



## Instruction Manual of Glass Scratch Repair Kit (2018)

1. The Kit is easy to operate, and the operation method is easy to learn for a green-hand. After receiving the product, please carefully read the Instruction Manual and learn the attached video clips. The operation can be started before trying some scratch-repair tests using waste glasses to achieve all the necessary skills.

2. Repair on deep scratches or improper handling of shallow scratches may cause certain or obvious deformation of the glass after the repair. It is recommended that before the repair operation, sufficient exercises must be tried fully to learn the skills and the differences between the “pre-” and “after” condition of the repair; in addition, it is recommended that during the repairing of scratches on the front windshield of vehicles, especially in areas within the driver's sight, be sure to fully communicate with the customer to explain what may happen after the repair, and get the customer's agreement before proceeding.

3. During the scratch repair process, the continuous friction between the Grinding Pad, the Polishing Pad and the glass leads to a continuous heat-up of the glass, which requires attention to the temperature of the glass during the repair process. If you do not pay enough attention to this, it may result in an explosion of the non-tempered glass (glass after tempering will be relatively safe); in order to maximize the safety of the glass, the operation should be proceeded when the glass has dropped to normal temperature.

4. It is normal for slight heat dissipation of the glass during grinding or polishing, but once the glass is hot to your hands, it is a dangerous temperature with risk of hazards. Therefore, it is very important to have the temperature of the glass controlled within a reasonable and safe range during the repair process (it's relatively safe for a tempered glass, however, special attention must be paid to the bullet-proof glasses, laminated glasses, front windshields and other non-tempered glasses).

5. Grinding abrasive particles that may be left during the previous grinding steps may cause new scratches to the glasses in the next work sequence of grinding or polishing. Also it's not easily to be found during the process till the end of the polishing steps, therefore, in the case of a high standard requirement, the grinding area may be cleaned before proceeding the next step.

6. Keep clean on the Kit and work area. When not in use, the Grinding Pad and Polishing Pad should be arranged in place to avoid contamination, and the environment should be kept clean during operation, since the dust in the surrounding air may cause new scratches during the repair process.

7. During the polishing process, the spray bottle shall be used to spray water to maintain the normal function of the Polishing Pad, hence water should be sprayed in an intermittent manner during the polishing process, and at the same time, pay attention to the angle of the water spray to ensure water never be sprayed onto the speed-adjustable angle grinder to avoid the risk of electric shock.

8. Before proceeding the repair process, first of all, the acceptance method and quality standard after the repair should be determined. A higher repair standard with a lower acceptance standard will cause a waste of time and consumables; and vice in versa, reworked might be required due to the fail to achieve the acceptance criteria which will result in unnecessary cost. Therefore, we must first clarify the acceptance criteria and quality requirements before start. NOTE: the acceptance shall be carried out in an environment identical to that of the operation, (namely, if the processed product are accepted under the light irradiation environment, the process must operated in this environment), and the operation shall be performed strictly following the acceptance criteria and quality requirements



## Observation of the following grinding techniques will deliver the best effect of repair

1. Please adjust the speed-adjustable angle grinder to the lowest gear or around 2nd gear (speed: 2500 rpm/3000 rpm). the speed should not be set too high since the required grinding effect can not be achieved under an excessively high rotational speed, also because overheating will reduce the service life of the abrasive pad and even cause scrapping of the abrasive pad and the bottom tray.
2. In the grinding process, do not add water. The Grinding Pad should touch the glass surface in a slight pressure, evenly and smoothly to ensure the Grinding Pad runs a smooth and reciprocating operation on the glass surface. Do not use a large pressure during the grinding which will also cause rapid heating of the bottom tray and the Grinding Pad. Excessive temperature will cause scrapping of the bottom tray and the Grinding Pad.
3. Exert a smooth, uniform force during the grinding process, and glass powder should be visible, which should be white glass powder. If the glass powder is found to like yellow, or dark color, or even invisible, it indicates the pressure or the rotation speed is over-high.
4. The grinding should be operated in a smooth and efficient manner, and it will be the best practice with two-thirds to four-fifths of alternate handling in the reciprocating operation.
5. Moving the angle grinder regularly in the clockwise direction or other direction will help prevent deformation resulted from uneven grinding. Do not remain at one point, which will cause serious local deformation.
6. Stable and regular grinding operation should be maintained between the Grinding Pad and the glass, and if the Grinding Pad is operated out of order on the glass, it will cause local deformation of the glass, and will also lead to the problem of“polishing gloss somewhere while dark elsewhere”.
7. Fine grinding shall be proceeded after the completion of the coarse grinding using No. 1 Grinding Pad, the grinding range of the fine grinding must be greater than that of the coarse grinding with the expansion ratio of 15 to 30% in the best practices.
8. Each step of grinding will leave traces of on the glass, where coarse grinding marks will be left on the glass after coarse grinding, and likely, fine grinding marks will be left on the glass after fine grinding. The effect of fine grinding can be determined by observing the change of the grind marks on the glass and thus judge whether the effect of the fine grinding is acceptable.
9. Under a lot of situations, the dark polishing gloss is not resulted directly from the operation of polishing, which more likely may be a result of the incomplete fine grinding. The purpose of fine grinding is to replace coarse grinding marks with coarse grinding traces, which makes it easier to polish and improve work effectiveness.
10. The deformation caused by deep-scratch repair can be controlled. The following methods can be used to effectively control the deformation after grinding:
  - Using a larger No. 1 Grinding Pad to expand the repair area will improve the deformation after repair.
  - Use a larger No. 2 fine grinding pad, and reduce the shearing pressure on the glass in reciprocating grinding, which will improve the deformation after repair.
  - Practice a certain times to achieve the kills of this Kit proficiently to enable a stable rotation while keeping an uniform, orderly distance in increment or decrement interval during the reciprocating grinding, it is also a good method to effectively relieve deformation to avoid remaining at a certain point or repeatedly grinding.
11. Determine the specification of the Grinding Pad to be used according to the location of the scratches, severity and the criteria for the post-repair requirements, and the 2 inch Grinding Pad can be used for repair with regard to slight scratches with low requirement; and for the repairs under general requirement, a 3-inch grinding pad can be

used for the repair; for more demanding repairs, a 4-inch, 5-inch grinding pad can be considered for the repair.

## Repair operation steps

1. Locate the position of the scratches. Clean the entire glass surface, mark the back area of the glass that needs repair.

2. For severe scratches (such as burns of spot welding slag, scratches of gravel, etc.), coarse grinding must first be performed using a No. 1 Grinding Pad. Stick a No. 1 Grinding Pad on the bottom tray and ensure being compacted Adjust the speed-adjustable angle grinder to 2nd gear and start the grinding. Do not add water during grinding, and the Grinding Pad should be in leveling contact with the glass, make sure that the pad is in full contact with the glass. When grinding, use uniform pressure to ensure a smooth, and reciprocating rotation, do not tilt, and the reciprocating operation should be run with two-thirds to four-fifths of alternative intervals, at this time there should be a certain amount of glass powder (should be masked for protection), and should pay attention to changes



in the grinding area and glass temperature, if the glass is a non-tempered type which is overheated, the grinding should be stopped, and wait for the glass to cool down, then proceed after cool-down completely (tempered glass is not limited by temperature). The No. 1 Grinding Pad functions to remove scratches as soon as possible, when the scratches have disappeared completely, the coarse grinding process is completed, and after the completion of this work sequence, the grinding area shall be carefully checked to confirm that the scratches have been removed completely.

3. Use a No. 2 fine grinding piece for fine grinding, during which white glass powder should be found, the



grinding area should be greater than that with marks left by No. 1 grinding pad, with the best practice of greater than

# Basic Glass Scratch Repair Set



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15% to 30%. During the grinding process, there will be continuous creation of glass powder. When the glass powder accumulates to a certain extent, the cutting force of the polishing pad will be greatly reduced, therefore, in the grinding process, the polishing pad used be cleaned frequently using a steel brush, and clean it up before proceeding. Observe the traces of the grinding and confirm that the traces left by No. 1 coarse grinding have already been replaced completely by the traces left by No. 2 fine grinding pad, the fine grinding is completed.

4, Upon implementation of the polishing procedure, firstly remove the Grinding Pad, replace it by a Polishing Pad, start the polishing, the rotation speed of the speed-adjustable angle grinder can be slightly increased, spray some water with a spray bottle while polishing to ensure the normal function of the Polishing Pad, keep observation while polishing till an effect of glossy appearance like a new one.



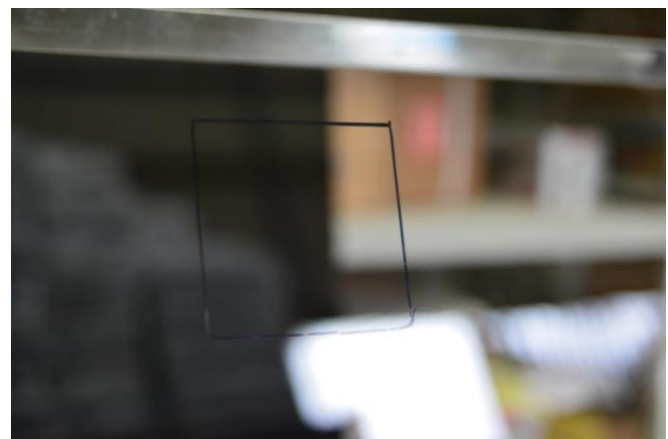
5.. For slight scratches (such as slight scratches resulted between glasses), a No. 2 fine grinding pad can be used for the fine grinding, proceed until scratches disappear, and then use a Polishing Pad for the polish, till the end of the repair.

6. For visible scratches that can't be felt by touching, you can polish the scratches area directly until the scratches disappear.

7. The repair of glass scratches is finished



Before repair



After repair

## Other

1.In this Product Kit, a method without add water can be used for the grinding, namely, dry-grinding, which is





determined by the unique configuration of this grinding sandpaper. Generally, it is not recommended to perform the grinding with water-adding under normal condition.

2. Judging the severity of the scratches: You can use the following simple method to distinguish - Those can be easily seen and can be clearly felt with a finger belong to a deep scratch typically; and those can be seen but not easy to feel with your fingernail belong to a normal type; scratches that are visible but not noticeable should be slight ones; those can not be easily seen by a straight sight can be found under special angles belong to the type of slightest hairline scratches.

3 After judging the depths of scratches, it is important to determine how to choose the repair method. If a method applicable to repairing slight scratches is used in a case of severe scratches, it will not only causes the wasting of the Grinding Pad, but also wastes time; and if a method applicable to repairing severe scratches is used in a case of slight scratches, it will not only prolong the repair time, but also increase the difficulty of repair and cause a waste of grinding pads and consumables.

4. Before repair, the post-repair acceptance criteria should be determined. Choose different repair methods supplemented with appropriate Grinding Pad according to different acceptance criteria; If the scratches are serious with a high requirement, you should select a 3-inch or 4-inch Grinding Pad for the repair; and if the scratches are light and with an ordinary requirement, you can select a 2-inch grinding pad for rough grinding and fine grinding which will make a lower cost of using such repair materials. At the same time, the repair time will be shorter if the repaired area is smaller; in case of special locations, such as scratches in small areas of automotive glass, it can be repaired using a 1.2-inch grinding pad.

5. Disclaimer of Interest: The Company ensures that this Product Kit can achieve the effects described in the manual. On account that everyone understands, learns in a different level, and imposes a different acceptance criteria on this Product Kit, the Company shall be held NONE liabilities for any damages, mistakes arise during any construction, operation, or failure to deliver for acceptance!

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