



**TURBO**  
**PRODUCT CATALOGUE**

|  | Page  |
|--|-------|
| Product overview .....                             | 3     |
| Square shoulder and slot milling cutters .....     | 4-11  |
| Helical milling cutters .....                      | 13-17 |
| Plunging cutters .....                             | 19-21 |
| Max RPM and torque value .....                     | 22    |
| Inserts overview .....                             | 23-26 |
| Seco material groups and workpiece materials ..... | 27    |

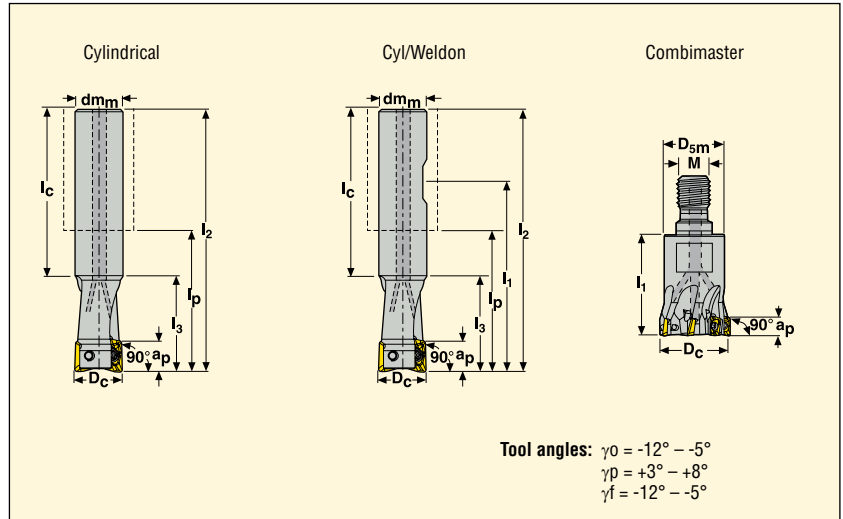


|               |               | HELICAL POWER            | POWER TURBO              |                          | HELICAL SUPER            | SUPER TURBO              |                          | HELICAL MICRO            | MICRO TURBO              |                          | HELICAL NANO             | NANO TURBO               |                          |
|---------------|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Cutter Bodies | Diameters     | 10-40 mm                 |                          |                          |                          |                          |                          |                          |                          |                          |                          | <input type="checkbox"/> |                          |
|               |               | 12-20 mm                 |                          |                          |                          |                          |                          |                          |                          |                          | <input type="checkbox"/> |                          |                          |
|               |               | 12-100 mm                |                          |                          |                          |                          |                          |                          | <input type="checkbox"/> |                          |                          |                          |                          |
|               |               | 20-40 mm                 |                          |                          |                          |                          |                          |                          | <input type="checkbox"/> |                          |                          |                          |                          |
|               |               | 20-125 mm                |                          |                          |                          |                          | <input type="checkbox"/> |                          |                          |                          |                          |                          |                          |
|               |               | 25-63 mm                 |                          |                          |                          | <input type="checkbox"/> |                          |                          |                          |                          |                          |                          |                          |
|               |               | 32-160 mm                |                          | <input type="checkbox"/> |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|               |               | 40-100 mm                | <input type="checkbox"/> |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|               | Versions      | Cassettes Ø 125–250      |                          | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> |                          |                          |                          |                          |                          |                          |
|               |               | Capto                    | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> |                          |                          |                          |
|               |               | Combimaster              |                          | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
|               |               | Normal Pitch             | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> |
|               |               | Coarse Pitch             |                          | <input type="checkbox"/> |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|               |               | Close Pitch              |                          | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> |                          |                          |                          |
| Inserts       | Grades        | F15M                     | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          |
|               |               | F25M                     |                          |                          |                          |                          |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |
|               |               | F30M                     | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          |
|               |               | F40M                     | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          |
|               |               | T25M                     |                          |                          |                          |                          |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |
|               |               | T150M                    | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |
|               |               | T200M                    | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |
|               |               | T250M                    | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |
|               |               | T350M                    | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |
|               |               | H15                      |                          |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
|               | H25           | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |                          |
| Geometries    | E (Easy)      | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |
|               | ME            | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |                          |
|               | M (Medium)    | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |
|               | MD            | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |                          |                          |                          |                          |
|               | D (Difficult) | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |                          |                          |                          |                          |

## Nano Turbo 217.69-06



- For complete insert program see page 23
- For max RPM and torque values see page 22



| Part No.               | Dimensions in mm |     |    |     |     |     |     |     |    |    | Type of mounting | Spare parts  |          |             |        |
|------------------------|------------------|-----|----|-----|-----|-----|-----|-----|----|----|------------------|--------------|----------|-------------|--------|
|                        | Dc               | dmm | l1 | l2  | lp  | l3  | lc  | M   | ap | KG |                  |              |          |             |        |
| R217.69 -1010.0-06-2A  | 10               | 10  | -  | 55  | 15  | 16  | 38  | -   | 5  | 2  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1010.0-06-2AD         | 10               | 10  | -  | 55  | 15  | 16  | 38  | -   | 5  | 2  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1212.0-06-2A          | 12               | 12  | -  | 80  | 35  | 17  | 62  | -   | 5  | 2  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1212.0-06-3A          | 12               | 12  | -  | 60  | 15  | 17  | 42  | -   | 5  | 3  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1212.0-06-3AD         | 12               | 12  | -  | 80  | 35  | 17  | 62  | -   | 5  | 3  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1616.0-06-3A          | 16               | 16  | -  | 90  | 42  | 19  | 70  | -   | 5  | 3  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1616.0-06-4A          | 16               | 16  | -  | 90  | 42  | 19  | 70  | -   | 5  | 4  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1616.0-06-4AD         | 16               | 16  | -  | 90  | 42  | 19  | 70  | -   | 5  | 4  | 0.3              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -2020.0-06-4A          | 20               | 20  | -  | 105 | 55  | 17  | 85  | -   | 5  | 4  | 0.2              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -2020.0-06-5A          | 20               | 20  | -  | 105 | 55  | 17  | 85  | -   | 5  | 5  | 0.2              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -2020.0-06-5AD         | 20               | 20  | -  | 105 | 55  | 20  | 85  | -   | 5  | 5  | 0.5              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -2025.0-06-7A          | 25               | 20  | -  | 115 | 65  | 65  | 95  | -   | 5  | 7  | 0.2              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -2532.0-06-8A          | 32               | 25  | -  | 130 | 74  | 74  | 105 | -   | 5  | 8  | 0.5              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -3240.0-06-10A         | 40               | 32  | -  | 140 | 80  | 80  | 115 | -   | 5  | 10 | 0.9              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| R217.69 -1010.0-06-2   | 10               | 10  | -  | 100 | 62  | 18  | 82  | -   | 5  | 2  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1212.0-06-2           | 12               | 12  | -  | 120 | 75  | 18  | 102 | -   | 5  | 2  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| R217.69 -0810.0-06-2A  | 10               | 8   | -  | 100 | 64  | 64  | 82  | -   | 5  | 2  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1012.0-06-2A          | 12               | 10  | -  | 120 | 80  | 80  | 102 | -   | 5  | 2  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1214.0-06-3A          | 14               | 12  | -  | 140 | 95  | 95  | 122 | -   | 5  | 3  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1416.0-06-3A          | 16               | 14  | -  | 160 | 115 | 115 | 140 | -   | 5  | 3  | 0.2              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1618.0-06-4A          | 18               | 16  | -  | 180 | 132 | 132 | 160 | -   | 5  | 4  | 0.3              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1820.0-06-4A          | 20               | 18  | -  | 200 | 150 | 150 | 180 | -   | 5  | 4  | 0.4              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| R217.69 -0810.0-06-2   | 10               | 8   | -  | 100 | 64  | 64  | 82  | -   | 5  | 2  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| -1012.0-06-2           | 12               | 10  | -  | 120 | 80  | 80  | 102 | -   | 5  | 2  | 0.1              | Cylindrical  | XO..0602 | C01804-T06P | T06P-3 |
| R217.69 -1616.3-06-3A  | 16               | 16  | 46 | 70  | 22  | 20  | 50  | -   | 5  | 3  | 0.1              | Cyl/Weldon   | XO..0602 | C01804-T06P | T06P-3 |
| -1616.3-06-4A          | 16               | 16  | 46 | 70  | 22  | 20  | 50  | -   | 5  | 4  | 0.1              | Cyl/Weldon   | XO..0602 | C01804-T06P | T06P-3 |
| -2020.3-06-4A          | 20               | 20  | 55 | 80  | 30  | 20  | 60  | -   | 5  | 4  | 0.2              | Cyl/Weldon   | XO..0602 | C01804-T06P | T06P-3 |
| -2020.3-06-5A          | 20               | 20  | 60 | 85  | 35  | 20  | 65  | -   | 5  | 5  | 0.2              | Cyl/Weldon   | XO..0602 | C01804-T06P | T06P-3 |
| -2025.3-06-7A          | 25               | 20  | 65 | 90  | 40  | 20  | 70  | -   | 5  | 7  | 0.2              | Cyl/Weldon   | XO..0602 | C01804-T06P | T06P-3 |
| R217.69 -0816.RE-06-4A | 16               | -   | 23 | -   | -   | -   | -   | M08 | 5  | 4  | 0.1              | Combimaster* | XO..0602 | C01804-T06P | T06P-3 |
| -1020.RE-06-5A         | 20               | -   | 28 | -   | -   | -   | -   | M10 | 5  | 5  | 0.1              | Combimaster* | XO..0602 | C01804-T06P | T06P-3 |
| -1225.RE-06-7A         | 25               | -   | 30 | -   | -   | -   | -   | M12 | 5  | 7  | 0.1              | Combimaster* | XO..0602 | C01804-T06P | T06P-3 |
| -1632.RE-06-8A         | 32               | -   | 35 | -   | -   | -   | -   | M16 | 5  | 8  | 0.2              | Combimaster* | XO..0602 | C01804-T06P | T06P-3 |
| -1640.RE-06-10A        | 40               | -   | 35 | -   | -   | -   | -   | M16 | 5  | 10 | 0.3              | Combimaster* | XO..0602 | C01804-T06P | T06P-3 |

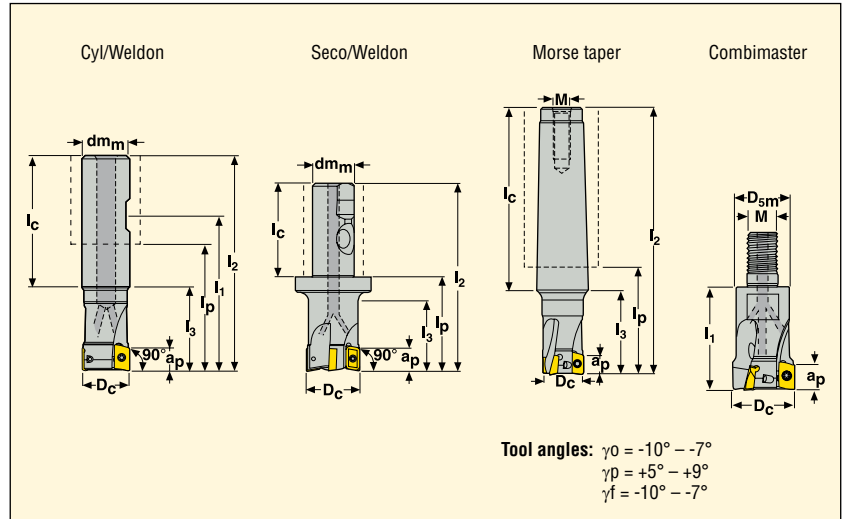
Please check availability in current price and stock-list.  
 \*For shanks and dimensions, see the Combimaster chapter in MN Milling part 2.

# Square shoulder and slot milling cutters

## Micro Turbo 217.69-09



- For complete insert program see page 24
- For max RPM and torque values see page 22



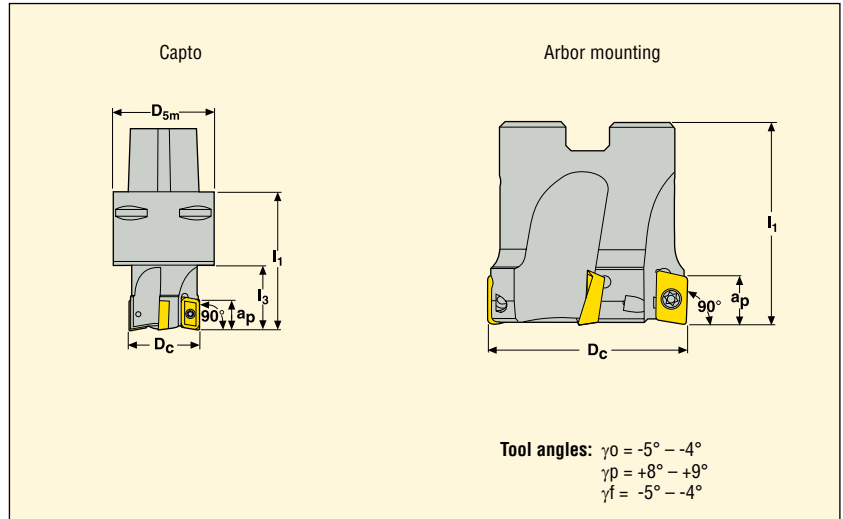
| Part No.               | Dimensions in mm |    |    |     |     |    |       |     |    | Type of mounting | Type of insert | Type of mounting | Spare parts   |             |        |
|------------------------|------------------|----|----|-----|-----|----|-------|-----|----|------------------|----------------|------------------|---------------|-------------|--------|
|                        | Dc               | dm | l1 | l2  | lp  | l3 | lc    | M   | ap |                  |                |                  | Locking screw | Key         |        |
| R217.69 -1612.3-09A    | 12               | 16 | 54 | 78  | 30  | 24 | 54    | -   | 8  | 1                | 0.1            | Cyl/Weldon       | XO..0903      | C02505-T08P | T08P-3 |
| -1616.3-09A            | 16               | 16 | 54 | 78  | 30  | 24 | 54    | -   | 8  | 2                | 0.1            | Cyl/Weldon       | XO..0903      | C02505-T08P | T08P-3 |
| -2018.3-09A            | 18               | 20 | 60 | 85  | 35  | 29 | 56    | -   | 8  | 2                | 0.2            | Cyl/Weldon       | XO..0903      | C02505-T08P | T08P-3 |
| -2020.3-09A            | 20               | 20 | 65 | 90  | 40  | 29 | 61    | -   | 8  | 2                | 0.2            | Cyl/Weldon       | XO..0903      | C02505-T08P | T08P-3 |
| -2525.3-09A            | 25               | 25 | 69 | 101 | 45  | 34 | 67    | -   | 8  | 3                | 0.4            | Cyl/Weldon       | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -2020.3-09TA   | 20               | 20 | 65 | 90  | 40  | 29 | 61    | -   | 8  | 3                | 0.2            | Cyl/Weldon       | XO..0903      | C02505-T08P | T08P-3 |
| -2525.3-09TA           | 25               | 25 | 69 | 101 | 45  | 34 | 67    | -   | 8  | 4                | 0.4            | Cyl/Weldon       | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -2025.3S-09A   | 25               | 20 | -  | 100 | 50  | 36 | 50    | -   | 8  | 3                | 0.3            | Seco/Weldon      | XO..0903      | C02505-T08P | T08P-3 |
| -2532.3S-09A           | 32               | 25 | -  | 111 | 55  | 41 | 56    | -   | 8  | 3                | 0.5            | Seco/Weldon      | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -2025.3S-09TA  | 25               | 20 | -  | 100 | 50  | 36 | 50    | -   | 8  | 4                | 0.3            | Seco/Weldon      | XO..0903      | C02505-T08P | T08P-3 |
| -2532.3S-09TA          | 32               | 25 | -  | 111 | 55  | 41 | 56    | -   | 8  | 5                | 0.5            | Seco/Weldon      | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -1612.0-09-1A  | 12               | 16 | -  | 135 | 87  | 22 | 105   | -   | 8  | 1                | 0.2            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| -1416.0-09-2A          | 16               | 14 | -  | 160 | 112 | 24 | 133.5 | -   | 8  | 2                | 0.3            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| -1616.0-09-2A          | 16               | 16 | -  | 135 | 87  | 24 | 105   | -   | 8  | 2                | 0.2            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| -1820.0-09-2A          | 20               | 18 | -  | 200 | 150 | 29 | 170   | -   | 8  | 2                | 0.4            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| -2020.0-09-2A          | 20               | 20 | -  | 150 | 100 | 29 | 115   | -   | 8  | 2                | 0.4            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| -2225.0-09-3A          | 25               | 22 | -  | 200 | 144 | 29 | 170   | -   | 8  | 3                | 0.6            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| -2525.0-09-3A          | 25               | 25 | -  | 170 | 114 | 29 | 130   | -   | 8  | 3                | 0.6            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| -3032.0-09-3A          | 32               | 30 | -  | 200 | 140 | 31 | 168   | -   | 8  | 3                | 1              | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| -3232.0-09-3A          | 32               | 32 | -  | 195 | 135 | 31 | 155   | -   | 8  | 3                | 1.2            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -2020.0-09-3A  | 20               | 20 | -  | 150 | 100 | 29 | 115   | -   | 8  | 3                | 0.4            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| -3232.0-09-5A          | 32               | 32 | -  | 195 | 135 | 31 | 155   | -   | 8  | 5                | 1.2            | Cylindrical      | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -0320.2-09     | 20               | -  | -  | 120 | 38  | 31 | 76    | M12 | 8  | 2                | 0.3            | Morse No.3       | XO..0903      | C02505-T08P | T08P-3 |
| -0325.2-09             | 25               | -  | -  | 120 | 38  | 38 | 76    | M12 | 8  | 3                | 0.4            | Morse No.3       | XO..0903      | C02505-T08P | T08P-3 |
| -0332.2-09             | 32               | -  | -  | 120 | 38  | 38 | 76    | M12 | 8  | 3                | 0.4            | Morse No.3       | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -0320.2-09T    | 20               | -  | -  | 120 | 38  | 31 | 76    | M12 | 8  | 3                | 0.3            | Morse No.3       | XO..0903      | C02505-T08P | T08P-3 |
| -0325.2-09T            | 25               | -  | -  | 120 | 38  | 38 | 76    | M12 | 8  | 4                | 0.4            | Morse No.3       | XO..0903      | C02505-T08P | T08P-3 |
| -0332.2-09T            | 32               | -  | -  | 120 | 38  | 38 | 76    | M12 | 8  | 4                | 0.4            | Morse No.3       | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -1020.RE-09.2A | 20               | -  | 28 | -   | -   | -  | -     | M10 | 8  | 2                | 0.1            | Combimaster*     | XO..0903      | C02505-T08P | T08P-3 |
| -1020.RE-09.3A         | 20               | -  | 28 | -   | -   | -  | -     | M10 | 8  | 3                | 0.1            | Combimaster*     | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -1225.RE-09.2A | 25               | -  | 30 | -   | -   | -  | -     | M12 | 8  | 2                | 0.2            | Combimaster*     | XO..0903      | C02505-T08P | T08P-3 |
| -1225.RE-09.3A         | 25               | -  | 30 | -   | -   | -  | -     | M12 | 8  | 3                | 0.2            | Combimaster*     | XO..0903      | C02505-T08P | T08P-3 |
| -1225.RE-09.4A         | 25               | -  | 30 | -   | -   | -  | -     | M12 | 8  | 4                | 0.2            | Combimaster*     | XO..0903      | C02505-T08P | T08P-3 |
| R217.69 -1632.RE-09.3A | 32               | -  | 40 | -   | -   | -  | -     | M16 | 8  | 3                | 0.3            | Combimaster*     | XO..0903      | C02505-T08P | T08P-3 |
| -1632.RE-09.5A         | 32               | -  | 40 | -   | -   | -  | -     | M16 | 8  | 5                | 0.3            | Combimaster*     | XO..0903      | C02505-T08P | T08P-3 |

Please check availability in current price and stock-list.  
 \*For shanks and dimensions, see the Combimaster chapter in MN Milling part 2.

## Nano-MicroTurbo



- For complete insert program see page 23-24
- For max RPM and torque values see page 22



| Fortanding | Part No.               | Dimensions in mm |                |                |                 |    |          |          | Material | Coating     | Spare parts |               |     |
|------------|------------------------|------------------|----------------|----------------|-----------------|----|----------|----------|----------|-------------|-------------|---------------|-----|
|            |                        | Dc               | l <sub>1</sub> | l <sub>3</sub> | D <sub>sm</sub> | ap | Symbol 1 | Symbol 2 |          |             | Symbol 3    | Locking screw | Key |
| Nano Turbo | R220.69 -0032-06-8A    | 32               | 35             | -              | -               | 5  | 8        | 0.2      | XO..0602 | C01804-T06P | T06P-3      | TCEI 0825     |     |
|            | -0040-06-10A           | 40               | 35             | -              | -               | 5  | 10       | 0.2      | XO..0602 | C01804-T06P | T06P-3      | TCEI 0825     |     |
|            | Micro Turbo            |                  |                |                |                 |    |          |          |          |             |             |               |     |
| Normal     | R220.69 -0040-09-4A    | 40               | 40             | -              | -               | 8  | 4        | 0.3      | XO..0903 | C02505-T08P | T08P-3      | MC6S 8x30     |     |
|            | -0050-09-5A            | 50               | 40             | -              | -               | 8  | 5        | 0.4      | XO..0903 | C02505-T08P | T08P-3      | 220.17-692    |     |
| Close      | R220.69 -0040-09-6A    | 40               | 40             | -              | -               | 8  | 6        | 0.3      | XO..0903 | C02505-T08P | T08P-3      | MC6S 8x30     |     |
|            | -0050-09-7A            | 50               | 40             | -              | -               | 8  | 7        | 0.4      | XO..0903 | C02505-T08P | T08P-3      | 220.17-692    |     |
|            | -0063-09-8A            | 63               | 40             | -              | -               | 8  | 8        | 0.5      | XO..0903 | C02505-T08P | T08P-3      | 220.17-692    |     |
|            | -0080-09-10A           | 80               | 50             | -              | -               | 8  | 10       | 1.0      | XO..0903 | C02505-T08P | T08P-3      | -             |     |
|            | -0100-09-12A           | 100              | 50             | -              | -               | 8  | 12       | 1.6      | XO..0903 | C02505-T08P | T08P-3      | -             |     |
| Capto      | Micro Turbo            |                  |                |                |                 |    |          |          |          |             |             |               |     |
|            | R217.69 -C5-040-09-6A* | 40               | 80             | 57             | 50              | 8  | 6        | 0.9      | XO..0903 | C02505-T08P | T08P-3      | -             |     |
|            | -C5-054-09-7A*         | 54               | 60             | 60             | 50              | 8  | 7        | 1.0      | XO..0903 | C02505-T08P | T08P-3      | -             |     |
|            | -C5-063-09-8A*         | 63               | 60             | 60             | 50              | 8  | 8        | 1.1      | XO..0903 | C02505-T08P | T08P-3      | -             |     |

\* In stock first quarter 2007

## Dimensions of mounting

| For cutter         | Dimensions in mm |                 |     | For arbor |
|--------------------|------------------|-----------------|-----|-----------|
|                    | d <sub>mm</sub>  | B <sub>kw</sub> | c   |           |
| R220.69 -0032-0040 | 16               | 8.4             | 5.6 | 16        |
| R220.69 -0050-0063 | 22               | 10.4            | 6.3 | 22        |
| R220.69 -0080      | 27               | 12.4            | 7   | 27        |
| R220.69 -0100      | 32               | 14.4            | 8   | 32        |

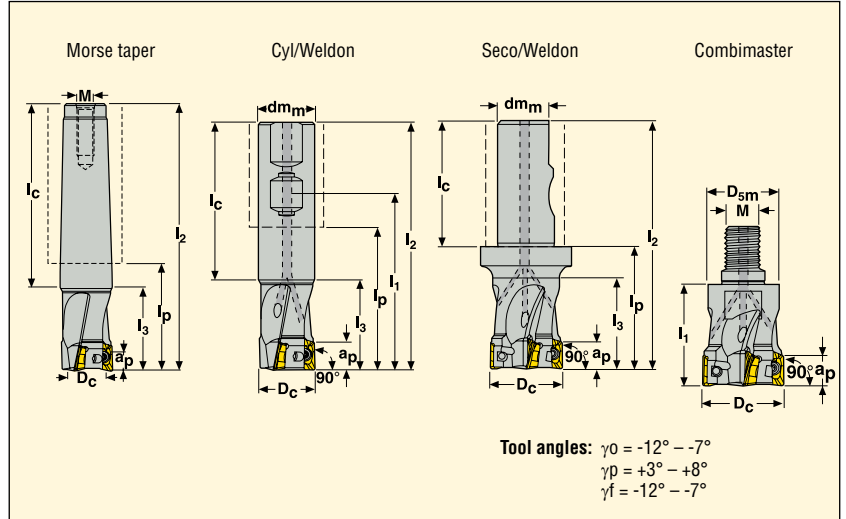
Please check availability in current price and stock-list.

# Square shoulder and slot milling cutters

## Super Turbo 217.69-12



- For complete insert program see page 25
- For max RPM and torque values see page 22



| Part No.               | Dimensions in mm |     |    |     |     |     |     |     |    | Type of mounting | Type of insert | Type of mounting | Spare parts   |             |        |
|------------------------|------------------|-----|----|-----|-----|-----|-----|-----|----|------------------|----------------|------------------|---------------|-------------|--------|
|                        | Dc               | dmm | l1 | l2  | l1p | l3  | lc  | M   | ap |                  |                |                  | Locking screw | Key         |        |
| R217.69 -1820.0-12-2A  | 20               | 18  | -  | 150 | 100 | 100 | 120 | -   | 11 | 2                | 0.3            | Cylindrical      | XO..1204      | C03507-T10P | T10P-3 |
| -2020.0-12-2A          | 20               | 20  | -  | 150 | 100 | 30  | 120 | -   | 11 | 2                | 0.4            | Cylindrical      | XO..1204      | C03507-T10P | T10P-3 |
| -2225.0-12-2A          | 25               | 22  | -  | 170 | 114 | 114 | 135 | -   | 11 | 2                | 0.5            | Cylindrical      | XO..1204      | C03507-T10P | T10P-3 |
| -2525.0-12-2A          | 25               | 25  | -  | 170 | 114 | 35  | 135 | -   | 11 | 2                | 0.6            | Cylindrical      | XO..1204      | C03507-T10P | T10P-3 |
| -2525.0-12-3A          | 25               | 25  | -  | 170 | 114 | 35  | 135 | -   | 11 | 3                | 0.6            | Cylindrical      | XO..1204      | C03507-T10P | T10P-3 |
| -3032.0-12-3A          | 32               | 30  | -  | 195 | 135 | 135 | 155 | -   | 11 | 3                | 1.0            | Cylindrical      | XO..1204      | C03507-T10P | T10P-3 |
| -3232.0-12-3A          | 32               | 32  | -  | 195 | 135 | 37  | 155 | -   | 11 | 3                | 1.2            | Cylindrical      | XO..1204      | C03507-T10P | T10P-3 |
| R217.69 -0320.2-12-2   | 20               | -   | -  | 120 | 39  | 30  | 81  | M12 | 11 | 2                | 0.3            | Morse No.3       | XO..1204      | C03507-T10P | T10P-3 |
| -0325.2-12-3           | 25               | -   | -  | 126 | 45  | 45  | 81  | M12 | 11 | 3                | 0.4            | Morse No.3       | XO..1204      | C03507-T10P | T10P-3 |
| -0332.2-12-4           | 32               | -   | -  | 126 | 45  | 45  | 81  | M12 | 11 | 4                | 0.4            | Morse No.3       | XO..1204      | C03507-T10P | T10P-3 |
| R217.69 -2020.3-12-2A  | 20               | 20  | 60 | 85  | 35  | 30  | 55  | -   | 11 | 2                | 0.2            | Cyl/Weldon       | XO..1204      | C03507-T10P | T10P-3 |
| -2525.3-12-3A          | 25               | 25  | 63 | 95  | 39  | 32  | 60  | -   | 11 | 3                | 0.4            | Cyl/Weldon       | XO..1204      | C03507-T10P | T10P-3 |
| -3232.3-12-3A          | 32               | 32  | 69 | 105 | 45  | 37  | 65  | -   | 11 | 3                | 0.6            | Cyl/Weldon       | XO..1204      | C03507-T10P | T10P-3 |
| R217.69 -3232.3-12-4A  | 32               | 32  | 69 | 105 | 45  | 37  | 65  | -   | 11 | 4                | 0.6            | Cyl/Weldon       | XO..1204      | C03507-T10P | T10P-3 |
| R217.69 -2025.3S-12-3A | 25               | 20  | -  | 100 | 50  | 36  | 50  | -   | 11 | 3                | 0.3            | Seco/Weldon      | XO..1204      | C03507-T10P | T10P-3 |
| -2532.3S-12-4A         | 32               | 25  | -  | 110 | 54  | 40  | 56  | -   | 11 | 4                | 0.5            | Seco/Weldon      | XO..1204      | C03507-T10P | T10P-3 |
| R217.69 -3240.3S-12-5A | 40               | 32  | -  | 120 | 60  | 46  | 60  | -   | 11 | 5                | 0.8            | Seco/Weldon      | XO..1204      | C03509-T10P | T10P-3 |
| R217.69 -1020.RE-12-2A | 20               | -   | 28 | -   | -   | -   | -   | M10 | 11 | 2                | 0.1            | Combimaster*     | XO..1204      | C03507-T10P | T10P-3 |
| -1225.RE-12-3A         | 25               | -   | 30 | -   | -   | -   | -   | M12 | 11 | 3                | 0.1            | Combimaster*     | XO..1204      | C03507-T10P | T10P-3 |
| -1632.RE-12-3A         | 32               | -   | 40 | -   | -   | -   | -   | M16 | 11 | 3                | 0.2            | Combimaster*     | XO..1204      | C03507-T10P | T10P-3 |
| -1632.RE-12-4A         | 32               | -   | 40 | -   | -   | -   | -   | M16 | 11 | 4                | 0.2            | Combimaster*     | XO..1204      | C03507-T10P | T10P-3 |
| -1640.RE-12-4A         | 40               | -   | 40 | -   | -   | -   | -   | M16 | 11 | 4                | 0.2            | Combimaster*     | XO..1204      | C03509-T10P | T10P-3 |
| -1640.RE-12-5A         | 40               | -   | 40 | -   | -   | -   | -   | M16 | 11 | 5                | 0.3            | Combimaster*     | XO..1204      | C03509-T10P | T10P-3 |

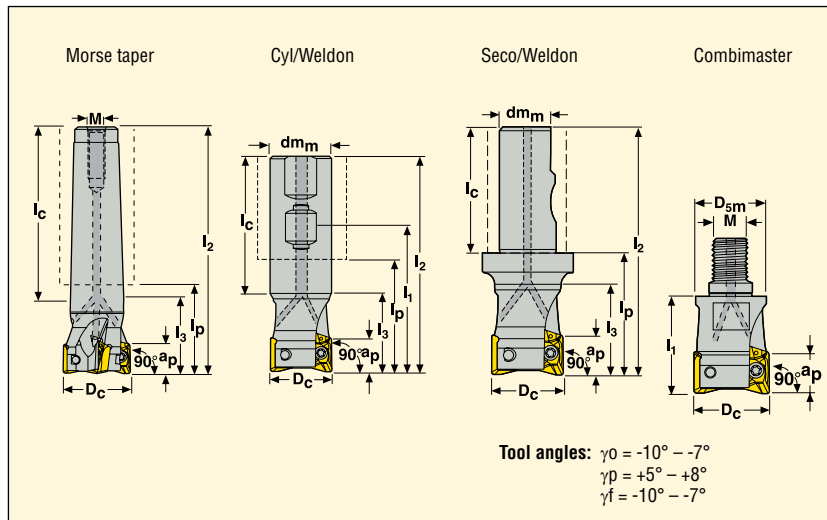
Please check availability in current price and stock-list.  
 \*For shanks and dimensions, see the Combimaster chapter in MN Milling part 2.



## Power Turbo 217.69-18A



- For complete insert program see page 26
- For max RPM and torque values see page 22



| Part No.               | Dimensions in mm |     |    |       |      |     |      |     |    |    | Type of mounting | Spare parts  |          |             |        |
|------------------------|------------------|-----|----|-------|------|-----|------|-----|----|----|------------------|--------------|----------|-------------|--------|
|                        | Dc               | dmm | l1 | l2    | lp   | l3  | lc   | M   | ap | KG |                  |              |          |             |        |
| R217.69 -3032.0-18-2A  | 32               | 30  | -  | 210   | 150  | 150 | 170  | -   | 17 | 2  | 1                | Cylindrical  | XO..1806 | C04510-T20P | T20P-3 |
| -3232.0-18-2A          | 32               | 32  | -  | 210   | 150  | 38  | 170  | -   | 17 | 2  | 1.1              | Cylindrical  | XO..1806 | C04510-T20P | T20P-3 |
| -3232.0-18-3A          | 32               | 32  | -  | 210   | 150  | 38  | 170  | -   | 17 | 3  | 1.1              | Cylindrical  | XO..1806 | C04510-T20P | T20P-3 |
| -3240.0-18-3A          | 40               | 32  | -  | 210   | 150  | 150 | 165  | -   | 17 | 3  | 1.2              | Cylindrical  | XO..1806 | C04510-T20P | T20P-3 |
| -3240.0-18-4A          | 40               | 32  | -  | 210   | 150  | 150 | 165  | -   | 17 | 4  | 1.2              | Cylindrical  | XO..1806 | C04510-T20P | T20P-3 |
| R217.69 -0332.2-18-2A  | 32               | -   | -  | 125   | 44   | 39  | 86   | M12 | 17 | 2  | 0.4              | Morse No. 3  | XO..1806 | C04510-T20P | T20P-3 |
| -0332.2-18-3A          | 32               | -   | -  | 125   | 44   | 39  | 86   | M12 | 17 | 3  | 0.5              | Morse No. 3  | XO..1806 | C04510-T20P | T20P-3 |
| -0440.2-18-3A          | 40               | -   | -  | 145   | 42.5 | 36  | 109  | M16 | 17 | 3  | 0.7              | Morse No. 4  | XO..1806 | C04510-T20P | T20P-3 |
| -0440.2-18-4A          | 40               | -   | -  | 145   | 42.5 | 36  | 109  | M16 | 17 | 4  | 0.7              | Morse No. 4  | XO..1806 | C04510-T20P | T20P-3 |
| R217.69 -3232.3-18-2A  | 32               | 32  | 74 | 110   | 50   | 38  | 70   | -   | 17 | 2  | 0.6              | Cyl/Weldon   | XO..1806 | C04510-T20P | T20P-3 |
| -3232.3-18-3A          | 32               | 32  | 74 | 110   | 50   | 38  | 70   | -   | 17 | 3  | 0.6              | Cyl/Weldon   | XO..1806 | C04510-T20P | T20P-3 |
| R217.69 -2532.3S-18-2A | 32               | 25  | -  | 109.5 | 54   | 40  | 55.5 | -   | 17 | 2  | 0.5              | Seco/Weldon  | XO..1806 | C04510-T20P | T20P-3 |
| -3240.3S-18-3A         | 40               | 32  | -  | 119.5 | 60   | 46  | 59.5 | -   | 17 | 3  | 0.8              | Seco/Weldon  | XO..1806 | C04510-T20P | T20P-3 |
| R217.69 -1632.RE-18-2A | 32               | -   | 45 | -     | -    | -   | -    | M16 | 17 | 2  | 0.2              | Combimaster* | XO..1806 | C04510-T20P | T20P-3 |
| -1632.RE-18-3A         | 32               | -   | 45 | -     | -    | -   | -    | M16 | 17 | 3  | 0.2              | Combimaster* | XO..1806 | C04510-T20P | T20P-3 |
| -1640.RE-18-3A         | 40               | -   | 45 | -     | -    | -   | -    | M16 | 17 | 3  | 0.3              | Combimaster* | XO..1806 | C04510-T20P | T20P-3 |
| -1640.RE-18-4A         | 40               | -   | 45 | -     | -    | -   | -    | M16 | 17 | 4  | 0.3              | Combimaster* | XO..1806 | C04510-T20P | T20P-3 |

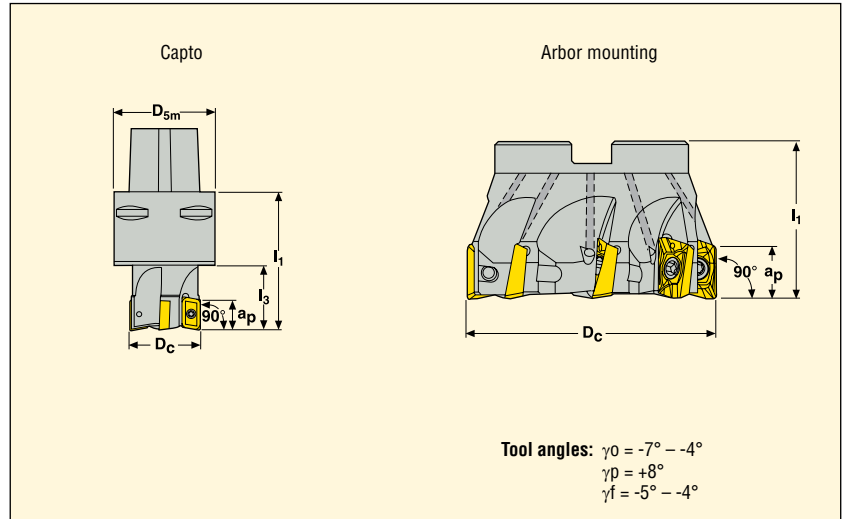
Please check availability in current price and stock-list.  
 \*For shanks and dimensions, see the Combimaster chapter in MN Milling part 2.



## Super Turbo 217/220.69-12



- For complete insert program see page 25
- For max RPM and torque values see page 22



| Pitch  | Part No.               | Dimensions in mm |    |    |     |    | Z  | KG  | Insert   | Spare parts   |        |             |
|--------|------------------------|------------------|----|----|-----|----|----|-----|----------|---------------|--------|-------------|
|        |                        | Dc               | l1 | l3 | D5m | ap |    |     |          | Locking screw | Key    | Arbor screw |
| Normal | <b>Super Turbo</b>     |                  |    |    |     |    |    |     |          |               |        |             |
|        | R220.69 -0040-12-4A    | 40               | 40 | -  | -   | 11 | 4  | 0.3 | XO..1204 | C03509-T10P   | T10P-3 | MC6S 8x30   |
|        | -0050-12-5A            | 50               | 40 | -  | -   | 11 | 5  | 0.4 | XO..1204 | C03509-T10P   | T10P-3 | 220.17-692  |
|        | -0063-12-6A            | 63               | 40 | -  | -   | 11 | 6  | 0.6 | XO..1204 | C03509-T10P   | T10P-3 | 220.17-693  |
|        | -0080-12-7A            | 80               | 50 | -  | -   | 11 | 7  | 1.0 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -0100-12-8A            | 100              | 50 | -  | -   | 11 | 8  | 1.7 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -0125-12-10A           | 125              | 63 | -  | -   | 11 | 10 | 3.0 | XO..1204 | C03509-T10P   | T10P-3 | -           |
| Close  | R220.69 -0040-12-5A    | 40               | 40 | -  | -   | 11 | 5  | 0.3 | XO..1204 | C03509-T10P   | T10P-3 | MC6S 8x30   |
|        | -0050-12-7A            | 50               | 40 | -  | -   | 11 | 7  | 0.4 | XO..1204 | C03509-T10P   | T10P-3 | 220.17-692  |
|        | -0063-12-8A            | 63               | 40 | -  | -   | 11 | 8  | 0.6 | XO..1204 | C03509-T10P   | T10P-3 | 220.17-693  |
|        | -0080-12-10A           | 80               | 50 | -  | -   | 11 | 10 | 1.0 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -0100-12-12A           | 100              | 50 | -  | -   | 11 | 12 | 1.7 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -0125-12-14A           | 125              | 63 | -  | -   | 11 | 14 | 3.0 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | <b>Capto</b>           |                  |    |    |     |    |    |     |          |               |        |             |
|        | R217.69 -C5-040-12-4A* | 40               | 80 | 57 | 50  | 11 | 4  | 0.8 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -C5-054-12-5A*         | 54               | 60 | 60 | 50  | 11 | 5  | 0.9 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -C5-063-12-6A*         | 63               | 60 | 60 | 50  | 11 | 6  | 1.0 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -C5-080-12-7A*         | 80               | 60 | 60 | 50  | 11 | 7  | 1.3 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -C6-040-12-4A*         | 40               | 80 | 55 | 63  | 11 | 4  | 1.2 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -C6-050-12-5A*         | 50               | 60 | 36 | 63  | 11 | 5  | 1.2 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -C6-066-12-6A*         | 66               | 60 | 60 | 63  | 11 | 6  | 1.5 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        | -C6-080-12-7A*         | 80               | 60 | 60 | 63  | 11 | 7  | 1.7 | XO..1204 | C03509-T10P   | T10P-3 | -           |
|        |                        |                  |    |    |     |    |    |     |          |               |        |             |
|        |                        |                  |    |    |     |    |    |     |          |               |        |             |

\* In stock first quarter 2007

## Dimensions of mounting

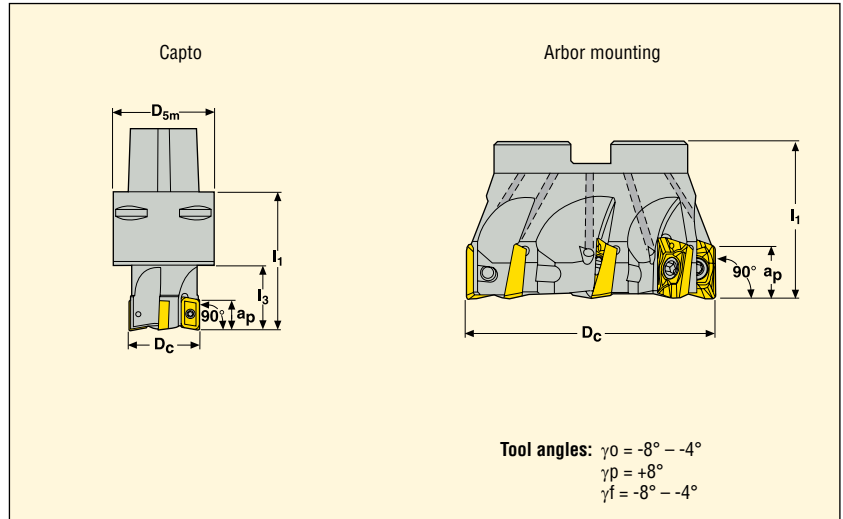
| For cutter    | Dimensions in mm |      |     |      | For arbor | For spindle nose |
|---------------|------------------|------|-----|------|-----------|------------------|
|               | dmm              | Bkw  | c   | dhc1 |           |                  |
| R220.69 -0040 | 16               | 8.4  | 5.6 | -    | 16        | -                |
| -0050         | 22               | 10.4 | 6.3 | -    | 22        | -                |
| -0063-0080    | 27               | 12.4 | 7   | -    | 27        | -                |
| -0100         | 32               | 14.4 | 8   | -    | 32        | -                |
| -0125         | 40               | 16.4 | 9   | -    | 40        | -                |
|               |                  |      |     |      |           |                  |
|               |                  |      |     |      |           |                  |

Please check availability in current price and stock-list.

## Power Turbo 217/220.69-18



- For complete insert program see page 26
- For max RPM and torque values, see page 22



## Power Turbo

| Pitch       | Part No.               | Dimensions in mm |    |    |     |    |               | Pitch    | KG          | Insert      | Spare parts |             |  |
|-------------|------------------------|------------------|----|----|-----|----|---------------|----------|-------------|-------------|-------------|-------------|--|
|             |                        | Dc               | I1 | I3 | D5m | ap | Locking screw |          |             |             | Key         | Arbor screw |  |
| Normal      | <b>Power Turbo</b>     |                  |    |    |     |    |               |          |             |             |             |             |  |
|             | R220.69 -0050-18-4A    | 50               | 40 | -  | -   | 17 | 4             | 0.3      | XO..1806    | C04510-T20P | T20P-4      | 220.17-692  |  |
|             | -0063-18-5A            | 63               | 40 | -  | -   | 17 | 5             | 0.5      | XO..1806    | C04510-T20P | T20P-4      | 220.17-693  |  |
|             | -0080-18-6A            | 80               | 50 | -  | -   | 17 | 6             | 1.0      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -0100-18-7A            | 100              | 50 | -  | -   | 17 | 7             | 1.7      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -0125-18-8A            | 125              | 63 | -  | -   | 17 | 8             | 3.1      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
| -8160-18-12 | 160                    | 63               | -  | -  | 17  | 12 | 5.2           | XO..1806 | C04510-T20P | T20P-4      | -           |             |  |
| Close       | R220.69 -0050-18-5A    | 50               | 40 | -  | -   | 17 | 5             | 0.3      | XO..1806    | C04510-T20P | T20P-4      | 220.17-692  |  |
|             | -0063-18-6A            | 63               | 40 | -  | -   | 17 | 6             | 0.5      | XO..1806    | C04510-T20P | T20P-4      | 220.17-693  |  |
|             | -0080-18-8A            | 80               | 50 | -  | -   | 17 | 8             | 1.0      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -0100-18-9A            | 100              | 50 | -  | -   | 17 | 9             | 1.7      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -0125-18-11A           | 125              | 63 | -  | -   | 17 | 11            | 3.1      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
| Coarse      | R220.69 -0063-18-4A    | 63               | 40 | -  | -   | 17 | 4             | 0.5      | XO..1806    | C04510-T20P | T20P-4      | 220.17-693  |  |
|             | -0080-18-5A            | 80               | 50 | -  | -   | 17 | 5             | 1.0      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -0100-18-6A            | 100              | 50 | -  | -   | 17 | 6             | 1.7      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -0125-18-7A            | 125              | 63 | -  | -   | 17 | 7             | 3.1      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -8160-18-7             | 160              | 63 | -  | -   | 17 | 7             | 4.6      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -8160-18-9             | 160              | 63 | -  | -   | 17 | 9             | 4.7      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
| Capto       | R217.69 -C6-040-18-3A* | 40               | 80 | 55 | 63  | 17 | 3             | 1.0      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -C6-050-18-4A*         | 50               | 80 | 55 | 63  | 17 | 4             | 1.3      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -C6-066-18-5A*         | 66               | 60 | 60 | 63  | 17 | 5             | 1.5      | XO..1806    | C04510-T20P | T20P-4      | -           |  |
|             | -C6-080-18-6A*         | 80               | 60 | 60 | 63  | 17 | 6             | 1.8      | XO..1806    | C04510-T20P | T20P-4      | -           |  |

\* In stock first quarter 2007

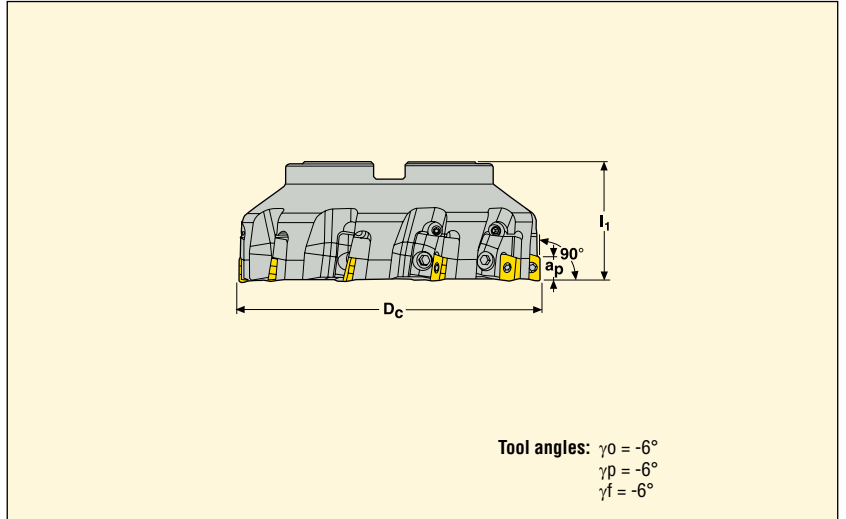
## Dimensions of mounting

| For cutter    | Dimensions in mm |      |     |      | For arbor | For spindle nose |
|---------------|------------------|------|-----|------|-----------|------------------|
|               | dmm              | Bkw  | c   | dhc1 |           |                  |
| R220.69 -0050 | 22               | 10.4 | 6.3 | -    | 22        | -                |
| -0063-0080    | 27               | 12.4 | 7   | -    | 27        | -                |
| -0100         | 32               | 14.4 | 8   | -    | 32        | -                |
| -0125         | 40               | 16.4 | 9   | -    | 40        | -                |
| -8160         | 40               | 16.4 | 9   | 66.7 | 40        | ISO40            |

Please check availability in current price and stock-list.

# Square shoulder and slot milling cutters

## Super Turbo 220.69-12C and Power Turbo 220.69-18C



- For complete insert program see page 25-26
- For max RPM and torque values see page 22

| Pitch  | Part No.                   | Dimensions in mm |    |    |    |      |          | Spare parts |         |       |              |        |  |
|--------|----------------------------|------------------|----|----|----|------|----------|-------------|---------|-------|--------------|--------|--|
|        |                            | Dc               | l1 | ap |    |      |          |             |         |       |              |        |  |
| Normal | <b>Super Turbo</b>         |                  |    |    |    |      |          |             |         |       |              |        |  |
|        | <b>R220.69 -0125-12-8C</b> | 125              | 63 | 11 | 8  | 3.1  | XO..1204 | XO12PR      | FS96018 | H05-4 | AU1114T-T15P | T15P-3 |  |
|        | <b>-8160-12-10C</b>        | 160              | 63 | 11 | 10 | 5.0  | XO..1204 | XO12PR      | FS96018 | H05-4 | AU1114T-T15P | T15P-3 |  |
|        | <b>-8200-12-12C</b>        | 200              | 63 | 11 | 12 | 7.5  | XO..1204 | XO12PR      | FS96018 | H05-4 | AU1114T-T15P | T15P-3 |  |
|        | <b>-8250-12-16C</b>        | 250              | 63 | 11 | 16 | 13.0 | XO..1204 | XO12PR      | FS96018 | H05-4 | AU1114T-T15P | T15P-3 |  |
| Normal | <b>Power Turbo</b>         |                  |    |    |    |      |          |             |         |       |              |        |  |
|        | <b>R220.69 -0125-18-8C</b> | 125              | 63 | 17 | 8  | 3.1  | XO..1806 | XO18PR      | FS96018 | H05-4 | AU1114T-T15P | T15P-3 |  |
|        | <b>-8160-18-10C</b>        | 160              | 63 | 17 | 10 | 5.0  | XO..1806 | XO18PR      | FS96018 | H05-4 | AU1114T-T15P | T15P-3 |  |
|        | <b>-8200-18-12C</b>        | 200              | 63 | 17 | 12 | 7.5  | XO..1806 | XO18PR      | FS96018 | H05-4 | AU1114T-T15P | T15P-3 |  |
|        | <b>-8250-18-16C</b>        | 250              | 63 | 17 | 16 | 13.0 | XO..1806 | XO18PR      | FS96018 | H05-4 | AU1114T-T15P | T15P-3 |  |

## Dimensions of mounting

|                      | Dimensions in mm |      |     |       | For arbor | For spindle nose |
|----------------------|------------------|------|-----|-------|-----------|------------------|
|                      | For cutter       | dmm  | Bkw | c     |           |                  |
| <b>R220.69 -0125</b> | 40               | 16,4 | 9   | —     | 40        | —                |
| <b>-8160</b>         | 40               | 16,4 | 9   | 66,7  | 40        | ISO40            |
| <b>-8200-8250</b>    | 60               | 25,7 | 14  | 101,6 | —         | ISO60            |

Please check availability in current price and stock-list.

\*Locking screw C03509-T10P-3 and insert locking key T10P-3 included for Super Turbo cutters.

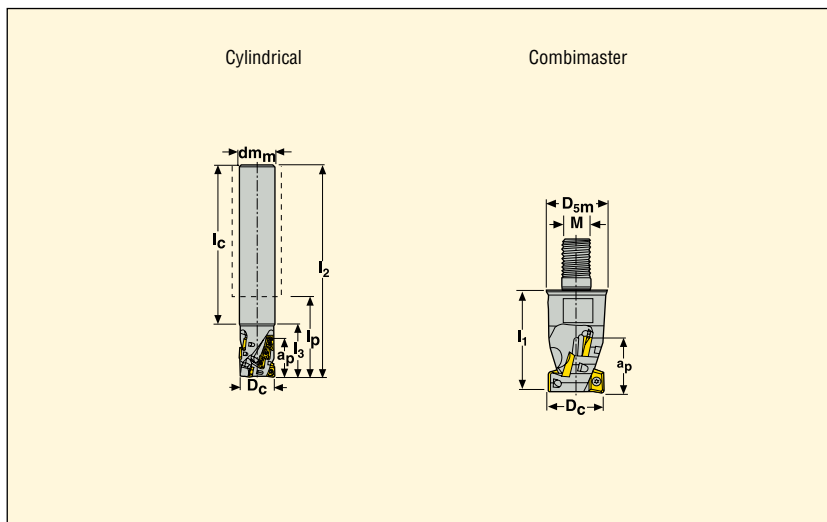
\*Locking screw C04510-T20P and insert locking key T20P-4 included for Power Turbo cutters.



## Helical Nano Turbo 217.69-06



- For complete insert program see page 23
- For max RPM and torque values see page 22



| Part No.                        | Dimensions in mm |     |    |     |     |    |     |     |     |    |                   | No of flute |      | <br>KG        | Type of mounting |             | Spare parts |  |
|---------------------------------|------------------|-----|----|-----|-----|----|-----|-----|-----|----|-------------------|-------------|------|---------------|------------------|-------------|-------------|--|
|                                 | Dc               | dmm | l1 | l2  | lp  | l3 | lc  | M   | ap* | zc | <br>Locking screw |             |      |               |                  |             | <br>Key     |  |
| <b>For Contouring</b>           |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
| <b>R217.69 -1612.0-10-06.2</b>  | 12               | 16  | –  | 98  | 53  | 23 | 66  | –   | 10  | 2  | 2                 | 4           | 0.13 | Cylindrical   | XO..0602         | C01804-T06P | T06P-3      |  |
| <b>-1212.0-10-06.2E</b>         | 12               | 12  | –  | 135 | 90  | 50 | 85  | –   | 10  | 2  | 2                 | 4           | 0.43 | Cyl/carbide   | XO..0602         | C01804-T06P | T06P-3      |  |
| <b>-1616.0-15-06.3</b>          | 16               | 16  | –  | 110 | 62  | 30 | 80  | –   | 15  | 3  | 3                 | 9           | 0.16 | Cylindrical   | XO..0602         | C01804-T06P | T06P-3      |  |
| <b>-1616.0-15-06.3E</b>         | 16               | 16  | –  | 165 | 117 | 50 | 115 | –   | 15  | 3  | 3                 | 9           | 0.43 | Cyl/carbide   | XO..0602         | C01804-T06P | T06P-3      |  |
| <b>-1616.0-20-06.2</b>          | 16               | 16  | –  | 110 | 62  | 30 | 80  | –   | 20  | 2  | 2                 | 8           | 0.16 | Cylindrical   | XO..0602         | C01804-T06P | T06P-3      |  |
| <b>-2020.0-25-06.3</b>          | 20               | 20  | –  | 120 | 70  | 35 | 85  | –   | 25  | 3  | 3                 | 15          | 0.27 | Cylindrical   | XO..0602         | C01804-T06P | T06P-3      |  |
| <b>R217.69 -0814.RE-15-06.2</b> | 14               | –   | 25 | –   | –   | –  | –   | M08 | 15  | 2  | 2                 | 6           | 0.03 | Combimaster** | XO..0602         | C01804-T06P | T06P-3      |  |
| <b>-0816.RE-15-06.3</b>         | 16               | –   | 25 | –   | –   | –  | –   | M08 | 15  | 3  | 3                 | 9           | 0.03 | Combimaster** | XO..0602         | C01804-T06P | T06P-3      |  |
| <b>-0816.RE-15-06.2</b>         | 16               | –   | 25 | –   | –   | –  | –   | M08 | 15  | 2  | 2                 | 6           | 0.03 | Combimaster** | XO..0602         | C01804-T06P | T06P-3      |  |
| <b>-1020.RE-20-06.3A</b>        | 20               | –   | 35 | –   | –   | –  | –   | M10 | 20  | 3  | 3                 | 12          | 0.07 | Combimaster** | XO..0602         | C01804-T06P | T06P-3      |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |
|                                 |                  |     |    |     |     |    |     |     |     |    |                   |             |      |               |                  |             |             |  |

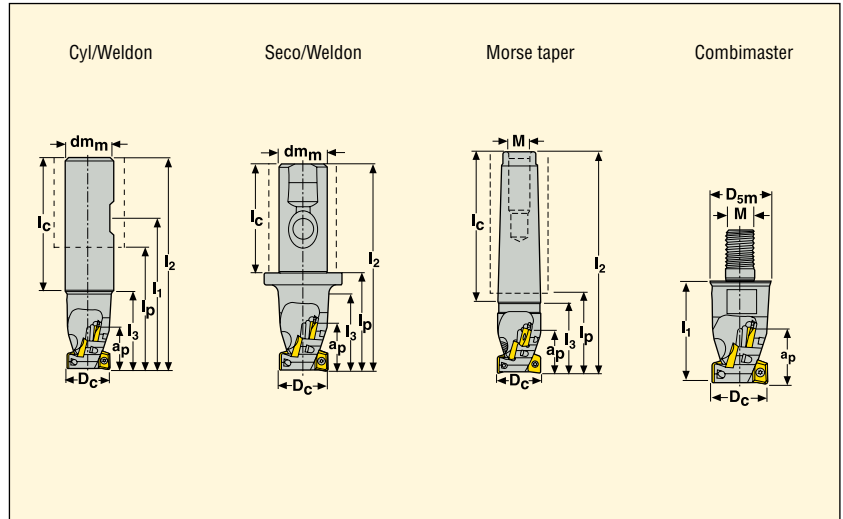
\*max ap for slotting 0,5 x Dc  
Please check availability in current price and stock-list.

\*\*For shanks and dimensions, see the Combimaster chapter in MN Milling part 2.

## Helical Micro Turbo 217.69-09



- For complete insert program see page 24
- For max RPM and torque values see page 22



| Part No.                         | Dimensions in mm |     |    |       |    |      |       |     |    |     | No of flute |    | KG  | Type of mounting |          | Spare parts   |        |
|----------------------------------|------------------|-----|----|-------|----|------|-------|-----|----|-----|-------------|----|-----|------------------|----------|---------------|--------|
|                                  | Dc               | dmm | l1 | l2    | lp | l3   | lc    | M   | ap | Zc  |             |    |     |                  |          | Locking screw | Key    |
| <b>Slotting &amp; contouring</b> |                  |     |    |       |    |      |       |     |    |     |             |    |     |                  |          |               |        |
| R217.69 -2020.3-024-09.1         | 20               | 20  | 65 | 90    | 40 | 39.5 | 50    | -   | 24 | 1   | 1           | 3  | 0.3 | Cyl/Weldon       | XO..0903 | C02555-T08P   | T08P-3 |
| R217.69 -2525.3S-024-09.2        | 25               | 25  | -  | 105   | 50 | 42   | 55    | -   | 24 | 2   | 2           | 6  | 0.5 | Seco/Weldon      | XO..0903 | C02506-T08P   | T08P-3 |
| -2532.3S-024-09.3A               | 32               | 25  | -  | 110   | 55 | 47   | 55    | -   | 24 | 3   | 3           | 9  | 0.5 | Seco/Weldon      | XO..0903 | C02506-T08P   | T08P-3 |
| R217.69 -0325.2-024-09.2         | 25               | -   | -  | 125.5 | 45 | 39   | 81    | M12 | 24 | 2   | 2           | 6  | 0.4 | Morse No.3       | XO..0903 | C02506-T08P   | T08P-3 |
| -0432.2-024-09.3                 | 32               | -   | -  | 152   | 50 | 43.5 | 102.5 | M16 | 24 | 3   | 3           | 9  | 0.7 | Morse No.4       | XO..0903 | C02506-T08P   | T08P-3 |
| R217.69 -1225.RE-024-09.2        | 25               | -   | 35 | -     | -  | -    | -     | M12 | 24 | 2   | 2           | 6  | 0.1 | Combimaster*     | XO..0903 | C02506-T08P   | T08P-3 |
| -1632.RE-024-09.3A               | 32               | -   | 40 | -     | -  | -    | -     | M16 | 24 | 3   | 3           | 9  | 0.2 | Combimaster*     | XO..0903 | C02506-T08P   | T08P-3 |
| <b>Contouring only</b>           |                  |     |    |       |    |      |       |     |    |     |             |    |     |                  |          |               |        |
| R217.69 -2020.3-016-09.2         | 20               | 20  | 60 | 85    | 35 | 34.5 | 50    | -   | 16 | 2   | 2           | 4  | 0.2 | Cyl/Weldon       | XO..0903 | C02555-T08P   | T08P-3 |
| R217.69 -2025.3S-031-09.3        | 25               | 20  | -  | 110   | 55 | 47   | 50    | -   | 31 | 3   | 3           | 12 | 0.4 | Seco/Weldon      | XO..0903 | C02506-T08P   | T08P-3 |
| -2525.3S-039-09.2                | 25               | 25  | -  | 120   | 65 | 57   | 55    | -   | 39 | 2   | 2           | 10 | 0.5 | Seco/Weldon      | XO..0903 | C02506-T08P   | T08P-3 |
| -2525.3S-031-09.3                | 25               | 25  | -  | 110   | 55 | 47   | 55    | -   | 31 | 3   | 3           | 12 | 0.4 | Seco/Weldon      | XO..0903 | C02506-T08P   | T08P-3 |
| -2532.3S-047-09.3A               | 32               | 25  | -  | 120   | 65 | 57   | 55    | -   | 47 | 3   | 3           | 18 | 0.5 | Seco/Weldon      | XO..0903 | C02506-T08P   | T08P-3 |
| -2532.3S-031-09.4A               | 32               | 25  | -  | 115   | 60 | 52   | 55    | -   | 31 | 4   | 4           | 16 | 0.5 | Seco/Weldon      | XO..0903 | C02506-T08P   | T08P-3 |
| R217.69 -0432.2-031-09.4         | 32               | -   | -  | 162   | 60 | 53.5 | 109   | M16 | 31 | 4   | 4           | 16 | 0.8 | Morse No.4       | XO..0903 | C02506-T08P   | T08P-3 |
| R217.69 -1020.RE-016-09.2        | 20               | -   | 28 | -     | -  | -    | -     | M10 | 16 | 2   | 2           | 4  | 0.1 | Combimaster*     | XO..0903 | C02506-T08P   | T08P-3 |
| -1632.RE-031-09.4A               | 32               | -   | 40 | -     | -  | -    | -     | M16 | 31 | 4** | 4           | 14 | 0.3 | Combimaster*     | XO..0903 | C02506-T08P   | T08P-3 |

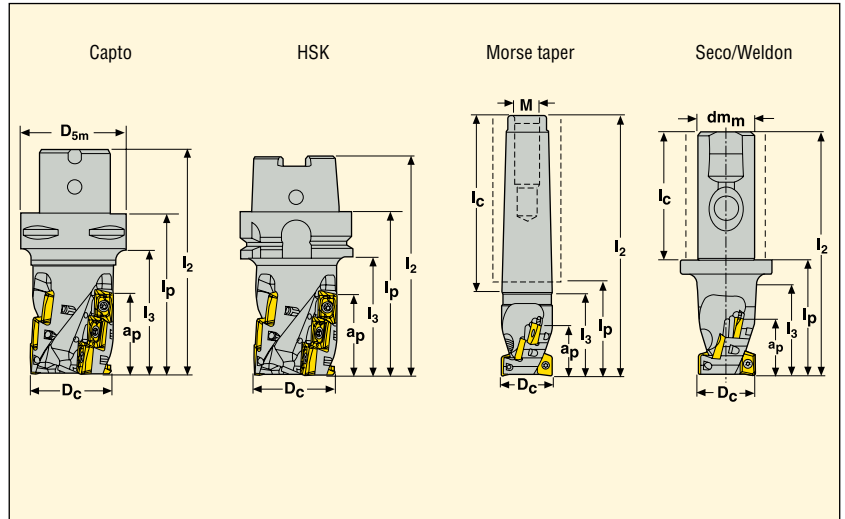
Please check availability in current price and stock-list.

\*For shanks and dimensions, see the Combimaster chapter in MN Milling part 2  
 \*\* Zc = 2 when ap > 24 mm

## Helical Super Turbo 217.69-12



- For complete insert program see page 25
- For max RPM and torque values see page 22



| Part No.                         | Dimensions in mm |           |    |       |     |      |     |     |    |    | No of flute |    | KG   | Type of mounting |             | Spare parts   |        |
|----------------------------------|------------------|-----------|----|-------|-----|------|-----|-----|----|----|-------------|----|------|------------------|-------------|---------------|--------|
|                                  | Dc               | dmm / D5m | l1 | l2    | lp  | l3   | lc  | M   | ap | zc |             |    |      |                  |             | Locking screw | Key    |
| <b>Slotting &amp; contouring</b> |                  |           |    |       |     |      |     |     |    |    |             |    |      |                  |             |               |        |
| R217.69 -2025.3S-022-12.2A       | 25               | 20        | -  | 99,5  | 50  | 38   | 50  | -   | 22 | 2  | 2           | 4  | 0,3  | Seco/Weldon      | XO..1204**  | C03507-T10P   | T10P-3 |
| -2532.3S-033-12.2A               | 32               | 25        | -  | 115,5 | 60  | 47   | 56  | -   | 33 | 2  | 2           | 6  | 0,5  | Seco/Weldon      | XO..1204**  | C03507-T10P   | T10P-3 |
| -3240.3S-033-12.3A               | 40               | 32        | -  | 119,5 | 60  | 47   | 60  | -   | 33 | 3  | 3           | 9  | 0,8  | Seco/Weldon      | XO..1204**  | C03509-T10P   | T10P-3 |
| -3240.3S-055-12.3A               | 40               | 32        | -  | 139,5 | 80  | 67   | 60  | -   | 55 | 3  | 3           | 15 | 0,7  | Seco/Weldon      | XO..1204**  | C03509-T10P   | T10P-3 |
| <b>For contouring only</b>       |                  |           |    |       |     |      |     |     |    |    |             |    |      |                  |             |               |        |
| R217.69 -2532.3S-044-12.3A       | 32               | 25        | -  | 125,5 | 70  | 58   | 56  | -   | 44 | 3  | 3           | 12 | 0,5  | Seco/Weldon      | XO..1204*** | C03507-T10P   | T10P-3 |
| -3240.3S-044-12.4A               | 40               | 32        | -  | 129,5 | 70  | 57   | 60  | -   | 44 | 4  | 4           | 16 | 0,8  | Seco/Weldon      | XO..1204*** | C03507-T10P   | T10P-3 |
| -3250.3S-055-12.4A               | 50               | 32        | -  | 139,5 | 80  | 67   | 60  | -   | 55 | 4  | 4           | 20 | 0,9  | Seco/Weldon      | XO..1204*** | C03509-T10P   | T10P-3 |
| R217.69 -0432.2-044-12.2A        | 32               | -         | -  | 167,5 | 65  | 58,5 | 109 | M16 | 44 | 2  | 2           | 8  | 0,6  | Morse No.4       | XO..1204*** | C03507-T10P   | T10P-3 |
| -0440.2-044-12.3A                | 40               | -         | -  | 167,5 | 65  | 58,5 | 109 | M16 | 44 | 3  | 3           | 12 | 0,5  | Morse No.4       | XO..1204*** | C03507-T10P   | T10P-3 |
| -0450.2-055-12.4A                | 50               | -         | -  | 177,5 | 75  | 68,5 | 109 | M16 | 55 | 4  | 4           | 20 | 1,0  | Morse No.4       | XO..1204*** | C03509-T10P   | T10P-3 |
| R217.69 -1225.RE-022-12.2A       | 25               | -         | 35 | -     | -   | -    | -   | M12 | 22 | 2  | 2           | 4  | 0,12 | Combimaster****  | XO..1204*** | C03507-T10P   | T10P-3 |
| <b>For contouring only</b>       |                  |           |    |       |     |      |     |     |    |    |             |    |      |                  |             |               |        |
| R217.69 -HSK63A.32-044-12.3A*    | 32               | -         | -  | 117   | 85  | 59   | 32  | -   | 44 | 3  | 3           | 12 | 0,6  | HSK              | XO..1204*** | C03507-T10P   | T10P-3 |
| <b>For contouring only</b>       |                  |           |    |       |     |      |     |     |    |    |             |    |      |                  |             |               |        |
| R217.69-C5032-044-12.3A*         | 32               | 50        | -  | 109   | 79  | 59   | -   | -   | 44 | 3  | 3           | 12 | 0,5  | Capto            | XO..1204*** | C03507-T10P   | T10P-3 |
| R217.69-C6040-055-12.3A*         | 40               | 63        | -  | 130   | 92  | 70   | -   | -   | 55 | 3  | 3           | 15 | 0,8  | Capto            | XO..1204*** | C03509-T10P   | T10P-3 |
| R217.69-C6050-055-12.4A*         | 50               | 63        | -  | 130   | 92  | 70   | -   | -   | 55 | 4  | 4           | 20 | 0,7  | Capto            | XO..1204*** | C03509-T10P   | T10P-3 |
| R217.69-C6050-066-12.4SA*        | 50               | 63        | -  | 141   | 103 | 81   | -   | -   | 66 | 4  | 4           | 24 | 0,7  | Capto            | XO..1204*** | C03509-T10P   | T10P-3 |
| R217.69-C5054-044-12.4A*         | 54               | 50        | -  | 109   | 79  | 59   | -   | -   | 44 | 4  | 4           | 16 | 0,8  | Capto            | XO..1204*** | C03509-T10P   | T10P-3 |
| R217.69-C6066-044-12.5A*         | 66               | 63        | -  | 119   | 81  | 59   | -   | -   | 44 | 5  | 5           | 20 | 1,0  | Capto            | XO..1204*** | C03509-T10P   | T10P-3 |

\* In stock first quarter 2007

### Assembly alternatives/Standard parts

| Assembled milling cutter Part No. | Standard parts           |                         |                 |
|-----------------------------------|--------------------------|-------------------------|-----------------|
|                                   | Cutter body Part No.     | Replacable end Part No. | Retaining screw |
| R217.69 -C6050-066-12.4SA         | R217.69 -C6050044-12.4BA | R220.69 -RE050022-12.4  | 220.17-692      |
|                                   |                          |                         |                 |
|                                   |                          |                         |                 |
|                                   |                          |                         |                 |

Please check availability in current price and stock-list.

\*\*Inserts with max. corner radius 6,0 mm can be used. For radius > 3,1 the cutter must be modified.

\*\*\*Inserts with max. corner radius 1,2 mm can be used.

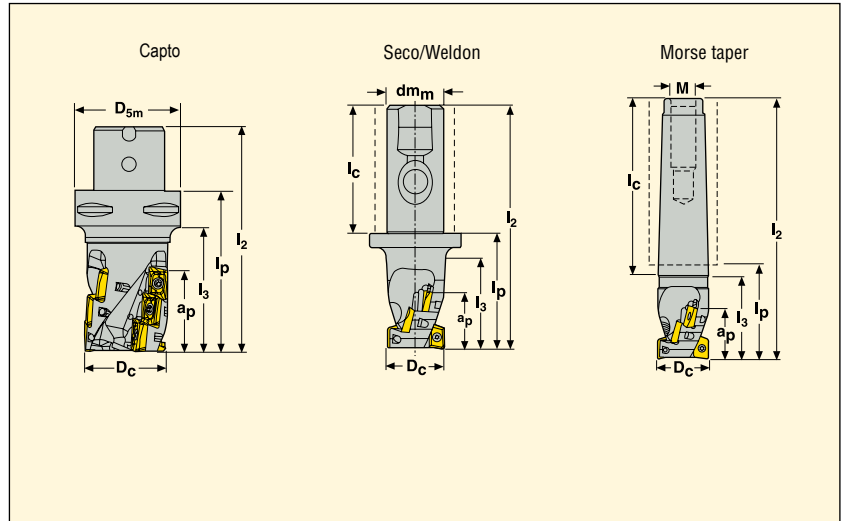
\*\*\*\*For shanks and dimensions, see the Combimaster chapter in MN Milling part 2.



## Helical Power Turbo 217.69-18



- For complete insert program see page 26
- For max RPM and torque values see page 22



| Part No.                         | Dimensions in mm |            |    |       |     |    |     |     |      |    |               | No of flute |     | KG          | Type of mounting |             | Spare parts |  |
|----------------------------------|------------------|------------|----|-------|-----|----|-----|-----|------|----|---------------|-------------|-----|-------------|------------------|-------------|-------------|--|
|                                  | Dc               | dmm<br>D5m | l1 | l2    | lp  | l3 | lc  | M   | ap   | Zc | Locking screw |             |     |             |                  |             | Key         |  |
| <b>Slotting &amp; contouring</b> |                  |            |    |       |     |    |     |     |      |    |               |             |     |             |                  |             |             |  |
| R217.69 -3240.3S-047-18.2A       | 40               | 32         | -  | 134.5 | 75  | 62 | 60  | -   | 46.5 | 2  | 2             | 6           | 0.8 | Seco/Weldon | XO..1806         | C04510-T20P | T20P-3      |  |
| -3250.3S-047-18.3A               | 50               | 32         | -  | 134.5 | 75  | 64 | 60  | -   | 46.5 | 3  | 3             | 9           | 1.0 | Seco/Weldon | XO..1806         | C04510-T20P | T20P-3      |  |
| R217.69 -0440.2-047-18.2A        | 40               | -          | -  | 172   | 70  | 70 | 109 | M16 | 46.5 | 2  | 2             | 6           | 0.8 | Morse No.4  | XO..1806         | C04510-T20P | T20P-3      |  |
| -0450.2-047-18.3A                | 50               | -          | -  | 172   | 70  | 70 | 109 | M16 | 46.5 | 3  | 3             | 9           | 1.0 | Morse No.4  | XO..1806         | C04510-T20P | T20P-3      |  |
| R217.69 -C5040-047-18.2A*        | 40               | 50         | -  | 112   | 82  | 62 | -   | -   | 47   | 2  | 2             | 6           | 0.8 | Capto       | XO..1806         | C04510-T20P | T20P-3      |  |
| -C5054-047-18.3A*                | 54               | 50         | -  | 112   | 82  | 62 | -   | -   | 47   | 3  | 3             | 9           | 1.0 | Capto       | XO..1806         | C04510-T20P | T20P-3      |  |
| -C6050-062-18.3A*                | 50               | 63         | -  | 137   | 99  | 77 | -   | -   | 62   | 3  | 3             | 12          | 1.1 | Capto       | XO..1806         | C04510-T20P | T20P-3      |  |
| -C6050-077-18.2SA*               | 50               | 63         | -  | 152   | 114 | 92 | -   | -   | 77   | 2  | 2             | 10          | 1.3 | Capto       | XO..1806         | C04510-T20P | T20P-3      |  |
| -C6066-047-18.4A*                | 66               | 63         | -  | 122   | 84  | 62 | -   | -   | 47   | 4  | 4             | 12          | 1.0 | Capto       | XO..1806         | C04510-T20P | T20P-3      |  |

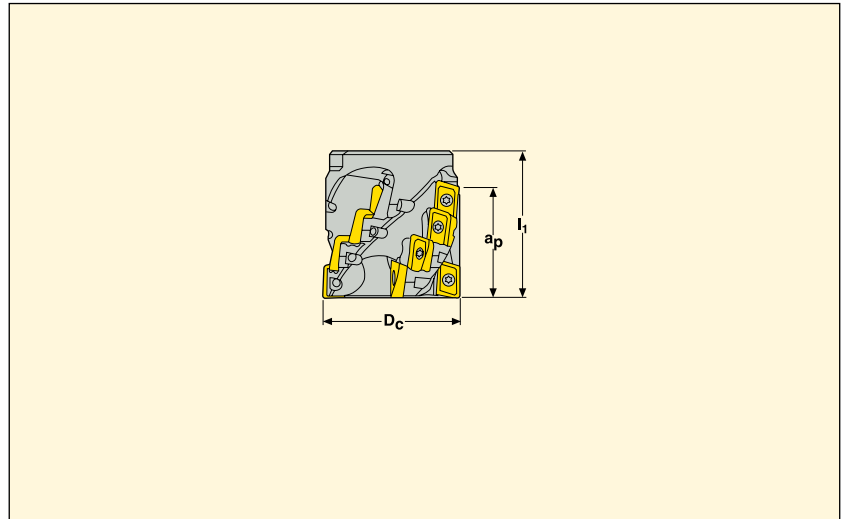
\* In stock first quarter 2007

### Assembly alternatives/Standard parts

| Assembled milling cutter Part No. | Standard parts           |                         |                 |
|-----------------------------------|--------------------------|-------------------------|-----------------|
|                                   | Cutter body Part No.     | Replacable end Part No. | Retaining screw |
| R217.69 -C6050-077-18.2SA         | R217.69 -C6050046-18.2BA | R220.69 -RE050031-18.2  | 220.17-692      |
|                                   |                          |                         |                 |
|                                   |                          |                         |                 |
|                                   |                          |                         |                 |

Please check availability in current price and stock-list.

## Helical Micro, Super, Power Turbo



- For complete insert program see page 24-26
- For max RPM and torque values see page 22

| Part No.                         | Dimensions in mm |     |      |    | No of flute |    | KG  |             | Spare parts |        |           |
|----------------------------------|------------------|-----|------|----|-------------|----|-----|-------------|-------------|--------|-----------|
|                                  | Dc               | l1  | ap   | zc |             |    |     |             |             |        |           |
| <b>Micro Turbo</b>               |                  |     |      |    |             |    |     |             |             |        |           |
| <b>For contouring only</b>       |                  |     |      |    |             |    |     |             |             |        |           |
| R220.69 -00040-031-09.4          | 40               | 43  | 31   | 4  | 4           | 16 | 0.3 | XO..0903    | C02506-T08P | T08P-3 | MC6S 8x30 |
| <b>Super Turbo</b>               |                  |     |      |    |             |    |     |             |             |        |           |
| <b>Slotting &amp; contouring</b> |                  |     |      |    |             |    |     |             |             |        |           |
| R220.69 -00050-033-12.4A         | 50               | 55  | 33   | 4  | 4           | 12 | 0.8 | XO..1204**  | C03509-T10P | T10P-3 | MC6S12x40 |
| -00063-033-12.5A                 | 63               | 63  | 33   | 5  | 5           | 15 | 0.9 | XO..1204**  | C03509-T10P | T10P-3 | MC6S12x50 |
| <b>For contouring only</b>       |                  |     |      |    |             |    |     |             |             |        |           |
| R220.69 -00050-044-12.4A         | 50               | 65  | 44   | 4  | 4           | 16 | 0.6 | XO..1204*** | C03509-T10P | T10P-3 | MC6S12x50 |
| -00050-044-12.5A                 | 50               | 65  | 44   | 5  | 5           | 20 | 0.6 | XO..1204*** | C03509-T10P | T10P-3 | MC6S12x50 |
| -00063-055-12.5A                 | 63               | 75  | 55   | 5  | 5           | 25 | 1.0 | XO..1204*** | C03509-T10P | T10P-3 | MC6S12x60 |
| -00063-077-12.4SA*               | 63               | 100 | 77   | 4  | 4           | 28 | 1.2 | XO..1204*** | C03509-T10P | T10P-3 | -         |
| <b>Power Turbo</b>               |                  |     |      |    |             |    |     |             |             |        |           |
| <b>Slotting &amp; contouring</b> |                  |     |      |    |             |    |     |             |             |        |           |
| R220.69 -00063-047-18.4A         | 63               | 70  | 46.5 | 4  | 4           | 12 | 0.8 | XO..1806    | C04510-T20P | T20P-3 | MC6S12x60 |
| -00063-062-18.3A*                | 63               | 85  | 62   | 3  | 3           | 12 | 1.2 | XO..1806    | C04510-T20P | T20P-3 | -         |
| -00063-062-18.4A*                | 63               | 85  | 62   | 4  | 4           | 16 | 1.0 | XO..1806    | C04510-T20P | T20P-3 | -         |
| -00063-077-18.4SA*               | 63               | 100 | 77   | 4  | 4           | 20 | 1.2 | XO..1806    | C04510-T20P | T20P-3 | -         |
| -00080-047-18.5A*                | 80               | 70  | 47   | 5  | 5           | 15 | 0.9 | XO..1806    | C04510-T20P | T20P-3 | -         |
| -00080-062-18.5A                 | 80               | 85  | 62   | 5  | 5           | 20 | 1.8 | XO..1806    | C04510-T20P | T20P-3 | MC6S16x70 |
| -00080-077-18.4SA*               | 80               | 100 | 77   | 4  | 4           | 20 | 1.3 | XO..1806    | C04510-T20P | T20P-3 | -         |
| -00100-062-18.6A                 | 100              | 85  | 62   | 6  | 6           | 24 | 3.0 | XO..1806    | C04510-T20P | T20P-3 | MC6S20x70 |
| -00100-077-18.5SA*               | 100              | 100 | 77   | 5  | 5           | 25 | 1.4 | XO..1806    | C04510-T20P | T20P-3 | -         |

\* In stock first quarter 2007

### Dimensions of mounting

| Dc  | Dimensions in mm |      |     |
|-----|------------------|------|-----|
|     | dmm              | Bkw  | c   |
| 40  | 16               | 8,4  | 5,6 |
| 50  | 27               | 12,4 | 7   |
| 63  | 27               | 12,4 | 7   |
| 80  | 32               | 14,4 | 8   |
| 100 | 40               | 16,4 | 9   |

### Assembly alternatives/Standard parts

| Assembled milling cutter Part No. | Standard parts           |                         |                 |
|-----------------------------------|--------------------------|-------------------------|-----------------|
|                                   | Cutter body Part No.     | Replacable end Part No. | Retaining screw |
| R220.69 -00063-077-12.4SA         | R220.69 -00063055-12.4BA | R220.69 -RE063022-12.4  | MP6S12X80       |
| -00063-077-18.4SA                 | -00063046-18.4BA         | -RE063031-18.4          | MP6S12x80       |
| -00080-077-18.4SA                 | -00080046-18.4BA         | -RE080031-18.4          | MP6S16x80       |
| -00100-077-18.5SA                 | -00100046-18.5BA         | -RE100031-18.5          | MP6S20x80       |

\*\* Inserts with max. corner radius 6,0 mm can be used. For radius > 3,1 the cutter must be modified.

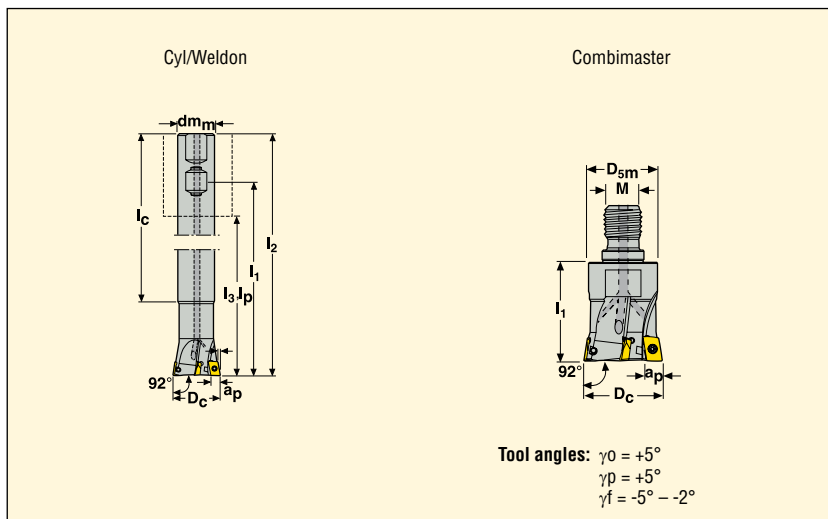
\*\*\* Inserts with max. corner radius 1,2 mm can be used.  
Please check availability in current price and stock-list.



## 217.79-09A



- For complete insert program see page 24
- For max RPM and torque values see page 22



| Part No.                      | Dimensions in mm |     |     |     |     |     |     |     |      |   | KG  | Type of mounting |          | Spare parts   |        |
|-------------------------------|------------------|-----|-----|-----|-----|-----|-----|-----|------|---|-----|------------------|----------|---------------|--------|
|                               | Dc               | dmm | l1  | l2  | lp  | l3  | lc  | M   | ap*  |   |     |                  |          | Locking screw | Key    |
| <b>R217.79 -1620.3-09A</b>    | 20               | 16  | 126 | 150 | 102 | 102 | 120 | -   | 6(1) | 2 | 0.2 | Cyl/Weldon       | XO..0903 | C02505-T08P   | T08P-3 |
| -2025.3-09A                   | 25               | 20  | 175 | 200 | 150 | 150 | 150 | -   | 6(1) | 3 | 0.4 | Cyl/Weldon       | XO..0903 | C02505-T08P   | T08P-3 |
| -2532.3-09A                   | 32               | 25  | 168 | 200 | 144 | 144 | 150 | -   | 6(1) | 4 | 0.7 | Cyl/Weldon       | XO..0903 | C02505-T08P   | T08P-3 |
| -3240.3-09A                   | 40               | 32  | 164 | 200 | 140 | 140 | 150 | -   | 6(1) | 5 | 1.2 | Cyl/Weldon       | XO..0903 | C02505-T08P   | T08P-3 |
| -3250.3-09A                   | 50               | 32  | 164 | 200 | 140 | 140 | 150 | -   | 6(1) | 6 | 1.3 | Cyl/Weldon       | XO..0903 | C02505-T08P   | T08P-3 |
| <b>R217.79 -1020.RE-09.2A</b> | 20               | -   | 35  | -   | -   | -   | -   | M10 | 6(1) | 2 | 0.1 | Combimaster**    | XO..0903 | C02505-T08P   | T08P-3 |
| -1225.RE-09.3A                | 25               | -   | 40  | -   | -   | -   | -   | M12 | 6(1) | 3 | 0.2 | Combimaster**    | XO..0903 | C02505-T08P   | T08P-3 |
| -1632.RE-09.4A                | 32               | -   | 40  | -   | -   | -   | -   | M16 | 6(1) | 4 | 0.2 | Combimaster**    | XO..0903 | C02505-T08P   | T08P-3 |
| -1640.RE-09.5A                | 40               | -   | 40  | -   | -   | -   | -   | M16 | 6(1) | 5 | 0.3 | Combimaster**    | XO..0903 | C02505-T08P   | T08P-3 |
| -1650.RE-09.6A                | 50               | -   | 40  | -   | -   | -   | -   | M16 | 6(1) | 6 | 0.4 | Combimaster**    | XO..0903 | C02505-T08P   | T08P-3 |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |
|                               |                  |     |     |     |     |     |     |     |      |   |     |                  |          |               |        |

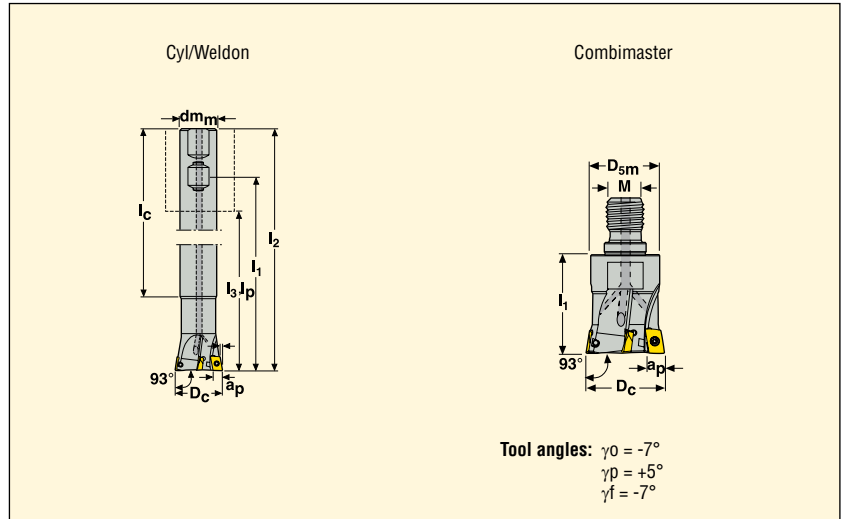
Please check availability in current price and stock-list.

\*ap a maximum of 1 mm on up-copying.  
 \*\*For shanks and dimensions, see the Combimaster chapter in MN Milling part 2.

## 217.79-12A



- For complete insert program see page 25
- For max RPM and torque values see page 22



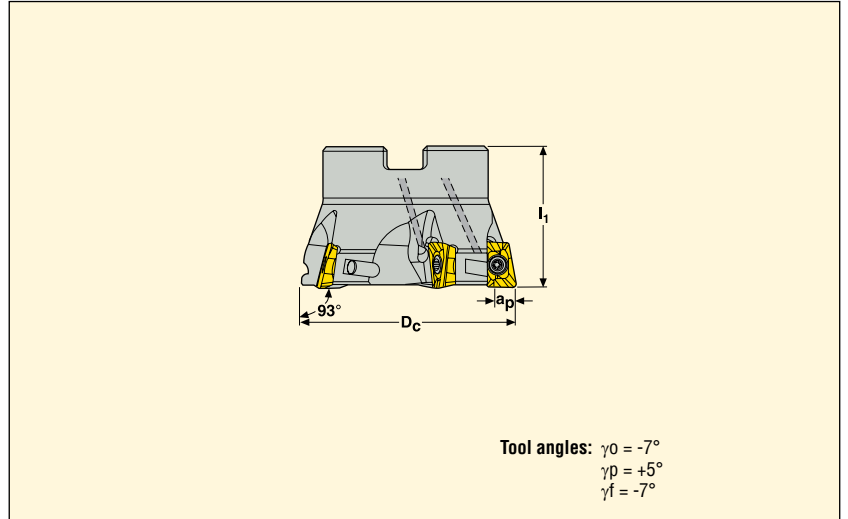
| Part No.                 | Dimensions in mm |     |     |     |     |     |     |     |        |    | Type of mounting | Spare parts   |               |             |        |
|--------------------------|------------------|-----|-----|-----|-----|-----|-----|-----|--------|----|------------------|---------------|---------------|-------------|--------|
|                          | Dc               | dmm | l1  | l2  | lp  | l3  | lc  | M   | ap*    | KG |                  |               | Locking screw | Key         |        |
| R217.79 -2025.3-XO12-2A  | 25               | 25  | 175 | 200 | 150 | 150 | 170 | -   | 7(1,5) | 2  | 0,4              | Cyl/Weldon    | XO..1204      | C03507-T10P | T10P-3 |
| -2532.3-XO12-3A          | 32               | 25  | 168 | 200 | 144 | 144 | 170 | -   | 7(1,5) | 3  | 0,7              | Cyl/Weldon    | XO..1204      | C03507-T10P | T10P-3 |
| -3240.3-XO12-4A          | 40               | 32  | 164 | 200 | 140 | 140 | 170 | -   | 7(1,5) | 4  | 1,2              | Cyl/Weldon    | XO..1204      | C03507-T10P | T10P-3 |
| R217.79 -1025.RE-XO12-2A | 25               | -   | 40  | -   | -   | -   | -   | M10 | 7(1,5) | 2  | 0,2              | Combimaster** | XO..1204      | C03507-T10P | T10P-3 |
| -1232.RE-XO12-3A         | 32               | -   | 40  | -   | -   | -   | -   | M12 | 7(1,5) | 3  | 0,2              | Combimaster** | XO..1204      | C03507-T10P | T10P-3 |
| -1640.RE-XO12-3A         | 40               | -   | 40  | -   | -   | -   | -   | M16 | 7(1,5) | 3  | 0,3              | Combimaster** | XO..1204      | C03507-T10P | T10P-3 |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |
|                          |                  |     |     |     |     |     |     |     |        |    |                  |               |               |             |        |

Please check availability in current price and stock-list.  
 \*ap a maximum of 1,5 mm on up-copying.  
 \*\*For shanks and dimensions, see the Combimaster chapter in MN Milling part 2.

## 220.79-12A



- For complete insert program see page 25
- For max RPM and torque values see page 22



| Part No.              | Dimensions in mm |                |        |   |     |          | Spare parts |        |            |
|-----------------------|------------------|----------------|--------|---|-----|----------|-------------|--------|------------|
|                       | Dc               | l <sub>1</sub> | ap*    |   |     |          |             |        |            |
| R220.79 -0050-X012-4A | 50               | 40             | 7(1,5) | 4 | 0,4 | XO..1204 | C03507-T10P | T10P-3 | TCEI0825   |
| -0063-X012-5A         | 63               | 40             | 7(1,5) | 5 | 0,6 | XO..1204 | C03507-T10P | T10P-3 | 220.17-692 |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |
|                       |                  |                |        |   |     |          |             |        |            |

### Dimensions of mounting

|                  | Dimensions in mm |                 |                 | For arbor |
|------------------|------------------|-----------------|-----------------|-----------|
|                  | For cutter       | d <sub>mm</sub> | B <sub>kw</sub> |           |
| R220.79 -0050-12 | 16               | 8,4             | 5,6             | 16        |
| -0063-12         | 22               | 10,4            | 6,3             | 22        |
|                  |                  |                 |                 |           |
|                  |                  |                 |                 |           |
|                  |                  |                 |                 |           |
|                  |                  |                 |                 |           |
|                  |                  |                 |                 |           |
|                  |                  |                 |                 |           |
|                  |                  |                 |                 |           |
|                  |                  |                 |                 |           |

Please check availability in current price and stock-list.

Recommended max RPM for all Turbo cutters are stated in the table below. Normally there is no need for balancing tools for RPM up to 10 000. However in some cases balancing is necessary, for instance when using heavy tools and toolholders in small machines.

**Over 10 000 RPM:**

We recommend balancing of tool and toolholder at least separately.

**Over 20 000 RPM:**

Both tool and toolholder must be balanced at least separately.

**Over 30 000 RPM:**

Tool and toolholder must be balanced as a unit.

The max RPM in the tables should never be exceeded.

**Square shoulder milling cutters**

| Cutter                 | D <sub>c</sub> mm | Torque values (Nm) | Max RPM |
|------------------------|-------------------|--------------------|---------|
| <b>Nano Turbo</b>      |                   |                    |         |
| R217.69 -06            | 10                | 0,5                | 60000   |
| -06                    | 12                | 0,5                | 54400   |
| -06                    | 16                | 0,5                | 48000   |
| -06                    | 18                | 0,5                | 45600   |
| -06                    | 20                | 0,5                | 44000   |
| -06                    | 25                | 0,5                | 37600   |
| -06                    | 32                | 0,5                | 33600   |
| -06                    | 40                | 0,5                | 28000   |
| <b>R220.69 -06</b>     |                   |                    |         |
| -06                    | 32                | 0,5                | 33600   |
| -06                    | 40                | 0,5                | 28000   |
| <b>Micro Turbo</b>     |                   |                    |         |
| R217.69 -09            | 12                | 1,2                | 37500   |
| -09                    | 16                | 1,2                | 32400   |
| -09                    | 20                | 1,2                | 29000   |
| -09                    | 25                | 1,2                | 26000   |
| -09                    | 32                | 1,2                | 22900   |
| <b>R217/220.69 -09</b> |                   |                    |         |
| -09                    | 40                | 1,2                | 20500   |
| -09                    | 50                | 1,2                | 18300   |
| -09                    | 54                | 1,2                | 17700   |
| -09                    | 63                | 1,2                | 16300   |
| -09                    | 80                | 1,2                | 14400   |
| -09                    | 100               | 1,2                | 12300   |
| <b>Super Turbo</b>     |                   |                    |         |
| R217.69 -12            | 20                | 2,0                | 23200   |
| -12                    | 25                | 2,0                | 20800   |
| -12                    | 32                | 2,0                | 18400   |
| <b>R217/220.69 -12</b> |                   |                    |         |
| -12                    | 40                | 2,0                | 16400   |
| -12                    | 50                | 2,0                | 14800   |
| -12                    | 54                | 2,0                | 14200   |
| -12                    | 63                | 2,0                | 13200   |
| -12                    | 66                | 2,0                | 12900   |
| -12                    | 80                | 2,0                | 11600   |
| -12                    | 100               | 2,0                | 10400   |
| -12                    | 125               | 2,0                | 9200    |
| <b>R220.69 -12C</b>    |                   |                    |         |
| -12C                   | 125               | 2,0                | 9200    |
| -12C                   | 160               | 2,0                | 8200    |
| -12C                   | 200               | 2,0                | 7300    |
| -12C                   | 250               | 2,0                | 6500    |
| <b>Power Turbo</b>     |                   |                    |         |
| R217.69 -18            | 32                | 2,0                | 11100   |
| -18                    | 40                | 2,0                | 9900    |
| <b>R217/220.69 -18</b> |                   |                    |         |
| -18                    | 50                | 5,0                | 8900    |
| -18                    | 63                | 5,0                | 7900    |
| -18                    | 66                | 5,0                | 7700    |
| -18                    | 80                | 5,0                | 7000    |
| -18                    | 100               | 5,0                | 6300    |
| -18                    | 125               | 5,0                | 5600    |
| -18                    | 160               | 5,0                | 5000    |
| <b>R220.69 -18C</b>    |                   |                    |         |
| -18C                   | 125               | 5,0                | 5600    |
| -18C                   | 160               | 5,0                | 5000    |
| -18C                   | 200               | 5,0                | 4400    |
| -18C                   | 250               | 5,0                | 3900    |

**Helical milling cutters**

| Cutter                 | D <sub>c</sub> mm | Torque values (Nm) | Max RPM |
|------------------------|-------------------|--------------------|---------|
| <b>Nano Turbo</b>      |                   |                    |         |
| R217.69 -06            | 12                | 0,5                | 54400   |
| -06                    | 14                | 0,5                | 51200   |
| -06                    | 16                | 0,5                | 48000   |
| -06                    | 20                | 0,5                | 44000   |
| <b>Micro Turbo</b>     |                   |                    |         |
| R217.69 -09            | 20                | 1,2                | 29000   |
| -09                    | 25                | 1,2                | 26000   |
| -09                    | 32                | 1,2                | 22900   |
| <b>R220.69 -09</b>     |                   |                    |         |
| -09                    | 40                | 1,2                | 20500   |
| <b>Super Turbo</b>     |                   |                    |         |
| R217.69 -12            | 25                | 2,0                | 20800   |
| -12                    | 32                | 2,0                | 18400   |
| -12                    | 40                | 2,0                | 16400   |
| -12                    | 50                | 2,0                | 14800   |
| <b>R220.69 -12</b>     |                   |                    |         |
| -12                    | 50                | 2,0                | 14800   |
| -12                    | 63                | 2,0                | 13200   |
| <b>Power Turbo</b>     |                   |                    |         |
| R217.69 -18            | 40                | 5,0                | 9900    |
| -18                    | 50                | 5,0                | 8900    |
| -18                    | 54                | 5,0                | 8600    |
| <b>R217/220.69 -18</b> |                   |                    |         |
| -18                    | 63                | 5,0                | 7900    |
| -18                    | 66                | 5,0                | 7700    |
| -18                    | 80                | 5,0                | 7000    |
| -18                    | 100               | 5,0                | 6300    |

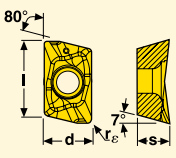
**Plunge milling cutters**

| Cutter             | D <sub>c</sub> mm | Torque values (Nm) | Max RPM |
|--------------------|-------------------|--------------------|---------|
| <b>R217.79 -09</b> |                   |                    |         |
| -09                | 20                | 1,2                | 29000   |
| -09                | 25                | 1,2                | 26000   |
| -09                | 32                | 1,2                | 22900   |
| -09                | 40                | 1,2                | 20500   |
| -09                | 50                | 1,2                | 18300   |
| <b>R217.79 -12</b> |                   |                    |         |
| -12                | 25                | 2,0                | 20800   |
| -12                | 32                | 2,0                | 18400   |
| -12                | 40                | 2,0                | 16400   |
| <b>R220.79 -12</b> |                   |                    |         |
| -12                | 50                | 2,0                | 14800   |
| -12                | 63                | 2,0                | 13200   |



# Inserts



## XOEX/XOMX06



Tolerances: (± mm)

|      | d     | s     |
|------|-------|-------|
| XOEX | 0,025 | 0,025 |
| XOMX | 0,03  | 0,05  |

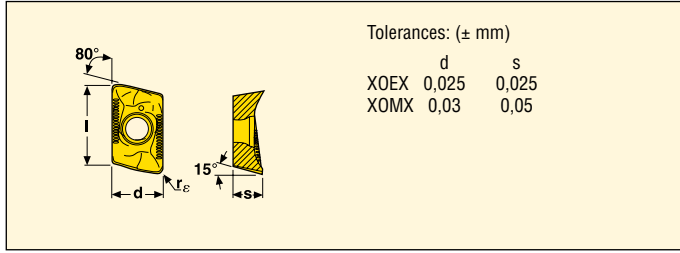
| Size     | Dimensions in mm |      |      |
|----------|------------------|------|------|
|          | l                | d    | s    |
| XOEX0602 | 6,94             | 4,09 | 2,45 |
| XOMX0602 | 6,91-6,94        | 4,09 | 2,45 |
|          |                  |      |      |
|          |                  |      |      |
|          |                  |      |      |

| Inserts   | Part No.         | r   | Cutting rake | Prot. chamfer |       | Grades |       |      |       |       |      |      |      |          |      |      |      |      |        |    |     |     |
|---|------------------|-----|--------------|---------------|-------|--------|-------|------|-------|-------|------|------|------|----------|------|------|------|------|--------|----|-----|-----|
|   |                  |     |              | Width mm      | Angle | Coated |       |      |       |       |      |      |      | Uncoated |      |      |      |      | Cermet |    |     |     |
|   |                  |     |              |               |       | T150M  | T200M | T25M | T250M | T350M | F15M | F17M | F20M | F25M     | F30M | F40M | S10M | S25M | S60M   | HX | H15 | H25 |
|  | XOEX 060202R-E03 | 0,2 | 30°          | -             | -     |        |       |      |       |       |      |      |      |          |      |      |      |      |        |    |     |     |
|   | 060204R-E03*     | 0,4 | 30°          | -             | -     |        |       |      |       |       |      |      |      | ∅        |      |      |      |      |        |    |     |     |
|   | 060208R-E03*     | 0,8 | 30°          | -             | -     |        |       |      |       |       |      |      |      |          |      |      |      |      | ∅      | ∅  |     |     |
|   | 060212R-E03*     | 1,2 | 30°          | -             | -     |        |       |      |       |       |      |      |      |          |      |      |      |      | ∅      | ∅  |     |     |
|   | 060216R-E03*     | 1,6 | 30°          | -             | -     |        |       |      |       |       |      |      |      |          | ∅    |      |      |      | ∅      |    |     |     |
|  | XOMX 060202R-M05 | 0,2 | 24°          | -             | -     |        |       |      |       |       |      |      |      |          |      |      |      |      |        |    |     |     |
|   | 060204R-M05      | 0,4 | 24°          | -             | -     |        |       |      |       |       |      |      |      |          |      |      |      |      |        |    |     |     |
|   | 060208R-M05      | 0,8 | 24°          | -             | -     |        |       |      |       |       | ∅    | ∅    |      |          |      |      |      |      |        |    |     |     |
|   | 060212R-M05*     | 1,2 | 24°          | -             | -     |        |       |      |       |       | ∅    | ∅    | ∅    |          |      |      |      |      |        |    |     |     |
|   | 060216R-M05      | 1,6 | 24°          | -             | -     |        |       |      |       |       | ∅    | ∅    | ∅    | ∅        |      |      |      |      |        |    |     |     |

∅ Stock standard  
 Subject to change, please refer to current price and stock-list  
 When using inserts with corner radius > 0,8 mm, the cutter must be modified.

\* In stock first quarter 2007.

XOEX/XOMX09



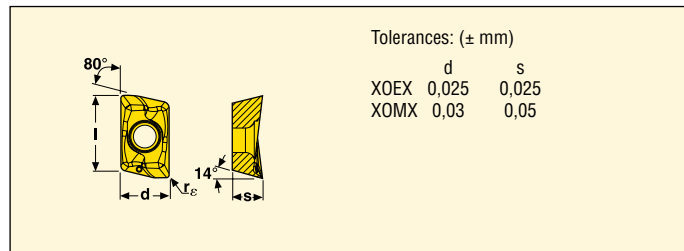
| Size     | Dimensions in mm |      |           |
|----------|------------------|------|-----------|
|          | l                | d    | s         |
| XOMX0903 | 9,9-10,8         | 6,35 | 3,21-3,65 |
| XOEX0903 | 10,8             | 6,35 | 3,65      |
|          |                  |      |           |
|          |                  |      |           |

| Inserts         | Part No.           | r <sub>e</sub> | Cutting rake | Prot. chamfer |       | Grades |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
|-----------------|--------------------|----------------|--------------|---------------|-------|--------|-------|------|-------|-------|---------|---------|---------|---------|------|----------|------|------|---------|----|-----|-----|------|--|--|---|--|
|                 |                    |                |              | Width mm      | Angle | Coated |       |      |       |       |         |         |         |         |      | Uncoated |      |      | Cermets |    |     |     |      |  |  |   |  |
|                 |                    |                |              |               |       | T150M  | T200M | T25M | T250M | T350M | MP1500* | MP2500* | MK1500* | MK2000* | F15M | F25M     | F30M | F40M | S60M    | HX | H15 | H25 | C15M |  |  |   |  |
| <b>E05</b><br>  | XOEX 090304FR-E05  | 0.4            | 31°          | –             | –     |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
|                 | 090308FR-E05       | 0.8            | 31°          | –             | –     |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
|                 | 090316FR-E05       | 1.6            | 31°          | –             | –     |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
|                 | 090320FR-E05       | 2.0            | 31°          | –             | –     |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
|                 | 090331FR-E05       | 3.1            | 31°          | –             | –     |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
| <b>ME06</b><br> | XOMX 090304TR-ME06 | 0.4            | 24°          | 0.06          | 4°    | ■      | ■     | ■    | ■     | ■     | ■       | ■       | ■       | ■       | ■    |          | ■    | ■    |         |    |     |     |      |  |  |   |  |
|                 | 090308TR-ME06      | 0.8            | 24°          | 0.06          | 4°    | ■      | ■     | ■    | ■     | ■     | ■       | ■       | ■       | ■       | ■    |          | ■    | ■    |         |    |     |     |      |  |  | ■ |  |
|                 | 090312TR-ME06      | 1.2            | 24°          | 0.06          | 4°    |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
|                 | 090316TR-ME06      | 1.6            | 24°          | 0.06          | 4°    | ■      |       | ■    | ■     | ■     | ■       | ■       | ■       | ■       | ■    | ■        |      | ■    | ■       |    |     |     |      |  |  |   |  |
|                 | 090320TR-ME06      | 2.0            | 24°          | 0.06          | 4°    |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
|                 | 090324TR-ME06      | 2.4            | 24°          | 0.06          | 4°    |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
|                 | 090331TR-ME06      | 3.1            | 24°          | 0.06          | 4°    |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
|                 | XOMX 090308TL-ME06 | 0.8            | 24°          | 0.06          | 4°    |        |       |      |       | ■     |         |         |         |         |      |          |      |      | ■       |    |     |     |      |  |  |   |  |
|                 | XOMX 090308TR-M08  | 0.8            | 16°          | 0.09          | 3°    |        | ■     | ■    | ■     | ■     | ■       | ■       | ■       | ■       | ■    | ■        |      |      | ■       | ■  |     |     |      |  |  |   |  |
|                 | 090312TR-M08       | 1.2            | 16°          | 0.09          | 3°    |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
| 090316TR-M08    | 1.6                | 16°            | 0.09         | 3°            |       |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
| 090320TR-M08    | 2.0                | 16°            | 0.09         | 3°            |       |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
| 090324TR-M08    | 2.4                | 16°            | 0.09         | 3°            |       |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |
| 090331TR-M08    | 3.1                | 16°            | 0.09         | 3°            |       |        |       |      |       |       |         |         |         |         |      |          |      |      |         |    |     |     |      |  |  |   |  |

Stock standard  
 Subject to change, please refer to current price and stock-list  
 When using inserts with corner radius > 0.8 mm, the cutter must be modified.

\* Duratomic

## XOEX/XOMX12



| Size     | Dimensions in mm |      |           |
|----------|------------------|------|-----------|
|          | l                | d    | s         |
| XOEX1204 | 11,73-12,16      | 8,18 | 5,06      |
| XOMX1204 | 11,41-12,16      | 8,18 | 3,93-4,15 |
|          |                  |      |           |
|          |                  |      |           |
|          |                  |      |           |
|          |                  |      |           |

| Inserts           | Part No.              | r <sub>ε</sub> | Cutting rake | Prot. chamfer |       | Grades |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|-------------------|-----------------------|----------------|--------------|---------------|-------|--------|-------|------|-------|-------|---------|---------|---------|----------|------|------|--------|------|------|----|-----|-----|------|
|                   |                       |                |              | Width mm      | Angle | Coated |       |      |       |       |         |         |         | Uncoated |      |      | Cermet |      |      |    |     |     |      |
|                   |                       |                |              |               |       | T150M  | T200M | T25M | T250M | T350M | MP1500* | MP2500* | MK1500* | MK2000*  | F15M | F25M | F30M   | F40M | S60M | HX | H15 | H25 | C15M |
|                   | XOEX 120404FR-E06     | 0,4            | 27°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120408FR-E06          | 0,8            | 27°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120416FR-E06          | 1,6            | 27°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120420FR-E06          | 2,0            | 27°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120424FR-E06          | 2,4            | 27°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120431FR-E06          | 3,1            | 27°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120440FR-E06          | 4,0            | 27°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120431FR-E10          | 3,1            | 27°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | XOEX 120402R-M07      | 0,2            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120404R-M07           | 0,4            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120408R-M07           | 0,8            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120416R-M07           | 1,6            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120420R-M07           | 2              | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120424R-M07           | 2,4            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120431R-M07           | 3,1            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120440R-M07           | 4,0            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120450R-M07**         | 5,0            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120463R-M07**         | 6,3            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | XOEX 120408ZZR-M07*** | 0,8            | 20°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | XOMX 120404TR-ME08    | 0,4            | 25°          | 0,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120408TR-ME08         | 0,8            | 25°          | 0,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120412TR-ME08         | 1,2            | 25°          | 0,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120416TR-ME08         | 1,6            | 25°          | 0,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120420TR-ME08         | 2              | 25°          | 0,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120424TR-ME08         | 2,4            | 25°          | 0,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120431TR-ME08         | 3,1            | 25°          | 0,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120440TR-ME08         | 4              | 25°          | 0,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | XOMX 120408TL-ME08    | 0,8            | 25°          | 0,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120416TL-ME08         | 1,6            | 25°          | 1,08          | 4°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | XOMX 120408TR-M12     | 0,8            | 13°          | 0,12          | 9°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | 120416TR-M12          | 1,6            | 13°          | 0,12          | 9°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
|                   | XOMX 120404TR-MD13    | 0,4            | 15°          | 0,09          | 8°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
| 120408TR-MD13     | 0,8                   | 15°            | 0,09         | 8°            |       |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
| 120412TR-MD13     | 1,2                   | 15°            | 0,09         | 8°            |       |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
| 120416TR-MD13     | 1,6                   | 15°            | 0,09         | 8°            |       |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
| XOMX 120408TR-D14 | 0,8                   | 7°             | 0,14         | 14°           |       |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |
| 120431TR-D14      | 3,1                   | 7°             | 0,14         | 14°           |       |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |

■ Stock standard  
 Subject to change, please refer to current price and stock-list  
 When using inserts with corner radius > 2,4 mm, the cutter must be modified.

\* Duratomic  
 \*\* Inserts with one cutting edge  
 \*\*\* Wiper inserts

XOEX/XOMX18

Tolerances: ( $\pm$  mm)

|      | d     | s     |
|------|-------|-------|
| XOEX | 0,025 | 0,025 |
| XOMX | 0,03  | 0,05  |

| Size | Dimensions in mm |      |      |
|------|------------------|------|------|
|      | l                | d    | s    |
| 1806 | ~17,5            | 11,2 | 6,35 |
|      |                  |      |      |
|      |                  |      |      |
|      |                  |      |      |

| Inserts | Part No.             | r <sub>E</sub> | Cutting rake | Prot. chamfer |       | Grades |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|---------|----------------------|----------------|--------------|---------------|-------|--------|-------|------|-------|-------|---------|---------|---------|----------|------|------|--------|------|------|----|-----|-----|------|--|--|--|--|
|         |                      |                |              | Width mm      | Angle | Coated |       |      |       |       |         |         |         | Uncoated |      |      | Cermet |      |      |    |     |     |      |  |  |  |  |
|         |                      |                |              |               |       | T150M  | T200M | T25M | T250M | T350M | MP1500* | MP2500* | MK1500* | MK2000*  | F15M | F25M | F30M   | F40M | S60M | HX | H15 | H25 | C15M |  |  |  |  |
|         | XOEX 180604FR-E10    | 0.4            | 30°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180608FR-E10         | 0.8            | 30°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180616FR-E10         | 1.6            | 30°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180620FR-E10         | 2.0            | 30°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180624FR-E10         | 2.4            | 30°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180631FR-E10         | 3.1            | 30°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180640FR-E10         | 4.0            | 30°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180650FR-E10         | 5.0            | 30°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | XOEX 180608ZZR-M10** | 0.8            | 17°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180616ZZR-M10**      | 1.6            | 17°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | XOMX 180604TR-ME13   | 0.4            | 25°          | 0.13          | 1°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180608TR-ME13        | 0.8            | 25°          | 0.13          | 1°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180616TR-ME13        | 1.6            | 25°          | 0.13          | 1°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180620TR-ME13        | 2.0            | 25°          | 0.13          | 1°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180624TR-ME13        | 2.4            | 25°          | 0.13          | 1°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180631TR-ME13        | 3.1            | 25°          | 0.13          | 1°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180640TR-ME13        | 4.0            | 25°          | 0.13          | 1°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | XOMX 180604R-M10     | 0.4            | 22°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180608R-M10          | 0.8            | 22°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180616R-M10          | 1.6            | 22°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180620R-M10          | 2.0            | 22°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180624R-M10          | 2.4            | 22°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180631R-M10          | 3.1            | 22°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180640R-M10          | 4.0            | 22°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180650R-M10          | 5.0            | 22°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180663R-M10          | 6.3            | 22°          | -             | -     |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | XOMX 180608TR-M14    | 0.8            | 15°          | 0.12          | 12°   |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180612TR-M14         | 1.2            | 15°          | 0.12          | 12°   |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180616TR-M14         | 1.6            | 15°          | 0.12          | 12°   |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180620TR-M14         | 2              | 15°          | 0.12          | 12°   |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180624TR-M14         | 2.4            | 15°          | 0.12          | 12°   |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180631TR-M14         | 3.1            | 15°          | 0.12          | 12°   |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | XOMX 180608TR-MD15   | 0.8            | 15°          | 0.12          | 12°   |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180612TR-MD15        | 1.2            | 15°          | 0.12          | 12°   |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180616TR-MD15        | 1.6            | 15°          | 0.12          | 12°   |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | XOMX 180608TR-D16    | 0.8            | 11°          | 0.15          | 9°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |
|         | 180631TR-D16         | 3.1            | 11°          | 0.15          | 9°    |        |       |      |       |       |         |         |         |          |      |      |        |      |      |    |     |     |      |  |  |  |  |

■ Stock standard  
 Subject to change, please refer to current price and stock-list  
 When using inserts with corner radius > 4,0 mm, the cutter must be modified.

\*Duratomic  
 \*\* Wiper inserts.

## Steel

|          |   | $R_m$ (N/mm <sup>2</sup> ) | $k_c$ 1.1 | $m_c$ |
|----------|---|----------------------------|-----------|-------|
| <b>1</b> | Very soft low-carbon steels.<br>Purely ferritic steels.   | <450                       | 1350      | 0,21  |
| <b>2</b> | Free-cutting steels.  | 400 <700                   | 1500      | 0,22  |
| <b>3</b> | Structural steels. Ordinary carbon steels with low to medium carbon content (<0,5%C).   | 450 <550                   | 1500      | 0,25  |
| <b>4</b> | Carbon steels with high carbon content (>0,5%C).<br>Medium hard steels for toughening. Ordinary low-alloy steels.<br>Ferritic and martensitic stainless steels. | 550 <700                   | 1700      | 0,24  |
| <b>5</b> | Normal tool steels.<br>Harder steels for toughening.<br>Martensitic stainless steels.   | 700 <900                   | 1900      | 0,24  |
| <b>6</b> | Difficult tool steels.<br>High-alloy steels with high hardness.<br>Martensitic stainless steels.  | 900 <1200                  | 2000      | 0,24  |
| <b>7</b> | Difficult high-strength steels with high hardness.<br>Hardened steels from material group 3–6.<br>Martensitic stainless steels.                                 | >1200                      | 2900      | 0,22  |

## Stainless steels

|           |   |  |      |      |
|-----------|---|--|------|------|
| <b>8</b>  | Easy austenitic stainless steels.<br>Free-cutting stainless steels. Calcium-treated stainless steels. |  | 1750 | 0,22 |
| <b>9</b>  | Moderately difficult stainless steels.<br>Austenitic and duplex stainless steels.                     |  | 1900 | 0,20 |
| <b>10</b> | Difficult stainless steels.<br>Austenitic and duplex stainless steels.                                |  | 2050 | 0,20 |
| <b>11</b> | Very difficult stainless steels.<br>Austenitic and duplex stainless steels.                           |  | 2150 | 0,20 |

## Cast iron

|           |   |  |      |      |
|-----------|---|--|------|------|
| <b>12</b> | Medium hard cast iron.<br>Grey iron.  |  | 1150 | 0,22 |
| <b>13</b> | Low-alloy cast iron.<br>Malleable cast iron. Nodular cast iron.                                       |  | 1225 | 0,25 |
| <b>14</b> | Moderately difficult alloy cast iron.<br>Moderately difficult malleable cast iron. Nodular cast iron. |  | 1350 | 0,28 |
| <b>15</b> | Difficult high-alloy cast iron.<br>Difficult malleable cast iron. Nodular cast iron.                  |  | 1470 | 0,30 |

## Other materials

|           |  |  |      |      |
|-----------|--|--|------|------|
| <b>16</b> | Free-cutting non-ferrous materials.<br>Aluminium with <16% Si.<br>Brass, Zinc, Magnesium.                            |  | 700  | 0,25 |
| <b>17</b> | Non-ferrous materials.<br>Aluminium with >16% Si.<br>Bronze, Cupro-nickel.   |  | 700  | 0,27 |
| <b>20</b> | Nickel-, Cobalt- and Iron-based superalloys with hardness <30 HRc.<br>Incoloy 800, Inconel 601, 617, 625. Monel 400. |  | 2600 | 0,24 |
| <b>21</b> | Nickel-, Cobalt- and Iron-based superalloys with hardness >30 HRc.<br>Incoloy 925, Inconel 718, 750-X, Monel K-500.  |  | 3300 | 0,24 |
| <b>22</b> | Titanium based alloys,<br>Ti-6Al-4V.   |  | 1450 | 0,23 |

$k_{c1.1}$ -values with 0 degree effective cutting rake angle. For other rake angles, reduce the  $k_{c1.1}$ -value by 1% for every degree increase in the cutting rake angle and vice versa.  $m_c$  is the exponent used for calculating power demand. Bear in mind that the  $R_m$ -value is only an aid in the selection of the material group when the material has been worked by rolling, drawing, heat treatment or other methods that increase the strength of the material.

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