CARBODIAM SA

## CONVERSION ROTATION <> PERIPHERAL SPEED

| Data | | | |
|---|---|---|---|
| **Diametre** (mm) = | 800 | | |
| **Rotation Speed** (rpm) = | 1100 | => | 46,1 m/sec |
| **Peripheral Speed** (m/sec) = | 45 | => | 1074 rpm |

**Formula**

**PS =** ( Pi x Ø x RPM ) / 60
**RPM =** ( 60 x PS ) /( Ø x Pi )
**Where :**
**PS =** Peripheral Speed in m/sec
**RPM =** Rotation Speed in rpm
**Pi =** 3.14
**Ø =** Diameter of the blade in **m**
**60 =** 60 sec / min

**Example :**
Prestressed concrete blade Ø1100
Recommended speed = 47 m/sec
=> Set rotation speed at :
60 x 47 / 1,1 x 3.14 =
816 rpm => 820 rpm

| **Electric hand saw** | **Speed :** | **60** | **to** | **80** | **m/sec** |
|---|---|---|---|---|---|
| | Ø 115 | 9964 | to | 13286 | rpm |
| | Ø 125 | 9167 | to | 12223 | rpm |
| | Ø 150 | 7639 | to | 10186 | rpm |
| | Ø 180 | 6366 | to | 8488 | rpm |
| | Ø 230 | 4982 | to | 6643 | rpm |

| **Masonry saw** | **Speed :** | **40** | **to** | **45** | **m/sec** |
|---|---|---|---|---|---|
| | Ø 300 | 2546 | to | 2865 | rpm |
| | Ø 350 | 3274 | to | 4365 | rpm |
| | Ø 400 | 2865 | to | 3820 | rpm |
| | Ø 500 | 2292 | to | 3056 | rpm |
| | Ø 600 | 1910 | to | 2546 | rpm |
| | Ø 650 | 1763 | to | 2351 | rpm |
| | Ø 700 | 1637 | to | 2183 | rpm |
| | Ø 900 | 1273 | to | 1698 | rpm |
| | Ø 1000 | 1146 | to | 1528 | rpm |

| **Petrol hand saw** | **Speed :** | **80** | **to** | **100** | **m/sec** |
|---|---|---|---|---|---|
| | Ø 300 | 5093 | to | 6366 | rpm |
| | Ø 350 | 4365 | to | 5457 | rpm |
| | Ø 400 | 3820 | to | 4775 | rpm |

| **Floor saw** | **Speed :** | **40** | **to** | **50** | **m/sec** |
|---|---|---|---|---|---|
| | Ø 300 | 2546 | to | 3183 | rpm |
| | Ø 350 | 2183 | to | 2728 | rpm |
| | Ø 400 | 1910 | to | 2387 | rpm |
| | Ø 450 | 1698 | to | 2122 | rpm |
| | Ø 500 | 1528 | to | 1910 | rpm |
| | Ø 600 | 1273 | to | 1592 | rpm |
| | Ø 650 | 1175 | to | 1469 | rpm |
| | Ø 700 | 1091 | to | 1364 | rpm |
| | Ø 750 | 1019 | to | 1273 | rpm |
| | Ø 800 | 955 | to | 1194 | rpm |
| | Ø 900 | 849 | to | 1061 | rpm |
| | Ø 1000 | 764 | to | 955 | rpm |
| | Ø 1200 | 637 | to | 796 | rpm |

| **Wall saw** | **Speed :** | **45** | **to** | **55** | **m/sec** |
|---|---|---|---|---|---|
| | Ø 450 | 1910 | to | 2334 | rpm |
| | Ø 500 | 1719 | to | 2101 | rpm |
| | Ø 600 | 1432 | to | 1751 | rpm |
| | Ø 650 | 1322 | to | 1616 | rpm |
| | Ø 700 | 1228 | to | 1501 | rpm |
| | Ø 750 | 1146 | to | 1401 | rpm |
| | Ø 800 | 1074 | to | 1313 | rpm |
| | Ø 900 | 955 | to | 1167 | rpm |
| | Ø 1000 | 859 | to | 1050 | rpm |
| | Ø 1200 | 716 | to | 875 | rpm |
| | Ø 1500 | 573 | to | 700 | rpm |
| | Ø 1800 | 477 | to | 584 | rpm |
| | Ø 2000 | 430 | to | 525 | rpm |

| | | | | | |
|---|---|---|---|---|---|
| | Ø 2200 | 391 | to | 477 | rpm |

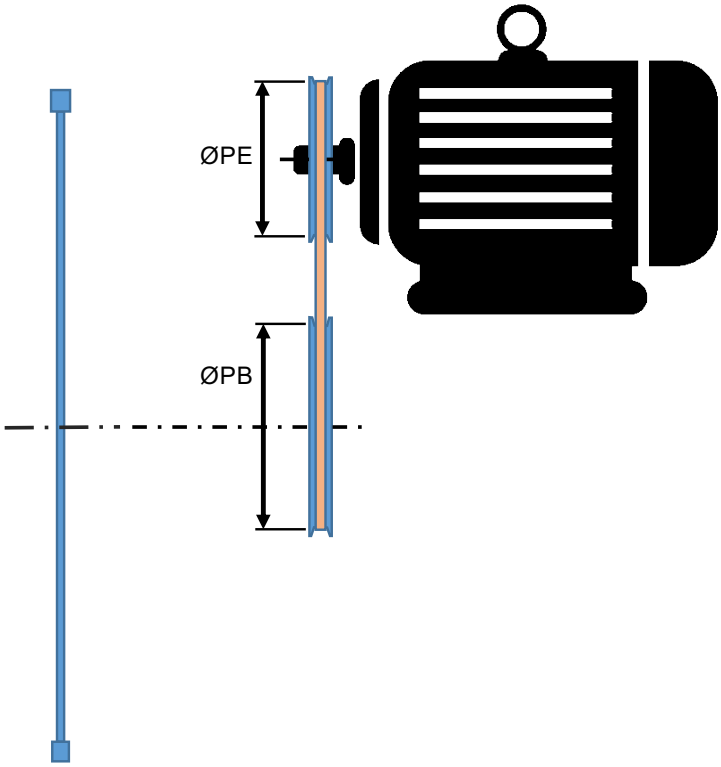
| **Prestressed concrete** | **Speed :** | **45** | **to** | **49** | **m/sec** |
|---|---|---|---|---|---|
| | Ø 500 | 1719 | to | 1872 | rpm |
| | Ø 600 | 1432 | to | 1560 | rpm |
| | Ø 700 | 1228 | to | 1337 | rpm |
| | Ø 750 | 1146 | to | 1248 | rpm |
| | Ø 800 | 1074 | to | 1170 | rpm |
| | Ø 900 | 955 | to | 1040 | rpm |
| | Ø 1000 | 859 | to | 936 | rpm |
| | Ø 1100 | 781 | to | 851 | rpm |
| | Ø 1200 | 716 | to | 780 | rpm |
| | Ø 1300 | 661 | to | 720 | rpm |
| | Ø 1400 | 614 | to | 668 | rpm |

**Blade rotation speed vs Engine rotation speed**

ØPE = Diameter of the pulley on the engine shaft
ØPB = Diameter of the pulley on the blade shaft

Blade rotation speed = Engine rotation speed x pulley diameter ratio ØPE / ØPB
Pulley diameter ratio ØPE / ØPB = Blade rotation speed / Engine rotation speed

**Example :**
Rotation speed engine = 1500 rpm
Recommended rotation speed blade = 900 rpm
=> Pulley ratio ØPE / ØPB = 900 / 1500 = 0.60



## RECOMMENDED CUTTING PARAMETERS FOR DIAMOND CORE BITS

| | | | | High hardness | | Medium to low hardness | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Low abrasiveness | Medium abrasiveness | High abrasiveness | | |
| | | | | Granites Quartzites Porphyres | Concretes with flint agregates | Marbles Travertines Limestone Calcareous | Reconstituted Sandstones (medium hard) | Refractories Soft sandstones | | |
| | | **Feed speed** (cm/min) —> | | 3 - 4 | 3 - 5 | 5 - 10 | 10 - 20 | 10 - 20 | | |
| | | **Peripheral speed** (m/sec) —> | | 1 - 2 | 2 - 3 | 3 - 5 | 6 - 8 | 8 - 10 | | |
| **Outside Ø** (mm) | **Flow rate** (l/min) | **Max. side run-out** (mm) | **Max. axial run-out** (mm) | **Spindle speed** (rpm) | | | | | **Power** KW | CV |
| 4 to 10 | 3 | 0,25 | 0,02 | 1910 - 3820 | 3820 - 5730 | 5730 - 9550 | 11460 - 15280 | 15280 - 19100 | 0,35 | 0,5 |
| 10 to 15 | 4 | 0,25 | 0,03 | 1530 - 3060 | 3060 - 4580 | 4580 - 7640 | 9170 - 12220 | 12220 - 15300 | 0,35 | 0,5 |
| 15 to 20 | 4 | 0,25 | 0,03 | 1090 - 2180 | 2180 - 3270 | 3270 - 5460 | 6550 - 8730 | 8730 - 10900 | 0,35 | 0,5 |
| 20 to 25 | 5 | 0,30 | 0,03 | 850 - 1700 | 1700 - 2550 | 2550 - 4240 | 5090 - 6790 | 6790 - 8490 | 0,35 | 0,5 |
| 25 to 30 | 5 | 0,30 | 0,04 | 695 - 1390 | 1390 - 2080 | 2080 - 3470 | 4170 - 5560 | 5560 - 6950 | 0,50 | 0,7 |
| 30 to 35 | 5 | 0,30 | 0,04 | 585 - 1175 | 1170 - 1760 | 1760 - 2940 | 3530 - 4700 | 4700 - 5880 | 0,50 | 0,7 |
| 35 to 40 | 5 | 0,30 | 0,04 | 510 - 1020 | 1020 - 1530 | 1530 - 2550 | 3060 - 4070 | 4070 - 5090 | 0,50 | 0,7 |
| 40 to 50 | 5 | 0,30 | 0,04 | 425 - 850 | 850 - 1270 | 1270 - 2120 | 2545 - 3395 | 3395 - 4250 | 0,50 | 0,7 |
| 50 to 60 | 6 | 0,30 | 0,05 | 345 - 695 | 695 - 1040 | 1040 - 1735 | 2080 - 2780 | 2780 - 3470 | 0,65 | 0,9 |
| 60 to 70 | 6 | 0,35 | 0,05 | 295 - 585 | 585 - 880 | 880 - 1470 | 1760 - 2350 | 2350 - 2940 | 0,85 | 1,1 |
| 70 to 80 | 7 | 0,35 | 0,06 | 255 - 510 | 510 - 765 | 765 - 1270 | 1530 - 2040 | 2040 - 2550 | 1,0 | 1,3 |
| 80 to 90 | 7 | 0,35 | 0,06 | 225 - 450 | 450 - 675 | 675 - 1125 | 1350 - 1800 | 1800 - 2245 | 1,1 | 1,5 |
| 90 to 100 | 7 | 0,35 | 0,06 | 200 - 400 | 400 - 600 | 600 - 1005 | 1205 - 1610 | 1610 - 2010 | 1,3 | 1,7 |
| 100 to 120 | 10 | 0,40 | 0,07 | 175 - 345 | 345 - 520 | 520 - 870 | 1040 - 1390 | 1390 - 1735 | 2,0 | 2,7 |
| 120 to 140 | 11 | 0,40 | 0,07 | 145 - 290 | 290 - 440 | 440 - 735 | 880 - 1175 | 1175 - 1470 | 2,3 | 3,1 |
| 140 to 170 | 12 | 0,40 | 0,08 | 125 - 245 | 245 - 370 | 370 - 615 | 740 - 985 | 985 - 1230 | 2,5 | 3,4 |
| 170 to 200 | 14 | 0,40 | 0,08 | 105 - 205 | 205 - 310 | 310 - 515 | 620 - 825 | 825 - 1030 | 2,7 | 3,6 |
| 200 to 230 | 16 | 0,50 | 0,10 | 90 - 180 | 180 - 265 | 265 - 445 | 530 - 710 | 710 - 890 | 3,0 | 4,0 |
| 230 to 265 | 18 | 0,50 | 0,10 | 77 - 155 | 155 - 230 | 230 - 385 | 460 - 615 | 615 - 770 | 3,3 | 4,4 |
| 265 to 300 | 20 | 0,50 | 0,10 | 68 - 135 | 135 - 205 | 205 - 340 | 405 - 540 | 540 - 675 | 3,5 | 4,7 |