QuickSilver™ Windshield Repair Kit

INSTRUCTIONS

KIT2000A, KIT2000J, KIT2000M

APPRENTICE KIT INCLUDES:

1. VACUUM PUMP W/ GAUGE
2. UV LAMP (LMP2001 SHOWN)
3. CONNECTOR HOSE
4. RESIN CHAMBERS ASSEMBLY
5. REPAIR FIXTURE
6. INSPECTION MIRROR
7. REPAIR RESINS
8. CHAMBER CLEANING BRUSH
9. HOSE CLEANING BRUSH
10. PIT FILLER
11. PIT POLISH
12. BOTTLE (FOR ALCOHOL)
13. BREAK CLEANING BRUSH
14. CARBIDE PROBE
15. SUPPLY BOX (SEE PAGE 11 FOR CONTENTS)
16. CARRYING CASE

(SEE PAGE 11 FOR OTHER KITS)

KIT2000A (APPRENTICE KIT) SHOWN

Preparing to Use the Kit

NOTE: This kit is intended for use in compliance with the ANSI/NWRA/ROLAGS 001 Standard. Users should be trained in all relevant industry and regulatory standards applicable in their region before attempting to repair windshields.

1. **SHADE THE REPAIR AREA:** Park the vehicle in shade, if possible. Otherwise, place an appropriate screen (such as KIT1044 [fig. 1], sold separately) over the repair area, to prevent premature curing of the Repair Resin.

Figure 1

2. **CHECK THE GLASS TEMPERATURE:** Suitable glass temperatures for performing a repair are 40° – 85° F (5° – 30° C). Verify that the glass is not too hot or too cold before starting.

Wear appropriate personal protective equipment and follow trade association guidelines.

3. **TEST THE UV LAMP** (fig. 2): It may not produce a strong beam, even in low-light conditions. However, at least a slight glow should be visible on either side of the lamp when attached. If not, see step 3 under "Curing the Resin".

Figure 2

4. **PROTECT THE VEHICLE:** Apply an appropriate cover (such as HDW5523 [fig. 3], sold separately) to shield the vehicle from possible damage caused by contact with tools or resin (see Caution 1).

Figure 3

Figure 4

CAUTION

CAUTION 1: If resin contacts the paint, do not wipe it off; cure the resin with the UV lamp (see "Curing the Resin") and carefully peel it off.

NOTE 1: If moisture is present, dry the break with a moisture evaporator (such as TLS5000 [fig. 4], sold separately).

5. **CLEAN THE GLASS:** Spray isopropyl alcohol on a soft, lint-free cloth and wipe the repair area. Do not spray directly on the break (see Note 1).

6. **CLEAR DEBRIS FROM THE IMPACT POINT:** Use the Carbide Probe and/or Break Cleaning Brush to remove loose glass fragments and dirt.

About the Repair Fixture

The Repair Fixture has a Vacuum Cup that attaches to the glass when the Plunger is pumped. After the fixture is securely attached, the Red-Line Indicator will show only if the cup loses sufficient vacuum. The opening in the Fixture Arm holds the Outer Chamber, which can be positioned easily and precisely over a break by using the Adjustment Lever and the Adjustment Screw. Functions of other listed features are described in the following sections.

1. PISTON
2. INJECTION CHAMBER
3. HOSE PLUG
4. OUTER CHAMBER
5. BLUE KNURLED NUT
6. FIXTURE ARM
7. INSERT SEAL
8. VACUUM CUP
9. PLUNGER
10. RED-LINE INDICATOR
11. ADJUSTMENT LEVER
12. ADJUSTMENT SCREW

About the Insert Seal

Before each repair, the Insert Seal (fig. 5) should be free of contaminants, Repair Resin buildup or damage. When necessary, remove the insert seal from the Outer Chamber and …

- clean it with isopropyl alcohol and a lint-free cloth, pat it dry and reinsert it, or;
- replace it. Typically, an insert seal lasts for 50-60 repairs.

The kit includes insert seals in a standard size and a “large pit” size with an adapter.

Figure 5

Setting Up the Repair Fixture

1. INSERT THE OUTER CHAMBER

1.1 Turn the Blue Knurled Nut counterclockwise until it stops at its highest position on the Outer Chamber (fig. 6).

1.2 Insert the outer chamber into the Fixture Arm’s opening and turn it 5 full turns clockwise. Make sure the Hose Plug is positioned at an upward angle when you complete the turns.

Figure 6

2. ATTACH THE REPAIR FIXTURE

2.1 Place the Repair Fixture on the windshield. Then center the outer chamber on the break by looking through the opening (fig. 7).

2.2 Press the repair fixture against the glass. Then pump the Plunger until the Red-Line Indicator is no longer visible.

2.3 Attach the Inspection Mirror to the inside of the windshield, directly behind the break.

Figure 7

3. ADJUST THE FIXTURE ARM: Turn the Adjustment Screw clockwise to move the Fixture Arm slightly downward and inward (figs. 8 and 9).

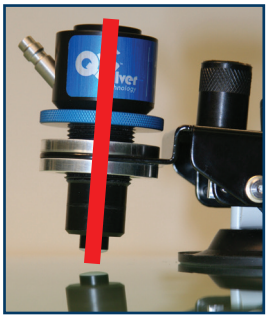


Figure 8

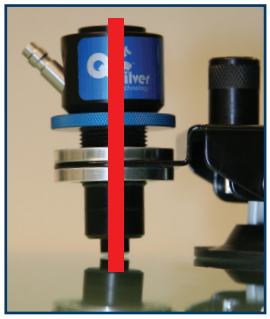


Figure 9

4. CONFIRM THE POSITION OF THE OUTER CHAMBER:

Look through the opening of the outer chamber (fig. 10). If the impact point is not visible, loosen the Adjustment Lever, center the impact point again, and retighten the lever.

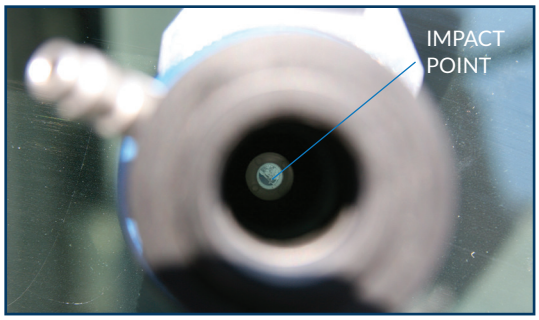


Figure 10

5. SEAL THE OUTER CHAMBER ON THE WINDSHIELD

5.1 Turn the outer chamber clockwise until its Insert Seal contacts the glass but does not cover the impact point. Then turn it another full rotation — ***do not overtighten*** (see Caution 2).

5.2 Turn the blue knurled nut clockwise until it tightens.

CAUTION

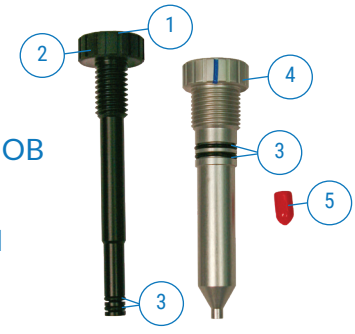
CAUTION 2: An effective seal is critical: If the Insert Seal is too loose, leaks can result during the pressure and vacuum cycles; if the Insert Seal is too tight, this can cause the break to expand, or pinch off cracks and prevent them from being filled.

Preparing the Injection Chamber

NOTE: A loaded injection chamber must be free of air for the repair system to operate effectively.

Typically, you will need only a few drops of Repair Resin to fill a break during a single repair. If you perform multiple repairs daily, the resin remaining in the Injection Chamber can be capped and stored.

1. PISTON
2. PISTON KNOB
3. O-RINGS
4. INJECTION CHAMBER
5. CAP



1. PREPARE THE INJECTION CHAMBER

1.1 Insert the Piston into the Injection Chamber (fig. 11). Once you begin threading, screw down the Piston Knob until it stops (about 6 full turns clockwise).

1.2 Turn the injection chamber upside down and remove the Cap. Then place a Resin Filling Adapter on the end (fig. 12).


Figure 11


Figure 12


Figure 13

2. FILL THE INJECTION CHAMBER

NOTE: Only use resins in a well-ventilated area and avoid contact with skin and eyes (see Additional Safety Information).

2.1 Choose the best resin for the application, based on the type of break:

- Crack Filler (LIQ2070) works well on most types of breaks, including those with tight cracks.
- Extreme II (LIQ2060) is our thinnest resin, providing better flow for filling difficult breaks and working in cool temperatures (see Caution 3 and Note 2).

2.2 Remove a tube of resin from the resin bag. Mix the resin by ***gently*** turning the tube over a few times.

2.3 Remove the cap from the resin tube. Then cut the tip off the tube and insert the tube's opening into filling adapter (fig. 13) (see Caution 4).

2.4 ***Slowly*** turn the piston clockwise to draw 0.5 ml (½ tube) into the injection chamber.

2.5 Carefully turn the piston counter-clockwise, to push any trapped air out of the injection chamber, stopping when resin is visible at the opening.

2.6 Remove the filling adapter. Reinstall the tube's cap and save the remaining resin in tube for future use.

CAUTION **CAUTION 3:** Resin can damage the vacuum cup and greatly reduce its service life.

NOTE 2: Check the expiration date on the resin bag. Do not use any expired resin.

CAUTION **CAUTION 4:** Do not combine different resins; contamination will occur.

3. INSTALL THE INJECTION CHAMBER

3.1 Using a gloved finger, lubricate the Injection Chamber's O-Rings with resin or isopropyl alcohol.

3.2 Insert the injection chamber into the Outer Chamber, lining up the blue indicator mark on the injection chamber with the Hose Plug on the outer chamber as a reference point to begin threading (fig. 14).

3.3 Turn the injection chamber until you feel the O-ring seal engaging (about 2½ turns clockwise). The injection chamber is now in position to draw vacuum.


Figure 14

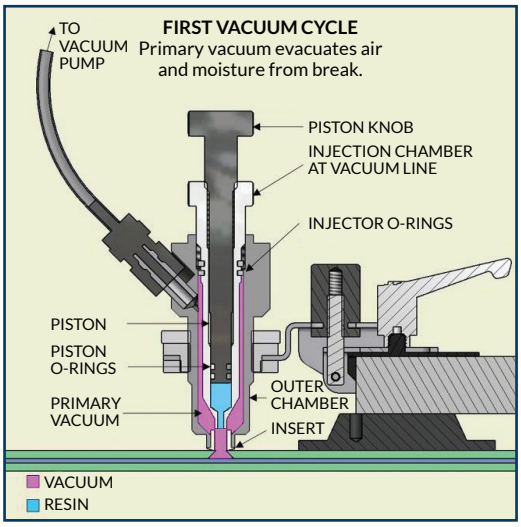
First Vacuum Cycle

1. ATTACH THE CONNECTOR HOSE

1.1 Attach one end of the Connector Hose to the Outer Chamber's Hose Plug (fig. 15): Pull back the sleeve on one of the hose's quick connectors and push the connector firmly onto the plug.

1.2 Attach the other end of the hose to the Vacuum Pump in the same way.

1.3 Give the hose a gentle tug to check each connection.



2. GENERATE VACUUM

2.1 Rapidly pump the Vacuum Pump 2-6 times (fig. 16), to draw out any trapped air and trace amounts of moisture from the break.

2.2 Monitor the pump's gauge, which should show approx 20" – 25" Hg (fig. 17); barometric pressure and altitude will cause the reading to vary slightly. If necessary, continue pumping to maintain vacuum for 1 full minute.

Figure 15

Figure 16

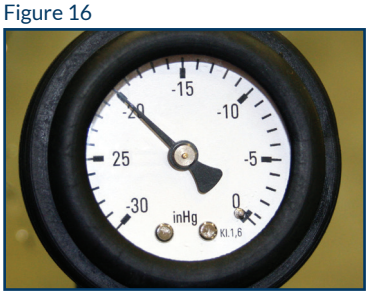


Figure 17

TIP: If vacuum cannot be maintained ...

1. turn the Blue Knurled Nut counterclockwise, to loosen and allow adjustment of the outer chamber;
2. turn the outer chamber clockwise slightly, to apply more pressure and seal, and;
3. turn the nut clockwise, to retighten.

First Pressure Cycle

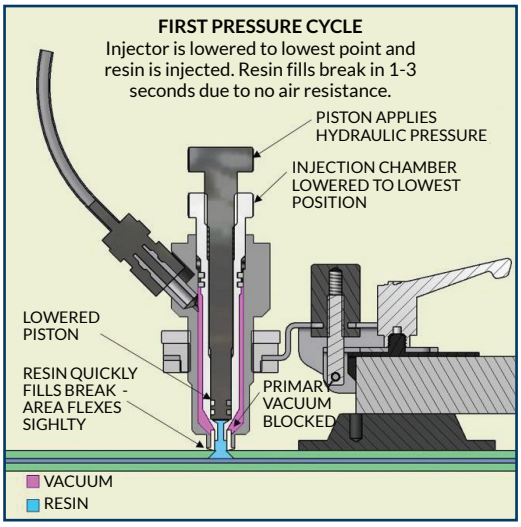
1. LOWER THE INJECTION CHAMBER

1.1 Turn the Injection Chamber clockwise (about 3-4 full turns) until it stops (fig. 18).

1.2. Disconnect the Connector Hose from the Outer Chamber's Hose Plug by pulling back on the quick connector's sleeve (fig. 19).

Figure 18

Figure 19



2. INJECT THE RESIN

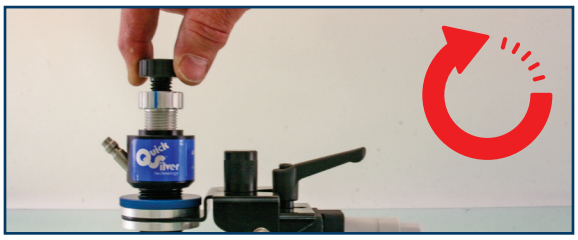


Figure 20

2.1 Turn the Piston (fig. 20), as follows:
- **Clockwise,** until you feel a slight amount of pressure (see Caution 5).
- **Then counterclockwise**, to back off the pressure.
- **Then clockwise again.** The break will now begin to fill with resin. For a typical break, this process usually takes about 1 minute (see Note 3).

CAUTION 5: Too much pressure increases the risk of losing the seal, causing the break to expand, or causing the windshield to delaminate. If you feel more than a slight amount of pressure, back off the pressure immediately.

NOTE 3: If necessary, repeat the clockwise and counterclockwise turns, to open the break and allow resin to fill it.

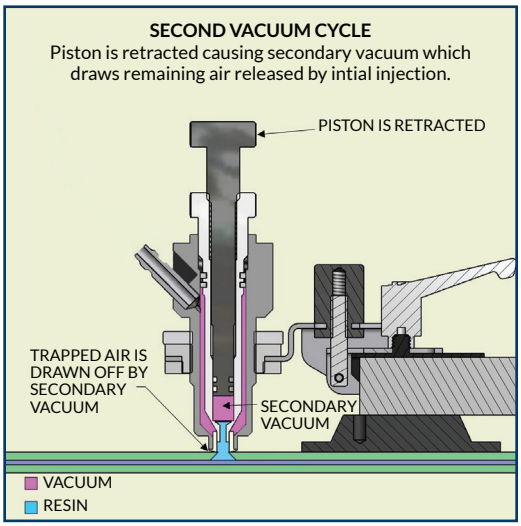
TIP: If no resin is filling the break after you've turned the piston to inject it, you may need to replace the O-Rings on the piston. Typically, a set of O-rings should last about 200 repairs.

Second Vacuum Cycle

1. RETRACT THE PISTON

1.1 When the break is nearly filled, turn the piston 3-4 turns counterclockwise to create vacuum again.

1.2 Maintain vacuum for 1 minute.



Second Pressure Cycle

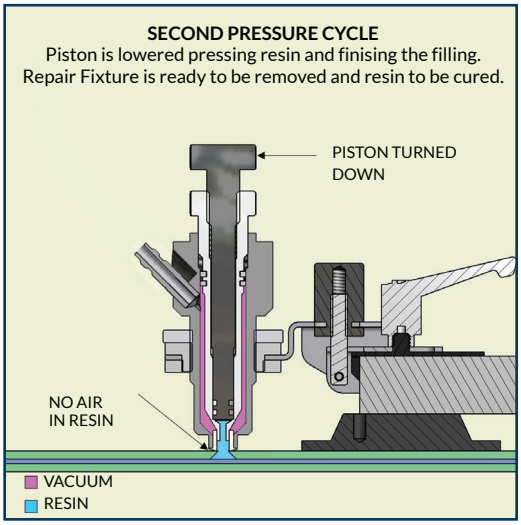
1. ENGAGE THE PISTON

1.1 Turn the Piston clockwise until you can feel slight pressure. Any remaining outer tips of a break should fill with Repair Resin.

1.2 Maintain pressure for about 1-2 minutes.

1.3 Make sure resin has filled the break completely (see Note 4). Often, radiant cracks won't fill because there is too little resin in the Injection Chamber.

NOTE 4: Air within a break will appear as a black spot. Unfilled areas will cast a shadow when a light shines on the break. Additional vacuum cycles will remove this trapped air: Use several short vacuum cycles, followed by short pressure cycles.



TIP: If a crack extends beyond the diameter of the seal, cure with the UV Lamp for 1 minute ***while the Repair Fixture is in place*** (see "Curing the Resin").

Curing the Resin

1. **REMOVE THE REPAIR FIXTURE:** Pull a tab on the Vacuum Cup, to release the Repair Fixture from the glass (fig. 21).

2. **APPLY A MYLAR® SHEET:** Quickly place a sheet over the break, to contain the Repair Resin (see Note 5).

3. **USE THE UV LAMP**
   - 3.1 Attach the UV Lamp (model LMP2001 is shown in fig. 22), with the light positioned directly over the repair area.
   - 3.2 Turn on the UV lamp for 1 to 7 minutes (see Caution 6 and Notes 6-7).

4. **MAKE SURE THE RESIN IS CURED:** Feel the resin. Cured resin is hard, with a light surface film; uncured resin is wet to the touch.

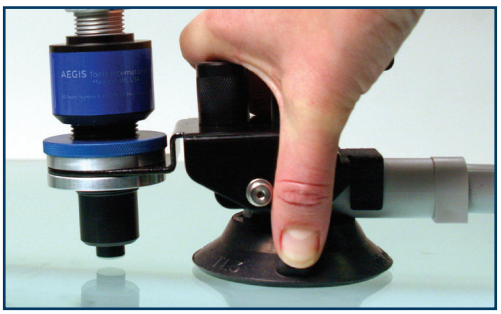


Figure 21

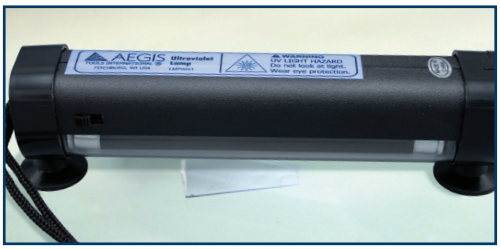


Figure 22

CAUTION 6: Wear eye protection when using a UV lamp. Excessive exposure can cause permanent eye damage.

NOTE 5: Larger Mylar® sheets (HDW3010, sold separately) can be used, as well.

NOTE 6: Curing times vary, depending on the model of UV lamp used.

NOTE 7: If the UV lamp does not appear to be working, consult the lamp instructions, when applicable. In the case of LMP2001, replace the batteries or, if the resin still does not cure, replace the bulb (LMP5000).

Finishing the Repair

1. **REMOVE THE MYLAR® SHEET:** Lift the corner and gently peel it away. Use a Razor Blade, if needed (fig. 23).
2. **REMOVE EXCESS REPAIR RESIN:** Hold a razor blade perpendicular to the glass and apply smooth, fast strokes without lifting the blade off the surface.
3. **REMOVE THE INSPECTION MIRROR**
4. **CLEAN THE WINDSHIELD:** Use isopropyl alcohol and a soft cloth to clean inside and out. If needed, finish the surface as directed in "Filling and Polishing a Pit."

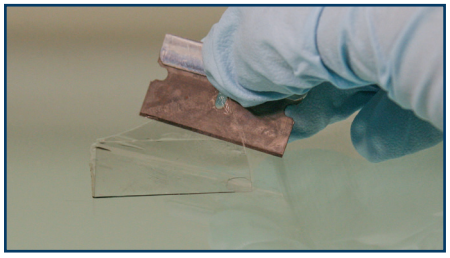


Figure 23

Filling and Polishing a Pit

1. **APPLY THE PIT FILLER:** Place a drop of Pit Filler on the windshield just above the pit, allowing it to flow slowly into the pit without trapping any air. Apply a Mylar® Sheet, as previously directed, to prevent Pit Filler from flowing down the glass. Make sure the pit is filled completely.
2. **CURE THE FILLER:** Apply the UV Lamp and then remove the Mylar® sheet, as previously directed. Curing takes 1-7 minutes, depending on the UV lamp used.
3. **REMOVE EXCESS FILLER:** If needed, use a razor blade, as previously directed.
4. **POLISH THE SURFACE:** Use Pit Polish and a soft cloth or a buffing wheel (such as DRL2025 [fig. 24], sold separately).

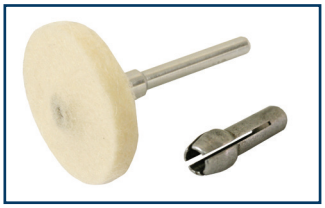


Figure 24

Repairing a Crack

Certain cracks require drilling a pathway to inject Repair Resin (see Caution 7). In such cases, we recommend using a Hi-Speed Rotary Tool (such as option PWR5070 [fig. 25] or PWR5400, sold separately) and a Carbide Bur (such as option DRL2021 [fig. 26], or DRL2031, sold separately).

CAUTION

CAUTION 7: Do not drill into the plastic interlayer between the glass layers.

Figure 25

Figure 26

For cracks shorter than 2" (<5 cm), drill a small hole in the center, making sure it intersects with the crack.

For cracks 2" to 6" (5 cm to 15 cm), up to three holes may be required: one at each end and a third in the center, if the crack is not completely filled from the ends.

For cracks longer than 6" (>15 cm), WPG recommends using the AEGIS Long Crack Repair Kit (KIT1036), sold separately.

Follow the repair procedure previously described. Set up the Repair Fixture to place the Outer Chamber over each drilled opening. Apply pressure by turning the piston knob clockwise until you feel slight resistance. Observe the crack from an angle, so you can see the resin filling the void. Cover the crack with Mylar® Sheets (or extra-large sheets HDW3010 [fig. 27], sold separately) as the break fills, to prevent air from re-entering the crack.

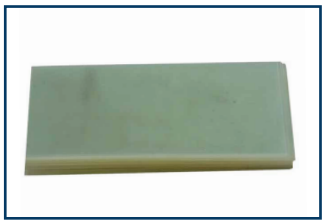


Figure 27

Tips for Best Results

- Inexperienced personnel should perform practice repairs on a used windshield before repairing a customer's vehicle. Their technique and results should improve with each attempt.
- ***Do not use lubricants on Insert Seals, as contamination of the Repair Resin may result.***
- Larger breaks usually require longer vacuum and pressure cycles.

Additional Safety Information

- Read all Repair Resin labels and Safety Data Sheets provided.
- If resin gets on your skin, wash thoroughly with soap and water.
- If resin gets in your eyes, flush them with water for 15 minutes and seek medical attention immediately.
- If you swallow any resin, drink 2 glasses of water and seek medical attention immediately.

Maintenance

AFTER EACH USE

NOTE: Dispose of resin in compliance with all local codes and applicable regulatory standards.

1. Remove the Injection Chamber from the Outer Chamber.
2. Wipe excess Repair Resin from the outside of the injection chamber with isopropyl alcohol and a lint-free cloth (see Note 8).

3. Clean and dry the Insert Seal, as previously directed.
4. Drip some isopropyl alcohol into the outer chamber, to remove any remaining resin.

NOTE 8: If you plan to perform multiple repairs in one 24-hour period, repair resin within the injection chamber can be capped and stored. Make sure there is adequate resin in the injection chamber to complete the next repair.

AT THE END OF EACH DAY

Piston: Clean the Piston with isopropyl alcohol and a lint-free cloth.

Injection Chamber

1. Remove any remaining resin from within the injection chamber. Then dispose of the resin.
2. Wipe excess resin from the outside of the injection chamber with isopropyl alcohol and a lint-free cloth.
3. Drip some isopropyl alcohol into the injection chamber, to remove any residual resin. Gently use a Chamber Cleaning Brush, if needed.

Outer Chamber

1. Clean and dry the insert seal, as previously directed.
2. Drip some isopropyl alcohol into the outer chamber, to remove any remaining resin. Gently use a chamber cleaning brush, if needed.

Vacuum Cup

1. Clean the Vacuum Cup with soapy water and a lint-free cloth. Do not use isopropyl alcohol or any solvents. Make sure the cup's felt filter stays in place.
2. Reinstall the cup's protective cover.

Inspection Mirror: Clean the Inspection Mirror with an alcohol-based glass cleaner and a lint-free cloth.

PERIODICALLY (every 15-20 repairs, unless otherwise noted)

Repair Fixture

1. Inspect the Repair Fixture's parts carefully and make sure they function correctly.
2. Remove any resin buildup, as previously directed.

Resin Chambers Assembly

1. Inspect the assembly's parts carefully and make sure they function correctly (see Note 9).
2. Remove any resin buildup.

NOTE 9: O-Rings that show signs of deterioration should be replaced. Use only O-rings supplied only by AEGIS. Incompatible O-rings will jam the equipment, possibly causing permanent damage, and can create a chemical reaction that contaminates the resin.

Vacuum Pump

1. Apply light lubricating oil to the Vacuum Pump's inner shaft. Then wipe off the excess oil.
2. Remove any resin buildup on the pump's hose fitting, using the Hose Cleaning Brush.

Connector Hose: Clean any contamination from the inside of the Connector Hose and its quick connectors, using the hose cleaning brush.

UV Lamp: Clean the UV Lamp. In the case of LMP2001, replace its bulb yearly.

KIT2000J
Journeyman Kit includes :

- APPRENTICE KIT*
- UV LAMP (LMP2007)

KIT2000M
Master Kit includes:

- JOURNEYMAN KIT*
- HI-SPEED ROTARY TOOL W/ ACCESSORIES (PWR5070)
- UV LAMP (LMP2008)

* except for upgrades, as noted / Apprentice Kit shown on cover page

Parts and Supplies

PART NO.	DESCRIPTION
28502	PLUNGER LUBRICANT
60024	FELT FILTER (FOR VACUUM CUP)
90111	PLUNGER (FOR VACUUM CUP)
91150	3" VACUUM PAD
DRL2021	CARBIDE BURS (10 QTY)
DRL2025	BUFFING WHEEL
DRL2031	CROSS-CUT TAPERED BURS (5 QTY)
FIX2004	CHAMBER CLEANING BRUSH
FIX4000	QUICKSILVER™, CHAMBERS ASSEMBLY
FIX4500	QUICKSILVER™, REPAIR FIXTURE
HDW3000	MYLAR SHEETS, 1.25” (3.175 CM) SQUARE (100 QTY)*
HDW3010	MYLAR SHEETS, 2.362” (6 CM) SQUARE (100 QTY)
HDW5040	CARBIDE PROBE
HDW5042	BREAK CLEANING BRUSH
HDW5410	RAZOR BLADES (100 QTY)*
HDW5523	FENDER COVER
HOS2000	CONNECTOR HOSE
HOS2001	HOSE CLEANING BRUSH
KIT1036	LONG CRACK REPAIR KIT
KIT1044	UV SUN SCREEN
LIQ2022	PIT FILLER
LIQ2030	PIT POLISH
LIQ2060	EXTREME II RESIN, 1-ML TUBES (25 QTY)
LIQ2070	CRACK FILLER RESIN, 1-ML TUBES (25 QTY)
LIQ3000	4-OZ BOTTLE (FOR DISPENSING ISOPROPYL ALCOHOL)
LMP2001	UV LAMP (FOR APPRENTICE KIT)
LMP2007	UV LAMP (FOR JOURNEYMAN KIT)
LMP2008	UV LAMP (FOR MASTER KIT)
LMP5000	UV LIGHT BULB (FOR LMP2001)
MIR2002	INSPECTION MIRROR
PMP4015	VACUUM PUMP W/GAUGE
PWR5400	HI-SPEED ROTARY TOOL WITH ACCESSORIES, MINI
PWR5070	HI-SPEED ROTARY TOOL WITH ACCESSORIES, DREMEL®
SBX2017	INSERT SEALS (10 QTY)*
SBX2018	RESIN FILLING ADAPTERS (4 QTY)*
SBX2019	O-RINGS, SMALL (12 QTY)*
SBX2021	O-RINGS, LARGE (12 QTY)*
SBX2022	LARGE PIT INSERT SEALS (5 QTY) WITH ADAPTER (1 QTY)*
TLS5000	MOISTURE EVAPORATOR

* INCLUDED IN SUPPLY BOX

Limited Warranty

AEGIS Tools International® products are warranted to be free from defects in manufacturing or materials for 1 year from the date of purchase. Read the Warranty Return Form at aegistools.com for important details about the warranty.

If a problem develops during the warranty period, follow the instructions below to obtain warranty service. If inspection shows that the product has a defect, AEGIS will repair or replace the product without charge.

To Obtain Warranty Service or Repair Service

For customers in the U.S. and Canada: Go to the Warranty page at aegistools.com and click the applicable link. Alternatively, you may contact AEGIS Tools International (see contact information).

For customers in all other localities: Contact AEGIS Tools International (see contact information) or your dealer for assistance.

CONTACT INFORMATION

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Phone: (1) 800-548-7341 or (1) 406-628-8231
www.AegisTools.com

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