

(12) Residual bead

(13) Bodywork mounting



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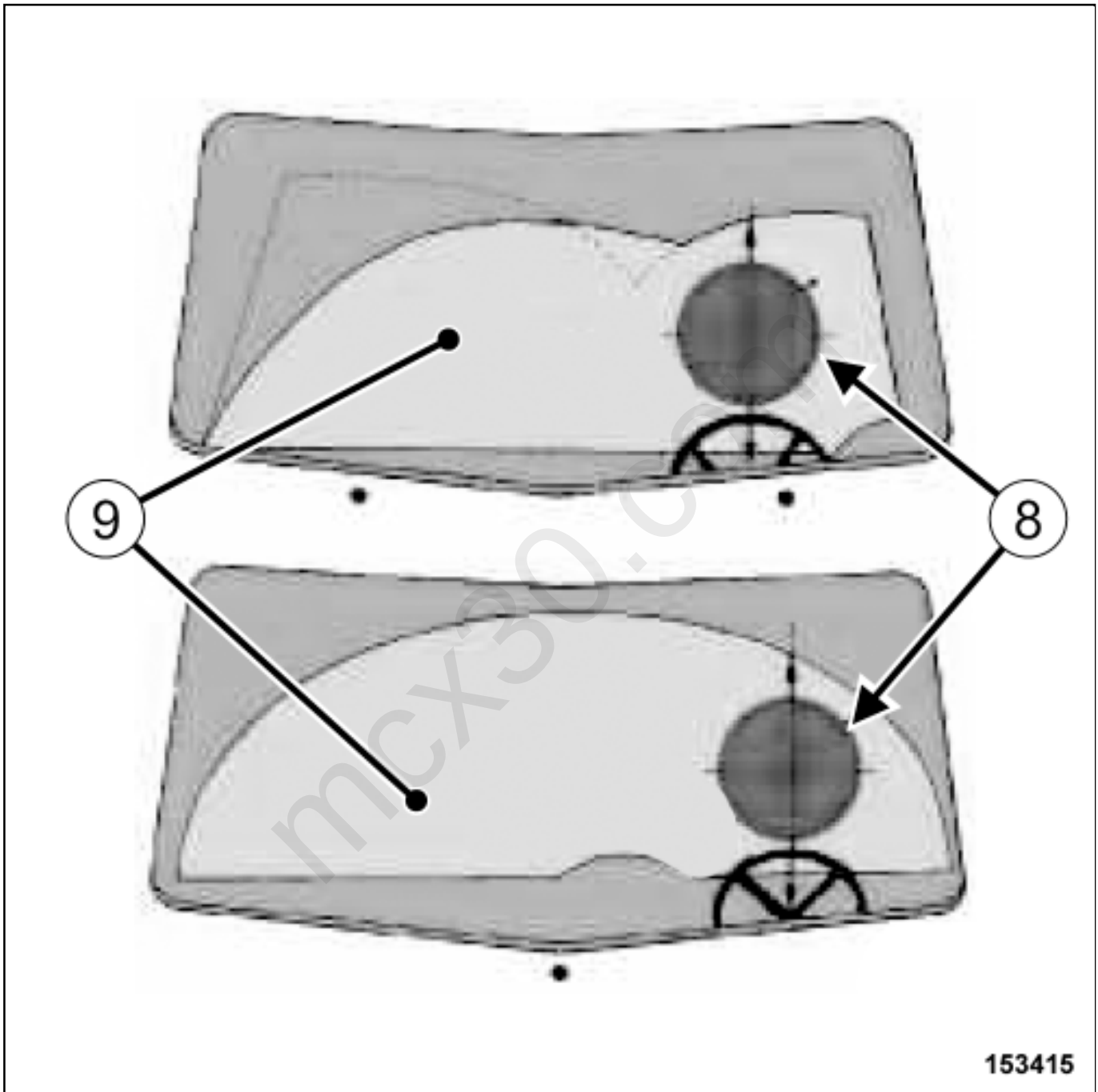


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WINDOWS: REPAIR

1. AREAS OF APPLICATION



■ The chip must be recent and located outside the field of vision of the driver(8) .

The area can be defined simply using the sweep of the wipers(9) .

2. PRECAUTIONS FOR THE USE AND STORAGE OF THE PRODUCTS

■ Before beginning all operations, check that the windscreen to be repaired is clean and dry and at an ideal temperature.

The ideal conditions are between 15° and 25°.

If this is not the case, leave the vehicle engine running for a few minutes with de-icing at the maximum until the windscreen is slightly warm.

■ Do not store resin or cans of resin with food.

■ To keep the resin in good condition, these cans must be stored in the dark, in a cool dry place.



Note:

Do not expose the resin to frost.

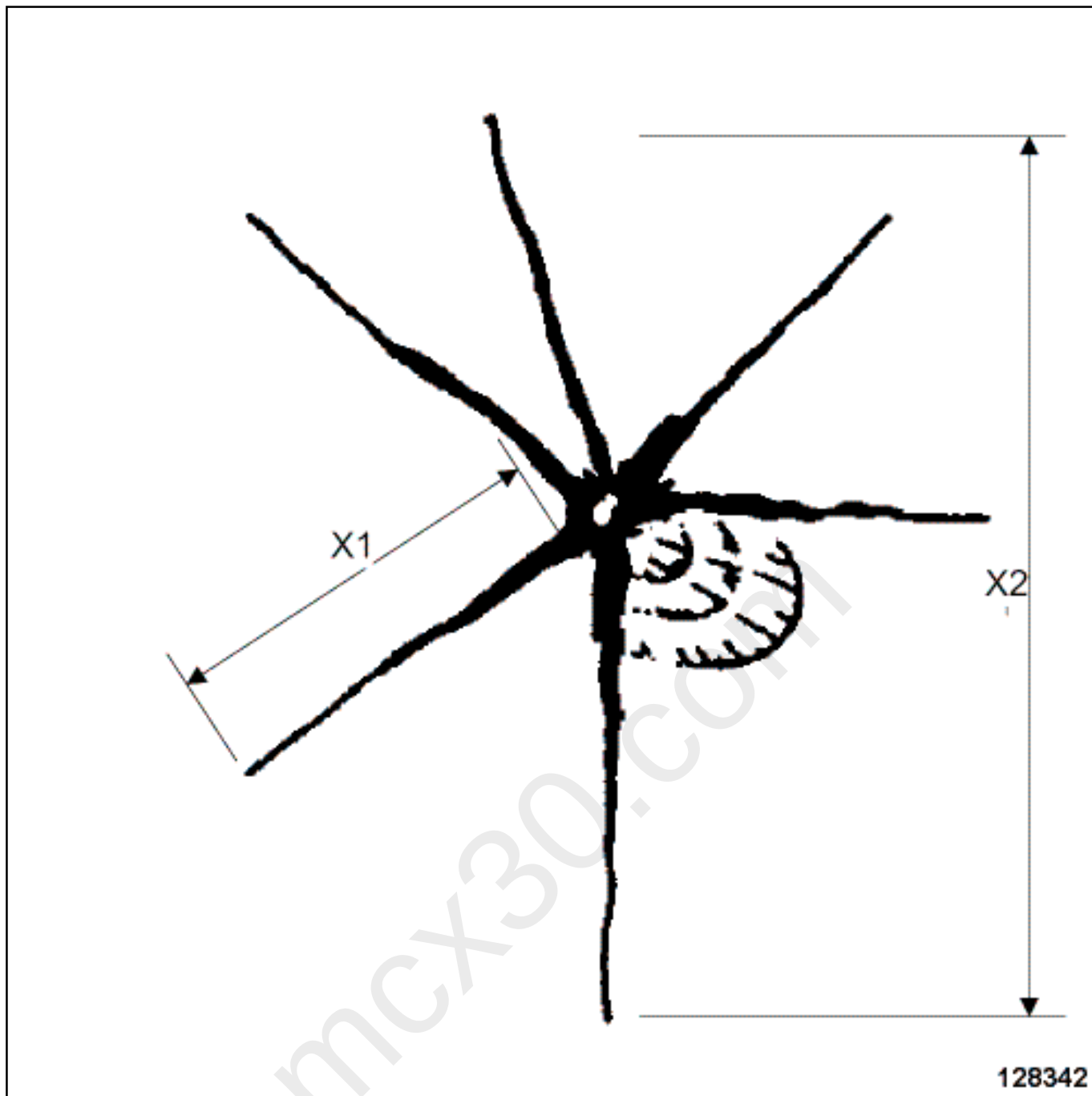
■ Do not expose the products to the sun or to a fluorescent light.

■ Do not open the protective envelope before using the resin.

■ The resin reacts to exposure to ultra-violet radiation (UV). That means that the light changes the resin from a liquid state to a solid state.

3. WHAT CAN BE REPAIRED

STAR



■ "Arm" of the star(x_1) = 10 mm to 12 mm.

"Arm" of the star(x_2) = 40 mm.

BUBBLE



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Bubble max $\varnothing$ = 20 mm.

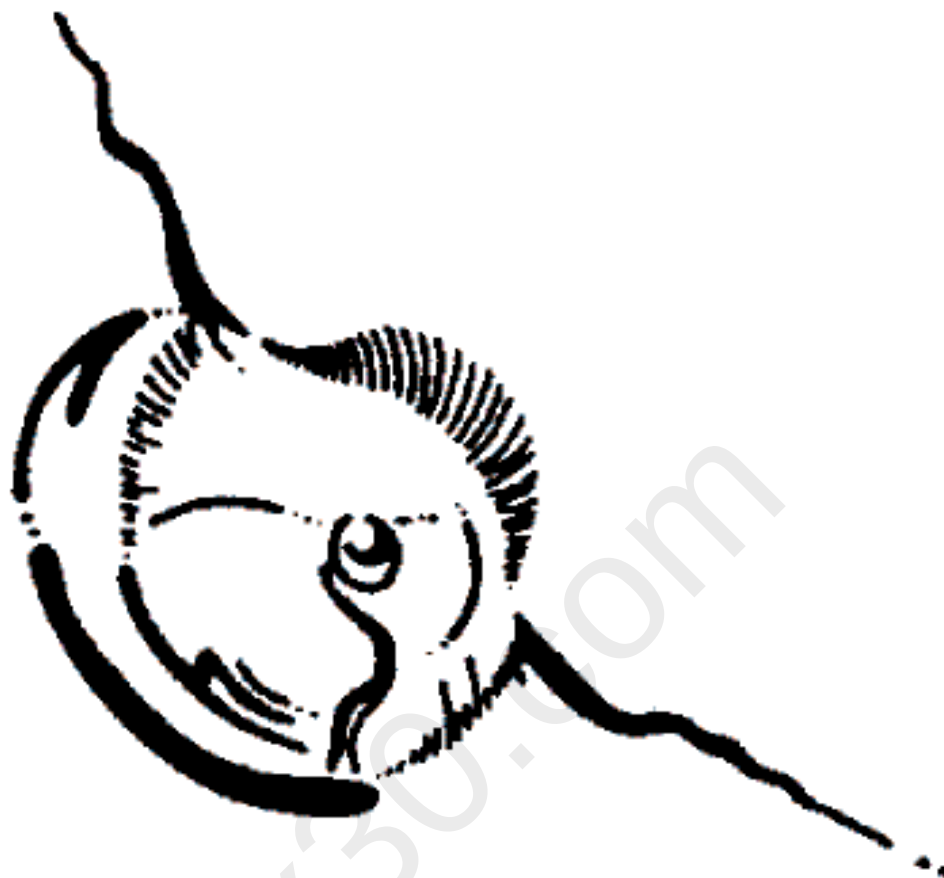
HALF BUBBLE



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Half bubble max dia. = 20 mm.

STAR + BUBBLE + CRACKS



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Star + bubble + crack max = 40 mm.

4. WHAT MUST NOT BE REPAIRED

-
- athermic windscreen,
- heated windscreen,
-

- the circular area of 300 mm diameter in the field of driver's vision(8) ,
- any crack more than 60 mm long,
- any chip at less than 40 mm from the edge of the windscreen,
- any chip at less than 20 mm from any sensor,
- if there are more than three chips,
- any chip that has resulted on oxidation of the intermediate layer.



Note:

This oxidation is characterized by a round opaque zone.

5. GENERAL REPAIR METHOD



Note:

This section considers the basic procedures for repair with the appropriate tools.

1- INSPECTION OF CHIP AND USE OF THE CARBIDE-TIPPED STYLUS



Take great care when examining the chip.



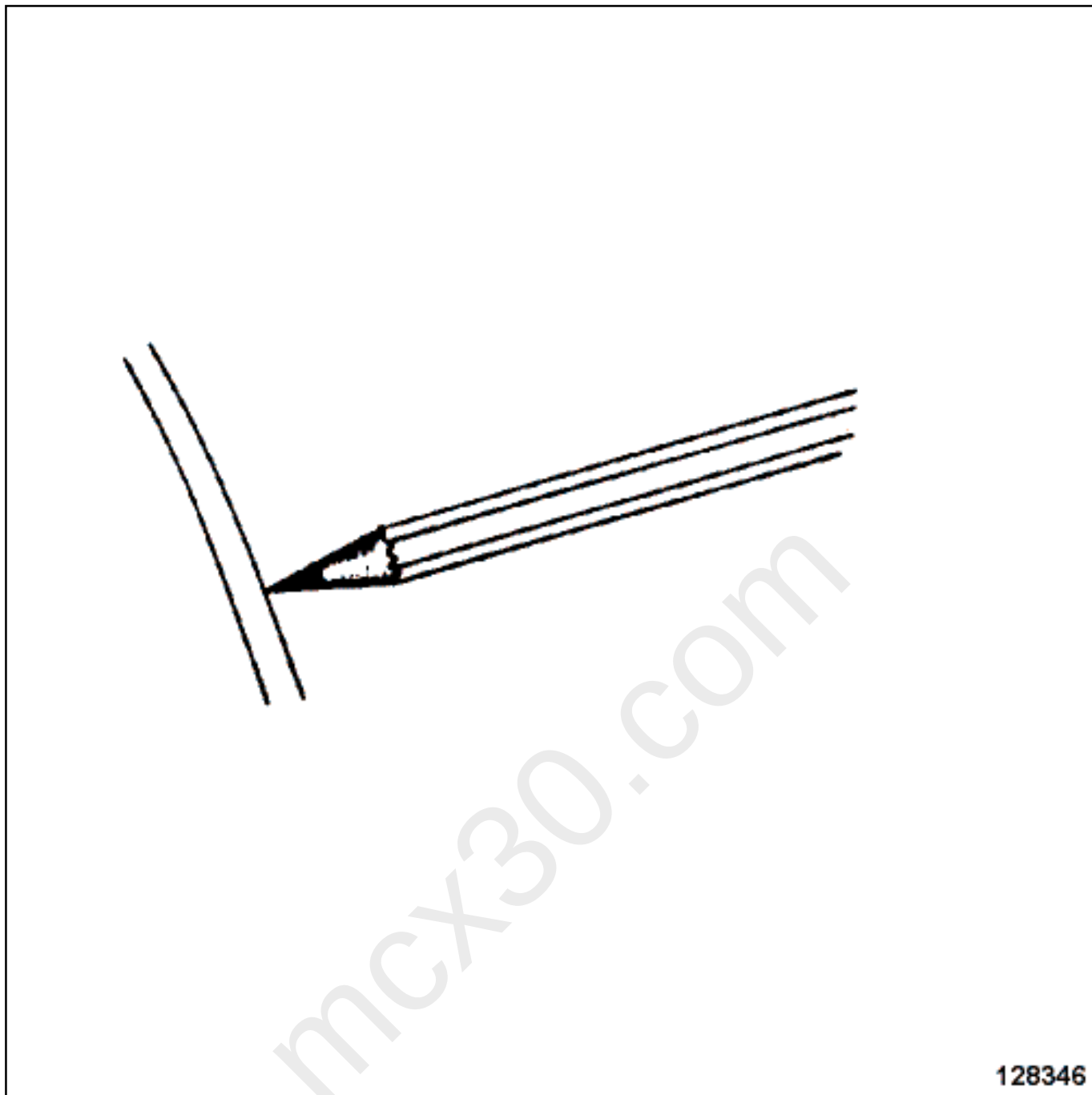
Check whether the radial cracks spread and note their length and the depth.



Decide whether holes should be drilled at the ends of the cracks.



Repair only the first layer.



Use the carbide tip of the stylus to gently scratch away any dirt or glass in the chip crater.



Note:

Do not enlarge the chip.



Place the magnifying mirror on the inside of the windscreen so that the chip on the outside is clearly visible.

The magnifying mirror enables you to see the progress of the repair clearly.

3- FITTING THE TOOL HOLDER



This is your most important tool.

It is used for injecting the resin when it is equipped with the injector.

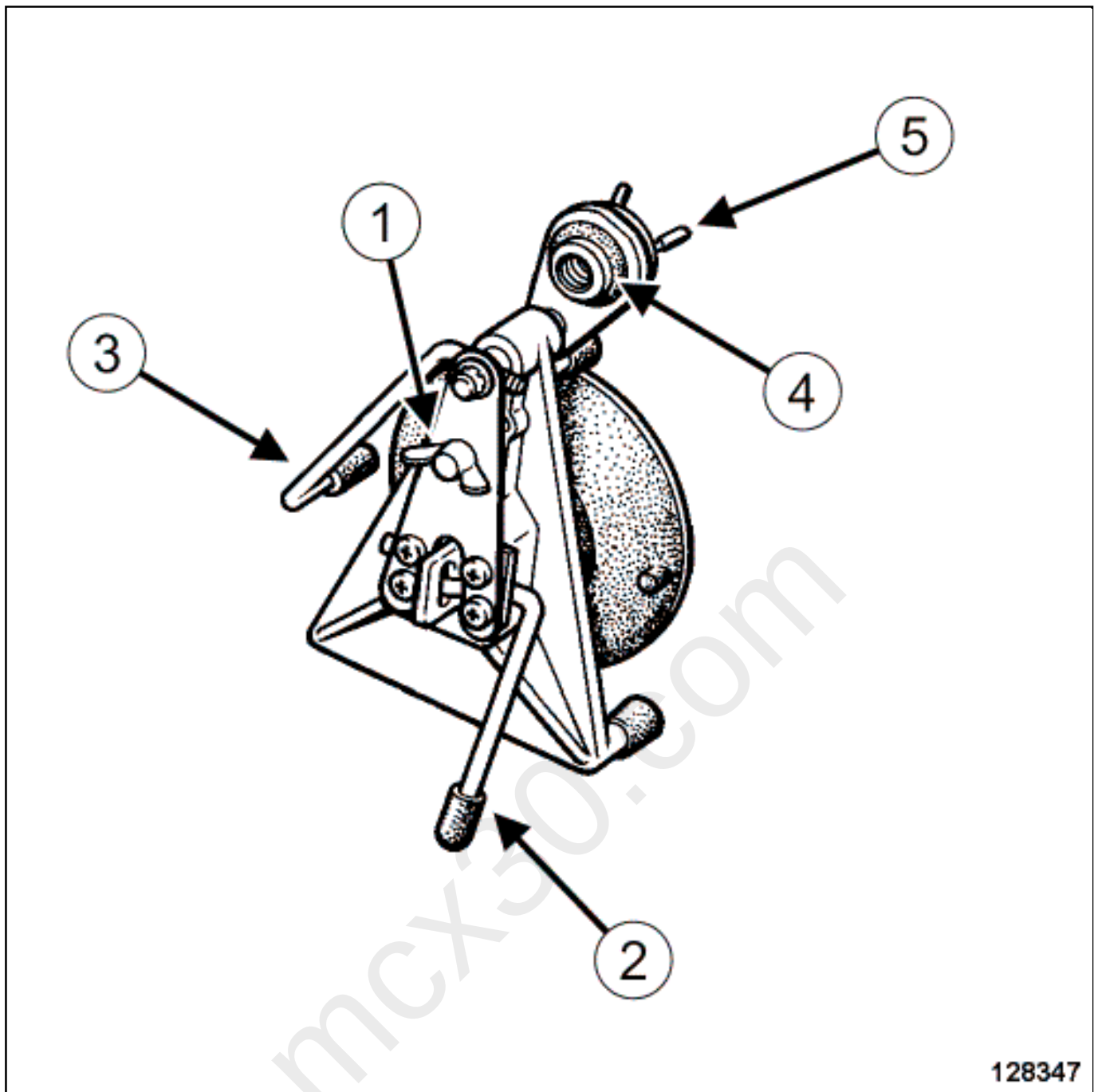


Find a position that makes operation easy.

It is desirable to locate the tool holder below the chip.

1) FITTING THE TOOL HOLDER

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Fully undo the spider support(1) so as not to put pressure on the chip.

Apply lubricating gel to the edge of the suction cup.

Check that the suction cup lever(2) is pointing forward.

Hold the tool holder so that the control lever(3) is right up against the left-hand side of the tool

holder.



Centre the injector holder(4) above the point of impact of the chip.



Press the tool holder firmly so that the suction cup is correctly pressed against the windscreen.



Use the lever(2) to lock the suction cup.

The spider of the threaded gun can then be handled freely.



Tighten the pressure bolt(1) of the threaded gun until the spider(5) is immobilised on the windscreen.

Note:



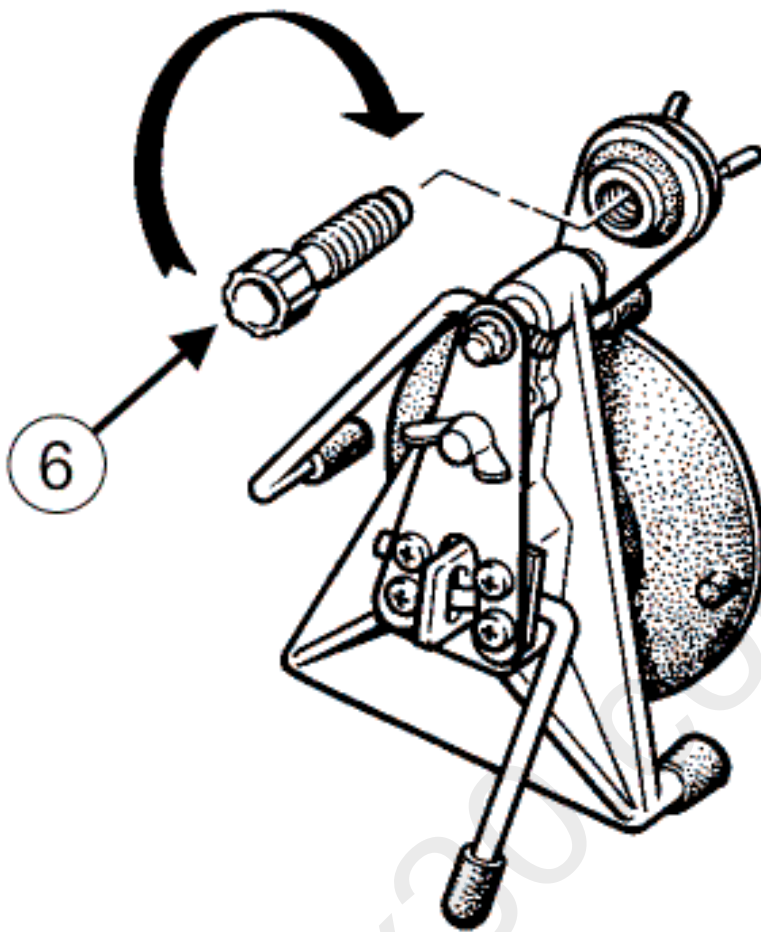
Check that the spider feet are definitely in contact with the glass.

This is very important as it ensures a perfectly perpendicular position for injection.

4-INJECTION



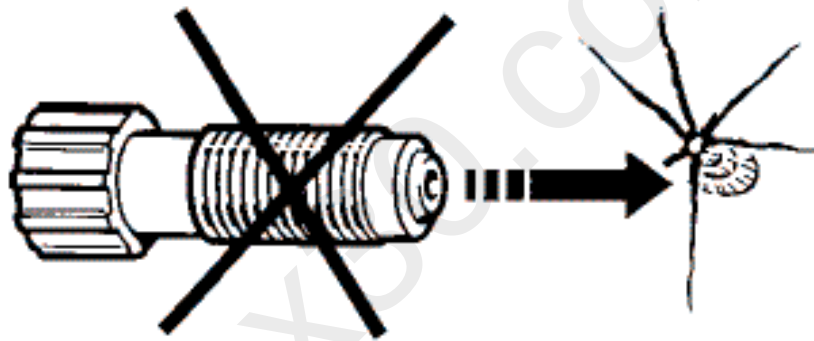
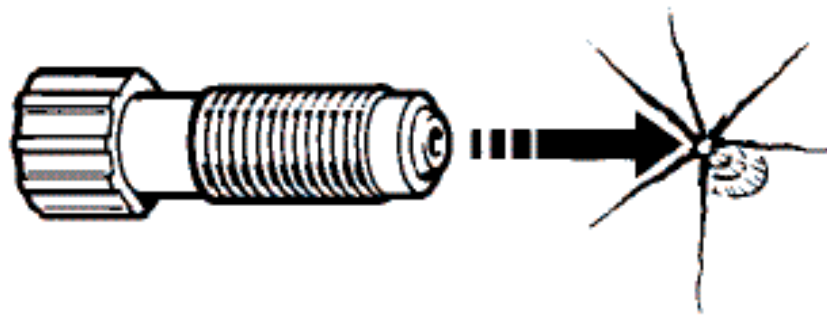
A resin sachet contains a bottle of resin and a plastic injector.



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Without tightening the injector(6) , place it on the injector holder to bring it in contact with the glass.



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Centre the injector opposite the crater of the chip.

Remove the injector, taking care of not to move the injector holder.

Take the bottle of resin and remove the small protective plug.

Cut off the tip of the bottle using the scraper blade (supplied in the kit).

Unscrew the piston of the injector by 5 to 6 mm.

Fill the injector with resin up to the edge on the white rubber seal side.

Note:



To fill the injector more easily, use the resin bottle as a dropper.

Check that the edge of the white rubber seal is clean and dry, wiping off any resin that may be there.

Put the flask of resin away where it will not be exposed to daylight.

Refit the injector on the injector holder but do not tighten it.

When the white rubber seal comes into contact with the glass, tighten it by one or two additional turns in order to obtain the seal needed for applying pressure to the resin.

Do this by holding the body of the injector with two fingers and screwing the piston very slowly with the other hand.

During this operation, look in the mirror to observe the moment when the seal of the injector expands slightly.

Continue to screw the piston in by no more than one turn, then do not touch it any more.

Wait for 1 minute, then observe what happens in the mirror. You would normally expect to see an improvement.



To accelerate the process of transferring the resin to the inside of the chip, from time to time you can undo the piston of the injector a little more than it was when you filled it with resin, without changing the position, and wait for a few seconds, then screw the piston up again until the seal expands once more.



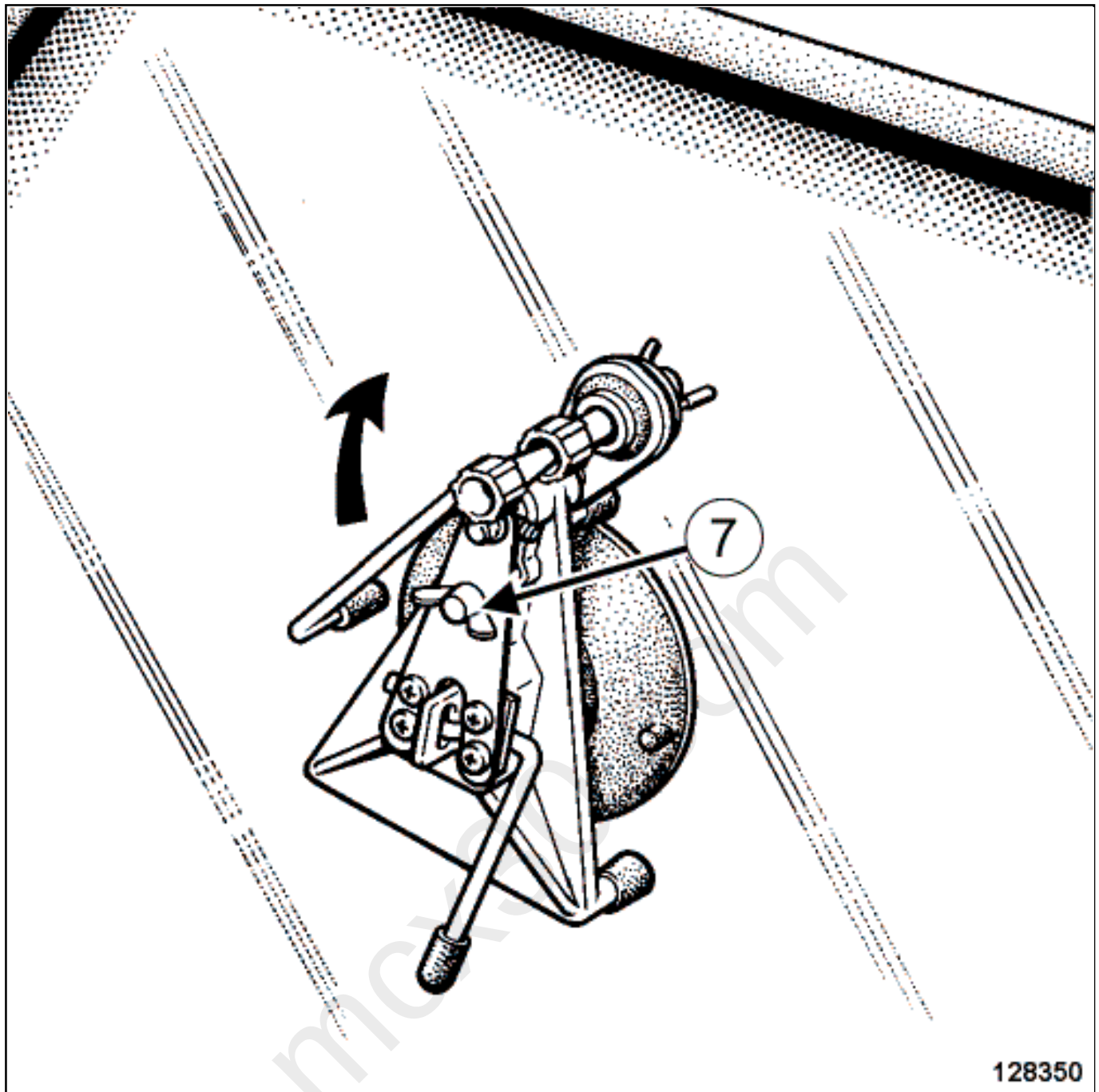
Repeat this operation several times until the chip has completely disappeared.



The resin takes 2 to 5 minutes to spread to the furthest ends of the cracks.

5- INSPECTION OF THE REPAIR

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Release the spider pressure using the bolt(7) .

Rotate the injector assembly to free the area of the chip.

This will relieve all pressure on the repair area.

Check and inspect the crack under different angles.

If no chip modification can be seen after 5 minutes, the glass must be drilled at the location of the crater (see When and how it is necessary to drill).

this means that when the projectile came into contact with it, the windscreen broke as a result of the shock wave but the glass was not perforated.

6- FINISHING



When the chip has disappeared, remove the tool holder, which is no longer needed.



Fit:



a drop or two of finishing resin above the crater and put the plastic sheet or film over the repair (the quantity of resin will have to protrude slightly in order to take into account the effect of "contraction" at the time of polymerisation),



the UV lamp astride the repair on the windscreen after first applying gel to the suction cups.



Drying time: as per supplier's instructions.



Once polymerisation has finished, use a scraper blade to remove the surplus resin that is on the windscreen. Scratch at right angles to the glass surface until only what is needed is left.



Fit the felt disc in the drill mandrel.



Apply a little polish to the area where the repair has been done.



Polish the repair without putting too much pressure on the window in order to obtain the right appearance.

7- WHEN AND HOW IS IT NECESSARY TO DRILL?

In certain cases, despite the application of pressure to the resin, nothing happens.

It is then necessary to drill to access the inside of the chip.

That means that the glass has broken internally under the effect of the shock wave, without the outer glass being damaged.

1) DRILLING

Put the carbide drill bit on the drill.

Drill in successive and brief operations in order to avoid the tool overheating.

When the plastic film separating the two layers of glass is reached, stop drilling.

Carry out the repair as described below.

2) REPAIR AFTER DRILLING

If repairing a crack, drill at the end of the crack to prevent it from propagating.

Inject the resin through this hole.

This will move up the crack by capillarity.

Harden this part using the UV lamp.

Position the injector holder so that the injector is located astride the slit, 5 cm away from the end of the resin just injected.