

**THD209 - NAWIERTAKI WĘGLIKOWE 90°, Z = 2**

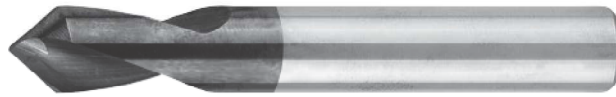
**THD209 - SPOTTING DRILLS 90°, Z = 2**

**THD212 - NAWIERTAKI WĘGLIKOWE 120°, Z = 2**

**THD212 - SPOTTING DRILLS 120°, Z = 2**

**THD214 - NAWIERTAKI WĘGLIKOWE 142°, Z = 2**

**THD214 - SPOTTING DRILLS 142°, Z = 2**



## Parametry narzędzi / Tools parameters

Kod	d [mm]	l [mm]	L [mm]
THD209-0300-FN	3	9,5	38
THD209-0400-FN	4	10,5	40
THD209-0500-FN	5	16,0	50
THD209-0600-FN	6	16,0	57
THD209-0800-FN	8	21,5	63
THD209-1000-FN	10	24,0	72
THD209-1200-FN	12	24,0	83
THD209-1600-FN	16	25,0	92

Kod	d [mm]	l [mm]	L [mm]
THD212-0300-FN	3	9,5	38
THD212-0400-FN	4	10,5	40
THD212-0500-FN	5	16,0	50
THD212-0600-FN	6	16,0	57
THD212-0800-FN	8	21,5	63
THD212-1000-FN	10	24,0	72
THD212-1200-FN	12	24,0	83
THD212-1600-FN	16	25,0	92

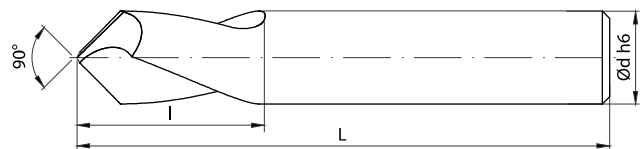
Kod	d [mm]	l [mm]	L [mm]
THD214-0300-FN	3	9,5	38
THD214-0400-FN	4	10,0	40
THD214-0500-FN	5	16,0	50
THD214-0600-FN	6	16,0	57
THD214-0800-FN	8	21,5	63
THD214-1000-FN	10	24,0	72
THD214-1200-FN	12	24,0	83
THD214-1600-FN	16	25,0	92

**Zalecane parametry skrawania**  
**- prosimy o kontakt z biurem TOOLS**  
**Cutting data - please contact with TOOLS office**

NORMA TOOLS TOOLS NORM
HM
Z=2
90°
20°
FUTURA NANO

EMULSJA EMULSION
POWIETRZE AIR
MGĘA OLEJOWA OIL MIST

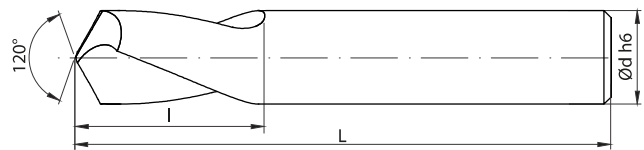
Stale/Steels < 1450 N/mm<sup>2</sup>
Żeliwo szare Grey cast iron < 180 HB
Stale/Steels 12% Cr
ALU > 6% Si
Żeliwo sferoidalne Spheroidal cast iron



NORMA TOOLS TOOLS NORM
HM
Z=2
120°
20°
FUTURA NANO

EMULSJA EMULSION
POWIETRZE AIR
MGĘA OLEJOWA OIL MIST

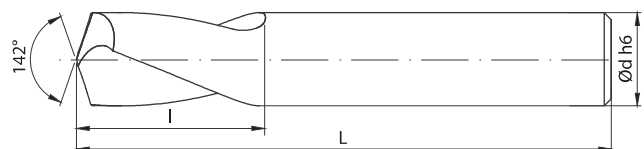
Stale/Steels < 1450 N/mm<sup>2</sup>
Żeliwo szare Grey cast iron < 180 HB
Stale/Steels 12% Cr
ALU > 6% Si
Żeliwo sferoidalne Spheroidal cast iron



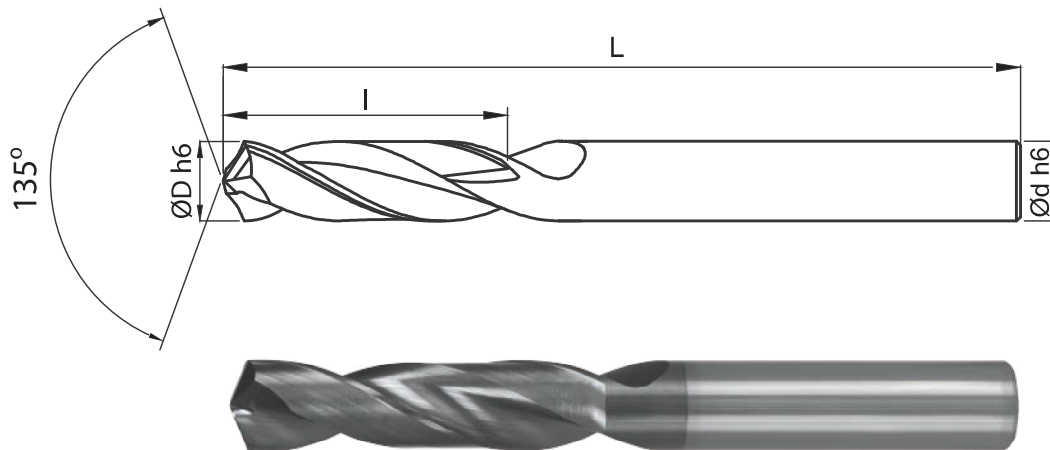
NORMA TOOLS TOOLS NORM
HM
Z=2
142°
20°
FUTURA NANO

EMULSJA EMULSION
POWIETRZE AIR
MGĘA OLEJOWA OIL MIST

Stale/Steels < 1450 N/mm<sup>2</sup>
Żeliwo szare Grey cast iron < 180 HB
Stale/Steels 12% Cr
ALU > 6% Si
Żeliwo sferoidalne Spheroidal cast iron



## THD 113 - WIERTŁA 3XD, Z=2 DRILLS 3XD, Z=2



### Zalecane parametry wiercenia / Cutting data

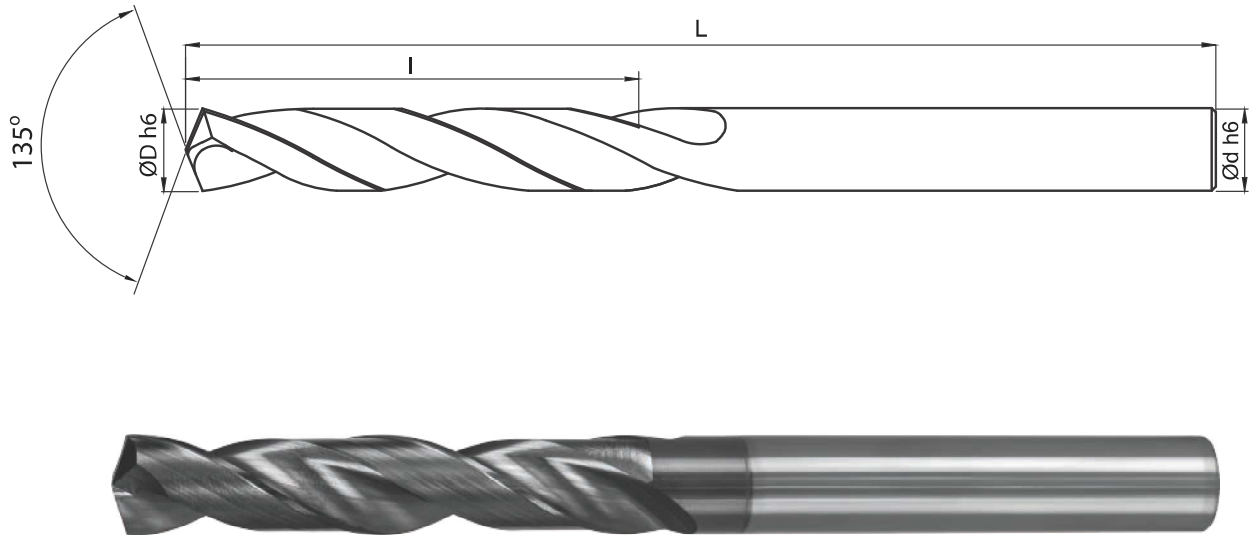
Kod	D [mm]	d [mm]	l [mm]	L [mm]	Stale niestopowe Non alloyed steels <800 N/mm <sup>2</sup>			Stale niskostopowe Low alloyed steels <1000 N/mm <sup>2</sup> Żeliwa szare / Grey cast iron <180 HB			Stale wysokostopowe Highly alloyed steels <1200 N/mm <sup>2</sup>		
					n [obr/min]	Vc [m/min]	f [mm/obr]	n [obr/min]	Vc [m/min]	f [mm/obr]	n [obr/min]	Vc [m/min]	f [mm/obr]
THD113-0250-FNT	2,50	3	8,5	50	15 279	120	0,10-0,14	15 279	120	0,08-0,12	12 096	95	0,06-0,10
THD113-0300-FNT	3,00	3	10,5	50	12 732	120	0,12-0,16	12 732	120	0,10-0,14	10 080	95	0,08-0,12
THD113-0330-FNT	3,30	4	11,5	50	12 057	125	0,12-0,16	11 575	120	0,10-0,14	9 646	100	0,08-0,12
THD113-0400-FNT	4,00	4	14,0	50	9 947	125	0,14-0,18	9 549	120	0,12-0,16	7 958	100	0,10-0,14
THD113-0420-FNT	4,20	5	14,5	50	9 474	125	0,14-0,18	9 095	120	0,12-0,16	7 579	100	0,10-0,14
THD113-0500-FNT	5,00	5	17,5	62	8 276	130	0,14-0,18	7 639	120	0,12-0,16	6 685	105	0,10-0,14
THD113-0600-FNT	6,00	6	21,0	66	6 897	130	0,20-0,24	6 366	120	0,18-0,22	5 570	105	0,16-0,20
THD113-0680-FNT	6,80	8	23,5	75	6 085	130	0,20-0,24	5 617	120	0,18-0,22	4 915	105	0,16-0,20
THD113-0800-FNT	8,00	8	28,0	75	5 173	130	0,21-0,25	4 775	120	0,19-0,23	4 178	105	0,17-0,21
THD113-0850-FNT	8,50	10	29,5	90	5 056	135	0,21-0,25	4 494	120	0,19-0,23	4 119	110	0,17-0,21
THD113-1000-FNT	10,00	10	35,0	90	4 297	135	0,25-0,29	3 501	110	0,23-0,27	3 501	110	0,21-0,25
THD113-1020-FNT	10,20	12	35,5	100	4 213	135	0,25-0,29	3 433	110	0,23-0,27	3 433	110	0,21-0,25
THD113-1200-FNT	12,00	12	42,0	100	3 581	135	0,24-0,28	2 918	110	0,22-0,26	2 918	110	0,20-0,24

Istnieje możliwość zamówienia wiertła bez powłoki. Kod THD 113 - średnica.  
It's possible to order drills without coating. Code THD 113 - diameter.

## THD 115 - WIERTŁA 5XD, Z=2 DRILLS 5XD, Z=2



UWAGA - zalecamy wiercenie w cyklu z odwiórowywaniem.  
REMARK - we advice pecking cycle.

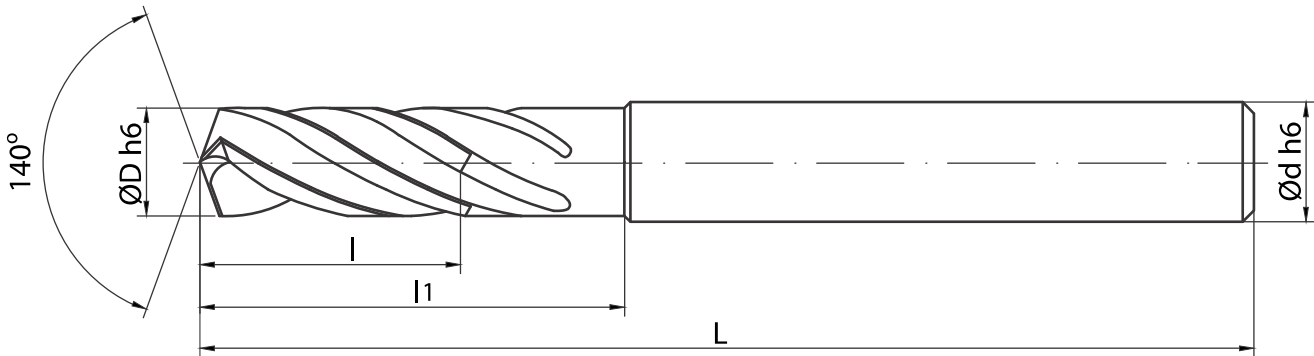
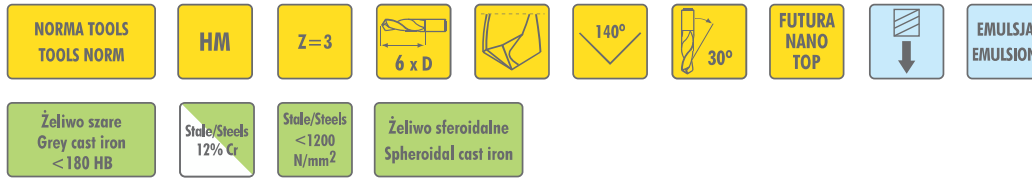


### Zalecane parametry wiercenia / Cutting data

Kod	D [mm]	d [mm]	l [mm]	L [mm]	Stale niestopowe Non alloyed steels <800 N/mm <sup>2</sup>			Stale niskostopowe Low alloyed steels <1000 N/mm <sup>2</sup> Żeliwo szare / Grey cast iron <180 HB			Stale wysokostopowe Highly alloyed steels <1200 N/mm <sup>2</sup>		
					n [obr/min]	Vc [m/min]	f [mm/obr]	n [obr/min]	Vc [m/min]	f [mm/obr]	n [obr/min]	Vc [m/min]	f [mm/obr]
THD115-0300-FNT	3,00	3	16,5	61	12 096	114	0,10-0,14	10 823	102	0,08-0,12	9 443	89	0,07-0,11
THD115-0330-FNT	3,30	4	18,0	60	11 454	119	0,10-0,14	9 839	102	0,08-0,12	9 043	94	0,07-0,11
THD115-0400-FNT	4,00	4	22,0	60	9 450	119	0,12-0,16	8 594	108	0,10-0,14	7 460	94	0,08-0,12
THD115-0420-FNT	4,20	5	23,0	75	9 000	119	0,12-0,16	8 185	108	0,10-0,14	7 105	94	0,08-0,12
THD115-0500-FNT	5,00	5	27,5	75	7 862	124	0,12-0,16	6 112	96	0,10-0,14	6 271	99	0,08-0,12
THD115-0600-FNT	6,00	6	33,0	80	6 552	124	0,17-0,21	4 775	90	0,15-0,19	5 226	99	0,13-0,17
THD115-0680-FNT	6,80	8	37,5	100	5 781	124	0,17-0,21	4 213	90	0,15-0,19	4 611	99	0,13-0,17
THD115-0800-FNT	8,00	8	44,0	100	4 914	124	0,18-0,22	4 058	102	0,16-0,20	3 919	99	0,14-0,18
THD115-0850-FNT	8,50	10	46,5	110	4 803	128	0,18-0,22	3 820	102	0,16-0,20	3 867	103	0,14-0,18
THD115-1000-FNT	10,00	10	55,0	110	4 082	128	0,21-0,25	3 326	105	0,19-0,23	3 287	103	0,18-0,22
THD115-1020-FNT	10,20	12	56,0	150	4 002	128	0,21-0,25	3 261	105	0,19-0,23	3 222	103	0,18-0,22
THD115-1200-FNT	12,00	12	66,0	150	3 402	128	0,20-0,24	2 918	110	0,18-0,22	2 739	103	0,17-0,21

Istnieje możliwość zamówienia wiertel bez powłoki. Kod THD 115 - średnica.  
It's possible to order drills without coating. Code THD 115 - diameter.

## THD136 - WIERTŁA DO OBRÓBKI MATERIAŁÓW DO 38 HRC, Z = 3 DRILLS FOR FOR MATERIALS UP TO 38 HRC, Z=3



### Parametry narzędzi / Tools parameters

Kod	D [mm]	d [mm]	l [mm]	l1 [mm]	L [mm]
THD136-0300-FNT	3,00	3	20	-	60
THD136-0330-FNT	3,30	4	21	30	60
THD136-0400-FNT	4,00	4	26	-	60
THD136-0420-FNT	4,20	5	27	38	80
THD136-0500-FNT	5,00	5	33	-	80
THD136-0600-FNT	6,00	6	39	-	80
THD136-0680-FNT	6,80	8	44	61	100
THD136-0800-FNT	8,00	8	52	-	100
THD136-0850-FNT	8,50	10	55	77	120
THD136-1000-FNT	10,00	10	65	-	120
THD136-1020-FNT	10,20	12	66	92	150
THD136-1200-FNT	12,00	12	78	-	150

Zalecane parametry skrawania - prosimy o kontakt z biurem TOOLS  
Cutting data - please contact with TOOLS office