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

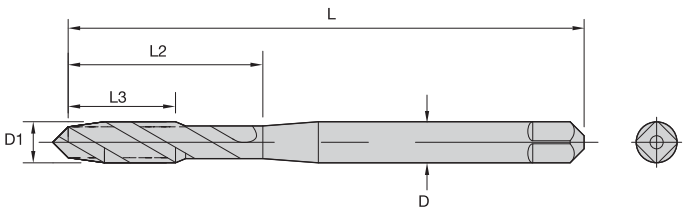
EM Series taps use special HSS-E compositions containing high-vanadium and/or cobalt content depending on the application. The right combination improves tap-life as measured by product finish and/or pitch diameter size.

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.

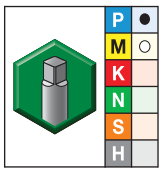
WIDIA VICTORY

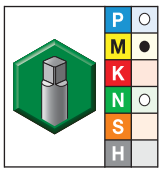
Available until stock is depleted.
See VariTap™ cross reference chart on pages A52–A62.

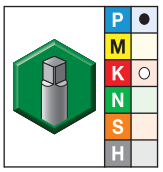


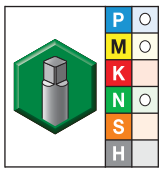
● first choice
○ alternate choice

Series 8304 • Machine Screw and Fractional • Chamfer 2-1/2–3-1/2 Pitches





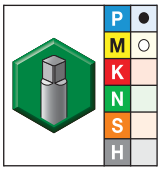
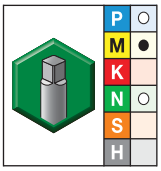
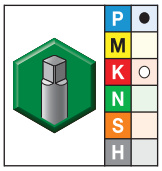
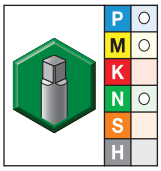




TiCN	TiN	oxide	uncoated	inch dimensions D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
–	–	84671	84671B	2 - 56	1.75	.44	–	.141	2	H2
–	–	84672	–	3 - 48	1.81	.50	–	.141	2	H2
84301	84901	84601	84601B	4 - 40	1.88	.24	.56	.141	2	H2
–	–	84602	–	4 - 40	1.88	.24	.56	.141	2	H3
–	–	84629	–	4 - 40	1.88	.24	.56	.141	2	H4
–	–	84634	84634B	4 - 40	1.88	.24	.56	.141	2	H5
–	–	84612	–	4 - 40	1.88	.24	.56	.141	2	H6
–	–	84683	–	4 - 48	1.88	.24	.56	.141	2	H2
84303	–	84603	84603B	5 - 40	1.94	.24	.63	.141	3	H2
–	–	84604	–	6 - 32	2.00	.28	.69	.141	3	H2
84305	84905	84605	84605B	6 - 32	2.00	.28	.69	.141	3	H3
–	–	84636	–	6 - 32	2.00	.28	.69	.141	3	H4
–	–	84635	84635B	6 - 32	2.00	.28	.69	.141	3	H5
–	–	84665	–	6 - 32	2.00	.28	.69	.141	3	H7
–	–	84684	–	6 - 40	2.00	.28	.69	.141	3	H2
–	–	84685	–	6 - 40	2.00	.28	.69	.141	3	H3
–	–	84606	–	8 - 32	2.13	.28	.75	.168	3	H2
84307	84907	84607	84607B	8 - 32	2.13	.28	.75	.168	3	H3
–	–	84638	–	8 - 32	2.13	.28	.75	.168	3	H4
–	–	84637	84637B	8 - 32	2.13	.28	.75	.168	3	H5
–	–	84660	–	8 - 32	2.13	.28	.75	.168	3	H6
–	–	84667	–	8 - 32	2.13	.28	.75	.168	3	H7
–	–	84687	–	8 - 36	2.13	.28	.75	.168	3	H3
–	–	84624	–	10 - 24	2.38	.35	.88	.194	3	H2
84309	84909	84609	84609B	10 - 24	2.38	.35	.88	.194	3	H3
–	–	84639	84639B	10 - 24	2.38	.35	.88	.194	3	H5
–	–	84669	–	10 - 24	2.38	.35	.88	.194	3	H7
–	–	84611	–	10 - 32	2.38	.28	.88	.194	3	H2
84310	84910	84610	84610B	10 - 32	2.38	.28	.88	.194	3	H3
–	–	84630	–	10 - 32	2.38	.28	.88	.194	3	H4
–	–	84640	84640B	10 - 32	2.38	.28	.88	.194	3	H5
–	–	84662	–	10 - 32	2.38	.28	.88	.194	3	H6

(continued)

(Series 8304 • Machine Screw and Fractional • Chamfer 2-1/2–3-1/2 Pitches continued)

 TiCN	 TiN	 oxide	 uncoated	D1 TPI	inch dimensions L	L3	L2	D	number of flutes	pitch diameter limit
—	—	84670	—	10 - 32	2.38	.28	.88	.194	3	H7
—	—	84688	—	12 - 24	2.38	.35	.94	.220	3	H3
—	—	84689	—	12 - 28	2.38	.28	.94	.220	3	H3
—	—	84641	—	1/4 - 20	2.50	.43	1.00	.255	3	H2
84313	84913	84613	84613B	1/4 - 20	2.50	.43	1.00	.255	3	H3
—	—	84643	84643B	1/4 - 20	2.50	.43	1.00	.255	3	H5
—	—	84673	—	1/4 - 20	2.50	.43	1.00	.255	3	H7
—	—	84642	—	1/4 - 28	2.50	.35	1.00	.255	3	H2
84314	84914	84614	84614B	1/4 - 28	2.50	.35	1.00	.255	3	H3
—	—	84631	—	1/4 - 28	2.50	.35	1.00	.255	3	H4
—	—	84644	84644B	1/4 - 28	2.50	.35	1.00	.255	3	H5
—	—	84664	—	1/4 - 28	2.50	.35	1.00	.255	3	H6
—	—	84674	—	1/4 - 28	2.50	.35	1.00	.255	3	H7
84315	84915	84615	84615B	5/16 - 18	2.72	.47	1.13	.318	3	H3
—	—	84645	84645B	5/16 - 18	2.72	.47	1.13	.318	3	H5
—	—	84675	—	5/16 - 18	2.72	.47	1.13	.318	3	H7
84316	84916	84616	84616B	5/16 - 24	2.72	.39	1.13	.318	3	H3
—	—	84646	84646B	5/16 - 24	2.72	.39	1.13	.318	3	H5
—	—	84657	—	5/16 - 24	2.72	.39	1.13	.318	3	H6
—	—	84676	—	5/16 - 24	2.72	.39	1.13	.318	3	H7
84317	84917	84617	84617B	3/8 - 16	2.94	.55	1.25	.381	3	H3
—	—	84647	—	3/8 - 16	2.94	.55	1.25	.381	3	H5
—	—	84677	—	3/8 - 16	2.94	.55	1.25	.381	3	H7
84318	84918	84618	84618B	3/8 - 24	2.94	.39	1.25	.381	3	H3
—	—	84633	—	3/8 - 24	2.94	.39	1.25	.381	3	H4
—	—	84648	84648B	3/8 - 24	2.94	.39	1.25	.381	3	H5
—	—	84658	—	3/8 - 24	2.94	.39	1.25	.381	3	H6
—	—	84678	—	3/8 - 24	2.94	.39	1.25	.381	3	H7
84319	84919	84619	84619B	7/16 - 14	3.16	.59	—	.323	3	H3
—	—	84649	84649B	7/16 - 14	3.16	.59	—	.323	3	H5
—	—	84679	—	7/16 - 14	3.16	.59	—	.323	3	H7
84320	84920	84620	84620B	7/16 - 20	3.16	.47	—	.323	3	H3
—	—	84650	84650B	7/16 - 20	3.16	.47	—	.323	3	H5
—	—	84691	—	7/16 - 20	3.16	.47	—	.323	3	H6
—	—	84680	—	7/16 - 20	3.16	.47	—	.323	3	H7
84321	84921	84621	84621B	1/2 - 13	3.38	.63	—	.367	3	H3
—	—	84651	84651B	1/2 - 13	3.38	.63	—	.367	3	H5
—	—	84681	—	1/2 - 13	3.38	.63	—	.367	3	H7
84322	84922	84622	84622B	1/2 - 20	3.38	.47	—	.367	3	H3
—	—	84652	84652B	1/2 - 20	3.38	.47	—	.367	3	H5
—	—	84692	—	1/2 - 20	3.38	.47	—	.367	3	H6
—	—	84682	—	1/2 - 20	3.38	.47	—	.367	3	H7
84353	84953	84653	84653B	9/16 - 12	3.59	.71	—	.429	3	H3
—	—	84699	84699B	9/16 - 12	3.59	.71	—	.429	3	H5

(continued)

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.