

# NUTFRÄSER GROOVING CUTTERS

|                             |                                |           |
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## Bestimmung der Zähnezahl

Folgendes Nomogramm ermöglicht die Bestimmung der Zähnezahl eines Fräs-  
werkzeuges aus:

- Drehzahl der Spindel  $n$  ( $\text{min}^{-1}$ )
- Werkstückvorschub  $s$  ( $\text{m} \cdot \text{min}^{-1}$ )
- Zahnvorschub  $f_z$  (mm)

Es gelten folgende Richtwerte:

- 0,3 bis 0,8 mm Feinschlichtspan
- 0,8 bis 2,5 mm Schlichtspan
- 2,5 bis 5,0 mm Schruppspan
- In der Praxis liegt das Optimum bei einem  $f_z$ -Wert zwischen 0,3 bis 0,8 mm

- Beispiel:
- $f_z = 0,8$  gefordert
- Drehzahl:  $n = 9.000 \text{ min}^{-1}$
- Vorschub:  $s = 20 \text{ m} \cdot \text{min}^{-1}$
- Zähnezahl: ?
- Aus Nomogramm  $Z = 3$

## Determination of Number of Teeth

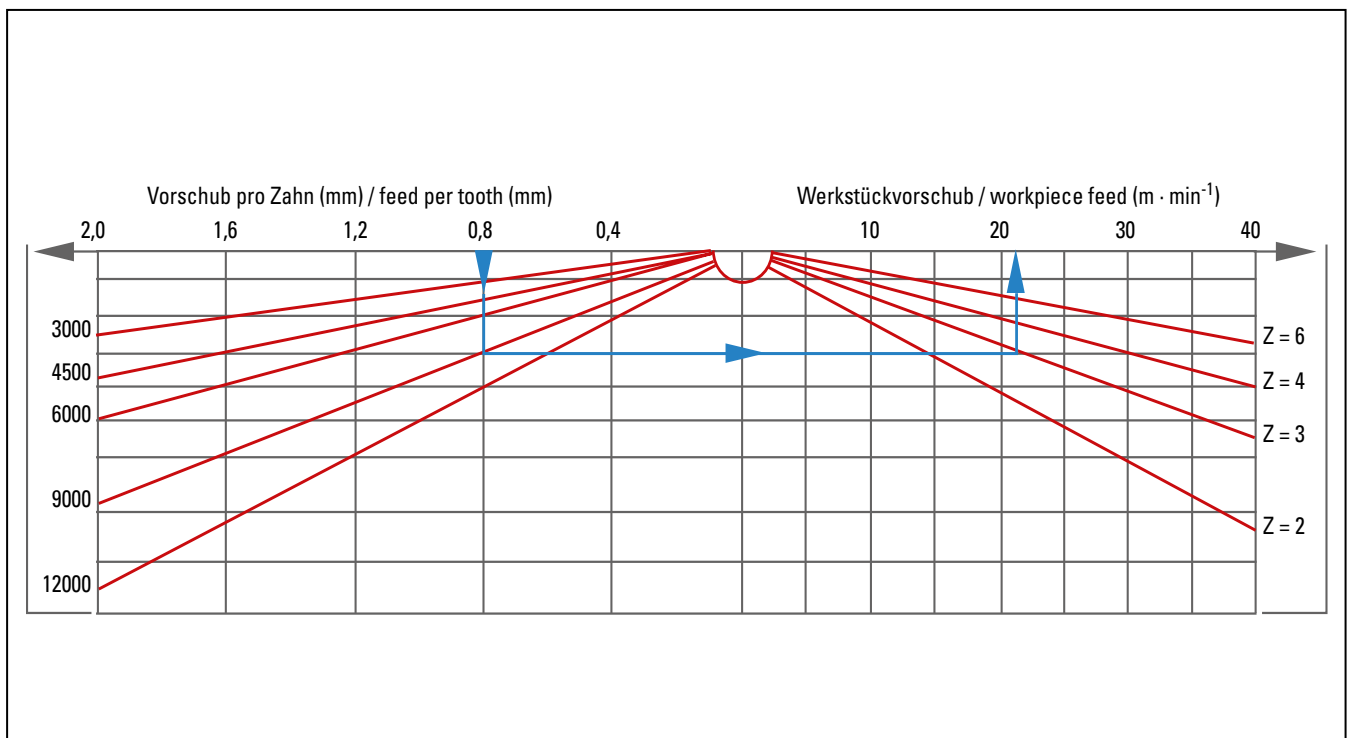
The table below indicates the required-  
number of teeth,  $Z$ , for a cutterhead  
according to:

- Rotation speed,  $n$  ( $\text{min}^{-1}$ )
- Feed rate,  $s$  ( $\text{m} \cdot \text{min}^{-1}$ )
- Tooth progress,  $f_z$  (mm)

The following are suggested values for  $f_z$ :

- 0.3 to 0.8 mm fine
- 0.8 to 2.5 mm smooth
- 2.5 to 5.0 mm coarse
- The best finish is obtained when a tooth progress of between 0.3 and 0.8 mm is achieved

- Example:
- $f_z = 0.8$  required
- Rotation speed,  $n = 9000 \text{ min}^{-1}$
- Feed rate,  $s = 20 \text{ m} \cdot \text{min}^{-1}$
- Number of teeth,  $Z = ?$
- From the table we obtain  $Z = 3$



## Bestimmung der Schnittgeschwindigkeit

- Die Schnittgeschwindigkeit resultiert aus dem Werkzeugdurchmesser und der Umdrehungszahl der Werkzeugspindel
- In jedes Werkzeug ist die höchstzulässige Drehzahl mit „n max.“ eingraviert
- Diese maximale Drehzahl ist nicht mit der zerspanungstechnisch optimalen Drehzahl gleichzusetzen
- Das Optimum liegt etwa 20 – 30% niedriger als die höchstzulässige Drehzahl

$$v_c = \frac{D \times \pi \times n}{60} = m \cdot s^{-1}$$

• Beispiel:

- D = 0,14 m
- d = 8000 min<sup>-1</sup>
- v<sub>c</sub> = ?
- Aus Nomogramm v<sub>c</sub> = 58,6 m · sek<sup>-1</sup>

- In Abhängigkeit des Werkzeugdurchmessers ist die optimale Drehzahl entsprechend unten dargestellter Tabelle zu ermitteln

### Beispiel:

- Fräserdurchmesser D = 140 mm optimale Drehzahl zwischen n = 5500 – 9000 min<sup>-1</sup>.

## Determination of Rim Speed

- The rim speed can be calculated when the diameter of the tool and rotational speed are known
- The maximum permitted rotational speed, „n max.“, of each tool is etched on the tool body
- This is not the optimum speed, but the maximum safe operating speed which must not be exceeded
- As a rule, the optimum speed is 20% – 30% below the maximum speed

$$v_c = \frac{D \times \pi \times n}{60} = m \cdot s^{-1}$$

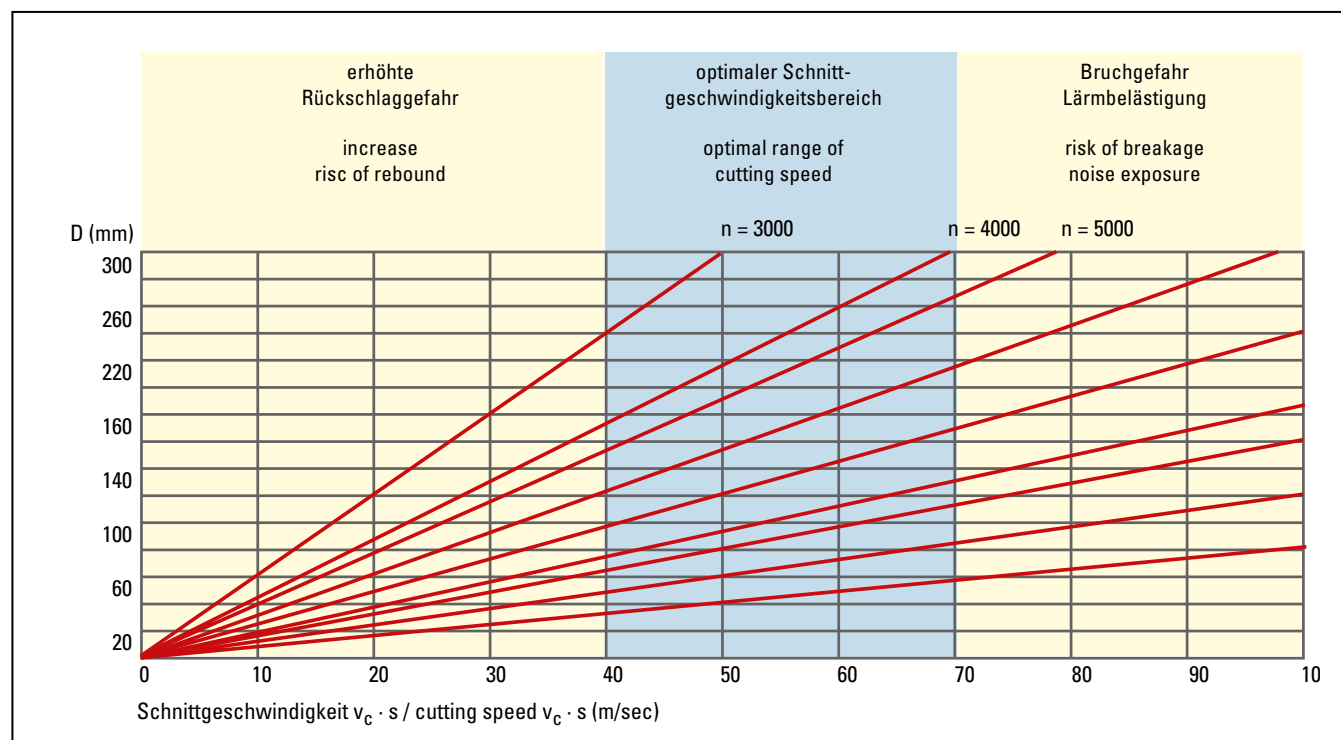
• Example:

- D = 0,14 m
- d = 8000 min<sup>-1</sup>
- v<sub>c</sub> = ?
- From the table we obtain v<sub>c</sub> = 58,6 m · sek<sup>-1</sup>

- In relation to tool diameter, D, the optimum rotational speed can be obtained from the table

### Example:

- Cutter diameter D = 140 mm optimum rotational speed range n = 5500 – 9000 min<sup>-1</sup>



## Bestimmung des Minstdurchmessers

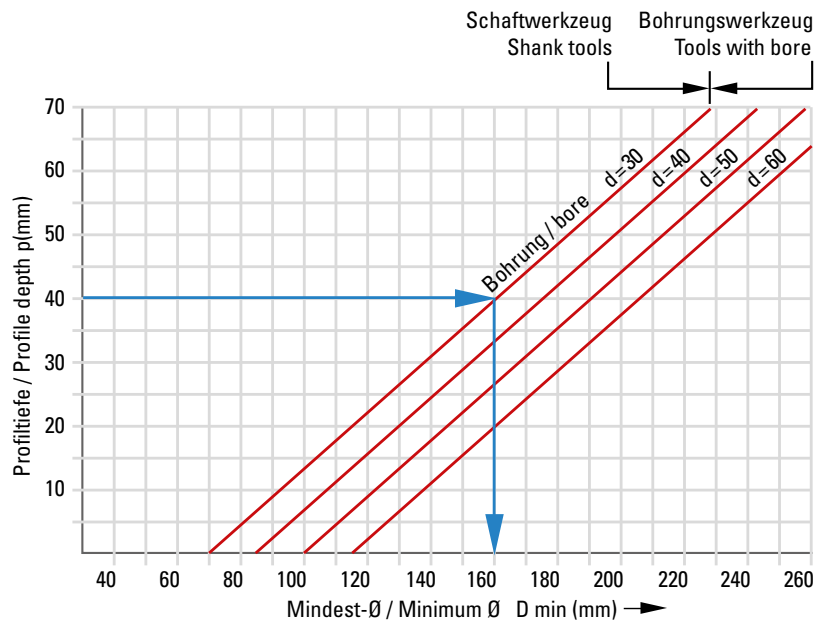
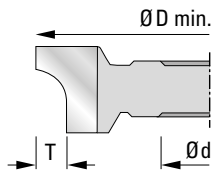
- Der Minstdurchmesser eines Fräswerkzeuges kann den folgenden Nomogrammen im Sinne der VBG 7 j entnommen werden, sie sagen jedoch nichts über die Anzahl der Werkzeugschneiden, des Vorschubs und der Schnittgeschwindigkeit aus

## Determination of Minimum Diameter

- The minimum safe cutting diameter of a tool is determined within the meaning of VBG 7 (Federal German Industrial Law), and can be calculated from the following tables. No consideration is taken of the number of knives, feed rate or cutting speed

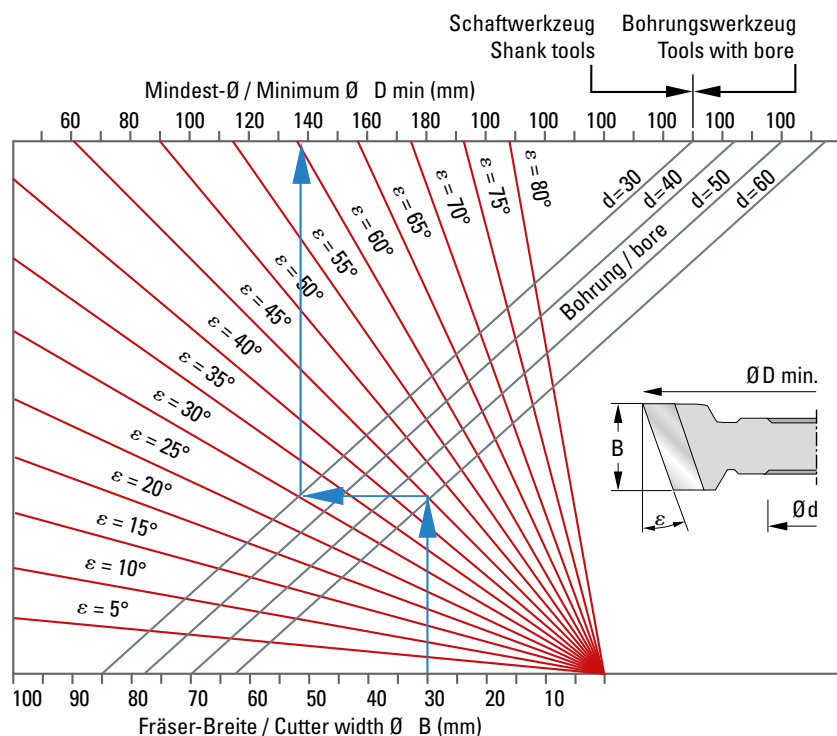
- Ermittlung des Mindest-Durchmessers  $D_{min.}$  bei Profilfräsern im Zusammenhang mit der Profiltiefe  $T$  und der Bohrung  $d$
- Beispiel:  
 $T = 40 \text{ mm}$ ,  $d = 30 \text{ mm}$   $D_{min.} = 160 \text{ mm}$

- To determine the minimum safe cutting diameter  $D_{min.}$  of profile cutterblocks when the profile depth  $T$  and bore diameter  $d$  are known
- Example:  
 $T = 40 \text{ mm}$ ,  $d = 30 \text{ mm}$   $D_{min.} = 160 \text{ mm}$



- Ermittlung des Mindest-Durchmessers  $D_{min.}$  bei Fasefräsern in Abhängigkeit von der Fräserbreite  $B$ , von dem Fräswinkel  $\varepsilon$  und von dem jeweiligen Bohrungs-Durchmesser  $d$
- Beispiel:  
 $B = 30 \text{ mm}$ ,  $\varepsilon = 45^\circ$   $d = 30 \text{ mm}$   
Ergebnis:  $D_{min.} = 140 \text{ mm}$
- Rechenzug (Reihenfolge)  
 $B - \varepsilon - d - D_{min.}$  oder  $D_{min.} - d - \varepsilon - B$   
unbedingt einhalten

- Determination of the minimum cutting diameter  $D_{min.}$  of bevel cutters from the cutter width  $B$ , bevel angle  $\varepsilon$  and bore diameter  $d$ .
- Example:  
 $B = 30 \text{ mm}$ ,  $\varepsilon = 45^\circ$   $d = 30 \text{ mm}$   
Result:  $D_{min.} = 140 \text{ mm}$
- Calculation (sequence)  
 $B - \varepsilon - d - D_{min.}$  or  $D_{min.} - d - \varepsilon - B$   
to be strictly applied



## HW-Nutfräser Z6

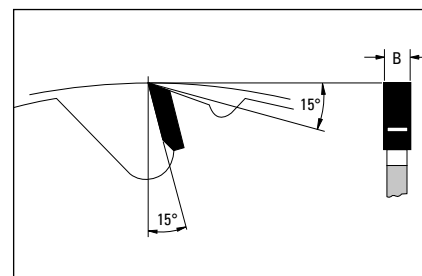
- Flachzahn
- Ohne Nabe (Sägenform), B = 1,5 – 2,5 mm  
mit Nabe (begrenzte Nuttiefe von 20 mm)
- MAN / Handvorschub

| D   | B    | t  | d  | n              | Best.-Nr./Part No. | Euro   |
|-----|------|----|----|----------------|--------------------|--------|
| 125 | 1,5  | 20 | 30 | 6.500 – 10.000 | 3107.125.15        | 86,70  |
| 125 | 2,0  | 20 | 30 | 6.500 – 10.000 | 3107.125.20        | 86,70  |
| 125 | 2,5  | 20 | 30 | 6.500 – 10.000 | 3107.125.25        | 86,70  |
| 125 | 3,0  |    | 30 | 6.500 – 10.000 | 3107.125.30        | 77,90  |
| 125 | 4,0  |    | 30 | 6.500 – 10.000 | 3107.125.40        | 85,40  |
| 125 | 4,5  |    | 30 | 6.500 – 10.000 | 3107.125.45        | 88,40  |
| 125 | 5,0  |    | 30 | 6.500 – 10.000 | 3107.125.50        | 91,80  |
| 125 | 6,0  |    | 30 | 6.500 – 10.000 | 3107.125.60        | 99,00  |
| 125 | 8,0  |    | 30 | 6.500 – 10.000 | 3107.125.80        | 124,90 |
| 125 | 10,0 |    | 30 | 6.500 – 10.000 | 3107.125.01        | 159,80 |
| 150 | 3,0  |    | 30 | 5.000 – 8.000  | 3107.150.30        | 81,90  |
| 150 | 3,5  |    | 30 | 5.000 – 8.000  | 3107.150.35        | 85,40  |
| 150 | 4,0  |    | 30 | 5.000 – 8.000  | 3107.150.40        | 88,40  |
| 150 | 5,0  |    | 30 | 5.000 – 8.000  | 3107.150.50        | 93,80  |
| 150 | 6,0  |    | 30 | 5.000 – 8.000  | 3107.150.60        | 102,00 |
| 150 | 8,0  |    | 30 | 5.000 – 8.000  | 3107.150.80        | 128,40 |
| 150 | 10,0 |    | 30 | 5.000 – 8.000  | 3107.150.01        | 163,20 |

## HW Grooving Cutter Z6

- Flat tooth
- Without centre boss (saw type),  
B = 1.5 – 2.5 mm with centre boss  
(groove depth limited to 20 mm)
- MAN / manual feed

## 3107 HW



## HW-Nutfräser Z12

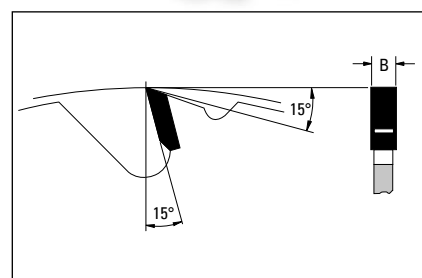
- Flachzahn
- Ohne Nabe (Sägenform)
- Mit Nabe bei B = 1,5 – 2,5 mm,  
begrenzte Nuttiefe von 20 mm
- MAN / Handvorschub

| D   | B    | t  | d  | n             | Best.-Nr./Part No. | Euro   |
|-----|------|----|----|---------------|--------------------|--------|
| 150 | 1,5  | 20 | 30 | 5.000 – 8.000 | 3108.150.15        | 94,20  |
| 150 | 2,0  | 20 | 30 | 5.000 – 8.000 | 3108.150.20        | 94,20  |
| 150 | 2,5  | 20 | 30 | 5.000 – 8.000 | 3108.150.25        | 94,20  |
| 150 | 3,0  |    | 30 | 5.000 – 8.000 | 3108.150.30        | 82,60  |
| 150 | 3,5  |    | 30 | 5.000 – 8.000 | 3108.150.35        | 84,90  |
| 150 | 4,0  |    | 30 | 5.000 – 8.000 | 3108.150.40        | 87,30  |
| 150 | 4,5  |    | 30 | 5.000 – 8.000 | 3108.150.45        | 91,80  |
| 150 | 5,0  |    | 30 | 5.000 – 8.000 | 3108.150.50        | 99,00  |
| 150 | 6,0  |    | 30 | 5.000 – 8.000 | 3108.150.60        | 107,30 |
| 150 | 8,0  |    | 30 | 5.000 – 8.000 | 3108.150.80        | 132,70 |
| 150 | 10,0 |    | 30 | 5.000 – 8.000 | 3108.150.01        | 169,20 |

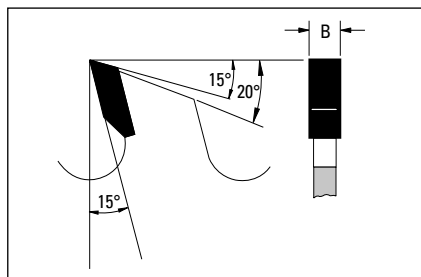
## HW Grooving Cutter Z12

- Flat tooth
- Without centre boss (saw type)
- With centre boss B = 1.5 – 2.5 mm,  
groove depth limited to 20 mm
- MAN / manual feed

## 3108 HW



## 3008 HW



## HW-Nutfräser Z12

- Flachzahn
- Ohne Nabe (Sägenform)
- Mit Nabe bei B = 1,5 – 2,5 mm, begrenzte Nuttiefe = 20 mm
- MEC / mech. Vorschub

## HW Grooving Cutter Z12

- Flat tooth
- Without centre boss (saw type)
- With centre boss B = 1.5 – 2.5 mm groove depth limited to 20 mm
- MEC / mechanical feed

| D   | B    | t  | d  | n              | Best.-Nr./Part No. | Euro   |
|-----|------|----|----|----------------|--------------------|--------|
| 125 | 2,0  | 20 | 30 | 6.500 – 10.000 | 3008.125.20        | 87,30  |
| 125 | 2,2  | 20 | 30 | 6.500 – 10.000 | 3008.125.22        | 87,30  |
| 125 | 2,5  | 20 | 30 | 6.500 – 10.000 | 3008.125.25        | 87,30  |
| 125 | 3,0  |    | 30 | 6.500 – 10.000 | 3008.125.30        | 77,90  |
| 125 | 3,5  |    | 30 | 6.500 – 10.000 | 3008.125.35        | 78,90  |
| 125 | 4,0  |    | 30 | 6.500 – 10.000 | 3008.125.40        | 82,60  |
| 125 | 5,0  |    | 30 | 6.500 – 10.000 | 3008.125.50        | 92,60  |
| 150 | 1,5  | 20 | 30 | 5.000 – 8.000  | 3008.150.15        | 94,20  |
| 150 | 2,2  | 20 | 30 | 5.000 – 8.000  | 3008.150.22        | 94,20  |
| 150 | 2,5  | 20 | 30 | 5.000 – 8.000  | 3008.150.25        | 94,20  |
| 150 | 3,0  |    | 30 | 5.000 – 8.000  | 3008.150.30        | 82,60  |
| 150 | 3,5  |    | 30 | 5.000 – 8.000  | 3008.150.35        | 84,90  |
| 150 | 4,0  |    | 30 | 5.000 – 8.000  | 3008.150.40        | 87,30  |
| 150 | 5,0  |    | 30 | 5.000 – 8.000  | 3008.150.50        | 99,60  |
| 150 | 6,0  |    | 30 | 5.000 – 8.000  | 3008.150.60        | 107,30 |
| 150 | 7,0  |    | 30 | 5.000 – 8.000  | 3008.150.70        | 121,40 |
| 150 | 8,0  |    | 30 | 5.000 – 8.000  | 3008.150.80        | 115,10 |
| 150 | 10,0 |    | 30 | 5.000 – 8.000  | 3008.150.01        | 169,20 |
| 180 | 4,0  |    | 30 | 4.500 – 7.000  | 3008.180.40        | 113,10 |
| 180 | 5,0  |    | 30 | 4.500 – 7.000  | 3008.180.50        | 121,40 |
| 180 | 6,0  |    | 30 | 4.500 – 7.000  | 3008.180.60        | 134,30 |
| 180 | 10,0 |    | 30 | 4.500 – 7.000  | 3008.180.01        | 196,80 |

## HW-Nutfräser Z18

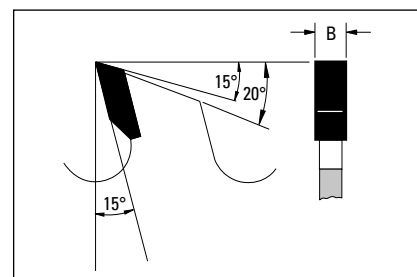
- Flachzahn
- Ohne Nabe (Sägenform)
- Mit Nabe bei B = 1,5 – 2,5 mm, begrenzte Nuttiefe = 20 mm
- MEC / mech. Vorschub

| D   | B    | t  | d  | n             | Best.-Nr./Part No. | Euro   |
|-----|------|----|----|---------------|--------------------|--------|
| 150 | 1,5  | 20 | 30 | 5.000 – 8.000 | 3009.150.15        | 112,00 |
| 150 | 2,0  | 20 | 30 | 5.000 – 8.000 | 3009.150.20        | 112,00 |
| 150 | 2,5  | 20 | 30 | 5.000 – 8.000 | 3009.150.25        | 112,00 |
| 150 | 3,0  |    | 30 | 5.000 – 8.000 | 3009.150.30        | 90,10  |
| 150 | 3,5  |    | 30 | 5.000 – 8.000 | 3009.150.35        | 93,80  |
| 150 | 4,0  |    | 30 | 5.000 – 8.000 | 3009.150.40        | 100,80 |
| 150 | 5,0  |    | 30 | 5.000 – 8.000 | 3009.150.50        | 116,20 |
| 150 | 6,0  |    | 30 | 5.000 – 8.000 | 3009.150.60        | 126,70 |
| 150 | 7,0  |    | 30 | 5.000 – 8.000 | 3009.150.70        | 150,30 |
| 150 | 8,0  |    | 30 | 5.000 – 8.000 | 3009.150.80        | 155,00 |
| 150 | 10,0 |    | 30 | 5.000 – 8.000 | 3009.150.01        | 198,60 |
| 180 | 4,0  |    | 30 | 4.500 – 7.000 | 3009.180.40        | 120,20 |
| 180 | 5,0  |    | 30 | 4.500 – 7.000 | 3009.180.50        | 128,40 |
| 180 | 6,0  |    | 30 | 4.500 – 7.000 | 3009.180.60        | 137,80 |
| 180 | 8,0  |    | 30 | 4.500 – 7.000 | 3009.180.80        | 165,60 |
| 180 | 10,0 |    | 30 | 4.500 – 7.000 | 3009.180.01        | 198,60 |

## HW Grooving Cutter Z18

- Flat tooth
- Without centre boss (saw type)
- With centre boss B = 1.5 – 2.5 mm groove depth limited to 20 mm
- MEC / mechanical feed

## 3009 HW



## HW-Schlitznutfräser

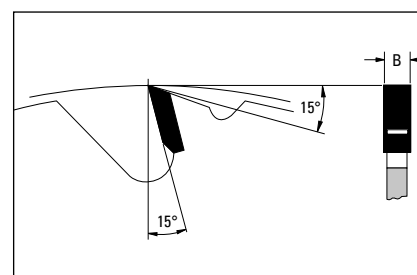
- Flachzahn
- MAN / Handvorschub

| D   | B   | d  | Z | n max. | Best.-Nr./Part No. | Euro   |
|-----|-----|----|---|--------|--------------------|--------|
| 200 | 4,0 | 30 | 4 | 6.000  | 3109.200.04        | 87,80  |
| 250 | 4,0 | 30 | 4 | 4.500  | 3109.250.04        | 105,60 |
| 250 | 6,0 | 30 | 4 | 4.500  | 3109.250.06        | 121,40 |
| 300 | 5,0 | 30 | 6 | 4.400  | 3109.300.05        | 138,50 |
| 300 | 6,0 | 30 | 6 | 4.400  | 3109.300.06        | 155,00 |
| 350 | 6,0 | 30 | 6 | 3.500  | 3109.350.06        | 170,40 |

## HW Slit Grooving Cutter

- Flat tooth
- MAN / manual feed

## 3109 HW





## 3115 HW



## HW-Nutfräser Z3 + V6

- Flachzahn mit Vorschneider
- MAN / Handvorschub

## HW Grooving Cutter Z3 + V6

- Flat tooth with spurs
- MAN / manual feed

| D   | B    | d  | n              | Best.-Nr./Part No. | Euro   |
|-----|------|----|----------------|--------------------|--------|
| 120 | 4,0  | 30 | 6.400 – 11.000 | 3115.120.04        | 227,30 |
| 120 | 5,0  | 30 | 6.400 – 11.000 | 3115.120.05        | 240,90 |
| 120 | 6,0  | 30 | 6.400 – 11.000 | 3115.120.06        | 248,10 |
| 120 | 8,0  | 30 | 6.400 – 11.000 | 3115.120.08        | 258,80 |
| 120 | 10,0 | 30 | 6.400 – 11.000 | 3115.120.10        | 274,90 |

## 3123 HW



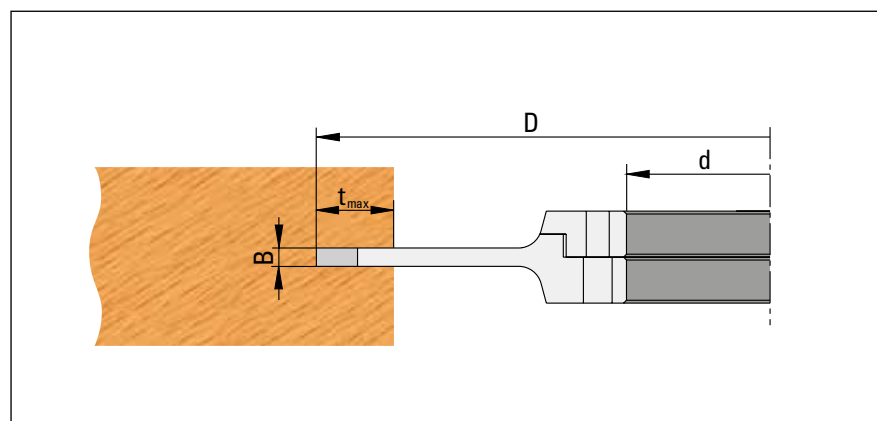
## HW-Verstellnutter Z4 + V4

- Flachzahn mit Vorschneider
- 2-teilig, verstellbar durch Zwischenringe
- MAN / Handvorschub

## HW Adjustable Grooving Cutter Z4 + V4

- Flat tooth with spurs
- 2 part, adjustable by means of spacers
- MAN / manual feed

| D   | B          | d  | t  | n              | Best.-Nr./Part No. | Euro   |
|-----|------------|----|----|----------------|--------------------|--------|
| 120 | 1,8 – 3,4  | 30 | 15 | 6.500 – 11.500 | 3123.019.34        | 241,00 |
| 120 | 3,0 – 5,8  | 30 | 15 | 5.500 – 9.500  | 3123.030.58        | 236,30 |
| 140 | 3,0 – 5,8  | 30 | 20 | 5.500 – 9.500  | 3123.031.58        | 245,70 |
| 150 | 4,0 – 7,5  | 30 | 25 | 5.100 – 9.000  | 3123.040.75        | 257,50 |
| 150 | 5,0 – 9,5  | 30 | 25 | 5.100 – 9.000  | 3123.050.95        | 272,20 |
| 150 | 7,5 – 14,5 | 30 | 25 | 5.100 – 9.000  | 3123.075.14        | 282,30 |





## HW-Kreissägen- Verstellnutter Z8 + V8

- Flachzahn mit Vorschneider
- 2-teilig, verstellbar durch Zwischenringe
- max. Nuttiefe: 45 mm
- Nebenlöcher: 2/10/60
- Bei Kreissägemaschinen nach EN 1870-5 nur eingeschränkt einsetzbar
- MAN / Handvorschub

## HW Adjustable Grooving Saw Z8 + V8

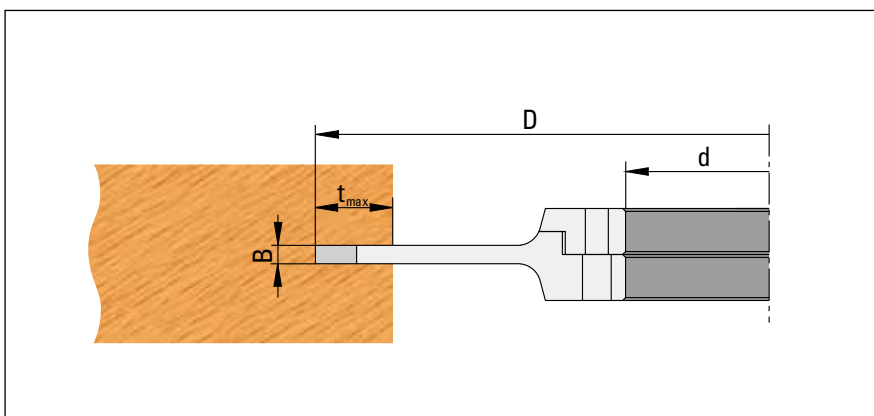
- Flat tooth with spurs
- 2-piece, adjustable by means of spacers
- max. groove depth: 45 mm
- pin holes: 2/10/60
- For machines to EN 1870-5, restricted use only
- MAN / manual feed

## 3121 HW



| D   | B          | d  | t  | n             | Best.-Nr./Part No. | Euro   |
|-----|------------|----|----|---------------|--------------------|--------|
| 250 | 5,2 – 10,0 | 30 | 45 | 3.200 – 5.500 | 3121.052.10        | 523,90 |
| 250 | 7,2 – 14,0 | 30 | 45 | 3.200 – 5.500 | 3121.072.14        | 586,90 |

| Nabenstärke / Centre boss | Min.    | Max.    |
|---------------------------|---------|---------|
| 3121.052.10               | 18,2 mm | 23,4 mm |
| 3121.072.14               | 18,2 mm | 25,4 mm |



## 3120 HW



### HW-Wankverstellnutter

- Flachzahn
- Tragkörper 48 mm hoch
- Verstellbar nach Skala (Richtwert)
- n max. 6.000
- MAN / Handvorschub

### HW Adjustable Wobble Saw

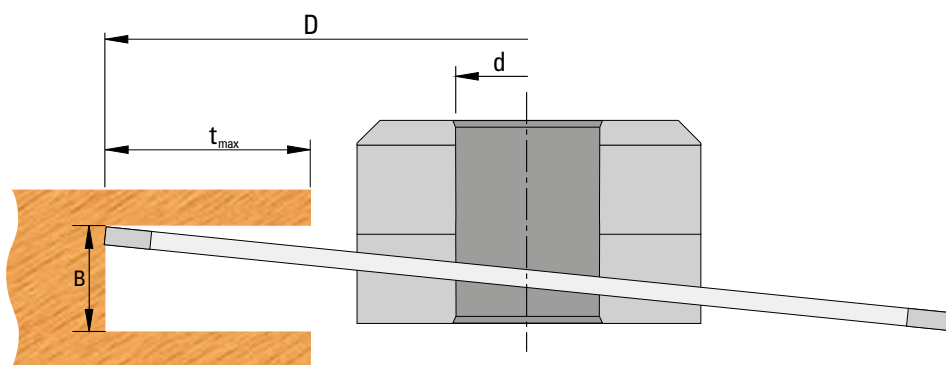
- Flat tooth
- Body height 48 mm
- Groove width adjustable (with scale),
- n max. 6000
- MAN / manual feed

| D   | ca. B      | d  | Z  | t  | Best.-Nr./Part No. | Euro   |
|-----|------------|----|----|----|--------------------|--------|
| 150 | 4,0 – 15,0 | 30 | 8  | 40 | 3120.150.30        | 231,40 |
| 200 | 4,0 – 20,0 | 30 | 12 | 65 | 3120.200.30        | 246,80 |
| 250 | 4,0 – 25,0 | 30 | 16 | 90 | 3120.250.30        | 267,10 |

### Ersatznutfräser, HW-bestückt, Bohrung mit Führungszapfen Spare blade, HW tipped, centre hole with key

| D   | B   | d  | Z  | Best.-Nr./Part No. | Euro   |
|-----|-----|----|----|--------------------|--------|
| 150 | 4,0 | 42 | 8  | 3120.150.42        | 110,90 |
| 200 | 4,0 | 42 | 12 | 3120.200.42        | 126,20 |
| 250 | 4,0 | 42 | 16 | 3120.250.42        | 146,60 |

| Ersatzteile                | Spare Parts              | Best.-Nr./Part No. | Euro   |
|----------------------------|--------------------------|--------------------|--------|
| Tragkörper für 3120.150.30 | body for 3120.150.30     | 3120.150.02        | 116,50 |
| Tragkörper für 3120.200.30 | body for 3120.200.30     | 3120.200.02        | 116,50 |
| Tragkörper für 3120.250.30 | body for 3120.250.30     | 3120.250.02        | 116,50 |
| Ersatzschlüssel für 3120   | replacement key for 3120 | 3120.000.01        | 11,40  |



## HW-WPL-Vorschneid- Nutfräser

- Tragkörper aus Stahl
- MAN / Handvorschub

## HW Grooving Cutter with Spurs

- Body in steel
- MAN / manual feed

## 4020 HW



| D   | B    | d  | Z | V | n              | Best.-Nr./Part No. | Euro   |
|-----|------|----|---|---|----------------|--------------------|--------|
| 125 | 4,0  | 30 | 4 | 4 | 6.100 – 10.500 | 4020.125.04        | 198,00 |
| 125 | 5,0  | 30 | 4 | 4 | 6.100 – 10.500 | 4020.125.05        | 205,30 |
| 125 | 6,0  | 30 | 4 | 4 | 6.100 – 10.500 | 4020.125.06        | 213,10 |
| 125 | 8,0  | 30 | 4 | 4 | 6.100 – 10.500 | 4020.125.08        | 189,80 |
| 125 | 10,0 | 30 | 4 | 4 | 6.100 – 10.500 | 4020.125.10        | 195,90 |
| 125 | 12,0 | 30 | 4 | 4 | 6.100 – 10.500 | 4020.125.12        | 202,20 |
| 150 | 4,0  | 30 | 4 | 4 | 5.200 – 8.900  | 4020.150.04        | 219,80 |
| 150 | 5,0  | 30 | 4 | 4 | 5.200 – 8.900  | 4020.150.05        | 227,60 |
| 150 | 6,0  | 30 | 4 | 4 | 5.200 – 8.900  | 4020.150.06        | 236,00 |
| 150 | 8,0  | 30 | 4 | 4 | 5.200 – 8.900  | 4020.150.08        | 195,90 |
| 150 | 10,0 | 30 | 4 | 4 | 5.200 – 8.900  | 4020.150.10        | 202,20 |
| 150 | 12,0 | 30 | 4 | 4 | 5.200 – 8.900  | 4020.150.12        | 209,00 |
| 180 | 4,0  | 30 | 8 | 8 | 4.200 – 7.200  | 4020.180.04        | 318,60 |
| 180 | 5,0  | 30 | 8 | 8 | 4.200 – 7.200  | 4020.180.05        | 332,60 |
| 180 | 6,0  | 30 | 8 | 8 | 4.200 – 7.200  | 4020.180.06        | 347,70 |
| 180 | 8,0  | 30 | 4 | 8 | 4.200 – 7.200  | 4020.180.08        | 202,20 |
| 180 | 10,0 | 30 | 4 | 8 | 4.200 – 7.200  | 4020.180.10        | 208,50 |
| 180 | 12,0 | 30 | 4 | 8 | 4.200 – 7.200  | 4020.180.12        | 214,70 |

| Ersatzteile für B = 4 mm                   | Spare parts for B = 4 mm         | B    | H    | S    | Best.-Nr./Part No. | Euro |
|--------------------------------------------|----------------------------------|------|------|------|--------------------|------|
| HW-Räumerplatte                            | HW raker knife                   | 18,0 | 18,0 | 1,95 | 4200.018.20        | 9,60 |
| HW-Vorschneiderplatte                      | HW spur knife                    | 14,0 | 14,0 | 1,2  | 4200.014.12        | 4,70 |
| Torx-Schraube M4x3,2 (T9) für Räumer       | Torx screw M4x3.2 (T9) for raker |      |      |      | 3020.000.00        | 3,10 |
| Torx-Schraube M4x3,2 (T9) für Vorschneider | Torx screw M4x3.2 (T9) for spur  |      |      |      | 3020.000.00        | 3,10 |
| Mutter für Räumerschneide (T9)             | nut for raker blade (T9)         |      |      |      | 3020.000.01        | 3,10 |
| Mutter für Vorschneider (T9)               | nut for spur (T9)                |      |      |      | 3020.000.02        | 3,10 |
| Torx-Schlüssel (T9)                        | Torx key T9                      |      |      |      | 3020.000.10        | 6,60 |

| Ersatzteile für B = 5 mm                 | Spare parts for B = 5 mm       | B    | H    | St   | Best.-Nr./Part No. | Euro  |
|------------------------------------------|--------------------------------|------|------|------|--------------------|-------|
| HW-Räumerplatte                          | HW raker knife                 | 18,0 | 18,0 | 2,45 | 4200.018.25        | 12,20 |
| HW-Vorschneiderplatte                    | HW spur knife                  | 14,0 | 14,0 | 1,2  | 4200.014.12        | 4,70  |
| Torx-Schraube M4x4 für Räumer (T9)       | Torx-screw M4x4 for raker (T9) |      |      |      | 4020.000.00        | 3,00  |
| Torx-Schraube M4x4 für Vorschneider (T9) | Torx-screw M4x4 for spur (T9)  |      |      |      | 4020.000.00        | 3,00  |
| Mutter für Räumerschneide (T9)           | nut for raker blade (T9)       |      |      |      | 3020.000.01        | 3,10  |
| Torx-Schraube M4x4 (T9)                  | Torx screw M4x4 (T9)           |      |      |      | 4020.000.00        | 3,00  |
| Mutter für Vorschneider (T9)             | nut for spur (T9)              |      |      |      | 3020.000.02        | 3,10  |
| Torx-Schlüssel T9                        | Torx key T9                    |      |      |      | 3020.000.10        | 6,60  |



## 4020 HW

## Fortsetzung

## Continuation

| Ersatzteile für B = 6 mm                            | Spare parts for B = 6 mm                  | B    | H    | St   | Best.-Nr./Part No. | Euro  |
|-----------------------------------------------------|-------------------------------------------|------|------|------|--------------------|-------|
| HW-Räumerplatte                                     | HW raker knife                            | 18,0 | 18,0 | 2,95 | 4200.018.30        | 13,60 |
| HW-Vorschneiderplatte                               | HW spur knife                             | 14,0 | 14,0 | 1,2  | 4200.014.12        | 4,70  |
| Torx-Schraube M4x5,2 für Räumer + Vorschneider (T9) | Torx screw M4x5,2 for raker and spur (T9) |      |      |      | 4020.000.02        | 3,00  |
| Mutter für Räumerschneide (T9)                      | nut for raker blade (T9)                  |      |      |      | 3020.000.01        | 3,10  |
| Mutter für Vorschneider (T9)                        | nut for spur (T9)                         |      |      |      | 3020.000.02        | 3,10  |
| Torx-Schlüssel T9                                   | Torx key T9                               |      |      |      | 3020.000.10        | 6,60  |

| Ersatzteile für B = 8 mm             | Spare parts for B = 8 mm   | B    | H    | St  | Best.-Nr./Part No. | Euro |
|--------------------------------------|----------------------------|------|------|-----|--------------------|------|
| HW-Räumerplatte                      | HW raker knife             | 7,5  | 12,0 | 1,5 | 4200.008.00        | 1,70 |
| HW-Vorschneiderplatte                | HW spur knife              | 14,0 | 14,0 | 2,0 | 4200.014.04        | 2,10 |
| Spannkeil 7,5 / 8 mm                 | clamping jaw 7,5 / 8 mm    |      |      |     | 4067.008.01        | 8,60 |
| Spannschraube M5x16 (SW2,5)          | lock screw M5x16 (SW 2,5)  |      |      |     | 4067.200.03        | 1,40 |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20) |      |      |     | 4067.200.01        | 1,80 |
| T-Spannschlüssel SW 2,5              | T-clamping key SW 2,5      |      |      |     | 4067.000.25        | 4,80 |
| Torx-Schlüssel T20                   | Torx key T20               |      |      |     | 4067.000.10        | 5,70 |

| Ersatzteile für B = 10 mm            | Spare parts for B = 10 mm  | B    | H    | St  | Best.-Nr./Part No. | Euro |
|--------------------------------------|----------------------------|------|------|-----|--------------------|------|
| HW-Räumerplatte                      | HW raker knife             | 9,6  | 12,0 | 1,5 | 4200.096.00        | 4,00 |
| HW-Vorschneiderplatte                | HW spur knife              | 14,0 | 14,0 | 2,0 | 4200.014.04        | 2,10 |
| Spannkeil 10 mm                      | clamping jaw 10 mm         |      |      |     | 4067.010.01        | 9,40 |
| Spannschraube M5x16 (SW2,5)          | lock screw M5x16 (SW 2,5)  |      |      |     | 4067.200.03        | 1,40 |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20) |      |      |     | 4067.200.01        | 1,80 |
| T-Spannschlüssel SW2,5               | T-clamping key SW 2,5      |      |      |     | 4067.000.25        | 4,80 |
| Torx-Schlüssel T20                   | Torx key T20               |      |      |     | 4067.000.10        | 5,70 |

| Ersatzteile für B = 12 mm            | Spare parts for B = 12 mm  | B    | H    | St  | Best.-Nr./Part No. | Euro  |
|--------------------------------------|----------------------------|------|------|-----|--------------------|-------|
| HW-Räumerplatte                      | HW raker knife             | 11,6 | 12,0 | 1,5 | 4200.116.00        | 6,30  |
| HW-Vorschneiderplatte                | HW spur knife              | 14,0 | 14,0 | 2,0 | 4200.014.04        | 2,10  |
| Spannkeil 12 mm                      | clamping jaw 12 mm         |      |      |     | 4067.012.01        | 10,40 |
| Spannschraube M5x16 (SW2,5)          | lock screw M5x16 (SW 2,5)  |      |      |     | 4067.200.03        | 1,40  |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20) |      |      |     | 4067.200.01        | 1,80  |
| T-Spannschlüssel SW2,5               | T-clamping key SW 2,5      |      |      |     | 4067.000.25        | 4,80  |
| Torx-Schlüssel T20                   | Torx key T20               |      |      |     | 4067.000.10        | 5,70  |

## HW-WPL-Verstellnutter

- 2-teilig, verstellbar durch Zwischenringe
- Tragkörper aus Stahl
- MAN / Handvorschub

## HW Adjustable Grooving Cutter

- 2-piece, adjustable by means of spacers
- Body in steel
- MAN / manual feed

## 4050 HW



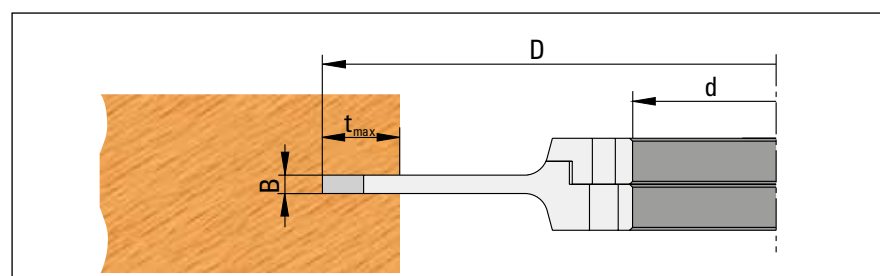
| D   | B           | d  | Z | V | n             | t  | Best.-Nr./Part No. | Euro   |
|-----|-------------|----|---|---|---------------|----|--------------------|--------|
| 160 | 4,0 – 7,5   | 30 | 8 | 4 | 5.000 – 8.900 | 40 | 4050.040.30        | 417,80 |
| 160 | 8,0 – 15,0  | 30 | 4 | 4 | 4.300 – 7.500 | 40 | 4050.080.31        | 356,50 |
| 160 | 12,5 – 24,0 | 30 | 4 | 4 | 5.000 – 6.900 | 40 | 4050.125.31        | 382,50 |
| 180 | 4,0 – 7,5   | 30 | 8 | 4 | 4.300 – 7.500 | 50 | 4050.040.31        | 441,30 |
| 180 | 8,0 – 15,0  | 30 | 4 | 4 | 4.200 – 5.500 | 50 | 4050.080.30        | 409,00 |
| 180 | 12,5 – 24,0 | 30 | 4 | 4 | 4.500 – 5.000 | 50 | 4050.125.30        | 438,70 |

| Ersatzwendeplatten    | Replacement knives | B    | H    | St   | Best.-Nr./Part No. | Euro |
|-----------------------|--------------------|------|------|------|--------------------|------|
| HW-Räumerplatte       | HW raker knife     | 18,0 | 18,0 | 1,95 | 4200.018.20        | 9,60 |
| HW-Räumerplatte       | HW raker knife     | 7,5  | 12,0 | 1,5  | 4200.008.00        | 1,70 |
| HW-Räumerplatte       | HW raker knife     | 12,0 | 12,0 | 1,5  | 4200.012.00        | 1,80 |
| HW-Vorschneiderplatte | HW spur knife      | 14,0 | 14,0 | 1,2  | 4200.014.12        | 4,70 |
| HW-Vorschneiderplatte | HW spur knife      | 14,0 | 14,0 | 2,0  | 4200.014.04        | 2,10 |

| Ersatzteile für B = 4,0 – 7,5 mm | Spare parts for B = 4,0 – 7,5 mm | Best.-Nr./Part No. | Euro |
|----------------------------------|----------------------------------|--------------------|------|
| Torx-Schraube M4x3,2 (T9)        | Torx screw M4x3,2 (T9)           | 3020.000.00        | 3,10 |
| Mutter für Räumerschneide (T9)   | nut for raker blade (T9)         | 3020.000.01        | 3,10 |
| Mutter für Vorschneider (T9)     | nut for raker blade (T9)         | 3020.000.02        | 3,10 |
| Torx-Schlüssel T9                | Torx key T9                      | 3020.000.10        | 6,60 |

| Ersatzteile für B = 8,0 – 15,0 mm    | Spare parts for B = 8,0 – 15,0 mm | Best.-Nr./Part No. | Euro |
|--------------------------------------|-----------------------------------|--------------------|------|
| Spannkeil 7,5 / 8 mm                 | clamping jaw 7,5 / 8 mm           | 4067.008.01        | 8,60 |
| Spannschraube M5x16 (SW2,5)          | lock screw M5x16 (SW2,5)          | 4067.200.03        | 1,40 |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20)        | 4067.200.01        | 1,80 |
| T-Spannschlüssel SW2,5               | T-clamping key SW2,5              | 4067.000.25        | 4,80 |
| Torx-Schlüssel T20                   | Torx key T20                      | 4067.000.10        | 5,70 |

| Ersatzteile für B = 12,5 – 24,0 mm   | Spare parts for B = 12,5 – 24,0 mm | Best.-Nr./Part No. | Euro  |
|--------------------------------------|------------------------------------|--------------------|-------|
| Spannkeil 12 mm                      | clamping jaw 12 mm                 | 4067.012.01        | 10,40 |
| Spannschraube M5x16 (SW2,5)          | lock screw M5x16 (SW2,5)           | 4067.200.03        | 1,40  |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20)         | 4067.200.01        | 1,80  |
| T-Spannschlüssel SW2,5               | T-clamping key SW2,5               | 4067.000.25        | 4,80  |
| Torx-Schlüssel T20                   | Torx key T20                       | 4067.000.10        | 5,70  |



## 4052 HW



## HW-WPL-Verstellnutter

- 3-teilig, verstellbar durch Zwischenringe
- Bestehend aus zweiteiligem Nutfräser mit Zwischenfräser und Ringsatz
- Tragkörper aus Stahl
- MAN / Handvorschub

## HW Adjustable Grooving Cutter

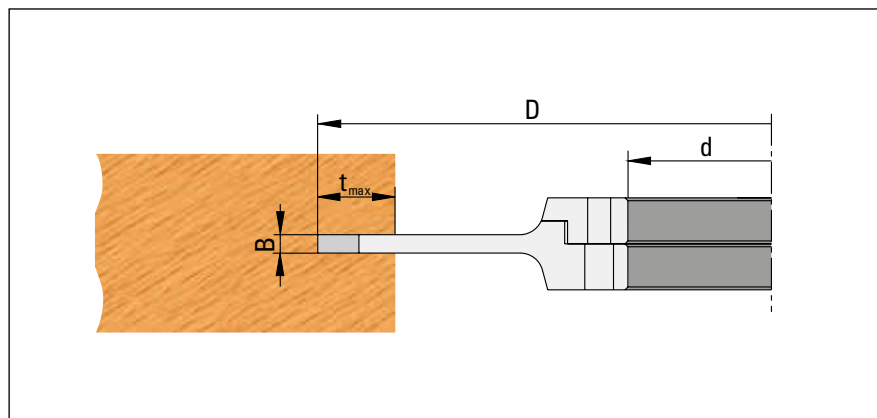
- 3-piece, adjustable by means of spacers
- Consists of two piece groover with centre cutter and ring set
- Body in steel
- MAN / manual feed

| D   | Typ | B          | d  | Z            | n             | t  | Best.-Nr./Part No. | Euro   |
|-----|-----|------------|----|--------------|---------------|----|--------------------|--------|
| 150 | 1   | 4,0 – 15,5 | 30 | Z4 + V4 + Z2 | 5.500 – 8.500 | 45 | 4052.040.30        | 421,50 |
| 150 | 2   | 8,0 – 30,0 | 30 | Z4 + V4 + Z2 | 5.000 – 8.000 | 45 | 4052.080.30        | 535,40 |

| Ersatzwendeplatten    | Typ | Replacement knives | B    | H    | St   | Best.-Nr./Part No. | Euro |
|-----------------------|-----|--------------------|------|------|------|--------------------|------|
| HW-Räumerplatte       | 1   | HW raker knife     | 18,0 | 18,0 | 1,95 | 4200.018.20        | 9,60 |
| HW-Räumerplatte       | 1+2 | HW raker knife     | 7,5  | 12,0 | 1,5  | 4200.008.00        | 1,70 |
| HW-Räumerplatte       | 2   | HW raker knife     | 15   | 12,0 | 1,5  | 4200.015.00        | 2,50 |
| HW-Vorschneiderplatte | 1   | HW spur knife      | 14,0 | 14,0 | 1,2  | 4200.014.12        | 4,70 |
| HW-Vorschneiderplatte | 2   | HW spur knife      | 14,0 | 14,0 | 2,0  | 4200.014.04        | 2,10 |

| Ersatzteile für 4 – 15,5 mm    | Spare Parts for 4 – 15,5 mm | Best.-Nr./Part No. | Euro |
|--------------------------------|-----------------------------|--------------------|------|
| Torx-Schraube M4x3,2 (T9)      | Torx screw M4x3,2 (T9)      | 3020.000.00        | 3,10 |
| Mutter für Räumerschneide (T9) | nut for raker blade (T9)    | 3020.000.01        | 3,10 |
| Mutter für Vorschneider (T9)   | nut for spur (T9)           | 3020.000.02        | 3,10 |
| Spannkeil 7,5 / 8 mm           | clamping jaw 7,5 / 8 mm     | 4067.008.01        | 8,60 |
| Spannschraube M5x16 (SW2,5)    | lock screw M5x16 (SW2,5)    | 4067.200.03        | 1,40 |
| Torx-Schlüssel T9              | Torx key T9                 | 3020.000.10        | 6,60 |
| T-Spannschlüssel SW2,5         | T-clamping key SW2,5        | 4067.000.25        | 4,80 |

| Ersatzteile für B = 8,0 – 30 mm      | Spare Parts for B = 8,0 – 30 mm | Best.-Nr./Part No. | Euro |
|--------------------------------------|---------------------------------|--------------------|------|
| Spannkeil 7,5 / 8mm                  | clamping jaw 7,5 / 8 mm         | 4067.008.01        | 8,60 |
| Spannschraube M5x16 (SW2,5)          | lock screw M5x16 (SW2,5)        | 4067.200.03        | 1,40 |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20)      | 4067.200.01        | 1,80 |
| T-Spannschlüssel SW2,5               | T-clamping key SW2,5            | 4067.000.25        | 4,80 |
| Torx-Schlüssel T20                   | Torx key T20                    | 4067.000.10        | 5,70 |



## HW-WPL-Verstellnut, Schlitz und Zapfenfräser Z4 + V4

- 2-teilig, verstellbar durch Zwischenringe
- Trägerkörper aus Stahl
- MAN/Handvorschub

## HW Adjustable Grooving Cutter, Slit and Plug Z4 + V4

- 2-piece, adjustable by means of spacers
- Body in steel
- MAN / manual feed

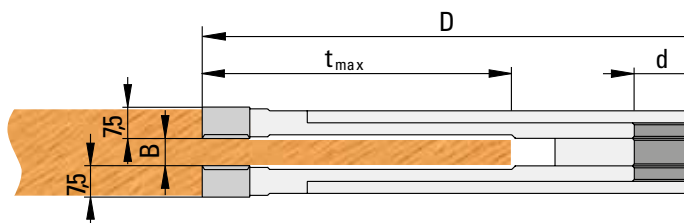
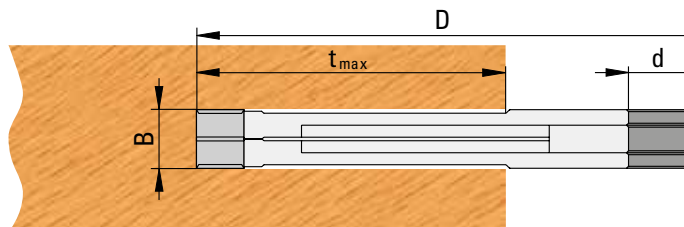
## 4053 HW



| D   | B        | d  | n             | t   | Best.-Nr./Part No. | Euro   |
|-----|----------|----|---------------|-----|--------------------|--------|
| 200 | 8,5 – 15 | 30 | 4.000 – 5.000 | 75  | 4053.200.30        | 403,50 |
| 250 | 8,5 – 15 | 30 | 3.000 – 4.500 | 100 | 4053.250.30        | 471,60 |

| Ersatzwendeplatten    | Replacement knives | B    | H    | St  | Best.-Nr./Part No. | Euro |
|-----------------------|--------------------|------|------|-----|--------------------|------|
| HW-Räumerplatte       | HW raker knife     | 7,5  | 12,0 | 1,5 | 4200.008.00        | 1,70 |
| HW-Vorschneiderplatte | HW spur knife      | 14,0 | 14,0 | 2,0 | 4200.014.04        | 2,10 |

| Ersatzteile                          | Spare parts                | Best.-Nr./Part No. | Euro |
|--------------------------------------|----------------------------|--------------------|------|
| Spannkeil 7,5 / 8mm                  | clamping jaw 7,5 / 8 mm    | 4067.008.01        | 8,60 |
| Spannschraube M5x16 (SW2,5)          | lock screw M5x16 (SW2,5)   | 4067.200.03        | 1,40 |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20) | 4067.200.01        | 1,80 |
| T-Spannschlüssel SW2,5               | T-clamping key SW2,5       | 4067.000.25        | 4,80 |
| Torx-Schlüssel T20                   | Torx key T20               | 4067.000.10        | 5,70 |





## 4049 HW



## HW-WPL-Verstellnutter

- 2-teilig, verstellbar durch Einstellbüchse mit Skala
- Tragkörper aus Stahl
- MAN / Handvorschub

## HW Adjustable Grooving Cutter

- 2-piece, adjustable by means of adjustment dial
- body in steel
- MAN / manual feed

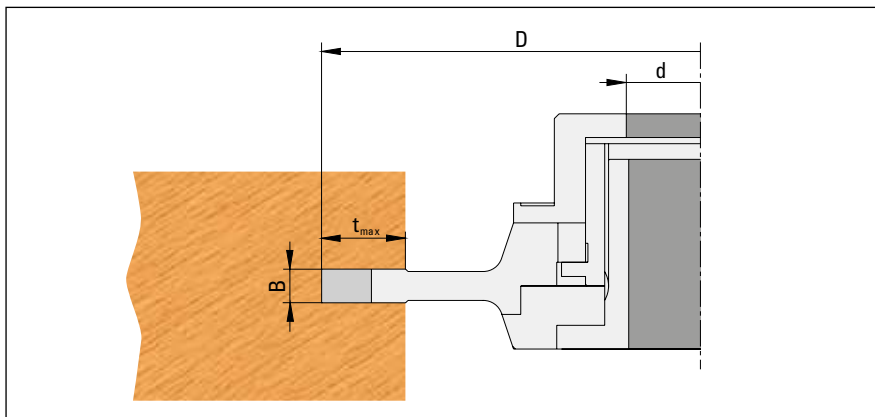
| D   | B           | d  | Z | V | n             | t  | Best.-Nr./Part No. | Euro   |
|-----|-------------|----|---|---|---------------|----|--------------------|--------|
| 160 | 4,0 – 7,5   | 30 | 8 | 4 | 5.000 – 8.900 | 35 | 4049.040.30        | 532,70 |
| 160 | 8,0 – 15,0  | 30 | 4 | 4 | 5.000 – 6.900 | 35 | 4049.080.30        | 458,40 |
| 160 | 12,5 – 24,0 | 30 | 4 | 4 | 5.000 – 6.900 | 35 | 4049.125.30        | 483,40 |
| 180 | 4,0 – 7,5   | 30 | 8 | 4 | 4.500 – 6.000 | 45 | 4049.040.31        | 571,10 |
| 180 | 8,0 – 15,0  | 30 | 4 | 4 | 4.500 – 5.500 | 45 | 4049.080.31        | 493,20 |
| 180 | 12,5 – 24,0 | 30 | 4 | 4 | 4.500 – 5.000 | 45 | 4049.125.31        | 519,20 |

| Ersatzwendeplatten    | Für B / For B      | Replacement knives | B    | H    | St   | Best.-Nr./Part No. | Euro |
|-----------------------|--------------------|--------------------|------|------|------|--------------------|------|
| HW-Räumerplatte       | 4 – 7,5            | HW raker knife     | 18,0 | 18,0 | 1,95 | 4200.018.20        | 9,60 |
| HW-Räumerplatte       | 8 – 15             | HW raker knife     | 7,5  | 12,0 | 1,5  | 4200.008.00        | 1,70 |
| HW-Räumerplatte       | 12,5 – 24          | HW raker knife     | 12,0 | 12,0 | 1,5  | 4200.012.00        | 1,80 |
| HW-Vorschneiderplatte | 4 – 7,5            | HW spur knife      | 14,0 | 14,0 | 1,2  | 4200.014.12        | 4,70 |
| HW-Vorschneiderplatte | 8 – 15 + 12,5 – 24 | HW spur knife      | 14,0 | 14,0 | 2,0  | 4200.014.04        | 2,10 |

| Ersatzteile für B = 4,0 – 7,5 mm | Spare parts for B = 4,0 – 7,5 mm | Best.-Nr./Part No. | Euro |
|----------------------------------|----------------------------------|--------------------|------|
| Torx-Schraube M4x3,2 (T9)        | Torx screw M4x3,2 (T9)           | 3020.000.00        | 3,10 |
| Mutter für Rämerschneide (T9)    | nut for raker blade (T9)         | 3020.000.01        | 3,10 |
| Mutter für Vorschneider (T9)     | nut for spur (T9)                | 3020.000.02        | 3,10 |
| Torx-Schlüssel T9                | Torx key T9                      | 3020.000.10        | 6,60 |

| Ersatzteile für B = 8,0 – 15,0 mm    | Spare parts for B = 8,0 – 15,0 mm | Best.-Nr./Part No. | Euro |
|--------------------------------------|-----------------------------------|--------------------|------|
| Spannkeil 7,5 / 8 mm                 | clamping jaw 7,5 / 8 mm           | 4067.008.01        | 8,60 |
| Spannschraube M5x16 (SW2,5)          | lock screw M5x16 (SW2,5)          | 4067.200.03        | 1,40 |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20)        | 4067.200.01        | 1,80 |
| T-Spannschlüssel SW2,5               | T-clamping key SW2,5              | 4067.000.25        | 4,80 |
| Torx-Schlüssel T20                   | Torx key T20                      | 4067.000.10        | 5,70 |

| Ersatzteile für B = 12,5 – 24,0 mm   | Spare parts for B = 12,5 – 24,0 mm | Best.-Nr./Part No. | Euro  |
|--------------------------------------|------------------------------------|--------------------|-------|
| Spannkeil 12 mm                      | clamping jaw 12 mm                 | 4067.012.01        | 10,40 |
| Spannschraube M5x16 (SW2,5)          | lock screw M5x16 (SW2,5)           | 4067.200.03        | 1,40  |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20)         | 4067.200.01        | 1,80  |
| T-Spannschlüssel SW2,5               | T-clamping key SW2,5               | 4067.000.25        | 4,80  |
| Torx-Schlüssel T20                   | Torx key T20                       | 4067.000.10        | 5,70  |



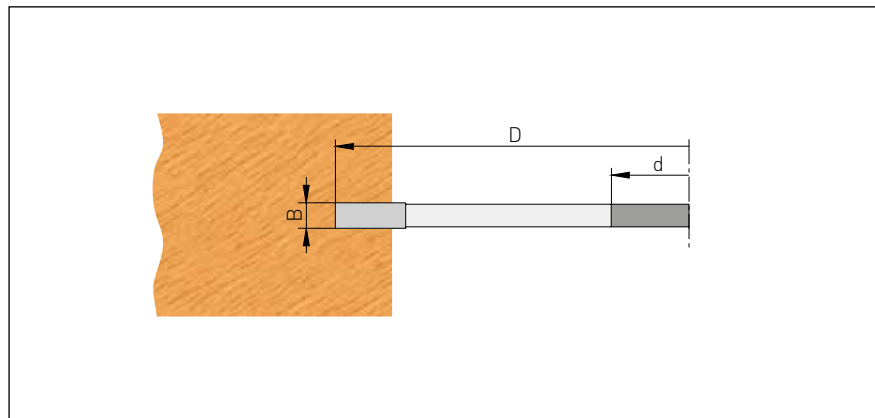
## HW-Lamello-Nuter

• MAN / Handvorschub

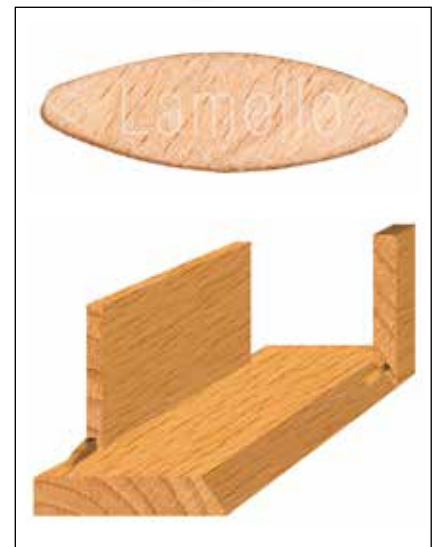
| D   | B    | d  | Z | V | n              | Best.-Nr./Part No. | Euro  |
|-----|------|----|---|---|----------------|--------------------|-------|
| 100 | 3,97 | 22 | 2 | 4 | 8.000 – 12.000 | 3116.100.22        | 81,90 |

Für Lamello Top 20 mit 4 Senklöchern für M4 auf TK 36  
For Lamello Top 20 with 4 countersunk holes

| D   | B    | d  | Z | V | n              | Best.-Nr./Part No. | Euro  |
|-----|------|----|---|---|----------------|--------------------|-------|
| 100 | 3,97 | 22 | 2 | 4 | 8.000 – 12.000 | 3116.101.22        | 89,60 |

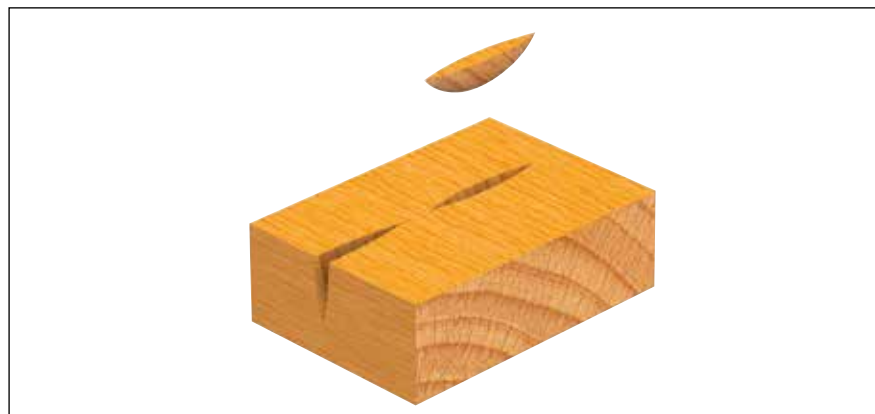


## 3116 HW



## Harzgallenfräser

| D   | B    | d  | Z | n              | Best.-Nr./Part No. | Euro   |
|-----|------|----|---|----------------|--------------------|--------|
| 100 | 8,0  | 22 | 4 | 7.700 – 15.000 | 3116.110.22        | 135,00 |
| 100 | 15,0 | 22 | 4 | 7.700 – 15.000 | 3116.111.22        | 199,80 |



## Mini Patch Cutter

## 3116 HW



## 3020 HW



### Harzgallenfräser in Wechselplattenausführung

- MAN / Handvorschub

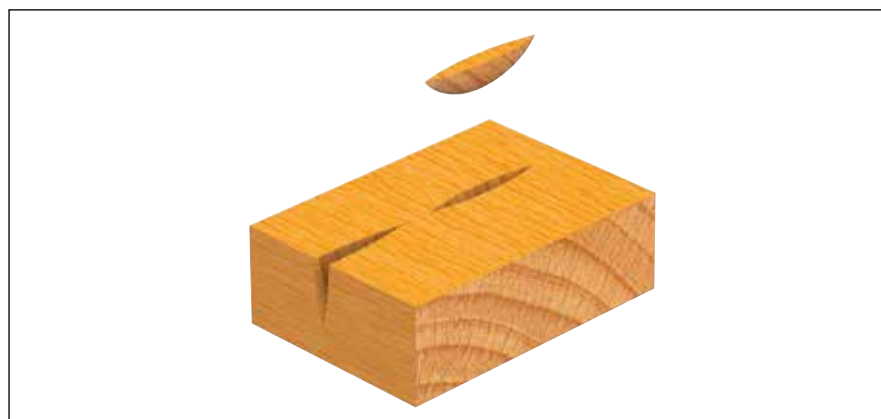
### HW WP Mini Patch Cutter

- MAN / manual feed

| D   | B   | d  | Z | n            | Best.-Nr./Part No. | Euro   |
|-----|-----|----|---|--------------|--------------------|--------|
| 100 | 8,0 | 22 | 3 | 7700 – 15000 | 3020.110.22        | 299,60 |

| Ersatzwendeplatten | Replacement knives | B   | H  | St. | Best.-Nr./Part No. | Euro  |
|--------------------|--------------------|-----|----|-----|--------------------|-------|
| HW-Profilplatte    | HW profile plate   | 8,0 | 20 | 2   | 3020.020.00        | 35,20 |

| Ersatzteile                 | Spare parts              | Best.-Nr./Part No. | Euro  |
|-----------------------------|--------------------------|--------------------|-------|
| Spannkeil 6 mm              | clamping jaw 6 mm        | 4067.006.01        | 11,70 |
| Spannschraube M5x16 (SW2,5) | lock screw M5x16 (SW2,5) | 4067.200.03        | 1,40  |
| T-Spannschlüssel SW2,5      | Torx key SW2,5           | 4067.000.25        | 4,80  |



## 3117 HW



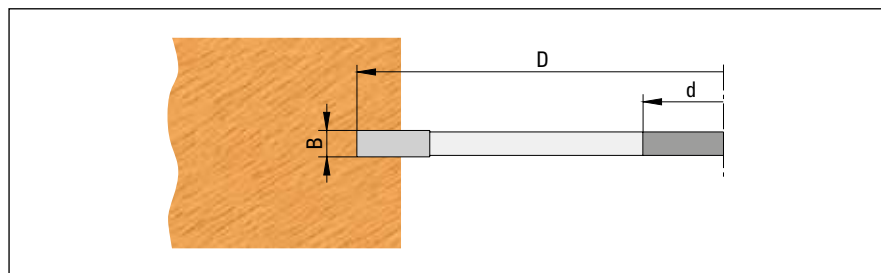
### HW-Lamello-Nuter Z6/12

- Wechselzahn
- MAN / Handvorschub

### HW Lamello Grooving Cutter Z6/12

- Alternate tooth
- MAN / manual feed

| D   | B   | d  | Z  | n              | Best.-Nr./Part No. | Euro  |
|-----|-----|----|----|----------------|--------------------|-------|
| 100 | 4,0 | 22 | 6  | 8.000 – 18.000 | 3117.101.22        | 65,50 |
| 100 | 4,0 | 22 | 12 | 8.000 – 18.000 | 3117.100.22        | 69,50 |



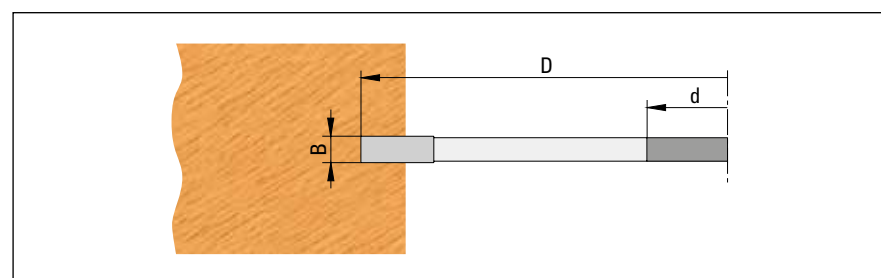
## HW-WPL-Lamello-Nuter Z4 + V4

- Auch passend für Lamello Top 20 mit 4 Senklöchern
- Tragkörper aus Stahl
- MAN / Handvorschub

| D   | B   | d  | n              | Best.-Nr./Part No. | Euro   |
|-----|-----|----|----------------|--------------------|--------|
| 100 | 4,0 | 22 | 7.700 – 15.000 | 3020.100.22        | 168,60 |

| Ersatzwendeplatten    | Replacement knives | B    | H    | St   | Best.-Nr./Part No. | Euro |
|-----------------------|--------------------|------|------|------|--------------------|------|
| HW-Räumerplatte       | HW raker knife     | 18,0 | 18,0 | 1,95 | 4200.018.20        | 9,60 |
| HW-Vorschneiderplatte | HW spur knife      | 14,0 | 14,0 | 1,2  | 4200.014.12        | 4,70 |

| Ersatzteile                   | Spare Parts              | Best.-Nr./Part No. | Euro |
|-------------------------------|--------------------------|--------------------|------|
| Torx-Schraube M4x3,2 (T9)     | Torx screw M4x3,2 (T9)   | 3020.000.00        | 3,10 |
| Mutter für Rämerschneide (T9) | nut for raker blade (T9) | 3020.000.01        | 3,10 |
| Mutter für Vorschneider (T9)  | nut for spur (T9)        | 3020.000.02        | 3,10 |
| Torx-Schlüssel T9             | Torx key T9              | 3020.000.10        | 6,60 |



## HW Lamello Grooving Cutter Z4 + V4

- Also suitable for Lamello Top 20 with 4 countersunk holes
- Body in steel
- MAN / manual feed

## 3020 HW



## HW-Nut-Kreissägeblatt

- HW-Lamello-Nuter für Tanga
- Einzusetzen auf der Trennfräsmaschine Tanga 1811S

| D   | B   | b   | d  | Z   | NL         | Best.-Nr./Part No. | Euro  |
|-----|-----|-----|----|-----|------------|--------------------|-------|
| 180 | 2,5 | 1,6 | 22 | 12F | 4SL 5,2/36 | 2002.181.22        | 53,40 |
| 180 | 2,5 | 1,6 | 22 | 24F | 4SL 5,2/36 | 2002.180.22        | 67,70 |

## HW Grooving Saw Blade

- HW Lamello Groover for Tanga
- Suitable for multi purpose cutter Tanga 1811S

## 2002



## 3185 HW\*



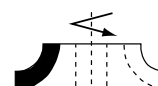
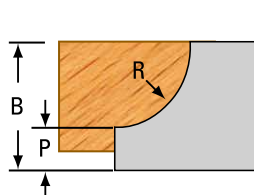
## HW-Abrundfräser Z3

- Viertelstab, Schema III
- MAN / Handvorschub

## HW Rounding Cutter Z3

- Quarter-round, scheme III
- MAN / manual feed

| D1  | D2  | B    | d  | R  | n             | Best.-Nr./Part No. | Euro   |
|-----|-----|------|----|----|---------------|--------------------|--------|
| 130 | 120 | 10,0 | 30 | 5  | 5.500 – 9.000 | 3185.120.05        | 333,70 |
| 132 | 120 | 11,0 | 30 | 6  | 5.500 – 9.000 | 3185.120.06        | 339,00 |
| 136 | 120 | 13,0 | 30 | 8  | 5.500 – 9.000 | 3185.120.08        | 349,20 |
| 140 | 120 | 15,0 | 30 | 10 | 5.500 – 9.000 | 3185.120.10        | 358,10 |
| 144 | 120 | 17,0 | 30 | 12 | 5.500 – 9.000 | 3185.120.12        | 366,50 |
| 148 | 120 | 19,0 | 30 | 14 | 5.500 – 9.000 | 3185.120.14        | 377,10 |
| 150 | 120 | 20,0 | 30 | 15 | 5.500 – 9.000 | 3185.120.15        | 383,10 |
| 152 | 120 | 21,0 | 30 | 16 | 5.500 – 9.000 | 3185.120.16        | 389,70 |
| 156 | 120 | 23,0 | 30 | 18 | 4.800 – 8.200 | 3185.120.18        | 397,40 |
| 160 | 120 | 25,0 | 30 | 20 | 4.800 – 8.200 | 3185.120.20        | 408,60 |



Schema III

scheme III

\*Solange Vorrat reicht

\*While stocks last

## HW-WP-Kantengetriebefräser Z2 + V4

- Zum nachträglichen Einfräsen der Beschlagnutte am Fensterflügel innen
- Passend zu den Beschlägen der Hersteller Roto-Centro, Segenia-Favorit, Weidtmann-Kurier u.a.
- Grundkörper aus Stahl
- MAN/Handvorschub

## HW-WP-Closure Fitting Cutter Z2 + V4

- For producing stepped groove to outside of window sash
- For closure fittings from Roto- Centro, Segenia-Favorit, Weidtmann-Kurier, etc.
- Body in steel
- MAN / manual feed

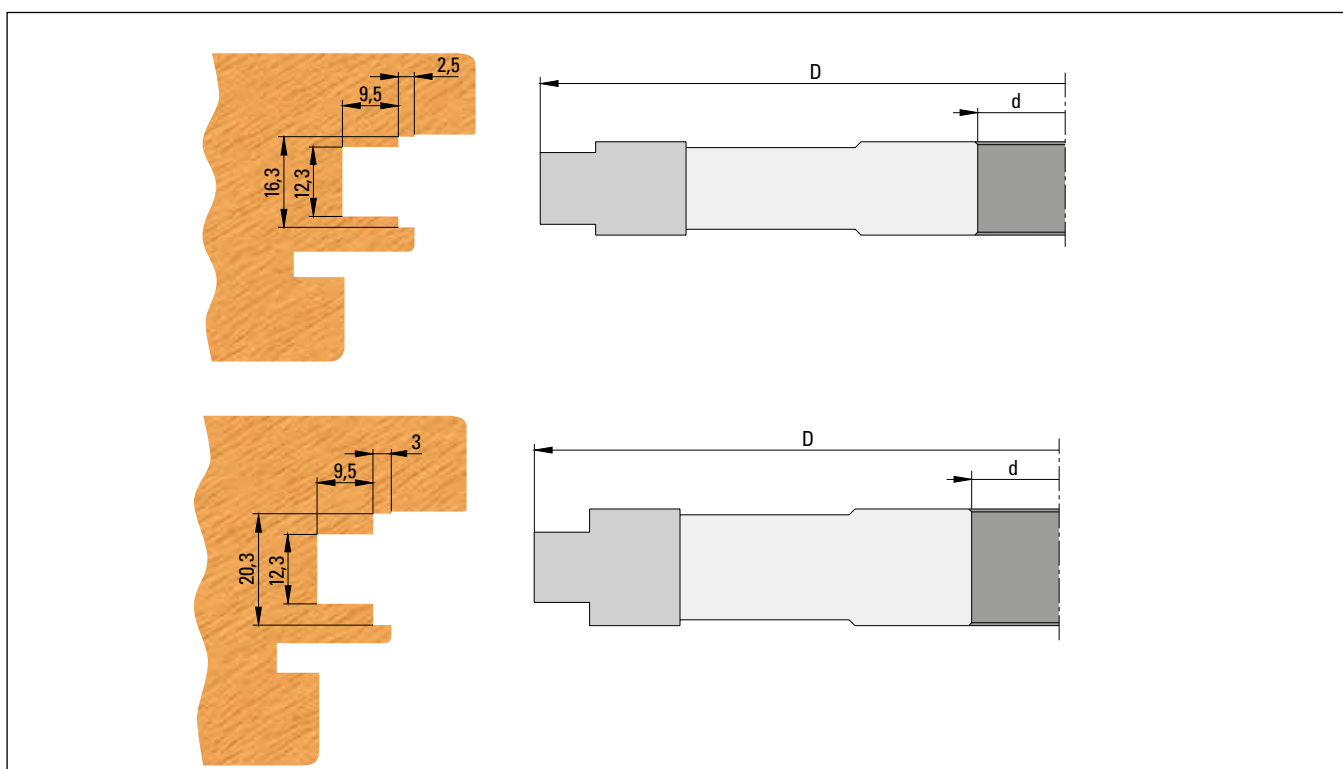
4057 HW



| D   | B1 / B2     | l   | d  | n           | Best.-Nr./Part No. | Euro   |
|-----|-------------|-----|----|-------------|--------------------|--------|
| 180 | 16,3 / 12,3 | 9,5 | 30 | 4000 – 7500 | 4057.180.30        | 255,50 |
| 180 | 20,3 / 12,5 | 9,5 | 30 | 4000 – 7500 | 4057.181.30        | 289,20 |

| Ersatzteile für B = 16,3 mm          | Spare parts for B = 16,3 mm   | B    | H    | St. | Best.-Nr./Part No. | Euro  |
|--------------------------------------|-------------------------------|------|------|-----|--------------------|-------|
| HW-Profilplatte                      | HW profile plate              | 16,0 | 25,0 | 2,0 | 4057.016.00        | 23,60 |
| HW-Vorschneiderplatte                | HW spur                       | 14,0 | 14,0 | 2,0 | 4200.014.04        | 2,10  |
| Spannkeil 13,5 x 8 x 12 mm           | clamping jaw 13,5 x 8 x 12 mm |      |      |     | 4067.013.50        | 11,00 |
| Spannschraube M6x16 (SW3)            | lock screw M6x16 (SW3)        |      |      |     | 4067.200.02        | 1,40  |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20)    |      |      |     | 4067.200.01        | 1,80  |
| T-Spannschlüssel SW3                 | T-clamping key SW3            |      |      |     | 4067.000.30        | 4,80  |
| Torx-Schlüssel T20                   | Torx key T20                  |      |      |     | 4067.000.10        | 5,70  |

| Ersatzteile für B = 20,3 mm          | Spare parts for B = 20,3 mm   | B    | H    | St  | Best.-Nr./Part No. | Euro  |
|--------------------------------------|-------------------------------|------|------|-----|--------------------|-------|
| HW-Profilplatte                      | HW profile plate              | 20,0 | 25,0 | 2,0 | 4057.020.00        | 25,60 |
| HW-Vorschneiderplatte                | HW spur                       | 14,0 | 14,0 | 2,0 | 4200.014.04        | 2,10  |
| Spannkeil 17,5 x 8 x 12 mm           | clamping jaw 17,5 x 8 x 12 mm |      |      |     | 4067.017.50        | 10,20 |
| Spannschraube M6x16 (SW3)            | lock screw M6x16 (SW3)        |      |      |     | 4067.200.02        | 1,40  |
| Torx-Vorschneiderschraube M5x6 (T20) | Torx spur screw M5x6 (T20)    |      |      |     | 4067.200.01        | 1,80  |
| T-Spannschlüssel SW3                 | T-clamping key SW3            |      |      |     | 4067.000.30        | 4,80  |
| Torx-Schlüssel T20                   | Torx key T20                  |      |      |     | 4067.000.10        | 5,70  |



## 3152 HW

### HW-Fasefräser

- Bitte Abmessung, Drehschema und Profil angeben
- MAN / Handvorschub

### HW Bevel Cutter

- Please specify dimensions, rotation scheme and profile
- MAN / manual feed

|                    |                 | Best.-Nr./Part No. | Euro |
|--------------------|-----------------|--------------------|------|
| Sonderabmessung Z2 | special size Z2 | 3152.000.00        | ***  |
| Sonderabmessung Z3 | special size Z3 | 3153.000.00        | ***  |
| Sonderabmessung Z4 | special size Z4 | 3154.000.00        | ***  |

\*\*\*Preis auf Anfrage

\*\*\*Price on request

## 3652 HS

### HS-Fasefräser

- Bitte Abmessung, Drehschema und Profil angeben
- MAN / Handvorschub

### HS Bevel Cutter

- Please specify dimensions, rotation scheme and profile
- MAN / manual feed

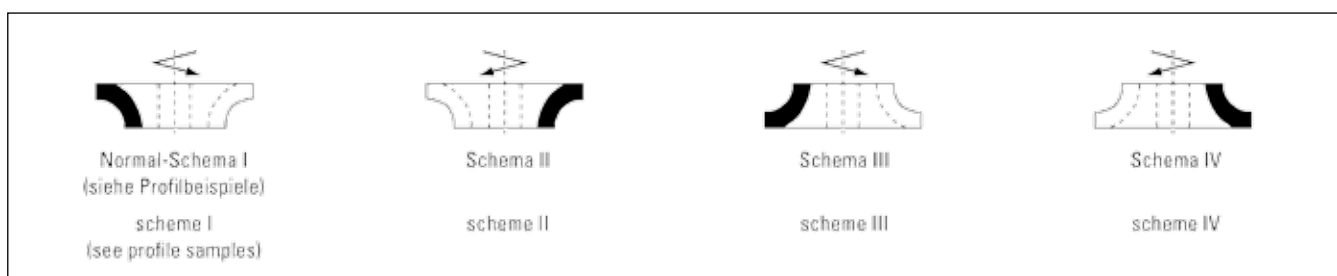
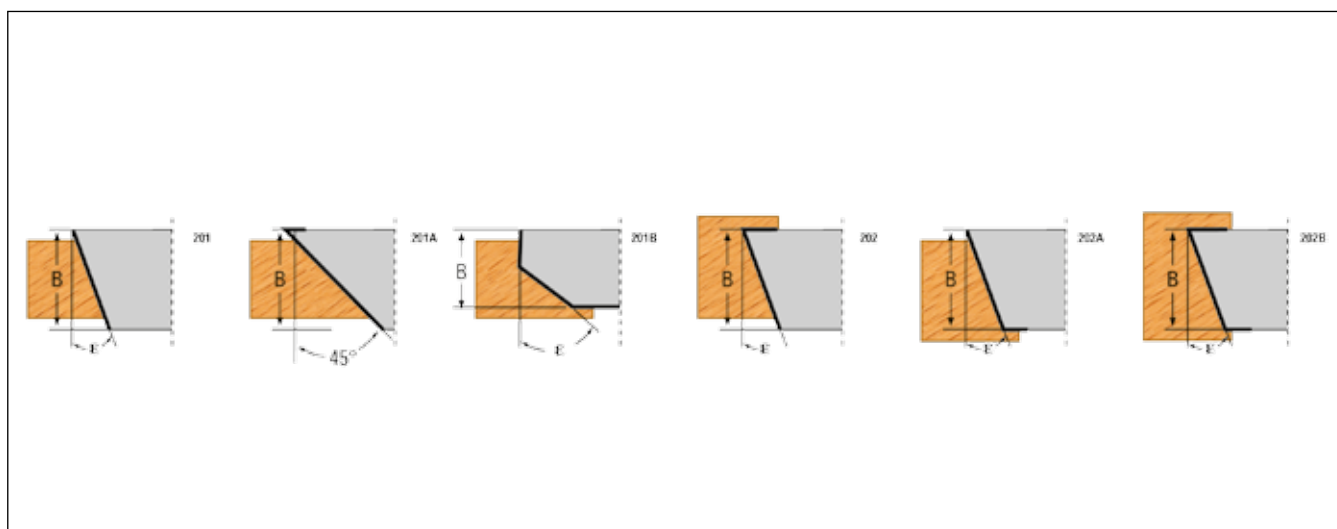
|                    |                 | Best.-Nr./Part No. | Euro |
|--------------------|-----------------|--------------------|------|
| Sonderabmessung Z2 | special size Z2 | 3652.000.00        | ***  |
| Sonderabmessung Z3 | special size Z3 | 3653.000.00        | ***  |
| Sonderabmessung Z4 | special size Z4 | 3654.000.00        | ***  |

\*\*\*Preis auf Anfrage

\*\*\*Price on request

für 3152 und 3652

for 3152 and 3652





## HW-Profilfräser Profilgruppe 1

- Bitte Abmessung, Drehschema und Profil angeben
- MAN / Handvorschub

## HW Profile Cutter Profile Group 1

- Please specify dimensions, rotation scheme and profile
- MAN / manual feed

**3162 HW**

|                    |                 | Best.-Nr./Part No. | Euro |
|--------------------|-----------------|--------------------|------|
| Sonderabmessung Z2 | special size Z2 | 3162.000.00        | ***  |
| Sonderabmessung Z3 | special size Z3 | 3163.000.00        | ***  |
| Sonderabmessung Z4 | special size Z4 | 3164.000.00        | ***  |

\*\*\*Preis auf Anfrage

\*\*\*Price on request

## HS-Profilfräser Profilgruppe 1

- Bitte Abmessung, Drehschema und Profil angeben
- MAN / Handvorschub

## HS Profile Cutter Profile Group 1

- Please specify dimensions, rotation scheme and profile
- MAN / manual feed

**3662 HS**

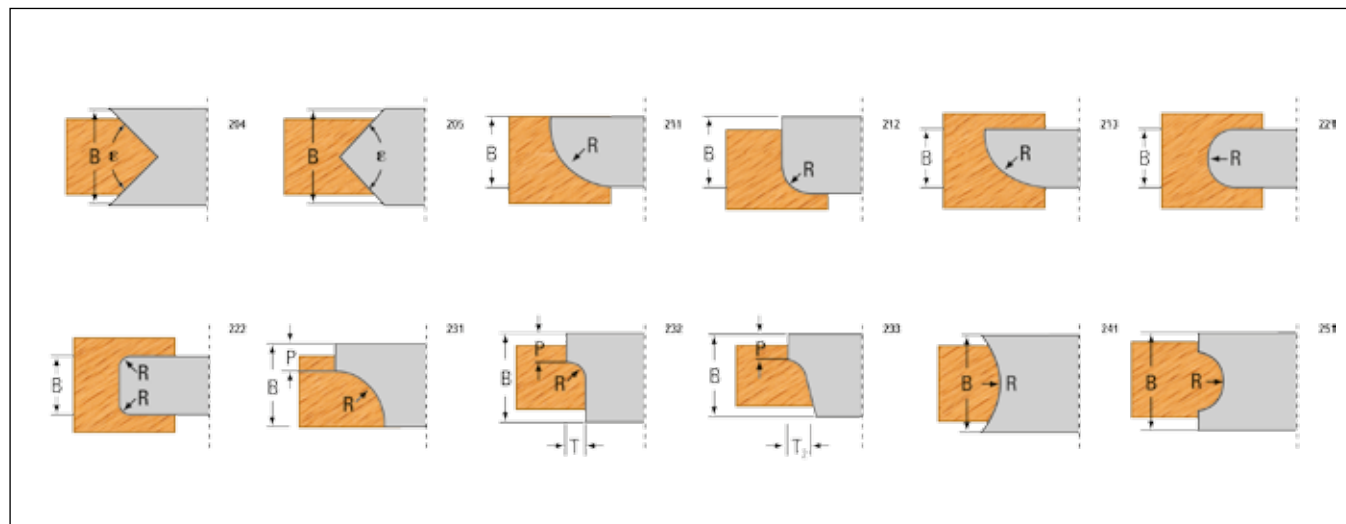
|                    |                 | Best.-Nr./Part No. | Euro |
|--------------------|-----------------|--------------------|------|
| Sonderabmessung Z2 | special size Z2 | 3662.000.00        | ***  |
| Sonderabmessung Z3 | special size Z3 | 3663.000.00        | ***  |
| Sonderabmessung Z4 | special size Z4 | 3664.000.00        | ***  |

\*\*\*Preis auf Anfrage

\*\*\*Price on request

**für 3162 und 3662**

**for 3162 and 3662**



## 3172 HW

### HW-Profilfräser Profilgruppe 2

- Bitte Abmessung, Drehschema und Profil angeben
- MAN / Handvorschub

### HW Profile Cutter Profile Group 2

- Please specify dimensions, rotation scheme and profile
- MAN / manual feed

|                    |                 | Best.-Nr./Part No. | Euro |
|--------------------|-----------------|--------------------|------|
| Sonderabmessung Z2 | special size Z2 | 3172.000.00        | ***  |
| Sonderabmessung Z3 | special size Z3 | 3173.000.00        | ***  |
| Sonderabmessung Z4 | special size Z4 | 3174.000.00        | ***  |

\*\*\*Preis auf Anfrage

\*\*\*Price on request

## 3672 HS

### HS-Profilfräser Profilgruppe 2

- Bitte Abmessung, Drehschema und Profil angeben
- MAN / Handvorschub

### HS Profile Cutter Profile Group 2

- Please specify dimensions, rotation scheme and profile
- MAN / manual feed

|                    |                 | Best.-Nr./Part No. | Euro |
|--------------------|-----------------|--------------------|------|
| Sonderabmessung Z2 | special size Z2 | 3672.000.00        | ***  |
| Sonderabmessung Z3 | special size Z3 | 3673.000.00        | ***  |
| Sonderabmessung Z4 | special size Z4 | 3674.000.00        | ***  |

\*\*\*Preis auf Anfrage

\*\*\*Price on request

für 3172 und 3672

for 3172 and 3672

