



Einstellbare Senker

Bearbeitung ab Bohrung - $\varnothing = 5.8$ mm
Wendepplatten können im μm -Bereich
separat eingestellt werden.

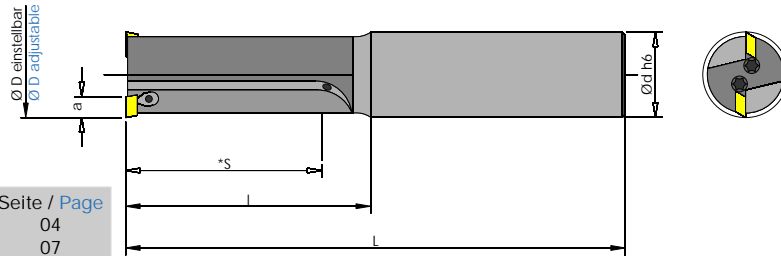
Adjustable counterbores

Machining with a boring - $\varnothing = 5.8$ mm
Inserts can be adjusted separately within a
range of μm .



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Einstellbare Senker Adjustable counterbores



Axial einstellbarer Senker
Zylinderschaft DIN 1835-A mit
innerer Kühlmittelzuführung

**Verstellen der Schneiden
nur bei geklemmter Patze**

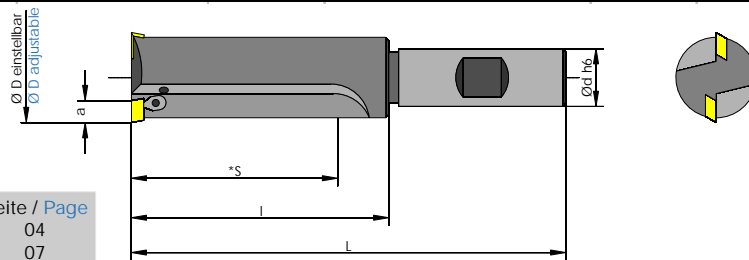
Axial adjustable counterbores
cylinder shank DIN 1835-A
with internal cooling supply

**adjustment of the inserts
only by locked clamping**

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Wendeplatten / Inserts 04
Ersatzteile / Spare parts 07

Ø D	Schneidenzahl number of teeth [mm]	Artikelnummer part number	Lieferstatus stock	Type typ [mm]	*S [mm]	a [mm]	l [mm]	L [mm]	Ød h6 [mm]
5.8 - 6.2	1	472.10306	⊙	AES-ZYL12-Z1-5.8/6.2	15	3,0	25	70,0	12,0
6.8 - 7.2	1	472.10307	⊙	AES-ZYL12-Z1-6.8/7.2	15	3,0	25	70,0	12,0
7.8 - 8.2	1	472.10308	⊙	AES-ZYL12-Z1-7.8/8.2	20	3,0	30	75,0	12,0
8.8 - 9.2	1	472.10309	⊙	AES-ZYL12-Z1-8.8/9.2	20	3,0	30	75,0	12,0
9.7 - 10.3	1	472.10510	⊙	AES-ZYL16-Z1- 9.7/10.3	25	3,0	35	83,0	16,0
10.7 - 11.3	1	472.10511	⊙	AES-ZYL16-Z1-10.7/11.3	25	3,0	35	83,0	16,0
11.7 - 12.3	1	472.10512	⊙	AES-ZYL16-Z1-11.7/12.3	30	3,0	40	88,0	16,0
12.7 - 13.3	1	472.10513	⊙	AES-ZYL16-Z1-12.7/13.3	30	3,0	40	88,0	16,0
9.8 - 10.2	2	472.20310	⊙	AES-ZYL16-Z2- 9.8/10.2	25	3,0	35	83,0	16,0
10.8 - 11.2	2	472.20311	⊙	AES-ZYL16-Z2-10.8/11.2	25	3,0	35	83,0	16,0
11.8 - 12.2	2	472.20312	⊙	AES-ZYL16-Z2-11.8/12.2	30	3,0	40	88,0	16,0
12.8 - 13.2	2	472.20313	⊙	AES-ZYL16-Z2-12.8/13.2	30	3,0	40	88,0	16,0
13.8 - 14.2	2	472.20314	⊙	AES-ZYL16-Z2-13.8/14.2	35	3,0	45	93,0	16,0
14.7 - 15.3	2	472.20515	⊙	AES-ZYL20-Z2-14.7/15.3	35	5,0	45	95,0	20,0
15.7 - 16.3	2	472.20516	⊙	AES-ZYL20-Z2-15.7/16.3	40	5,0	50	100,0	20,0
16.7 - 17.3	2	472.20517	⊙	AES-ZYL20-Z2-16.7/17.3	40	5,0	50	100,0	20,0
17.7 - 18.3	2	472.20518	⊙	AES-ZYL20-Z2-17.7/18.3	45	5,0	55	105,0	20,0
18.7 - 19.3	2	472.20519	⊙	AES-ZYL20-Z2-18.7/19.3	45	5,0	55	105,0	20,0
14.8 - 15.2	3	472.30315	⊙	AES-ZYL20-Z3-14.8/15.2	35	3,0	45	95,0	20,0
15.8 - 16.2	3	472.30316	⊙	AES-ZYL20-Z3-15.8/16.2	40	3,0	50	100,0	20,0
16.8 - 17.2	3	472.30317	⊙	AES-ZYL20-Z3-16.8/17.2	40	3,0	50	100,0	20,0
17.8 - 18.2	3	472.30318	⊙	AES-ZYL20-Z3-17.8/18.2	45	3,0	55	105,0	20,0
18.8 - 19.2	3	472.30319	⊙	AES-ZYL20-Z3-18.8/19.2	45	3,0	55	105,0	20,0
19.7 - 20.3	3	472.30520	⊙	AES-ZYL20-Z3-19.7/20.3	50	5,0	64	115,0	20,0
20.7 - 21.3	3	472.30521	⊙	AES-ZYL20-Z3-20.7/21.3	50	5,0	64	115,0	20,0
21.7 - 22.3	3	472.30522	⊙	AES-ZYL20-Z3-21.7/22.3	55	5,0	69	120,0	20,0
22.7 - 23.3	3	472.30523	⊙	AES-ZYL20-Z3-22.7/23.3	55	5,0	69	120,0	20,0
23.7 - 24.3	3	472.30524	⊙	AES-ZYL20-Z3-23.7/24.3	60	5,0	74	125,0	20,0
24.7 - 25.3	3	472.30525	⊙	AES-ZYL20-Z3-24.7/25.3	60	5,0	74	125,0	20,0



Radial einstellbarer Senker
Zylinderschaft DIN 1835-A mit
innerer Kühlmittelzuführung

**Verstellen der Schneiden
nur bei geklemmter Patze**

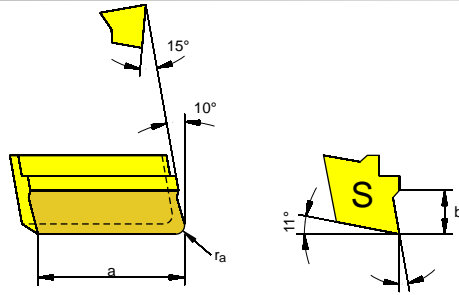
Radial adjustable counterbores
cylinder shank DIN 1835-A
with internal cooling supply

**adjustment of the inserts
only by locked clamping**

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Wendeplatten / Inserts 04
Ersatzteile / Spare parts 07

Ø D	Schneidenzahl number of teeth [mm]	Artikelnummer part number	Lieferstatus stock	Type typ [mm]	*S [mm]	a [mm]	l [mm]	L [mm]	Ød h6 [mm]
10 - 11	1	471.25510	⊙	RES-ZYL16-Z1-10/11	25	5,0	35	83,0	16,0
11 - 12	1	471.25511	⊙	RES-ZYL16-Z1-11/12	25	5,0	35	83,0	16,0
12 - 13	1	471.30512	⊙	RES-ZYL16-Z1-12/13	30	5,0	40	88,0	16,0
13 - 14	1	471.30513	⊙	RES-ZYL16-Z1-13/14	30	5,0	40	88,0	16,0
14 - 15	2	471.35514	⊙	RES-ZYL16-Z2-14/15	35	5,0	45	93,0	16,0
15 - 16	2	471.35515	⊙	RES-ZYL16-Z2-15/16	35	5,0	45	93,0	16,0
16 - 17	2	471.40516	⊙	RES-ZYL16-Z2-16/17	40	5,0	50	98,0	16,0
17 - 18	2	471.40517	⊙	RES-ZYL16-Z2-17/18	40	5,0	50	98,0	16,0
18 - 19	2	471.45518	⊙	RES-ZYL16-Z2-18/19	45	5,0	55	103,0	16,0
19 - 20	2	471.45519	⊙	RES-ZYL16-Z2-19/20	45	5,0	55	103,0	16,0
14 - 16	1	471.35714	⊙	RES-ZYL16-Z1-14/16	35	7,0	45	93,0	16,0
16 - 18	1	471.35716	⊙	RES-ZYL16-Z1-16/18	40	7,0	50	98,0	16,0
18 - 20	1	471.35718	⊙	RES-ZYL16-Z1-18/20	40	7,0	55	103,0	16,0
20 - 22	2	471.35720	⊙	RES-ZYL20-Z2-20/22	50	7,0	60	108,0	20,0
22 - 24	2	471.35722	⊙	RES-ZYL20-Z2-22/24	55	7,0	65	113,0	20,0
24 - 26	2	471.35724	⊙	RES-ZYL20-Z2-24/26	60	7,0	70	118,0	20,0
26 - 28	2	471.40926	⊙	RES-ZYL20-Z2-26/28	65	9,0	80	130,0	20,0
28 - 30	2	471.40928	⊙	RES-ZYL20-Z2-28/30	70	9,0	85	135,0	20,0
30 - 32	2	471.40930	⊙	RES-ZYL20-Z2-30/32	75	9,0	90	140,0	20,0
32 - 34	2	471.40932	⊙	RES-ZYL20-Z2-32/34	80	9,0	95	145,0	20,0



Auf Anfrage
auch in PKD lieferbar

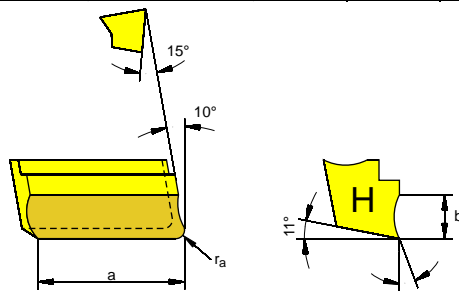
upon request
also available in PKD

Senker • Counterbores
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Bestellbeispiel / Sample order:

659.00082-14

Ausführung execution	Type typ	Artikelnummer part number	Schneidstoffe					a [mm]	r _a [mm]	b [mm]	H [mm]
			P15 -14	P40 -02	K10 -04	Zg30 -07	Ps10PVD -142				
S	MES-3-S-RA0.05	659.00082	⊙	⊙	⊙	⊙	⊙	3	0.05	0.8	10°
S	MES-3-S-RA0.2	659.02082	⊙	⊙	⊙	⊙	⊙	3	0.2	0.8	10°
S	MES-5-S-RA0.2	659.02142	⊙	⊙	⊙	⊙	⊙	5	0.2	1.4	10°
S	MES-5-S-RA0.4	659.04142	⊙	⊙	⊙	⊙	⊙	5	0.4	1.4	10°
S	MES-7-S-RA0.2	659.02182	⊙	⊙	⊙	⊙	⊙	7	0.2	1.8	10°
S	MES-7-S-RA0.4	659.04182	⊙	⊙	⊙	⊙	⊙	7	0.4	1.8	10°
S	MES-9-S-RA0.2	659.02252	⊙	⊙	⊙	⊙	⊙	9	0.2	2.5	10°
S	MES-9-S-RA0.4	659.04252	⊙	⊙	⊙	⊙	⊙	9	0.4	2.5	10°



Auf Anfrage
auch in PKD lieferbar

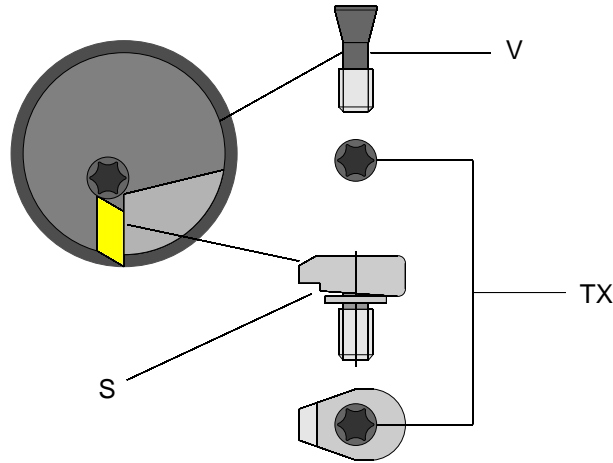
upon request
also available in PKD

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Bestellbeispiel / Sample order:

660.0082-02

Ausführung execution	Type typ	Artikelnummer part number	Schneidstoffe					a [mm]	r _a [mm]	b [mm]	H [mm]
			P15 -14	P40 -02	K10 -04	Zg30 -07	Ps10PVD -142				
H	MES-3-H-RA0.05	660.00082			⊙		⊙	3	0.05	0.8	16°
H	MES-3-H-RA0.2	660.02082			⊙		⊙	3	0.2	0.8	16°
H	MES-5-H-RA0.2	660.02142		⊙	⊙	⊙	⊙	5	0.2	1.4	16°
H	MES-5-H-RA0.4	660.04142		⊙	⊙	⊙	⊙	5	0.4	1.4	16°
H	MES-7-H-RA0.2	660.02182		⊙	⊙	⊙	⊙	7	0.2	1.8	16°
H	MES-7-H-RA0.4	660.04182		⊙	⊙	⊙	⊙	7	0.4	1.8	16°
H	MES-9-H-RA0.2	660.02252		⊙	⊙	⊙	⊙	9	0.2	2.5	16°
H	MES-9-H-RA0.4	660.04252		⊙	⊙	⊙	⊙	9	0.4	2.5	16°



Ersatzteile für
Axial einstellbare Senker
Zylinderschaft DIN 1835-A

Spare-Parts for
axial adjustable counterbores
Cylinder shank DIN 1835-A

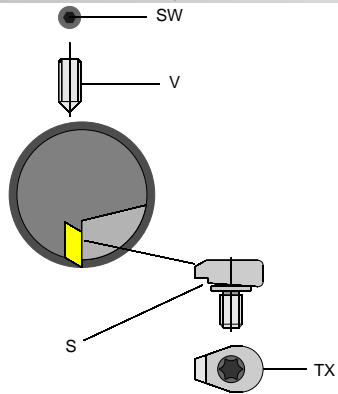
Senker • Counterbores
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Bestellbeispiel / Sample order:
für Senker / for counterbores

472.10306

943.13441 (S)
943.13383 (V)

Artikelnummer Senker part number Counterbores	Artikelnummer Spannsatz (S) part number clamping - set	Lieferstatus stock	Torx Größe Torx size	Anzugsmoment M_A (Ncm) chucking torque M_A (Ncm)	Artikelnummer Verstellelement (V) part number adj. component (V)	Lieferstatus stock
472.10306	943.13441	⊙	5	45	943.13383	⊙
472.10307	943.13441	⊙	5	45	943.13383	⊙
472.10308	943.13441	⊙	5	45	943.13383	⊙
472.10309	943.13441	⊙	5	45	943.13383	⊙
472.10510	943.11112	⊙	6	70	943.12986	⊙
472.10511	943.11112	⊙	6	70	943.12986	⊙
472.10512	943.11112	⊙	6	70	943.12986	⊙
472.10513	943.11112	⊙	6	70	943.12986	⊙
472.20310	943.13441	⊙	5	45	943.13383	⊙
472.20311	943.13441	⊙	5	45	943.13383	⊙
472.20312	943.13441	⊙	5	45	943.13383	⊙
472.20313	943.13441	⊙	5	45	943.13383	⊙
472.20314	943.13441	⊙	5	45	943.13383	⊙
472.20515	943.11112	⊙	6	70	943.12986	⊙
472.20516	943.11112	⊙	6	70	943.12986	⊙
472.20517	943.11112	⊙	6	70	943.12986	⊙
472.20518	943.11112	⊙	6	70	943.12986	⊙
472.20519	943.11112	⊙	6	70	943.12986	⊙
472.30315	943.13441	⊙	5	45	943.13383	⊙
472.30316	943.13441	⊙	5	45	943.13383	⊙
472.30317	943.13441	⊙	5	45	943.13383	⊙
472.30318	943.13441	⊙	5	45	943.13383	⊙
472.30319	943.13441	⊙	5	45	943.13383	⊙
472.30520	943.11112	⊙	6	70	943.12986	⊙
472.30521	943.11112	⊙	6	70	943.12986	⊙
472.30522	943.11112	⊙	6	70	943.12986	⊙
472.30523	943.11112	⊙	6	70	943.12986	⊙
472.30524	943.11112	⊙	6	70	943.12986	⊙
472.30525	943.11112	⊙	6	70	943.12986	⊙



Ersatzteile für
Radial einstellbare Senker
Zylinderschaft DIN 1835-A

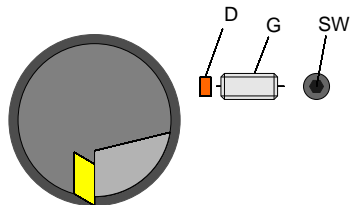
Spare-Parts for
radial adjustable counterbores
Cylinder shank DIN 1835-A

Senker • Counterbores
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Bestellbeispiel / Sample order:
für Senker / for counterbores
471.25510

943.11085 (S)
943.26102 (V)

Artikelnummer Senker part number Counterbores	Artikelnummer Spannsatz (S) part number clamping - set (S)	Lieferstatus stock	Torx Größe Torx size	Anzugsmoment M_A (Ncm) chucking torque M_A (Ncm)	Artikelnummer Verstellelement (V) part number adj. component (V)	Lieferstatus stock	(SW) (SW)
471.25510	943.11085	⊙	6	70	943.26102	⊙	0.9
471.25511	943.11085	⊙	6	70	943.26102	⊙	0.9
471.30512	943.11085	⊙	6	70	943.26103	⊙	0.9
471.30513	943.11085	⊙	6	70	943.26104	⊙	0.9
471.35514	943.11085	⊙	6	70	943.26102	⊙	0.9
471.35515	943.11085	⊙	6	70	943.26102	⊙	0.9
471.40516	943.11085	⊙	6	70	943.26102	⊙	0.9
471.40517	943.11085	⊙	6	70	943.26103	⊙	0.9
471.45518	943.11085	⊙	6	70	943.26103	⊙	0.9
471.45519	943.11085	⊙	6	70	943.26104	⊙	0.9
471.35714	943.11060	⊙	8	140	943.26121	⊙	1.3
471.35716	943.11060	⊙	8	140	943.26121	⊙	1.3
471.35718	943.11060	⊙	8	140	943.26122	⊙	1.3
471.35720	943.11060	⊙	8	140	943.26121	⊙	1.3
471.35722	943.11060	⊙	8	140	943.26121	⊙	1.3
471.35724	943.11060	⊙	8	140	943.26122	⊙	1.3
471.40926	943.11040	⊙	15	345	943.26141	⊙	1.5
471.40928	943.11040	⊙	15	345	943.26141	⊙	1.5
471.40930	943.11040	⊙	15	345	943.26141	⊙	1.5
471.40932	943.11040	⊙	15	345	943.26142	⊙	1.5



Ersatzteile für
Radial einstellbare Senker
Zylinderschaft DIN 1835-A

Spare-Parts for
radial adjustable counterbores
Cylinder shank DIN 1835-A

Bestellbeispiel / Sample order:
für Senker / for counterbores
471.25510

943.11085 (S)
943.26102 (V)

Artikelnummer Senker part number Counterbores	Artikelnummer Gewindestift (G) part number set screw (G)	Lieferstatus stock	(SW) (SW)	Artikelnummer Druckstück (D) part number thrust pin (D)	Lieferstatus stock
471.25510	943.26102	⊙	0.9	943.26492	⊙
471.25511	943.26102	⊙	0.9	943.26492	⊙
471.30512	943.26103	⊙	0.9	943.26492	⊙
471.30513	943.26104	⊙	0.9	943.26492	⊙
471.35514	943.26102	⊙	0.9	943.26492	⊙
471.35515	943.26102	⊙	0.9	943.26492	⊙
471.40516	943.26102	⊙	0.9	943.26492	⊙
471.40517	943.26103	⊙	0.9	943.26492	⊙
471.45518	943.26103	⊙	0.9	943.26492	⊙
471.45519	943.26104	⊙	0.9	943.26492	⊙
471.35714	943.26121	⊙	1.3	943.26493	⊙
471.35716	943.26121	⊙	1.3	943.26493	⊙
471.35718	943.26122	⊙	1.3	943.26493	⊙
471.35720	943.26121	⊙	1.3	943.26493	⊙
471.35722	943.26121	⊙	1.3	943.26493	⊙
471.35724	943.26122	⊙	1.3	943.26493	⊙
471.40926	943.26141	⊙	1.5	943.26494	⊙
471.40928	943.26141	⊙	1.5	943.26494	⊙
471.40930	943.26141	⊙	1.5	943.26494	⊙
471.40932	943.26142	⊙	1.5	943.26494	⊙

Sortenübersicht - Verwendungszweck
Summary of carbide types - application purpose

Type typ	Schneidstoff cutting quality	Werkstückstoff material	Eignung suitability	Spanstufe chip breaker
P15 (-14)	P15 (unbeschichtet) (uncoated)	Stahl steel	☹	S
P40 (-02)	P40 (unbeschichtet) (uncoated)	Stahl steel	☹	S
K10 (-04)	K10 (unbeschichtet) (uncoated)	GG / GGG NE - Metalle Titanlegierungen	☹ ☹ ☹	S H H
Zg30 (-07)	P40 (TiN - beschichtet) (TiN - coated)	Stahl / warmfeste Legierungen Nichtrostende Stähle	☹ ☹	S H
Zs10PVD (-142)	K10 (TiAlN - beschichtet) (TiAlN - coated)	GG / GGG NE - Metalle Nichtrostende Stähle	☹ ☹ ☹	S H H

☹ sehr gut geeignet - ☹ geeignet

Arbeitsrichtwerte
Working reference values

Werkstoff material	Schnittgeschwindigkeit m/min speed m/min					Vorschub mm/Z feed mm/Z			
	P15	P40	K10	Zg30	Zs10PVD	MES-3	MES-5	MES-7	MES-9
ST 37 / C 15	90 - 160	90 - 160		90 - 160		0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
ST 50 / C 50	80 - 150	80 - 150		80 - 150		0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
ST 60-70 / C 60	70 - 140	70 - 140		70 - 140		0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
16 MN Cr 5	70 - 140	70 - 140		70 - 140		0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
42 Cr Mo 4 / 50 Cr V4	60 - 120	60 - 120		60 - 120		0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
100 Cr 6 / 90 Mn Cr V8	50 - 100	50 - 100		50 - 100		0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
Rostbeständige X-Cr Ni-Stähle				40 - 70	40 - 70	0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
GG20 / GGG40			50 - 150		50 - 150	0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
GG30 / GGG50			50 - 120		50 - 120	0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
GG40 / GGG60			50 - 100		50 - 100	0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
Alu rein / Alu Guss			100 - 230			0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
Knetlegierungen Al-Si			70 - 120			0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
Kupfer			70 - 120		70 - 120	0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
Bronze			70 - 120		70 - 120	0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
Messing			70 - 120		70 - 120	0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
Titan			20 - 40			0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20
Titanlegierungen			20 - 30			0.02-0.10	0.04-0.12	0.05-0.15	0.07-0.20

Die in der Arbeitsrichtwerttabelle angegebenen Schnittwerte sind Richtwerte.
Diese werden unter anderem durch die Werkstück-, Vorrichtung-, sowie Maschinenstabilität beeinflusst.



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