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Material	Strength (N/mm <sup>2</sup> )	Feed (mm/Z)	Ø1x2			Ø1x30			Ø1.2x5			Ø1.2x20			
			ae=1xD	ae=0.25xD	ae=0.1xD	ae=1xD	ae=0.015xD	ae=0.01xD	ae=1xD	ae=0.25xD	ae=0.1xD	ae=1xD	ae=0.04xD	ae=0.015xD	
		Infeed in mm		ap=0.2xD		ap=L2 max		ap=0.1xD		ap=0.2xD		ap=L2 max		ap=0.03xD	
		Application													
<b>N</b>		<b>Vc (m/min)</b>	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
1.1	Aluminium, alloyed	<500	500	0.025	0.03	0.035	0.01	0.015	0.02	0.025	0.03	0.035	0.02	0.025	0.03
1.2	Aluminium, alloyed	<600	480	0.025	0.03	0.035	0.01	0.015	0.02	0.025	0.03	0.035	0.02	0.025	0.03
2.1-2.3	Aluminium, casted	<600	450	0.022	0.027	0.032	0.008	0.013	0.017	0.022	0.027	0.032	0.017	0.022	0.027
3.1-3.3	Cooper, alloyed	<650	220	0.019	0.024	0.029	0.006	0.011	0.014	0.019	0.024	0.029	0.014	0.019	0.024
4.1	Magnesium, alloyed	<250	500	0.025	0.03	0.035	0.01	0.015	0.02	0.025	0.03	0.035	0.02	0.025	0.03
5.1	Thermoplastic	<100	400	0.022	0.027	0.032	0.008	0.013	0.017	0.022	0.027	0.032	0.017	0.022	0.027
5.2	Duroplastic	<150	350	0.019	0.024	0.029	0.006	0.011	0.014	0.019	0.024	0.029	0.014	0.019	0.024

Material	Strength (N/mm <sup>2</sup> )	Feed (mm/Z)	Ø1.5x4			Ø1.5x30			Ø1.8x8			Ø1.8x20			
			ae=1xD	ae=0.25xD	ae=0.1xD	ae=1xD	ae=0.03xD	ae=0.01xD	ae=1xD	ae=0.25xD	ae=0.1xD	ae=1xD	ae=0.13xD	ae=0.05xD	
		Infeed in mm		ap=0.2xD		ap=L2 max		ap=0.1xD		ap=0.2xD		ap=L2 max		ap=0.1xD	
		Application													
<b>N</b>		<b>Vc (m/min)</b>	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
1.1	Aluminium, alloyed	<500	500	0.025	0.03	0.035	0.015	0.02	0.025	0.03	0.035	0.04	0.025	0.03	0.035
1.2	Aluminium, alloyed	<600	480	0.025	0.03	0.035	0.015	0.02	0.025	0.03	0.035	0.04	0.025	0.03	0.035
2.1-2.3	Aluminium, casted	<600	450	0.022	0.027	0.032	0.013	0.017	0.022	0.027	0.031	0.035	0.022	0.026	0.03
3.1-3.3	Cooper, alloyed	<650	220	0.019	0.024	0.029	0.011	0.014	0.019	0.024	0.027	0.03	0.019	0.022	0.025
4.1	Magnesium, alloyed	<250	500	0.025	0.03	0.035	0.015	0.02	0.025	0.03	0.035	0.04	0.025	0.03	0.035
5.1	Thermoplastic	<100	400	0.022	0.027	0.032	0.013	0.017	0.022	0.027	0.031	0.035	0.022	0.026	0.03
5.2	Duroplastic	<150	350	0.019	0.024	0.029	0.011	0.014	0.019	0.024	0.027	0.03	0.019	0.022	0.025

Material	Strength (N/mm <sup>2</sup> )	Feed (mm/Z)	Ø2x4			Ø2x40			Ø2.5x15			Ø2.5x30			
			ae=1xD	ae=0.25xD	ae=0.1xD	ae=1xD	ae=0.015xD	ae=0.01xD	ae=1xD	ae=0.25xD	ae=0.1xD	ae=1xD	ae=0.09xD	ae=0.04xD	
		Infeed in mm		ap=0.2xD		ap=L2 max		ap=0.1xD		ap=0.2xD		ap=L2 max		ap=0.07xD	
		Application													
<b>N</b>		<b>Vc (m/min)</b>	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
1.1	Aluminium, alloyed	<500	500	0.03	0.035	0.04	0.02	0.025	0.03	0.03	0.035	0.04	0.025	0.03	0.035
1.2	Aluminium, alloyed	<600	480	0.03	0.035	0.04	0.02	0.025	0.03	0.03	0.035	0.04	0.025	0.03	0.035
2.1-2.3	Aluminium, casted	<600	450	0.027	0.031	0.035	0.017	0.021	0.025	0.027	0.031	0.035	0.022	0.026	0.03
3.1-3.3	Cooper, alloyed	<650	220	0.024	0.027	0.03	0.014	0.017	0.02	0.024	0.027	0.03	0.019	0.022	0.025
4.1	Magnesium, alloyed	<250	500	0.03	0.035	0.04	0.02	0.025	0.03	0.03	0.035	0.04	0.025	0.03	0.035
5.1	Thermoplastic	<100	400	0.027	0.031	0.035	0.017	0.021	0.025	0.027	0.031	0.035	0.022	0.026	0.03
5.2	Duroplastic	<150	350	0.024	0.027	0.03	0.014	0.017	0.02	0.024	0.027	0.03	0.019	0.022	0.025

**NOTE** | Values in the table are the shortest and the longest overhang length (L3) of each dimension; please calculate fz, ap and ae depending on the given values.  
 ae/ap(max) = 0.5x corner radius!

		Dimension		Ø 3x6			Ø 3x45					
		Infeed in mm		ae= 1xD	ae= 0.25xD	ae= 0.1xD	ae= 1xD	ae= 0.05xD	ae= 0.02xD			
		Application		ap= 0.2xD	ap= L2 max	ae= 0.1xD	ap= 0.04xD	ap= L2 max	ae= 0.02xD			
		Application										
Material	Strength (N/mm <sup>2</sup> )	Feed (mm/Z)	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
N	Vc (m/min)											
1.1	Aluminium, alloyed	<500	500	0.033	0.038	0.043	0.025	0.03	0.035			
1.2	Aluminium, alloyed	<600	480	0.033	0.038	0.043	0.025	0.03	0.035			
2.1-2.3	Aluminium, casted	<600	450	0.03	0.034	0.038	0.022	0.026	0.03			
3.1-3.3	Cooper, alloyed	<650	220	0.027	0.03	0.033	0.019	0.022	0.025			
4.1	Magnesium, alloyed	<250	500	0.033	0.038	0.043	0.025	0.03	0.035			
5.1	Thermoplastic	<100	400	0.03	0.034	0.038	0.022	0.026	0.03			
5.2	Duroplastic	<150	350	0.027	0.03	0.033	0.019	0.022	0.025			

**NOTE** | Values in the table are the shortest and the longest overhang length (L3) of each dimension; please calculate fz, ap and ae depending on the given values.  
 ae/ap(max) = 0.5x corner radius!

Cooling

Tolerance d04

Coating AlphaSlide Rainbow

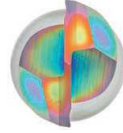
Strategy **HSC**

Application

Features **HA**

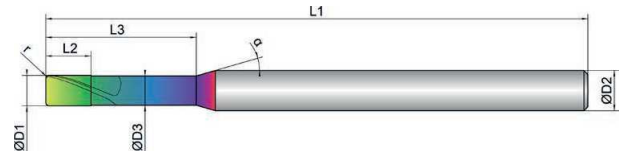


- Optimized face geometry for excellent surfaces and highest dimensional accuracy
- Defined microbevel for support and stabilization
- Polished chip space for ideal chip evacuation



- Multipass milling of 3D contours

- Tolerance D1: -0.001/-0.006 mm
- Tolerance D3: 0/-0.02 mm
- Radius tolerance r: 0/-0.003 mm (measured from 0-90°)



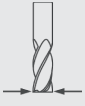
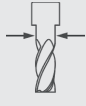
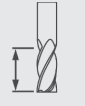
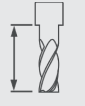

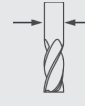




**Roughing**



**Finishing**



EXN1-M16-0143	D1 mm ø	D3 mm ø	L2 mm	L3 mm	L1 mm	D2 mm ø	z #	r mm	$\alpha$ °
1X2	1.0	0.95	1.0	2.0	50.0	4.0	2	0.30	30
1X3	1.0	0.95	1.0	3.0	50.0	4.0	2	0.30	30
1X4	1.0	0.95	1.0	4.0	50.0	4.0	2	0.30	30
1X5	1.0	0.95	1.0	5.0	50.0	4.0	2	0.30	30
1X6	1.0	0.95	1.0	6.0	50.0	4.0	2	0.30	30
1X8	1.0	0.95	1.0	8.0	50.0	4.0	2	0.30	30
1X10	1.0	0.95	1.0	10.0	50.0	4.0	2	0.30	30
1X12	1.0	0.95	1.0	12.0	54.0	4.0	2	0.30	30
1X15	1.0	0.95	1.0	15.0	60.0	4.0	2	0.30	30
1X20	1.0	0.95	1.0	20.0	60.0	4.0	2	0.30	30
1X25	1.0	0.95	1.0	25.0	70.0	4.0	2	0.30	30
1X30	1.0	0.95	1.0	30.0	70.0	4.0	2	0.30	30
1,2X5	1.2	1.14	1.2	5.0	50.0	4.0	2	0.30	30
1,2X10	1.2	1.14	1.2	10.0	50.0	4.0	2	0.30	30
1,2X15	1.2	1.14	1.2	15.0	54.0	4.0	2	0.30	30
1,2X20	1.2	1.14	1.2	20.0	60.0	4.0	2	0.30	30
1,5X4	1.5	1.44	1.5	4.0	50.0	4.0	2	0.30	30
1,5X6	1.5	1.44	1.5	6.0	50.0	4.0	2	0.30	30
1,5X8	1.5	1.44	1.5	8.0	50.0	4.0	2	0.30	30

EXN1-M16-0143	D1	D3	L2	L3	L1	D2	z	r		$\alpha$
	 mm $\varnothing$	 mm $\varnothing$	 mm	 mm	 mm	 mm $\varnothing$	 #	 mm	 °	 °
1,5X10	1.5	1.44	1.5	10.0	50.0	4.0	2	0.30	30	16
1,5X12	1.5	1.44	1.5	12.0	54.0	4.0	2	0.30	30	16
1,5X15	1.5	1.44	1.5	15.0	54.0	4.0	2	0.30	30	16
1,5X20	1.5	1.44	1.5	20.0	60.0	4.0	2	0.30	30	16
1,5X25	1.5	1.44	1.5	25.0	60.0	4.0	2	0.30	30	16
1,5X30	1.5	1.44	1.5	30.0	70.0	4.0	2	0.30	30	16
1,8X8	1.8	1.74	1.8	8.0	50.0	4.0	2	0.30	30	16
1,8X10	1.8	1.74	1.8	10.0	50.0	4.0	2	0.30	30	16
1,8X15	1.8	1.74	1.8	15.0	50.0	4.0	2	0.30	30	16
1,8X20	1.8	1.74	1.8	20.0	54.0	4.0	2	0.30	30	16
2X4	2.0	1.91	2.0	4.0	50.0	4.0	2	0.30	30	16
2X6	2.0	1.91	2.0	6.0	50.0	4.0	2	0.30	30	16
2X8	2.0	1.91	2.0	8.0	50.0	4.0	2	0.30	30	16
2X10	2.0	1.91	2.0	10.0	50.0	4.0	2	0.30	30	16
2X12	2.0	1.91	2.0	12.0	54.0	4.0	2	0.30	30	16
2X15	2.0	1.91	2.0	15.0	54.0	4.0	2	0.30	30	16
2X20	2.0	1.91	2.0	20.0	60.0	4.0	2	0.30	30	16
2X25	2.0	1.91	2.0	25.0	70.0	4.0	2	0.30	30	16
2X30	2.0	1.91	2.0	30.0	70.0	4.0	2	0.30	30	16
2X35	2.0	1.91	2.0	35.0	80.0	4.0	2	0.30	30	16
2X40	2.0	1.91	2.0	40.0	80.0	4.0	2	0.30	30	16
2,5X15	2.5	2.41	2.5	15.0	54.0	4.0	2	0.30	30	16
2,5X20	2.5	2.41	2.5	20.0	54.0	4.0	2	0.30	30	16
2,5X25	2.5	2.41	2.5	25.0	60.0	4.0	2	0.30	30	16
2,5X30	2.5	2.41	2.5	30.0	70.0	4.0	2	0.30	30	16
3X6	3.0	2.91	4.5	6.0	50.0	4.0	2	0.30	30	16
3X8	3.0	2.91	4.5	8.0	50.0	4.0	2	0.30	30	16
3X10	3.0	2.91	4.5	10.0	50.0	4.0	2	0.30	30	16
3X12	3.0	2.91	4.5	12.0	50.0	4.0	2	0.30	30	16
3X15	3.0	2.91	4.5	15.0	54.0	4.0	2	0.30	30	16
3X20	3.0	2.91	4.5	20.0	54.0	4.0	2	0.30	30	16
3X25	3.0	2.91	4.5	25.0	60.0	4.0	2	0.30	30	16
3X30	3.0	2.91	4.5	30.0	70.0	4.0	2	0.30	30	16
3X35	3.0	2.91	4.5	35.0	80.0	4.0	2	0.30	30	16
3X40	3.0	2.91	4.5	40.0	80.0	4.0	2	0.30	30	16
3X45	3.0	2.91	4.5	45.0	90.0	4.0	2	0.30	30	16