

Wet Diamond Drilling of Annealed Glass JHA

Worked instructional example

Work and worksite

A trained glazing fabricator will drill a specified hole in identified annealed stock at a protected ground-level station using a compatible CRL2 tripod machine, diamond tube drill, coolant reservoir and controlled depth adjustment. Supported stock and a guarded zone remain established through breakthrough and hole acceptance. This fictional example contains planned controls, without inspection findings or authorization.

- The accepted fabrication detail identifies annealed stock, thickness, hole geometry and required quality. Tempered, heat-strengthened and laminated glass, insulated units and installed glazing are excluded. Uncertain glass identity or suitability stops the work; no safety-glass modification is authorized.
- The actual legacy CRL2 unit matches AVD3007 Rev 01/03 and applicable manufacturer advice. Current construction electrical, guarding and grounding acceptance is independently verified. Obsolete grounding-adaptor advice in the older booklet is not carried into this plan.
- On-site glass fabrication 238150-24 is a partial connection: supported wet diamond hole-making only. Score-and-break cuts, edge finishing, outlet cutouts with adjoining holes, abrasive-grain tube drilling, spearpoint drilling, machine repair and subsequent glazing installation are excluded.

Questions before work

- Who confirms the stock is annealed and that the specified hole and remaining glass are suitable for their intended use?
- How are the pane, breakthrough area and drilling machine supported without hands entering the rotating or fragment path?
- Which actual drill, coolant, electrical protection, guarding and hole-acceptance criteria must be verified before the machine starts?

Task Hazard Control

1 Accept the stock and fabrication instruction

Hazard: Misidentified safety glass, an unsuitable hole location or unseen damage can cause sudden breakage and leave an unacceptable component for later use.

Control: Lead matches stock identity, thickness and condition to the issued fabrication detail. Obtain the producer's acceptance of hole location and finished quality; do not infer permission from an unmarked pane. Confirm the actual CRL2/manual match and resolve legacy-unit electrical or operating differences with the appropriate people before setup.

Verification: Lead records stock identity, instructions and hole criteria.

Reasoning: A drill setting cannot authorize modifying unidentified glass.

2 Establish protected support and electrical supply

Hazard: A rocking pane, exposed rotating parts or water reaching electrical connections can cause glass collapse, entanglement or shock at the station.

Control: Support the whole pane on the approved stable surface with the prescribed sacrificial backing and breakthrough clearance. Arrange required guarding so no body part can enter the drilling danger zone. Protect and route the grounded supply, use accepted ground-fault protection for this wet station, and contain coolant away from connections and walkways.

Verification: Lead verifies support, guarding and wet-work electrical protection.

Reasoning: Support and wet-work controls must function throughout drilling.

3 Fit the diamond drill and preset penetration

Hazard: A loose or mismatched accessory, retained chuck key or incorrect depth stop can cause ejection, uncontrolled penetration or hand contact with rotation.

Control: With power disconnected, fit the identified compatible diamond tube drill under the CRL2 instructions and remove the chuck key. Set the quick and micro adjustments for this pane so initial penetration stops short of its underside. Confirm feet, housing travel and the safe operating controls; no bypassed guard or substitute pressure device is accepted.

Verification: Operator checks retained accessory, removed key and depth setting.

Reasoning: Preset travel keeps final breakthrough under deliberate control.

Complete the work and hand over

4 Establish coolant and start the supported cut

Hazard: Inadequate cooling, a moving reservoir or added force can damage the drill, crack the stock or splash workers while the machine is running.

Control: Use the prescribed reservoir and diamond-tool coolant method, with the actual current coolant SDS available. Keep abrasive grain out of this diamond route. Establish the permitted speed and reservoir readiness, then operate from the guarded position. Let the machine feed as instructed; stop for lost cooling, movement, abnormal sound or unexpected resistance.

Verification: Operator monitors coolant, stability and feed.

Reasoning: Cooling and stable feed preserve drilling control.

5 Control final breakthrough and stop rotation

Hazard: Forcing through the last glass layer or reaching beneath the bit can cause chipping, core ejection and severe cuts from a fractured pane.

Control: At the preset stop, follow the CRL2 micro-adjustment method to lower the diamond drill slowly through the remaining glass without added forcing. Keep people clear of the supported underside and core path. Switch off, wait for rotation to stop, raise and retain the housing as instructed, then disconnect before any hands approach the hole.

Verification: Operator verifies stopped, retained housing and isolated power.

Reasoning: The final layer needs slow feed and a clear release path.

6 Inspect the hole and secure the station

Hazard: Unnoticed cracks, sharp cores or contaminated coolant left for the next person can cause cuts or allow defective glass into an installation.

Control: Inspect the hole and surrounding stock against the supplied quality criteria from a safe, supported position. Quarantine cracks, excessive chipping or uncertain acceptance rather than expanding the hole as a repair. Collect cores and waste with appropriate tools and protection, manage coolant under its SDS, and transfer the documented stock disposition before storage or further fabrication.

Verification: Lead records hole findings, stock disposition and closeout.

Reasoning: Actual hole quality governs further stock use.

Pause and reassess

- Stock identity, thickness, existing damage or hole geometry differs from the accepted fabrication instruction.
- Coolant, guarding, depth control, electrical protection, stable support or safe control access cannot be maintained.
- Unexpected resistance, noise, vibration, cracking or breakthrough damage requires shutdown and technical assessment before restart.

Improve the controls

Needs improvement: Glass can be drilled if the diamond bit is sharp.

More useful: Lead verifies annealed identity, accepted hole geometry and remaining-stock suitability before the selected machine and diamond route are set up.

Needs improvement: Push harder when the drill gets close to the bottom.

More useful: Preset penetration stops short of the underside; the operator uses the prescribed micro adjustment and slow breakthrough without forcing or reaching below.

Decisions that change the analysis

What if the pane's identity or drilling permission cannot be established?

Hold the fabrication. A missing safety-glass mark does not prove annealed material, and appearance does not authorize a new hole. Obtain reliable stock identification and the producer's applicable fabrication criteria.

Replace or refer the component as directed when it cannot be accepted; this example never permits drilling tempered, heat-strengthened, laminated or installed glass.

What must the crew record for actual use?

Record stock identity, condition and thickness, fabrication revision and hole criteria, machine/manual, drill/coolant, support, guarding, electrical and depth-control findings. Add actual hole defects, stock disposition, waste and closeout. Identify the responsible checkers and decisions; this example supplies no field evidence or installation release.

Training needs

- Model-specific CRL2 setup, depth-stop and controlled-breakthrough instruction, including the selected diamond drill, coolant method, shutdown and response to loss of stability or cooling.
- Fabrication-station instruction on glass identity, independent stock support, entanglement and fragment protection, current wet-work electrical controls, and documenting hole defects without improvising a repair.

Confirm applicable qualifications and actual training evidence for the people assigned. Related toolbox talks support discussion; they do not establish competence.

References and adaptation

CRL2 Glass Drilling Machine, AVD3007 Rev 01/03, legacy operating instructions
https://azure.crlaurence.com/techdocs/PDF/crl2_avd3007.pdf

OSHA 1926.300, tool condition and point-of-operation guarding
<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.300>

OSHA 1926.404, current construction ground-fault and grounding provisions
<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.404>

OSHA 1926.59, hazard communication for the actual coolant
<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.59>

References reviewed October 13, 2026. Use actual equipment and product instructions, project design and site requirements. This original draft supplies no fabricated inspection, signature or approval.