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EUROCOPTER FRANCE

SERVICE BULLETIN
ALOUETTE

No. 05.86 | **RECOMMENDED**

SUBJECT: LIMITATIONS

Monitoring the tab area of main blades with reinforced trailing edge ledge.

OFFICIAL APPPROVAL
D.G.A.C. approved: July 23, 1992

Approval by Direction Générale de l'Aviation Civile (D.G.A.C.) is limited to helicopters subject to Airworthiness Certificate.

1- PLANNING INFORMATION

A - EFFECTIVITY

Helicopter type: AL III type 316 B and C, SA 319 A and B and 3160

B - REASON

To inform operators of the monitoring to be carried out on main blades P/N 3160 S.11.30 000, 40 000 and 50 000, all dash numbers, in the tab area.

C - DESCRIPTION

1) Inspection with blades installed

- Visual inspection for cracks in the skin in the area of the tabs as per attached Card 57.10.601.8 paragraph 4b.

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Acceptance criteria

- If no cracks are found:
  The blade may remain in service.

- If a crack is found:
  . outside zone A, defined in the Work Card, the blade must be returned to the manufacturer for reconditioning.

- If a crack is found in zone A, the blade must be scrapped on site.

2) Inspection with blades removed

- Visual inspection for cracks in the skin in the area of the tabs, paragraph 1C1 of this Service-Bulletin.

- Tapping inspection of tab bonding.
  The procedure and acceptance criteria are given in paragraph 1 of Card 57 10 601 9M attached.

D - COMPLIANCE

Eurocopter considers the action defined in this Service-Bulletin to be necessary.

On production line : Not applicable

Retrofit action : By the operator

- Inspection as per paragraph 1C1

  On reception of this Service-Bulletin, then every 25 hours flying time to coincide with a check after the last flight of the day.

- Inspection as per paragraph 1C2

  At each type «T» inspection

  New production : Not applicable

  Spares : Not applicable

E - APPROVAL

Note: *This Service-Bulletin enables us to update Inspection Cards 57.10.601 and Repair Cards 57.10.808. 810.5.20 page 3, 5.20.202 8/8 5.20.202 C 8/8 and 57.P3. page 2 which should be incorporated in the Manuals concerned.*

OPERATION DESCRIPTION	INTERVALS	OPERATIONS TO BE PERFORMED
MECHANICAL ASSEMBLIES MGB		
- Oil filter check	25 hours	40-12-604
FREE WHEEL		
- Lubrication by MGB. Lubrication check	100 hours	40-13-602
TGB		
- Magnetic plug inspection	25 hours	5-41-202
MGB (cont.)		OPTIONAL As per supplementary documentation
On MGB equipped with a high pressure (105 bar) hydraulic pump. Check oil pump drive.	100 hours	26-12-602
STABILIZER	100 hours	55-00-601
- Stabilizer check	200 hours	55-00-602
MAIN ROTOR HEAD		
- Monitoring of M.R.H/blade spacing cable junction - Check blade spacing cables	25 hours 200 hours	57-00-302 57-20-602
LUBRICATION AND OIL CHANGES		
- Lubrication - Oil change - Oil change	25 hours 200 hours 300 hours	See section 5.10
MAIN ROTOR HUB BODY PART NUMBERS: 3160S 12.10.020 and 3160S 12.10.020.1		
Detailed visual check of the yoke lugs: - For hub bodies with operating time $\geq$ 3000 hours (1). - For hub bodies with operating time $<$ 3000 hours (1).	50 hours 400 hours	(1) Inspect for cracks as per Card 57.20.601/3
MAIN BLADES : (tab area) (BLADES INSTALLED)		
- Inspect for cracks in the skin in the area aft of the tabs. - If a crack is found, remove the blade and return to the factory.	Check after the last flight of the day nearest to the 25 hour deadline.	5-20-202 (319B) 5-20-202C (316C) 57-10-601

REFERENCED CARDS	INSPECTION	EFFECTIVE FOR SA 319B (Not effective for SA 316C) ROUTINE CHECK Check «After the Last Flight of the Day»	ALOUETTE III - LAMA 5-20-202 8/8
		ENGINE	- OIL LEVEL
		- Forward attachment - Accessories - Air intake screen	- Condition, locking - Condition, attachment - Condition, attachment, cleanliness
		- Engine air inlet casing and axial compressor Operation to be performed only if the engine is not equipped with a screen or a filter.	- Condition
		- Exhaust nozzle	- Condition, attachment
		STATION 6 - MAIN BLADES - ROTOR MAST - MAIN ROTOR HUB	
57-10-601		- Main blades (INSTALLED)	- Visual condition of attachment fitting, strut, blades locking pin attachment. - Condition of leading edge (absence of erosion, corrosion, condition of protection). - General condition of skin, cracks, condition of trailing edge rivets, condition and attachment of tip cap, static dischargers, tab bonding and inspection for cracks.
		- Main rotor hub	- Condition, attachment, locking of pitch links - Condition of stops - Oil level in drag dampers - Condition of boots, condition of blade spacing system.
57-00-303		CAUTION: IF THE PILOT HAS FELT AEROLOGICAL PHENOMENA ACCOMPANIED BY A HIGH LEVEL OF VIBRATION, REPLACE THE BLADE SPACING SYSTEM COMPONENTS: LINKS, SPINDLES, BOLTS, NUTS, SPLIT-PINS.	

REFERENCED CARDS	INSPECTION	EFFECTIVE FOR SA 316C (Not effective for SA 319B) — ROUTINE CHECK — Check «After the Last Flight of the Day»	ALOUETTE III - LAMA 5-20-202C8/8
		ENGINE	
		- Forward attachment — Condition, locking - Accessories — Condition, attachment - Air intake screen or filter — Condition, attachment, cleanliness - Engine air inlet casing and axial compressor Operation to be performed only if the engine is not equipped with a screen or a filter. — Condition - Exhaust nozzle — Condition, attachment	
		STATION 6 - MAIN BLADES - ROTOR MAST - MAIN ROTOR HUB	
57-10-601		- Main blades (INSTALLED) — Visual condition of attachment fitting, strut, blades locking pin attachment. - Condition of leading edge (absence of erosion, corrosion, condition of protection). - General condition of skin, cracks, condition of trailing edge rivets, condition and attachment of tip cap, static dischargers, tab bonding and inspection for cracks.	
		- Main rotor hub — Condition, attachment, locking of pitch links - Condition of stops - Oil level in drag dampers - Condition of boots, condition of blade spacing system.	
57-00-303		CAUTION: IF THE PILOT HAS FELT AEROLOGICAL PHENOMENA ACCOMPANIED BY A HIGH LEVEL OF VIBRATION, REPLACE THE BLADE SPACING SYSTEM COMPONENTS: LINKS, SPINDLES, BOLTS, NUTS, SPLIT-PINS.	

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SA 316C - 319B ALOUETTE III

MAINTENANCE MANUAL

REFERENCED CARDS	INSPECTION	MAIN BLADES Inspections - Checks of the Blades	Operators	Time	ALOUETTE III - LAMA 57-10-601-1/14
57-10-401		Refer to the general instructions 1. OPERATIONS TO BE PERFORMED (1) Check: (a) The blade root and fitting (b) The strut and attachments (c) The tip cap for attachment and the end rib (d) The blade skin 2. PRELIMINARY STEPS - Remove the blades - Place on a trolley if necessary. 3. CHECKING THE BLADE ROOT AND FITTING A. Checking the tapered bores (1) Check that the bores are free of: - Corrosion marks - Serious scores (2) If defects are found, return the blades to the manufacturer or an approved repair facility.	Equipment required - Standard tools - Punch - Hammer - Brush - Separation detector BR 8 x 80 - Special tools - Main blade trolley 3160-98-11.020 - Ingredients - Tape Y.9265, width 4 inches (101.6mm) - Scotchcall - Araldite 123B - SI4		

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REFERENCED CARDS	INSPECTION	MAIN BLADES Inspections - Checks	ALOUETTE III - LAMA 57-10-601-3
		5. CHECKING TIP CAP, TIP CAP ATTACHMENT AND END RIB.	
		A. External checks	
		(1) Check the external appearance of the tip cap.	
		(2) Check the stainless steel protection on the leading edge (see paragraph 6-C)	
		(3) Check that erosion has not led to perforation of the skin.	
57-10-402		*NOTE: Replace the tip cap if one of the above defects is found.*	
		B. Internal checks	
57-10-402		(1) Remove the tip cap	
		(2) Check the tip cap for cracks, especially around the attachment holes and on the trailing edge.	
		(3) Change the tip cap if cracks are found.	
		(4) Check the correct position of the balance weights (Figure 3). Notify the manufacturer if the weights have moved or of any other anomaly.	
57-10-402		(5) Install the tip cap.	
		6. CHECKING THE BLADE SKIN	
		NOTE: Separations that are not immediately visible can be detected by tapping using a cylindrical object, dia. 8 mm with rounded ends of 80 mm. *- Use a hardwood object on the skin.* *- Use a steel object on the leading edge.*	
		A. Skin bonding defects on the spar (zone A - Figure 4)	
		(1) The acceptable skin bonding defects must lie within a rectangle of 50 x 200 mm, whose longest side is parallel to the leading edge.	

REFERENCED CARDS	INSPECTION	MAIN BLADES Inspections - Checks	ALOUETTE III - LAMA 57-10-601-4

(2) The total area of the defects must be less than or equal to 4 dm2 on each face (approx. 10% of the surface of the zone)

(3) There must be no separation of the skin to a depth of 5 mm beyond the strip (separation between the strip and the skin is acceptable) (Figure 2).

B. Acceptable bonding defects in the skin area on Moltoprene (zone B - Figure 4)

(1) The total surface of bonding defects on one face must be less than or equal to 30 dm2 (30% of the zone).

(2) For two adjacent defects, the distance between the defects must be monitored periodically. If the distance does not change, the defects are not dangerous.

NOTE: Separations reaching the trailing edge are acceptable within the following limits: width less than or equal to 8 mm, length less than or equal to 350 mm for one separation. A total separated length of 500 mm spread over several points is acceptable.

C. Stainless steel leading edge strip bonding defects (for blades equipped with these strips).

(1) Separation of 15% of the surface of the stainless steel, opening out at the edge or not, is acceptable per blade. The open separation, at one or more defects, upper and lower surface combined, must not exceed 120 mm. The defect must be caulked using HEXCELITE 6109. The open separation shall be delimited at the paint and checked approximately every 25 and 50 flying hours. If the separation does not spread, return to the normal inspection intervals. If further separation is found, continue checks every 25 hours. Remove the blade when the above limits are reached.

NOTE: Replacement of these strips shall be entrusted to the manufacturer or an approved workshop.

- For stainless steel strips within the separation tolerances, distortion such as slight hollows, bulging, peening or local discontinuity of the leading edge fold is acceptable.

(2) To prevent these defects, the stainless steel leading edges in good condition may be protected by a continuous strip of Y.9265 tape.

REFERENCED CARDS	INSPECTION	MAIN BLADES Inspections - Checks	ALOUETTE III - LAMA 57-10-601-5

(3) Blades type 3160S-11-30-000

Check the presence of all the stainless steel cover strips located at the junction of the protection strips.

In principle, the absence of a cover strip is not acceptable. However, if it is not possible to replace the cover strip rapidly, replacement of the missing cover strip(s) by pieces of Y.9265 tape is acceptable as a temporary solution.

CAUTION: DO NOT FLY WITHOUT PROTECTION, (COVER STRIPS OR TAPE) OVER THE JUNCTIONS OF THE PROTECTION STRIPS.

57-10-808

D. Painting (Figure 8)

(1) Flaking and erosion on the leading edge are acceptable.

(2) Flaking and erosion on the skin.
If a defect is found, touch up the paint to match the surface concerned.

57-10-801
or
57-10-802

E. Checking for signs of erosion

(1) On blades with 8560 tape leading edge strips

(a) Remove the blade for repair if the leading edge skin has been seriously eroded by rain or sand.

(b) Return the blade to the manufacturer if the skin has been perforated.

(c) If a set of blades with eroded skin is taken out of service for any length of time, protect the exposed areas with SI4.

(d) Replace the strips if the metal of the skin is visible.

(2) On blades with stainless steel leading edge strips

Since March 1974, blades with stainless steel leading edges are totally covered in paint.

REFERENCED CARDS	INSPECTION	MAIN BLADES Inspections - Checks	ALOUETTE III - LAMA 57-10-601-8

57-10-806

- That the score, if it is perpendicular to the blade centreline, does not exceed 50 mm in length.
- That the repair is carried out in accordance with the referenced Card.
- That the material removed during repair does not exceed 0.2 mm in depth.

NOTE: Return the blade to the manufacturer or an approved workshop if any perforation is found.

- After touching up with paint, delimit the repaired area with a red paint line when returning to service.
- Pay particular attention to these areas during each check.
- If cracks appear, remove the blade.

57-10401

- Return the blade to the manufacturer.

(4) Crack detection (Figure 8)

(a) All blade types:

Check the skin for cracks, in particular at the trailing edge and root strip.

NOTE: If a crack perpendicular to the blade centreline cuts the skin entirely and ends at less than 1 cm from the spar root, scrap the blade definitively.

(b) Blade types: 3160S-11-30-000 / 40-000 / 50-000

Check for cracks on the upper and lower surface skins along the edge of the tabs, and in particular, forward of each rivet.

- If a crack is found in this area and does not reach zone A, return the blade to the factory for reconstruction.
- If a crack reaches zone A, scrap the blade on-site.

REFERENCED CARDS	INSPECTION	MAIN BLADES Inspections - Checks	ALOUETTE III - LAMA 57-10-601-9
57-10-807		H. Defect on trailing edge (1) Local distortions: CAUTION: NEVER MODIFY THE TRAILING EDGE SETTINGS: THE SET OF BLADES MUST BE RETURNED TO THE MANUFACTURER FOR CHECKS ON THE TEST BENCH IF ANY MODIFICATION IS MADE. THE TRAILING EDGE HAS TWO SET AREAS, EACH AREA IS DELIMITED BY 2 YELLOW PAINT LINES(SEE FIGURE 7). THESE AREAS ARE ADJUSTED INDIVIDUALLY WITH THE BLADES INSTALLED ON THE MANUFACTURER'S TEST BENCH. NEVER MODIFY THE DIFFERENCES WHICH COULD BE FOUND BETWEEN THESE AREAS (SET OR NON-SET); IT IS ONLY AUTHORIZED TO RECTIFY A LOCAL DISTORTION BY ALIGNING IT WITH THE AREA REMAINING INTACT, OUTSIDE THE DAMAGED AREA. (2) Cracks: (a) If cracks, or impacts which could result in cracks, appear, the following action is recommended: - Strip locally. - Carry out a dye penetrant crack detection in order to determine the exact length of the crack. - Repair the blade if the length of the crack is less than or equal to 8 mm. NOTE: *Only two repairs of this kind are authorized per blade. If further repair is required, return the blade to the factory.* - If the length of the crack exceeds 8 mm., return the blade to the factory (it will be rebuilt).	

REFERENCED CARDS	INSPECTION	MAIN BLADES Inspections - Checks	ALOUETTE III - LAMA 57-10-601-9M
57-10-810		1. DEFECTS ON TABS Effective for blades: 3160S 11 30 000 / 40 000 / 50 000 (1) Separation: Open or closed separation is acceptable and does not require repair if it is within the following limits: - Individual surface less than 300 mm2 - 3 separations per tab face. - Distance between two separations less than 50 mm. *NOTE: The blade has two tabs strips with three tabs each. Each tab is numbered from 1 to 6, from the blade tip to the blade root. On blades which can be replaced individually, 3160S-11-40.000 and 50.000, only tab number 6 can be adjusted by the operators and is left in the neutral position by the factory test bench.* *The other blade types are in sets, all 6 tabs are adjusted in the factory.* (2) Crack detection on tabs (Figure 9) Effective for blades: 3160S 11 30 000 / 40 000 / 50 000 Only cracks located in the prolongation of the slots between tabs are acceptable and require the installation of additional rivets.	

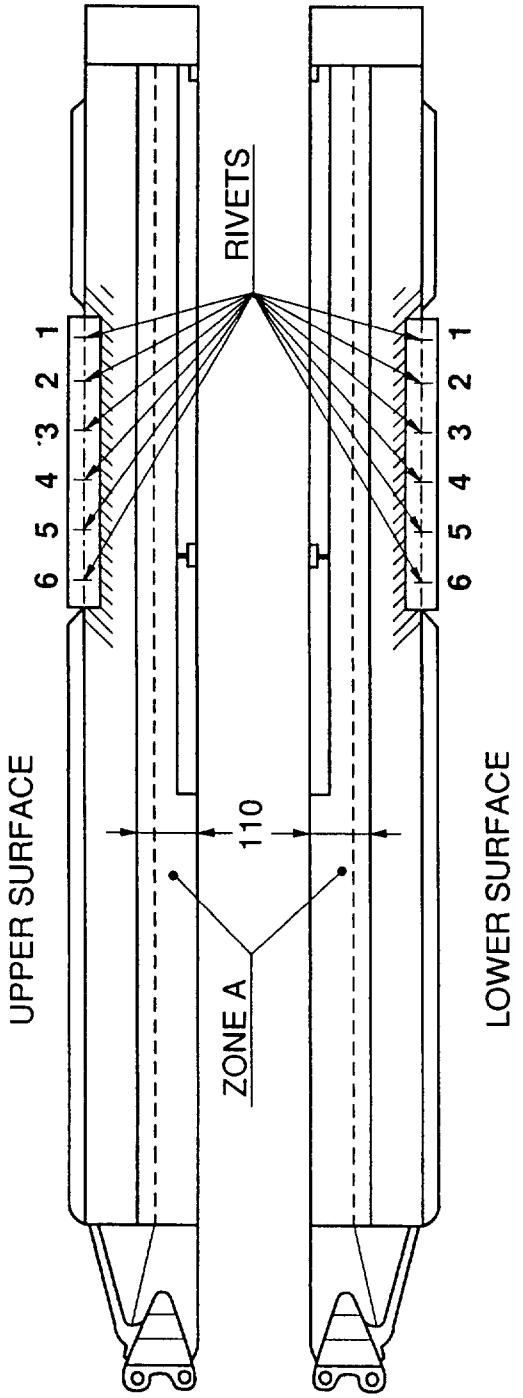
RIVETS
6 5 4 3 2 1
6 5 4 3 2 1
UPPER SURFACE
LOWER SURFACE
110
ZONE A

FIG. 8

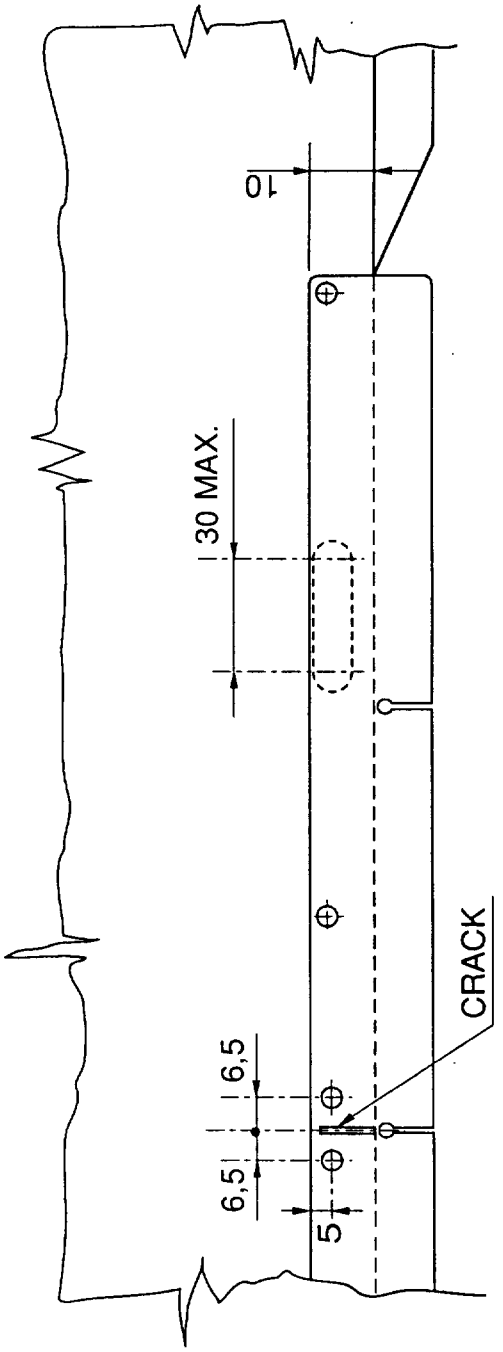
10
30 MAX.
CRACK
6,5
6,5
5

FIG. 9

REFERENCED CARDS	INSPECTION	MAIN BLADES Paint touch-ups	Operators	Time	ALOUETTE III - LAMA 57-10-808-1/2

Refer to the general instructions

1. PRELIMINARY STEPS

Install the blades on two trestles covered with padding.

2. PAINT TOUCH-UP ON REPAIRED AREAS

A. General

- In order to conserve blade balance, do not attempt to paint the entire blade.
- For local paint touch-ups, the following procedure is effective for all paints used.
- To simplify the operation, we recommend that aerosol type paints are used.

B. Procedure

(1) Remove paint particles using lacquer thinner.

(2) Rinse with clarified water.

(3) Dry.

(4) Degrease using solvent 725L or White Spirit.

(5) Sand lightly using water and abrasive paper No.400 to remove the ridges.

(6) Rinse with clarified water.

(7) Dry.

CAUTION: DO NOT USE METALLIC ABRASIVES OR EMERY PAPER.

Equipment required

- Standard tools
  - Installation for spray painting
  - Lint-free rag.
- Ingredients
  - Alodine 1200
  - «Wash-primer»
  - Zinc chromate primer
  - «Valentine» final lacquer, army green HRIR 06843, matt black 604
  - Valentine thinner F8
  - SCALP 725L solvent or White Spirit
  - Abrasive paper No.400
  - Masking tape, MASKING 202 Minnesota de France.
  - Aerosol, army green 780 804
  - Aerosol, NATO green 780 808
  - Aerosol, zinc chromate.

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REFERENCED CARDS	INSPECTION	MAIN BLADES Paint touch-ups	Operators	Time	ALOUETTE III - LAMA 57-10-810-1/2

Refer to the general instructions

I. INTRODUCTION

Blade types: 3160S 11 30.000
3160S 11 40.000
3160S 11 50.000

1. Preparation (Figure 1)

- Position the blade on the trestles.
- Using a grease pencil, delimit an area of approximately 1 cm2 at either side of the crack.
- Remove the paint in this area by sanding using water and abrasive paper No.240.
- Clean the sanded area using a gauze pad lightly dampened with methyl ethyl ketone.

2. Installing rivets

- Using a grease pencil, mark out the position of the rivets on either side of the crack as per the drawing below .
- Punch mark lightly, drill to dia. 2, deburr.
- Protect the reworked area using Alodine 1200.
- Coat rivets G dia.2 with zinc chromate and install using an air powered riveting gun fitted with a C rivet equipped with a die for rivet G dia.2.

57-10-808

3. Paint touch-ups

Equipment required

- Standard tools

. Centre punch
. Drilling machine
. Drill bit, dia. 2.
. Riveting gun assembly.
. Riveting hammer
. Abrasive paper No.240
. Gauze pads.

- Ingredients

. Methyl ethyl ketone
. Alodine 1200
. Zinc chromate

- Replacement parts

. Rivets G, dia. 2 mm 21211DB02009

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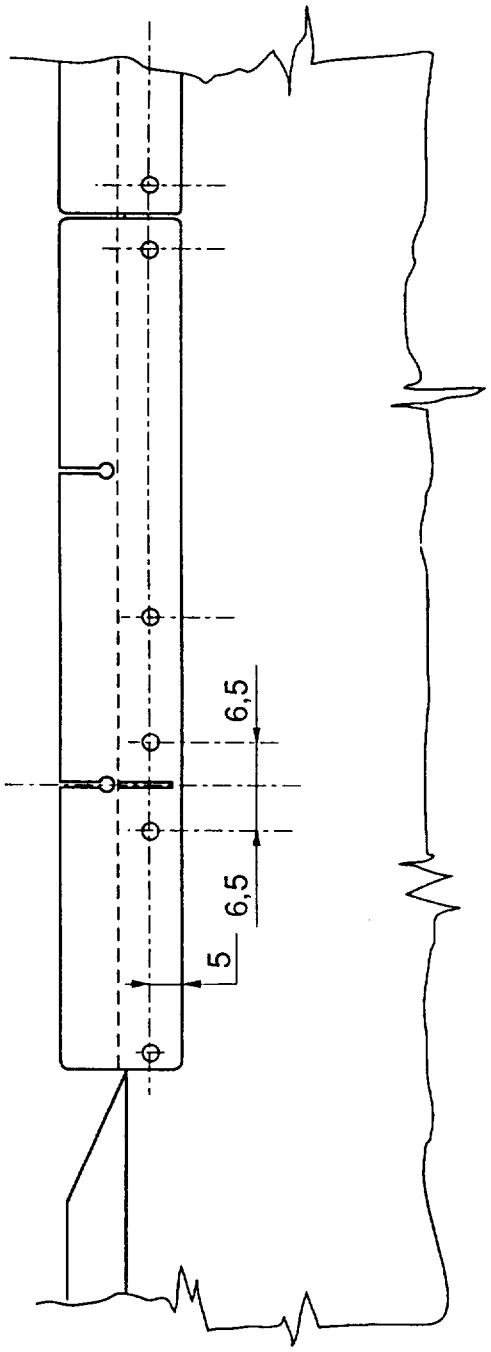

FIG. 1