High-Performance HSS-E Taps • **WIDIA-GTD™**

Our family of Exotic Material (EM) taps are specially designed to thread a broad assortment of materials for unrivaled high-performance tapping.

EM-SS available until stock is depleted.

See EM-SS cross reference list to VariTap™ on pages A52–A62.

EM Series

- Enhanced tool geometry.
- Less tapping torque.
- Better chip removal.

Unmatched Performance

The WIDIA-GTD™ EM Series taps are designed and manufactured to successfully thread high- and low-volume applications in aluminum, stainless steel, nickel alloys, titanium alloys, mold steels, irons, brass, bronze, and plastics. The formulation of premium steel tap base material is unique for every application. The combination of a special geometry, tap surface treatment, and premium steep gives these taps the highest level of performance.

Premium Steels

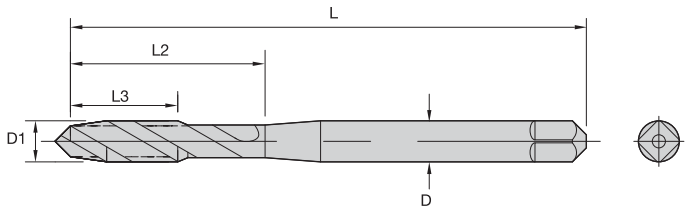
EM Series taps use special HSS-E compositions containing high-vanadium and/or cobalt content depending on the application. The right combination improves tap-life as measured by product finish and/or pitch diameter size.

Broad Offering of Diameter Limits

Pitch diameters from H2–H7 and metric pitch diameters from D3–D7 are stocked as standards in many styles, at no premium in price. With rigid setups, higher pitch diameter limits can be used for longer tool life. The EM Series offers many size options to produce the class of thread desired.

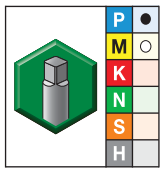
WIDIA VICTORY

Available until stock is depleted.
See VariTap™ cross reference chart on pages A52–A62.



● first choice
○ alternate choice

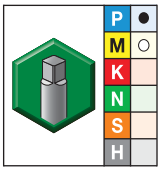
■ Series 8304 • Machine Screw and Fractional • Full Bottoming Chamfer



oxide	inch dimensions D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
84001	4 - 40	1.88	.24	.56	.141	2	H2
84002	4 - 40	1.88	.24	.56	.141	2	H3
84034	4 - 40	1.88	.24	.56	.141	2	H5
84083	4 - 48	1.88	.24	.56	.141	2	H2
84003	5 - 40	1.94	.24	.63	.141	3	H2
84004	6 - 32	2.00	.28	.69	.141	3	H2
84005	6 - 32	2.00	.28	.69	.141	3	H3
84035	6 - 32	2.00	.28	.69	.141	3	H5
84084	6 - 40	2.00	.28	.69	.141	3	H2
84085	6 - 40	2.00	.28	.69	.141	3	H3
84006	8 - 32	2.13	.28	.75	.168	3	H2
84007	8 - 32	2.13	.28	.75	.168	3	H3
84037	8 - 32	2.13	.28	.75	.168	3	H5
84009	10 - 24	2.38	.35	.88	.194	3	H3
84039	10 - 24	2.38	.35	.88	.194	3	H5
84010	10 - 32	2.38	.28	.88	.194	3	H3
84040	10 - 32	2.38	.28	.88	.194	3	H5
84013	1/4 - 20	2.50	.43	1.00	.255	3	H3
84043	1/4 - 20	2.50	.43	1.00	.255	3	H5
84014	1/4 - 28	2.50	.35	1.00	.255	3	H3
84044	1/4 - 28	2.50	.35	1.00	.255	3	H5
84015	5/16 - 18	2.72	.47	1.13	.318	3	H3
84045	5/16 - 18	2.72	.47	1.13	.318	3	H5
84016	5/16 - 24	2.72	.39	1.13	.318	3	H3
84046	5/16 - 24	2.72	.39	1.13	.318	3	H5
84017	3/8 - 16	2.94	.55	1.25	.381	3	H3
84047	3/8 - 16	2.94	.55	1.25	.381	3	H5
84077	3/8 - 16	2.94	.55	1.25	.381	3	H7

(continued)

(Series 8304 • Machine Screw and FractionI • Full Bottoming Chamfer continued)



oxide	inch dimensions D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
84018	3/8 - 24	2.94	.39	1.25	.381	3	H3
84033	3/8 - 24	2.94	.39	1.25	.381	3	H4
84048	3/8 - 24	2.94	.39	1.25	.381	3	H5
84019	7/16 - 14	3.16	.59	—	.323	3	H3
84049	7/16 - 14	3.16	.59	—	.323	3	H5
84020	7/16 - 20	3.16	.47	—	.323	3	H3
84050	7/16 - 20	3.16	.47	—	.323	3	H5
84021	1/2 - 13	3.38	.63	—	.367	3	H3
84051	1/2 - 13	3.38	.63	—	.367	3	H5
84022	1/2 - 20	3.38	.47	—	.367	3	H3
84052	1/2 - 20	3.38	.47	—	.367	3	H5
84053	9/16 - 12	3.59	.71	—	.429	3	H3
84054	9/16 - 18	3.59	.51	—	.429	3	H3
84025	5/8 - 11	3.81	.75	—	.480	3	H3
84055	5/8 - 11	3.81	.75	—	.480	3	H5
84026	5/8 - 18	3.81	.51	—	.480	3	H3
84056	5/8 - 18	3.81	.51	—	.480	3	H5
84027	3/4 - 10	4.25	.83	—	.590	4	H3
84028	3/4 - 16	4.25	.59	—	.590	4	H3

NOTE: EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
See pages A274–A275 for the recommended pitch diameter limit for 2B or 3B class of fit.

Unified Inch Screw Threads

thread size/pitch	recommended tap limits[1] class 2B	recommended tap limits[1] class 3B	internal thread pitch diameter limits min all classes (BASIC)	internal thread pitch diameter limits max class 2B	internal thread pitch diameter limits max class 3B
0-80	H2	H2	0.0519	0.0542	0.0536
1-64	H2	H2	0.0629	0.0655	0.0648
1-72	H2	H2	0.0640	0.0665	0.0659
2-56	H2	H2	0.0744	0.0772	0.0765
2-64	H2	H2	0.0759	0.0786	0.0779
3-48	H3	H2	0.0855	0.0885	0.0877
3-56	H2	H2	0.0874	0.0902	0.0895
4-40	H3	H2	0.0958	0.0991	0.0982
4-48	H3	H2	0.0985	0.1016	0.1008
5-40	H3	H2	0.1088	0.1121	0.1113
5-44	H3	H2	0.1102	0.1134	0.1126
6-32	H3	H2	0.1177	0.1214	0.1204
6-40	H3	H2	0.1218	0.1252	0.1243
8-32	H3	H3	0.1437	0.1475	0.1465
8-36	H3	H3	0.1460	0.1496	0.1487
10-24	H3	H3	0.1629	0.1672	0.1661
10-32	H3	H3	0.1697	0.1736	0.1726
12-24	H3	H3	0.1889	0.1933	0.1922
12-28	H3	H3	0.1928	0.1970	0.1959
1/4-20	H5	H3	0.2175	0.2224	0.2211
1/4-28	H4	H3	0.2268	0.2311	0.2300
5/16-18	H5	H3	0.2764	0.2817	0.2803
5/16-24	H4	H3	0.2854	0.2902	0.2890
3/8-16	H5	H3	0.3344	0.3401	0.3387
3/8-24	H4	H3	0.3479	0.3528	0.3516
7/16-14	H5	H3	0.3911	0.3972	0.3957
7/16-20	H5	H3	0.4050	0.4104	0.4091
1/2-13	H5	H4	0.4500	0.4565	0.4548
1/2-20	H5	H3	0.4675	0.4731	0.4717
9/16-12	H5	H4	0.5084	0.5152	0.5135
9/16-18	H5	H3	0.5264	0.5323	0.5308
5/8-11	H5	H4	0.5660	0.5732	0.5714
5/8-18	H5	H3	0.5889	0.5949	0.5934
3/4-10	H5	H4	0.6850	0.6927	0.6907

[1]Tap H limit selected for 3B will also produce thread to 2B.

NOTE: The above recommended taps normally produce the class of thread indicated in average materials when used with reasonable care. However, if the specified tap does not provide a satisfactory gage fit, choose an alternate tap limit.