Cost efficiency with Seco Crownloc® Plus!

Features:
- Strong drill body design
- Optimal geometries for different materials -P geometry, the versatile geometry for different materials

Advantages:
- High productivity
- Excellent chip evacuation in all materials
- Good hole quality

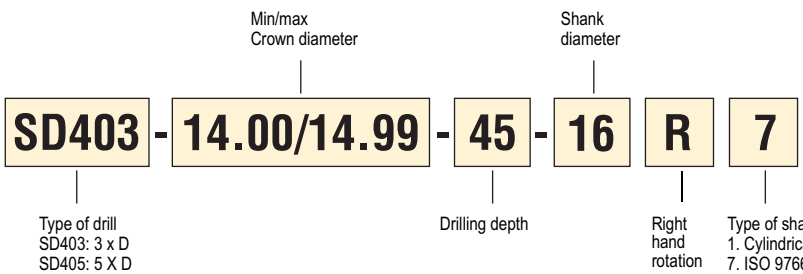
Benefits:
Cost reduction through:
- High application security
- Increased output

Range:
- Drill diameters 12.00-19.99
- Drill depths 3 x D and 5 X D

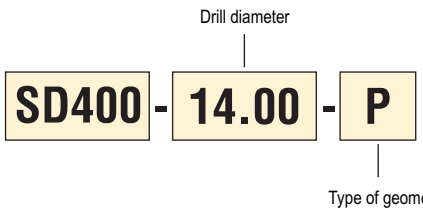
Crownloc®Plus – Code key

Crownloc®Plus	Drill depth	∅ Range	Crown tolerance	Hole tolerance (1)	Surface finish (2)
SD403  Pages 137-138	~ 3 x D	12,00–19,99	k7	IT 9-10	R_a 1–3 µm
SD405  Pages 139-140	~ 5 X D	12,00–19,99	k7	IT 10	R_a 1–3 µm

Code key Crownloc® Plus

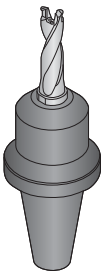


Code key Crowns

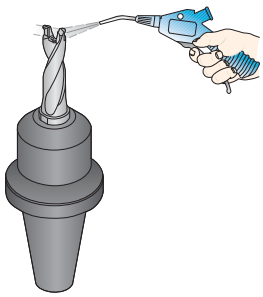


P-geometry
– Universal geometry

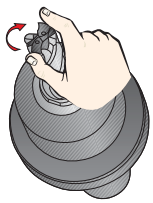
Mounting instructions



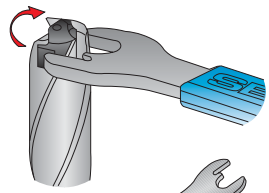
1.

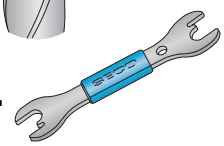


2.



3.



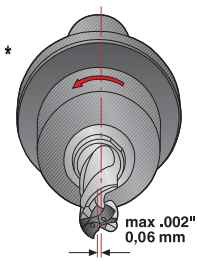


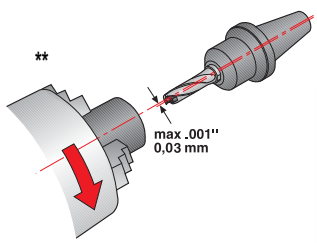
4.

Stability
The stability of the application is important to obtain the best tool life and hole accuracy. Check the condition of the machine spindle, fixture and fixturing of the component to secure maximum stability and rigidity.
Unstable conditions can cause tool breakages.

Rotating*
Totally Indicated Run-out (TIR) should not exceed 0,06 mm in a rotating application. Measure the run-out when the drill is mounted in the spindle.

Stationary**
The distance between the drill point and the rotating centre of the workpiece should not exceed 0.03 mm in a stationary application.





Recommended tool holders
For best results, use holders type DIN 1835 B/DIN 6535 HB (Weldon), Type 5834 Hydraulic chucks or Type 5603 Shrinkfit holders. For further information see EPB (tooling) catalogue.

Weldon

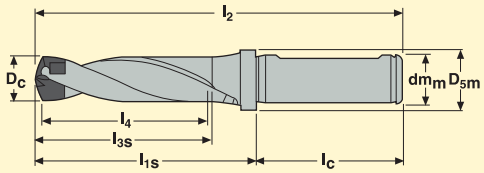
Hydraulic chuck
(For cylindrical, -R1 shanks only)

Shrinkfit holder
(For cylindrical, -R1 shanks only)

Drilling depth ~ 3 x D

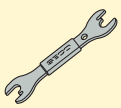
SD403 - R7 shank

- ISO9766 fits holders: Weldon 1835B, ISO 5414, DIN 60880.
- Internal 'through' coolant.
- For cutting and machining data see page 143-145, 147.



Drill dia. D_c (mm)	Max drilling depth l_4 (mm)	Part No.		Dimensions in mm					
				l_2	l_{1s}	l_c	l_{3s}	dm_m h6	D_{5m}
12.00-12.49	38	**SD403-12.00/12.49-38-16R7**		106,2	58,2	48	46,2	16	20
12.50-12.99	39	**SD403-12.50/12.99-39-16R7**		108,0	60,0	48	47,5	16	20
13.00-13.99	42	**SD403-13.00/13.99-42-16R7**		111,9	63,9	48	50,9	16	20
14.00-14.99	45	**SD403-14.00/14.99-45-16R7**		116,5	68,5	48	54,5	16	20
15.00-15.99	48	**SD403-15.00/15.99-48-16R7**		121,2	73,2	48	58,2	16	20
16.00-16.99	51	**SD403-16.00/16.99-51-20R7**		127,9	77,9	50	61,9	20	24
17.00-17.99	54	**SD403-17.00/17.99-54-20R7**		132,6	82,6	50	65,6	20	24
18.00-18.99	57	**SD403-18.00/18.99-57-20R7**		137,3	87,3	50	69,3	20	24
19.00-19.99	60	**SD403-19.00/19.99-60-20R7**		142,0	92,0	50	73,0	20	24

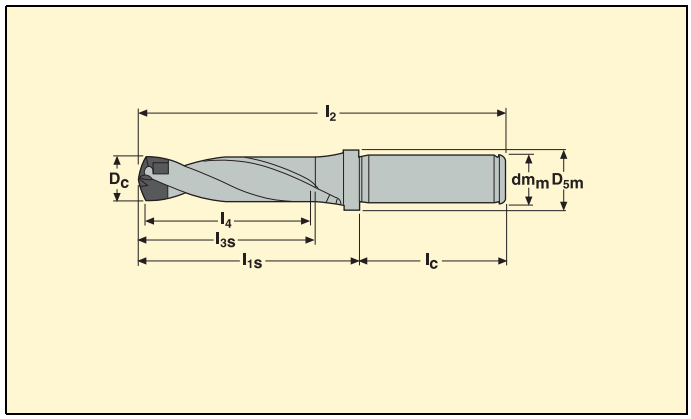
For drill diameter — Accessories*

	Key
	
12,00 – 12,99	SD400-K05
13,00 – 14,99	SD400-K06
15,00 – 16,99	SD400-K07
17,00 – 18,99	SD400-K08
19,00 - 21,99	SD400-K09

* Not included in delivery.

Drilling depth ~ 3 x D

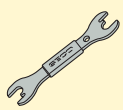
SD403 - R1 shank



- Cylindrical shank (R1) fits holders: 5834 and 5603.
- Internal 'through' coolant.
- For cutting and machining data see pages 143-145, 147.

Drill dia. D_C (mm)	Max drilling depth l_4 (mm)	Part No.		Dimensions in mm					
				l_2	l_{1s}	l_c	l_{3s}	dm_m h6	D_{5m}
12.00-12.49	38	**SD403-12.00/12.49-38-16R1**		106,2	58,2	48	46,2	16	20
12.50-12.99	39	**SD403-12.50/12.99-39-16R1**		108,0	60,0	48	47,5	16	20
13.00-13.99	42	**SD403-13.00/13.99-42-16R1**		111,9	63,9	48	50,9	16	20
14.00-14.99	45	**SD403-14.00/14.99-45-16R1**		116,5	68,5	48	54,5	16	20
15.00-15.99	48	**SD403-15.00/15.99-48-16R1**		121,2	73,2	48	58,2	16	20
16.00-16.99	51	**SD403-16.00/16.99-51-20R1**		127,9	77,9	50	61,9	20	24
17.00-17.99	54	**SD403-17.00/17.99-54-20R1**		132,6	82,6	50	65,6	20	24
18.00-18.99	57	**SD403-18.00/18.99-57-20R1**		137,3	87,3	50	69,3	20	24
19.00-19.99	60	**SD403-19.00/19.99-60-20R1**		142,0	92,0	50	73,0	20	24

For drill diameter — Accessories*

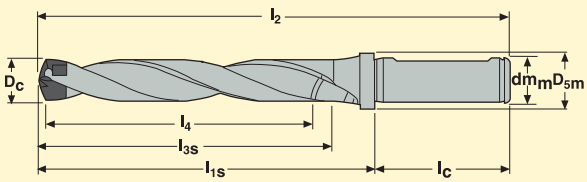
	Key
	
12,00 – 12,99	SD400-K05
13,00 – 14,99	SD400-K06
15,00 – 16,99	SD400-K07
17,00 – 18,99	SD400-K08
19,00 - 21,99	SD400-K09

* Not included in delivery.

Drilling depth ~ 5 X D

SD405 - R7 shank

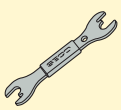
- ISO9766 fits holders: Weldon 1835B, ISO 5414, DIN 60880.
- Internal 'through' coolant.
- For cutting and machining data see page 143-145, 147.



Available 1/1 2012.

Drill dia. D_c (mm)	Max drilling depth l_4 (mm)	Part No.		Dimensions in mm					
				l_2	l_{1s}	l_c	l_{3s}	dm_m h6	D_{5m}
12,00-12,49	63	**SD405-12.00/12.49-63-16R7**		131,2	83,2	48	71,2	16	20
12,50-12,99	65	**SD405-12.50/12.99-65-16R7**		134,0	86,0	48	73,5	16	20
13,00-13,99	70	**SD405-13.00/13.99-70-16R7**		139,9	91,9	48	78,9	16	20
14,00-14,99	75	**SD405-14.00/14.99-75-16R7**		146,5	98,5	48	84,5	16	20
15,00-15,99	80	**SD405-15.00/15.99-80-16R7**		153,2	105,2	48	90,2	16	20
16,00-16,99	85	**SD405-16.00/16.99-85-20R7**		161,9	111,9	50	95,9	20	24
17,00-17,99	90	**SD405-17.00/17.99-90-20R7**		168,6	118,6	50	101,6	20	24
18,00-18,99	95	**SD405-18.00/18.99-95-20R7**		175,3	125,3	50	107,3	20	24
19,00-19,99	100	**SD405-19.00/19.99-100-20R7**		182,0	132,0	50	113,0	20	24

For drill diameter — Accessories*

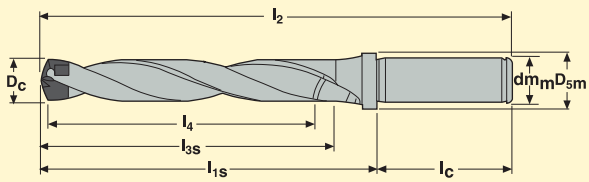
	Key
	
12,00 – 12,99	SD400-K05
13,00 – 14,99	SD400-K06
15,00 – 16,99	SD400-K07
17,00 – 18,99	SD400-K08
19,00 - 21,99	SD400-K09

* Not included in delivery.

Drilling depth ~ 5 X D

SD405 - R1 shank

- Cylindrical shank (R1) fits holders: 5834 and 5603.
- Internal 'through' coolant.
- For cutting and machining data see pages 143-145, 147.

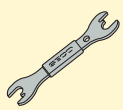


Available 1/1 2012.

Drill dia. D_c (mm)	Max drilling depth l_4 (mm)	Part No.		Dimensions in mm					
				l_2	l_{1s}	l_c	l_{3s}	dm_m h6	D_{5m}
12,00-12,49	63	**SD405-12.00/12.49-63-16R1**		131,2	83,2	48	71,2	16	20
12,50-12,99	65	**SD405-12.50/12.99-65-16R1**		134,0	86,0	48	73,5	16	20
13,00-13,99	70	**SD405-13.00/13.99-70-16R1**		139,9	91,9	48	78,9	16	20
14,00-14,99	75	**SD405-14.00/14.99-75-16R1**		146,5	98,5	48	84,5	16	20
15,00-15,99	80	**SD405-15.00/15.99-80-16R1**		153,2	105,2	48	90,2	16	20
16,00-16,99	85	**SD405-16.00/16.99-85-20R1**		161,9	111,9	50	95,9	20	24
17,00-17,99	90	**SD405-17.00/17.99-90-20R1**		168,6	118,6	50	101,6	20	24
18,00-18,99	95	**SD405-18.00/18.99-95-20R1**		175,3	125,3	50	107,3	20	24
19,00-19,99	100	**SD405-19.00/19.99-100-20R1**		182,0	132,0	50	113,0	20	24

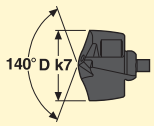
For drill diameter

Accessories*

	Key
	
12,00 – 12,99	SD400-K05
13,00 – 14,99	SD400-K06
15,00 – 16,99	SD400-K07
17,00 – 18,99	SD400-K08
19,00 - 21,99	SD400-K09

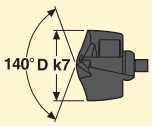
* Not included in delivery.

Make your choice of geometry; P= Universal geometry

Crown	P-geometry for steel	Reamer size*	∅ D k7	
	SD400-12.00-P		12,00	
	SD400-12.10-P		12,10	
	SD400-12.20-P		12,20	
	SD400-12.30-P		12,30	
	SD400-12.41-P		12,41	
	SD400-12.50-P		12,50	
	SD400-12.60-P		12,60	
	SD400-12.70-P		12,70	
	SD400-12.80-P	13 H6/13 H7	12,80	
	SD400-12.90-P	13 H6/13 H7	12,90	
	SD400-13.00-P		13,00	
	SD400-13.10-P		13,10	
	SD400-13.20-P		13,20	
	SD400-13.30-P		13,30	
	SD400-13.50-P		13,50	
	SD400-13.70-P		13,70	
	SD400-13.80-P	14 H6/14 H7	13,80	
	SD400-13.89-P	14 H6/14 H7	13,89	
	SD400-14.00-P		14,00	
	SD400-14.10-P		14,10	
	SD400-14.20-P		14,20	
	SD400-14.288-P		14,29	
	SD400-14.40-P		14,50	
	SD400-14.50-P		14,50	
	SD400-14.68-P		14,68	
	SD400-14.70-P		14,70	
	SD400-14.80-P	15 H6/15 H7	14,80	
	SD400-14.90-P	15 H6/15 H7	14,90	
	SD400-15.00-P		15,00	
	SD400-15.08-P		15,08	
	SD400-15.10-P		15,10	
	SD400-15.20-P		15,20	
	SD400-15.25-P		15,25	
	SD400-15.478-P		15,48	
	SD400-15.50-P		15,50	
	SD400-15.70-P		15,70	
	SD400-15.80-P	16 H6/16 H7	15,80	
	SD400-15.875-P	16 H6/16 H7	15,88	
	SD400-16.00-P		16,00	
	SD400-16.10-P		16,10	
	SD400-16.20-P		16,20	
	SD400-16.25-P		16,25	
	SD400-16.27-P		16,27	
	SD400-16.40-P		16,40	
	SD400-16.50-P		16,50	
	SD400-16.669-P		16,67	
	SD400-16.70-P		16,70	
	SD400-16.80-P	17 H6/17 H7	16,80	
	SD400-16.90-P	17 H6/17 H7	16,90	
	SD400-17.00-P		17,00	
	SD400-17.065-P		17,07	
	SD400-17.10-P		17,10	
	SD400-17.20-P		17,20	
	SD400-17.463-P		17,46	
	SD400-17.50-P		17,50	
	SD400-17.70-P		17,70	
	SD400-17.80-P	18 H6/18 H7	17,80	
	SD400-17.859-P	18 H6/18 H7	17,86	
	SD400-17.90-P	18 H6/18 H7	17,90	

For further information on what reamer to use and how to use it see reaming chapter.
The diameters marked with bold are available 1/10 2011 and the other diameters will be available 2012.

Make your choice of geometry; P= Universal geometry

Crown	P-geometry for steel	Reamer size*	∅ D k7	
 Tolerances	SD400-18.00-P		18,00	
	SD400-18.10-P		18,10	
	SD400-18.20-P		18,20	
	SD400-18.256-P		18,26	
	SD400-18.50-P		18,50	
	SD400-18.653-P		18,65	
	SD400-18.70-P		18,70	
	SD400-18.80-P	19 H6/19 H7	18.80	
	SD400-18.90-P	19 H6/19 H7	18.90	
	SD400-19.00-P		19.00	
	SD400-19.05-P		19.05	
	SD400-19.10-P		19.10	
	SD400-19.20-P		19.20	
	SD400-19.25-P		19.25	
	SD400-19.447-P		19.45	
	SD400-19.50-P		19.50	
	SD400-19.70-P		19.70	
	SD400-19.80-P	20 H6/20 H7	19.80	
	SD400-19.844-P	20 H6/20 H7	19.84	
	SD400-19.90-P	20 H6/20 H7	19.90	

For further information on what reamer to use and how to use it see reaming chapter.
The diameters marked with bold are available 1/10 2011 and the other diameters will be available 2012.

SD403

The recommended start values for general applications are marked **bold**.

SMG	Geometry	Recommended cutting speed v_c (m/min)	Recommended feed f, (mm/rev) for drill diameter			
			∅12,00-12,99	∅13,00-13,99	∅14,00-14,99	∅15,00-15,99
1	L	150-**110**-70	0,24-**0,28**-0,31	0,25-**0,29**-0,32	0,26-**0,30**-0,34	0,27-**0,31**-0,35
2–3	P	150-**110**-70	0,21-**0,25**-0,28	0,22-**0,26**-0,30	0,23-**0,27**-0,31	0,24-**0,28**-0,32
4–5	P	150-**110**-70	0,24-**0,28**-0,31	0,25-**0,29**-0,32	0,26-**0,30**-0,34	0,27-**0,31**-0,35
6	P	100-**70**-40	0,20-**0,24**-0,28	0,21-**0,25**-0,29	0,22-**0,26**-0,30	0,23-**0,27**-0,31
7	M	80-**60**-60	0,18-**0,20**-0,23	0,19-**0,21**-0,24	0,19-**0,22**-0,25	0,20-**0,23**-0,26
8-9	P	100-**80**-60	0,14-**0,16**-0,18	0,15-**0,17**-0,19	0,15-**0,17**-0,19	0,16-**0,18**-0,20
10	M	80-**60**-40	0,14-**0,16**-0,18	0,15-**0,17**-0,19	0,15-**0,17**-0,19	0,16-**0,18**-0,20
11	M	75-**60**-45	0,12-**0,14**-0,16	0,13-**0,15**-0,17	0,14-**0,15**-0,17	0,14-**0,16**-0,18
12	P	170-**130**-90	0,22-**0,29**-0,43	0,23-**0,31**-0,45	0,24-**0,32**-0,47	0,25-**0,33**-0,49
13–14	P	150-**110**-70	0,22-**0,29**-0,43	0,23-**0,31**-0,45	0,24-**0,32**-0,47	0,25-**0,33**-0,49
15	P	130-**100**-70	0,15-**0,24**-0,33	0,16-**0,25**-0,34	0,16-**0,26**-0,36	0,17-**0,27**-0,37
16	M	300-**260**-200	0,18-**0,27**-0,36	0,19-**0,28**-0,37	0,19-**0,29**-0,39	0,20-**0,30**-0,40
17	M	260-**220**-150	0,18-**0,27**-0,36	0,19-**0,28**-0,37	0,19-**0,29**-0,39	0,20-**0,30**-0,40
18	M	235-**175**-155	0,18-**0,27**-0,36	0,19-**0,28**-0,37	0,19-**0,29**-0,39	0,20-**0,30**-0,40

SMG	Geometry	Recommended cutting speed v_c (m/min)	Recommended feed f, (mm/rev) for drill diameter			
			∅16,00-16,99	∅17,00-17,99	∅18,00-18,99	∅19,00-19,99
1	L	150-**110**-70	0,28-**0,32**-0,36	0,29-**0,33**-0,37	0,29-**0,34**-0,38	0,30-**0,34**-0,39
2-3	P	150-**110**-70	0,25-**0,29**-0,33	0,25-**0,30**-0,34	0,26-**0,30**-0,35	0,27-**0,31**-0,35
4-5	P	150-**110**-70	0,28-**0,32**-0,36	0,29-**0,33**-0,37	0,29-**0,34**-0,38	0,30-**0,34**-0,39
6	P	100-**70**-40	0,24-**0,28**-0,32	0,24-**0,29**-0,33	0,25-**0,29**-0,34	0,25-**0,30**-0,34
7	M	80-**60**-60	0,21-**0,24**-0,27	0,21-**0,24**-0,28	0,22-**0,25**-0,28	0,22-**0,25**-0,29
8-9	P	100-**80**-60	0,16-**0,19**-0,21	0,17-**0,19**-0,21	0,17-**0,20**-0,22	0,18-**0,20**-0,22
10	M	80-**60**-40	0,16-**0,19**-0,21	0,17-**0,19**-0,21	0,17-**0,20**-0,22	0,18-**0,20**-0,22
11	M	75-**60**-45	0,14-**0,16**-0,19	0,15-**0,17**-0,19	0,15-**0,17**-0,20	0,15-**0,18**-0,20
12	P	170-**130**-90	0,26-**0,34**-0,51	0,26-**0,35**-0,52	0,27-**0,36**-0,53	0,28-**0,37**-0,54
13-14	P	150-**110**-70	0,26-**0,34**-0,51	0,26-**0,35**-0,52	0,27-**0,36**-0,53	0,28-**0,37**-0,54
15	P	130-**100**-70	0,18-**0,28**-0,38	0,18-**0,29**-0,39	0,18-**0,29**-0,40	0,19-**0,30**-0,41
16	M	300-**260**-200	0,21-**0,31**-0,41	0,21-**0,32**-0,42	0,22-**0,33**-0,43	0,22-**0,33**-0,44
17	M	260-**220**-150	0,21-**0,31**-0,41	0,21-**0,32**-0,42	0,22-**0,33**-0,43	0,22-**0,33**-0,44
18	M	235-**175**-155	0,21-**0,31**-0,41	0,21-**0,32**-0,42	0,22-**0,33**-0,43	0,22-**0,33**-0,44

SD405

The recommended start values for general applications are marked **bold**.
Reduce the values in case of poor stability in the application, high hardness of the workpiece or low coolant pressure in combination with drilling deep holes.

SMG	Geometry	Recommended cutting speed v_c (m/min)	Recommended feed f, (mm/rev) for drill diameter			
			∅12,00-12,99	∅13,00-13,99	∅14,00-14,99	∅15,00-15,99
1	L	140-**105**-70	0,18-**0,26**-0,33	0,19-**0,27**-0,35	0,20-**0,28**-0,36	0,21-**0,29**-0,37
2–3	P	140-**105**-70	0,18-**0,23**-0,29	0,19-**0,24**-0,31	0,19-**0,25**-0,32	0,20-**0,26**-0,33
4–5	P	140-**105**-70	0,20-**0,26**-0,31	0,21-**0,27**-0,32	0,22-**0,28**-0,34	0,23-**0,29**-0,35
6	P	90-**70**-40	0,15-**0,20**-0,26	0,16-**0,21**-0,27	0,16-**0,22**-0,28	0,17-**0,23**-0,29
7	M	80-**55**-30	0,11-**0,15**-0,20	0,11-**0,16**-0,20	0,12-**0,16**-0,21	0,12-**0,17**-0,22
8-9*	P	95-**75**-55	0,11-**0,14**-0,25	0,11-**0,15**-0,26	0,12-**0,15**-0,27	0,12-**0,16**-0,28
10*	M	75-**55**-35	0,11-**0,14**-0,25	0,11-**0,15**-0,26	0,12-**0,15**-0,27	0,12-**0,16**-0,28
11*	M	70-**55**-40	0,07-**0,11**-0,14	0,07-**0,11**-0,15	0,08-**0,12**-0,15	0,08-**0,12**-0,16
12	P	155-**130**-105	0,18-**0,28**-0,44	0,19-**0,29**-0,46	0,19-**0,30**-0,48	0,20-**0,31**-0,50
13–14	P	140-**105**-70	0,18-**0,28**-0,44	0,19-**0,29**-0,46	0,19-**0,30**-0,48	0,20-**0,31**-0,50
15	P	125-**100**-75	0,13-**0,22**-0,31	0,14-**0,23**-0,32	0,14-**0,24**-0,34	0,15-**0,25**-0,35
16	M	250-**220**-150	0,18-**0,27**-0,36	0,19-**0,28**-0,37	0,19-**0,29**-0,39	0,20-**0,30**-0,40
17	M	220-**180**-120	0,18-**0,27**-0,36	0,19-**0,28**-0,37	0,19-**0,29**-0,39	0,20-**0,30**-0,40
18	M	235-**175**-155	0,18-**0,27**-0,36	0,19-**0,28**-0,37	0,19-**0,29**-0,39	0,20-**0,30**-0,40

SMG	Geometry	Recommended cutting speed v_c (m/min)	Recommended feed f, (mm/rev) for drill diameter			
			∅16,00-16,99	∅17,00-17,99	∅18,00-18,99	∅19,00-19,99
1	L	140-**105**-70	0,21-**0,30**-0,38	0,22-**0,31**-0,39	0,22-**0,31**-0,40	0,23-**0,32**-0,41
2-3	P	140-**105**-70	0,21-**0,27**-0,34	0,21-**0,28**-0,35	0,22-**0,28**-0,36	0,22-**0,29**-0,37
4-5	P	140-**105**-70	0,24-**0,30**-0,36	0,24-**0,31**-0,37	0,25-**0,31**-0,38	0,25-**0,32**-0,39
6	P	90-**70**-40	0,18-**0,24**-0,30	0,18-**0,24**-0,31	0,18-**0,25**-0,31	0,19-**0,25**-0,32
7	M	80-**55**-30	0,12-**0,18**-0,23	0,13-**0,18**-0,23	0,13-**0,18**-0,24	0,13-**0,19**-0,24
8-9*	P	95-**75**-55	0,12-**0,16**-0,29	0,13-**0,17**-0,30	0,13-**0,17**-0,30	0,13-**0,18**-0,31
10*	M	75-**55**-35	0,12-**0,16**-0,29	0,13-**0,17**-0,30	0,13-**0,17**-0,30	0,13-**0,18**-0,31
11*	M	70-**55**-40	0,08-**0,12**-0,16	0,08-**0,13**-0,17	0,09-**0,13**-0,17	0,09-**0,13**-0,18
12	P	155-**130**-105	0,21-**0,32**-0,52	0,21-**0,33**-0,53	0,22-**0,34**-0,54	0,22-**0,34**-0,55
13-14	P	140-**105**-70	0,21-**0,32**-0,52	0,21-**0,33**-0,53	0,22-**0,34**-0,54	0,22-**0,34**-0,55
15	P	125-**100**-75	0,15-**0,26**-0,36	0,16-**0,26**-0,37	0,16-**0,27**-0,38	0,17-**0,28**-0,39
16	M	250-**220**-150	0,21-**0,31**-0,41	0,21-**0,32**-0,42	0,22-**0,33**-0,43	0,22-**0,33**-0,44
17	M	220-**180**-120	0,21-**0,31**-0,41	0,21-**0,32**-0,42	0,22-**0,33**-0,43	0,22-**0,33**-0,44
18	M	235-**175**-155	0,21-**0,31**-0,41	0,21-**0,32**-0,42	0,22-**0,33**-0,43	0,22-**0,33**-0,44

* When using SD405 in stainless steel a pre-drilling operation might be needed.

Crownloc®Plus – Cutting data for superalloys

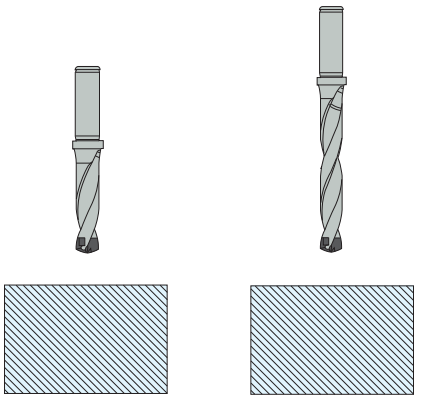
Cutting Data

The recommended start values for general applications are marked **bold**.
Reduce the values in case of poor stability in the application, high hardness of the workpiece or low coolant pressure in combination with drilling deep holes (> 3 x D).

For each material group there is a reference material according to the list below. To see all materials belonging to each group please look at page 499. Look at the materials machinability factor and adjust the cutting speed accordingly. For example a material with machinability 1.1 in SMG22 will have Vc 1,1x50=55m/min

SMG	Reference material	Geometry	Recommended cutting speed v_c (m/min)	Recommended feed f, (mm/rev) for drill diameter				
			Internal through coolant supply	∅ 10,00-11,99	∅12,00-13,99	∅14,00-15,99	∅16,00-17,99	∅18,00-25,99
19	Discalloy	M	35	0,07-**0,10**-0,13	0,07-**0,10**-0,13	0,08-**0,12**-0,15	0,10-**0,14**-0,18	0,10-**0,14**-0,18
20	Stellite 21	M	25	0,07-**0,10**-0,13	0,07-**0,10**-0,13	0,08-**0,12**-0,15	0,10-**0,14**-0,18	0,10-**0,14**-0,18
21	Inconel 718	M	25	0,07-**0,10**-0,13	0,07-**0,10**-0,13	0,08-**0,12**-0,15	0,10-0,14-0,18	0,10-**0,14**-0,18
22	Ti 6Al-4V	M	50	0,13-**0,16**-0,20	0,13-**0,16**-0,20	0,16-**0,20**-0,24	0,18-**0,23**-0,27	0,18-**0,23**-0,27

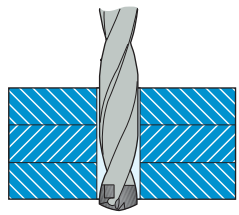
Machined surface



No pre-drilling or entrance feed needed when using SD403 and SD405.
(When using SD405 in stainless steel a pre-drilling operation might be needed).

Stacked material

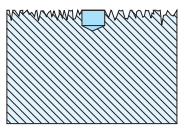
It is possible to drill stacked material as long as the pieces are securely clamped together, so that there are no air gaps between the parts.
Air gaps can affect chip evacuation, and thereby damage the drill.



Irregular/Angled hole entrance

If irregular or angle entrance use pre operations accordingly.

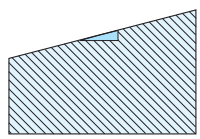
When using drills >3 x D pre-drilling with a standard tool e.g. SD403 is recommended.



Irregular hole entrance

Pre-drilling operation alternatives

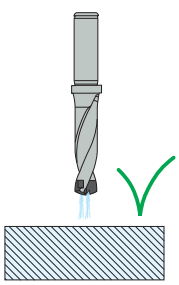
Machine a flat using an end mill from the Seco range.



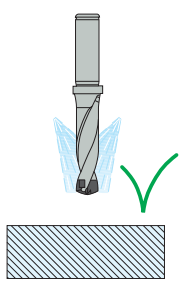
Angled hole entrance

Coolant recommendations

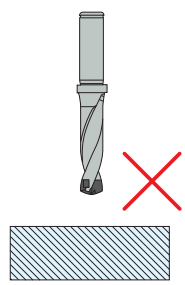
Coolant pressure	**Coolant mix**
Minimum recommended coolant pressure 10 bar with ≤ 3 x D Minimum recommended coolant pressure 30 bar with > 3 x D	Recommended emulsion mix 6-8%. When drilling in stainless steels, superalloys and high strength steels a mix of 10% is recommended.



First choice



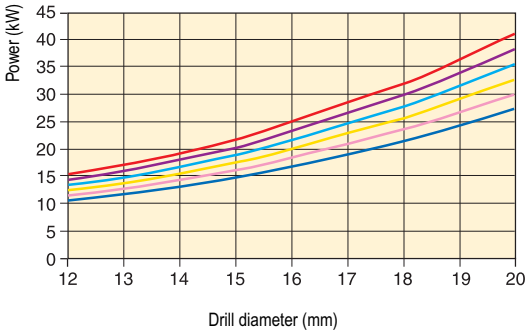
≤ 3 x D



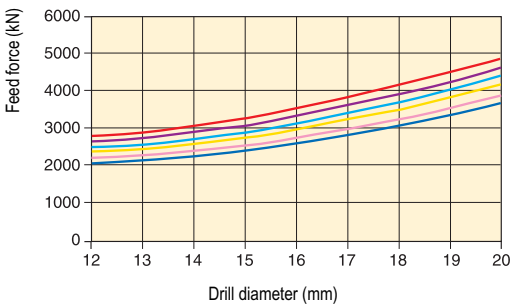
Crownloc®Plus – Machining data

The values in the graphs vary with e.g. cutting data, material, efficiency of the machine and tool wear. The graphs below are valid for Seco Material Group (SMG) 4 and cutting speed 90 m/min.

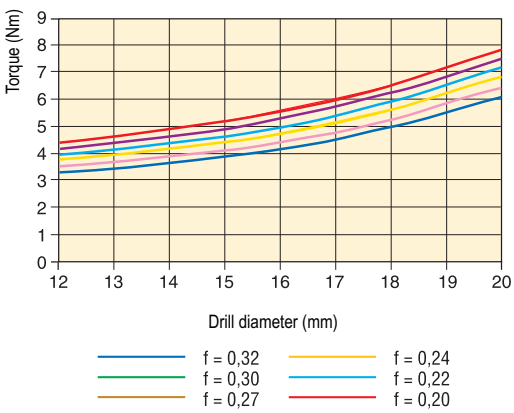
Net power consumption



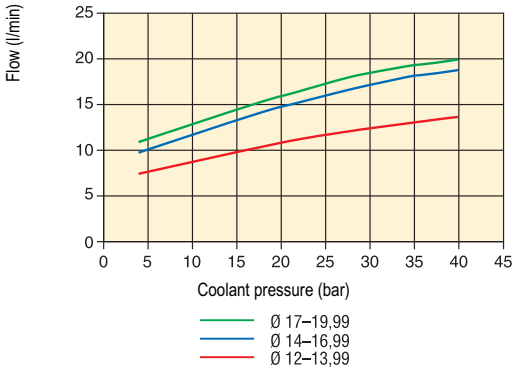
Feed force



Drilling torque



Coolant flow at different pressures



Recommended coolant flow Dx1 l/min.
Minimum coolant flow D/2 l/min.
D = Drill diameter.
Minimum recommended coolant pressure 10 bar with < 3 x D.
Minimum recommended coolant pressure 20 bar with > 3 x D.
Minimum recommended coolant pressure 40 bar with > 5 x D.

Coolant mix
Recommended emulsion mix is 6–8%. When drilling in stainless steels, superalloys and high strength steels a mix of 10% is recommended.

Hole tolerances/Surface finish

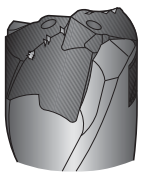
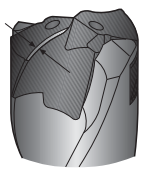
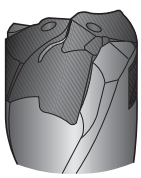
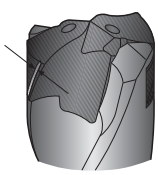
SD403 and SD405 IT9–10/R_a 1-4*		
Drill dia, D_c (mm)	**IT9 tolerance (µm)**	**IT10 tolerance (µm)**
>10–18	43	70
>18–30	52	84

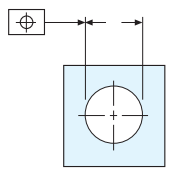
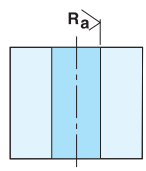
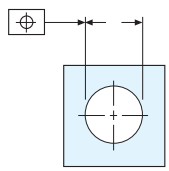
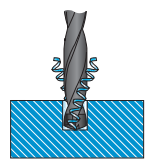
*Deterioration of surface finish and hole tolerance can occur when drilling in low carbon steel or stainless steel. Use the shortest drill possible for best hole quality.

Crownloc® Plus – Troubleshooting

Initial check points:

- Fixturing stability
- Machine spindle condition
- Tool holder condition
- Clamping of tool:
  - Run-out within 0.06 TIR
- Chip evacuation:
  - Cutting data
- Coolant:
  - Pressure
  - Flow
  - Concentration

Cutting edges get chipped 	• Reduce the feed/rev. • If the drill vibrates, reduce the cutting speed and increase the feed rate. • When drilling through rough or hard surfaces, reduce the feed rate by 30%-50% during entrance and exit.
Too fast flank wear 	• Check that the correct geometry is used. • Reduce the cutting speed.
Groove wear 	• Reduce the feed/rev. • Reduce the cutting speed. • Increase the coolant concentration.
Wear of peripheral land margins 	• Check that the correct geometry is used. • Reduce the cutting speed. • Increase the coolant concentration. • When drilling through rough or hard surfaces, reduce the feed rate by 30%–50% during entrance and exit.

Unsatisfactory diameter tolerance 	• Increase the feed/rev. • Use a Seco Feedmax solid carbide drill see Feedmax chapter. • Use a reaming operation see reaming chapter. • Use a boring operation see boring chapter.
Unsatisfactory surface finish 	• Reduce the feed/rev. • Increase the cutting speed. • Check that the correct geometry is used. • Use a Seco Feedmax solid carbide drill see Feedmax chapter. • Use a reaming operation see reaming chapter.
Unsatisfactory positioning of the hole 	Reduce the feed/rev. • If drilling through rough, hard and angled surfaces - reduce the feed by 30%–50% during entrance and exit. • Pre drill with a 140° point angle. • Use a Seco Feedmax solid carbide drill see Feedmax. • Use a boring operation see boring chapter.
Chip jamming due to long chips 	• Increase the feed. • In long chipping materials SMG1-3, SMG8: – Increase cutting speed and reduce feed/rev. – Use the -L geometry.