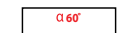
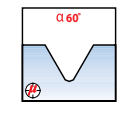
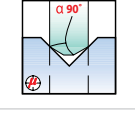
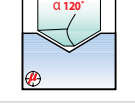


ดอกนำเจาะ

ประเภท และ ตัวเลือก

Tool Types and selections



Type				Material & Coating							Page
				HSS	HSSE	TIN	HSSE8	Red'X	Carbide	Hard'X	
NC Drills	Duo Mag			-	-	-	✓	✓	-	-	36
	Combi Mag			-	-	-	-	✓	-	-	37
	60°			-	✓	-	-	-	-	-	44
	90°			✓	✓	✓	-	✓	✓	✓	38 - 46
	120°			✓	✓	✓	-	✓	✓	✓	39 - 47
	140°			-	-	-	-	-	-	✓	42

วัสดุและการชุบ – Materials and Coating

วัสดุ Material	H	H5	H8	C	TIN	RED'X	HARD'X
	HSS	HSSE (HSSE Cobalt 5%)	HSSE8 (HSSE Cobalt 8%)	Carbide	TIN Coating	Red'X Coating	Hard'X Coating
ความแข็ง Hardness	63HRC	65HRC	67HRC	1800HV	+2300HV	+3500HV	+3500HV (for carbide)



= วัสดุหลัก | Base Material



= วัสดุชุบ | Coating Material

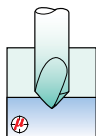
DUO-MAG Double NC Drill – ดอกนำเจาะสองหัว

DUO-mag

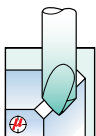
ประหยัดกว่าด้วยดอกนำเจาะสองหัวในชิ้นเดียว
Double value with two-sided NC-Drill.



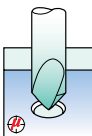
Tolerance	
D	h7
d	±0.2
L	±1



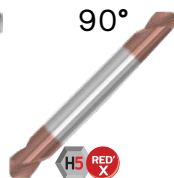
CENTERING



EDGE CHAMFERING



CHAMFERING



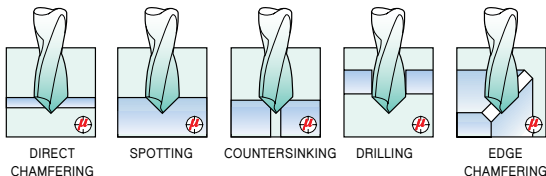
D x d	L	Order Code			
		Angle 60°		Angle 90°	
		HSSE	HSSE+Red'X	HSSE	HSSE+Red'X
		Model 06016	Model 060916	Model 06019	Model 060919
3.0 x 0.5	40	06016030500	06091603050	06019030500	06091903050
4.0 x 1.0	45	06016041000	06091604100	06019041000	06091904100
6.0 x 2.0	55	06016062000	06091606200	06019062000	06091906200
8.0 x 2.5	65	06016082500	06091608250	06019082500	06091908250
10.0 x 3.0	75	06016103000	06091610300	06019103000	06091910300
12.0 x 3.5	85	06016123500	06091612350	06019123500	06091912350
16.0 x 4.0	90	06016164000	06091616400	06019164000	06091916400
20.0 x 5.0	100	06016205000	06091620500	06019205000	06091920500
3.0 x 0.5		06016L03050	060916L0305	06019L03050	060919L0305
4.0 x 1.0		06016L04100	060916L0410	06019L04100	060919L0410
6.0 x 2.0		06016L06200	060916L0620	06019L06200	060919L0620
8.0 x 2.5		06016L08250	060916L0825	06019L08250	060919L0825
10.0 x 3.0		06016L10300	060916L1030	06019L10300	060919L1030
12.0 x 3.5		06016L12350	060916L1235	06019L12350	060919L1235
8.0 x 2.5	150	06016XL0825	060916XL0825	06019XL0825	060919XL0825
10.0 x 3.0		06016XL1030	060916XL103	06019XL1030	060919XL103
12.0 x 3.5		06016XL1235	060916XL1235	06019XL1235	060919XL1235
16.0 x 4.0		06016XL1640	060916XL164	06019XL1640	060919XL164
20.0 x 5.0		06016XL2050	060916XL205	06019XL2050	060919XL205

ดอกนำเจาะ

COMBI-MAG Multi Function NC Drill – ดอกนำเจาะมัลติฟังก์ชัน

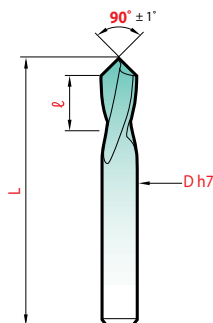
COMBI-mag

ดอกนำเจาะที่พัฒนาให้แข็งแรงขึ้นจนสามารถทำได้มากกว่าเจาะนำ
An improved NC Drill that can perform multiple jobs.



D		L	ℓ	T (Web Thickness)	Order Code
mm	inch				HSS+Red'X Model 06007
3		50	6	0.3	06007030000
3.17	1/8"	50	6	0.3	06007031700
4		52	8	0.4	06007040000
4.76	3/16"	60	9	0.5	06007047600
5		60	10	0.5	06007050000
6		66	12	0.6	06007060000
6.35	1/4"	66	12	0.6	06007063500
7.93	5/16"	79	14	0.8	06007079300
8		79	14	0.8	06007080000
9.52	3/8"	89	16	1.0	06007095200
10		89	16	1.0	06007100000
12		102	18	1.2	06007120000
12.7	1/2"	102	19	1.3	06007127000
14		115	21	1.4	06007140000
15.87	5/8"	115	24	1.6	06007158700
16		115	24	1.6	06007160000

Tolerance	
D	h7
L	±1
ℓ	±1



SET BOX



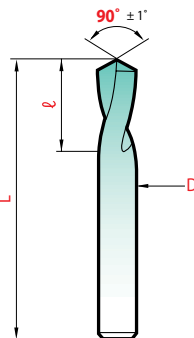
Order Code	Type	Angle	Includes
			1 pc each
06019000001	Duo-Mag	90°	Ø3 / 4 / 6 / 8 / 10 / 12
06091900001			Ø3 / 4 / 6 / 8 / 10 / 12
06007000001	Combi-Mag		Ø4 / 5 / 6 / 8 / 10 / 12

NC Drill (90°) – ดอกนำเจาะ



D		L	ℓ	Order Code			
				HSS	HSSE	HSSE+Tin	HSSE+Red'X
mm	inch			Model 06190	Model 06195	Model 060895	Model 060995
2		49	8		06195020000	06089502000	06099502000
3		50	10	06190030000	06195030000	06089503000	06099503000
3.17	1/8"	50	10		06195031700	06089503170	06099503170
4		52	12	06190040000	06195040000	06089504000	06099504000
4.76	3/16"	60	15	06190050000	06195050000	06089505000	06099505000
5		60	15	06190050000	06195050000	06089505000	06099505000
6		66	20	06190060000	06195060000	06089506000	06099506000
6.35	1/4"	66	22		06195063500	06089506350	06099506350
7.93	5/16"	79	25		06195079300	06089507930	06099507930
8		79	25	06190080000	06195080000	06089508000	06099508000
9.52	3/8"	89	25		06195095200	06089509520	06099509520
10		89	25	06190100000	06195100000	06089510000	06099510000
12		102	30	06190120000	06195120000	06089512000	06099512000
12.7	1/2"	102	35		06195127000	06089512700	06099512700
14		115	35		06195140000	06089514000	06099514000
15.87	5/8"	115	35		06195158700	06089515870	06099515870
16		115	35	06190160000	06195160000	06089516000	06099516000
18		130	40		06195180000	06089518000	06099518000
19.05	3/4"	131	40		06195190500	06089519050	06099519050
20		131	40	06190200000	06195200000	06089520000	06099520000
25		138	45		06195250000	06089525000	06099525000
25.4	1"	138	45		06195254000	06089525400	06099525400

Standards	90°
	NFE 66052
	ISO 10898
Tolerance	
D	h6
L	±1
ℓ	+1



SET BOX



Order Code	Angle	Includes
		1 pc each
06195000000	90°	Ø4 / 5 / 6 / 8 / 10 / 12
06089500000		
06099500000		

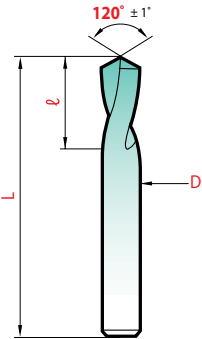
ดอกนำเจาะ

NC Drill (120°) – ดอกนำเจาะ



D		L	ℓ	Order Code		
				HSSE	HSSE+TiN	HSSE+Red'X
mm	inch			Model 06196	Model 060896	Model 060996
2		49	8	06196020000	06089602000	06099602000
3		50	10	06196030000	06089603000	06099603000
3.17	1/8"	50	10	06196031700	06089603170	06099603170
4		52	12	06196040000	06089604000	06099604000
4.76	3/16"	60	15	06196047600	06089604760	06099604760
5		60	15	06196050000	06089605000	06099605000
6		66	20	06196060000	06089606000	06099606000
6.35	1/4"	66	22	06196063500	06089606350	06099606350
8		79	25	06196080000	06089608000	06099608000
9.52	3/8"	89	25	06196095200	06089609520	06099609520
10		89	25	06196100000	06089610000	06099610000
12		102	30	06196120000	06089612000	06099612000
12.7	1/2"	102	35	06196127000	06089612700	06099612700
14		115	35	06196140000	06089614000	06099614000
15.87	5/8"	115	35	06196158700	06089615870	06099615870
16		115	35	06196160000	06089616000	06099616000
18		130	40	06196180000	06089618000	06099618000
19.05	3/4"	131	40	06196190500	06089619050	06099619050
20		131	40	06196200000	06089620000	06099620000
25		138	45	06196250000	06089625000	06099625000
25.4	1"	138	45	06196254000	06089625400	06099625400

Standards	120°
	NFE 66052 ISO 10898
Tolerance	
D	h6
L	±1
ℓ	+1



SET BOX

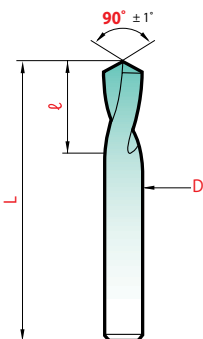


Order Code	Angle	Includes
		1 pc each
06196000000	120°	Ø4 / 5 / 6 / 8 / 10 / 12
06089600000		
06099600000		

Carbide NC Drill (90°) – ดอกนำเจาะ คาร์ไบด์



D h5		L	ℓ	Order Code	
				Carbide	Carbide+Hard'X
				Model 068195	Model 068195H
mm	inch				
2		40	8	06819502000	068195H0200
3		45	10	06819503000	068195H0300
4		50	12	06819504000	068195H0400
5		50	15	06819505000	068195H0500
6		50	18	06819506000	068195H0600
6.35	1/4"	50	18	06819506350	068195H0635
7.93	5/16"	60	23	06819507930	068195H0793
8		60	23	06819508000	068195H0800
9.52	3/8"	70	24	06819509520	068195H0952
10		70	24	06819510000	068195H1000
12		70	24	06819512000	068195H1200
12.7	1/2"	70	24	06819512700	068195H1270
14		75	24	06819514000	068195H1400
15.87	5/8"	80	26	06819515870	068195H1587
16		80	26	06819516000	068195H1600
20		100	35	06819520000	068195H2000



Standards	90°
	Magafor Standard
Tolerance	
D	h5
L	±1
ℓ	+1

NC Drills

SET BOX



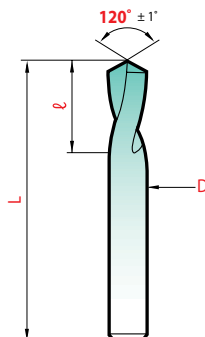
Order Code	Angle	Includes
		1 pc each
06819500000	90°	Ø4 / 5 / 6 / 8 / 10 / 12
068195H0000		

ดอกนำเจาะ

Carbide NC Drill (120°) – ดอกนำเจาะ คาร์ไบต์



D		L	ℓ	Order Code	
				Carbide	Carbide+Hard'X
				Model 068196	Model 068196H
mm	inch				
2		40	8	06819602000	068196H0200
3		45	10	06819603000	068196H0300
4		50	12	06819604000	068196H0400
5		50	15	06819605000	068196H0500
6		50	18	06819606000	068196H0600
6.35	1/4"	50	18	06819606350	068196H0635
8		60	23	06819608000	068196H0800
9.52	3/8"	70	24	06819609520	068196H0952
10		70	24	06819610000	068196H1000
12		70	24	06819612000	068196H1200
12.7	1/2"	70	24	06819612700	068196H1270
14		75	24	06819614000	068196H1400
15.87	5/8"	80	26	06819615870	068196H1587
16		80	26	06819616000	068196H1600
20		100	35	06819620000	068196H2000



Standards	120°
	Magafor Standard
Tolerance	
D	h5
L	±1
ℓ	+1

SET BOX

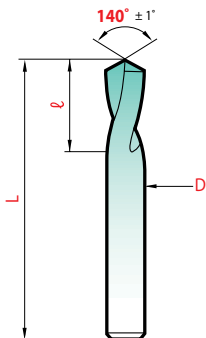


Order Code	Angle	Includes
		1 pc each
06819600000	120°	Ø4 / 5 / 6 / 8 / 10 / 12
068196H0000		

Carbide NC Drill (140°) – ดอกนำเจาะ คาร์ไบต์



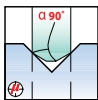
D		L	ℓ	Order Code	
mm	inch			Carbide+Hard'X	Model 068190H
6		50	18	068190H0600	
6.35	1/4"	50	18	068190H0635	
8		60	23	068190H0800	
9.52	3/8"	70	24	068190H0952	
10		70	24	068190H1000	
12		70	24	068190H1200	
12.7	1/2"	70	24	068190H1270	
15.87	5/8"	80	26	068190H1587	
16		80	26	068190H1600	



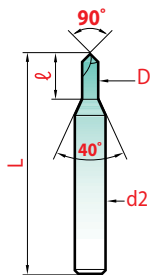
Standards	140°
	Magafor Standard
Tolerance	
D	h5
L	±1
ℓ	+1

NC Drills

Miro NC Drill – ดอกนำเจาะขนาดเล็ก



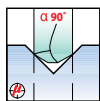
D	d	L	ℓ	Order Code	
				Carbide	Carbide+Hard'X
				Model 06819D	Model 06819DH
0.3	3	39	0.9	06819D00300	06819DH0030
0.6	3	39	1.8	06819D00600	06819DH0060
0.9	3	39	2.7	06819D00900	06819DH0090
1.2	3	39	3.6	06819D01200	06819DH0120
1.5	3	39	4.5	06819D01500	06819DH0150
2.0	3	39	6.0	06819D02000	06819DH0200
2.5	3	39	7.5	06819D02500	06819DH0250



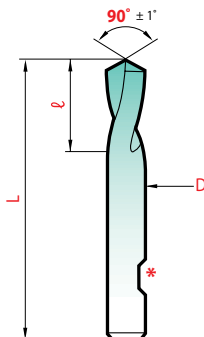
Standards	90°
	Magafor Standard
Tolerance	
D	+0.01
d2	h5
L	±1
ℓ	+1

ดอกนำเจาะ

Weldon (Side Lock) Shank NC Drill (90°) – ดอกนำเจาะ

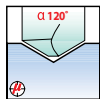


D	L	ℓ	Order Code		
			HSSE	HSSE+TiN	HSSE+Red'X
			Model 06195W	Model 060895W	Model 060995W
6	66	20	06195W06000	060895W0600	060995W0600
8	79	25	06195W08000	060895W0800	060995W0800
10	89	25	06195W10000	060895W1000	060995W1000
12	102	30	06195W12000	060895W1200	060995W1200
16	115	35	06195W16000	060895W1600	060995W1600
20	131	40	06195W20000	060895W2000	060995W2000

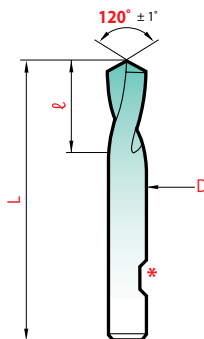


Standards	90°
	NFE 66052 ISO 10898 *DIN 6535 HB
Tolerance	
D	h6
L	±1
ℓ	+1

Weldon (Side Lock) Shank NC Drill (120°) – ดอกนำเจาะ



D	L	ℓ	Order Code		
			HSSE	HSSE+TiN	HSSE+Red'X
			Model 06196W	Model 060896W	Model 060996W
6	66	20	06196W06000	060896W0600	060996W0600
8	79	25	06196W08000	060896W0800	060996W0800
10	89	25	06196W10000	060896W1000	060996W1000
12	102	30	06196W12000	060896W1200	060996W1200
16	115	35	06196W16000	060896W1600	060996W1600
20	131	40	06196W20000	060896W2000	060996W2000

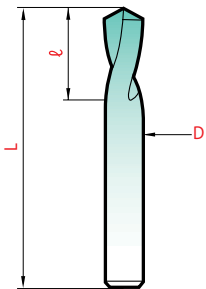
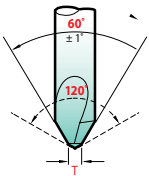


Standards	120°
	NFE 66052 ISO 10898 *DIN 6535 HB
Tolerance	
D	h6
L	±1
ℓ	+1

NC Drill (60°) – ดอกนำเจาะ



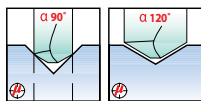
D	L	ℓ	T	Order Code
				HSSE
				Model 06191
4	52	12	0.8	06191040000
5	60	15	0.9	06191050000
6	66	20	1.0	06191060000
8	79	25	1.3	06191080000
10	89	25	1.6	06191100000
12	102	30	2.0	06191120000
16	115	35	3.0	06191160000
20	131	40	3.5	06191200000



Standards	60°
	Magafor Standard
Tolerance	
D	h6
L	±1
ℓ	+1

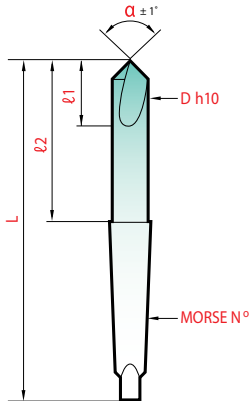
ดอกนำเจาะ

NC Drill with Morse Taper Shank – ดอกนำเจาะ ก้านเทเปอร์



D	L	f1	f2	Morse Taper	Order Code
					HSSE
					Model 06198
10	130	25	64	MT1	06198100000
12	130	30	64	MT1	06198120000
16	148	35	68	MT2	06198160000
20	148	40	68	MT2	06198200000
25	171	45	72	MT3	06198250000

90°



Standards	90°
	Magafor Standard

Tolerance	
D	h10
L	±1
f1	+1
f2	+1

D	L	f1	f2	Morse Taper	Order Code
					HSSE
					Model 061906
10	130	25	64	MT1	06190610000
12	130	30	64	MT1	06190612000
16	148	35	68	MT2	06190616000
20	148	40	68	MT2	06190620000
25	171	45	72	MT3	06190625000

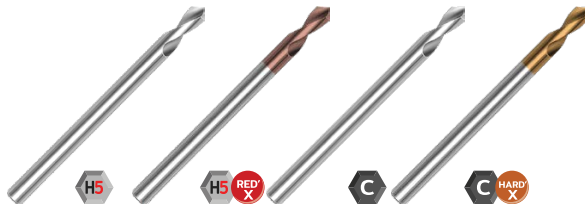
120°

Standards	120°
	Magafor Standard

Tolerance	
D	h10
L	±1
f1	+1
f2	+1

NC Drills

Long NC Drill (90°) – ดอกนำเจาะ ร่นยาว



! *Carbide D = h5

D		L	ℓ	Order Code			
				HSSE	HSSE+Red'X	Carbide	Carbide+Hard'X
				Model 06197	Model 060997	Model 068197	Model 068197H
mm	inch						
2		60	8			06819702000	068197H0200
3		80	10	06197030000	06099703000	06819703000	068197H0300
4		100	12	06197040000	06099704000	06819704000	068197H0400
5		120	15	06197050000	06099705000	06819705000	068197H0500
6		140	20	06197060000	06099706000	06819706000	068197H0600
6.35	1/4"	140	22	06197063500	06099706350	06819706350	068197H0635
8		140	25	06197080000	06099708000	06819708000	068197H0800
9.52	3/8"	170	25	06197095200	06099709520	06819709520	068197H0952
10		170	25	06197100000	06099710000	06819710000	068197H1000
12		170	30	06197120000	06099712000	06819712000	068197H1200
12.7	1/2"	170	35	06197127000	06099712700	06819712700	068197H1270
15.87	5/8"	200	35	06197158700	06099715870	06819715870	068197H1587
16		200	35	06197160000	06099716000	06819716000	068197H1600
19.05	3/4"	200	40	06197190500	06099719050	06819719050	068197H1905
20		200	40	06197200000	06099720000	06819720000	068197H2000
25.4	1"	200	45	06197200000			

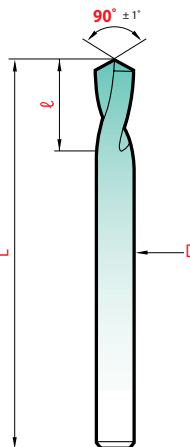
Standards

90°

Magafor
Standard

Tolerance

D	h6 (h5*)
L	±1
ℓ	+1



NC Drills

ดอกนำเจาะ

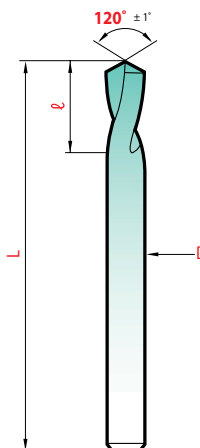
Long NC Drill (120°) – ดอกนำเจาะ ร่นยาว



! *Carbide D = h5

D		L	ℓ	Order Code			
				HSSE	HSSE+Red'X	Carbide	Carbide+Hard'X
				Model 06199	Model 060999	Model 068199	Model 068199H
mm	inch						
2		60	8			06819902000	068199H0200
3		80	10	06199030000	06099903000	06819903000	068199H0300
4		100	12	06199040000	06099904000	06819904000	068199H0400
5		120	15	06199050000	06099905000	06819905000	068199H0500
6		140	20	06199060000	06099906000	06819906000	068199H0600
6.35	1/4"	140	22	06199063500	06099906350	06819906350	068199H0635
8		140	25	06199080000	06099908000	06819908000	068199H0800
9.52	3/8"	170	25	06199095200	06099909520	06819909520	068199H0952
10		170	25	06199100000	06099910000	06819910000	068199H1000
12		170	30	06199120000	06099912000	06819912000	068199H1200
12.7	1/2"	170	35	06199127000	06099912700	06819912700	068199H1270
15.87	5/8"	200	35	06199158700	06099915870	06819915870	068199H1587
16		200	35	06199160000	06099916000	06819916000	068199H1600
19.05	3/4"	200	40	06199190500	06099919050	06819919050	068199H1905
20		200	40	06199200000	06099920000	06819920000	068199H2000
25.4	1"	200	45	06199200000			

Standards	120°
	Magafor Standard
Tolerance	
D	h6 (h5*)
L	±1
ℓ	+1



ข้อแนะนำการใช้งาน ดอกนำเจาะ

Recommendations of use for NC Drills



HSS



TiN Coating

Materials	
Steel < 500 N/mm ²	30 - 44
Steel 500-800 N/mm ²	25 - 30
Steel 800-1000 N/mm ²	15 - 25
Steel 800-1300 N/mm ²	10 - 25
Stainless Steel / Titanium	6 - 10
Inconel	5 - 6
Cast Iron < 180HB	15 - 25
Cast Iron > 180HB	10 - 15
Copper / Brass / Bronze	40 - 50
Aluminum ≤ 6% Si	60 - 90
Aluminum > 6% Si	35 - 50
Thermoplast	90 - 100

Speed m/min.	Feed mm/rev.				
	D				
	2	3	6	10	16
30 - 44	0.08	0.10	0.20	0.30	0.40
25 - 30	0.05	0.07	0.14	0.21	0.28
15 - 25	0.04	0.06	0.12	0.18	0.25
10 - 25	0.03	0.05	0.10	0.16	0.22
6 - 10	0.08	0.10	0.20	0.30	0.40
5 - 6	0.06	0.07	0.15	0.25	0.35
15 - 25	0.10	0.12	0.18	0.30	0.35
10 - 15	0.12	0.14	0.20	0.35	0.45

Speed m/min.	Feed mm/rev.				
	D				
	2	3	6	10	16
35 - 60	0.08	0.10	0.20	0.30	0.40
35 - 50	0.05	0.07	0.14	0.21	0.28
22 - 40	0.04	0.06	0.12	0.18	0.25
15 - 20	0.03	0.05	0.10	0.16	0.22
10 - 15	0.08	0.10	0.20	0.30	0.40
8 - 12	0.06	0.07	0.15	0.25	0.35
20 - 35	0.10	0.12	0.18	0.30	0.35
15 - 20	0.12	0.14	0.20	0.35	0.45
50 - 60	0.12	0.14	0.20	0.35	0.45

NC Drills



Red'X Coating



Carbide
Hard'X Coating

Materials	
Steel < 500 N/mm ²	60 - 65
Steel 500-800 N/mm ²	50 - 60
Steel 800-1000 N/mm ²	40 - 50
Steel 800-1300 N/mm ²	20 - 30
Stainless Steel / Titanium	15 - 20
Inconel	15 - 20
Cast Iron < 180HB	40 - 50
Cast Iron > 180HB	30 - 40
Copper / Brass / Bronze	60 - 80
Aluminum ≤ 6% Si	80 - 120
Aluminum > 6% Si	50 - 75
Thermoplast	110 - 140

Speed m/min.	Feed mm/rev.				
	D				
	2	3	6	10	16
60 - 65	0.08	0.10	0.20	0.30	0.40
50 - 60	0.05	0.07	0.14	0.21	0.28
40 - 50	0.04	0.06	0.12	0.18	0.25
20 - 30	0.03	0.05	0.10	0.16	0.22
15 - 20	0.08	0.10	0.20	0.30	0.40
15 - 20	0.06	0.07	0.15	0.25	0.35
40 - 50	0.10	0.12	0.18	0.30	0.35
30 - 40	0.12	0.14	0.20	0.35	0.45

Speed m/min.	Feed mm/rev.				
	D				
	2	3	6	10	16
70 - 80	0.10	0.12	0.2	0.33	0.45
60 - 75	0.07	0.08	0.15	0.23	0.31
50 - 60	0.06	0.07	0.13	0.20	0.27
25 - 40	0.06	0.08	0.15	0.20	0.30
20 - 30	0.05	0.07	0.13	0.18	0.27
20 - 30	0.10	0.12	0.22	0.33	0.45
50 - 60	0.08	0.10	0.17	0.30	0.40
35 - 50	0.12	0.15	0.20	0.35	0.40
70 - 100	0.13	0.15	0.25	0.40	0.50