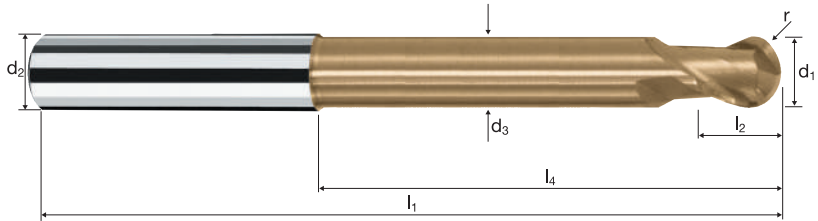
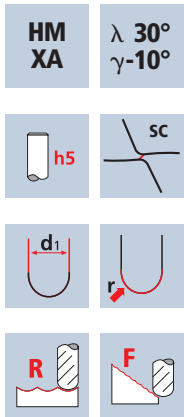


Ball nose end mills Sphero-X

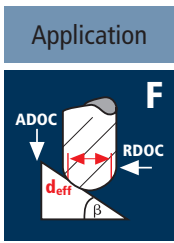
Tolerance r ± 0.005 , 6xd



		HRC 34-42	HRC 42-48	HRC 48-56	HRC 56-60	HRC > 60			HSS
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Order-N°	d ₁	d ₂ h5	d ₃	l ₁	l ₂	l ₃	l ₄	r ± 0.005	α	fl	DURO-V
V7474100	1	6	0.95	66	1.5	6.00	16.08	0.5	9.5°	2	●
V7474140	2	6	1.90	66	3.0	12.00	20.31	1.0	6.1°	2	●
V7474180	3	6	2.80	66	4.0	18.00	24.63	1.5	3.9°	2	●
V7474220	4	6	3.70	69	5.0	24.00	28.95	2.0	2.2°	2	●
V7474260	5	6	4.60	75	6.0	30.00	33.27	2.5	1.0°	2	●
V7474300	6	6	5.50	80	7.0	42.34	43.00	3.0	0.0°	2	●
V7474391	8	8	7.40	90	9.0	52.29	53.00	4.0	0.0°	2	●
V7474450	10	10	9.20	105	11.0	63.20	64.00	5.0	0.0°	2	●
V7474501	12	12	11.00	120	13.0	73.13	74.00	6.0	0.0°	2	●
V7474610	16	16	15.00	135	17.0	85.13	86.00	8.0	0.0°	2	●

VII



Material

Hardened tool steel
52 - 56 HRC

d1 [mm]	fl	Speed [m/min]	FPT [mm]	ADOC [mm]	RDOC [mm]	d _{eff} [mm]	RPM [min ⁻¹]	Feed [mm/min]	β [°]
1	2	200	0.025	0.05	0.05	0.94	60000	3000	45°
2	2	200	0.030	0.07	0.07	1.84	34600	2075	45°
3	2	200	0.035	0.10	0.10	2.74	23235	1625	45°
4	2	200	0.065	0.12	0.12	3.62	17585	2285	45°
5	2	200	0.070	0.15	0.15	4.53	14055	1970	45°
6	2	200	0.075	0.15	0.15	5.36	11880	1780	45°
8	2	200	0.085	0.17	0.17	7.05	9030	1535	45°
10	2	200	0.090	0.20	0.20	8.77	7260	1305	45°
12	2	200	0.095	0.25	0.25	10.56	6030	1145	45°

Hardened tool steel
56 - 60 HRC

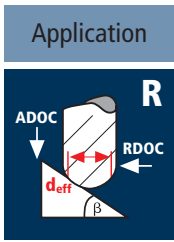
1	2	150	0.025	0.05	0.05	0.94	50795	2540	45°
2	2	150	0.030	0.07	0.07	1.84	25950	1555	45°
3	2	150	0.035	0.10	0.10	2.74	17425	1220	45°
4	2	150	0.060	0.12	0.12	3.62	13190	1585	45°
5	2	150	0.065	0.15	0.15	4.53	10540	1370	45°
6	2	150	0.070	0.15	0.15	5.36	8910	1245	45°
8	2	150	0.080	0.17	0.17	7.05	6775	1085	45°
10	2	150	0.085	0.20	0.20	8.77	5445	925	45°
12	2	150	0.090	0.25	0.25	10.56	4520	815	45°

Hardened tool steel
60 - 64 HRC

1	2	90	0.020	0.04	0.04	0.93	30805	1230	45°
2	2	90	0.025	0.06	0.06	1.80	15915	795	45°
3	2	90	0.030	0.08	0.08	2.68	10690	640	45°
4	2	90	0.050	0.09	0.09	3.54	8095	810	45°
5	2	90	0.055	0.12	0.12	4.43	6465	710	45°
6	2	90	0.060	0.12	0.12	5.24	5465	655	45°
8	2	90	0.070	0.13	0.13	6.90	4150	580	45°
10	2	90	0.070	0.15	0.15	8.58	3340	470	45°
12	2	90	0.075	0.19	0.19	10.34	2770	415	45°

Hardened tool steel
64 - 70 HRC

1	2	60	0.015	0.03	0.03	0.89	21460	645	45°
2	2	60	0.020	0.04	0.04	1.74	10975	440	45°
3	2	60	0.020	0.05	0.05	2.59	7375	295	45°
4	2	60	0.035	0.06	0.06	3.43	5570	390	45°
5	2	60	0.040	0.08	0.08	4.29	4450	355	45°
6	2	60	0.040	0.08	0.08	5.08	3760	300	45°
8	2	60	0.050	0.09	0.09	6.70	2850	285	45°
10	2	60	0.050	0.10	0.10	8.34	2290	230	45°
12	2	60	0.055	0.13	0.13	10.03	1905	210	45°



Material

Hardened tool steel
52 - 56 HRC

d1 [mm]	fl	Speed [m/min]	FPT [mm]	ADOC [mm]	RDOC [mm]	d _{eff} [mm]	RPM [min ⁻¹]	Feed [mm/min]	β [°]
1	2	130	0.045	0.10	0.10	0.92	44980	4050	30°
2	2	130	0.070	0.20	0.20	1.84	22490	3150	30°
3	2	130	0.075	0.30	0.30	2.76	14995	2250	30°
4	2	130	0.090	0.40	0.40	3.68	11245	2025	30°
5	2	130	0.100	0.50	0.50	4.60	8995	1800	30°
6	2	130	0.110	0.60	0.60	5.52	7495	1650	30°
8	2	130	0.125	0.80	0.80	7.36	5620	1405	30°
10	2	130	0.145	0.90	0.90	9.06	4565	1325	30°
12	2	130	0.155	0.96	0.96	10.68	3875	1200	30°

Hardened tool steel
56 - 60 HRC

1	2	80	0.025	0.08	0.08	0.89	28615	1430	30°
2	2	80	0.040	0.16	0.16	1.78	14305	1145	30°
3	2	80	0.045	0.24	0.24	2.67	9540	860	30°
4	2	80	0.055	0.32	0.32	3.56	7155	785	30°
5	2	80	0.060	0.40	0.40	4.45	5725	685	30°
6	2	80	0.065	0.48	0.48	5.34	4770	620	30°
8	2	80	0.075	0.64	0.64	7.12	3575	535	30°
10	2	80	0.085	0.72	0.72	8.76	2905	495	30°
12	2	80	0.095	0.77	0.77	10.32	2470	470	30°

Hardened tool steel
60 - 64 HRC

1	2	60	0.020	0.06	0.06	0.85	22470	900	30°
2	2	60	0.030	0.12	0.12	1.70	11235	675	30°
3	2	60	0.035	0.18	0.18	2.55	7490	525	30°
4	2	60	0.040	0.24	0.24	3.41	5600	450	30°
5	2	60	0.045	0.30	0.30	4.26	4485	405	30°
6	2	60	0.050	0.36	0.36	5.11	3740	375	30°
8	2	60	0.055	0.48	0.48	6.81	2805	310	30°
10	2	60	0.065	0.54	0.54	8.37	2280	295	30°
12	2	60	0.070	0.58	0.58	9.88	1935	270	30°

Hardened tool steel
64 - 70 HRC

1	2	40	0.020	0.06	0.06	0.85	14980	600	30°
2	2	40	0.030	0.12	0.12	1.70	7490	450	30°
3	2	40	0.035	0.18	0.18	2.55	4995	350	30°
4	2	40	0.040	0.24	0.24	3.41	3735	300	30°
5	2	40	0.045	0.30	0.30	4.26	2990	270	30°
6	2	40	0.050	0.36	0.36	5.11	2490	250	30°
8	2	40	0.055	0.48	0.48	6.81	1870	205	30°
10	2	40	0.065	0.54	0.54	8.37	1520	200	30°
12	2	40	0.070	0.58	0.58	9.88	1290	180	30°