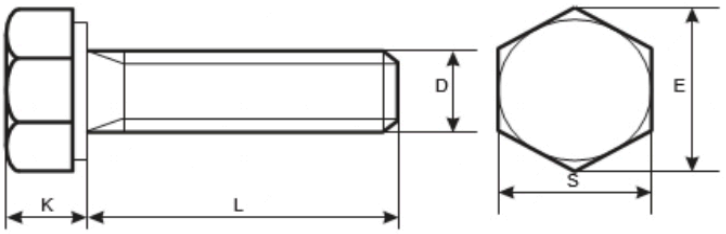
Dimensional Standards

DIN933- HEX BOLT/HEXAGON HEAD CAP SCREW



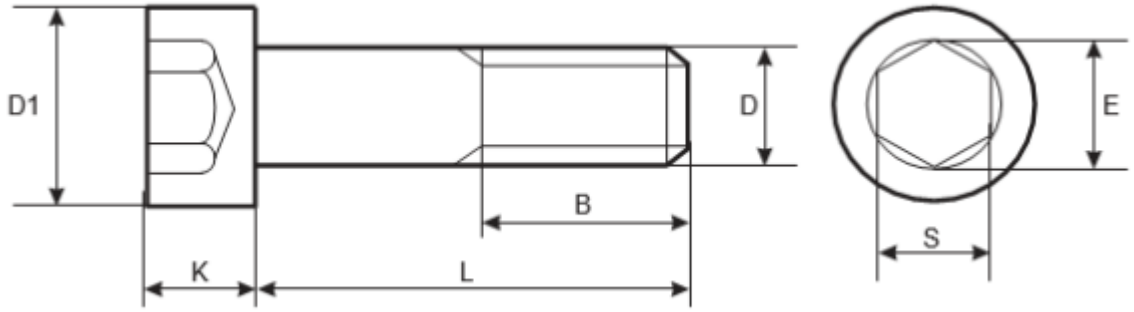
Dimensions of Metric DIN 933 Hexagon Head Cap Screws / Bolts Full Thread

Thread D	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
S	7	8	10	13	17	19	22	24	27	30	32	36
E	7.74	8.87	11.05	14.38	18.9	21.1	24.49	26.75	30.14	33.14	35.72	39.98
K	2.8	3.5	4	5.5	7	8	9	10	12	13	14	15

Thread D	M27	M30	M33	M36	M39	M42	M45	M48
S	41	46	50	55	60	65	70	75
E	45.63	51.28	55.8	61.31	66.96	72.61	78.26	83.91
K	17	19	21	23	25	26	28	30

Dimensional Standards

DIN912- HEXAGON SOCKET HEAD CAP SCREW/SHCS/ALLEN BOLT

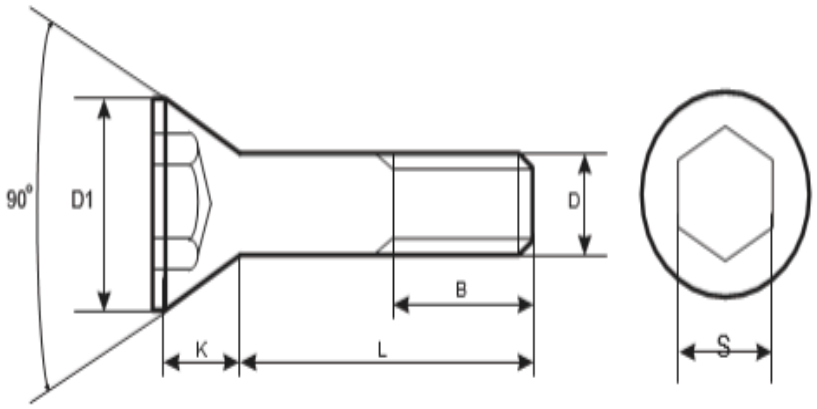


Metric DIN 912 Hexagon Socket Head Cap Screw

D	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
D1	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36
K	3	4	5	6	6	10	1	14	16	18	20	2	24
S	2.5	3	4	5	6	8	10	12	14	14	17	17	19
B	18	20	22	24	28	32	36	40	44	48	52	56	60

Dimensional Standards

DIN7991- FLAT COUNTERSUNK HEXAGON HEAD SOCKET CAP SCREW/ ALLEN CSK



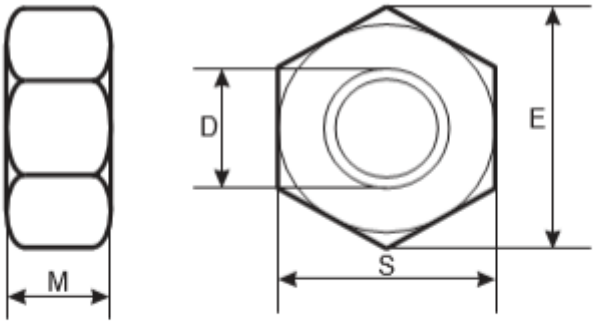
Dimensions of Metric DIN 7991 Flat Countersunk Head Hexagon Socket Cap Screw

D	3	4	5	6	8	10	12	14	16	20	24
D1	6	8	10	12	16	4	24	27	30	36	39
K	1.7	2.3	2.8	3.3	4.4	6.5	6.5	7	7.5	8.5	14
S	2	2.5	3	4	5	8	8	10	10	12	14
B	12	14	16	18	22	26	30	34	38	46	54

All measurements are in mm

Dimensional Standards

DIN934- HEXAGON NUTS/ HEX NUTS



Dimensions of Metric DIN 934 Hexagon Nuts

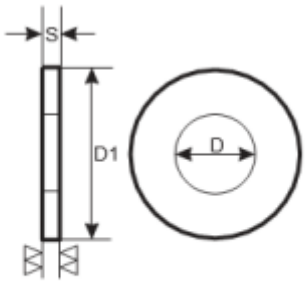
Thread D		M1.6	M2	M2.5	M3	M3.5	M4	M5	M6	M8	M10	M12	M14	M16	M18
P		0.35	0.4	0.45	0.5	0.6	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5
E	min.	3.4	4.3	5.5	6.0	6.6	7.7	8.8	11.1	14.4	17.8	20.0	23.4	26.8	29.6
M	max.	1.3	1.6	2.0	2.4	2.8	3.2	4.7	5.2	6.8	8.4	10.8	12.8	14.8	15.8
	min.	1.1	1.4	1.8	2.2	2.6	2.9	4.4	4.9	6.4	8.0	10.4	12.1	14.1	15.1
S	max.	3.2	4.0	5.0	5.5	6.0	7.0	8.0	10.0	13.0	16.0	18.0	21.0	24.0	27.0
	min.	3.0	3.8	4.8	5.3	5.8	6.8	7.8	9.8	12.7	15.7	17.7	20.7	23.7	26.2

Thread D		M20	M22	M24	M27	M30	M33	M36	M39	M42	M45	M48	M52	M56	M60	M64
P		2.5	2.5	3	3	3.5	3.5	4	4	4.5	4.5	5	5	5.5	5.5	6
E	min.	33.0	37.3	39.6	45.2	50.9	55.4	60.8	66.4	71.3	77.0	82.6	88.3	93.6	99.2	104.9
M	max.	18.0	19.4	21.5	23.8	25.6	28.7	31.0	33.4	34.0	36.0	38.0	42.0	45.0	48.0	51.0
	min.	16.9	18.1	20.2	22.5	24.3	27.4	29.4	31.8	32.4	34.4	36.4	40.4	43.4	46.4	49.1
S	max.	30.0	34.0	36.0	41.0	46.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0
	min.	29.2	33.0	35.0	40.0	45.0	49.0	53.8	58.8	63.1	68.1	73.1	78.1	82.8	87.8	92.8

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Dimensional Standards

DIN125A- PLATE WASHER



TYPE A
STRAIGHT

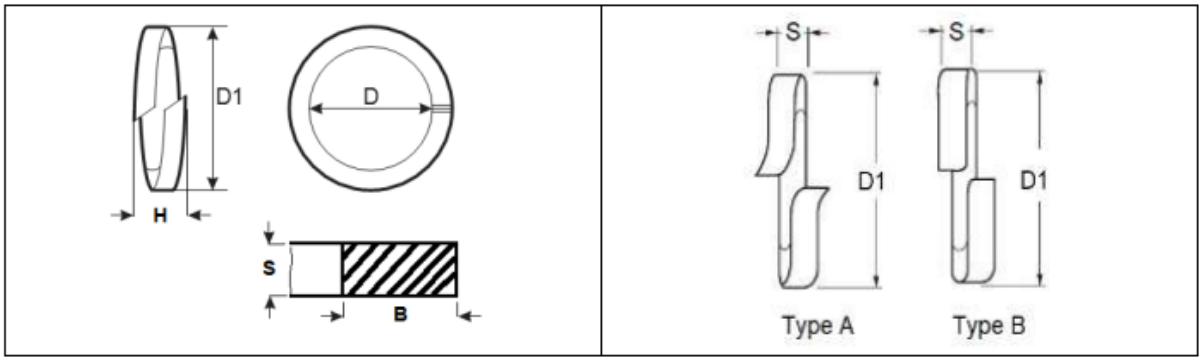
Nominal Diameter	D	D1	S
M3	3.2	7	0.5
M4	4.3	9	0.8
M5	5.3	10	1
M6	6.4	12.5	1.6
M7	7.4	14	1.6
M8	8.4	17	1.6
M10	10.5	21	2
M12	13	24	2.5
M14	15	28	2.5
M16	17	30	3
M18	19	34	3
M20	21	37	3
M22	23	39	3
M24	25	44	4
M27	28	50	4
M30	31	56	4
M33	34	60	5
M36	37	66	5

Nominal Diameter	D	D1	S
M39	40	72	6
M42	43	78	7
M45	46	85	7
M45	50	92	8
M52	54	98	8
M56	58	105	9
M58	60	110	9
M64	65	115	9
M72	74	125	10

All measurements are in mm

Dimensional Standards

DIN127B SPRING WASHER



Type DIN 127 A has bent up tang at both ends of the washer. Type B simply has square/straight ends.

PLEXUS

Dimensional Standards

Nominal Diameter	D min.	D max.	D1 max.	B	S	H min.	H max.
M2	2.1	2.4	4.4	0.9 ± 0.1	0.5 ± 0.1	1	1.2
M2.2	2.3	2.6	4.8	1 ± 0.1	0.6 ± 0.1	1.2	1.4
M2.5	2.6	2.9	5.1	1 ± 0.1	0.6 ± 0.1	1.2	1.4
M3	3.1	3.4	6.2	1.3 ± 0.1	0.8 ± 0.1	1.6	1.9
M3.5	3.6	3.9	6.7	1.3 ± 0.1	0.8 ± 0.1	1.6	1.9
M4	4.1	4.4	7.6	1.5 ± 0.1	0.9 ± 0.1	1.8	2.1
M5	5.1	5.4	9.2	1.8 ± 0.1	1.2 ± 0.1	2.4	2.8
M6	6.4	6.5	11.8	2.5 ± 0.15	1.6 ± 0.1	3.2	3.8
M7	7.1	7.5	12.8	2.5 ± 0.15	1.6 ± 0.1	3.2	3.8
M8	8.1	8.5	14.8	3 ± 0.15	2 ± 0.1	4	4.7
M10	10.2	10.7	18.1	3.5 ± 0.2	2.2 ± 0.15	4.4	5.2
M12	12.2	12.7	21.1	4 ± 0.2	2.5 ± 0.15	5	5.9
M14	14.2	14.7	24.1	4.5 ± 0.2	3 ± 0.15	6	7.1
M16	16.2	17	27.4	5 ± 0.2	3.5 ± 0.2	7	8.3
M18	18.2	19	29.4	5 ± 0.2	3.5 ± 0.2	7	8.3
M20	20.2	21.2	33.6	6 ± 0.2	4 ± 0.2	8	9.4

PLEXUS

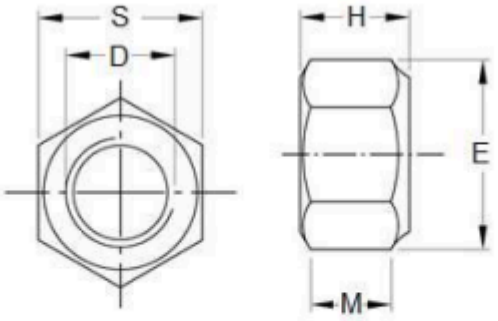
Dimensional Standards

Nominal Diameter	D min.	D max.	D1 max.	B	S	H min.	H max.
M22	22.5	23.5	35.9	6 ± 0.2	4 ± 0.2	8	9.4
M24	24.5	25.5	40	7 ± 0.25	5 ± 0.2	10	11.8
M27	27.5	28.5	43	7 ± 0.25	5 ± 0.2	10	11.8
M30	30.5	31.7	48.2	8 ± 0.25	6 ± 0.2	12	14.2
M36	36.5	37.7	58.2	10 ± 0.25	6 ± 0.2	12	14.2
M39	39.5	40.7	61.2	10 ± 0.25	6 ± 0.2	12	14.2
M42	42.5	43.7	66.2	12 ± 0.25	7 ± 0.25	14	16.5
M45	45.5	46.7	71.2	12 ± 0.25	7 ± 0.25	14	16.5
M48	49	50.6	75	12 ± 0.25	7 ± 0.25	14	16.5
M52	53	54.6	83	14 ± 0.25	8 ± 0.25	16	18.9
M56	57	58.5	87	14 ± 0.25	8 ± 0.25	16	18.9
M60	61	62.5	91	14 ± 0.25	8 ± 0.25	16	18.9
M64	65	66.5	95	14 ± 0.25	8 ± 0.25	16	18.9
M68	69	70.5	99	14 ± 0.25	8 ± 0.25	16	18.9
M72	73	74.5	103	14 ± 0.25	8 ± 0.25	16	18.9
M80	81	82.5	111	14 ± 0.25	8 ± 0.25	16	18.9
M90	91	92.5	121	14 ± 0.25	8 ± 0.25	16	18.9
M100	101	102.5	131	14 ± 0.25	8 ± 0.25	16	18.9

All measurements are in mm

Dimensional Standards

DIN982- NYLON INSERT HEXAGON NUT/NYLOCK NUT

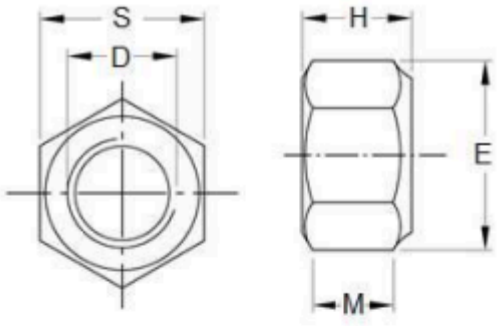


Dimensions of Metric DIN 982 Nylon Insert Hexagon Stop Lock Nuts High Type

D	S	E	H	M
M4	7	7.66	6	2.9
M5	8	8.79	6.3	4.4
M6	10	11.05	8	4.9
M8	13	14.38	9.5	6.44
M10	17	18.9	11.5	8.04
M12	19	21.1	14	10.37
M14	22	23.9	16	12.1
M16	24	26.76	18	14.1
M20	30	32.95	22	16.9
M24	36	39.55	28	20.2

Dimensional Standards

DIN985- NYLON INSERT HEXAGON NUT/NYLOCK NUT

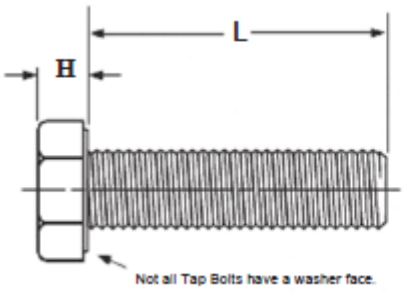


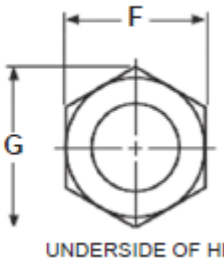
Dimensions of Metric DIN 985

D	S	E	H	M	WEIGHT KG/1000pcs
M4	7	7.66	5	2.9	1
M5	8	8.79	5	3.2	1.4
M6	10	11.05	6	4	2.4
M8	13	14.38	8	5.5	5.1
M10	17	18.9	10	6.5	10.6
M12	19	21.1	12	8	17.2
M14	22	24.49	14	9.5	26
M16	24	26.75	16	10.5	34
M18	27	29.56	18.5	13	45
M20	30	32.95	20	14	65
M22	32	35.03	22	15	75
M24	36	39.55	24	15	100
M27	41	45.02	27	17	162
M30	46	50.82	30	19	212
M3	50	55.37	33	22	317
M36	55	60.79	36	25	415
M39	60	66.44	39	27	499
M42	65	72.09	42	29	628
M45	70	76.95	45	32	771
M48	75	82.6	48	36	998

ASME B18.2.1- HEXAGON HEAD CAP SCREW/HEX BOLT

Dimensional Standards



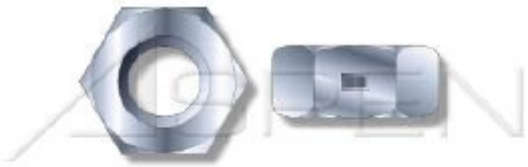


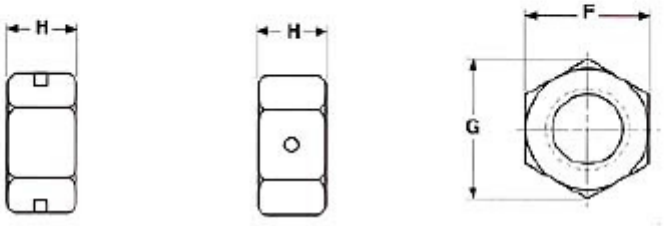
Nominal or Basic Product Diameter	F			G		H		
	Width Across Flats			Width Across Corners		Head Height		
	Basic	Max.	Min.	Max.	Min.	Basic	Max.	Min.
1/4	7/16	0.438	0.428	0.505	0.488	5/32	0.163	0.150
5/16	1/2	0.500	0.489	0.577	0.557	13/64	0.211	0.195
3/8	9/16	0.562	0.551	0.650	0.628	15/64	0.243	0.226
7/16	5/8	0.625	0.612	0.722	0.698	9/32	0.291	0.272
1/2	3/4	0.750	0.736	0.866	0.840	5/16	0.323	0.302
9/16	13/16	0.812	0.798	0.938	0.910	23/64	0.371	0.348
5/8	15/16	0.938	0.922	1.083	1.051	25/64	0.403	0.378
3/4	1 1/8	1.125	1.100	1.299	1.254	15/32	0.483	0.455
7/8	1 5/16	1.312	1.269	1.516	1.447	37/64	0.604	0.531
1	1 1/2	1.500	1.450	1.732	1.653	43/64	0.700	0.591
1 1/4	1 7/8	1.875	1.812	2.165	2.066	27/32	0.876	0.749

	Nominal Screw Size	Nominal Size				
		Up to 1 in., incl.	Over 1" to 2-1/2", incl.	Over 2-1/2" to 4", incl.	Over 4" to 6", incl.	Over 6"
Tolerance on Length	1/4 to 3/8	-0.03	-0.04	-0.06	-0.10	-0.18
	7/16 and 1/2	-0.03	-0.06	-0.08	-0.10	-0.18
	9/16 to 3/4	-0.03	-0.08	-0.10	-0.10	-0.18
	7/8 and 1	—	-0.10	-0.14	-0.16	-0.20
	1 1/4	—	-0.12	-0.16	-0.18	-0.22

ASME B18.2.2- HEXAGON NUTS/ HEX NUTS

Dimensional Standards



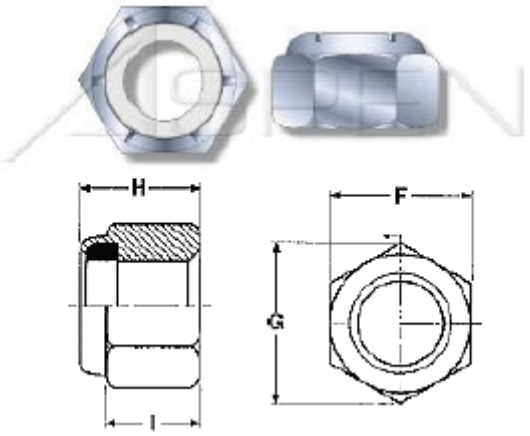


Nominal or Basic Major Dia of Thread (inches)		F Width Across Flats			G Width Across Corners		H Thickness		
		Basic (inches)	Max	Min	Max	Min	Basic (inches)	Max	Min
#8	0.1640	11/32	0.344	0.332	0.397	0.378	3/16	0.193	0.178
#10	0.1900	3/8	0.375	0.362	0.433	0.413	13/64	0.203	0.187
1/4	0.2500	7/16	0.438	0.428	0.505	0.488	1/32	0.226	0.212
5/16	0.3125	1/2	0.500	0.489	0.577	0.557	17/64	0.273	0.258
3/8	0.3750	9/16	0.562	0.551	0.650	0.628	21/64	0.337	0.32
7/16	0.4375	11/16	0.688	0.675	0.794	0.768	3/8	0.385	0.365
1/2	0.5000	3/4	0.750	0.736	0.866	0.840	7/16	0.448	0.427
9/16	0.5625	7/8	0.875	0.861	1.010	0.982	31/64	0.496	0.473
5/8	0.6250	1-5/16	0.938	0.922	1.083	1.051	35/64	0.559	0.535
3/4	0.7500	1-1/8	1.125	1.088	1.299	1.240	41/64	0.665	0.617
7/8	0.8750	1-5/16	1.312	1.269	1.516	1.447	3/4	0.776	0.724
1	1.0000	1-1/2	1.500	1.450	1.732	1.653	55/64	0.887	0.831

PLEXUS

Dimensional Standards

ASME B18.2.2- HEXAGON NUTS/ HEX NUTS



Nominal Size or Basic Thread Diameter		ESNA Part Numbers				F			H		I	G
		Steel, Zinc-plate		Stainless		Width Across Flats			Thickness		Side Height	Width Across Corners (Ref)
		Coarse	Fine	Coarse	Fine	Basic	Max	Min	Max	Min	Ref	
2	0.0860	21NM-26		79NM-26		1/4	0.251	0.243	0.153	0.133	0.081	0.268
3	0.0990	21NM-38		79NM-38		1/4	0.251	0.243	0.153	0.133	0.081	0.268
4	0.1120	21NM-40	--	79NM-40	--	1/4	0.251	0.243	0.153	0.133	0.081	0.268
5	0.1250	21NM-50	--	--	--	1/4	0.251	0.243	0.153	0.133	0.081	0.268
6	0.1380	21NM-62	--	79NM-62	--	5/16	0.313	0.305	1.880	0.168	0.103	0.339
8	0.1640	21NM-82	--	79NM-82	--	11/32	0.345	0.336	0.239	0.219	0.140	0.374
10	0.1900	21NM-04	21NM-02	79NM-04	79NM-02	3/8	0.376	0.367	0.249	0.229	0.140	0.410
12	0.2160	21NM-124	21NM-128	79NM-124		7/16	0.439	0.430	0.328	0.298	0.225	0.482
1/4	0.2500	21NE-040	21NE-048	79NE-040	--	7/16	0.439	0.430	0.328	0.298	0.225	0.482
5/16	0.3125	21NE058	21NE-054	79NE-058	--	1/2	0.502	0.492	0.359	0.290	0.250	0.552
3/8	0.3750	21NE-066	21NE-064	79NE-066	--	9/16	0.564	0.553	0.468	0.438	0.335	0.622
7/16	0.4375	21NE-074	21NE-070	--	--	11/16	0.627	0.616	0.468	0.438	0.324	0.698
1/2	0.5000	21NM-083	21NE-080	79NE-083	--	3/4	0.752	0.741	0.609	0.579	0.464	0.837
9/16	0.5625	21NM-092	21NE-098	--	--	7/8	0.877	0.865	0.656	0.626	0.469	0.978
5/8	0.6250	21NE-101	21NE-108	79NE-108	--	15/16	0.940	0.928	0.765	0.735	0.593	1.051
3/4	0.7500	41NE-120	41NE-126	79NE-120	--	1-1/8	1.064	1.052	0.890	0.860	0.742	1.191
7/8	0.8750	41NE-149	41NE-144	--	--	1-5/16	1.252	1.239	0.999	0.969	0.790	1.403
1	1.0000	41NE-168	41NE-164	--	--	1-1/2	1.440	1.427	1.078	1.016	0.825	1.615
1 1/8	1.1250	41NE177	--	--	--	1-11/16	1.627	1.614	1.203	1.141	0.930	1.826
1 1/4	1.2500	41NE-197	41NE-202	--	--	1-7/8	1.815	1.801	1.422	1.360	1.125	2.038
1 1/2	1.5000	41NE-242	--	--	--	2-1/4	2.197	2.159	1.640	1.578	1.313	2.444