

## Profile Milling Inserts

### Small Ball Nose & Back Draft Inserts

| VRBS | Tool Ordering Number | Dimensions |       |       | Grade |     |     | Description   |
|------|----------------------|------------|-------|-------|-------|-----|-----|---|
|      |                      | D          | L     | R     | XRN   | TLN | HSN |   |
|      | VRBS-0250            | 0.250      | 0.294 | 0.125 | •     | •   | •   | Used for semi and finish-milling small radius or detail work, and surface milling in soft and hard steel, cast iron, aerospace and non-ferrous alloys, graphite, etc. Suitable for high speed and hard milling. |
|      | VRBS-0312            | 0.312      | 0.184 | 0.156 | •     | •   | •   |   |
| VBD  | Tool Ordering Number | Dimensions |       |       | Grade |     |     | Description   |
|      |                      | D          | L     | R     | XRN   | TLN | HSN |   |
|      | VBD-0250-R01         | 0.250      | 0.313 | 0.015 | •     | •   | •   | Used for semi and finish-milling small radius or detail work, and surface milling in soft and hard steel, cast iron, aerospace and non-ferrous alloys, graphite, etc. Suitable for high speed and hard milling. |
|      | VBD-0312-R01         | 0.312      | 0.215 | 0.015 | •     | •   | •   |   |

### High Feed Inserts

| HF | Tool Ordering Number | Dimensions |        |       | Grade |     |     | Description  |
|----|----------------------|------------|--------|-------|-------|-----|-----|--|
|    |                      | D          | L      | PR    | XRN   | TLN | HSN |  |
|    | HF-0375...           | 0.375      | 0.0125 | 0.028 | •     | •   | •   | Millstar HF insert is designed for High feed and High speed machining. It runs at high cutting speed and feed rates with shallow depth of cut. It allows the chip to flow up and out of the cut quickly. It allows heavy chip loads. |
|    | HF-0500...           | 0.500      | 0.0203 | 0.052 | •     | •   | •   |  |
|    | HF-0625...           | 0.625      | 0.0235 | 0.071 | •     | •   | •   |  |
|    | HF-0750...           | 0.750      | 0.0315 | 0.094 | •     | •   | •   |  |
|    | HF-1000...           | 1.000      | 0.0345 | 0.111 | •     | •   | •   |  |

### Cutting Recommendations for High Feed Inserts

| Work Material         | Material Hardness | Cutting Depth at Diameter ap max |       |       |       |        |          | Cutting Width | Insert  | Coating Type Recom. | Cut speed at D<br>sfm/min | Max feed per tooth fz at cutting insert diameter D |             |             |             |       |
|-----------------------|-------------------|----------------------------------|-------|-------|-------|--------|----------|---------------|---------|---------------------|---------------------------|--|-------------|-------------|-------------|-------|
|                       |                   | 0.375                            | 0.500 | 0.625 | 0.750 | 1.000  | Ae max   |               |         |                     |                           | 0.375  | 0.500       | 0.625       | 0.750       | 1.000 |
| H13/1.2344/<br>SKD61  | <41               | 0.014                            | 0.019 | 0.023 | 0.028 | 0.037  | 60 - 75% | HF            | XRN/HSN | 515 - 715           | 0.012~0.016               | 0.017~0.021  | 0.021~0.025 | 0.026~0.030 | 0.035~0.039 |       |
| H13/1.2344/<br>SKD61  | 41-50             | 0.012                            | 0.016 | 0.019 | 0.023 | 0.031  | 60 - 75% | HF            | XRN/HSN | 415 - 615           | 0.010~0.014               | 0.014~0.018  | 0.017~0.021 | 0.021~0.025 | 0.029~0.033 |       |
| H13/1.2344/<br>SKD61  | 51+               | 0.009                            | 0.013 | 0.016 | 0.019 | 0.025  | 60 - 75% | HF            | HSN     | 315 - 515           | 0.007~0.011               | 0.011~0.015  | 0.014~0.018 | 0.017~0.021 | 0.023~0.027 |       |
| A2/1.2363/<br>SKD12   | <41               | 0.014                            | 0.019 | 0.023 | 0.028 | 0.037  | 60 - 75% | HF            | XRN/HSN | 515 - 715           | 0.012~0.016               | 0.017~0.021  | 0.021~0.025 | 0.026~0.030 | 0.035~0.039 |       |
| A2/1.2363/<br>SKD12   | 14-50             | 0.012                            | 0.016 | 0.019 | 0.023 | 0.0319 | 60 - 75% | HF            | XRN/HSN | 415 - 615           | 0.010~0.014               | 0.014~0.018  | 0.017~0.021 | 0.021~0.025 | 0.029~0.033 |       |
| A2/1.2363/<br>SKD12   | 51+               | 0.009                            | 0.013 | 0.016 | 0.019 | 0.025  | 60 - 75% | HF            | HSN     | 315 - 515           | 0.007~0.011               | 0.011~0.015  | 0.014~0.018 | 0.017~0.021 | 0.023~0.027 |       |
| P20/1.2330            | <41               | 0.014                            | 0.019 | 0.023 | 0.028 | 0.037  | 60 - 75% | HF            | XRN/HSN | 515 - 715           | 0.012~0.016               | 0.017~0.021  | 0.021~0.025 | 0.026~0.030 | 0.035~0.039 |       |
| P20/1.2330            | 14-50             | 0.012                            | 0.016 | 0.019 | 0.023 | 0.031  | 60 - 75% | HF            | XRN/HSN | 415 - 615           | 0.010~0.014               | 0.014~0.018  | 0.017~0.021 | 0.021~0.025 | 0.029~0.033 |       |
| D2/1.2379/<br>SKD11   | <41               | 0.014                            | 0.019 | 0.023 | 0.028 | 0.037  | 60 - 75% | HF            | XRN/HSN | 515 - 715           | 0.012~0.016               | 0.017~0.021  | 0.021~0.025 | 0.026~0.030 | 0.035~0.039 |       |
| D2/1.2379/<br>SKD11   | 14-50             | 0.012                            | 0.016 | 0.019 | 0.023 | 0.031  | 60 - 75% | HF            | XRN/HSN | 415 - 615           | 0.010~0.014               | 0.014~0.018  | 0.017~0.021 | 0.021~0.025 | 0.029~0.033 |       |
| D2/1.2379/<br>SKD11   | 51+               | 0.009                            | 0.013 | 0.016 | 0.019 | 0.025  | 60 - 75% | HF            | HSN     | 315 - 515           | 0.007~0.011               | 0.011~0.015  | 0.014~0.018 | 0.017~0.021 | 0.023~0.027 |       |
| Grey Cast Iron/<br>GG | <41               | 0.014                            | 0.019 | 0.023 | 0.028 | 0.037  | 60 - 75% | HF            | XRN/HSN | 515 - 715           | 0.012~0.016               | 0.017~0.021  | 0.021~0.025 | 0.026~0.030 | 0.035~0.039 |       |
| Cast Iron/GGG         | 41+               | 0.012                            | 0.016 | 0.019 | 0.023 | 0.031  | 60 - 75% | HF            | XRN/HSN | 515 - 715           | 0.012~0.016               | 0.017~0.021  | 0.021~0.025 | 0.026~0.030 | 0.035~0.039 |       |

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### Small Ball Nose & Back Draft Inserts

| VRBS | Tool Ordering Number | Dimensions |      |         | Grade |     |     | Description   |
|------|----------------------|------------|------|---------|-------|-----|-----|---|
|      |                      | D          | L    | R       | XRN   | TLN | HSN |   |
|      | VRBS-6               | 6          | 8,10 | 3       | •     | •   | •   | Used for semi and finish-milling small radius or detail work, and surface milling in soft and hard steel, cast iron, aerospace and non-ferrous alloys, graphite, etc. Suitable for high speed and hard milling. |
|      | VRBS-8               | 8          | 4,50 | 4       | •     | •   | •   |   |
| VBD  | Tool Ordering Number | Dimensions |      |         | Grade |     |     | Description   |
|      |                      | D          | L    | R       | XRN   | TLN | HSN |   |
|      | VBD-06               | 6          | 8,6  | 0,1/0,4 | •     | •   | •   | Used for semi and finish-milling small radius or detail work, and surface milling in soft and hard steel, cast iron, aerospace and non-ferrous alloys, graphite, etc. Suitable for high speed and hard milling. |
|      | VBD-08               | 8          | 5    | 0,1/0,4 | •     | •   | •   |   |

### Metric High Feed Inserts

| HF | Tool Ordering Number | Dimensions |   |      | Grade |     |     | Description  |
|----|----------------------|------------|---|------|-------|-----|-----|--|
|    |                      | D          | L | PR   | XRN   | TLN | HSN |  |
|    | HF-10                | 10         | 3 | 1,00 | •     | •   | •   | Millstar HF insert is designed for High feed and High speed machining. It runs at high cutting speed and feed rates with shallow depth of cut. It allows the chip to flow up and out of the cut quickly. It allows heavy chip loads. |
|    | HF-12                | 12         | 4 | 1,43 | •     | •   | •   |  |
|    | HF-16                | 16         | 5 | 1,94 | •     | •   | •   |  |
|    | HF-20                | 20         | 6 | 2,26 | •     | •   | •   |  |
|    | HF-25                | 25         | 7 | 2,82 | •     | •   | •   |  |

### Cutting Recommendations for High Feed Inserts

| Work Material     | Material Hardness | Cutting Depth at Diameter ap max |      |      |      |      | Cutting Width Ae max | Insert | Coating Type Recom. | Cut speed at D m/min | Max feed per tooth fz at cutting insert diameter D |           |            |            |           |
|-------------------|-------------------|----------------------------------|------|------|------|------|----------------------|--------|---------------------|----------------------|--|-----------|------------|------------|-----------|
|                   |                   | 10                               | 12   | 16   | 20   | 25   |                      |        |                     |                      | 10   | 12        | 16         | 20         | 25        |
| H13/1,2344/SKD61  | <41               | 0,38                             | 0,46 | 0,61 | 0,76 | 0,95 | 60 - 75%             | HF     | XRN/HSN             | 157 - 218            | 0,28~0,48  | 0,36~0,56 | 0,051~0,71 | 0,66~0,86  | 0,85~1,05 |
| H13/1,2344/SKD61  | 41-50             | 0,32                             | 0,38 | 0,51 | 0,64 | 0,80 | 60 - 75%             | HF     | XRN/HSN             | 126 - 187            | 0,22~0,42  | 0,28~0,48 | 0,41~0,61  | 0,54~0,74  | 0,70~0,90 |
| H13/1,2344/SKD61  | 51+               | 0,26                             | 0,31 | 0,42 | 0,52 | 0,65 | 60 - 75%             | HF     | HSN                 | 96 - 157             | 0,16~0,36  | 0,21~0,41 | 0,32~0,52  | 0,42~0,62  | 0,55~0,75 |
| A2/1,2363/SKD12   | <41               | 0,38                             | 0,46 | 0,61 | 0,76 | 0,95 | 60 - 75%             | HF     | XRN/HSN             | 157 - 218            | 0,28~0,48  | 0,36~0,56 | 0,51~0,71  | 0,66~0,86  | 0,85~1,05 |
| A2/1,2363/SKD12   | 14-50             | 0,32                             | 0,38 | 0,51 | 0,64 | 0,80 | 60 - 75%             | HF     | XRN/HSN             | 126 - 187            | 0,220~0,42   | 0,28~0,48 | 0,32~0,52  | 0,54~0,74  | 0,70~0,90 |
| A2/1,2363/SKD12   | 51+               | 0,26                             | 0,31 | 0,42 | 0,52 | 0,65 | 60 - 75%             | HF     | HSN                 | 96 - 157             | 0,16~0,36  | 0,21~0,41 | 0,51~0,71  | 0,42~0,62  | 0,55~0,75 |
| P20/1,2330        | <41               | 0,38                             | 0,46 | 0,61 | 0,76 | 0,95 | 60 - 75%             | HF     | XRN/HSN             | 157 - 218            | 0,28~0,48  | 0,36~0,56 | 0,41~0,61  | 0,66~0,86  | 0,85~1,05 |
| P20/1,2330        | 14-50             | 0,32                             | 0,38 | 0,51 | 0,64 | 0,80 | 60 - 75%             | HF     | XRN/HSN             | 126 - 187            | 0,22~0,42  | 0,28~0,48 | 0,51~0,71  | 0,54~0,74  | 0,70~0,90 |
| D2/1,2379/SKD11   | <41               | 0,38                             | 0,46 | 0,61 | 0,76 | 0,95 | 60 - 75%             | HF     | XRN/HSN             | 157 - 218            | 0,28~0,48  | 0,36~0,56 | 0,41~0,71  | 0,66~0,86  | 0,85~1,05 |
| D2/1,2379/SKD11   | 14-50             | 0,32                             | 0,38 | 0,51 | 0,64 | 0,80 | 60 - 75%             | HF     | XRN/HSN             | 126 - 187            | 0,22~0,42  | 0,28~0,48 | 0,41~0,61  | 0,54~0,744 | 0,70~0,90 |
| D2/1,2379/SKD11   | 51+               | 0,26                             | 0,31 | 0,42 | 0,52 | 0,65 | 60 - 75%             | HF     | HSN                 | 96 - 157             | 0,16~0,36  | 0,21~0,41 | 0,32~0,52  | 0,42~0,62  | 0,55~0,75 |
| Grey Cast Iron/GG | <41               | 0,38                             | 0,46 | 0,61 | 0,76 | 0,95 | 60 - 75%             | HF     | XRN/HSN             | 157 - 218            | 0,282~0,48   | 0,36~0,56 | 0,51~0,71  | 0,66~0,86  | 0,85~1,05 |
| Cast Iron/GGG     | 41+               | 0,38                             | 0,46 | 0,61 | 0,76 | 0,95 | 60 - 75%             | HF     | XRN/HSN             | 157 - 218            | 0,28~0,48  | 0,36~0,56 | 0,51~0,71  | 0,66~0,86  | 0,85~1,05 |