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CONNECTIONS BY ARC WELDING UNDER SHIELDING GAS: PRECAUTIONS FOR THE REPAIR



Note, one or more warnings are present in this procedure



Special tooling required

Kit for checking weld seams.	Car. 1779
Set of replacement test pieces for tool Car. 1779	Car. 1800

1. INTRODUCTION

1-PURPOSE

The purpose of this document is to provide the information necessary for making quality GMAW welds by describing the procedure to apply to define the correct resistance weld parameters, for three types of joint:

- fillet weld,
- butt weld,
-

plug weld.

These tests alone validate the weld parameters and guarantee the result in terms of repair quality.

Note:



These procedures should be applied before each welding operation, according to the joint and/or stack.

2- PROCEDURE

-
- Consult the vehicle MR,
- Carry out the weld test,
- Interpret the results,
-

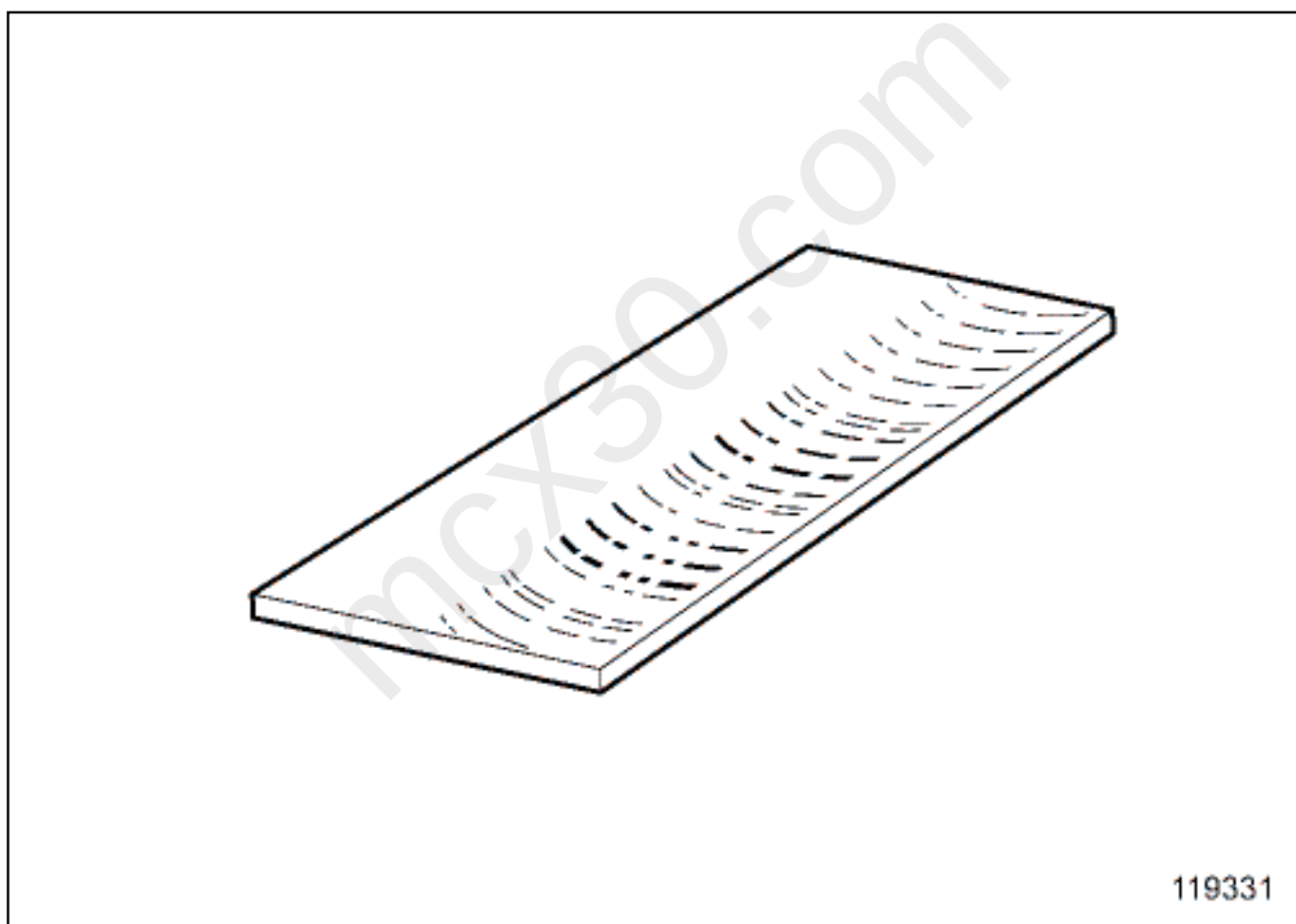
3- TEST PERFORMANCE CONDITIONS

All tests should be performed using the weld validation kit for checking weld seams. (Car. 1779), and the set of replacement part test specimens Set of replacement test pieces for tool Car. 1779 (Car. 1800).

2. BUTT WELDING TEST PROCEDURE

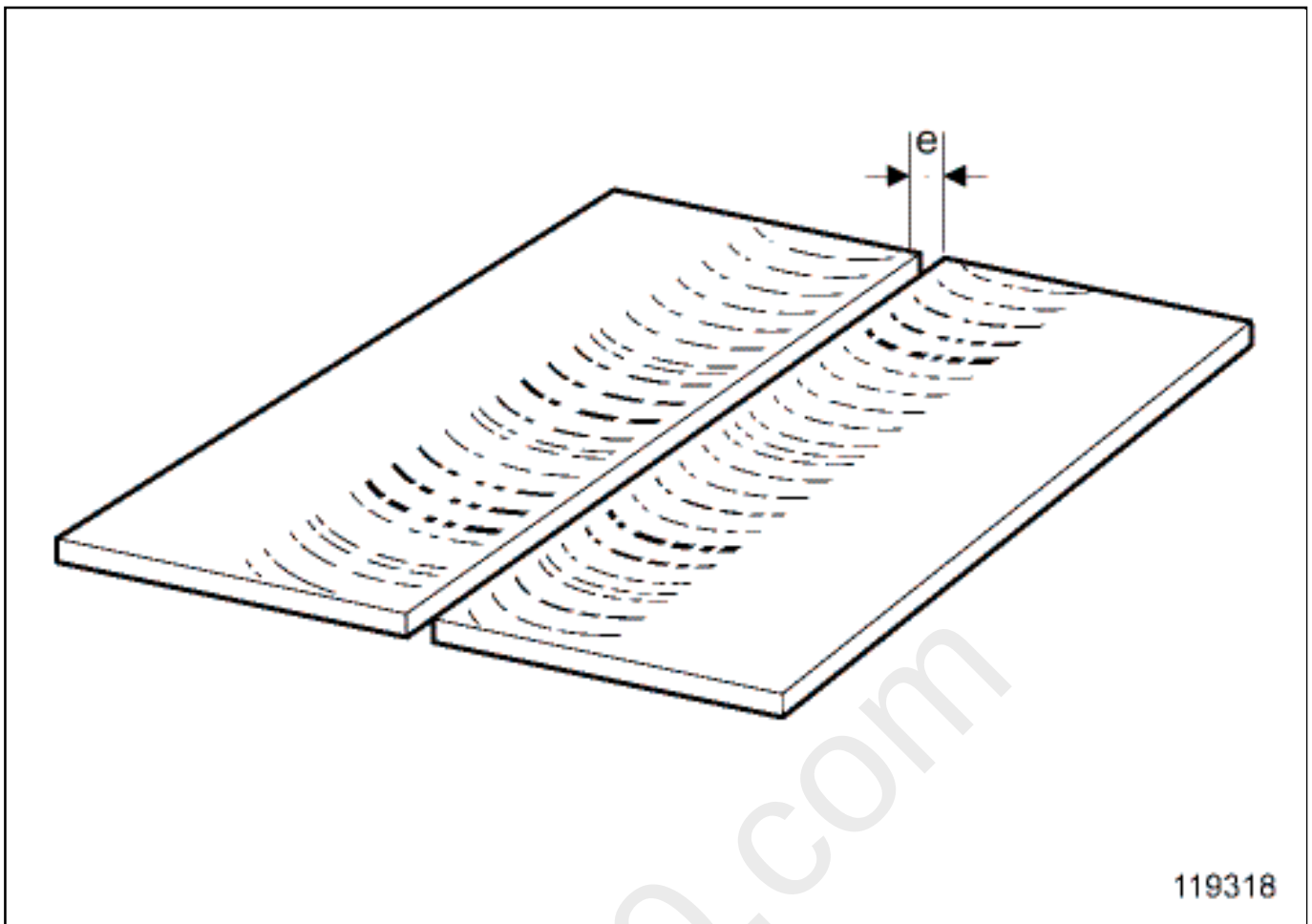
1- PREPARATION BEFORE ASSEMBLY

Select test specimens that are representative of the assembly being tested.

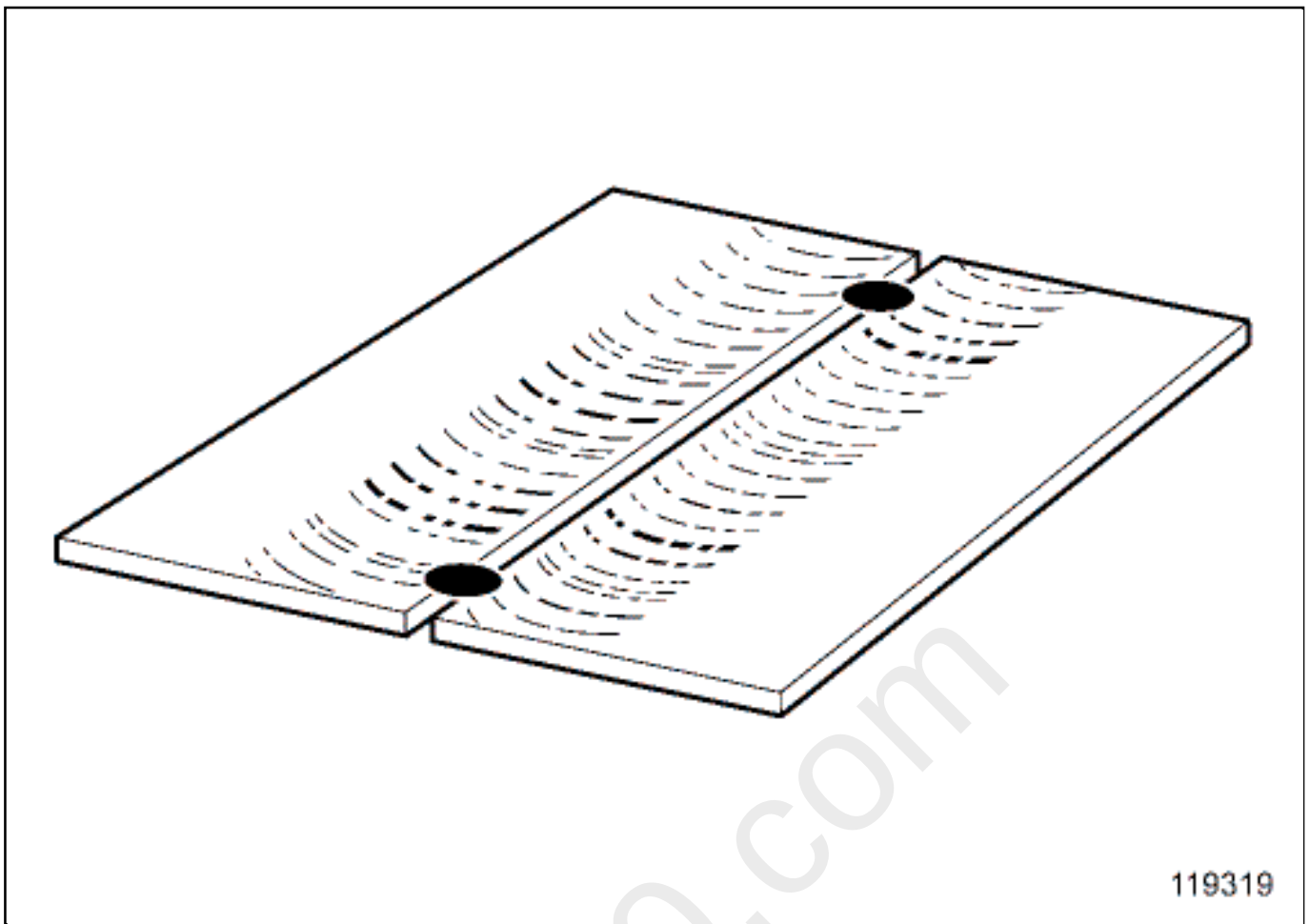


Prepare the test specimens in the same way as the vehicle.

(see 40E, Partial replacement connections, Connections for edge to edge partial replacements: Description)



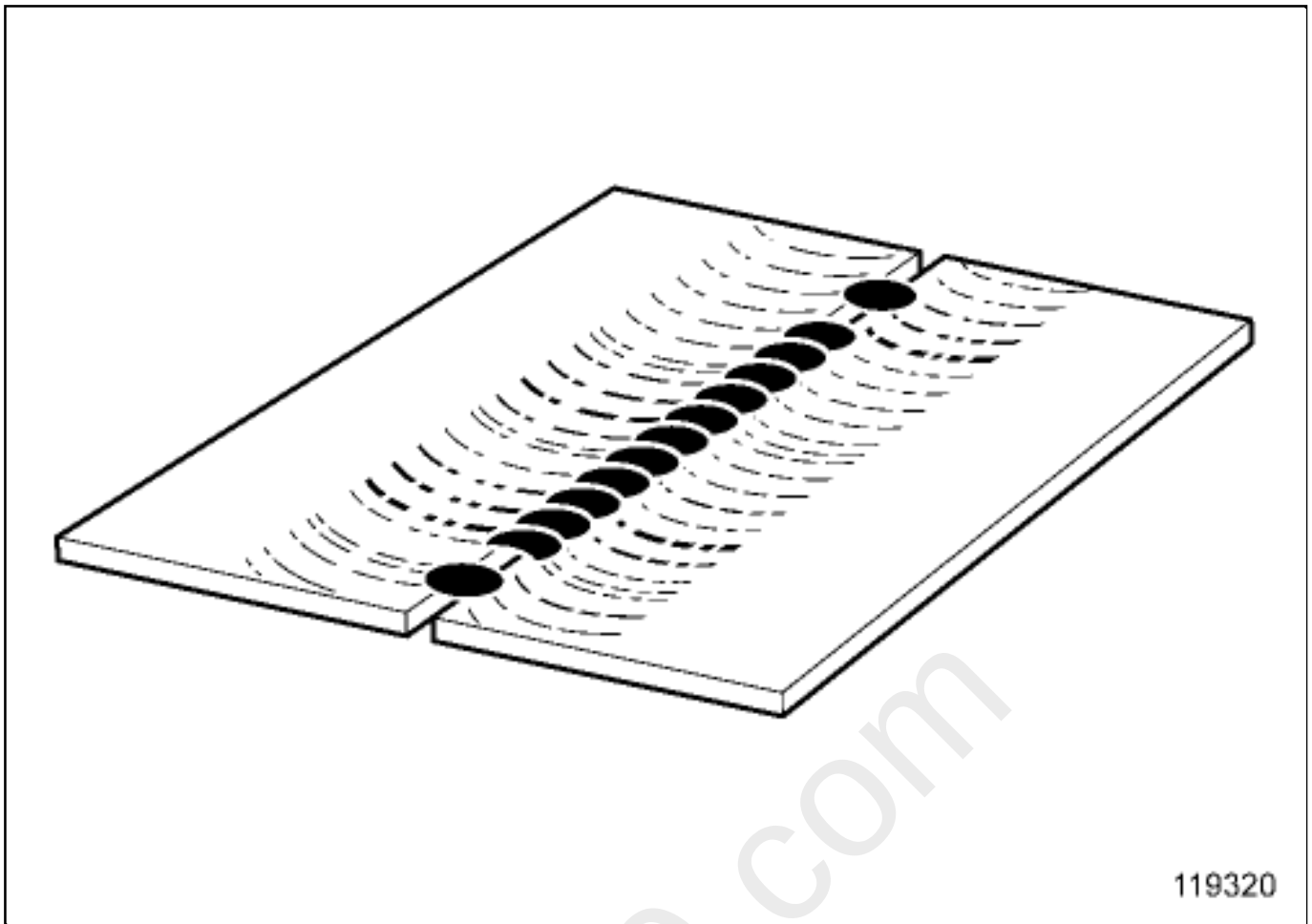
Adjust and secure the test specimens, leaving a clearance(e) equal to the thinnest measurement.



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Make two holding spots at each end.

2- ASSEMBLY



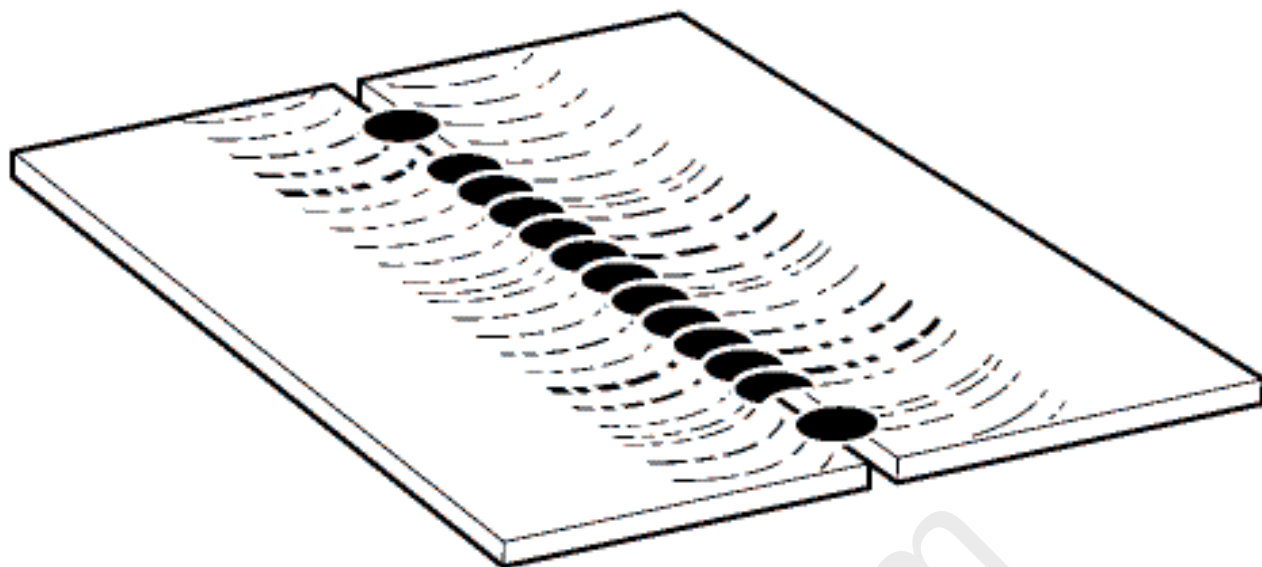
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Make an 80 mmlong bead of chain weld.

3- CHECK

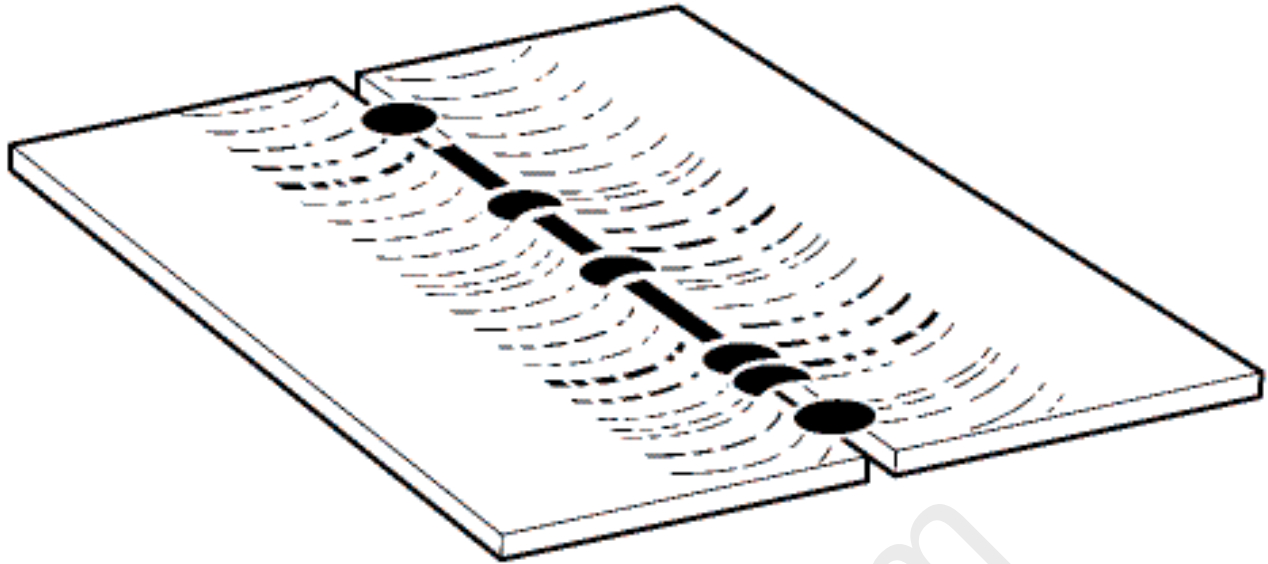
Check that the bead of chain weld has penetrated the internal face of the assembly.

ACCEPTABLE CHAIN WELD BEAD - CONTINUOUS PENETRATION



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UNACCEPTABLE CHAIN WELD BEAD - INCOMPLETE PENETRATION



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Penetration should be continuous along the length of the weld.

The bead of chain weld should be as wide on the internal face as on the external face.

4-SOLUTIONS

If there is incomplete or no penetration:



■ Increase the weld current to improve its penetration,



If the current is already at maximum, increase the gap between the panels and the weld time.



Note:

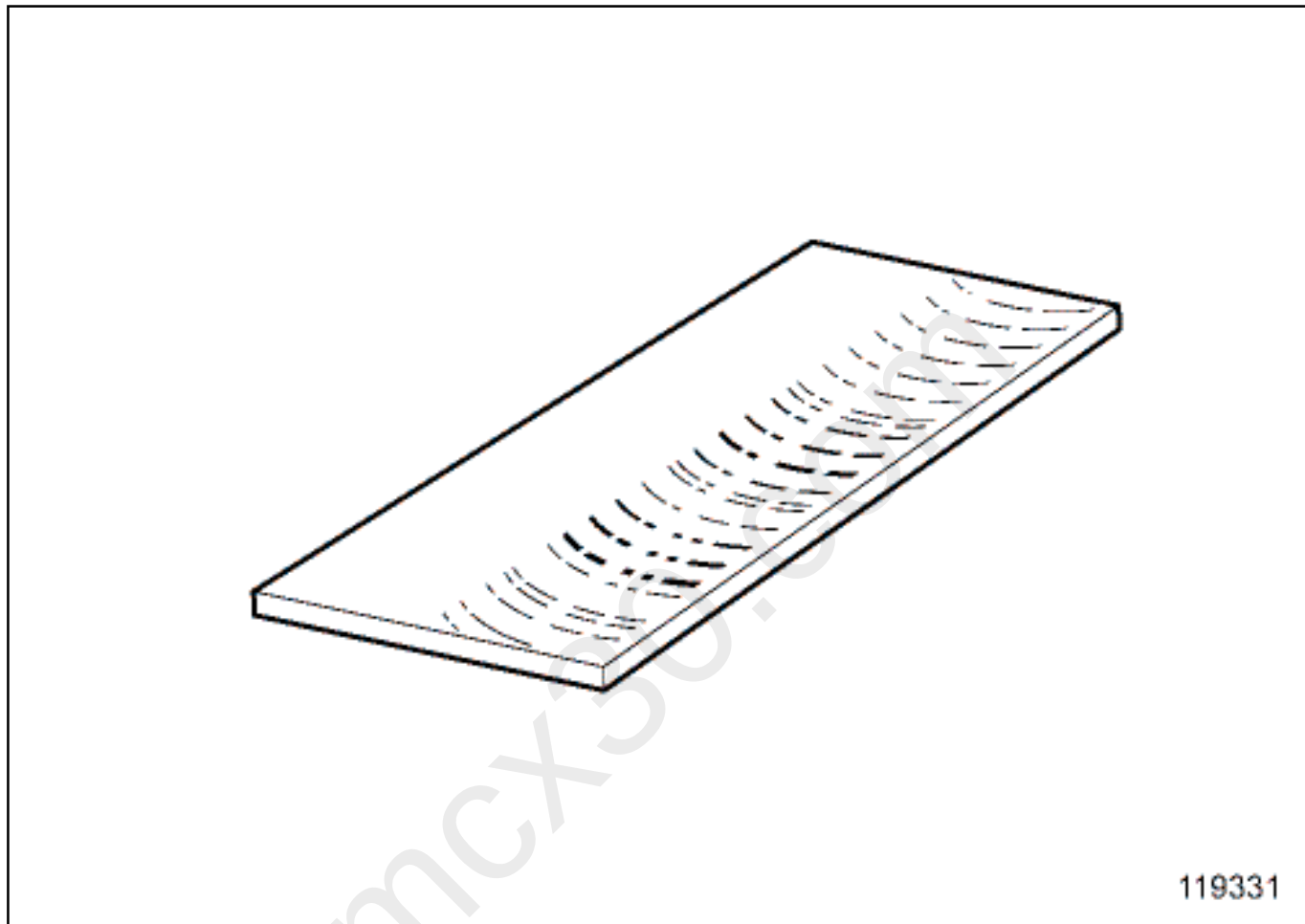
A new weld check must be carried out if any settings are adjusted.

3. FILLET WELD TEST PROCEDURE

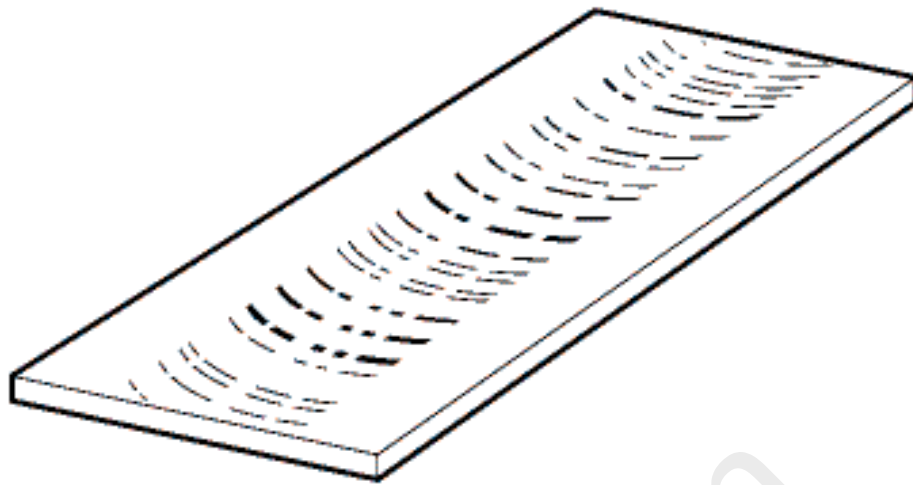
1- PREPARATION BEFORE ASSEMBLY

Select test specimens that are representative of the assembly being tested.

UPPER TEST SPECIMEN



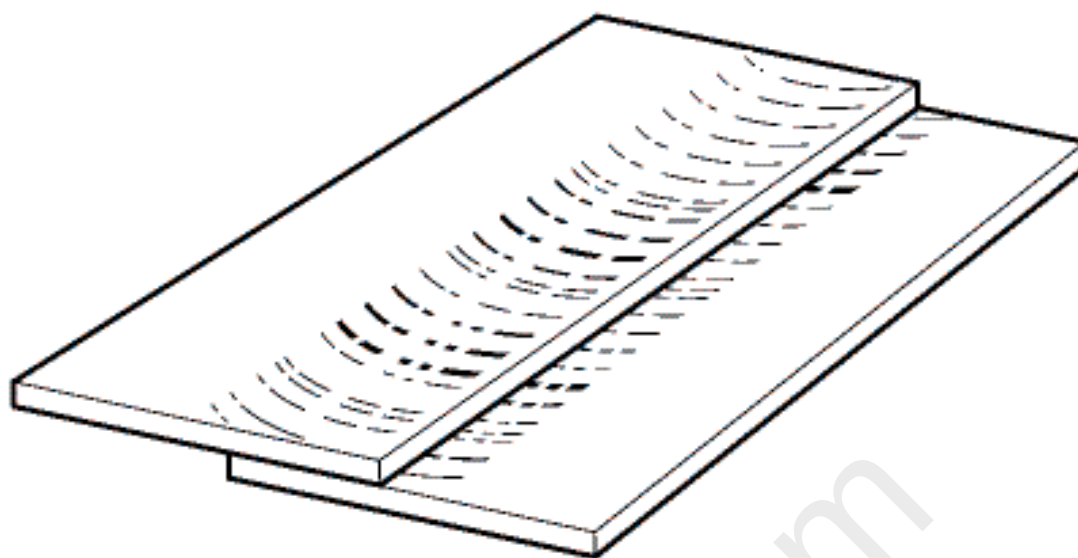
LOWER TEST SPECIMEN



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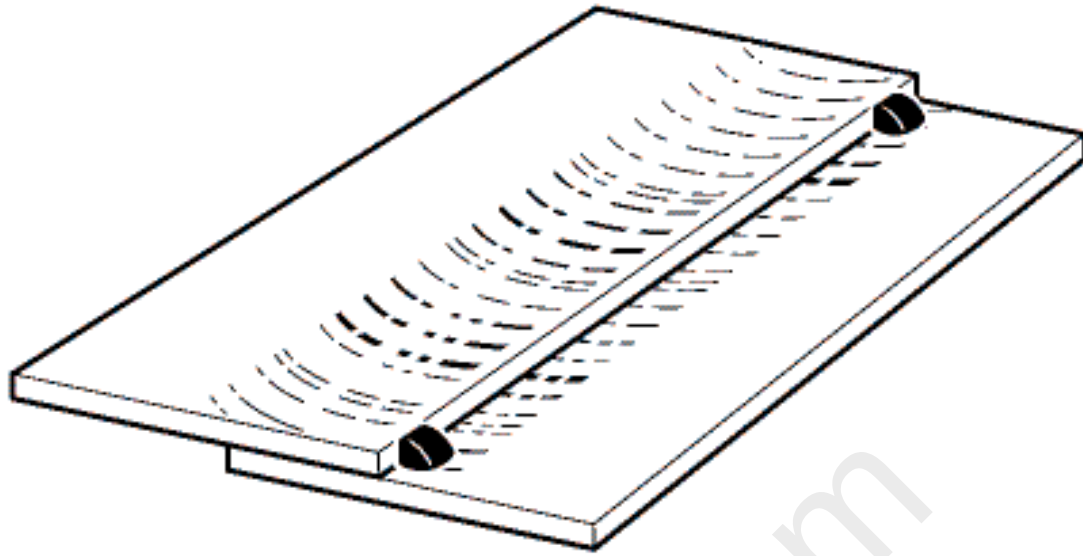
Prepare the test specimens in the same way as the vehicle.

(see 40C, Gas metal arc welded connections, Connections by arc welding under shielding gas: Description)



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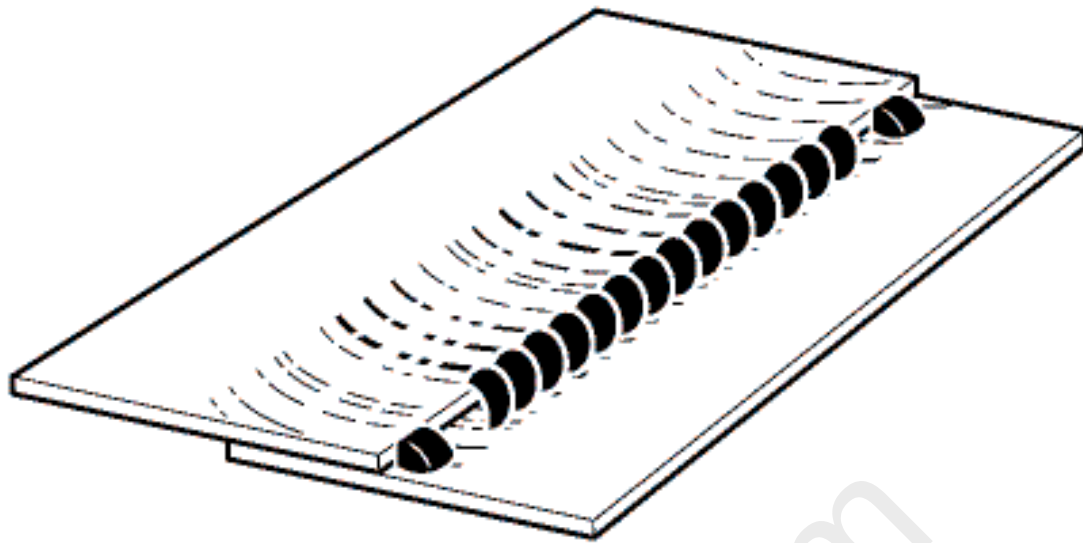
Adjust and secure the test specimens, half overlapping them.



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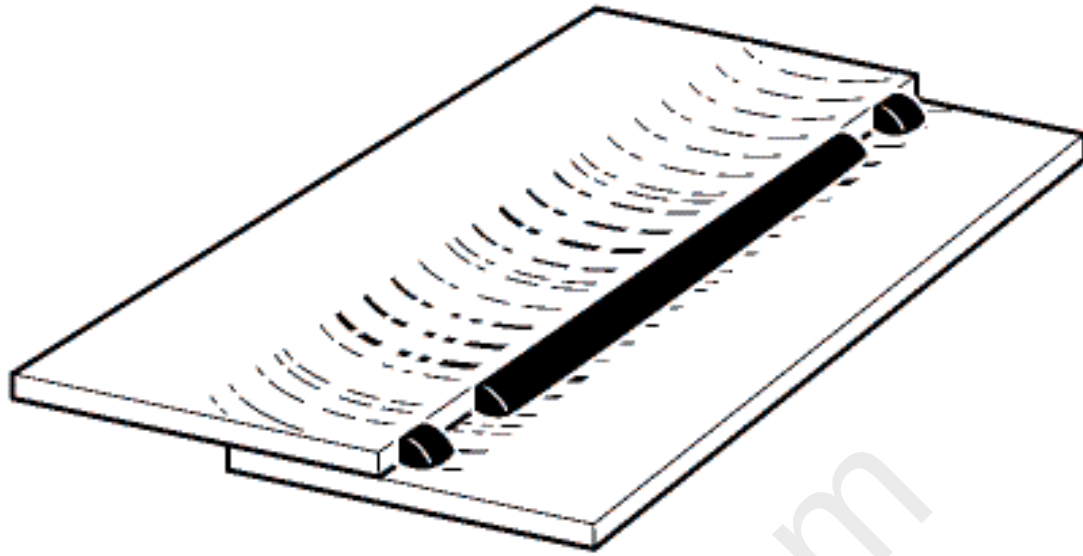
Make two holding spots at each end.

2- ASSEMBLY



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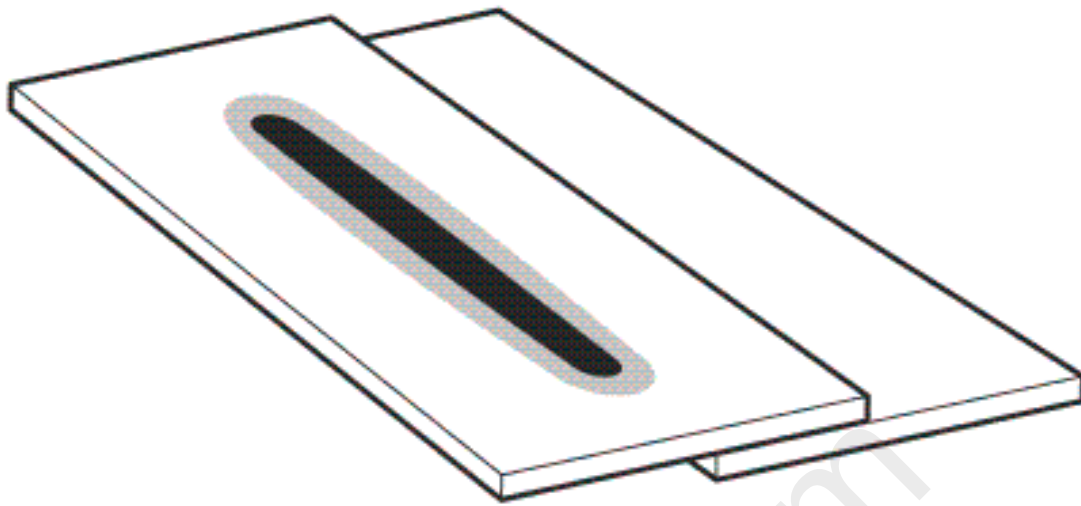
Make an 80 mmlong bead of chain weld, for thin assemblies= "less than 1.5 mm".



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Make an 80 mm long continuous weld bead, for thick assemblies= "greater than 1.5 mm"

3- CHECK



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Check that the bead has penetrated the internal face of the assembly.

Penetration should be continuous along the length of the weld.



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Note:

For thick assemblies, penetration is not always visible on the internal face.

Cut the assembly in the middle.

Check that the bead has penetrated.

4- SOLUTIONS



If there is incomplete or no penetration:



■ Increase the weld current to improve its penetration,



■ If the current is already at maximum, increase the welding time.



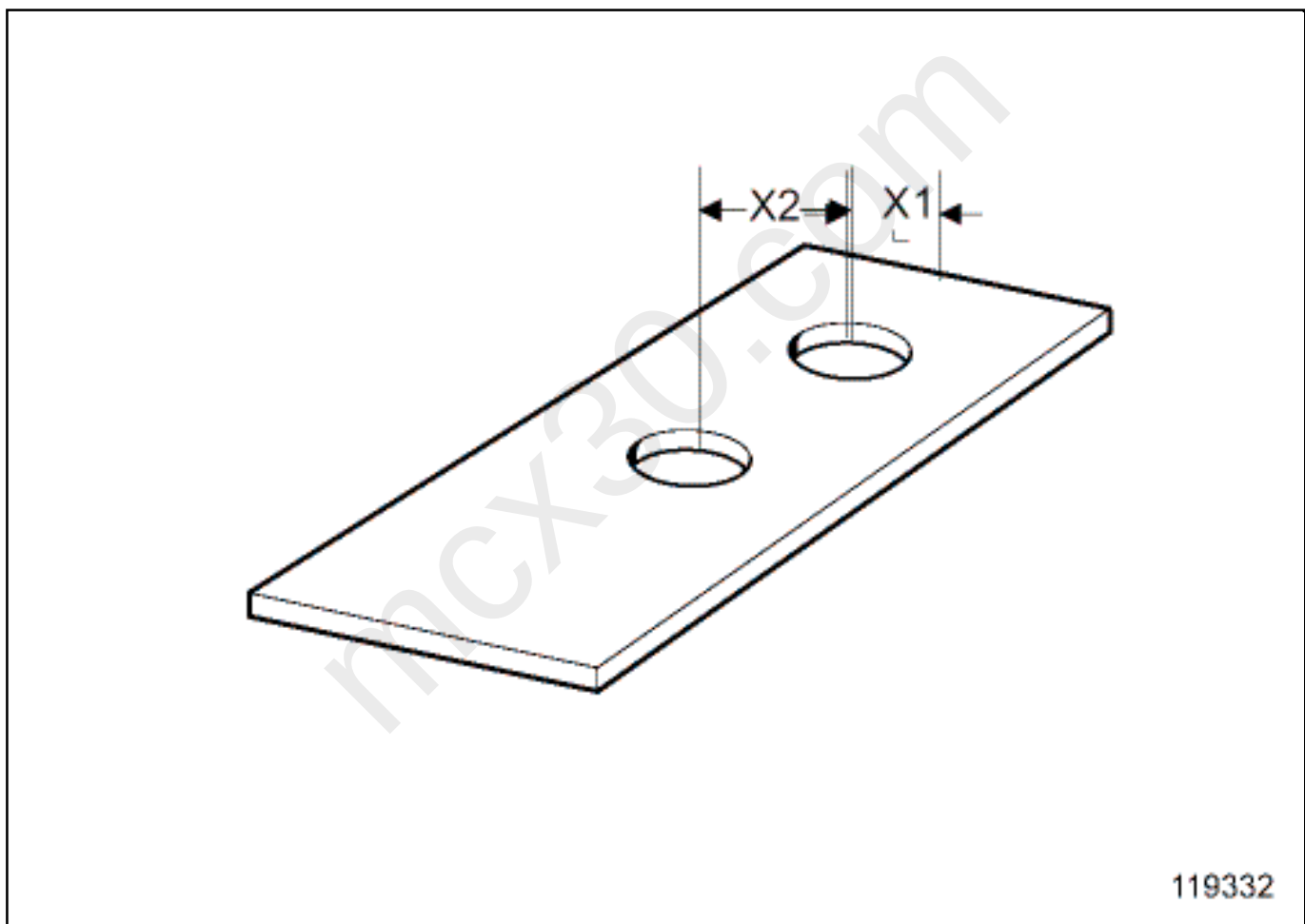
Note:

A new weld check must be carried out if any settings are adjusted.

4. PLUG WELD TEST PROCEDURE

1- PREPARATION BEFORE ASSEMBLY

Select test specimens that are representative of the assembly being tested.



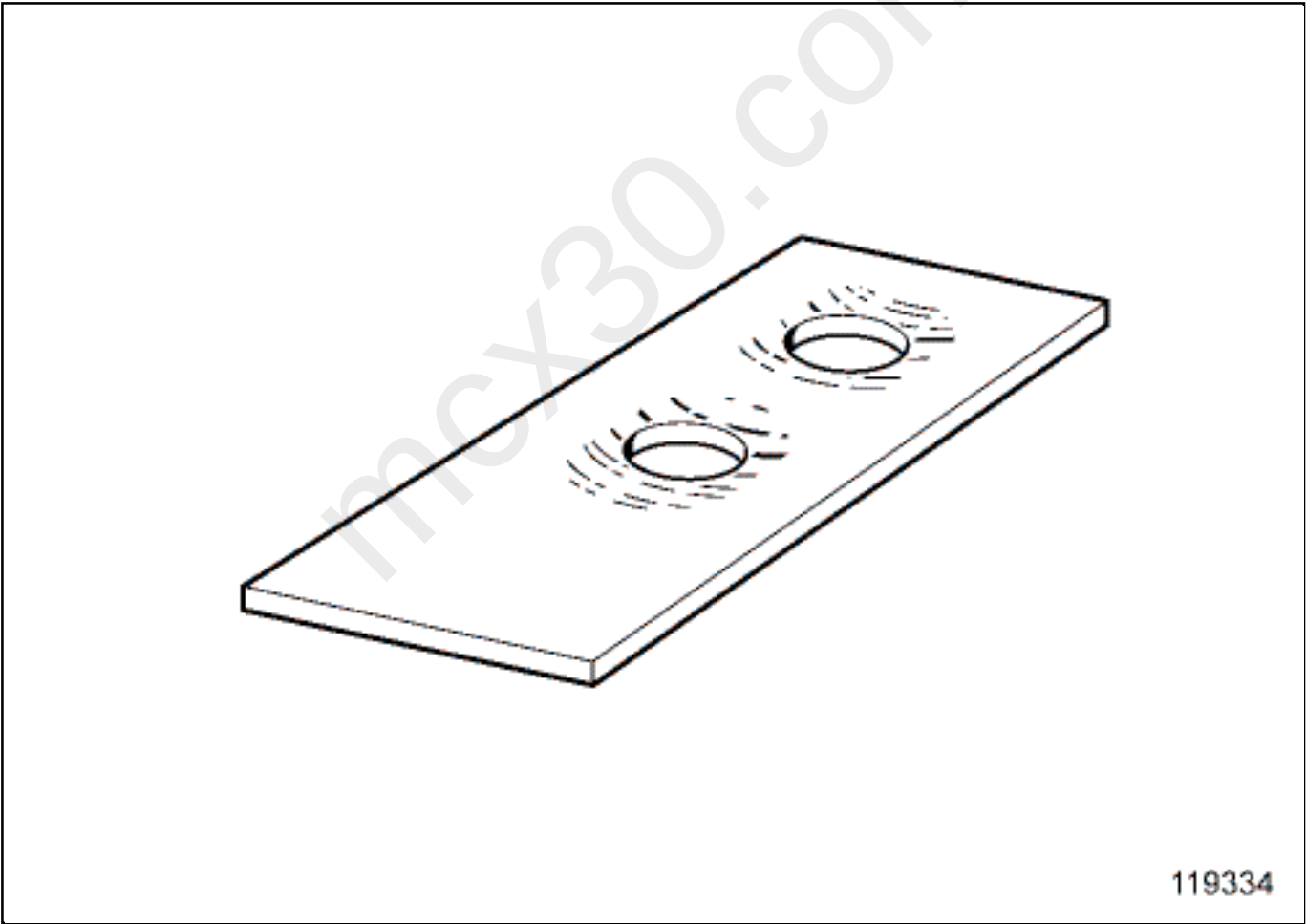
Drill the test specimen, respecting the positioning values, and the following table for the drilling diameters:

(X1) = 20 mm

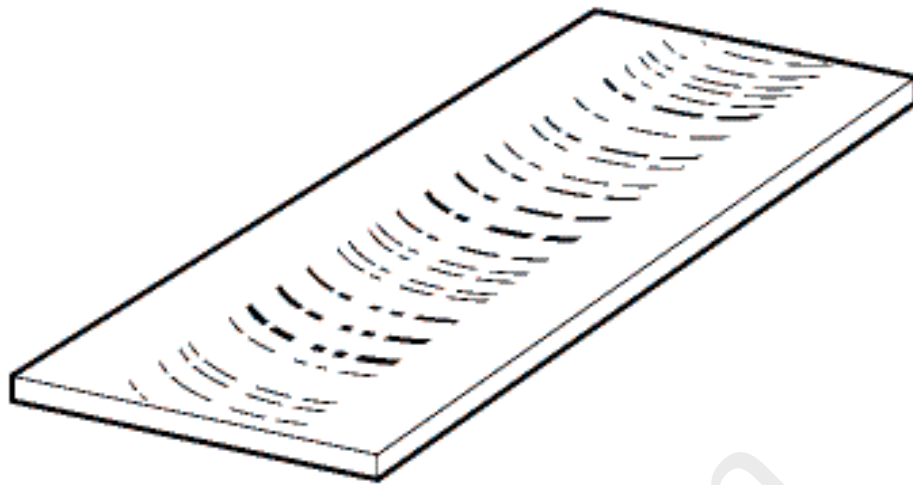
(X2) = 40 mm

Thickness (mm)	Drill bit diameter (mm)
0.6 to 1	6
1 to 1.5	7
1.5 to 2	8
2 and more	10

UPPER TEST SPECIMEN

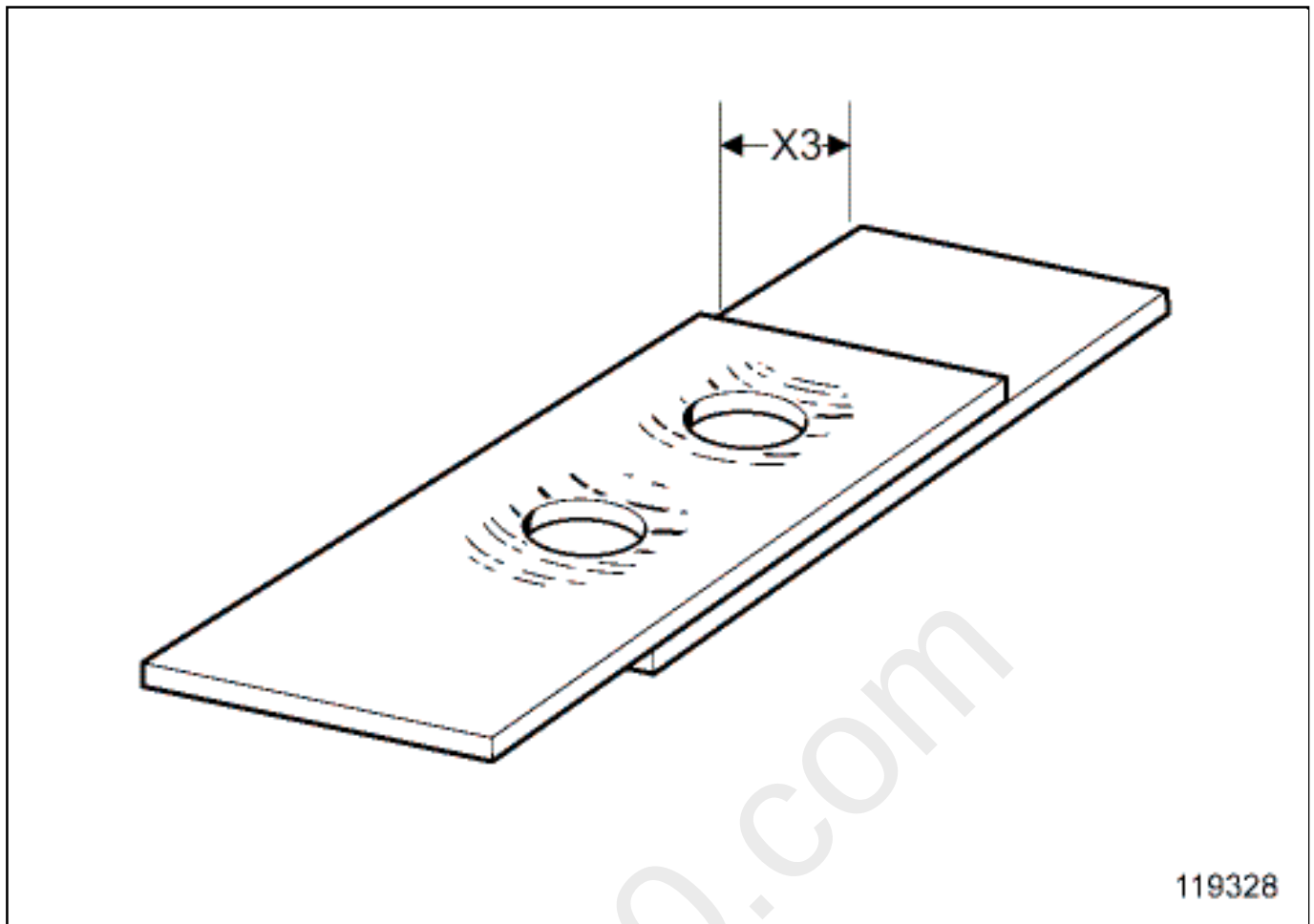


LOWER TEST SPECIMEN



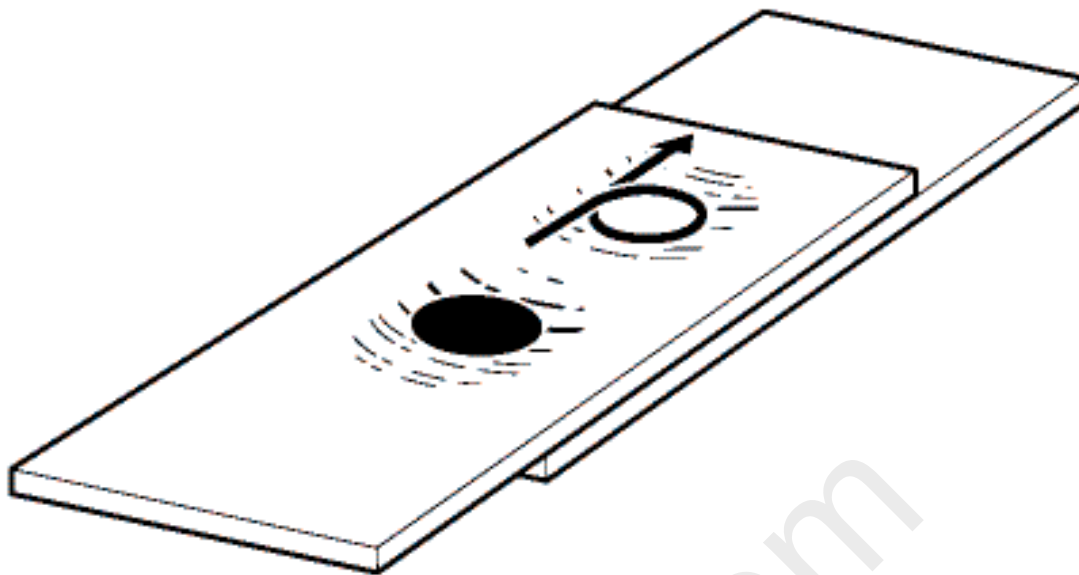
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Prepare the test specimens in the same way as the vehicle.



Adjust and secure the test specimens, offsetting them by $(x_3) = 20 \text{ mm}$.

2- ASSEMBLY



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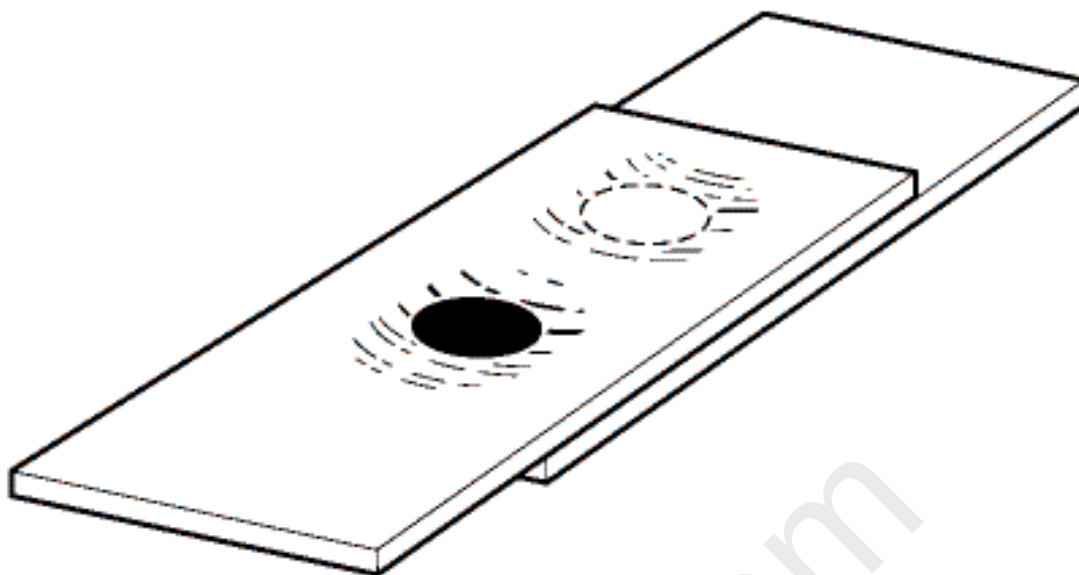
Do the plug welds.



Note:

The illustration shows a loop type welding method.

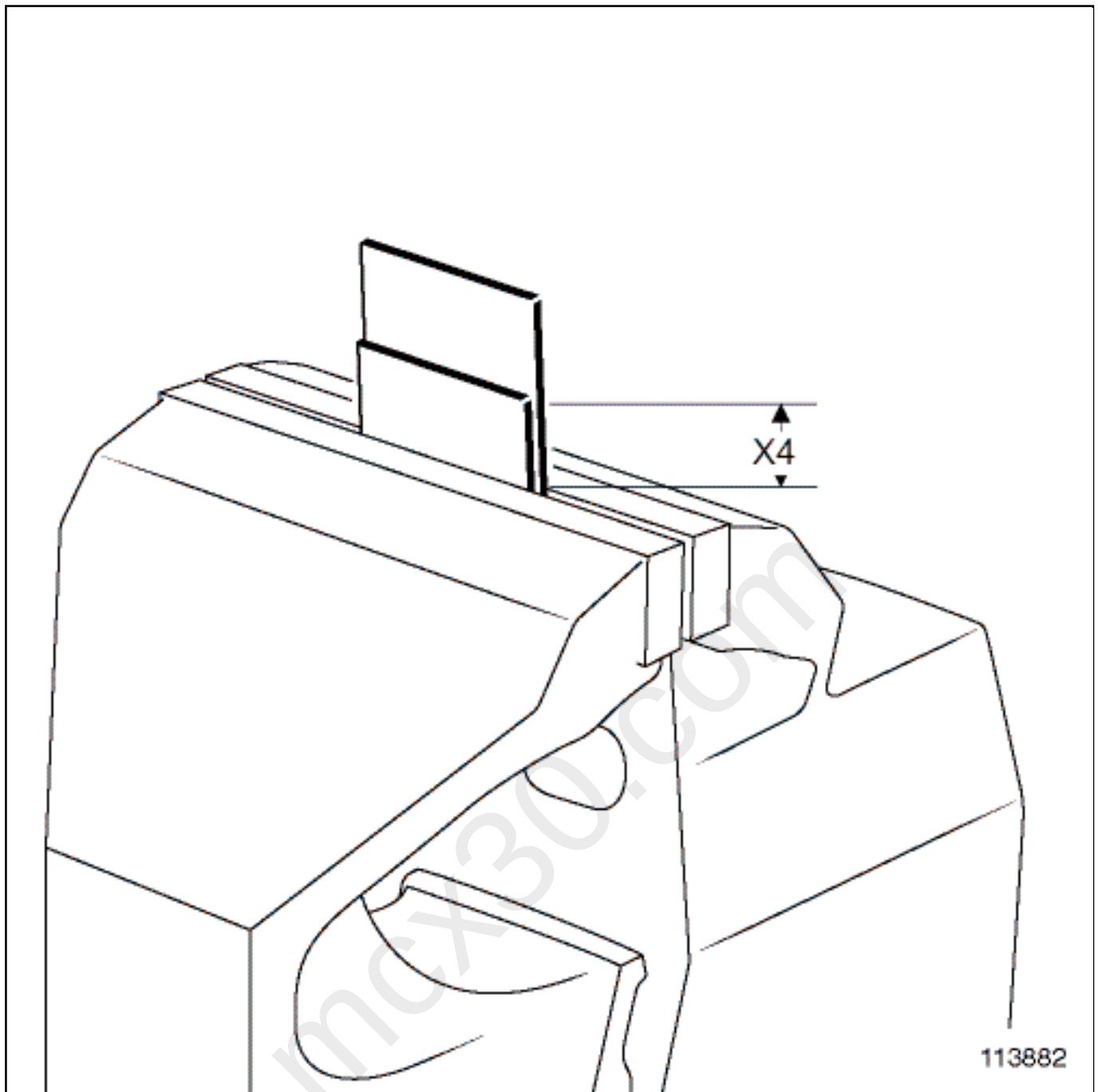
3- CHECK



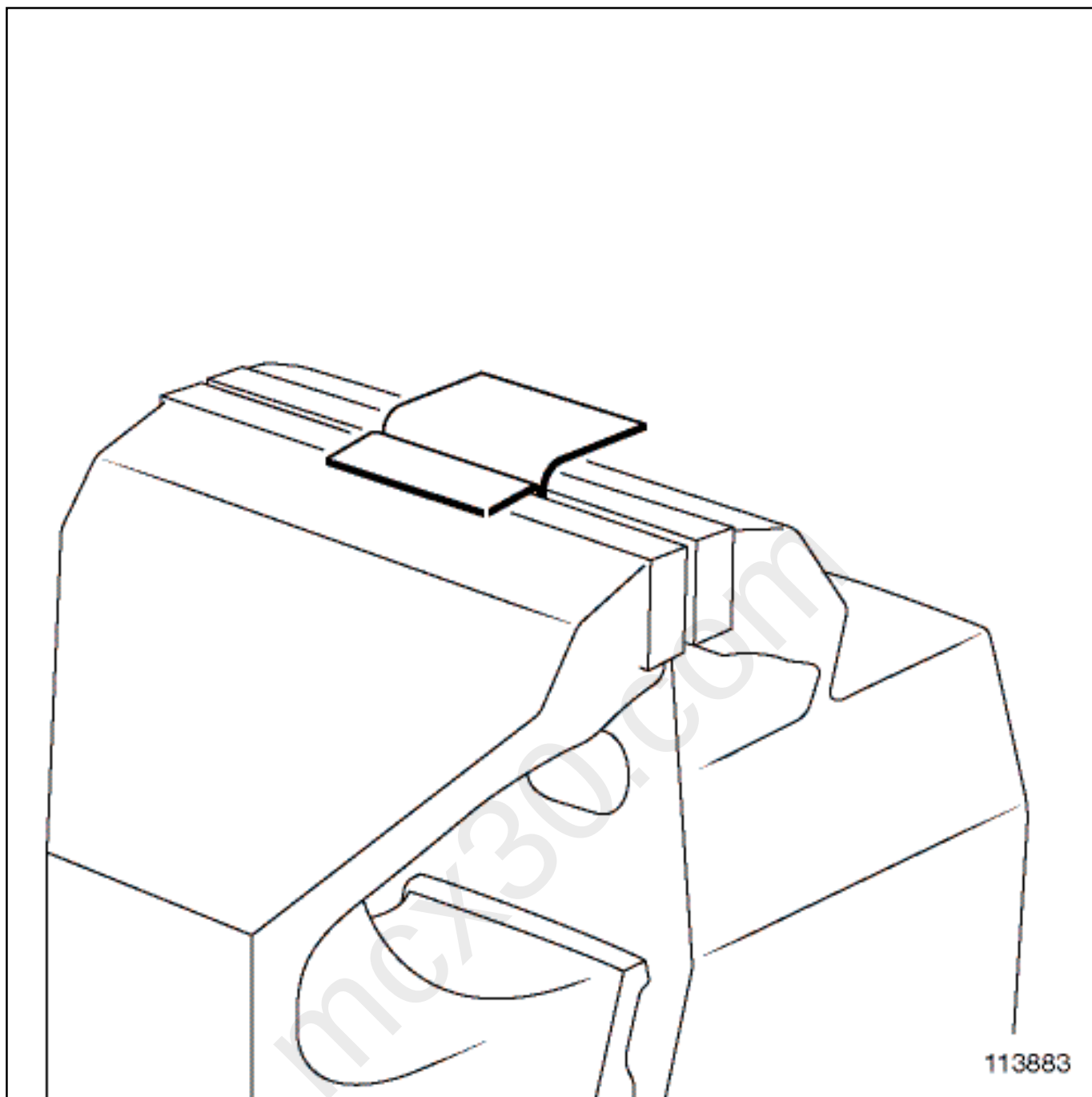
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If necessary, level off the plug weld to be tested, to reproduce it as it will appear on the vehicle.

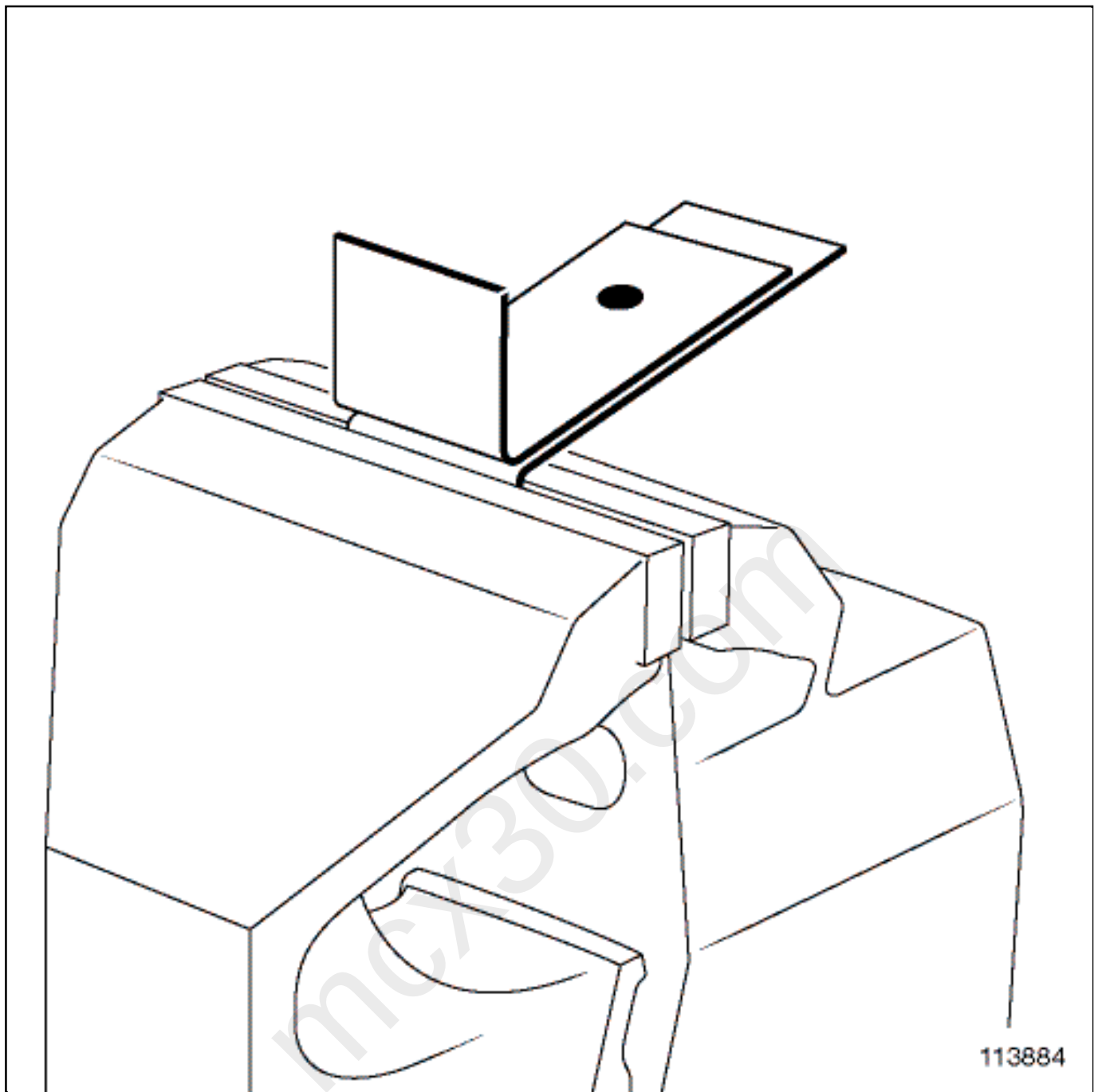
(see 05B, Equipment and Tools, Tool for levelling off weld residue: Use)



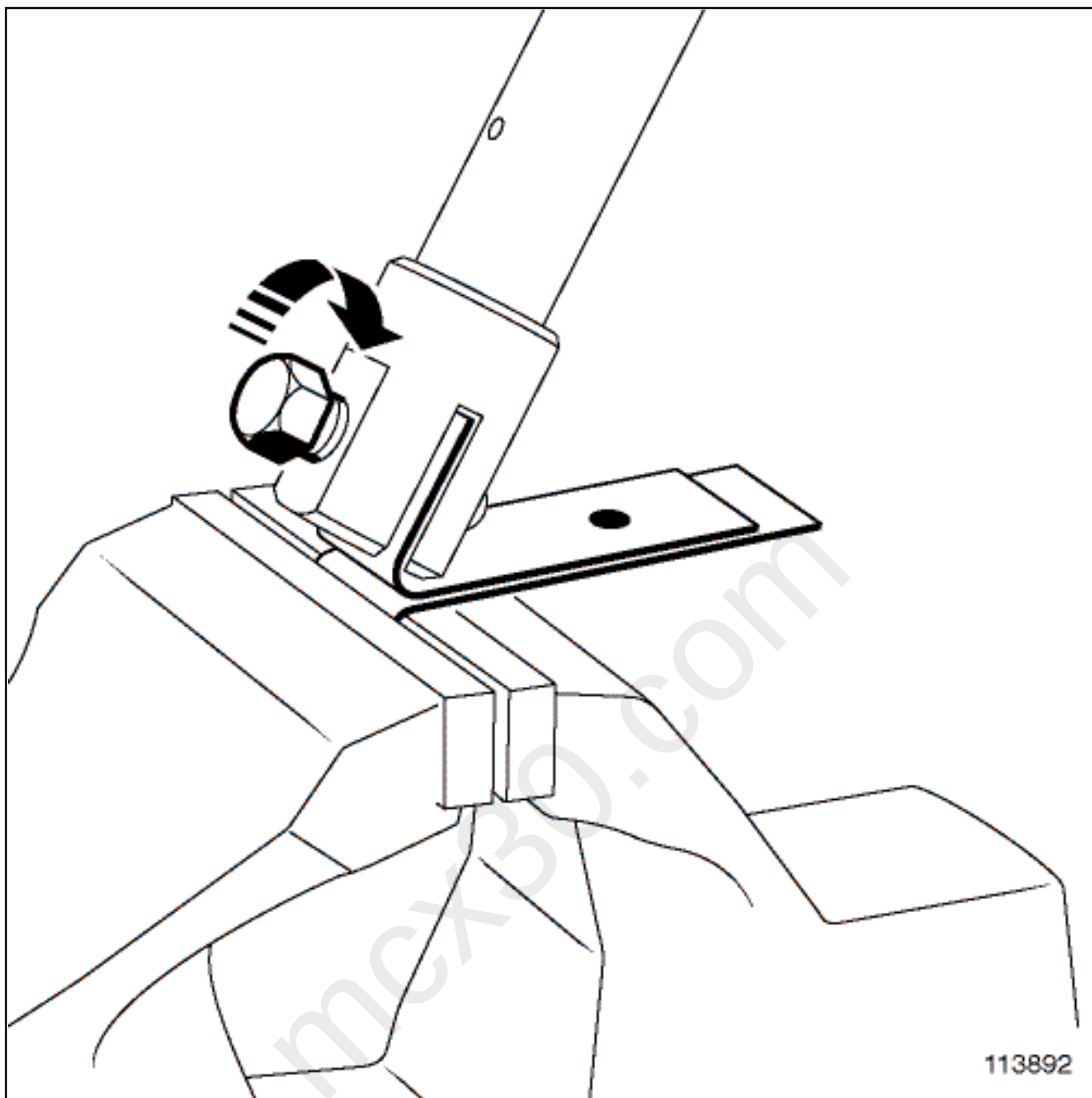
Secure the test specimens in the vice(x_4) = 15 mm to avoid damaging the plug weld during the following stage.



Fold down the test specimens, as shown in the illustration.



Re-secure the test specimens in the vice.

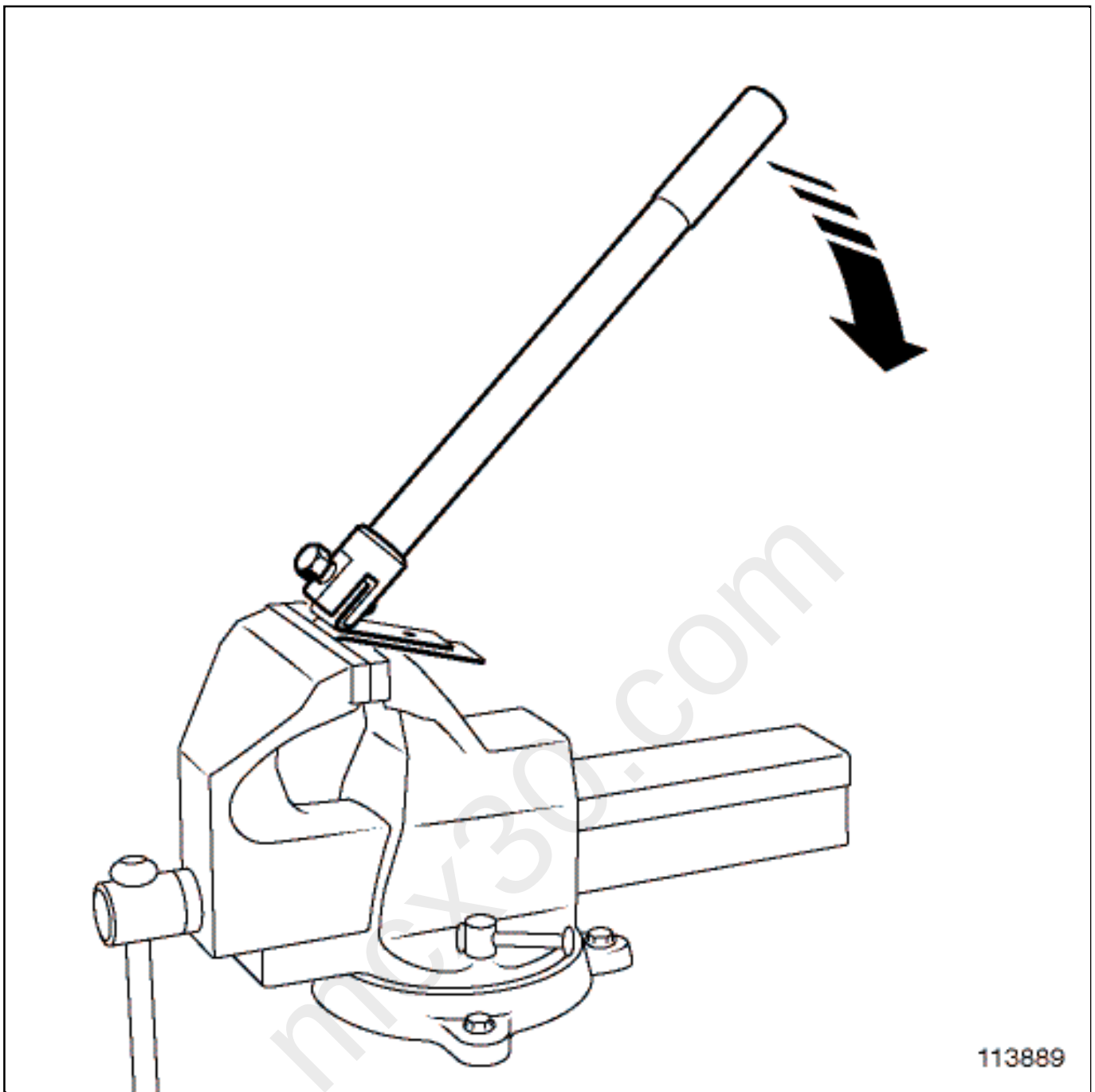


Secure the jaw of the peeling tool.



WARNING

To avoid any accidents, tighten the jaw of the tool to prevent slipping during peeling.

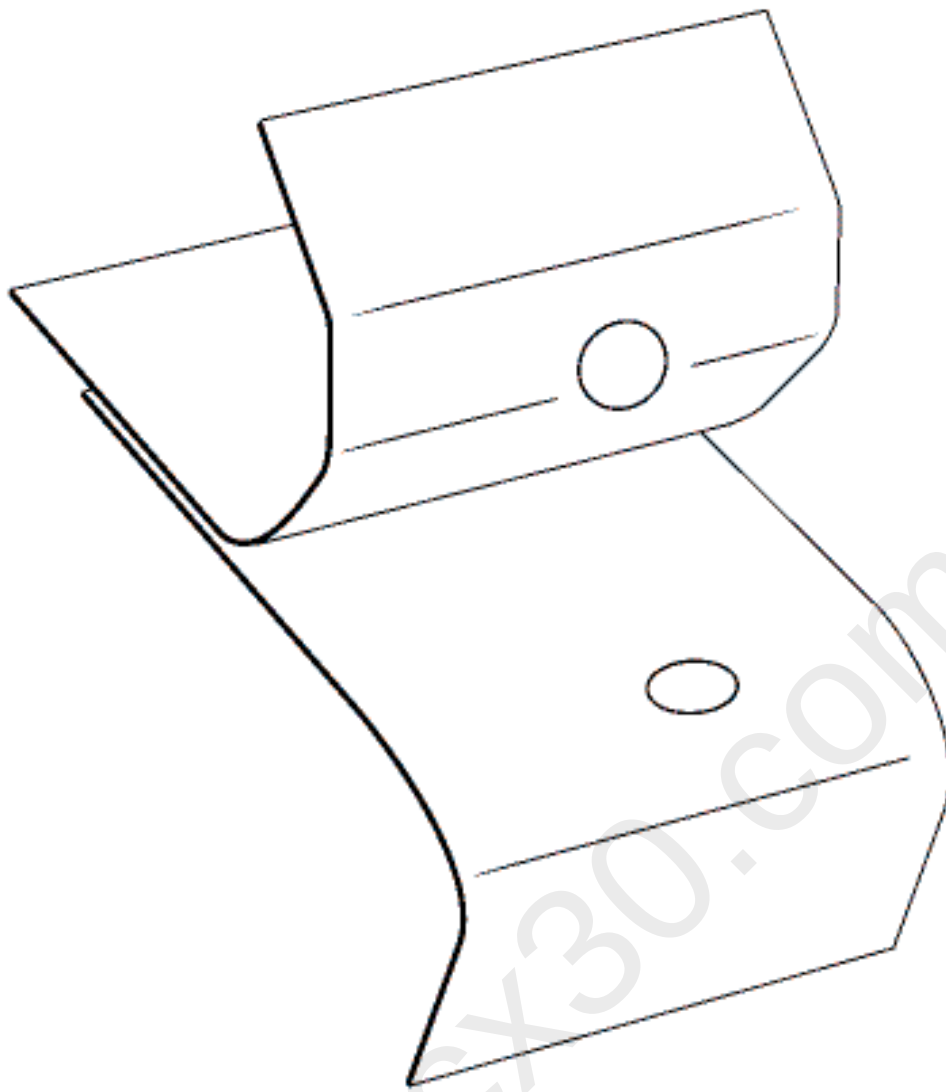


Peel the assembly, applying continuous pressure.

4- RESULTS: INTERPRETATION

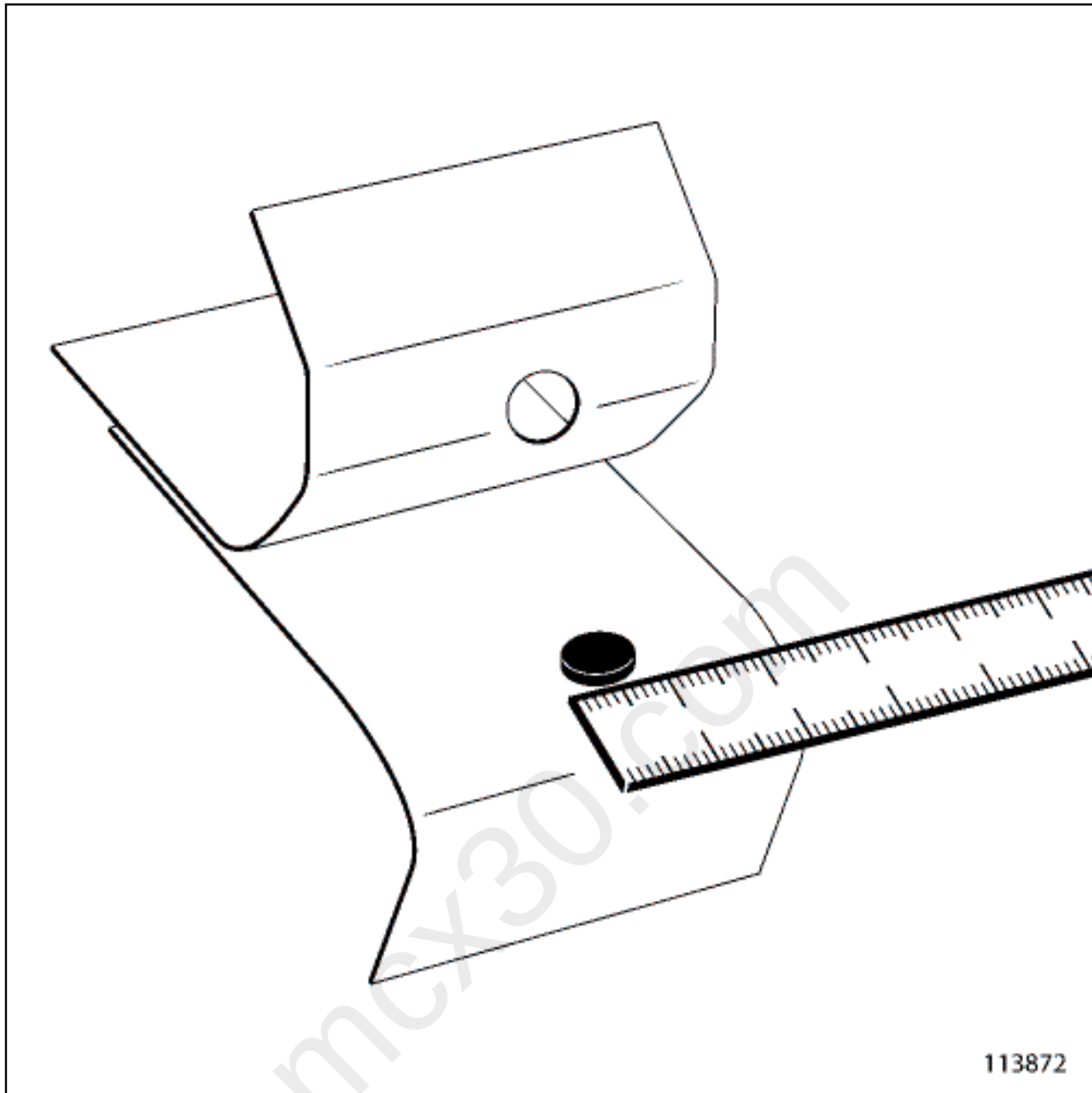
this test is based on the presence or absence of a material rivet after peeling of the plug weld.

CEMENTED SPOT: UNACCEPTABLE

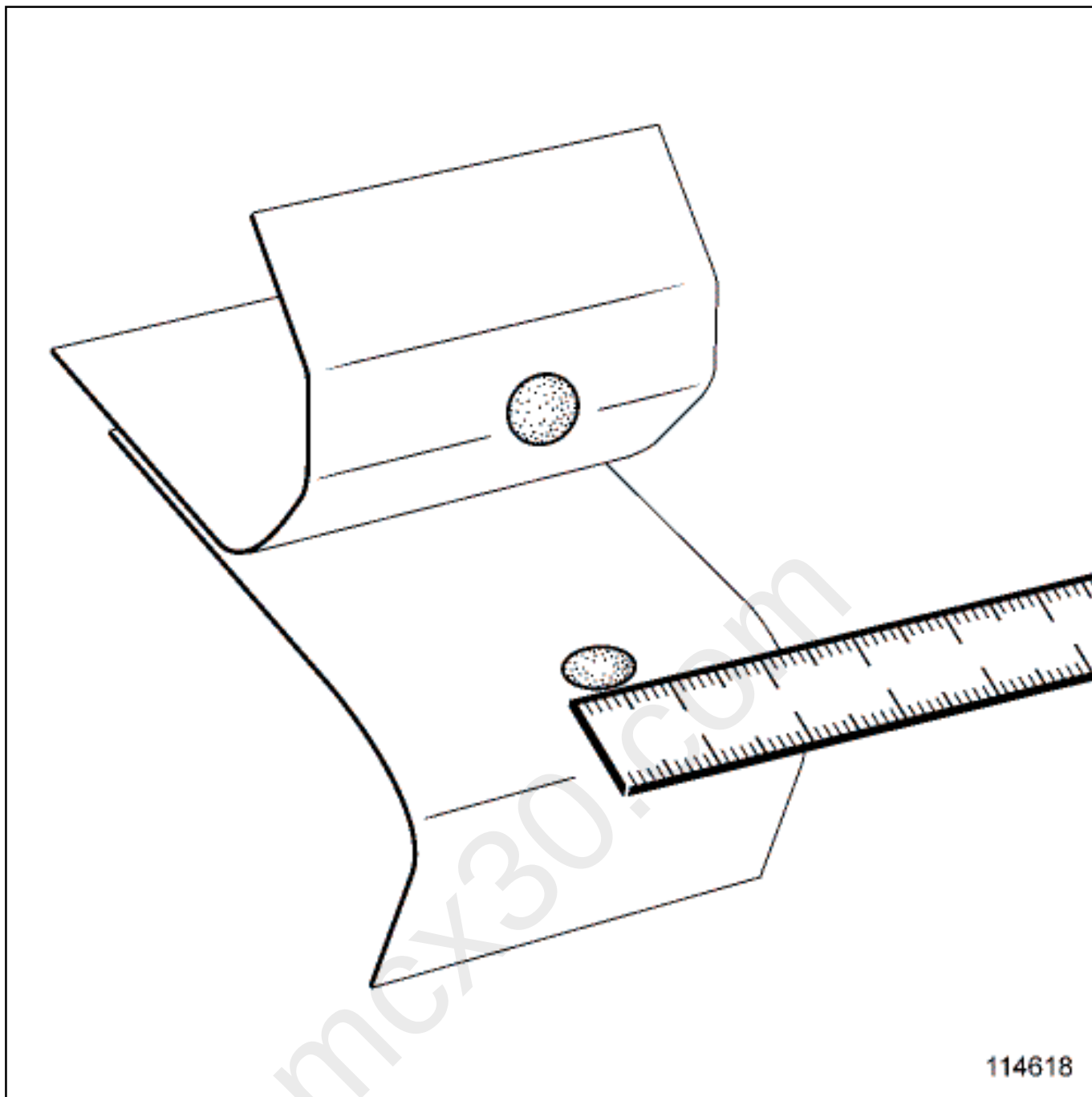


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SPOT WITH MATERIAL RIVET: ACCEPTABLE IF DIAMETER SUFFICIENT



SPOT WITH MATERIAL PULLING OFF: ACCEPTABLE IF DIAMETER SUFFICIENT



Check that the diameter of the material rivet meets the criteria in the following table, with regard to the reference thickness.