



# 3M™ Trizact™ Diamond 673FA and 673LA For Flat Grinding and Finishing

## Pad Mounting and Conditioning Procedures

3M™ Trizact™ Diamond 673FA/LA is a 3-Dimensional diamond abrasive designed for flat grinding and finishing of a variety of substrates. To obtain the optimum results, the abrasive must be properly mounted to the lapping platen and then conditioned, or dressed. The Trizact Diamond 673FA/LA has a Pressure Sensitive Adhesive (PSA) coating on the back side, which allows for easy mounting.



### Mounting Procedure



1. Thoroughly clean and dry the platen. Scotch-Brite™ Pads work well to remove debris and oxidation.



2. Position the abrasive, hold in place, remove one edge of the liner, and fold it under the abrasive.



3. Stick the PSA down to the platen.



4. Roller with even pressure and pull the liner back.



5. Roller over the entire surface paying particular attention to the edges.



Note: If mounting a larger segmented Trizact Diamond 673FA/LA disc, position all segments, then mount each segment as shown.

### Break-in Conditioning Procedure

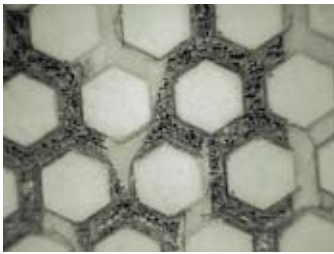
Prior to the first use, 3M Trizact Diamond 673FA/LA pads have a thin resin cap on the feature surface which must be removed to expose diamond grains and initiate cut. The method used to remove this resin cap depends on the substrate hardness and the diamond grade of the pad. The initial resin cap removal is referred to as “break-in” and should not be confused with in-process conditioning, which is covered later. It is typical to remove approximately 10% of the feature height during the break-in step. *Continued on back page*



No Break-in



50% Break-in



100% Break-in

A discrete break-in step is not necessary for most medium hard glass substrates with a Mohs hardness of 5–6 and includes materials like borosilicate glass, fused silica, and glass ceramic. These materials will satisfactorily condition a fresh 3M™ Trizact™ Diamond 673FA/LA pad “in-process.” When run at typical pressures of 1.5–3.0 psi and surface speeds of 400–600 ft/min measured at the pad OD, materials in this class will remove the resin cap during the initial 5–15 minutes of the first batch. With the break-in accomplished, subsequent batches will not require the extra run time.

Visual inspection of the pad feature surface can be used to determine when a Trizact Diamond 673FA/LA pad is sufficiently broken-in. When the printing on the surface of the Trizact pad is gone from the tops of the hexagon features, the pad is sufficiently broken-in. Various stages of the break-in method are pictured at left.

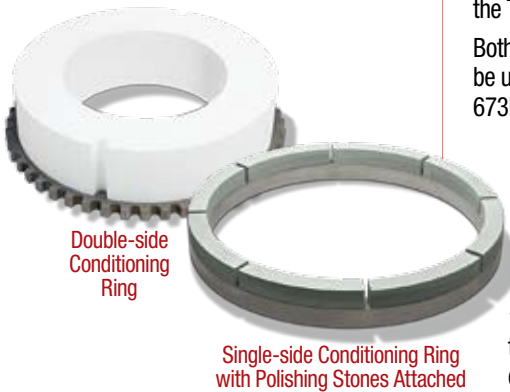
Multiple break-in/dressing methods are available. Note that for all dressing methods it is important to cover the entire surface of the Trizact pad with the dressing media so that a flat surface can be obtained. Blanchard or rough ground glass substrates and soft glass such as Borofloat™ can be used to accomplish break-in in 10 to 20 minutes with typical machine operating conditions and aqueous based lubricant.

The preferred method to break-in the Trizact diamond 673FA/LA pad is to use aluminum oxide or silicon carbide dressing rings or conditioning sticks mounted in a circular pattern on a metal plate, ring, or carrier. Conditioning sticks are commonly referred to as “dressing sticks” and are used to dress or true diamond wheels. For single-sided lapping machines, the ring or sticks can be mounted to an aluminum or steel plate, with pressure being applied by the machine pressure plate. For double-sided lapping machines, carriers and stone rings with mating keyways work well. In general, the finest grade of polishing stone that will still remove the resin cap in a reasonable time should be chosen to minimize the chance of scratching from the polishing stone debris. Contact your 3M Representative for conditioning abrasive solutions. Note that diamond abrasives should not be used to dress 673FA/LA pads.

## In-Process Conditioning Procedure

Periodic or in-process conditioning cycles are required to maintain stable cut rates on some hard substrates due to the diamond dulling. Machine motion dynamics will dictate whether and how often the Trizact 673FA/LA pads will require conditioning to maintain pad flatness.

Both periodic and in-process conditioning methods as described under the break-in methods can be used. Adding loose abrasive to the machine coolant works well to continuously condition the 673FA/LA pad.



Double-side Conditioning Ring

Single-side Conditioning Ring with Polishing Stones Attached

## Pad Storage on the Machine

Machine mounted Trizact 673FA/LA pads should be kept wet, on the lapping machine, when not in use. If the pads are allowed to dry, a 10 to 25% drop in stock removal rate could occur in the first 1 to 3 batches at start-up. Original cut rates are achievable after this short ramp to steady state. During shut down periods, it is recommended to rinse the pad with DI water, spray the pad with lubricant, and cover it with plastic sheeting. For longer periods of inactivity, it is fine to allow the pad to dry, but be sure to clean the pad with DI water to prevent swarf from drying and contaminating future batches.

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