Tooling News No.551

SUMITOMO
CARBIDE - CBN - DIAMOND
Global Support, Global Solutions.

Small Lathe Tools

# Indexable Head Type Quick Change Tool Holder APM series

## Sharply reduces changeover time with outstanding change repeatability

Polygon taper shape achieves head change accuracy within 5µm



Small Lathe/Autolathe Tool series
SumiSmall

SUMITOMO ELECTRIC GROUP

# APM series

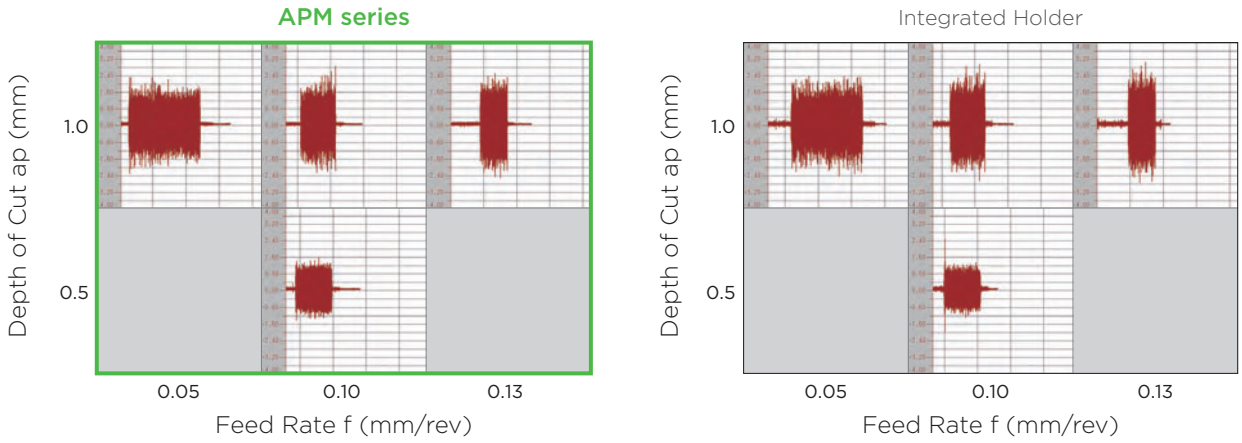
## ■ Features

- **Tool changeover time reduced**
  **Mounting / removing the head alone improves workability and safety when changing the insert, reducing machine downtime at changeovers thus increasing productivity**
- **Excellent head change repeatability**
  **High-accuracy polygon taper shape achieves change repeatability within 5µm**
- **Lineup of 10, 12 and 16mm shank sizes support a wide range of CNC autolathes, etc.**
- **Supports front turning, back turning, grooving, and cut-off**
- **Internal coolant supply design, supports coolant supply without hose**

## ■ Cutting Performance

### ● Low vibration

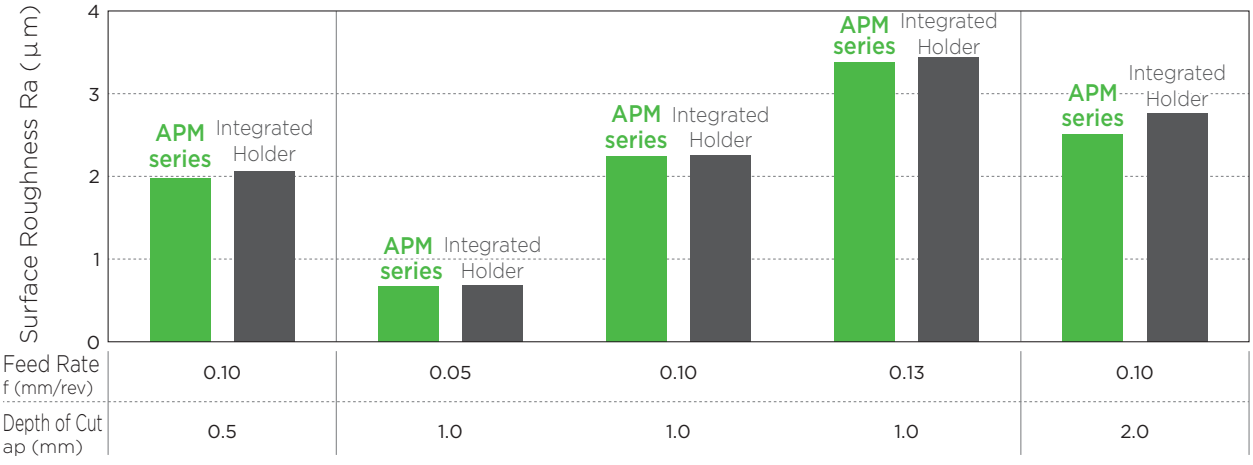
The APM series realises low vibration performance equivalent to that of integrated holders




Work Material: SUS420J2 Tool: Shank: APM-R1212X84J Head: APM12-SDJCR11T3J Insert: DCGT11T302MN-SI (AC1030U)
Cutting Conditions: vc = 80m/min f = 0.05, 0.10, 0.13mm/rev ap=0.5, 1.0mm Wet

### ● Machined surface roughness

The APM series realises machined surface roughness equivalent to that of integrated holders

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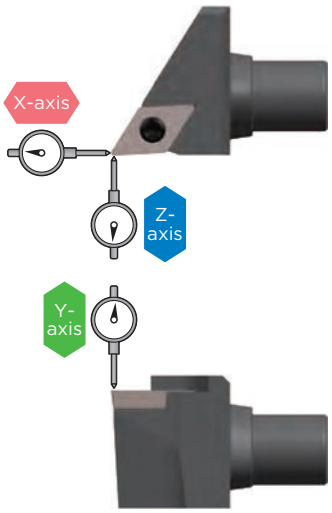
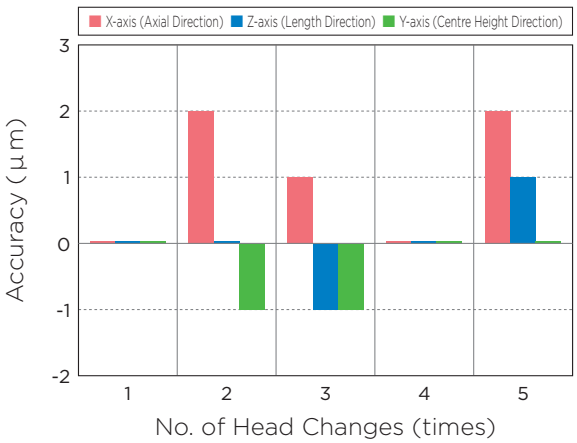
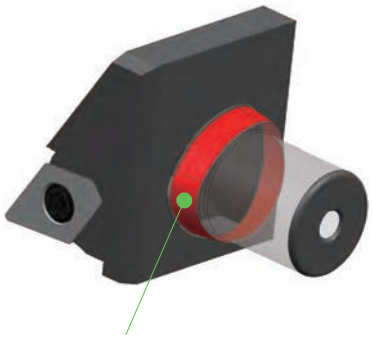
Cutting Conditions: vc = 80m/min f = 0.05, 0.10, 0.13mm/rev ap=0.5, 1.0, 2.0mm Wet

## ■ Head Change Repeatability

### Polygon taper shape achieves change repeatability within 5µm



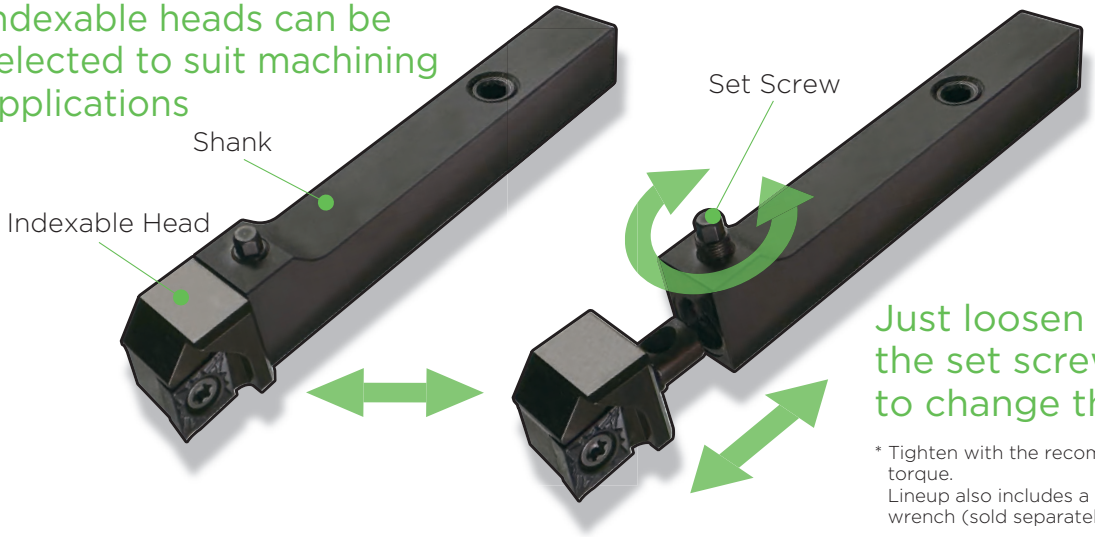




* Measured using the same shank, the same head, and the same insert corner

## ■ Head Change Structure

### Indexable heads can be selected to suit machining applications




### Just loosen the set screw to change the head

* Tighten with the recommended tightening torque.
Lineup also includes a dedicated torque wrench (sold separately).

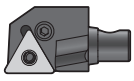
## ■ APM series Combination Examples

### Indexable Head

**For ISO Turning Inserts**

**Positive**
**SCLC** type
**SDJC** type
**SVJB** type
**SVJC** type
**SVJP** type

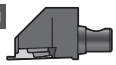
**Negative**
**PTGN** type



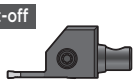
**For Dedicated Inserts**

**Back Turning**
**SBT** type

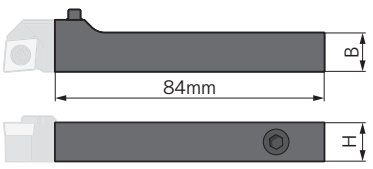
**Grooving / Threading**
**GWC** type



**Grooving / Cut-off**
**GNDM** type
**GNDL** type



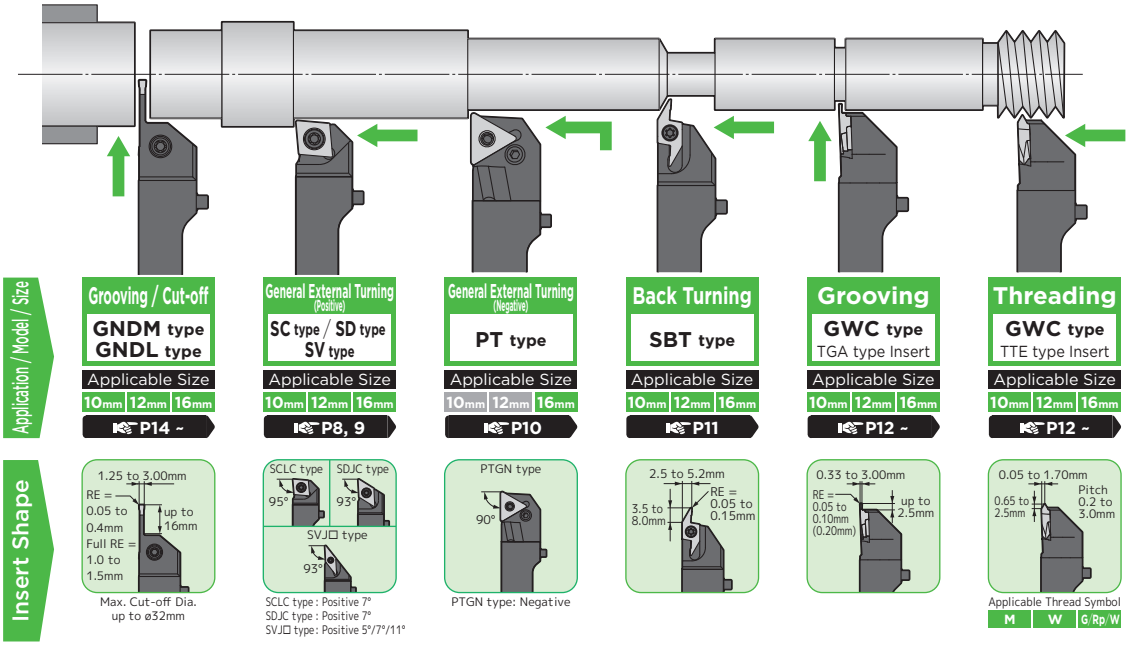
### Shank



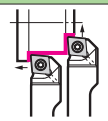
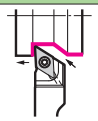
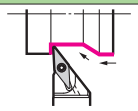
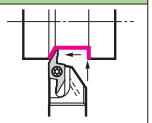
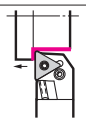

| | | |
|---|---|---|
| **APM-R1010X84J** | Height H: **10mm** | Width B: **10mm** |
| **APM-R1212X84J** | Height H: **12mm** | Width B: **12mm** |
| **APM-R1616X84J** | Height H: **16mm** | Width B: **16mm** |

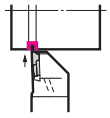
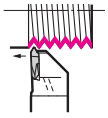
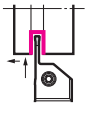
The product appearance may vary in colour, but these variations do not affect the performance.

## ■ Head Lineup




## ■ Tooling Selection

| Applications | External Turning | | | | |
|---|---|---|---|---|---|
| | General Turning / Facing | General Turning / Profiling | | General Turning | Back Turning |
| Insert Shape<br>Clamp Mechanism | 80° Diamond type C (Positive) | 55° Diamond type D (Positive) | 35° Diamond type V (Positive) | Triangular type T (Negative) | Dedicated Insert (BT type) |
| Screw-on |  **SCLC type** P8 |  **SDJC type** P8 |  **SVJB type / SVJC type SVJP type** P9 | — |  **SBT type** P11 ~ |
| Lever Lock | — | — | — |  **PTGN type** P10 | — |

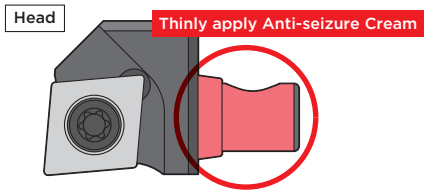
| Applications | External Grooving / Threading / Cut-off | | |
|---|---|---|---|
| | Grooving | Threading | Grooving / Cut-off |
| Insert Shape<br>Clamp Mechanism | Dedicated Insert (TGA type) | Dedicated Insert (TTE type) | Dedicated Insert (GCM type / GCG type) |
| Screw-on |  **GWC type** P12 ~ |  **GWC type** P12 ~ | — |
| Clamp-on | — | — |  **GNDM type GNDL type** P14 ~ |

## Quick Change Holder APM series Precautions for Use

### ■ Anti-seizure Cream (APM-P)

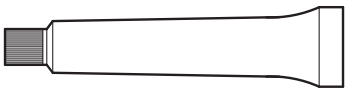
When removing the head, it may be difficult to take out even when the set screw has been loosened.
As a countermeasure, use dedicated Anti-seizure Cream APM-P to enable smooth removal.

#### Application Method




After cleaning the head polygon taper and shaft,
apply a thin layer of dedicated Anti-seizure Cream APM-P with a rag or similar.
* Anti-seizure Cream (APM-P) has been applied before packaging.

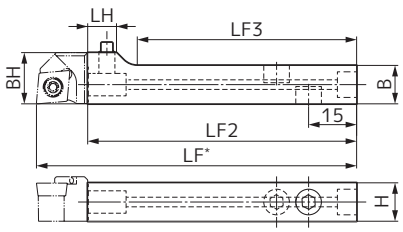
#### Anti-seizure Cream

| Cat. No. | Stock | |
|---|---|---|
| **APM-P** | ● |  |

Anti-seizure Cream is sold separately.

New Indexable Shank Internal Coolant

Fig 1

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## Shank

## Parts

Dimensions (mm)

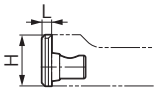
| Cat. No. | Stock | Height H | Width B | Overall Length LF2 | Width BH | Head LH | Length LF3 | Applicable Size | Fig | Set Screw | N·m | Plug | Torque Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM-R1010X84J** | ● | 10 | 10 | 84 | 13.5 | 9 | 69.0 | 10 | 1 | BTT0507H | 3.0 | APM-M8P | TRDRS3530(*) |
| **APM-R1212X84J** | ● | 12 | 12 | 84 | 16.0 | 9 | 68.5 | 12 | 1 | BTT0510H | | | |
| **APM-R1616X84J** | ● | 16 | 16 | 84 | 20.0 | 10 | 68.0 | 16 | 1 | BTT0611H | 4.0 | APM-G1/8P | TRDRS4540(*) |

Select shanks and heads with matching applicable size. * See head tables for specific LF dimensions (set dimensions).
* Torque wrench is sold separately from the main body.

Fig 1

Fig 2

Fig 1




## Parts (Set Screw)

Dimensions (mm)

| Cat. No. | Stock | Screw Standard | Overall Length | Applicable Shank | N·m | Fig |
|---|---|---|---|---|---|---|
| **BTT 0507H** | ● | SW3.5 | 10.0 | APM-R1010X84J | 3.0 | 1 |
| **BTT 0510H** | ● | SW3.5 | 12.5 | APM-R1212X84J | 3.0 | 1 |
| **BTT 0611H** | ● | SW4.5 | 14.5 | APM-R1616X84J | 4.0 | 1 |
| **BTT 0507T** | ● | T10 | 7.0 | APM-R1010X84J | 3.0 | 2 |
| **BTT 0510T** | ● | T10 | 9.5 | APM-R1212X84J | 3.0 | 2 |
| **BTT 0611T** | ● | T20 | 10.5 | APM-R1616X84J | 4.0 | 2 |

Suffix H: Hex Suffix T: Torx (sold separately: use a commercially available wrench)

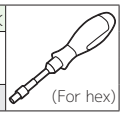
## Parts (Stopper Plug)

Dimensions (mm)

| Cat. No. | Stock | L | H | Applicable Shank | Fig |
|---|---|---|---|---|---|
| **APM10-PLUG** | ● | 2.2 | 13.4 | APM-R1010X84J | 1 |
| **APM12-PLUG** | ● | 3.0 | 15.9 | APM-R1212X84J | 1 |
| **APM16-PLUG** | ● | 4.0 | 19.9 | APM-R1616X84J | 1 |

Use the stopper plug to protect the shank joint part when the head is not mounted. (Sold separately)

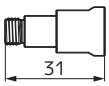
## Set Screw Torque Wrench

| Cat. No. | Stock | Screw Standard | Torque Value (N·m) | Applicable Shank | |
|---|---|---|---|---|---|
| **TRDRS3530** | ● | SW3.5 | 3.0 | APM-R1010X84J<br>APM-R1212X84J |  (For hex) |
| **TRDRS4540** | ● | SW4.5 | 4.0 | APM-R1616X84J | |

Torque wrench is sold separately. Dedicated for set screw part number suffix H.

Fig 1

Fig 1




## Piping Parts (Plug)

| Cat. No. | Stock | Screw Standard | Applicable Shank | Fig |
|---|---|---|---|---|
| **APM-M8P** | ● | M8 | APM-R1010X84J<br>APM-R1212X84J | 1 |
| **APM-G1/8P** | ● | G1/8 | APM-R1616X84J | 1 |

The shank is shipped with two plugs mounted.

## Piping Parts (Adapter)

Dimensions (mm)

| Cat. No. | Stock | Screw Standard | Screw Standard | External Diameter | Applicable Shank | Fig |
|---|---|---|---|---|---|---|
| **J-M8-G1/8-U** | ● | M8 | G1/8 | ø15 | APM-R1010X84J<br>APM-R1212X84J | 1 |
| **J-G1/8-G1/8-U** | ● | G1/8 | G1/8 | ø18 | APM-R1616X84J | 1 |

Adapter is sold separately.

Fig 1

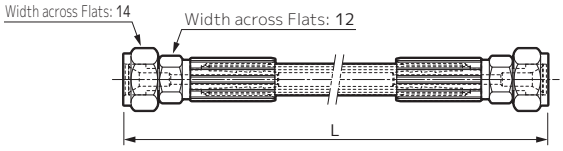



Fig 1

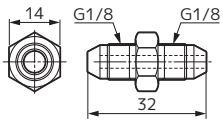
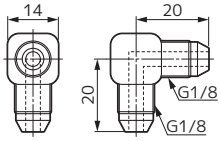



Fig 2




## Piping Parts (Hose)

Dimensions (mm)

| Cat. No. | Stock | L | Screw Standard | Screw Standard | Fig |
|---|---|---|---|---|---|
| **J-HOSE-G1/8-G1/8-200** | ● | 200 | G1/8 | G1/8 | 1 |
| **J-HOSE-G1/8-G1/8-300** | ● | 300 | G1/8 | G1/8 | 1 |

Hoses are sold separately.

## Piping Parts (Connector)

Dimensions (mm)

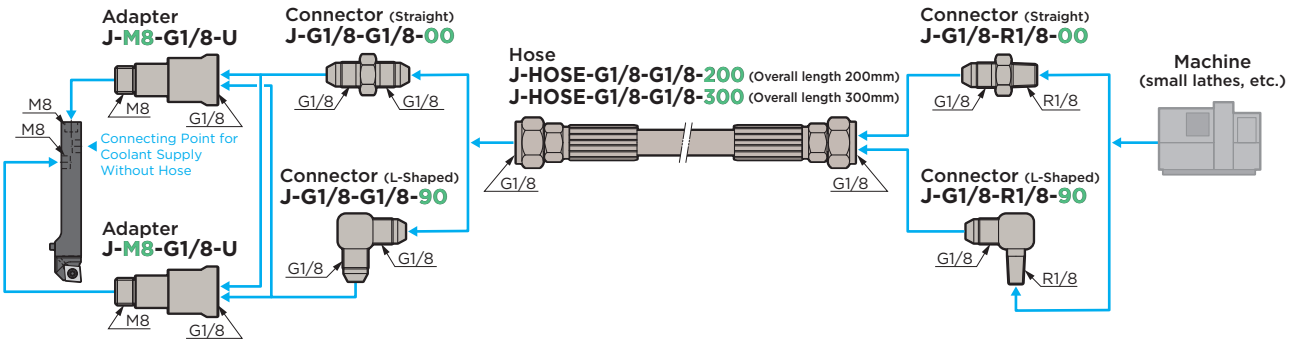
| Cat. No. | Stock | Screw Standard | Screw Standard | Fig |
|---|---|---|---|---|
| **J-G1/8-G1/8-00** | ● | G1/8 | G1/8 | 1 |
| **J-G1/8-G1/8-90** | ● | G1/8 | G1/8 | 2 |

Connectors are sold separately.

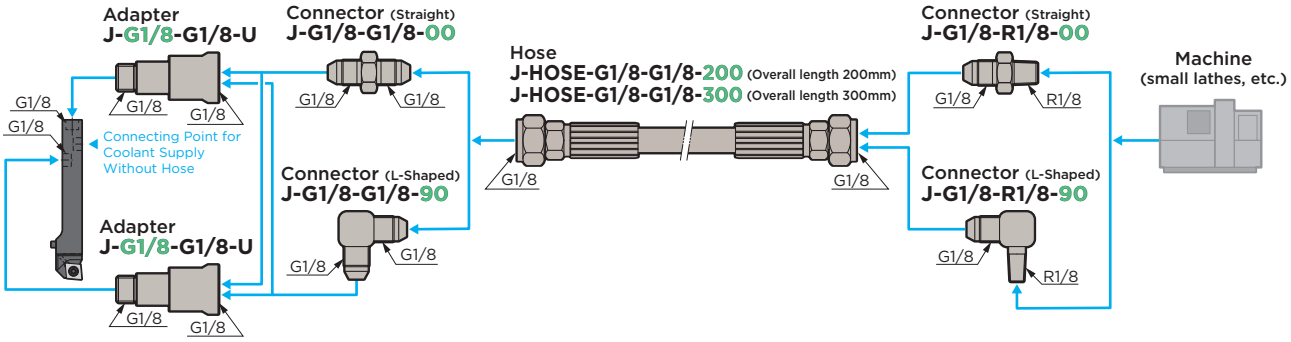
● mark: Standard stocked item N·m Recommended Tightening Torque (N·m)

## ■ Piping Method for Hoses, Connectors, and Adapters

APM series Shank
**APM-R1010X84J (10mm square) / APM-R1212X84J (12mm square)**

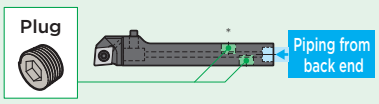



APM series Shank
**APM-R1616X84J (16mm square)**



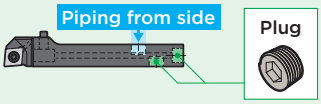

· Use an adapter suited to the machine specifications.
· Apply sealant such as commercial sealing tape to the piping connection parts.
· See figures below for plug mounting when piping. (For Plug Cat. No. 10/12mm square: **APM-M8P**, 16mm square: **APM-G1/8P**)

**Piping from back end (as default)**

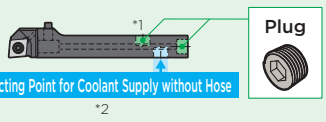



* The plug may protrude a few millimetres when mounted on the side.

**Piping from side**



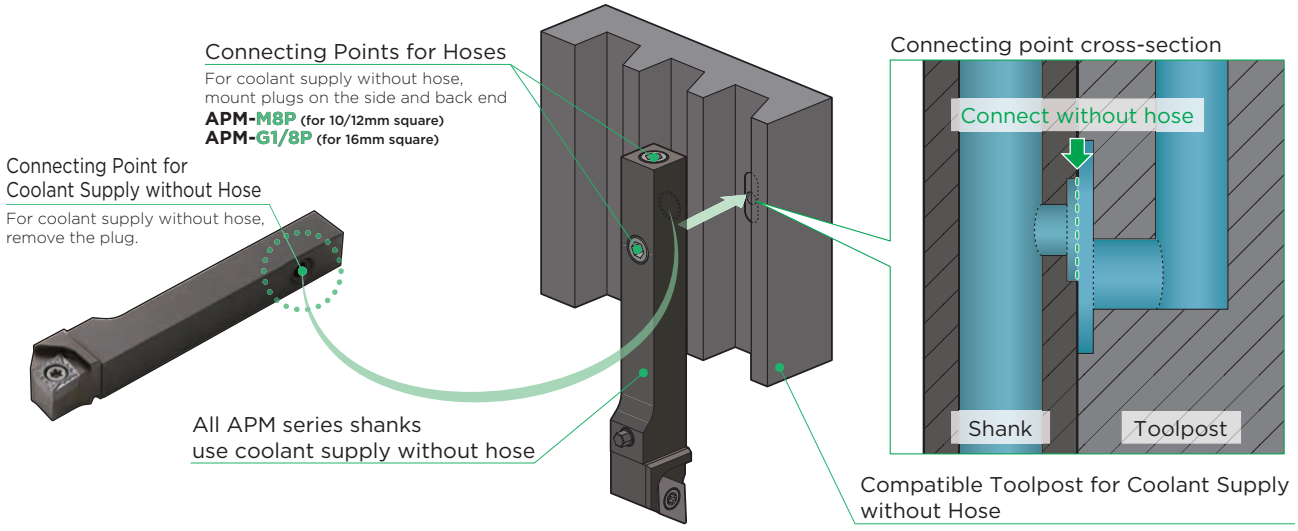

**Coolant Supply without Hose**




*1 The plug may protrude a few millimetres when mounted on the side.
*2 The plug is mounted as default, so remove it for use with coolant supply without hose.

### Coolant Supply without Hose

Coolant can be supplied directly from the toolpost without a hose




Note: When using external coolant supply, attach a plug at the back end as well.

New | Positive | External | C 80° | 95° 95° | Zero Offset | Indexable Head | Internal Coolant

External Turning
Screw-on, Internal Coolant Supply

## SCLC
External Turning and Facing

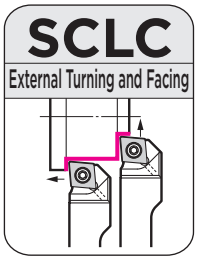


Fig 1

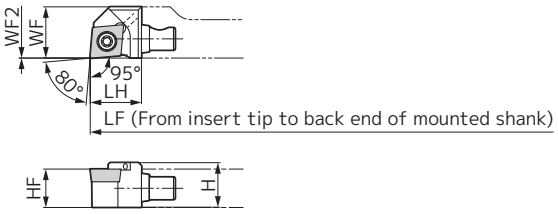



Figure shows right-handed (R) tool.

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General Catalogue Inserts Stock Page

### Head

### Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Offset WF2 | Overall Length LF | Applicable Insert Cat. No. | Applicable Size | Fig | Flat Insert Screw | N·m | Wrench (For Torx hole) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM10-SCLC R0602J** | ● | 11.9 | 16 | 13.5 | 10 | 0 | 100 | CC□T0602 | 10 | 1 | BFTX02506N | 1.5 | TRX08(*) |
| **APM12-SCLC R0602J** | ● | 13.9 | 16 | 16.0 | 12 | 0 | 100 | | 12 | 1 | | | |
| **APM16-SCLC R0602J** | ● | 17.9 | 16 | 20.0 | 16 | 0 | 100 | | 16 | 1 | | | |
| **APM10-SCLC R09T3J** | ● | 11.9 | 16 | 13.5 | 10 | 0 | 100 | CC□T09T3 | 10 | 1 | BFTX0409N | 3.4 | TRX15(*) |
| **APM12-SCLC R09T3J** | ● | 13.9 | 16 | 16.0 | 12 | 0 | 100 | | 12 | 1 | | | |
| **APM16-SCLC R09T3J** | ● | 17.9 | 16 | 20.0 | 16 | 0 | 100 | | 16 | 1 | | | |

Refer to shank selection on P6 for applicable shank.
* Wrenches are sold separately from heads.

New | Positive | External | D 55° | 93° | Zero Offset | Indexable Head | Internal Coolant

External Turning
Screw-on, Internal Coolant Supply

## SDJC
External/Profiling

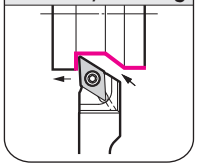


Fig 1

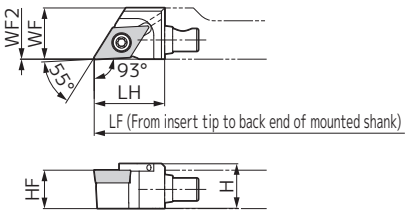



Fig 2

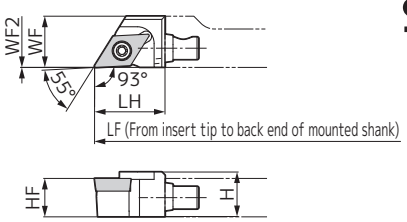



Figure shows right-handed (R) tool.

SumiSmall
General Catalogue Inserts Stock Page

### Head

### Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Offset WF2 | Overall Length LF | Applicable Insert Cat. No. | Applicable Size | Fig | Flat Insert Screw | N·m | Wrench (For Torx hole) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM10-SDJC R0702J** | ● | 11.9 | 16 | 13.5 | 10 | 0 | 100 | DC□T0702 | 10 | 1 | BFTX02506N | 1.5 | TRX08(*) |
| **APM12-SDJC R0702J** | ● | 13.9 | 16 | 16.0 | 12 | 0 | 100 | | 12 | 1 | | | |
| **APM16-SDJC R0702J** | ● | 17.9 | 16 | 20.0 | 16 | 0 | 100 | | 16 | 1 | | | |
| **APM10-SDJC R11T3J** | ● | 11.9 | 20 | 13.5 | 10 | 0 | 104 | DC□T11T3 | 10 | 1 | BFTX0409N | 3.4 | TRX15(*) |
| **APM12-SDJC R11T3J** | ● | 13.9 | 22 | 16.0 | 12 | 0 | 106 | | 12 | 2 | | | |
| **APM16-SDJC R11T3J** | ● | 17.9 | 22 | 20.0 | 16 | 0 | 106 | | 16 | 2 | | | |

Refer to shank selection on P6 for applicable shank.
* Wrenches are sold separately from heads.

Refer to the chapter on "Indexable Inserts" in the General Catalogue for applicable inserts.
● mark: Standard stocked item N·m Recommended Tightening Torque (N·m)

New | Positive | External | V 35° | 93° | Zero Offset | Indexable Head | Internal Coolant

External Turning
Screw-on, Internal Coolant Supply

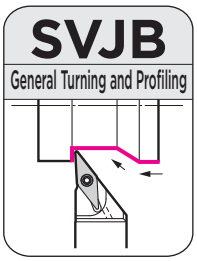



Fig 1

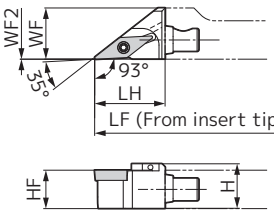



Figure shows right-handed (R) tool.

SumiSmall
General Catalogue Inserts Stock Page

## Head

## Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Offset WF2 | Overall Length LF | Applicable Insert Cat. No. | Applicable Size | Fig | Flat Insert Screw | N·m | Wrench (For Torx hole) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM10-SVJB R1103J** | ● | 11.9 | 22 | 13.5 | 10 | 0 | 106 | VB□T1103 | 10 | 1 | BFTX02508NV | 1.5 | TRX08(*) |
| **APM12-SVJB R1103J** | ● | 13.9 | 22 | 16.0 | 12 | 0 | 106 | | 12 | 1 | | | |
| **APM16-SVJB R1103J** | ● | 17.9 | 22 | 20.0 | 16 | 0 | 106 | | 16 | 1 | | | |

Refer to shank selection on P6 for applicable shank. * Wrenches are sold separately from heads.

New | Positive | External | V 35° | 93° | Zero Offset | Indexable Head | Internal Coolant

External Turning
Screw-on, Internal Coolant Supply

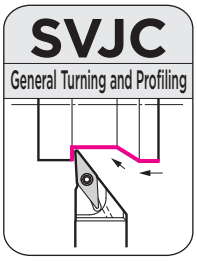



Fig 1

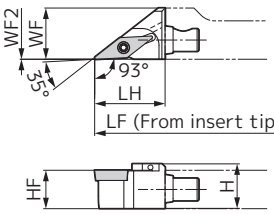



Figure shows right-handed (R) tool.

SumiSmall
General Catalogue Inserts Stock Page

## Head

## Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Offset WF2 | Overall Length LF | Applicable Insert Cat. No. | Applicable Size | Fig | Flat Insert Screw | N·m | Wrench (For Torx hole) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM10-SVJC R1103J** | ● | 11.9 | 22 | 13.5 | 10 | 0 | 106 | VC□T1103 | 10 | 1 | BFTX02508NV | 1.5 | TRX08(*) |
| **APM12-SVJC R1103J** | ● | 13.9 | 22 | 16.0 | 12 | 0 | 106 | | 12 | 1 | | | |
| **APM16-SVJC R1103J** | ● | 17.9 | 22 | 20.0 | 16 | 0 | 106 | | 16 | 1 | | | |

Refer to shank selection on P6 for applicable shank. * Wrenches are sold separately from heads.

New | Positive | External | V 35° | 93° | Zero Offset | Indexable Head | Internal Coolant

External Turning
Screw-on, Internal Coolant Supply

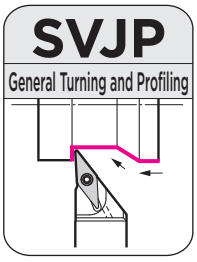



Fig 1

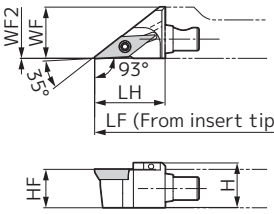



Figure shows right-handed (R) tool.

SumiSmall
General Catalogue Inserts Stock Page

## Head

## Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Offset WF2 | Overall Length LF | Applicable Insert Cat. No. | Applicable Size | Fig | Flat Insert Screw | N·m | Wrench (For Torx hole) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM10-SVJP R1103J** | ● | 11.9 | 22 | 13.5 | 10 | 0 | 106 | VP□T1103 | 10 | 1 | BFTX02508NV | 1.5 | TRX08(*) |
| **APM12-SVJP R1103J** | ● | 13.9 | 22 | 16.0 | 12 | 0 | 106 | | 12 | 1 | | | |
| **APM16-SVJP R1103J** | ● | 17.9 | 22 | 20.0 | 16 | 0 | 106 | | 16 | 1 | | | |

Refer to shank selection on P6 for applicable shank.
* Wrenches are sold separately from heads.

Refer to the chapter on "Indexable Inserts" in the General Catalogue for applicable inserts.

● mark: Standard stocked item (N·m) Recommended Tightening Torque (N·m)

# APM series

New | Negative | External | T 60° | 90° | Zero Offset | Indexable Head | Internal Coolant

External Turning
Lever Lock, Internal Coolant Supply

## PTGN
External Turning

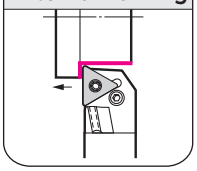


Fig 1

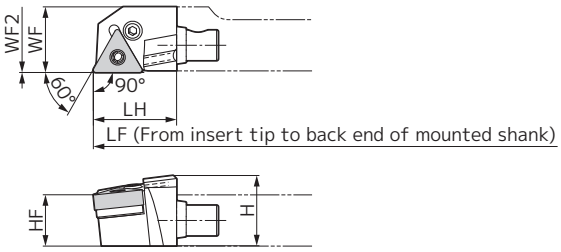



Figure shows right-handed (R) tool.

SumiSmall
General Catalogue Inserts Stock Page

## Head

## Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Offset WF2 | Overall Length LF | Applicable Insert Cat. No. | Applicable Size | Fig | Lever Pin | Bolt | Bolt N·m | Shim | Shim Retainer | Wrench (For hexagonal hole) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM16-PTGN R1604J** | ● | 22 | 26 | 20.5 | 16 | 0.5 | 110 | TN□□1604 | 16 | 1 | LCL3APM | LCS3APM | 3.5 | LST317APM | LSP3APM | LH025(*) |

Refer to shank selection on P6 for applicable shank.
* Wrenches are sold separately from heads.

Refer to the chapter on "Indexable Inserts" in the General Catalogue for applicable inserts.
● mark: Standard stocked item (N·m) Recommended Tightening Torque (N·m)

New | External | Back Turning | Indexable Head | Internal Coolant

Back Turning
Screw-on, Internal Coolant Supply

# SBT
## Back Turning

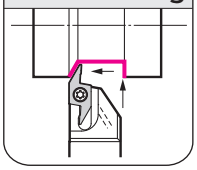


Fig 1

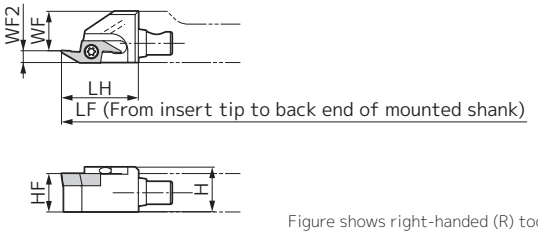



Figure shows right-handed (R) tool.

SumiSmall

## Head

## Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Offset WF2 | Overall Length LF | Applicable Insert Cat. No. | Applicable Size | Fig | Flat Insert Screw | N·m | Wrench (For Torx hole) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM10-SBT R-35J** | ● | 11.9 | 22 | 11.0 | 10 | 2.5 | 106 | | 10 | 1 | | | |
| **APM12-SBT R-35J** | ● | 13.9 | 22 | 13.5 | 12 | 2.5 | 106 | BTR35○○ | 12 | 1 | BFTX0307N | 2.0 | TRX10(*) |
| **APM16-SBT R-35J** | ● | 17.9 | 22 | 17.5 | 16 | 2.5 | 106 | | 16 | 1 | | | |
| **APM10-SBT R-55J** | ● | 11.9 | 22 | 9.8 | 10 | 3.7 | 106 | | 10 | 1 | | | |
| **APM12-SBT R-55J** | ● | 13.9 | 24 | 12.3 | 12 | 3.7 | 108 | BTR55○○ | 12 | 1 | BFTX0307N | 2.0 | TRX10(*) |
| **APM16-SBT R-55J** | ● | 17.9 | 24 | 16.3 | 16 | 3.7 | 108 | | 16 | 1 | | | |
| **APM12-SBT R-80J** | ● | 13.9 | 30 | 10.8 | 12 | 5.2 | 114 | BTR80○○ | 12 | 1 | BFTX0307N | 2.0 | TRX10(*) |
| **APM16-SBT R-80J** | ● | 17.9 | 30 | 14.8 | 16 | 5.2 | 114 | | 16 | 1 | | | |

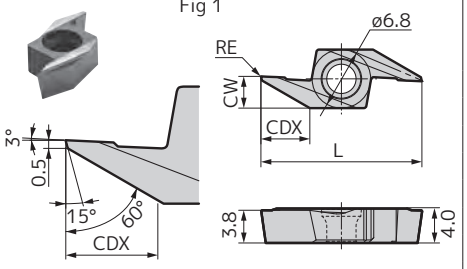
Refer to shank selection on P6 for applicable shank.
* Wrenches are sold separately from heads.

## Insert ( Coated Carbide / DLC / Cermet)

Dimensions (mm)

| Cat. No. | AC5015S | AC5025S | AC1030U | AC530U | ACZ150 | DL1500 | T1500A | Overall Length L | Maximum Depth of Cut CDX | Width of Cut CW | Corner Radius RE | Applicable Head | Fig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BT R3505** | ○ | ○ | ● | ● | ● | ○ | ● | 15 | 3.5 | 2.5 | 0.05 | | 1 |
| **BT R3508** New | ○ | ○ | ○ | | | ○ | ○ | 15 | 3.5 | 2.5 | 0.08 | APM○○-SBTR-35J | 1 |
| **BT R3515** | ○ | ○ | ● | ● | ● | ○ | ● | 15 | 3.5 | 2.5 | 0.15 | | 1 |
| **BT R5505** | ○ | ○ | ● | ● | ● | ○ | ○ | 19 | 5.5 | 3.7 | 0.05 | | 1 |
| **BT R5508** New | ○ | ○ | ○ | | | ○ | ○ | 19 | 5.5 | 3.7 | 0.08 | APM○○-SBTR-55J | 1 |
| **BT R5515** | ○ | ○ | ● | ● | ● | ○ | ○ | 19 | 5.5 | 3.7 | 0.15 | | 1 |
| **BT R8005** | ○ | ○ | ● | ● | ● | | — | 24 | 8.0 | 5.2 | 0.05 | | 1 |
| **BT R8008** New | ○ | ○ | ○ | | | | — | 24 | 8.0 | 5.2 | 0.08 | APM○○-SBTR-80J | 1 |
| **BT R8015** | ○ | ○ | ● | ● | ● | | — | 24 | 8.0 | 5.2 | 0.15 | | 1 |

Fig 1




## Recommended Cutting Conditions

| Work Material | P Free-Cutting Steel | | P Carbon Steel | | M Stainless Steel | | S Exotic Alloy | | N Non-Ferrous Metal | |
|---|---|---|---|---|---|---|---|---|---|---|
| Tooling | Plunging | Traverse Cut | Plunging | Traverse Cut | Plunging | Traverse Cut | Plunging | Traverse Cut | Plunging | Traverse Cut |
| Tool Grades | AC1030U/ACZ150 T1500A | | AC1030U/AC530U/ACZ150 T1500A | | AC1030U/AC5015S/AC5025S AC530U/ACZ150 | | AC5015S AC5025S | | DL1500 | |
| Cutting Speed vc (m/min) | 50 to 150 | | 50 to 150 | | 50 to 150 | | 20 to 80 | | 150 to 300 | |
| Feed Rate f (mm/rev) | 0.02 to 0.10 | 0.02 to 0.15 | 0.02 to 0.05 | 0.02 to 0.10 | 0.02 to 0.04 | 0.02 to 0.06 | 0.01 to 0.03 | 0.01 to 0.04 | 0.02 to 0.05 | 0.02 to 0.10 |

● mark: Standard stocked item ○ mark: Planned stock (around summer 2024) — mark: Not available Blank: Made-to-order item N·m Recommended Tightening Torque (N·m)

New | External | Grooving | Threading | Zero Offset | Indexable Head | Internal Coolant

External Shallow Grooving
Screw-on

# GWC
## External Grooving

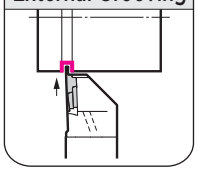


Fig 1

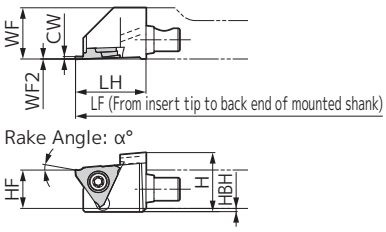
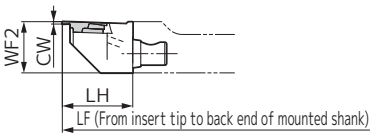



Fig 2




SumiSmall

## Head

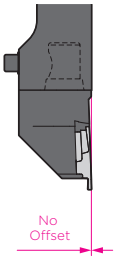
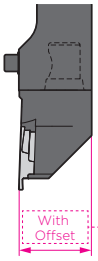
## Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Step HBH | Offset WF2 | Overall Length LF | Width of Cut CW | Maximum Groove Depth | Applicable Size | Applicable Insert Cat. No. | Fig | Flat Insert Screw | N·m | Wrench (For Torx hole) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM10-GWC R-R3J** | ● | 18.3 | 20 | 13.5 | 10 | 3 | 0 | 104 | 0.33 to 3.00 | 0.8 to 2.5 | 10 | | 1 | | | |
| **APM12-GWC R-R3J** | ● | 18.4 | 22 | 16.0 | 12 | 1 | 0 | 106 | 0.33 to 3.00 | 0.8 to 2.5 | 12 | TGAR3··· | 1 | BFTX0409N | **3.4**[*1] | TRX15(*2) |
| **APM16-GWC R-R3J** | ● | 21.4 | 22 | 20.0 | 16 | — | 0 | 106 | 0.33 to 3.00 | 0.8 to 2.5 | 16 | | 1 | | | |
| **APM10-GWC R13.5-L3J** | ● | 18.3 | 20 | — | 10 | 3 | 13.5 | 104 | 0.33 to 3.00 | 0.8 to 2.5 | 10 | | 2 | | | |
| **APM12-GWC R16-L3J** | ● | 18.4 | 22 | — | 12 | 1 | 16.0 | 106 | 0.33 to 3.00 | 0.8 to 2.5 | 12 | TGAL3··· | 2 | BFTX0409N | **3.4**[*1] | TRX15(*2) |
| **APM16-GWC R20-L3J** | ● | 21.4 | 22 | — | 16 | — | 20.0 | 106 | 0.33 to 3.00 | 0.8 to 2.5 | 16 | | 2 | | | |

Refer to shank selection on P6 for applicable shank. Refer to P13 for applicable inserts.
*1 Cermet inserts have a recommended tightening torque of 4N·m.
Right-handed (part number suffix: -R3J) heads are used with right-handed (R) inserts.
*2 Wrenches are sold separately from heads.

## Selecting GWC series Heads

| Integrated Holder | Right-handed (R) | Left-handed (L) |
|---|---|---|
| APM series | Right-handed (R) **No** Offset | Right-handed (R) **With** Offset |
| APM series Shank | **APM-R○○X84J** (Common) | |
| GWC series Head | **APM○○-GWC R-R3J** | **APM○○-GWC R○○○-L3J** (Offset Dimensions) |
| Applicable Insert | **TGA R3○○○** | **TGA L3○○○** |
| GWC series Head Mounted Appearance |  Shank: Common; Head: No Offset, Right-handed; Insert: Right-handed |  Shank: Common; Head: With Offset, Right-handed; Insert: Left-handed |



## Rake Angle When Mounted on the Head (α°)

| Coated Carbide | Carbide | DLC | Coated Cermet | Cermet |
|---|---|---|---|---|
| AC5015S AC5025S AC530U | H1 | DL1500 | T2500Z | T1500A |
| 10° | 20° | 10° | 10° | 5° |

● mark: Standard stocked item (N·m) Recommended Tightening Torque (N·m)

Fig. 1 (Grooving)

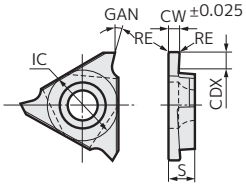



Fig 2 (Threading)

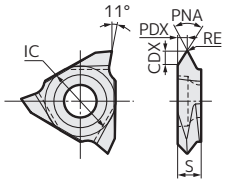



Figure shows right-handed (R) tool.

**Rake Angle by Grade (Grooving)**

| Grade | | Cutting Edge Shape | GAN |
|---|---|---|---|
| Coated Carbide | AC5015S | Honing | 15° |
| Coated Carbide | AC5025S | Honing | 15° |
| Coated Carbide | AC530U | Honing | 15° |
| Carbide | H1 | Sharp Edged | 25° |
| DLC | DL1500 | Sharp Edged | 25° |
| Coated Cermet | T2500Z | Honing | 15° |
| Cermet | T1500A | Sharp Edged | 10° |

* For the rake angle when mounted on the head, refer to P12.

## Insert (Grooving) (Coated Carbide / Cemented Carbide / DLC / Cermet)

Dimensions (mm)

| Cat. No.*1 | AC5015S | | AC5025S | | AC530U | | H1 | | DL1500 | | T2500Z | | T1500A | | Width of Cut | Maximum Groove Depth | Corner Radius | Inscribed Circle | Thickness | Applicable Head | Fig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | R | L | R | L | R | L | R | L | R | L | R | L | CW | CDX | RE | IC | S | | |
| **TGA R/L3033(E)** | | | | | ● | ● | ● | ● | | | ● | ● | ● | ● | **0.33** | **0.8** | 0.05 | 9.525 | 3.18 | | 1 |
| **TGA R/L3043(E)** New | | | | | ○ | ○ | | | | | | | ○ | ○ | **0.43** | **0.8** | 0.05 | 9.525 | 3.18 | | 1 |
| **TGA R/L3050(E)** | | | | | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ● | **0.50** | **1.2** | 0.05 | 9.525 | 3.18 | | 1 |
| **TGA R/L3053(E)** New | | | | | ○ | ○ | | | | | | | ○ | ○ | **0.53** | **1.2** | 0.05 | 9.525 | 3.18 | | 1 |
| **TGA R/L3065(E)** New | | | | | ○ | ○ | | | | | | | ○ | ○ | **0.65** | **1.2** | 0.05 | 9.525 | 3.18 | | 1 |
| **TGA R/L3075(E)** | | | | | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ● | **0.75** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3080(E)** New | | | | | ○ | ○ | | | | | | | ○ | ○ | **0.80** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3095(E)** | | | | | ● | ● | ● | ● | | | ● | ● | ● | ● | **0.95** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3100(E)** | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ● | **1.00** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3110(E)** | ○ | ○ | ○ | ○ | ● | ● | | | | | ● | ● | ● | ● | **1.10** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3120(E)** New | | | | | ○ | ○ | | | | | | | ○ | ○ | **1.20** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3125(E)** | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ● | **1.25** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3130(E)** New | | | | | ○ | ○ | | | | | | | ○ | ○ | **1.30** | **2.0** | 0.1*2 | 9.525 | 3.18 | APMOO-GWCR-R3J | 1 |
| **TGA R/L3135(E)** | | | | | ● | ● | | | | | ● | ● | ● | ● | **1.35** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3140(E)** New | | | | | ○ | ○ | | | | | | | ○ | ○ | **1.40** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3145(E)** | | | | | ● | ● | ● | ● | | | ● | ● | ● | ● | **1.45** | **2.0** | 0.1*2 | 9.525 | 3.18 | APMOO-GWCR···-L3J | 1 |
| **TGA R/L3150(E)** | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ● | **1.50** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3160(E)** New | | | | | ○ | ○ | | | | | | | ○ | ○ | **1.60** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3165(E)** | | | | | ● | ● | | | | | ● | ● | ● | ● | **1.65** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3175(E)** | | | | | ● | ● | | | | | ● | ● | ● | ● | **1.75** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3185(E)** | | | | | ● | ● | ● | ● | | | ● | ● | ● | ● | **1.85** | **2.0** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3200(E)** | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ● | **2.00** | **2.5** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3220(E)** | | | | | ● | ● | | | | | ● | ● | ● | ● | **2.20** | **2.5** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3230(E)** | | | | | ● | ● | ● | ● | | | ● | ● | ● | ● | **2.30** | **2.5** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3250(E)** | | | | | ● | ● | ● | ● | | | ● | ● | ● | ● | **2.50** | **2.5** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3265(E)** | | | | | ● | ● | | | | | ● | ● | ● | ● | **2.65** | **2.5** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3270(E)** | | | | | ● | ● | | | | | ● | ● | ● | ● | **2.70** | **2.5** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3280(E)** | | | | | ● | ● | | | | | ● | ● | ● | ● | **2.80** | **2.5** | 0.1*2 | 9.525 | 3.18 | | 1 |
| **TGA R/L3300(E)** New | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | ○ | | | ○ | ○ | **3.00** | **2.5** | 0.1*2 | 9.525 | 3.18 | | 1 |

*1 Add E as the part number suffix for T1500A. Right-handed (R) inserts are used with right-handed (part number suffix: -R3J) heads.
*2 T1500A is RE = 0.2

## Recommended Cutting Conditions

| Work Material | P General Steel | | | M Stainless Steel | | S Exotic Alloy | N Non-Ferrous Metal | |
|---|---|---|---|---|---|---|---|---|
| Tool Grades | AC530U | T2500Z | T1500A | AC5015S AC5025S | AC530U | AC5015S AC5025S | H1 | DL1500 |
| Cutting Speed vc (m/min) | 50 to 200 | 100 to 180 | 100 to 180 | 50 to 200 | 50 to 200 | 20 to 80 | up to 300 | up to 300 |
| Feed Rate f (mm/rev) | 0.02 to 0.10 | 0.05 to 0.10 | 0.05 to 0.08 | 0.02 to 0.10 | 0.02 to 0.10 | 0.01 to 0.03 | 0.05 | 0.15 |

## Insert (60°/55° General Screw for Threading) (Coated Carbide / DLC / Cermet)

Dimensions (mm)

| Cat. No. | AC5015S | | AC5025S | | AC1030U | | DL1500 | | T1500A | | Pitch | | Corner Radius | X Direction | Depth of Cut | Included Angle | Inscribed Circle | Thickness | Applicable Head | Fig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | L | R | L | R | L | R | L | R | L | mm | Threads/Inch | RE | PDX | CDX | PNA | IC | S | | |
| **TTE R/L36002075** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 0.20 to 0.75 | 80 to 32 | 0.05 | 0.55 | 0.65 | **60** | 9.525 | 3.18 | APMOO-GWCR-R3J | 2 |
| **TTE R/L36005125** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 0.50 to 1.25 | 56 to 20 | 0.05 | 1.00 | 1.30 | **60** | 9.525 | 3.18 | | 2 |
| **TTE R/L3601015** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 1.00 to 1.50 | 24 to 16 | 0.10 | 1.30 | 1.80 | **60** | 9.525 | 3.18 | | 2 |
| **TTE R/L3601530** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 1.50 to 3.00 | 16 to 8 | 0.20 | 1.70 | 2.40 | **60** | 9.525 | 3.18 | APMOO-GWCR···-L3J | 2 |
| **TTE R/L3554816** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | — | 48 to 16 | 0.05 | 1.00 | 1.50 | **55** | 9.525 | 3.18 | | 2 |
| **TTE R/L3552008** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | — | 20 to 8 | 0.10 | 1.50 | 2.40 | **55** | 9.525 | 3.18 | | 2 |

Right-handed (R) inserts are used with right-handed (part number suffix: -R3J) heads.

● mark: Standard stocked item ○ mark: Planned stock (around summer 2024) Blank: Made-to-order item

New | External | Grooving | Zero Offset | Indexable Head | Internal Coolant

* For traverse cutting (groove expansion), use a multi-functional or profiling insert.

For Small Lathes, External Multi-Functional (Grooving, Traverse Cutting and Profiling) Clamp-on

# GNDM

External Grooving (for Small Lathes)

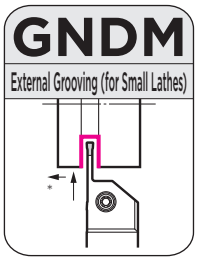


Fig 1

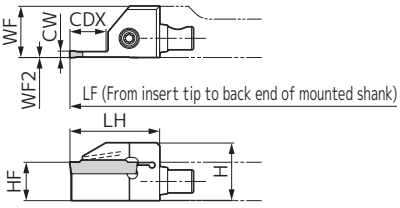
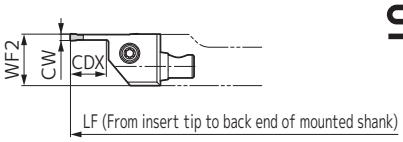



Fig 2




SumiSmall

## Head

## Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Offset WF2 | Overall Length LF | Width of Cut CW | Maximum Groove Depth CDX | Max. Cut-off Dia. | Applicable Size | Fig | Flat Insert Screw | N·m | Wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM16-GNDMR-212.5J** | ○ | 21.9 | 28 | **20** | 16 | 0 | 112 | **2.00** | **12.5** | **25** | 16 | 1 | BX0515 | **4.0** | LH040(*) |
| **APM16-GNDMR-312.5J** | ○ | 21.9 | 28 | **20** | 16 | 0 | 112 | **3.00** | **12.5** | **25** | 16 | 1 | | | |
| **APM16-GNDMR20-212.5J** | ○ | 21.9 | 28 | — | 16 | 20 | 112 | **2.00** | **12.5** | **25** | 16 | 2 | | | |
| **APM16-GNDMR20-312.5J** | ○ | 21.9 | 28 | — | 16 | 20 | 112 | **3.00** | **12.5** | **25** | 16 | 2 | | | |

Refer to shank selection on P6 for applicable shank. Select heads and inserts with matching width of cut CW.
Refer to P15 for applicable inserts. Refer to P16 for head feed direction selection. * Wrenches are sold separately from heads.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to P16.

New | External | Grooving | Zero Offset | Indexable Head | Internal Coolant

External Deep Grooving & Cut-off Clamp-on

# GNDL

External Grooving (for Small Lathes)

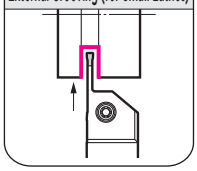


Fig 1

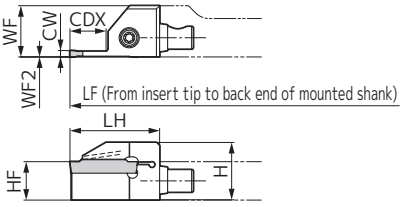
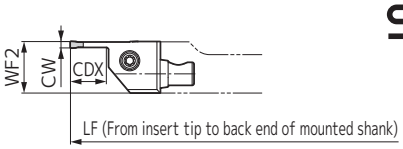



Fig 2




SumiSmall

## Head

## Parts

Dimensions (mm)

| Cat. No. | Stock | Height H | Head LH | Cutting Edge Distance WF | Cutting Edge Height HF | Offset WF2 | Overall Length LF | Width of Cut CW | Maximum Groove Depth CDX | Max. Cut-off Dia. | Applicable Size | Fig | Flat Insert Screw BFTX0412N / BX0515 | N·m | Wrench LT15-10 / LH040 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APM10-GNDLR-1.2509J** | ○ | 13.9 | 22 | **13.5** | 10 | 0 | 106 | **1.25** | **9.0** | **18** | 10 | 1 | BFTX0412N | **3.0** | LT15-10(*) |
| **APM10-GNDLR-1.509J** | ○ | 13.9 | 22 | **13.5** | 10 | 0 | 106 | **1.50** | **9.0** | **18** | 10 | 1 | | | |
| **APM10-GNDLR-209J** | ○ | 13.9 | 22 | **13.5** | 10 | 0 | 106 | **2.00** | **9.0** | **18** | 10 | 1 | | | |
| **APM10-GNDLR-309J** | ○ | 13.9 | 22 | **13.5** | 10 | 0 | 106 | **3.00** | **9.0** | **18** | 10 | 1 | | | |
| **APM10-GNDLR13.5-1.2509J** | ○ | 13.9 | 22 | — | 10 | 13.5 | 106 | **1.25** | **9.0** | **18** | 10 | 2 | | | |
| **APM10-GNDLR13.5-1.509J** | ○ | 13.9 | 22 | — | 10 | 13.5 | 106 | **1.50** | **9.0** | **18** | 10 | 2 | | | |
| **APM10-GNDLR13.5-209J** | ○ | 13.9 | 22 | — | 10 | 13.5 | 106 | **2.00** | **9.0** | **18** | 10 | 2 | | | |
| **APM10-GNDLR13.5-309J** | ○ | 13.9 | 22 | — | 10 | 13.5 | 106 | **3.00** | **9.0** | **18** | 10 | 2 | | | |
| **APM12-GNDLR-1.2512J** | ○ | 17.9 | 28 | **16** | 12 | 0 | 112 | **1.25** | **12.0** | **24** | 12 | 1 | BFTX0412N | **3.0** | LT15-10(*) |
| **APM12-GNDLR-1.512J** | ○ | 17.9 | 28 | **16** | 12 | 0 | 112 | **1.50** | **12.0** | **24** | 12 | 1 | | | |
| **APM12-GNDLR-212.5J** | ○ | 17.9 | 28 | **16** | 12 | 0 | 112 | **2.00** | **12.5** | **25** | 12 | 1 | | | |
| **APM12-GNDLR-312.5J** | ○ | 17.9 | 28 | **16** | 12 | 0 | 112 | **3.00** | **12.5** | **25** | 12 | 1 | | | |
| **APM12-GNDLR16-1.2512J** | ○ | 17.9 | 28 | — | 12 | 16 | 112 | **1.25** | **12.0** | **24** | 12 | 2 | | | |
| **APM12-GNDLR16-1.512J** | ○ | 17.9 | 28 | — | 12 | 16 | 112 | **1.50** | **12.0** | **24** | 12 | 2 | | | |
| **APM12-GNDLR16-212.5J** | ○ | 17.9 | 28 | — | 12 | 16 | 112 | **2.00** | **12.5** | **25** | 12 | 2 | | | |
| **APM12-GNDLR16-312.5J** | ○ | 17.9 | 28 | — | 12 | 16 | 112 | **3.00** | **12.5** | **25** | 12 | 2 | | | |
| **APM16-GNDLR-1.2512.5J** | ○ | 21.9 | 33 | **20** | 16 | 0 | 117 | **1.25** | **12.5** | **25** | 16 | 1 | BX0515 | **4.0** | LH040(*) |
| **APM16-GNDLR-1.512.5J** | ○ | 21.9 | 33 | **20** | 16 | 0 | 117 | **1.50** | **12.5** | **25** | 16 | 1 | | | |
| **APM16-GNDLR-216J** | ○ | 21.9 | 33 | **20** | 16 | 0 | 117 | **2.00** | **16.0** | **32** | 16 | 1 | | | |
| **APM16-GNDLR-316J** | ○ | 21.9 | 33 | **20** | 16 | 0 | 117 | **3.00** | **16.0** | **32** | 16 | 1 | | | |
| **APM16-GNDLR20-1.2512.5J** | ○ | 21.9 | 33 | — | 16 | 20 | 117 | **1.25** | **12.5** | **25** | 16 | 2 | | | |
| **APM16-GNDLR20-1.512.5J** | ○ | 21.9 | 33 | — | 16 | 20 | 117 | **1.50** | **12.5** | **25** | 16 | 2 | | | |
| **APM16-GNDLR20-216J** | ○ | 21.9 | 33 | — | 16 | 20 | 117 | **2.00** | **16.0** | **32** | 16 | 2 | | | |
| **APM16-GNDLR20-316J** | ○ | 21.9 | 33 | — | 16 | 20 | 117 | **3.00** | **16.0** | **32** | 16 | 2 | | | |

Refer to shank selection on P6 for applicable shank. Select heads and inserts with matching width of cut CW.
Refer to P15 for applicable inserts. Refer to P16 for head feed direction selection. * Wrenches are sold separately from heads.
The maximum groove depth CDX is the figure during grooving. For maximum depth of cut during traverse cutting and profiling, refer to P16.

● mark: Standard stocked item ○ mark: Planned stock (around summer 2024) N·m Recommended Tightening Torque (N·m)

# APM series

## Inserts for GNDM-J type / GNDL-J type

( Coated Carbide / Cermet / Cemented Carbide / DLC)

Fig 1

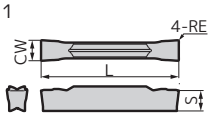



Fig. 2 (Figure shows right-handed (R) tool.)

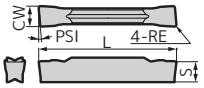



Fig 3

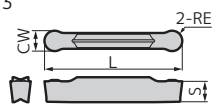
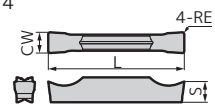



Fig 4




## Grooving / Traverse Cutting

Dimensions (mm)

| Cat. No. | AC8025P | AC8035P | AC830P | AC425K | AC5015S | AC5025S | AC520U | AC530U | T2500A | Width of Cut CW | | Corner Radius | Overall Length | Thickness | Pcs/Pack | Fig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Width of Cut | Tolerance | RE | L | S | | |
| GCM N3002-MG | ● | ● | | ● | ● | ● | | ● | — | 3.0 | ±0.03 | 0.2 | 21.1 | 3.8 | 5 | 1 |
| N3004-MG | ● | ● | ● | ● | ● | ● | ● | ● | — | 3.0 | ±0.03 | 0.4 | 21.1 | 3.8 | | 1 |
| GCM N2002-ML | — | — | — | — | ● | ● | ● | ● | — | 2.0 | ±0.03 | 0.2 | 21.1 | 3.6 | 5 | 1 |
| GCM N3002-ML | ● | ● | ● | ● | ● | ● | ● | ● | ● | 3.0 | ±0.03 | 0.2 | 21.1 | 3.8 | | 1 |
| N3004-ML | ● | ● | | ● | ● | ● | | ● | ● | 3.0 | ±0.03 | 0.4 | 21.1 | 3.8 | | 1 |

## Grooving / Cut-off

Dimensions (mm)

| Cat. No. | AC8025P | AC8035P | AC830P | AC425K | AC5015S | AC5025S | AC520U | AC530U | T2500A | Width of Cut CW | | Corner Radius | Overall Length | Thickness | Pcs/Pack | Fig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Width of Cut | Tolerance | RE | L | S | | |
| GCM N2002-GG | | ● | ● | | ● | ● | ● | ● | — | 2.0 | ±0.03 | 0.2 | 21.1 | 3.6 | 5 | 1 |
| GCM N3002-GG | | ● | ● | | ● | ● | ● | ● | — | 3.0 | ±0.03 | 0.2 | 21.1 | 3.8 | | 1 |
| N3004-GG | | ● | ● | | ● | ● | ● | ● | — | 3.0 | ±0.03 | 0.4 | 21.1 | 3.8 | | 1 |
| GCM N2002-GL | | ● | ● | | ● | ● | ● | ● | — | 2.0 | ±0.03 | 0.2 | 21.1 | 3.6 | 5 | 1 |
| N2004-GL | | ● | | | ● | ● | | ● | — | 2.0 | ±0.03 | 0.4 | 21.1 | 3.6 | | 1 |
| GCM N3002-GL | | ● | ● | | ● | ● | ● | ● | — | 3.0 | ±0.03 | 0.2 | 21.1 | 3.8 | | 1 |
| N3004-GL | | ● | | | ● | ● | | ● | — | 3.0 | ±0.03 | 0.4 | 21.1 | 3.8 | | 1 |
| GCM N125005-GF | — | — | — | — | — | — | — | ● | — | 1.25 | ±0.03 | 0.05 | 17.4 | 3.2 | 5 | 1 |
| GCM N150005-GF | — | — | — | — | — | — | — | ● | — | 1.5 | ±0.03 | 0.05 | 17.8 | 3.7 | | 1 |
| GCM N2002-GF | — | — | — | — | ● | ● | | ● | ● | 2.0 | ±0.03 | 0.2 | 21.1 | 3.6 | | 1 |
| N2004-GF | — | — | — | — | ● | ● | | ● | ● | 2.0 | ±0.03 | 0.4 | 21.1 | 3.6 | | 1 |
| GCM N3002-GF | | ● | ● | | ● | ● | ● | ● | ● | 3.0 | ±0.03 | 0.2 | 21.1 | 3.8 | | 1 |
| N3004-GF | | ● | | | ● | ● | | ● | ● | 3.0 | ±0.03 | 0.4 | 21.1 | 3.8 | | 1 |

## Cut-off (Handed Edge)

Dimensions (mm)

| Cat. No. | AC8035P | AC830P | AC5015S | AC5025S | AC520U | AC530U | AC1030U | Lead Angle | Width of Cut CW | | Corner Radius | Overall Length | Thickness | Pcs/Pack | Fig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PSI | Width of Cut | Tolerance | RE | L | S | | |
| GCM R2002-CG-05 | ● | ● | ● | ● | ● | ● | — | 5° | 2.0 | ±0.03 | 0.2 | 21.1 | 3.6 | 5 | 2 |
| GCM L2002-CG-05 | ● | ● | ● | ● | ● | ● | — | 5° | 2.0 | ±0.03 | 0.2 | 21.1 | 3.6 | | 2 |
| GCM R3002-CG-05 | ● | ● | ● | ● | ● | ● | — | 5° | 3.0 | ±0.03 | 0.2 | 21.3 | 3.8 | | 2 |
| GCM L3002-CG-05 | ● | ● | ● | ● | ● | ● | — | 5° | 3.0 | ±0.03 | 0.2 | 21.3 | 3.8 | | 2 |
| GCM R20003-CF-10 | — | — | ● | ● | — | — | ● | 10° | 2.0 | ±0.08 | 0.03 | 22.4 | 3.6 | 5 | 2 |
| GCM L20003-CF-10 | — | — | ● | ● | — | — | ● | 10° | 2.0 | ±0.08 | 0.03 | 22.4 | 3.6 | | 2 |
| GCM R30003-CF-10 | — | — | ● | ● | — | — | ● | 10° | 3.0 | ±0.08 | 0.03 | 22.4 | 3.8 | | 2 |
| GCM L30003-CF-10 | — | — | ● | ● | — | — | ● | 10° | 3.0 | ±0.08 | 0.03 | 22.4 | 3.8 | | 2 |
| GCM R20003-CF-15 | — | — | ● | ● | — | — | ● | 15° | 2.0 | ±0.08 | 0.03 | 22.4 | 3.6 | | 2 |
| GCM L20003-CF-15 | — | — | ● | ● | — | — | ● | 15° | 2.0 | ±0.08 | 0.03 | 22.4 | 3.6 | | 2 |
| GCM R30003-CF-15 | — | — | ● | ● | — | — | ● | 15° | 3.0 | ±0.08 | 0.03 | 22.4 | 3.8 | | 2 |
| GCM L30003-CF-15 | — | — | ● | ● | — | — | ● | 15° | 3.0 | ±0.08 | 0.03 | 22.4 | 3.8 | | 2 |

GCMR: Right-handed, GCML: Left-handed

## External Profiling / External Radius Grooving

Dimensions (mm)

| Cat. No. | AC8025P | AC8035P | AC830P | AC425K | AC5015S | AC5025S | AC520U | AC530U | T2500A | Width of Cut CW | | Corner Radius | Overall Length | Thickness | Pcs/Pack | Fig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Width of Cut | Tolerance | RE | L | S | | |
| GCM N3015-RG | ● | ● | ● | ● | ● | ● | ● | ● | ● | 3.0 | ±0.03 | 1.5 | 21.1 | 3.8 | 5 | 3 |

## Profiling / Radius Grooving / Necking

Dimensions (mm)

| Cat. No. | AC8025P | AC8035P | AC830P | AC425K | AC5015S | AC5025S | AC520U | AC530U | Width of Cut CW | | Corner Radius | Overall Length | Thickness | Pcs/Pack | Fig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Width of Cut | Tolerance | RE | L | S | | |
| GCM N2010-RN | — | — | — | — | ● | ● | ● | ● | 2.0 | ±0.03 | 1.0 | 21.7 | 3.6 | 5 | 3 |
| N3015-RN | ● | ● | ● | ● | ● | ● | ● | ● | 3.0 | ±0.03 | 1.5 | 22.6 | 3.8 | | 3 |

## Non-Ferrous Metals

Dimensions (mm)

| Cat. No. | H10 | DL1500 | | | | | | | Width of Cut CW | | Corner Radius | Overall Length | Thickness | Pcs/Pack | Fig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Width of Cut | Tolerance | RE | L | S | | |
| GCG N2002-GA | ● | ○ | | | | | | | 2.0 | ±0.025 | 0.2 | 21.1 | 3.6 | 5 | 4 |
| N3002-GA | ● | ○ | | | | | | | 3.0 | ±0.025 | 0.2 | 21.1 | 3.8 | | 4 |

## Part Number Suffix Code (Chipbreakers)

| Type | Symbol | Applications |
|---|---|---|
| Grooving / Traverse Cutting | MG | Multi-functional / General-purpose |
| | ML | Multi-functional / Low-feed |
| Grooving / Cut-off | GG | Grooving / General-purpose |
| | GL | Grooving / Low-feed |
| | GF | Grooving / Low cutting force |

| Type | Symbol | Applications |
|---|---|---|
| Cut-off (Handed Edge) | CG | Cut-off / General-purpose |
| | CF | Cut-off / Low cutting force |
| External Profiling / External Radius Grooving | RG | Profiling / General-purpose |
| Profiling / Radius Grooving / Necking | RN | Facing / Necking / General-purpose |
| For Non-Ferrous Metals | GA | Non-Ferrous Metals / General-purpose |

Chipbreaker Selection P17 Recommended Cutting Conditions P16

Select heads and inserts with matching width of cut (CW).

● mark: Standard stocked item ○ mark: Planned stock (around summer 2024) Blank: Made-to-order item — mark: Not available

## GND series Head Lineup

MG : Multi-functional / General-purpose type　ML : Multi-functional / Low-feed type　GG : Grooving / General-purpose type　GL : Grooving / Low-feed type　GF : Grooving / Low cutting force type
CG : Cut-off / General-purpose type　CF : Cut-off / Low cutting force type　RG : Profiling / General-purpose type　RN : Facing / Necking / General-purpose type　GA : Non-Ferrous Metal / General-purpose type

| Type | Shank Size (mm) Height H | Width B | Width of Cut (mm) | Model | Max. Groove Depth (mm) | Ref. Page | MG | ML | GG | GL | GF | CG | CF | RG | RN | GA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| For Small Lathes | 10 | 10 | 1.25 1.5 | GNDL-J | 9 | P14 | | | | | ◎ | | | | | |
| | | | 2 | GNDL-J | 9 | P14 | | ○ | ◎ | ◎ | ◎ | ◎ | ◎ | | ◎ | ◎ |
| | | | 3 | GNDL-J | 9 | P14 | ○ | ○ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ○ | ◎ |
| | 12 | 12 | 1.25 1.5 | GNDL-J | 12 | P14 | | | | | ◎ | | | | | |
| | | | 2 | GNDL-J | 12.5 | P14 | | ○ | ◎ | ◎ | ◎ | ◎ | ◎ | | ◎ | ◎ |
| | | | 3 | GNDL-J | 12.5 | P14 | ○ | ○ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ○ | ◎ |
| | 16 | 16 | 1.25 1.5 | GNDL-J | 12.5 | P14 | | | | | ◎ | | | | | |
| | | | 2 | GNDM-J | 12.5 | P14 | | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | | ◎ | ◎ |
| | | | 2 | GNDL-J | 16 | P14 | | ○ | ◎ | ◎ | ◎ | ◎ | ◎ | | ◎ | ◎ |
| | | | 3 | GNDM-J | 12.5 | P14 | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ○ | ◎ |
| | | | 3 | GNDL-J | 16 | P14 | ○ | ○ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ○ | ◎ |

: In Stock　　◎: Best ○: Suitable

## GND series Head Recommended Cutting Conditions (Feed Rate / Depth of Cut)

| Width of Cut (mm) | Recommended Cutting Conditions: Grooving / Cut-off (Necking) | Recommended Cutting Conditions: Traverse Cutting | Corner Radius (mm) | Applicable Insert |
|---|---|---|---|---|
| 1.25 | Chipbreaker: GF; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6 | — | 0.05 | GF |
| 1.5 | Chipbreaker: GF; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6 | — | 0.05 | GF |
| 2.0 | Chipbreaker: ML GG GL GF CG CF RN GA; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6 | Depth of Cut ap (mm) 4.0 3.0 2.0 1.0; ML GA RN; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 | 0.03 | CF |
| | | | 0.2 | ML GG GL GF CG GA |
| | | | 0.4 | GL GF |
| | | | 1.0 | RN |
| 3.0 | Chipbreaker: MG ML GG GL GF CG CF RG RN GA; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6 | Depth of Cut ap (mm) 4.0 3.0 2.0 1.0; ML MG RG/RN GA; Feed Rate f (mm/rev) 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 | 0.03 | CF |
| | | | 0.2 | MG ML GG GL GF CG GA |
| | | | 0.4 | MG ML GG GL GF |
| | | | 1.5 | RG RN |

In cut-off applications, reduce the feed rate to around 30% to 50% near the centre of the workpiece.

## GND series Head Recommended Cutting Conditions (Cutting Speed by Work Material)

| Work Material | P Carbon Steel / Alloy Steel | | | | | M Stainless Steel | | | K Cast Iron | | | | S Exotic Alloy | | N Non-Ferrous Metal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tool Grades | AC8025P | AC8035P AC830P | AC5015S AC520U | AC5025S AC530U AC1030U | T2500A | AC8035P AC830P | AC5015S AC520U | AC5025S AC530U AC1030U | AC8025P | AC425K | AC5015S AC520U | AC5025S AC530U AC1030U | AC5015S AC520U | AC5025S AC530U AC1030U | H10 DL1500 |
| Cutting Speed vc (m/min) | 80 to 250 | 80 to 200 | 80 to 200 | 50 to 200 | 50 to 200 | 70 to 150 | 70 to 150 | 50 to 150 | 80 to 200 | 80 to 200 | 60 to 200 | 50 to 200 | 20 to 80 | 20 to 60 | 150 to 300 |

## Selecting GND series Heads

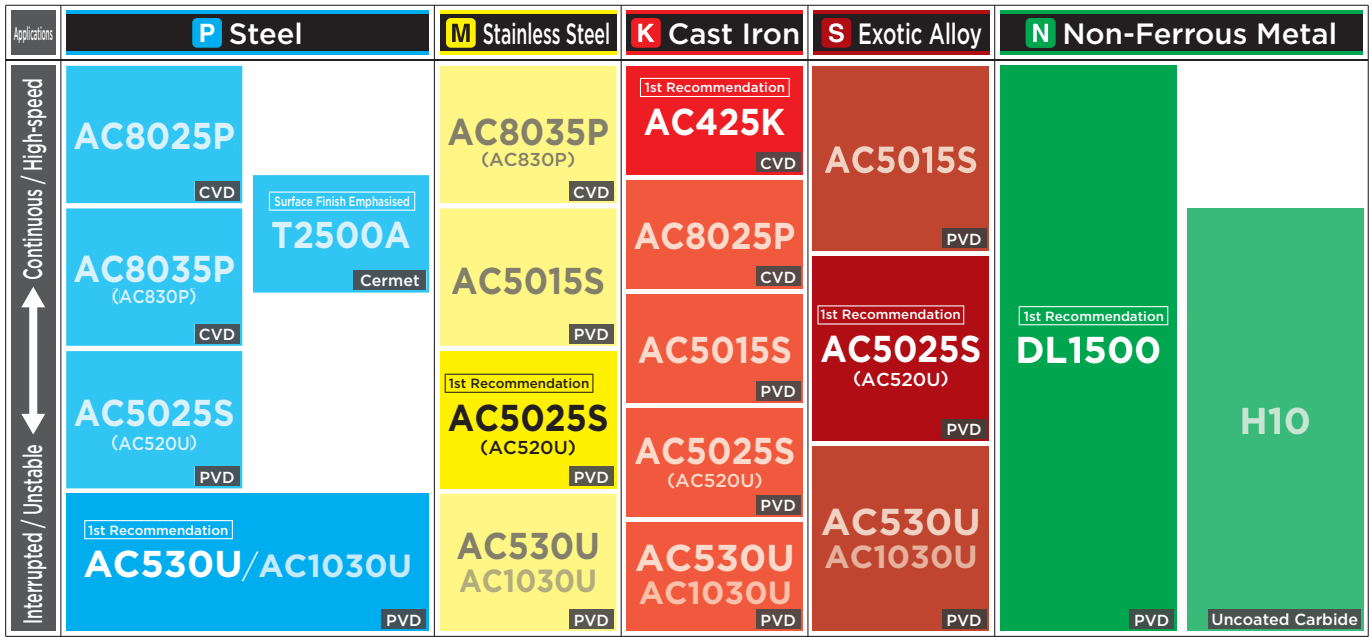
| | | |
|---|---|---|
| Integrated Holder | Right-handed (R) | Left-handed (L) |
| APM series | Right-handed (R) No Offset | Right-handed (R) With Offset |
| APM series Shank | APM-R○○X84J (Common) | |
| GND series Head | APM○○-GND□ R-○○○○J | APM○○-GND□ R ○○○ -○○○○J (Offset Dimensions) |
| Applicable Insert | Common | |
| GND series Head Mounted Appearance | Shank: Common<br>Head: No Offset, Right-handed<br>Insert: Common<br>No Offset | Shank: Common<br>Head: With Offset, Right-handed<br>Insert: Common<br>With Offset |

# APM series

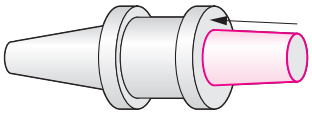
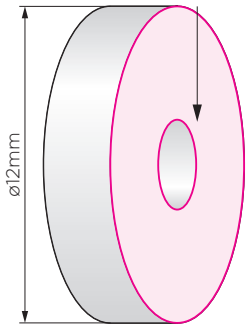
## Chipbreaker Selection Guide for GND series Head Inserts



## Grade Selection Guide for GND series Head Inserts



## ■ Application Examples

| Titanium Alloy Medical Component S | Kovar Semiconductor Component S |
|---|---|
| Machined surface quality equivalent to integrated type in vibration cutting of titanium alloy<br>  | Realises accuracy equivalent to integrated type in facing<br>  |
| Shank: APM-R1212X84J Head: APM12-SDJCR11T3J<br>Insert: DCGT11T302<br>Cutting Conditions: vc = 50m/min f = 0.03mm/rev<br>ap = 1.0mm Vibration Cutting Wet | Shank: APM-R1212X84J Head: APM12-SCLCR09T3J<br>Insert: CCGT09T301<br>Cutting Conditions: vc = 60m/min f = 0.06mm/rev<br>ap = 0.5mm Wet |

# MEMO

## < SAFETY NOTES >

- Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.
- Please handle with care as this product has sharp edges.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.
- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.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