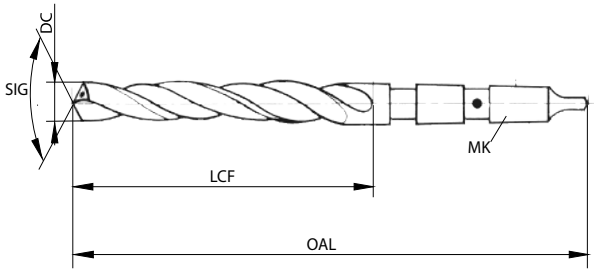
IMPLEMENTS

HSS OVERSIZE MORSE TAPER SHANK DRILLS WITH INTERNAL COOLANT

WIERTŁA HSS ZE WZMOCNIONYM STOŻKIEM MORSE'A Z WEWNĘTRZYNYM CHŁODZENIEM

HSS | RN | 118° | DIN 1412A | Vap-Ox | IK | ≤10xD | h8 | DIN 341 | DIN 346

HSS DRILLS 068
WIERTŁA HSS 068



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	
VDI3323	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	O	O	O	O		O	O	O		O		O	O		O	O	O	O	O	O
ISO	N											S						H		
Material Description	Aluminium wrought alloy		Aluminium-cast, alloyed			Copper and Copper Alloys (Bronze/ Brass)			Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chiled Cast Iron	Hardened Cast Iron
VDI3323	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	400 Rm	1050 Rm	550	630	400	550
Recomended	O	O	O						O								O					

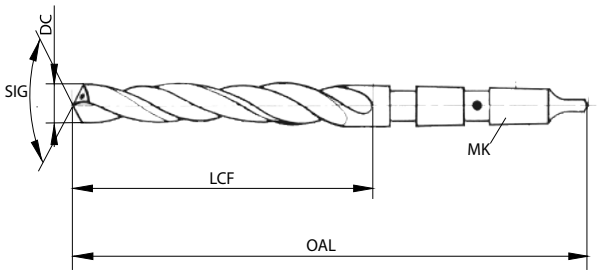
Code Kod	DC h8 mm	OAL mm	LCF mm	MK
0681000	10,00	214	116	MK2
0681025	10,25	214	116	MK2
0681050	10,50	214	116	MK2
0681075	10,75	223	125	MK2
0681100	11,00	223	125	MK2
0681125	11,25	223	125	MK2
0681150	11,50	223	125	MK2
0681175	11,75	223	125	MK2
0681200	12,00	232	134	MK2
0681225	12,25	232	134	MK2
0681250	12,50	232	134	MK2
0681275	12,75	232	134	MK2
0681300	13,00	232	134	MK2
0681325	13,25	232	134	MK2
0681350	13,50	240	142	MK2
0681375	13,75	240	142	MK2
0681400	14,00	240	142	MK2
0681425	14,25	240	142	MK2
0681450	14,50	245	147	MK2
0681475	14,75	245	147	MK2
0681500	15,00	245	147	MK2
0681525	15,25	251	153	MK2
0681550	15,50	251	153	MK2
0681575	15,75	251	153	MK2
0681600	16,00	251	153	MK2
0681625	16,25	257	159	MK2

Code Kod	DC h8 mm	OAL mm	LCF mm	MK
0681650	16,50	257	159	MK2
0681675	16,75	257	159	MK2
0681700	17,00	257	159	MK2
0681725	17,25	263	165	MK2
0681750	17,50	263	165	MK2
0681775	17,75	263	165	MK2
0681800	18,00	263	165	MK2
0681825	18,25	269	171	MK3
0681850	18,50	292	171	MK3
0681875	18,75	292	171	MK3
0681900	19,00	292	171	MK3
0681925	19,25	298	177	MK3
0681950	19,50	298	177	MK3
0681975	19,75	298	177	MK3
0682000	20,00	298	177	MK3
0682050	20,50	305	184	MK3
0682100	21,00	305	184	MK3
0682150	21,50	312	191	MK3
0682200	22,00	312	191	MK3
0682250	22,50	319	198	MK3
0682300	23,00	319	198	MK3
0682350	23,50	319	198	MK3
0682400	24,00	327	206	MK3
0682450	24,50	327	206	MK3
0682500	25,00	327	206	MK3
0682540	25,40	335	214	MK3

Code Kod	DC h8	OAL	LCF	MK
	mm	*mm*	*mm*	
0682550	25,50	335	214	MK3
0682600	26,00	335	214	MK3
0682650	26,50	335	214	MK3
0682700	27,00	371	222	MK4
0682750	27,50	371	222	MK4
0682800	28,00	371	222	MK4
0682850	28,50	379	230	MK4
0682900	29,00	379	230	MK4
0682950	29,50	379	230	MK4
0683000	30,00	379	230	MK4
0683050	30,50	379	230	MK4

Code Kod	DC h8	OAL	LCF	MK
	mm	*mm*	*mm*	
0683100	31,00	388	239	MK4
0683150	31,50	388	239	MK4
0683200	32,00	397	248	MK4
0683300	33,00	397	248	MK4
0683400	34,00	406	257	MK4
0683500	35,00	406	257	MK4
0683600	36,00	406	257	MK4
0683700	37,00	406	257	MK4
0683800	38,00	426	277	MK4
0683900	39,00	426	277	MK4
0684000	40,00	426	277	MK4

HSSCO DRILLS 069, 070
WIERTŁA HSSCO 069,070



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	
VDI3323	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	O	O	O	O		O	O	O		O		O	O	O	O	O	O		O	

ISO	N										S						H			
Material Description	Aluminium wrought alloy		Aluminium-cast, alloyed			Copper and Copper Alloys (Bronze/ Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chiled Cast Iron	Hardened Cast Iron
VDI3323	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	400 Rm	1050 Rm	550	630	400	550
Recomended	O	O	O						O							O					

Code Kod		DC h8	OAL	LCF	MK
		mm	*mm*	*mm*	
0691000	0701000	10,0	214	116	MK2
0691050	0701050	10,5	214	116	MK2
0691100	0701100	11,0	223	125	MK2
0691150	0701150	11,5	223	125	MK2
0691200	0701200	12,0	232	134	MK2
0691250	0701250	12,5	232	134	MK2
0691300	0701300	13,0	232	134	MK2
0691350	0701350	13,5	240	142	MK2
0691400	0701400	14,0	240	142	MK2

Code Kod		DC h8	OAL	LCF	MK
		mm	*mm*	*mm*	
0691450	0701450	14,5	245	147	MK2
0691500	0701500	15,0	245	147	MK2
0691550	0701550	15,5	251	153	MK2
0691600	0701600	16,0	251	153	MK2
0691650	0701650	16,5	257	159	MK2
0691700	0701700	17,0	257	159	MK2
0691750	0701750	17,5	263	165	MK2
0691800	0701800	18,0	263	165	MK2
0691850	0701850	18,5	292	171	MK3

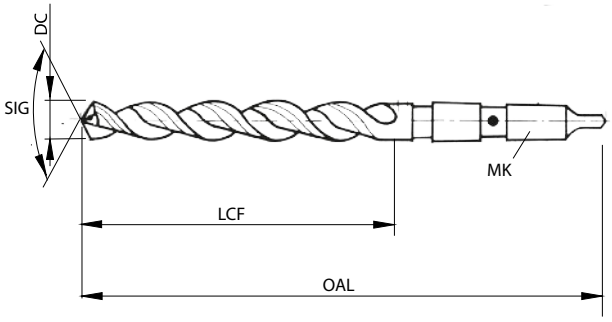
Code / Kod		DC h8	OAL	LCF	MK
		mm	mm	mm	
0691900	0701900	19,0	292	171	MK3
0691950	0701950	19,5	298	177	MK3
0692000	0702000	20,0	298	177	MK3
0692050		20,5	305	184	MK3
0692100		21,0	305	184	MK3
0692150		21,5	312	191	MK3
0692200		22,0	312	191	MK3
0692250		22,5	319	198	MK3
0692300		23,0	319	198	MK3
0692350		23,5	319	198	MK3
0692400		24,0	327	206	MK3
0692450		24,5	327	206	MK3

Code / Kod		DC h8	OAL	LCF	MK
		mm	mm	mm	
0692500		25,0	327	206	MK3
0692550		25,5	335	214	MK3
0692600		26,0	335	214	MK3
0692650		26,5	335	214	MK3
0692700		27,0	371	222	MK4
0692750		27,5	371	222	MK4
0692800		28,0	371	222	MK4
0692850		28,5	379	230	MK4
0692900		29,0	379	230	MK4
0692950		29,5	379	230	MK4
0693000		30,0	379	230	MK4

069 - Vap-Ox > Ø 20
070 TICN/TIALN on demand

HSSCO | RS | 130° | DIN 1412A | 072 - TIN 071 - | IK | ≤10xD | h8 | DIN 1870/1 | DIN 346

HSSCO DRILLS 071, 072
WIERTŁA HSSCO 071, 072



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	
VDI3323	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	O	O	O	O		O	O	O		O		O	O	O	O	O	O		O	

ISO	N										S							H			
Material Description	Aluminium wrought alloy		Aluminium-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
VDI3323	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	400 Rm	1050 Rm	550	630	400	550
Recomended	O	O	O						O							O					

Code / Kod		DC h8	OAL	LCF	MK
		mm	mm	mm	
0711000	0721000	10,0	285	185	MK2
0711050	0721050	10,5	285	185	MK2
0711100	0721100	11,0	300	195	MK2
0711150	0721150	11,5	300	195	MK2
0711200	0721200	12,0	310	205	MK2
0711250	0721250	12,5	310	205	MK2

Code / Kod		DC h8	OAL	LCF	MK
		mm	mm	mm	
0711300	0721300	13,0	310	205	MK2
0711350	0721350	13,5	325	220	MK2
0711400	0721400	14,0	325	220	MK2
0711450	0721450	14,5	340	220	MK2
0711500	0721500	15,0	340	220	MK2
0711550		15,5	355	230	MK2

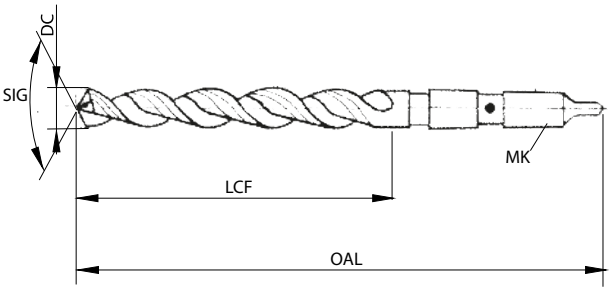
Code / Kod	DC h8	OAL	LCF	MK
	mm	mm	mm	
0711600	16,0	355	230	MK2
0711650	16,5	355	230	MK2
0711700	17,0	355	230	MK2
0711750	17,5	370	245	MK2
0711800	18,0	370	245	MK2
0711850	18,5	370	245	MK3
0711900	19,0	370	245	MK3
0711950	19,5	385	260	MK3
0712000	20,0	385	260	MK3
0712050	20,5	385	260	MK3
0712100	21,0	385	260	MK3
0712150	21,5	405	270	MK3
0712100	21,0	405	270	MK3
0712250	22,5	405	270	MK3
0712300	23,0	405	270	MK3

Code / Kod	DC h8	OAL	LCF	MK
	mm	mm	mm	
0712350	23,5	425	270	MK3
0712400	24,0	440	290	MK3
0712450	24,5	440	290	MK3
0712500	25,0	440	290	MK3
0712550	25,5	440	290	MK3
0712600	26,0	440	290	MK3
0712650	26,5	440	290	MK3
0712700	27,0	460	305	MK4
0712750	27,5	460	305	MK4
0712800	28,0	460	305	MK4
0712850	28,5	460	305	MK4
0712900	29,0	460	305	MK4
0712950	29,5	460	305	MK4
0713000	30,0	460	305	MK4

071 - Vap-Ox > Ø 2
072 TICN/TIALN on demand

HSSCO | RS | 130° | DIN 1412A | IK | ≤10xD | h8 | DIN 1870/2 | DIN 346

HSSCO DRILLS 073
WIERTŁA HSSCO 073



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	
VDI3323	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	O	O	O	O		O	O	O		O		O	O	O	O	O	O		O	

ISO	N										S							H			
Material Description	Aluminium wrought alloy		Aluminium-cast, alloyed			Copper and Copper Alloys (Bronze/ Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chiled Cast Iron	Hardened Cast Iron
VDI3323	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	400 Rm	1050 Rm	550	630	400	550
Recomended	O	O	O						O							O					

Code / Kod	DC h8	OAL	LCF	MK
	mm	mm	mm	
0731400	14,0	410	275	MK2
0731450	14,5	425	275	MK2
0731500	15,0	425	275	MK2
0731550	15,5	445	295	MK2

Code / Kod	DC h8	OAL	LCF	MK
	mm	mm	mm	
0731600	16,0	445	295	MK2
0731650	16,5	445	295	MK2
0731700	17,0	445	295	MK2
0731750	17,5	465	310	MK2

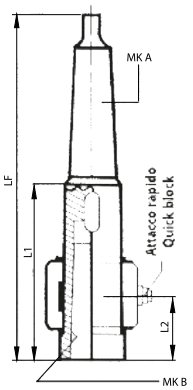
Code Kod	DC h8	OAL	LCF	MK
	mm	*mm*	*mm*	
0731800	18,0	465	310	MK2
0731850	18,5	465	310	MK3
0731900	19,0	465	310	MK3
0731950	19,5	490	325	MK3
0732000	20,0	490	325	MK3
0732100	21,0	490	325	MK3
0732200	22,0	515	345	MK3
0732300	23,0	515	345	MK3
0732400	24,0	555	365	MK3
0732500	25,0	555	365	MK3

Code Kod	DC h8	OAL	LCF	MK
	mm	*mm*	*mm*	
0732600	26,0	555	365	MK3
0732700	27,0	580	385	MK4
0732800	28,0	580	385	MK4
0732900	29,0	580	385	MK4
0733000	30,0	580	385	MK4
0733100	31,0	610	410	MK4
0733200	32,0	635	410	MK4

COOLANT INDUCER SOCKETS
COOLANT INDUCER SOCKETS

for taper shank twist drills with internal cooling
do wierteł z wewnętrznym chłodzeniem

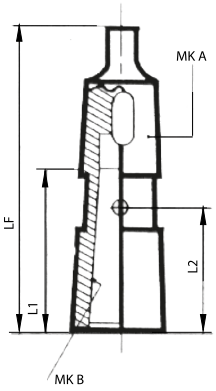
Code Kod	LF	L1	L2	MK A	MK B
	mm	*mm*	*mm*		
CM2CM20175	175	80	30	MK2	MK2
CM3CM30215	215	110	30	MK3	MK3
CM4CM40265	265	135	49	MK4	MK4



MORSE TAPER ADAPTERS
MORSE TAPER ADAPTERS

for taper shank twist drills with internal cooling
do wierteł z wewnętrznym chłodzeniem

Code Kod	LF	L1	L2	MK A	MK B
	mm	*mm*	*mm*		
CM2CM10092	92	47	32	MK2	MK1
CM3CM10099	99	47	32	MK3	MK1
CM3CM20112	112	57	43	MK3	MK2
CM4CM10120	120	50	33	MK4	MK1
CM4CM20122	122	56	40	MK4	MK2
CM4CM30136	136	70	49	MK4	MK3



TECHNICAL DATA
DANE TECHNICZNE

Materials Materiał

HSS - high speed steel (AISI M2) HSSCO - high speed steel with 5% cobalt (AISI M35)
HSS - stal szybkotnąca (AISI M2) HSSCO - stal szybkotnąca z domieszką 5% kobaltu (AISI M35)

Type Typ

Twist drills have different types and different sharpenings. The main types are four and could be recognized by helix inclination. Letters R or L before the letters of the type signify respectively right or left hand.
Wiertła kręte mają różne typy i różne ostrzenia. Są cztery główne typy i można je rozpoznać po nachyleniu helisy. Litery R lub L przed literami typu oznaczają odpowiednio prawą lub lewą stronę.


Type H


Type N


Type S


Type W

Point angle SIG Kąt wierzchołkowy SIG

The most common point angles are 118°-120° and 130°-140; the first one is usually adopted on types N and H, the second one on types W and S.
Najczęstsze kąty to 118°-120° i 130°-140; pierwszy z nich jest zwykle przyjmowany dla typów N i H, drugi dla typów W i S-

Point shape Point shape

A- DIN1412A Web thinning. It reduces the web thickness therefore the penetration pressure and gets better cutting conditions. Used for long series.
A- DIN1412A Web thinning. It reduces the web thickness therefore the penetration pressure and gets better cutting conditions. Used for long series

ISO	VDI 3323	Material description	Vc	Parameter	Drill Diameter (mm)						
					10.0	13.0	16.0	18.0	20.0	30.0	40.0
P	1	Non alloy steel	30	RPM	950	730	600	530	480	320	240
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
	2		25	RPM	800	610	500	440	400	270	200
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
	3		20	RPM	640	490	400	350	320	210	160
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
	4		15	RPM	640	370	300	270	240	160	120
				FEED	0.03-0.06	0.04-0.10	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18	0.14-0.20
	6		25	RPM	800	610	500	440	400	270	200
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
	7	Low alloy steel	20	RPM	640	490	400	350	320	210	160
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
	8		15	RPM	640	370	300	270	240	160	120
				FEED	0.03-0.06	0.04-0.10	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18	0.14-0.20
	10	High alloyed steel, and tool steel	15	RPM	480	370	300	270	240	160	120
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
M	12	Stainless steel	20	RPM	640	490	400	350	320	210	160
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
	13		15	RPM	480	370	300	270	240	160	120
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
K	15	Grey cast iron	30	RPM	950	730	600	530	480	320	240
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
	16		25	RPM	800	610	500	440	400	270	200
				FEED	0.03-0.06	0.04-0.10	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18	0.14-0.20
	17	Nodular cast iron	30	RPM	950	730	600	530	480	320	240
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
	18		20	RPM	900	490	400	350	320	210	160
				FEED	0.11-0.15	0.04-0.10	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18	0.14-0.20
	19	Malleable cast iron	25	RPM	800	610	500	440	400	270	200
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
	20		20	RPM	900	490	400	350	320	210	160
				FEED	0.11-0.15	0.04-0.10	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18	0.14-0.20
N	21	Aluminium wrought alloy	55	RPM	1750	1350	1090	970	880	580	440
				FEED	0.14-0.20	0.16-0.22	0.18-0.24	0.20-0.28	0.20-0.30	0.28-0.38	0.32-0.42
	22		55	RPM	1750	1350	1090	970	880	580	440
				FEED	0.14-0.20	0.16-0.22	0.18-0.24	0.20-0.28	0.20-0.30	0.28-0.38	0.32-0.42
	23	Aluminium-cast alloyed	40	RPM	1270	980	800	710	640	420	320
				FEED	0.14-0.20	0.16-0.22	0.18-0.24	0.20-0.28	0.20-0.30	0.28-0.38	0.32-0.42
	29	Non metallic materials	20	RPM	640	490	400	350	320	210	160
				FEED	0.11-0.15	0.11-0.17	0.12-0.18	0.14-0.20	0.19-0.25	0.22-0.28	0.24-0.30
S	36	Titanium Alloys	10	RPM	320	240	200	180	160	110	80
				FEED	0.05-0.09	0.06-0.10	0.05-0.11	0.06-0.12	0.09-0.13	0.12-0.18	0.14-0.20

IMPLEMENTS

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