

Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

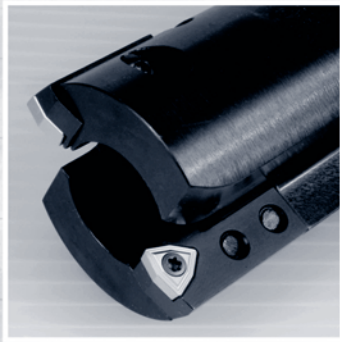
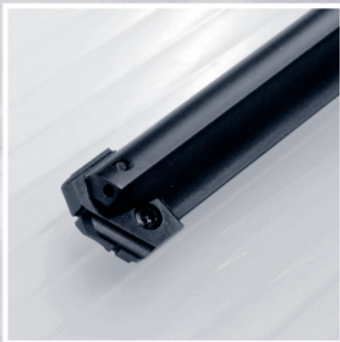
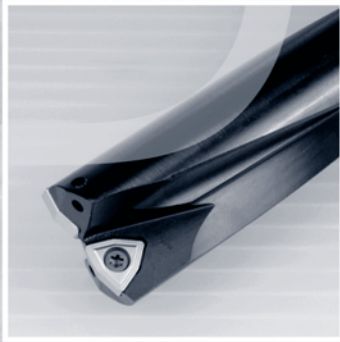
Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

Drills



Drills

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Code key	I.03
Drills	I.04
Trepanning drills	I.11
Technical information	I.13

Inserts
Face milling cutters

Positive 11° clearance - Square insert

Normally available for immediate delivery ●
Only available in a limited quantity ○

SPMT	l	s	d	r	KM15	PM25	PM40	NC40	TiN16	ZR10	TiN22	TiN25	TiN35	TL40
SPMT 060304	6,35	3,18	6,35	0,4								●	●	●
SPMT 070308	7,94	3,18	7,94	0,8								●	●	●
SPMT 090308	9,52	3,18	9,52	0,8								●	●	●
SPMT 120408	12,70	4,76	12,70	0,8								●	●	●

Square shoulder cutters
Slot cutters

Positive 7° clearance - 80° Trigon insert.

Normally available for immediate delivery ●
Only available in a limited quantity ○

WCMT	l	s	d	r	KM15	PM25	PM40	NC40	TiN16	ZR10	TiN22	TiN32	TiN35	TL40
WCMT 030204	3,46	2,38	5,56	0,4								●	●	●
WCMT 040204	3,99	2,38	6,35	0,4								●	●	●
WCMT 050308	5,07	3,18	7,94	0,8								●	●	●
WCMT 06T308	6,14	3,97	9,52	0,8								●	●	●

Porcupine cutters
Specific applications and Sets

Positive 7° clearance - 80° Trigon insert.

Normally available for immediate delivery ●
Only available in a limited quantity ○

WCMX	l	s	d	r	KM15	PM25	PM40	NC40	TiN16	ZR10	TiN22	TiN32	TiN35	TL40
WCMX 030208	3,46	2,38	5,56	0,8								●	●	●
WCMX 040208	3,99	2,38	6,35	0,8								●	●	●
WCMX 050308	5,07	3,18	7,94	0,8								●	●	●
WCMX 06T308	6,14	3,97	9,52	0,8								●	●	●
WCMX 080412	8,14	4,76	12,70	1,2								●	●	●

Profile milling
Solid carbide

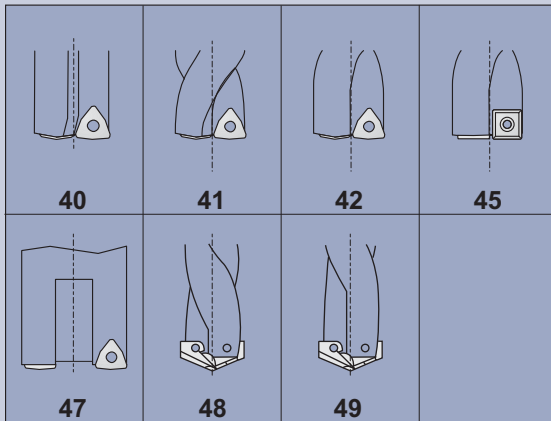
Positive inserts

Normally available for immediate delivery ●
Only available in a limited quantity ○

XPMT	Diameter		s	HS15	TL40
	Metric	Inch			
XPMT095	9,50	3/8	2,4	○	○
XPMT098	9,80	-	2,4	●	●
XPMT099	9,92	25/64	2,4	○	○
XPMT100	10,00	-	2,4	●	●
XPMT102	10,20	-	2,4	●	●
XPMT103	10,32	13/32	2,4	●	●
XPMT105	10,50	-	2,4	●	●
XPMT107	10,72	27/64	2,4	○	○
XPMT108	10,80	-	2,4	●	●
XPMT110	11,00	-	2,4	●	●
XPMT111	11,11	7/16	2,4	○	○
XPMT115	11,50	29/64	2,4	○	○
XPMT119	11,91	15/32	2,4	○	○
XPMT120	12,00	-	2,4	●	●
XPMT123	12,30	31/64	2,4	○	○
XPMT125	12,50	-	2,4	●	●
XPMT127	12,70	1/2	2,4	○	○
XPMT130	13,00	-	3,2	●	●
XPMT131	13,10	33/64	3,2	○	○
XPMT135	13,50	17/32	3,2	○	○
XPMT138	13,89	35/64	3,2	○	○
XPMT140	14,00	-	3,2	●	●
XPMT142	14,29	9/16	3,2	○	○
XPMT145	14,50	-	3,2	●	●
XPMT146	14,68	37/64	3,2	○	○
XPMT150	15,00	-	3,2	●	●
XPMT155	15,50	39/64	3,2	○	○
XPMT158	15,88	5/8	3,2	○	○
XPMT160	16,00	-	3,2	●	●
XPMT162	16,27	41/64	3,2	○	○
XPMT165	16,50	-	3,2	●	●
XPMT166	16,67	21/32	3,2	○	○
XPMT170	17,00	-	3,2	●	●
XPMT174	17,46	11/16	3,2	○	○
XPMT175	17,50	-	3,2	●	●

4	2	3	4	63	027
1	2	3	4	5	

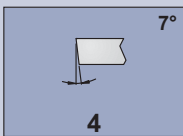
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2

1	2	3	4	5
WCM.. 0302	WCM.. 0402	WCM.. 0503	WCM.. 06T3	WCM.. 0804
SPMT 0603	SPMT 0703	SPMT 0903	SPMT 1204	
XPMT 095 XPMT 110	XPMT 115 XPMT 127	XPMT 130 XPMT 175	XPMT 150 XPMT 175	

3



4

Ø20	Ø25	Ø32	Ø40	Ø20	Ø24	Ø28	Ø36
61	62	63	64	72	73	74	75

5



Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

Drills

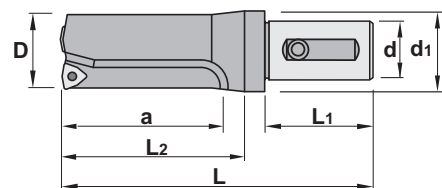
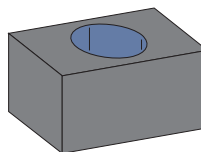
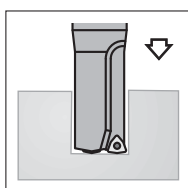


Characteristics:

Straight flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. lathes. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 17,5 to 55 mm.

Applications:

This drill works well on steels, alloyed steels, stainless steels and refractories.



Max. hole depth = 2xDiameter (D)

40..		D	L	L1	L2	a	d	d1	Radial Adj. Dmax			Insert size	
Ref.	4014.61.017,5	17,5	103	50	39	35	20	32	+1,00 ↻ 19,5	1622	5507	WCM.. 0302..	0,200
	4014.61.018	18	103	50	40	36	20	32	+0,90 ↻ 19,8	1622	5507	WCM.. 0302..	0,200
	4014.61.018,5	18,5	103	50	41	37	20	32	+0,85 ↻ 20,2	1622	5507	WCM.. 0302..	0,200
	4014.61.019	19	103	50	42	38	20	32	+0,80 ↻ 20,6	1622	5507	WCM.. 0302..	0,250
	4014.61.020	20	103	50	44	40	20	32	+0,75 ↻ 21,5	1622	5507	WCM.. 0302..	0,250
	4024.62.022	22	123	55	48	44	25	40	+1,25 ↻ 24,5	1225	5507	WCM.. 0402..	0,385
	4024.62.024	24	123	55	52	48	25	40	+0,75 ↻ 25,5	1225	5507	WCM.. 0402..	0,380
	4024.62.025	25	123	55	54	50	25	40	+0,50 ↻ 26,0	1225	5507	WCM.. 0402..	0,400
	4034.62.026	26	133	55	56	52	25	40	+2,50 ↻ 31,0	1630	5509	WCM.. 0503..	0,430
	4034.62.027	27	133	55	58	54	25	40	+2,20 ↻ 31,4	1630	5509	WCM.. 0503..	0,430
	4034.62.028	28	133	55	60	56	25	40	+2,10 ↻ 32,2	1630	5509	WCM.. 0503..	0,485
	4034.62.029	29	133	55	62	58	25	40	+1,80 ↻ 32,6	1630	5509	WCM.. 0503..	0,465
	4034.62.030	30	133	55	64	60	25	40	+1,80 ↻ 33,0	1630	5509	WCM.. 0503..	0,475
	4044.63.031	31	153	60	66	62	32	50	+3,50 ↻ 38,0	1635	5510	WCM.. 06T3..	0,785
	4044.63.032	32	153	60	68	64	32	50	+3,20 ↻ 38,4	1635	5510	WCM.. 06T3..	0,800
	4044.63.034	34	153	60	73	68	32	50	+2,80 ↻ 39,6	1635	5510	WCM.. 06T3..	0,850
	4044.63.035	35	153	60	75	70	32	50	+2,50 ↻ 40,0	1635	5510	WCM.. 06T3..	0,850
	4044.63.038	38	163	60	80	76	32	50	+1,80 ↻ 41,0	1635	5510	WCM.. 06T3..	0,950
	4044.63.039	39	163	60	82	78	32	50	+1,50 ↻ 41,6	1635	5510	WCM.. 06T3..	0,950
	4044.63.040	40	163	60	84	80	32	50	+1,20 ↻ 42,0	1635	5510	WCM.. 06T3..	1,000
	4054.64.042	42	193	65	89	84	40	60	+4,20 ↻ 51,0	1640	5515	WCM.. 0804..	1,570
	4054.64.043	43	193	65	91	86	40	60	+4,00 ↻ 51,4	1640	5515	WCM.. 0804..	1,560
	4054.64.045	45	193	65	95	90	40	60	+3,60 ↻ 52,2	1640	5515	WCM.. 0804..	1,700
	4054.64.048	48	193	65	101	96	40	60	+2,70 ↻ 53,4	1640	5515	WCM.. 0804..	2,050
	4054.64.049	49	213	65	103	98	40	60	+2,50 ↻ 54,0	1640	5515	WCM.. 0804..	2,000
	4054.64.050	50	213	65	105	100	40	60	+2,20 ↻ 54,4	1640	5515	WCM.. 0804..	2,215
	4054.64.052	52	213	65	110	104	40	60	+1,80 ↻ 55,6	1640	5515	WCM.. 0804..	2,210
	4054.64.054	54	213	65	114	108	40	60	+1,20 ↻ 56,4	1640	5515	WCM.. 0804..	2,300
	4054.64.055	55	213	65	116	110	40	60	+0,80 ↻ 56,6	1640	5515	WCM.. 0804..	2,400

Ref.	WCM..	l	s	d	Positive 7° clearance - 80° Trigon insert.
	WCM.. 0302..	3,46	2,38	5,56	
WCM.. 0402..	3,99	2,38	6,35		
WCM.. 0503..	5,07	3,18	7,94		
WCM.. 06T3..	6,14	3,97	9,52		
WCM.. 0804..	8,14	4,76	12,70		

WCMT	WCMX				

For more information see page: I.02



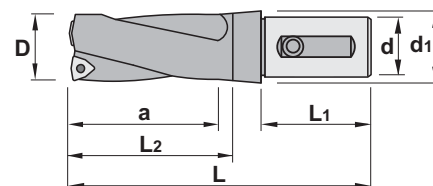
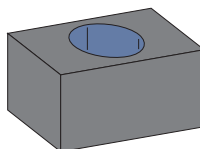
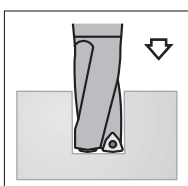
Max. hole depth = 2xDiameter (D)

Characteristics:

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 17,5 to 55 mm.

Applications:

This drill works well on steels, alloyed steels, stainless steels and refractories.



41..		D	L	L1	L2	a	d	d1	Radial Adj. D _{max}			Insert size	
Ref.	4114.62.017,5	17,5	108	55	39	35	25	40	+1,00 ↻ 19,5	1622	5507	WCM.. 0302..	0,200
	4114.62.018	18	108	55	40	36	25	40	+0,90 ↻ 19,8	1622	5507	WCM.. 0302..	0,200
	4114.62.018,5	18,5	113	55	41	37	25	40	+0,85 ↻ 20,2	1622	5507	WCM.. 0302..	0,200
	4114.62.019	19	113	55	42	38	25	40	+0,80 ↻ 20,6	1622	5507	WCM.. 0302..	0,250
	4114.62.020	20	113	55	44	40	25	40	+0,75 ↻ 21,5	1622	5507	WCM.. 0302..	0,250
	4124.62.022	22	123	55	48	44	25	40	+1,25 ↻ 24,5	1225	5507	WCM.. 0402..	0,375
	4124.62.024	24	123	55	52	48	25	40	+0,75 ↻ 25,5	1225	5507	WCM.. 0402..	0,385
	4124.62.025	25	123	55	54	50	25	40	+0,50 ↻ 26,0	1225	5507	WCM.. 0402..	0,390
	4134.63.026	26	138	60	56	52	32	50	+2,50 ↻ 31,0	1630	5509	WCM.. 0503..	0,425
	4134.63.027	27	138	60	58	54	32	50	+2,20 ↻ 31,4	1630	5509	WCM.. 0503..	0,430
	4134.63.028	28	138	60	60	56	32	50	+2,10 ↻ 32,2	1630	5509	WCM.. 0503..	0,440
	4134.63.029	29	138	60	62	58	32	50	+1,80 ↻ 32,6	1630	5509	WCM.. 0503..	0,450
	4134.63.030	30	138	60	64	60	32	50	+1,80 ↻ 33,0	1630	5509	WCM.. 0503..	0,470
	4144.64.031	31	158	65	66	62	40	60	+3,50 ↻ 38,0	1635	5510	WCM.. 06T3..	0,765
	4144.64.032	32	158	65	68	64	40	60	+3,20 ↻ 38,4	1635	5510	WCM.. 06T3..	0,780
	4144.64.034	34	158	65	73	68	40	60	+2,80 ↻ 39,6	1635	5510	WCM.. 06T3..	0,800
	4144.64.035	35	158	65	75	70	40	60	+2,50 ↻ 40,0	1635	5510	WCM.. 06T3..	0,815
	4144.64.038	38	168	65	80	76	40	60	+1,80 ↻ 41,0	1635	5510	WCM.. 06T3..	0,930
	4144.64.039	39	168	65	82	78	40	60	+1,50 ↻ 41,6	1635	5510	WCM.. 06T3..	0,950
	4144.64.040	40	168	65	84	80	40	60	+1,20 ↻ 42,0	1635	5510	WCM.. 06T3..	0,970
	4154.64.042	42	193	65	89	84	40	60	+4,20 ↻ 51,0	1640	5515	WCM.. 0804..	1,550
	4154.64.043	43	193	65	91	86	40	60	+4,00 ↻ 51,4	1640	5515	WCM.. 0804..	1,530
	4154.64.045	45	193	65	95	90	40	60	+3,60 ↻ 52,2	1640	5515	WCM.. 0804..	1,630
	4154.64.048	48	193	65	101	96	40	60	+2,70 ↻ 53,4	1640	5515	WCM.. 0804..	1,700
	4154.64.049	49	213	65	103	98	40	60	+2,50 ↻ 54,0	1640	5515	WCM.. 0804..	2,050
4154.64.050	50	213	65	105	100	40	60	+2,20 ↻ 54,4	1640	5515	WCM.. 0804..	2,100	
4154.64.052	52	213	65	110	104	40	60	+1,80 ↻ 55,6	1640	5515	WCM.. 0804..	2,120	
4154.64.054	54	213	65	114	108	40	60	+1,20 ↻ 56,4	1640	5515	WCM.. 0804..	2,150	
4154.64.055	55	213	65	116	110	40	60	+0,80 ↻ 56,6	1640	5515	WCM.. 0804..	2,200	

Ref.	WCM..			Positive 7° clearance - 80° Trigon insert.
	l	s	d	
WCM.. 0302..	3,46	2,38	5,56	
WCM.. 0402..	3,99	2,38	6,35	
WCM.. 0503..	5,07	3,18	7,94	
WCM.. 06T3..	6,14	3,97	9,52	
WCM.. 0804..	8,14	4,76	12,70	

WCMT	WCMX				

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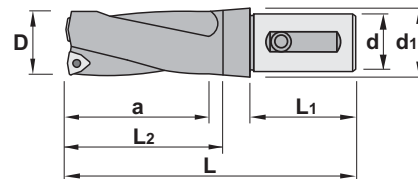
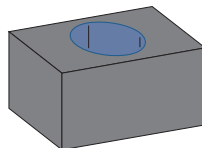
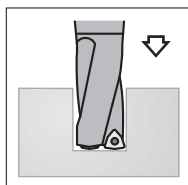
Max. hole depth = 3xDiameter (D)

Characteristics:

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 17,5 to 55 mm.

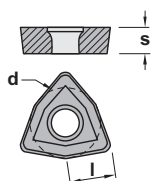
Applications:

This drill works well on steels, alloyed steels, stainless steels and refractories.



42..		D	L	L1	L2	a	d	d1	Radial Adj. D _{max}			Insert size	
Ref.	4214.62.017,5	17,5	127	55	56	53	25	40	+1,00 ↻ 19,5	1622	5507	WCM.. 0302..	0,220
	4214.62.018	18	128	55	57	54	25	40	+0,90 ↻ 19,8	1622	5507	WCM.. 0302..	0,230
	4214.62.018,5	18,5	130	55	59	56	25	40	+0,85 ↻ 20,2	1622	5507	WCM.. 0302..	0,240
	4214.62.019	19	131	55	60	57	25	40	+0,80 ↻ 20,6	1622	5507	WCM.. 0302..	0,240
	4214.62.020	20	136	55	64	60	25	40	+0,75 ↻ 21,5	1622	5507	WCM.. 0302..	0,250
	4224.62.022	22	142	55	69	66	25	40	+1,25 ↻ 24,5	1225	5507	WCM.. 0402..	0,400
	4224.62.024	24	150	55	76	72	25	40	+0,75 ↻ 25,5	1225	5507	WCM.. 0402..	0,450
	4224.62.025	25	154	55	79	75	25	40	+0,50 ↻ 26,0	1225	5507	WCM.. 0402..	0,475
	4234.63.026	26	162	60	81	78	32	50	+2,50 ↻ 31,0	1630	5509	WCM.. 0503..	0,475
	4234.63.027	27	165	60	84	81	32	50	+2,20 ↻ 31,4	1630	5509	WCM.. 0503..	0,500
	4234.63.028	28	169	60	87	84	32	50	+2,10 ↻ 32,2	1630	5509	WCM.. 0503..	0,550
	4234.63.029	29	172	60	90	87	32	50	+1,80 ↻ 32,6	1630	5509	WCM.. 0503..	0,570
	4234.63.030	30	177	60	94	90	32	50	+1,80 ↻ 33,0	1630	5509	WCM.. 0503..	0,600
	4244.64.031	31	186	65	97	93	40	60	+3,50 ↻ 38,0	1635	5510	WCM.. 06T3..	0,850
	4244.64.032	32	189	65	100	96	40	60	+3,20 ↻ 38,4	1635	5510	WCM.. 06T3..	0,900
	4244.64.034	34	196	65	106	102	40	60	+2,80 ↻ 39,6	1635	5510	WCM.. 06T3..	0,975
	4244.64.035	35	200	65	109	105	40	60	+2,50 ↻ 40,0	1635	5510	WCM.. 06T3..	1,000
	4244.64.038	38	211	65	118	114	40	60	+1,80 ↻ 41,0	1635	5510	WCM.. 06T3..	1,170
	4244.64.039	39	214	65	121	117	40	60	+1,50 ↻ 41,6	1635	5510	WCM.. 06T3..	1,200
	4244.64.040	40	218	65	124	120	40	60	+1,20 ↻ 42,0	1635	5510	WCM.. 06T3..	1,300
	4254.64.042	42	225	65	130	126	40	60	+4,20 ↻ 51,0	1640	5515	WCM.. 0804..	1,600
	4254.64.043	43	229	65	133	129	40	60	+4,00 ↻ 51,4	1640	5515	WCM.. 0804..	1,750
	4254.64.045	45	237	65	140	135	40	60	+3,60 ↻ 52,2	1640	5515	WCM.. 0804..	1,900
	4254.64.048	48	248	65	149	144	40	60	+2,70 ↻ 53,4	1640	5515	WCM.. 0804..	2,250
	4254.64.049	49	251	65	152	147	40	60	+2,50 ↻ 54,0	1640	5515	WCM.. 0804..	2,200
	4254.64.050	50	255	65	155	150	40	60	+2,20 ↻ 54,4	1640	5515	WCM.. 0804..	2,400
	4254.64.052	52	262	65	161	156	40	60	+1,80 ↻ 55,6	1640	5515	WCM.. 0804..	2,500
	4254.64.054	54	269	65	167	162	40	60	+1,20 ↻ 56,4	1640	5515	WCM.. 0804..	2,700
	4254.64.055	55	274	65	171	165	40	60	+0,80 ↻ 56,6	1640	5515	WCM.. 0804..	2,850

WCM..		l	s	d	Positive 7° clearance - 80° Trigon insert.
Ref.	WCM.. 0302..	3,46	2,38	5,56	
	WCM.. 0402..	3,99	2,38	6,35	
	WCM.. 0503..	5,07	3,18	7,94	
	WCM.. 06T3..	6,14	3,97	9,52	
	WCM.. 0804..	8,14	4,76	12,70	
	WCMT				
	WCMX				



For more information see page: I.02



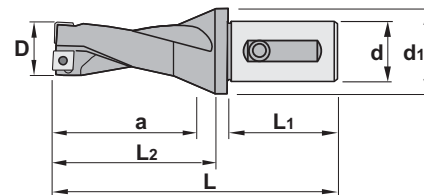
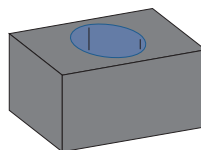
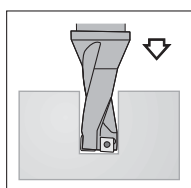
Characteristics:

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down square inserts for stability and clean through-hole putting. Drills available from 15 to 55 mm.

Applications:

This drill works well on steels, alloyed steels, stainless steels and refractories.

Max. hole depth = 3xDiameter (D)



45..		D	L	L1	L2	a	d	d1	Radial Adj. D _{max}			Insert size	
Ref.	4514.62.015	15	120	55	56	45	25	40	+0,50 ↻ 16,0	1225	5507	SPMT 0603..	0,240
	4514.62.016	16	121	55	56	48	25	40	+0,50 ↻ 17,0	1225	5007	SPMT 0603..	0,250
	4514.62.017	17	127	55	54	51	25	40	+0,50 ↻ 18,0	1225	5007	SPMT 0603..	0,250
	4514.62.017,5	17,5	127	55	56	53	25	40	+1,00 ↻ 19,5	1225	5507	SPMT 0603..	0,250
	4514.62.018	18	128	55	57	54	25	40	+0,90 ↻ 19,8	1225	5507	SPMT 0603..	0,230
	4514.62.018,5	18,5	130	55	59	56	25	40	+0,85 ↻ 20,2	1225	5507	SPMT 0603..	0,240
	4514.62.019	19	131	55	60	57	25	40	+0,80 ↻ 20,6	1225	5507	SPMT 0603..	0,240
	4514.62.020	20	136	55	64	60	25	40	+0,75 ↻ 21,5	1225	5507	SPMT 0603..	0,250
	4524.62.022	22	142	55	69	66	25	40	+1,25 ↻ 24,5	1225	5507	SPMT 0703..	0,400
	4524.62.024	24	150	55	76	72	25	40	+0,75 ↻ 25,5	1225	5507	SPMT 0703..	0,450
	4524.62.025	25	154	55	79	75	25	40	+0,50 ↻ 26,0	1225	5507	SPMT 0703..	0,475
	4534.63.026	26	162	55	81	78	32	50	+2,50 ↻ 31,0	1230	5508	SPMT 0903..	0,475
	4534.63.027	27	165	55	84	81	32	50	+2,20 ↻ 31,4	1230	5508	SPMT 0903..	0,500
	4534.63.028	28	169	55	87	84	32	50	+2,10 ↻ 32,2	1230	5508	SPMT 0903..	0,550
	4534.63.029	29	172	55	90	87	32	50	+1,80 ↻ 32,6	1230	5508	SPMT 0903..	0,570
	4534.63.030	30	177	55	94	90	32	50	+1,80 ↻ 33,0	1230	5508	SPMT 0903..	0,600
	4544.64.031	31	186	65	97	93	40	60	+3,50 ↻ 38,0	1230	5508	SPMT 0903..	0,850
	4544.64.032	32	189	65	100	96	40	60	+3,20 ↻ 38,4	1230	5508	SPMT 0903..	0,900
	4544.64.034	34	196	65	106	102	40	60	+2,80 ↻ 39,6	1230	5508	SPMT 0903..	0,975
	4544.64.035	35	200	65	109	105	40	60	+2,50 ↻ 40,0	1550	5520	SPMT 1204..	1,000
	4544.64.038	38	211	65	118	114	40	60	+1,80 ↻ 41,0	1550	5520	SPMT 1204..	1,170
	4544.64.039	39	214	65	121	117	40	60	+1,50 ↻ 41,6	1550	5520	SPMT 1204..	1,200
	4544.64.040	40	218	65	124	120	40	60	+1,20 ↻ 42,0	1550	5520	SPMT 1204..	1,300
	4554.64.042	42	225	65	130	126	40	60	+4,20 ↻ 51,0	1550	5520	SPMT 1204..	1,600
	4554.64.043	43	229	65	133	129	40	60	+4,00 ↻ 51,4	1550	5520	SPMT 1204..	1,750
	4554.64.045	45	237	65	140	135	40	60	+3,60 ↻ 52,2	1550	5520	SPMT 1204..	1,900

		SPMT			Positive 11° clearance - Square inserts
Ref.	SPMT	l	s	d	
	SPMT 060304	6,35	3,18	6,35	For more information see page: I.02
	SPMT 070308	7,94	3,18	7,94	
	SPMT 090308	9,52	3,18	9,52	
	SPMT 120408	12,70	4,76	12,70	

Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

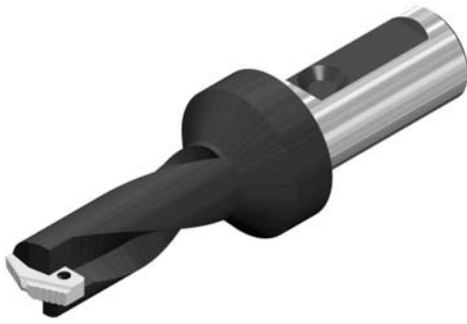
Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

Drills



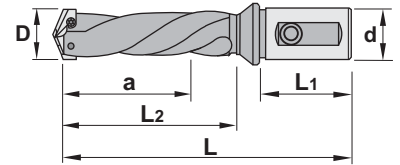
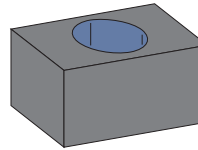
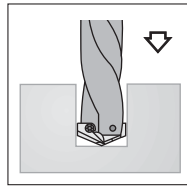
Characteristics:

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down spade inserts for stability and clean through-hole putting. Drills available from 9,5 to 17,5 mm.

Applications:

This drill works well on steels, alloyed steels, stainless steels and refractories.

Max. hole depth = 3xDiameter (D)

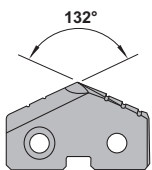


48..

Ref.	D	L	L1	L2	a	d	Insert size	kg
4814.61.009,5	9,50 ~ 11,0	120,0	42	50	35	20	XPMT 095 ~ XPMT 110	0,200
4824.61.011,5	11,5 ~ 12,7	125,0	42	55	40	20	XPMT 115 ~ XPMT 127	0,250
4834.61.013	13,0 ~ 17,5	140,0	42	65	53	20	XPMT 130 ~ XPMT 175	0,300
4834.61.015	15,5 ~ 17,5	140,0	42	75	53	20	XPMT 150 ~ XPMT 175	0,380

Ref.	1420	5506
4814.61.009,5	1420	5506
4824.61.011,5	1422	5506
4834.61.013	1425	5507
4834.61.015	1425	5507

XPMT		s
Ref.	XPMT 095 ~ XPMT 110	2,4
	XPMT 115 ~ XPMT 127	2,4
	XPMT 130 ~ XPMT 175	3,2
	XPMT 150 ~ XPMT 175	3,2
	XPMT	



For more information see page: I.02



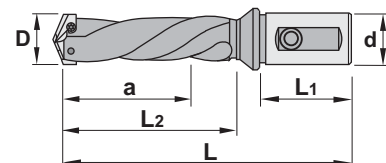
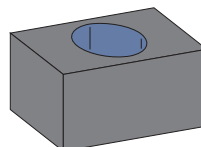
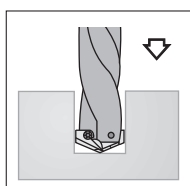
Long Series

Characteristics:

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down spade inserts for stability and clean through-hole putting. Drills available from 9,5 to 17,5 mm.

Applications:

This drill works well on steels, alloyed steels, stainless steels and refractories.



49..

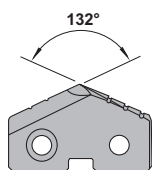
Ref.		D	L	L ₁	L ₂	a	d	Insert size	Kg
4914.61.009,5		9,50 ~ 11,0	132	42	65	57	20	XPMT 095 ~ XPMT 110	0,200
4924.61.011,5		11,5 ~ 12,7	142	42	75	69	20	XPMT 115 ~ XPMT 127	0,250
4934.61.013		13,0 ~ 17,5	188	42	125	112	20	XPMT 130 ~ XPMT 175	0,300
4934.61.015		15,5 ~ 17,5	198	42	135	122	20	XPMT 150 ~ XPMT 175	0,380

Ref.		
4914.61.009,5	1420	5506
4924.61.011,5	1422	5506
4934.61.013	1425	5507
4934.61.015	1425	5507

XPMT		s
Ref.	XPMT 095 ~ XPMT 110	2,4
	XPMT 115 ~ XPMT 127	2,4
	XPMT 130 ~ XPMT 175	3,2
	XPMT 150 ~ XPMT 175	3,2

For more information see page: I.02

XPMT						



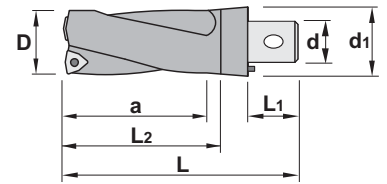
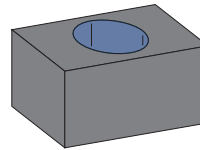
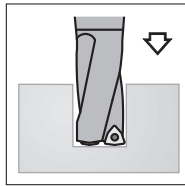


Characteristics:

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 17,5 to 40 mm.

Applications:

This drill works well on steels, alloyed steels, stainless steels and refractories.



Max. hole depth = 3xDiameter (D)

42 ¹ 4.72 44.75		D	L	L1	L2	a	d	d1	Radial Adj. D _{max}			Insert size	
Ref.	4214.72.017,5	17,5	92	20	56	53	20	32	+1,00 ↻ 19,5	1622	5507	WCM.. 0302..	0,070
	4214.72.018	18	93	20	57	54	20	32	+0,90 ↻ 19,8	1622	5507	WCM.. 0302..	0,080
	4214.72.018,5	18,5	95	20	59	56	20	32	+0,85 ↻ 20,2	1622	5507	WCM.. 0302..	0,080
	4214.72.019	19	96	20	60	57	20	32	+0,80 ↻ 20,6	1622	5507	WCM.. 0302..	0,090
	4214.72.020	20	101	20	64	60	20	32	+0,75 ↻ 21,5	1622	5507	WCM.. 0302..	0,110
	4224.73.022	22	112	25	69	66	24	42	+1,25 ↻ 24,5	1225	5507	WCM.. 0402..	0,320
	4224.73.024	24	120	25	76	72	24	42	+0,75 ↻ 26,5	1225	5507	WCM.. 0402..	0,370
	4224.73.025	25	124	25	79	75	24	42	+0,50 ↻ 26,0	1225	5507	WCM.. 0402..	0,400
	4234.74.026	26	132	30	81	78	28	50	+2,50 ↻ 31,0	1630	5509	WCM.. 0503..	0,375
	4234.74.027	27	135	30	84	81	28	50	+2,20 ↻ 31,4	1630	5509	WCM.. 0503..	0,400
	4234.74.028	28	139	30	87	84	28	50	+2,10 ↻ 32,2	1630	5509	WCM.. 0503..	0,450
	4234.74.029	29	142	30	90	87	28	50	+1,80 ↻ 32,6	1630	5509	WCM.. 0503..	0,470
	4234.74.030	30	147	30	94	90	28	50	+1,80 ↻ 33,0	1630	5509	WCM.. 0503..	0,500
	4244.75.031	31	161	40	97	93	36	68	+3,50 ↻ 38,0	1635	5510	WCM.. 06T3..	0,600
	4244.75.032	32	164	40	100	96	36	68	+3,20 ↻ 38,4	1635	5510	WCM.. 06T3..	0,750
	4244.75.034	34	171	40	106	102	36	68	+2,80 ↻ 39,6	1635	5510	WCM.. 06T3..	0,800
	4244.75.035	35	175	40	109	105	36	68	+2,50 ↻ 40,0	1635	5510	WCM.. 06T3..	0,850
	4244.75.038	38	186	40	118	114	36	68	+1,80 ↻ 41,0	1635	5510	WCM.. 06T3..	1,000
	4244.75.039	39	189	40	121	117	36	68	+1,50 ↻ 41,6	1635	5510	WCM.. 06T3..	1,050
	4244.75.040	40	193	40	124	120	36	68	+1,20 ↻ 42,0	1635	5510	WCM.. 06T3..	1,150

Ref.	WCM..	l	s	d	Positive 7° clearance - 80° Trigon insert.
	WCM.. 0302..	3,46	2,38	5,56	
WCM.. 0402..	3,99	2,38	6,35		
WCM.. 0503..	5,07	3,18	7,94		
WCM.. 06T3..	6,14	3,97	9,52		

WCMT	WCMX				

For more information see page: I.02



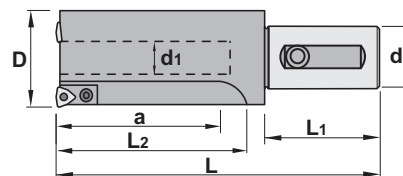
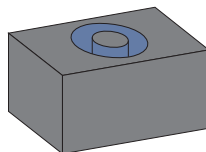
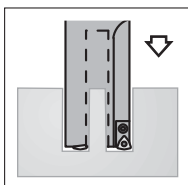
Characteristics:

Straight flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 60 to 100 mm. Specially recommended for low power machines.

Applications:

This drill works well on steels, alloyed steels, stainless steels and refractories.

Max. hole depth = 2.5xDiameter (D)

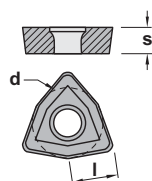


4744.64

Ref.	D	L	L1	L2	a	d	d1	Insert size	kg
4744.64.060	60	260	65	160	150	40	24	WCM.. 06T3..	3,100
4744.64.065	65	275	65	175	165	40	29	WCM.. 06T3..	3,700
4744.64.070	70	285	65	185	175	40	34	WCM.. 06T3..	4,250
4744.64.075	75	300	65	200	190	40	39	WCM.. 06T3..	5,100
4744.64.080	80	310	65	210	200	40	44	WCM.. 06T3..	5,800
4744.64.085	85	325	65	225	215	40	49	WCM.. 06T3..	6,500
4744.64.090	90	335	65	235	225	40	54	WCM.. 06T3..	7,250
4744.64.095	95	350	65	250	240	40	59	WCM.. 06T3..	8,200
4744.64.100	100	360	65	260	250	40	64	WCM.. 06T3..	9,050

Ref.	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.060	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.065	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.070	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.075	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.080	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.085	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.090	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.095	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.100	1396	5510	1405	1635	1503	5002	5005	6806	6816

WCM..		l	s	d	Positive 7° clearance - 80° Trigon insert.
Ref.	WCM.. 06T3..	6,14	3,97	9,52	
					For more information see page: I.02
	WCMT	WCMX			



Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

Specific applications and Sets

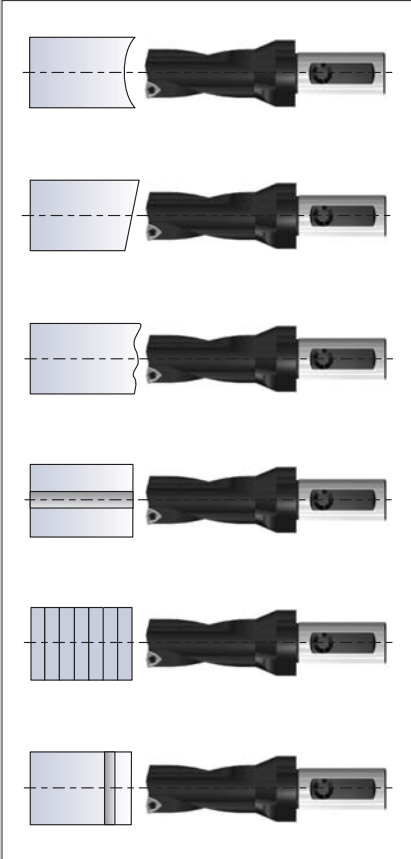
Profile milling

Solid carbide

Drills



Drills - Recommendations for the assembly



Drills for indexable inserts

A concave surface is not normally recommended because there is the possibility that the tool turns away from the center. Feed should be reduced to 1/3 of the recommended.

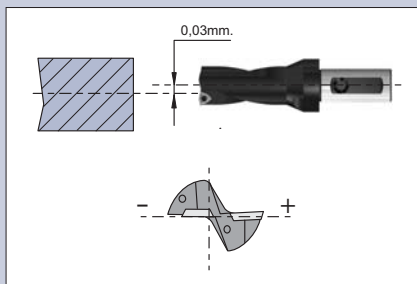
The surface of the tool to be drilled on should be preferably even. If the angles exceed 2°, feed should be reduced to 1/3 of the recommended.

If the starting surface is an uneven surface of the component, feed should be reduced so that the chip of the cutting edges can be avoided. The same can also happen at the way out from the tool.

When working with a hole made beforehand, this should not be bigger than 1/4 of the final size, because the tool could turn away.

There is the possibility to drill sets of more than one piece.

When the tool has a crossed hole, which is 1/4 bigger than the diameter of the drill, feed should be reduced when going through it.



Fixed drills

The axis of the tool should not be deviated from the center of the piece more than 0,03 mm. so that the pointed tolerances are acquired.

The tool should be assembled in a way that the face of the central insert goes parallel to the cross movement axis of the machine.

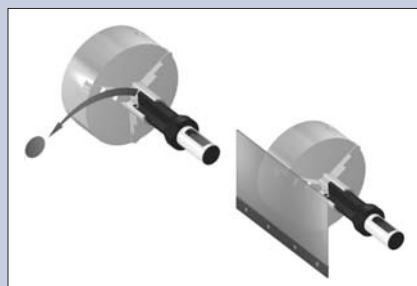


Drilling with drill-holders with housing for cutting fluid supply

When a drillholder with a housing supplier of cutting fluid is used, it has to have a fixed top so as to avoid that the housing turns around.

If it is the case that the cutting fluid has some dirty rests, this could lock the rotary housing and, consequently, the supplier tube will roll up around it, which can cause a serious accident.

If it is the case that the drillholder has not been used for a long time, check if it turns round in the housing before the spindle starts working.



Drilling of through-holes

When through holes are drilled a disk is produced after the drill has finished the hole. This disk is often thrown away at high speed through the dish claws and can cause injuries and accidents.

In order to avoid this accident, a suitable safety system has to be placed around the dish.

Inserts

Face milling
cuttersSquare shoulder
cutters

Slot cutters

Porcupine cutters

Specific applications
and Sets

Profile milling

Solid carbide

Drills

Material	HB	Condition	D mm.	Feed mm./Rev.	Cutting speed m./min.	
Unalloyed steel P	90-200	Non-hardened 0,05-0,25%C	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,04-0,08 0,06-0,10 0,08-0,12 0,08-0,12	100-250	
	125-225 150-225 180-225	Non-hardened 0,25-0,55%C Non-hardened 0,55-0,80%C High carbon & carbon tool steel	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,04-0,12 0,09-0,19 0,11-0,20 0,14-0,25	100-250	
	150-260	Non-hardened	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,08-0,12 0,09-0,16 0,11-0,20 0,14-0,22	90-250	
	220-400	Hardened	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,06-0,10 0,08-0,15 0,08-0,15 0,11-0,20	80-220	
	150-250 150-250	Annealed Annealed HSS	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,08-0,12 0,09-0,18 0,11-0,22 0,14-0,25	100-220	
	250-350 250-400	Hardened tool steel Hardened steel	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,08-0,12 0,09-0,15 0,11-0,17 0,12-0,20	90-200	
	150-270	Ferritic, Martensitic 13-25%Cr	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,04-0,12 0,10-0,16 0,11-0,18 0,11-0,18	90-190	
	150-270	Unalloyed	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,05-0,08 0,06-0,10 0,09-0,15 0,11-0,18	100-230	
	90-225	Low alloyed (alloying elements < 5%)	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,08-0,12 0,09-0,15 0,12-0,20 0,14-0,22	90-200	
	Stainless steel M	150-250	Austenitic Ni > 8%, 18-25% Cr	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,04-0,12 0,10-0,16 0,11-0,18 0,11-0,18	70-150
Malleable cast iron K		110-145	Ferritic (short chipping)	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,11-0,18 0,14-0,22 0,17-0,27 0,18-0,30	90-200
		150-270	Pearlitic (long chipping)	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,09-0,15 0,11-0,19 0,12-0,20 0,14-0,22	80-180
		150-220	Low tensile strength	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,09-0,15 0,14-0,22 0,15-0,25 0,18-0,30	80-180
		200-330	High tensile strength	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,09-0,15 0,12-0,20 0,14-0,22 0,15-0,25	70-150
		125-230	Ferritic	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,09-0,15 0,14-0,22 0,15-0,25 0,17-0,28	80-180
		200-300	Pearlitic	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,09-0,15 0,12-0,20 0,14-0,22 0,15-0,30	70-150
		75-150 40-100 70-125	Wrought, solution treated & aged Cast Cast, solution treated & aged	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,08-0,12 0,11-0,17 0,17-0,27 0,17-0,27	150-375
		50 - 160	Free cutting alloys (pb>1%) Brass and lead bronzes (pb<1%)	17,5-25,4 26,0-30,0 31,0-41,3 42,0-80,0	0,09-0,15 0,09-0,15 0,15-0,25 0,15-0,25	80-160

Material	HB	Condition	D mm.	Cutting speed m/min	Feed mm/Rev
Unalloyed steel P	90-200	Non-hardened 0,05-0,25%C	60-100	150-250	0,08-0,12
	125-225	Non-hardened 0,25-0,55%C		100-250	0,11-0,18
	150-225	Non-hardened 0,55-0,80%C		100-250	0,11-0,18
	180-225	High carbon & carbon tool steel		100-250	0,11-0,18
Low alloyed steel	150-260	Non-hardened	60-100	100-250	0,11-0,18
	220-400	Hardened		100-220	0,08-0,12
High alloyed steel	150-250	Annealed	60-100	100-220	0,11-0,19
	150-250	Annealed HSS		100-220	0,11-0,19
	250-350	Hardened tool steel		100-200	0,11-0,18
	250-400	Hardened steel		100-200	0,11-0,17
Stainless steel	150-270	Ferritic, Martensitic 13-25%Cr	60-100	100-200	0,11-0,17
Steel castings	90-225	Unalloyed	60-100	100-200	0,12-0,20
	150-250	Low alloyed (< 5%)		100-150	0,11-0,17

Stainless steel M	150-270	Austenitic Ni > 8%, 18-25% Cr	60-100	100-230	0,09-0,15
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Malleable cast iron K	110-145	Ferritic (short chipping)	60-100	100-200	0,17-0,27
	150-270	Pearlitic (long chipping)	60-100	90-180	0,12-0,20
Grey cast iron	150-220	Low tensile strength	60-100	90-180	0,15-0,25
	200-300	High tensile strength	60-100	90-150	0,14-0,22
Nodular cast iron	125-230	Ferritic	60-100	100-180	0,15-0,25
	200-300	Pearlitic	60-100	90-150	0,14-0,22
Aluminium alloys	75-150	Wrought, solution treated & aged	60-100	150-375	0,17-0,27
	40-100	Cast	60-100	150-375	0,17-0,27
	70-125	Cast, solution treated & aged	60-100	150-375	0,17-0,27
Copper and copper alloys	50-160	Free cutting alloys (pb>1%) Brass and lead bronzes (pb<1%)	60-100	100-160	0,15-0,25