

2016 New Revision



CLEVELAND

HIGH PERFORMANCE TAPS





Greenfield Industries is excited to announce the addition of high performance taps to the Cleveland brand. All taps in the Cleveland line are designed to machine a broad range of materials and are manufactured out of premium high speed steel.

This supplement shows the range of products to be added to the Cleveland line along with machining parameters. Various surface treatments are available for our taps designed for specific applications. The 2015 Cleveland catalog will be updated to include these products. This supplement is also available to download at our website, www.gfii.com.

A new Cleveland net pricing file is available upon request. For more information, contact Customer Service via telephone at 800-348-2885 or via email at standard.distributors@gfii.com, or visit the Greenfield Industries web site, www.gfii.com.

Icon Reference

✓ = BEST Performance * Also Suitable

Icon	Material	Hardness	TiN	TiCN	TiAlN
M	Austenitic Stainless Steel	< 35 HRc		*	✓
	Martensitic Stainless Steel	< 35 HRc		*	✓
	Martensitic Stainless Steel	>= 35 HRc			✓
	PH Stainless Steel	< 35 HRc		*	✓
	PH Stainless Steel	<= 35 HRc		*	✓
S	Ni, Co, Fe Based Super Alloys				✓
	Titanium				✓
P	Alloy Steel	16-23 HRc	*	*	✓
	Alloy Steel	23-38 HRc	*	*	✓
	Alloy Steel	> 38 HRc		*	✓
	Carbon Steel	16-23 HRc	*	*	✓
	Carbon Steel	23-38 HRc	*	*	✓
	Carbon Steel	> 38 HRc		*	✓
	Low Carbon Steel	13-23 HRc	*	*	✓
	Low Carbon Steel	23-38 HRc	*	*	✓
Low Carbon Steel	> 38 HRc		*	✓	
K	Gray Cast Iron	18-22 HRc		*	✓
	Nodular Cast Iron	22-32 HRc	*	✓	
N	Aluminum	< 10% Si	*	✓	
	Aluminum	> 10% Si	*	✓	
H	Hardened Steel	>45 HRc		*	✓

Surface Treatments

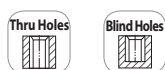


Additional treatments available upon request.

Standard



Application



Flute / Helix



Chamfer



These taps were developed for the highest cutting performance to cope with the increasing demands placed on industrial thread cutting. By optimizing the cutting geometry, substrate material, and surface treatment the tap will achieve the best results in CNC as well as in conventional thread cutting environments.

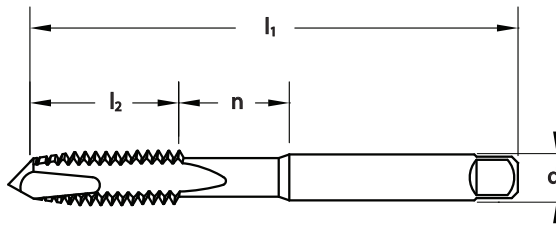
Our **Progress series** of taps are designed to be a "Universal" tool that performs well in a wide range of Steel Alloys as well as Stainless Steels and Ductile Irons.

Our **Performance series** of taps are designed for those difficult jobs including Stainless Steels but work well in Steel Alloys and Ductile Irons.

Material		Application			Tapping Speed (SFM)		
		Black Oxide	TiAlN	Hardlube	Black Oxide	TiAlN	Hardlube
Structural steels < 1000 N/mm ²	G01		1		40	73	77
Structural steels > 1000 N/mm ²	G02		(3)	1	27	40	42
Case hardening steels < 1000 N/mm ²	G03		2	1	33	66	70
Case hardening steels > 1000 N/mm ²	G04		(3)	1	20	33	35
Heat treatable steels < 1000 N/mm ²	G05		2	1	20	46	49
Heat treatable steels > 1000 N/mm ²	G06		(3)	1	14	27	29
Nitriding steels	G07	(3)	2	1	14	27	29
Carbon tool steels	G08		1	2	20	30	32
Heat Resisting Steels < 1400 N/mm ²	G09	(3)	(3)	1	14	23	25
Cr Stainless Steels, Sulphured	G10	(3)	(3)	1	20	33	35
Cr Stainless Steels, Ferric & Martensitic	G11	(3)	(3)	1	20	33	35
Cr-Ni Stainless Steels, Austenitic	G12	(3)	(3)	1	17	27	29
Free Cutting Steels	G13		1		46	79	83
Cast Steels < 1000 N/mm ²	G14		1		33	53	56
Cast Steels > 900 N/mm ²	G15		2	1	20	27	29
Malleable Cast Iron	G16		(3)		33	53	56
Nodular Graphite Cast Iron	G17		(3)		40	53	56
Lamellar Graphite Cast Iron (Grey Cast Iron)	G18		(3)		33	46	49
Vermicular Graphite Cast Iron	G19		(3)		40	53	56
Copper	G20		(3)		33	53	56
Hard Brass -- Short Chipping	G21		(3)		66	115	121
Soft Brass -- Long Chipping	G22		(3)		60	109	115
Red Brass	G23		(3)		33	60	63
Phosphor Bronze	G24		(3)		40	69	73
Aluminum Alloy - Wrought	G25		(3)		50	79	83
Aluminum Alloy - Cast (0.5% to 5% Silicon)	G26		(3)		66	86	91
Aluminum Alloy - Cast (5% to 10% Silicon)	G27		(3)		66	86	91
Aluminum Alloy - Cast (> 10% Silicon)	G28		(3)		66	86	91
Magnesium Alloy - Wrought	G29		(3)		50	79	83
Magnesium Alloy - Cast	G30		(3)		66	86	91
Nickel Alloy	G31		(3)		14	20	21
Titanium Alloy	G32		(3)		14	20	21
Ferro - TiC	G33		(3)		14	20	21
Thermoplastic Compounds/Synthetics	G34		(3)		66	66	70
High Strength Structural Steels - Fine Grained	G35		(3)		20	33	35



High Performance Taps



Inch Sizes

tap size and pitch	thread form	decimal equiv.	metric equiv.	no. of flutes	class of fit	overall length		thread length		neck		shank diameter		order number	
						l_1 in	l_1 mm	l_2 in	l_2 mm	n in	n mm	d_1 in	d_1 mm	Black Oxide PRO-961SP	TiAlN PRO-861SP
2-56	UNC	0.0860	2.18	3	2B	1.772	45	0.354	9	—	—	0.141	3.58	C96101	C86101
3-48	UNC	0.0990	2.51	3	2B	1.969	50	0.394	10	—	—	0.141	3.58	C96102	C86102
4-40	UNC	0.1120	2.84	3	2B	2.205	56	0.394	10	0.315	8	0.141	3.58	C96103	C86103
4-48	UNF	0.1120	2.84	3	2B	2.205	56	0.394	10	0.315	8	0.141	3.58	C96104	C86104
5-40	UNC	0.1250	3.18	3	2B	2.205	56	0.394	10	0.394	10	0.141	3.58	C96105	C86105
6-32	UNC	0.1380	3.51	3	2B	2.205	56	0.433	11	0.394	10	0.141	3.58	C96106	C86106
6-40	UNF	0.1380	3.51	3	2B	2.205	56	0.433	11	0.394	10	0.141	3.58	C96107	C86107
8-32	UNC	0.1640	4.17	3	2B	2.480	63	0.433	11	0.433	11	0.168	4.27	C96108	C86108
8-36	UNF	0.1640	4.17	3	2B	2.480	63	0.433	11	0.433	11	0.168	4.27	C96109	C86109
10-24	UNC	0.1900	4.83	3	2B	2.756	70	0.551	14	0.512	13	0.194	4.93	C96110	C86110
10-32	UNF	0.1900	4.83	3	2B	2.756	70	0.551	14	0.512	13	0.194	4.93	C96111	C86111
12-24	UNC	0.2160	5.49	3	2B	3.150	80	0.512	13	0.591	15	0.220	5.59	C96112	C86112
12-28	UNF	0.2160	5.49	3	2B	3.150	80	0.512	13	0.591	15	0.220	5.59	C96113	C86113
1/4-20	UNC	0.2500	6.35	3	2B	3.150	80	0.669	17	0.630	16	0.255	6.48	C96114	C86114
1/4-28	UNF	0.2500	6.35	3	2B	3.150	80	0.669	17	0.630	16	0.255	6.48	C96115	C86115
5/16-18	UNC	0.3125	7.94	3	2B	3.543	90	0.709	18	0.709	18	0.318	8.08	C96116	C86116
5/16-24	UNF	0.3125	7.94	3	2B	3.543	90	0.709	18	0.709	18	0.318	8.08	C96117	C86117
3/8-16	UNC	0.3750	9.53	3	2B	3.937	100	0.787	20	—	—	0.381	9.68	C96118	C86118
3/8-24	UNF	0.3750	9.53	3	2B	3.937	100	0.787	20	—	—	0.381	9.68	C96119	C86119
7/16-14	UNC	0.4375	11.11	3	2B	3.937	100	0.866	22	0.866	22	0.323	8.2	C96120	C86120
7/16-20	UNF	0.4375	11.11	3	2B	3.937	100	0.866	22	0.866	22	0.323	8.2	C96121	C86121
1/2-13	UNC	0.5000	12.70	3	2B	4.331	110	0.984	25	0.591	15	0.367	9.32	C96122	C86122
1/2-20	UNF	0.5000	12.70	3	2B	4.331	110	0.984	25	0.591	15	0.367	9.32	C96123	C86123
9/16-12	UNC	0.5625	14.29	3	2B	4.331	110	1.024	26	0.787	20	0.429	10.9	C96124	C86124
9/16-18	UNF	0.5625	14.29	3	2B	4.331	110	1.024	26	0.787	20	0.429	10.9	C96125	C86125
5/8-11	UNC	0.6250	15.88	3	2B	4.331	110	1.142	29	—	—	0.480	12.19	C96126	C86126
5/8-18	UNF	0.6250	15.88	3	2B	4.331	110	1.142	29	—	—	0.480	12.19	C96127	C86127
3/4-10	UNC	0.7500	19.05	4	2B	4.921	125	1.102	28	1.142	29	0.590	14.99	C96128	C86128
3/4-16	UNF	0.7500	19.05	4	2B	4.921	125	1.102	28	1.142	29	0.590	14.99	C96129	C86129
7/8-9	UNC	0.8750	22.23	4	2B	5.512	140	1.299	33	1.102	28	0.697	17.7	C96130	C86130
7/8-14	UNF	0.8750	22.23	4	2B	5.512	140	1.299	33	1.102	28	0.697	17.7	C96131	C86131
1-8	UNC	1.0000	25.40	4	2B	6.299	160	1.378	35	1.181	30	0.800	20.32	C96132	C86132
1-12	UNF	1.0000	25.40	4	2B	6.299	160	1.378	35	1.181	30	0.800	20.32	C96133	C86133

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High Performance Taps

Styles: **PRO-961SP** and **PRO-861SP**

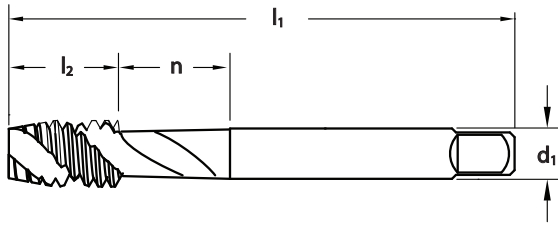
Progress
Spiral Point

Metric Sizes

tap size and pitch	thread form	decimal equiv.	metric equiv.	no. of flutes	class of fit	overall length		thread length		neck		shank diameter		order number	
						in	mm	in	mm	in	mm	in	mm	Black Oxide PRO-961SP	TiAIN PRO-861SP
M3x0.5	M	0.1181	3.00	3	6H	2.205	56	0.394	10	0.394	10	0.141	3.58	C96134	C86134
M3.5x0.6	M	0.1378	3.50	3	6H	2.205	56	0.433	11	0.394	10	0.141	3.58	C96135	C86135
M4x0.7	M	0.1575	4.00	3	6H	2.480	63	0.433	11	0.433	11	0.168	4.27	C96136	C86136
M5x0.8	M	0.1969	5.00	3	6H	2.756	70	0.551	14	0.512	13	0.194	4.93	C96137	C86137
M6x1	M	0.2362	6.00	3	6H	3.150	80	0.669	17	0.630	16	0.255	6.48	C96138	C86138
M7x1	M	0.2756	7.00	3	6H	3.150	80	0.591	15	0.630	16	0.318	8.08	C96139	C86139
M8x1	M	0.3150	8.00	3	6H	3.543	90	0.709	18	0.709	18	0.318	8.08	C96140	C86140
M8x1.25	M	0.3150	8.00	3	6H	3.543	90	0.709	18	0.709	18	0.318	8.08	C96141	C86141
M10x1.25	M	0.3937	10.00	3	6H	3.937	100	0.787	20	0.827	21	0.381	9.68	C96142	C86142
M10x1.5	M	0.3937	10.00	3	6H	3.937	100	0.787	20	0.827	21	0.381	9.68	C96143	C86143
M12x1.25	M	0.4724	12.00	3	6H	4.331	110	1.142	29	—	—	0.367	9.32	C96144	C86144
M12x1.75	M	0.4724	12.00	3	6H	4.331	110	1.142	29	—	—	0.367	9.32	C96145	C86145
M14x1.5	M	0.5512	14.00	3	6H	4.331	110	1.024	26	0.787	20	0.429	10.9	C96146	C86146
M14x2	M	0.5512	14.00	3	6H	4.331	110	1.024	26	0.787	20	0.429	10.9	C96147	C86147
M16x1.5	M	0.6299	16.00	3	6H	4.331	110	1.142	29	—	—	0.480	12.19	C96148	C86148
M16x2	M	0.6299	16.00	3	6H	4.331	110	1.142	29	—	—	0.480	12.19	C96149	C86149
M18x1.5	M	0.7087	18.00	4	6H	4.921	125	1.142	29	0.787	27	0.542	13.77	C96150	C86150
M18x2.5	M	0.7087	18.00	4	6H	4.921	125	1.142	29	0.787	27	0.542	13.77	C96151	C86151

High Performance Taps





High Performance Taps

Inch Sizes

tap size and pitch	thread form	decimal equiv.	metric equiv.	no. of flutes	class of fit	overall length		thread length		neck		shank diameter		order number	
						l_1 in	l_1 mm	l_2 in	l_2 mm	n in	n mm	d_1 in	d_1 mm	Black Oxide PRO-981SF	TiAlN PRO-892SF
2-56	UNC	0.0860	2.18	3	2B	1.772	45	0.354	9	—	—	0.141	3.58	C98101	C89201
3-48	UNC	0.0990	2.51	3	2B	1.969	50	0.394	10	—	—	0.141	3.58	C98102	C89202
4-40	UNC	0.1120	2.84	3	2B	2.205	56	0.394	10	0.315	8	0.141	3.58	C98103	C89203
4-48	UNF	0.1120	2.84	3	2B	2.205	56	0.394	10	0.315	8	0.141	3.58	C98104	C89204
5-40	UNC	0.1250	3.18	3	2B	2.205	56	0.394	10	0.394	10	0.141	3.58	C98105	C89205
6-32	UNC	0.1380	3.51	3	2B	2.205	56	0.433	11	0.394	10	0.141	3.58	C98106	C89206
6-40	UNF	0.1380	3.51	3	2B	2.205	56	0.433	11	0.394	10	0.141	3.58	C98107	C89207
8-32	UNC	0.1640	4.17	3	2B	2.480	63	0.433	11	0.433	11	0.168	4.27	C98108	C89208
8-36	UNF	0.1640	4.17	3	2B	2.480	63	0.433	11	0.433	11	0.168	4.27	C98109	C89209
10-24	UNC	0.1900	4.83	3	2B	2.756	70	0.551	14	0.512	13	0.194	4.93	C98110	C89210
10-32	UNF	0.1900	4.83	3	2B	2.756	70	0.551	14	0.512	13	0.194	4.93	C98111	C89211
12-24	UNC	0.2160	5.49	3	2B	3.150	80	0.512	13	0.591	15	0.220	5.59	C98112	C89212
12-28	UNF	0.2160	5.49	3	2B	3.150	80	0.512	13	0.591	15	0.220	5.59	C98113	C89213
1/4-20	UNC	0.2500	6.35	3	2B	3.150	80	0.669	17	0.630	16	0.255	6.48	C98114	C89214
1/4-28	UNF	0.2500	6.35	3	2B	3.150	80	0.669	17	0.630	16	0.255	6.48	C98115	C89215
5/16-18	UNC	0.3125	7.94	3	2B	3.543	90	0.709	18	0.709	18	0.318	8.08	C98116	C89216
5/16-24	UNF	0.3125	7.94	3	2B	3.543	90	0.709	18	0.709	18	0.318	8.08	C98117	C89217
3/8-16	UNC	0.3750	9.53	3	2B	3.937	100	0.787	20	—	—	0.381	9.68	C98118	C89218
3/8-24	UNF	0.3750	9.53	3	2B	3.937	100	0.787	20	—	—	0.381	9.68	C98119	C89219
7/16-14	UNC	0.4375	11.11	3	2B	3.937	100	0.866	22	0.866	22	0.323	8.2	C98120	C89220
7/16-20	UNF	0.4375	11.11	3	2B	3.937	100	0.866	22	0.866	22	0.323	8.2	C98121	C89221
1/2-13	UNC	0.5000	12.70	3	2B	4.331	110	0.984	25	0.591	15	0.367	9.32	C98122	C89222
1/2-20	UNF	0.5000	12.70	3	2B	4.331	110	0.984	25	0.591	15	0.367	9.32	C98123	C89223
9/16-12	UNC	0.5625	14.29	4	2B	4.331	110	1.024	26	0.787	20	0.429	10.9	C98124	C89224
9/16-18	UNF	0.5625	14.29	4	2B	4.331	110	1.024	26	0.787	20	0.429	10.9	C98125	C89225
5/8-11	UNC	0.6250	15.88	4	2B	4.331	110	1.142	29	—	—	0.480	12.19	C98126	C89226
5/8-18	UNF	0.6250	15.88	4	2B	4.331	110	1.142	29	—	—	0.480	12.19	C98127	C89227
3/4-10	UNC	0.7500	19.05	4	2B	4.921	125	1.102	28	1.142	29	0.590	14.99	C98128	C89228
3/4-16	UNF	0.7500	19.05	4	2B	4.921	125	1.102	28	1.142	29	0.590	14.99	C98129	C89229
7/8-9	UNC	0.8750	22.23	4	2B	5.512	140	1.299	33	1.102	28	0.697	17.7	C98130	C89230
7/8-14	UNF	0.8750	22.23	4	2B	5.512	140	1.299	33	1.102	28	0.697	17.7	C98131	C89231
1-8	UNC	1.0000	25.40	4	2B	6.299	160	1.378	35	1.181	30	0.800	20.32	C98132	C89232
1-12	UNF	1.0000	25.40	4	2B	6.299	160	1.378	35	1.181	30	0.800	20.32	C98133	C89233

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High Performance Taps

Styles: **PRO-981SF** and **PRO-892SF**

Progress
Spiral Flute

Metric Sizes

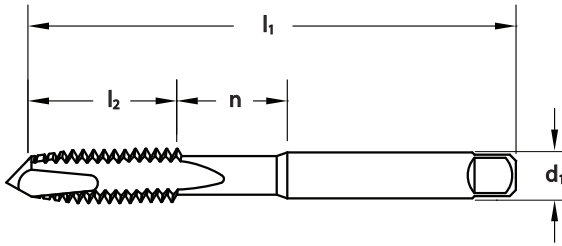
tap size and pitch	thread form	decimal equiv.	metric equiv.	no. of flutes	class of fit	overall length		thread length		neck		shank diameter		order number	
						l ₁ in	mm	l ₂ in	mm	n in	mm	d ₁ in	mm	Black Oxide PRO-981SF	TiAIN PRO-892SF
M3x0.5	M	0.1181	3.00	3	6H	2.205	56	0.394	10	0.394	10	0.141	3.58	C98134	C89234
M3.5x0.6	M	0.1378	3.50	3	6H	2.205	56	0.433	11	0.394	10	0.141	3.58	C98135	C89235
M4x0.7	M	0.1575	4.00	3	6H	2.480	63	0.433	11	0.433	11	0.168	4.27	C98136	C89236
M5x0.8	M	0.1969	5.00	3	6H	2.756	70	0.551	14	0.512	13	0.194	4.93	C98137	C89237
M6x1	M	0.2362	6.00	3	6H	3.150	80	0.669	17	0.630	16	0.255	6.48	C98138	C89238
M7x1	M	0.2756	7.00	3	6H	3.150	80	0.591	15	0.630	16	0.318	8.08	C98139	C89239
M8x1	M	0.3150	8.00	3	6H	3.543	90	0.709	18	0.709	18	0.318	8.08	C98140	C89240
M8x1.25	M	0.3150	8.00	3	6H	3.543	90	0.709	18	0.709	18	0.318	8.08	C98141	C89241
M10x1.25	M	0.3937	10.00	3	6H	3.937	100	0.787	20	0.827	21	0.381	9.68	C98142	C89242
M10x1.5	M	0.3937	10.00	3	6H	3.937	100	0.787	20	0.827	21	0.381	9.68	C98143	C89243
M12x1.25	M	0.4724	12.00	3	6H	4.331	110	1.142	29	—	—	0.367	9.32	C98144	C89244
M12x1.75	M	0.4724	12.00	3	6H	4.331	110	1.142	29	—	—	0.367	9.32	C98145	C89245
M14x1.5	M	0.5512	14.00	3	6H	4.331	110	1.024	26	0.787	20	0.429	10.9	C98146	C89246
M14x2	M	0.5512	14.00	3	6H	4.331	110	1.024	26	0.787	20	0.429	10.9	C98147	C89247
M16x1.5	M	0.6299	16.00	4	6H	4.331	110	1.142	29	—	—	0.480	12.19	C98148	C89248
M16x2	M	0.6299	16.00	4	6H	4.331	110	1.142	29	—	—	0.480	12.19	C98149	C89249
M18x1.5	M	0.7087	18.00	4	6H	4.921	125	1.142	29	0.787	27	0.542	13.77	C98150	C89250
M18x2.5	M	0.7087	18.00	4	6H	4.921	125	1.142	29	0.787	27	0.542	13.77	C98151	C89251
M20x2.5	M	0.7874	20.00	4	6H	5.512	140	1.299	33	1.146	29.1	0.650	16.51	C98152	C89252
M22x2.5	M	0.8661	22.00	4	6H	5.512	140	1.299	33	1.098	27.9	0.697	17.70	C98153	C89253
M24x3.0	M	0.9449	24.00	4	6H	6.299	160	1.378	35	1.181	30	0.760	19.30	C98154	C89254

High Performance Taps





High Performance Taps



Inch Sizes

tap size and pitch	thread form	decimal equiv.	metric equiv.	no. of flutes	class of fit	overall length		thread length		neck		shank diameter		order number	
						l_1 in	l_1 mm	l_2 in	l_2 mm	n in	n mm	d_1 in	d_1 mm	Black Oxide PER-862SP	Hardlube PER-960SP
2-56	UNC	0.0860	2.18	3	2B	1.772	45	0.354	9	—	—	0.141	3.58	C86201	C96001
3-48	UNC	0.0990	2.51	3	2B	1.969	50	0.394	10	—	—	0.141	3.58	C86202	C96002
4-40	UNC	0.1120	2.84	3	2B	2.205	56	0.394	10	0.315	8	0.141	3.58	C86203	C96003
4-48	UNF	0.1120	2.84	3	2B	2.205	56	0.394	10	0.315	8	0.141	3.58	C86204	C96004
5-40	UNC	0.1250	3.18	3	2B	2.205	56	0.394	10	0.394	10	0.141	3.58	C86205	C96005
6-32	UNC	0.1380	3.51	3	2B	2.205	56	0.433	11	0.394	10	0.141	3.58	C86206	C96006
6-40	UNF	0.1380	3.51	3	2B	2.205	56	0.433	11	0.394	10	0.141	3.58	C86207	C96007
8-32	UNC	0.1640	4.17	3	2B	2.480	63	0.433	11	0.433	11	0.168	4.27	C86208	C96008
8-36	UNF	0.1640	4.17	3	2B	2.480	63	0.433	11	0.433	11	0.168	4.27	C86209	C96009
10-24	UNC	0.1900	4.83	3	2B	2.756	70	0.551	14	0.512	13	0.194	4.93	C86210	C96010
10-32	UNF	0.1900	4.83	3	2B	2.756	70	0.551	14	0.512	13	0.194	4.93	C86211	C96011
12-24	UNC	0.2160	5.49	3	2B	3.150	80	0.512	13	0.591	15	0.220	5.59	C86212	C96012
12-28	UNF	0.2160	5.49	3	2B	3.150	80	0.512	13	0.591	15	0.220	5.59	C86213	C96013
1/4-20	UNC	0.2500	6.35	3	2B	3.150	80	0.669	17	0.630	16	0.255	6.48	C86214	C96014
1/4-28	UNF	0.2500	6.35	3	2B	3.150	80	0.669	17	0.630	16	0.255	6.48	C86215	C96015
5/16-18	UNC	0.3125	7.94	3	2B	3.543	90	0.709	18	0.709	18	0.318	8.08	C86216	C96016
5/16-24	UNF	0.3125	7.94	3	2B	3.543	90	0.709	18	0.709	18	0.318	8.08	C86217	C96017
3/8-16	UNC	0.3750	9.53	3	2B	3.937	100	0.787	20	—	—	0.381	9.68	C86218	C96018
3/8-24	UNF	0.3750	9.53	3	2B	3.937	100	0.787	20	—	—	0.381	9.68	C86219	C96019
7/16-14	UNC	0.4375	11.11	3	2B	3.937	100	0.866	22	0.866	22	0.323	8.2	C86220	C96020
7/16-20	UNF	0.4375	11.11	3	2B	3.937	100	0.866	22	0.866	22	0.323	8.2	C86221	C96021
1/2-13	UNC	0.5000	12.70	3	2B	4.331	110	0.984	25	0.591	15	0.367	9.32	C86222	C96022
1/2-20	UNF	0.5000	12.70	3	2B	4.331	110	0.984	25	0.591	15	0.367	9.32	C86223	C96023
9/16-12	UNC	0.5625	14.29	3	2B	4.331	110	1.024	26	0.787	20	0.429	10.9	C86224	C96024
9/16-18	UNF	0.5625	14.29	3	2B	4.331	110	1.024	26	0.787	20	0.429	10.9	C86225	C96025
5/8-11	UNC	0.6250	15.88	3	2B	4.331	110	1.142	29	—	—	0.480	12.19	C86226	C96026
5/8-18	UNF	0.6250	15.88	3	2B	4.331	110	1.142	29	—	—	0.480	12.19	C86227	C96027
3/4-10	UNC	0.7500	19.05	4	2B	4.921	125	1.102	28	1.142	29	0.590	14.99	C86228	C96028
3/4-16	UNF	0.7500	19.05	4	2B	4.921	125	1.102	28	1.142	29	0.590	14.99	C86229	C96029
7/8-9	UNC	0.8750	22.23	4	2B	5.512	140	1.299	33	1.102	28	0.697	17.7	C86230	C96030
7/8-14	UNF	0.8750	22.23	4	2B	5.512	140	1.299	33	1.102	28	0.697	17.7	C86231	C96031
1-8	UNC	1.0000	25.40	4	2B	6.299	160	1.378	35	1.181	30	0.800	20.32	C86232	C96032
1-12	UNF	1.0000	25.40	4	2B	6.299	160	1.378	35	1.181	30	0.800	20.32	C86233	C96033

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High Performance Taps

Performance
Spiral Point

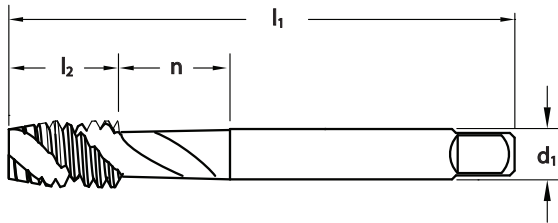
Styles: **PER-862SP** and **PER-960SP**

Metric Sizes

tap size		decimal equiv.	metric equiv.	no. of flutes	class of fit	overall length		thread length		neck		shank diameter		order number	
and pitch	thread form					l_1	l_2	n	d_1	in	mm	in	mm	in	mm
M3x0.5	M	0.1181	3.00	3	6H	2.205	56	0.394	10	0.394	10	0.141	3.58	C86234	C96034
M3.5x0.6	M	0.1378	3.50	3	6H	2.205	56	0.433	11	0.394	10	0.141	3.58	C86235	C96035
M4x0.7	M	0.1575	4.00	3	6H	2.480	63	0.433	11	0.433	11	0.168	4.27	C86236	C96036
M5x0.8	M	0.1969	5.00	3	6H	2.756	70	0.551	14	0.512	13	0.194	4.93	C86237	C96037
M6x1	M	0.2362	6.00	3	6H	3.150	80	0.669	17	0.630	16	0.255	6.48	C86238	C96038
M7x1	M	0.2756	7.00	3	6H	3.150	80	0.591	15	0.630	16	0.318	8.08	C86239	C96039
M8x1	M	0.3150	8.00	3	6H	3.543	90	0.709	18	0.709	18	0.318	8.08	C86240	C96040
M8x1.25	M	0.3150	8.00	3	6H	3.543	90	0.709	18	0.709	18	0.318	8.08	C86241	C96041
M10x1.25	M	0.3937	10.00	3	6H	3.937	100	0.787	20	0.827	21	0.381	9.68	C86242	C96042
M10x1.5	M	0.3937	10.00	3	6H	3.937	100	0.787	20	0.827	21	0.381	9.68	C86243	C96043
M12x1.25	M	0.4724	12.00	3	6H	4.331	110	1.142	29	—	—	0.367	9.32	C86244	C96044
M12x1.75	M	0.4724	12.00	3	6H	4.331	110	1.142	29	—	—	0.367	9.32	C86245	C96045
M14x1.5	M	0.5512	14.00	3	6H	4.331	110	1.024	26	0.787	20	0.429	10.9	C86246	C96046
M14x2	M	0.5512	14.00	3	6H	4.331	110	1.024	26	0.787	20	0.429	10.9	C86247	C96047
M16x1.5	M	0.6299	16.00	3	6H	4.331	110	1.142	29	—	—	0.480	12.19	C86248	C96048
M16x2	M	0.6299	16.00	3	6H	4.331	110	1.142	29	—	—	0.480	12.19	C86249	C96049
M18x1.5	M	0.7087	18.00	4	6H	4.921	125	1.142	29	0.787	27	0.542	13.77	C86250	C96050
M18x2.5	M	0.7087	18.00	4	6H	4.921	125	1.142	29	0.787	27	0.542	13.77	C86251	C96051

High Performance Taps





High Performance Taps

Inch Sizes

tap size and pitch	thread form	decimal equiv.	metric equiv.	no. of flutes	class of fit	overall length		thread length		neck		shank diameter		order number	
						l_1 in	l_1 mm	l_2 in	l_2 mm	n in	n mm	d_1 in	d_1 mm	Black Oxide PER-893SF	Hardlube PER-980SF
2-56	UNC	0.0860	2.18	3	2B	1.772	45	0.354	9	—	—	0.141	3.58	C89301	C98001
3-48	UNC	0.0990	2.51	3	2B	1.969	50	0.394	10	—	—	0.141	3.58	C89302	C98002
4-40	UNC	0.1120	2.84	3	2B	2.205	56	0.394	10	0.315	8	0.141	3.58	C89303	C98003
4-48	UNF	0.1120	2.84	3	2B	2.205	56	0.394	10	0.315	8	0.141	3.58	C89304	C98004
5-40	UNC	0.1250	3.18	3	2B	2.205	56	0.394	10	0.394	10	0.141	3.58	C89305	C98005
6-32	UNC	0.1380	3.51	3	2B	2.205	56	0.433	11	0.394	10	0.141	3.58	C89306	C98006
6-40	UNF	0.1380	3.51	3	2B	2.205	56	0.433	11	0.394	10	0.141	3.58	C89307	C98007
8-32	UNC	0.1640	4.17	3	2B	2.480	63	0.433	11	0.433	11	0.168	4.27	C89308	C98008
8-36	UNF	0.1640	4.17	3	2B	2.480	63	0.433	11	0.433	11	0.168	4.27	C89309	C98009
10-24	UNC	0.1900	4.83	3	2B	2.756	70	0.551	14	0.512	13	0.194	4.93	C89310	C98010
10-32	UNF	0.1900	4.83	3	2B	2.756	70	0.551	14	0.512	13	0.194	4.93	C89311	C98011
12-24	UNC	0.2160	5.49	3	2B	3.150	80	0.512	13	0.591	15	0.220	5.59	C89312	C98012
12-28	UNF	0.2160	5.49	3	2B	3.150	80	0.512	13	0.591	15	0.220	5.59	C89313	C98013
1/4-20	UNC	0.2500	6.35	3	2B	3.150	80	0.669	17	0.630	16	0.255	6.48	C89314	C98014
1/4-28	UNF	0.2500	6.35	3	2B	3.150	80	0.669	17	0.630	16	0.255	6.48	C89315	C98015
5/16-18	UNC	0.3125	7.94	3	2B	3.543	90	0.709	18	0.709	18	0.318	8.08	C89316	C98016
5/16-24	UNF	0.3125	7.94	3	2B	3.543	90	0.709	18	0.709	18	0.318	8.08	C89317	C98017
3/8-16	UNC	0.3750	9.53	3	2B	3.937	100	0.787	20	—	—	0.381	9.68	C89318	C98018
3/8-24	UNF	0.3750	9.53	3	2B	3.937	100	0.787	20	—	—	0.381	9.68	C89319	C98019
7/16-14	UNC	0.4375	11.11	3	2B	3.937	100	0.866	22	0.866	22	0.323	8.2	C89320	C98020
7/16-20	UNF	0.4375	11.11	3	2B	3.937	100	0.866	22	0.866	22	0.323	8.2	C89321	C98021
1/2-13	UNC	0.5000	12.70	3	2B	4.331	110	0.984	25	0.591	15	0.367	9.32	C89322	C98022
1/2-20	UNF	0.5000	12.70	3	2B	4.331	110	0.984	25	0.591	15	0.367	9.32	C89323	C98023
9/16-12	UNC	0.5625	14.29	4	2B	4.331	110	1.024	26	0.787	20	0.429	10.9	C89324	C98024
9/16-18	UNF	0.5625	14.29	4	2B	4.331	110	1.024	26	0.787	20	0.429	10.9	C89325	C98025
5/8-11	UNC	0.6250	15.88	4	2B	4.331	110	1.142	29	—	—	0.480	12.19	C89326	C98026
5/8-18	UNF	0.6250	15.88	4	2B	4.331	110	1.142	29	—	—	0.480	12.19	C89327	C98027
3/4-10	UNC	0.7500	19.05	4	2B	4.921	125	1.102	28	1.142	29	0.590	14.99	C89328	C98028
3/4-16	UNF	0.7500	19.05	4	2B	4.921	125	1.102	28	1.142	29	0.590	14.99	C89329	C98029
7/8-9	UNC	0.8750	22.23	4	2B	5.512	140	1.299	33	1.102	28	0.697	17.7	C89330	C98030
7/8-14	UNF	0.8750	22.23	4	2B	5.512	140	1.299	33	1.102	28	0.697	17.7	C89331	C98031
1-8	UNC	1.0000	25.40	4	2B	6.299	160	1.378	35	1.181	30	0.800	20.32	C89332	C98032
1-12	UNF	1.0000	25.40	4	2B	6.299	160	1.378	35	1.181	30	0.800	20.32	C89333	C98033

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High Performance Taps

Styles: **PER-893SF** and **PER-980SF**

Performance
Spiral Flute

Metric Sizes

tap size and pitch	thread form	decimal equiv.	metric equiv.	no. of flutes	class of fit	overall length		thread length		neck		shank diameter		order number	
						l ₁ in	mm	l ₂ in	mm	n in	mm	d ₁ in	mm	Black Oxide PER-893SF	Hardlube PER-980SF
M3x0.5	M	0.1181	3.00	3	6H	2.205	56	0.394	10	0.394	10	0.141	3.58	C89334	C98034
M3.5x0.6	M	0.1378	3.50	3	6H	2.205	56	0.433	11	0.394	10	0.141	3.58	C89335	C98035
M4x0.7	M	0.1575	4.00	3	6H	2.480	63	0.433	11	0.433	11	0.168	4.27	C89336	C98036
M5x0.8	M	0.1969	5.00	3	6H	2.756	70	0.551	14	0.512	13	0.194	4.93	C89337	C98037
M6x1	M	0.2362	6.00	3	6H	3.150	80	0.669	17	0.630	16	0.255	6.48	C89338	C98038
M7x1	M	0.2756	7.00	3	6H	3.150	80	0.591	15	0.630	16	0.318	8.08	C89339	C98039
M8x1	M	0.3150	8.00	3	6H	3.543	90	0.709	18	0.709	18	0.318	8.08	C89340	C98040
M8x1.25	M	0.3150	8.00	3	6H	3.543	90	0.709	18	0.709	18	0.318	8.08	C89341	C98041
M10x1.25	M	0.3937	10.00	3	6H	3.937	100	0.787	20	0.827	21	0.381	9.68	C89342	C98042
M10x1.5	M	0.3937	10.00	3	6H	3.937	100	0.787	20	0.827	21	0.381	9.68	C89343	C98043
M12x1.25	M	0.4724	12.00	3	6H	4.331	110	1.142	29	—	—	0.367	9.32	C89344	C98044
M12x1.75	M	0.4724	12.00	3	6H	4.331	110	1.142	29	—	—	0.367	9.32	C89345	C98045
M14x1.5	M	0.5512	14.00	3	6H	4.331	110	1.024	26	0.787	20	0.429	10.9	C89346	C98046
M14x2	M	0.5512	14.00	3	6H	4.331	110	1.024	26	0.787	20	0.429	10.9	C89347	C98047
M16x1.5	M	0.6299	16.00	4	6H	4.331	110	1.142	29	—	—	0.480	12.19	C89348	C98048
M16x2	M	0.6299	16.00	4	6H	4.331	110	1.142	29	—	—	0.480	12.19	C89349	C98049
M18x1.5	M	0.7087	18.00	4	6H	4.921	125	1.142	29	0.787	27	0.542	13.77	C89350	C98050
M18x2.5	M	0.7087	18.00	4	6H	4.921	125	1.142	29	0.787	27	0.542	13.77	C89351	C98051
M20x2.5	M	0.7874	20.00	4	6H	5.512	140	1.299	33	1.146	29.1	0.650	16.51	C89352	C98052
M22x2.5	M	0.8661	22.00	4	6H	5.512	140	1.299	33	1.098	27.9	0.697	17.70	C89353	C98053
M24x3.0	M	0.9449	24.00	4	6H	6.299	160	1.378	35	1.181	30	0.760	19.30	C89354	C98054

High Performance Taps





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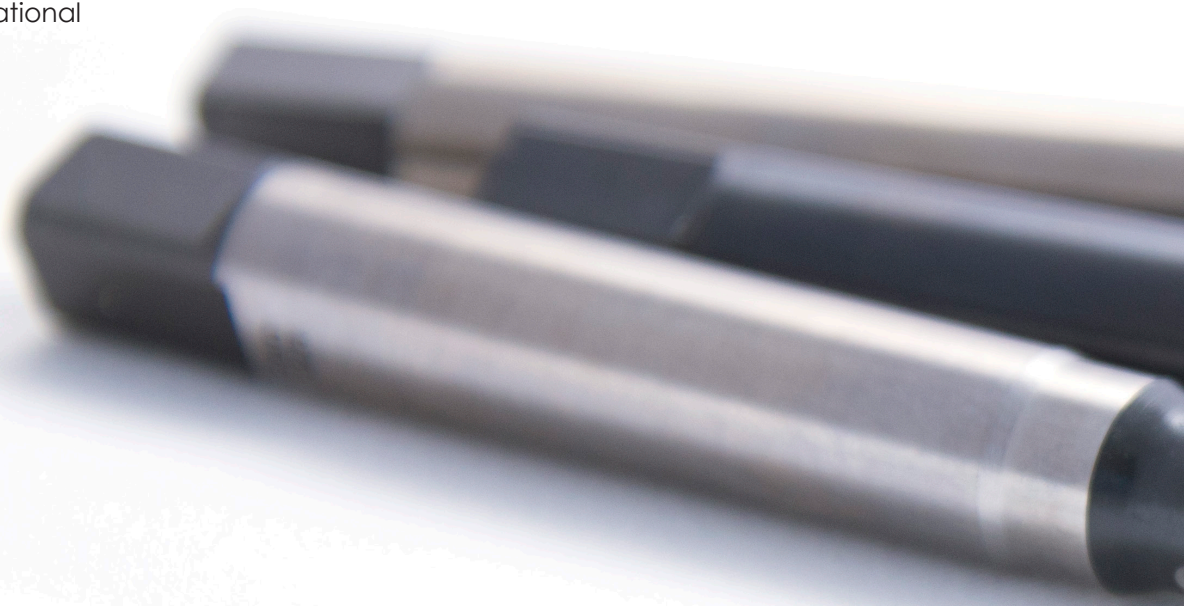
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