VERSATILE CARTRIDGE MILLING CUTTERS

The 8000V-8010V cutter series provides the opportunity to assemble the bodies with different cartridges for a wide range of applications.

This clamping design allows the adjusting screws to work in opposition to each other, to allow setting of each insert within 0.0008".

All Stellram cartridge face mills feature a unique design that maintains the accuracy of the cartridge location even after a collision.
8000V-8010V Face Milling Cutters

Applications

8000V CUTTERS WITH UNEQUAL PITCH
The cutters in the 8000V series (Ø 3.940” – 15.750”) with interchangeable cartridges have a medium pitch and an unequal division of teeth. This design has been developed through extensive studies of their vibration phenomena. They are especially recommended for surfacing cast structures and all other parts with drilled holes or thin walled sections, as well as for square shoulder face milling. For a given table feed, the medium pitch allows a lower feed rate per tooth which avoids the risks of damage to sides or recesses of the machined parts.

These are quick-change cartridges thanks to a heel, which comes up against a setting track. The runout achieved is in the order of 0.002 in. If a greater degree of precision is required, they can easily be adjusted individually with a runout of 0.0008 in. In case of accidental distresses, the heel disengages automatically from the track and the tool body remains intact.

8010V CUTTERS WITH EQUAL PITCH
For machining High Temperature Alloys, we have modified our milling cutters with cartridges. Available in Ø 3.940” - 7.870”, the bodies of the 8010V milling cutters have the same characteristics as the 8000V body but the distribution of the teeth is regular. The number of teeth is equal to that of the 8000V series.

The 8010V is best used for rough milling, semi-finishing and finishing of Titanium and High Temperature Alloys.

Precautions
At speeds above 240 (SFM), the differential pitch becomes essential to reduce the possibility of vibration.

The capability of the 8000V-8010V series is dependent on the different assembly options.
8000V-8010V

Milling Cutter Bodies

** Note: Mounting instructions refer to page 170. **

For these mentioned assemblies the cutter dimension will change, please see assembly pages for dimension detail.

** Note: D* is nominal diameter for most cutter assemblies except for 90 degree A-Style, (16mm) 0.630" & (20mm) 0.787" Button and (12mm) 0.472" & (16mm) 0.630" High Feed assemblies.

These cartridges, have a fine adjusting set screw and are set according to the dimension (axial shift) “X”.

X = 0.0012 - 0.0020 in.

(X = 0.0008 in. with a pressed insert with a nose radius)

The following series assemblies with a wiper insert are possible:

** Also, all 8010V cutter series are not possible to assemble with a wiper insert. **
8000V-8010V Milling Cutter Bodies

Mounting / Attachment

80_V Cutters Mounting & Attachment Dimensions (inch)

<table>
<thead>
<tr>
<th>Ø Cutter D</th>
<th>Fixation Bore / Pilot</th>
<th>d1</th>
<th>D2</th>
<th>f</th>
<th>f1</th>
<th>d2</th>
<th>d3</th>
<th>d4</th>
<th>d5</th>
<th>b</th>
<th>t</th>
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<tbody>
<tr>
<td>3.94</td>
<td>1.250</td>
<td>1.250</td>
<td>2.080</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.500</td>
<td>0.310</td>
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<tr>
<td>4.92</td>
<td>1.500</td>
<td>1.500</td>
<td>3.090</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.630</td>
<td>0.390</td>
</tr>
<tr>
<td>6.30</td>
<td>1.500</td>
<td>1.500</td>
<td>3.930</td>
<td>2.620</td>
<td>-</td>
<td>0.550</td>
<td>0.780</td>
<td>-</td>
<td>-</td>
<td>0.630</td>
<td>0.390</td>
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<td>7.87</td>
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<td>5.360</td>
<td>4.000</td>
<td>-</td>
<td>0.700</td>
<td>1.020</td>
<td>-</td>
<td>-</td>
<td>1.000</td>
<td>0.560</td>
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<tr>
<td>9.84</td>
<td>2.500</td>
<td>2.500</td>
<td>7.080</td>
<td>4.000</td>
<td>-</td>
<td>0.700</td>
<td>1.020</td>
<td>-</td>
<td>-</td>
<td>1.000</td>
<td>0.560</td>
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<tr>
<td>12.40</td>
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<td>2.500</td>
<td>9.440</td>
<td>4.000</td>
<td>7.000</td>
<td>0.700</td>
<td>1.020</td>
<td>0.860</td>
<td>1.250</td>
<td>1.000</td>
<td>0.560</td>
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<tr>
<td>15.75</td>
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<td>2.500</td>
<td>12.590</td>
<td>4.000</td>
<td>7.000</td>
<td>0.700</td>
<td>1.020</td>
<td>0.860</td>
<td>1.250</td>
<td>1.000</td>
<td>0.560</td>
</tr>
</tbody>
</table>

Locate Directly to Milling Arbor

For cutter Ø 3.940, 4.920 & 6.300 in.

Locate Directly to Spindle Nose 7/24 with Centering Arbor

Spindle 7/24 No. 40 for cutter Ø 6.300 in.
Spindle 7/24 No. 50 for cutter Ø 7.870 to 15.750 in.
Spindle 7/24 No. 60 for cutter Ø 12.400 to 15.750 in.
Surface Finishing with 81FS00 Cartridges

The cartridge 81 FS 00 R-12 is intended to perform finishing operations when used in conjunction with other cartridges as shown in the diagram opposite. They have a fine adjusting set screw to enable the cartridge to be pulled back and pushed forward again to the initial preset position.

Stock removal for finishing should be no more than 0.040 in. and preferably 0.020 in. The finishing insert actually removing a maximum 0.0012 in. due to it trailing the main cutting inserts.

On the cutter series 8000V one, two or even three (according to diameter) of the roughing cartridges may be replaced by an 81 FS 00 R-12 finishing cartridge.

These cartridges, having a fine adjusting set screw, are set according to the dimension (axial shift) “X”.

\[ X = 0.0012 - 0.0020 \text{ in.} \]
\[ (X = 0.0008 \text{ in. with a pressed insert with a nose radius}) \]

Maximum feed = 0.118 ipr

Note: 8000V Series assemblies that cannot use wiper cartridges are 90 degree A-Style, 20mm Round Button and 12mm and 16mm High Feed Mills.

Also, all 8010V cutter series are not possible to assemble with a wiper insert cartridge.

<table>
<thead>
<tr>
<th>Product</th>
<th>Spares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finishing Insert Part Number</td>
<td>Finishing Cartridge</td>
</tr>
<tr>
<td>SPHX 12 M5 12-EN</td>
<td>81 FS 00 R-12</td>
</tr>
</tbody>
</table>
General Cartridge Mounting Instructions

For the majority of current applications, 8000V and 8010V cutters with interchangeable cartridges do not have to be adjusted. The cartridges therefore are mounted by pressing the calibrated heel up against the setting track on the tool body (runout 0.002 in. max., with inserts with ground wiper edges). However, if greater accuracy is required, they may be adjusted individually with a runout of 0.0008 in.

A Mounting of Cartridges without Adjustment
1. Lubricate the screw under the head and on the thread (preferably with copper paste).
2. Clean cartridges and their pockets located in the milling cutter.
3. Introduce the first cartridge into its pocket and check if it moves freely.
4. Introduce screw No. 1 and tighten it moderately whilst pushing the cartridge against its axial setting track; mount all the cartridges in the same way.
5. Introduce screw No. 2 and lock it (tightening torque 7.37 Ft. Lbs.).
6. Lock screw No. 1 well with an extended allen key (tightening torque 13.26 Ft. Lbs.).
7. Mount the indexable inserts.
B Mounting of Cartridges with Adjustment

1. Lubricate the screws under the head and on the thread (preferably with copper paste).
2. Clean the cartridges and their pockets located in the milling cutter.
3. Introduce the first cartridge into its pocket and check it moves freely.
4. Introduce screws No. 1 and No. 2 while pushing the cartridge against its axial setting track, tighten screw No. 1.
5. Mount an insert with ground periphery which will serve as a gauge.
6. Gauge the height of the first mounted cartridge, then set the pre-setter to zero. Set the the pre-setter so that the measuring system indicates +0.0008 in.
7. Slightly loosen both screws; reverse the cartridge to just below zero in relation to pre-set +0.0008 in. and again moderately tighten screw No. 1. Using screw No. 2 advance the cartridge to zero. Then loosen screw No. 2.

Instructions for Tightening
After height zero has been reached:

A Lock screw No. 1 securely with an extended allen key (tightening torque 13.26 Ft. Lbs.). When doing this it is possible that the cartridge may reverse a little.
B Re-tighten screw No. 2 to jack cartridge back to zero position.

8. To adjust the other cartridges, proceed as follows:

A Mount the cartridge using screw No. 1 which must be moderately tightened.
B Mark, as a reference face with a red felt-tipped pen, the insert from the preceding cartridge and introduce it so as to use the same wiper edge.
C Rotate the dial gauge above the insert which has been mounted on the new cartridge.
D Introduce screw No. 2 which will help push the cartridge up to position zero on the dial. Loosen the screw.
E From this point onwards, follow the tightening instructions described in B 7. A and B.

9. Once the mounting of the cartridges is complete, mount the indexable inserts.

NOTE: By proceeding in this way with the mounting of cartridges, the insert seats should all be at a precise height (±0.0008 in.); only variations in the insert dimensions will then influence the axial runout of the milling cutter.
C Mounting & Setting of the Finishing Cartridges

The 8000V series of milling cutters have no additional and independent pockets, but according to their diameter one, two or even three roughing cartridges can be replaced by one finishing cartridge - 81 FS 00 R-12.

NOTE: When using two or even three finishing cartridges, their equal spacing on the milling cutter circumference must be ensured and the axial runout between the edges of the wiper inserts must be as small as possible.

MOUNTING & SETTING INSTRUCTIONS

1. A After the 81 FS 00 R-12 cartridge and its pocket in the cutter body have been cleaned, place the cartridge into its pocket and locate the heel against the setting track.

B Introduce the cartridge fixing screw and lightly tighten. The finishing inserts will protrude from the cutting plane of the roughing cartridges 0.008 - 0.040 in. depending upon the roughing inserts being used.

2. Check each insert on the roughing cartridges, whose mounting is described in A and B so that the highest insert can be marked and used to set the pre-setter to zero.

3. A Rotate the cutter until the plunger / lens is placed above the center of the finishing insert cutting edge.

B Screw in the set screw, which will move the 81 FS 00 R-12 finishing cartridge off the setting track until the measuring system indicates +0.0012 to 0.0020 in. from the zero already set. If the roughing cartridges are equipped with SCMT utility inserts (with as pressed periphery), the offset should only be +0.0008 in.

C Loosen the cartridge fixing screw and move the cartridge up and down to verify the dimension already set. If necessary, correct the preset dimension by adjusting the set screw.

4. Lightly tighten the cartridge fixing screw.

5. The 81 FS 00 R-12 finishing cartridges are able to be pulled back or pushed forward as necessary to allow for roughing or finishing work as they will always return to the dimension as preset in 3 B and C. So, simply unscrew the fixing screw, push the finishing cartridge either forward or backwards, then lock the screw again.

Note: Not suitable for use on 8010 V cutter bodies.