

# Inhalt

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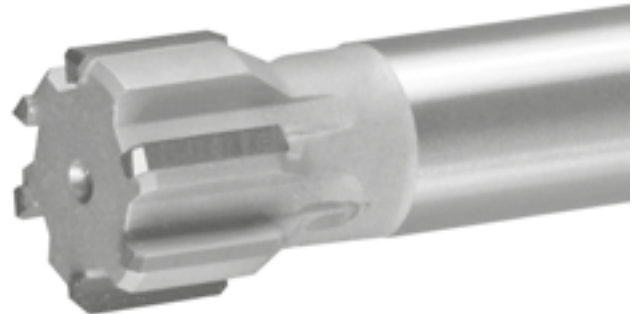
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**Fest-Reibahlen, Zyl.**  
**Solid reamers, cyl.**  
**Alésoirs fixes, cyl.**

**A25N / A45N**

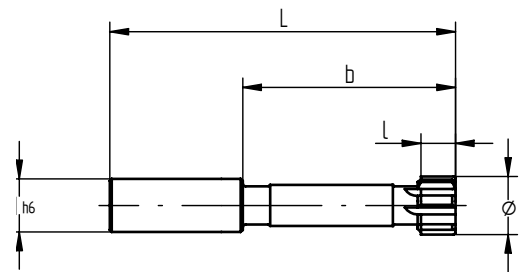
Ohne Kühlung  
 Without coolant through  
 Sans arrosage



**A25N**

**Gerade Schneiden**  
 Straight fluted  
 Outils avec coupe droite

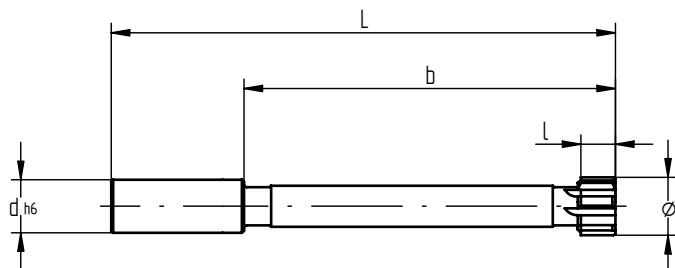
Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	80	8	40	12	4
7.61 - 8.60	80	10	40	12	4
8.61 - 9.60	90	10	50	12	4
9.61 - 10.60	90	12	50	12	4
10.61 - 14.60	100	12	50	12	6
14.61 - 15.60	100	14	50	12	6
15.61 - 18.60	110	14	50	16	6
18.61 - 21.10	130	14	60	20	6
21.11 - 25.10	130	16	60	20	6
25.11 - 28.10	145	16	75	25	6
28.11 - 33.10	145	18	75	25	6



**A45N**

**Gerade Schneiden**  
 Straight fluted  
 Outils avec coupe droite

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	120	8	80	12	4
7.61 - 8.60	120	10	80	12	4
8.61 - 9.60	130	10	90	12	4
9.61 - 10.60	130	12	90	12	4
10.61 - 14.60	150	12	100	12	6
14.61 - 15.60	150	14	100	12	6
15.61 - 18.60	160	14	100	16	6
18.61 - 21.10	190	14	120	20	6
21.11 - 25.10	190	16	120	20	6
25.11 - 28.10	220	16	150	25	6
28.11 - 33.10	220	18	150	25	6



# Fest-Reibahlen, Zyl. Solid reamers, cyl. Alésoirs fixes, cyl.

## A27N / A47N

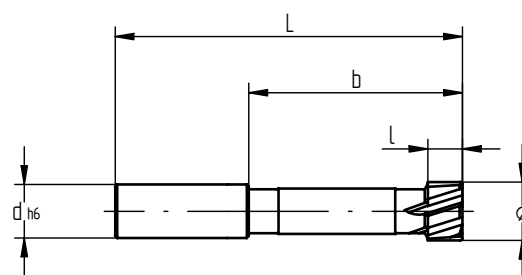
Ohne Kühlung  
Without coolant through  
Sans arrosage



### A27N

**Linksschräg verzahnte Schneiden**  
Left helical fluted  
Outils avec coupe diagonale gauche

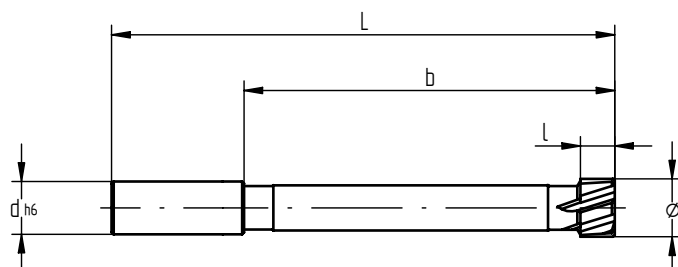
Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	dh6	Z
5.80 - 7.60	80	8	40	12	4
7.61 - 8.60	80	10	40	12	4
8.61 - 9.60	90	10	50	12	4
9.61 - 10.60	90	12	50	12	4
10.61 - 14.60	100	12	50	12	6
14.61 - 15.60	100	14	50	12	6
15.61 - 18.60	110	14	50	16	6
18.61 - 21.10	130	14	60	20	6
21.11 - 25.10	130	16	60	20	6
25.11 - 28.10	145	16	75	25	6
28.11 - 33.10	145	18	75	25	6



### A47N

**Linksschräg verzahnte Schneiden**  
Left helical fluted  
Outils avec coupe diagonale gauche

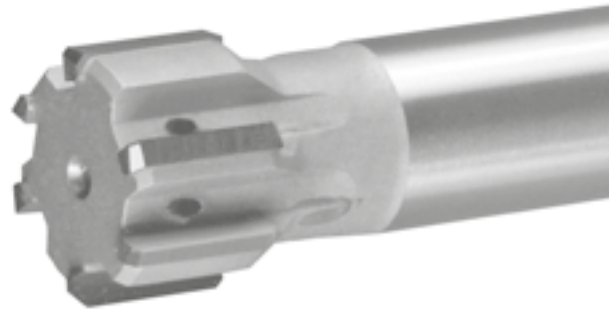
Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	dh6	Z
5.80 - 7.60	120	8	80	12	4
7.61 - 8.60	120	10	80	12	4
8.61 - 9.60	130	10	90	12	4
9.61 - 10.60	130	12	90	12	4
10.61 - 14.60	150	12	100	12	6
14.61 - 15.60	150	14	100	12	6
15.61 - 18.60	160	14	100	16	6
18.61 - 21.10	190	14	120	20	6
21.11 - 25.10	190	16	120	20	6
25.11 - 28.10	220	16	150	25	6
28.11 - 33.10	220	18	150	25	6



**Fest-Reibahlen, Zyl.**  
**Solid reamers, cyl.**  
**Alésoirs fixes, cyl.**

**C25N / B25N**

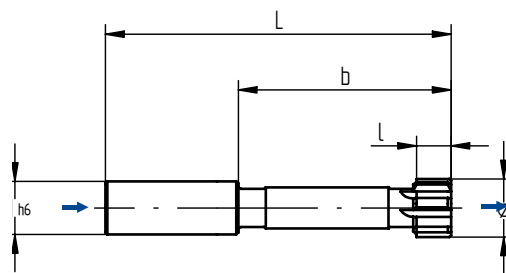
Mit Kühlung  
 With coolant through  
 Avec arrosage



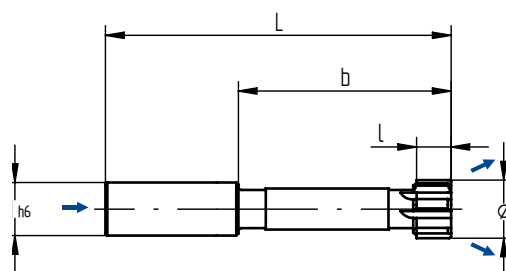
**Gerade Schneiden**  
 Straight fluted  
 Outils avec coupe droite

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	80	8	40	12	4
7.61 - 8.60	80	10	40	12	4
8.61 - 9.60	90	10	50	12	4
9.61 - 10.60	90	12	60	12	4
10.61 - 14.60	100	12	60	12	6
14.61 - 15.60	100	14	60	12	6
15.61 - 18.60	110	14	60	16	6
18.61 - 21.10	130	14	70	20	6
21.11 - 25.10	130	16	70	20	6
25.11 - 28.10	145	16	85	25	6
28.11 - 33.10	145	18	85	25	6

**C25N**



**B25N**



**Fest-Reibahlen, Zyl.**  
**Solid reamers, cyl.**  
**Alésoirs fixes, cyl.**

**C27N / B27N**

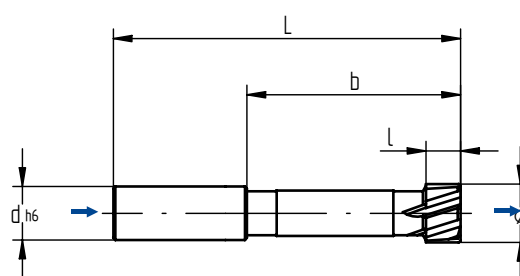
Mit Kühlung  
 With coolant through  
 Avec arrosage



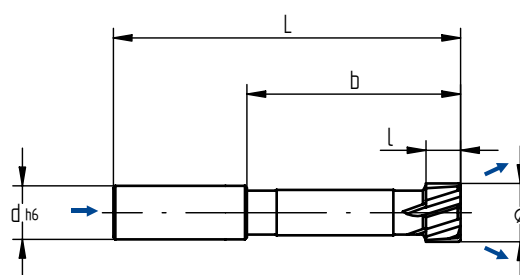
**Linksschräg verzahnte Schneiden**  
 Left helical fluted  
 Outils avec coupe diagonale gauche

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	80	8	40	12	4
7.61 - 8.60	80	10	40	12	4
8.61 - 9.60	90	10	50	12	4
9.61 - 10.60	90	12	60	12	4
10.61 - 14.60	100	12	60	12	6
14.61 - 15.60	100	14	60	12	6
15.61 - 18.60	110	14	60	16	6
18.61 - 21.10	130	14	70	20	6
21.11 - 25.10	130	16	70	20	6
25.11 - 28.10	145	16	85	25	6
28.11 - 33.10	145	18	85	25	6

**C27N**



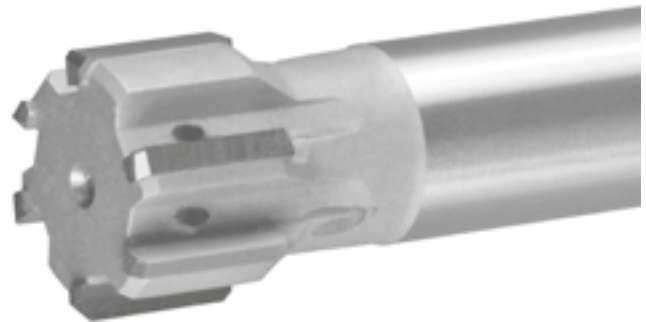
**B27N**



**Fest-Reibahlen, Zyl.**  
**Solid reamers, cyl.**  
**Alésoirs fixes, cyl.**

**C45N / B45N**

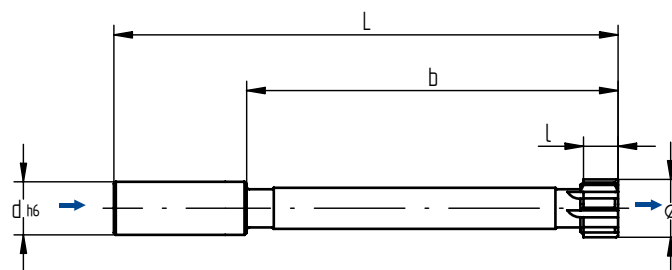
Mit Kühlung  
 With coolant through  
 Avec arrosage



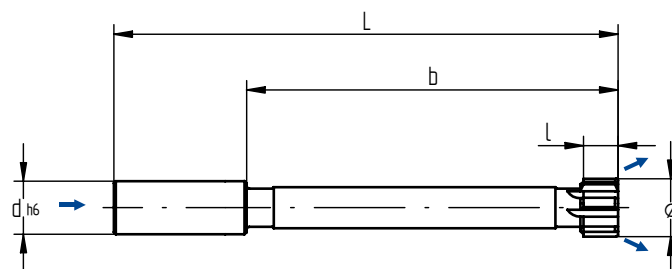
**Gerade Schneiden**  
 Straight fluted  
 Outils avec coupe droite

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	120	8	80	12	4
7.61 - 8.60	120	10	80	12	4
8.61 - 9.60	130	10	90	12	4
9.61 - 10.60	130	12	90	12	4
10.61 - 14.60	150	12	110	12	6
14.61 - 15.60	150	14	110	12	6
15.61 - 18.60	160	14	110	16	6
18.61 - 21.10	190	14	130	20	6
21.11 - 25.10	190	16	130	20	6
25.11 - 28.10	220	16	160	25	6
28.11 - 33.10	220	18	160	25	6

**C45N**



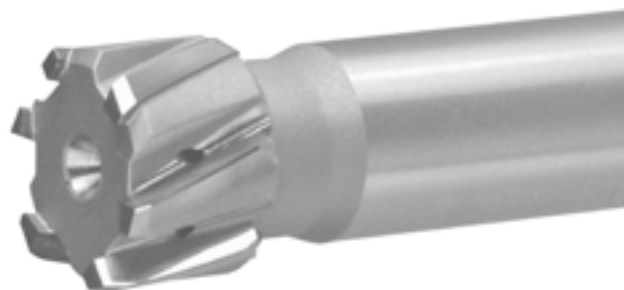
**B45N**



**Fest-Reibahlen, Zyl.**  
**Solid reamers, cyl.**  
**Alésoirs fixes, cyl.**

**C47N / B47N**

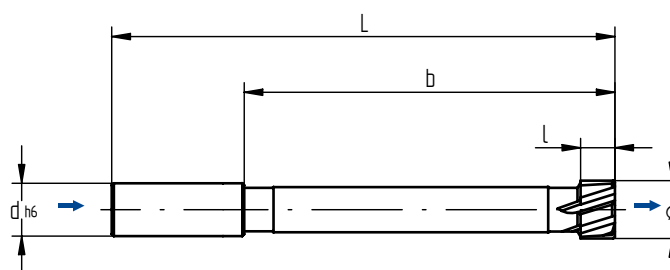
Mit Kühlung  
 With coolant through  
 Avec arrosage



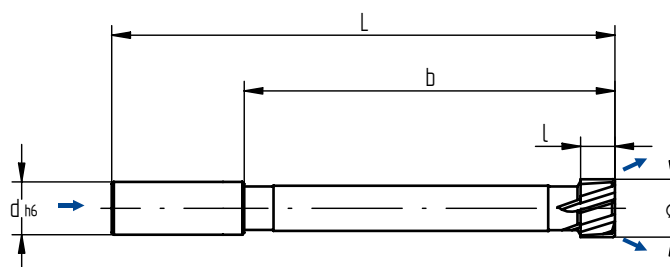
**Linksschräg verzahnte Schneiden**  
 Left helical fluted  
 Outils avec coupe diagonale gauche

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	120	8	80	12	4
7.61 - 8.60	120	10	80	12	4
8.61 - 9.60	130	10	90	12	4
9.61 - 10.60	130	12	90	12	4
10.61 - 14.60	150	12	110	12	6
14.61 - 15.60	150	14	110	12	6
15.61 - 18.60	160	14	110	16	6
18.61 - 21.10	190	14	130	20	6
21.11 - 25.10	190	16	130	20	6
25.11 - 28.10	220	16	160	25	6
28.11 - 33.10	220	18	160	25	6

**C47N**



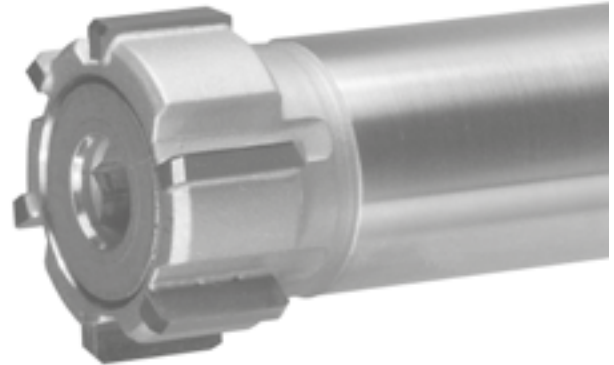
**B47N**



**Nachstell-Reibahlen, Zyl.**  
**Expandable reamers, cyl.**  
**Alésoirs expansibles, cyl.**

**D25N / D45N**

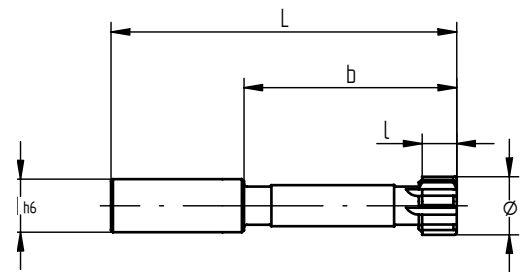
Ohne Kühlung  
 Without coolant through  
 Sans arrosage



**D25N**

**Gerade Schneiden**  
 Straight fluted  
 Outils avec coupe droite

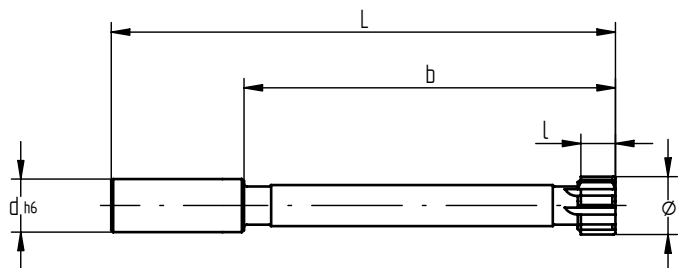
Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	dh6	Z
5.80 - 7.60	80	8	40	12	4
7.61 - 8.60	80	10	40	12	4
8.61 - 9.60	90	10	50	12	4
9.61 - 10.60	90	12	50	12	4
10.61 - 14.60	100	12	50	12	6
14.61 - 15.60	100	14	50	12	6
15.61 - 18.60	110	14	50	16	6
18.61 - 21.10	130	14	60	20	6
21.11 - 25.10	130	16	60	20	6
25.11 - 28.10	145	16	75	25	6
28.11 - 33.10	145	18	75	25	6



**D45N**

**Gerade Schneiden**  
 Straight fluted  
 Outils avec coupe droite

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	dh6	Z
5.80 - 7.60	120	8	80	12	4
7.61 - 8.60	120	10	80	12	4
8.61 - 9.60	130	10	90	12	4
9.61 - 10.60	130	12	90	12	4
10.61 - 14.60	150	12	100	12	6
14.61 - 15.60	150	14	100	12	6
15.61 - 18.60	160	14	100	16	6
18.61 - 21.10	190	14	120	20	6
21.11 - 25.10	190	16	120	20	6
25.11 - 28.10	220	16	150	25	6
28.11 - 33.10	220	18	150	25	6



# Nachstell-Reibahlen, Zyl.

## Expandable reamers, cyl.

### Alésoirs expansibles, cyl.

## D27N / D47N

Ohne Kühlung  
Without coolant through  
Sans arrosage



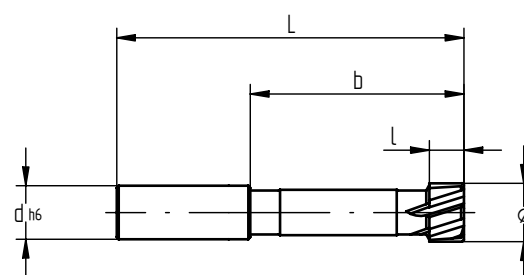
### D27N

#### Linksschräg verzahnte Schneiden

Left helical fluted

Outils avec coupe diagonale gauche

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	dh6	Z
5.80 - 7.60	80	8	40	12	4
7.61 - 8.60	80	10	40	12	4
8.61 - 9.60	90	10	50	12	4
9.61 - 10.60	90	12	50	12	4
10.61 - 14.60	100	12	50	12	6
14.61 - 15.60	100	14	50	12	6
15.61 - 18.60	110	14	50	16	6
18.61 - 21.10	130	14	60	20	6
21.11 - 25.10	130	16	60	20	6
25.11 - 28.10	145	16	75	25	6
28.11 - 33.10	145	18	75	25	6



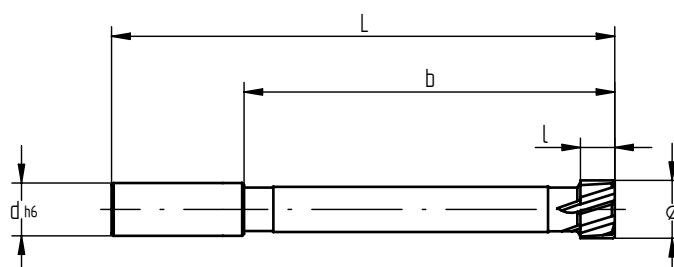
### D47N

#### Linksschräg verzahnte Schneiden

Left helical fluted

Outils avec coupe diagonale gauche

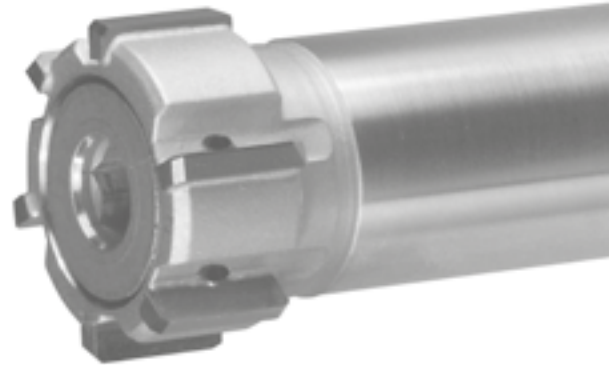
Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	dh6	Z
5.80 - 7.60	120	8	80	12	4
7.61 - 8.60	120	10	80	12	4
8.61 - 9.60	130	10	90	12	4
9.61 - 10.60	130	12	90	12	4
10.61 - 14.60	150	12	100	12	6
14.61 - 15.60	150	14	100	12	6
15.61 - 18.60	160	14	100	16	6
18.61 - 21.10	190	14	120	20	6
21.11 - 25.10	190	16	120	20	6
25.11 - 28.10	220	16	150	25	6
28.11 - 33.10	220	18	150	25	6



**Nachstell-Reibahlen, Zyl.**  
**Expandable reamers, cyl.**  
**Alésoirs expansibles, cyl.**

**G25N / F25N**

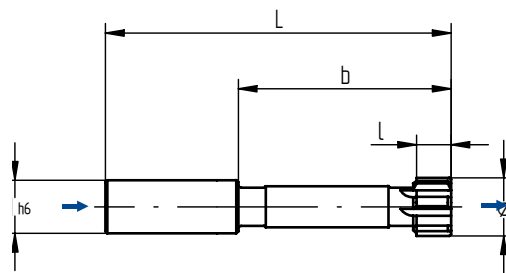
Mit Kühlung  
 With coolant through  
 Avec arrosage



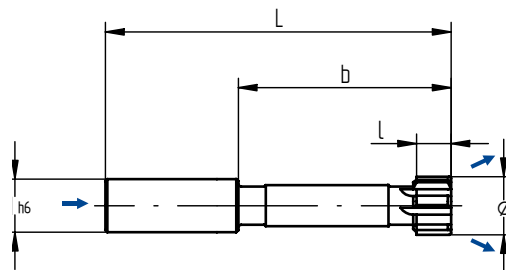
**Gerade Schneiden**  
 Straight fluted  
 Outils avec coupe droite

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	80	8	40	12	4
7.61 - 8.60	80	10	40	12	4
8.61 - 9.60	90	10	50	12	4
9.61 - 10.60	90	12	60	12	4
10.61 - 14.60	100	12	60	12	6
14.61 - 15.60	100	14	60	12	6
15.61 - 18.60	110	14	60	16	6
18.61 - 21.10	130	14	70	20	6
21.11 - 25.10	130	16	70	20	6
25.11 - 28.10	145	16	85	25	6
28.11 - 33.10	145	18	85	25	6

**G25N**



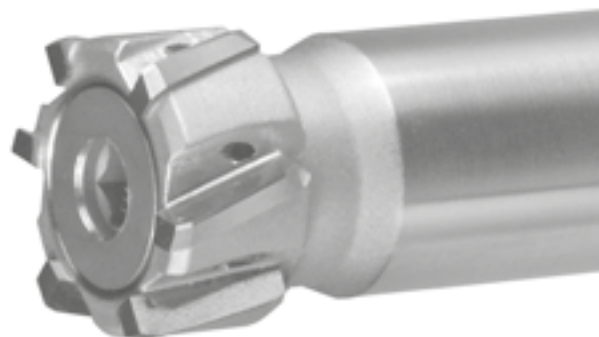
**F25N**



**Nachstell-Reibahlen, Zyl.**  
**Expandable reamers, cyl.**  
**Alésoirs expansibles, cyl.**

**G27N / F27N**

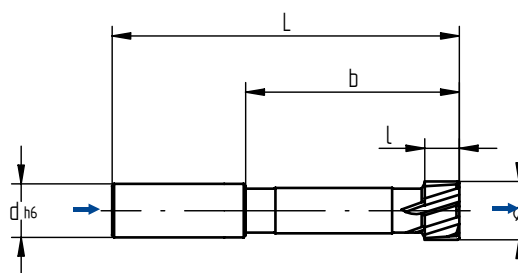
Mit Kühlung  
 With coolant through  
 Avec arrosage



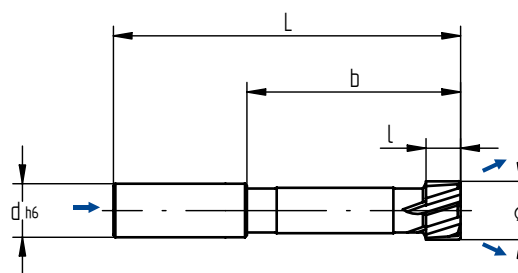
**Linksschräg verzahnte Schneiden**  
 Left helical fluted  
 Outils avec coupe diagonale gauche

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	80	8	40	12	4
7.61 - 8.60	80	10	40	12	4
8.61 - 9.60	90	10	50	12	4
9.61 - 10.60	90	12	60	12	4
10.61 - 14.60	100	12	60	12	6
14.61 - 15.60	100	14	60	12	6
15.61 - 18.60	110	14	60	16	6
18.61 - 21.10	130	14	70	20	6
21.11 - 25.10	130	16	70	20	6
25.11 - 28.10	145	16	85	25	6
28.11 - 33.10	145	18	85	25	6

**G27N**



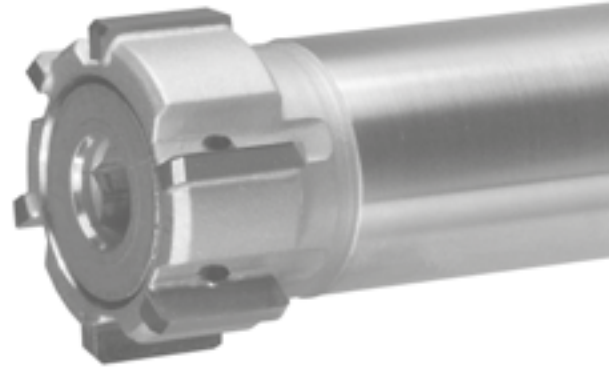
**F27N**



**Nachstell-Reibahlen, Zyl.**  
**Expandable reamers, cyl.**  
**Alésoirs expansibles, cyl.**

**G45N / F45N**

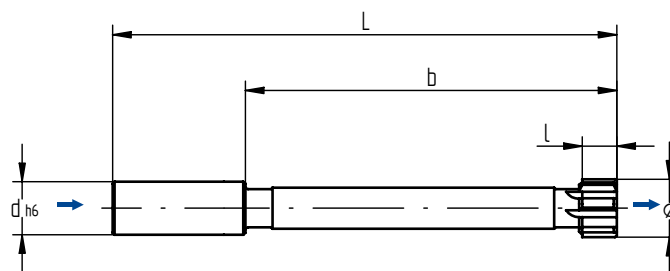
Mit Kühlung  
 With coolant through  
 Avec arrosage



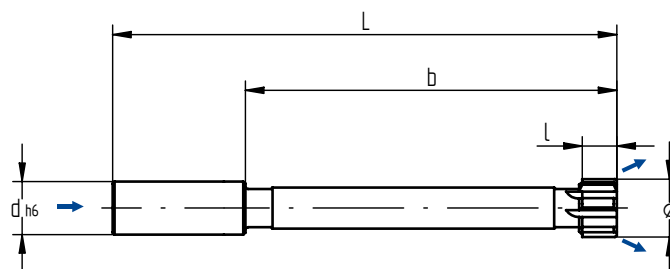
**Gerade Schneiden**  
 Straight fluted  
 Outils avec coupe droite

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	120	8	80	12	4
7.61 - 8.60	120	10	80	12	4
8.61 - 9.60	130	10	90	12	4
9.61 - 10.60	130	12	90	12	4
10.61 - 14.60	150	12	110	12	6
14.61 - 15.60	150	14	110	12	6
15.61 - 18.60	160	14	110	16	6
18.61 - 21.10	190	14	130	20	6
21.11 - 25.10	190	16	130	20	6
25.11 - 28.10	220	16	160	25	6
28.11 - 33.10	220	18	160	25	6

**G45N**



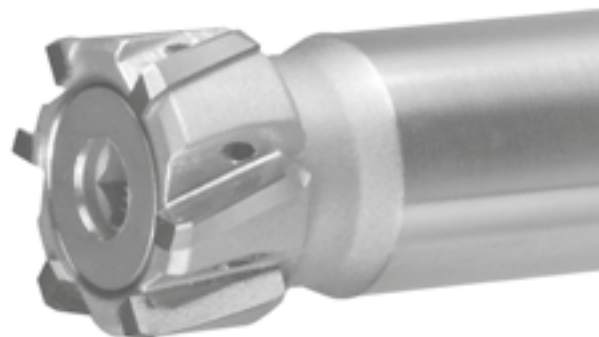
**F45N**



**Nachstell-Reibahlen, Zyl.**  
**Expandable reamers, cyl.**  
**Alésoirs expansibles, cyl.**

**G47N / F47N**

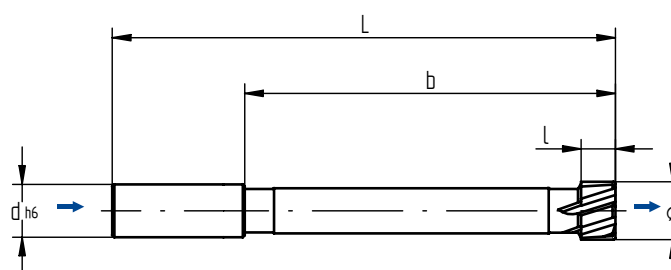
Mit Kühlung  
 With coolant through  
 Avec arrosage



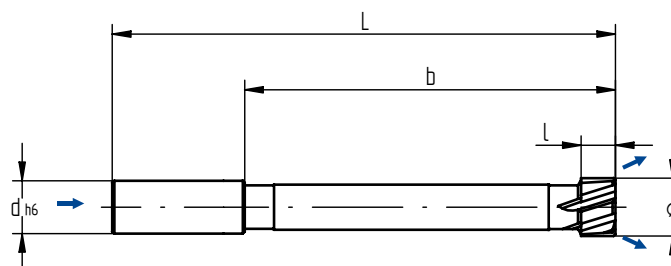
**Linksschräg verzahnte Schneiden**  
 Left helical fluted  
 Outils avec coupe diagonale gauche

Ø-Bereich mm Ø-range mm Ø-plage mm	L	l	b	d <sub>h6</sub>	Z
5.80 - 7.60	120	8	80	12	4
7.61 - 8.60	120	10	80	12	4
8.61 - 9.60	130	10	90	12	4
9.61 - 10.60	130	12	90	12	4
10.61 - 14.60	150	12	110	12	6
14.61 - 15.60	150	14	110	12	6
15.61 - 18.60	160	14	110	16	6
18.61 - 21.10	190	14	130	20	6
21.11 - 25.10	190	16	130	20	6
25.11 - 28.10	220	16	160	25	6
28.11 - 33.10	220	18	160	25	6

**G47N**



**F47N**



# Schnittdaten Richtwerte Variopoint

## Recommended Cutting Data Variopoint

### Données de coupe indicatives Variopoint

ISO	UC	VR	Drehbohrung		linksschräg verzahnt left helical fluted coupe diagonale gauche		gerade straight fluted coupe droite				$a_p$ (mm)			
			D <sup>1)</sup>	B <sup>1)</sup>	25° B01	30/4° D01	45° A01	45/8° C01	20° E01 <sup>3)</sup>	90° F01 <sup>4)</sup>	ø < 11 mm	ø 11-25 mm	ø 25-50 mm	
P	1	L	■		■							0.08-0.13	0.10-0.18	0.10-0.20
		G	■	■			■	□		□		0.08-0.13	0.10-0.18	0.10-0.20
	2	L	■		■	□						0.08-0.13	0.10-0.18	0.10-0.20
		G	■	■			■	□		□		0.08-0.13	0.10-0.18	0.10-0.20
	3	L	■		■	□						0.08-0.13	0.10-0.18	0.10-0.20
		G	■	■			■	□		□		0.08-0.13	0.10-0.18	0.10-0.20
	3.1	L												
		G	■	■			■	□		□		0.08-0.15	0.10-0.20	0.10-0.20
	3.2	L												
		G	■	■			■	□		□		0.08-0.15	0.10-0.20	0.10-0.20
	3.3	L												
		G	■	■			■	□		□		0.08-0.15	0.10-0.20	0.10-0.20
H	4	L												
		G	■	■			□			■				
M	5	L												
		G	■	■			■	□		□		0.08-0.13	0.08-0.18	0.08-0.20
	5.1	L												
		G	■	■			■	□		□		0.08-0.13	0.08-0.18	0.08-0.20
	5.2	L												
		G	■	■			■	□		□		0.08-0.13	0.08-0.18	0.08-0.20
K	6	L												
		G	■	■			■	□		□		0.10-0.18	0.10-0.25	0.10-0.25
	6.1	L												
		G	■	■			■	□		□		0.10-0.18	0.10-0.25	0.10-0.25
	6.2	L												
		G	■	■			■	□		□		0.10-0.18	0.10-0.25	0.10-0.25
N	7	L												
		G	■	■			■	□		□		0.08-0.13	0.08-0.20	0.10-0.25
	7.1	L												
		G	■	■			■	□		□		0.08-0.13	0.08-0.20	0.10-0.25
	7.2	L												
		G	■	■			■	□		□		0.10-0.18	0.10-0.25	0.10-0.25
	7.3	L	□		■	□						0.06-0.10	0.06-0.15	0.08-0.18
		G	■	■			■	□	□	■		0.06-0.10	0.06-0.15	0.08-0.18
7.4	L	□		■	□						0.06-0.12	0.06-0.18	0.08-0.18	
	G	■	■			■	□	□	■		0.06-0.12	0.06-0.18	0.08-0.18	
S	8	L												
		G	■	■			□			■		0.10-0.18	0.10-0.20	0.10-0.25
	8.1	L												
		G	■	■			□			■		0.10-0.18	0.10-0.20	0.10-0.25

ISO = Standard

UC = Urma Material code / Urma material code / Désignation de la matière

VR = Verzahnungsrichtung / Direction of flutes / Direction de coupe

G = Gerade genutet / Straight fluted / Coupe droite

L = Linksschräg / Left helical fluted / Coupe diagonale gauche

$a_p$  = Empfohlene, radiale Spantiefe / Recommended radial cutting depth /  
Profondeur de coupe radiale recommandée

■ = Standard

□ = Optional

1) D = Durchgangsbohrung / Through hole / Trou passant

1) B = Sacklochbohrung / Blind hole / Trou borgne

3) = Schälanschnitt / Curling cut / Coupe gun

4) = Stirnschnitt / Face cutting / Coupe frontale

Unbeschichtet / Uncoated / Sans revêtement				Beschichtet / Coated / Revêtu							
HM W1 <sup>5)</sup> (HW-K10)		Cermet T1 <sup>5)</sup> (HT-P15)		HM W2 – W3 <sup>5)</sup> (HC-K10)		Cermet T2 – T3 <sup>5)</sup> (HT-P15)		PKD D1 <sup>5)</sup> (DP-N05)		CBN B1 <sup>5)</sup> (BN-H05)	
vc m/min	fz mm/z	vc m/min	fz mm/z	vc m/min	fz mm/z	vc m/min	fz mm/z	vc m/min	fz mm/z	vc m/min	fz mm/z
6-10	0.04-0.20	75-200	0.06-0.23	60-150	0.06-0.23	75-200	0.06-0.23				
6-10	0.03-0.15	75-200	0.04-0.15	60-150	0.04-0.15	75-200	0.04-0.15				
6-10	0.04-0.20	75-200	0.06-0.23	60-150	0.06-0.23	75-200	0.06-0.23				
6-10	0.03-0.15	75-200	0.04-0.15	60-150	0.04-0.15	75-200	0.04-0.15				
6-10	0.04-0.20	60-150	0.04-0.20	40-100	0.04-0.20	60-150	0.04-0.20				
6-10	0.03-0.15	60-150	0.03-0.15	40-100	0.03-0.15	60-150	0.03-0.15				
6-10	0.03-0.12			15-40	0.03-0.15						
4-7	0.03-0.10			15-40	0.03-0.15						
4-7	0.03-0.10			10-25	0.03-0.15						
											2)
5-8	0.03-0.12			15-40	0.03-0.15						
4-7	0.03-0.12			10-30	0.03-0.15						
4-7	0.03-0.12			10-30	0.03-0.15						
10-25	0.03-0.18			30-120	0.04-0.23						
6-12	0.03-0.18			20-80	0.04-0.23						
10-20	0.03-0.18	100-250	0.04-0.23	60-220	0.04-0.23	100-250	0.04-0.23				
10-25	0.03-0.15	100-300	0.04-0.23	60-180	0.04-0.23	100-300	0.04-0.23	100-300	0.02-0.05		
8-20	0.03-0.15			30-90	0.04-0.23			100-300	0.02-0.05		
10-25	0.03-0.10			15-40	0.03-0.15						
6-14	0.06-0.22										
6-14	0.04-0.15										
4-7	0.06-0.22										
4-7	0.04-0.23										
10-30	0.04-0.23										
4-12	0.04-0.15							80-160	0.02-0.07		

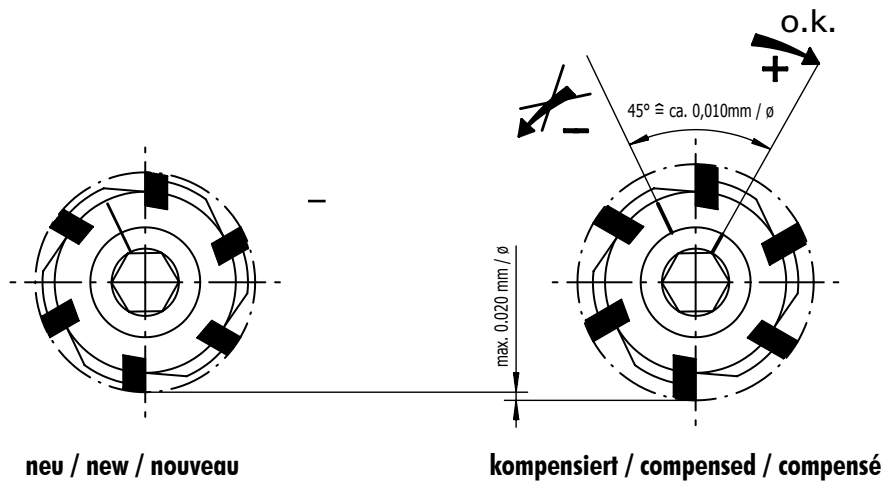
<sup>2)</sup> Auf Anfrage / On request / Sur demande

<sup>5)</sup> Nummernschlüssel Seite 45 / Numerical code page 45 / Code numérique page 45

# Anwendungshinweise Variopoint

## Directions for use Variopoint

### Conseils d'utilisation Variopoint



## RX Retrofit



### Richtlinien für RX Retrofit:

1. Retrofit möglich ab 5 Schneiden gleicher Art (Durchmesser und Geometrie)
2. Retrofit nur 1x möglich
3. Ausgebrochene, zerbrochene oder stark verschlissene Schneiden können nicht nachgeschliffen werden
4. Preis: 80 % vom Nettopreis

### Regulations for RX retrofit:

1. Retrofit is available from 5 pcs of the same insert (diameter and geometry)
2. Each insert can only be retrofitted once
3. Broken, cracked or strongly worn-out inserts cannot be retrofitted
4. Price: 80 % of net price

### Réglementation pour le retrofit RX:

1. Le réaffutage est possible à partir de 5 pièces du même type (diamètre et géométrie)
2. Un seul réaffutage est possible
3. Les outils fortement endommagés ne peuvent être réaffutés
4. Prix: 80 % du coût neuf