2.4 Tools

1. Drilling machine
2. Drill Ø 2 mm
3. Drill Ø 3.5 mm
4. Drill Ø4.1 mm
5. Drill Ø4.9 mm
6. Drill Ø5.1 mm
7. Drill Ø 6.0 mm
8. Brush
9. Mixing sticks
10. Cups
11. Scale
12. Gloves
13. Pen
14. Marker
15. Ruler and square
16. Facility for temperature treatment (as per 3.2.3 required)
17. Knife
18. Cutting machine
19. Angle grinder (as per 3.3.4.1 required)
20. Grinding-and-polishing machine
21. Screwdriver
22. Cleco Fasteners for approx. Ø4mm and Ø5mm
23. Cleco Pliers
24. Riveting machine
25. Caliper
26. Aluminum angles
27. Wrench 8 mm
28. Wrench 10 mm
29. Socket wrench 13 mm
30. Allen key 3 mm
31. Allen key 4 mm
32. Allen key 5 mm
33. Level
34. Ruler 20” (500 mm)

2.5 Special tools

If measurement procedure Trim Tab deflection angles with template is used (refer to 4.4.4):
Template for the Trim Tab deflection as per Appendix 4.5 of this SI.

2.6 Manpower

The described task can be performed within approximately 10-13 hours (working time).
The working time does not include:

- Removal of Stabilator
- Post-curing cycle
- Reinstallation of the Stabilator
- Balancing of Stabilator adjustment and check flight

2.7 Cost

The retrofit kit will be provided by Flight Design free of charge.

3 Instructions

3.1 General

This chapter provides extended explanations for the sequential repair steps.

- **Note:** On the figures the asterisk (*) marks the reference dimensions.

3.2 General Procedures

3.2.1 Surface Preparation

Surface preparation is one of the most critical processes when doing composite repair. The long term safety and durability of this work is directly affected by the quality of the surface preparation for adhesive bonding.

The process of surface preparation includes the following steps:

1. **Dry the laminate** if it has come in contact with water or high humidity

This is achieved by storage in a warm, dry room for three days or by support of a heater. Take care that no part of the structure heats up more than 40°C, to avoid damages.

2. **Clean the surface** with alcohol or acetone

▲**Warning:** Use clean white cotton rags for the purpose in the bonding area. Wet the cloth, do not apply the solvent to the part. Wipe until no sign of particulate or debris is visible on the cloth. Replace the cloth often as required. Minimize the cleaning contact with unprepared areas to avoid picking up any contaminates.

3. **Sand the surface** by hand with 60 grit sandpaper.

▲**Warning:** Identify the boundaries of the area to be sanded. Always sand beyond the minimum contact area to ensure that all of the gluing surfaces are prepared. Inspect the surface often to avoid damaging the laminate. On bonding surfaces all evidence of gloss or shine must be removed except the small spots left in pits or irregularities.

4. **Clean the bonding area** by removing the sanding dust

This is achieved by carefully blowing the dust away with filtered (free from humidity and oil) low pressure air and/or solvent wipe with alcohol or acetone.

▲**Warning:** Never use greased or humid compressed air. This will make a structurally safe bonding impossible. In case of doubt use a new, clean and soft brush to wipe off any dust.

▲**Warning:** The mandatory evaporation time between solvent wipe and resin application is a minimum of 15 minutes.

3.2.2 Preparing of mixtures

3.2.2.1. Resin

Put paper (plastic) cup on the scale. Set scale to zero. Pour portion of the resin into the cup. Notice scale indication. Pour portion of the hardener into the cup (ratio of mixture resin-to-hardener must be 100:40±2 by weight). Thoroughly stir content of the cap with the wooden stick to get formation of uniform mixture.

▲**Warning:** Mixing ration stated in this SI is correct for the specified resin at the date of generation of this SI. As it is possible that the manufacturer of resin changes the mixing ratio, always consult manufacturer specification. Resin manufacturer specification has precedence over this SI.

3.2.2.2. Bonding Paste (Thickened Resin)

Prepare the mixture of cotton flocks and cab-o-sil in volume ratio 1:2.

Blend the mixture of the resin L285 and hardener 285, 286, or 287 (refer to 3.2.2.1) with the mixture of cotton flocks and cab-o-sil in a ratio of 1:3 by volume. Thoroughly stir content of the cap with the wooden stick to get formation of uniform mixture.

3.2.3 Post Curing Cycle

Once the resin is hardened at room temperature (refer to resin manufacturer information for details) it is necessary to post cure the whole repaired area at 55°C/131°F for min. 15 hours. Ideally the repaired area is slowly heated in a post curing oven under temperature control.

▲**Warning:** If you do not cure a composite structure correctly it may fail!

When no post curing oven is available, the following solution provides an adequate means. Apply a transparent plastic film loosely around the repaired area and blow warm air from a hairdryer or from a fan heater to the plastic “tent”. Make sure that the air can also exit the plastic tent at the opposite end. Put temperature gauges to both ends of the tent, so that the correct temperature and distribution can be recorded. Changing the size of the opening of the warm air outlet helps to regulate.

▲**Warning:** Proper and continuous temperature control is mandatory to avoid overheating or too low heating to the work areas.

▲**Warning:** When using the method of the tent with fan heater or hairdryer never leave the setup unattended. Not even for a short lunch break. Fan heaters or hairdryers are not designed for this purpose and may overheat, catching fire. Therefore maximum care is required when using this kind of setup.

● **Note:** Only the heating of the modified areas is necessary!

3.3 Retrofit Steps

3.3.1 Removal of the Stabilator

Remove the Stabilator in accordance with Appendix 4.3 of this SI.

Lay the Stabilator on stands, saw horses or a table with soft padding, with the lower skin upwards.

Remove the sealing tapes from the Stabilator.

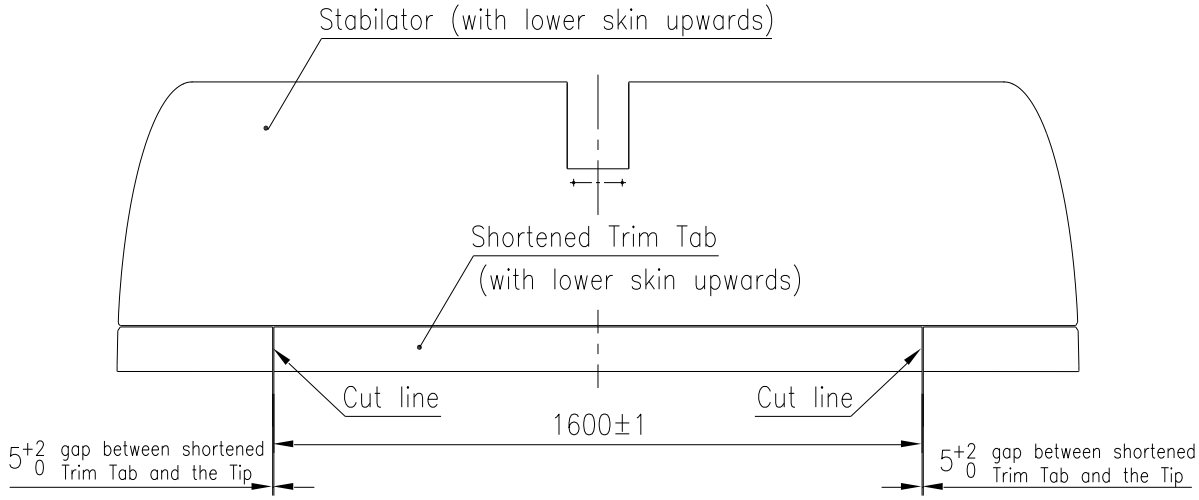
■ **Caution:** Make sure that the used device is covered with soft material. Scratches or dents can occur during the conduct of this step!

3.3.2 Marking of the Cut Lines and Gluing Places on the Trim Tab

Mark the cut lines on the Trim Tab in accordance with Fig. 3-1. To mark the cut lines draw a line through the centers of the installation holes of Stabilator. Then draw another line through the middle of the first line perpendicular to the trailing edge of the Trim Tab. Check this measurement by half span of the Trim Tab.

■ **Caution:** Take care that the shortened Trim Tab's length is always 1600 mm. Gaps between the shortened Trim Tab and the tips must be achieved by the tips length.

Cut lines on the Trim Tab have to be rectangular to the trailing edge.



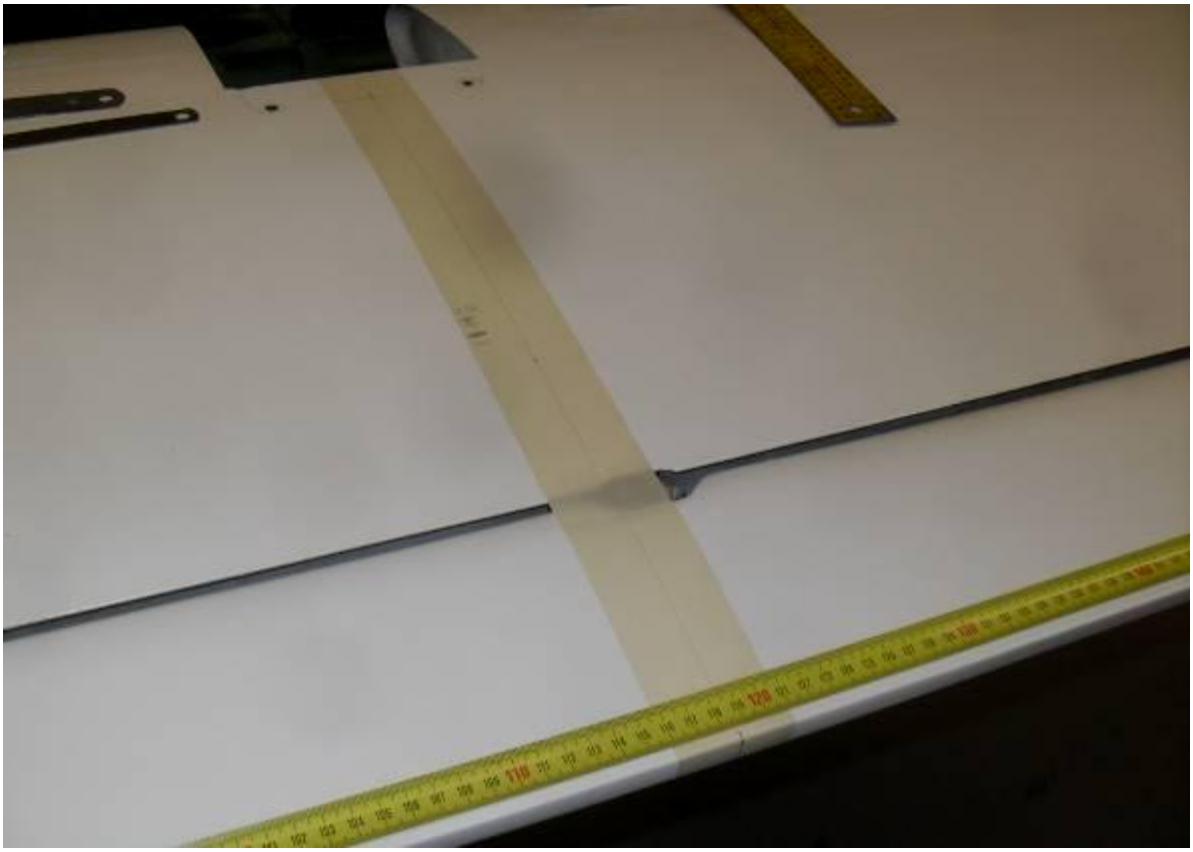


Fig. 3-1

Adjust the Trim Tab in the zero position i.a.w. Appendix 4.4.4 and fix it using the supports or saw horses. Mark the gluing places the Trim Tab i.a.w. Fig. 3-2.

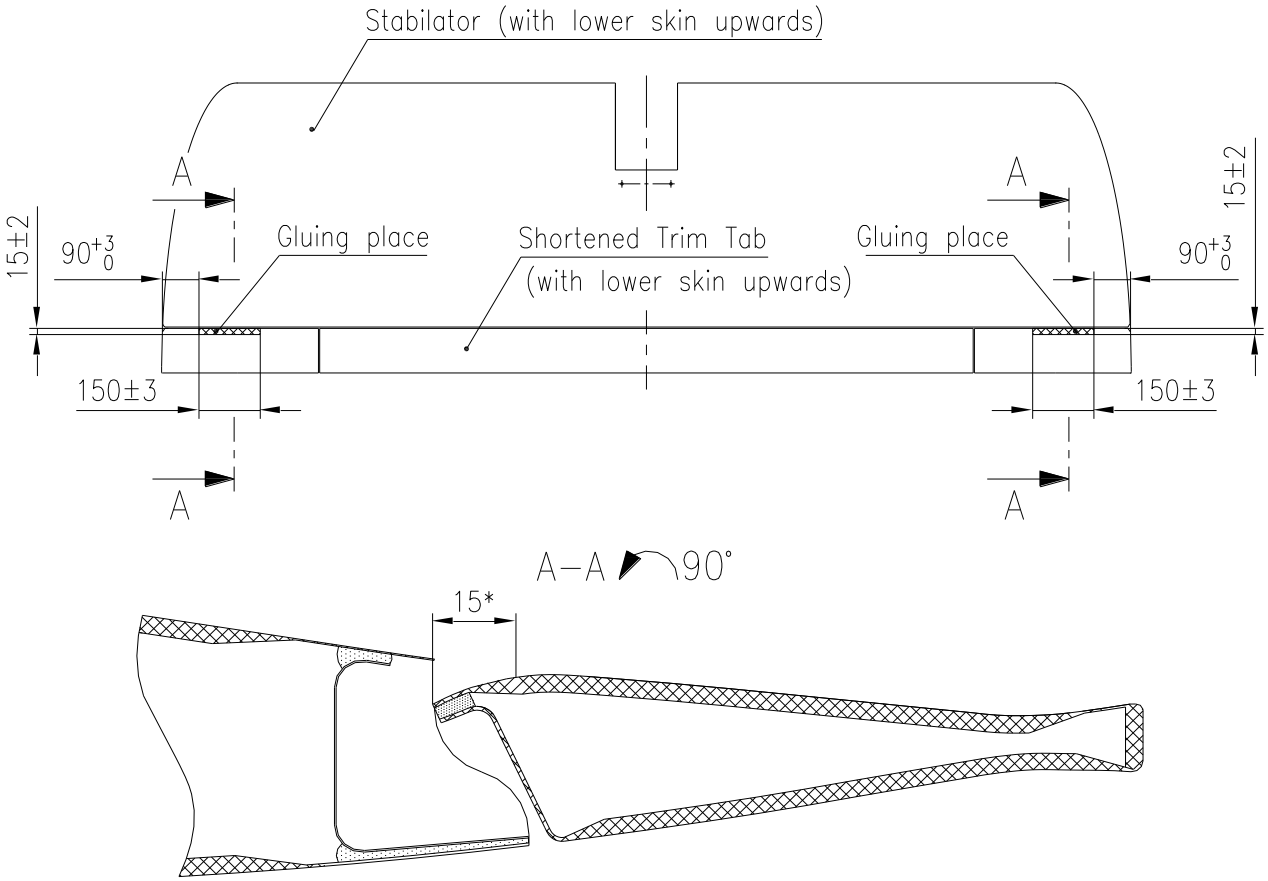


Fig. 3-2

3.3.3 Cutting of the Trim Tab

Using the cutting machine make two cuts on the Trim Tab along both marked cut lines.

- **Caution:** On this step only the partial cuts shall be made (approx. 50-60% of the cut line length), as shown on Fig. 3-3, a.
- **Note:** Use an Aluminum angle to protect the Stabilator skin during cutting, as shown on Fig. 3-3, b.

Fig. 3-3

3.3.4 Gluing of the Fiberglass Plates

Identify which design standard is installed. There are two possible options:

- If the Balancing Weights are installed then before Fiberglass Plates KD 5520 1070 gluing-in they must be cut as per 3.3.4.1 of this SI. The two cases are possible here: four Balancing Weights or two Balancing Weights (see 3.3.5, Fig. 3-11).
- No Balancing Weights on the Trim Tab. In this case glue the Fiberglass Plates KD 5520 1070 as 3.3.4.2 of this SI requires.

3.3.4.1. Balancing Weights Cutting

● **Note:** The Balancing Weights cutting on this stage has only practical reason and is not binding. If they are not removed on this stage, then they shall be removed in step 3.3.5.

Deflect the Trim Tab to the lowermost position. Cut the arms of balancing Weights with angle grinder (Fig. 3-4).

▲**Warning:** Take care to not damage the Stabilator and Trim Tab during the Balancing Weights cutting.

Fig. 3-4

3.3.4.2. Procedure

Deflect the Trim Tab (Fig. 3-5) and cover the unaffected areas of each gluing place (3.3.2) with the sticky tape (Fig. 3-6).

Fig. 3-5

Fig. 3-6

Remove paint and filler down to the structure and prepare the surface of each gluing point (Refer to 3.2.1). Prepare the inner surface of the Stabilator lower skin for each gluing place (Refer to 3.2.1) (Fig. 3-7 and Fig. 3-8).

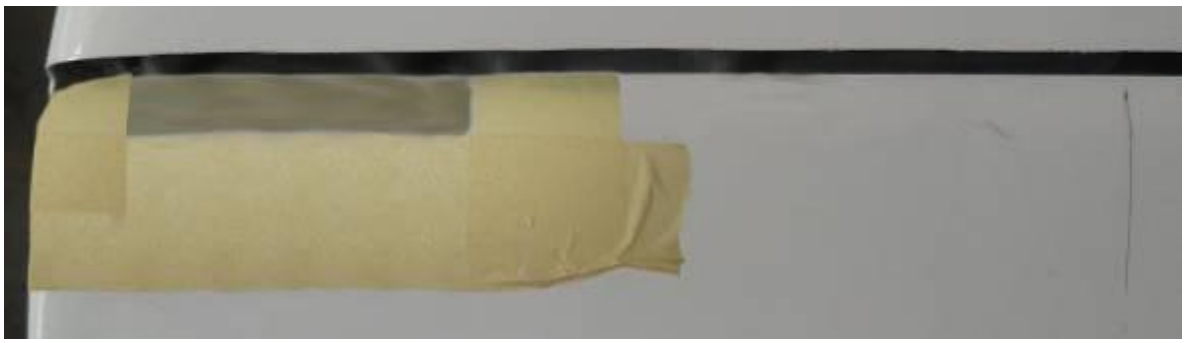


Fig. 3-7

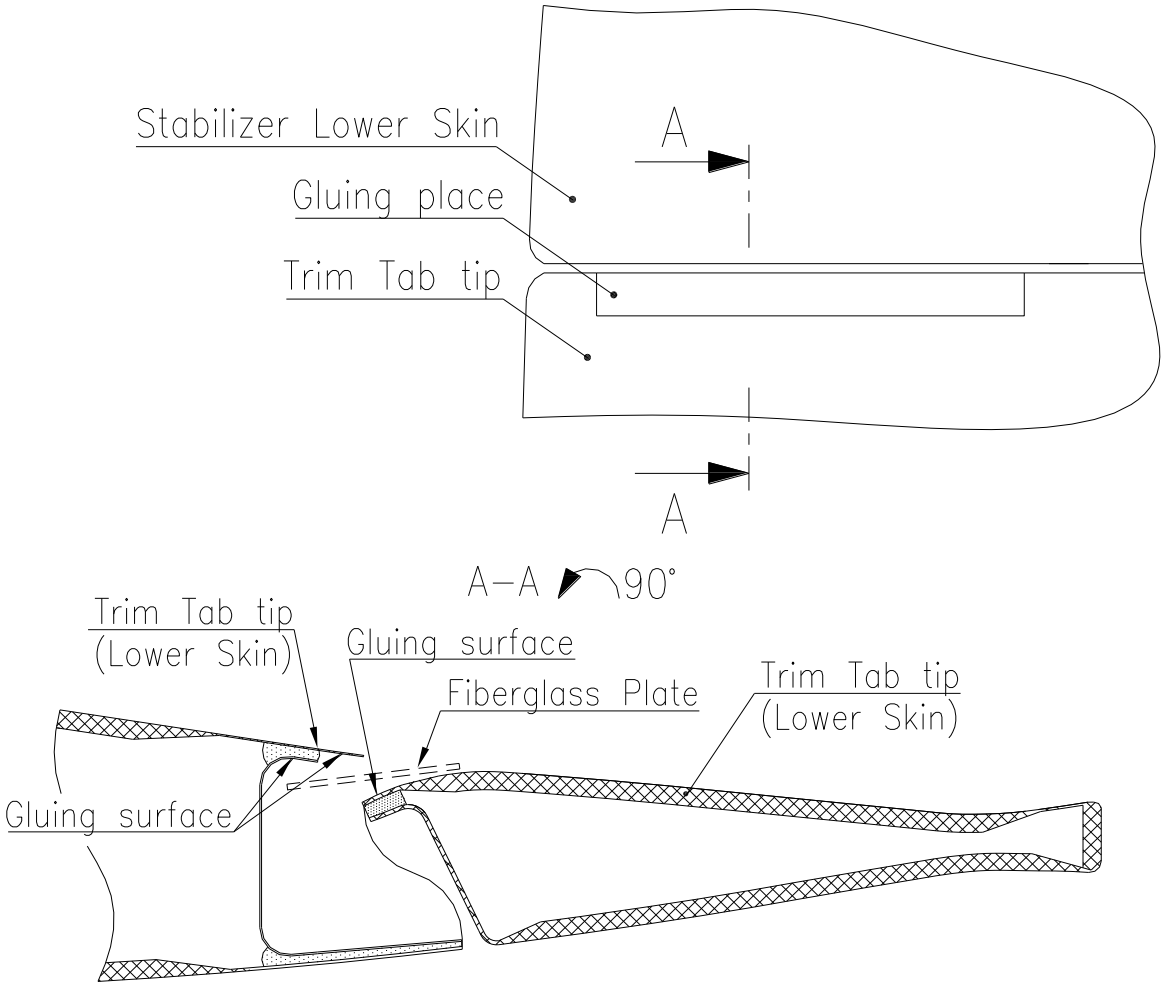


Fig. 3-8

Put each Fiberglass Plate on the gluing place. Drill six auxiliary holes Ø2 mm for the self-tapping screws in the Trim Tab lower skin (three holes for each gluing place). See Fig. 3-9. Drill out the holes of the Fiberglass Plates by Ø3.5mm.

- **Note:** Drill out the holes of the Fiberglass Plates only.

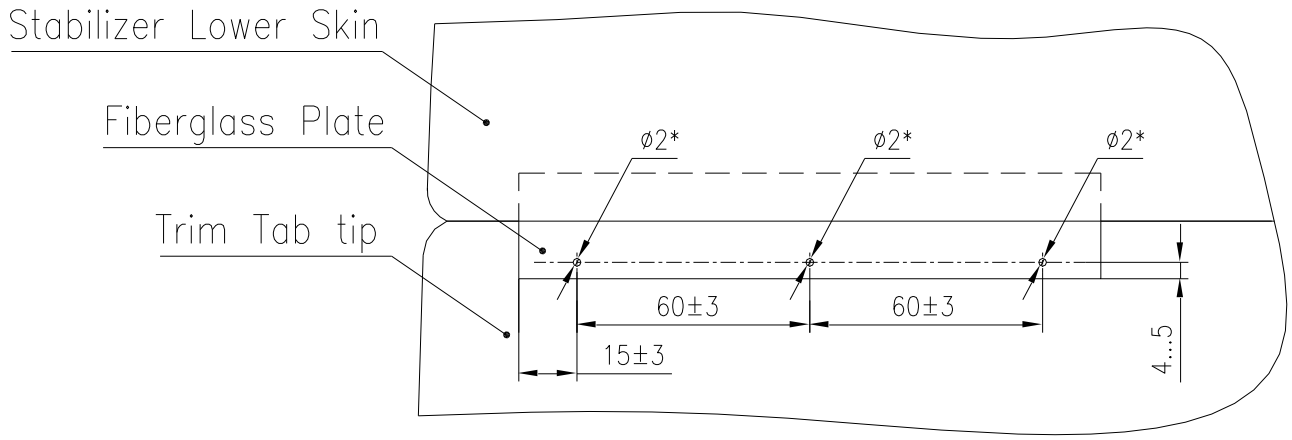


Fig. 3-9

Clean all gluing surfaces by solvent (Refer to 3.2.1)

Prepare resin and bonding paste (Refer to 3.2.2.1 and 3.2.2.2 of this SI).

Put pure resin on all gluing surfaces with using a brush and put the bonding paste on each KD 5520 1070 Fiberglass Plate's contact surfaces (Fig. 3-8):

- with the Trim Tab;
- with the inner surface of the Stabilator lower skin.

Install each Fiberglass Plate KD 5520 1070 between the Trim Tab and the inner surface of the Stabilator lower skin. Match the auxiliary holes. Lock each Fiberglass Plate KD 5520 1070 with the self-tapping screws (3-10, b).

While the bonding paste is not hardened, adjust the Trim Tab in the zero position i.a.w. Appendix 4.4.2 (3.) and fix it using the supports or saw horses. Remove the surplus bonding paste from all areas. Then let the resin harden at room temperature (refer to resin manufacturer information for details).

■ **Caution:** Check that the entire space between the Stabilator Lower Skin and the Fiberglass plate KD 5520 1070 is filled with bonding paste. Also the space between Fiberglass Plate KD 5520 1070 and Lower Skin of Trim Tab tip must be filled with bonding paste completely.

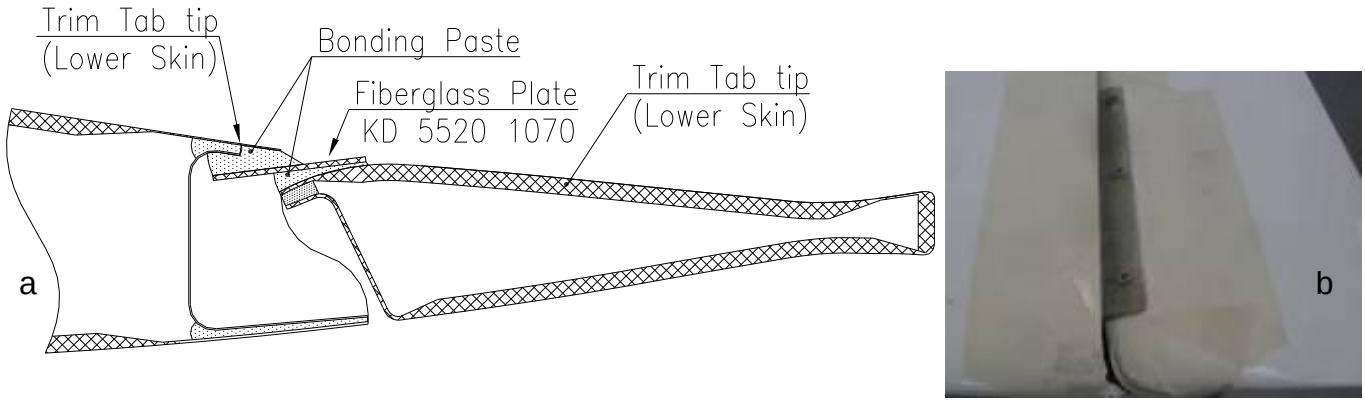


Fig. 3-10

After the resin has hardened remove the protective sticky tape and the self-tapping screws.

Then cut the Trim Tab by the cut lines shown on Fig. 3-2 completely.

- **Caution:** Pay attention to make equal and parallel gaps on the Upper and Lower Trim Tab Skins when cutting. Also the sectional areas of the shortened Trim Tab and of the Trim Tab Tips shall be rectangular to their Upper and Lower Skins. Ensure the width of the gaps as specified on Fig. 3-2.

Remove the shortened Trim Tab. Follow the instructions of 3.3 (4) of [2], with only exception that only the rivets of the shortened Trim Tab shall be removed. Also consider the diameter of the rivets: use drill Ø4.1 mm for rivets Ø4mm and drill Ø4.9 mm for rivets Ø4.8 mm (in case the SI [2] was conducted already).

- **Note:** The Trim Tab control rods can be left attached to the Trim Tab. All further assembly steps of the Trim Tab to the Stabilator require re-inserting of these rods into the Stabilator.

3.3.5 Removal of the Balancing Weights

Using the drill Ø4.1 mm drill out the rivets of each of the four (Fig. 3-11, items *a, b, c, d*) or two (Fig. 3-11, items *a, d*) Balancing Weights from the shortened Trim Tab.

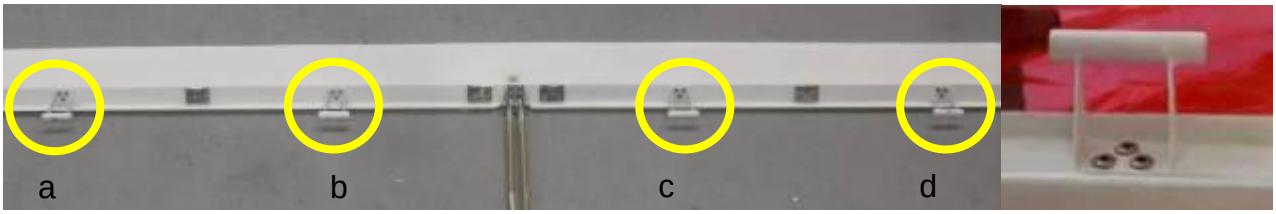


Fig. 3-11

Remove all the foreign objects from the Trim Tab.

3.3.6 Gluing-in of the Insert Plates

Some Trim Tabs in places of the Balancing Weights installation have the Aluminum Insert Plates glued-in, similar to the Insert Plates KE 5520 1021 from the retrofit kit. The existing Insert Plates are recognizable on the Trim Tab from inside by a visible and feasible step in Trim Tab wall, see Fig. 3-12. Also there is a case when the Insert Plates in places of the Balancing Weights installation are not glued-in. Identify if the insert plates do exist. The Insert Plates KE 5520 1021 from the retrofit kit shall be glued-in in either case. The procedures are different for the two cases.

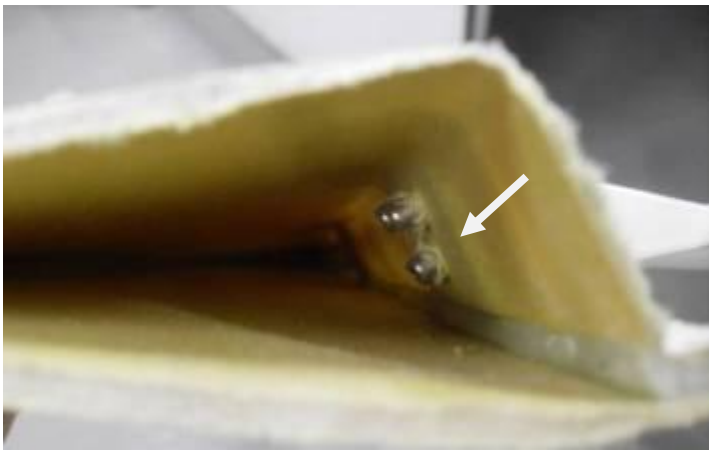


Fig. 3-12

3.3.6.1. Gluing-in Procedure for the Trim Tabs with the Existing Insert Plates

Mark the places of the new Insert Plates KE 5520 1021 i.a.w. Fig. 3-13.

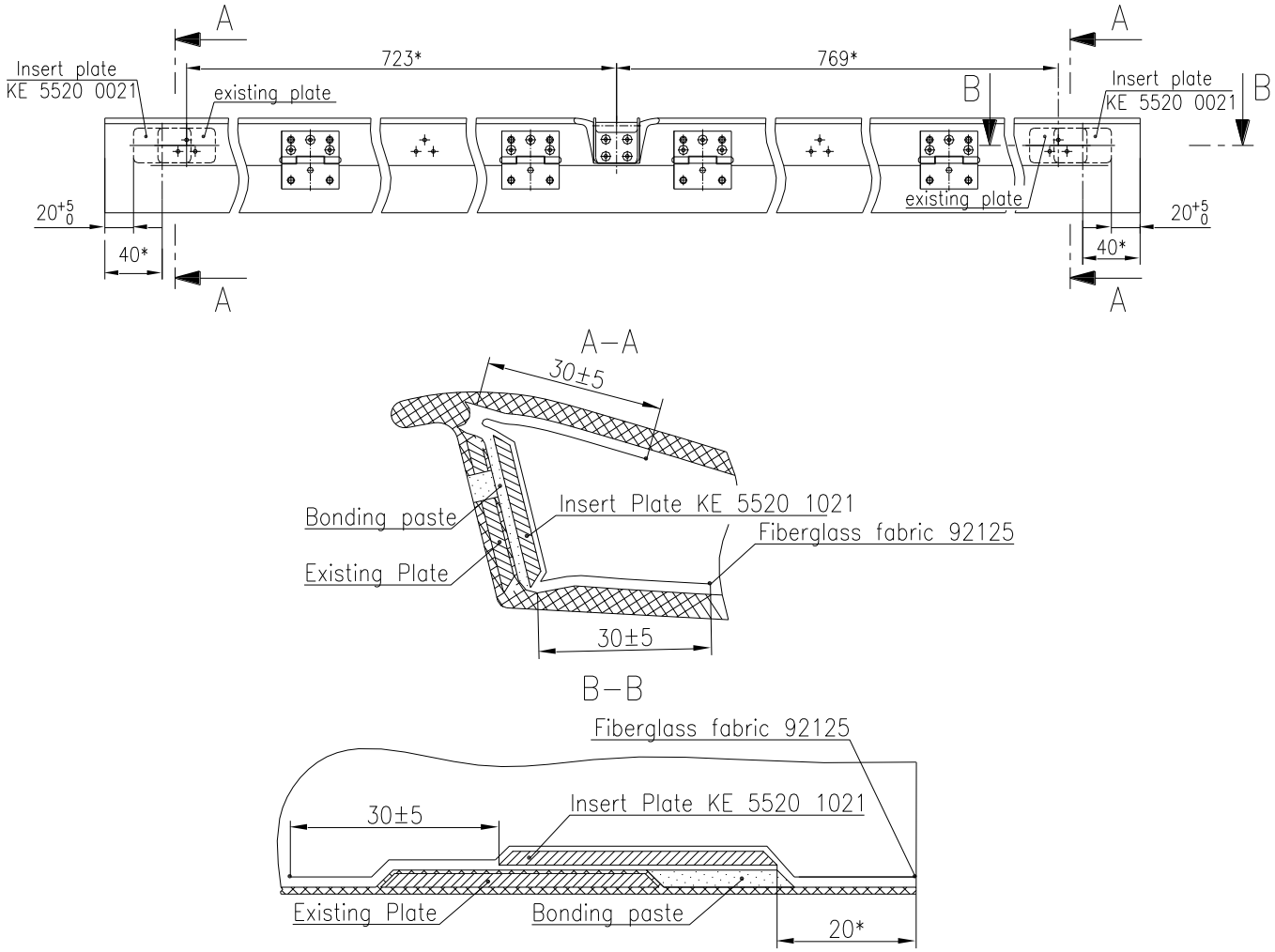


Fig. 3-13

Prepare the inside surface of the shortened Trim Tab in places where the new Insert Plates KE 5520 1021 will be glued-in and the fiberglass fabric are laid up (Refer to 3.2.1). Sizes of the preparation area are 30 mm over the each new Insert Plate KE 5520 1021 in all directions (Fig. 3-13).

Prepare resin and bonding paste (Refer to 3.2.2.1 and 3.2.2.2 of this SI).

Degrease the Insert Plate KE 5520 1021 surfaces with abrasive sponge (Scotch Brite) and acetone.

Paint the Insert Plates and the gluing area with pure resin. Put the bonding paste on the inner skin of the Trim Tab to prepare even surface for the new Insert Plates.

Install the Insert Plates KE 5520 1021 inside of the Trim Tab on their positions.

- **Note:** Install the Insert Plates KE 5520 1021 exactly as shown on Fig. 3-13, section B-B; pay attention to the facets position. Also make sure the new plates are installed absolutely parallel to the existing plates. Check the distance between the Insert Plates edges and Trim Tab ends is 20 mm as per Fig. 3-13.

Remove the excessive bonding paste around the Insert plates KE 5520 1021.

Check the thickness of the Trim Tab Wall with installed Insert Plate KE 5520 1021. Use caliper for measuring. If the thickness of the Trim Tab Wall with installed Insert Plate KE 5520 1021 exceeds 9.5mm remove the Insert Plate KE 5520 1021 and install it again on the same place again by usage of less bonding paste. Repeat reinstallation until the thickness of the Trim Tab Wall with installed Insert Plate KE 5520 1021 is in the range 8.0 ... 9.5 mm.

Clean the Caliper by solvent after the job.

- **Note:** Ensuring of the specified thickness of the Trim Tab Wall is important in order to successful installation of the Hinges KD 5520 1051 (refer to 3.3.8).

Lay up one layer of Fiberglass fabric 92125, 90mm (spanwise) x 80mm, fiber orientation ±90°, over the each new Insert Plate.

Lay up the polyamide fabric (peel ply).

Use a brush to remove all trapped air. Before applying next layer make sure that the fabric is completely impregnated with resin.

- **Note:** Overlap lengths are given per minimum. Because of the difficulties cutting the Fiberglass fabric patches in the correct size slightly increased overlaps are most helpful.

Fill the holes of the removed Balancing Weights “*a*” and “*d*” of Fig. 3-11 with bonding paste to be flush with the Trim Tab Wall. Close the holes of the removed Balancing Weights “*b*” and “*c*” of Fig. 3-11 with blind rivets RIV-MHD-A2/A2-(4.5-6.5)-4X10.

Pre-cure the resin at the room temperature (refer to resin manufacturer information for details).

Cut the overhanging fabric on the Trim Tab ends and remove the peel ply.

3.3.6.2. Gluing-in Procedure for the Trim Tabs without the Insert Plates

Mark the places of the Insert Plates KE 5520 1021 i.a.w. Fig. 3-14.

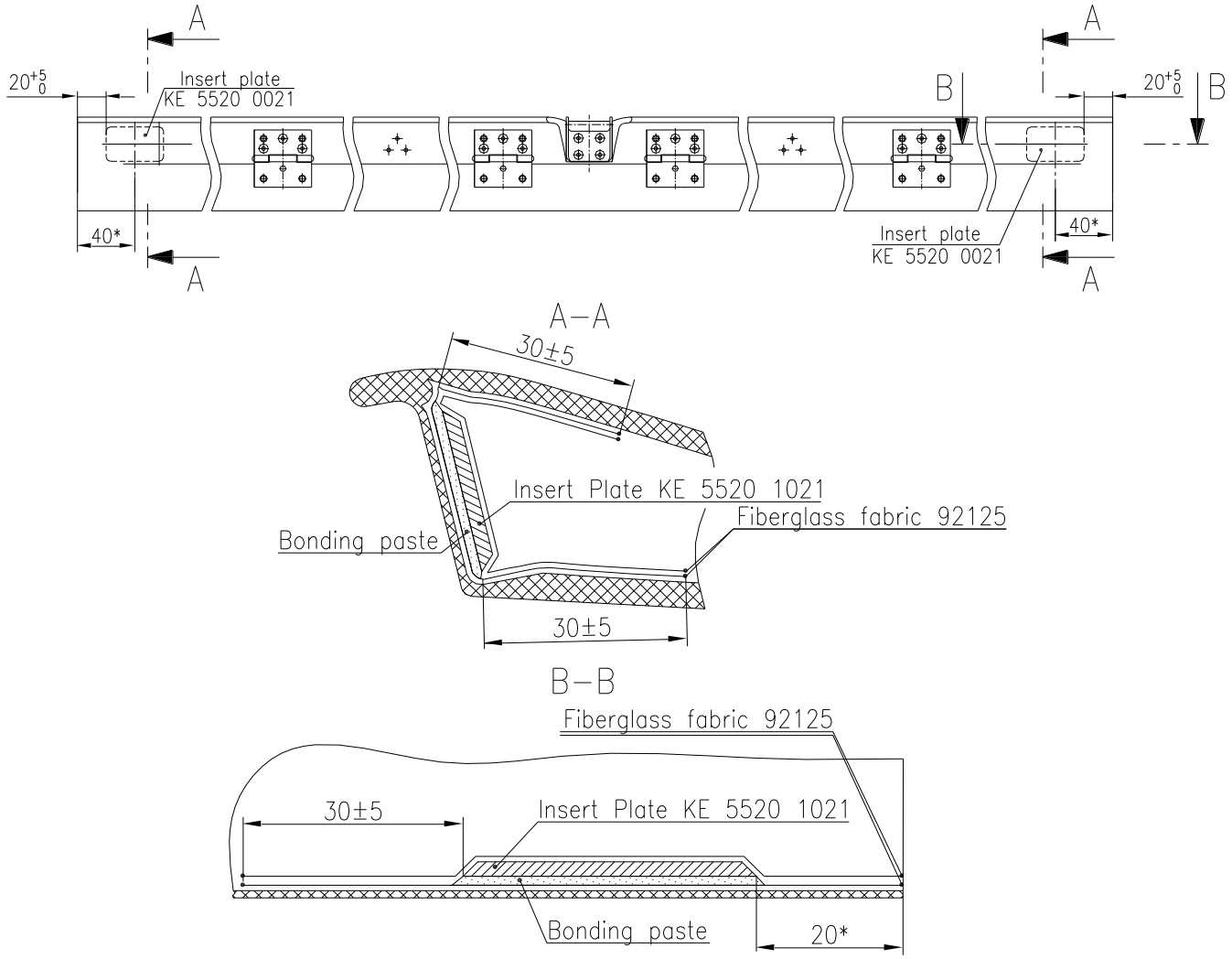


Fig. 3-14

Prepare the inside surface of the shortened Trim Tab in places where the new Insert Plates KE 5520 1021 will be glued-in and the fiberglass fabric are laid up (Refer to 3.2.1). Sizes of the preparation area are 30 mm over the each new Insert Plate KE 5520 1021 in all directions (Fig. 3-14).

Prepare resin and bonding paste (Refer to 3.2.2.1 and 3.2.2.2 of this SI).

Degrease the Insert Plate KE 5520 1021 surfaces with abrasive sponge (Scotch Brite) and acetone.

Paint the prepared surface with pure resin and lay up one layer of Fiberglass fabric 92125, 90mm (spanwise) x 80mm, fiber orientation ±90°, on the inner skin of the Trim Tab in the area of the Insert plates gluing-in as shown in Fig. 3-14. Use a brush to remove all trapped air and make sure that the fabric is completely impregnated with resin.

Put the bonding paste on the gluing surfaces of the Insert Plates KE 5520 1021.

Install the Insert Plates KE 5520 1021 inside of the Trim Tab on their positions.

- **Note:** Install the Insert Plates KE 5520 1021 exactly as shown on Fig. 3-14, section B-B; pay attention to the facets position. Check the distance between the Insert Plates edges and Trim Tab ends is 20 mm as per Fig. 3-14).

Remove the excessive bonding paste around the Insert plates KE 5520 1021.

Check the thickness of the Trim Tab Wall with installed Insert Plate KE 5520 1021. Use caliper for measuring. If the thickness of the Trim Tab Wall with installed Insert Plate KE 5520 1021 exceeds 5.5mm remove the Insert Plate KE 5520 1021 and install it again on the same place again by usage of less bonding paste. Repeat reinstallation until the thickness of the Trim Tab Wall with installed Insert Plate KE 5520 1021 is in the range 4.0…5.5 mm.

Clean the Caliper by solvent after the job.

- **Note:** Ensuring of the specified thickness of the Trim Tab Wall is important in order to successful installation of the Hinges KD 5520 1051 (refer to 3.3.8).

Lay up one layer of Fiberglass fabric 92125, 90mm (spanwise) x 80mm, fiber orientation ±90°, over the each Insert Plate.

Lay up the polyamide fabric (peel ply).

Use a brush to remove all trapped air. Before applying next layer make sure that the fabric is completely impregnated with resin.

- **Note:** Overlap lengths are given per minimum. Because of the difficulties cutting the carbon fabric patches in the correct size slightly increased overlaps are most helpful.

If balancing weights were installed: fill the holes of the removed Balancing Weights “*a*” and “*d*” of Fig. 3-11 with bonding paste until they are flushed with the Trim Tab Wall. Close the holes of the removed Balancing Weights “*b*” and “*c*” of Fig. 3-11 with blind rivets RIV-MHD-A2/A2-(2,5-4,5)-4,0X8.

Pre-cure the resin at the room temperature (refer to resin manufacturer information for details).

Cut the overhanging fabric on the Trim Tab ends and remove the peel ply.

3.3.7 Drilling of the Draining Holes

Drill two draining holes according to Fig. 3-15 using the drill Ø4.1 mm. Put resin on the inner surface of the holes for impregnation.

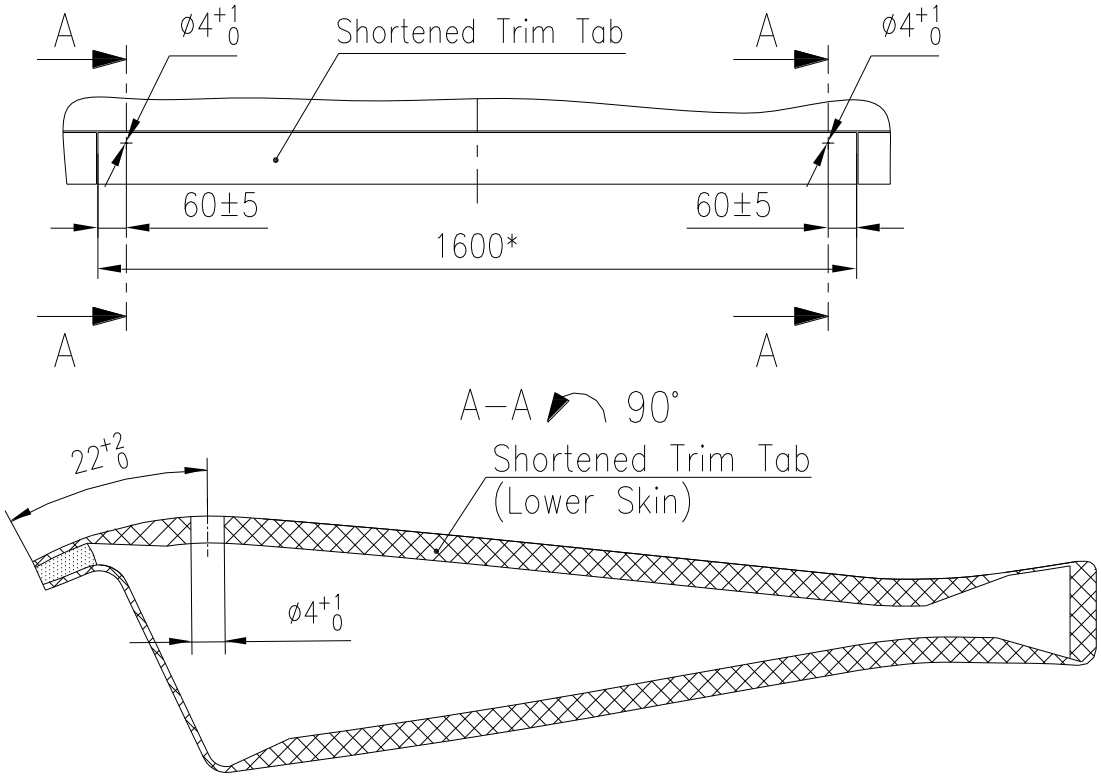


Fig. 3-15

3.3.8 Installation of the Hinges

Depending on design two following cases are possible.

3.3.8.1. Case 1: With the Existing Insert Plates

Check the thickness of the Trim Tab wall. If the thickness is the range 8.0 ... 10.0 mm use Blind rivets, mushroom head RIV-MHD-A2/A2-(8,5-10,5)-4,0X14 for Hinges KE 5520 1051 installation. After the hole is drilled as per 3.3.8.3, step 2 the thickness can be measured through this hole using a caliper.

- **Caution:** If thickness of Trim Tab is out of range contact Flight Design for further instructions (refer to 1.13).

3.3.8.2. Case 2: Without the Existing Insert Plates

Check the thickness of the Trim Tab wall. If the thickness is the range 4.0 ... 6.0 mm use Blind rivets, mushroom head RIV-MHD-A2/A2-(4,5-6,5)-4,0X10. After the hole is drilled as per 3.3.8.3, step 2 the thickness can be measured through this hole using a caliper.

- **Caution:** If thickness of Trim Tab is out of range contact Flight Design for further instructions (refer to 1.13).

3.3.8.3. The Procedure

Lay the shortened Trim Tab with its upper skin upwards.

Fig. 3-16

1. On the Trim Tab wall mark the position for hole "*1*" of the hinge "*a*" (Fig. 3-16). The new holes shall be marked in alignment with the holes "*1*" of the existing hinges ("*c*" or "*d*").

■ **Caution:** The center of the hole "1" of the hinge "a" shall be coincided with the center of the glued Insert Plate KD 5520 1021 (Fig. 3-17).

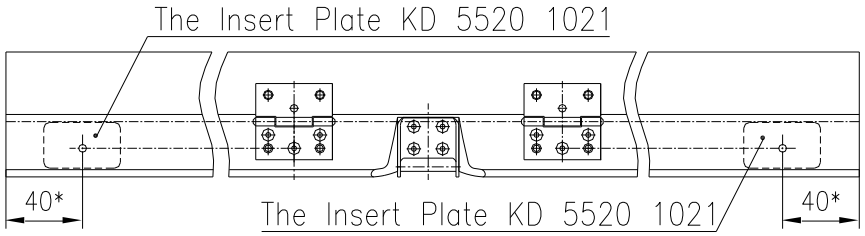


Fig. 3-17

2. Place the hinge on the Trim Tab Wall as shown on Fig. 3-18. Combine the hole "*1"* of the Hinge KE 5520 1051 (Fig. 3-16) with the mark on the Trim Tab Wall.

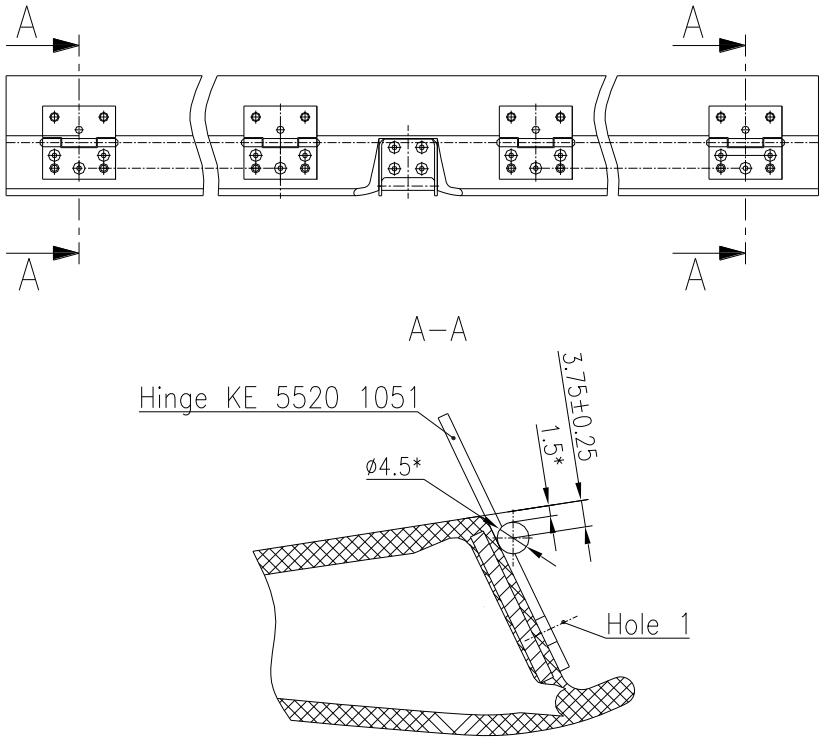


Fig. 3-18

Drill the hole in the Trim Tab wall using a drill Ø4.1mm by the hole 1 of the Hinge KE 5520 1051. Remove all the foreign objects from the Trim Tab. Check the thickness of the Trim Tab wall through this hole as required in 3.3.8.1.

3. Combine the hole "*1"* of the Hinge KE 5520 1051 (Fig. 3-16) with the hole in the Trim Tab wall. Check that the hinge is aligned with the Trim Tab wall edge.

4. Rivet the Hinge KE 5520 1051 through the hole "*1"*, Fig. 3-16 and the hole in the Trim Tab wall.

5. Drill the holes using a drill Ø4.1mm in the Trim Tab wall by the holes "*2*" and "*3*" (Fig. 3-16) of the Hinge KE 5520 1051.

6. Rivet the hinge through the holes "*2*" and "*3*", Fig. 3-16 and the holes in the Trim Tab wall.

7. Repeat steps 1-6 for the Hinge "*f*", Fig. 3-16.

3.3.9 Installation of the Fiberglass Ribs to the Stabilator Rear Wall

Identify which design standard is installed. There are four possible options:

- No pockets for the Trim Tab Balancing Weights. In this case no action is required.
- If the Stabilator Rear Wall has the pockets for Balancing Weights then they must be bridged with the Fiberglass ribs KD 5520 1073 (Fig. 3-19).

Fig. 3-19

- If there are pockets formed by the Big Ribs i.a.w. [3], they must be bridged with the Fiberglass ribs KD 5520 1073 (Fig. 3-20).

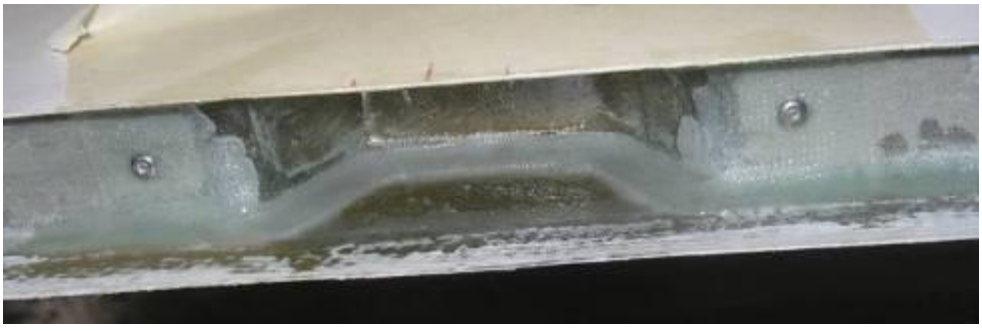


Fig. 3-20

- If the cuts for Balancing Weights in the Stabilator Rear Wall are not closed with Big Ribs i.a.w. SI [3], they must be bridged with the Fiberglass ribs KD 5520 1073 (Fig. 3-21)

Fig. 3-21

3.3.9.1. Installation of the Fiberglass Ribs to the Stabilator Rear Wall with pockets for Balancing Weights

Fit each Fiberglass Rib KD 5520 1073 in accordance with Fig. 3-22.

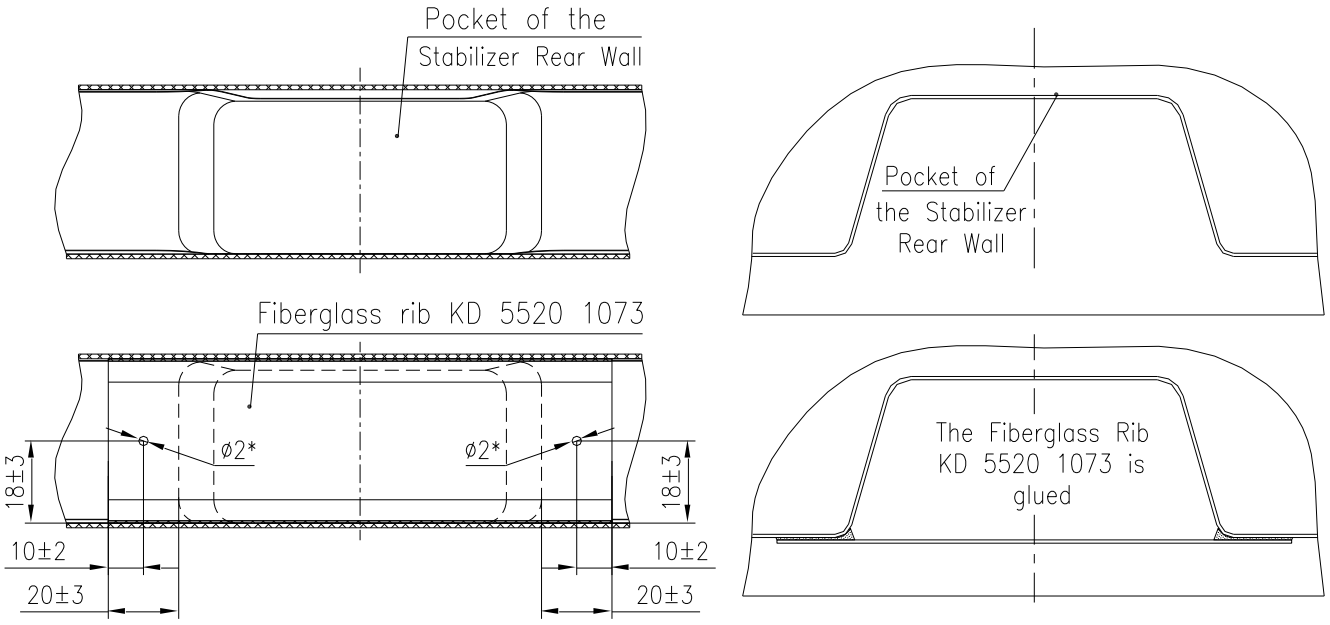


Fig. 3-22

Prepare the surface of the Stabilator rear wall in places of the Fiberglass Ribs KD 5520 1073 gluing-in (Refer to 3.2.1).

Drill four auxiliary holes Ø2 mm for the self-tapping screws in the Fiberglass ribs KD 5520 1073 (two holes for each Fiberglass rib) and in the Stabilator Rear Wall (Fig. 3-22).

- **Note:** Drill the auxiliary holes in the Stabilator Rear Wall together with the Fiberglass Ribs KD 5520 1073.

Enlarge the bore of the Fiberglass ribs KD 5520 1073 using a 3.5mm drill.

Prepare resin and bonding paste (Refer to 3.2.2.1 and 3.2.2.2 of this SI).

Paint all prepared surfaces with pure resin.

Put the bonding paste on each KD 5520 1073 Fiberglass rib's contact surfaces:

- with the Stabilator Rear Wall;
- with the Stabilator Lower and Upper Skins.

Install each Fiberglass Rib KD 5520 1073 on their positions. Match the auxiliary holes. Lock each Fiberglass Rib KD 5520 1073 with the self-tapping screws. Remove excessive bonding paste.

Let the resin harden at room temperature (refer to resin manufacturer information for details).

3.3.9.2. Installation of the Fiberglass Ribs to the Stabilator Rear Wall with pockets for Balancing Weights formed by the Big Ribs i.a.w. [3]

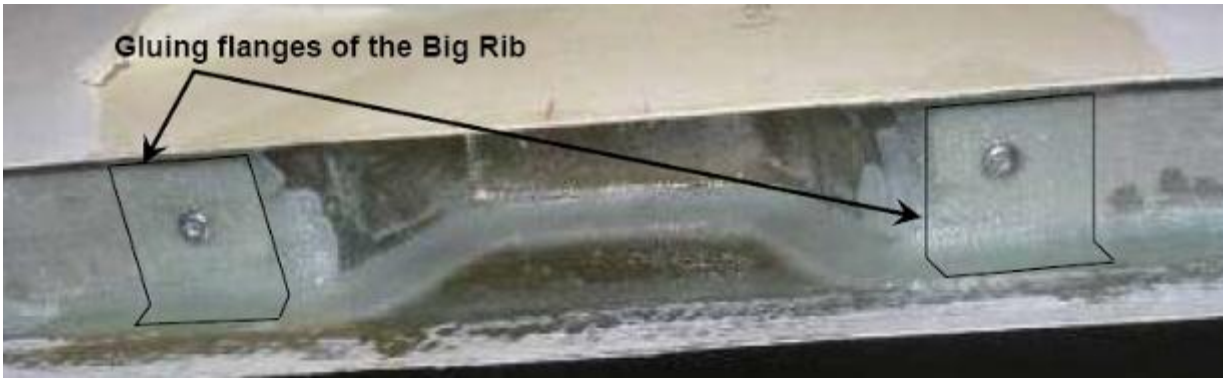


Fig. 3-23

Drill out the rivets of the Big Ribs from the Stabilator rear wall using a 4.1mm drill.

Remove the gluing flanges of the Big Ribs so that the gluing flanges of the Fiberglass Rib KD 5520 1073 were entirely against the Stabilator Rear Wall (Fig. 3-24).

- **Note:** Take care not to damage the Stabilator Rear Wall and Skins during this operation (Fig. 3-25).

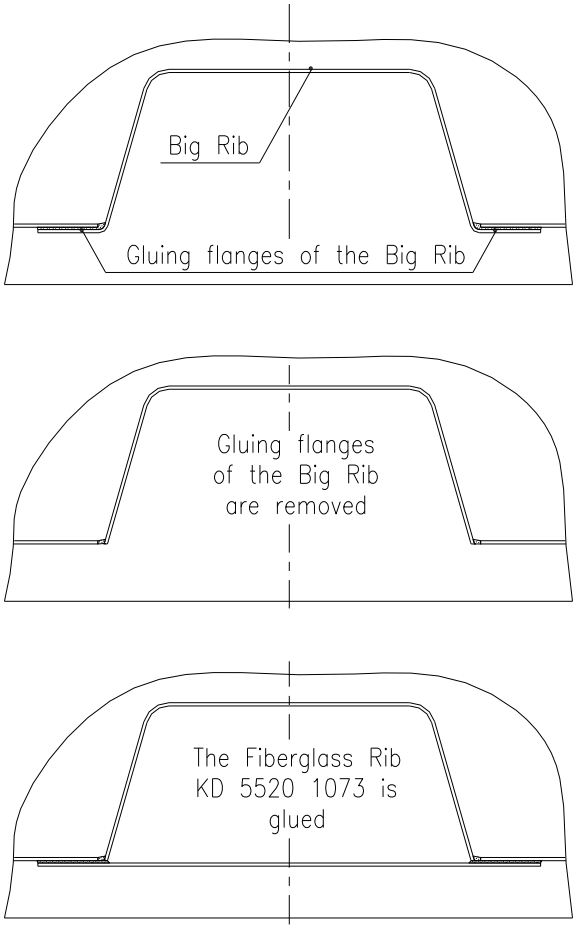


Fig. 3-24

Fig. 3-25

Fit each Fiberglass Rib KD 5520 1073 in accordance with Fig. 3-26.

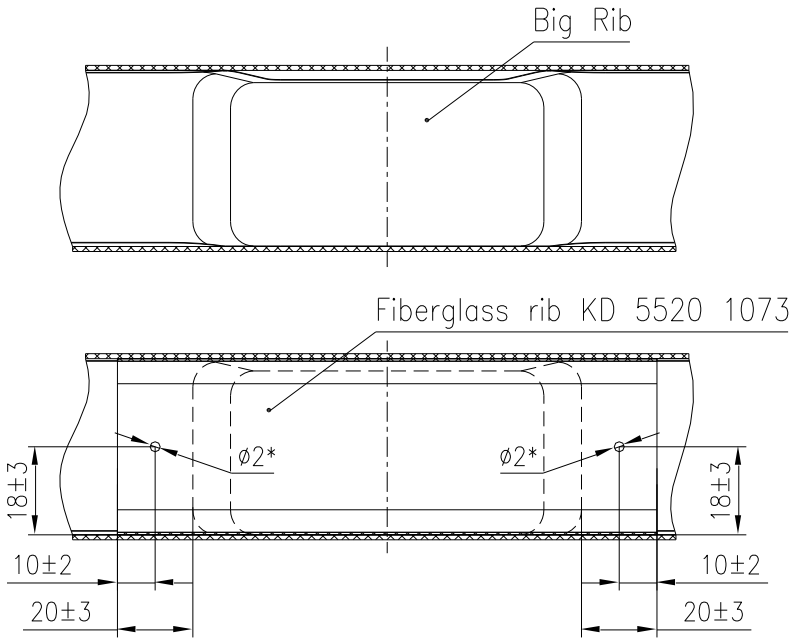


Fig. 3-26

Prepare the surface of the Stabilator Rear Wall in places of the Fiberglass Ribs KD 5520 1073 gluing-in (Refer to 3.2.1).

Drill four auxiliary holes Ø2 mm for the self-tapping screws in the Fiberglass ribs KD 5520 1073 (two holes for each Fiberglass rib).

- **Note:** Drill the auxiliary holes in the Fiberglass Ribs KD 5520 1073 by the holes as per Fig. 3-26. If marking meets the holes from drilled out rivets move the position 5mm to the side.

Enlarge the bore of the Fiberglass ribs KD 5520 1073 using a 3.5mm drill.

Prepare resin and bonding paste (Refer to 3.2.2.1 and 3.2.2.2 of this SI).

Paint all prepared surfaces with pure resin.

Put the bonding paste on each KD 5520 1073 Fiberglass rib's contact surfaces:

- with the Stabilator Rear Wall;
- with the Stabilator Lower and Upper Skins.

Install each Fiberglass Rib KD 5520 1073 on their positions. Match the auxiliary holes. Lock each Fiberglass Rib KD 5520 1073 with the self-tapping screws. Remove the surpluses bonding paste.

Let the resin harden at room temperature (refer to resin manufacturer information for details).

3.3.9.3. Installation of the Fiberglass Ribs to the Stabilator Rear Wall with unclosed cuts for Balancing Weights

Glue-in the Fiberglass Ribs KD 5520 1073 as per 3.3.9.1. The only difference is that cuts are closed here, not the pockets.

3.3.10 Installation of the Sandwich Ribs

Protect the unaffected areas of the gluing places of the shortened Trim Tab and the Trim Tab Tips with the sticky tape (Fig. 3-27).

Fig. 3-27

Prepare the inner surfaces of the shortened Trim Tab and of the Trim Tab tips in places of Sandwich Ribs KD 5520 1071 gluing in. (Refer to 3.2.1 and Fig. 3-28).

Prepare resin and bonding paste (Refer to 3.2.2.1 and 3.2.2.2 of this SI).

Paint all prepared surfaces with pure resin.

Put the bonding paste on each KD 5520 1071 Sandwich Rib's contact surface with the Trim Tab. Glue the Sandwich Ribs KD 5520 1071 into the ends of the shortened Trim Tab and into the cut ends of the Trim Tab tips. The ribs must be sank by 2 mm into the body of the Trim Tab ends (Fig. 3-28). Remove the surpluses bonding paste.

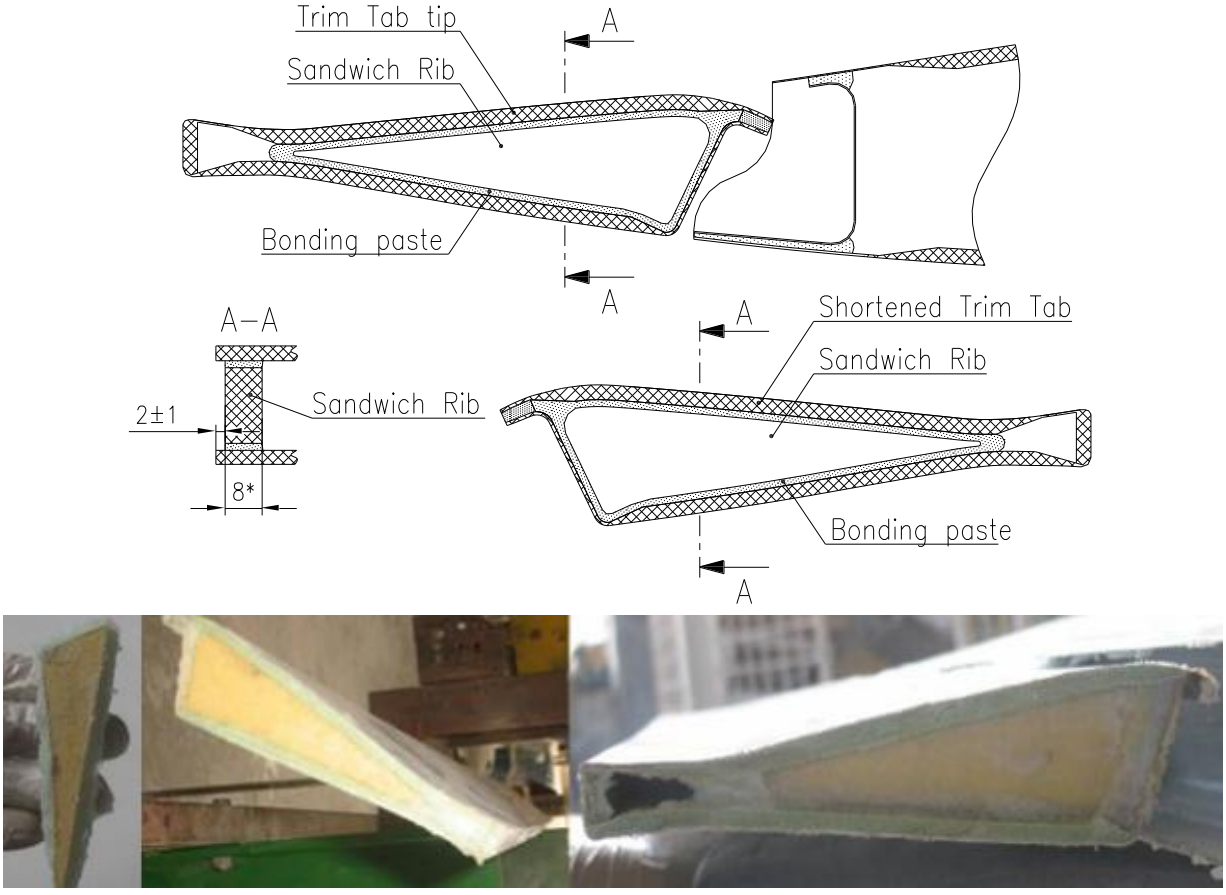


Fig. 3-28

Let the resin harden at room temperature (refer to resin manufacturer information for details).

3.3.11 Installation of the End Plates

Remove a 2 mm depth layer of foam from the skins of the shortened Trim Tab and the Trim Tab tips (Fig. 3-29).

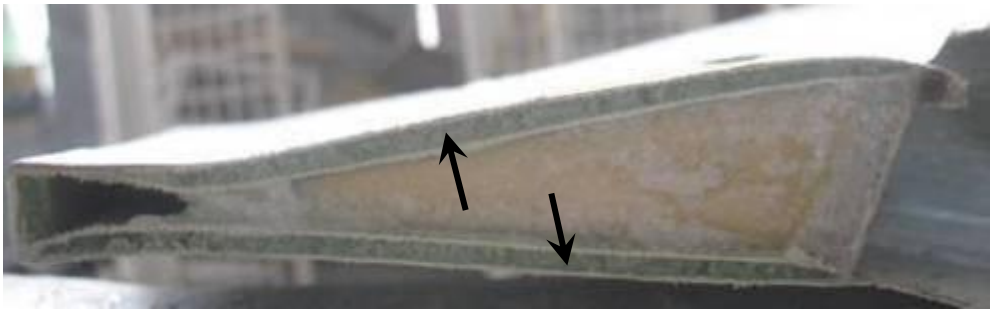


Fig. 3-29

By cutting the End Plate (if necessary) ensure that it fits in the Stabilator Rear Wall. The gap here, however, shall not exceed 1…2 mm.

Put the End Plates KD 5520 1072 on the ends of the Trim Tab tips.

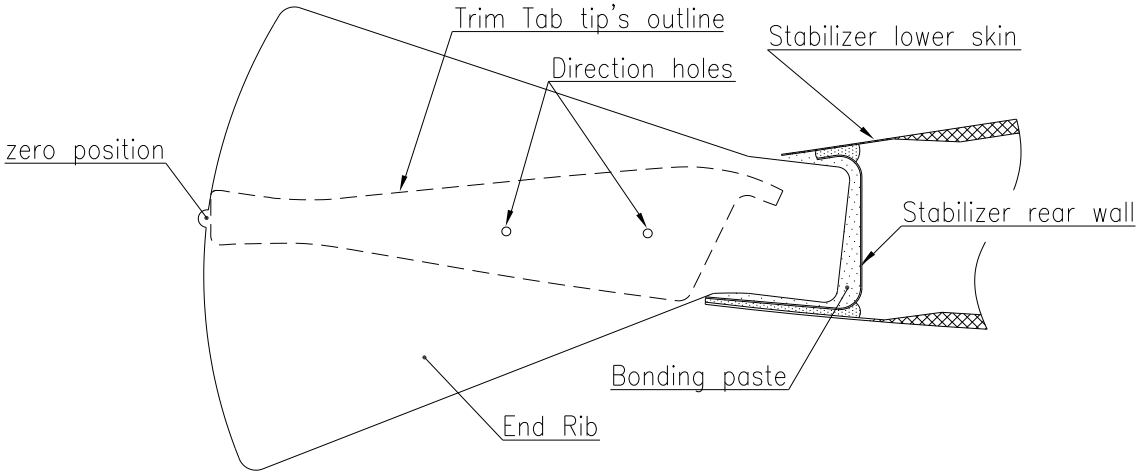


Fig. 3-30

Install the End Plates KD 5520 1072 in proper position according to Fig. 3-30:

- The zero positions markers (can be small nose or notch) of the End Plates KD 5520 1072 must be combined with the center line of the trailing edge of the Trim Tab Tip

■ **Caution:** The bigger part of the deflection area (divided by zero position) of the End Plate must be positioned upwards!

- The End Plates KD 5520 1072 must be perpendicular to the trailing edge of the Trim Tab Tip (Fig. 3-31).

Fig. 3-31

Once the End Plates' right position is achieved, drill small direction holes in the sandwich ribs by the direction holes in the End Plates KD 5520 1072 using a 2mm drill, enlarge the bore in end plates using a 3.5mm drill and fix the End Plates KD5520 1072 with self- tapping screws.

Using Clecos, temporarily install the Stabilator on 4 middle Hinges ("*b*", "*c*", "*d*", "*e*" of Fig. 3-16), the Stabilator skin already has the holes for these Hinges.

Deflect the Shortened Trim Tab to check the gaps between Shortened Trim Tab and Trim Tab Tips along entire deflection angle. The gap between the Shortened Trim Tab and Trim Tab Tips with the End Plates are installed is to be ensured of 3…5 mm as Fig. 3-1 requires.

Check if the endplate covers the full range of deflection as required by 4.4.

Remove the shortened Trim Tab.

Mark the Trim Tab tip's outline on each End Plate KD 5520 1072. Once the Trim Tab tip's outlines on each End Plate KD 5520 1072 are marked remove the End Plates.

Remove the paint and filler down to the glass fiber layer of each End Plate KD 5520 1072 inside of the Trim Tab tip's outline marking for gluing. Prepare the surface i.a.w. 3.2.1. Also prepare the surfaces of contact between the End Plates KD 5520 1072 and the Stabilator rear wall. Refer to 3.2.1 of this SI (Fig. 3-32).

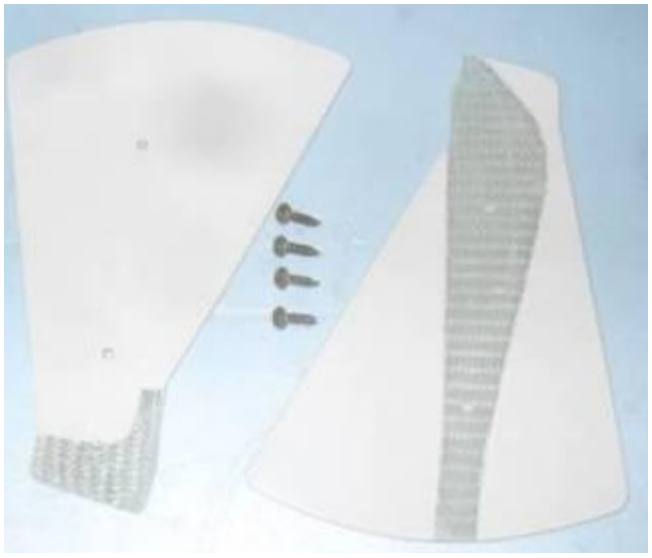


Fig. 3-32

Prepare resin and bonding paste (Refer to 3.2.2.1 and 3.2.2.2 of this SI).

Put the pure resin on all gluing areas.

Fill all the cavities of the ends of the shortened Trim Tab and the Trim Tab Tips with the bonding paste to obtain a smooth surface (Fig. 3-33).

Put the bonding paste on the surfaces of contact with the Stabilator rear wall.

Glue the End Plate KD 5520 1072 on the Trim Tab Tips with the bonding paste (Fig. 3-33).

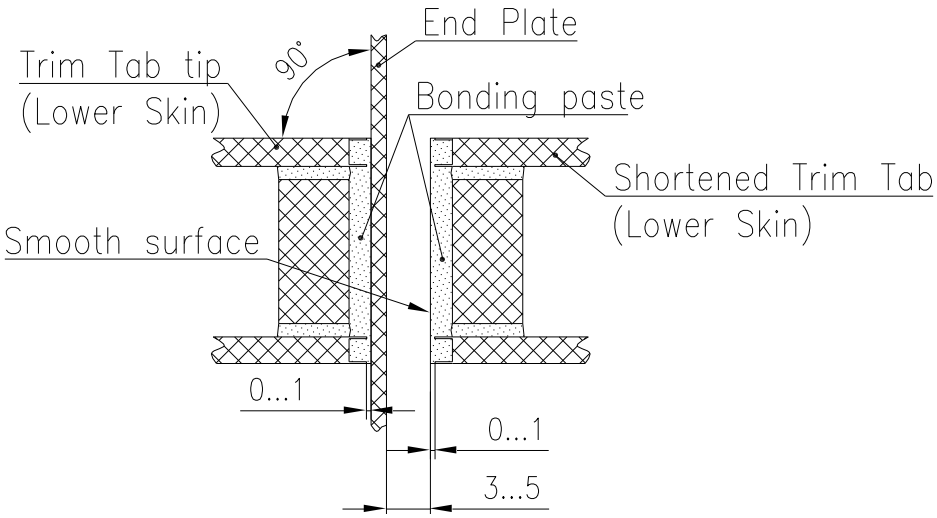


Fig. 3-33

When the End Plates are glued in their proper position fix them with two self-tapping screws – tighten the self-tapping screws into the direction holes shown on Fig. 3-30.

While the bonding paste is not hardened check that the End Plates are perpendicular to the trailing edge of the Trim Tab. Adjust them if necessary (Fig. 3-31).

Remove excessive bonding paste after the self-tapping screws are tightened.

Let the resin harden at room temperature (refer to resin manufacturer information for details).

Remove the self-tapping screws. Put the resin on the inner surface of the holes in the Sandwich Ribs KD 5520 1071.

Remove the protective sticky tape.

Apply white Acryl on the glue joint between the Trim Tab tips and the End Plates KD 5520 1072, on both sides of the Trim Tab tips. Also put white Acryl on the end sections of the Trim Tab tips.

Post cure the whole retrofitted area in accordance with 3.2.3.

▲**Warning:** If you do not cure a composite structure correctly it may fail!

3.3.12 Installation of the Trim Tab to the Stabilator

Install the shortened Trim Tab to the Stabilator as described below.

1. Put the Stabilator on stands, saw horses or a table, with the upper skin upwards.

2. Using Clecos, temporarily install the Stabilator on 4 middle Hinges (“*b*”, “*c*”, “*d*”, “*e*” of Fig. 3-16), the Stabilator skin already has the holes for these Hinges.

3. Put the Stabilator with lower skin upwards.

4. Check that the unriveted flaps of the Hinges "*a*" and "*f*" of Fig. 3-16 lay completely against to the Stabilator Upper Skin. If they do – perform step 6 below. Otherwise, the cutting of the Stabilator Rear Wall gluing flanges is required, Fig. 3-34.

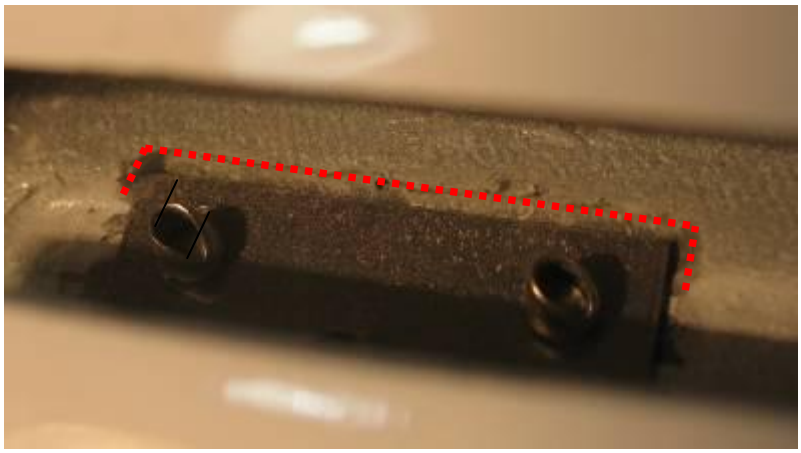


Fig. 3-34

5. Check if the trailing edge of the Trim Tab is aligned with trailing edge of the Trim Tab Tip. Once the trailing edges of the Trim Tab and Trim Tab Tip are aligned, mark a contour of the Hinge. Remove the Trim Tab and carefully cut/ grind the obstructive part of the Stabilator Rear Wall gluing flange by the mark.

■ **Caution:** Take care not to damage the Stabilator during this operation!

Using Clecos install the Stabilator on 4 middle Hinges ("*b*", "*c*", "*d*", "*e*" of Fig. 3-16) again. Check if the Hinges "*a*" and "*f*" of Fig. 3-16 straight positions are achieved.

6. Align the trailing edges of the Trim Tab and Trim Tab Tip again. Mark position of the central hole. Deflect the Trim Tab. Using the drill Ø5.1 mm drill the central holes by the holes of the Hinges. Both, Stabilator upper skin and hinge must be drilled (Fig. 3-35).

■ **Note:** The central holes of the Hinges are to be combined with their marks on the Stabilator Upper Skin during the drilling.

Fig. 3-35

7. Fix the drilled central holes of the Hinges "*a*" and "*f*" of Fig. 3-16 with Clecos, Fig. 3-36.

Fig. 3-36

8. Deflect the Trim Tab. Using the drill Ø5.1 mm drill the rest holes by the holes of the Hinges. Both, Stabilator upper skin and hinge must be drilled.

9. Put the Stabilator with upper skin upwards.

10. Using blind rivets RIV-MHD-A2/A2-(2.5-4.0)-5X8 rivet the Hinges "*a*" and "*f*" of Fig. 3-16 to the Stabilator upper skin.

11. Rivet the Hinges "*b*", "*c*", "*d*", "*e*" (Fig. 3-16) to the Stabilator upper skin (Fig. 3-37). In order to obtain a proper riveting, the rivets of bigger sizes are to be used for the attachment to the Stabilator. Therefore it is required to widen the rivet holes accordingly. Keep hinges temporarily fixed with Clecos in two holes and drill out the remaining rivet hole using a drill Ø5.1 mm. Both, Stabilator flange and hinge must be drilled.

Fig. 3-37

12. Check free movement with less friction up to maximum deflections after assembly.

3.3.13 Balancing of the Trim Tab

Not applicable

3.3.14 Installation of the Sealing Tapes

Apply Glue Tape 389 25 mm x 50 mm, white i.a.w. 3.7 of [2].

▲**Warning:** Tape must be applied when Trim Tab is deflected maximum downwards. Otherwise the tape limits the required deflection.

Make cuts in Glue Tape 389 25 mm x 50 mm, white, in places where the End Plates KD 5520 1072 stick out (Fig. 3-38).

Make cuts in Glue Tape 389 25 mm x 50 mm, white in places where the Hinges KE 5520 1051 stick out (Fig. 3-38).

Apply Mylar Sealing Tape white 30 mm to the lower side of the Stabilator, i.a.w. 3.7 of [2].

- **Caution:** The Fiberglass Plates KD 5520 1070 must be hidden under the Mylar Sealing Tape white 30 mm.

Apply Anti Peel Adhesive Tape 12 mm (Fig. 3-38).

Make the cut-outs in the Mylar Sealing Tape for the Trim Tab control rod connection.

Also check if the Mylar Sealing Tape does not cover the draining holes. Make the cut outs in the Mylar Sealing Tape if necessary.

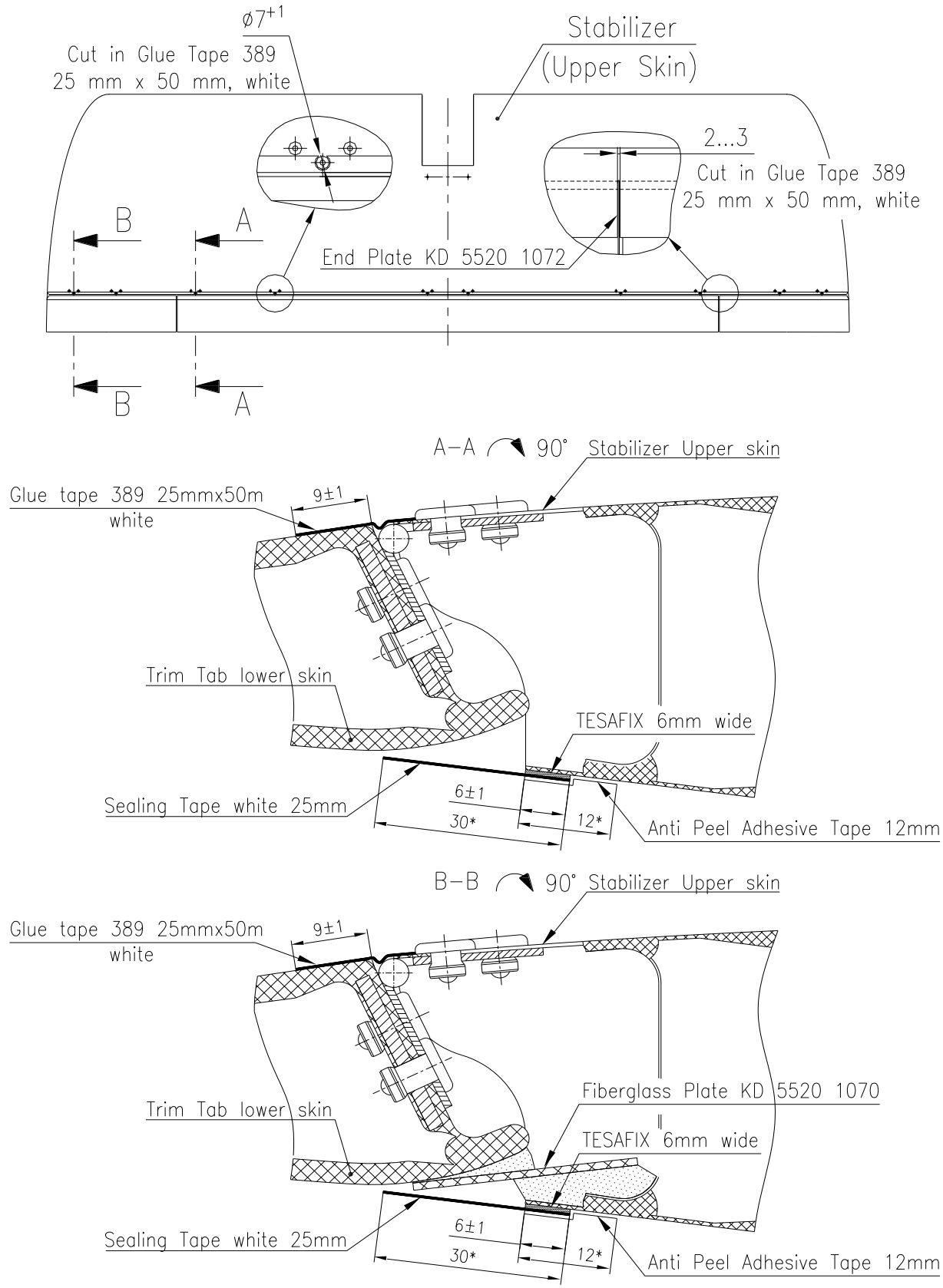


Fig. 3-38

3.3.15 Balancing and Installation of the Stabilator

Conduct the Stabilator balancing and install Stabilator, Refer to 4.4.6 and 4.3.4.2.

3.3.16 Adjustment of the Angles of Deflection and Flight Verification

Check and adjust the deflections of the Stabilator on ground i.a.w. Appendix 4.4.

Check and adjust the deflections of the Trim Tab on ground i.a.w. 3.9 of [2] and Appendix 4.4.

Verify the Trim Tab adjustment in flight i.a.w. 3.10 of [2].

- **Note:** The deflections for the long Trim Tab are still valid although the serial short Trim Tab has different deflection angles.
- **Caution:** Any adjustment of the control system must be documented in an adjustment report. You can find the template including the nominal values and allowable tolerances in the section 4.6.

3.4 Documentation

Conduct of this SI must be logged in the aircraft log book with date and signature of the responsible Person conducting the SI. National regulations have to be considered.

4 Appendix

4.1 Changes to Previous Revision

Original Issue – no changes

4.2 Feedback Template Flight Design

No specific feedback required

4.3 Stabilator Installation and Removal

4.3.1 Tools Required

Wrench 8 mm	2 pcs
Wrench 10 mm	2 pcs
Socket wrench 13 mm	2 pcs
Allen key 3 mm	1 pcs
Allen key 4 mm	1 pcs
Allen key 5 mm	1 pcs
Level	1 pcs
Ruler 20” (500 mm)	1 pcs
Drill machine	1 pcs
Drill (for metal drilling) Ø1/4” (6.0 mm)	1 pcs

4.3.2 Parts and Materials Required

4.3.2.1. Parts

Part number	*Description*	*Qty*	*Unit*
C9996333	Self-locking nut DIN 985-M5, regular	5	pcs
C9996334	Self-locking nut DIN 985-M6, regular	3	pcs
C9996336	Self-locking nut DIN 985-M8, regular	2	pcs
C9997727C	TY-wraps CV-100 white	1	pcs
C9997727F	TY-wraps CV-250 white	4	pcs

4.3.2.2. Materials

LITOL-24M (Retinax EP 2. Alvania EP-2 (SHELL); Alvania Grease R3 (Petroleum Co, Ltd); Mobilgrease MP, Mobilux 3 (Mobil Oil Corp.); Energrease LS 3 (British Petroleum Co.); Beacom 3 (Esso)).

4.3.3 General

Set the plane on parking brake and ensure good access to the tail of the aircraft.

Inspect metal parts and especially welding seams for cracks and dents.

Inspect fasteners and axles for nicks and their threads for condition.

▲**Warning:** Ensure that only new self-locking nut DIN 985 are used.

Inspect composite parts for cracks, paint delamination, and mounting holes for deformation where bolts, pivots and bearings are attached. If found, contact Flight Design for decision on further inspection and maintenance.

4.3.4 Stabilator Installation and Removal

The Stabilator is attached to the fuselage via the Stabilator Mounting Pivot that rotates on Stabilator Axis of Rotation installed into Bearings in the fuselage.

One person is required to install and remove the Stabilator with Stabilator Mounting Pivot.

4.3.4.1. Stabilator Removal

4.3.4.1.1. Stabilator Removal from the Stabilator Mounting Pivot

1. Unscrew nuts (1) with wrench 8 (mm) and disconnect push rods (2) from pin of rocker (3), Fig. 4-1. (rudder, rudder support and underfin not shown).

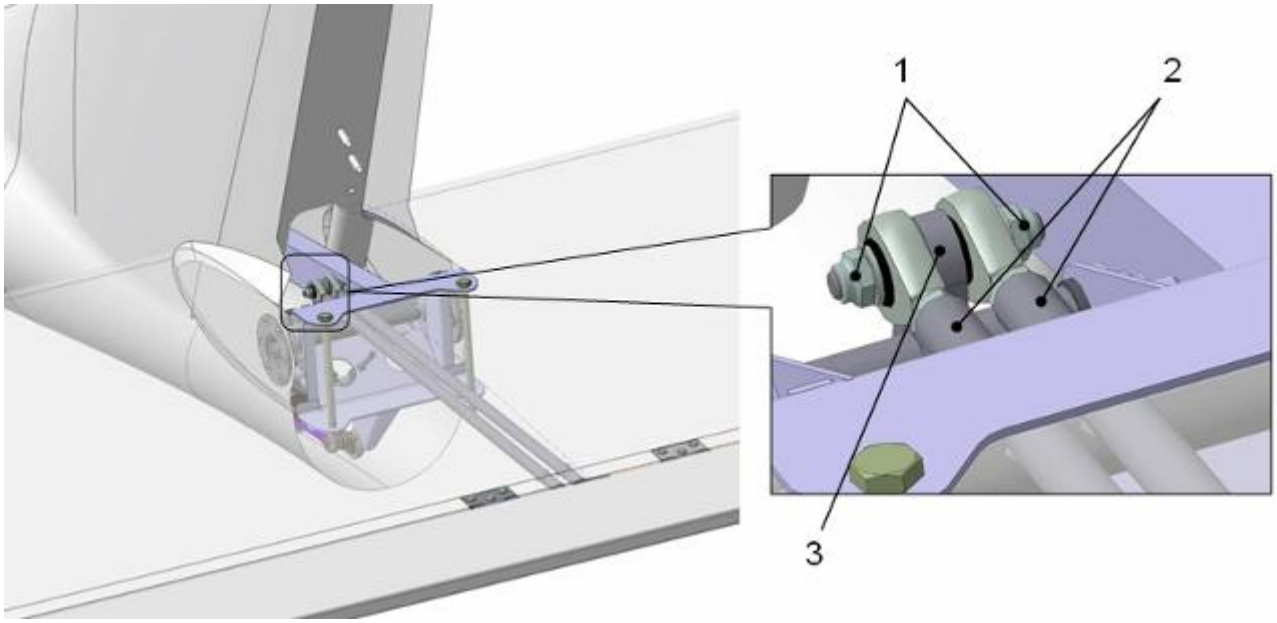


Fig. 4-1

2. Unscrew nuts (1) with two wrench 10 (mm), remove bolts (2) and detach Stabilator, Fig. 4-2.

■ **Caution:** Take care not to damage the Rudder during the bolts removal. Deflect the Rudder in the opposite direction of the side of the bolt you remove.

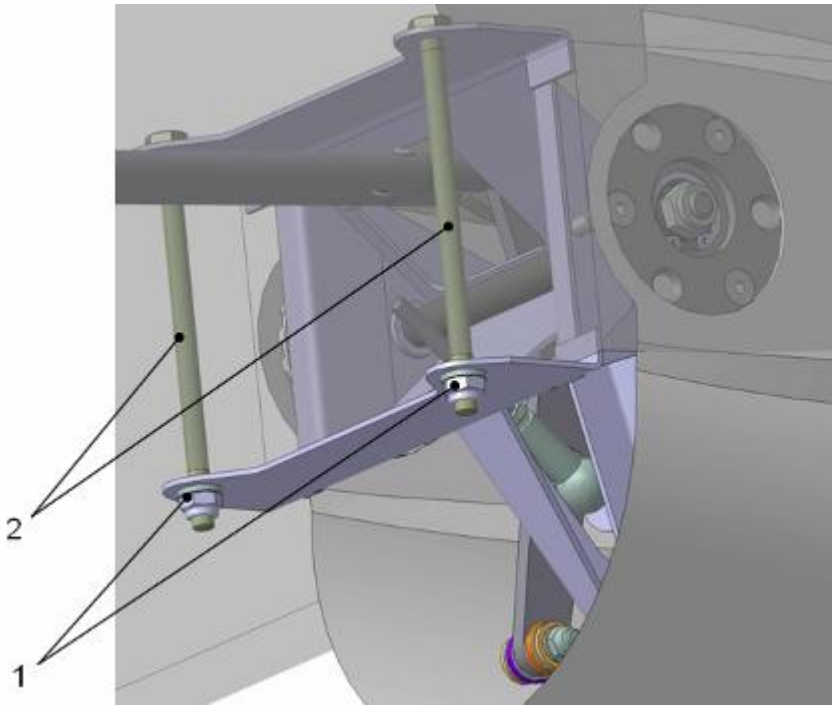


Fig. 4-2

4.3.4.1.2. Removal of the Trim Tab control rods from the Stabilator

Put the Stabilator on saw horses, on stands or on a table with soft covers, with the lower skin upwards. Deflect Trim Tab to provide access to Trim Tab push-rods. Unscrew and remove fixing bolts (1) and nuts (2) after that detach push-rods, Fig. 4-3.

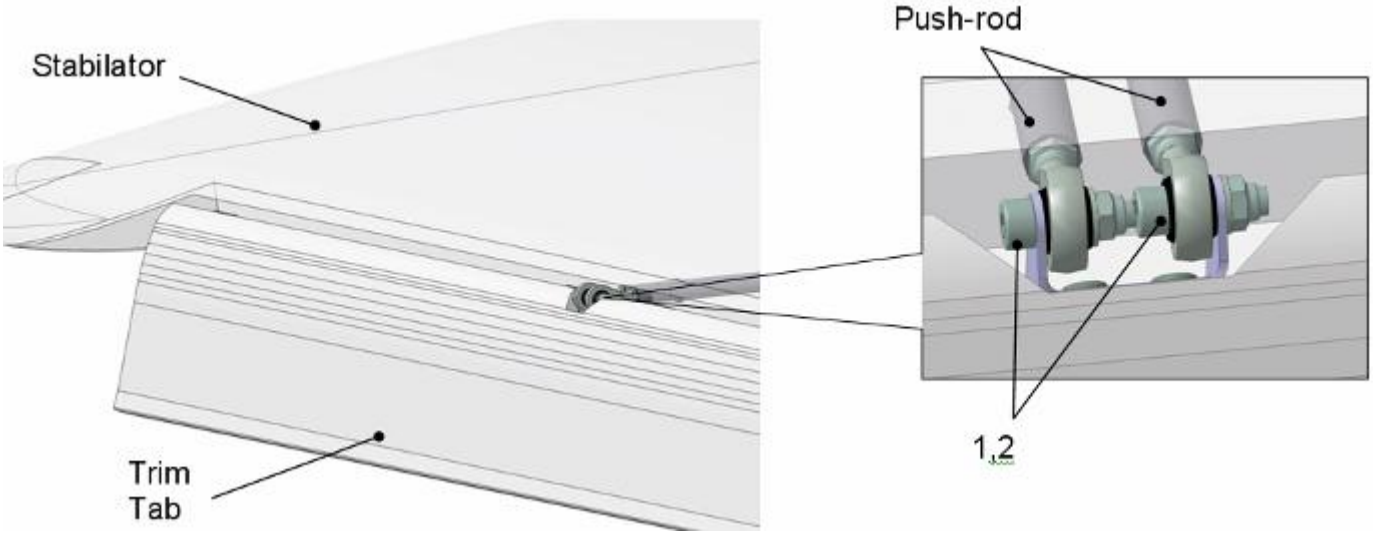


Fig. 4-3

■ **Caution:** Before the Push-rods removal mark them with marks “left” and “right”. Afterwards the Push-rods shall be assembled in the same configuration.

4.3.4.1.3. Removal of the Stabilator Mounting Pivot from the Fuselage

1. Set Trim Tab Steering Wheel in max Stabilator trim down position.
2. Remove Throttle Box Covering Plate and Tunnel Hatch:
   a. Remove the handles of the brake lever and of the throttle lever, Fig. 4-4;
   b. Screw out the bolts of the Throttle Box covering plate, Fig. 4-5;
   c. Remove the Throttle Box covering plate;
   d. Screw out the bolts of the Tunnel Hatch, Fig. 4-5;
   e. Remove the Hatch.

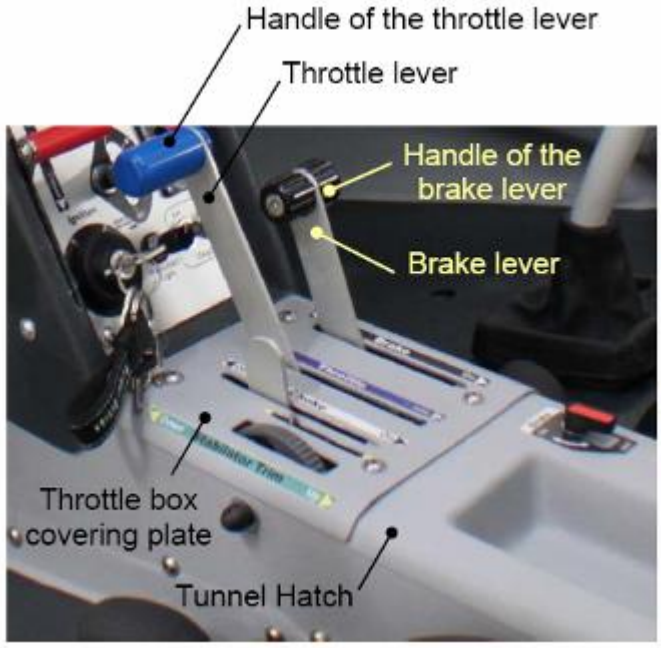


Fig. 4-4

3. To prevent cable disentanglement on Steering wheel and roller during removing Stabilator and Stabilator mounting pivot is necessary to fix cable in two places (on Steering wheel and roller) by plastic clamps (1) and (2) as shown on Fig. 4-5. Plastic clamp (2) consists of some clamps (2-4 pcs.) connected together to provide needed length.

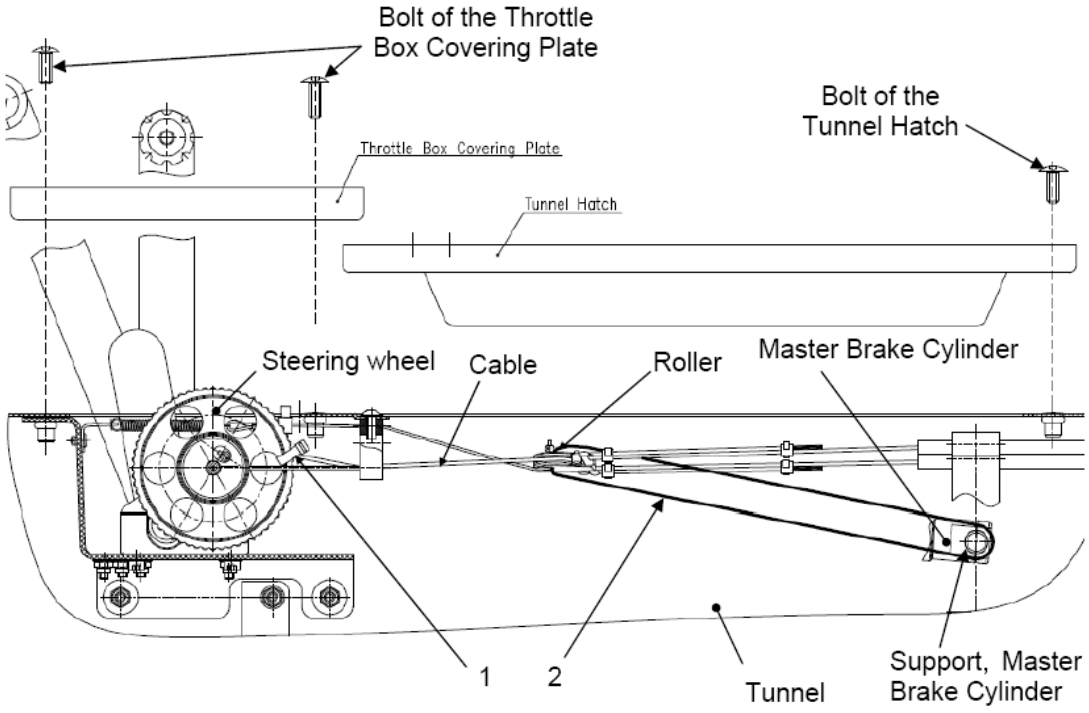


Fig. 4-5

Fig.	*Item*	*Part Name*	*Q-ty*	*Torque*	*FD Part No.*	*Note*
4-5	1	TY-wraps CV-100 white	1		C9997727D	
	2	TY-wraps CV-250 white	4		C9997727F	

4. Disconnect Cables from Rocker. For this unscrew nut (1) and remove bolt (2) together with bushes (3) and washer (4). Disconnect Push-Pull Cable End from Stabilator mounting Pivot, for this unscrew nut (5) and remove bolt (6) together with washer (7), Fig. 4-6.

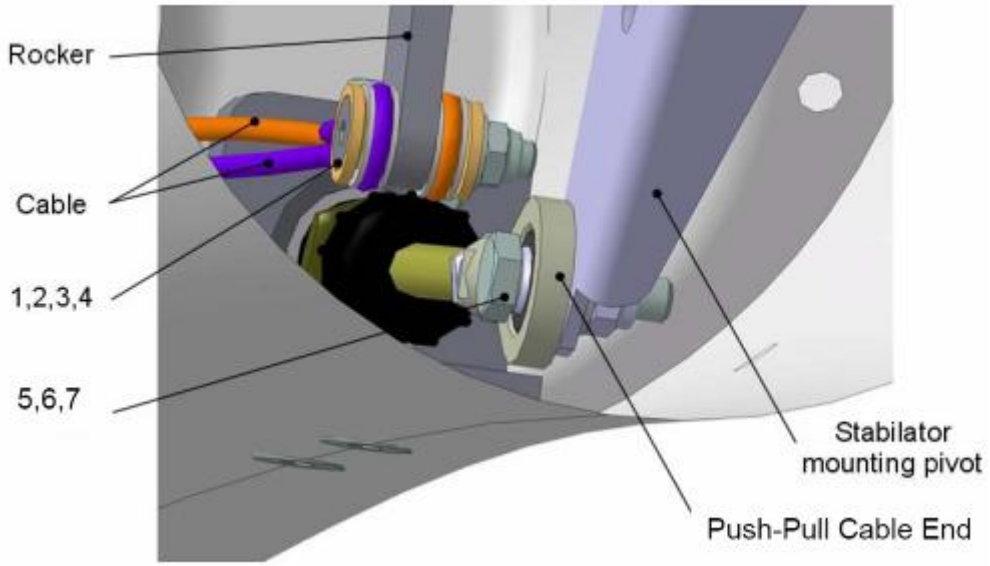


Fig. 4-6

5. Tighten cable on Steering Wheel and Roller by plastic clamp (2), Fig. 4-5.
6. Unscrew nuts (1) with two socket wrenches 13 (mm) and remove Stabilator Axis (2) together with Spacer (3) and Washers (4), Fig. 4-7, a. Pay attention washers (4) installed on the outer and inner sides of the bearings, Fig. 4-7, b.

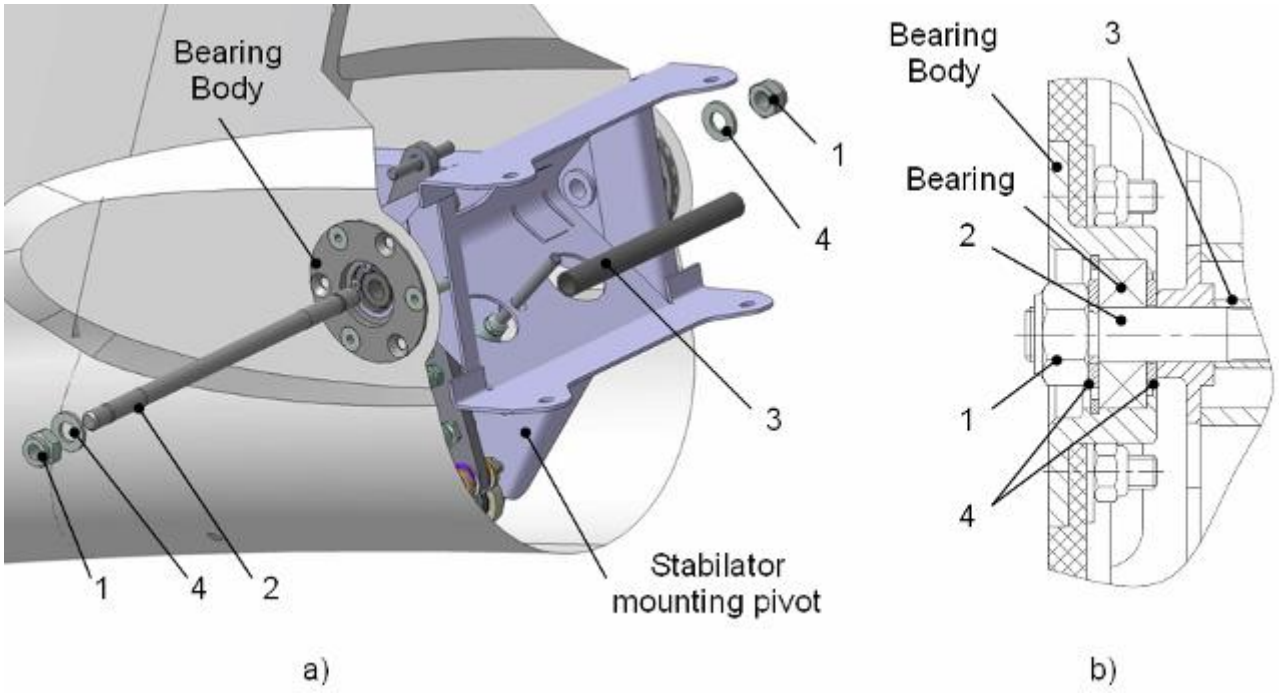


Fig. 4-7

7. Disconnect spring push-rod together with spring and telescopic guide from Trim Tab Rocker by removing wire clip from angle joint, Fig. 4-8.

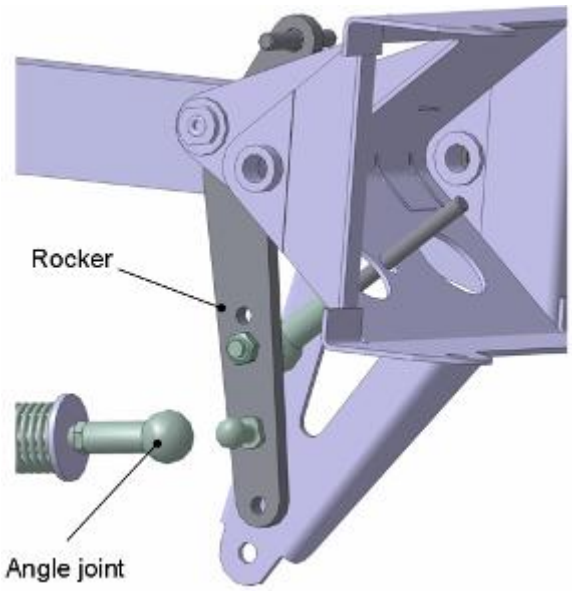


Fig. 4-8

4.3.4.2. Stabilator Installation

■ **Caution:** In cases when the Stabilator was removed to change the Stabilator bracket; to perform repairs of the Stabilator or Trim Tab surfaces or in case of Stabilator replacement with new one, checking of the Stabilator balancing shall be performed as per 4.4.6 before installation.

4.3.4.2.1. Stabilator Mounting Pivot Installation in the Fuselage

1. Check that the lock rings (1) which secure the bearings (2) in bearing bodies are present on both sides of the fuselage (Fig. 4-9). Check inner rings of the bearings (2) for free rotation. Replace bearings, if necessary. For replacing of a bearing there is no need to remove a bearing body. Before the removal of the bearing body each of them shall be marked to ensure that it is re-installed later in the same position (L, R, and respective position to the fuselage).

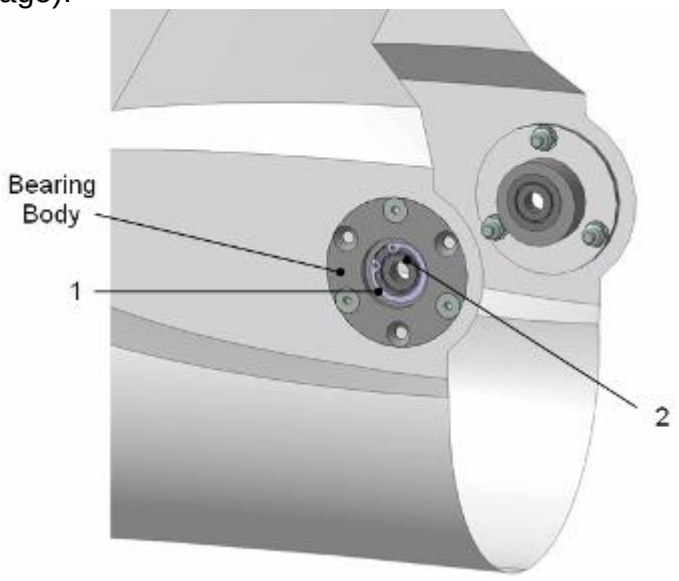


Fig. 4-9

Fig.	Item	Part Name	Q-ty	Torque	FD Part No.	Note
4-9	1	Lock ring DIN 472-22x1	2		C9997032	
	2	Bearing SKF 608-2RZ	2		C9997025	

2. Insert washers (1) to bearing body as shown on Fig. 4-10 for both sides.

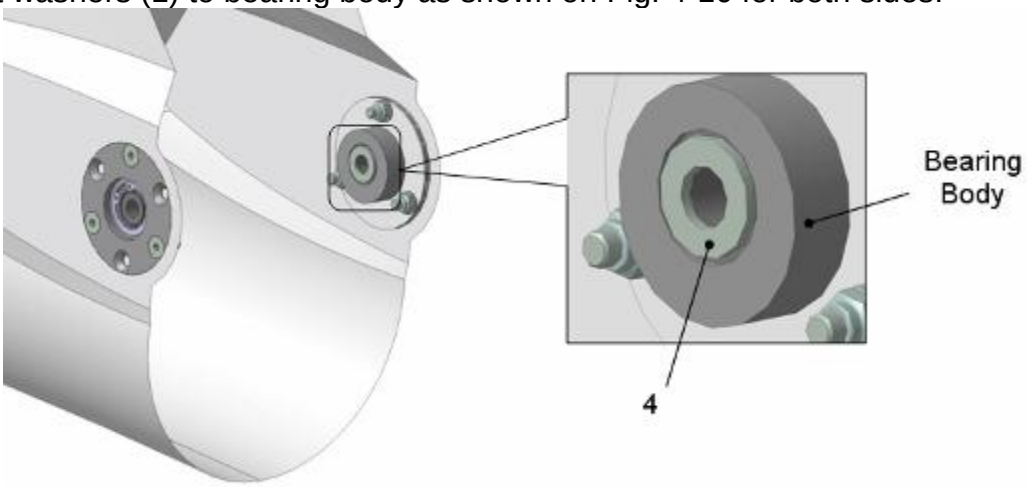


Fig. 4-10

Fig.	Item	Part Name	Q-ty	Torque	FD Part No.	Note
4-10	1	Washer DIN 125 A-8.4mm VZ	2		C9996505	

3. Check if the perceptible backlash of the rocker bearings on the rotation axle presents. If so, replace the rocker bearings against a new one.
    - Screw out the lock-nut (1) and screw out the bolt (2), remove the rocker (3), Fig. 4-11;
    - Remove the bearings (4) from the rocker (3);
    - Install the new bearings;
    - Install the rocker on the Stabilator mounting pivot. For this match holes of the rocker (3) with holes of the Stabilator mounting pivot. Then insert the bolt (2) and tight it up to provide slightly tight rocker rotation without backlash. After that tight the lock nut (1) to fix the bolt (2).

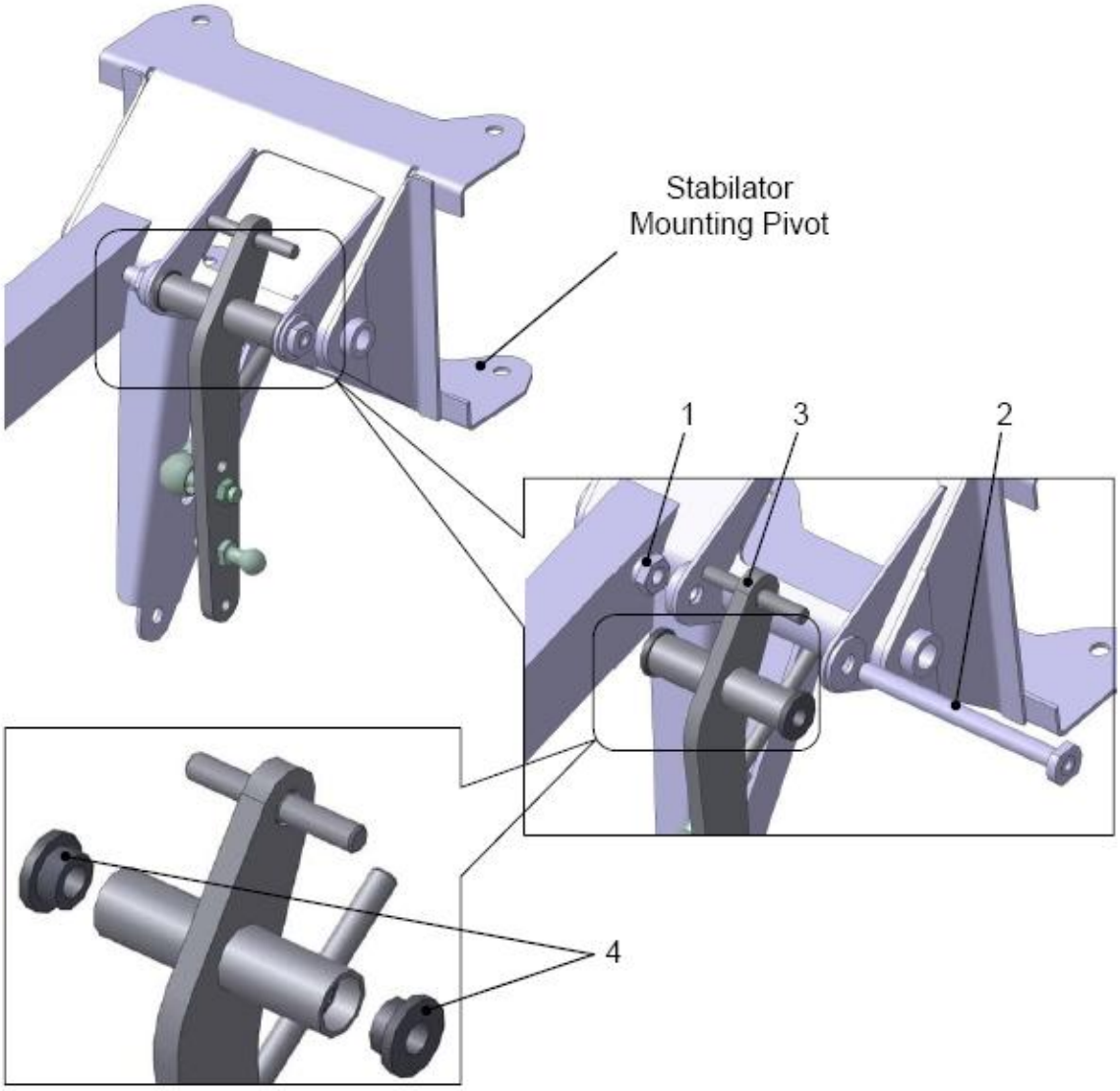


Fig. 4-11

Fig.	*Item*	*Part Name*	*Q-ty*	*Torque*	*FD Part No.*	*Note*
4-11	1	Self-locking nut DIN 985-M6 regular, grade 8	1	9 Nm (80 lb-in)	C9996334	
	2	Bolt	1		KA6060020	
	3	Rocker, Assembly	1		KA6060100	
	4	Bearing, MFM-0610-06	2		C9997023	

4. Lubricate the Stabilator axle (2) (see Fig. 4-12) by CIATIM-201 (or Aeroshell Grease 6 (SHELL), Unirex S 2 (Esso), Eneryrease LCI, LT 2 (British Petroleum)). Make sure that the threaded parts of the axle are not lubricated.
5. Install the Stabilator mounting pivot with installed Trim Tab Rocker on the fuselage as follows: Match holes in the Stabilator mounting pivot with holes in the bearings; Insert the Stabilator axis (2) through hole in the left bearing, the left hole in the Stabilator mounting pivot, Spacer (3), and right hole in the Stabilator mounting pivot and right bearing, Fig. 4-12.

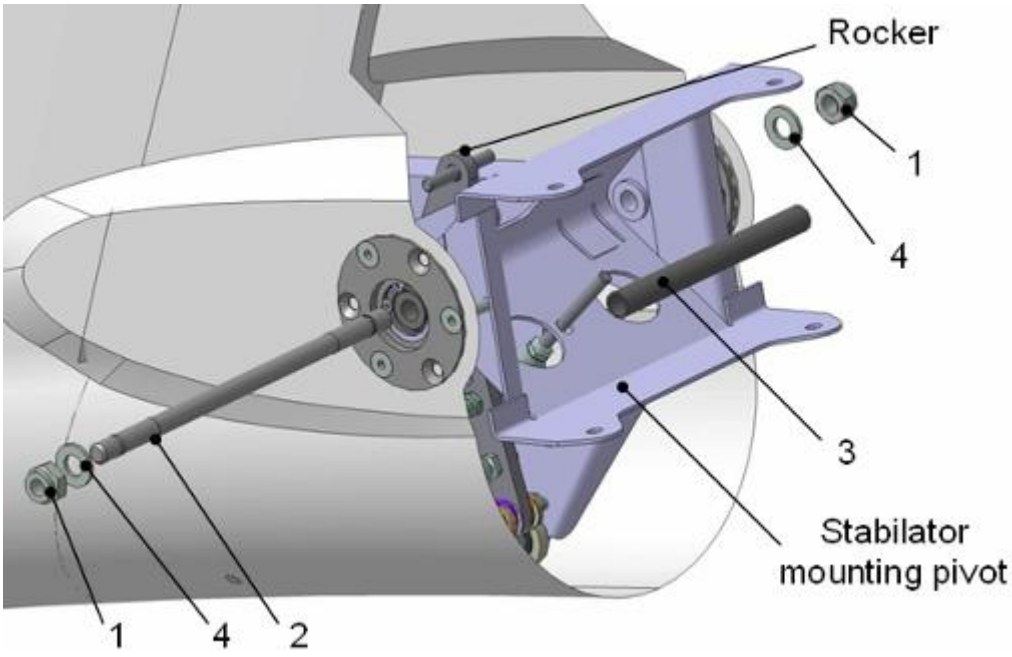


Fig. 4-12

Fig.	*Item*	*Part Name*	*Q-ty*	*Torque*	*FD Part No.*	*Note*
4-12	1	Self-locking nut DIN 985-M8 regular, grade 8	2	22.5 Nm (200 lb-in)	C9996336	
	2	Axis of Stabilizer	1		KA3010001	
	3	Bush	1		KA3010002	
	4	Washer DIN 125 A-8.4mm VZ	2		C9996505	

6. Ensure that threaded parts of the Stabilator axis (2) are not lubricated. Secure the axis (2) by new nuts (1) using two socket wrenches 13 mm, Fig. 4-12.
7. Connect cables to rocker and push-pull cable end to Stabilator mounting pivot as shown on Fig. 4-13. Secure bolts with new nuts (4) and (7).

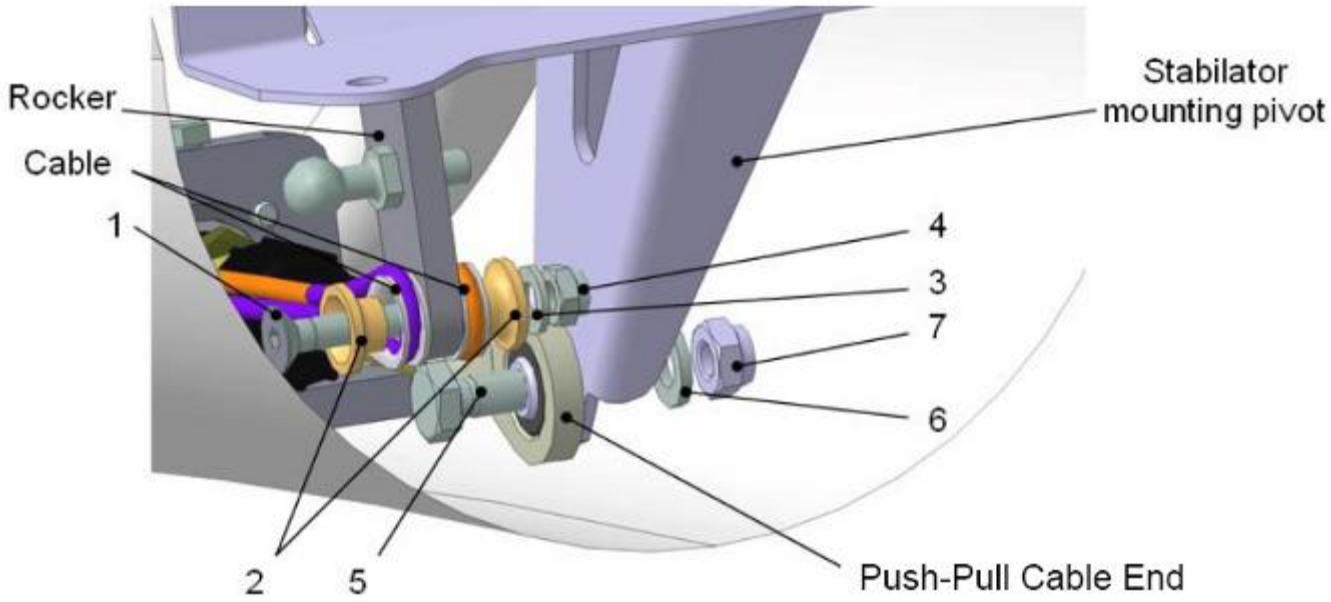


Fig. 4-13

Fig.	Item	Part Name	Q-ty	Torque	FD Part No.	Note
4-13	1	Bolt DIN 7991 M5x25-8.8	1		C9996208K	
	2	Bush	2		KA6060004	
	3	Washer DIN 125 A2-5.3mm	1		C9996503	
	4	Self-locking nut DIN 985-M5 regular, grade 8	1	5.5 Nm (49 lb-in)	C9996333	
	5	Bolt DIN 933 M6x20-8.8	1		C9996284B	
	6	Washer DIN 125 A2B-6.4mm	1		C9996504	
	7	Self-locking nut DIN 985-M6 regular, grade 8	1	9 Nm (80 lb-in)	C9996334	

8. Pre-assemble telescopic system with returning spring. The telescopic guide consists of two tubes with washer welded to one end of each, that slide one in the other. The telescope guides support the spring from inside and are itself guided by the 5 mm diameter rod. The parts are shown on Fig. 4-14. The spring has 37 windings and a length of approx. 260 mm.

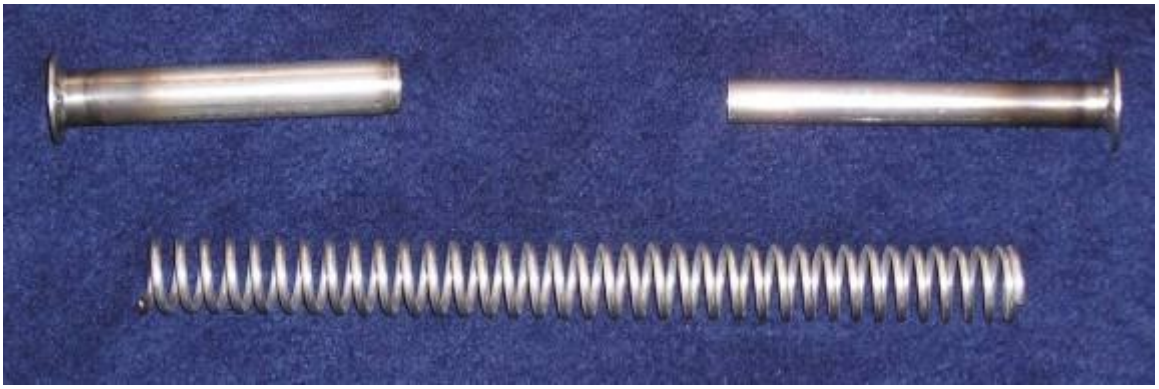


Fig. 4-14

Installation of telescopic system with spring is shown on Fig. 4-15. To install the spring (2) with telescopic guide (1), compress the spring and hold it in compressed state using safety wire. Carefully grease the outside of both telescopic tubes and the flanges, where the spring will have contact. This is to ensure smooth operation of the telescopic guide itself and of the spring guided by it, when installed. Insert the telescopic tubes to the pre-tensioned spring. Lubricate the rod (3) and insert it to the telescopic guide. Before installation of telescopic system take care that rod (5) was lubricated and inserted to hole in the Stabilator mounting pivot.

Insert the telescopic system with spring and rod to the lower hole in the fin wall.

■ **Caution:** Do not use the upper hole / attachment area!

Snap the Angle Ball Joint (4), Fig. 4-15 to the Ball Head attached to the Rocker and secure the ball head with the safety pin.

Release the spring by removing the safety wires. Be careful to completely remove the whole safety wire.

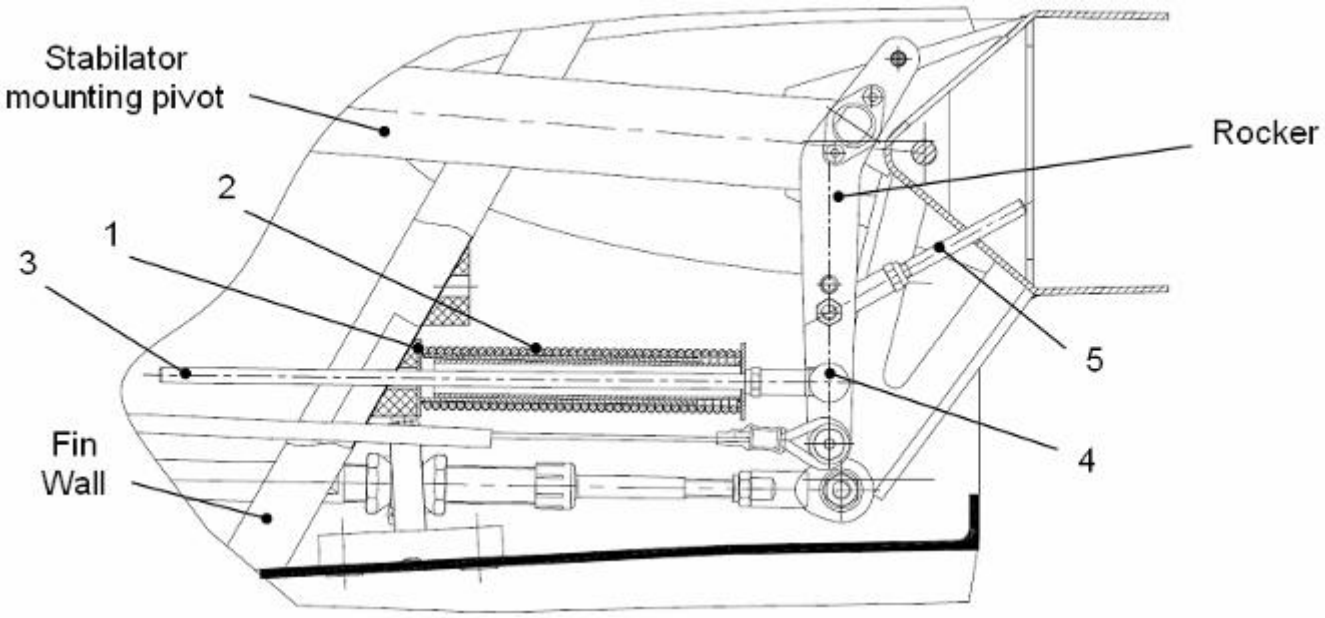


Fig. 4-15

Fig.	*Item*	*Part Name*	*Q-ty*	*Torque*	*FD Part No.*	*Note*
4-15	1	Telescopic Guide	1		KA6060040	
	2	Spring	1		KA6060007-01	
	3	Rod	1		KA6060003	
	4	Angle joint M 5	1		C9997010	
	5	Rod	1		KA6060009	

9. Remove the plastic clamps (1) and (2) to unfix the Trim Tab control cables on Steering wheel and Roller, Fig. 4-5.
10. Rotate Steering wheel to limits positions and check laying of cable in wheel trays. Cable shall not overlap.

4.3.4.2.2. Trim Tab push rods Installation on the Stabilator

Put the Stabilator on saw horses, on a stands or table with soft covers, with the lower skin upwards. Deflect Trim Tab to provide access for installation of Trim Tab push-rods (1). Insert push-rods through hole in Stabilator spar wall and connect them to the Trim Tab bracket by bolts (2) with new nuts (3), Fig. 4-16.

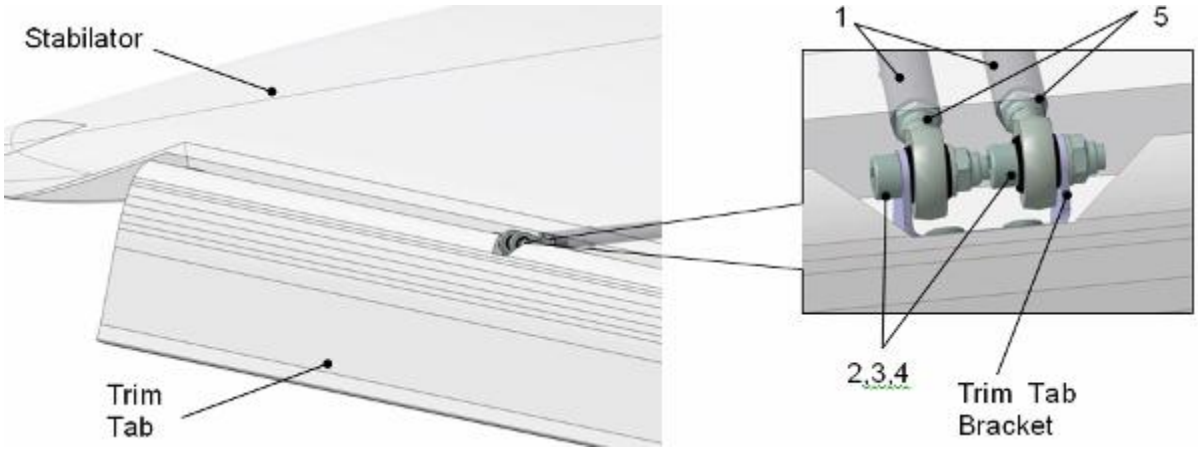


Fig. 4-16

Caution: Push-rods marked with marks “left” and “right”.

Fig.	*Item*	*Part Name*	*Q-ty*	*Torque*	*FD Part No.*	*Note*
4-16	1	Rod, Trim Tab Control	2		KA6060010	
	2	Bolt M5x17	2		KA6060013	
	3	Self-locking nut DIN 985-M5 regular, grade 8	1	5.5 Nm (49 lb-in)	C9996333	
	4	Washer DIN 125 A2-5.3mm	1		C9996503	
	5	Lock Nut M5	-	5.5 Nm (49 lb-in)	Part of set item 1	See item 14 of Section 4.3.4.2

4.3.4.2.3. Stabilator Installation on the Stabilator Mounting Pivot

1. Match fixing holes of the Stabilator with fixing holes of the Stabilator Mounting Pivot. Insert bolts (1) and secure with new nuts (2), Fig. 4-17.

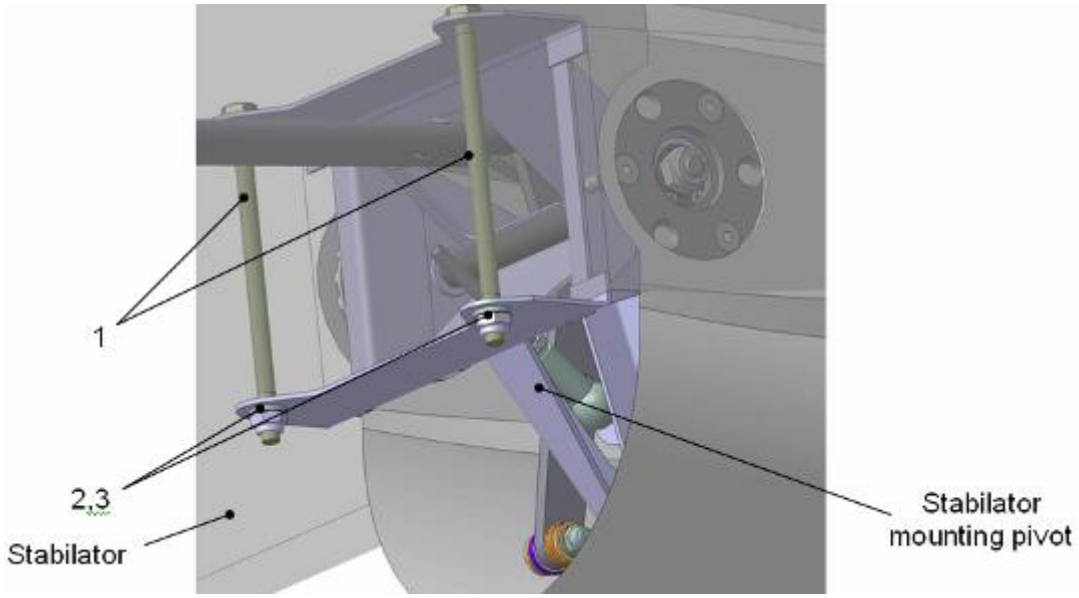


Fig. 4-17

Fig.	*Item*	*Part Name*	*Q-ty*	*Torque*	*FD Part No.*	*Note*
4-17	1	Bolt M6	2		KA3010003	
	2	Self-locking nut DIN 985-M6 regular, grade 8	2	9 Nm (80 lb-in)	C9996334	
	3	Washer DIN 125 A2B-6.4mm	2		C9996504	

2. Connect Trim Tab push-rods to pin of the Rocker. If required adjust the length of one of two rods. Temporarily secure rods by any nuts M5, Fig. 4-18. Install new nuts (1) instead of temporary nuts after Stabilator and Trim Tab adjustment.

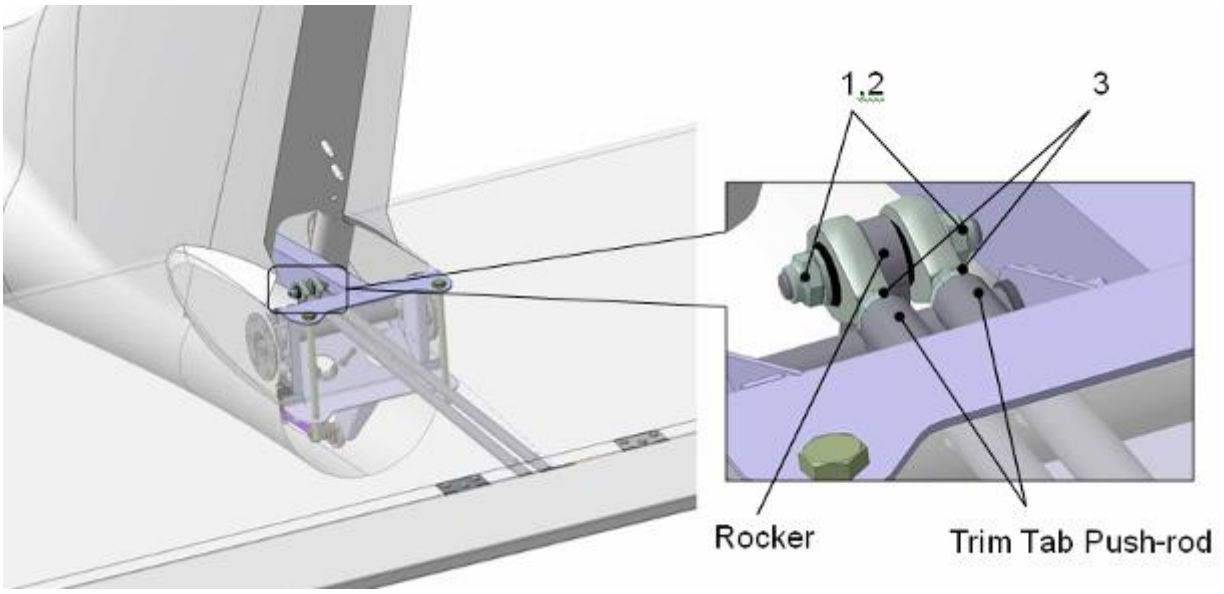


Fig. 4-18

Fig.	*Item*	*Part Name*	*Q-ty*	*Torque*	*FD Part No.*	*Note*
4-18	1	Self-locking nut DIN 985-M5 regular, grade 8	2	5.5 Nm (49 lb-in)	C9996333	
	2	Washer DIN 125 A2-5.3mm	2		C9996503	
	3	Lock Nut M5	-	5.5 Nm (49 lb-in)	Part of set Trim Tab Push-rod	See item 4 of Section 4.3.4.2.3

3. Check deflections of the Stabilator and of the Trim Tab. If required adjust as per 4.4.
4. Tight the Lock Nuts M5 of Trim Tab Push-rods (Item 5 of Fig. 4-16 and item 3 of Fig. 4-18) with torque 5.5 Nm (49lb-in).
5. Install the tunnel hatch, the throttle box covering plate and the handles of the brake lever and of the throttle lever in reversed order to the removal described in 4.3.4.1.3.

4.4 Adjustment of the Stabilator and the Trim Tab

4.4.1 Deflection of Stabilator and Trim Tab

Angles of deflection of the Stabilator and Trim Tab shall be within the range as follows.

Stabilator trailing edge deviation in respect to horizontal plane:

Maximum downwards angle of deflection: 8° – 10°;

Maximum upwards angle of deflection: 13° – 15°;

Trim Tab trailing edge deviation in respect to the Stabilator trailing edge:

The Stabilator is horizontal (control stick in neutral position):

Trim Tab zero position 8 ± 3 mm $^{10}/_{32} \pm {}^{4}/_{32}$".

Stabilator trailing edge up (control stick pulled backward):

Trim Tab trailing edge maximum upwards deflection 31 ± 5 mm $1\,{}^{7}/_{32} \pm {}^{5}/_{32}$".

Stabilator trailing edge down (control stick pushed forward):

Trim Tab trailing edge maximum downwards deflection 38 ± 5 mm $1\,{}^{16}/_{32} \pm {}^{6}/_{32}$".

For checking Trim Tab deflection angles use template from Appendix 4.5 or follow procedure using a ruler i.a.w. 4.4.4.

- **Caution:** Any adjustment of the control system must be documented in an adjustment report. You can find the template including the nominal values and allowable tolerances in 4.6.

4.4.2 Measurement of Stabilator Angles of Deflection

1. Hold the Stabilator in zero position (see Fig. 4-19).

Fig. 4-19

2. Put the level on upper surface of the Stabilator (see Fig. 4-20). Install the level indicator in zero. Hold the level in the same place during all measurements. Prevent the level from moving.

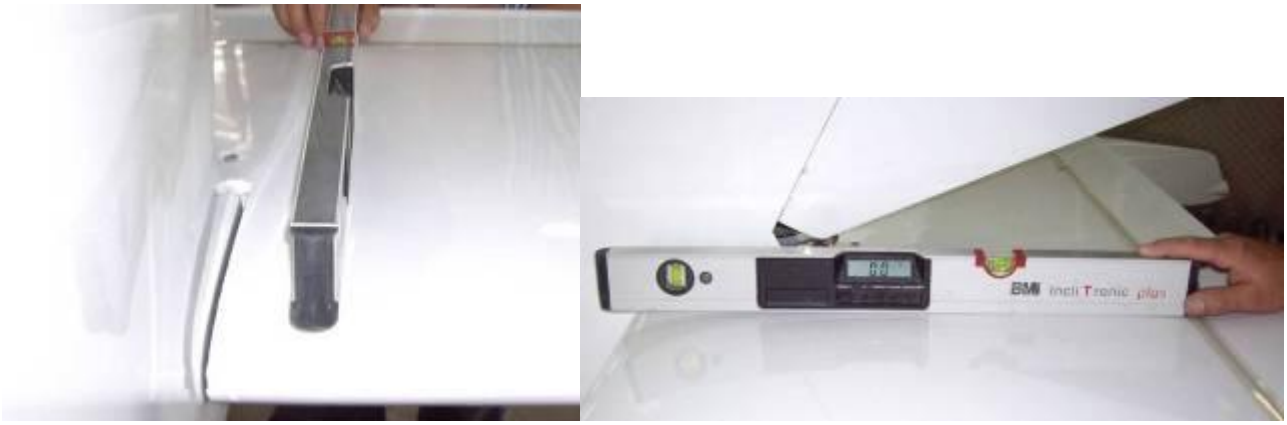


Fig. 4-20

3. Deflect the Stabilator by control stick up to forward (rearward) stop the stick. Define angle of deflection by the level (see Fig. 4-21).

Fig. 4-21

4. Check received values with boundary values (see table in 4.6).

Using ruler:

Mark leading edge on the Stabilator and on the fuselage (see Fig. 4-22).

Deflect the Stabilator and measure the distance.

Fig. 4-22

4.4.3 Adjustment of Stabilator Angles of Deflection

For limitation of deflection of the Stabilator upward and downward use the rod (2) with stopper bushes (4) and (6) and stopper plate (1) which installed inside of the tunnel, Fig. 4-23.

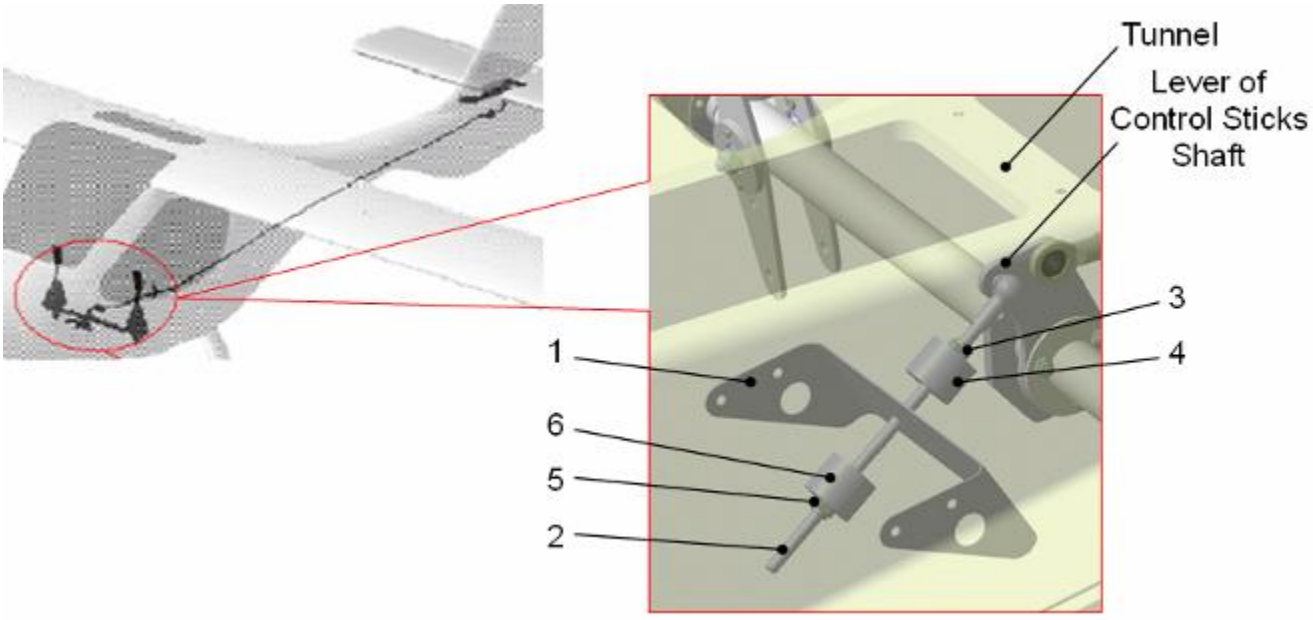


Fig. 4-23

Fig.	Item	Part Name	Q-ty	Torque	FD Part No.	Note
4-23	1	Stopper Plate	1		KA6040071	
	2	Rod	1		KA6040008	
	3	Self-locking nut DIN 985-M6 regular, grade 8	1	9 Nm (80 lb-in)	C9996334	
	4	Bush	1		KA6040007	
	5	Self-locking nut DIN 985-M6 regular, grade 8	1	9 Nm (80 lb-in)	C9996334	
	6	Bush	1		KA6040007	

Adjusting of downward Stabilator deflection, Fig. 4-23:

- unscrew the lock nut (3) on 2-3 turns;
- to increase angle of deflection screw out the bush (4);
- to decrease angle of deflection screw in the bush (4);
- once the required deflection is achieved, lock the bush (4) by the nut (3).

Adjusting of upward Stabilator deflection, Fig. 4-23:

- unscrew the lock nut (5) on 2-3 turns;
- to increase angle of deflection screw out the bush (6);
- to decrease angle of deflection screw in the bush (6);
- once the required deflection is achieved, lock the bush (6) by the nut (5).

4.4.4 Measurement of Trim Tab Angles of Deflection

1. Set and hold the Stabilator in zero position (see Fig. 4-20).

2. Set the Trim Tab in zero position by steering wheel. The Trim Tab indicator must indicate zero.

3. Put the Template for Trim Tab deflection angles measurement as shown on Fig. 4-24. Check zero position of the Trim Tab.

Fig. 4-24

4. Deflect the Trim Tab up to maximum upward angle. Deflect the Stabilator up to maximum upward deflection angle by control stick. Define Trim Tab deflection angle by the template (see Fig. 4-24).

Check received values against boundary values (see 4.6).

5. Deflect the Trim Tab up to maximum downward angle. Deflect the Stabilator up to maximum downward deflection angle by control stick. Define Trim Tab deflection angle by the pattern (see Fig. 4-24).

Check received values against boundary values (see 4.6).

Using ruler:

Use a bar on the upper surface of Stabilator for measuring. Mark position of the same corners (lowest or topmost) on the trailing edge of the Trim Tab in the maximum downward Trim Tab position / maximum upward Trim Tab position for all 3 positions of Stabilator (upward / zero / downward) - see Fig. 4-25. Then check the result against the table in 4.6.

■ **Caution:** Deduct thickness of the used bar.

Fig. 4-25

4.4.5 Adjustment of Trim Tab Angles of Deflection

■ **Caution:** Trim Tab deflection can be adjusted only once the Stabilator deflection is set correctly.

Trim Tab angles of deflection can be adjusted by changing of length of the Trim Tab push-rods (1), Fig. 4-26.

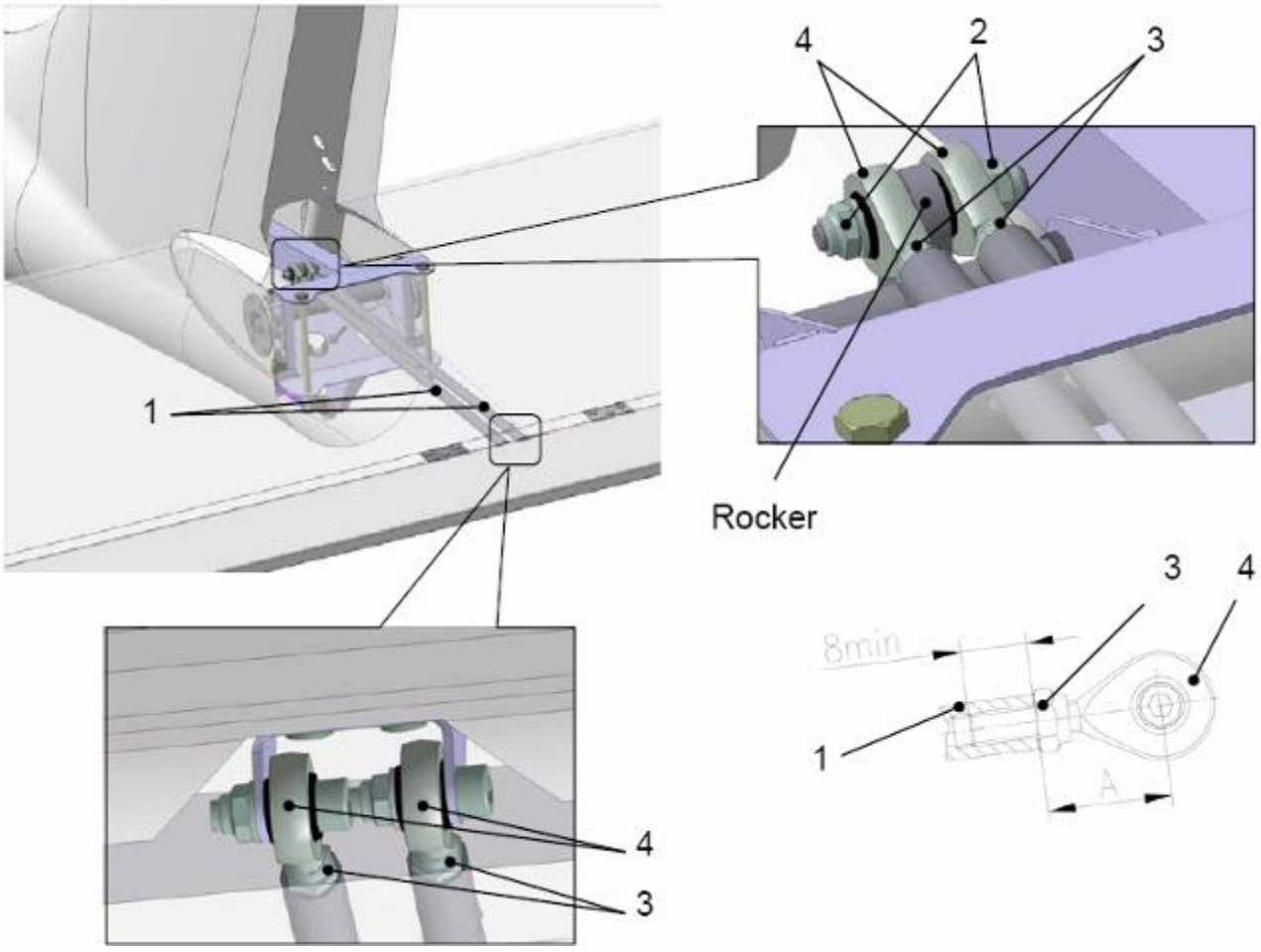


Fig. 4-26

Adjustment procedure:

1. Set the Trim Tab steering wheel to neutral position.
2. Unscrew 2-3 turns the push-rods lock nuts (3).
3. Set Stabilator in the neutral position.
4. Unscrew nuts (2) and disconnect push-rods (1) from Rocker.
5. Adjust length of push-rods by screwing in or screwing out the rod-ends (4) to set Trim Tab in neutral position (7.5 mm ± 2.5 mm downward at steering wheel and Stabilator neutral position).
6. Connect push-rods to Rocker and secure by nut (2).
7. Tight the lock-nuts (3) with torque 5.5 Nm (49 lb-in).
8. Ensure that thread parts of rod-ends (4) screwed in to push-rods no less than by 8 mm. To check it measure the dimension A on Fig. 4-26, the dimension A shall not exceed 25 mm.
9. Check Trim Tab deflections for all Trim Tab and Stabilator positions specified in 4.6. Readjust if required.
10. Exchange nuts (2) by new nuts and tightening with torque as specified 4.3.4.2.3.

4.4.6 Balance of the Stabilator Checking and Balancing

4.4.6.1. Balance of the Stabilator Checking

Perform checking of the Stabilator balance as described below. There are two possible options:

- Stabilator balance checking with installed Stabilator mounting pivot in the fuselage;
- Stabilator balance checking outside the fuselage with the Stabilator mounting pivot is installed on the Stabilator.

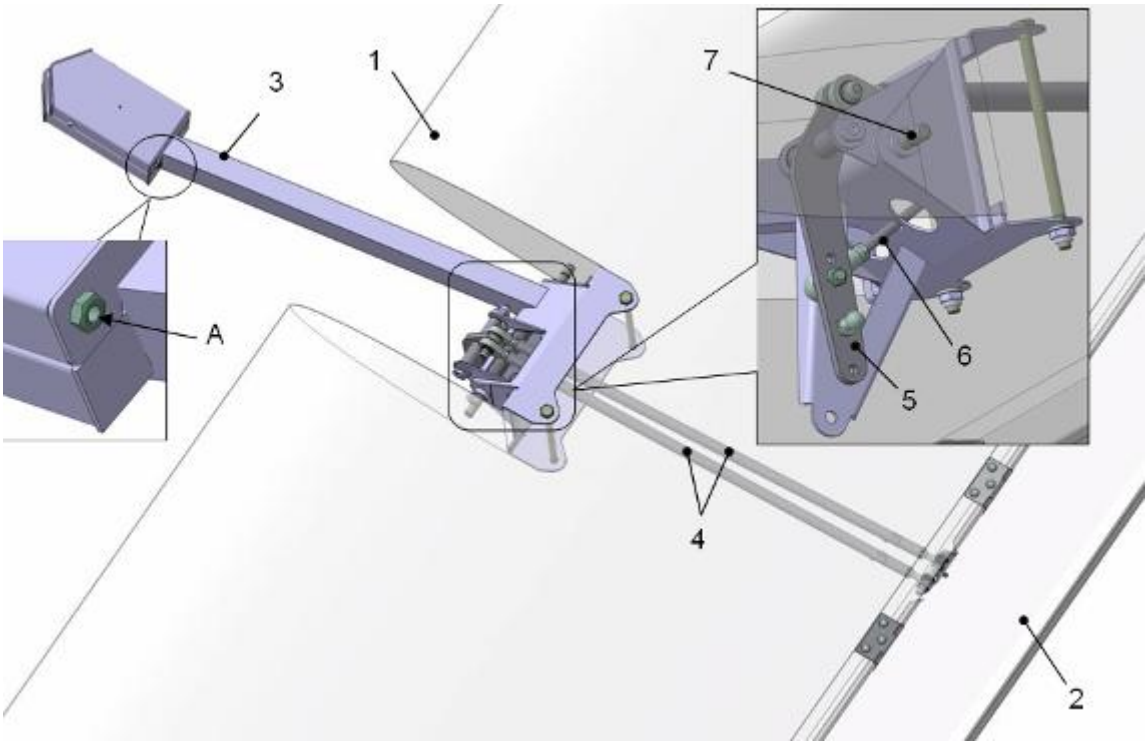


Fig. 4-27

- **Note:** During the Stabilator balance checking the Trim Tab shall be installed on the Stabilator and shall be set in its zero position in respect to the Stabilator.

4.4.6.1.1. Stabilator Balance Checking with Installed Stabilator Mounting Pivot in the Fuselage

For this case the Stabilator mounting pivot is to be installed in the fuselage in following configuration:

- Cables, Push-Pull Cable End and Spring shall be disconnected (refer to Fig. 4-6; Fig. 4-8);
- Stabilator Axis together with Spacer and Washers shall be installed, (refer to Fig. 4-12).

Balance checking procedure:

1. Attach the Stabilator to the Stabilator mounting pivot. For this match fixing holes of the Stabilator with fixing holes of the Stabilator mounting pivot, then insert bolts and secure with nuts, (refer to Fig. 4-17). The Stabilator shall freely revolve on its axis under its own weight.

2. Check that once the Stabilator stops rocking, its airfoil chord remains aligned with the horizon (Fig. 4-28). If the Stabilator airfoil chord remains parallel to the horizon, then the Stabilator is balanced, and it can be installed on the fuselage as per 4.3.4.2.

If the Stabilator airfoil chord is deflected from the horizon, the Stabilator shall be balanced as per 4.4.6.2.

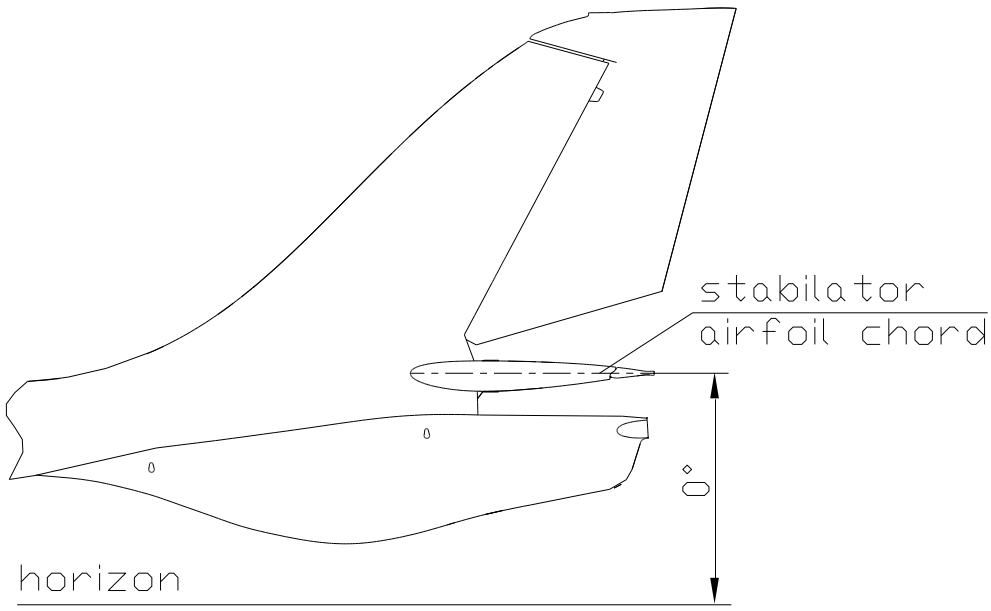


Fig. 4-28

4.4.6.1.2. Stabilator Balance Checking Outside the Fuselage with the Stabilator Mounting Pivot Installed on the Stabilator

For this case the Stabilator mounting pivot shall be removed from the fuselage as per 4.3.4.1.3 and installed on the Stabilator as per 4.3.4.2.3.

1. Make sure that the push-rods (4) are connected to the Trim Tab, the Stabilator Mounting Pivot is equipped with Trim Tab Rocker (5) and Rod (6), the Stabilator axle (7) is inserted, Fig. 4-27.

2. Set the assembled Stabilator on the supports as it shown on Fig. 4-29. Hold the Stabilator in position when the Stabilator airfoil chord is parallel to the horizon. Then loosen it; the Stabilator

shall freely revolve on its axis under its own weight. When the Stabilator stops rocking, its airfoil chord shall remain aligned with the horizon.

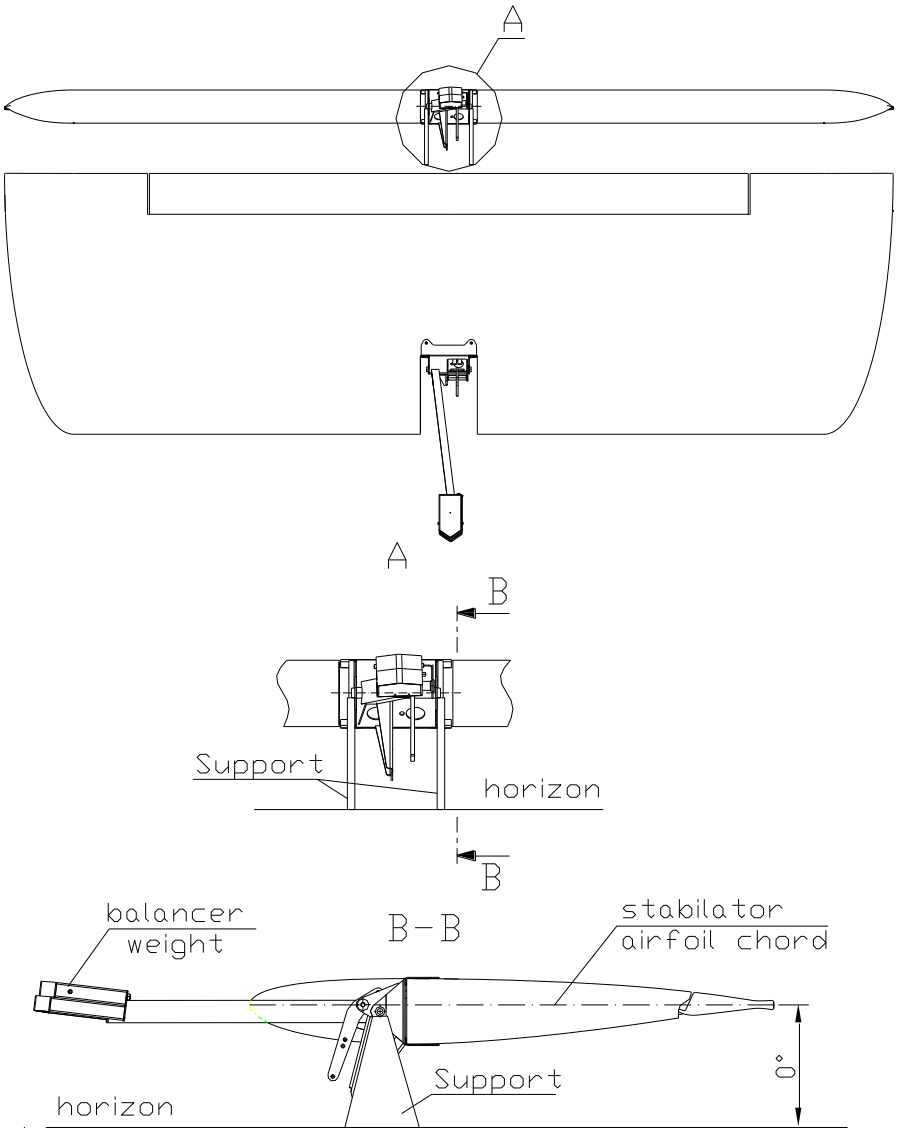


Fig. 4-29

If the Stabilator airfoil chord remains aligned to the horizon, then the Stabilator is balanced, and it can be installed on the fuselage as per 4.3.4.2.

If the Stabilator airfoil chord is deflected from the horizon, the Stabilator shall be balanced as per 4.4.6.2

4.4.6.2. Balancing of the Stabilator

The Stabilator balancing shall be performed outside the fuselage. If the Stabilator balance checking was performed on the fuselage, then the Stabilator with its mounting pivot shall be removed from the fuselage as per 4.3.4.1.3 and set on the supports as per 4.4.6.1.2.

Make sure that the push-rods (4) are connected to the Trim Tab, the Stabilator Mounting Pivot is equipped with Trim Tab Rocker (5) and Rod (6), the Stabilator axle (7) is inserted, Fig. 4-27.

During the Stabilator balancing, the bolt M8 in the hole A (Fig. 4-27) has to be screwed-in, but not tightened.

Once the Stabilator is set on the supports in correct configuration (Fig. 4-27) and stopped rocking on its axis under its own weight, depend on deflection direction perform the balancing by increasing or reducing of the balancer weight until the Stabilator airfoil chord is aligned with the horizon.

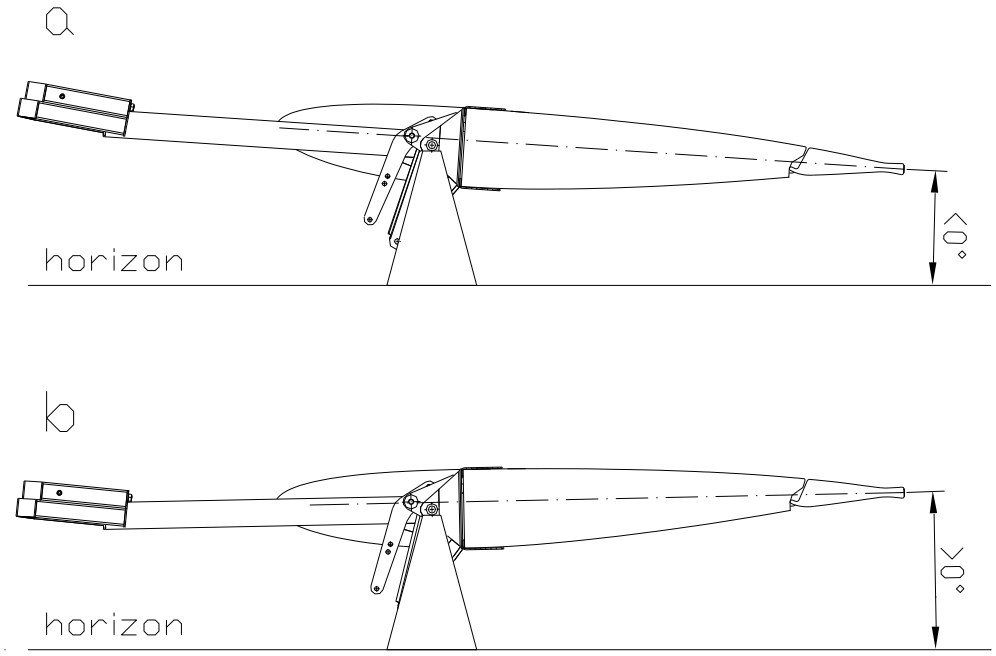


Fig. 4-30

a) Increasing of the balancer weight

Define which weight value shall be added into the balancer to align the Stabilator airfoil chord with the horizon. Prepare the lead pellets of required weight; the pellets shall be richly covered with epoxy resin, which also means that the weight of the epoxy resin shall be taken into account.

Screw the bolt M8 out of the hole A Fig. 4-27 using socket wrench 13 (mm).

Put the covered with epoxy resin lead pellets into the hole A. If necessary, drill out material through the hole A (Fig. 4-27) to accommodate enough lead pellets. After balance is set, tight the bolt in the hole A with torque 22.5 Nm (200 lb-in) after applying lock liquid of middle strength Loctite 243.

b) Reducing of the balancer weight

Screw the bolt M8 out of the hole A (Fig. 4-27) using socket wrench 13 (mm).

Using a drill up to 6 mm drill out needed quantity of the material through the hole A (Fig. 4-27). Drill out the material in small portions and check balance each time. Upon completion tighten the bolt with torque 22.5 Nm (200 lb-in) after applying lock liquid of middle strength Loctite 243.

4.4.7 Verification of Stabilator Installation and Adjustment

Check Stabilator deflection i.a.w. 4.4.2.

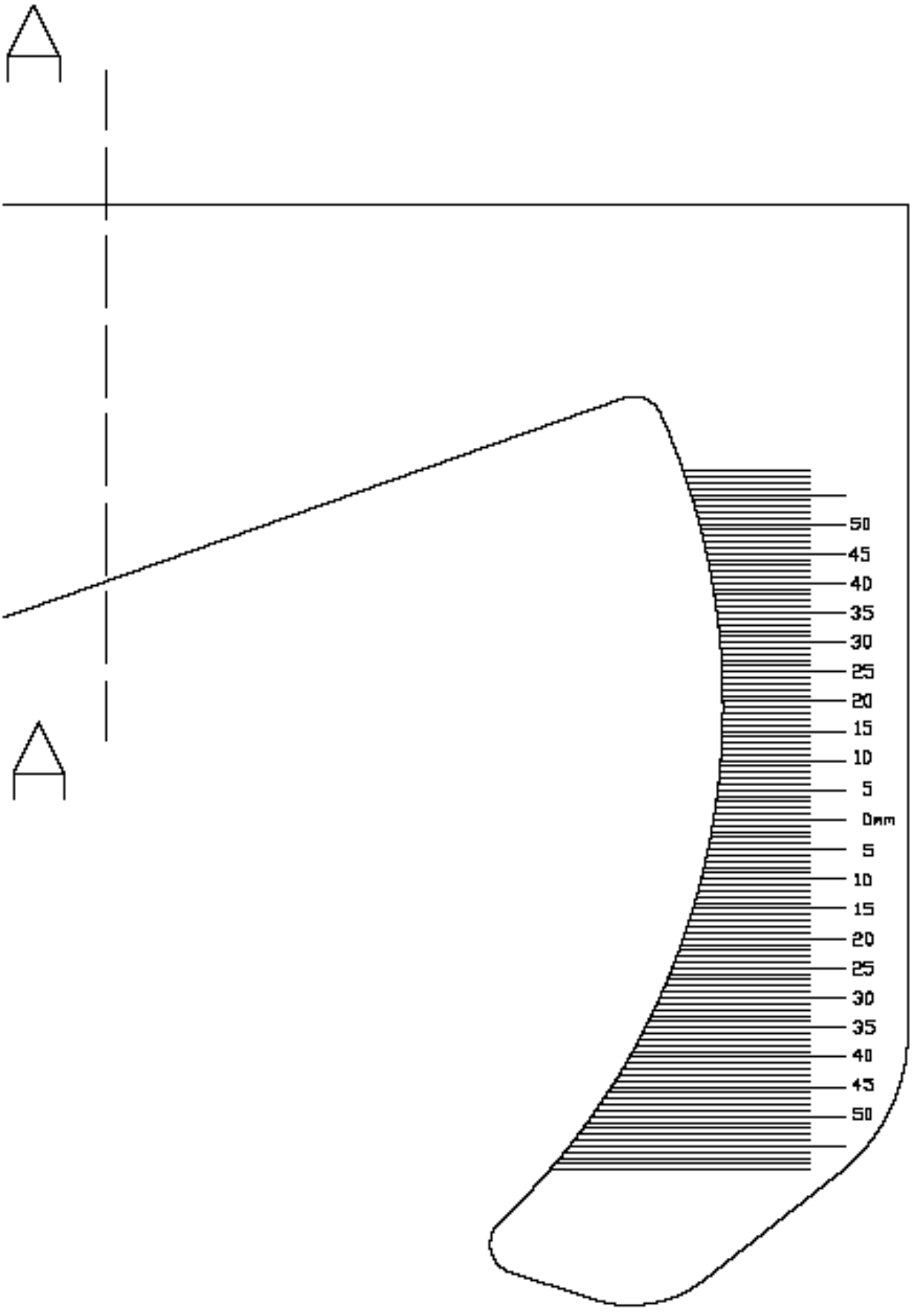
Check Trim Tab deflection i.a.w. 4.4.4.

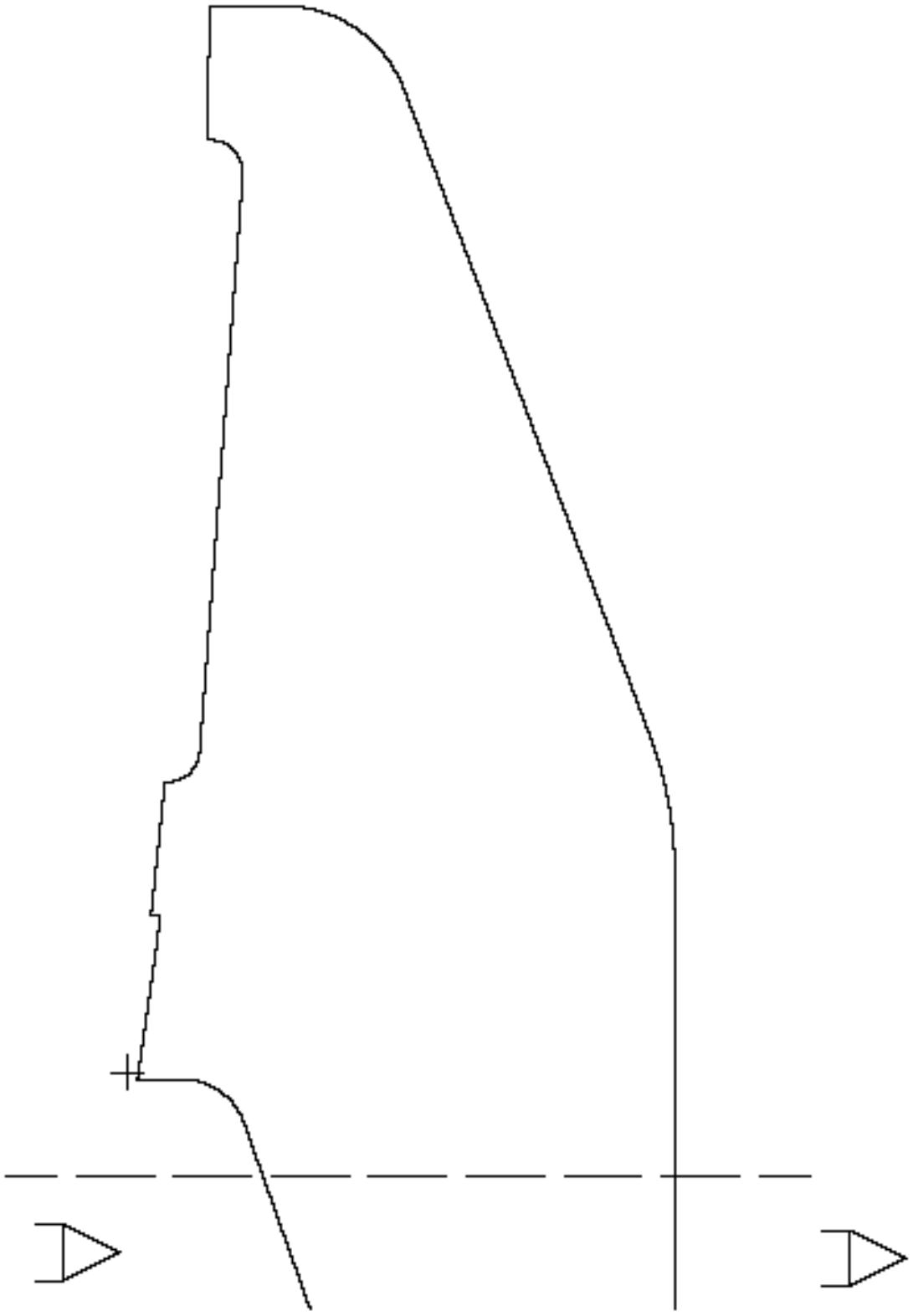
Check tightening torque for all thread connections i.a.w. 4.3.4.2.

4.5 Template for Trim Tab Deflection Angles Measurement

For checking Trim Tab deflection angles:

1. Print the template and cut out two parts of template and glue them together through A-A line.
   - **Caution:** Take care about correct scaling during printing process. Check the scale by comparison of the template scale to the ruler.
2. Glue prepared template on the appropriate surface (for example 3-4 mm polycarbonate) and cut it out.
3. Use prepared template for verification of Trim Tab deflection angle.





4.6 Adjustment Report

Adjustment Report after Trim Tab shortening i.a.w. SI-LTUL-CTSW-13

Airplane serial number:

Inspector:

Control surface	Position	Limits, degrees/mm	Actual, degrees/mm	Note
Stabilator	up (deg)	14 deg, Tol.+1 deg, -1 deg 30 mm, Tol. + 3mm, -3 mm		
Stabilator	down (deg)	9 deg, Tol.+1 deg, -1 deg 25 mm, Tol. + 3mm, -3 mm		
Trim Tab	down (mm)	7.5 mm, Tol.+2.5 mm, -2.5 mm		Handle (wheel) neutral Stabilator in neutral position
Trim Tab	up (mm)	31 mm, Tol. +5 mm, -5 mm		Handle (wheel) forward Stabilator TE up
Trim Tab	down (mm)	38 mm, Tol.+5 mm, -5 mm		Handle (wheel) rearward Stabilator TE down

Date:

Inspector's signature: