

# GOLD RHINO



## Insert Shapes

- YNMG 2.53

## Corner Radii

- .016", .031"

## Grades

- Cermet:
  - PV3010
  - CT3000
- Carbide:
  - TT8115 (CVD)
  - TT5080 (PVD)



## Now Available, New YNMG 2.53 Inserts

Ingersoll is pleased to announce the expansion of the Gold-Rhino product line with a new YNMG style insert.

This new insert is designed with a 25° included angle shape that enables profile and grooving applications in cases where a 35° VNMG insert doesn't provide enough side clearance. This insert is also an excellent option for uninterrupted undercut machining applications.

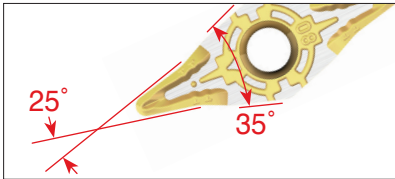
The YNMG insert is offered with our new FS chip breaker, featuring a sharp cutting edge which reduces radial and tangential forces during machining. Combined with the wide protrusion on the rake face, the result is minimal vibration and favorable chip control producing an excellent surface finish.

All YNMG inserts are interchangeable with the Gold-Rhino VNMX H-Type holders, but for optimal performance, it is recommended the new T-Type holders are used for all external applications.

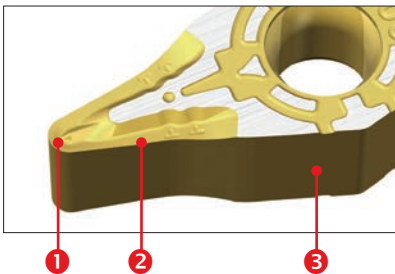
**NEW  
PRODUCT  
ANNOUNCEMENT  
2016**

## YNMG FS Features

- New profile machining concept: 25 degree included angle

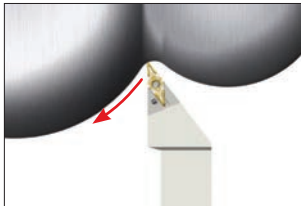


- FS chipbreaker features a sharp cutting edge and wide chip breaker shape for excellent chip control

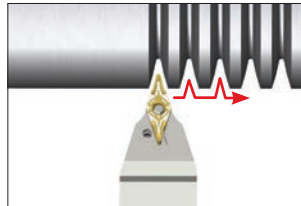


- 1 Wide chip breaker shape for chip control
- 2 Positive rake angle
- 3 Interchangeable with VNMX holders

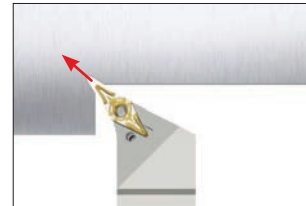
- Main applications



Profiling



Profiling



Undercut machining

➔ Improved productivity and cost savings

- Interchangeable with the recently launched VNMX insert holders



VNMX 2.53 insert setting

➔  
Can be fastened  
to the same holder



YNMG 2.53 insert setting


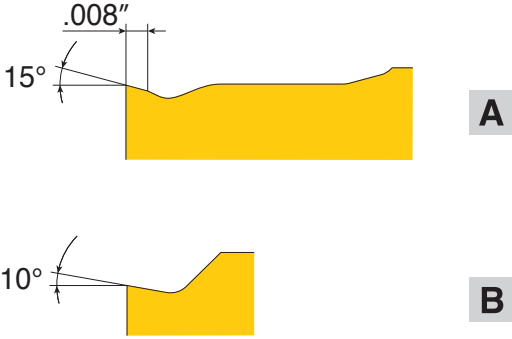
- YNMG 2.53 insert's cutting edge length



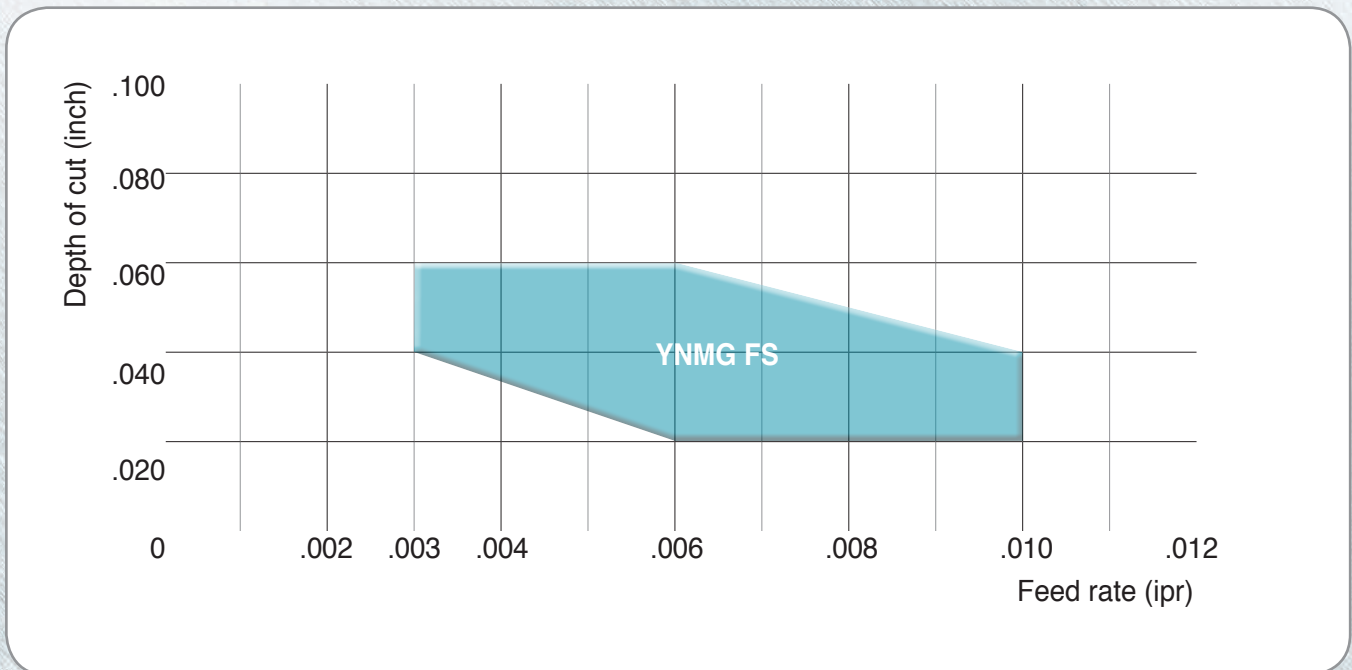
YNMG 2.531 ➔ E.L. = .185"

YNMG 2.532 ➔ E.L. = .165"

## YVMG FS chipbreaker edge geometry

| Chip breaker |  | Edge geometry  |
|--------------|--|--|
| YVMG         |  <p>YVMG FS</p> |  <p>A</p> <p>B</p> |

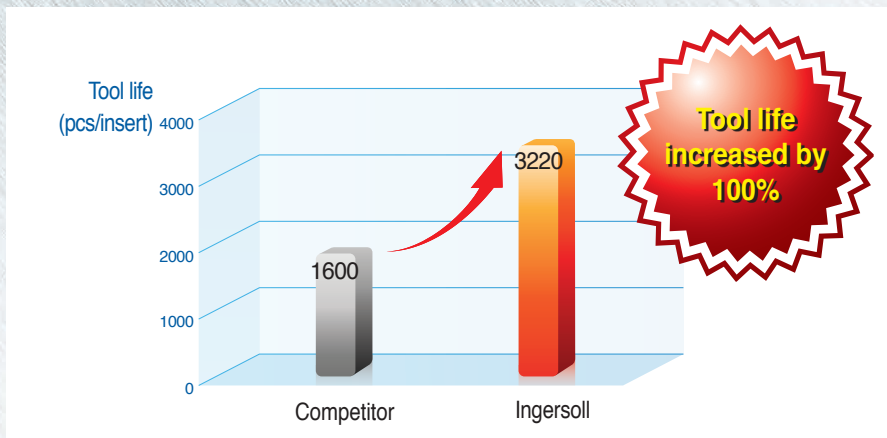
## Chipbreaker range



- Insert: YVMG 2.532 (130408) FS
- Cutting Speed (V): 650 sfm
- Material: 0.45% Carbon steel (HB200~230)

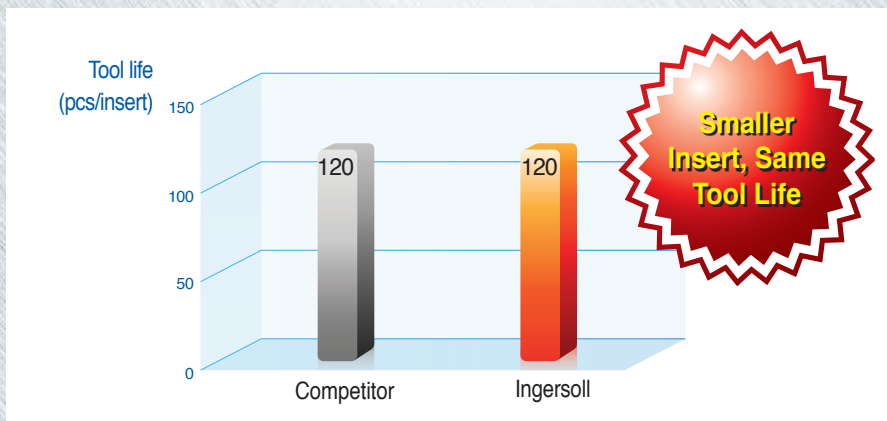
## Case Study 1

|                        |           | Competitor                           | Ingersoll                 |
|------------------------|-----------|--------------------------------------|---------------------------|
| Workpiece              |           | Pulley                               |                           |
| Workpiece material     |           | Carbon steel (S40C, AISI 1040)       |                           |
| Insert                 |           | 'Y' type positive insert (2 corners) | YNMG 2.531 FS (4 corners) |
| Grade                  |           | P25 tungsten carbide coated          | PV3010                    |
| Cutting speed          | V (sfm)   | 1300                                 |                           |
| Feed rate              | f (ipr)   | .008                                 |                           |
| Depth of cut           | ap (inch) | .008                                 |                           |
| Coolant                |           | Dry                                  |                           |
| Tool life (pcs/insert) |           | 1600                                 | 3220                      |



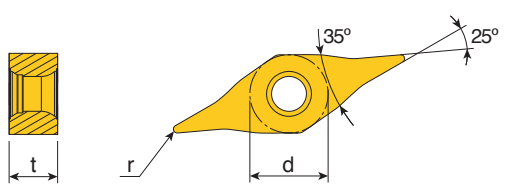
## Case Study 2

|                        |           | Competitor           | Ingersoll                 |
|------------------------|-----------|----------------------|---------------------------|
| Workpiece              |           | Shaft                |                           |
| Workpiece material     |           | Magnesium alloy      |                           |
| Insert                 |           | YNMG 331 (4 corners) | YNMG 2.531 FS (4 corners) |
| Grade                  |           | P10 cermet grade     | PV3010                    |
| Cutting speed          | V (sfm)   | 850                  |                           |
| Feed rate              | f (ipr)   | .0023                |                           |
| Depth of cut           | ap (inch) | .020                 |                           |
| Coolant                |           | Dry                  |                           |
| Tool life (pcs/insert) |           | 120                  | 120                       |




# GOLD RHINO

## YNMG 2.53 Negative 25° rhombic inserts



| Size | Dimension (in) |      |           |
|------|----------------|------|-----------|
|      | d              | t    | r         |
| 2.53 | .312           | .187 | .016-.031 |
|      |                |      |           |
|      |                |      |           |
|      |                |      |           |
|      |                |      |           |

| Insert  | Designation<br>ANSI (ISO) | Recommended machining<br>conditions |            | Cermet |        | CVD<br>Coated | PVD<br>coated |
|---|---------------------------|-------------------------------------|------------|--------|--------|---------------|---------------|
|   |                           | feed<br>(ipr)                       | ap<br>(in) | PV3010 | CT3000 | TT8115        | TT5080        |
|  | YNMG 2.531 (130404) FS    | .003-.008                           | .012-.040  | •      | •      | •             | •             |
|   | 2.532 (130408) FS         | .003-.010                           | .020-.060  | •      | •      | •             | •             |
|   |                           |                                     |            |        |        |               |               |

• : Standard item



# AHB

Tooling & Machinery, Inc.

Complete Metalworking Solutions

Roseville Saginaw & Jackson, MI

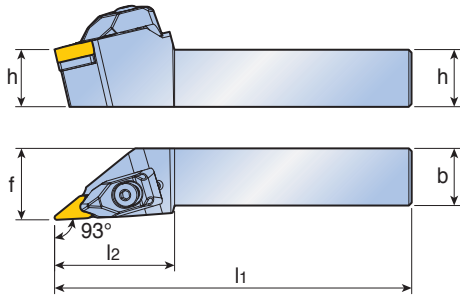
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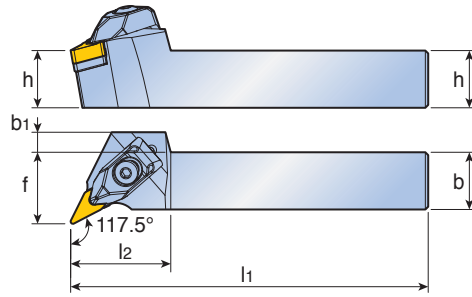
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## TVJNR/L TVQNR/L T-Type holder



TVJNR/L



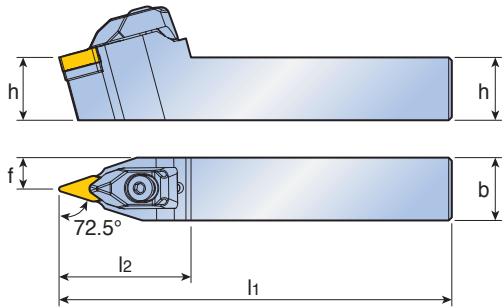
TVQNR/L

| Approach angle    | Designation             | Dimension (inch) |       |                |                |      |                | Insert                       |
|-------------------|-------------------------|------------------|-------|----------------|----------------|------|----------------|------------------------------|
|                   |                         | h                | b     | l <sub>1</sub> | l <sub>2</sub> | f    | b <sub>1</sub> |                              |
| <b>93°</b><br>    | <b>TVJNR/L 12-2.53B</b> | .750             | .750  | 4.5            | 1.65           | 1.00 | -              | VNMX 2.53...<br>YNMG 2.53... |
|                   | <b>16-2.53D</b>         | 1.000            | 1.000 | 6.0            | 1.65           | 1.25 | -              |                              |
|                   | <b>20-2.53D</b>         | 1.250            | 1.250 | 6.0            | 1.77           | 1.50 | -              |                              |
|                   |                         |                  |       |                |                |      |                |                              |
| <b>117.5°</b><br> | <b>TVQNR/L 12-2.53B</b> | .750             | .750  | 4.5            | 1.38           | 1.00 | .276           |                              |
|                   | <b>16-2.53D</b>         | 1.000            | 1.000 | 6.0            | 1.38           | 1.25 | -              |                              |
|                   |                         |                  |       |                |                |      |                |                              |
|                   |                         |                  |       |                |                |      |                |                              |

## Spare parts

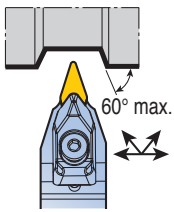
| Designation | Clamp       | Clamp screw | Shim       | Shim screw | Spring | Wrench |      |
|-------------|-------------|-------------|------------|------------|--------|--------|------|
| ...2.53     | DLM 2.5V-NX | DLS 4       | MSVI 2.522 | SO 40085I  | DSP 4  | L-W 4  | T 15 |

## TVVNN T-Type holder



TVVNN

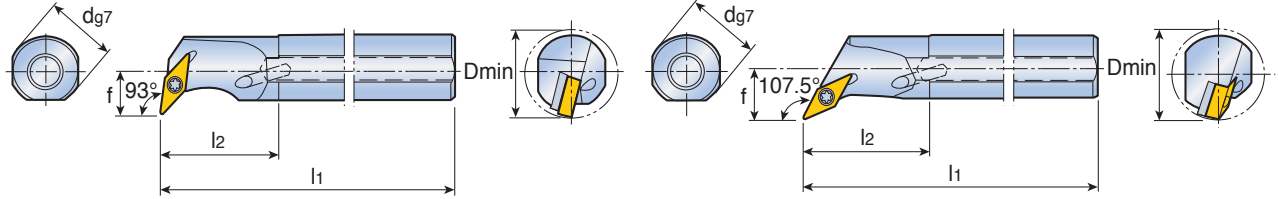
| Approach angle | Designation    | Dimension (inch) |       |     |      |      | Insert       |
|----------------|----------------|------------------|-------|-----|------|------|--------------|
|                |                | h                | b     | l1  | l2   | f    |              |
| 72.5°          | TVVNN 12-2.53B | .750             | .750  | 4.5 | 1.65 | .375 | VNMX 2.53... |
|                | 16-2.53D       | 1.000            | 1.000 | 6.0 | 1.65 | .500 | YNMG 2.53... |
|                |                |                  |       |     |      |      |              |
|                |                |                  |       |     |      |      |              |
|                |                |                  |       |     |      |      |              |
|                |                |                  |       |     |      |      |              |
|                |                |                  |       |     |      |      |              |
|                |                |                  |       |     |      |      |              |



## Spare parts

| Designation | Clamp       | Clamp screw | Shim       | Shim screw | Spring | Wrench |      |
|-------------|-------------|-------------|------------|------------|--------|--------|------|
| ...1304     | DLM 2.5V-NX | DLS 4       | MSVI 2.522 | SO 40085I  | DSP 4  | L-W 4  | T 15 |

## A-SVUNR/L A-SVQNR/L Screw type holder



A-SVUNR/L

A-SVQNR/L

| Approach angle | Designation | Dimension (in) |      |      |      |      | Insert |              |
|----------------|-------------|----------------|------|------|------|------|--------|--------------|
|                |             | dg7            | l1   | l2   | f    | Dmin |        |              |
| <p>95°</p>     | A16T        | SVUNR/L-2.53   | 1.00 | 12.0 | 1.58 | .625 | 1.25   | VNMX 2.53... |
|                | A20U        | SVUNR/L-2.53   | 1.25 | 14.0 | 1.58 | .750 | 1.50   |              |
|                |             |                |      |      |      |      |        |              |
|                |             |                |      |      |      |      |        |              |
|                |             |                |      |      |      |      |        |              |
|                |             |                |      |      |      |      |        |              |
| <p>117.5°</p>  | A16T        | SVQNR/L-2.53   | 1.00 | 12.0 | 1.30 | .750 | 1.30   |              |
|                | A20U        | SVQNR/L-2.53   | 1.25 | 14.0 | 1.38 | .875 | 1.65   |              |
|                |             |                |      |      |      |      |        |              |
|                |             |                |      |      |      |      |        |              |
|                |             |                |      |      |      |      |        |              |
|                |             |                |      |      |      |      |        |              |

## Spare parts

| Designation | Screw        | Shim       | Shim screw  | Wrench 1   | Wrench 2 |
|-------------|--------------|------------|-------------|------------|----------|
| VNMX 2.53x  | TS 30120I/HG | SSVN 2.523 | TS 5030062S | T 9(T-9/5) | L-W 3.5  |



## OPERATING GUIDELINES

| ISO                   | Material   | Condition                    | Tensile strength (N/mm <sup>2</sup> ) | Hardness HB | Material No. | Cutting Speed Vc (sfm) |           |          |          |  |
|-----------------------|--|------------------------------|---------------------------------------|-------------|--------------|------------------------|-----------|----------|----------|--|
|                       |  |                              |                                       |             |              | Cermet                 |           | Coated   |          |  |
|                       |  |                              |                                       |             |              | PV3010                 | CT3000    | TT8115   | TT5080   |  |
| P                     | Non-alloy steel, cast steel, free cutting steel                    | < 0.25%C                     | Annealed                              | 420         | 125          | 1                      | 1150-2130 | 980-1870 | 920-1740 |  |
|                       |  | >= 0.25%C                    | Annealed                              | 650         | 190          | 2                      | 885-1700  | 820-1640 | 780-1575 |  |
|                       |  | < 0.55%C                     | Quenched and tempered                 | 850         | 250          | 3                      | 790-1575  | 720-1500 | 650-1440 |  |
|                       |  | >= 0.55%C                    | Annealed                              | 750         | 220          | 4                      | 850-1640  | 780-1540 | 720-1480 |  |
|                       |  |                              | Quenched and tempered                 | 1000        | 300          | 5                      | 790-1510  | 720-1440 | 590-1380 |  |
|                       | Low alloy steel and cast steel (less than 5% of alloying elements) | Annealed                     | 600                                   | 200         | 6            | 790-1770               | 720-1700  | 650-1640 |          |  |
|                       |  | Quenched and tempered        | 930                                   | 275         | 7            | 625-1080               | 560-980   | 500-920  |          |  |
|                       |  |                              | 1000                                  | 300         | 8            | 550-980                | 490-885   | 425-820  |          |  |
|                       |  |                              | 1200                                  | 350         | 9            | 460-885                | 425-820   | 400-750  |          |  |
|                       | High alloy steel, cast steel and tool steel                        | Annealed                     | 680                                   | 200         | 10           | 850-1325               | 820-1300  | 625-1250 |          |  |
| Quenched and tempered |  | 1100                         | 325                                   | 11          | 460-670      | 425-640                | 300-590   |          |          |  |
| M                     | Stainless steel and cast steel                                     | Ferritic / martensitic       | 680                                   | 200         | 12           | 650-980                | 590-885   |          | 525-1280 |  |
|                       |  | Martensitic                  | 820                                   | 240         | 13           | 650-885                | 560-820   |          | 525-920  |  |
|                       |  | Austenitic                   | 600                                   | 180         | 14           | 560-850                | 490-780   |          | 330-820  |  |
| K                     | Gray cast iron (GG)  | Ferritic                     |                                       | 160         | 15           | 750-1080               | 720-1050  |          |          |  |
|                       |  | Pearlitic                    |                                       | 250         | 16           | 700-950                | 670-920   |          |          |  |
|                       | Cast iron nodular (GGG)  | Ferritic                     |                                       | 180         | 17           | 560-870                | 525-830   |          |          |  |
|                       |  | Pearlitic                    |                                       | 260         | 18           | 590-780                | 560-750   |          |          |  |
|                       | Malleable cast iron  | Ferritic                     |                                       | 130         | 19           | 475-720                | 440-650   |          |          |  |
|                       |  | Pearlitic                    |                                       | 230         | 20           | 340-490                | 310-460   |          |          |  |
| N                     | Aluminum - wrought alloy   | Not cureable                 |                                       | 60          | 21           |                        |           |          |          |  |
|                       |  | Cured                        |                                       | 100         | 22           |                        |           |          |          |  |
|                       | Aluminum-cast, alloyed   | <=12% Si                     | Not cureable                          |             | 75           | 23                     |           |          |          |  |
|                       |  |                              | Cured                                 |             | 90           | 24                     |           |          |          |  |
|                       | Copper alloys  | >12% Si                      | High temp.                            |             | 130          | 25                     |           |          |          |  |
|                       |  | >1% Pb                       | Free cutting                          |             | 110          | 26                     |           |          |          |  |
|                       |  |                              | Brass                                 |             | 90           | 27                     |           |          |          |  |
|                       |  |                              | Electrolitic copper                   |             | 100          | 28                     |           |          |          |  |
|                       | Non-metallic   | Duroplastics, fiber plastics |                                       |             |              | 29                     |           |          |          |  |
|                       |  | Hard rubber                  |                                       |             |              | 30                     |           |          |          |  |
| S                     | High temp. alloys  | Fe based                     | Annealed                              |             | 200          | 31                     |           |          | 165-600  |  |
|                       |  |                              | Cured                                 |             | 280          | 32                     |           |          | 130-525  |  |
|                       |  | Ni or Co based               | Annealed                              |             | 250          | 33                     |           |          | 150-330  |  |
|                       |  |                              | Cured                                 |             | 350          | 34                     |           |          | 115-300  |  |
|                       |  |                              | Cast                                  |             | 320          | 35                     |           |          | 100-260  |  |
|                       | Titanium, Ti alloys  |                              | Rm 400                                |             | 36           |                        |           | 360-650  |          |  |
|                       |  | Alpha+beta alloys cured      | Rm 1050                               |             | 37           |                        |           | 165-330  |          |  |
| H                     | Hardened steel   | Hardened                     |                                       | 55HRC       | 38           |                        |           |          |          |  |
|                       |  | Hardened                     |                                       | 60HRC       | 39           |                        |           |          |          |  |
|                       | Chilled cast iron  | Cast                         |                                       | 400         | 40           |                        |           |          |          |  |
|                       | Cast iron nodular  | Hardened                     |                                       | 55HRC       | 41           |                        |           |          |          |  |

■ Steel   
 ■ Stainless steel   
 ■ Cast iron   
 ■ Nonferrous   
 ■ High temp. alloys   
 ■ Hardened steel