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HARDWARE DATA

RECOMMENDED TIGHTENING TORQUE

The hardware used in connectors must be compatible with the connector material, have high mechanical strength and be corrosion resistant and correspond to NEMA recommendations.

Copper alloy connectors have hardware made of DURIUM™, which is BURNDY's trade name for silicon bronze alloy ASTM B99 type B. This material was first introduced by BURNDY® in 1927 for use in outdoor construction, and today, is the standard throughout the industry.

DURIUM™ and Steel Hardware		Aluminum Hardware	
Bolt Size	Recommended Torque (Inch Pounds)	Bolt Size	Recommended Torque (Inch Pounds)
1/4 - 20	80	1/2 - 13	300
5/16 - 18	180	5/8 - 11	480
3/8 - 16	240	3/4 - 10	650
1/2 - 13	480		
5/8 - 11	660		
3/4 - 10	1,050		

Aluminum connectors generally have aluminum alloy hardware. The bolts are 2024T4 and anodized to resist corrosion. The nuts are 6061T6, which is resistant to corrosion and does not require anodizing. Both nuts and bolts are lubricated to eliminate galling and to provide consistent clamping forces.

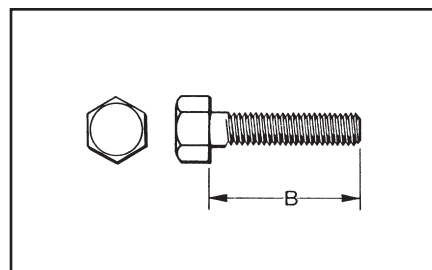
The size material for clamping hardware are selected to provide the required force when tightened to the recommended torque. To reduce or greatly exceed the recommended torque can adversely affect the performance of the connector.

DURIUM™ BOLT

SILICON BRONZE

BURNDY® introduced silicon-bronze bolts, nuts, and other hardware items on outdoor connector applications in 1927. Today the DURIUM™ trademark is a standard for this use.

DURIUM™ bolts combine high strength with corrosion resistance. **Bolts up to 2 inches long are fully threaded; longer bolts are threaded for two inches.** Heads have



American Standard dimension, and the threads are per American National Coarse Series, Class #2 fit. The silicon bronze is per ASTM B99.

Catalog Number	Thread Size	B Length	Catalog Number	Thread Size	B Length	Catalog Number	Thread Size	B Length
25x50 HEB BOX	1/4-20	1/2"	38x125 HEB BOX	3/8-16	1-1/4"	50x300 HEB BOX	1/2-13	3"
25x62 HEB BOX	1/4-20	5/8"	38x150 HEB BOX	3/8-16	1-1/2"	50x325 HEB BOX	1/2-13	3-1/4"
25x75 HEB BOX	1/4-20	3/4"	38x175 HEB BOX	3/8-16	1-3/4"	50x350 HEB BOX	1/2-13	3-1/2"
25x100 HEB BOX	1/4-20	1"	38x200 HEB BOX	3/8-16	2"	50x375 HEB BOX	1/2-13	3-3/4"
25x125 HEB BOX	1/4-20	1-1/4"	38x225 HEB BOX	3/8-16	2-1/4"	50x400 HEB BOX	1/2-13	4"
25x150 HEB BOX	1/4-20	1-1/2"	38x250 HEB BOX	3/8-16	2-1/2"	50x450 HEB BOX	1/2-13	4-1/2"
25x200 HEB BOX	1/4-20	2"	38x275 HEB BOX	3/8-16	2-3/4"	50x500 HEB BOX	1/2-13	5"
25x250 HEB BOX	1/4-20	2-1/2"	38x300 HEB BOX	3/8-16	3"	50x550 HEB BOX	1/2-13	5-1/2"
25x300 HEB BOX	1/4-20	3"	38x325 HEB BOX	3/8-16	3-1/4"	50x600 HEB BOX	1/2-13	6"
31x50 HEB BOX	5/16-18	1/2"	38x350 HEB BOX	3/8-16	3-1/2"	62x100 HEB BOX	5/8-11	1"
31x62 HEB BOX	5/16-18	5/8"	38x400 HEB BOX	3/8-16	4"	62x125 HEB BOX	5/8-11	1-1/4"
31x75 HEB BOX	5/16-18	3/4"	38x450 HEB BOX	3/8-16	4-1/2"	62x150 HEB BOX	5/8-11	1-1/2"
31x100 HEB BOX	5/16-18	1"	38x500 HEB BOX	3/8-16	5"	62x175 HEB BOX	5/8-11	1-3/4"
31x125 HEB BOX	5/16-18	1-1/4"	44x150 HEB BOX	7/16-14	1-1/2"	62x200 HEB BOX	5/8-11	2"
31x150 HEB BOX	5/16-18	1-1/2"	44x200 HEB BOX	7/16-14	2"	62x225 HEB BOX	5/8-11	2-1/4"
31x175 HEB BOX	5/16-18	1-3/4"	50x75 HEB BOX	1/2-13	3/4"	62x250 HEB BOX	5/8-11	2-1/2"
31x200 HEB BOX	5/16-18	2"	50x100 HEB BOX	1/2-13	1"	62x275 HEB BOX	5/8-11	2-3/4"
31x250 HEB BOX	5/16-18	2-1/2"	50x125 HEB BOX	1/2-13	1-1/4"	62x300 HEB BOX	5/8-11	3"
31x300 HEB BOX	5/16-18	3"	50x150 HEB BOX	1/2-13	1-1/2"	62x325 HEB BOX	5/8-11	3-1/4"
38x50 HEB BOX	3/8-16	1/2"	50x175 HEB BOX	1/2-13	1-3/4"	62x350 HEB BOX	5/8-11	3-1/2"
38x62 HEB BOX	3/8-16	5/8"	50x200 HEB BOX	1/2-13	2"	62x400 HEB BOX	5/8-11	4"
38x75 HEB BOX	3/8-16	3/4"	50x225 HEB BOX	1/2-13	2-1/4"	62x450 HEB BOX	5/8-11	4-1/2"
38x88 HEB BOX	3/8-16	7/8"	50x250 HEB BOX	1/2-13	2-1/2"	62x500 HEB BOX	5/8-11	5"
38x100 HEB BOX	3/8-16	1"	50x275 HEB BOX	1/2-13	2-3/4"	62x600 HEB BOX	5/8-11	6"

DURIUM™ NUT

SILICON BRONZE

DURIUM™ hexagon regular nuts are non-magnetic and are made to American Standard dimensions. American National Coarse Series threads, #2 fit.

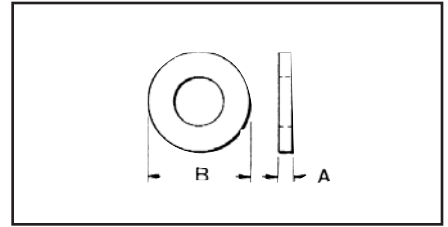


Catalog Number	Thread Size
25C HEN BOX	1/4-20
31C HEN BOX	5/16-18
38C HEN BOX	3/8-16
44C HEN BOX	7/16-14
50C HEN BOX	1/2-13
62C HEN BOX	5/8-11
75C HEN BOX	3/4-10

DURIUM™ FLAT WASHER

SILICON BRONZE

High strength DURIUM™ Flat Washers are non-magnetic and free from galvanic action when in contact with copper. Conforms to SAE standards.



Catalog Number	For Bolt Size	Nominal Dimensions in Inches	
		A	B
25 FW BOX	1/4	1/16	5/8
31 FW BOX	5/16	1/16	11/16
38 FW BOX	3/8	1/16	13/16
44 FW BOX	7/16	1/16	15/16
50 FW BOX	1/2	3/32	1-1/16
62 FW BOX	5/8	3/32	1-5/16

DURIUM™ SPLIT LOCKWASHER

SILICON BRONZE

DURIUM™ spring type lockwasher has high resiliency and exerts constant pressure on the face of the nut, preventing vibration from loosening the nut.

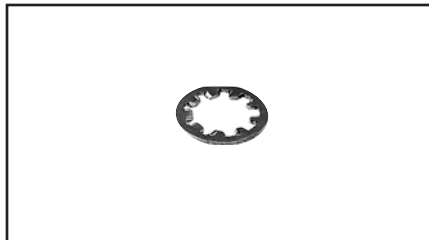


Catalog Number	For Bolt Size
25 SW BOX	1/4
31 SW BOX	5/16
38 SW BOX	3/8
44 SW BOX	7/16
50 SW BOX	1/2
62 SW BOX	5/8

DURIUM™ INTERNAL TOOTH LOCKWASHER

SILICON BRONZE

DURIUM™ Internal Tooth Lockwashers are available as illustrated. The teeth are twisted slightly and present biting edges which grip the nut and the part being clamped, preventing the nut from backing off.

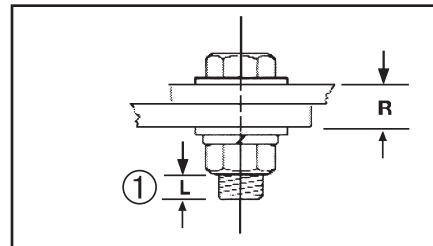


Catalog Number	For Bolt Size
25 NW BOX	1/4
31 NW BOX	5/16
38 NW BOX	3/8
44 NW BOX	7/16
50 NW BOX	1/2
62 NW BOX	5/8

TYPE TMH

DURIUM™ SILICON BRONZE HARDWARE KITS

Type TMH are DURIUM™ silicon bronze hardware kits. The kits can be ordered for specific applications ensuring the proper type and amount of hardware for each installation. Packaged in separate sealed bags, they are convenient to use, eliminating mismatched quantities. DURIUM™ silicon bronze material provides long lasting corrosion resistance.



Catalog Number	Size	Each TMH Kit Includes:					Working Range R	Installation Torque (In-lbs)
		Bolt		Flat Washer	Split Washer	Hex Nut		
		Length	Qty.					
TMH262	1/4-20	0.75	2	4	2	2	0.09 - 0.34	80
TMH263		1.00	2	4	2	2	0.34 - 0.59	
TMH264		1.25	2	4	2	2	0.59 - 0.84	
TMH265		1.50	2	4	2	2	0.84 - 1.09	
TMH323		0.75	1	0	1	1	-	
TMH266	3/8-16	0.75	2	4	2	2	0.00 - 0.19	240
TMH267		1.00	2	4	2	2	0.19 - 0.44	
TMH268		1.25	2	4	2	2	0.44 - 0.69	
TMH269		1.50	2	4	2	2	0.69 - 0.94	
TMH270		1.75	2	4	2	2	0.94 - 1.19	
TMH271		2.00	2	4	2	2	1.19 - 1.44	
TMH332 ²		2.75	2	4	2	2	-	
TMH261 [†]		3.00	2	4	2	2	2.15 - 2.40	
TMH289 ^{††}	1.25	1	2	1	1	0.02 - 0.27		
TMH295	1/2-13	1.25	2	4	2	2	0.27 - 0.49	480
TMH272		1.50	2	4	2	2	0.49 - 0.74	
TMH294		1.75	2	4	2	2	0.74 - 0.99	
TMH69		2.00	2	4	2	2	0.99 - 1.24	

† For use with CUSA750-2TC38 copper spacer adaptor, (2) terminals and " thick equipment bus bar. For other combinations contact BURNDY®.
 †† For use with all GAR-TC connectors. "R" dimension is allowable pad thickness of terminal

* For other combinations contact BURNDY®.
 ① "L" dimension never exceeds .25"
 2 For use with CUSA442TC38 on 1/4" bus bar and HYLUG™ 4/0 - 750 kcmil.

TYPE TMH-SS

STAINLESS STEEL HARDWARE KITS

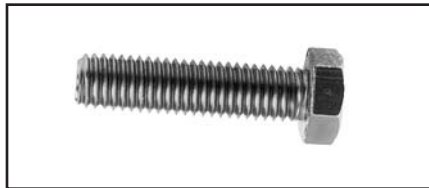
Type TMH-SS are Grade 5 stainless steel hardware kits. Just like the standard TMH kits, these kits can be ordered for specific applications ensuring the proper type and amount of hardware for each installation. They are packaged in separate sealed bags and convenient for use and ordering.

Catalog Number	Size	Each TMH Kit Includes:					Working Range R	Installation Torque (In-lbs)
		Bolt		Flat Washer	Split Washer	Hex Nut		
		Length	Qty.					
TMH322SS	10 - 32	0.875	1	0	1	1	-	45
TMH262SS	1/4-20	0.75	2	4	2	2	0.09 - 0.34	80
TMH263SS		1.00	2	4	2	2	0.34 - 0.59	
TMH264SS		1.25	2	4	2	2	0.59 - 0.84	
TMH265SS		1.50	2	4	2	2	0.84 - 1.09	
TMH323SS		0.75	1	0	1	1	-	
TMH266SS	3/8-16	0.75	2	4	2	2	0.00 - 0.19	240
TMH267SS		1.00	2	4	2	2	0.19 - 0.44	
TMH268SS		1.25	2	4	2	2	0.44 - 0.69	
TMH269SS		1.50	2	4	2	2	0.69 - 0.94	
TMH270SS		1.75	2	4	2	2	0.94 - 1.19	
TMH271SS		2.00	2	4	2	2	1.19 - 1.44	
TMH261SS [†]		3.00	2	4	2	2	2.15 - 2.40	
TMH289SS ^{††}		1.25	1	2	1	1	0.02 - 0.27	
TMH295SS	1/2-13	1.25	2	4	2	2	0.27 - 0.49	480
TMH272SS		1.50	2	4	2	2	0.49 - 0.74	
TMH294SS		1.75	2	4	2	2	0.74 - 0.99	
TMH69SS		2.00	2	4	2	2	0.99 - 1.24	

GALVANIZED STEEL HARDWARE

Galvanized bolts, nuts, flatwashers, and internal tooth lockwashers are manufactured per ASTM307 Grade A. Bolts up to 2 inches long are fully threaded; longer bolts are threaded for 2 inches. Nut surfaces and bolt heads have American Standard dimensions, and the threads are per American National Coarse Series, Class #2 fit. Galvanizing is per ASTM A153.

BOLTS



CATALOG NUMBER	THREAD SIZE	LENGTH (B)
38x125 HGSB	3/8-16	1.25
38x275 HGSB	3/8-16	2.75
38x225 HGSB	3/8-16	2.25
50x100 HGSB	1/2-13	1.00
50x150 HGSB	1/2-13	1.50
50x200 HGSB	1/2-13	2.00
62x125 HGSB	5/8-11	1.00
62x175 HGSB	5/8-11	1.75
75x125 HGSB	3/4-10	1.25

NUTS



CATALOG NUMBER	THREAD SIZE
31CHGSN	5/16-18
38 HGSN-009	3/8-16
38 HGSN	3/8-16
50 HGSN	1/2-13
62 HGSN	5/8-11

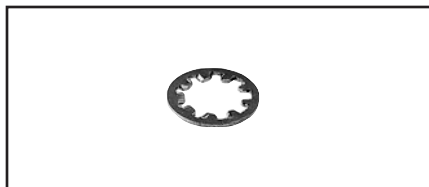
FLATWASHER



CATALOG NUMBER	BOLT SIZE	NOMINAL DIMENSIONS (INCHES)	
		I.D. A	O.D. B
38x81 FWGS	3/8	0.406	0.813
50x106 FWGS	1/2	0.531	1.06
62x31 FWGS	5/8	0.656	1.75
75 FWGS	3/4	0.812	1.50

L-5

INTERNAL TOOTH LOCKWASHERS

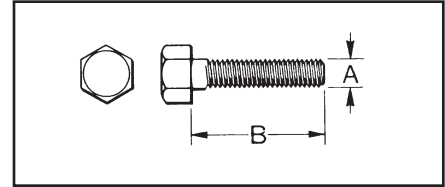


CATALOG NUMBER	BOLT SIZE
38 NWGS	3/8
50 NWGS	1/2
62 NWGS	5/8
75 NWGS	3/4

ALUMINUM HARDWARE

BOLTS

BURNDY® aluminum hexagon head bolts are manufactured of alloy 2024-T4 and are finished with anodic coating and lubricated. Threads are coarse series, class 2A fit.



CATALOG NUMBER	THREAD SIZE	B LENGTH	CATALOG NUMBER	THREAD SIZE	B LENGTH
50x150 HAB BOX	1/2-13	1-1/2"	50x500 HAB BOX	1/2-13	5"
50x175 HAB BOX	1/2-13	1-3/4"	50x550 HAB BOX	1/2-13	5-1/2"
50x200 HAB BOX	1/2-13	2"	62x175 HAB BOX	5/8-11	1-3/4"
50x225 HAB BOX	1/2-13	2-1/4"	62x200 HAB BOX	5/8-11	2"
50x250 HAB BOX	1/2-13	2-1/2"	62x225 HAB BOX	5/8-11	2-1/4"
50x275 HAB BOX	1/2-13	2-3/4"	62x250 HAB BOX	5/8-11	2-1/2"
50x300 HAB BOX	1/2-13	3"	62x300 HAB BOX	5/8-11	3"
50x325 HAB BOX	1/2-13	3-1/4"	62x350 HAB BOX	5/8-11	3-1/2"
50x350 HAB BOX	1/2-13	3-1/2"	62x400 HAB BOX	5/8-11	4"
50x375 HAB BOX	1/2-13	3-3/4"	62x450 HAB BOX	5/8-11	4-1/2"
50x400 HAB BOX	1/2-13	4"	62x500 HAB BOX	5/8-11	5"
50x425 HAB BOX	1/2-13	4-1/4"	62x550 HAB BOX	5/8-11	5-1/2"
50x450 HAB BOX	1/2-13	4-1/2"	62x600 HAB BOX	5/8-11	6"

NUTS

BURNDY® aluminum nuts are manufactured of alloy 6061-T6, are finished type, coarse thread, class 2B fit.



CATALOG NUMBER	THREAD SIZE
50 HAN BOX	1/2-13
62 HAN BOX	5/8-11
75 HAN BOX	3/4-10

L-6

FLATWASHER

BURNDY® aluminum flat washers are manufactured of alloy 2024-T4 and are medium design.



CATALOG NUMBER	DESCRIPTION	FOR BOLT SIZE
50 FWA BOX	Flat Washer	1/2
62 FWA BOX	Flat Washer	5/8

SPLIT LOCKWASHERS

BURNDY® aluminum split lockwashers are manufactured of alloy 7075-T6 and are regular design.

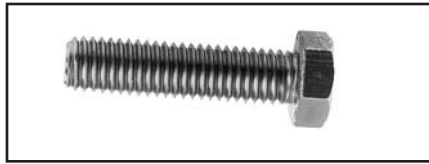


CATALOG NUMBER	DESCRIPTION	FOR BOLT SIZE
50 SWAL BOX	Split Washer	1/2
62 SWAL BOX	Split Washer	5/8

STAINLESS STEEL HARDWARE

Stainless steel bolts, nuts, flatwashers and split lockwashers are manufactured from 18-8 non-magnetic material. Bolts up to 2 inches long are fully threaded; longer bolts are threaded for 2 inches. Nut surfaces and bolt heads have American National Coarse Series, Class #2 fit.

BOLTS



CATALOG NUMBER	THREAD SIZE	LENGTH B (INCHES)
38X125 HSSB	3/8-16	1.25
38x225 HSSB	3/8-16	2.25
38x250 HSSB	3/8-16	2.50
38x275 HSSB	3/8-16	2.75
50x200 HSSB	1/2-13	2.00
50x250 HSSB	1/2-13	2.50
50x300 HSSB	1/2-13	3.00
62x300 HSSB	5/8-11	3.00

NUTS



CATALOG NUMBER	THREAD SIZE
25 HSSN	1/4-20
38 HSSN	3/8-16
50 HSSN	1/2-13
62 HSSN	5/8-11

SPLIT LOCKWASHERS



CATALOG NUMBER	FOR BOLT SIZE
25 SWSS LT	1/4
38 SWSSMD	3/8
50 SWSSMD	1/2
62 SWSSMD	5/8

FLATWASHER



CATALOG NUMBER	BOLT SIZE	NOMINAL DIMENSIONS (INCHES)	
		I.D. A	O.D. B
25 FWSS	1/4	0.266	0.688
38 FWSS	3/8	0.406	1.000
50 FWSS	1/2	0.594	1.125
62 FWSS	5/8	0.656	1.312
75 FLATWASHER (VC)	3/4	0.812	2.000

BELLEVILLE WASHERS

Any bolted "pad to flat" electrical connection should include a bolt, two flatwashers, and the nut. In addition, if any of the flat components is aluminum, a properly designed Belleville washer should be interposed between one of the flatwashers and either the bolt head or the nut, with the hollow of the Belleville washer placed against the flat washer. BURNDY® Belleville washers are designed to maintain substantial force when tightened to NEMA - recommended values and finely finished to avoid galling.



CATALOG NUMBER	MATERIAL	BOLT SIZE	NOMINAL DIMENSIONS		
			THICKNESS	I.D.	O.D.
38x75 BWSS	Stainless	3/8	.062	.388	.750
50x106 BWSS		1/2	.095	.530	1.06

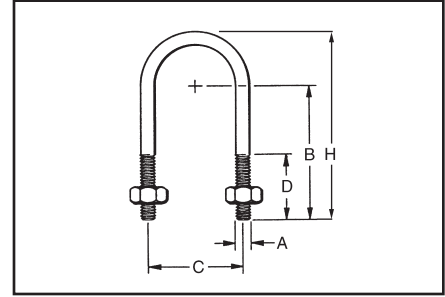
The stainless washers are 301 stainless steel.

DURIUM™ U-BOLTS

SILICON BRONZE

TYPE UB

DURIUM™ U-BOLTS are specifically designed for electrical connections to pipe and rod. The U-BOLTS are threaded on the straight portion of the legs only allowing for more contact surface on the pipe or rod. American National Coarse Threads Class #2 fit. The silicon bronze is per ASTM B99.



Catalog Number	Thread Size	H	C	D	B
UB101	1/4-20	1.38	0.75	0.75	0.88
UB104		1.81	1.12	0.88	1.12
UB105		2.03	1.31	1.00	1.25
UB106		2.31	1.62	1.12	1.38
UB107		2.66	1.94	1.31	1.56
UB336	3/8-16	1.50	0.88	0.62	0.88
UB337		1.94	1.12	0.75	1.19
UB178		2.00	0.88	0.75	1.38
UB354		2.44	1.25	1.00	1.62
UB187		2.47	1.16	1.06	1.69
UB271		2.50	1.00	1.19	1.81
UB284		2.50	1.38	1.00	1.62
UB467		2.62	1.04	1.28	1.91
UB222		2.69	1.50	1.12	1.75
UB242		2.72	1.16	1.31	1.94
UB383	2.75	0.94	1.47	2.09	
UB269	2.78	1.19	1.38	2.00	
UB357	2.78	1.69	1.12	1.75	
UB466	2.88	1.09	1.52	2.14	
UB384	2.91	1.44	1.38	2.00	
UB249	3.00	1.50	1.44	2.06	
UB1031	3.31	1.75	1.90	2.25	
UB244	3.31	1.75	1.62	2.25	
UB199	3.41	2.34	1.44	2.05	
UB204	3.47	2.06	1.62	2.25	
UB124	3.50	2.75	1.31	1.94	
UB268	3.97	2.34	2.00	2.62	
UB257	4.16	2.81	1.94	2.56	
UB1032	4.41	2.81	2.56	2.81	
UB310	4.41	2.81	2.19	2.81	
UB266	4.97	3.31	2.50	3.12	
UB275	5.09	3.31	3.62	4.25	
UB267	5.53	3.94	2.75	3.38	
UB258	5.56	4.00	2.75	3.38	
UB264	6.16	4.44	3.12	3.75	
UB1033	6.16	4.44	3.50	3.75	
UB261	6.34	4.94	3.06	3.69	
UB422	7.69	6.00	3.88	4.50	
UB1027	8.12	7.12	2.88	4.38	
UB1028	9.62	9.12	2.88	4.88	
UB1029	11.20	11.25	2.88	5.38	
UB1030	12.70	13.25	2.88	5.88	
UB224	1/2-13	2.44	1.12	0.88	1.62
UB358		2.66	1.31	1.00	1.75

Catalog Number	Thread Size	H	C	D	B
UB226	1/2-13	2.75	1.25	1.12	1.88
UB291		2.81	1.19	1.22	1.97
UB293		2.81	1.75	1.19	1.69
UB507		2.97	1.31	1.31	2.06
UB464		3.12	1.81	1.31	1.96
UB468		3.16	1.69	1.31	2.06
UB540		3.19	1.38	1.75	2.25
UB460		3.25	1.50	1.50	2.25
UB254		3.41	1.31	1.75	2.50
UB328		3.41	2.94	0.94	1.69
UB469	3.50	1.62	1.69	2.44	
UB465	3.50	1.75	1.62	2.38	
UB463	3.59	2.17	1.50	2.25	
UB400	4.03	1.31	2.38	3.12	
UB462	4.16	2.10	2.12	2.86	
UB256	4.16	2.22	2.06	2.81	
UB230	4.34	2.94	1.88	2.62	
UB360	4.44	1.62	2.62	3.38	
UB311	4.44	1.88	2.50	3.25	
UB302	4.62	2.47	2.38	3.12	
UB232	4.97	3.44	2.25	3.00	
UB260	5.34	2.94	2.88	3.62	
UB390	5.38	2.50	3.12	3.88	
UB263	5.78	4.56	2.50	3.25	
UB388	6.16	4.56	2.88	3.62	
UB282	6.31	4.12	3.25	4.00	
UB236	6.41	5.06	2.88	3.62	
UB399	6.66	1.31	5.00	5.75	
UB436	6.66	4.56	3.62	4.12	
UB262	6.78	5.06	3.25	4.00	
UB392	7.06	1.62	5.25	6.00	
UB416	7.53	5.06	4.00	4.75	
UB300	7.62	6.12	3.56	4.31	
UB306	7.88	6.12	3.81	4.56	
UB437	8.56	6.12	4.50	5.25	
UB294	5/8-11	3.50	1.38	1.75	2.50
UB314		3.66	2.09	1.56	2.31
UB425		3.72	2.31	1.50	2.25
UB317		4.97	1.81	3.00	3.75
UB315		5.56	2.09	3.44	4.19
UB332	3/4-10	4.22	1.81	2.19	2.94
UB318		4.22	2.44	1.87	2.62
UB344		4.72	1.94	2.63	3.38
UB319		6.34	2.44	4.00	4.75