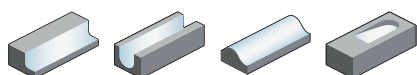
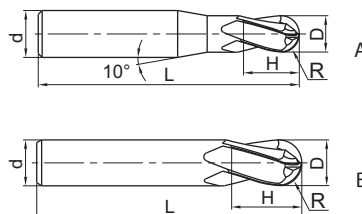


**Ball nose cutter** **High-performance machining**

**PM-4B**



- Factory standard
- Centre cutting
- Helix angle 30°



| Article     | * | Dimensions [mm] |    |        |    |     | Teeth | Geometry | Grade |
|-------------|---|-----------------|----|--------|----|-----|-------|----------|-------|
|             |   | R               | D  | d (h6) | H  | L   |       |          |       |
| PM-4B-R1.5  |   | 1.5             | 3  | 6      | 6  | 50  | 4     | A        | ●     |
| PM-4B-R2.0  |   | 2               | 4  | 6      | 8  | 50  | 4     | A        | ●     |
| PM-4B-R2.5  |   | 2.5             | 5  | 6      | 10 | 50  | 4     | A        | ●     |
| PM-4B-R3.0  |   | 3               | 6  | 6      | 12 | 50  | 4     | B        | ●     |
| PM-4B-R4.0  |   | 4               | 8  | 8      | 16 | 60  | 4     | B        | ●     |
| PM-4B-R5.0  |   | 5               | 10 | 10     | 20 | 75  | 4     | B        | ●     |
| PM-4B-R6.0  |   | 6               | 12 | 12     | 24 | 75  | 4     | B        | ●     |
| PM-4B-R7.0  |   | 7               | 14 | 14     | 28 | 75  | 4     | B        | ●     |
| PM-4B-R8.0  |   | 8               | 16 | 16     | 32 | 100 | 4     | B        | ●     |
| PM-4B-R9.0  |   | 9               | 18 | 18     | 36 | 100 | 4     | B        | ●     |
| PM-4B-R10.0 |   | 10              | 20 | 20     | 40 | 100 | 4     | B        | ●     |

● Ex stock ○ On demand

\* With internal cooling

| Application field |   |   |   |   |   |
|-------------------|---|---|---|---|---|
| P                 | M | K | N | S | H |
| ✓                 | ✓ | ✓ |   |   | ✓ |

✓ Very suitable

✓ Suitable

**A**

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System code > B268

Cutting data > B436

Nonstandard order > B477









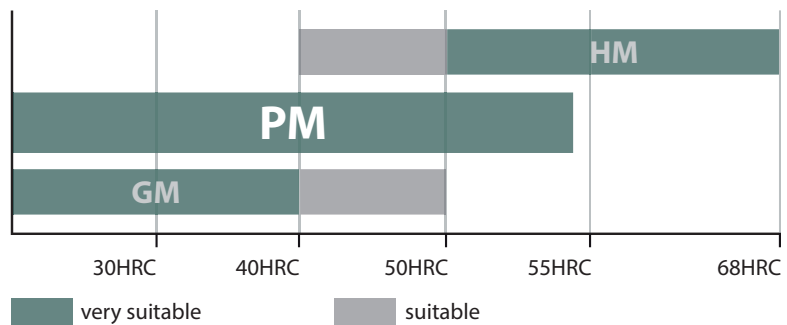


# PM series

*For demanding applications*

- For machining of steel to max. 55 HRC and cast iron to heat-resistant alloys.
- Very solid cutting edge with high stiffness for higher cutting speeds and feed rates.
- End mills, ball nose cutters, torus mills and high feed mills
- Diameter range 3.0–20.0 mm

Application fields for machining of steel



# GM – 2 E L P – D12 R0.5 – M08 – W

**1**      **2**      **3**      **4**      **5**      **6**      **7**      **8**      **9**

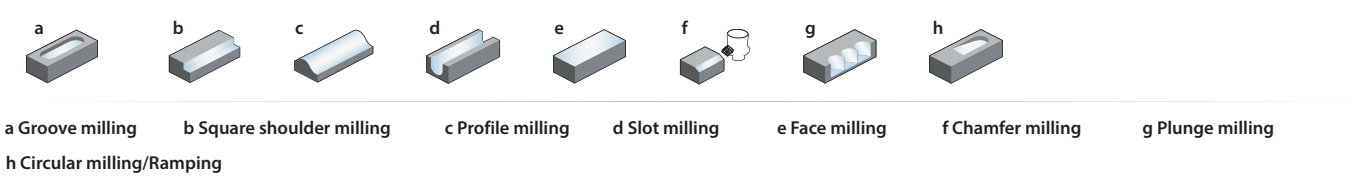
| Application |  |
|-------------|--|
| Code        | Description                                    |
| GR          | General roughing                               |
| GM          | Semi-finishing                                 |
| GF          | Finishing                                      |
| PM          | High-performance machining                     |
| HM          | Hard machining                                 |
| HH          | High-speed hard machining                      |
| NM          | General machining of non-ferrous metals        |
| AL          | General machining of Al and Al alloys          |
| ALP         | High-performance machining of Al and Al alloys |
| ALG         | General machining of Al and Al alloys          |
| UM          | HSC/HPC machining                              |
| VSM         | General machining of heat-resistant alloys     |

Number of teeth

| Cutting edge type |   | Cutting edge length |             |
|-------------------|---|---------------------|-------------|
| Code              | Description                                   | Code                | Description |
| E                 | Square shoulder mill with protective chamfer  | L                   | Long        |
| F                 | Square shoulder mill with sharp cutting edges | X                   | Extra long  |
| B                 | Ball nose cutter                              | F                   | Short       |
| R                 | Torus mill                                    |                     |             |
| W                 | Ripper  |                     |             |
| H                 | High-feed mill                                |                     |             |

| Type |               | Diameter [mm] |             |
|------|---------------|---------------|-------------|
| Code | Description   | Code          | Description |
| S    | Mini diameter | D3.0          | 3,0         |
| P    | Ground neck   | D8.0          | 8,0         |
| C    | Conical neck  | D20.0         | 20,0        |
|      |               | ...           |             |

| Radius [mm] |             | Features |                        | Weldon shank |
|-------------|-------------|----------|------------------------|--------------|
| Code        | Description | Code     | Description            |              |
| R0.5        | 0,5         | G        | Spiral angle 30°       |              |
| R1.0        | 1,5         | M        | Neck length [mm]       |              |
| R3.0        | 3,0         | S        | Thin shank             |              |
| ...         |             | AIR      | For aerospace industry |              |



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**A**

Turning

## Coated cemented carbide PVD

| Grade         | Grade description   |
|---------------|---|
| <b>KMD401</b> | PVD coated carbide substrate for high performance milling application of non-ferrous metals, CFRP and GFRP and organic materials. The DLC layer has very good wear protection and high thermal stability. |

**B**

Milling

|               |   |
|---------------|---|
| <b>KMG303</b> | PVD coated carbide substrate for universal milling application of steel (up to HRC<=48), stainless steel and cast iron. |
|---------------|---|

|               |   |
|---------------|---|
| <b>KMG405</b> | PVD coated carbide substrate for high performance milling application of steel (up to HRC <55), stainless steel, super alloy material and cast iron. High wear resistance and toughness for a wide application field. |
|---------------|---|

**C**

Drilling

|               |  |
|---------------|--|
| <b>KMG555</b> | PVD coated carbide substrate for hard milling application of steel (HRC 55–68), highest wear resistance and toughness for best cutting result. |
|---------------|--|

|               |  |
|---------------|--|
| <b>KMG309</b> | PVD coated carbide substrate for non ferrous materials. High wear resistance even in abrasive materials. |
|---------------|--|

**D**

Technical Information

## Uncoated cemented carbide








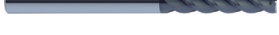






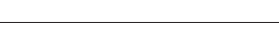
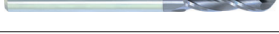




| Grade        | Grade description   |
|--------------|---|
| <b>YK30F</b> | Uncoated K30 carbide substrate for steel, stainless steel, cast iron and non ferrous materials. |

**E**

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|              |   |
|--------------|---|
| <b>YK40F</b> | Uncoated K20–K30/N20–N30 carbide substrate for cast iron and non ferrous materials. |
|--------------|---|

## High performance milling

| Products | Solid carbide cutters   | Teeth | Ø        | Application |   |   |   |   |   | Type                               | Page |
|----------|---|-------|----------|-------------|---|---|---|---|---|------------------------------------|------|
|          |   |       |          | P           | M | K | N | S | H |                                    |      |
| PM-2E    |    | 2     | 1.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | End mills                          | B330 |
| PM-2EL   |    | 2     | 3.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | End mills                          | B331 |
| PM-4E-G  |    | 4     | 1.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | End mills                          | B332 |
| PM-4EL-G |    | 4     | 3.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | End mills                          | B333 |
| PM-4EX-G |    | 4     | 3.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | End mills                          | B334 |
| PM-4E    |    | 4     | 1.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | End mills                          | B335 |
| PM-4EL   |    | 4     | 3.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | End mills                          | B336 |
| PM-6E    |    | 6     | 6.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | End mills                          | B337 |
| PM-6EL   |    | 6     | 6.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | End mills                          | B338 |
| PM-2B    |    | 2     | 1.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | Ball nose cutters                  | B339 |
| PM-2BL   |  | 2     | 2.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | Ball nose cutters                  | B340 |
| PM-2BFP  |  | 2     | 1.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | Ball nose cutters                  | B341 |
| PM-2BC   |  | 2     | 0.5-4.0  | ✓           | ✓ | ✓ |   |   | ✓ | Ball nose cutter with conical neck | B342 |
| PM-4B    |  | 4     | 3.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | Ball nose cutters                  | B345 |
| PM-4BL   |  | 4     | 3.0-20.0 | ✓           | ✓ | ✓ |   |   | ✓ | Ball nose cutters                  | B346 |
| PM-2R    |  | 2     | 1.0-12.0 | ✓           | ✓ | ✓ |   |   | ✓ | Torus mills                        | B347 |
| PM-4R    |  | 4     | 3.0-12.0 | ✓           | ✓ | ✓ |   |   | ✓ | Torus mills                        | B350 |
| PM-4RL   |  | 4     | 6.0-16.0 | ✓           | ✓ | ✓ |   |   | ✓ | Torus mills                        | B351 |
| PM-4H    |  | 4     | 3.0-12.0 | ✓           | ✓ | ✓ |   |   | ✓ | High-feed mills                    | B348 |
| PM-4HL   |  | 4     | 4.0-12.0 | ✓           | ✓ | ✓ |   |   | ✓ | High-feed mills                    | B349 |

✓ Very suitable    ✓ Suitable

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