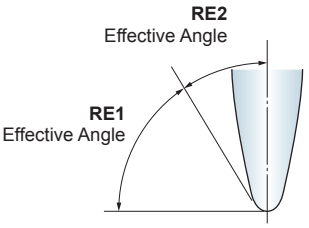
Recommended Cutting Conditions

Effective Angle

Please refer to the table below for the use of the nose radius (RE1) and tangential form radius (RE2).

(inch)

Order Number	Nose Radius		Tangential Form Radius	
	RE1	Effective Angle	**RE2**	Effective Angle
VQT6URR020R075S08	.079 (2mm)	76.6°	2.953 (75mm)	13.4°
VQT6URR020R085S10	.079 (2mm)	74.5°	3.346 (85mm)	15.5°
VQT6URR030R075S10	.118 (3mm)	76.4°	2.953 (75mm)	13.6°
VQT6URR040R100S12	.157 (4mm)	78.3°	3.937 (100mm)	11.7°



Side Milling with the Use of the Tangential Form Radius (RE2)

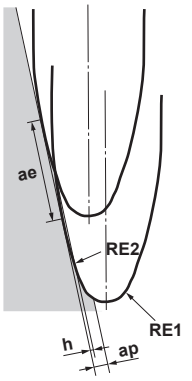
(inch)

Workpiece Material				Mild Steels (≤180HB) Carbon Steels, Alloy Steels (180−280HB)				Austenitic Stainless Steels (≤200HB) Titanium Alloys				Aluminum Alloys (Si<5%)			
DC		**RE2**		Revolution (min^{-1})	Feed Rate (IPM)	Depth of Cut **ae**	Depth of Cut **ap**	Revolution (min^{-1})	Feed Rate (IPM)	Depth of Cut **ae**	Depth of Cut **ap**	Revolution (min^{-1})	Feed Rate (IPM)	Depth of Cut **ae**	Depth of Cut **ap**
mm	inch	mm	inch												
8	**.315**	**75**	**2.953**	8000	94.5	.031	.002–.012	3200	30.3	.031	.002–.012	16000	189.0	.031	.002–.012
10	**.394**	**85**	**3.346**	6400	74.8	.033	.002–.012	2500	23.6	.033	.002–.012	13000	153.5	.033	.002–.012
10	**.394**	**75**	**2.953**	6400	74.8	.031	.002–.012	2500	23.6	.031	.002–.012	13000	153.5	.031	.002–.012
12	**.472**	**100**	**3.937**	5300	63.0	.035	.002–.012	2100	19.7	.035	.002–.012	11000	129.9	.035	.002–.012

Note 1) SMART MIRACLE coating has very low electrical conductivity; therefore, an external contact type of tool setter (electric transmitted) may not work.
When measuring the tool length, an internal contact/non-electric type or laser tool setter is recommended.

Note 2) Recommended for finish cutting only.

Note 3) The tool contact part differs between the nose radius and tangential form radius depending on machining geometries and tilt angles. Select suitable cutting conditions according to tool contact parts.



Depth of Cut Calculation Table Based on Tangential Form Radius (RE2) and Cusp Height (h)

(inch)

Order Number	**RE2**	Cusp Height **h**	.000004	.000012	.000020	.000031	.000039	.000118	.000197	.000315
VQT6URR020R075S08	2.953 (75mm)	Depth of Cut **ae**	.0096	.0167	.0216	.0273	.0305	.0528	.0682	.0863
VQT6URR030R075S10	2.953 (75mm)		.0096	.0167	.0216	.0273	.0305	.0528	.0682	.0863
VQT6URR020R085S10	3.346 (85mm)		.0103	.0178	.0230	.0291	.0325	.0562	.0726	.0918
VQT6URR040R100S12	3.937 (100mm)		.0111	.0193	.0249	.0315	.0352	.0610	.0787	.0996

Recommended Cutting Conditions

Fillet Milling with the Use of the Nose Radius (RE1)

(inch)

Workpiece Material				Mild Steels (≤180HB) Carbon Steels, Alloy Steels (180−280HB)				Austenitic Stainless Steels (≤200HB) Titanium Alloys				Aluminum Alloys (Si<5%)			
DC		RE1		Revolution (min^{-1})	Feed Rate (IPM)	Depth of Cut **ap**	Depth of Cut **ae**	Revolution (min^{-1})	Feed Rate (IPM)	Depth of Cut **ap**	Depth of Cut **ae**	Revolution (min^{-1})	Feed Rate (IPM)	Depth of Cut **ap**	Depth of Cut **ae**
mm	inch	mm	inch												
8	**.315**	**2**	**.079**	16000	94.5	.016	.039	6400	22.8	.016	.039	32000	189.0	.016	.039
10	**.394**	**2**	**.079**	16000	94.5	.016	.039	6400	22.8	.016	.039	32000	189.0	.016	.039
10	**.394**	**3**	**.118**	11000	66.9	.024	.059	4200	15.0	.024	.059	21000	126.0	.024	.059
12	**.472**	**4**	**.157**	8000	47.2	.031	.079	3200	11.4	.031	.079	16000	94.5	.031	.079

Note 1) SMART MIRACLE coating has very low electrical conductivity; therefore, an external contact type of tool setter (electric transmitted) may not work.
When measuring the tool length, an internal contact/non-electric type or laser tool setter is recommended.

Note 2) Recommended for finish cutting only.

Note 3) The tool contact part differs between the nose radius and tangential form radius depending on machining geometries and tilt angles. Select suitable cutting conditions according to tool contact parts.