

DURONTO FX

Premium Four Margin Drills

Features:

- Special flute geometry for precise and efficient manufacturing ✓
- Double Margin provides superior hole accuracy ✓
- Smooth Chip evacuation ✓
- Continuos feed drilling of deep holes ✓



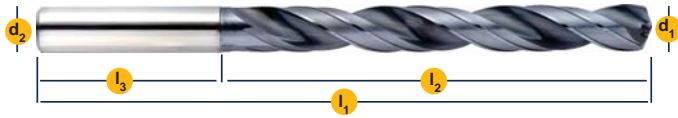
Size Range

25xd	3.0 - 6.0mm
20xd	3.0 - 6.0mm
15xd	3.0 - 8.0mm
12xd	3.0 - 12.0mm
8xd	3.0 - 18.0mm
5xd	3.0 - 20.0mm

PRECISION IN HOLEMAKING

DURONTO FX

Premium Four Margin Drills



d ₁ Tolerance	3.0 ≤ d ₁ ≤ 6.0	6.0 ≤ d ₁ ≤ 10.0	10.0 ≤ d ₁ ≤ 18.0	18.0 ≤ d ₁ ≤ 20.0
h ₇	0 - 0.012	0 - 0.015	0 - 0.018	0 - 0.021

Drill Dia d ₁	Hole Depth l/d	Dimensions (mm)			
		l ₁	l ₂	l ₃	d ₂
3.0	3	62	20	36	6
	5	66	28	36	6
	8	74	34	36	6
	12	86	46	36	6
	15	95	55	36	6
	20	110	70	36	6
	25	125	85	36	6
	30	140	100	36	6
3.1 ~ 3.5	3	62	20	36	6
	5	66	28	36	6
	8	80	40	36	6
	12	94	54	36	6
	15	104	64	36	6
	20	122	82	36	6
	25	139	99	36	6
	30	157	117	36	6
3.6 ~ 4.0	3	62	20	36	6
	5	66	28	36	6
	8	85	45	36	6
	12	101	61	36	6
	15	113	73	36	6
	20	133	93	36	6
	25	153	113	36	6
	30	173	133	36	6

Drill Dia d ₁	Hole Depth l/d	Dimensions (mm)			
		l ₁	l ₂	l ₃	d ₂
4.1 ~ 4.5	3	66	24	36	6
	5	74	36	36	6
	8	91	51	36	6
	12	109	69	36	6
	15	122	82	36	6
	20	145	105	36	6
	25	167	127	36	6
	30	190	150	36	6
4.6 ~ 5.0	3	66	24	36	6
	5	74	36	36	6
	8	96	55	36	6
	12	116	76	36	6
	15	131	91	36	6
	20	156	116	36	6
	25	181	141	36	6
	30	206	166	36	6
5.1 ~ 5.5	3	66	28	36	6
	5	82	44	36	6
	8	102	62	36	6
	12	124	84	36	6
	15	140	100	36	6
	20	168	128	36	6
	25	195	155	36	6
	30	223	183	36	6

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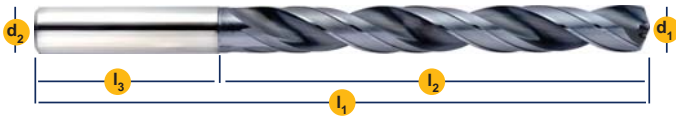


d_1 Tolerance	$3.0 \leq d_1 \leq 6.0$	$6.0 \leq d_1 \leq 10.0$	$10.0 \leq d_1 \leq 18.0$	$18.0 \leq d_1 \leq 20.0$
h_7	0 - 0.012	0 - 0.015	0 - 0.018	0 - 0.021

Drill Dia d_1	Hole Depth l/d	Dimensions (mm)			
		l_1	l_2	l_3	d_2
5.6 ~ 6.0	3	66	28	36	6
	5	82	44	36	6
	8	107	67	36	6
	12	131	91	36	6
	15	149	109	36	6
	20	179	139	36	6
	25	209	169	36	6
30	239	199	36	6	
6.1 ~ 6.5	3	79	34	36	8
	5	91	53	36	8
	8	113	73	36	8
	12	139	99	36	8
	15	158	118	36	8
	20	191	151	36	8
6.6 ~ 7.0	3	79	34	36	8
	5	91	53	36	8
	8	118	78	36	8
	12	146	106	36	8
	15	167	127	36	8
20	202	162	36	8	
7.1 ~ 7.5	3	79	41	36	8
	5	91	53	36	8
	8	124	84	36	8
	12	154	114	36	8
	15	176	136	36	8
	20	214	174	36	8

Drill Dia d_1	Hole Depth l/d	Dimensions (mm)			
		l_1	l_2	l_3	d_2
7.6 ~ 8.0	3	79	41	36	8
	5	91	53	36	8
	8	129	89	36	8
	12	161	121	36	8
	15	185	145	36	8
	20	225	185	36	8
8.1 ~ 8.5	3	88	46	40	10
	5	102	60	40	10
	8	139	95	40	10
	12	173	129	40	10
15	198	154	40	10	
8.6 ~ 9.0	3	88	46	40	10
	5	102	60	40	10
	8	144	100	40	10
	12	180	136	40	10
	15	207	163	40	10
9.1 ~ 9.5	3	89	47	40	10
	5	103	62	40	10
	8	151	107	40	10
	12	189	145	40	10
	15	217	173	40	10
9.6 ~ 10.0	3	89	47	40	10
	5	103	62	40	10
	8	156	112	40	10
	12	196	152	40	10
	15	226	182	40	10

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d ₁ Tolerance	3.0 ≤ d ₁ ≤ 6.0	6.0 ≤ d ₁ ≤ 10.0	10.0 ≤ d ₁ ≤ 18.0	18.0 ≤ d ₁ ≤ 20.0
h ₇	0 - 0.012	0 - 0.015	0 - 0.018	0 - 0.021

Drill Dia d ₁	Hole Depth l/d	Dimensions (mm)			
		l ₁	l ₂	l ₃	d ₂
10.1 ~ 10.5	3	102	55	45	12
	5	118	71	45	12
	8	167	118	45	12
	12	209	160	45	12
10.6 ~ 11.0	3	102	55	45	12
	5	118	71	45	12
	8	172	123	45	12
	12	216	167	45	12
11.1 ~ 11.5	3	102	55	45	12
	5	118	71	45	12
	8	178	129	45	12
	12	224	175	45	12
11.6 ~ 12.0	3	102	55	45	12
	5	118	71	45	12
	8	183	134	45	12
	12	231	182	45	12
12.1 ~ 12.5	3	107	60	45	14
	5	124	77	45	14
	8	189	140	45	14
12.6 ~ 13.0	3	107	60	45	14
	5	124	77	45	14
	8	194	145	45	14
13.1 ~ 13.5	3	107	60	45	14
	5	124	77	45	14
	8	200	151	45	14

Drill Dia d ₁	Hole Depth l/d	Dimensions (mm)			
		l ₁	l ₂	l ₃	d ₂
13.6 ~ 14.0	3	107	60	45	14
	5	124	77	45	14
	8	205	156	45	14
14.1 ~ 16.0	3	115	64	48	16
	5	133	82	48	16

40xd Series					
Drill Dia d ₁	Hole Depth l/d	Dimensions (mm)			
		l ₁	l ₂	l ₃	d ₂
3.0	40	174	131	36	6
3.1	40	191	141	36	6
3.3	40	191	151	36	6
3.4	40	191	151	36	6
3.5	40	191	151	36	6
3.6	40	213	163	36	6
3.7	40	213	163	36	6
3.8	40	213	173	36	6
3.9	40	213	173	36	6
4.0	40	213	173	36	6

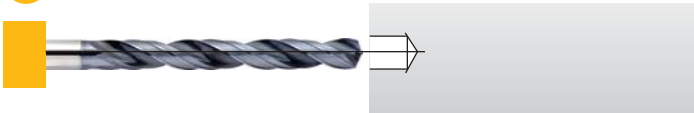
** Notes:

Ordering Code Legend. Series remains the same, last four digits as per diameter

3xd : DFDA.0320.0300 (3.0 mm)	15xd : DFDA.1520.0340 (3.4 mm)
5xd : DFDA.0520.0310 (3.1 mm)	20xd : DFDA.2020.0350 (3.5 mm)
8xd : DFDA.0820.0320 (3.2 mm)	25xd : DFDA.2520.0360 (3.6 mm)
8xd : DFDA.0820.0320 (3.2 mm)	30xd : DFDA.3020.0370 (3.7 mm)
12xd : DFDA.1220.0330 (3.3 mm)	40xd : DFDA.4020.0380 (3.8 mm)

How to use DURONTO FX Drills

A. Pilot Hole Drilling



- All deep hole drills must utilize a pilot hole
- Machine a pilot hole with a 3xd Duronto FX drill to a minimum pilot depth of 1.5~2 x d

B. Initial Drilling with DURONTO FX



- Enter the pilot hole at 20% RPM Value and with 50% of the feed rate

C. Deep Hole Drilling with DURONTO FX



- Start high coolant pressure and increase RPM to 100% value. Drill continuously till the desired hole depth.
- For through holes with inclined exit, reduce the feed rate to 30% about 1mm prior to break-through.

D. Drill Retraction



- After reaching the desired hole depth reduce RPM to 10% & withdraw the drill.

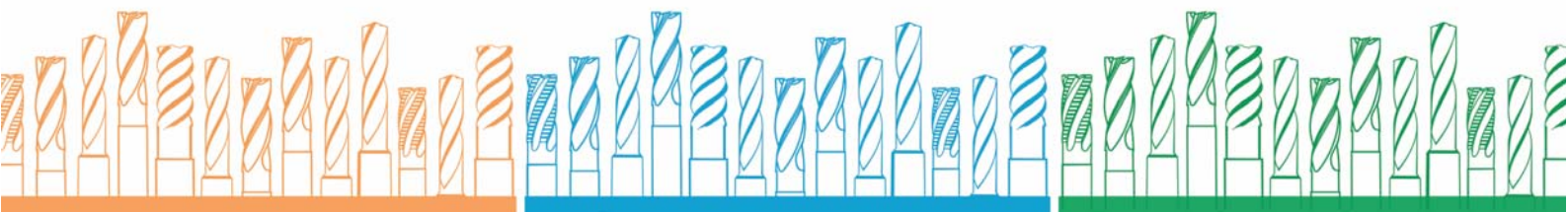
Recommended Cutting Conditions:

Work Material		5xd to 12xd								15xd to 25xd		
		Ø 3.0 - Ø 6.0		Ø 6.0 - Ø 10.0		Ø 10.0 - Ø 14.0		Ø 14.0 - Ø 20.0		Ø 3.0 - Ø 6.0		
		Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	
P	Mild Steel	≤ 180HB	110 (50-120)	0.20 (0.15-0.25)	130 (80-140)	0.25 (0.20-0.35)	150 (90-170)	0.30 (0.20-0.40)	160 (100-180)	0.35 (0.20-0.40)	85 (35-100)	0.20 (0.15-0.25)
	Carbon Steel Alloy Steel	180-280HB	90 (50-100)	0.20 (0.15-0.25)	110 (70-120)	0.25 (0.20-0.35)	130 (80-140)	0.25 (0.20-0.40)	140 (100-150)	0.30 (0.20-0.40)	80 (40-95)	0.20 (0.15-0.25)
		280-350HB	80 (40-90)	0.20 (0.15-0.30)	90 (60-110)	0.25 (0.15-0.30)	110 (70-130)	0.25 (0.15-0.40)	120 (90-140)	0.30 (0.20-0.40)	75 (35-80)	0.15 (0.15-0.20)
M	Stainless Steel	≤ 200 HB	50 (20-100)	0.10 (0.05-0.15)	60 (40-120)	0.20 (0.10-0.25)	70 (50-120)	0.25 (0.15-0.30)	80 (60-120)	0.25 (0.15-0.30)	50 (20-80)	0.10 (0.05-0.15)
K	Cast Iron	Tensile Strength ≤ 350N/mm ²	100 (70-120)	0.25 (0.15-0.30)	130 (100-140)	0.30 (0.20-0.35)	150 (110-160)	0.35 (0.25-0.40)	160 (120-170)	0.35 (0.25-0.40)	70 (40-85)	0.25 (0.15-0.30)
	Ductile Cast Iron	Tensile Strength ≤ 450N/mm ²	60 (30-80)	0.20 (0.15-0.25)	70 (40-90)	0.20 (0.15-0.30)	90 (50-110)	0.25 (0.20-0.40)	100 (60-110)	0.3 (0.20-0.40)	65 (35-80)	0.20 (0.15-0.25)
S	Heat Resistant Alloy	-	20 (10-25)	0.10 (0.05-0.15)	25 (15-30)	0.12 (0.05-0.15)	25 (15-30)	0.15 (0.10-0.20)	30 (25-35)	0.15 (0.10-0.20)	20 (10-25)	0.10 (0.5-0.15)





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