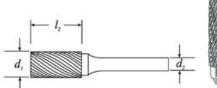
#### TYPE OF CUT

| TYPE OF CUT            | PICTURE  | RECOMMENDED USE  |
|------------------------|----------|--|
| Standard<br>Cut        |          | STANDARD CUT is a general purpose tool designed for cast iron, copper, brass and other ferrous materials. It will give good material removal and good work piece finishes. |
| Fine Cut               |          | FINE CUT improves finishes on hardened steel, stainless steel and cast iron. Operator control is improved.   |
| Coarse Cut             | mm.      | COARSE CUT is recommended for use on soft material such as copper, brass, aluminum, plastics, and rubber, where chip loading is a problem.                                 |
| Chip<br>Breaker        |          | CHIP BREAKER CUT will reduce sliver size and improve operator control at a slightly reduced surface finish.  |
| Standard<br>Double-Cut | 10,00,00 | STANDARD DOUBLE-CUT allows for rapid stock removal<br>and better operator control. Chip size is reduced and<br>tool speed can be slower than normal speeds.                |
| Coarse<br>Double-Cut   | 11.10.1  | COARSE DOUBLE-CUT is for fast stock removal in soft materials. Allows good operator control and produces small chips.  |
| Fine<br>Double-Cut     |          | FINE DOUBLE-CUT is very effective on heat treated and tough alloy steels. Chip size is reduced and it offers good operator control.  |
| Aluminum<br>Cut        |          | ALUMINUM CUT is for use on non-ferrous and non-<br>metallic materials. It is designed for rapid stock<br>removal with minimum chip loading.                                |
| Diamond<br>Cut         |          | DIAMOND CUT is very effective on heat treated and tough alloy steels. It produces very small chips and good operator control. Surface finish and tool life is reduced.     |

| Type Of Cut                       | 1     |
|-----------------------------------|-------|
| SA Cylinder Shape                 | 2     |
| SB Cylinder Shape with End Cut    | 3     |
| SC Cylinder Shape with Radius End | 4     |
| SD Ball Shape                     | 5     |
| SE Oval Shape                     | 6     |
| SF Tree Shape with Radius End     | 7     |
| SG Tree Shape with Pointed End    | 8     |
| SH Flame Shape                    | 8     |
| SJ, SK 60° & 90° Cone Shape       | 9     |
| SL Taper Shape with Radius End    | 10    |
| SM, SN Cone & Inverted Cone Shape | 11    |
| Long Shank                        | 12    |
| Mold, Tool & Die Making           | 13-16 |

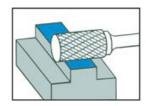
#### Cylindrical Shape SA













| TOOL<br>NO.                       | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |  |
|-----------------------------------|--------------|-----------------|--------------|--|
| SA-11                             | 1/8"         | 1/2"            | 1/4"         |  |
| SA-12                             | 1/8"         | 5/8"            | 1/4"         |  |
| SA-13                             | 5/32"        | 5/8"            | 1/4"         |  |
| SA-14                             | 3/16"        | 5/8"            | 1/4"         |  |
| SA-1                              | 1/4"         | 5/8"            | 1/4"         |  |
| SA-1L                             | 1/4"         | 1"              | 1/4"         |  |
| SA-2                              | 5/16"        | 3/4"            | 1/4"         |  |
| SA-3                              | 3/8"         | 3/4"            | 1/4"         |  |
| SA-3L                             | 3/8"         | 1"              | 1/4"         |  |
| SA-3X                             | 3/8"         | 1-1/2"          | 1/4"         |  |
| SA-4                              | 7/16"        | 1"              | 1/4"         |  |
| SA-5                              | 1/2"         | 1"              | 1/4"         |  |
| SA-6                              | 5/8"         | 1"              | 1/4"         |  |
| SA-7                              | 3/4"         | 1"              | 1/4"         |  |
| SA-15                             | 3/4"         | 1/2"            | 1/4"         |  |
| SA-16                             | 3/4"         | 3/4"            | 1/4"         |  |
| SA-8                              | 7/8"         | 1"              | 1/4"         |  |
| SA-9                              | 1"           | 1"              | 1/4"         |  |
| 1/4" shapks are supplied standard |              |                 |              |  |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL                              | HEAD    | FLUTE   | SHANK |
|-----------------------------------|---------|---------|-------|
| NO.                               | DIA.    | LENGTH  | DIA   |
| SA-11M                            | 3 mm    | 12 mm   | 6 mm  |
| SA-12M                            | 3 mm    | 15.8 mm | 6 mm  |
| SA-13M                            | 4 mm    | 15.8 mm | 6 mm  |
| SA-14M                            | 5 mm    | 15.8 mm | 6 mm  |
| SA-1M                             | 6 mm    | 15.8 mm | 6 mm  |
| SA-1LM                            | 6 mm    | 25 mm   | 6 mm  |
| SA-2M                             | 8 mm    | 19 mm   | 6 mm  |
| SA-3M                             | 9.5 mm  | 19 mm   | 6 mm  |
| SA-3LM                            | 9.5 mm  | 25 mm   | 6 mm  |
| SA-3XM                            | 9.5 mm  | 37 mm   | 6 mm  |
| SA-4M                             | 11 mm   | 25 mm   | 6 mm  |
| SA-5M                             | 12.7 mm | 25 mm   | 6 mm  |
| SA-6M                             | 16 mm   | 25 mm   | 6 mm  |
| SA-7M                             | 19 mm   | 25 mm   | 6 mm  |
| SA-15M                            | 19 mm   | 12 mm   | 6 mm  |
| SA-16M                            | 19 mm   | 19 mm   | 6 mm  |
| SA-8M                             | 22.3 mm | 25 mm   | 6 mm  |
| SA-9M                             | 25 mm   | 25 mm   | 6 mm  |
| 6 mm shanks are supplied standard |         |         |       |



| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SA-1AL      | 1/4"         | 3/4"            | 1/4"         |
| SA-3AL      | 3/8"         | 3/4"            | 1/4"         |
| SA-5AL      | 1/2"         | 1"              | 1/4"         |
| SA-6AL      | 5/8"         | 1"              | 1/4"         |
| SA-7AL      | 3/4"         | 1"              | 1/4"         |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter. Metric shanks available on request.

| TOOL    | HEAD    | FLUTE  | SHANK |
|---------|---------|--------|-------|
| NO.     | DIA.    | LENGTH | DIA   |
| SA-1ALM | 6 mm    | 19 mm  | 6 mm  |
| SA-3ALM | 9.5 mm  | 19 mm  | 6 mm  |
| SA-5ALM | 12 mm   | 25 mm  | 6 mm  |
| SA-6ALM | 15.8 mm | 25 mm  | 6 mm  |
| SA-7ALM | 19 mm   | 25 mm  | 6 mm  |

unless ordered otherwise. 8mm

shanks are recommended on all Burs

larger than 12mm diameter.

#### Cylindrical Shape SB(W / End Cut)





| TOOL<br>NO.                       | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-----------------------------------|--------------|-----------------|--------------|
| SB-11                             | 1/8"         | 1/2"            | 1/4"         |
| SB-12                             | 1/8"         | 5/8"            | 1/4"         |
| SB-13                             | 5/32"        | 5/8"            | 1/4"         |
| SB-14                             | 3/16"        | 5/8"            | 1/4"         |
| SB-1                              | 1/4"         | 5/8"            | 1/4"         |
| SB-1L                             | 1/4"         | 1"              | 1/4"         |
| SB-2                              | 5/16"        | 3/4"            | 1/4"         |
| SB-3                              | 3/8"         | 3/4"            | 1/4"         |
| SB-3L                             | 3/8"         | 1"              | 1/4"         |
| SB-3X                             | 3/8"         | 1-1/2"          | 1/4"         |
| SB-4                              | 7/16"        | 1"              | 1/4"         |
| SB-5                              | 1/2"         | 1"              | 1/4"         |
| SB-6                              | 5/8"         | 1"              | 1/4"         |
| SB-7                              | 3/4"         | 1"              | 1/4"         |
| SB-15                             | 3/4"         | 1/2"            | 1/4"         |
| SB-16                             | 3/4"         | 3/4"            | 1/4"         |
| SB-8                              | 7/8"         | 1"              | 1/4"         |
| SB-9                              | 1"           | 1"              | 1/4"         |
| 1/4" shanks are supplied standard |              |                 |              |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SB-11M      | 3 mm         | 12 mm           | 6 mm         |
| SB-12M      | 3 mm         | 15.8 mm         | 6 mm         |
| SB-13M      | 4 mm         | 15.8 mm         | 6 mm         |
| SB-14M      | 5 mm         | 15.8 mm         | 6 mm         |
| SB-1M       | 6 mm         | 15.8 mm         | 6 mm         |
| SB-1LM      | 6 mm         | 25 mm           | 6 mm         |
| SB-2M       | 8 mm         | 19 mm           | 6 mm         |
| SB-3M       | 9.5 mm       | 19 mm           | 6 mm         |
| SB-3LM      | 9.5 mm       | 25 mm           | 6 mm         |
| SB-3XM      | 9.5 mm       | 37 mm           | 6 mm         |
| SB-4M       | 11 mm        | 25 mm           | 6 mm         |
| SB-5M       | 12.7 mm      | 25 mm           | 6 mm         |
| SB-6M       | 16 mm        | 25 mm           | 6 mm         |
| SB-7M       | 19 mm        | 25 mm           | 6 mm         |
| SB-15M      | 19 mm        | 12 mm           | 6 mm         |
| SB-16M      | 19 mm        | 19 mm           | 6 mm         |
| SB-8M       | 22.3 mm      | 25 mm           | 6 mm         |
| SB-9M       | 25 mm        | 25 mm           | 6 mm         |

6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

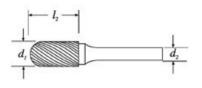




| TOOL   | HEAD | FLUTE         | SHANK |
|--------|------|---------------|-------|
| NO.    | DIA. | <b>LENGTH</b> | DIA   |
| SB-1AL | 1/4" | 3/4"          | 1/4"  |
| SB-3AL | 3/8" | 3/4"          | 1/4"  |
| SB-5AL | 1/2" | 1"            | 1/4"  |
| SB-6AL | 5/8" | 1"            | 1/4"  |
| SB-7AL | 3/4" | 1"            | 1/4"  |

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SB-1ALM     | 6 mm         | 19 mm           | 6 mm         |
| SB-3ALM     | 9.5 mm       | 19 mm           | 6 mm         |
| SB-5ALM     | 12 mm        | 25 mm           | 6 mm         |
| SB-6ALM     | 15.8 mm      | 25 mm           | 6 mm         |
| SB-7ALM     | 19 mm        | 25 mm           | 6 mm         |

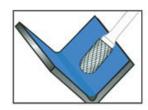
#### Cylindrical Shape SC(With Radius)













| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SC-11       | 1/8"         | 1/2"            | 1/4"         |
| SC-12       | 1/8"         | 5/8"            | 1/4"         |
| SC-13       | 5/32"        | 5/8"            | 1/4"         |
| SC-14       | 3/16"        | 5/8"            | 1/4"         |
| SC-1        | 1/4"         | 5/8"            | 1/4"         |
| SC-1L       | 1/4"         | 1"              | 1/4"         |
| SC-2        | 5/16"        | 3/4"            | 1/4"         |
| SC-3        | 3/8"         | 3/4"            | 1/4"         |
| SC-3L       | 3/8"         | 1"              | 1/4"         |
| SC-3X       | 3/8"         | 1-1/2"          | 1/4"         |
| SC-4        | 7/16"        | 1"              | 1/4"         |
| SC-5        | 1/2"         | 1"              | 1/4"         |
| SC-6        | 5/8"         | 1"              | 1/4"         |
| SC-7        | 3/4"         | 1"              | 1/4"         |
| SC-15       | 3/4"         | 1/2"            | 1/4"         |
| SC-16       | 3/4"         | 3/4"            | 1/4"         |
| SC-8        | 7/8"         | 1"              | 1/4"         |
| SC-9        | 1"           | 1"              | 1/4"         |
|             |              |                 |              |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SC-11M      | 3 mm         | 12 mm           | 6 mm         |
| SC-12M      | 3 mm         | 15.8 mm         | 6 mm         |
| SC-13M      | 4 mm         | 15.8 mm         | 6 mm         |
| SC-14M      | 5 mm         | 15.8 mm         | 6 mm         |
| SC-1M       | 6 mm         | 15.8 mm         | 6 mm         |
| SC-1LM      | 6 mm         | 25 mm           | 6 mm         |
| SC-2M       | 8 mm         | 19 mm           | 6 mm         |
| SC-3M       | 9.5 mm       | 19 mm           | 6 mm         |
| SC-3LM      | 9.5 mm       | 25 mm           | 6 mm         |
| SC-3XM      | 9.5 mm       | 37 mm           | 6 mm         |
| SC-4M       | 11 mm        | 25 mm           | 6 mm         |
| SC-5M       | 12.7 mm      | 25 mm           | 6 mm         |
| SC-6M       | 16 mm        | 25 mm           | 6 mm         |
| SC-7M       | 19 mm        | 25 mm           | 6 mm         |
| SC-15M      | 19 mm        | 12 mm           | 6 mm         |
| SC-16M      | 19 mm        | 19 mm           | 6 mm         |
| SC-8M       | 22.3 mm      | 25 mm           | 6 mm         |
| SC-9M       | 25 mm        | 25 mm           | 6 mm         |

6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

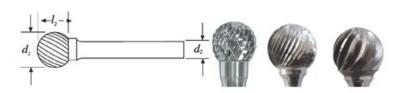


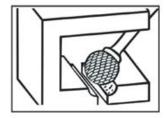
| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SC-1AL      | 1/4"         | 3/4"            | 1/4"         |
| SC-3AL      | 3/8"         | 3/4"            | 1/4"         |
| SC-5AL      | 1/2"         | 1"              | 1/4"         |
| SC-6AL      | 5/8"         | 1"              | 1/4"         |
| SC-7AL      | 3/4"         | 1"              | 1/4"         |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter. Metric shanks available on request.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SC-1ALM     | 6 mm         | 19 mm           | 6 mm         |
| SC-3ALM     | 9.5 mm       | 19 mm           | 6 mm         |
| SC-5ALM     | 12 mm        | 25 mm           | 6 mm         |
| SC-6ALM     | 15.8 mm      | 25 mm           | 6 mm         |
| SC-7ALM     | 19 mm        | 25 mm           | 6 mm         |

#### Ball Shape SD







| TOOL<br>NO. | HEAD<br>DIA. | SHANK<br>DIA |
|-------------|--------------|--------------|
| SD-11       | 1/8"         | 1/4"         |
| SD-14       | 3/16"        | 1/4"         |
| SD-1        | 1/4"         | 1/4"         |
| SD-2        | 5/16"        | 1/4"         |
| SD-3        | 3/8"         | 1/4"         |
| SD-4        | 7/16"        | 1/4"         |
| SD-5        | 1/2"         | 1/4"         |
| SD-6        | 5/8"         | 1/4"         |
| SD-7        | 3/4"         | 1/4"         |
| SD-9        | 1"           | 1/4"         |
|             |              |              |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | SHANK<br>DIA |
|-------------|--------------|--------------|
| SD-11M      | 3 mm         | 6 mm         |
| SD-14M      | 5 mm         | 6 mm         |
| SD-1M       | 6 mm         | 6 mm         |
| SD-2M       | 8 mm         | 6 mm         |
| SD-3M       | 9.5 mm       | 6 mm         |
| SD-4M       | 11 mm        | 6 mm         |
| SD-5M       | 12.7 mm      | 6 mm         |
| SD-6M       | 16 mm        | 6 mm         |
| SD-7M       | 19 mm        | 6 mm         |
| SD-9M       | 25 mm        | 6 mm         |

6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

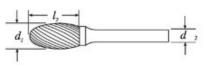


| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SD-1AL      | 1/4"         | 1/4"            | 1/4"         |
| SD-3AL      | 3/8"         | 3/8"            | 1/4"         |
| SD-5AL      | 1/2"         | 1/2"            | 1/4"         |
| SD-6AL      | 5/8"         | 5/8"            | 1/4"         |
| SD-7AL      | 3/4"         | 3/4"            | 1/4"         |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter. Metric shanks available on request.

| TOOL NO. |         | FLUTE<br>LENGTH | SHANK<br>DIA |
|----------|---------|-----------------|--------------|
| SD-1ALM  | 6 mm    | 6 mm            | 6 mm         |
| SD-3ALM  | 9.5 mm  | 9.5 mm          | 6 mm         |
| SD-5ALM  | 12 mm   | 12 mm           | 6 mm         |
| SD-6ALM  | 15.8 mm | 15.8 mm         | 6 mm         |
| SD-7ALM  | 19 mm   | 19 mm           | 6 mm         |

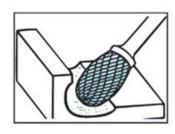
#### Oval Shape SE













| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SE-11       | 3/16"        | 5/16"           | 1/4"         |
| SE-1        | 1/4"         | 3/8"            | 1/4"         |
| SE-3        | 3/8"         | 5/8"            | 1/4"         |
| SE-5        | 1/2"         | 7/8"            | 1/4"         |
| SE-6        | 5/8"         | 1"              | 1/4"         |
| SE-7        | 3/4"         | 1"              | 1/4"         |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SE-11M      | 4.7 mm       | 7.9 mm          | 6 mm         |
| SE-1M       | 6 mm         | 9.5 mm          | 6 mm         |
| SE-3M       | 9.5 mm       | 16 mm           | 6 mm         |
| SE-5M       | 12.7 mm      | 22 mm           | 6 mm         |
| SE-6M       | 16 mm        | 25 mm           | 6 mm         |
| SE-7M       | 19 mm        | 25 mm           | 6 mm         |
|             |              |                 |              |

6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.



| TOOL   | HEAD | FLUTE         | SHANK |
|--------|------|---------------|-------|
| NO.    | DIA. | <b>LENGTH</b> | DIA   |
| SE-3AL | 3/8" | 5/8"          | 1/4"  |
| SE-5AL | 1/2" | 7/8"          | 1/4"  |
| SE-6AL | 5/8" | 1"            | 1/4"  |
| SE-7AL | 3/4" | 1"            | 1/4"  |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter. Metric shanks available on request.

| TOOL<br>NO. |         | FLUTE<br>LENGTH |      |
|-------------|---------|-----------------|------|
| SE-3ALM     | 9.5 mm  | 15.8 mm         | 6 mm |
| SE-5ALM     | 12 mm   | 22.3 mm         | 6 mm |
| SE-6ALM     | 15.8 mm | 25 mm           | 6 mm |
| SE-7ALM     | 19 mm   | 25 mm           | 6 mm |

#### Round Nose Tree Shape SF





| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SF-11       | 1/8"         | 1/2"            | 1/4"         |
| SF-1        | 1/4"         | 5/8"            | 1/4"         |
| SF-3        | 3/8"         | 3/4"            | 1/4"         |
| SF-4        | 7/16"        | 1"              | 1/4"         |
| SF-5        | 1/2"         | 1"              | 1/4"         |
| SF-13       | 1/2"         | 3/4"            | 1/4"         |
| SF-6        | 5/8"         | 1"              | 1/4"         |
| SF-7        | 3/4"         | 1"              | 1/4"         |
| SF-14       | 3/4"         | 1-1/4"          | 1/4"         |
| SF-15       | 3/4"         | 1-1/2"          | 1/4"         |
|             |              |                 |              |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SF-11M      | 3 mm         | 12.7 mm         | 6 mm         |
| SF-1M       | 6 mm         | 16 mm           | 6 mm         |
| SF-3M       | 9.5 mm       | 19 mm           | 6 mm         |
| SF-4M       | 11 mm        | 25 mm           | 6 mm         |
| SF-5M       | 12.7 mm      | 25 mm           | 6 mm         |
| SF-13M      | 12.7 mm      | 19 mm           | 6 mm         |
| SF-6M       | 16 mm        | 25 mm           | 6 mm         |
| SF-7M       | 19 mm        | 25 mm           | 6 mm         |
| SF-14M      | 19 mm        | 32 mm           | 6 mm         |
| SF-15M      | 19 mm        | 38 mm           | 6 mm         |

6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

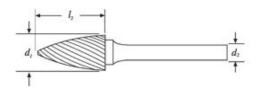


| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SF-1AL      | 1/4"         | 3/4"            | 1/4"         |
| SF-3AL      | 3/8"         | 3/4"            | 1/4"         |
| SF-5AL      | 1/2"         | 1"              | 1/4"         |
| SF-6AL      | 5/8"         | 1"              | 1/4"         |
| SF-14AL     | 3/4"         | 1-1/4"          | 1/4"         |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter. Metric shanks available on request.

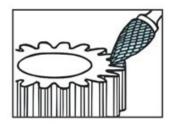
| TOOL<br>NO.  | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|--------------|--------------|-----------------|--------------|
| SF-1ALM      | 6 mm         | 19 mm           | 6 mm         |
| SF-3ALM      | 9.5 mm       | 19 mm           | 6 mm         |
| SF-5ALM      | 12 mm        | 25 mm           | 6 mm         |
| SF-6ALM      | 15.8 mm      | 25 mm           | 6 mm         |
| SF-<br>14ALM | 19 mm        | 32 mm           | 6 mm         |

#### Pointed Tree Shape SG











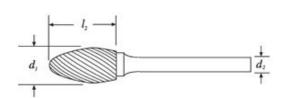
| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SG-1        | 1/4"         | 5/8"            | 1/4"         |
| SG-2        | 5/16"        | 3/4"            | 1/4"         |
| SG-3        | 3/8"         | 3/4"            | 1/4"         |
| SG-5        | 1/2"         | 1"              | 1/4"         |
| SG-13       | 1/2"         | 3/4"            | 1/4"         |
| SG-6        | 5/8"         | 1"              | 1/4"         |
| SG-7        | 3/4"         | 1"              | 1/4"         |
| SG-14       | 3/4 "        | 1-1/4"          | 1/4 "        |
| SG-15       | 3/4"         | 1-1/2"          | 1/4"         |
| 4 / 4 11 1  | -            | 19 1            |              |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SG-1M       | 6 mm         | 16 mm           | 6 mm         |
| SG-2M       | 8 mm         | 19 mm           | 6 mm         |
| SG-3M       | 9.5 mm       | 19 mm           | 6 mm         |
| SG-5M       | 12.7 mm      | 25 mm           | 6 mm         |
| SG-13M      | 12.7 mm      | 19 mm           | 6 mm         |
| SG-6M       | 16 mm        | 25 mm           | 6 mm         |
| SG-7M       | 19 mm        | 25 mm           | 6 mm         |
| SG-14       |              |                 |              |
| SG-15M      | 19 mm        | 38 mm           | 6 mm         |

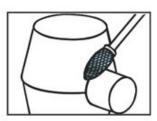
6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

#### Flame Shape SH











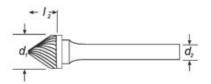
| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SH-1        | 1/4"         | 5/8"            | 1/4"         |
| SH-2        | 5/16"        | 3/4"            | 1/4"         |
| SH-5        | 1/2"         | 1-1/4"          | 1/4"         |
| SH-6        | 5/8"         | 1-7/16"         | 1/4"         |
| SH-7        | 3/4"         | 1-5/8"          | 1/4"         |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SH-1M       | 6 mm         | 16 mm           | 6 mm         |
| SH-2M       | 8 mm         | 19 mm           | 6 mm         |
| SH-5M       | 12.7 mm      | 32 mm           | 6 mm         |
| SH-6M       | 16 mm        | 36 mm           | 6 mm         |
| SH-7M       | 19 mm        | 41 mm           | 6 mm         |

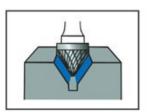
6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

## Cone ShapeSJ (60°











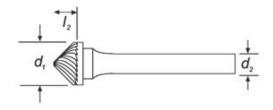
| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SJ-1        | 1/4"         | 3/16"           | 1/4"         |
| SJ-3        | 3/8"         | 5/16"           | 1/4"         |
| SJ-5        | 1/2"         | 7/16"           | 1/4"         |
| SJ-6        | 5/8"         | 9/16"           | 1/4"         |
| SJ-7        | 3/4"         | 11/16"          | 1/4"         |
| SJ-9        | 1"           | 15/16"          | 1/4"         |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SJ-1M       | 6 mm         | 4 mm            | 6 mm         |
| SJ-3M       | 9.5 mm       | 8 mm            | 6 mm         |
| SJ-5M       | 12.7 mm      | 11 mm           | 6 mm         |
| SJ-6M       | 16 mm        | 14.5 mm         | 6 mm         |
| SJ-7M       | 19 mm        | 17.5 mm         | 6 mm         |
| SJ-9M       | 25 mm        | 24.5 mm         | 6 mm         |

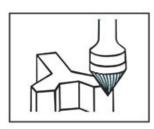
6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

## Cone Shape SK(90°











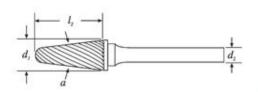
| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| 140.        | DIA.         | LLINGIII        | DIA          |
| SK-1        | 1/4"         | 1/8"            | 1/4"         |
| SK-3        | 3/8"         | 3/16"           | 1/4"         |
| SK-5        | 1/2"         | 1/4"            | 1/4"         |
| SK-6        | 5/8"         | 5/16"           | 1/4"         |
| SK-7        | 3/4"         | 3/8"            | 1/4"         |
| SK-9        | 1"           | 1/2"            | 1/4"         |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SK-1M       | 6 mm         | 3 mm            | 6 mm         |
| SK-3M       | 9.5 mm       | 4.7 mm          | 6 mm         |
| SK-5M       | 12.7 mm      | 6.3 mm          | 6 mm         |
| SK-6M       | 16 mm        | 8 mm            | 6 mm         |
| SK-7M       | 19 mm        | 9.5 mm          | 6 mm         |
| SK-9M       | 25 mm        | 12.7 mm         | 6 mm         |

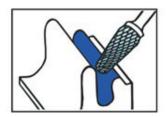
6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

#### Taper Shape(Cone W / Radius End) SL











| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SL-1        | 1/4"         | 3/16"           | 1/4"         |
| SL-2        | 5/16"        | 7/8"            | 1/4"         |
| SL-3        | 3/8"         | 1-1/16"         | 1/4"         |
| SL-4        | 1/2"         | 1-1/8"          | 1/4"         |
| SL-5        | 5/8"         | 1-3/16"         | 1/4"         |
| SL-6        | 5/8"         | 1-5/16"         | 1/4"         |
| SL-7        | 3/4"         | 1-1/2"          | 1/4"         |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |
|-------------|--------------|-----------------|--------------|
| SL-1M       | 6 mm         | 16 mm           | 6 mm         |
| SL-2M       | 8 mm         | 22 mm           | 6 mm         |
| SL-3M       | 9.5 mm       | 27 mm           | 6 mm         |
| SL-4M       | 12.7 mm      | 28 mm           | 6 mm         |
| SL-5M       | 16 mm        | 30 mm           | 6 mm         |
| SL-6M       | 15.9 mm      | 33 mm           | 6 mm         |
| SL-7M       | 19 mm        | 38 mm           | 6 mm         |

6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

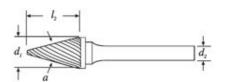


| TOOL   | HEAD | FLUTE   | SHANK |
|--------|------|---------|-------|
| NO.    | DIA. | LENGTH  | DIA   |
| SL-3AL | 3/8" | 1-1/16" | 1/4"  |
| SL-4AL | 1/2" | 1-1/8"  | 1/4"  |
| SL-5AL | 5/8" | 1-3/16" | 1/4"  |
| SL-6AL | 5/8" | 1-5/16" | 1/4"  |
| SI-7AI | 3/4" | 1-1/2"  | 1/4"  |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter. Metric shanks available on request.

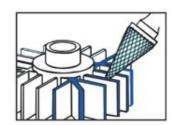
| TOOL<br>NO. |         | FLUTE<br>LENGTH |      |
|-------------|---------|-----------------|------|
| SL-3ALM     | 9.5 mm  | 27 mm           | 6 mm |
| SL-4ALM     | 12 mm   | 29 mm           | 6 mm |
| SL-5ALM     | 15.8 mm | 30 mm           | 6 mm |
| SL-6ALM     | 15.8 mm | 34 mm           | 6 mm |
| SL-7ALM     | 19 mm   | 38 mm           | 6 mm |

#### Cone Shape SM











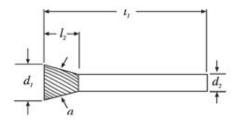
| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA. |
|-------------|--------------|-----------------|---------------|
| SM-1        | 1/4"         | 1/2"            | 1/4"          |
| SM-2        | 1/4"         | 3/4"            | 1/4"          |
| SM-3        | 1/4"         | 1"              | 1/4"          |
| SM-4        | 3/8"         | 5/8"            | 1/4"          |
| SM-5        | 1/2"         | 7/8"            | 1/4"          |
| SM-6        | 5/8"         | 1"              | 1/4"          |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | INCLUDED<br>ABGLE |
|-------------|--------------|-----------------|-------------------|
| SM-1M       | 6 mm         | 12.7 mm         | 22°               |
| SM-2M       | 6 mm         | 19 mm           | 14°               |
| SM-3M       | 6 mm         | 25 mm           | 10°               |
| SM-4M       | 9.5 mm 16 mm |                 | 28°               |
| SM-5M       | 12.7 mm      | 22 mm           | 28°               |
| SM-6M       | 16 mm        | 25 mm           | 31°               |

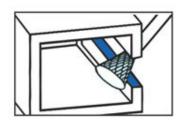
6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

#### Cone Shape SN











| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA. |
|-------------|--------------|-----------------|---------------|
| SN-1        | 1/4"         | 5/16"           | 1/4"          |
| SN-2        | 3/8"         | 3/8"            | 1/4"          |
| SN-4        | 1/2"         | 1/2"            | 1/4"          |
| SN-6        | 5/8"         | 3/4"            | 1/4"          |
| SN-7        | 3/4"         | 5/8"            | 1/4"          |

1/4" shanks are supplied standard unless ordered otherwise. 3/8" shanks are recommended on all Burs larger than 1/2" diameter.

| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | INCLUDED<br>ABGLE |
|-------------|--------------|-----------------|-------------------|
| SN-1M       | 6 mm         | 8 mm            | 10°               |
| SN-2M       | 9.5 mm       | 9.5 mm          | 13°               |
| SN-4M       | 12.7 mm      | 12.7 mm         | 28°               |
| SN-6M       | 16 mm        | 19 mm           | 18°               |
| SN-7M       | 19 mm        | 16 mm           | 30°               |

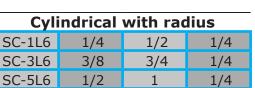
6 mm shanks are supplied standard unless ordered otherwise. 8 mm shanks are recommended on all Burs larger than 12 mm diameter.

Burs listed are with 6" long steel shanks. Special shank length are available upon request.



| TOOL<br>NO. | HEAD<br>DIA. | FLUTE<br>LENGTH | SHANK<br>DIA |  |
|-------------|--------------|-----------------|--------------|--|
|             | Cylinde      | r Shpae         |              |  |
| SA-1L6      | 1/4          | 1/2             | 1/4          |  |
| SA-3L6      | 3/8          | 3/4             | 1/4          |  |
| SA-5L6      | 1/2          | 1               | 1/4          |  |







| Ball Shape |     |      |     |  |  |  |
|------------|-----|------|-----|--|--|--|
| SD-1L6     | 1/4 | 7/32 | 1/4 |  |  |  |
| SD-3L6     | 3/8 | 5/16 | 1/4 |  |  |  |
| SD-5L6     | 1/2 | 7/16 | 1/4 |  |  |  |



| Over Shape |     |     |     |  |  |  |
|------------|-----|-----|-----|--|--|--|
| SE-1L6     | 1/4 | 3/8 | 1/4 |  |  |  |
| SE-3L6     | 3/8 | 5/8 | 1/4 |  |  |  |
| SE-5L6     | 1/2 | 7/8 | 1/4 |  |  |  |





#### **Round Nose Tree**

| SF-1L6 | 1/4 | 1/2 | 1/4 |
|--------|-----|-----|-----|
| SF-3L6 | 3/8 | 3/4 | 1/4 |
| SF-5L6 | 1/2 | 1   | 1/4 |





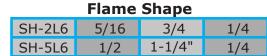
# **Tree Shape Pointed End**

| SG-1L6 | 1/4 | 1/2 | 1/4 |
|--------|-----|-----|-----|
| SG-3L6 | 3/8 | 3/4 | 1/4 |
| SG-5L6 | 1/2 | 1   | 1/4 |



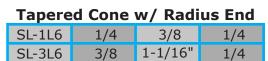












1/2

SL-4L6

1-1/8"

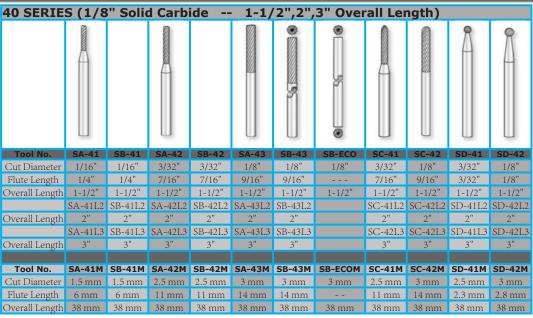
1/4

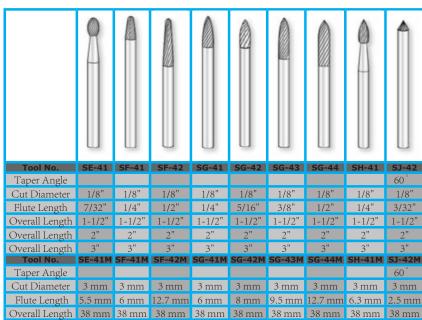






#### 41-43 Series-Mold, Tool&Die Making

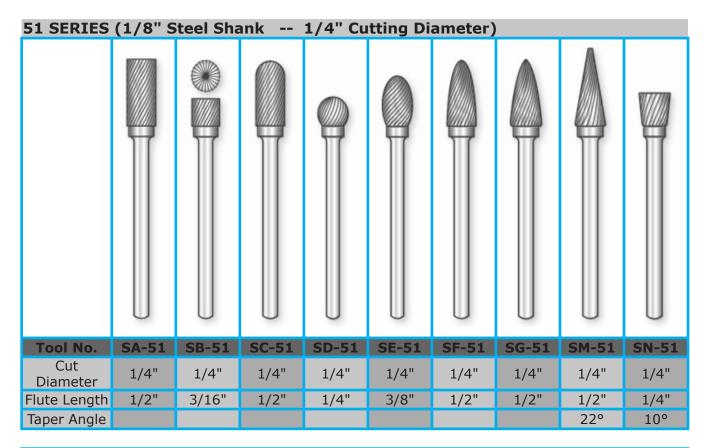




| Tool No.       | SK-42  | SL-41  | SL-42  | SM-41  | SM-42  | SM-43  | SN-41  | SN-42  |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Taper Angle    | 90°    | 8°     | 8°     | 12°    | 14°    | 7°     | 10°    | 10°    |
| Cut Diameter   | 1/8"   | 1/8"   | 1/8"   | 1/8"   | 1/8"   | 1/8"   | 3/32"  | 1/8"   |
| Flute Length   | 1/16"  | 3/8"   | 1/2"   | 11/32" | 7/16"  | 5/8"   | 1/8"   | 3/16"  |
| Overall Length | 1-1/2" | 1-1/2" | 1-1/2" | 1-1/2" | 1-1/2" | 1-1/2" | 1-1/2" | 1-1/2" |
| Overall Length | 2"     | 2"     | 2"     | 2"     | 2"     | 2"     | 2"     | 2"     |
| Overall Length | 3"     | 3"     | 3"     | 3"     | 3"     | 3"     | 3"     | 3"     |

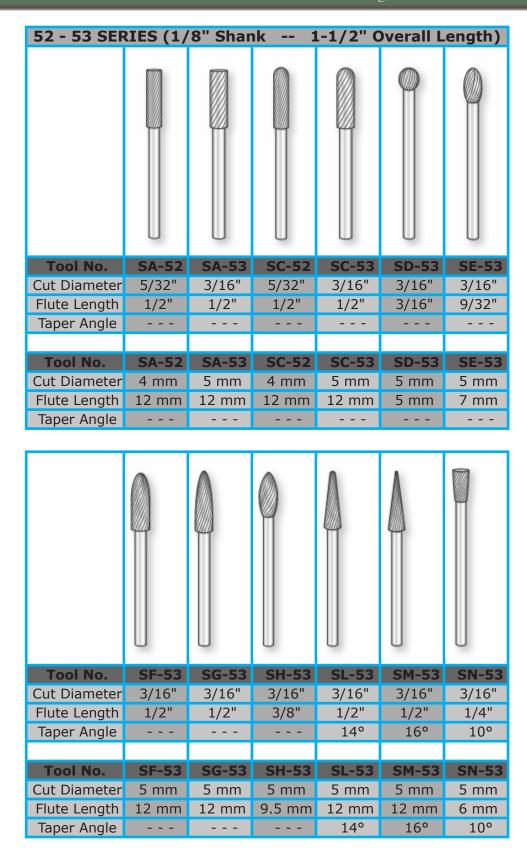
| Tool No.       | SK-42M | SL-41M | SL-42M  | SM-41M | SM-42M | SM-43M | SN-41M | SN-42M |
|----------------|--------|--------|---------|--------|--------|--------|--------|--------|
| Taper Angle    | 90°    | 8°     | 8°      | 12°    | 14°    | 7°     | 10°    | 10°    |
| Cut Diameter   | 3 mm   | 3 mm   | 3 mm    | 3 mm   | 3 mm   | 3 mm   | 2.5 mm | 3 mm   |
| Flute Length   | 1.5 mm | 9.5 mm | 12.7 mm | 8.9 mm | 11 mm  | 16 mm  | 3 mm   | 4 mm   |
| Overall Length | 38 mm  | 38 mm  | 38 mm   | 38 mm  | 38 mm  | 38 mm  | 38 mm  | 38 mm  |

#### 51 Series-Mold, Tool&Die Making



| Tool No.        | <b>SA-51M</b> | SB-51M | SC-51M  | SD-51M | SE-51M | SF-51M  | SG-51M  | SM-51M  | SN-51M |
|-----------------|---------------|--------|---------|--------|--------|---------|---------|---------|--------|
| Cut<br>Diameter | 6 mm          | 6 mm   | 6 mm    | 6 mm   | 6 mm   | 6 mm    | 6 mm    | 6 mm    | 6 mm   |
| Flute Length    | 12.7 mm       | 5 mm   | 12.7 mm | 6 mm   | 9.5 mm | 12.7 mm | 12.7 mm | 12.7 mm | 6 mm   |
| Taper Angle     |               |        |         |        |        |         |         | 22°     | 10°    |

#### 52-53 Series-Mold, Tool&Die Making



#### 61-63 & 81 Series-Mold, Tool&Die Making

| 61 - 63 SERI | ES (3/3 | 2" Solid | Carbide | e 1-   | 1-1/4" Overall Length) |        |        |        |        |  |
|--------------|---------|----------|---------|--------|------------------------|--------|--------|--------|--------|--|
|              |         |          |         |        |                        |        |        |        |        |  |
| Tool No.     | SA-61   | SA-63    | SC-61   | SD-61  | SE-61                  | SF-61  | SG-61  | SM-61  | SN-61  |  |
| Cut Diameter | 1/16"   | 3/32"    | 3/32"   | 3/32"  | 3/32"                  | 3/32"  | 3/32"  | 3/32"  | 3/32"  |  |
| Flute Length | 1/4"    | 3/8"     | 3/8"    | 3/32"  | 1/8"                   | 1/4"   | 1/4"   | 1/4"   | 1/8"   |  |
|              |         |          |         |        |                        |        |        |        |        |  |
| Tool No.     | SA-61   | SA-63    | SC-61   | SD-61  | SE-61                  | SF-61  | SG-61  | SM-61  | SN-61  |  |
| Cut Diameter | 1.5 mm  | 2.5 mm   | 2.5 mm  | 2.5 mm | 2.5 mm                 | 2.5 mm | 2.5 mm | 2.5 mm | 2.5 mm |  |
| Flute Length | 6 mm    | 9.5 mm   | 9.5 mm  | 2.5 mm | 3 mm                   | 6 mm   | 6 mm   | 6 mm   | 3 mm   |  |

| 81 SERIES (  | SERIES (3/16" Solid Carbide 2" Overall Length) |       |       |       |       |       |       |       |  |  |
|--|--|-------|-------|-------|-------|-------|-------|-------|--|--|
|  |  |       |       |       |       |       |       |       |  |  |
| Tool No.   | SA-81  | SC-81 | SD-81 | SE-81 | SF-81 | SG-81 | SL-81 | SN-81 |  |  |
| Cut Diameter   | 3/16"  | 3/16" | 3/16" | 3/16" | 3/16" | 3/16" | 3/16" | 3/16" |  |  |
| Flute Length   | 1/2"   | 1/2"  | 3/16" | 9/32" | 1/2"  | 1/2"  | 7/16" | 1/4"  |  |  |
|  |  |       |       |       |       |       |       |       |  |  |
| Tool No.   | SA-81  | SC-81 | SD-81 | SE-81 | SF-81 | SG-81 | SL-81 | SN-81 |  |  |
| Cut Diameter   | 5 mm   | 5 mm  | 5 mm  | 5 mm  | 5 mm  | 5 mm  | 5 mm  | 5 mm  |  |  |
| Flute Length   | 12 mm  | 12 mm | 5 mm  | 7 mm  | 12 mm | 12 mm | 11 mm | 6 mm  |  |  |
| This sery need moulding developing unpon demand, negotiable. |  |       |       |       |       |       |       |       |  |  |

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