Small holes can be easy to drill – ***with the right tools!***

rainfordprecision.com

OSAWA

TYPHOON SUH MINI – *Through Coolant Drills*

Special Offer Prices
– see inside

Product Range with internal coolant feed, designed for drilling accuracy

Drill small holes with accuracy using our high performance *through coolant drills*, 1 mm to 3 mm in 0.1 mm increments.

- Miniature drills are manufactured with unified 3 mm shank.
- Oil holes for internal coolant feed.
- Self-centering geometry: highly accurate holes.
- Straight and reinforced edge: high stability and chipping resistance.
- Edge geometry: special design for edge and corner protection.
- Chip pocket: highly polished to prevent welding and to improve the chip ejection.
- Substrate and coating: specifically selected for high wear resistance, long and reliable life.
- Different cutting length types from short (5xD) to extra-long (30xD).

In our experience, many companies have difficulty with precision drilling of small holes. The majority of issues are caused by using the wrong drill for the material or making do with a drill which is readily available, but not necessarily up to the job. This can be costly in time and money.

We help customers by supplying the correct drill for the material, with the right geometry and coating – and tool holding if necessary.

With our advice, you can be sure you are supplied with the right tools, making the drilling of your small diameter holes easy.

Call 01744 889726 to ask for assistance before you order

Extensive range – Available from Ø1 mm to Ø3 mm

355 SUH Mini *5xD*
from 6.5 to 19.5 mm hole depth

358 SUH Mini *8xD*
from 9.5 mm to 28.5 mm hole depth

3512 SUH Mini *12xD*
from 13.5 mm to 40.5 mm hole depth

3520 SUH Mini *20xD*
from 21.5 mm to 64.5 mm hole depth

3525 SUH Mini *25xD*
from 26.5 mm to 79.5 mm hole depth

3530 SUH Mini *30xD*
from 31.5 mm to 94.5 mm hole depth

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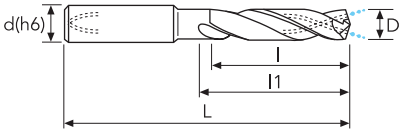

TYPHOON SUH MINI – *Through Coolant Drills*

Diameter (mm) column applicable to all lengths

355 SUH MINI
Super Micro Grain Carbide
Point Angle 135 degree, 3 mm shank
Diameter Tolerance +0 / -0.01 mm

5 x D Length

Diameter (mm)	Max Hole Depth (mm)	Clearance Length (mm)	*Special Offer Price*
D (h7)	l	l1	£
1.00	6.5	8.0	£ 56.20
1.10	7.2	8.7	£ 56.20
1.20	7.8	9.3	£ 56.20
1.30	8.5	10.0	£ 56.20
1.40	9.1	10.6	£ 56.20
1.50	9.8	11.3	£ 56.20
1.60	10.4	11.9	£ 56.20
1.70	11.1	12.6	£ 56.20
1.80	11.7	13.2	£ 56.20
1.90	12.4	13.9	£ 56.20
2.00	13.0	16.0	£ 56.20
2.10	13.7	16.9	£ 56.20
2.20	14.3	17.6	£ 56.20
2.30	15.0	18.5	£ 56.20
2.40	15.6	19.2	£ 56.20
2.50	16.3	20.1	£ 56.20
2.60	16.9	20.8	£ 56.20
2.70	17.6	21.7	£ 56.20
2.80	18.2	22.4	£ 56.20
2.90	18.9	23.3	£ 56.20
3.00	19.5	24.0	£ 56.20

358 SUH MINI
Super Micro Grain Carbide
Point Angle 135 degree, 3 mm shank
Diameter Tolerance +0 / -0.01 mm

8 x D Length

Max Hole Depth (mm)	Clearance Length (mm)	*Special Offer Price*
l	l1	£
9.5	11.0	£ 66.91
10.5	12.0	£ 66.91
11.4	12.9	£ 66.91
12.4	13.9	£ 66.91
13.3	14.8	£ 66.91
14.3	15.8	£ 66.91
15.2	16.7	£ 66.91
16.2	17.7	£ 66.91
17.1	18.6	£ 66.91
18.1	19.6	£ 66.91
19.0	22.0	£ 66.91
20.0	23.2	£ 66.91
20.9	24.2	£ 66.91
21.9	25.4	£ 66.91
22.8	26.4	£ 66.91
23.8	27.6	£ 66.91
24.7	28.6	£ 66.91
25.7	29.8	£ 66.91
26.6	30.8	£ 66.91
27.6	32.0	£ 66.91
28.5	33.0	£ 66.91

3512 SUH MINI
Super Micro Grain Carbide
Point Angle 135 degree, 3 mm shank
Diameter Tolerance +0 / -0.01 mm

12 x D Length

Max Hole Depth (mm)	Clearance Length (mm)	*Special Offer Price*
l	l1	£
13.5	15.0	£ 77.95
14.9	16.4	£ 77.95
16.2	17.7	£ 77.95
17.6	19.1	£ 77.95
18.9	20.4	£ 77.95
20.3	21.8	£ 77.95
21.6	23.1	£ 84.16
23.0	24.5	£ 84.16
24.3	25.8	£ 84.16
25.7	27.2	£ 84.16
27.0	30.0	£ 84.16
28.4	31.6	£ 84.16
29.7	33.0	£ 84.16
31.1	34.6	£ 84.16
32.4	36.0	£ 90.79
33.8	37.6	£ 90.79
35.1	39.0	£ 90.79
36.5	40.6	£ 90.79
37.8	42.0	£ 90.79
39.2	43.6	£ 90.79
40.5	45.0	£ 90.79

3520 SUH MINI
Super Micro Grain Carbide
Point Angle 135 degree, 3 mm shank
Diameter Tolerance +0 / -0.01 mm

20 x D Length

Max Hole Depth (mm)	Clearance Length (mm)	*Special Offer Price*
l	l1	£
26.5	28.0	£ 81.48
29.2	30.7	£ 81.48
31.8	33.3	£ 81.48
34.5	36.0	£ 81.48
37.1	38.6	£ 81.48
39.8	41.3	£ 91.26
42.4	43.9	£ 91.26
45.1	46.6	£ 91.26
47.7	49.2	£ 91.26
50.4	51.9	£ 91.26
53.0	56.0	£ 91.26
55.7	58.8	£ 91.26
58.3	61.6	£ 91.26
61.0	64.4	£ 104.96
63.6	67.2	£ 104.96
66.3	70.0	£ 104.96
68.9	72.8	£ 104.96
71.6	75.6	£ 104.96
74.2	78.4	£ 104.96
76.9	81.2	£ 104.96
79.5	84.0	£ 104.96

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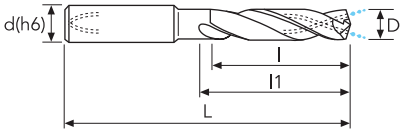

TYPHOON SUH MINI – *Through Coolant Drills*

Diameter (mm) column applicable to all lengths

3525 SUH MINI
Super Micro Grain Carbide
Point Angle 135 degree, 3 mm shank
Diameter Tolerance +0 / -0.01 mm

25 x D Length

Diameter (mm)	Max Hole Depth (mm)	Clearance Length (mm)	*Special Offer Price*
D (h7)	l	l1	£
1.00	26.5	28.0	£ *105.97*
1.10	29.2	30.7	£ *105.97*
1.20	31.8	33.3	£ *105.97*
1.30	34.5	36.0	£ *105.97*
1.40	37.1	38.6	£ *105.97*
1.50	39.8	41.3	£ *105.97*
1.60	42.4	43.9	£ *104.29*
1.70	45.1	46.6	£ *104.29*
1.80	47.7	49.2	£ *104.29*
1.90	50.4	51.9	£ *109.88*
2.00	53.0	56.0	£ *109.88*
2.10	55.7	58.8	£ *109.88*
2.20	58.3	61.6	£ *109.88*
2.30	61.0	64.4	£ *109.88*
2.40	63.6	67.2	£ *109.88*
2.50	66.3	70.0	£ *109.88*
2.60	68.9	72.8	£ *111.55*
2.70	71.6	75.6	£ *111.55*
2.80	74.2	78.4	£ *111.55*
2.90	76.9	81.2	£ *113.79*
3.00	79.5	84.0	£ *113.79*

3530 SUH MINI
Super Micro Grain Carbide
Point Angle 135 degree, 3 mm shank
Diameter Tolerance +0 / -0.01 mm

30 x D Length

Max Hole Depth (mm)	Clearance Length (mm)	*Special Offer Price*
l	l1	£
31.50	33.0	£ *113.21*
34.70	36.20	£ *113.21*
37.80	39.30	£ *113.21*
41.00	42.50	£ *119.56*
44.10	45.60	£ *119.56*
47.30	48.80	£ *119.56*
50.40	51.90	£ *117.88*
53.60	55.10	£ *117.88*
56.70	58.20	£ *117.88*
59.90	61.40	£ *117.88*
63.00	66.00	£ *117.88*
66.20	69.30	£ *117.88*
69.30	72.60	£ *117.88*
72.50	75.90	£ *117.88*
75.60	79.20	£ *120.42*
78.80	82.50	£ *120.42*
81.00	85.80	£ *122.10*
85.10	89.10	£ *124.40*
88.20	92.40	£ *124.40*
91.40	95.70	£ *124.40*
94.50	99.00	£ *124.40*

343TA Micro Pilot Drill *(not through coolant)*
Super Micro Grain Carbide
Point Angle 140 degree
Diameter Tolerance +0 / -0.01 mm

Pilot *Drills*

Diameter (mm)	Shank Diameter (mm)	Max Hole Depth (mm)	*Special Offer Price*
D	D (h6)	l	£
1.00	2	6	£ *13.19*
1.10	2	7	£ *13.19*
1.20	2	8	£ *13.19*
1.30	2	8	£ *13.19*
1.40	2	9	£ *13.19*
1.50	2	9	£ *13.19*
1.60	2	10	£ *13.19*
1.70	2	10	£ *13.19*
1.80	2	11	£ *13.19*
1.90	2	11	£ *13.19*
2.00	2	12	£ *13.19*
2.10	2.1	12	£ *13.19*
2.20	2.2	13	£ *13.76*
2.30	2.3	13	£ *13.76*
2.40	2.4	14	£ *13.76*
2.50	2.5	14	£ *13.76*
2.60	2.6	14	£ *13.76*
2.70	2.7	16	£ *14.79*
2.80	2.8	16	£ *15.30*
2.90	2.9	16	£ *15.30*
3.00	3	16	£ *15.81*

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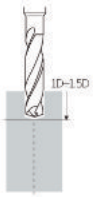
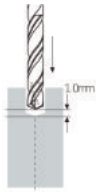
TYPHOON SUH MINI – *Machining Examples*



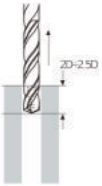
Machining of DEEP HOLES PERPENDICULAR to the surface

STEP 1
Use a pilot drill (343TA) with drill point 140° to start the hole, drill to depth = 1.5 D.



STEP 2
With coolant feed OFF, enter the pilot hole with SUH MINI drill at Vc=20 m/min and fn=0.3 mm/rev. Position the SUH MINI drill at 1 mm from the end of the pilot hole, start the coolant supply and drill feed.

STEP 3
Continue drilling operation without steps for chip ejection. Where making through holes, reduce the feed by 30% before the hole exit (1 mm approx.). Stop the coolant feed.

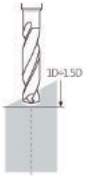


STEP 4
Withdraw the drill using max rpm and double fn, until 2 x D from the hole entrance.

STEP 5
Complete the exit from the hole by using slow and constant speed.

To Machine HOLES on SLANTED or IRREGULAR surfaces

Prepare a flat surface of the same size as the drilling diameter with an endmill.



STEP 1
Use a pilot drill (343TA) with drill point 140° to start the hole, drill to depth = 1.5 D.

– Continue in the same way as described in STEPS 2 to 5 (left).

TYPHOON Through Coolant Drills – *Feed and Speed Chart example Stainless Steel*

Material Group ISO 513	M1 M2			M3			M4			M5		
Hardness/Rm	< 750 N/mm²			550-850 N/mm²			650-950 N/mm²			850-1200 N/mm²		
Vc (m/min)	30-39*			27-35*			24-31*			21-27*		
D (mm)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)
1.0	11140	0,027	300	9870	0,028	280	8920	0,027	240	7640	0,017	130
1.1	10130	0,030	300	8970	0,031	280	8110	0,030	240	6950	0,019	130
1.2	9290	0,032	300	8230	0,034	280	7430	0,032	240	6370	0,020	130
1.3	8570	0,035	300	7590	0,037	280	6860	0,035	240	5880	0,022	130
1.4	7960	0,038	300	7050	0,040	280	6370	0,038	240	5460	0,024	130
1.5	7430	0,040	300	6580	0,043	280	5950	0,040	240	5100	0,025	130
1.6	6970	0,050	350	6170	0,052	320	5570	0,048	270	4780	0,033	160
1.7	6560	0,053	350	5810	0,055	320	5250	0,051	270	4500	0,036	160
1.8	6190	0,057	350	5490	0,058	320	4960	0,054	270	4250	0,038	160
1.9	5870	0,060	350	5200	0,062	320	4700	0,057	270	4030	0,040	160
2.0	5570	0,063	350	4940	0,065	320	4460	0,061	270	3820	0,042	160
2.1	5310	0,075	400	4700	0,077	360	4250	0,071	300	3640	0,052	190
2.2	5070	0,079	400	4490	0,080	360	4060	0,074	300	3480	0,055	190
2.3	4850	0,082	400	4290	0,084	360	3880	0,077	300	3330	0,057	190
2.4	4650	0,086	400	4120	0,087	360	3720	0,081	300	3190	0,060	190
2.5	4460	0,090	400	3950	0,091	360	3570	0,084	300	3060	0,062	190
2.6	4290	0,105	450	3800	0,105	400	3430	0,093	320	2940	0,075	220
2.7	4130	0,109	450	3660	0,109	400	3310	0,097	320	2830	0,078	220
2.8	3980	0,113	450	3530	0,113	400	3190	0,100	320	2730	0,081	220
2.9	3850	0,117	450	3410	0,117	400	3080	0,104	320	2640	0,083	220
3.0	3720	0,121	450	3290	0,122	400	2980	0,107	320	2550	0,086	220

*if the machine tool or the equipment wouldn't allow to reach the requested rpm, please use the max. available rpm recalculating the Vf value (Vf=n available x fn)

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