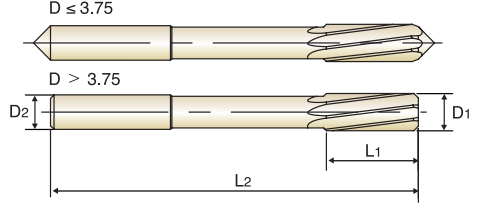


HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø
 ● HSS-E, NC-MASCHINENREIBAHLEN mit GERADZÄHLIGEN SCHAFT Ø
 ○ ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
 ○ ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

- ▶ O.D. Tolerances
 Whole-number Ø and 1/10 size : DIN 1420 for H7
 1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
 from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- ▶ Shank Diameter Tolerances : h6
- ▶ LH Spiral Flutes / Right Hand Cut
- ▶ Chamfer Angle - Up to Ø3.75 : 15°
 - Over Ø3.75 : 45°

- ▶ Ø Toleranzen:
 ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
 1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
 von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- ▶ Schaft-Durchmesser Toleranzen : h6
- ▶ linksspiralig/ rechtsschneidend
- ▶ Anschnittwinkel - bis Ø3,75 : 15°
 - über Ø3,75 : 45°



HSS-E H7 LH7° 15° 45° P.428

up to Ø3.75 over Ø3.75



Unit : mm

EDP No.	Reamer Diameter		Shank Diameter		Flute Length		Overall Length	
	D1	D2	D2	D1	L1	L2	L2	L2
K21B100200	2.0	2	2	2	11	49	49	49
K21B100201	2.01	2	2	2	11	49	49	49
K21B100202	2.02	2	2	2	11	49	49	49
K21B100203	2.03	2	2	2	11	49	49	49
K21B100210	2.1	2	2	2	11	49	49	49
K21B100220	2.2	3	3	3	12	53	53	53
K21B100230	2.3	3	3	3	12	53	53	53
K21B100240	2.4	3	3	3	14	57	57	57
K21B100247	2.47	3	3	3	14	57	57	57
K21B100248	2.48	3	3	3	14	57	57	57
K21B100249	2.49	3	3	3	14	57	57	57
K21B100250	2.5	3	3	3	14	57	57	57
K21B100251	2.51	3	3	3	14	57	57	57
K21B100252	2.52	3	3	3	14	57	57	57
K21B100253	2.53	3	3	3	14	57	57	57
K21B100260	2.6	3	3	3	14	57	57	57
K21B100270	2.7	3	3	3	15	61	61	61
K21B100280	2.8	3	3	3	15	61	61	61
K21B100290	2.9	3	3	3	15	61	61	61
K21B100297	2.97	3	3	3	15	61	61	61
K21B100298	2.98	3	3	3	15	61	61	61
K21B100299	2.99	3	3	3	15	61	61	61
K21B100300	3.0	3	3	3	15	61	61	61
K21B100301	3.01	4	4	4	16	65	65	65

▶NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	15	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	○	○	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○

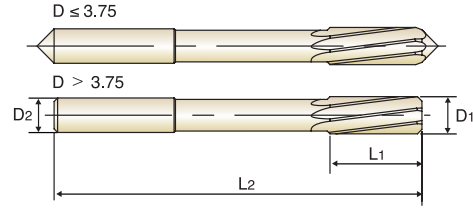
ISO	N										S							H				
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc											15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○														

HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø

- HSS-E, NC-MASCHINENREIBAHLEN mit GERADZÄHLIGEN SCHAFT Ø
- ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
- ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

- ▶ O.D. Tolerances
Whole-number Ø and 1/10 size : DIN 1420 for H7
1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- ▶ Shank Diameter Tolerances : h6
- ▶ LH Spiral Flutes / Right Hand Cut
- ▶ Chamfer Angle - Up to Ø3.75 : 15°
- Over Ø3.75 : 45°

- ▶ Ø Toleranzen:
ganzahlige Ø und 1/10 Größen : DIN 1420 für H7
1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- ▶ Schaft-Durchmesser Toleranzen : h6
- ▶ linksspiralig/ rechtsscheidend
- ▶ Ansnittwinkel - bis Ø3,75 : 15°
- über Ø3,75 : 45°



HSS-E
H7
LH7°
15°
45°
P.428

up to Ø3.75 over Ø3.75



Unit : mm

EDP No.	Reamer Diameter		Shank Diameter		Flute Length		Overall Length	
	D1		D2		L1		L2	
K21B100302	3.02		4		16		65	
K21B100303	3.03		4		16		65	
K21B100310	3.1		4		16		65	
K21B100320	3.2		4		16		65	
K21B100330	3.3		4		16		65	
K21B100340	3.4		4		18		70	
K21B100350	3.5		4		18		70	
K21B100360	3.6		4		18		70	
K21B100370	3.7		4		18		70	
K21B100380	3.8		4		19		75	
K21B100390	3.9		4		19		75	
K21B100397	3.97		4		19		75	
K21B100398	3.98		4		19		75	
K21B100399	3.99		4		19		75	
K21B100400	4.0		4		19		75	
K21B100401	4.01		4		19		75	
K21B100402	4.02		4		19		75	
K21B100403	4.03		4		19		75	
K21B100410	4.1		4		19		75	
K21B100420	4.2		4		19		75	
K21B100430	4.3		5		21		80	
K21B100440	4.4		5		21		80	
K21B100450	4.5		5		21		80	
K21B100460	4.6		5		21		80	

▶NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	○	○	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○

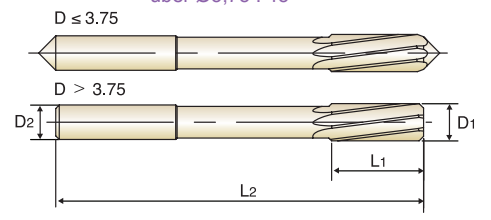
ISO	N					S										H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○													

HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø

- HSS-E, NC-MASCHINENREIBAHLEN mit GERADZÄHLIGEN SCHAFT Ø
- ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
- ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

- ▶ O.D. Tolerances
Whole-number Ø and 1/10 size : DIN 1420 for H7
1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- ▶ Shank Diameter Tolerances : h6
- ▶ LH Spiral Flutes / Right Hand Cut
- ▶ Chamfer Angle - Up to Ø3.75 : 15°
- Over Ø3.75 : 45°

- ▶ Ø Toleranzen:
ganzahlige Ø und 1/10 Größen : DIN 1420 für H7
1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- ▶ Schaft-Durchmesser Toleranzen : h6
- ▶ linksspiralig/ rechtsschneidend
- ▶ Ansnittwinkel - bis Ø3,75 : 15°
- über Ø3,75 : 45°



HSS-E H7 LH7° 15° 45° P.428

up to Ø3.75 over Ø3.75



Unit : mm

EDP No.	Reamer Diameter		Shank Diameter		Flute Length		Overall Length	
	D1	D2	D2	D1	L1	L2	L2	L2
K21B100470	4.7	5	5	4.7	21	80	80	80
K21B100480	4.8	5	5	4.8	23	86	86	86
K21B100490	4.9	5	5	4.9	23	86	86	86
K21B100497	4.97	5	5	4.97	23	86	86	86
K21B100498	4.98	5	5	4.98	23	86	86	86
K21B100499	4.99	5	5	4.99	23	86	86	86
K21B100500	5.0	5	5	5.0	23	86	86	86
K21B100501	5.01	5	5	5.01	23	86	86	86
K21B100502	5.02	5	5	5.02	23	86	86	86
K21B100503	5.03	5	5	5.03	23	86	86	86
K21B100510	5.1	5	5	5.1	23	86	86	86
K21B100520	5.2	5	5	5.2	23	86	86	86
K21B100530	5.3	5	5	5.3	23	86	86	86
K21B100540	5.4	6	6	5.4	26	93	93	93
K21B100550	5.5	6	6	5.5	26	93	93	93
K21B100560	5.6	6	6	5.6	26	93	93	93
K21B100570	5.7	6	6	5.7	26	93	93	93
K21B100580	5.8	6	6	5.8	26	93	93	93
K21B100590	5.9	6	6	5.9	26	93	93	93
K21B100597	5.97	6	6	5.97	26	93	93	93
K21B100598	5.98	6	6	5.98	26	93	93	93
K21B100599	5.99	6	6	5.99	26	93	93	93
K21B100600	6.0	6	6	6.0	26	93	93	93
K21B100601	6.01	6	6	6.01	28	101	101	101

▶NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	○	○	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○

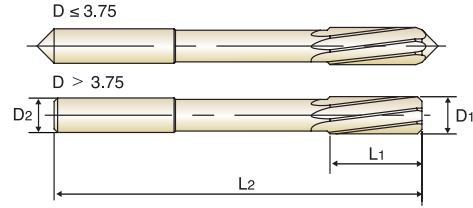
ISO	N										S							H			
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○													

HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø

- HSS-E, NC-MASCHINENREIBAHLEN mit GERADZÄHLIGEN SCHAFT Ø
- ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
- ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

- ▶ O.D. Tolerances
Whole-number Ø and 1/10 size : DIN 1420 for H7
1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- ▶ Shank Diameter Tolerances : h6
- ▶ LH Spiral Flutes / Right Hand Cut
- ▶ Chamfer Angle - Up to Ø3.75 : 15°
- Over Ø3.75 : 45°

- ▶ Ø Toleranzen:
ganzahlige Ø und 1/10 Größen : DIN 1420 für H7
1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- ▶ Schaft-Durchmesser Toleranzen : h6
- ▶ linksspiralig/ rechtsscheidend
- ▶ Ansnittwinkel - bis Ø3,75 : 15°
- über Ø3,75 : 45°



HSS-E
H7
LH7°
15°
45°
P.428

up to Ø3.75 over Ø3.75



Unit : mm

EDP No.	Reamer Diameter		Shank Diameter		Flute Length		Overall Length	
	D1		D2		L1		L2	
K21B100602	6.02		6		28		101	
K21B100603	6.03		6		28		101	
K21B100610	6.1		6		28		101	
K21B100620	6.2		6		28		101	
K21B100630	6.3		6		28		101	
K21B100640	6.4		6		28		101	
K21B100650	6.5		6		28		101	
K21B100660	6.6		6		28		101	
K21B100670	6.7		6		28		101	
K21B100680	6.8		8		31		109	
K21B100690	6.9		8		31		109	
K21B100700	7.0		8		31		109	
K21B100710	7.1		8		31		109	
K21B100720	7.2		8		31		109	
K21B100730	7.3		8		31		109	
K21B100740	7.4		8		31		109	
K21B100750	7.5		8		31		109	
K21B100760	7.6		8		33		117	
K21B100770	7.7		8		33		117	
K21B100780	7.8		8		33		117	
K21B100790	7.9		8		33		117	
K21B100797	7.97		8		33		117	
K21B100798	7.98		8		33		117	
K21B100799	7.99		8		33		117	

▶NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	○	○	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○

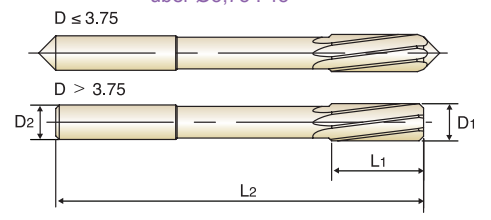
ISO	N					S										H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○													

HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø

- HSS-E, NC-MASCHINENREIBAHLEN mit GERADZÄHLIGEN SCHAFT Ø
- ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
- ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

- ▶ O.D. Tolerances
Whole-number Ø and 1/10 size : DIN 1420 for H7
1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- ▶ Shank Diameter Tolerances : h6
- ▶ LH Spiral Flutes / Right Hand Cut
- ▶ Chamfer Angle - Up to Ø3.75 : 15°
- Over Ø3.75 : 45°

- ▶ Ø Toleranzen:
ganzahlige Ø und 1/10 Größen : DIN 1420 für H7
1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- ▶ Schaft-Durchmesser Toleranzen : h6
- ▶ linksspiralig/ rechtsschneidend
- ▶ Anschnittwinkel - bis Ø3,75 : 15°
- über Ø3,75 : 45°



HSS-E
H7
LH7°
15°
45°
P.428

up to Ø3.75 over Ø3.75



Unit : mm

EDP No.	Reamer Diameter		Shank Diameter		Flute Length		Overall Length	
	D1	D2	D2	D1	L1	L2	L2	L2
K21B100800	8.0	8	8	8	33	117	117	117
K21B100801	8.01	8	8	8	33	117	117	117
K21B100802	8.02	8	8	8	33	117	117	117
K21B100803	8.03	8	8	8	33	117	117	117
K21B100810	8.1	8	8	8	33	117	117	117
K21B100820	8.2	8	8	8	33	117	117	117
K21B100830	8.3	8	8	8	33	117	117	117
K21B100840	8.4	8	8	8	33	117	117	117
K21B100850	8.5	8	8	8	33	117	117	117
K21B100860	8.6	10	10	10	36	125	125	125
K21B100870	8.7	10	10	10	36	125	125	125
K21B100880	8.8	10	10	10	36	125	125	125
K21B100890	8.9	10	10	10	36	125	125	125
K21B100900	9.0	10	10	10	36	125	125	125
K21B100901	9.01	10	10	10	36	125	125	125
K21B100902	9.02	10	10	10	36	125	125	125
K21B100903	9.03	10	10	10	36	125	125	125
K21B100910	9.1	10	10	10	36	125	125	125
K21B100920	9.2	10	10	10	36	125	125	125
K21B100930	9.3	10	10	10	36	125	125	125
K21B100940	9.4	10	10	10	36	125	125	125
K21B100950	9.5	10	10	10	36	125	125	125
K21B100960	9.6	10	10	10	38	133	133	133
K21B100970	9.7	10	10	10	38	133	133	133

▶NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K							
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommended	◎	◎	○	○	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○		

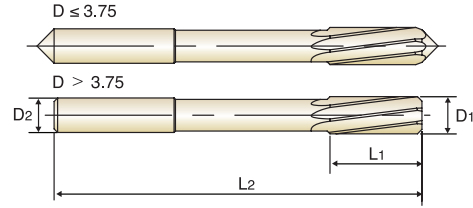
ISO	N										S							H				
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc											15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○														

HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø

- HSS-E, NC-MASCHINENREIBAHLEN mit GERADZÄHLIGEN SCHAFT Ø
- ALÉSOIRS HSS-E MACHINE CN AVEC DIFFÉRENTES TOLÉRANCES DE QUEUE
- ALESATORI A MACCHINA IN HSS-E CON GAMMA Ø NOMINALI

- ▶ O.D. Tolerances
Whole-number Ø and 1/10 size : DIN 1420 for H7
1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- ▶ Shank Diameter Tolerances : h6
- ▶ LH Spiral Flutes / Right Hand Cut
- ▶ Chamfer Angle - Up to Ø3.75 : 15°
- Over Ø3.75 : 45°

- ▶ Ø Toleranzen:
ganzahlige Ø und 1/10 Größen : DIN 1420 für H7
1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- ▶ Schaft-Durchmesser Toleranzen : h6
- ▶ linksspiralig/ rechtsschneidend
- ▶ Ansnittwinkel - bis Ø3,75 : 15°
- über Ø3,75 : 45°



HSS-E
H7
LH7°
15°
45°
P.428

up to Ø3.75 over Ø3.75



Unit : mm

EDP No.	Reamer Diameter		Shank Diameter		Flute Length		Overall Length	
	D1		D2		L1		L2	
K21B100980	9.8		10		38		133	
K21B100990	9.9		10		38		133	
K21B100997	9.97		10		38		133	
K21B100998	9.98		10		38		133	
K21B100999	9.99		10		38		133	
K21B101000	10.0		10		38		133	
K21B101001	10.01		10		38		133	
K21B101002	10.02		10		38		133	
K21B101003	10.03		10		38		133	
K21B101100	11.0		10		41		142	
K21B101197	11.97		10		41		151	
K21B101198	11.98		10		41		151	
K21B101199	11.99		10		41		151	
K21B101200	12.0		10		44		151	
K21B101201	12.01		10		44		151	
K21B101202	12.02		10		44		151	
K21B101203	12.03		10		44		151	
K21B101300	13.0		10		44		151	
K21B101400	14.0		14		47		160	
K21B101500	15.0		14		50		162	
K21B101600	16.0		14		52		170	
K21B101700	17.0		14		54		175	
K21B101800	18.0		14		56		182	
K21B101900	19.0		16		58		189	
K21B102000	20.0		16		60		195	

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	○	○	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO	N					S										H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○													



RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

K2101, K2111, K21B1, K2102, K2112 SERIES

HSS-E, STRAIGHT & LH SPIRAL FLUTE CHUCKING REAMERS
HSS-E, NC MACHINE REAMERS

RPM = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc (m/min)	Feed(mm/rev)															
				2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	45.0	50.0
P	1	Non-alloy steel	14	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
	2		14	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
	3		10	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	4		8	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	5																		
	6	Low alloy steel	12	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	7		8	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	8																		
	9																		
	10		High alloyed steel, and tool steel	6	0.03-0.04	0.04-0.05	0.05-0.06	0.06-0.07	0.07-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20	0.20-0.22	0.22-0.24	0.24-0.26	0.26-0.28
	11																		
M	12	Stainless steel	6	0.03-0.04	0.04-0.05	0.05-0.06	0.06-0.07	0.07-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20	0.20-0.22	0.22-0.24	0.24-0.26	0.26-0.28	0.28-0.30
	13		5	0.03-0.04	0.04-0.05	0.05-0.06	0.06-0.07	0.07-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20	0.20-0.22	0.22-0.24	0.24-0.26	0.26-0.28	0.28-0.30
	14		4	0.03-0.04	0.04-0.05	0.05-0.06	0.06-0.07	0.07-0.08	0.08-0.10	0.10-0.12	0.12-0.14	0.14-0.16	0.16-0.18	0.18-0.20	0.20-0.22	0.22-0.24	0.24-0.26	0.26-0.28	0.28-0.30
K	15	Grey cast iron	14	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
	16		11	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	17	Nodular cast iron	12	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
	18		10	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40
	19		12	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.14	0.14-0.17	0.17-0.20	0.20-0.23	0.23-0.26	0.26-0.29	0.29-0.32	0.32-0.35	0.35-0.38	0.38-0.41	0.41-0.44	0.44-0.47	0.47-0.50
20	Malleable cast iron	10	0.05-0.07	0.07-0.09	0.09-0.11	0.11-0.13	0.13-0.15	0.15-0.17	0.17-0.19	0.19-0.21	0.21-0.23	0.23-0.25	0.25-0.27	0.27-0.29	0.29-0.31	0.31-0.34	0.34-0.37	0.37-0.40	
N	21	Aluminum-wrought alloy	18	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	22		18	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	23	Aluminum-cast, alloyed	18	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	24		17	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	25																		
	26	Copper and Copper Alloys (Bronze / Brass)	18	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	27		16	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	28		20	0.10-0.13	0.13-0.16	0.16-0.19	0.19-0.22	0.22-0.25	0.25-0.28	0.28-0.31	0.31-0.34	0.34-0.37	0.37-0.40	0.40-0.43	0.43-0.46	0.46-0.49	0.49-0.52	0.52-0.56	0.56-0.60
	29	Non Metallic Materials																	
	30																		
S	31	Heat Resistant Super Alloys																	
	32																		
	33																		
	34																		
H	35	Titanium Alloys																	
	36																		
	37																		
H	38	Hardened steel																	
	39																		
	40	Chilled Cast Iron																	
	41	Hardened Cast Iron																	

SELECTION GUIDE

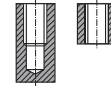


SERIES

K4101

K4111

HOLETYPE



FLUTETYPE

Straight

LH Spiral

SIZE MIN

D2.0

D2.0

SIZE MAX

D20.0

D20.0

PAGE

406

407

SURFACE TREATMENT

Bright

CARBIDE, HSS & HSS-E REAMERS

Carbide NC Machine Reamers
HSS Hand Reamers
HSS-E Chucking Reamers



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.427

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	K4101	K4111
P	1	Non-alloy steel	About 0.15% C Annealed	125		◎	◎
	2		About 0.45% C Annealed	190	13	◎	◎
	3		About 0.45% C Quenched & Tempered	250	25	◎	◎
	4		About 0.75% C Annealed	270	28	○	○
	5		About 0.75% C Quenched & Tempered	300	32	○	○
	6	Low alloy steel	Annealed	180	10	◎	◎
	7		Quenched & Tempered	275	29	◎	◎
	8		Quenched & Tempered	300	32	○	○
	9		Quenched & Tempered	350	38		
	10		High alloyed steel, and tool steel	Annealed	200	15	○
	11	Quenched & Tempered		325	35		
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	○	○
	13		Martensitic Quenched & Tempered	240	23	○	○
	14		Austenitic	180	10	○	○
K	15	Grey cast iron	Pearlitic / ferritic	180	10	◎	◎
	16		Pearlitic (Martensitic)	260	26	○	○
	17	Nodular cast iron	Ferritic	160	3	◎	◎
	18		Pearlitic	250	25	○	○
	19		Ferritic	130		◎	◎
20	Malleable cast iron	Pearlitic	230	21	○	○	
N	21	Aluminum-wrought alloy	Not Curable	60		○	○
	22		Curable Hardened	100		○	○
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		○	○
	24		≤ 12% Si, Curable Hardened	90		○	○
	25		> 12% Si, Not Curable	130			
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110		○	○
	27		CuZn, CuSnZn (Brass)	90		○	○
	28		CuSn, lead-free copper and electrolytic copper	100		○	○
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.			
30							
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15		
	32		Cured	280	30		
	33		Annealed	250	25		
	34		Ni or Co Based Cured	350	38		
	35		Cast	320	34		
36	Titanium Alloys	Pure Titanium	400 Rm				
37		Alpha + Beta Alloys Hardened	1050 Rm				
H	38	Hardened steel	Hardened	550	55		
	39		Hardened	630	60		
	40	Chilled Cast Iron	Cast	400	42		
	41	Hardened Cast Iron	Hardened	550	55		

K1143	K1153	K2101	K2111	K2121	K2102	K2112	K21B1
Straight	LH Spiral	Straight	LH Spiral	LH Spiral (Quick Spiral)	Straight	LH Spiral	LH Spiral
D2.0	D2.0	D2.0	D2.0	D4.0	D10.0	D10.0	D2.0
D60.0	D60.0	D20.0	D20.0	D20.0	D50.0	D50.0	D20.0
408	410	412	414	416	417	419	421

Bright



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