



FLEXIDEX SOLID DRILLING TOOLS

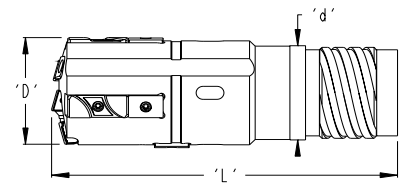
Diameter range 65.00 mm – 195.99 mm (2.559 in – 7.716 in)



FlexiDex Single Tube System

Diameter Range: 65.00 mm – 195.99 mm (2.559 in – 7.716 in)

Drill Head Part Numbering Code Example: Metric: FDM#####M414 Imperial: FD#####M414



FD		M#####		M		4		
FlexiDex Prefix		Bore Size		Connection Type		Thread Starts		
Description	Code	Description	Code	Description	Code	Description	Code	Code
FlexiDex	FD	Size in Metric (###.## mm)	M#####	Male / External	M	Four-Start	4	14
		Size in Imperial ##.### in	#####	Female / Internal	F	Single-Start	1	

Connection Size Numbering Code

Bore Size Range	65.00-66.99 mm	67.00-72.99 mm	73.00 - 79.99 mm	80.00 - 86.99 mm	87.00- 94.99 mm	95.00 - 99.99 mm	100.00 - 111.99 mm	100.00 - 119.99 mm	120.00 - 123.99 mm	124.00 - 135.99 mm	136.00 - 147.99 mm	148.00 - 159.99 mm	160.00 - 171.99 mm	172.00- 183.99 mm	184.00-195.99 mm
	2.559- 2.637 in	2.638 - 2.873 in	2.874 - 3.149 in	3.150 - 3.424 in	3.425 - 3.739 in	3.740 - 3.936 in	3.937 - 4.409 in	4.410 - 4.724 in	4.725 - 4.881 in	4.882 - 5.353 in	5.354 - 5.826 in	5.827 - 6.298 in	6.299 - 6.771 in	6.772 - 7.243 in	7.244 - 7.716 in
Code	14	15	16	17	18	18	19	20	20	21	22	23	24	25	26

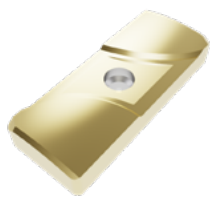
Drill Ø	Item Code	Drill Tube	Dimensions		
'D'			Tube OD	L	'd'
65.00 - 66.99 mm	FDM#####M414	14	56 mm	200 mm	52 mm
2.559 - 2.637 in	FD#####M414		2.205 in	7.874 in	2.047 in
67.00 - 72.99 mm	FDM#####M415	15	62 mm	200 mm	58 mm
2.638 - 2.873 in	FD#####M415		2.441 in	7.874 in	2.283 in
73.00 - 79.99 mm	FDM#####M416	16	68 mm	200 mm	63 mm
2.874 - 3.149 in	FD#####M416		2.677 in	7.874 in	2.480 in
80.00 - 86.99 mm	FDM#####M417	17	75 mm	225 mm	70 mm
3.150 - 3.424 in	FD#####M417		2.953 in	8.858 in	2.756 in
87.00 - 94.99 mm	FDM#####M418	18	82 mm	225 mm	77 mm
3.425 - 3.739 in	FD#####M418		3.228 in	8.858 in	3.031 in
95.00 - 99.99 mm	FDM#####M418	18	82 mm	240 mm	77 mm
3.740 - 3.936 in	FD#####M418		3.228 in	9.449 in	3.031 in
100.00 - 111.99 mm	FDM#####M419	19	94 mm	250 mm	89 mm
3.937 - 4.409 in	FD#####M419		3.701 in	9.842 in	3.504 in
112.00 - 119.99 mm	FDM#####M420	20	106 mm	260 mm	101 mm
4.410 - 4.724 in	FD#####M420		4.173 in	10.236 in	3.976 in
120.00 - 123.99 mm	FDM#####M420	20	106 mm	270 mm	101 mm
4.725 - 4.881 in	FD#####M420		4.173 in	10.630 in	3.976 in
124.00 - 135.99 mm	FDM#####M421	21	118 mm	270 mm	113 mm
4.882 - 5.353 in	FD#####M421		4.646 in	10.630 in	4.449 in
136.00 - 147.99 mm	FDM#####M422	22	130 mm	270 mm	125 mm
5.354 - 5.826 in	FD#####M422		5.118 in	10.630 in	4.921 in
148.00 - 159.99 mm	FDM#####M423	23	142 mm	285 mm	137 mm
5.827 - 6.298 in	FD#####M423		5.591 in	11.220 in	5.394 in
160.00 - 171.99 mm	FDM#####M424	24	154 mm	285 mm	149 mm
6.299 - 6.771 in	FD#####M424		6.063 in	11.220 in	5.866 in
172.00 - 183.99 mm	FDM#####M425	25	166 mm	300 mm	161 mm
6.772 - 7.243 in	FD#####M425		6.535 in	11.811 in	6.339 in
184.00 - 195.99 mm	FDM#####M426	26	178 mm	315 mm	173 mm
7.244 - 7.716 in	FD#####M426		7.008 in	12.402 in	6.811 in

Drill Ø	Radial Adjustment
'D'	
65.00 - 66.99 mm	0.75 mm
2.559 - 2.716 in	0.030 in
69.00 - 69.99 mm	0.5 mm
2.717 - 2.755 in	0.020 in
70.00 - 70.99 mm	0.0 mm
2.756 - 2.794 in	0.0 in
71.00 - 71.99 mm	1.0 mm
2.795 - 2.834 in	0.039 in
72.00 - 72.99 mm	0.5 mm
2.835 - 2.873 in	0.020 in
73.00 - 76.99 mm	2.0 mm
2.874 - 3.031 in	0.079 in
77.00 - 77.49 mm	1.5 mm
3.032 - 3.050 in	0.059 in
77.50 - 78.99 mm	1.0 mm
3.051 - 3.109 in	0.039 in
79.00 - 88.99 mm	2.0 mm
3.110 - 3.503 in	0.079 in
89.00 - 89.99 mm	1.5 mm
3.504 - 3.542 in	0.059 in
90.00 - 92.49 mm	2.0 mm
3.543 - 3.641 in	0.079 in
92.50 - 93.99 mm	1.0 mm
3.642 - 3.700 in	0.039 in
94.00 - 94.99 mm	0.75 mm
3.701 - 3.739 in	0.030 in
95.00 - 99.99 mm	2.0 mm
3.740 - 3.936 in	0.079 in
100.00 - 100.99 mm	2.05 mm
3.937 - 3.976 in	0.098 in
101.00 - 101.59 mm	2.0 mm
3.977 - 3.999 in	0.079 in
101.60 - 125.99 mm	2.5 mm
4.000 - 4.960 in	0.098 in
126.00 - 127.99 mm	1.5 mm
4.961 - 5.039 in	0.059 in
128.00 - 195.99 mm	2.5 mm
5.040 - 7.716 in	0.098 in

Sunnen's FlexiDex deep hole drilling heads, inserts, cartridges, and pads are a direct replacement for Sandvik's CoroDrill® 801 series of tools.

FlexiDex Pad Range Chart

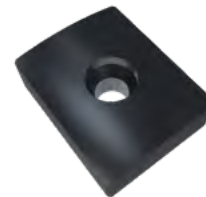
Drill	Support Pad		Safety Pad		Sub Guide Pad		Pad Screw	
'D'	Cartridge	Qty	Pad	Qty	Pad	Qty	Screw	Qty
65.00 - 70.99 mm 2.559 - 2.794 in	GPS1435D0650	3	SPS142067	3	SPF142067	1	PHSM1158	7
71.00 - 74.99 mm 2.795 - 2.952 in								
75.00 - 84.99 mm 2.953 - 3.346 in	GPS1435D0750	3	SPS142067	3	SPF142067	1	PHSM1158	7
85.00 - 99.99 mm 3.347 - 3.936 in								
100.00 - 109.99 mm 3.937 - 4.330 in	GPS2050D1000	3	SPS202582	3	SPF202582	1	PHSM1160	7
110.00 - 119.99 mm 4.331 - 4.724 in								
120.00 - 129.99 mm 4.725 - 5.117 in	GPS2050D1200	3	SPS202582	3	SPF202582	1	PHSM1160	7
130.00 - 139.99 mm 5.118 - 5.511 in								
140.00 - 149.99 mm 5.512 - 5.905 in	GPB2050D1400	3	SPS202582	3	SPF202582	1	PHSM1160	7
150.00 - 159.99 mm 5.906 - 6.298 in								
160.00 - 169.99 mm 6.299 - 6.692 in	GPB2050D1600	3	SPS202582	3	SPF202582	1	PHSM1160	7
170.00 - 179.99 mm 6.693 - 7.086 in								
180.00 - 195.99 mm 7.087 - 7.716 in	GPB2050D1800	3	SPS202582	3	SPF202582	1	PHSM1160	7



Solid Carbide
Support and Safety Pad



Brazed Carbide
Support Pad



Sub Guide Pad

Spare Parts

Peripheral Cartridge						
Cartridge	Cartridge Screw	Washer	Insert	Insert Screw	Adjustment Screw	Shim Set
CTFDN13P	PHSM516	PHWM519	BTTDN13P	PHSM1154	PHSM596	SHM1445*
CTFDN18P	PHSM607	PHWM518	BTTDN18P	PHSM1159	PHSM596	SHM1850*

Intermediate Cartridge			
Cartridge	Cartridge Screw	Insert	Insert Screw
CTFDN08I	PHSM1159	BTDDN08I	PHSM1153
CTFDN12I	PHSM1160	BTDDN12I	PHSM1153

Central Cartridge			
Cartridge	Cartridge Screw	Insert	Insert Screw
CTFDN06C	PHSM1159	BTDDN06C	PHSM1153
CTFDN08C	PHSM1159	BTDDN08C	PHSM1153
CTFDN10C	PHSM1160	BTDDN10C	PHSM1153
CTFDN12C	PHSM1160	BTDDN12C	PHSM1153
CTFDN06C2	PHSM1160	BTDDN06C (1) BTDDN08C (1)	PHSM1153 (2)

Support Pad		
Pad	Pad Screw	Shim Set
GPS1435D0650	PHSM1158	SHM1435*
GPS1435D0650	PHSM1158	
GPS1435D0750	PHSM1158	
GPS1435D0850	PHSM1158	
GPS2050D1000	PHSM1160	SHM2050*
GPS2050D1100	PHSM1160	
GPS2050D1200	PHSM1160	
GPS2050D1300	PHSM1160	
GPB2050D1400	PHSM1160	
GPB2050D1500	PHSM1160	
GPB2050D1600	PHSM1160	
GPB2050D1700	PHSM1160	
GPB2050D1800	PHSM1160	

Safety Pad		
Pad	Pad Screw	Shim Set
SPS142067	PHSM1158	SHM1420*
SPS202582	PHSM1160	SHM2025*

Sub Guide Pad		
Pad	Pad Screw	Shim Set
SPF142067	PHSM1158	SHM1420*
SPF202582	PHSM1160	SHM2025*

Shim Part Descriptions		
Part Number	Part Description	Long Description
SHM1445	CARTRIDGE SHIM SET, 0.05MM (.002"), 0.1MM (.004"), 0.2MM (.008"), 0.3MM (.012"), 0.5MM (.020")SANDVIK REF 5549 128-40	SHIM SET INCLUDES: SHM1445005 (4), SHM1445010 (4), SHM1445020 (4), SHM1445030 (4), SHM1445050 (4)
SHM1850	CARTRIDGE SHIM SET, 0.05MM (.002"), 0.1MM (.004"), 0.2MM (.008"), 0.3MM (.012"), 0.5MM (.020")SANDVIK REF 5549 128-60	SHIM SET INCLUDES: SHM1850005 (4), SHM1850010 (4), SHM1850020 (4), SHM1850030 (4), SHM1850050 (4)
SHM1420	SAFETY PAD SHIM SET, 0.05MM (.002"), 0.1MM (.004"), 0.2MM (.008"), 0.3MM (.012"), 0.5MM (.020")SANDVIK REF 5549 126-90	SHIM SET INCLUDES: SHM1420005 (4), SHM1420010 (4), SHM1420020 (4), SHM1420030 (4), SHM1420050 (4)
SHM2025	SAFETY PAD SHIM SET, 0.05MM (.002"), 0.1MM (.004"), 0.2MM (.008"), 0.3MM (.012"), 0.5MM (.020")SANDVIK REF 5549 126-91	SHIM SET INCLUDES: SHM2025005 (4), SHM2025010 (4), SHM2025020 (4), SHM2025030 (4), SHM2025050 (4)
SHM1435	SUPPORT PAD SHIM SET, 0.05MM (.002"), 0.1MM (.004"), 0.2MM (.008"), 0.3MM (.012"), 0.5MM (.020")SANDVIK REF 5549 127-20	SHIM SET INCLUDES: SHM1435005 (4), SHM1435010 (4), SHM1435020 (4), SHM1435030 (4), SHM1435050 (4)
SHM2050	SUPPORT PAD SHIM SET, 0.05MM (.002"), 0.1MM (.004"), 0.2MM (.008"), 0.3MM (.012"), 0.5MM (.020") SANDVIK REF 5549 126-10	SHIM SET INCLUDES: SHM2050005 (4), SHM2050010 (4), SHM2050020 (4), SHM2050030 (4), SHM2050050 (4)

*For Shim Specification Details, please refer to Shim Part Descriptions Chart

FlexiDex - Feed & Speed



Inch values

ISO	ANSI	Material	Specific cutting force kc1 lbs/in ²	Hardness Brinell HB	Geometry / Grade	Cutting speed vc ft/min	Drill diameter, inch
							≥ 2.500
							Feed f _n inch/rev
P	1018, 1020, 1215	Unalloyed steel Non-hardened 0.10-0.25% C	290 000	90-200	-G/-L/TE	260-330	.007-.014
	1045, 1050, 1335	Non-hardened 0.25-0.55% C	304 500	125-225	-G/TE	260-330	.007-.014
	1055, 1060	Non-hardened 0.55-0.80% C	316 100	150-250	-G/TE	260-330	.007-.014
	1095	High carbon steel, annealed	336 400	180-275	-G/TE	260-330	.007-.014
	4140, 52100, 8620	Low alloy steel Non hardened	304 500	150-260	-G/TE	230-330	.007-.014
	4140, 52100, 8620	Hardened and tempered	402 400	220-450	-G/TE	200-330	.006-.014
	D3, H13, A2	High alloy steel Annealed	362 500	150-250	-G/TE	200-330	.007-.012
	M3, M35 D3, H13, A2	Annealed HSS Hardened tool steel	398 750 543 750	150-250 250-350	-G/TE -G/TE	200-330 200-330	.007-.012 .007-.012
	D3, H13, A2	Hardened steel, others	580 000	250-450	-G/TE	200-330	.007-.012
	1018, 1045, 1055	Castings Unalloyed	261 000	90-225	-G/TE	165-330	.006-.012
4140, 52100, 8620	Low alloyed (alloying elements < 5%)	2304 500	150-250	-G/TE	165-330	.006-.012	
M	403, 405, 410	Rolled/forged Ferritic/Martensitic, non hardened	333 500	150-270	-G/L/TE	165-300	.006-.014
	15-5, 17-4	Corrosion Resistance	350 000	277-352	-L/TE	128-190	.008-.013
	304, 316, 318	Austenitic	377 000	150-270	-L/TE	165-300	.006-.014
K	32510 40010, 50005	Malleable Ferritic Pearlitic	137 750 159 500	110-145 150-270	-G/TE -G/TE	260-330 260-330	.007-.012 .007-.012
	Class 20, 25, 30 Class 45, 50, 60	Grey Low tensile strength High tensile strength	159 500 187 050	150-220 200-330	-G/TE -G/TE	200-330 200-330	.006-.014 .006-.014
	60-40-18, 80-55-56 100-70-03	Nodular Ferritic Pearlitic	152 250 253 750	125-230 200-300	-G/TE -G/TE	165-330 165-330	.006-.014 .006-.014
N	7075, 2024, 7010	Aluminium alloys Wrought or wrought and coldworked, non- aging	72 500	30-100	-L/TE	210-600	.004-.012
	7075, 2024, 7010	Wrought or wrought and aged	116 000	30-150	-L/TE	210-600	.004-.012
	7075, 2024, 7010	Cast, non aging	108 750	40-100	-L/TE	210-600	.004-.012
	7075, 2024, 7010	Cast or cast and aged	130 500	70-140	-L/TE	210-600	.004-.012
	Copper Copper	Copper and copper alloys Free cutting alloys (Pb > 1%) Brass and leaded alloys (Pb < 1%)	101 500 101 500	70-160 50-200	-L/TE -L/TE	210-600 210-600	.004-.012 .004-.012
S	330	Iron base Annealed or solution treated	435 000	180-230	-G/L/TES	65-210	.006-.012
	Waspaloy, Inconel	Nickel base Annealed or solution treated	481 400	140-300	-L/TES	65-210	.006-.012
	Air Resistant 213, Jet alloy 209	Cobalt alloys Annealed or solution treated	478 500	180-230	-L/TES	65-210	.006-.012
	Ti6Al4V	Titanium Alfa- , near Alfa- and Alfa + Beta alloys annealed	242 875	600-1100	-L/TES -L/TES	100-330 100-330	.006-.012 .006-.012

FlexiDex - Feed & Speed



Metric values

ISO	ANSI	Material	Specific cutting force kc1 N/mm ²	Hardness Brinell HB	Geometry / Grade	Cutting speed vc m/min	Drill diameter, mm
							≥ 63.50
							Feed f _n mm/r
P	1018, 1020, 1215	Unalloyed steel Non-hardened 0.10-0.25% C	1500	90-200	-G/-L/TE	80-100	0.18-0.35
	1045, 1050, 1335	Non-hardened 0.25-0.55% C	1600	125-225	-G/TE	80-100	0.18-0.35
	1055, 1060	Non-hardened 0.55-0.80% C	1700	150-250	-G/TE	80-100	0.18-0.35
	1095	High carbon steel, annealed	1800	180-275	-G/TE	80-100	0.18-0.35
	4140, 52100, 8620	Low alloy steel Non hardened	1700	150-260	-G/TE	70-100	0.18-0.35
	4140, 52100, 8620	Hardened and tempered	1900	220-450	-G/TE	60-100	0.18-0.35
	D3, H13, A2	High alloy steel Annealed	1950	150-250	-G/TE	70-100	0.18-0.30
	M3, M35 D3, H13, A2	Annealed HSS Hardened tool steel	2150 2900	150-250 250-350	-G/TE -G/TE	70-100 60-100	0.18-0.30 0.16-0.30
	D3, H13, A2	Hardened steel, others	3100	250-450	-G/TE	60-100	0.16-0.30
	1018, 1045, 1055	Castings Unalloyed	1400	90-225	-G/TE	50-100	0.15-0.30
4140, 52100, 8620	Low alloyed (alloying elements < 5%)	1600	150-250	-G/TE	50-100	0.15-0.30	
M	403, 405, 410	Rolled/forged Ferritic/Martensitic, non hardened	1800	150-270	-G/L/TE	50-90	0.15-0.30
	16-5, 17-4	Corrosion Resistance	1900	277-352	-L/TE	39-58	0.20-0.33
	304, 316, 318	Austenitic	1950	150-275	-L/TE	50-90	0.15-0.30
K	32510 40010, 50005	Malleable Ferritic Pearlitic	790 900	110-145 150-270	-G/TE -G/TE	80-100 80-100	0.18-0.30 0.18-0.30
	Class 20, 25, 30 Class 45, 50, 60	Grey Low tensile strength High tensile strength	890 1100	150-220 200-330	-G/TE -G/TE	60-100 60-100	0.16-0.35 0.16-0.35
	60-40-18, 80-55-56 100-70-03	Nodular Ferritic Pearlitic	900 1350	125-230 200-300	-G/TE -G/TE	50-100 50-100	0.16-0.35 0.16-0.35
N	7075, 2024, 7010	Aluminium alloys Wrought or wrought and coldworked, non- aging	400	30-100	-L/TE	65-130	0.10-0.30
	7075, 2024, 7010	Wrought or wrought and aged	650	30-150	-L/TE	65-130	0.10-0.30
	7075, 2024, 7010	Cast, non aging	600	40-100	-L/TE	65-130	0.10-0.30
	7075, 2024, 7010	Cast or cast and aged	700	70-140	-L/TE	65-130	0.10-0.30
	Copper Copper	Copper and copper alloys Free cutting alloys (Pb > 1%) Brass and leaded alloys (Pb < 1%)	550 550	70-160 50-200	-L/TE -L/TE	65-130 65-130	0.10-0.30 0.10-0.30
S	330	Iron base Annealed or solution treated	2400	180-230	-G/TES	20-65	0.15-0.30
	Waspaloy, Inconel	Nickel base Annealed or solution treated	2650	140-300	-L/TES	20-65	0.15-0.30
	Air Resistant 213, Jetalloy 209	Cobalt alloys Annealed or solution treated	2700	180-230	-L/TES	20-65	0.15-0.30
	Ti6Al4V	Titanium Alfa-, near Alfa- and Alfa + Beta alloys annealed	1400	600-1100	-L/TES -L/TES	30-60 30-100	0.15-0.30 0.15-0.30



A LEGACY OF EXCELLENCE SINCE 1924.

SUNNEN WORLDWIDE



With world headquarters in St. Louis, Missouri, Sunnen is the largest fully integrated company in the world specializing in precision bore creation, sizing and finishing equipment.

A Sunnen solution might include honing, lapping, skiving/roller burnishing or deep hole machining...or a combination of those processes.

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