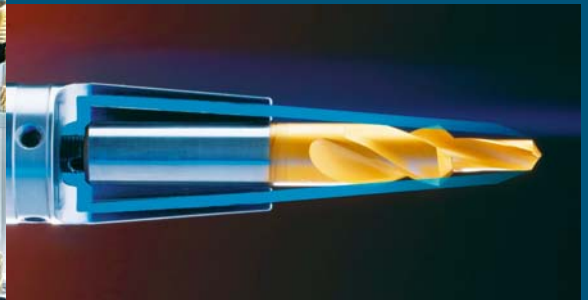


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Qualität gewinnt.

30 JAHRE/YEARS
HAIMER



Zubehör
Accessories

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FOR GOOD COMMUNICATION**

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Zubehör

Accessories

<u>Artikel/Article</u>	<u>Seite/Page</u>
Schrumpfverlängerungen Shrinking Extensions	4
Reduzierhülsen Reduction Sleeves	7
Cool Jet Cool Jet	8
Spannmütern für Spannzangenfutter Locknuts for collet chucks	9
Spannzangen ER/OZ Collets ER/OZ	10
Spannschlüssel Wrenches	15
HG-Spannzangen und HG-Kegelwischer HG Collets and HG Cone Wiper	16
Anzugsbolzen Pull Studs	17
Sägeblattaufnahme Sawblade Holder	20
Kühlmittelrohre Coolant Tubes	21
Auswuchtringe Balancing Index Rings	22
Wuchtschraubensatz Set of Balancing Screws	23
Schrumpffutterbürste Shrink Fit Brush	24
Kegelwischer Cone Wiper	25
Einstellschrauben für Schrumpffutter Back up Screws for Shrink Fit Chucks	26
Einstellschrauben für Whistle-Notch Back up Screws for Whistle Notch	28
Längeneinstellschrauben für Spannzangenfutter ER Back up Screws for Collet Chucks	29
Spannschrauben für Weldon- und Whistle-Notch Aufnahmen Clamping Screws for Weldon and Whistle Notch	30
Messerkopf, Kombi-Zubehör Accessories Face Mill, Combination Shell	31
Schnellwechseleinsätze Typ FH Quick Change Inserts Type FH	32
Umrüstsatz DIN 2080-DIN 69871 Conversion Kit DIN 2080-DIN 69871	33

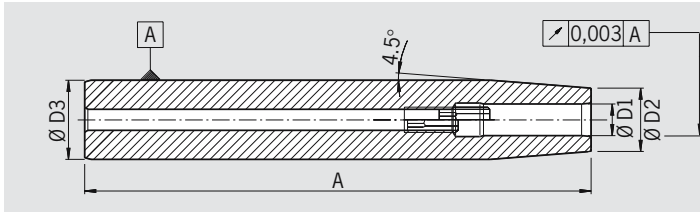
SCHRUMPFVERLÄNGERUNGEN/SHRINK FIT EXTENSIONS

Die universelle Lösung für Ihre Bearbeitungsfälle

- absolute Rundlaufgenauigkeit
- optimale und nahezu unbegrenzte Verlängerungen möglich
- universell einsetzbar und immer wieder neu verwendbar
- die wirtschaftlichere Art, Sonderlösungen zu bearbeiten
- für HM- und HSS-Schäfte
- Lieferung ohne Kühladapter

The universal solution for your machining issues

- highest runout accuracy
- optimum and almost unlimited extensions likely
- the most economic way for special machining requirements
- for carbide steel and HSS shanks
- delivery without cooling adapter



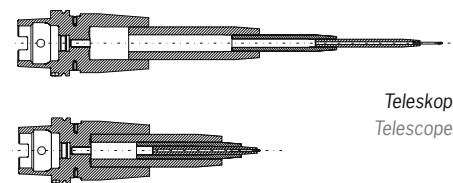
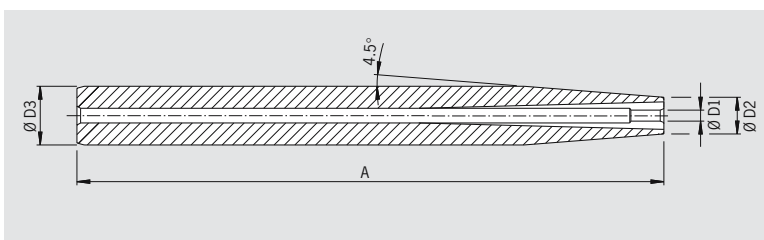
Ausführung:

- mit Längeneinstellschraube (Verstellweg 10 mm)

Version:

- with set screw

Bestell-Nr. Order No.	Länge A Length A [mm]	Außen Ø Outer Ø D3 [mm]	Schafttoleranz Shank tolerance	Spann Ø Clamping Ø D1 [mm]	Ø D2 [mm]	L [mm]	Kühlung mit Kühlkörper Cooling body	zusätzlich mit Kühladapter Adapter
78.160.06	160	16	h6	6	10	36	Ø 14-16	80.105.14.1.1
78.200.06	160	20	h6	6	14	36	Ø 14-16	80.105.14.1.2
78.200.08	160	20	h6	8	14	36	Ø 14-16	80.105.14.1.2
78.250.08	160	25	h6	8	19	36	Ø 6- 8	-
78.250.10	160	25	h6	10	20	42	Ø 6- 8	-
78.250.12	160	25	h6	12	20	47	Ø 6- 8	-
78.250.14	160	25	h6	14	20	47	Ø 6- 8	-
78.250.16	160	25	h6	16	22	50	Ø 6- 8	-
78.320.10	160	32	h6	10	24	42	Ø 14-16	-
78.320.12	160	32	h6	12	24	47	Ø 14-16	-
78.320.14	160	32	h6	14	27	47	Ø 14-16	-
78.320.16	160	32	h6	16	27	50	Ø 14-16	-
78.320.18	160	32	h6	18	27	50	Ø 14-16	-
78.320.20	160	32	h6	20	27	52	Ø 14-16	-



Ausführung:

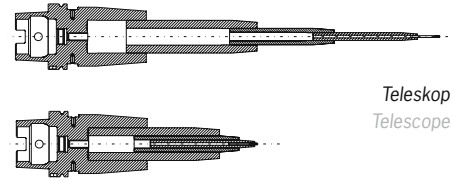
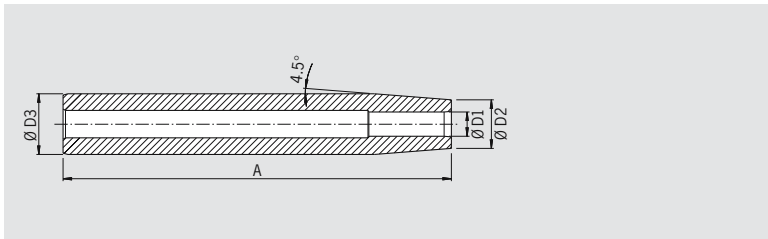
- ohne Längeneinstellschraube
- optimale Kühlmittelzuführung von außen durch Schlitz
- beliebige Längeneinstellung (Teleskop)

Version:

- without set screw
- with slits along the clamping bore for proper clamping and coolant around the cutting tool
- variable length setting (telescope)

Bestell-Nr. Order No.	Länge A Length A [mm]	Außen Ø Outer Ø D3 [mm]	Schafttoleranz Shank tolerance	Spann Ø Clamping Ø D1 [mm]	Ø D2 [mm]	Kühlung mit Kühlkörper Cooling body	zusätzlich mit Kühladapter Adapter
78.120.03.2	160	12	h6	3	8	Ø 14-16	80.105.14.1.1
78.120.035.2	160	12	h6	3,5	8	Ø 14-16	80.105.14.1.1
78.120.04.2	160	12	h6	4	8	Ø 14-16	80.105.14.1.1
78.120.045.2	160	12	h6	4,5	8	Ø 14-16	80.105.14.1.1
78.160.03.2	160	16	h6	3	10	Ø 14-16	80.105.14.1.1
78.160.035.2	160	16	h6	3,5	10	Ø 14-16	80.105.14.1.1
78.160.04.2	160	16	h6	4	10	Ø 14-16	80.105.14.1.1
78.160.045.2	160	16	h6	4,5	10	Ø 14-16	80.105.14.1.1
78.160.05.2	160	16	h6	5	10	Ø 14-16	80.105.14.1.1
78.200.05.2	160	20	h6	5	14	Ø 14-16	80.105.14.1.2

SCHRUMPFVERLÄNGERUNGEN/SHRINK FIT EXTENSIONS



Teleskop
Telescope

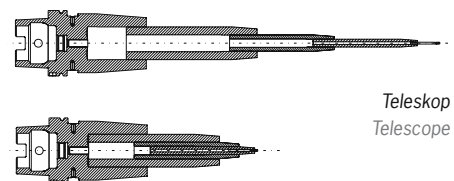
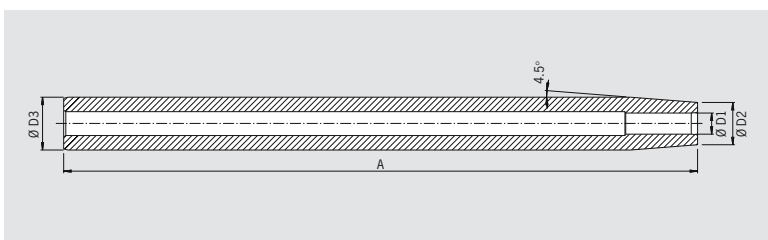
Ausführung:

- ohne Längeneinstellschraube
- beliebige Längeneinstellung (Teleskop)

Version:

- without set screw
- variable length setting (telescope)

Bestell-Nr. Order No.	Länge A Length A [mm]	Außen Ø Outer Ø D3 [mm]	Schafttoleranz Shank tolerance	Spann Ø Clamping Ø D1 [mm]	Ø D2 [mm]	Kühlung mit Kühlkörper Cooling body	zusätzlich mit Kühladapter Adapter
78.120.03.1	160	12	h4	3	8	Ø 14-16	80.105.14.1.1
78.120.04.1	160	12	h4	4	8	Ø 14-16	80.105.14.1.1
78.160.03.1	160	16	h4	3	10	Ø 14-16	80.105.14.1.1
78.160.04.1	160	16	h4	4	10	Ø 14-16	80.105.14.1.1
78.160.05.1	160	16	h4	5	10	Ø 14-16	80.105.14.1.1
78.160.06.1	160	16	h6	6	10	Ø 14-16	80.105.14.1.1
78.200.05.1	160	20	h4	5	14	Ø 14-16	80.105.14.1.2
78.200.06.1	160	20	h6	6	14	Ø 14-16	80.105.14.1.2
78.200.08.1	160	20	h6	8	14	Ø 14-16	80.105.14.1.2
78.250.08.1	160	25	h6	8	19	Ø 6- 8	-
78.250.10.1	160	25	h6	10	20	Ø 6- 8	-
78.250.12.1	160	25	h6	12	20	Ø 6- 8	-
78.250.14.1	160	25	h6	14	20	Ø 6- 8	-
78.250.16.1	160	25	h6	16	22	Ø 6- 8	-
78.320.10.1	160	32	h6	10	24	Ø 14-16	-
78.320.12.1	160	32	h6	12	24	Ø 14-16	-
78.320.14.1	160	32	h6	14	27	Ø 14-16	-
78.320.16.1	160	32	h6	16	27	Ø 14-16	-
78.320.18.1	160	32	h6	18	27	Ø 14-16	-
78.320.20.1	160	32	h6	20	27	Ø 14-16	-



Teleskop
Telescope

Ausführung: 300 mm lang

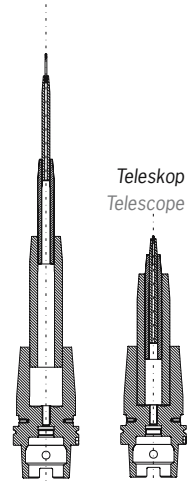
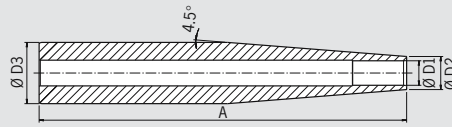
- ohne Längeneinstellschraube
- beliebige Längeneinstellung (Teleskop)

Version: Extension length 300 mm

- without set screw
- variable length setting (telescope)

Bestell-Nr. Order No.	Länge A Length A [mm]	Außen Ø Outer Ø D3 [mm]	Schafttoleranz Shank tolerance	Spann Ø Clamping Ø D1 [mm]	Ø D2 [mm]	Kühlung mit Kühlkörper Cooling body	zusätzlich mit Kühladapter Adapter
78.201.06.1	300	20	h6	6	14	Ø 14-16	80.105.14.1.2
78.201.08.1	300	20	h6	8	14	Ø 14-16	80.105.14.1.2
78.251.08.1	300	25	h6	8	19	Ø 6- 8	-
78.251.10.1	300	25	h6	10	20	Ø 6- 8	-
78.251.12.1	300	25	h6	12	20	Ø 6- 8	-
78.251.14.1	300	25	h6	14	20	Ø 6- 8	-
78.251.16.1	300	25	h6	16	22	Ø 6- 8	-
78.321.10.1	300	32	h6	10	24	Ø 14-16	-
78.321.12.1	300	32	h6	12	24	Ø 14-16	-
78.321.14.1	300	32	h6	14	27	Ø 14-16	-
78.321.16.1	300	32	h6	16	27	Ø 14-16	-
78.321.20.1	300	32	h6	20	27	Ø 14-16	-

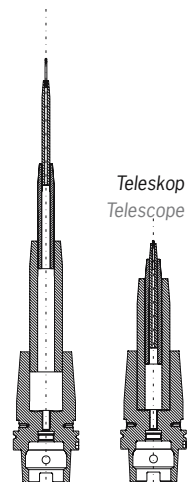
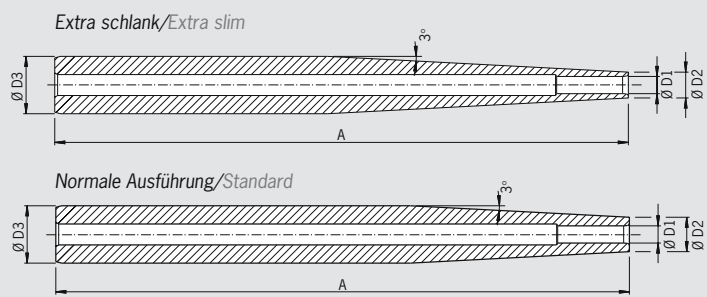
SCHRUMPFVERLÄNGERUNGEN/SHRINK FIT EXTENSIONS
 MINI SHRINK VERLÄNGERUNGEN/MINI SHRINK EXTENSIONS



Ausführung: Verlängerung mit Außendurchmesser 50 mm
 (Schrumpfen nur mit Power Clamp Profi Plus)
 – HSS + HM

Version: Extension with diameter 50 mm
 (Shrinking only with Power Clamp Profi Plus)
 – HSS + solid carbide

Bestell-Nr. Order No.	Länge A Length A [mm]	Außen Ø Outer Ø D3 [mm]	Schafttoleranz Shank tolerance	Spann Ø Clamping Ø D1 [mm]	Ø D2 [mm]	Kühlung mit Kühlkörper Cooling body
78.501.10.1	300	50	h6	10	24	Ø 10–12
78.501.12.1	300	50	h6	12	24	Ø 14–16
78.501.14.1	300	50	h6	14	27	Ø 14–16
78.501.16.1	300	50	h6	16	27	Ø 14–16
78.501.18.1	300	50	h6	18	27	Ø 14–16
78.501.20.1	300	50	h6	20	33	Ø 25–32
78.501.25.1	300	50	h6	25	44	Ø 25–32
78.501.32.1	300	50	h6	32	44	Ø 25–32

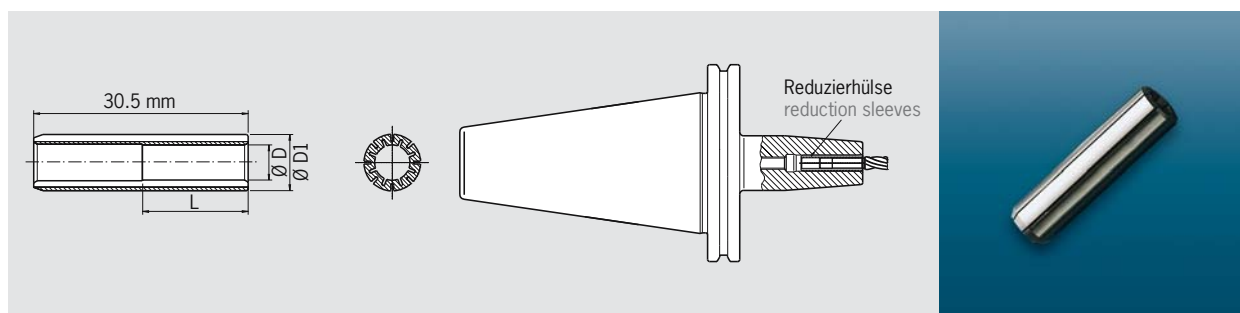


Mini Shrink Verlängerungen (Für alle HM-Werkzeuge mit Schaft-Toleranz h6)
 Mini Shrink extensions (For all solid carbide tools with shank tolerance h6)

Normale Ausführung/ Standard version Bestell-Nr./Order No.	Länge A Length A [mm]	Außen Ø Outer Ø D3 [mm]	Schafttoleranz Shank tolerance	Spann Ø Clamping Ø D1 [mm]	Ø D2 [mm]	Kühlung mit Kühlkörper Cooling body	Zusätzlich mit Kühladapter Adapter
77.162.03	160	16	h6	3	9	Ø 6–8	80.105.14.2.04
77.162.04	160	16	h6	4	10	Ø 6–8	80.105.14.2.08
77.162.05	160	16	h6	5	11	Ø 6–8	80.105.14.2.05
77.162.06 ¹⁾	160	16	h6	6	12	Ø 6–8	80.105.14.2.09
77.162.08 ¹⁾	160	16	h6	8	14	Ø 6–8	80.105.14.2.10
77.162.10 ¹⁾	160	16	h6	10	16	Ø 6–8	80.105.14.2.11
77.202.06	200	20	h6	6	12	Ø 6–8	80.105.14.2.09
77.202.08	200	20	h6	8	14	Ø 6–8	80.105.14.2.10
77.202.10	200	20	h6	10	16	Ø 6–8	80.105.14.2.11
77.202.12	200	20	h6	12	18	Ø 6–8	80.105.14.2.12
Extra schlank/Extra slim							
77.160.03	160	16	h6	3	6	Ø 6–8	80.105.14.2.01
77.160.04	160	16	h6	4	7	Ø 6–8	80.105.14.2.02
77.160.05	160	16	h6	5	8	Ø 6–8	80.105.14.2.03
77.160.06 ¹⁾	160	16	h6	6	9	Ø 6–8	80.105.14.2.04
77.160.08 ¹⁾	160	16	h6	8	11	Ø 6–8	80.105.14.2.05
77.160.10 ¹⁾	160	16	h6	10	13	Ø 6–8	80.105.14.2.06
77.200.06	200	20	h6	6	9	Ø 6–8	80.105.14.2.04
77.200.08	200	20	h6	8	11	Ø 6–8	80.105.14.2.05
77.200.10	200	20	h6	10	13	Ø 6–8	80.105.14.2.06
77.200.12	200	20	h6	12	15	Ø 6–8	80.105.14.2.07

¹⁾ Mit Einstellschraube/With set screw

REDUZIERHÜLSEN/REDUCTION SLEEVES

**Verwendung:**

Zum Spannen von kleinen Schäften in Aufnahmen mit Spanndurchmesser 8 mm.

Erster Schritt: Reduzierhülse in Werkzeugaufnahme einpressen
Zweiter Schritt: Werkzeugschaft in Reduzierhülse einschrumpfen.

– Schafttoleranz h6

Use:

for clamping small shanks in chucks with $\varnothing 5/16"$ or 8mm ID's.

First step: press reduction sleeve into bore of chuck
Second step: clamp tool shank in reduction sleeve.

– Shank tolerance h6

[mm]	$\varnothing D$	$\varnothing D1$	L
Bestell-Nr./Order No. 79.100.02.5	2,5	8	7,5
79.100.3	3	8	9
79.100.03.5	3,5	8	10,5
79.100.4	4	8	12
79.100.04.5	4,5	8	13,5
79.100.5	5	8	15
79.100.05.5	5,5	8	16,5

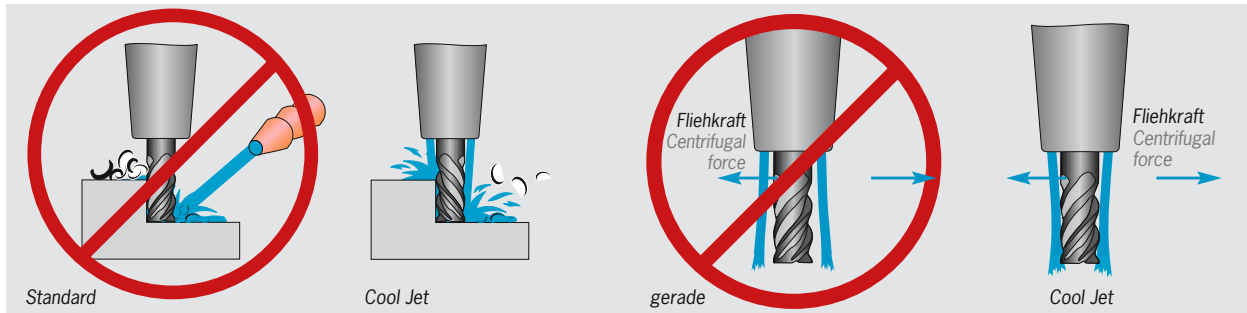
**Kann eingesetzt werden in:**

- HG-Fütter
- Schrumpffutter
- Spannzangenfutter
- Hydrodehnspannfutter

For all chucks for reduction:

- For use in
- HG-chucks
 - Shrink fit chucks
 - Collet chucks
 - Hydraulic chucks

**COOL JET – DAMIT SIE DEN SPAN NUR EINMAL SCHNEIDEN!
COOL JET – CUT THE CHIP ONLY ONCE!**



- Standard**
- Optimale Strahlenkung bis an die Schneide
 - Bis zu 100% höhere Standzeiten
 - Erhöhte Prozess-Sicherheit
 - Keine Späneknäuel am Werkzeug

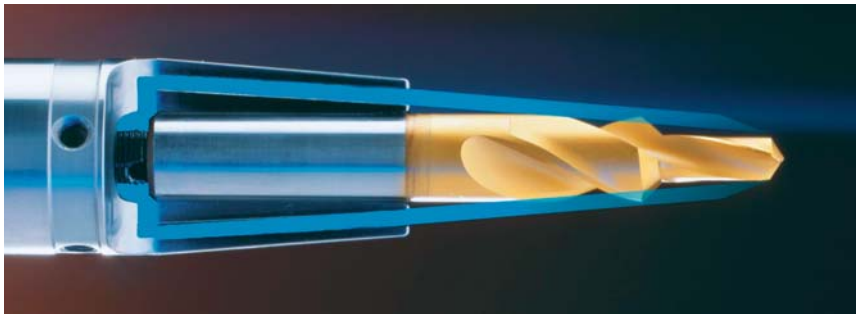
- Cool Jet**
- Coolant directly to the cutting edge
 - Extended tool life up to 100%
 - Higher reliability of cutting process
 - No more balls of chips on tool

- Verhalten bei hoher Drehzahl**
- Bisherige Kühlmittelbohrungen:
gerade
Optimierte Kühlmittelbohrung:
schräg

- Function at high spindle speed**
- Previous coolant bores:
straight
Optimized coolant bores:
aimed at center

Cool Jet

Bestell-Nr./Order No. 91.100.24



Anwendungsbeispiele

- Einsatz:
- Schrumpffutter
 - HG-Futter
 - Messerkopfaufnahme
 - Weldon

Examples

- For use in:
- Shrink fit chuck
 - HG chuck
 - Face mill holder
 - Weldon



Schrumpffutter
Shrink fit chuck

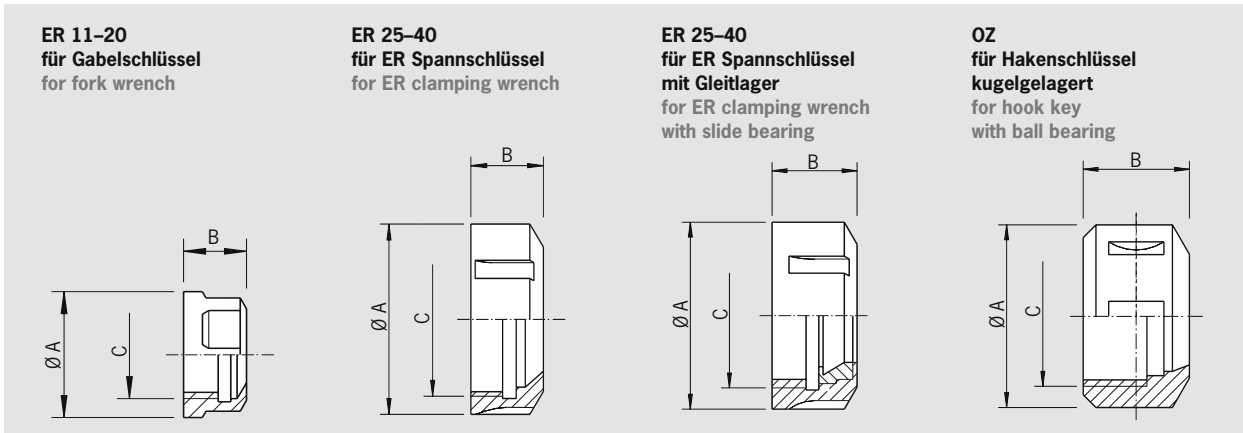


Optimierte Kühlmittelbohrung: schräg
Cool Jet System von Haimer/
Coolant bores aimed at center
Cool Jet by Haimer



Weldon

SPANNMUTTERN FÜR SPANNZANGENFUTTER LOCKNUTS FOR COLLET CHUCKS



Spannmuttern ER:

- Höchste Rundlaufgenauigkeit
- Kein Verschleiß und hohe Spannkraft durch spezielle Gleitbeschichtung
- Geringe Vibrationen durch Vorwuchtung
- Ausführung HS feingewuchtet

Spannmuttern OZ:

- Innenring kugelgelagert
- Hohe Spannkraft
- Geringe Unwucht durch symmetrische Bauweise

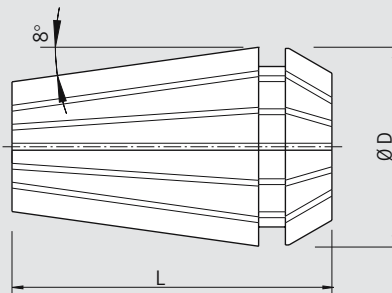
Locknuts ER:

- Highest runout accuracy
- No wear and high clamping force due to special slide coating
- Small vibrations due to pre-balancing
- Version HS fine-balanced

Locknuts OZ:

- Inner ring with ball bearing
- High clamping forces
- Low unbalance due to symmetrical design

ER	ER 11	ER 16	ER 20		
Bestell-Nr./Order No. 83.912...	...11	...16	...20		
HS Version					
Bestell-Nr./Order No. 83.912...		...16.HS	...20.HS		
Ø A	19	28	34		
B	11,3	17	19		
C	M 14 x 0,75	M 22 x 1,5	M 25 x 1,5		
ER		ER 25	ER 32	ER 40	
Bestell-Nr./Order No. 83.912...		...25	...32	...40	
HS Version					
Bestell-Nr./Order No. 83.912...		...25.HS	...32.HS	...40.HS	
Ø A		42	50	63	
B		20	22,3	25,3	
C		M 32 x 1,5	M 40 x 1,5	M 50 x 1,5	
ER mit Gleitlager/with slide bearing		ER 25	ER 32	ER 40	
Bestell-Nr./Order No. 83.913...		...25	...32	...40	
Ø A		42	50	63	
B		22	26	29	
C		M 32 x 1,5	M 40 x 1,5	M 50 x 1,5	
OZ kugelgelagert/with ball bearing					
Spannbereich/Clamping Ø [mm]		2-16	2-25	4-32	6-40
Bestell-Nr./Order No. 83.920...		...16	...25	...32	...40
Ø A		43	60	72	85
B		24	30	33,5	37
C		M 33 x 1,5	M 48 x 2	M 60 x 2,5	M 68 x 2,5



- Polierte Oberfläche garantiert Präzision und Langlebigkeit, insbesondere unter Verwendung von Haimer ER Spannanzangenfutter
- Überlegene Haltekräfte
- Passend für ER-Spannanzangenfutter aller Hersteller
- High polished finish for extra accuracy and long life, especially when clamped in HAIMER ER chucks
- superior clamping strength
- fits all brands of ER holders

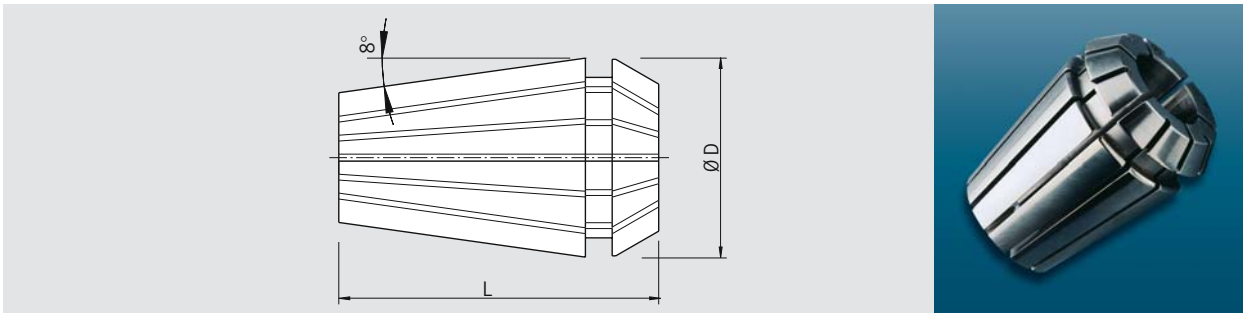
ER 11 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	81.110.01	0.50 ... 1.00	11,5	18
	81.110.1.5	1.00 ... 1.50	11,5	18
	81.110.02	1.50 ... 2.00	11,5	18
	81.110.2.5	2.00 ... 2.50	11,5	18
	81.110.03	2.50 ... 3.00	11,5	18
	81.110.3.5	3.00 ... 3.50	11,5	18
	81.110.04	3.50 ... 4.00	11,5	18
	81.110.4.5	4.00 ... 4.50	11,5	18
	81.110.05	4.50 ... 5.00	11,5	18
	81.110.5.5	5.00 ... 5.50	11,5	18
	81.110.06	5.50 ... 6.00	11,5	18
	81.110.6.5	6.00 ... 6.50	11,5	18
	81.110.07	6.50 ... 7.00	11,5	18

ER 16 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	81.160.01	0.50 ... 1.00	17	27
	81.160.1.5	1.00 ... 1.50	17	27
	81.160.02	1.50 ... 2.00	17	27
	81.160.2.5	2.00 ... 2.50	17	27
	81.160.03	2.50 ... 3.00	17	27
	81.160.04	3.00 ... 4.00	17	27
	81.160.05	4.00 ... 5.00	17	27
	81.160.06	5.00 ... 6.00	17	27
	81.160.07	6.00 ... 7.00	17	27
	81.160.08	7.00 ... 8.00	17	27
	81.160.09	8.00 ... 9.00	17	27
	81.160.10	9.00 ... 10.00	17	27

ER 20 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	81.200.02	1.50 ... 2.00	21	31,5
	81.200.03	2.00 ... 3.00	21	31,5
	81.200.04	3.00 ... 4.00	21	31,5
	81.200.05	4.00 ... 5.00	21	31,5
	81.200.06	5.00 ... 6.00	21	31,5
	81.200.07	6.00 ... 7.00	21	31,5
	81.200.08	7.00 ... 8.00	21	31,5
	81.200.09	8.00 ... 9.00	21	31,5
	81.200.10	9.00 ... 10.00	21	31,5
	81.200.11	10.00 ... 11.00	21	31,5
	81.200.12	11.00 ... 12.00	21	31,5
	81.200.13	12.00 ... 13.00	21	31,5

ER 25 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	81.250.1.5	1.00 ... 1.50	26	35
	81.250.02	1.50 ... 2.00	26	35
	81.250.2.5	2.00 ... 2.50	26	35
	81.250.03	2.50 ... 3.00	26	35
	81.250.04	3.00 ... 4.00	26	35
	81.250.05	4.00 ... 5.00	26	35
	81.250.06	5.00 ... 6.00	26	35
	81.250.07	6.00 ... 7.00	26	35
	81.250.08	7.00 ... 8.00	26	35
	81.250.09	8.00 ... 9.00	26	35
	81.250.10	9.00 ... 10.00	26	35
	81.250.11	10.00 ... 11.00	26	35
	81.250.12	11.00 ... 12.00	26	35
	81.250.13	12.00 ... 13.00	26	35
	81.250.14	13.00 ... 14.00	26	35
	81.250.15	14.00 ... 15.00	26	35
	81.250.16	15.00 ... 16.00	26	35

HOCHPRÄZISIONSSPANNZANGEN ER/HIGH PRECISION COLLETS ER

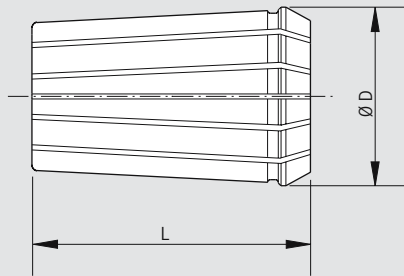


- Polierte Oberfläche garantiert Präzision und Langlebigkeit, insbesondere unter Verwendung von Haimer ER Spannanzangenfutter
- Überlegene Haltekräfte
- Passend für ER-Spannzangenfutter aller Hersteller
- High polished finish for extra accuracy and long life, especially when clamped in HAIMER ER chucks
- superior clamping strength
- fits all brands of ER holders

ER 32 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	81.320.02	1.50 ... 2.00	33	40
	81.320.2.5	2.00 ... 2.50	33	40
	81.320.03	2.50 ... 3.00	33	40
	81.320.04	3.00 ... 4.00	33	40
	81.320.05	4.00 ... 5.00	33	40
	81.320.06	5.00 ... 6.00	33	40
	81.320.07	6.00 ... 7.00	33	40
	81.320.08	7.00 ... 8.00	33	40
	81.320.09	8.00 ... 9.00	33	40
	81.320.10	9.00 ... 10.00	33	40
	81.320.11	10.00 ... 11.00	33	40
	81.320.12	11.00 ... 12.00	33	40
	81.320.13	12.00 ... 13.00	33	40
	81.320.14	13.00 ... 14.00	33	40
	81.320.15	14.00 ... 15.00	33	40
	81.320.16	15.00 ... 16.00	33	40
	81.320.17	16.00 ... 17.00	33	40
	81.320.18	17.00 ... 18.00	33	40
	81.320.19	18.00 ... 19.00	33	40
	81.320.20	19.00 ... 20.00	33	40

ER 40 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	81.400.03	2.50 ... 3.00	41	46
	81.400.04	3.00 ... 4.00	41	46
	81.400.05	4.00 ... 5.00	41	46
	81.400.06	5.00 ... 6.00	41	46
	81.400.07	6.00 ... 7.00	41	46
	81.400.08	7.00 ... 8.00	41	46
	81.400.09	8.00 ... 9.00	41	46
	81.400.10	9.00 ... 10.00	41	46
	81.400.11	10.00 ... 11.00	41	46
	81.400.12	11.00 ... 12.00	41	46
	81.400.13	12.00 ... 13.00	41	46
	81.400.14	13.00 ... 14.00	41	46
	81.400.15	14.00 ... 15.00	41	46
	81.400.16	15.00 ... 16.00	41	46
	81.400.17	16.00 ... 17.00	41	46
	81.400.18	17.00 ... 18.00	41	46
	81.400.19	18.00 ... 19.00	41	46
	81.400.20	19.00 ... 20.00	41	46
	81.400.21	20.00 ... 21.00	41	46
	81.400.22	21.00 ... 22.00	41	46
	81.400.23	22.00 ... 23.00	41	46
	81.400.24	23.00 ... 24.00	41	46
	81.400.25	24.00 ... 25.00	41	46
	81.400.26	25.00 ... 26.00	41	46

SPANNZANGEN FÜR ZANGENSPANNFUTTER OZ/COLLETS OZ



Spannzangen beidseitig geschlitzt, ähnlich DIN 6388 Form A, für Werkzeuge mit zylindrischem Schaft mit Schafttoleranz h10

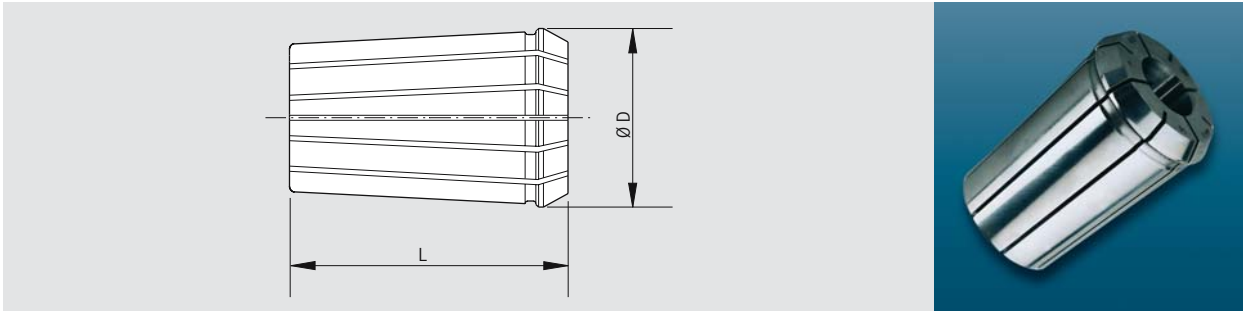
Collets with slits from both sides. For cylindrical shanks with tolerance h10

OZ 16 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	82.160.02	2	25,5	40
	82.160.2.5	2,5	25,5	40
	82.160.03	3	25,5	40
	82.160.04	4	25,5	40
	82.160.05	5	25,5	40
	82.160.06	6	25,5	40
	82.160.07	7	25,5	40
	82.160.08	8	25,5	40
	82.160.09	9	25,5	40
	82.160.10	10	25,5	40
	82.160.11	11	25,5	40
	82.160.12	12	25,5	40
	82.160.13	13	25,5	40
	82.160.14	14	25,5	40
	82.160.15	15	25,5	40
	82.160.16	16	25,5	40

OZ 32 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	82.320.02	2	44	60
	82.320.05	5	44	60
	82.320.06	6	44	60
	82.320.07	7	44	60
	82.320.08	8	44	60
	82.320.09	9	44	60
	82.320.10	10	44	60
	82.320.11	11	44	60
	82.320.12	12	44	60
	82.320.13	13	44	60
	82.320.14	14	44	60
	82.320.15	15	44	60
	82.320.16	16	44	60
	82.320.18	18	44	60
	82.320.20	20	44	60
	82.320.25	25	44	60
	82.320.32	32	44	60

OZ 25 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	82.250.02	2	35,5	52
	82.250.03	3	35,5	52
	82.250.04	4	35,5	52
	82.250.05	5	35,5	52
	82.250.06	6	35,5	52
	82.250.07	7	35,5	52
	82.250.08	8	35,5	52
	82.250.09	9	35,5	52
	82.250.10	10	35,5	52
	82.250.11	11	35,5	52
	82.250.12	12	35,5	52
	82.250.13	13	35,5	52
	82.250.14	14	35,5	52
	82.250.15	15	35,5	52
	82.250.16	16	35,5	52
	82.250.17	17	35,5	52
	82.250.18	18	35,5	52
	82.250.19	19	35,5	52
	82.250.20	20	35,5	52
	82.250.21	21	35,5	52
	82.250.22	22	35,5	52
	82.250.23	23	35,5	52
	82.250.24	24	35,5	52
	82.250.25	25	35,5	52

SPANNZANGEN FÜR ZANGENSPIANNFUTTER OZ/COLLETS OZ



Spannzangen beidseitig geschlitzt, nach DIN 6388 Form B, für Werkzeuge mit zylindrischem Schaft

Collets with slits from both sides

OZ 16 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	82.161.4.0	3.50 ... 4.00	25,5	40
	82.161.4.5	4.00 ... 4.50	25,5	40
	82.161.5.0	4.50 ... 5.00	25,5	40
	82.161.5.5	5.00 ... 5.50	25,5	40
	82.161.6.0	5.50 ... 6.00	25,5	40
	82.161.6.5	6.00 ... 6.50	25,5	40
	82.161.7.0	6.50 ... 7.00	25,5	40
	82.161.7.5	7.00 ... 7.50	25,5	40
	82.161.8.0	7.50 ... 8.00	25,5	40
	82.161.8.5	8.00 ... 8.50	25,5	40
	82.161.9.0	8.50 ... 9.00	25,5	40
	82.161.9.5	9.00 ... 9.50	25,5	40
	82.161.10.0	9.50 ... 10.00	25,5	40
	82.161.10.5	10.00 ... 10.50	25,5	40
	82.161.11.0	10.50 ... 11.00	25,5	40
	82.161.11.5	11.00 ... 11.50	25,5	40
	82.161.12.0	11.50 ... 12.00	25,5	40
	82.161.12.5	12.00 ... 12.50	25,5	40
	82.161.13.0	12.50 ... 13.00	25,5	40
	82.161.13.5	13.00 ... 13.50	25,5	40
	82.161.14.0	13.50 ... 14.00	25,5	40
	82.161.14.5	14.00 ... 14.50	25,5	40
	82.161.15.0	14.50 ... 15.00	25,5	40
	82.161.15.5	15.00 ... 15.50	25,5	40
	82.161.16.0	15.50 ... 16.00	25,5	40

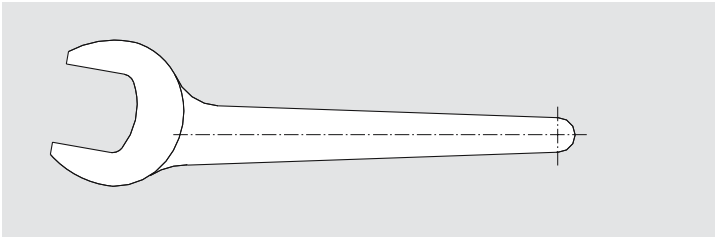
OZ 25 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	82.251.4.0	3.50 ... 4.00	35,5	52
	82.251.4.5	4.00 ... 4.50	35,5	52
	82.251.5.0	4.50 ... 5.00	35,5	52
	82.251.5.5	5.00 ... 5.50	35,5	52
	82.251.6.0	5.50 ... 6.00	35,5	52
	82.251.6.5	6.00 ... 6.50	35,5	52
	82.251.7.0	6.50 ... 7.00	35,5	52
	82.251.7.5	7.00 ... 7.50	35,5	52
	82.251.8.0	7.50 ... 8.00	35,5	52
	82.251.8.5	8.00 ... 8.50	35,5	52
	82.251.9.0	8.50 ... 9.00	35,5	52
	82.251.9.5	9.00 ... 9.50	35,5	52
	82.251.10.0	9.50 ... 10.00	35,5	52
	82.251.10.5	10.00 ... 10.50	35,5	52
	82.251.11.0	10.50 ... 11.00	35,5	52
	82.251.11.5	11.00 ... 11.50	35,5	52
	82.251.12.0	11.50 ... 12.00	35,5	52
	82.251.12.5	12.00 ... 12.50	35,5	52
	82.251.13.0	12.50 ... 13.00	35,5	52
	82.251.13.5	13.00 ... 13.50	35,5	52
	82.251.14.0	13.50 ... 14.00	35,5	52
	82.251.14.5	14.00 ... 14.50	35,5	52
	82.251.15.0	14.50 ... 15.00	35,5	52
	82.251.15.5	15.00 ... 15.50	35,5	52
	82.251.16.0	15.50 ... 16.00	35,5	52
	82.251.16.5	16.00 ... 16.50	35,5	52
	82.251.17.0	16.50 ... 17.00	35,5	52
	82.251.17.5	17.00 ... 17.50	35,5	52
	82.251.18.0	17.50 ... 18.00	35,5	52
	82.251.18.5	18.00 ... 18.50	35,5	52
	82.251.19.0	18.50 ... 19.00	35,5	52
	82.251.19.5	19.00 ... 19.50	35,5	52
	82.251.20.0	19.50 ... 20.00	35,5	52
	82.251.20.5	20.00 ... 20.50	35,5	52
	82.251.21.0	20.50 ... 21.00	35,5	52
	82.251.21.5	21.00 ... 21.50	35,5	52
	82.251.22.0	21.50 ... 22.00	35,5	52
	82.251.22.5	22.00 ... 22.50	35,5	52
	82.251.23.0	22.50 ... 23.00	35,5	52
	82.251.23.5	23.00 ... 23.50	35,5	52
	82.251.24.0	23.50 ... 24.00	35,5	52
	82.251.24.5	24.00 ... 24.50	35,5	52
	82.251.25.0	24.50 ... 25.00	35,5	52

SPANNZANGEN FÜR ZANGENSPIANNFUTTER OZ/COLLETS OZ

OZ 32 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	82.321.6.0	5.50 ... 6.00	44	60
	82.321.6.5	6.00 ... 6.50	44	60
	82.321.7.0	6.50 ... 7.00	44	60
	82.321.7.5	7.00 ... 7.50	44	60
	82.321.8.0	7.50 ... 8.00	44	60
	82.321.8.5	8.00 ... 8.50	44	60
	82.321.9.0	8.50 ... 9.00	44	60
	82.321.9.5	9.00 ... 9.50	44	60
	82.321.10.0	9.50 ... 10.00	44	60
	82.321.10.5	10.00 ... 10.50	44	60
	82.321.11.0	10.50 ... 11.00	44	60
	82.321.11.5	11.00 ... 11.50	44	60
	82.321.12.0	11.50 ... 12.00	44	60
	82.321.12.5	12.00 ... 12.50	44	60
	82.321.13.0	12.50 ... 13.00	44	60
	82.321.13.5	13.00 ... 13.50	44	60
	82.321.14.0	13.50 ... 14.00	44	60
	82.321.14.5	14.00 ... 14.50	44	60
	82.321.15.0	14.50 ... 15.00	44	60
	82.321.15.5	15.00 ... 15.50	44	60
	82.321.16.0	15.50 ... 16.00	44	60
	82.321.16.5	16.00 ... 16.50	44	60
	82.321.17.0	16.50 ... 17.00	44	60
	82.321.17.5	17.00 ... 17.50	44	60
	82.321.18.0	17.50 ... 18.00	44	60
	82.321.18.5	18.00 ... 18.50	44	60
	82.321.19.0	18.50 ... 19.00	44	60
	82.321.19.5	19.00 ... 19.50	44	60
	82.321.20.0	19.50 ... 20.00	44	60
	82.321.20.5	20.00 ... 20.50	44	60
	82.321.21.0	20.50 ... 21.00	44	60
	82.321.21.5	21.00 ... 21.50	44	60
	82.321.22.0	21.50 ... 22.00	44	60
	82.321.22.5	22.00 ... 22.50	44	60
	82.321.23.0	22.50 ... 23.00	44	60
	82.321.23.5	23.00 ... 23.50	44	60
	82.321.24.0	23.50 ... 24.00	44	60
	82.321.24.5	24.00 ... 24.50	44	60
	82.321.25.0	24.50 ... 25.00	44	60
	82.321.25.5	25.00 ... 25.50	44	60
	82.321.26.0	25.50 ... 26.00	44	60
	82.321.26.5	26.00 ... 26.50	44	60
	82.321.27.0	26.50 ... 27.00	44	60
	82.321.27.5	27.00 ... 27.50	44	60
	82.321.28.0	27.50 ... 28.00	44	60
	82.321.28.5	28.00 ... 28.50	44	60
	82.321.29.0	28.50 ... 29.00	44	60
	82.321.29.5	29.00 ... 29.50	44	60
	82.321.30.0	29.50 ... 30.00	44	60
	82.321.30.5	30.00 ... 30.50	44	60
	82.321.31.0	30.50 ... 31.00	44	60
	82.321.31.5	31.00 ... 31.50	44	60
	82.321.32.0	31.50 ... 32.00	44	60

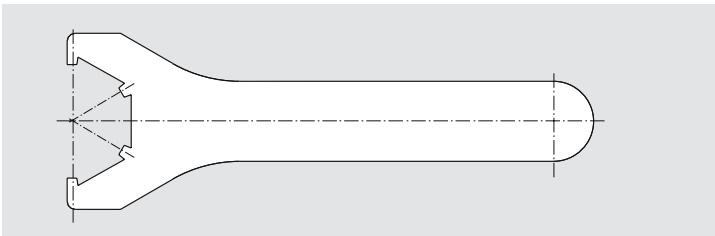
OZ 40 Spann/Clamping Ø		[mm]	Ø D	L
Bestell-Nr./Order No.	82.401.8.0	7.50 ... 8.00	52,7	68
	82.401.8.5	8.00 ... 8.50	52,7	68
	82.401.9.0	8.50 ... 9.00	52,7	68
	82.401.9.5	9.00 ... 9.50	52,7	68
	82.401.10.0	9.50 ... 10.00	52,7	68
	82.401.10.5	10.00 ... 10.50	52,7	68
	82.401.11.0	10.50 ... 11.00	52,7	68
	82.401.11.5	11.00 ... 11.50	52,7	68
	82.401.12.0	11.50 ... 12.00	52,7	68
	82.401.12.5	12.00 ... 12.50	52,7	68
	82.401.13.0	12.50 ... 13.00	52,7	68
	82.401.13.5	13.00 ... 13.50	52,7	68
	82.401.14.0	13.50 ... 14.00	52,7	68
	82.401.14.5	14.00 ... 14.50	52,7	68
	82.401.15.0	14.50 ... 15.00	52,7	68
	82.401.15.5	15.00 ... 15.50	52,7	68
	82.401.16.0	15.50 ... 16.00	52,7	68
	82.401.16.5	16.00 ... 16.50	52,7	68
	82.401.17.0	16.50 ... 17.00	52,7	68
	82.401.17.5	17.00 ... 17.50	52,7	68
	82.401.18.0	17.50 ... 18.00	52,7	68
	82.401.18.5	18.00 ... 18.50	52,7	68
	82.401.19.0	18.50 ... 19.00	52,7	68
	82.401.19.5	19.00 ... 19.50	52,7	68
	82.401.20.0	19.50 ... 20.00	52,7	68
	82.401.20.5	20.00 ... 20.50	52,7	68
	82.401.21.0	20.50 ... 21.00	52,7	68
	82.401.21.5	21.00 ... 21.50	52,7	68
	82.401.22.0	21.50 ... 22.00	52,7	68
	82.401.22.5	22.00 ... 22.50	52,7	68
	82.401.23.0	22.50 ... 23.00	52,7	68
	82.401.23.5	23.00 ... 23.50	52,7	68
	82.401.24.0	23.50 ... 24.00	52,7	68
	82.401.24.5	24.00 ... 24.50	52,7	68
	82.401.25.0	24.50 ... 25.00	52,7	68
	82.401.25.5	25.00 ... 25.50	52,7	68
	82.401.26.0	25.50 ... 26.00	52,7	68
	82.401.26.5	26.00 ... 26.50	52,7	68
	82.401.27.0	26.50 ... 27.00	52,7	68
	82.401.27.5	27.00 ... 27.50	52,7	68
	82.401.28.0	27.50 ... 28.00	52,7	68
	82.401.28.5	28.00 ... 28.50	52,7	68
	82.401.29.0	28.50 ... 29.00	52,7	68
	82.401.29.5	29.00 ... 29.50	52,7	68
	82.401.30.0	29.50 ... 30.00	52,7	68
	82.401.30.5	30.00 ... 30.50	52,7	68
	82.401.31.0	30.50 ... 31.00	52,7	68
	82.401.31.5	31.00 ... 31.50	52,7	68
	82.401.32.0	31.50 ... 32.00	52,7	68
	82.401.32.5	32.00 ... 32.50	52,7	68
	82.401.33.0	32.50 ... 33.00	52,7	68
	82.401.33.5	33.00 ... 33.50	52,7	68
	82.401.34.0	33.50 ... 34.00	52,7	68
	82.401.34.5	34.00 ... 34.50	52,7	68
	82.401.35.0	34.50 ... 35.00	52,7	68
	82.401.35.5	35.00 ... 35.50	52,7	68
	82.401.36.0	35.50 ... 36.00	52,7	68
	82.401.36.5	36.00 ... 36.50	52,7	68
	82.401.37.0	36.50 ... 37.00	52,7	68
	82.401.37.5	37.00 ... 37.50	52,7	68
	82.401.38.0	37.50 ... 38.00	52,7	68
	82.401.38.5	38.00 ... 38.50	52,7	68
	82.401.39.0	38.50 ... 39.00	52,7	68
	82.401.39.5	39.00 ... 39.50	52,7	68
	82.401.40.0	39.50 ... 40.00	52,7	68

SPANNSCHLÜSSEL/WRENCHES



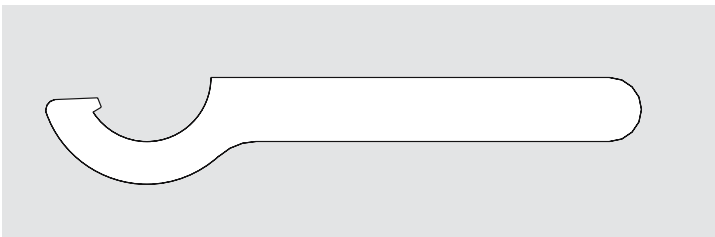
Gabelschlüssel für Spannmutter ER 16 und ER 20/Wrench for locknuts ER 16 and ER 20

ER	ER 16	ER 20
Bestell-Nr./Order No. 84.200...	...16	...20



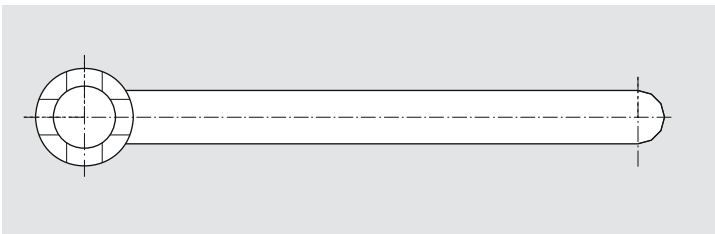
Spannschlüssel für Spannmutter ER 25-40/Wrench for locknuts ER 25-40

ER	ER 25	ER 32	ER 40
Bestell-Nr./Order No. 84.200...	...25	...32	...40



Hakenschlüssel für Spannmutter OZ/Wrench for locknuts OZ

OZ Spannungsbereich/Clamping range	OZ 2-16	OZ 2-25	OZ 4-32	OZ 6-40
Bestell-Nr./Order No. 84.300...	...16	...25	...32	...40

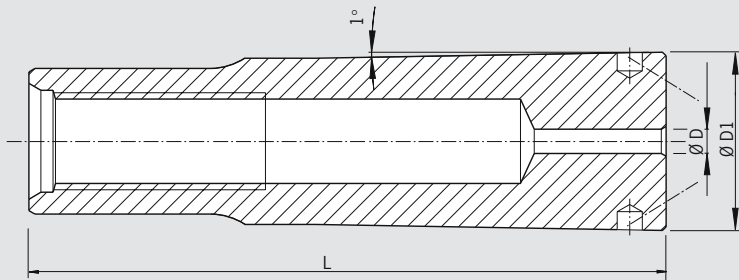


Nasenschlüssel DIN 6368 für Kombiaufsteckfräserdorne und Messerkopfaufnahmen Ø 16-60

Wrench for tightening bolts for face mill arbors and combination shell end mill adapters Ø 16-60

Ø	16	22	27	32	40	50	60
Bestell-Nr./Order No. 84.400...	...16	...22	...27	...32	...40	...50	...60

HG-SPANNZANGEN UND HG-KEGELWISCHER
HG COLLETS AND HG CONE WIPER



HG-Spannzangen

Zum hochgenauen Spannen von Werkzeugen mit zylindrischem Schaft in HG-Futtern

HG Collets

For clamping tools with cylindrical shank with utmost precision in HG chucks

HG 01	Ø D [mm]	2	2,5	3	4	4,5	5	5,5	5,6 ¹⁾	6	6,3	7	7,1 ¹⁾	8	9
	Ø D1 [mm]	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7
	L [mm]	52,5	52,5	52,5	52,5	52,5	52,5	52,5	52,5	52,5	52,5	52,5	52,5	52,5	52,5
Bestell-Nr./Order No.	82.510...	...02	...02.5	...03	...04	...04.5	...05	...05.5	...05.6	...06	...06.3	...07	...07.1	...08	...09
HG 02	Ø D [mm]	10	11	12	12,5	14									
	Ø D1 [mm]	17,87	17,87	17,87	17,87	17,87									
	L [mm]	64,2	64,2	64,2	64,2	64,2									
Bestell-Nr./Order No.	82.520...	...10	...11	...12	...12.5	...14									
HG 03	Ø D [mm]	16	18	20											
	Ø D1 [mm]	26,147	26,147	26,147											
	L [mm]	69,7	69,7	69,7											
Bestell-Nr./Order No.	82.530...	...16	...18	...20											

Zubehör/Accessories

Siehe auch Zubehörkatalog/See also accessories

Ausziehhaken/Pull-out hook

HG

Bestell-Nr./Order No. 82.570.00



Schmierpaste/Lubricating paste

Bestell-Nr./Order No. 82.585.00

Cool Jet Bohrungen/Cool Jet bores

Bestell-Nr./Order No. 91.100.24



Seite 8/Page 8

Kegelwischer

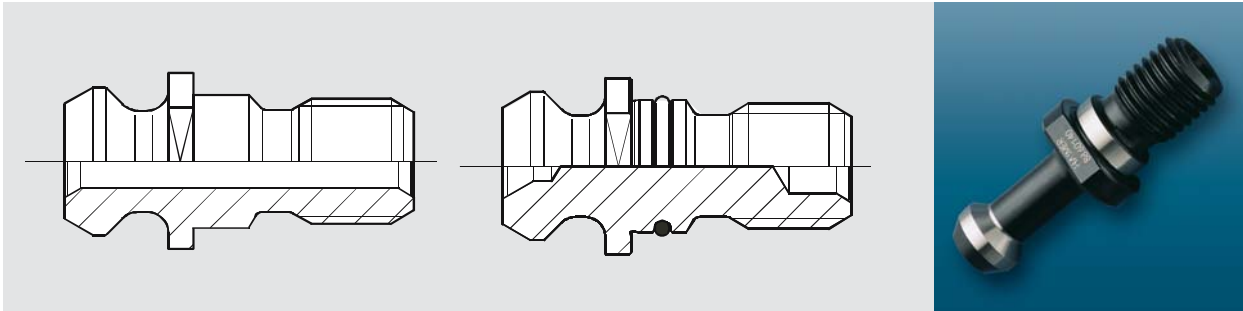
Zum Reinigen des Innenkonus des HG-Futters

Cone wiper

For cleaning tool holder I.D. of HG chuck

HG	HG 01	HG 02	HG 03
Bestell-Nr./Order No.	82.590... ...01	...02	03

ANZUGSBOLZEN/PULL STUDS



Anzugsbolzen sind ein wichtiges Bindeglied zwischen Maschine und Werkzeug. Die Anforderungen an Genauigkeit, Festigkeit und Zuverlässigkeit sind hoch.

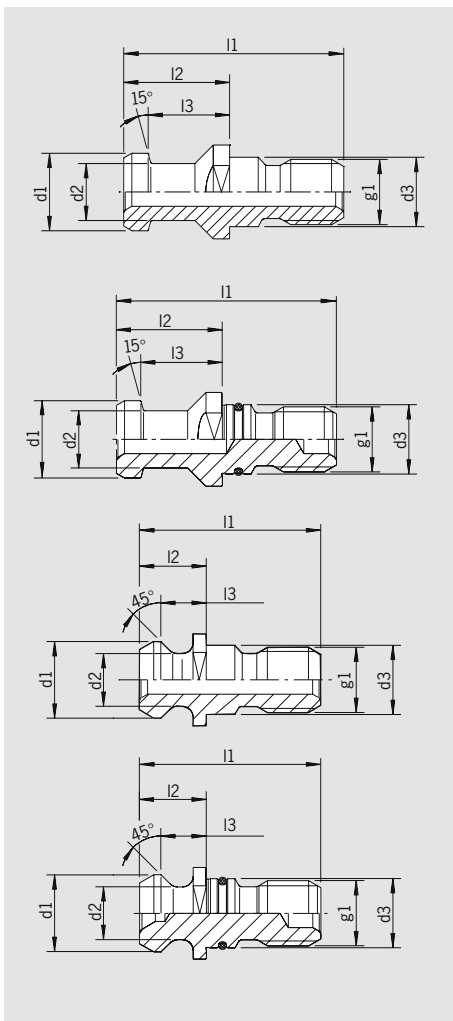
Minderwertige Anzugsbolzen beeinträchtigen nicht nur die Leistungsfähigkeit der Maschine, sondern sie stellen sogar ein Sicherheitsrisiko dar. Brechende Anzugsbolzen können nicht nur Kosten an Maschine und Werkstück verursachen, sondern auch schwere Personenschäden.

- Gefertigt aus hochfestem Spezialstahl
- Aufwändige Wärmebehandlung in mehreren Schritten
- Gezieltes Anlassen der am höchsten belasteten Bereiche
- Hohe Schlagzähigkeit
- Alle Funktionsflächen nach dem Härten fein bearbeitet
- Höchste Sicherheit und Zuverlässigkeit

Pull studs are an important link between machine and tool. The requirements concerning accuracy, rigidity and reliability are very high.

Pull studs of minor quality not only decrease the performance of the machine, they are even a safety risk. A breaking pull stud might cause severe damage on machine and workpiece and even injuries on persons.

- Made of special steel with high rigidity
- Costly heat treatment in several steps
- Spots with highest stress tempered specifically
- High impact strength
- All functional surfaces fine finished after hardening
- Highest security and reliability



DIN 69872 Form A mit Durchgangsbohrung/with drill through

	d1	d2	d3	l1	l2	l3	g1
SK 40							
Bestell-Nr./Order No. 88.200.40	19	14	17	54	26	20	M16
SK 50							
Bestell-Nr./Order No. 88.200.50	28	21	25	74	34	25	M24

DIN 69872 Form B abgedichtet/sealed

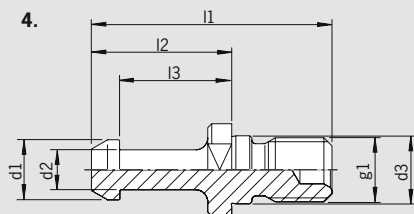
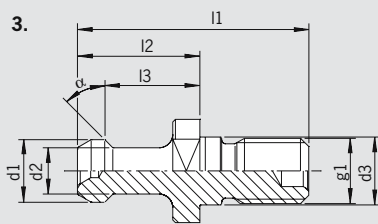
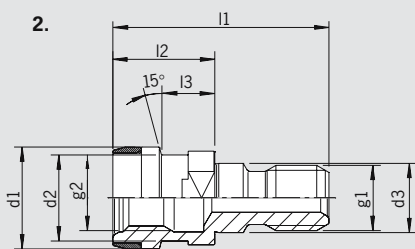
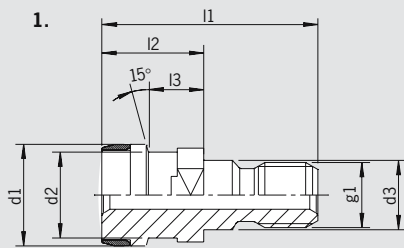
	d1	d2	d3	l1	l2	l3	g1
SK 40							
Bestell-Nr./Order No. 88.202.40	19	14	17	54	26	20	M16
SK 50							
Bestell-Nr./Order No. 88.202.50	28	21	25	74	34	25	M24

ISO 7388 B mit Durchgangsbohrung/with drill through

	d1	d2	d3	l1	l2	l3	g1
SK 40							
Bestell-Nr./Order No. 88.400.40	18,95	12,95	17	44,5	16,4	11,15	M16
SK 50							
Bestell-Nr./Order No. 88.400.50	29,1	19,6	25	65,5	25,55	17,95	M24

ISO 7388 B abgedichtet/sealed

	d1	d2	d3	l1	l2	l3	g1
SK 40							
Bestell-Nr./Order No. 88.402.40	18,95	12,95	17	44,5	16,4	11,15	M16
SK 50							
Bestell-Nr./Order No. 88.402.50	29,1	19,6	25	65,5	25,55	17,95	M24



1. Ott-Ringnut mit Durchgangsbohrung/Ott-groove with drill through

	d1	d2	d3	l1	l2	l3	g1
SK 40							
Bestell-Nr./Order No. 88.300.40	25	21,1	17	53	25	13,6	M16
SK 50							
Bestell-Nr./Order No. 88.300.50	39,3	32	25	65	25	13,35	M24

SK 40 mit Messingschutzring/SK 40 with protective ring of brass

2. Ott-Ringnut mit Innengewinde/Ott-groove with inner thread

	d1	d2	d3	l1	l2	l3	g1	g2
SK 40								
Bestell-Nr./Order No. 88.303.40	25	21,1	17	53	25	13,6	M16	M16
SK 50								
Bestell-Nr./Order No. 88.303.50	39,3	32	25	65	25	13,35	M24	M24

SK 40 mit Messingschutzring/SK 40 with protective ring of brass

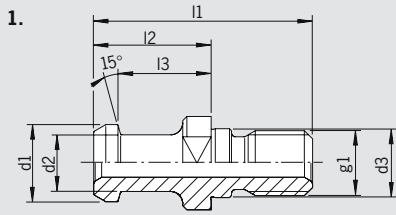
3. MAS 403 30°/45°

	d1	d2	d3	l1	l2	l3	g1	α
BT 30 30°								
Bestell-Nr./Order No. 88.604.30	11	7	12,5	43	23	18	M12	30°
BT 40 45°								
Bestell-Nr./Order No. 88.601.40	15	10	17	60	35	28	M16	45°
BT 40 45° verkürzt/shortened								
Bestell-Nr./Order No. 88.601.40.1	15	10	17	57,15	32,15	25,15	M16	45°
BT 40 45° mit Bohrung Ø 3,5/with bore Ø 3,5								
Bestell-Nr./Order No. 88.603.40	15	10	17	60	35	28	M16	45°
BT 40 30°								
Bestell-Nr./Order No. 88.604.40	15	10	17	60	35	28	M16	30°
BT 50 45°								
Bestell-Nr./Order No. 88.601.50	23	17	25	85	45	35	M24	45°
BT 50 30°								
Bestell-Nr./Order No. 88.604.50	23	17	25	85	45	35	M24	30°

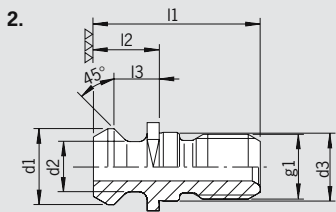
4. MORI - SEIKI MAS 90°

	d1	d2	d3	l1	l2	l3	g1
BT 40							
Bestell-Nr./Order No. 88.101.40	15	10	17	60	35	28	M16
BT 50							
Bestell-Nr./Order No. 88.101.50	23	17	25	85	45	35	M24

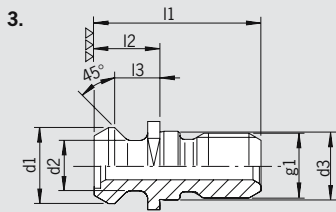
ANZUGSBOLZEN/PULL STUDS



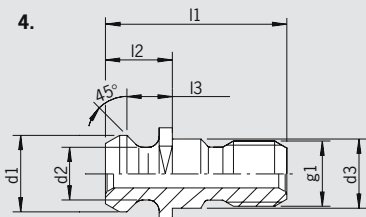
1. JIS B 6339 mit Durchgangsbohrung/with drill through							
	d1	d2	d3	l1	l2	l3	g1
BT 40							
Bestell-Nr./Order No. 88.700.40	19	14	17	54	29	23	M16
BT 50							
Bestell-Nr./Order No. 88.700.50	28	21	25	74	34	25	M24



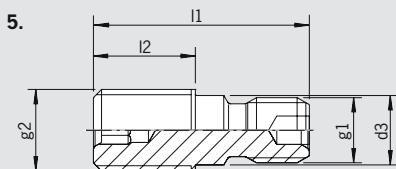
2. ANSI - CAT 40 (MAZAK) mit Durchgangsbohrung/with drill through							
	d1	d2	d3	l1	l2	l3	g1
CAT 40							
Bestell-Nr./Order No. 88.500.40	18,796	12,446	17	41,256	16,256	11,176	M16
mit Dichtfläche an Stirnseite/with sealing on face side							



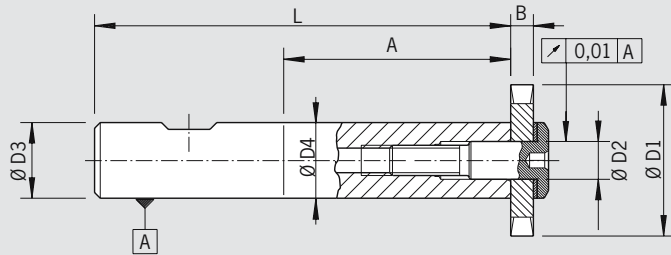
3. ANSI - CAT 50 (MAZAK) mit Durchgangsbohrung/with drill through							
	d1	d2	d3	l1	l2	l3	g1
CAT 50							
Bestell-Nr./Order No. 88.500.50	28,956	20,828	25	65,4	25,4	17,78	M24
mit Nut für O-Ring/with groove for o-ring							



4. ANSI - CAT 40 (MAZAK)							
	d1	d2	d3	l1	l2	l3	g1
CAT 40 verlängert/extended							
Bestell-Nr./Order No. 88.900.40.1	18,796	12,446	17	44,106	19,106	14,026	M16
mit Dichtfläche an Stirnseite/with sealing on face side							



5. Anzugsbolzen mit Sägewinde S 20 x 2/with saw thread S 20 x 2							
	d1	d2	d3	l1	l2	l3	g1 g2
SK 40							
Bestell-Nr./Order No. 88.600.40	-	-	17	53	25	-	M16 S20x2



Verwendung:

Zur Aufnahme von Sägeblättern über Weldon-Aufnahmen

Schaftausführung nach

DIN 1835-B

hochvergütet, Außen- und Innen-Ø geschliffen

- Lieferumfang: komplett mit Spannschraube und Zwischenring
- Kühlung mit Cool Jet gegen Aufpreis

Use:

For holding sawblades on Weldon toolholders

Design of shank according to

DIN 1835-B

well quenched and tempered, internally and externally ground

- Included in delivery: completely with tightening bolt and intermediate disk
- Cooling with Cool Jet against extra charge

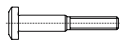
Sägeblatt/Sawblade Ø D1 [mm]	20	25	32	40	50	63
Ø D2 [mm]	5	8	8	10	13	16
Ø D3 [mm]	20	20	20	20	25	25
Ø D4 [mm]	10	13	16	20	25	25
L [mm]	90	100	105	110	136	136
B 0,2 mm – 6 mm						
Maß/Length A [mm]	40	50	55	60	80	80
Bestell-Nr./Order No. 79.200...	...20	...25	...32	...40	...50	...63
Sägeblattaufnahmensatz bestehend aus allen sechs Größen inkl. Werkzeugträger/ Tool box incl. 6 pcs. sawblade adapter						
Bestell-Nr./Order No. 79.200.00						

Zubehör/Accessories

Siehe auch Zubehörkatalog/See also accessories

Spannschraube/Tightening bolt

Größe/Size D1	20	25	32	40	50	63
Bestell-Nr./Order No. 79.250...	...20	...25	...32	...40	...50	...63



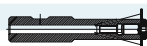
Scheibe/Disk

Größe/Size D1	20	25	32	40	50	63
Bestell-Nr./Order No. 79.260...	...20	...25	...32	...40	...50	...63



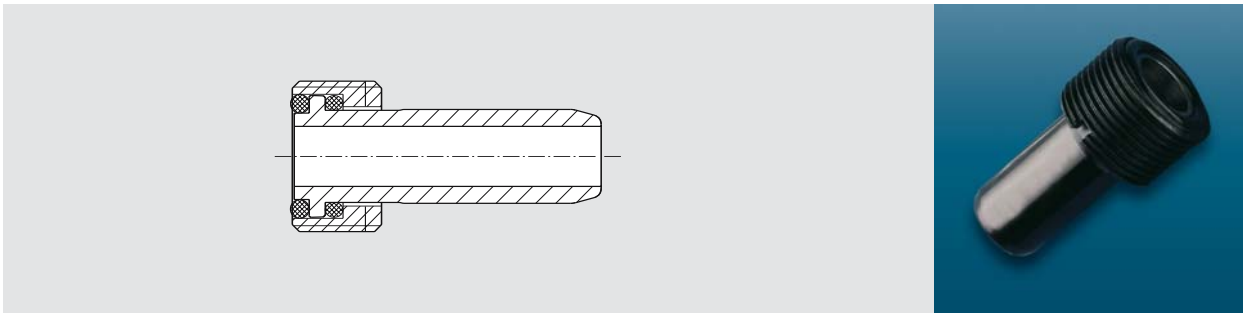
Cool Jet Bohrungen/Cool Jet bores

Bestell-Nr./Order No. 91.100.24



Seite 8/Page 8

KÜHLMITTELROHRE/COOLANT TUBES



- Verhindert Verschmutzung der Spindel
- Notwendig für alle HSK-Maschinen mit Innenkühlung
- Zwei O-Ringe für leichte Beweglichkeit des Rohres
- Spezialbeschichtung mit extrem glatter Oberfläche
- Schont das Dichtsystem der Spindel
- Passend für alle Fabrikate

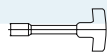
- Prevents spindle from being spoiled
- Must be used with all coolant through HSK spindles
- Dual o-ring design makes tube slightly movable
- Special coating with extremely smooth surface
- No damaging of the sealing system
- Fits all brands of HSK holders

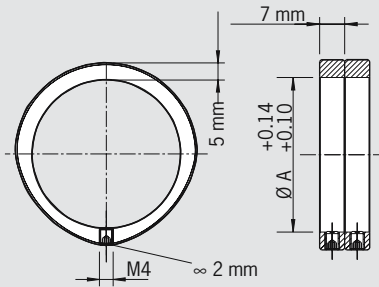
Kühlmittelrohr/Coolant tube with 2 o-rings	HSK-A 32	HSK-A 40	HSK-A 50	HSK-A 63	HSK-A 80	HSK-A 100
	HSK-E 32	HSK-E 40	HSK-E 50			
Bestell-Nr./Order No. 85.700...	...32	...40	...50	...63	...80	...10

Zubehör/Accessories

Siehe auch Zubehörkatalog/See also accessories

Schlüssel/Wrench	HSK-32	HSK-40	HSK-50	HSK-63	HSK-80	HSK-100
Bestell-Nr./Order No. 84.500...	...32	...40	...50	...63	...80	...10





Zum Feinwuchten von allen Werkzeugaufnahmen mit zylindrischem Außendurchmesser (Ø A)

For fine-balancing of all tool holders with cylindrical outer diameter (diam. A)

Die Auswuchtringe tragen selbst eine genau definierte Unwucht. Sie werden so gedreht, dass die Unwucht der Werkzeugaufnahme genau ausgeglichen wird. Es werden immer 2 Ringe pro Auswuchtebene benötigt.

The balancing index rings have a defined unbalance in themselves. They are turned in such a position that the unbalance of the tool holder will be compensated. There are always 2 rings needed per balancing plane.

- Schnell und präzise auswuchten
- Keine Beschädigung des Futter
- Beliebig oft wiederholbar
- Einfache Fixierung mit Klemmschraube
- Passend für alle Fabrikate
- Die Auswuchtmaschine bestimmt die Position der Ringe (z.B. HAIMER TOOL DYNAMIC)

- Balancing quickly and precisely
- No damage of tool holder
- Can be repeated as often as necessary
- Simply fixed by clamping screw
- Suitable for tool holders of all brands
- The balancing machine determines the position of the rings (e.g. HAIMER TOOL DYNAMIC)

- Lieferumfang: 2 Auswuchtringe mit Klemmschrauben ohne Innensechskantschlüssel

- Included in delivery: 2 balancing rings with clamping screws without hex wrench

	Ø A [mm]	Unwucht ca. unbalance
Bestell-Nr./Order No. 79.350.15	15	9 g·mm
79.350.17	17	12 g·mm
79.350.19	19	16 g·mm
79.350.20	20	17 g·mm
79.350.22	22	20 g·mm
79.350.24	24	27 g·mm
79.350.25	25	32 g·mm
79.350.26	26	33 g·mm
79.350.27	27	33 g·mm
79.350.28	28	40 g·mm
79.350.30	30	45 g·mm
79.350.32	32	36 g·mm
79.350.34	34	40 g·mm
79.350.35	35	48 g·mm
79.350.36	36	47 g·mm
79.350.38	38	53 g·mm
79.350.40	40	57 g·mm
79.350.42	42	65 g·mm
79.350.43	43	65 g·mm
79.350.44	44	68 g·mm
79.350.46	46	75 g·mm
79.350.48	48	81 g·mm
79.350.50	50	87 g·mm
79.350.52	52	94 g·mm
79.350.53	53	86 g·mm
79.350.54	54	91 g·mm
79.350.55	55	94 g·mm

	Ø A [mm]	Unwucht ca. unbalance
Bestell-Nr./Order No. 79.350.56	56	100 g·mm
79.350.58	58	106 g·mm
79.350.60	60	110 g·mm
79.350.62	62	120 g·mm
79.350.63	63	123 g·mm
79.350.64	64	126 g·mm
79.350.65	65	129 g·mm
79.350.66	66	120 g·mm
79.350.68	68	135 g·mm
79.350.70	70	145 g·mm
79.350.72	72	152 g·mm
79.350.74	74	160 g·mm
79.350.76	76	168 g·mm
79.350.78	78	178 g·mm
79.350.80	80	186 g·mm
79.350.82	82	199 g·mm
79.350.84	84	215 g·mm
79.350.86	86	224 g·mm
79.350.87	87	225 g·mm
79.350.88	88	226 g·mm
79.350.89	89	231 g·mm
79.350.90	90	237 g·mm
79.350.92	92	247 g·mm
79.350.94	94	253 g·mm
79.350.96	96	267 g·mm
79.350.98	98	277 g·mm
79.350.100	100	285 g·mm

WUCHTSCHRAUBENSATZ/SET OF BALANCING SCREWS



Bestell-Nr./Order No. 80.203.00

Zum Feinwuchten von Werkzeugaufnahmen mit Wuchtgewinden M 6 (z.B. Schrumpffutter von HAIMER).

Die Wuchtschrauben haben verschiedene Gewichte in einer feinen Abstufung. Sie werden in die vorhandenen Wuchtgewinde des Futters gedreht, so dass ihr Gewicht die Unwucht des Futters ausgleicht.

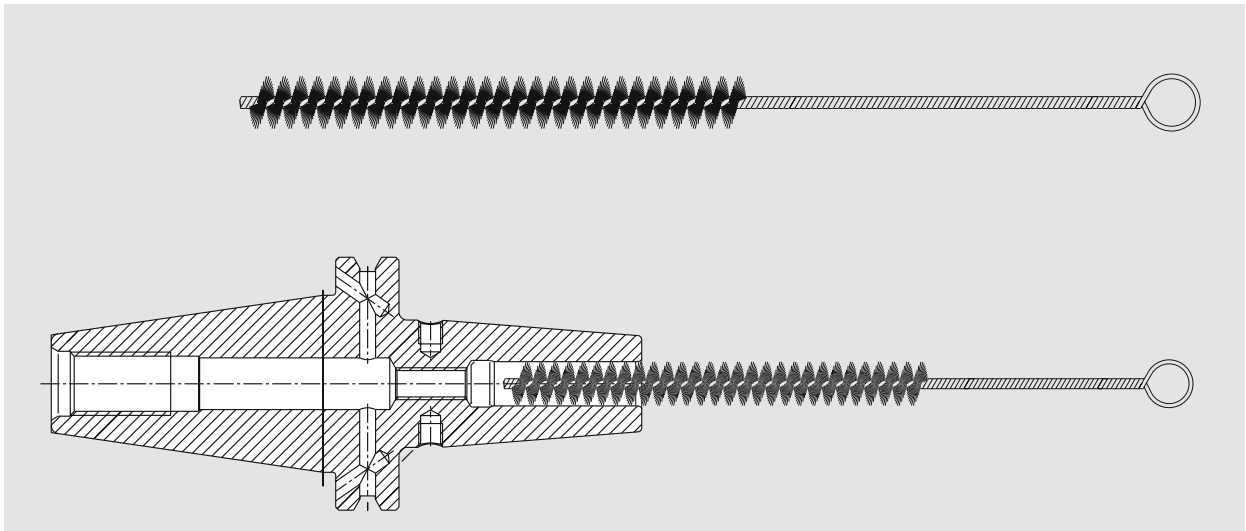
- Sortiment mit 11 verschiedenen Schraubengrößen mit verschiedenen Gewichten
- Die Schrauben werden bis auf den Grund des Gewindes gedreht und festgezogen. Keine Schraubensicherung notwendig.
- Schnell und präzise auswuchten
- Keine Beschädigung der Werkzeugaufnahme
- Beliebig oft wiederholbar
- Passend für alle Fabrikate
- Die Auswuchtmaschine berechnet das benötigte Gewicht (z.B. HAIMER TOOL DYNAMIC)
- Lieferumfang: Kassette mit 11 x 10 Wuchtschrauben
Schraubendreher

For fine-balancing of all tool holders with balancing threads M 6 (e.g. shrink fit chucks from HAIMER)

The screws have different weights in a fine graduation. They are screwed into the balancing threads of the tool holder so that their weight compensates the unbalance of the tool holder.

- Set consisting of screws of 11 different sizes and weights
- Screws are screwed to the ground of the thread and tightened. No additional fixing of screws necessary.
- Balancing quickly and precisely
- No damage of tool holders
- Can be repeated as often as necessary
- Suitable for tool holders of all brands
- The balancing machine calculates the necessary weight of the screws (e.g. HAIMER TOOL DYNAMIC)
- Included in delivery: Case with 11 x 10 balancing screws
Screw driver

SCHRUMPFUTTERBÜRSTE/SHRINK FIT BRUSH

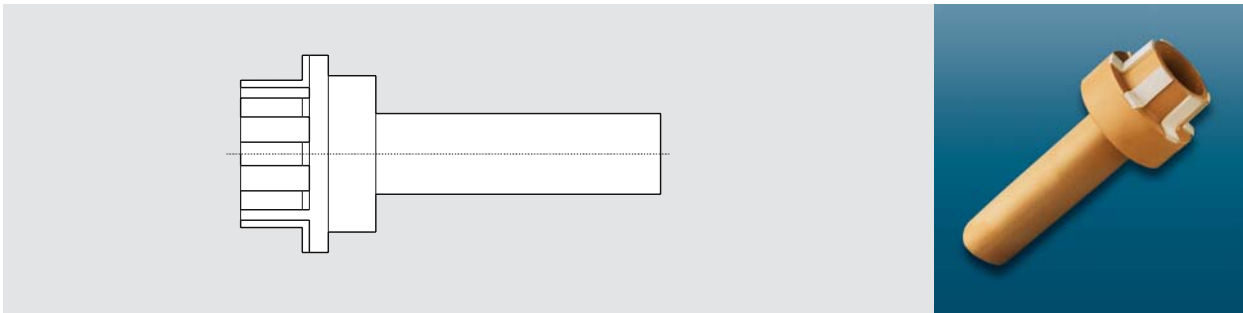


Um optimale Haltekräfte im Schrumpfsitz zu erzielen, muss die Schrumpfbohrung sauber und fettfrei sein. Die Reinigung sollte mit einem Lösungsmittel erfolgen, z.B. Bremsenreiniger. Mit der Schrumpffutterbürste kann die Schrumpfbohrung bis auf den Grund gereinigt werden.

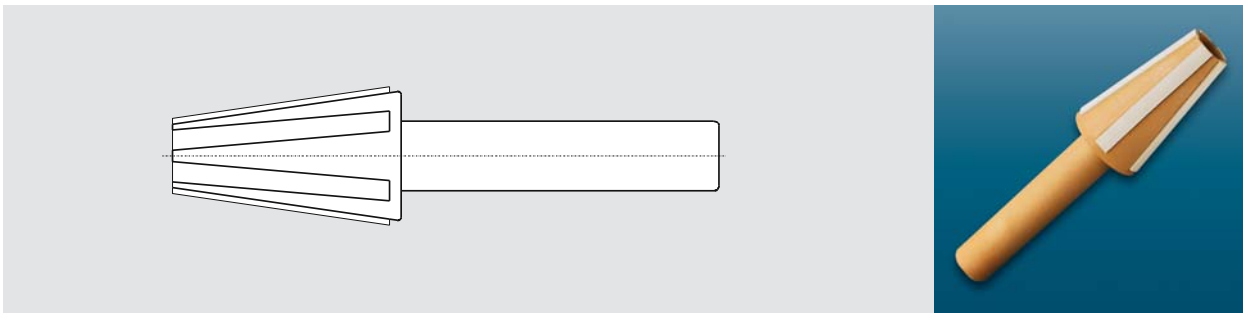
In order to achieve the best possible shrink fit connection, a grease free socket and shank is necessary. The cleaning can be done by a cold solvent (e.g. brake cleaner). An appropriate cleaning brush is necessary to clean the socket of the Shrink Fit Chuck.

Schrumpffutter/Shrink Fit Chuck	Ø [mm]
Bestell-Nr./Order No. 86.200.01	3
86.200.02	3.5
86.200.02	4
86.200.02	4.5
86.200.02	5
86.200.03	6
86.200.03	8
86.200.04	10
86.200.04	12
86.200.06	14
86.200.06	16
86.200.07	18
86.200.07	20
86.200.08	25

KEGELWISCHER/CONE WIPER

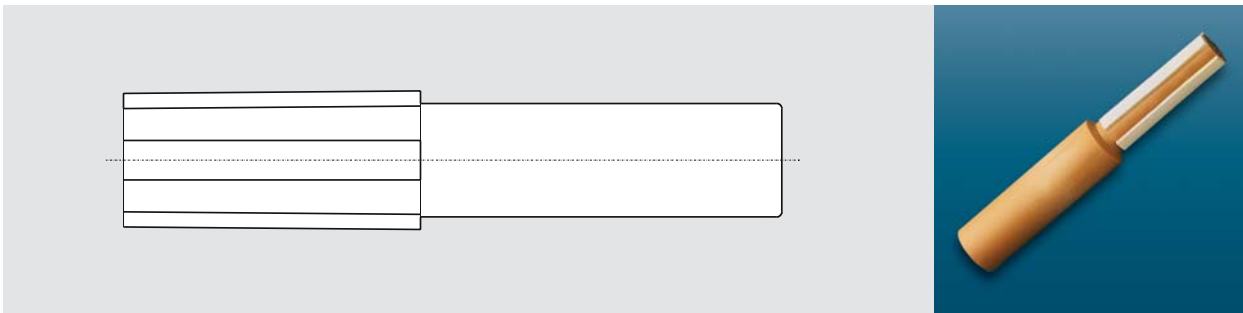


Kegelwischer/Cone wiper HSK	HSK-32	HSK-40	HSK-50	HSK-63	HSK-80	HSK-100
Bestell-Nr./Order No. 85.820...	...32	...40	...50	...63	...80	...100



Kegelwischer/Cone wiper SK, BT, CAT	SK 40	BT 40	CAT 40	SK 50	BT 50	CAT 50
Bestell-Nr./Order No. 86.100...	...40	...40	...40	...50	...50	...50

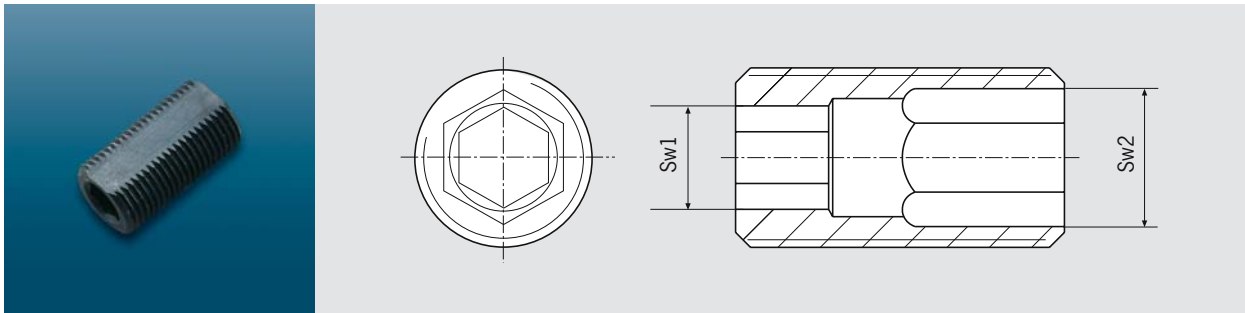
Kegelwischer/Cone wiper MK	MK 01	MK 02	MK 03	MK 04
Bestell-Nr./Order No. 86.100...	...01	...02	...03	...04



Kegelwischer/Cone wiper HG	HG 01	HG 02	HG 03
Bestell-Nr./Order No. 82.590...	...01	...02	...03

Zum Reinigen des Innenkegels von HG-Futtern/For cleaning the inner cone of HG chucks

EINSTELLSCHRAUBEN FÜR SCHRUMPFUTTER BACK UP SCREWS FOR SHRINK FIT CHUCKS



- Innensechskant an jedem Ende – immer zugänglich
- Seitlich abgeflacht für optimalen Kühlmittelabfluss
- Feingewinde für höchste Genauigkeit

- Hexagon socket on each end – can always be reached
- Flats on sides for optimized coolant drainage
- Fine thread for maximum accuracy

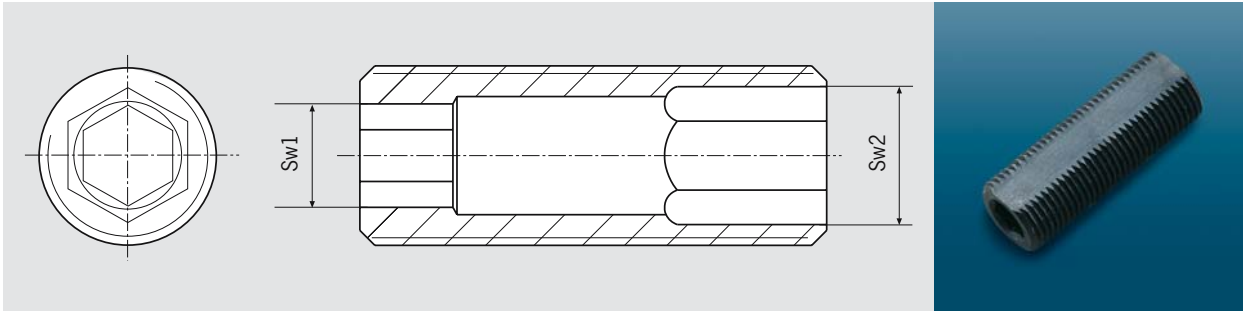
[mm]		SK 40/50 BT 40/50	HSK-A 32/E 32 A 40/E 40	HSK-A 50/ E 50	HSK-A 63	HSK-F 63	HSK-A 80	HSK-A 100
Spann- Clamping Ø	Länge/Length Bestell-Nr. Order No.							
6	85.810...	...12.1	...12.1	...12.1	...12.1	...12.1	...12.1	...12.1
8		...15.1	...15.1	...15.1	...15.1	...15.1	...15.1	...15.1
10	kurz/short andere/other	...18.2 ...18.2	...18.2 ...36.2	...18.2 ...36.2	...18.2 ...36.2	...18.2 ...36.2	...18.2 ...36.2	...18.2 ...36.2
12	kurz/short andere/other	...24.2 ...24.2	...24.2 ²⁾ ...24.2	...39.2 ...24.2	...39.2 ...24.2	...39.2 ...24.2	...21.2 ...24.2	...21.2 ...24.2
14	kurz/short ZG130/oversize	...24.2 ...24.2	...24.2 ...24.2	...39.2 ...24.2	...39.2 ...24.2	- -	...21.2 ...24.2	...21.2 ...24.2
16	kurz/short ZG130/oversize	...46.2 ...46.2	...27.2 ...27.2	...25.2 ...38.2	...25.2 ...46.2	...25.2 ...46.2	...27.2 ...46.2	...40.1 ...46.2
18	kurz/short ZG130/oversize	...46.2 ...46.2 ¹⁾	- -	...25.2 ...38.2	...25.2 ...46.2	- -	...27.2 ...46.2	...40.1 ...46.2
20	kurz/short ZG130/oversize	...52.2 (37.2) ³⁾ ...52.2 (37.2) ³⁾	- -	...51.2 (43.2) ³⁾ ...52.2 (44.2) ³⁾	...51.2 (43.2) ³⁾ ...52.2 (37.2) ³⁾	...51.2 (43.2) ³⁾ ...52.2 (37.2) ³⁾	...51.2 (46.2) ³⁾ ...52.2 (37.2) ³⁾	...51.2 (45.2) ³⁾ ...52.2 (37.2) ³⁾
25	kurz/short ZG130/oversize	...52.2 (37.2) ³⁾ ...52.2 (37.2) ³⁾	- -	- -	...52.2 (37.2) ³⁾ ...52.2 (37.2) ³⁾	...52.2 (37.2) ³⁾ ...52.2 (37.2) ³⁾	...52.2 (37.2) ³⁾ ...52.2 (37.2) ³⁾	...52.2 (46.2) ³⁾ ...52.2 (37.2) ³⁾
32	kurz/short ZG130/oversize	...52.2 (37.2) ³⁾ ...52.2 (37.2) ³⁾	- -	- -	...52.2 (37.2) ³⁾ ...52.2 (37.2) ³⁾	- -	...52.2 (37.2) ³⁾ ...52.2 (37.2) ³⁾	...52.2 (37.2) ³⁾ ...52.2 (37.2) ³⁾

Bestell-Nr./Order No.	SW1	SW2	Gewinde/Thread
85.810.12.1	SW2,5	SW2,5	M5x0,8x16
85.810.15.1	SW3	SW3	M6x1x16
85.810.18.2	SW3	SW4	M8x1x16
85.810.24.2	SW4	SW5	M10x1x20
85.810.37.2	SW6	SW8	M12x1x22
85.810.46.2	SW6	SW8	M12x1x20
85.810.25.2	SW5	SW6	M12x1x18
85.810.27.2	SW4	SW6	M12x1x18
85.810.36.2	SW3	SW4	M8x1x20

Bestell-Nr./Order No.	SW1	SW2	Gewinde/Thread
85.810.21.2	SW4	SW5	M10x1x16
85.810.38.2	SW5	SW6	M12x1x22
85.810.39.2	SW4	SW5	M10x1x18
85.810.40.1	SW6	SW6	M12x1x16
85.810.43.2	SW5	SW8	M12x1x18
85.810.44.2	SW5	SW8	M12x1x22
85.810.45.2	SW6	SW8	M12x1x18
85.810.51.2	SW5	SW8	M16x1x18
85.810.52.2	SW6	SW8	M16x1x22

1) BT 40 Ø 18 ZG130 = Bestell-Nr./Order No. 85.810.37.2
 2) HSK-32 Ø 12 = Bestell-Nr./Order No. 85.810.36.2
 3) Pos. in () für alten Standard/Pos. in () for old Standard

LANGE EINSTELLSCHRAUBEN FÜR SCHRUMPFUTTER BACK UP SCREWS LONG FOR SHRINK FIT CHUCKS



- Innensechskant an jedem Ende – immer zugänglich
- Seitlich abgeflacht für optimalen Kühlmittelabfluss
- Feingewinde für höchste Genauigkeit

- Hexagon socket on each end – can always be reached
- Flats on sides for optimized coolant drainage
- Fine thread for maximum accuracy

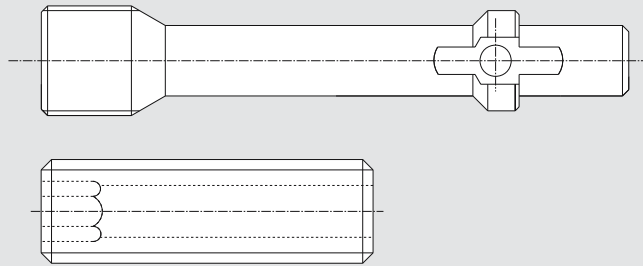
[mm]		SK 40/50 BT 40/50	HSK-A 32/E 32 A 40/E 40	HSK-A 50/ E 50	HSK-A 63	HSK-F 63	HSK-A 80	HSK-A 100
Spann-Clamping Ø	Länge/Length Bestell-Nr. Order No.							
6	85.810...	...12.4	...12.4	...12.4	...12.4	...12.4	...12.4	...12.4
8		...15.4	...15.4	...15.4	...15.4	...15.4	...15.4	...15.4
10		...18.4	...18.4	...18.4	...18.4	...18.4	...18.4	...18.4
12		...21.4	...21.4 ¹⁾	...21.4	...21.4	...21.4	...21.4	...21.4
14		...21.4	...21.4	...21.4	...21.4	...21.4	...21.4	...21.4
16	kurz/short ZG130/oversize	...37.4 ...37.4	...27.4 ...27.4	...25.4 ...25.4	...25.4 ...37.4	...25.4 ...37.4	...27.4 ...37.4	...40.4 ...37.4
18	kurz/short ZG130/oversize	...37.4 ...37.4	- -	...25.4 ...25.4	...25.4 ...37.4	...25.4 ...37.4	...27.4 ...37.4	...40.4 ...37.4
20	kurz/short ZG130/oversize	...52.4 (37.4) ²⁾ ...52.4 (37.4) ²⁾	- -	...52.4 (43.4) ²⁾ ...52.4 (43.4) ²⁾	...52.4 (43.4) ²⁾ ...52.4 (37.4) ²⁾	...52.4 (43.4) ²⁾ ...52.4 (37.4) ²⁾	...52.4 (37.4) ²⁾ ...52.4 (37.4) ²⁾	...52.4 (37.4) ²⁾ ...52.4 (37.4) ²⁾
25		...52.4 (37.4) ²⁾	-	-	...52.4 (37.4) ²⁾	...52.4 (37.4) ²⁾	...52.4 (37.4) ²⁾	...52.4 (37.4) ²⁾
32		...52.4 (37.4) ²⁾	-	-	...52.4 (37.4) ²⁾	...52.4 (37.4) ²⁾	...52.4 (37.4) ²⁾	...52.4 (37.4) ²⁾

Bestell-Nr./Order No.	SW1	SW2	Gewinde/Thread
85.810.12.4	SW2,5	SW2,5	M5x0,8x24
85.810.15.4	SW3	SW3	M6x1x24
85.810.18.4	SW3	SW4	M8x1x24
85.810.21.4	SW4	SW5	M10x1x28
85.810.37.4	SW6	SW8	M12x1x34
85.810.43.4	SW5	SW8	M12x1x34
85.810.25.4	SW5	SW6	M12x1x34
85.810.27.4	SW4	SW6	M12x1x34
85.810.52.4	SW6	SW8	M16x1x34

1) HSK-A 32 Ø 12 = Bestell-Nr./Order No. 85.810.18.4
2) Pos. in () für alten Standard/Pos. in () for old Standard

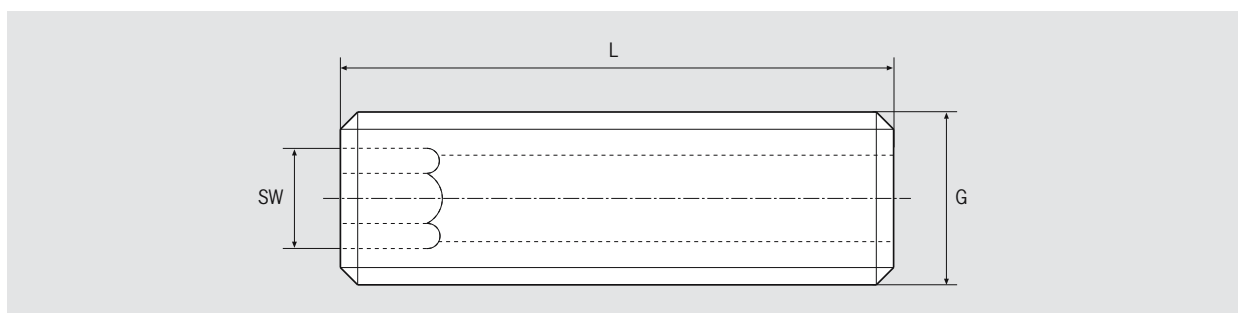
Technische Änderungen vorbehalten
Technical data subject to change without prior notice

EINSTELLSCHRAUBEN FÜR WHISTLE-NOTCH
BACK UP SCREWS FOR WHISTLE NOTCH



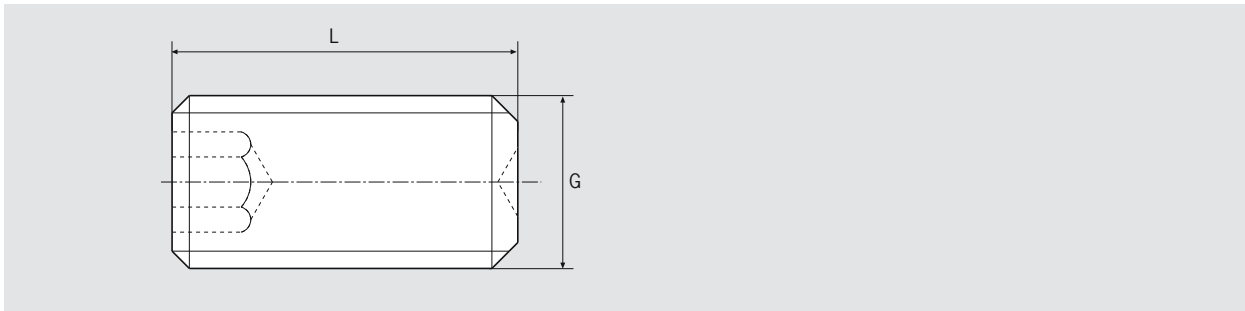
Größe/Size Ø D1 [mm]	DIN 69871, SK 40	DIN 69871, SK 50	JIS B 6339, BT 40	JIS B 6339, BT 50	DIN 69893, HSK-A 63 HSK-A 80, HSK-A 100
6 kurz/short	85.150.01	85.150.03	85.150.01	85.150.03	85.810.02
6 lang/long	85.150.04	85.150.04	85.150.04	85.150.04	85.810.12.1
6 ZG 130	85.150.05	85.150.05	-	-	-
6 überlang/oversize	85.150.07	85.150.07	85.150.07	85.150.07	85.810.02
8 kurz/short	85.150.01	85.150.03	85.150.01	85.150.03	85.810.05
8 lang/long	85.150.04	85.150.04	85.150.04	85.150.04	85.810.15.1
8 ZG 130	85.150.05	85.150.05	-	-	-
8 überlang/oversize	85.150.07	85.150.07	85.150.07	85.150.07	85.810.05
10 kurz/short	85.150.01	85.150.03	85.150.02	85.150.03	85.810.09
10 lang/long	85.150.04	85.150.04	85.150.04	85.150.04	85.810.18.2
10 ZG 130	85.150.05	85.150.05	-	-	-
10 überlang/oversize	85.150.07	85.150.07	85.150.07	85.150.07	85.810.36.2
12 kurz/short	85.150.01	85.150.01	85.150.01	85.150.02	85.810.14
12 lang/long	85.150.04	85.150.04	85.150.04	85.150.04	85.810.24.2
12 ZG 130	85.150.05	85.150.05	-	-	-
12 überlang/oversize	85.150.06	85.150.07	85.150.06	85.150.07	85.810.14
14 kurz/short	85.150.01	85.150.01	85.150.01	85.150.02	85.810.14
14 lang/long	85.150.04	85.150.04	85.150.04	85.150.04	85.810.24.2
14 ZG 130	85.150.05	85.150.05	-	-	-
14 überlang/oversize	85.150.06	85.150.06	85.150.06	85.150.07	85.810.14
16 kurz/short	85.150.01	85.150.01	85.150.01	85.150.02	85.810.18
16 lang/long	85.150.04	85.150.04	85.150.04	85.150.04	85.810.46.2
16 ZG 130	85.150.05	85.150.05	-	-	-
16 überlang/oversize	85.150.07	85.150.06	85.150.06	85.150.06	85.810.18
18 kurz/short	85.150.01	85.150.01	85.150.01	85.150.02	85.810.18
18 lang/long	85.150.04	85.150.04	85.150.04	85.150.04	85.810.46.2
18 ZG 130	85.150.05	85.150.05	-	-	-
18 überlang/oversize	85.150.07	85.150.06	85.150.06	85.150.06	85.810.18
20 kurz/short	85.150.01	85.150.01	85.150.01	85.150.02	85.810.27
20 lang/long	85.150.04	85.150.04	85.150.04	85.150.04	85.810.38.2
20 ZG 130	85.150.05	85.150.05	-	-	-
20 überlang/oversize	85.150.07	85.150.06	85.150.06	85.150.06	85.810.27
25 kurz/short	85.150.03	85.150.02	85.150.03	85.150.03	85.810.27
25 lang/long	-	-	-	-	85.810.38.2
25 ZG 130	85.150.08	85.150.08	-	-	-
25 überlang/oversize	85.150.06	85.150.06	85.150.06	85.150.06	85.810.27
32 kurz/short	-	85.150.03	85.150.03	85.150.03	85.810.27
32 lang/long	-	-	-	-	85.810.38.2
32 ZG 130	-	85.150.08	-	-	-
32 überlang/oversize	-	85.150.06	85.150.06	85.150.06	85.810.27
40 kurz/short	-	85.150.02	-	85.150.03	-
40 lang/long	-	-	-	-	-
40 ZG 130	-	85.150.08	-	-	-
40 überlang/oversize	-	85.150.05	-	85.150.05	-

LÄNGENEINSTELLSCHRAUBEN FÜR SPANNZANGENFUTTER ER BACK UP SCREWS FOR COLLET CHUCKS



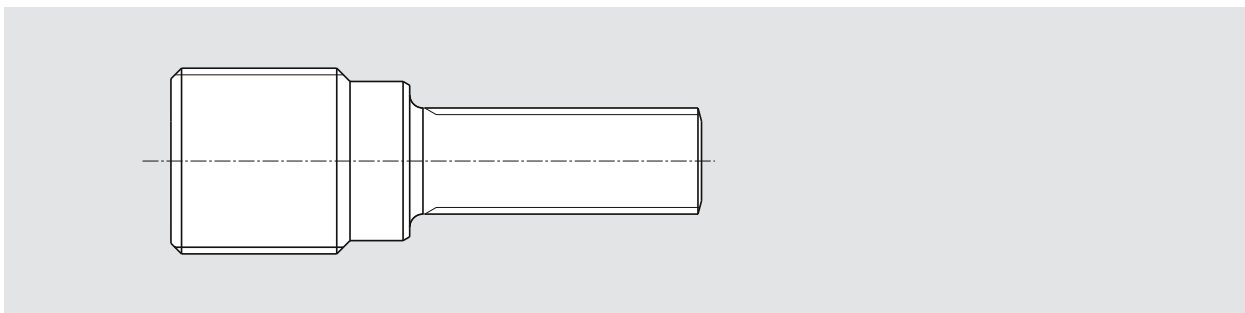
Größe/Size Ø [mm]	HSK-32, 40, 50, 63, 80, 100	SW	L [mm]	Gewinde/Thread
ER 16	Bestell-Nr./Order No. 85.800.34	3	25	M6
ER 20	85.800.34	3	25	M6
ER 25	85.800.34	3	25	M6
ER 32	85.800.35	5	25	M10
ER 40	85.800.35	5	25	M10

SPANNSCHRAUBEN FÜR WELDON- UND WHISTLE-NOTCH AUFNAHMEN CLAMPING SCREWS FOR WELDON AND WHISTLE NOTCH



Spann/Clamping	Ø D1 [mm]	06	08	10	12	14	16	18	20	25	25	32	40
Bestell-Nr./Order No. 85.100...		...06	...08	...10	...12	...12	...14	...14	...16	...18	ultrakurz ...18.1	...20	...20
G		M6	M8	M10	M12	M12	M14	M14	M16	M18x2	M18x2	M20x2	M20x2
L		10	10	12	16	16	16	16	16	20	13	20	20

SPANNSCHRAUBEN FÜR HG-FUTTER CLAMPING SCREWS FOR HG CHUCK



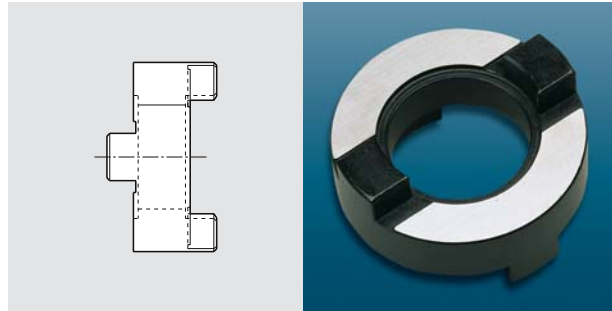
	DIN 69871	DIN 69871	MAS	MAS				
	SK 40	SK 50	BT 40	BT 50	HSK-A 63	HSK-F 63	HSK-A 80	HSK-A 100
für Maß/for Length kurz/short	40.420.01	50.420.01	40.620.01	–	A 63.120.01	F 63.120.01	A 80.120.01	A 10.120.01
Bestell-Nr./Order No. 82.560...	...03	...03	...03	–	...12	...02	...02	...02
für Maß/for Length kurz/short	40.420.02	50.420.02	40.620.02	–	A 63.120.02	F 63.120.02	A 80.120.02	A 10.120.02
Bestell-Nr./Order No. 82.560...	...02	...02	...02	–	...14	...14	...14	...14
für Maß/for Length kurz/short	40.420.03	50.420.03	40.620.03	–	A 63.120.03	F 63.120.03	A 80.120.03	A 10.120.03
Bestell-Nr./Order No. 82.560...	...02	...02	...02	–	...14	...14	...14	...14
für Maß/for Length lang/long	40.421.01	50.421.01	40.621.01	50.621.01	–	–	–	–
Bestell-Nr./Order No. 82.560...	...04	...04	...04	...04	–	–	–	–
für Maß/for Length lang/long	40.421.02	50.421.02	40.621.02	50.621.02	–	–	–	–
Bestell-Nr./Order No. 82.560...	...01	...01	...01	...01	–	–	–	–
für Maß/for Length lang/long	40.421.03	50.421.03	40.621.03	50.621.03	–	–	–	–
Bestell-Nr./Order No. 82.560...	...05	...05	...05	...17	–	–	–	–
für Maß/for Length überlang/extralong	40.422.01	50.422.01	40.622.01	50.622.01	A 63.122.01	–	A 80.122.01	A 10.122.01
Bestell-Nr./Order No. 82.560...	...08	...08	...08	...08	...04	–	...04	...04
für Maß/for Length überlang/extralong	40.422.02	50.422.02	40.622.02	50.622.02	A 63.122.02	–	A 80.122.02	A 10.122.02
Bestell-Nr./Order No. 82.560...	...06	...06	...06	...06	...01	–	...05	...05
für Maß/for Length überlang/extralong	40.422.03	50.422.03	40.622.03	50.622.03	A 63.122.03	–	A 80.122.03	A 10.122.03
Bestell-Nr./Order No. 82.560...	...07	...07	...07	...07	...01	–	...05	...05

MESSERKOPF-, KOMBI-ZUBEHÖR
ACCESSORIES FACE MILL AND COMBINATION ARBORS

MITNEHMERRINGE/DRIVING RINGS

Aufnahme/Tool holder Ø	16	22	27	32	40	50
Bestell-Nr./Order No. 85.200...	...16	...22	...27	...32	...40	...50

Mitnehmerringe für DIN 6366/1 für Kombiaufsteckfräserdorne

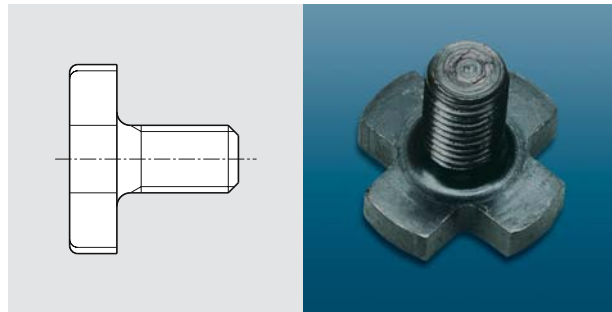


Driving rings DIN 6366/1 for combination shell end mill adapters

FRÄSERANZUGSSCHRAUBEN
TIGHTENING BOLTS

Aufnahme/Tool holder Ø	16	22	27	32	40	50	60
Best.-Nr./Order No. 85.300...	...16	...22	...27	...32	...40	...50	...60

Fräseranzugsschrauben DIN 6367 für Kombiaufsteckfräserdorne und Messerkopfaufnahmen

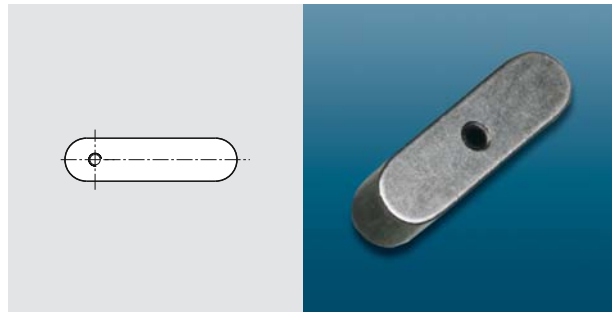


Tightening bolts DIN 6367 for combination shell end mill adapters and face mill arbors

PASSFEDERN/FEATHER KEYS

Aufnahme/Tool holder Ø	16	22	27	32	40	50
Bestell-Nr./Order No. 85.400...	...16	...22	...27	...32	...40	...50

Passfedern DIN 6885 mit Abdrückschraube für Kombiaufsteckfräserdorne



Feather keys DIN 6885 with loosening screw for combination shell end mill adapters

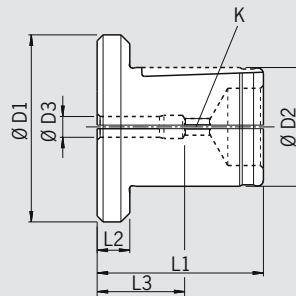
UMRÜSTSATZ AD-B
CONVERSION KIT AD-B

Umrüstsatz Form AD/Form B je 50 Dichtdübel und Spannschrauben

Größe/Size	SK40	SK50
Bestell-Nr./Order No. 85.600...	...40	...50

Conversion kit form AD/form B comprising each 50 sealing dowels and lock screws

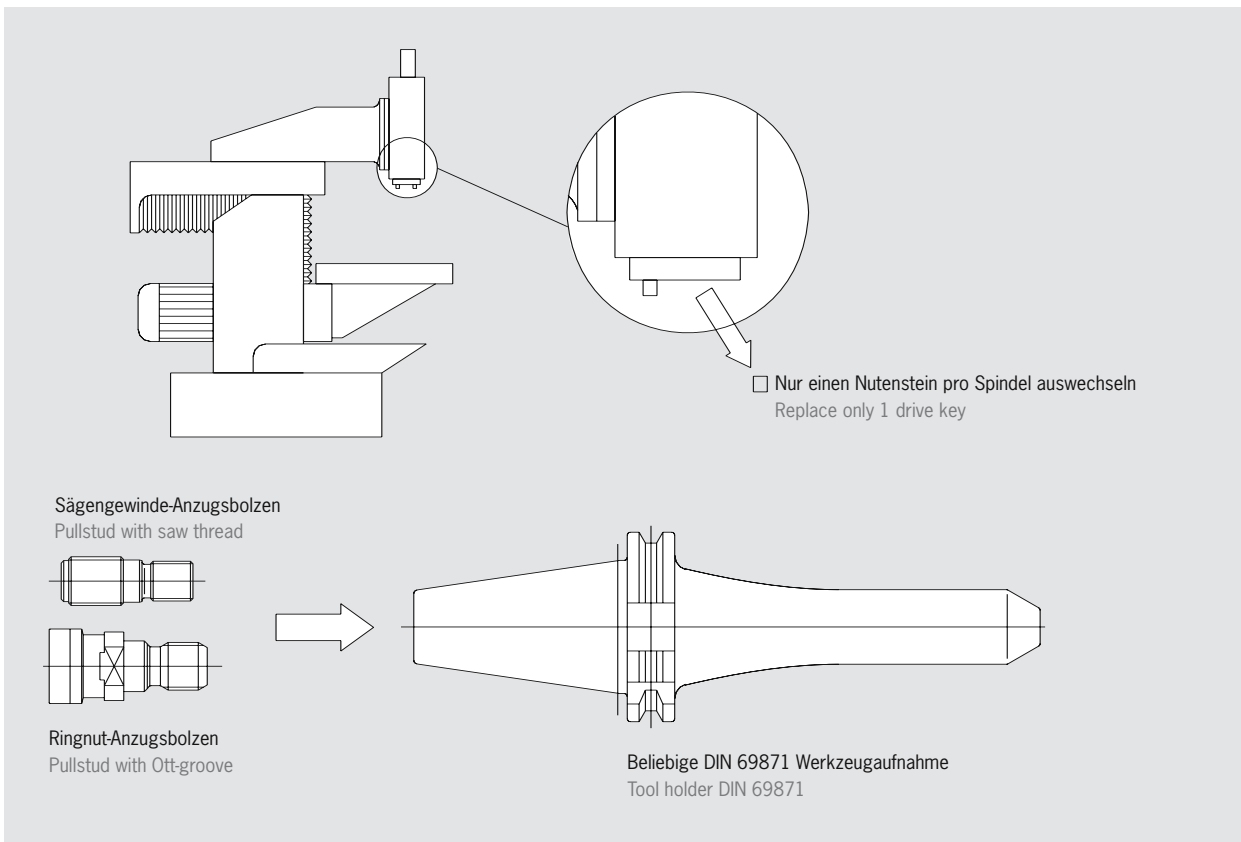
SCHNELLWECHSELEINSÄTZE TYP FH
QUICK CHANGE INSERTS TYPE FH



Nicht kompatibel mit Fa. Bilz/Not useable with comp. Bilz

Typ FH/Type FH				01	03			
Ø D1 [mm]				32	42			
Ø D2 [mm]				20	28			
L1 [mm]				28	35			
L2 [mm]				5,5	5,5			
Schneidbereich/Cutting range				M3–M14		M4,5–M24		
Schaft/Shank Ø D3	Vierkant Square K	DIN 371	DIN 374/376 ISO	Schaftmaß Shank size	L3	Bestell-Nr. Order No.	L3	Bestell-Nr. Order No.
2,5	2,1	M1–M1,8	M3,5	–	11,5	80.501.02.5	–	–
2,8	2,1	M2–M2,5	M4	–	12	80.501.02.8	–	–
3,15	2,5	M3	M4,5–M5	M4–M3	13	80.501.03.1	–	–
3,5	2,7	M3	M4,5–M5	–	14,5	80.501.03.5	–	–
3,55	2,8	M3	M4,5–M5	M4,5–M3,5	14	80.501.03.6	–	–
4	3	M3,5	–	–	16	80.501.04.0	–	–
4	3,15	M3,5	–	M4–M5	16	80.501.04.3	–	–
4,5	3,4	M4	M6	–	17	80.501.04.5	–	–
5	4	M4	M6	M5	17	80.501.05.0	–	–
6	4,9	M4,5–M6	M8	–	17	80.501.06.0	17	80.503.06.0
6,3	5	M4,5–M6	M8	M6–M8	17	80.501.06.3	17	80.503.06.3
7	5,55	M7	M10	–	17	80.501.07.0	17	80.503.07.0
8	6,3	M8	–	–	17	80.501.08.0	20	80.503.08.0
9	7,1	–	M12	–	17	80.501.09.0	21	80.503.09.0
10	8	M10	–	–	17	80.501.10.0	21	80.503.10.0
11	9	–	M14	–	17	80.501.11.0	21	80.503.11.0
11,2	9	–	–	–	–	–	21	80.503.11.2
12	9	–	M16	–	–	–	21	80.503.12.0
12,5	10	–	M16	M16	–	–	21	80.503.12.5
14	11	–	M18	–	–	–	22	80.503.14.0
14	11,2	–	M18	M18–M20	–	–	22	80.503.14.2
16	12	–	M20	–	–	–	22	80.503.16.0
16	12,5	–	M20	M22	–	–	22	80.503.16.5
18	14,5	–	M22–M24	–	–	–	22	80.503.18.0

UMRÜSTSATZ DIN 2080-DIN 69871 CONVERSION KIT DIN 2080-DIN 69871



Zum Umrüsten von Spindeln DIN 2080 für Werkzeugaufnahmen DIN 69871/For conversion of spindles DIN 2080 for tool holders DIN 69871



2 Austauschnutensteine mit Befestigungsschrauben
2 drive keys with clamping screws

SK 40: Bestell-Nr./Order No. 85.500.40

SK 50: Bestell-Nr./Order No. 85.500.50

TERMS OF DELIVERY AND PAYMENT

I. Generalities

The following conditions apply to all business transactions – also those in the future – with the customer. Our sales and shipping conditions apply exclusively; we do not recognize contrary or otherwise differing conditions on the part of the customer, unless we explicitly approve of the validity of those conditions. Our sales and shipping conditions also apply in the event that we acknowledge contrary or differing conditions on the side of the customer and unreservedly fulfil the order. All agreements reached between ourselves and the customer must be in written form in order to be valid. Our sales and shipping conditions apply exclusively towards registered businessmen/businesswomen if the contract is integrated in operating their business and towards legal entities under public law and separate estates or assets under public law.

II. Prices/Price changes, shipping

1. Our prices offered are Euro prices, and do not include value-added tax. Therefore, value-added tax must be added to the prices at the rate determined by the law applicable at the time. If not agreed specifically otherwise, our prices are ex works, excluding costs for packaging, postage, and shipping. All offered prices are subject to change.
2. Our prices offered are applicable only for the dates of order upon which the offers are based. Subsequent changes or additions upon request or at the instigation of the customer, including additional costs incurred by the above, shall be charged additionally. The same applies for additional costs which might arise as the result of the above from machine down-time. In the event of changes in wages or material costs which arise either between making the offer and the placing of the order, or at any time exceeding four months following completion of contract, we reserve the right to adjust the price accordingly.
3. Shipping of goods occurs at expense and risk of the customer. Inasmuch as goods are shipped at cost and risk of the customer at the customer's request, our liability, as far as is legally permissible, is limited to damage caused intentionally or by gross negligence. At the customer's written request, and at his own expense, goods may be shipped insured by ourselves against theft, breakage, damage to or loss of goods in transit, fire and water damage, or against such other risks as may be expressed explicitly by the customer insofar as such are insurable.
4. As far as can be reasonably expected on the part of the customer, partial shipments are permissible.

III. Payment

1. The goods are to be paid in full, no deductions, within 30 calendar days of date of invoice.
2. Bills of exchange are only accepted upon special agreement and on account of performance without allowance for discount. Discounting and bill charges shall be borne by the customer and become due for payment immediately. We are not liable for the timely presentation of a bill of exchange, its due protest, due notice, or the return of an unpaid bill, unless we or our vicarious agents are guilty of damage by intention or gross negligence.
3. The customer is only entitled to set-off claims if his counterclaims have become res judicata, are uncontested or recognized by ourselves. In the event of contested counterclaims, the customer has no right of retention.
4. In the case of uncontested counterclaims, the customer can only claim a right of retention regarding asserted claims which are based upon the same contractual relationship.

IV. Delay in Payment

1. In the event of delay in payment, we are entitled to charge the legal rate of interest on overdue payments, i.e. the rate of 8% plus the basic annual interest rate current at the time in question; this notwithstanding, we explicitly reserve the right to assert claims regarding additional damages.
2. Should we become aware of circumstances which call into question the customer's creditworthiness and therefore deem our claim for payment to be at risk, particularly if the initiation of insolvency proceedings are filed for – or if insolvency proceedings are opened against the customer's property, or if a cheque is not honoured, or the customer stops payments, then we are entitled to declare the residual debt due immediately and to demand immediate payment. Further, we are entitled to demand advance payment or provisions of security, and to retain the goods until payment, advance payment, or provisions of security are made, and to discontinue processing running orders until the same.

V. Reservation of title

1. Until all claims arising from the business relationship with the customer are fulfilled, the customer is required to grant the following securities, which we will release at the customer's request and at our own free will if the securities' value consistently exceeds that of the claims by more than 10%.
2. All goods delivered to the customer remain our property until all claims arising from the business relationship with the customer are paid in full.
3. The object delivered may be neither pledged nor transferred for security to a third party before it is paid in full. In the event of attachment by a third party to the object of delivery, particularly as a pledge, the customer shall refer to our ownership and inform us in writing immediately, so that we can enforce our rights of ownership. The customer is liable for costs which arise judicially or extra-judicially should the third party not be in a position to repay us such costs as arise in relation to the abovementioned.
4. The customer is permitted to sell and process the goods within the context of proper business transactions, as long as he is not in arrears with fulfilling the claims which he owes. We can revoke this permission if the customer is overdue in payments or comes into a state of forfeiture of assets, particularly if insolvency proceedings are opened against his property.
5. The processing or transforming of the goods by the customer shall always be done for us. In the event that the goods are joined, mixed, or blended with other items, we acquire co-ownership in proportion with the value of the goods (sum total of invoice including legal value-added tax) to the remaining items which were joined, mixed, or blended together at the time when they were joined, mixed, or blended together. For the event that ownership of the goods be lost inasmuch as the goods become an integral or necessary part of another item, the customer hereby concedes to us now, in advance, co-ownership of the main item equal to the share which corresponds with the proportion of the value of the goods delivered (sum total of invoice including legal value-added tax) to the value of the main item at the time of said joining, mixing, or blending.
6. In the event that the goods are sold, the customer now and hereby, for the security of our claims arising from the whole of the business relationship, assigns all claims which arise for the customer from resale or from other legal grounds (insurance, tortious act, or the like) against the buyer or third parties, independently of whether the goods, of which we have (partial) ownership, are resold with or without processing. Upon our request, which may be made at any time, the customer must inform us regarding the state of the claim, and allow us or anyone authorized by us to inspect those business records relevant to the above. We grant the customer permission, subject to revocation, to collect the sums due for the claims we assigned, to his own account and in his own name. This direct debit authorization can only be revoked if the customer does not meet his financial obligations in a proper manner. Our authority to collect ourselves the sums due remains unaffected by the above. However, we bind ourselves not to collect the sums due as long as the customer meets his financial obligations with the collected sales revenue, is not overdue for payments, and especially if no initiation for insolvency proceedings has been filed or cessation of payments has been noted. If this is the case, however, we can require that the customer makes known to us immediately the claims assigned and their debtors, including all information required for collection purposes, providing us with all records necessary therefore, and informing the debtors (third parties) of the assignment of claims. We as well have the right of disclosure of assignments against debtors. The customer, however, is not entitled to assign this claim to third parties.
7. Contrary to position 3, the customer is not entitled to sell the goods, even within the context of proper, standard business transactions, if the customer excludes assigning claims based on the sale of the goods to us.
8. In the event of actions contrary to the terms of contract, particularly in the case of delay of payment, we are entitled to rescission of the contract. Following rescission, we can demand return of the goods from the customer.

VI. Delivery time

1. Delivery dates and delivery periods are only binding if they are confirmed by us explicitly in writing.
2. The confirmed delivery dates and delivery periods start when the following cumulative conditions are met: the clarification of all technical questions; the fulfilment of the customer's contractual obligations, particularly that of furnishing records, authorizations, and release statements. When alterations ordered by the customer have an influence upon the duration of production time, we are entitled to insist upon agreeing to a new delivery time which is adjusted to the changed circumstances. We are not liable for delays in delivery and performance, even if binding dates and times have been agreed upon, in case of acts of God, in case of circumstances which we are not responsible for, and in the event of incidents which not only temporarily substantially impede delivery or make it impossible – this includes in particular strike, lock-out, sovereign intervention, acts of war, riots, electrical shortage, destruction or damage to our production or works fixtures for which we are not liable, as well as transportation failure, work limitations etc., also when the above affect our suppliers or their sub-suppliers. Such circumstances entitle us to postpone delivery or performance for the duration of the impediment plus a reasonable starting-up time. Furthermore, such a case entitles us, for our part, to adjust the price accordingly. We are also not liable for the circumstances mentioned if they arise during an already existing delay. In important cases, we will inform the customer as soon as possible regarding the beginning and end of such hindrances. The delivery deadline is met if by date of its expiry the goods have left the works or the customer has received notice of readiness of dispatch.

VII. Samples

Samples of all kinds, whether designs, models, etc., are prepared especially for the customer according to his instructions and only by prior written commission for the same. In every case, these samples will be billed separately to the customer.

VIII. Storage of documents and items for further use

The storage of the customer's papers and other objects such as may serve some future purpose is undertaken only upon prior written agreement and in exchange for special compensation beyond the date of delivery of the goods ordered. The abovementioned goods a/o objects, if they are placed at our disposal by the customer, shall be handled with care up to the delivery date. In this case as well, storage beyond the delivery date is only granted upon prior written agreement and in return for special compensation. Should the abovementioned documents a/o objects be insured against water, fire, theft, or other dangers, the customer must provide the necessary insurance himself. Further, within legally permissible limits, we are exempt from liability for the loss of, damage to, or destruction of these documents a/o objects.

IX. Company print

On objects of our manufacture, we can, with the customer's permission, make reference to our company in an appropriate manner. The customer can only withhold his permission in the event that he has a justifiable interest in so doing.

X. Time limit for making a claim

Upon delivery, the customer must inspect the goods without delay, and in the event that the goods have obvious defects, these must be reported to us within a period of two weeks following receipt of the goods, in the case of shipping from the point of taking delivery from the shipper or carrier; otherwise, the customer's claims regarding defects are excluded. Claims for non-obvious defects can only be asserted within a period of one year upon receipt of the goods, in the case of shipping upon taking delivery from the shipper or carrier.

XI. Warranty

In the event of defects, we are entitled to choose between rectifying the defects or delivering a substitute, up to the amount of the contractual value, unless we or our vicarious agents are guilty of damage by intent or gross negligence, or if we have given a guarantee for the condition of the goods. If two attempts at rectifying the defects or at delivering a substitute fail, or if rectification or substitution is not possible, not to be reasonably expected for the customer, or finally refused by ourselves, then the customer can demand a reasonable reduction in price or withdraw from the contract. For substantial third-party products, our liability is limited initially to the assignment of liability claims to which we are entitled against the supplier of the third-party products. Any liability ensuing on our part in this instance can only be secondary and requires prior recourse to the courts for the supplier of the third-party product. We will reimburse such costs as may arise if they cannot be collected from the supplier and if they were necessary for prosecution. Guarantee and damage claims which exceed the above are excluded, so far as is permissible by law.

XII. Compensation for Damages

The following liability limits apply for damage claims, within the parameters of the law:

For all damages arising from culpable breach of contract, we are liable if we ourselves or our vicarious agents are at fault, but only in case of damage by intention or gross negligence. Within the limits of the law, this also applies in cases of default or when performance becomes impossible. Insofar as we are considered liable for damages due to breach of contract which results from a slight degree of negligence on our part or on the part of our vicarious agents, liability for indirect damages is excluded. When delay damages arise due to delay in our performance, we are only liable to the extent of contractual value (our own work excluding advance performance and material) if we or our vicarious agents are only at fault for slight negligence.

XIII. Taking Delivery; Passing of Risk

The customer must take delivery of the goods at the completion time agreed upon if the goods are ready for acceptance. If the customer is in default of acceptance, regardless of article III.1 the price agreed upon is due immediately. If the customer does not meet this obligation, we are entitled to withdraw from the contract and to make other use of the goods, whereby the sales revenues gained in this case are credited to the price agreed upon. We must be compensated for profit lost. If the seller is in default of acceptance or fails to perform other participation duties, then we are entitled to demand compensation for damages thus caused, including any additional expenditures which may arise. We reserve the right to further claims on our behalf. In case of default or delay in acceptance by the buyer, or other failure to perform participation duties on the part of the buyer, then the risk of accidental loss of the goods or of accidental worsening of the state of the goods passes over to the buyer from the point in which he entered into the state of default in acceptance or debtor's delay.

XIV. Ownership, Copyright, Duty of Secrecy

Those articles of the trade which we use to manufacture the product of the contract, in particular special means of operation (tools, devices) remain our property and shall not be delivered. We reserve for ourselves the ownership and copyrights of estimates of cost, drawings, and other documents. They may only then be made available to unauthorized third parties if we give our prior explicit written permission. The customer is solely liable if, in the process of executing orders, any rights, particularly copyrights, trademarks, or patents of third parties are infringed upon. The customer indemnifies us against claims of third parties in the event of such violations of rights. All ideas and documents drawn up by ourselves, in particular samples, sketches, designs, technical information, models, etc. are under the protection of our intellectual property, and may not be used or applied in any manner without our prior written consent.

XV. Applicability of German Law

The law of the Federal Republic of Germany is exclusively applicable. Application of the UN Convention on Contracts for the International Sale of Goods, dated January 1, 1991, is precluded.

XVI. Place of Performance, Place of Jurisdiction, and Validity

The place of performance for all claims arising from this contractual relationship is Igenhausen. Augsburg is the place of jurisdiction for all legal disputes arising from this business connection. We are, however, entitled to bring grievances before the legal place of jurisdiction as well. The partial or complete invalidity of any provision in these terms of sales and delivery, or of any provision within the context of other agreements, whether now or in the future, shall not affect the validity of any part of the remaining provisions or agreements. The invalid provision is then replaced by that lawfully permissible provision which is closest to the meaning of the invalid provision.

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