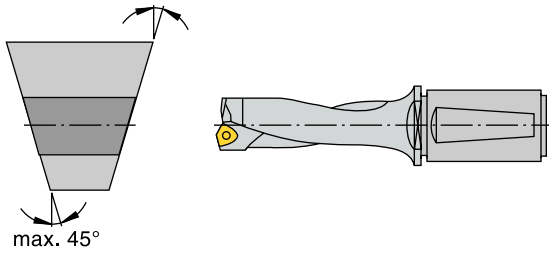
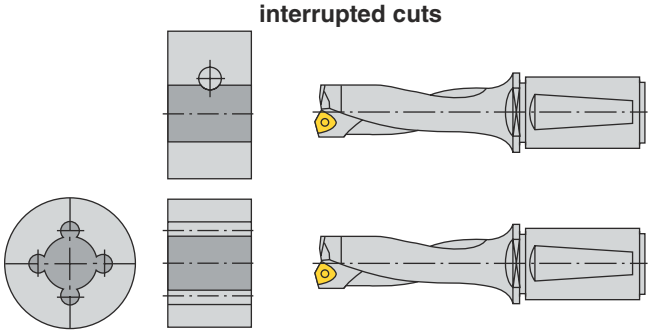
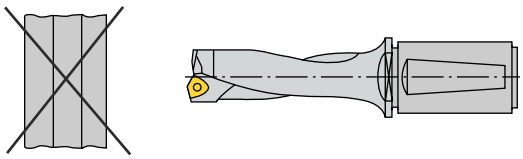
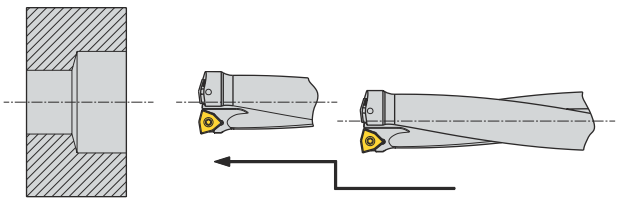
# DRILL-FIX Indexable Drills

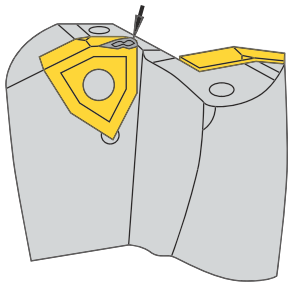
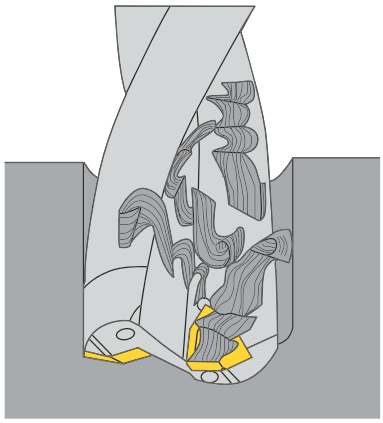
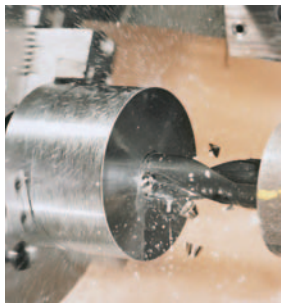
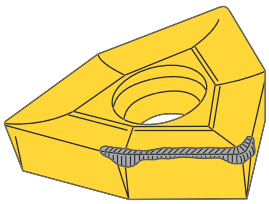
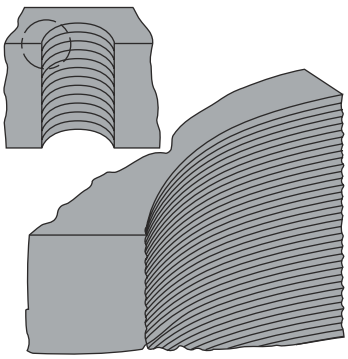
## Application Guidelines — For DRILL-FIX (inch and metric)



| operation | description |
|---|---|
| **spot drilling and drilling through on inclined surfaces**<br>  | Up to a 30° inclination angle is possible without reducing the cutting parameters. For angles between 30°– 45°, reduce feed force at inclined surface by 50% (compared to values shown above in starting conditions). |
| **interrupted cuts**<br>  | For problem-free drilling in interrupted cuts (cross drilling, etc.), reduce the cutting force and feed by 30% to maintain maximum stability of the machine and clamping mechanisms. |
| **drilling of stacked plates**<br>  | This is not possible with the standard DRILL-FIX series drills. A final disc will form when the drill breaks through.<br><br>Special DRILL-FIX drills may be quoted upon request for stacked plate drilling. |
|  | When DRILL-FIX tools are used as a boring tool, offset the drill in the direction of the outer insert. Watch the outer insert for wear because it is cutting more metal than the inner insert and may require more frequent indexing. |

# DRILL-FIX Indexable Drills

## Troubleshooting Guide for DRILL-FIX

| problem | solution |
|---|---|
| inner cutting edge cracking<br>  | On lathes:<br>• Check machine alignment.<br>• Check clamping accuracy. If tool clamping cannot be improved and/or optimum machine stability is doubtful, reduce feed by 30%.<br>• Use tougher carbide grade.<br>  <br>**TIP:** Grades can be mixed to achieve optimum performance.<br>**EXAMPLE:** Use grade KC720 in the inside pocket, with KC7935 in the outside pocket. |
| chip evacuation not optimal<br>  | • Increase coolant pressure and volume (coolant helps support chip evacuation as well as cooling the cutting edges)<br>• Optimize chip control for a given application.<br>• Increase cutting speed by 20%.<br>  |
| excessive insert wear<br>  | • Increase coolant pressure and volume.<br>• Reduce cutting speed by 20%<br>• Use a more wear-resistant grade. |
| poor drill hole quality<br>  | • Increase coolant pressure and volume.<br>• Increase cutting speed by 20%.<br>• Check clamping accuracy (tool and workpiece) for possible improvement.<br>**TIP:** Use higher speed with lighter feed to produce better hole quality. |

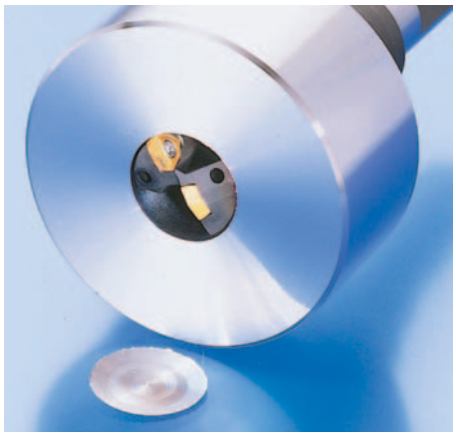
# DRILL-FIX Indexable Drills

## Troubleshooting Guide for DRILL-FIX

The DRILL-FIX indexable drill is a high-performance drilling tool that operates at feed rates often requiring a great deal of horsepower. Therefore, it's essential that special attention be given to the rigidity of the components in the operation, including the machine, workpiece, and fixturing. Please review the following recommendations, which are designed to identify and eliminate common problems encountered when using this tool.

### Chip Evacuation

DRILL-FIX requires coolant supplied at a pressure of 45 psi and a volume of 5 to 6.5 gallons per minute. Coolant is used to evacuate chips and dissipate heat. Therefore, the greater the coolant pressure and volume, the cooler the part and the longer the tool life.



**WARNING**

**During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.**

### Chip Formation

If long, stringy, flat chips are a problem, increase the cutting speed first while leaving the feed per revolution constant. Chips should not turn a dark blue color. If this occurs, either reduce the cutting speed or increase the coolant supply. If chip formation is not satisfactory after increasing the cutting speed, begin to increase the feed per revolution until adequate chip formation takes place.

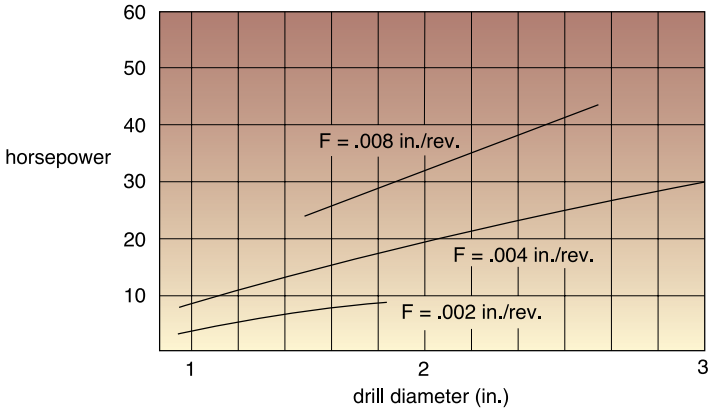
### Breakage or Chipping of the Inner Insert

The cutting speed at the centerline of any drill is always zero. Therefore, this area of the tool must be durable enough to survive the compressive force of the machine feed without breaking. For this reason, the in-board or center insert of the indexable drill should be tougher, while the exterior insert often must combat the excessive cutting speed typical of this type of operation. Two carbide grades often are used simultaneously in the same drill. (See the KENNA PERFECT Application Guide.) If the KENNA PERFECT recommended speeds are not attainable due to machining conditions, use TiN-coated grades in the outer pocket. Usually, grade KC720 is appropriate.

# DRILL-FIX Indexable Drills

## Cutting Forces — DRILL-FIX

**Power:** These charts are based on machining experiences using steels with a hardness of 200-250 HB, and on a cutting speed of 650 sfm.




**Coolant Application:** DRILL-FIX drills must always be applied with coolant lubricant. The higher the coolant rate, the better the drilling performance.