

MANDATORY SERVICE BULLETIN

NO. MSB-40-054/1

NO. MSB-F4-013

SUPERSEDES NO. MSB-40-054

I TECHNICAL DETAILS

I.1 Category

Mandatory

I.2 Airplanes affected

Type: DA 40 and DA 40 F

Serial Numbers: 40.006 up to and inclusive 40.079, 40.081, 40.082, 40.083,
40.201 up to and inclusive 40.944
40.FC001 up to and inclusive 40.FC029

I.3 Date of Effectivity

27-Aug-2008

I.4 Time of Compliance

Within the next 200 flight hours from the date of effectivity, but not later than 31-Dez-2009.

I.5 Subject

This Service Bulletin addresses the protection reinforcement of the pitot, static and stall warning line installation to prevent pinching.

I.6 Reason

In the area where the pitot, static and stall warning lines are routed through the aft wall of the floor panel these lines can be pinched by the side hard pocket. Similar problems with pinching of the pitot, static and stall warning lines can occur if a soft

pocket is installed. In these cases the 3 lines are routed behind the soft pocket and can be pinched by the pilot's knee or by hard objects stored in the soft pocket.

I.7 Concurrent Documents

None

I.8 Approval

The technical information or instructions contained in this document are related to the Design Change Advisory No. MÄM 40-308, which has been approved under the authority of EASA Design Organization Approval No. EASA.21J.052.

The technical content of this document has been approved under the authority of DOA No. EASA.21J.052.

I.9 Accomplishment/Instructions

WI-MSB-40-054, latest effective issue, must be complied with for DA 40 airplanes.
WI-MSB-F4-013, latest effective issue, must be complied with for DA 40 F airplanes.

I.10 Mass (Weight) and CG

Negligible

II PLANNING INFORMATION

II.1 Material & Availability

Necessary materials are available through DAI.

II.2 Special Tools

None

II.3 Labor effort

2 hours (does not include cure times of products used)

II.4 Credit

2 hours of labor and material as stated in WI-MSB-40-054 or WI-MSB-F4-013

II.5 Reference Documents

DA 40 Series Airplane Maintenance Manual Doc. No. 6.02.01, latest effective issue

III REMARKS

1. All measures must be carried out by a certified aircraft service station or a certified aircraft maintenance mechanic.
2. Accomplishment of the measures must be confirmed in the aircraft log book.
3. In case of doubt, contact Diamond Aircraft Industries.
4. If material or labor hours are subject to be credited through Diamond Aircraft Industries, the SB must be carried out by an authorized Diamond Service Center and the Warranty Application must be sent not later than 31-Jan-2010.

WORK INSTRUCTION

WI-MSB-40-054

WI-MSB-F4-013

“Protection of Pitot, Static and Stall Warning Lines”

I GENERAL INFORMATION

I.1 Subject:

This Work Instruction addresses the protection of the pitot, static and stall warning line installation to prevent pinching.

I.2 Reference Documents:

Diamond Aircraft DA 40 Series Airplane Maintenance Manual, Doc. No. 6.02.01, latest effective issue

I.3 Remarks:

- a) The work must be carried out by a certified aircraft service station or a certified aircraft maintenance mechanic. In case of doubt, contact Diamond Aircraft Industries.
- b) All work (particularly that which is not specifically described in this work instruction) must be carried out in accordance with the referenced maintenance manual.

II DRAWINGS, SPECIAL TOOLS & MATERIALS

II.1 Drawings:

None

II.2 Special Tools:

None

II.3 Materials:

Material subjected to credit:


Qty	Description	Part Number
0.15m	Edge protection	GE128-C69
0.8m	Spiral wrap for the pitot line	T38F
0.8m	Spiral wrap for the static line	T38F
0.8m	Spiral wrap for the stall warning line	T62F
2.5m	PVC pitot tube - green	299T01/009
2.0m	PVC static tube - blue	299T01/004
2.0m	PVC stall warning tube - transparent	N000101


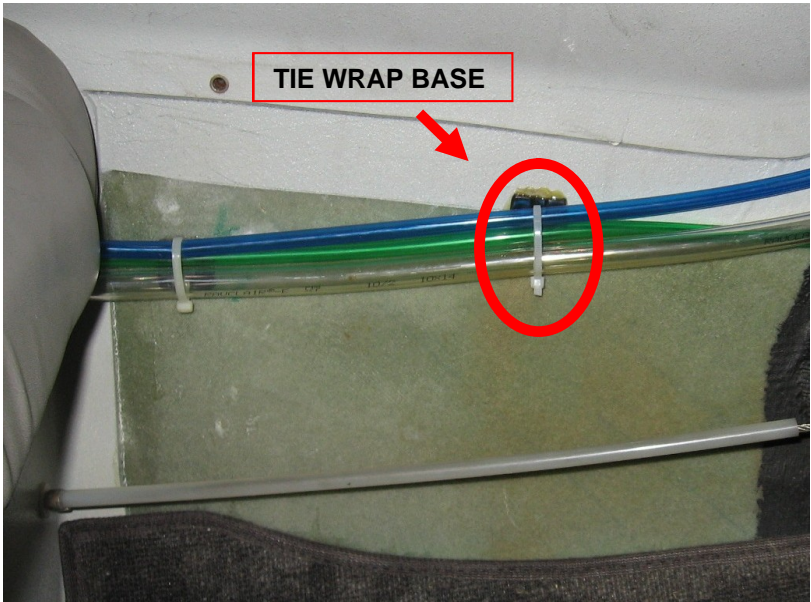
Consumables not subjected to credit:

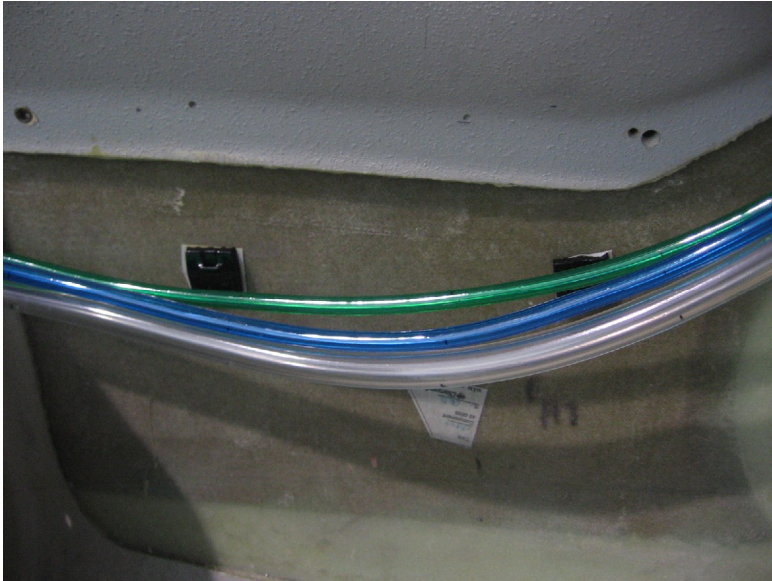
Qty	Description	Part Number
A/R	Commercial 5 min Epoxy adhesive	-

III INSTRUCTIONS

1. Installation using soft side pocket p/n DA4-2583-51-00 according to OÄM 40-218 and tie wrap base

1	<p>Remove the soft side pocket.</p> 
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2	Remove pilot seat according to AMM, chapter 25.
3	<p data-bbox="276 436 1406 533">Inspect the pitot, static and stall warning lines at the through hole in the aft floor panel wall. If the diameters of any of the lines have been reduced by more than 30%, the lines must be replaced.</p> 
4	<p data-bbox="276 1211 1406 1308">Ensure that any tie wrap bases are secured to the fuselage wall behind the side pocket. If a tie wrap base has been dislodged from the fuselage wall, bond it back into its original position using commercial 5 min Epoxy adhesive.</p> 

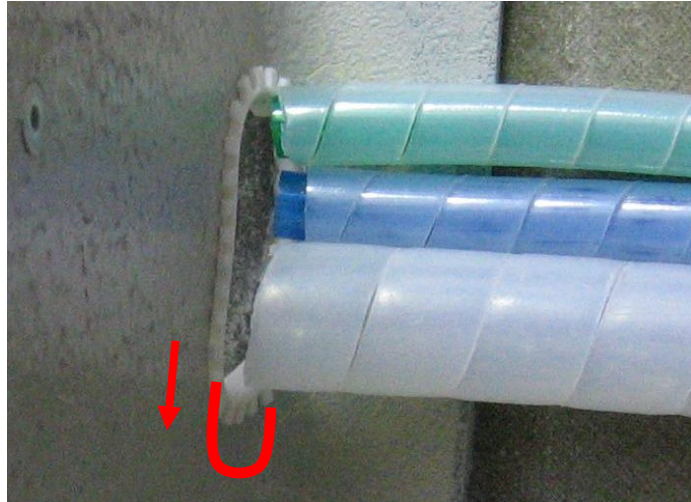
5	<p>Cut the tie wraps holding the lines to the fuselage.</p> 
6	<p>Disconnect the pitot, static and stall warning lines from the nearest barbed fitting aft of the floor panel wall.</p>
7	<p>Pull all three lines forward through the slot in the floor panel wall.</p> <p>NOTE: Aft of the floor panel wall cut tie wraps as required to free the lines.</p>

8

Wrap the pitot and static lines with spiral-wrap, P/N T38F and the stall warning line with spiral-wrap, P/N T62F. Wrap spiral-wrap around each line individually down their full length until the point where they pass behind the instrument panel. The spiral-wrap should also extend aft beyond the floor panel wall a minimum of 50mm.

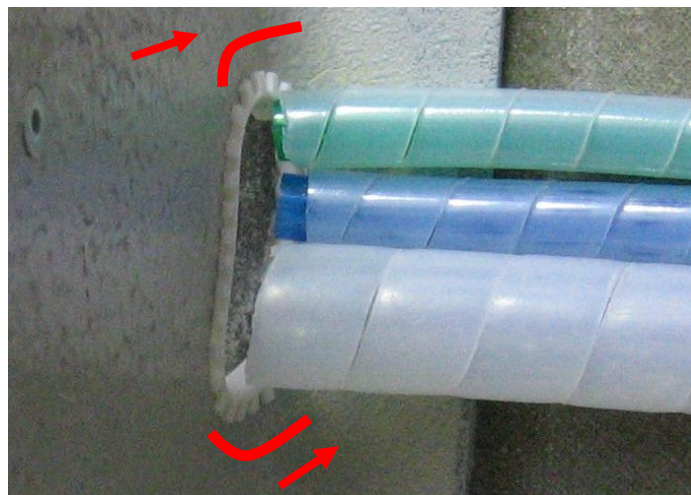


Check to see that the through-hole in the aft wall of the floor panel is large enough to route the 3 lines (wrapped in spiral wrap) side by side without excessive bunching. If it is not, remove the edge guard from the inside edge of the hole and elongate the hole vertically down only as required to allow the lines to sit side by side.



NOTE: Do not enlarge the hole vertically to more than 43 mm (the thickness of the edge protection already taken into account).

- 9 Elongate the hole horizontally outboard so that the outboard edge of the hole is flush with the outboard face of the floor panel.



CAUTION: Do not grind away the bonding flange of the floor panel.

NOTE: If after making the outboard edge of the hole flush with the outboard face of the floor panel the lines including the spiral wrap do not fit through the hole, enlarge the hole horizontally inboard up to a maximum of 19 mm (the thickness of the edge protection already taken into account).

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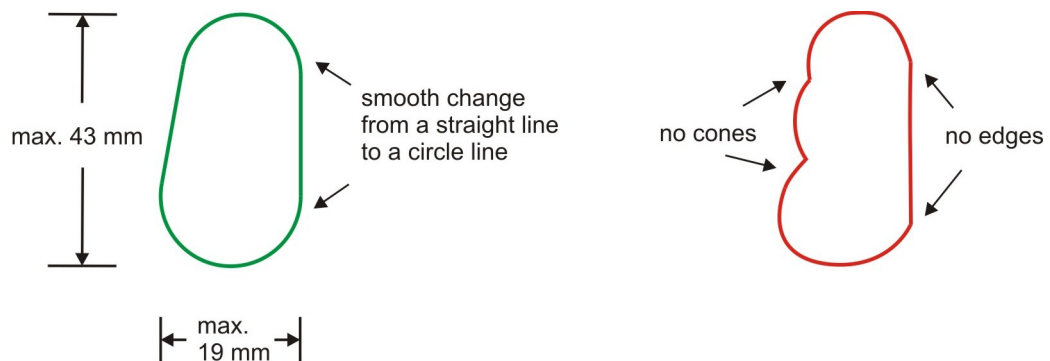
If you find an installation as it is shown on the photograph below, then elongate the three holes so that they become a long one as it is described in step 9.

NOTE: When finding an installation with three single holes through the aft wall of the floor panel the given maximum length of 43 mm may be increased up to a maximum length of 60 mm.



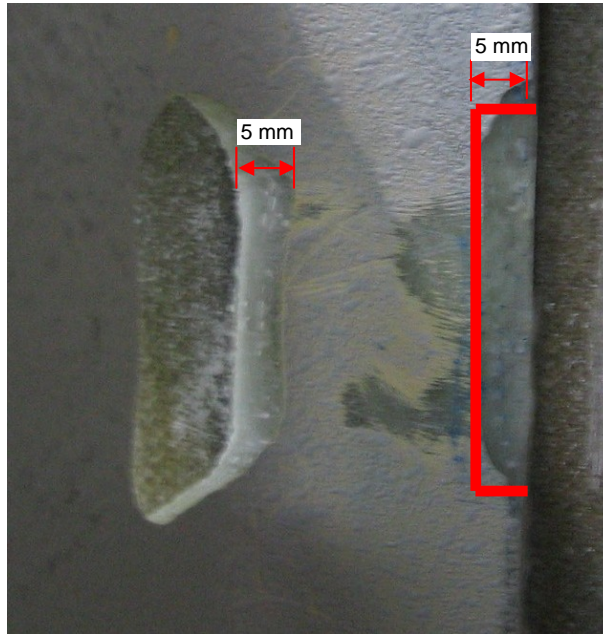
11

It is important that the hole does not have an unsteady shape but a smooth one. An example how it should look like and how it should not look like are shown below.





12

Chamfer the forward edge of the floor panel bonding flange behind where the lines are routed. The chamfer (approx. 45°) should not remove any more than 5 mm of the bonding flange material.


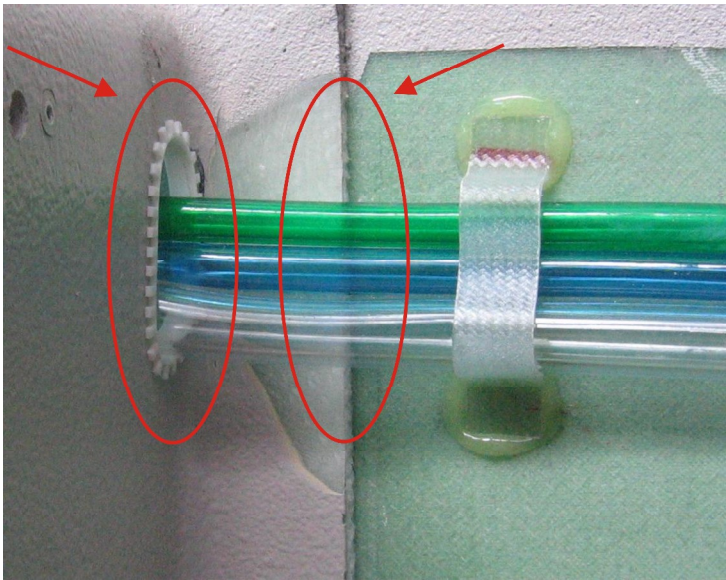


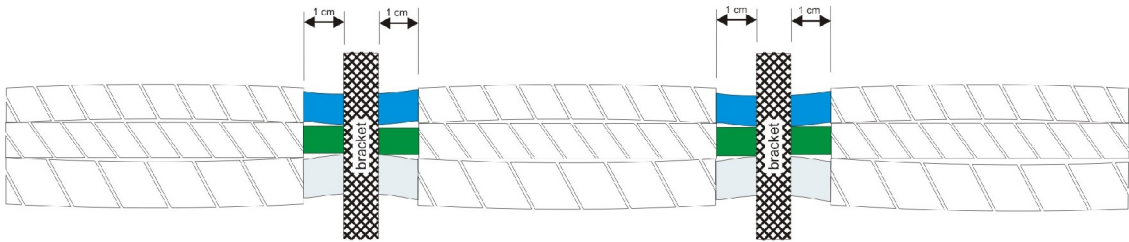
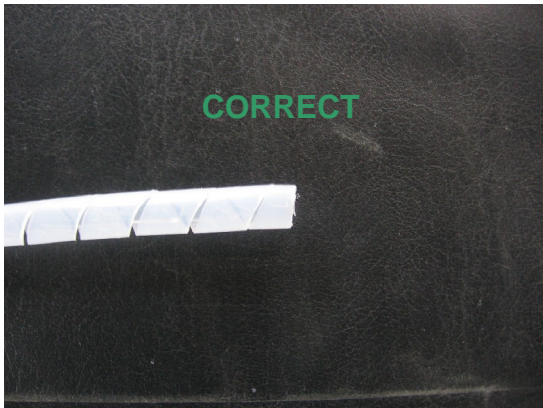

CAUTION: Do not damage the surrounding composite material.

13	<p>Chamfer the aft side of the outboard edge of the through hole in the floor panel. The chamfer (approx. 45°) should not remove any more than 5 mm of the bonding flange material.</p>  <p>CAUTION: Do not damage the surrounding composite material.</p>
14	<p>Install edge protection, P/N GE128-C69 on the inboard, top & bottom edges of the hole using a small amount of commercial 5 min Epoxy adhesive.</p>

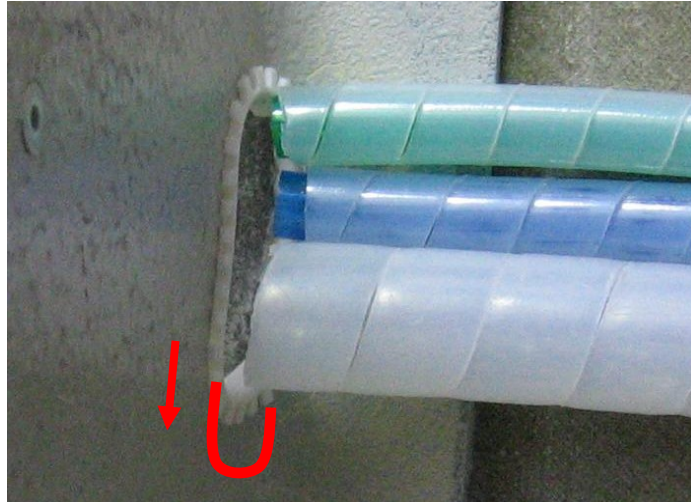
15	<p>Feed the lines back through the hole in the floor panel wall and reposition the lines on the fuselage wall. Use tie-wraps to secure the lines at the tie wrap base</p>  <p>CAUTION: Do not overtighten the cable ties to prevent squeezing of the pitot, static and stall warning lines.</p>
16	<p>Attach lines to their fittings aft of the floor panel wall. Reinstall all tie wraps removed.</p> <p>CAUTION: Do not overtighten the cable ties to prevent squeezing of the pitot, static and stall warning lines.</p>
17	Clean work area and check for foreign objects.
18	Test all systems in working area for function and perform a leakage test.
19	Perform functional check of all new altered or repaired parts.
20	Reinstall the pilot seat according to AMM, chapter 25, and the soft side panel.
21	Make necessary entries in aircraft log books.

2. Installation using soft side pocket p/n DA4-2583-51-00 according to OÄM 40-218 and glass fibre retaining brackets

1	<p>Remove the soft side pocket.</p> 
2	<p>Remove pilot seat according to AMM, chapter 25.</p>
3	<p>Inspect the pitot, static and stall warning lines at the through hole in the aft floor panel wall. If the diameters of any of the lines have been reduced by more than 30%, the lines must be replaced.</p> 

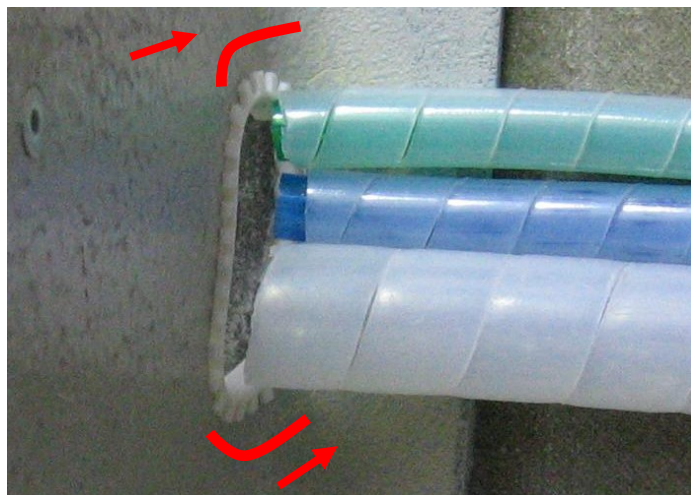
4	<p>Prepare the pieces of spiral-wrap so that each tube between two brackets can be covered with leaving a gap of 1 cm between the bracket and the spiral-wrap. Use spiral wrap, P/N T38F for the pitot and static lines and spiral wrap, P/N T62F for the stall warning line.</p> <p>The foremost pieces of spiral-wrap should be routed until the point where they pass behind the instrument panel. The rearmost pieces of spiral-wraps should also extend aft beyond the floor panel a minimum of 50mm. Mark each piece of spiral-wrap so that later it can be placed at the correct position.</p>  <p>If the spiral wraps are to be cut, ensure that the cut is 90 deg to the length of the line as shown.</p> <div style="display: flex; justify-content: space-around;">   </div>
5	<p>Disconnect the pitot, static and stall warning lines from the nearest barbed fitting aft of the floor panel wall.</p>
6	<p>Pull all three lines forward through the slot in the floor panel wall and the glass fibre brackets.</p> <p>NOTE: Aft of the floor panel wall cut tie wraps as required to free the lines.</p>

Check to see that the through-hole in the aft wall of the floor panel is large enough to route the 3 lines (wrapped in spiral wrap) side by side without excessive bunching. If it is not, remove the edge guard from the inside edge of the hole and elongate the hole vertically down only as required to allow the lines to sit side by side.



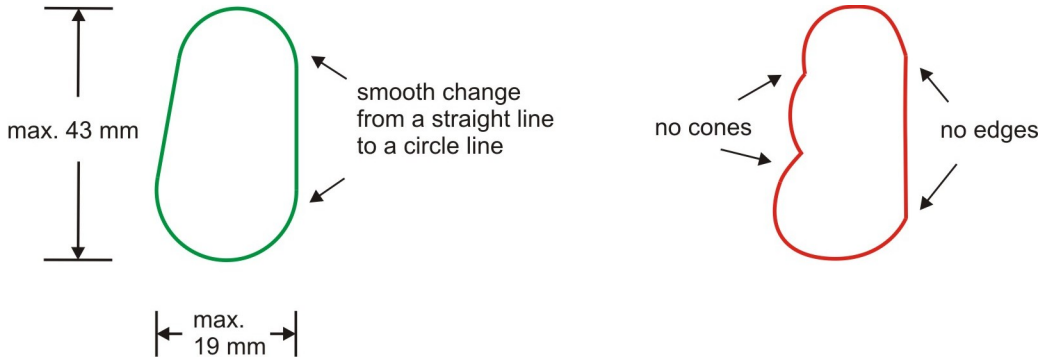
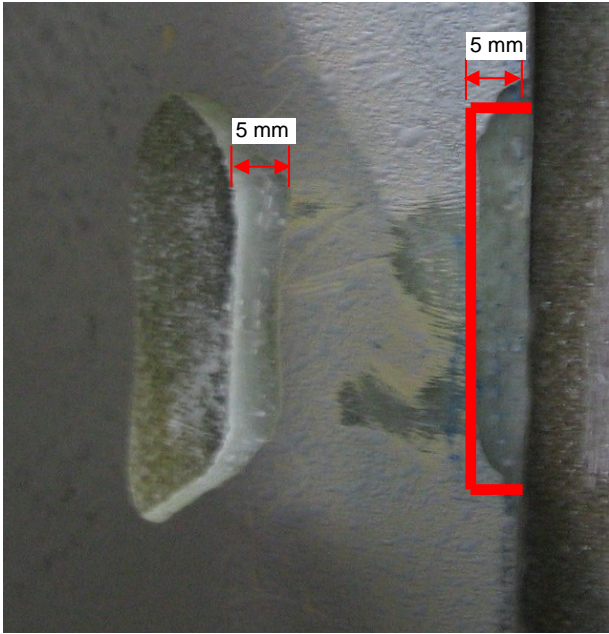
NOTE: Do not enlarge the hole vertically to more than 43 mm (the thickness of the edge protection already taken into account).


- 7 Elongate the hole horizontally outboard so that the outboard edge of the hole is flush with the outboard face of the floor panel.



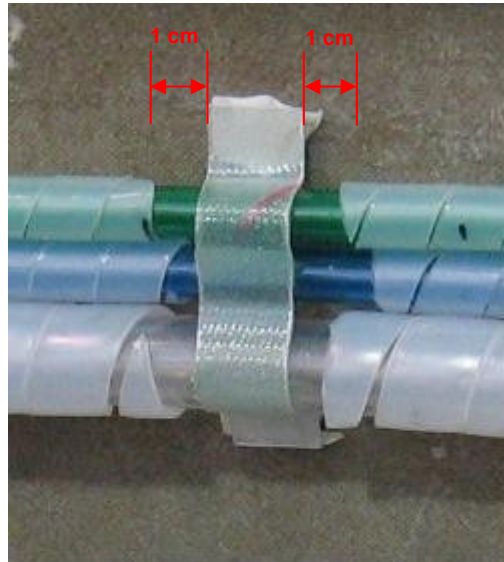
CAUTION: Do not grind away the bonding flange of the floor panel.

NOTE: If after making the outboard edge of the hole flush with the outboard face of the floor panel the stall lines including the spiral wrap do not fit through the hole, enlarge the hole horizontally inboard up to a maximum of 19 mm (the thickness of the edge protection already taken into account).

8	<p>It is important that the hole does not have an unsteady shape but a smooth one. An example how it should look like and how it should not look like are shown below.</p> 
9	<p>Chamfer the forward edge of the floor panel bonding flange behind where the lines are routed. The chamfer (approx. 45°) should not remove any more than 5 mm of the bonding flange material.</p>  <p>CAUTION: Do not damage the surrounding composite material.</p>

10	<p>Chamfer the aft side of the outboard edge of the through hole in the floor panel. The chamfer (approx. 45°) should not remove any more than 5 mm of the bonding flange material.</p>  <p>CAUTION: Do not damage the surrounding composite material.</p>
11	<p>Install edge protection, P/N GE128-C69 on the inboard, top & bottom edges of the hole using a small amount of commercial 5 min Epoxy adhesive.</p>

Install the pitot-, static and stall warning lines and the corresponding pieces or spiral wraps by feeding them back through the glass fibre brackets and the aft hole of the floor panel wall.



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Attach lines to their fittings aft of the floor panel wall. Reinstall all tie wraps removed.

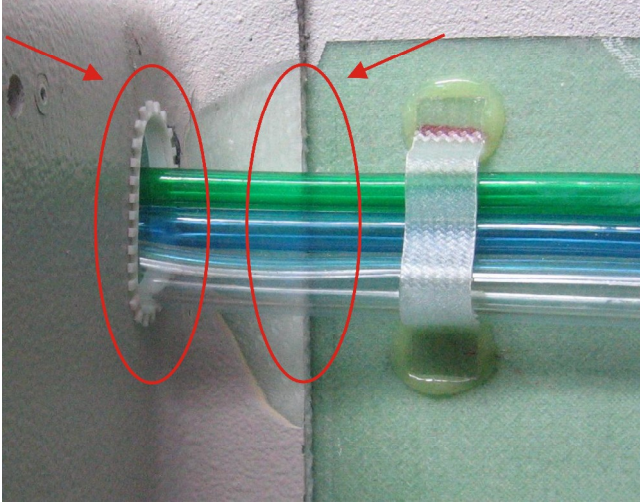
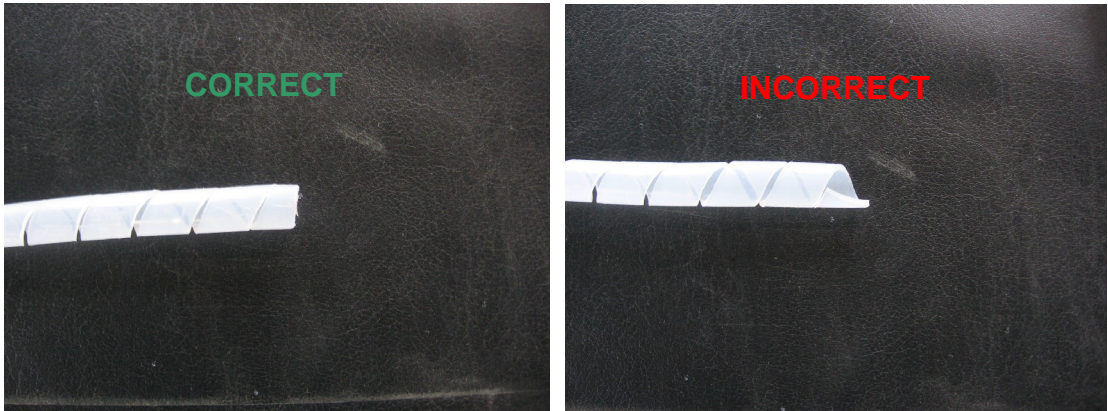
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CAUTION: Do not overtighten the cable ties to prevent squeezing of the pitot, static and stall warning lines.

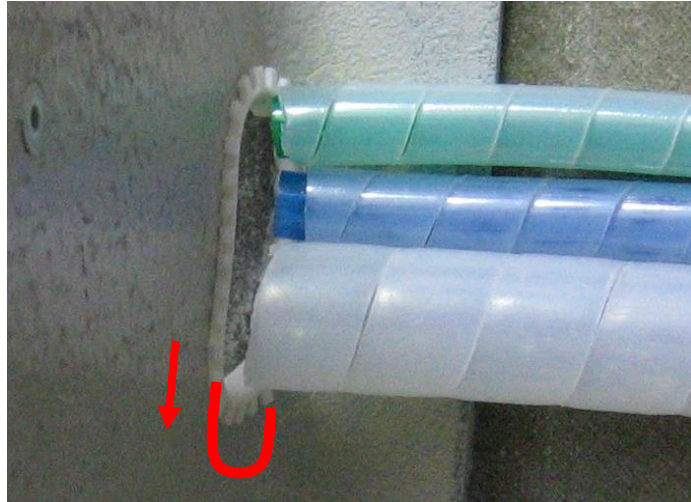
14	Clean work area and check for foreign objects.
15	Test all systems in working area for function and perform a leakage test.
16	Perform functional check of all new altered or repaired parts.
17	Reinstall the pilot seat according to AMM, chapter 25, and the soft side pocket.
18	Make necessary entries in aircraft log books.

3. Installation using hard side pocket p/n DA4-2583-65-00X01 according to OÄM 40-188

1	Remove pilot seat according to AMM, chapter 25.
2	<p>Remove the side panel.</p> 

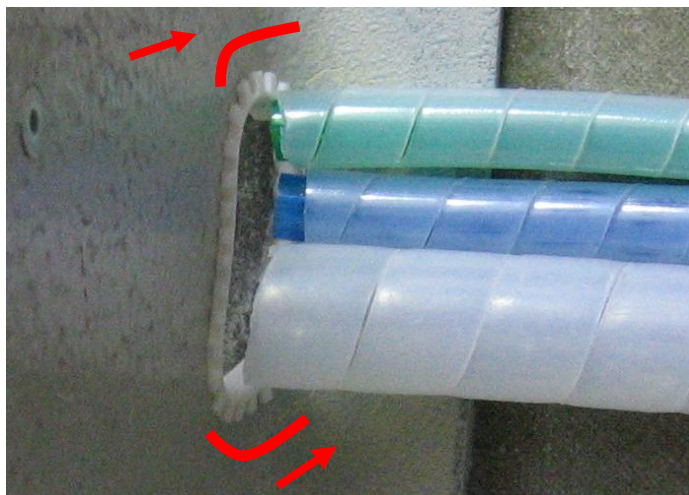
3	<p>Inspect the pitot, static and stall warning lines at the through hole in the aft floor panel wall. If the diameters of any of the lines have been reduced by more than 30%, the lines must be replaced.</p> 
4	<p>Prepare one piece of spiral-wrap, P/N T38F for the pitot and static line respectively and one piece of spiral-wrap, P/N T62F for the stall warning tube. Leave a gap of 1 cm between the rearmost glass fiber retaining bracket and the spiral-wrap. The spiral-wraps should also extend aft beyond the floor panel wall a minimum of 50mm.</p> <p>If the spiral wraps are to be cut, ensure that the cut is 90 deg to the length of the line as shown.</p> 
5	<p>Disconnect the pitot, static and stall warning lines from the nearest barbed fitting aft of the floor panel wall.</p>
6	<p>Pull all three lines forward through the slot in the floor panel wall.</p> <p>NOTE: Aft of the floor panel wall cut tie wraps as required to free the lines.</p>

Check to see that the through-hole in the aft wall of the floor panel is large enough to route the 3 lines (wrapped in spiral wrap) side by side without excessive bunching. If it is not, remove the edge guard from the inside edge of the hole and elongate the hole vertically down only as required to allow the lines to sit side by side.



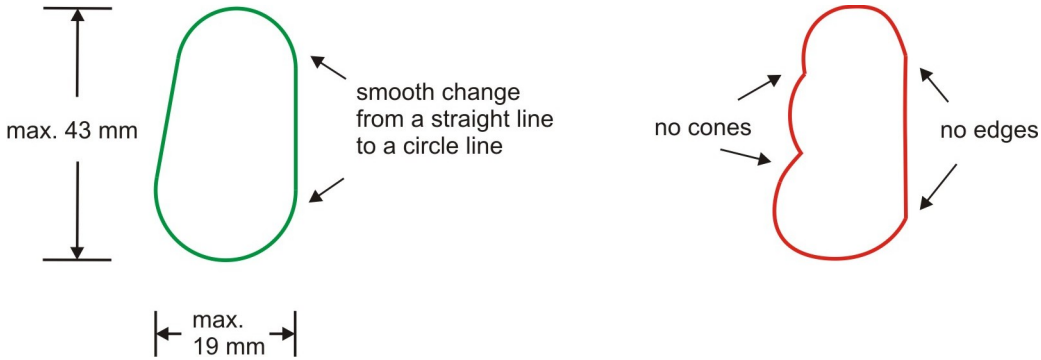
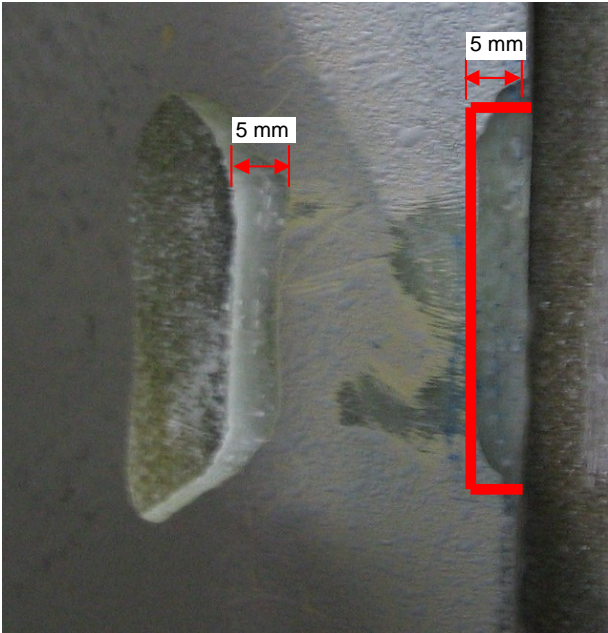
NOTE: Do not enlarge the hole vertically to more than 43 mm (the thickness of the edge protection already taken into account).

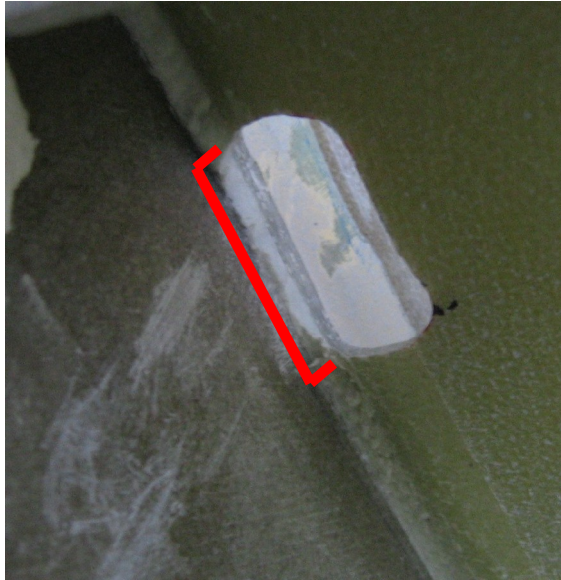
- 7 Elongate the hole horizontally outboard so that the outboard edge of the hole is flush with the outboard face of the floor panel.

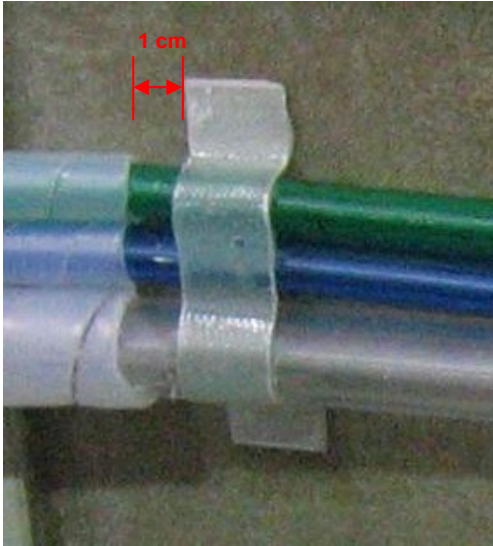



CAUTION: Do not grind away the bonding flange of the floor panel.

NOTE: If after making the outboard edge of the hole flush with the outboard face of the floor panel the stall lines including the spiral wrap do not fit through the hole, enlarge the hole horizontally inboard up to a maximum of 19 mm (the thickness of the edge protection already taken into account).

8	<p>It is important that the hole does not have an unsteady shape but a smooth one. An example how it should look like and how it should not look like are shown below.</p> 
9	<p>Chamfer the forward edge of the floor panel bonding flange behind where the lines are routed. The chamfer (approx. 45°) should not remove any more than 5 mm of the bonding flange material.</p>  <p>CAUTION: Do not damage the surrounding composite material.</p>

10	<p>Chamfer the aft side of the outboard edge of the through hole in the floor panel. The chamfer (approx. 45°) should not remove any more than 5 mm of the bonding flange material.</p>  <p>CAUTION: Do not damage the surrounding composite material.</p>
11	<p>Install edge protection, P/N GE128-C69 on the inboard, top & bottom edges of the hole using a small amount of commercial 5 min Epoxy adhesive.</p>

12	<p>Install the pitot, static and stall warning lines by feeding them through the glass fibre retaining brackets, moving the spiral-wraps onto the lines and feeding the lines back through the hole in the aft floor panel wall. Check that there is a space of 1 cm between the glass fibre retaining bracket and the spiral wraps. The spiral-wraps should also extend aft beyond the floor panel a minimum of 50mm.</p>  
13	<p>Attach lines to their fittings aft of the floor panel wall. Reinstall all tie wraps removed.</p> <p>CAUTION: Do not overtighten the cable ties to prevent squeezing of the pitot, static and stall warning lines.</p>
14	<p>Clean work area and check for foreign objects.</p>

15	Test all systems in working area for function and perform a leakage test.
16	Perform functional check of all new altered or repaired parts.
17	Reinstall the pilot seat according to AMM, chapter 25, and the side panel.
18	Make necessary entries in aircraft log books.