



Swisspacer Spacer bars

Welding
Technical information
Quality control

| swisspacer |
SAINT-GOBAIN

the edge
of tomorrow

TI 001 Vers. 2.0e

Quality Control

of welded Swisspacer frames

In-house production control

Content

The technical information TI 001 describes process-relevant properties of Swisspacer frames which are welded by machines of Rottler und Rüdiger und Partner GmbH. The description intends to ensure the right way of processing and trouble-free evaluation of welded Swisspacer frames.

I.	Overview of evaluation criteria and tolerances	3
1.	Conformity of the marking.....	4
2.	Dimension of the frame	4
3.	Molten material on three defined sides of the corner (Solution for II.2)	5
4.	Condition of the foil (Solution for II.3)	6
5.	Innerside of the corner “close control” (Solution for II.5)	7
6.	Outer side of the corner “close control” (Solution for II.4)	8
7.	Linear connection of the bars(Solution for II.6)	9
I.	Identification and removal of typical errors	11
1.	Quality control	13
2.	Molten material on the the three defined sides of the corner (To item I.3).....	14
3.	Damage of the foil (To item I.4)	16
4.	Open corner (To item I.6).....	18
5.	Cracks on the inner side (To item I.4)	21
6.	Linear connection problems (To item I.7).....	24

I. Overview of evaluation criteria and tolerances

	Evaluation criteria		Tolerance
Point 1	Conformity of the marking		
	1.1	Correct marking	100% correct
	1.2	Readable	100% correct
Point 2	Dimension of the frame		
	2.1	Length of the frame	0 ^{+1/-1mm}
	2.2	Height of the frame	0 ^{+1/-1mm}
Point 3	Molten material on three defined sides of the corner		
	3.1	Welding seam on the edges of the corner	welded material visible
Point 4	Condition of the foil		
	4.1	No destructive damage of the foil related to the sonotrode area	0 holes visible
	4.2		0 scratches visible
	4.3		0 burn marks visible
Point 5	Inner side of the corner		
	5.1	Close visual control	Tightly joined
	5.2	No gap, no opening, no break, no crack	0% visible
Point 6	Outer side of the corner		
	6.1	No shift of the bars (Misalignment)	0 ^{+0.5/-0.5mm}
	6.2	Width of the corner: no surpassing of	< 0.3 mm
	6.3	Height of the welded lip	0 ^{+1.3}
Point 7	Linear connection of the bars		
	7.1	No gap between the bars	Tightly joined

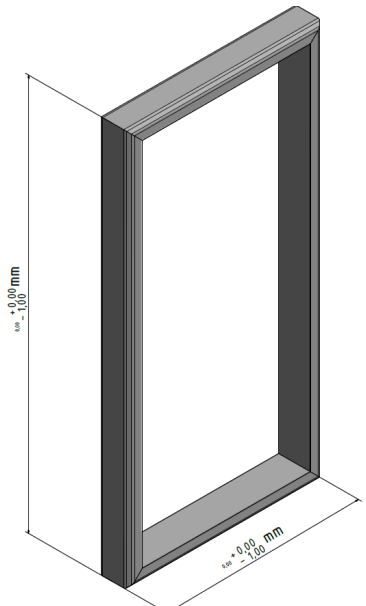
1. Conformity of the marking

The printed marking on the inner side of the frame must be correct and clearly legible
 The order is as follows: “Name of the plant” – Saint-Gobain – “Name of the customer” – “Customer Code”

	
<p>GLASSOLUTION Saint-Gobain naviglass.com “Naviglass code” CEKAL “Plant number”</p>	<p>Wrong order or missing letters</p>
<p style="text-align: center;">Correct</p>	<p style="text-align: center;">Incorrect</p>

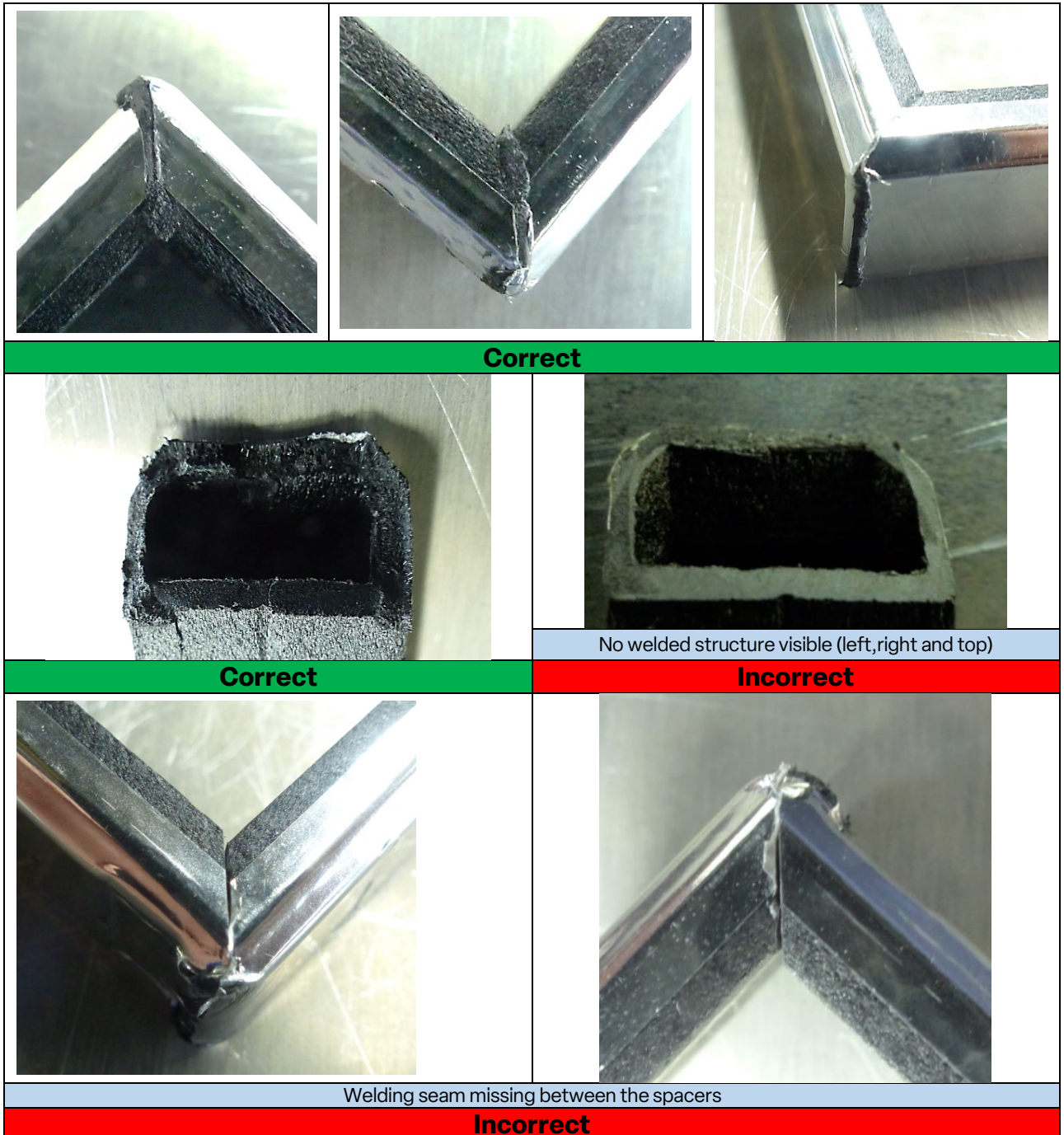
2. Dimension of the frame

The length of the bars guarantees the general geometry of the frame. Due to continuous monitoring of the length open corners or corners out of shape can be avoided.

	<p>Length of the frame: $0^{+1/-1}mm$</p> <p>Height of the frame: $0^{+1/-1}mm$</p>
---	---

3. Molten material on three defined sides of the corner (Solution for II.2)

The opened corner (described in document “List of tests”) should show significant material changes in the area of the profile cross section. The center wall with foil on the back must show a welded material structure as well as the right and left wall. Welded material structure can be identified as not a smooth surface with a slightly frothy appearance.



4. Condition of the foil (Solution for II.3)

In the best case the foil shall not show any big signs of damage:

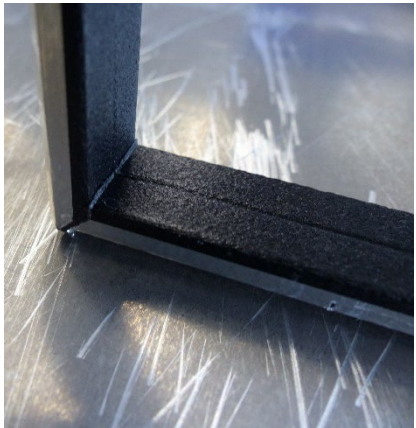



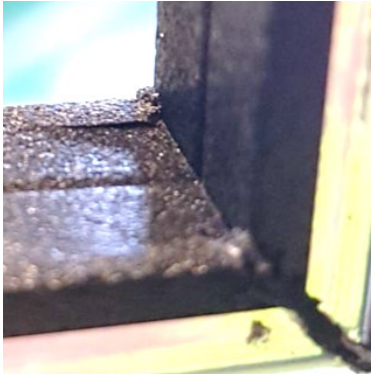
- The best condition is shown as



The produced frames should be checked and evaluated within the daily quality control. If needed readjustments of the machine and its settings must be conducted.

	Intervention needed	Actions
Correct	No	Not needed
Acceptable	Yes	Precise observation of quality
Incorrect	Yes	Check of the mashine & readjustment


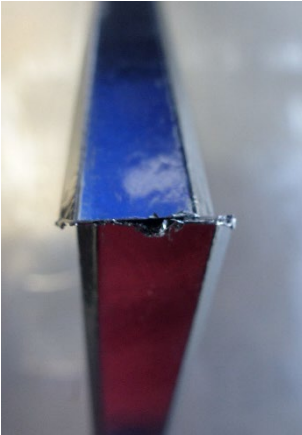
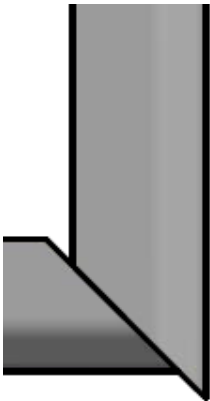
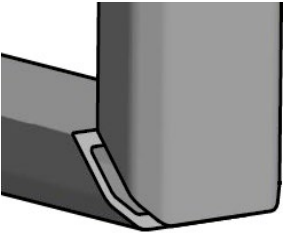
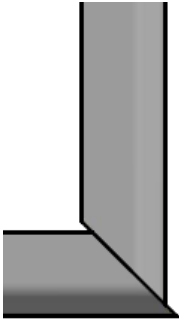
5. Innerside of the corner “close control” (Solution for II.5)

		
100% welded	No cracks	No gap
Correct	Incorrect	Incorrect
		
Incorrect		

	Intervention needed	Actions
Correct	No	Not needed
Incorrect	Yes	Check of the mashine & readjustment

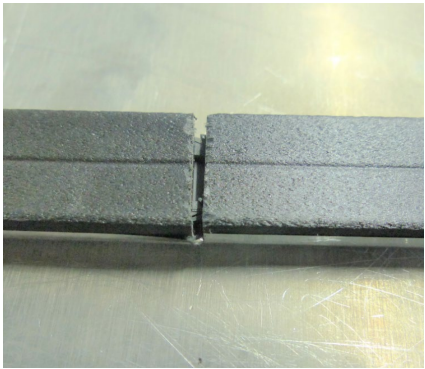


6. Outer side of the corner “close control” (Solution for II.4)

The frame shall not show any traces of visual damage in terms of breaks, gaps between the spacer bars in the corner.

		
Lip : $0^{+1,3}mm$	Allowed shift: $0^{+0,5/-0,5}mm$	
Incorrect		
		
	Shift: $0^{+0,5/-0,5}mm$	
Incorrect		

7. Linear connection of the bars(Solution for II.6)

The linear connection of the bars signifies the position where two spacer bars are connected by a linear plastic connector. The two connected bars must be completely joined that the connector is not capable of being perceived visually.

	 	
<p>Tightly joined</p>	<p>No <u>gap/break</u> between the bars</p>	<p>No damaged foil</p>
<p>Correct</p>	<p>Incorrect</p>	<p>Incorrect</p>

This processing guideline is limited to the most important instructions for the processing of Swisspacer spacer bars.

The instructions given are based on many years of practical experience and the latest knowledge.

The trading names of other companies mentioned in this document is for informational purposes only and does not preclude the use of other products of the same type.

We would be pleased to send you supplemental documents on individual areas on request.

If you have any questions, please contact us at: technik@swisspacer.com



Copyright

All rights reserved. The duplication of photos, texts and data, including their storage and use on optical and electronic data carriers, is permitted only with the prior consent of Vetrotech Saint-Gobain (Int.) AG. The utilisation of data including their storage in online services, databases or websites by third parties is prohibited without permission.

Exclusion of liability

Vetrotech Saint-Gobain (Int.) AG is not liable for damage resulting from incorrect content or actions carried out in good faith as regards the correctness of the content. The application, use and processing of our products and of the products manufactured by you on the basis of our technical advice takes place outside our control and therefore solely within the scope of your responsibility.

The customer is not exempt from having the functions or applications of the products carefully checked by suitably qualified personnel.

Target group of the instructions: Manufacturers of insulated glass in a technical capacity

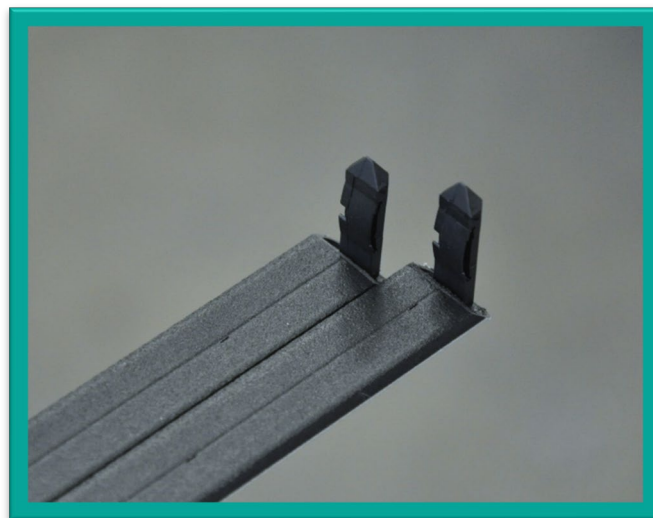
This version supersedes the validity of all prior versions.



Complementary documents (Rottler und Rüdiger und Partner GmbH)

I. Identification and removal of typical errors

For welded
Swisspacer-Frames



Die Rottler und Rüdiger und Partner GmbH übernimmt keine Haftung für Schäden an Personen, Tieren oder Sachen sowie an der Anlage selbst, die durch unsachgemäße Anwendung, durch Nichtbeachtung oder ungenügende Beachtung der in dieser Beschreibung und der Betriebsanleitung enthaltenen Hinweise und Sicherheitskriterien entstehen bzw. durch Abänderung der Anlage oder der Verwendung von nicht geeigneten Ersatzteilen verursacht werden.

1. Quality control

Length of the bar

Is the length of the milled bars correct?
Is the length within the specified tolerance?

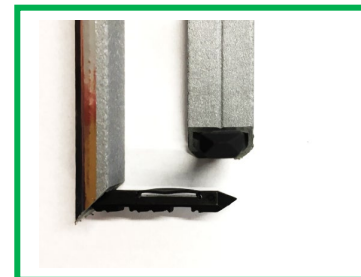
Quality of milling

Is the milling quality sufficient?
Is the milling edge free of breaks/cracks?



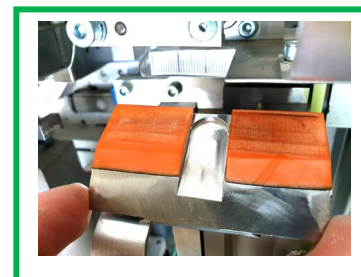
Corner Keys

Corner key correctly applied?
Corner key completely slid in?



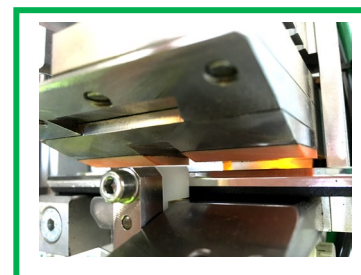
Clamping jaws

Clamping jaws clean for the welding feed?
Clamping jaws need to be changed?

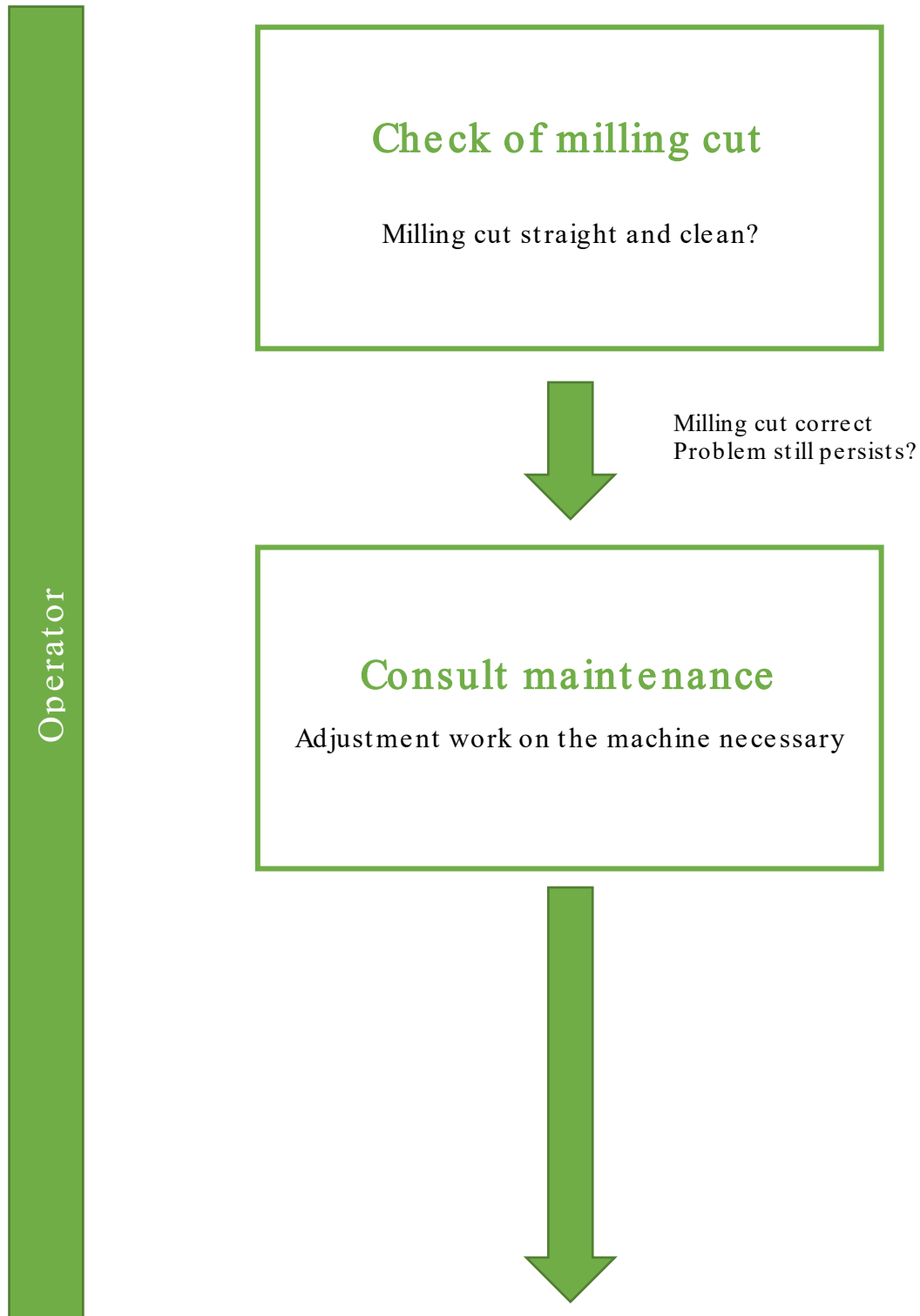


Clamping cylinder

Profile correctly fixed after loading?
Does the cylinder move and clamp normally?

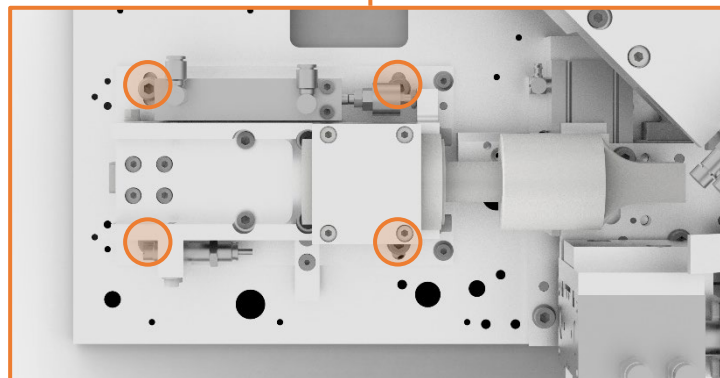
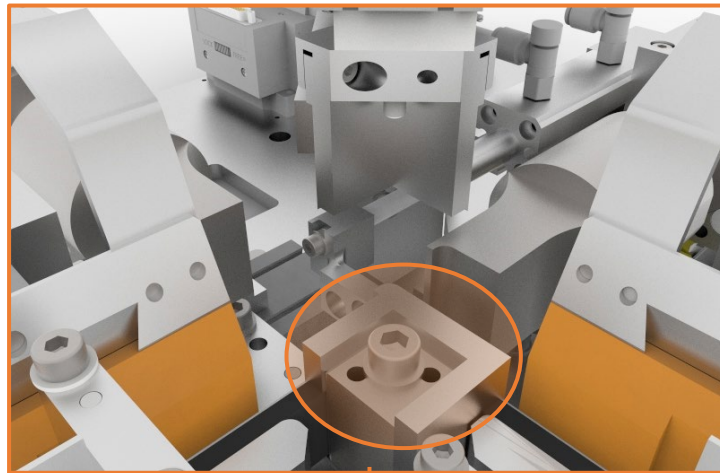


2. Molten material on the the three defined sides of the corner (To item I.3)



Check of sonotrode positioning

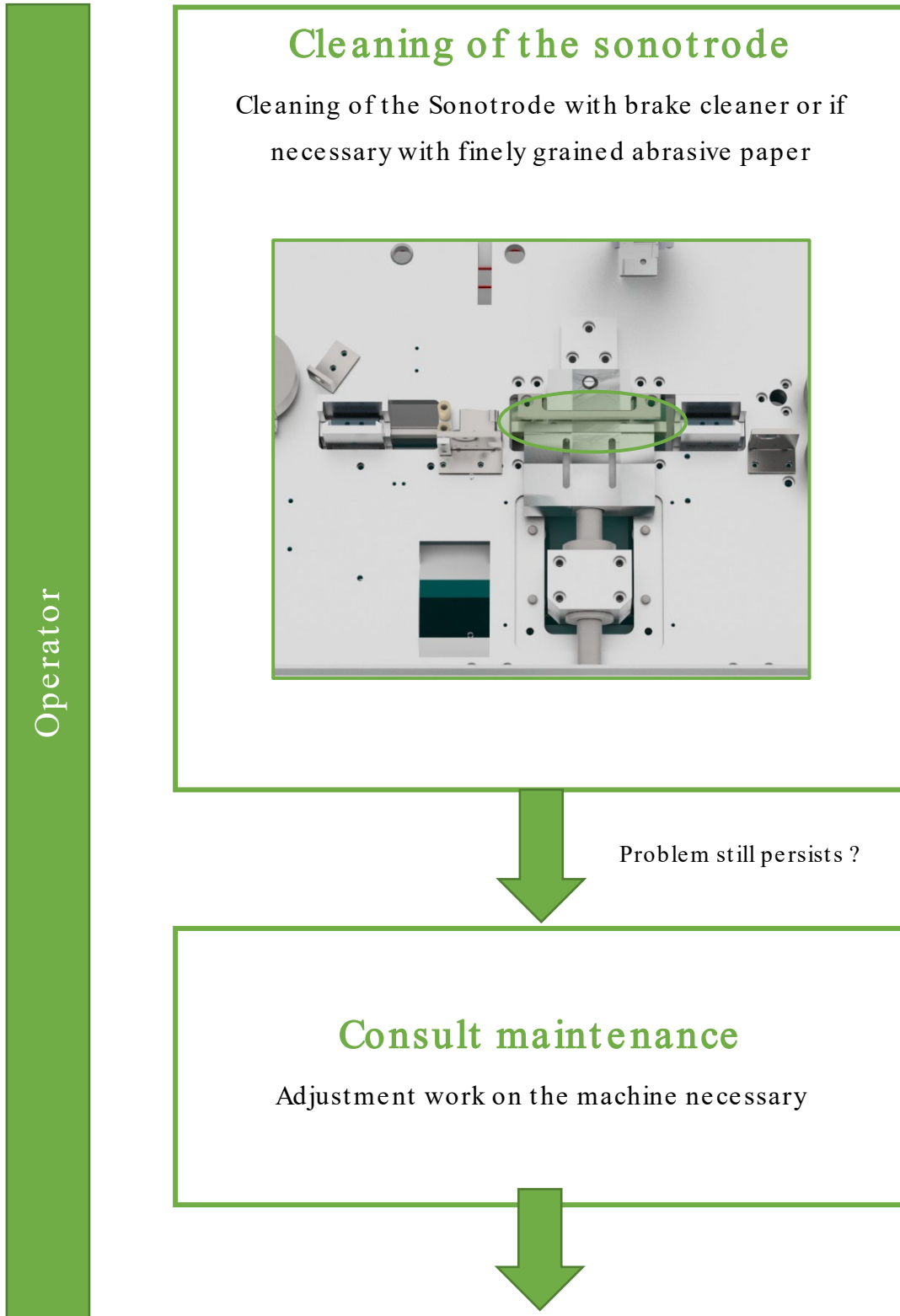
Align the sonotrode gage at the anvil and check the position of the sonotrodes and adjust them if necessary



Problem still persists ?

Consult R&R service

3. Damage of the foil (To item I.4)



Maintenance

Reduce the welding time

Reduction of the welding time, Acces under menu item
 'Parameter' & 'Profile'

The screenshot shows the 'Profile' configuration interface. The 'Zerzeit Schweißen' field is highlighted with an orange circle. Other visible fields include 'Profil Breite' (10), 'Profil Stangenlaenge' (5100), 'Biegen Faktor' (1), 'Überbiegen Winkel', 'Transport Faktor' (1), 'Korrektur Schweißzuschlag' (0.5), 'Verbinder Stange' (LC60), 'Korrektur Länge' (0,99641), and 'Fueller Modus'.



Problem still persists ?

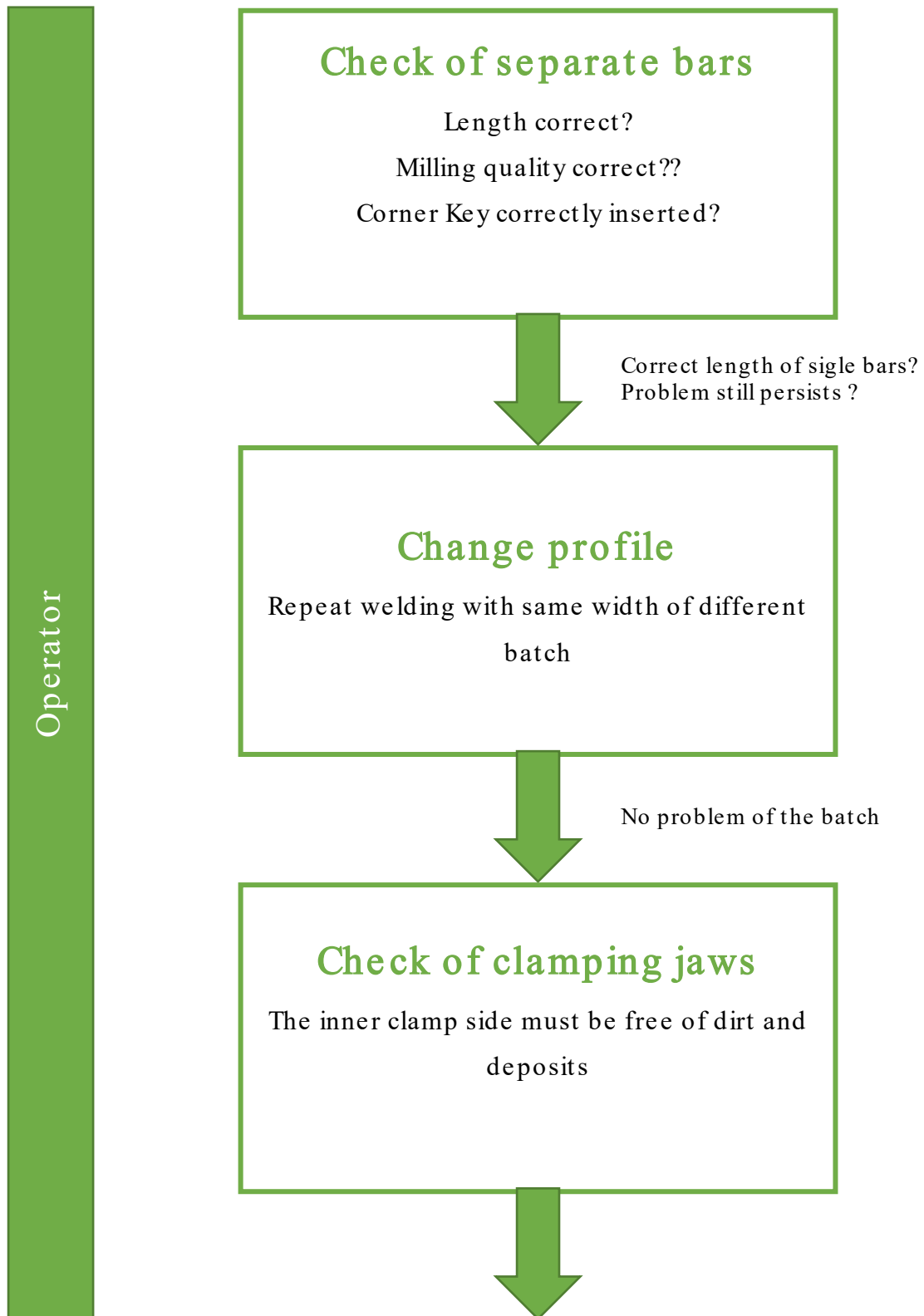
Cancel all adaptions

Recover initial value



Consult R&R service

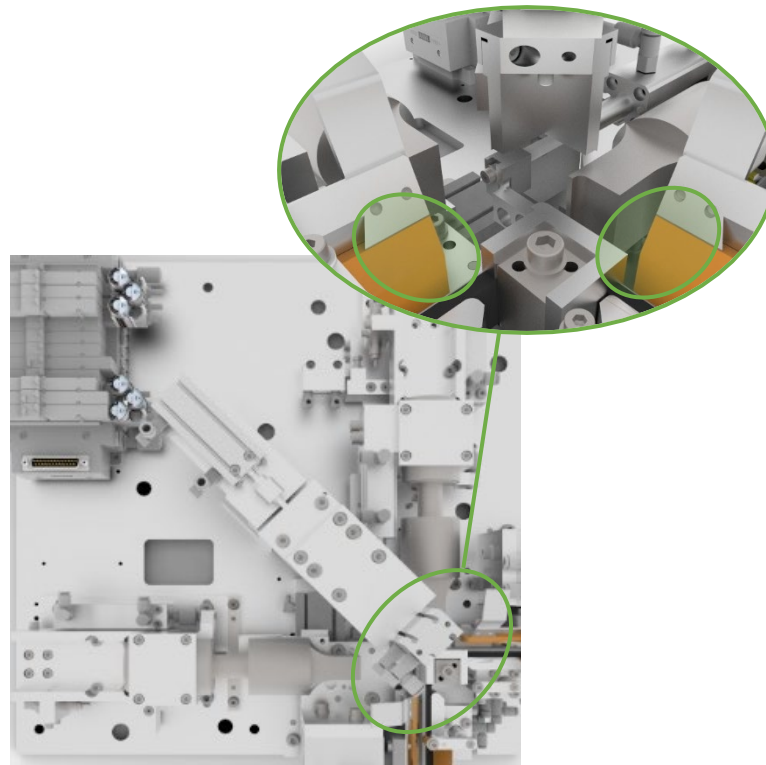
4. Open corner (To item I.6)



Operator

Cleaning of clamping jaws

Removing dirt and deposits from the clamping jaws with cleaning set



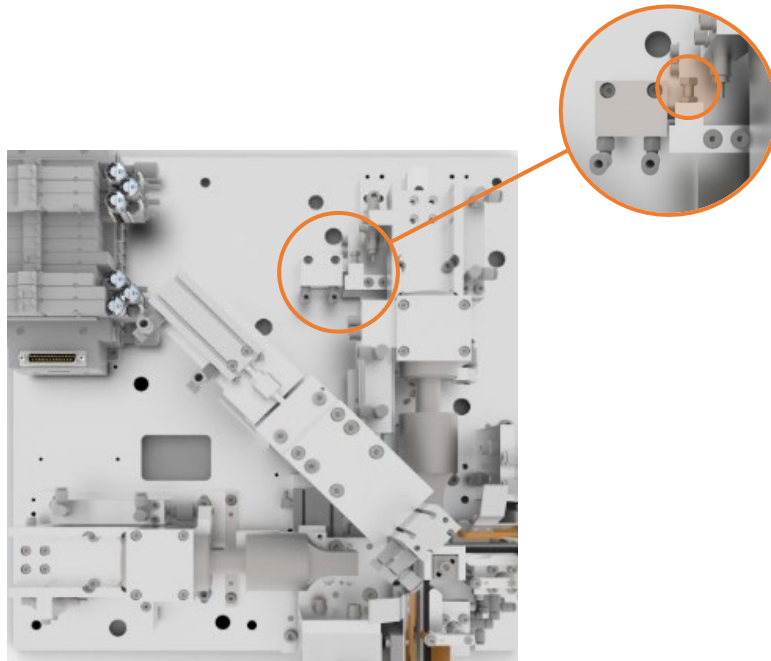
Problem still persists ?

Consult maintenance

Adjustment work on the machine necessary

Adjust pre-positioning

Loosen lock nut and tighten adjustment screw by ∂ turn in the effected corner ÷ Tighten lock nut



Problem still persists ?

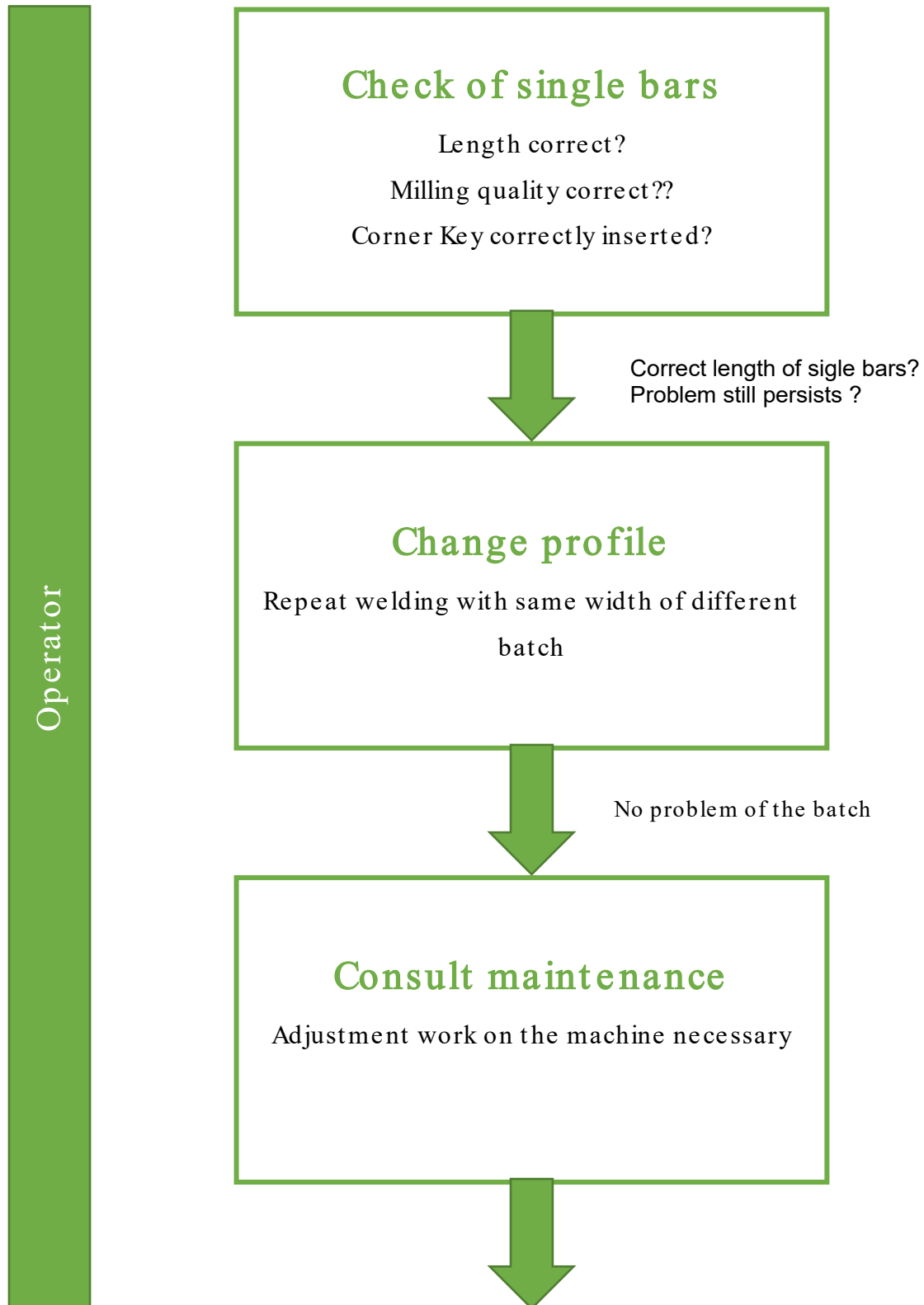
Cancel all adaptions

Adjustment screw back to initial position and tighten lock nut



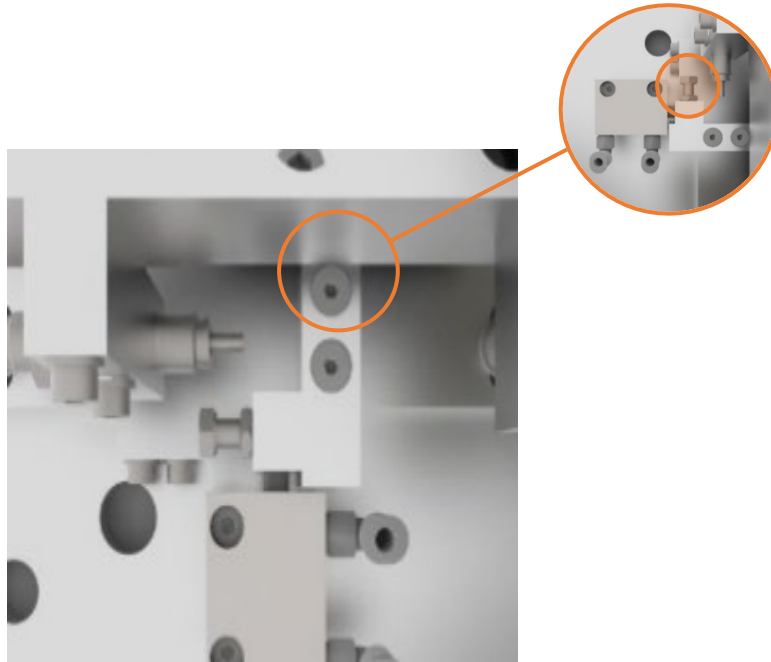
Consult R&R service

5. Cracks on the inner side (To item I.4)



Adjust pre-positioning

Loosen lock nut and tighten adjustment screw by ∂ turn in the effected corner ÷ Tighten lock nut



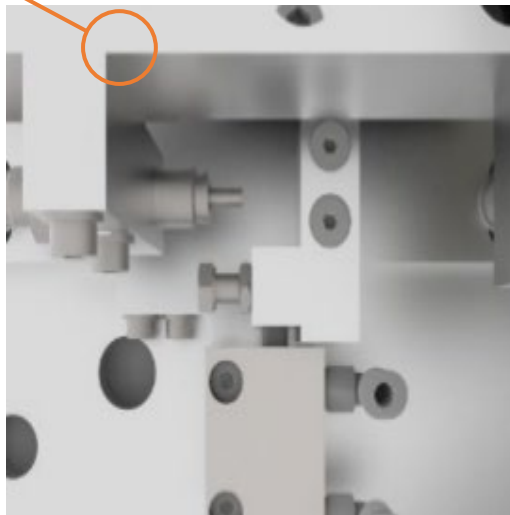
Problem still persists ?

Cancel all adaptionns

Adjustment screw back to initial position and tighten lock nut

Adjust pressure

Decrease the pressure for the welding feed in 0,1 MPa-steps, the minimum pressure must always be 0,25 MPa



Problem still persists ?

Cancel all adaptations

Recover initial value



Consult R&R Service

6. Linear connection problems (To item I.7)

