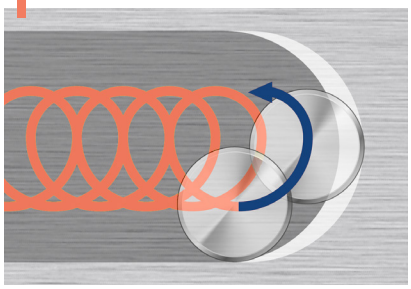
HAGRO
precisie bv



**Nu ook snijlengtes van 2xD en 4xD!**

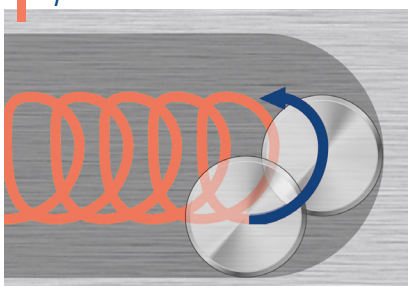
# SCT Trochoïdaal frezen

## Trochoïdaal frezen



- Zeer sterke allround frezen
- 37-38˚ helix geometrie voor bewerking van verschillende soorten staal verkrijgbaar met een cilindrische of weldon schacht
- Korte spanen, zodat met de volledige snijlengte ook hoge snelheden mogelijk zijn
- Ongelijke spiraalhoek met hoekradius of fase, vrijgelegd en met geavanceerde coating geschikt voor staal en gehard staal (<60HRC)
- Constantere verspaancondities waardoor het verspanend volume met 30% tot 300% kan worden verhoogd
- Frezen zijn voorzien van spaanbrekers, zo word de spaan kort en makkelijk afgevoerd

## Dynamisch frezen



| Materiaal | | Trekvastheid | Hardheid | Vc min. | Vc opt. | Vc max. |
|---|---|---|---|---|---|---|
| P | Regulier staal | < 600 | < 230 | 180 | 210 | 240 |
| | Gelegeerd staal | < 1200 | < 350 | 150 | 175 | 200 |
| | Hooggelegeerd staal /gereedschapstaal | < 1400 | < 380 | 100 | 120 | 140 |
| H | Gehard staal | - | < 54 HRC | 90 | 120 | 150 |
| | Gehard staal | - | 52-60 HRC | 70 | 100 | 130 |

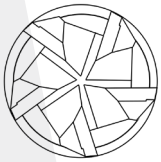
**Gemiddelde spaandikte berekenen?**

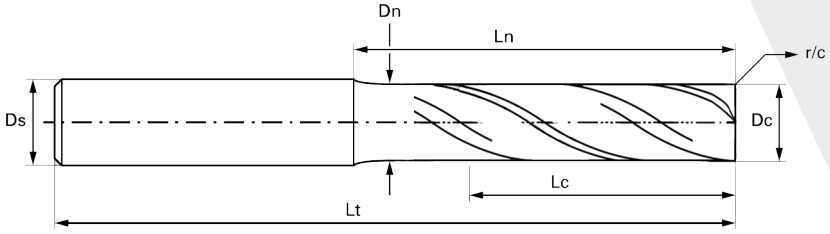
$h_m$ Spaandikte (mm)
$f_z$ Voeding (mm)
Ae Breedte van verspaning
Dc Snijdiameter

$$h_m = f_z \times \sqrt{\frac{Ae}{Dc}} [mm]$$

# Basic Line+

## 5-snijder VHM frees 37°-38° helix AlCrN






### 2XD

| DIN 6535 HA | DIN 6535 HB | Dc | Ds | Lc | Ln | Dn | Lt | c [45°] | Prijs excl. | Ap [max] | Ae1 [0.15xD] | Ae2 [0.25xD] | fz1 | fz2 | hm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BLC5L03038VN | BLW5L03038VN | 3.0 | 6 | 6 | 14 | 2.8 | 57 | 0.06 | **€ 18.27** | 6.0 | 0.5 | 0.8 | 0.027 | 0.020 | 0.011 |
| BLC5L04038VN | BLW5L04038VN | 4.0 | 6 | 8 | 16 | 3.8 | 57 | 0.08 | **€ 18.27** | 8.0 | 0.6 | 1.0 | 0.036 | 0.027 | 0.014 |
| BLC5L05038VN | BLW5L05038VN | 5.0 | 6 | 10 | 18 | 4.8 | 57 | 0.10 | **€ 18.27** | 10.0 | 0.8 | 1.3 | 0.045 | 0.033 | 0.018 |
| BLC5L06038VN | BLW5L06038VN | 6.0 | 6 | 12 | 19 | 5.7 | 57 | 0.12 | **€ 18.27** | 12.0 | 0.9 | 1.5 | 0.054 | 0.040 | 0.020 |
| BLC5L08038VN | BLW5L08038VN | 8.0 | 8 | 16 | 25 | 7.6 | 63 | 0.16 | **€ 23.66** | 16.0 | 1.2 | 2.0 | 0.072 | 0.054 | 0.027 |
| BLC5L10038VN | BLW5L10038VN | 10.0 | 10 | 20 | 30 | 9.5 | 72 | 0.20 | **€ 34.83** | 20.0 | 1.5 | 2.5 | 0.090 | 0.067 | 0.034 |
| BLC5L12038VN | BLW5L12038VN | 12.0 | 12 | 24 | 36 | 11.5 | 83 | 0.24 | **€ 46.08** | 24.0 | 1.8 | 3.0 | 0.108 | 0.081 | 0.041 |
| BLC5L14038VN | BLW5L14038VN | 14.0 | 14 | 28 | 36 | 13.5 | 83 | 0.28 | **€ 62.73** | 28.0 | 2.1 | 3.5 | 0.126 | 0.094 | 0.048 |
| BLC5L16038VN | BLW5L16038VN | 16.0 | 16 | 32 | 42 | 15.5 | 92 | 0.32 | **€ 81.99** | 32.0 | 2.4 | 4.0 | 0.144 | 0.107 | 0.055 |
| BLC5L18038VN | BLW5L18038VN | 18.0 | 18 | 36 | 42 | 17.5 | 92 | 0.36 | **€ 104.19** | 36.0 | 2.7 | 4.5 | 0.162 | 0.121 | 0.061 |
| BLC5L20038VN | BLW5L20038VN | 20.0 | 20 | 40 | 52 | 19.5 | 104 | 0.40 | **€ 126.26** | 40.0 | 3.0 | 5.0 | 0.179 | 0.134 | 0.068 |
| BLC5L25038VN | BLW5L25038VN | 25.0 | 25 | 50 | 62 | 24.0 | 120 | 0.50 | **€ 226.83** | 50.0 | 3.8 | 6.3 | 0.224 | 0.168 | 0.086 |



Ook leverbaar met een radius 0.5 - 3.0

### 3XD

| DIN 6535 HA | DIN 6535 HB | Dc | Ds | Lc | Ln | Dn | Lt | c [45°] | Prijs excl. | Ap [max] | Ae1 [0.1xD] | Ae2 [0.2xD] | fz1 | fz2 | hm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BLC5X03038VN | BLW5X03038VN | 3.0 | 6 | 9 | 14 | 2.8 | 62 | 0.06 | **€ 19.70** | 9.0 | 0.3 | 0.6 | 0.033 | 0.023 | 0.010 |
| BLC5X04038VN | BLW5X04038VN | 4.0 | 6 | 12 | 18 | 3.8 | 62 | 0.08 | **€ 19.70** | 12.0 | 0.4 | 0.8 | 0.044 | 0.030 | 0.014 |
| BLC5X05038VN | BLW5X05038VN | 5.0 | 6 | 15 | 21 | 4.8 | 62 | 0.10 | **€ 19.70** | 15.0 | 0.5 | 1.0 | 0.055 | 0.038 | 0.017 |
| BLC5X06038VN | BLW5X06038VN | 6.0 | 6 | 18 | 24 | 5.7 | 62 | 0.12 | **€ 19.70** | 18.0 | 0.6 | 1.2 | 0.066 | 0.045 | 0.020 |
| BLC5X08038VN | BLW5X08038VN | 8.0 | 8 | 24 | 30 | 7.6 | 68 | 0.16 | **€ 25.20** | 24.0 | 0.8 | 1.6 | 0.088 | 0.060 | 0.027 |
| BLC5X10038VN | BLW5X10038VN | 10.0 | 10 | 30 | 38 | 9.5 | 80 | 0.20 | **€ 37.28** | 30.0 | 1.0 | 2.0 | 0.110 | 0.075 | 0.034 |
| BLC5X12038VN | BLW5X12038VN | 12.0 | 12 | 36 | 46 | 11.5 | 93 | 0.24 | **€ 49.74** | 36.0 | 1.2 | 2.4 | 0.132 | 0.090 | 0.041 |
| BLC5X14038VN | BLW5X14038VN | 14.0 | 14 | 42 | 50 | 13.5 | 100 | 0.28 | **€ 67.55** | 42.0 | 1.4 | 2.8 | 0.154 | 0.105 | 0.048 |
| BLC5X16038VN | BLW5X16038VN | 16.0 | 16 | 48 | 58 | 15.5 | 108 | 0.32 | **€ 92.57** | 48.0 | 1.6 | 3.2 | 0.176 | 0.120 | 0.055 |
| BLC5X18038VN | BLW5X18038VN | 18.0 | 18 | 54 | 67 | 17.5 | 115 | 0.36 | **€ 118.19** | 54.0 | 1.8 | 3.6 | 0.198 | 0.135 | 0.061 |
| BLC5X20038VN | BLW5X20038VN | 20.0 | 20 | 60 | 74 | 19.5 | 126 | 0.40 | **€ 143.36** | 60.0 | 2.0 | 4.0 | 0.220 | 0.150 | 0.068 |
| BLC5X25038VN | BLW5X25038VN | 25.0 | 25 | 75 | 92 | 24.0 | 150 | 0.50 | **€ 245.84** | 75.0 | 2.5 | 5.0 | 0.275 | 0.188 | 0.086 |



Ook leverbaar met een radius 0.5 - 3.0

### 4XD

| DIN 6535 HA | DIN 6535 HB | Dc | Ds | Lc | Ln | Dn | Lt | c [45°] | Prijs excl. | Ap [max] | Ae1 [0.05xD] | Ae2 [0.15xD] | fz1 | fz2 | hm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BLC5X03038XVN | BLW5X03038XVN | 3.0 | 6 | 12 | 18 | 2.8 | 62 | 0.06 | **€ 26.99** | 12.0 | 0.2 | 0.5 | 0.047 | 0.026 | 0.011 |
| BLC5X04038XVN | BLW5X04038XVN | 4.0 | 6 | 16 | 21 | 3.8 | 62 | 0.08 | **€ 26.99** | 16.0 | 0.2 | 0.6 | 0.060 | 0.033 | 0.013 |
| BLC5X05038XVN | BLW5X05038XVN | 5.0 | 6 | 20 | 25 | 4.8 | 70 | 0.10 | **€ 26.99** | 20.0 | 0.3 | 0.8 | 0.078 | 0.043 | 0.018 |
| BLC5X06038XVN | BLW5X06038XVN | 6.0 | 6 | 24 | 30 | 5.7 | 70 | 0.12 | **€ 26.99** | 24.0 | 0.3 | 0.9 | 0.094 | 0.052 | 0.021 |
| BLC5X08038XVN | BLW5X08038XVN | 8.0 | 8 | 32 | 38 | 7.6 | 80 | 0.16 | **€ 35.43** | 32.0 | 0.4 | 1.2 | 0.124 | 0.070 | 0.027 |
| BLC5X10038XVN | BLW5X10038XVN | 10.0 | 10 | 40 | 48 | 9.5 | 90 | 0.20 | **€ 51.74** | 40.0 | 0.5 | 1.5 | 0.155 | 0.086 | 0.034 |
| BLC5X12038XVN | BLW5X12038XVN | 12.0 | 12 | 48 | 58 | 11.5 | 110 | 0.24 | **€ 69.00** | 48.0 | 0.6 | 1.8 | 0.185 | 0.103 | 0.041 |
| BLC5X14038XVN | BLW5X14038XVN | 14.0 | 14 | 56 | 64 | 13.5 | 110 | 0.28 | **€ 87.90** | 56.0 | 0.7 | 2.1 | 0.219 | 0.122 | 0.048 |
| BLC5X16038XVN | BLW5X16038XVN | 16.0 | 16 | 64 | 74 | 15.5 | 130 | 0.32 | **€ 123.03** | 64.0 | 0.8 | 2.4 | 0.249 | 0.139 | 0.055 |
| BLC5X18038XVN | BLW5X18038XVN | 18.0 | 18 | 72 | 85 | 17.5 | 140 | 0.36 | **€ 146.27** | 72.0 | 0.9 | 2.7 | 0.279 | 0.155 | 0.061 |
| BLC5X20038XVN | BLW5X20038XVN | 20.0 | 20 | 80 | 94 | 19.5 | 150 | 0.40 | **€ 186.54** | 80.0 | 1.0 | 3.0 | 0.309 | 0.173 | 0.068 |
| BLC5X25038XVN | BLW5X25038XVN | 25.0 | 25 | 100 | 117 | 24.0 | 180 | 0.50 | **€ 296.49** | 100.0 | 1.3 | 3.8 | 0.387 | 0.216 | 0.086 |



Ook leverbaar met een radius 0.5 - 3.0

## Wat is trochoïdaal frezen?

Door de beweging van de tafelvoeding te combineren met een cirkelvormig freespad, worden de verspaningscondities bij het frezen positief beïnvloed, vooral bij het in- en uittreden van de frees. Doordat men hierbij met een kleinere snedebreedte (Ae), maar tegelijkertijd wél met de complete snijlengte van de frees werkt, worden de krachten die bij het verspaningsproces optreden fors gereduceerd én beter verdeeld. Meer verspanend volume en minder slijtage dus.

Prijzen excl. BTW geldig tot 31 december 2020