

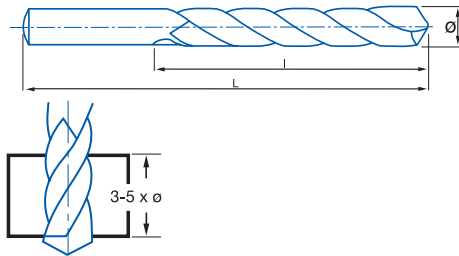
Ref. **9010**

BROCA INTEGRAL METAL DURO. SERIE CORTA

HM Twist Drill. Jobber Series
Foret Carbure. Série Courte



| | | | | | | | | |
|-------------------------|--------------|------|-----|--|--|---|---------------------------------------|--------------|
| MD/HM Carbure K20 | DIN 338 N | 118° | 40° | | | Blanca Bright Finish Finition Blanc | Rectificado Ground Taillé Meulé | Tol. D h8 |
|-------------------------|--------------|------|-----|--|--|---|---------------------------------------|--------------|



| Material | | Vc | Avances mm/rev. Feed / Pas | | | | | | | |
|----------|------|-------------|----------------------------|-------|-------|-------|-------|-------|-------|-------|
| Grupo | Sub. | MD/HM/Carb. | Ø 2 | Ø 4 | Ø 6 | Ø 8 | Ø 10 | Ø 12 | Ø 14 | Ø 16 |
| 1 | 1.1 | 60-75 | 0,026 | 0,045 | 0,066 | 0,088 | 0,110 | 0,130 | 0,160 | 0,180 |
| 1 | 1.2 | 55-65 | 0,022 | 0,043 | 0,057 | 0,072 | 0,090 | 0,110 | 0,140 | 0,160 |
| 2 | 2.1 | 35-45 | 0,022 | 0,036 | 0,050 | 0,062 | 0,065 | 0,072 | 0,076 | 0,080 |
| | 2.2 | 40-50 | 0,022 | 0,043 | 0,057 | 0,072 | 0,090 | 0,110 | 0,140 | 0,160 |
| 3 | 3.1 | 40-70 | 0,044 | 0,090 | 0,140 | 0,200 | 0,240 | 0,290 | 0,320 | 0,350 |
| | 3.2 | 40-60 | 0,030 | 0,060 | 0,090 | 0,120 | 0,140 | 0,170 | 0,200 | 0,230 |
| 4 | | 30-40 | 0,026 | 0,045 | 0,066 | 0,088 | 0,110 | 0,130 | 0,160 | 0,180 |
| 5 | 5.1 | 40-100 | 0,040 | 0,090 | 0,140 | 0,200 | 0,240 | 0,290 | 0,320 | 0,350 |
| | 5.2 | 70-150 | 0,040 | 0,090 | 0,140 | 0,200 | 0,240 | 0,290 | 0,320 | 0,350 |
| 6 | 6.1 | 100-150 | 0,040 | 0,080 | 0,140 | 0,200 | 0,240 | 0,290 | 0,320 | 0,350 |
| | 6.2 | 100-150 | 0,040 | 0,090 | 0,140 | 0,200 | 0,240 | 0,290 | 0,320 | 0,350 |
| | 6.3 | 60-120 | 0,040 | 0,080 | 0,130 | 0,160 | 0,200 | 0,240 | 0,260 | 0,280 |
| 7 | 7.1 | 80-170 | 0,020 | 0,040 | 0,055 | 0,070 | 0,090 | 0,120 | 0,140 | 0,160 |
| | 7.2 | 60-120 | 0,020 | 0,035 | 0,050 | 0,060 | 0,065 | 0,072 | 0,075 | 0,080 |

Vc= m/min.

r.p.m. = $\frac{Vc \times 1.000}{\pi \times \phi}$

| D mm | L mm | I mm | | N° Art. MD/HM | € |
|---------|---------|---------|---|------------------|--------|
| 1,00 | 34 | 12 | 1 | 44961 | 7,55 |
| 1,50 | 40 | 18 | 1 | 44964 | 8,32 |
| 2,00 | 49 | 24 | 1 | 44967 | 10,33 |
| 2,50 | 57 | 30 | 1 | 44970 | 12,51 |
| 3,00 | 61 | 33 | 1 | 44973 | 12,82 |
| 3,30 | 65 | 36 | 1 | 44976 | 17,33 |
| 3,50 | 70 | 39 | 1 | 44979 | 17,08 |
| 4,00 | 75 | 43 | 1 | 44982 | 19,22 |
| 4,20 | 75 | 43 | 1 | 44985 | 23,53 |
| 4,50 | 80 | 47 | 1 | 44988 | 23,48 |
| 5,00 | 86 | 52 | 1 | 44991 | 25,92 |
| 5,50 | 93 | 57 | 1 | 44997 | 29,95 |
| 6,00 | 93 | 57 | 1 | 45000 | 34,61 |
| 6,50 | 101 | 63 | 1 | 45003 | 42,84 |
| 6,80 | 109 | 69 | 1 | 45004 | 50,43 |
| 7,00 | 109 | 69 | 1 | 45007 | 49,99 |
| 7,50 | 109 | 69 | 1 | 45008 | 53,33 |
| 8,00 | 117 | 75 | 1 | 45009 | 60,99 |
| 8,50 | 117 | 75 | 1 | 45010 | 72,08 |
| 9,00 | 125 | 81 | 1 | 45011 | 79,75 |
| 9,50 | 125 | 81 | 1 | 45012 | 88,71 |
| 10,00 | 133 | 87 | 1 | 45013 | 95,84 |
| 10,20 | 133 | 87 | 1 | 45014 | 110,67 |
| 10,50 | 133 | 87 | 1 | 45015 | 106,41 |
| 11,00 | 142 | 94 | 1 | 45016 | 126,48 |
| 11,50 | 142 | 94 | 1 | 45017 | 139,68 |
| 12,00 | 151 | 101 | 1 | 45018 | 166,14 |
| 13,00 | 151 | 101 | 1 | 45019 | 179,87 |
| 14,00 | 160 | 108 | 1 | 45020 | 207,60 |
| 15,00 | 169 | 114 | 1 | 45021 | 249,08 |
| 16,00 | 178 | 120 | 1 | 45022 | 275,61 |

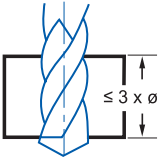
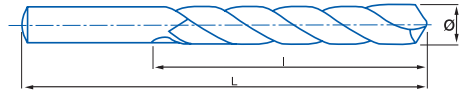
Ref. **8400**

BROCA INTEGRAL METAL DURO GRAN RENDIMIENTO CNC

CNC High Performance HM Twist Drill
Foret Carbure Haut Rendement CNC



| | | | | | | | | | |
|-------------------------|-------|---------------|--|--|--|----|----------------|--------------|--------------|
| MD/HM Carbure K20 | ALTIN | DIN 6537 K | | | | 2Z | DIN 6535 HA | HRC 45-55 | Tol. D h7 |
|-------------------------|-------|---------------|--|--|--|----|----------------|--------------|--------------|



| Material | | Vc | Avances mm/rev. Feed / Pas | | | | | | |
|----------|------|--------|----------------------------|-------|-------|-------|-------|-------|-------|
| Grupo | Sub. | ALTIN | Ø 4 | Ø 6 | Ø 8 | Ø 10 | Ø 12 | Ø 14 | Ø 16 |
| 1 | 1.1 | 90-110 | 0,090 | 0,140 | 0,200 | 0,240 | 0,290 | 0,300 | 0,340 |
| 1 | 1.2 | 40-80 | 0,060 | 0,090 | 0,120 | 0,140 | 0,160 | 0,200 | 0,220 |
| 1 | 1.3 | 30-40 | 0,040 | 0,050 | 0,070 | 0,090 | 0,100 | 0,140 | 0,160 |
| 1 | 1.4 | 15-30 | 0,030 | 0,050 | 0,060 | 0,062 | 0,070 | 0,075 | 0,080 |
| 2 | 2.1 | 35-45 | 0,035 | 0,050 | 0,060 | 0,062 | 0,070 | 0,075 | 0,080 |
| | 2.2 | 40-70 | 0,045 | 0,060 | 0,080 | 0,100 | 0,120 | 0,160 | 0,180 |
| 3 | 3.1 | 40-100 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,320 |
| | 3.2 | 40-60 | 0,080 | 0,120 | 0,160 | 0,200 | 0,240 | 0,260 | 0,280 |
| 4 | | 30-40 | 0,040 | 0,060 | 0,080 | 0,100 | 0,120 | 0,160 | 0,180 |
| 5 | 5.1 | 50-150 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |
| | 5.2 | 50-150 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |
| 6 | 6.1 | 80-300 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |
| | 6.2 | 80-300 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |
| | 6.3 | 60-150 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |

Vc= m/min.

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \phi}$$



| D mm | d mm | L mm | l mm | | Nº Art. ALTIN | € |
|---------|---------|---------|---------|---|------------------|--------|
| 3,00 | 6,00 | 62 | 20 | 1 | 15819 | 36,86 |
| 3,30 | 6,00 | 62 | 20 | 1 | 15840 | 36,86 |
| 3,50 | 6,00 | 62 | 20 | 1 | 15841 | 36,86 |
| 4,00 | 6,00 | 66 | 24 | 1 | 15842 | 36,86 |
| 4,20 | 6,00 | 66 | 24 | 1 | 15843 | 36,86 |
| 4,50 | 6,00 | 66 | 24 | 1 | 15844 | 36,86 |
| 5,00 | 6,00 | 66 | 28 | 1 | 15845 | 36,86 |
| 5,50 | 6,00 | 66 | 28 | 1 | 15846 | 36,86 |
| 6,00 | 6,00 | 66 | 28 | 1 | 15847 | 36,86 |
| 6,50 | 8,00 | 79 | 34 | 1 | 15848 | 43,08 |
| 6,80 | 8,00 | 79 | 34 | 1 | 15866 | 43,08 |
| 7,00 | 8,00 | 79 | 34 | 1 | 15867 | 43,08 |
| 7,50 | 8,00 | 79 | 41 | 1 | 15869 | 43,08 |
| 8,00 | 8,00 | 79 | 41 | 1 | 15870 | 43,08 |
| 8,50 | 10,00 | 89 | 47 | 1 | 15872 | 49,75 |
| 9,00 | 10,00 | 89 | 47 | 1 | 15873 | 49,75 |
| 9,50 | 10,00 | 89 | 47 | 1 | 15874 | 49,75 |
| 10,00 | 10,00 | 89 | 47 | 1 | 15875 | 49,75 |
| 10,20 | 12,00 | 102 | 55 | 1 | 15877 | 74,63 |
| 10,50 | 12,00 | 102 | 55 | 1 | 15878 | 74,63 |
| 11,00 | 12,00 | 102 | 55 | 1 | 15880 | 74,63 |
| 11,50 | 12,00 | 102 | 55 | 1 | 15881 | 74,63 |
| 12,00 | 12,00 | 102 | 55 | 1 | 15882 | 74,63 |
| 13,00 | 14,00 | 107 | 60 | 1 | 15883 | 99,50 |
| 14,00 | 14,00 | 107 | 60 | 1 | 15884 | 99,50 |
| 15,00 | 16,00 | 115 | 65 | 1 | 15885 | 124,37 |
| 16,00 | 16,00 | 115 | 65 | 1 | 15886 | 124,37 |

Otros Ø bajo demanda

More Ø upon request

Autres Ø sur demande

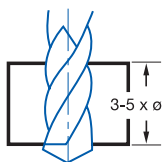
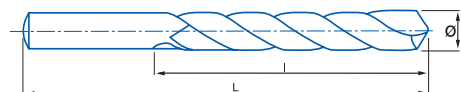
Ref. **8405**

BROCA INTEGRAL METAL DURO GRAN RENDIMIENTO CNC

CNC High Performance HM Twist Drill
Foret Carbure Haut Rendement CNC



| | | | | | | | | | |
|-------------------------|-------|---------------|------|--|--|----|----------------|--------------|--------------|
| MD/HM Carbure K20 | ALTIN | DIN 6537 L | 140° | | | 2Z | DIN 6535 HA | HRC 45-55 | Tol. D h7 |
|-------------------------|-------|---------------|------|--|--|----|----------------|--------------|--------------|



| Material | | Vc | Avances mm/rev. Feed / Pas | | | | | | |
|----------|------|--------|----------------------------|-------|-------|-------|-------|-------|-------|
| Grupo | Sub. | ALTIN | Ø 4 | Ø 6 | Ø 8 | Ø 10 | Ø 12 | Ø 14 | Ø 16 |
| 1 | 1.1 | 90-110 | 0,090 | 0,140 | 0,200 | 0,240 | 0,290 | 0,300 | 0,340 |
| 1 | 1.2 | 40-80 | 0,060 | 0,090 | 0,120 | 0,140 | 0,160 | 0,200 | 0,220 |
| 1 | 1.3 | 30-40 | 0,040 | 0,050 | 0,070 | 0,090 | 0,100 | 0,140 | 0,160 |
| 1 | 1.4 | 15-30 | 0,030 | 0,050 | 0,060 | 0,062 | 0,070 | 0,075 | 0,080 |
| 2 | 2.1 | 35-45 | 0,035 | 0,050 | 0,060 | 0,062 | 0,070 | 0,075 | 0,080 |
| | 2.2 | 40-70 | 0,045 | 0,060 | 0,080 | 0,100 | 0,120 | 0,160 | 0,180 |
| 3 | 3.1 | 40-100 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,320 |
| | 3.2 | 40-60 | 0,080 | 0,120 | 0,160 | 0,200 | 0,240 | 0,260 | 0,280 |
| 4 | | 30-40 | 0,040 | 0,060 | 0,080 | 0,100 | 0,120 | 0,160 | 0,180 |
| 5 | 5.1 | 50-150 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |
| | 5.2 | 50-150 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |
| 6 | 6.1 | 80-300 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |
| | 6.2 | 80-300 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |
| | 6.3 | 60-150 | 0,090 | 0,140 | 0,200 | 0,240 | 0,280 | 0,300 | 0,340 |

Vc= m/min.

r.p.m. = $\frac{Vc \times 1.000}{\pi \times \phi}$



| D mm | d mm | L mm | l mm | | Nº Art. ALTIN | € |
|---------|---------|---------|---------|---|------------------|--------|
| 3,00 | 6,00 | 66 | 28 | 1 | 16156 | 42,76 |
| 3,30 | 6,00 | 66 | 28 | 1 | 16178 | 42,76 |
| 3,50 | 6,00 | 66 | 28 | 1 | 16202 | 42,76 |
| 4,00 | 6,00 | 74 | 36 | 1 | 16219 | 42,76 |
| 4,20 | 6,00 | 74 | 36 | 1 | 16221 | 42,76 |
| 4,50 | 6,00 | 74 | 36 | 1 | 16225 | 42,76 |
| 5,00 | 6,00 | 82 | 44 | 1 | 16226 | 42,76 |
| 5,50 | 6,00 | 82 | 44 | 1 | 16227 | 42,76 |
| 6,00 | 6,00 | 82 | 44 | 1 | 16228 | 42,76 |
| 6,50 | 8,00 | 91 | 53 | 1 | 16229 | 46,99 |
| 6,80 | 8,00 | 91 | 53 | 1 | 16231 | 46,99 |
| 7,00 | 8,00 | 91 | 53 | 1 | 16242 | 46,99 |
| 7,50 | 8,00 | 91 | 53 | 1 | 16252 | 46,99 |
| 8,00 | 8,00 | 91 | 53 | 1 | 16254 | 46,99 |
| 8,50 | 10,00 | 103 | 61 | 1 | 16260 | 60,80 |
| 9,00 | 10,00 | 103 | 61 | 1 | 16276 | 60,80 |
| 9,50 | 10,00 | 103 | 61 | 1 | 16277 | 60,80 |
| 10,00 | 10,00 | 103 | 61 | 1 | 16278 | 60,80 |
| 10,20 | 12,00 | 118 | 71 | 1 | 16279 | 87,53 |
| 10,50 | 12,00 | 118 | 71 | 1 | 16280 | 87,53 |
| 11,00 | 12,00 | 118 | 71 | 1 | 16281 | 87,53 |
| 11,50 | 12,00 | 118 | 71 | 1 | 16282 | 87,53 |
| 12,00 | 12,00 | 118 | 71 | 1 | 16300 | 87,53 |
| 13,00 | 14,00 | 124 | 77 | 1 | 16303 | 115,54 |
| 14,00 | 14,00 | 124 | 77 | 1 | 16305 | 115,54 |
| 15,00 | 16,00 | 133 | 83 | 1 | 16308 | 144,43 |
| 16,00 | 16,00 | 133 | 83 | 1 | 16310 | 144,43 |

Otros Ø bajo demanda

More Ø upon request

Autres Ø sur demande

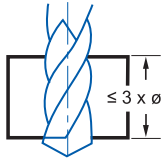
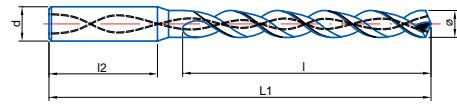
Ref. **8410**

BROCA INTEGRAL METAL DURO REFRIGERACIÓN INTERIOR

Internal Cooling HM Twist Drill
Foret Carbure Trous d'huile



| | | | | | | |
|--------------------------|-------|---------------|------|----|----------------|--------------|
| MD/HM Carbure K30F | ALTIN | DIN 6537 K | 140° | 2Z | DIN 6535 HA | HRC 45-55 |
|--------------------------|-------|---------------|------|----|----------------|--------------|



| Material | | Vc* | Avances** mm/rev. Feed** / Pas** | | | | | | |
|----------|------|---------|----------------------------------|-------|-------|-------|-------|-------|-------|
| Grupo | Sub. | ALTIN | Ø 4 | Ø 6 | Ø 8 | Ø 10 | Ø 12 | Ø 14 | Ø 16 |
| 1 | 1.1 | 100-120 | 0,180 | 0,200 | 0,280 | 0,300 | 0,350 | 0,400 | 0,450 |
| 1 | 1.2 | 90-110 | 0,160 | 0,180 | 0,200 | 0,220 | 0,280 | 0,300 | 0,350 |
| 1 | 1.3 | 75-95 | 0,080 | 0,100 | 0,110 | 0,120 | 0,140 | 0,180 | 0,220 |
| 1 | 1.4 | 35-40 | 0,050 | 0,070 | 0,090 | 0,100 | 0,110 | 0,140 | 0,160 |
| 2 | 2.1 | 30-40 | 0,060 | 0,060 | 0,060 | 0,080 | 0,100 | 0,120 | 0,160 |
| | 2.2 | 50-65 | 0,090 | 0,120 | 0,150 | 0,180 | 0,200 | 0,240 | 0,260 |
| 3 | 3.1 | 125-150 | 0,200 | 0,220 | 0,300 | 0,350 | 0,400 | 0,450 | 0,550 |
| | 3.2 | 90-110 | 0,180 | 0,200 | 0,260 | 0,280 | 0,300 | 0,350 | 0,450 |
| 4 | | 35-50 | 0,060 | 0,090 | 0,090 | 0,100 | 0,140 | 0,160 | 0,180 |

Vf (Avance mm/min Feed/Pas) = r.p.m. x f x K

K = Coeficiente corrección segun profundidad taladrado / Correction coefficient depending on drilling depth / Coefficient Correction suivant la profondeur du perçage

*K para/for/pour Vc:
 <math>< 3 \times \phi \Rightarrow K = 1</math>
 <math>< 4 \times \phi \Rightarrow K = 0,9</math>
 <math>< 5 \times \phi \Rightarrow K = 0,8</math>

**K para/for/pour Vf:
 <math>< 3 \times \phi \Rightarrow K = 1</math>
 $> 3 \times \phi \Rightarrow K = 0,9$

r.p.m. = $\frac{Vc \times 1.000 \times K}{\pi \times \phi}$

Vc= m/min.



| D mm | d mm | L mm | l mm | l2 mm | | Nº Art. ALTIN | € |
|-------|-------|------|------|-------|---|---------------|-------|
| 3,00 | 6,00 | 62 | 20 | 36 | 1 | 12950 | 66,40 |
| *3,20 | 6,00 | 62 | 20 | 36 | 1 | 12951 | 66,40 |
| 3,30 | 6,00 | 62 | 20 | 36 | 1 | 12952 | 66,40 |
| 3,50 | 6,00 | 62 | 20 | 36 | 1 | 12954 | 66,40 |
| *3,70 | 6,00 | 66 | 24 | 36 | 1 | 12955 | 66,40 |
| 3,80 | 6,00 | 66 | 24 | 36 | 1 | 12959 | 66,40 |
| 4,00 | 6,00 | 66 | 24 | 36 | 1 | 16315 | 66,40 |
| 4,20 | 6,00 | 66 | 24 | 36 | 1 | 16319 | 66,40 |
| 4,50 | 6,00 | 66 | 24 | 36 | 1 | 16559 | 66,40 |
| *4,60 | 6,00 | 66 | 24 | 36 | 1 | 16568 | 66,40 |
| 4,80 | 6,00 | 66 | 28 | 36 | 1 | 16589 | 66,40 |
| 5,00 | 6,00 | 66 | 28 | 36 | 1 | 16601 | 66,40 |
| *5,20 | 6,00 | 66 | 28 | 36 | 1 | 16604 | 66,40 |
| 5,50 | 6,00 | 66 | 28 | 36 | 1 | 16607 | 66,40 |
| *5,70 | 6,00 | 66 | 28 | 36 | 1 | 16616 | 66,40 |
| 5,80 | 6,00 | 66 | 28 | 36 | 1 | 16645 | 66,40 |
| 6,00 | 6,00 | 66 | 28 | 36 | 1 | 16671 | 66,40 |
| 6,30 | 8,00 | 79 | 34 | 36 | 1 | 16705 | 78,87 |
| *6,40 | 8,00 | 79 | 34 | 36 | 1 | 16723 | 78,87 |
| 6,50 | 8,00 | 79 | 34 | 36 | 1 | 16732 | 78,87 |
| *6,60 | 8,00 | 79 | 34 | 36 | 1 | 16740 | 78,87 |
| 6,80 | 8,00 | 79 | 34 | 36 | 1 | 16742 | 78,87 |
| *7,00 | 8,00 | 79 | 34 | 36 | 1 | 16745 | 78,87 |
| 7,40 | 8,00 | 79 | 41 | 36 | 1 | 16750 | 78,87 |
| 7,50 | 8,00 | 79 | 41 | 36 | 1 | 16751 | 78,87 |
| 7,80 | 8,00 | 79 | 41 | 36 | 1 | 16756 | 78,87 |
| 8,00 | 8,00 | 79 | 41 | 36 | 1 | 16759 | 78,87 |
| *8,30 | 10,00 | 89 | 47 | 40 | 1 | 16763 | 88,35 |
| *8,40 | 10,00 | 89 | 47 | 40 | 1 | 16765 | 88,35 |
| 8,50 | 10,00 | 89 | 47 | 40 | 1 | 16766 | 88,35 |
| *8,60 | 10,00 | 89 | 47 | 40 | 1 | 16767 | 88,35 |
| *8,70 | 10,00 | 89 | 47 | 40 | 1 | 16768 | 88,35 |
| *8,80 | 10,00 | 89 | 47 | 40 | 1 | 16769 | 88,35 |
| 9,00 | 10,00 | 89 | 47 | 40 | 1 | 16772 | 88,35 |

| D mm | d mm | L mm | l mm | l2 mm | | Nº Art. ALTIN | € |
|--------|-------|------|------|-------|---|---------------|--------|
| 9,20 | 10,00 | 89 | 47 | 40 | 1 | 16774 | 88,35 |
| *9,40 | 10,00 | 89 | 47 | 40 | 1 | 16777 | 88,35 |
| 9,50 | 10,00 | 89 | 47 | 40 | 1 | 16778 | 88,35 |
| *9,60 | 10,00 | 89 | 47 | 40 | 1 | 16779 | 88,35 |
| *9,70 | 10,00 | 89 | 47 | 40 | 1 | 16780 | 88,35 |
| 9,80 | 10,00 | 89 | 47 | 40 | 1 | 16781 | 88,35 |
| 10,00 | 10,00 | 89 | 47 | 40 | 1 | 16807 | 88,35 |
| *10,20 | 12,00 | 102 | 55 | 45 | 1 | 16822 | 126,26 |
| 10,50 | 12,00 | 102 | 55 | 45 | 1 | 16834 | 126,26 |
| *10,80 | 12,00 | 102 | 55 | 45 | 1 | 16835 | 126,26 |
| 11,00 | 12,00 | 102 | 55 | 45 | 1 | 16836 | 126,26 |
| *11,10 | 12,00 | 102 | 55 | 45 | 1 | 13023 | 126,26 |
| 11,20 | 12,00 | 102 | 55 | 45 | 1 | 13028 | 126,26 |
| 11,50 | 12,00 | 102 | 55 | 45 | 1 | 16837 | 126,26 |
| 11,80 | 12,00 | 102 | 55 | 45 | 1 | 13029 | 126,26 |
| 12,00 | 12,00 | 102 | 55 | 45 | 1 | 16838 | 126,26 |
| *12,50 | 14,00 | 107 | 60 | 45 | 1 | 16840 | 175,67 |
| *12,70 | 14,00 | 107 | 60 | 45 | 1 | 13031 | 175,67 |
| 12,80 | 14,00 | 107 | 60 | 45 | 1 | 13032 | 175,67 |
| 13,00 | 14,00 | 107 | 60 | 45 | 1 | 16841 | 175,67 |
| 13,50 | 14,00 | 107 | 60 | 45 | 1 | 16842 | 175,67 |
| 14,00 | 14,00 | 107 | 60 | 45 | 1 | 16844 | 175,67 |
| *14,50 | 16,00 | 115 | 65 | 48 | 1 | 16848 | 217,42 |
| 15,00 | 16,00 | 115 | 65 | 48 | 1 | 16849 | 217,42 |
| 15,50 | 16,00 | 115 | 65 | 48 | 1 | 16855 | 217,42 |
| *16,00 | 16,00 | 115 | 65 | 48 | 1 | 16867 | 217,42 |
| *16,50 | 18,00 | 123 | 73 | 48 | 1 | 12960 | 342,80 |
| *17,00 | 18,00 | 123 | 73 | 48 | 1 | 12962 | 342,80 |
| 17,50 | 18,00 | 123 | 73 | 48 | 1 | 12963 | 342,80 |
| *18,00 | 18,00 | 123 | 73 | 48 | 1 | 12965 | 342,80 |
| 18,50 | 20,00 | 131 | 79 | 50 | 1 | 12968 | 376,71 |
| 19,00 | 20,00 | 131 | 79 | 50 | 1 | 12969 | 376,71 |
| 19,50 | 20,00 | 131 | 79 | 50 | 1 | 12970 | 376,71 |
| 20,00 | 20,00 | 131 | 79 | 50 | 1 | 12972 | 376,71 |

*Diámetros bajo demanda *Diameters upon request *Diamètres sur demande

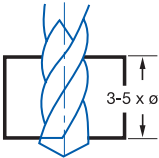
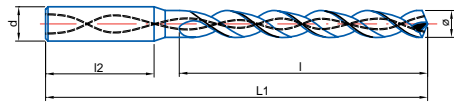
Ref. **8415**

BROCA INTEGRAL METAL DURO REFRIGERACIÓN INTERIOR

Internal Cooling HM Twist Drill
Foret Carbure Trous d'huile



| | | | | | | | | | |
|--------------------------|-------|---------------|------|--|--|--|----|----------------|--------------|
| MD/HM Carbure K30F | ALTIN | DIN 6537 L | 140° | | | | 2Z | DIN 6535 HA | HRC 45-55 |
|--------------------------|-------|---------------|------|--|--|--|----|----------------|--------------|



| Material | | Vc* | Avances** mm/rev. Feed** / Pas** | | | | | | |
|----------|------|---------|----------------------------------|-------|-------|-------|-------|-------|-------|
| Grupo | Sub. | ALTIN | Ø 4 | Ø 6 | Ø 8 | Ø 10 | Ø 12 | Ø 14 | Ø 16 |
| 1 | 1.1 | 100-120 | 0,180 | 0,200 | 0,280 | 0,300 | 0,350 | 0,400 | 0,450 |
| 1 | 1.2 | 90-110 | 0,160 | 0,180 | 0,200 | 0,220 | 0,280 | 0,300 | 0,350 |
| 1 | 1.3 | 75-95 | 0,080 | 0,100 | 0,110 | 0,120 | 0,140 | 0,180 | 0,220 |
| 1 | 1.4 | 35-40 | 0,050 | 0,070 | 0,090 | 0,100 | 0,110 | 0,140 | 0,160 |
| 2 | 2.1 | 30-40 | 0,060 | 0,060 | 0,060 | 0,080 | 0,100 | 0,120 | 0,160 |
| | 2.2 | 50-65 | 0,090 | 0,120 | 0,150 | 0,180 | 0,200 | 0,240 | 0,260 |
| 3 | 3.1 | 125-150 | 0,200 | 0,220 | 0,300 | 0,350 | 0,400 | 0,450 | 0,550 |
| | 3.2 | 90-110 | 0,180 | 0,200 | 0,260 | 0,280 | 0,300 | 0,350 | 0,450 |
| 4 | | 35-50 | 0,060 | 0,090 | 0,090 | 0,100 | 0,140 | 0,160 | 0,180 |

Vf (Avance mm/min Feed/Pas) = r.p.m. x f x K
 K = Coeficiente corrección segun profundidad taladrado / Correction coefficient depending on drilling depth / Coefficient Correction suivant la profondeur du perçage

*K para/for/pour Vc:
 < 3 x ø => K = 1
 < 4 x ø => K = 0,9
 < 5 x ø => K = 0,8

**K para/for/pour Vf:
 < 3 x ø => K = 1
 > 3 x ø => K = 0,9

r.p.m. = $\frac{Vc \times 1.000 \times K}{\pi \times \phi}$
 Vc = m/min.



| D mm | d mm | L mm | l mm | l2 mm | | Nº Art. ALTIN | € |
|-------|-------|------|------|-------|---|---------------|-------|
| 3,00 | 6,00 | 66 | 28 | 36 | 1 | 12973 | 74,39 |
| *3,20 | 6,00 | 66 | 28 | 36 | 1 | 12975 | 74,39 |
| *3,30 | 6,00 | 66 | 28 | 36 | 1 | 12978 | 74,39 |
| 3,50 | 6,00 | 66 | 28 | 36 | 1 | 12981 | 74,39 |
| *3,70 | 6,00 | 74 | 36 | 36 | 1 | 12982 | 74,39 |
| 3,80 | 6,00 | 74 | 36 | 36 | 1 | 12983 | 74,39 |
| 4,00 | 6,00 | 74 | 36 | 36 | 1 | 16876 | 74,39 |
| 4,20 | 6,00 | 74 | 36 | 36 | 1 | 16891 | 74,39 |
| 4,50 | 6,00 | 74 | 44 | 36 | 1 | 16915 | 74,39 |
| *4,60 | 6,00 | 74 | 44 | 36 | 1 | 16924 | 74,39 |
| 4,80 | 6,00 | 82 | 44 | 36 | 1 | 16939 | 74,39 |
| 5,00 | 6,00 | 82 | 44 | 36 | 1 | 16945 | 74,39 |
| 5,50 | 6,00 | 82 | 44 | 36 | 1 | 16957 | 74,39 |
| *5,70 | 6,00 | 82 | 44 | 36 | 1 | 16961 | 74,39 |
| 5,80 | 6,00 | 82 | 44 | 36 | 1 | 16962 | 74,39 |
| 6,00 | 6,00 | 82 | 44 | 36 | 1 | 16968 | 74,39 |
| 6,30 | 8,00 | 91 | 53 | 36 | 1 | 17030 | 83,37 |
| 6,50 | 8,00 | 91 | 53 | 36 | 1 | 17039 | 83,37 |
| *6,60 | 8,00 | 91 | 53 | 36 | 1 | 17083 | 83,37 |
| 6,80 | 8,00 | 91 | 53 | 36 | 1 | 17091 | 83,37 |
| *7,00 | 8,00 | 91 | 53 | 36 | 1 | 17104 | 83,37 |
| 7,40 | 8,00 | 91 | 53 | 36 | 1 | 17111 | 83,37 |
| 7,50 | 8,00 | 91 | 53 | 36 | 1 | 17119 | 83,37 |
| 7,80 | 8,00 | 91 | 53 | 36 | 1 | 17143 | 83,37 |
| 8,00 | 8,00 | 91 | 53 | 36 | 1 | 17149 | 83,37 |
| *8,20 | 10,00 | 103 | 61 | 40 | 1 | 17227 | 96,91 |
| *8,30 | 10,00 | 103 | 61 | 40 | 1 | 17228 | 96,91 |
| *8,40 | 10,00 | 103 | 61 | 40 | 1 | 17230 | 96,91 |
| *8,50 | 10,00 | 103 | 61 | 40 | 1 | 17241 | 96,91 |
| 8,80 | 10,00 | 103 | 61 | 40 | 1 | 17275 | 96,91 |
| 9,00 | 10,00 | 103 | 61 | 40 | 1 | 17278 | 96,91 |
| 9,20 | 10,00 | 103 | 61 | 40 | 1 | 17288 | 96,91 |
| *9,40 | 10,00 | 103 | 61 | 40 | 1 | 17297 | 96,91 |
| 9,50 | 10,00 | 103 | 61 | 40 | 1 | 17302 | 96,91 |

| D mm | d mm | L mm | l mm | l2 mm | | Nº Art. ALTIN | € |
|--------|-------|------|------|-------|---|---------------|--------|
| *9,60 | 10,00 | 103 | 61 | 40 | 1 | 17303 | 96,91 |
| *9,70 | 10,00 | 103 | 61 | 40 | 1 | 17306 | 96,91 |
| *9,80 | 10,00 | 103 | 61 | 40 | 1 | 17308 | 96,91 |
| 10,00 | 10,00 | 103 | 61 | 40 | 1 | 17320 | 96,91 |
| *10,20 | 12,00 | 118 | 71 | 45 | 1 | 17321 | 137,97 |
| *10,40 | 12,00 | 118 | 71 | 45 | 1 | 13034 | 137,97 |
| *10,50 | 12,00 | 118 | 71 | 45 | 1 | 17323 | 137,97 |
| *10,60 | 12,00 | 118 | 71 | 45 | 1 | 10841 | 137,97 |
| 10,80 | 12,00 | 118 | 71 | 45 | 1 | 17324 | 137,97 |
| 11,00 | 12,00 | 118 | 71 | 45 | 1 | 17326 | 137,97 |
| *11,10 | 12,00 | 118 | 71 | 45 | 1 | 13035 | 137,97 |
| 11,20 | 12,00 | 118 | 71 | 45 | 1 | 13037 | 137,97 |
| 11,50 | 12,00 | 118 | 71 | 45 | 1 | 17330 | 137,97 |
| 11,80 | 12,00 | 118 | 71 | 45 | 1 | 13038 | 137,97 |
| 12,00 | 12,00 | 118 | 71 | 45 | 1 | 17336 | 137,97 |
| *12,50 | 14,00 | 124 | 77 | 45 | 1 | 17343 | 187,41 |
| 12,70 | 14,00 | 124 | 77 | 45 | 1 | 13040 | 187,41 |
| 12,80 | 14,00 | 124 | 77 | 45 | 1 | 13041 | 187,41 |
| *13,00 | 14,00 | 124 | 77 | 45 | 1 | 17344 | 187,41 |
| 13,50 | 14,00 | 124 | 77 | 45 | 1 | 17346 | 187,41 |
| 14,00 | 14,00 | 124 | 77 | 45 | 1 | 17357 | 187,41 |
| 14,50 | 16,00 | 133 | 83 | 48 | 1 | 17365 | 235,03 |
| 15,00 | 16,00 | 133 | 83 | 48 | 1 | 17371 | 235,03 |
| 15,50 | 16,00 | 133 | 83 | 48 | 1 | 17379 | 235,03 |
| 16,00 | 16,00 | 133 | 83 | 48 | 1 | 17384 | 235,03 |
| 16,50 | 18,00 | 143 | 93 | 48 | 1 | 12984 | 371,07 |
| 17,00 | 18,00 | 143 | 93 | 48 | 1 | 12985 | 371,07 |
| *17,50 | 18,00 | 143 | 93 | 48 | 1 | 12986 | 371,07 |
| *18,00 | 18,00 | 143 | 93 | 48 | 1 | 12987 | 371,07 |
| 18,50 | 20,00 | 153 | 101 | 50 | 1 | 12988 | 405,60 |
| 19,00 | 20,00 | 153 | 101 | 50 | 1 | 12989 | 405,60 |
| 19,50 | 20,00 | 153 | 101 | 50 | 1 | 12990 | 405,60 |
| *20,00 | 20,00 | 153 | 101 | 50 | 1 | 12991 | 405,60 |

*Diámetros bajo demanda *Diameters upon request *Diamètres sur demande

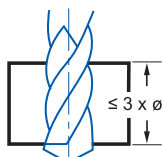
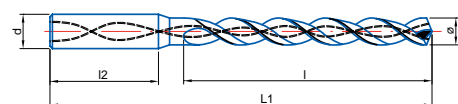
Ref. **8412**

BROCA INTEGRAL METAL DURO REFRIGERACIÓN INTERIOR

Internal Cooling HM Twist Drill
Foret Carbure Trous d'huile



| | | | | | | |
|--------------------------|-------|---------------|------|--|----------------|--------------|
| MD/HM Carbure K30F | ALTIM | DIN 6537 K | 140° | | DIN 6535 HE | HRC 45-55 |
|--------------------------|-------|---------------|------|--|----------------|--------------|



| Material | | Vc* | Avances** mm/rev. Feed** / Pas** | | | | | | |
|----------|------|---------|----------------------------------|-------|-------|-------|-------|-------|-------|
| Grupo | Sub. | ALTIM | Ø 4 | Ø 6 | Ø 8 | Ø 10 | Ø 12 | Ø 14 | Ø 16 |
| 1 | 1.1 | 100-120 | 0,180 | 0,200 | 0,280 | 0,300 | 0,350 | 0,400 | 0,450 |
| 1 | 1.2 | 90-110 | 0,160 | 0,180 | 0,200 | 0,220 | 0,280 | 0,300 | 0,350 |
| 1 | 1.3 | 75-95 | 0,080 | 0,100 | 0,110 | 0,120 | 0,140 | 0,180 | 0,220 |
| 1 | 1.4 | 35-40 | 0,050 | 0,070 | 0,090 | 0,100 | 0,110 | 0,140 | 0,160 |
| 2 | 2.1 | 30-40 | 0,060 | 0,060 | 0,060 | 0,080 | 0,100 | 0,120 | 0,160 |
| | 2.2 | 50-65 | 0,090 | 0,120 | 0,150 | 0,180 | 0,200 | 0,240 | 0,260 |
| 3 | 3.1 | 125-150 | 0,200 | 0,220 | 0,300 | 0,350 | 0,400 | 0,450 | 0,550 |
| | 3.2 | 90-110 | 0,180 | 0,200 | 0,260 | 0,280 | 0,300 | 0,350 | 0,450 |
| 4 | | 35-50 | 0,060 | 0,090 | 0,090 | 0,100 | 0,140 | 0,160 | 0,180 |

Vf (Avance mm/min Feed/Pas) = r.p.m. x f x K

K = Coeficiente corrección segun profundidad taladrado / Correction coefficient depending on drilling depth / Coefficient Correction suivant la profondeur du perçage

*K para/for/pour Vc:
< 3 x Ø => K = 1
< 4 x Ø => K = 0,9
< 5 x Ø => K = 0,8

**K para/for/pour Vf:
< 3 x Ø => K = 1
> 3 x Ø => K = 0,9

$$r.p.m. = \frac{Vc \times 1.000 \times K}{\pi \times \phi}$$

Vc= m/min.



| D mm | d mm | L mm | l mm | l2 mm | | Nº Art. ALTIM | € |
|-------|-------|------|------|-------|---|---------------|-------|
| 3,00 | 6,00 | 62 | 20 | 36 | 1 | 11851 | 69,37 |
| *3,20 | 6,00 | 62 | 20 | 36 | 1 | 11854 | 69,37 |
| 3,30 | 6,00 | 62 | 20 | 36 | 1 | 11856 | 69,37 |
| 3,50 | 6,00 | 62 | 20 | 36 | 1 | 11860 | 69,37 |
| *3,70 | 6,00 | 66 | 24 | 36 | 1 | 11863 | 69,37 |
| 3,80 | 6,00 | 66 | 24 | 36 | 1 | 11866 | 69,37 |
| 4,00 | 6,00 | 66 | 24 | 36 | 1 | 11868 | 69,37 |
| 4,20 | 6,00 | 66 | 24 | 36 | 1 | 11869 | 69,37 |
| 4,50 | 6,00 | 66 | 24 | 36 | 1 | 11878 | 69,37 |
| *4,60 | 6,00 | 66 | 24 | 36 | 1 | 11881 | 69,37 |
| 4,80 | 6,00 | 66 | 28 | 36 | 1 | 11884 | 69,37 |
| 5,00 | 6,00 | 66 | 28 | 36 | 1 | 11887 | 69,37 |
| *5,30 | 6,00 | 66 | 28 | 36 | 1 | 11899 | 69,37 |
| 5,50 | 6,00 | 66 | 28 | 36 | 1 | 11904 | 69,37 |
| *5,70 | 6,00 | 66 | 28 | 36 | 1 | 11905 | 69,37 |
| 5,80 | 6,00 | 66 | 28 | 36 | 1 | 11908 | 69,37 |
| 6,00 | 6,00 | 66 | 28 | 36 | 1 | 11923 | 69,37 |
| 6,30 | 8,00 | 79 | 34 | 36 | 1 | 11932 | 82,32 |
| *6,40 | 8,00 | 79 | 34 | 36 | 1 | 11933 | 82,32 |
| 6,50 | 8,00 | 79 | 34 | 36 | 1 | 11934 | 82,32 |
| *6,60 | 8,00 | 79 | 34 | 36 | 1 | 11937 | 82,32 |
| 6,80 | 8,00 | 79 | 34 | 36 | 1 | 11941 | 82,32 |
| *6,90 | 8,00 | 79 | 34 | 36 | 1 | 11944 | 82,32 |
| 7,00 | 8,00 | 79 | 34 | 36 | 1 | 11946 | 82,32 |
| 7,40 | 8,00 | 79 | 41 | 36 | 1 | 11952 | 82,32 |
| 7,50 | 8,00 | 79 | 41 | 36 | 1 | 11955 | 82,32 |
| 7,80 | 8,00 | 79 | 41 | 36 | 1 | 11956 | 82,32 |
| 8,00 | 8,00 | 79 | 41 | 36 | 1 | 11961 | 82,32 |
| *8,20 | 10,00 | 89 | 47 | 40 | 1 | 11964 | 91,81 |
| *8,30 | 10,00 | 89 | 47 | 40 | 1 | 11969 | 91,81 |
| *8,40 | 10,00 | 89 | 47 | 40 | 1 | 11973 | 91,81 |
| 8,50 | 10,00 | 89 | 47 | 40 | 1 | 11976 | 91,81 |
| *8,60 | 10,00 | 89 | 47 | 40 | 1 | 11977 | 91,81 |
| 8,80 | 10,00 | 89 | 47 | 40 | 1 | 11982 | 91,81 |
| 9,00 | 10,00 | 89 | 47 | 40 | 1 | 11995 | 91,81 |
| 9,20 | 10,00 | 89 | 47 | 40 | 1 | 11998 | 91,81 |

| D mm | d mm | L mm | l mm | l2 mm | | Nº Art. ALTIM | € |
|--------|-------|------|------|-------|---|---------------|--------|
| 9,50 | 10,00 | 89 | 47 | 40 | 1 | 12007 | 91,81 |
| *9,60 | 10,00 | 89 | 47 | 40 | 1 | 12009 | 91,81 |
| *9,70 | 10,00 | 89 | 47 | 40 | 1 | 12010 | 91,81 |
| *9,80 | 10,00 | 89 | 47 | 40 | 1 | 12094 | 91,81 |
| 10,00 | 10,00 | 89 | 47 | 40 | 1 | 12097 | 91,81 |
| *10,20 | 12,00 | 102 | 55 | 45 | 1 | 12103 | 131,45 |
| *10,40 | 12,00 | 102 | 55 | 45 | 1 | 12106 | 131,45 |
| 10,50 | 12,00 | 102 | 55 | 45 | 1 | 12110 | 131,45 |
| *10,60 | 12,00 | 102 | 55 | 45 | 1 | 12114 | 131,45 |
| 10,80 | 12,00 | 102 | 55 | 45 | 1 | 12118 | 131,45 |
| 11,00 | 12,00 | 102 | 55 | 45 | 1 | 12121 | 131,45 |
| *11,10 | 12,00 | 102 | 55 | 45 | 1 | 12124 | 131,45 |
| 11,20 | 12,00 | 102 | 55 | 45 | 1 | 12127 | 131,45 |
| 11,50 | 12,00 | 102 | 55 | 45 | 1 | 12130 | 131,45 |
| 11,80 | 12,00 | 102 | 55 | 45 | 1 | 12132 | 131,45 |
| 12,00 | 12,00 | 102 | 55 | 45 | 1 | 12133 | 131,45 |
| 12,50 | 14,00 | 107 | 60 | 45 | 1 | 12142 | 182,61 |
| *12,70 | 14,00 | 107 | 60 | 45 | 1 | 12145 | 182,61 |
| 12,80 | 14,00 | 107 | 60 | 45 | 1 | 12146 | 182,61 |
| 13,00 | 14,00 | 107 | 60 | 45 | 1 | 12149 | 182,61 |
| 13,50 | 14,00 | 107 | 60 | 45 | 1 | 12152 | 182,61 |
| 14,00 | 14,00 | 107 | 60 | 45 | 1 | 12166 | 182,61 |
| 14,50 | 16,00 | 115 | 65 | 48 | 1 | 12169 | 226,07 |
| 15,00 | 16,00 | 115 | 65 | 48 | 1 | 12172 | 226,07 |
| 15,50 | 16,00 | 115 | 65 | 48 | 1 | 12175 | 226,07 |
| 16,00 | 16,00 | 115 | 65 | 48 | 1 | 12178 | 226,07 |
| 16,50 | 18,00 | 123 | 73 | 48 | 1 | 12181 | 351,46 |
| 17,00 | 18,00 | 123 | 73 | 48 | 1 | 12184 | 351,46 |
| 17,50 | 18,00 | 123 | 73 | 48 | 1 | 12187 | 351,46 |
| 18,00 | 18,00 | 123 | 73 | 48 | 1 | 12190 | 351,46 |
| 18,50 | 20,00 | 131 | 79 | 50 | 1 | 12193 | 385,36 |
| 19,00 | 20,00 | 131 | 79 | 50 | 1 | 12196 | 385,36 |
| 19,50 | 20,00 | 131 | 79 | 50 | 1 | 12199 | 385,36 |
| 20,00 | 20,00 | 131 | 79 | 50 | 1 | 12202 | 385,36 |

*Diámetros bajo demanda *Diameters upon request *Diamètres sur demande

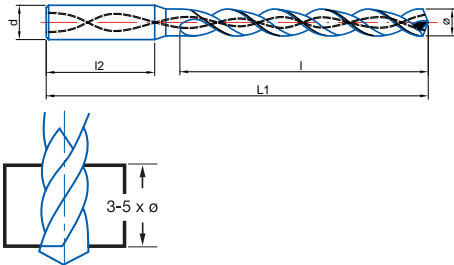
Ref. **8417**

BROCA INTEGRAL METAL DURO REFRIGERACIÓN INTERIOR

Internal Cooling HM Twist Drill
Foret Carbure Trous d'huile



| | | | | | | | | |
|--------------------------|-------|---------------|------|--|--|----|----------------|--------------|
| MD/HM Carbure K30F | ALTIN | DIN 6537 L | 140° | | | 2Z | DIN 6535 HE | HRC 45-55 |
|--------------------------|-------|---------------|------|--|--|----|----------------|--------------|



| Material | | Vc* | Avances** mm/rev. Feed** / Pas** | | | | | | |
|----------|------|---------|----------------------------------|-------|-------|-------|-------|-------|-------|
| Grupo | Sub. | ALTIN | Ø 4 | Ø 6 | Ø 8 | Ø 10 | Ø 12 | Ø 14 | Ø 16 |
| 1 | 1.1 | 100-120 | 0,180 | 0,200 | 0,280 | 0,300 | 0,350 | 0,400 | 0,450 |
| 1 | 1.2 | 90-110 | 0,160 | 0,180 | 0,200 | 0,220 | 0,280 | 0,300 | 0,350 |
| 1 | 1.3 | 75-95 | 0,080 | 0,100 | 0,110 | 0,120 | 0,140 | 0,180 | 0,220 |
| 1 | 1.4 | 35-40 | 0,050 | 0,070 | 0,090 | 0,100 | 0,110 | 0,140 | 0,160 |
| 2 | 2.1 | 30-40 | 0,060 | 0,060 | 0,060 | 0,080 | 0,100 | 0,120 | 0,160 |
| | 2.2 | 50-65 | 0,090 | 0,120 | 0,150 | 0,180 | 0,200 | 0,240 | 0,260 |
| 3 | 3.1 | 125-150 | 0,200 | 0,220 | 0,300 | 0,350 | 0,400 | 0,450 | 0,550 |
| | 3.2 | 90-110 | 0,180 | 0,200 | 0,260 | 0,280 | 0,300 | 0,350 | 0,450 |
| 4 | | 35-50 | 0,060 | 0,090 | 0,090 | 0,100 | 0,140 | 0,160 | 0,180 |

Vf (Avance mm/min Feed/Pas) = r.p.m. x f x K

K = Coeficiente corrección según profundidad taladrado / Correction coefficient depending on drilling depth / Coefficient Correction suivant la profondeur du perçage

*K para/for/pour Vc:

- < 3 x Ø => K = 1
- < 4 x Ø => K = 0,9
- < 5 x Ø => K = 0,8

**K para/for/pour Vf:

- < 3 x Ø => K = 1
- > 3 x Ø => K = 0,9

$$r.p.m. = \frac{Vc \times 1.000 \times K}{\pi \times \phi}$$

Vc = m/min.



| D mm | d mm | L mm | l mm | l2 mm | | Nº Art. ALTIN | € |
|---------|---------|---------|---------|----------|---|------------------|--------|
| 3,00 | 6,00 | 66 | 28 | 36 | 1 | 10762 | 77,98 |
| *3,20 | 6,00 | 66 | 28 | 36 | 1 | 10765 | 77,98 |
| 3,30 | 6,00 | 66 | 28 | 36 | 1 | 10768 | 77,98 |
| 3,50 | 6,00 | 66 | 28 | 36 | 1 | 12208 | 77,98 |
| *3,70 | 6,00 | 74 | 36 | 36 | 1 | 12211 | 77,98 |
| 3,80 | 6,00 | 74 | 36 | 36 | 1 | 12214 | 77,98 |
| 4,00 | 6,00 | 74 | 36 | 36 | 1 | 12220 | 77,98 |
| 4,20 | 6,00 | 74 | 36 | 36 | 1 | 12223 | 77,98 |
| 4,50 | 6,00 | 74 | 44 | 36 | 1 | 12229 | 77,98 |
| *4,60 | 6,00 | 74 | 44 | 36 | 1 | 12232 | 77,98 |
| 4,80 | 6,00 | 82 | 44 | 36 | 1 | 12235 | 77,98 |
| 5,00 | 6,00 | 82 | 44 | 36 | 1 | 12238 | 77,98 |
| *5,30 | 6,00 | 82 | 44 | 36 | 1 | 12247 | 77,98 |
| 5,50 | 6,00 | 82 | 44 | 36 | 1 | 12250 | 77,98 |
| *5,70 | 6,00 | 82 | 44 | 36 | 1 | 12253 | 77,98 |
| 5,80 | 6,00 | 82 | 44 | 36 | 1 | 12256 | 77,98 |
| 6,00 | 6,00 | 82 | 44 | 36 | 1 | 12259 | 77,98 |
| 6,30 | 8,00 | 91 | 53 | 36 | 1 | 12265 | 86,94 |
| *6,40 | 8,00 | 91 | 53 | 36 | 1 | 12268 | 86,94 |
| 6,50 | 8,00 | 91 | 53 | 36 | 1 | 12274 | 86,94 |
| *6,60 | 8,00 | 91 | 53 | 36 | 1 | 12277 | 86,94 |
| 6,80 | 8,00 | 91 | 53 | 36 | 1 | 12283 | 86,94 |
| *6,90 | 8,00 | 91 | 53 | 36 | 1 | 12289 | 86,94 |
| 7,00 | 8,00 | 91 | 53 | 36 | 1 | 12292 | 86,94 |
| *7,40 | 8,00 | 91 | 53 | 36 | 1 | 12298 | 86,94 |
| 7,50 | 8,00 | 91 | 53 | 36 | 1 | 12301 | 86,94 |
| 7,80 | 8,00 | 91 | 53 | 36 | 1 | 12600 | 86,94 |
| 8,00 | 8,00 | 91 | 53 | 36 | 1 | 12602 | 86,94 |
| *8,20 | 10,00 | 103 | 61 | 40 | 1 | 12604 | 102,29 |
| *8,30 | 10,00 | 103 | 61 | 40 | 1 | 12605 | 102,29 |
| *8,40 | 10,00 | 103 | 61 | 40 | 1 | 12606 | 102,29 |
| 8,50 | 10,00 | 103 | 61 | 40 | 1 | 12607 | 102,29 |
| 8,80 | 10,00 | 103 | 61 | 40 | 1 | 12610 | 102,29 |
| 9,00 | 10,00 | 103 | 61 | 40 | 1 | 12612 | 102,29 |
| 9,20 | 10,00 | 103 | 61 | 40 | 1 | 12613 | 102,29 |
| *9,40 | 10,00 | 103 | 61 | 40 | 1 | 12615 | 102,29 |

| D mm | d mm | L mm | l mm | l2 mm | | Nº Art. ALTIN | € |
|---------|---------|---------|---------|----------|---|------------------|--------|
| 9,50 | 10,00 | 103 | 61 | 40 | 1 | 12616 | 102,29 |
| *9,60 | 10,00 | 103 | 61 | 40 | 1 | 12617 | 102,29 |
| *9,70 | 10,00 | 103 | 61 | 40 | 1 | 12618 | 102,29 |
| 9,80 | 10,00 | 103 | 61 | 40 | 1 | 12619 | 102,29 |
| 10,00 | 12,00 | 118 | 71 | 45 | 1 | 12620 | 102,29 |
| *10,20 | 12,00 | 118 | 71 | 45 | 1 | 12622 | 143,36 |
| *10,40 | 12,00 | 118 | 71 | 45 | 1 | 12623 | 143,36 |
| 10,50 | 12,00 | 118 | 71 | 45 | 1 | 12624 | 143,36 |
| *10,60 | 12,00 | 118 | 71 | 45 | 1 | 12625 | 143,36 |
| 10,80 | 12,00 | 118 | 71 | 45 | 1 | 12627 | 143,36 |
| 11,00 | 12,00 | 118 | 71 | 45 | 1 | 12628 | 143,36 |
| *11,10 | 12,00 | 118 | 71 | 45 | 1 | 12629 | 143,36 |
| *11,20 | 12,00 | 118 | 71 | 45 | 1 | 12631 | 143,36 |
| 11,50 | 12,00 | 118 | 71 | 45 | 1 | 12634 | 143,36 |
| *11,80 | 12,00 | 118 | 71 | 45 | 1 | 12641 | 143,36 |
| 12,00 | 12,00 | 118 | 71 | 45 | 1 | 12652 | 143,36 |
| 12,50 | 14,00 | 124 | 77 | 45 | 1 | 12658 | 196,38 |
| *12,70 | 14,00 | 124 | 77 | 45 | 1 | 12662 | 196,38 |
| 12,80 | 14,00 | 124 | 77 | 45 | 1 | 12664 | 196,38 |
| 13,00 | 14,00 | 124 | 77 | 45 | 1 | 12665 | 196,38 |
| 13,50 | 14,00 | 124 | 77 | 45 | 1 | 12683 | 196,38 |
| 14,00 | 14,00 | 124 | 77 | 45 | 1 | 12685 | 196,38 |
| 14,50 | 16,00 | 133 | 83 | 48 | 1 | 12687 | 244,00 |
| 15,00 | 16,00 | 133 | 83 | 48 | 1 | 12703 | 244,00 |
| 15,50 | 16,00 | 133 | 83 | 48 | 1 | 12710 | 244,00 |
| 16,00 | 16,00 | 133 | 83 | 48 | 1 | 12714 | 244,00 |
| *16,50 | 18,00 | 143 | 93 | 48 | 1 | 12715 | 379,72 |
| 17,00 | 18,00 | 143 | 93 | 48 | 1 | 12716 | 379,72 |
| 17,50 | 18,00 | 143 | 93 | 48 | 1 | 12719 | 379,72 |
| 18,00 | 18,00 | 143 | 93 | 48 | 1 | 12722 | 379,72 |
| 18,50 | 20,00 | 153 | 101 | 50 | 1 | 12724 | 414,26 |
| 19,00 | 20,00 | 153 | 101 | 50 | 1 | 12728 | 414,26 |
| 19,50 | 20,00 | 153 | 101 | 50 | 1 | 12733 | 414,26 |
| 20,00 | 20,00 | 153 | 101 | 50 | 1 | 12765 | 414,26 |

*Diámetros bajo demanda *Diameters upon request *Diamètres sur demande