

HOU GRAND SEA SEMEREMER SACOIDE CO.,LTD Hohlhou Grand Sea Group

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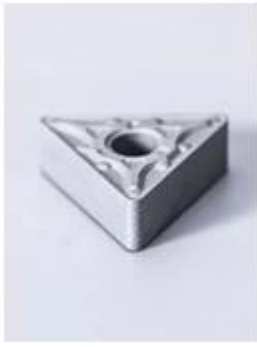
2.

3.

4.



















5.

| | | | | g / cm ±0.1 | hra ±0.5 | TRS [kgf /mm²] |
|-------|----|----|-----|-------------|----------|----------------|
| H10F | 90 | 10 | 0.8 | 14.40 | 91.8 | > 350 |
| H11F | 87 | 12 | 0.3 | 14.50 | 91.4 | > 350 |
| h12a. | 88 | 22 | 1.2 | 14.20 | 90.5 | > 350 |












1 2 3 4 5 6 7 8 9 10
C N M G 12 04 08 (E) (N)-MP

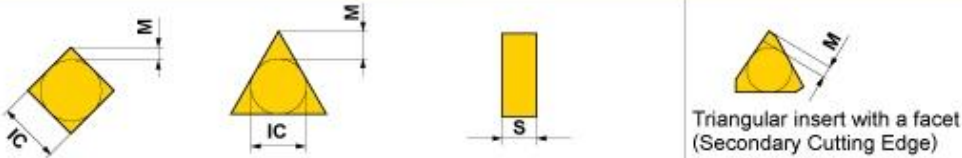
1. Insert Shape

| 1. Insert Shape | | |
|-----------------|-------------------|---|
| Symbol | Insert Shape | |
| H | Hexagonal |  |
| O | Octagonal |  |
| P | Pentagonal |  |
| S | Square |  |
| T | Triangular |  |
| C | Rhombic 80° |  |
| D | Rhombic 55° |  |
| E | Rhombic 75° |  |
| F | Rhombic 50° |  |
| M | Rhombic 86° |  |
| V | Rhombic 35° |  |
| W | Trigon |  |
| L | Rectangular |  |
| A | Parallelogram 85° |  |
| B | Parallelogram 82° |  |
| K | Parallelogram 55° |  |
| R | Round |  |
| X | Special Design |  |

2. Relief Angle

| 2. Relief Angle | | |
|--------------------|--------------------|--|
| Symbol | Normal Clearance | |
| A | 3° |  |
| B | 5° |  |
| C | 7° |  |
| D | 15° |  |
| E | 20° |  |
| F | 25° |  |
| G | 30° |  |
| N | 0° |  |
| P | 11° |  |
| O | Other Relief Angle | |
| Major Relief Angle | | |

3. Tolerance Class

| 3. Tolerance Class | | | | | | | | | | |
|--|---------------------------------|---------------------------------------|-------------------------------|--|------------|--------|-------------|-------------|-------------|-------|
|  | | | | | | | | | | |
| 3. Tolerance Class | | | | Detail of M Class Insert Tolerance | | | | | | |
| Symbol | Tolerance of Nose Height M (mm) | Tolerance of Inscribed Circle IC (mm) | Tolerance of Thickness S (mm) | ●Tolerance of Nose Height M (mm) | | | | | | |
| | | | | D.I.C. | Triangular | Square | Rhombic 80° | Rhombic 55° | Rhombic 35° | Round |
| A | ±0.005 | ±0.025 | ±0.025 | 6.35 | ±0.08 | ±0.08 | ±0.08 | ±0.11 | ±0.16 | — |
| F | ±0.005 | ±0.013 | ±0.025 | 9.525 | ±0.08 | ±0.08 | ±0.08 | ±0.11 | ±0.16 | — |
| C | ±0.013 | ±0.025 | ±0.025 | 12.70 | ±0.13 | ±0.13 | ±0.13 | ±0.15 | — | — |
| H | ±0.013 | ±0.013 | ±0.025 | 15.875 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | — | — |
| E | ±0.025 | ±0.025 | ±0.025 | 19.05 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | — | — |
| G | ±0.025 | ±0.025 | ±0.13 | 25.40 | — | ±0.18 | — | — | — | — |
| J | ±0.005 | ±0.05—±0.15 | ±0.025 | 31.75 | — | ±0.20 | — | — | — | — |
| K* | ±0.013 | ±0.05—±0.15 | ±0.025 | ●Tolerance of Inscribed Circle IC (mm) | | | | | | |
| L* | ±0.025 | ±0.05—±0.15 | ±0.025 | D.I.C. | Triangular | Square | Rhombic 80° | Rhombic 55° | Rhombic 35° | Round |
| M* | ±0.08—±0.18 | ±0.05—±0.15 | ±0.13 | 6.35 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | — |
| N* | ±0.08—±0.18 | ±0.05—±0.15 | ±0.025 | 9.525 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| U* | ±0.13—±0.38 | ±0.08—±0.25 | ±0.13 | 12.70 | ±0.08 | ±0.08 | ±0.08 | ±0.08 | — | ±0.08 |
| The surface of insert with * mark is sintered. | | | | 15.875 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | — | ±0.10 |
| | | | | 19.05 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | — | ±0.10 |
| | | | | 25.40 | — | ±0.13 | — | — | — | ±0.13 |
| | | | | 31.75 | — | ±0.15 | — | — | — | ±0.15 |


4. Chipbreaker and Clamping System

| 4. Chipbreaker and Clamping System | | | | | | | | | |
|------------------------------------|-----------|-----------------------------|--------------|--------|--------|--------------|--------------------|--------------|----------------|
| Metric | | | | | | | | | |
| Symbol | Hole | Hole Configuration | Chip Breaker | Figure | Symbol | Hole | Hole Configuration | Chip Breaker | Figure |
| W | With Hole | Cylindrical Hole | No | | A | With Hole | Cylindrical Hole | No | |
| T | With Hole | One Countersink (40–60°) | One Sided | | M | With Hole | Cylindrical Hole | Single Sided | |
| Q | With Hole | Cylindrical Hole | No | | G | With Hole | Cylindrical Hole | Double Sided | |
| U | With Hole | Double Countersink (40–60°) | Double Sided | | N | Without Hole | — | No | |
| B | With Hole | Cylindrical Hole | No | | R | Without Hole | — | Single Sided | |
| H | With Hole | One Countersink (70–90°) | One Sided | | F | Without Hole | — | Double Sided | |
| C | With Hole | Cylindrical Hole | No | | X | — | — | — | Special Design |
| J | With Hole | Double Countersink (70–90°) | Double Sided | | | | | | |

5. Insert Size

| 5. Insert Size | | | | | | | |
|----------------|----|----|----|----|----|----|-----------------------------------|
| Symbol | | | | | | | Diameter of Inscribed Circle (mm) |
| R | W | V | D | C | S | T | |
| | 02 | | 04 | 03 | 03 | 06 | 3.97 |
| | L3 | 08 | 05 | 04 | 04 | 08 | 4.76 |
| | 03 | 09 | 06 | 05 | 05 | 09 | 5.56 |
| 06 | | | | | | | 6.00 |
| | 04 | 11 | 07 | 06 | 06 | 11 | 6.35 |
| | 05 | 13 | 09 | 08 | 07 | 13 | 7.94 |
| 08 | | | | | | | 8.00 |
| 09 | 06 | 16 | 11 | 09 | 09 | 16 | 9.525 |
| 10 | | | | | | | 10.00 |
| 12 | | | | | | | 12.00 |
| 12 | 08 | 22 | 15 | 12 | 12 | 22 | 12.70 |
| 15 | 10 | | 19 | 16 | 15 | 27 | 15.875 |
| 16 | | | | | | | 16.00 |
| 19 | 13 | | 23 | 19 | 19 | 33 | 19.05 |
| 20 | | | | | | | 20.00 |
| | | | 27 | 22 | 22 | 38 | 22.225 |
| 25 | | | | | | | 25.00 |
| 25 | | | 31 | 25 | 25 | 44 | 25.40 |
| 31 | | | 38 | 32 | 31 | 54 | 31.75 |
| 32 | | | | | | | 32.00 |

6. Insert Thickness

| 6. Insert Thickness | |
|---|----------------|
|  <p>*Thickness is from the bottom of the insert to the top of the cutting edge.</p> | |
| Symbol | Thickness (mm) |
| S1 | 1.39 |
| 01 | 1.59 |
| T0 | 1.79 |
| 02 | 2.38 |
| T2 | 2.78 |
| 03 | 3.18 |
| T3 | 3.97 |
| 04 | 4.76 |
| 06 | 6.35 |
| 07 | 7.94 |
| 09 | 9.52 |

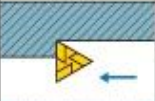


7. Insert Corner Configuration

| 7. Insert Corner Configuration | |
|--------------------------------|--------------------|
| Symbol | Corner Radius (mm) |
| 00 | Sharp Nose |
| V3 | 0.03 |
| V5 | 0.05 |
| 01 | 0.1 |
| 02 | 0.2 |
| 04 | 0.4 |
| 08 | 0.8 |
| 12 | 1.2 |
| 16 | 1.6 |
| 20 | 2.0 |
| 24 | 2.4 |
| 28 | 2.8 |
| 32 | 3.2 |
| 00 : Inch M0 : Metric | Round Insert |

8. Cutting Edge Condition

| 8. Cutting Edge Condition | | |
|---|-------------------------------------|--------|
| Figure | Cutting Edge | Symbol |
|  | Sharp Cutting Edges | F |
|  | Round Cutting Edges | E |
|  | Chamfered Cutting Edges | T |
|  | Chamfered and Rounded Cutting Edges | S |
| Mitsubishi Materials omit the honing symbol. | | |

9. Cutting Direction

| 9. Cutting Direction | | |
|---|---------|--------|
| Figure | Hand | Symbol |
|  | Right | R |
|  | Left | L |
|  | Neutral | N |

10. Chip Breaker

| 10. Chip Breaker | | |
|---|--|---|
| LP | MP | RP |
|  |  |  |
| LM | MM | RM |
|  |  |  |
| LK | MK | RK |
|  |  |  |
| LS | MS | RS |
|  |  |  |
| FP | LP | MP |
|  |  |  |
| MA | SW | MW |
|  |  |  |
| HZ | HX | HV |
|  |  |  |