Handy Charts and Guides 2017

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Handy Charts and Guides 2017

DX ENGINEERING®

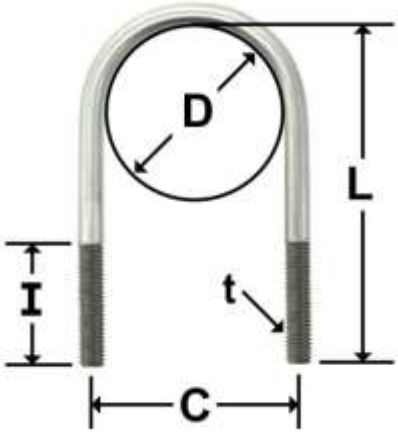
DX Engineering Charts and Guides - 2017

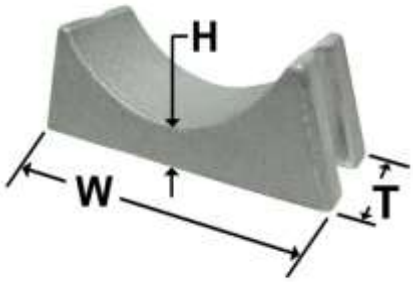
May 2017

U-Bolt Saddle Clamp Installation

Saddle clamps must be used on a flat surface or customer supplied reinforcement

Personal injury and property damage can occur without proper installation





Always use a lubricant such as Never Seez or Anti Seize to prevent the stainless steel hardware from seizing

Nominal Size	DXE Part Number	D	L	C	I	t	Suggested Hole Size	W	H	T
0.50	**DXE-SAD-050A**	0.50	1.35	0.75	0.87	1/4-20	0.266 "H"	0.90	0.188	0.63
0.75	**DXE-SAD-075A**	0.75	1.81	1.00	0.87	1/4-20	0.266 "H"	1.13	0.188	0.75
1.00	**DXE-SAD-100A**	1.00	2.06	1.25	0.87	1/4-20	0.266 "H"	1.50	0.250	1.00
1.25	**DXE-SAD-125A**	1.25	2.37	1.50	0.87	1/4-20	0.266 "H"	1.75	0.250	1.00
1.50	**DXE-SAD-150A**	1.50	2.62	1.75	0.87	1/4-20	0.266 "H"	2.00	0.250	1.00
1.75	**DXE-SAD-175A**	1.75	3.00	2.00	1.00	1/4-20	0.266 "H"	2.31	0.250	1.00
2.00	**DXE-SAD-200A**	2.00	3.43	2.31	1.12	5/16-18	0.332 "Q"	2.62	0.375	1.00
2.00	**DXE-SAD-200B**	2.00	4.00	2.37	1.50	3/8-16	0.397 "X"	2.62	0.375	1.00
2.50	**DXE-SAD-250A**	2.50	4.18	2.81	1.25	5/16-18	0.332 "Q"	3.13	0.375	1.13
2.50	**DXE-SAD-250B**	2.50	4.75	2.87	1.75	3/8-16	0.397 "X"	3.13	0.375	1.13
3.00	**DXE-SAD-300A**	3.00	4.68	3.31	1.25	5/16-18	0.332 "Q"	3.62	0.375	1.25
3.00	**DXE-SAD-300B**	3.00	5.25	3.37	1.75	3/8-16	0.397 "X"	3.62	0.375	1.25
4.00	**DXE-SAD-400A**	4.05	5.56	4.43	1.50	3/8-16	0.397 "X"	4.80	0.438	1.50
4.50	**DXE-SAD-450A**	4.55	6.06	4.93	1.50	3/8-16	0.397 "X"	5.30	0.438	1.50

Suggested Hole Size: 0.266" is letter "H" drill bit, 0.332" is letter "Q" drill bit, and 0.397" is letter "X" drill bit.
* All U-Bolts are formed from premium 18-8 stainless steel.* All Saddles are cast 535.0 aluminum.*
All Saddle Clamp Sets are supplied with 18-8 stainless steel nuts and lock washers. **Dimensions shown are in Inches.**

[**For Powder Coated Clamps** - add the letter "P" to the part number - example: **DXE-PSAD-050A**]

These are NOT Automotive Muffler Clamps

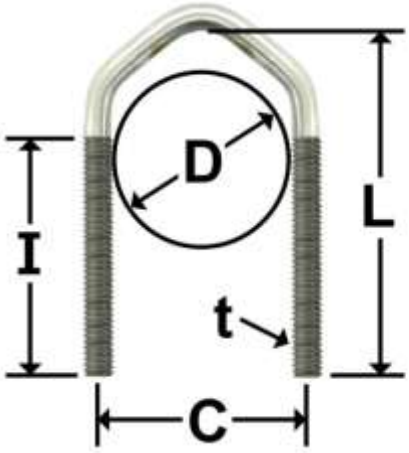
Rev. 14a

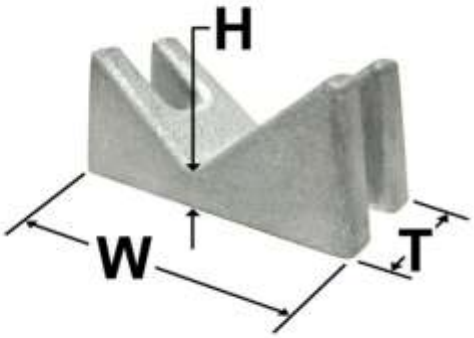
V-Bolt Saddle Clamp Installation

Saddle clamps must be used on a flat surface or customer supplied reinforcement

Personal injury and property damage can occur without proper installation

Always use a lubricant such as Never Seez or Anti Seize to prevent the stainless steel hardware from seizing





Nominal Size	DXE Part Number	D	L	C	I	t	Suggested Hole Size	W	H	T
0.50 to 1.75	**DXE-CAVS-1P**	1.75	3.438	1.968	2.313	1/4-20	0.266 "H"	2.313	0.250	1
0.50 to 1.75	**DXE-CAVS-11P**	1.75	3.438	2.063	2.313	5/16-18	0.332 "Q"	2.313	0.250	1
1 to 2	**DXE-CAVS-2P**	2.00	3.438	2.332	2.000	5/16-18	0.332 "Q"	2.835	0.375	1
2 to 3	**DXE-CAVS-3P**	3.13	4.610	3.500	1.750	3/8-16	0.397 "X"	4.250	0.500	2

All Dimensions are in Inches.

Note: DXE-CAVS-1/11/2P saddle material is cast 319.0 aluminum DXE-CAVS-3P saddle material is cast 319.0 aluminum.
Suggested Hole Size: 0.266" is letter "H" drill bit, 0.332" is letter "Q" drill bit, and 0.397" is letter "X" drill bit.

These are NOT Automotive Muffler Clamps

The CAVS-1P and CAVS-2P are available with a black powder coated saddle use the letter “P” in the part number (example: DXE-PCAVS-1P or DXE-PCAVS-2P)

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Rev. 14a

Genius Clamps & Bolt Selection Chart

Rev 1

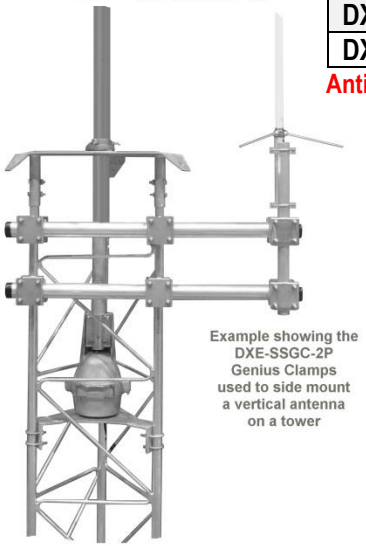
There are two DX Engineering Genius Clamp sets designed for mounting round tubing and pipe members either perpendicular or parallel to each other. If you want to build a tower standoff to side mount a dipole, vertical or Yagi on your tower or mounting two mast pipes or tubes parallel to each other, Genius Clamps are perfect for the job. They're so versatile that their use is limited only by imagination. The stainless steel Genius Clamps fit on ROHN 25, 45 or 55G tower sections or equivalent and tubing sizes from 1" through 2" OD. They are sold in pairs.

Because their construction is high-quality 1/8- in. thick 304 stainless steel, Genius Clamps can last beyond the life of a steel tower. Each **DXE-SSGC-2P** clamp set consists of three pieces; two identical single-direction flanged outer saddles and one unique inner saddle with dual-direction "side saddle" flanges for mounting pipes perpendicular to each other. Each **DXE-SSGC-2VP** clamp set consists of four identical single-direction flanged outer saddles for mounting pipes parallel to each other. Match them with our DX Engineering **DXE-SSGC-BOLT** Series of stainless steel bolts and hardware for the ultimate in pipe or tubing and tower fastening. The two pieces of tubing and the bolt set of the appropriate length that is required for the project are sold separately.

Part Number	Description
DXE-SSGC-2P	**Genius Clamps**, Stainless Steel, 1 to 2 inch OD, Pair for Perpendicular Mounting
DXE-SSGC-2VP	**Genius Clamps**, Stainless Steel, 1 to 2 inch OD, Pair for Parallel Mounting

Part Number	Bolt Set Description
DXE-SSGC-Bolt-4	4.0 inch length Bolt and Hardware, 5/16-18 Stainless Steel, for Genius Clamp, set of 8
DXE-SSGC-Bolt-4-5	4.5 inch length Bolt and Hardware, 5/16-18 Stainless Steel, for Genius Clamp, set of 8
DXE-SSGC-Bolt-5	5.0 inch length Bolt and Hardware, 5/16-18 Stainless Steel, for Genius Clamp, set of 8
DXE-SSGC-Bolt-5-5	5.5 inch length Bolt and Hardware, 5/16-18 Stainless Steel, for Genius Clamp, set of 8
DXE-SSGC-Bolt-6	6.0 inch length Bolt and Hardware, 5/16-18 Stainless Steel, for Genius Clamp, set of 8

Anti-Seize is required for all Stainless Steel Hardware **Jet-Lube SS-30 (part number: JTL-12555) is recommended**



Bolt Length Selection Chart					
Outside Diameter	1.00"	1.25"	1.50"	1.75"	2.00"
1.00 inch	4.0"	4.0"	4.5"	5.0"	5.0"
1.25 inch	4.0"	4.5"	4.5"	5.0"	5.5"
1.50 inch	4.5"	4.5"	5.0"	5.0"	5.5"
1.75 inch	5.0"	5.0"	5.0"	5.5"	6.0"
2.00 inch	5.0"	5.5"	5.5"	6.0"	6.0"

Stainless Steel V-Clamps with Tab for Steel Pipe

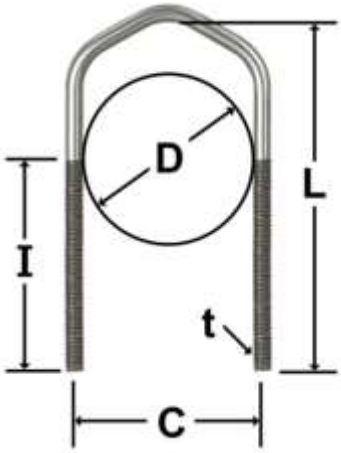
DXE-SSVC-1PG and DXE-SSVC-150PG

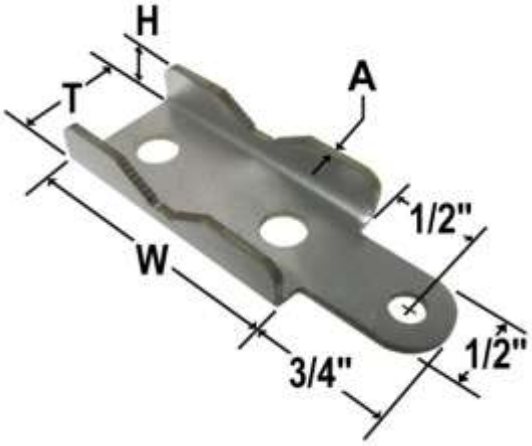
These stainless steel V-Clamps with special tabs are made in two sizes to fit ground rods, steel tubing or pipe ranging from 1/2" to 1-1/2" OD for use in antenna construction.

The V-Bolts, U-Bolt and Saddles are made from high-strength 304 (18-8) stainless steel. The special stainless steel saddles have serrated teeth and will clamp to the pipe securely by biting into the surface.

Continuing on the popular **DXE-SSVC** series of clamps, the **"G"** models have a special tab for connecting an optional ground braid or wire. Also included for connection to the tab: #10 Stainless Steel Hex Nut, #10 Split Washer, #10 Star Washer, #10 Flat Washer and #10 x 5/8" long Hex bolt.

1/4-20 Stainless Steel Hex Nuts, Flat Washers and, Split Washers are included for the U or V Bolt (depending on the model you order).





DXE Part Number	Nominal Size	Bolt Type	D	L	C	I	t	Suggested Hole Size*	A	W	T	H
SSVC-1PG	1/2" to 3/4" OD	U	.75	2.050	1.00	1.1	1/4-20	0.266 "H"	.058	1.62	.87	0.365
SSVC-150PG	1" to 1-1/2" OD	V	1.5	2.688	1.750	1.5	1/4-20	0.266 "H"	.116	2.75	1.5	0.688

All Dimensions are in Inches.
***Suggested Hole Sizes: "H" drill bit is 0.266"**
Always use a lubricant such as Never Seez or Anti Seize to prevent the stainless steel hardware from seizing.

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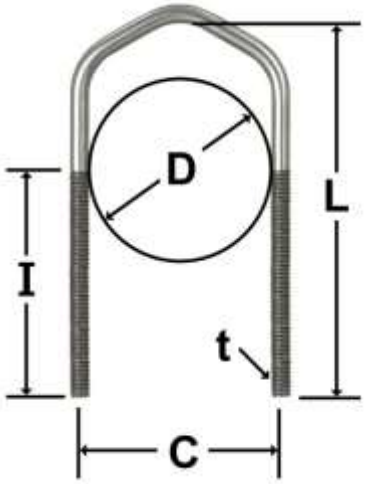
Stainless Steel V-Clamps for Steel Pipe

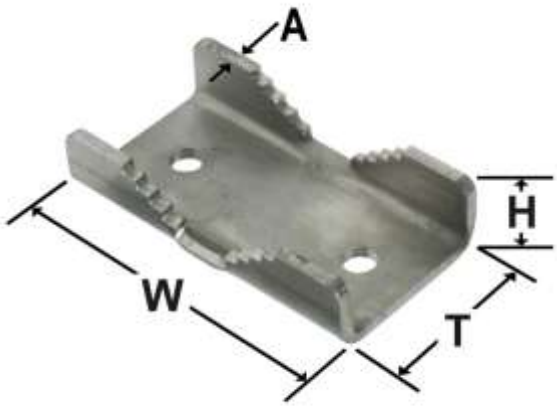
DXE-SSVC-1P, DXE-SSVC-150P, DXE-SSVC-2P, DXE-SSVC-3P

These stainless steel V-Saddle Clamps are made in four sizes to fit steel tubing or pipe ranging from 1/2" to 3" OD for use in antenna construction. The U and V-Bolts and Saddles are made from high-strength 304 (18-8) stainless steel.

The special stainless steel saddles have serrated teeth and will clamp to the pipe securely by biting into the surface.

Ideal for fastening an antenna. The **DXE-SSVC-2P** was designed for mounting the **DXE-RADP-3** Radial Plate to a 2" OD steel pipe. The **DXE-SSVC-3P** was designed for mounting the **DXE-RADP-3** Radial Plate to a 3" OD steel pipe. Included are Stainless Steel Hex Nuts, Split Washers and Flat Washers.





DXE Part Number	Nominal Size	Bolt Type	D	L	C	I	t	Suggested Hole Size*	W	A	T	H
SSVC-1P	1/2" TO 3/4"	U	.75	2.050	1.000	1.1	1/4-20	0.266 "H"	1.62	.058	.87	0.365
SSVC-150P	1" to 1-1/2" OD	V	1.5	2.688	1.750	1.5	1/4-20	0.266 "H"	2.75	.116	1.5	0.688
SSVC-2P	1" to 2" OD	V	2.0	3.438	2.3125	2.0	5/16-18	0.332 "Q"	3.25	.116	1.5	0.688
SSVC-3P	2-3/8" to 3" OD	V	3.0	4.610	3.505	1.75	3/8-16	0.397 "X"	4.50	.116	1.5	0.844

All Dimensions are in Inches.

***Suggested Hole Sizes: "H" drill bit is 0.266". "Q" drill bit is 0.332". "X" drill bit is 0.397".**

Always use a lubricant such as Never Seez or Anti Seize to prevent the stainless steel hardware from seizing.

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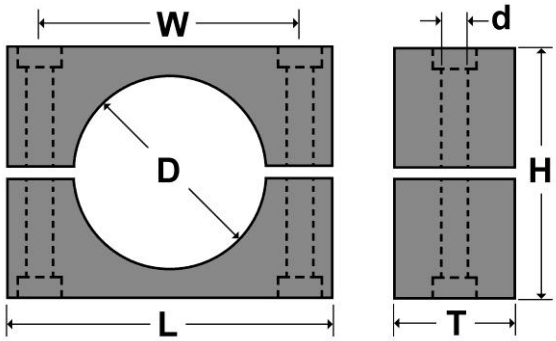
DXE-SSVC-INS-Rev. 4a

RSB Saddle Clamps

Resin Support Block Saddle clamps must be used on a flat surface or customer supplied backing plate



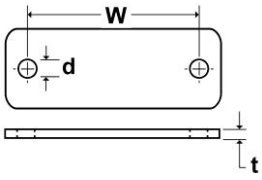
Shown with optional **DXE-RSB-DP** Plate

Always use a lubricant such as Never Seez®, Jet-Lube SS-30 or Anti Seize to prevent the stainless steel hardware from seizing

Clamp Part Number	D Tube O.D.	H	T	L	W	d	Bolt Length with customer supplied 1/4" backing plate	DP Plate Size*	Bolt Length with 1/4" backing plate and DP-Reinforcement Plate*
DXE-RSB-I02500	1/4"	1.050"	1.185"	1.350"	0.784"	0.275"	1.50"	1	2.00"
DXE-RSB-I03125	5/16"	1.050"	1.185"	1.350"	0.784"	0.275"	1.50"	1	2.00"
DXE-RSB-I03750	3/8"	1.050"	1.185"	1.350"	0.784"	0.275"	1.50"	1	2.00"
DXE-RSB-I05000	1/2"	1.290"	1.192"	1.595"	1.024"	0.275"	1.75"	2	2.25"
DXE-RSB-I06250	5/8"	1.290"	1.192"	1.595"	1.024"	0.275"	1.75"	2	2.25"
DXE-RSB-I03400	3/4"	1.394"	1.186"	1.910"	1.301"	0.275"	2.00"	3	2.25"
DXE-RSB-I10000	1"	1.394"	1.186"	1.910"	1.301"	0.275"	2.00"	3	2.25"
DXE-RSB-I11250	1-1/8"	1.665"	1.189"	2.258"	1.575"	0.275"	2.25"	4	2.50"
DXE-RSB-I12500	1-1/4"	2.292"	1.182"	2.760"	2.050"	0.275"	2.75"	5	3.25"
DXE-RSB-I11500	1-1/2"	2.292"	1.182"	2.760"	2.050"	0.275"	2.75"	5	3.25"
DXE-RSB-I13400	1-3/4"	2.674"	1.184"	3.394"	2.600"	0.275"	3.25"	6	3.50"
DXE-RSB-I20000	2"	2.678"	1.184"	3.394"	2.600"	0.275"	3.25"	6	3.50"
DXE-RSB-I22500	2-1/4"	2.904"	1.184"	3.394"	2.600"	0.275"	3.25"	6	3.50"

* RSB Reinforcement Plates and Bolt Sets are ordered separately from RSB Clamps

Personal injury and property damage can occur without proper installation



RSB Reinforcement Plates*

Plate Part Number	d	t	W	RSB-DP- Plate Size
DXE-RSB-DP-1	0.275"	0.119"	0.784"	1
DXE-RSB-DP-2	0.275"	0.119"	1.024"	2
DXE-RSB-DP-3	0.275"	0.119"	1.301"	3
DXE-RSB-DP-4	0.275"	0.119"	1.575"	4
DXE-RSB-DP-5	0.275"	0.119"	2.050"	5
DXE-RSB-DP-6	0.275"	0.119"	2.600"	6

Hex Bolt Sets for RSB Clamps*

Part Number	Thread Size	Bolt Length	Thread Length
DXE-RSBBOLT1-50	1/4"-20	1.50"	3/4" - 1"
DXE-RSBBOLT1-75	1/4"-20	1.75"	3/4" - 1"
DXE-RSBBOLT2-00	1/4"-20	2.00"	3/4" - 1"
DXE-RSBBOLT2-25	1/4"-20	2.25"	3/4" - 1"
DXE-RSBBOLT2-50	1/4"-20	2.50"	3/4" - 1"
DXE-RSBBOLT2-75	1/4"-20	2.75"	3/4" - 1"
DXE-RSBBOLT3-25	1/4"-20	3.25"	3/4" - 1"
DXE-RSBBOLT3-50	1/4"-20	3.50"	3/4" - 1"
Sets contain 2 Bolts, 2 Nuts, 2 Flat Washers and 2 Split Washers			

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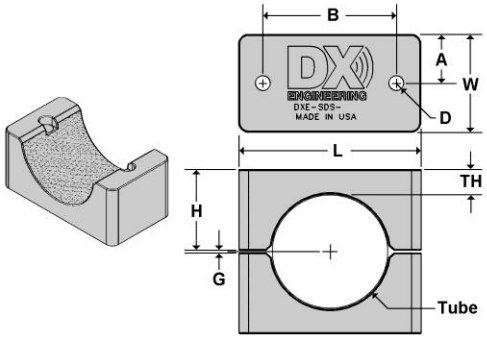
Super Duty and Heavy Duty Saddle Clamps

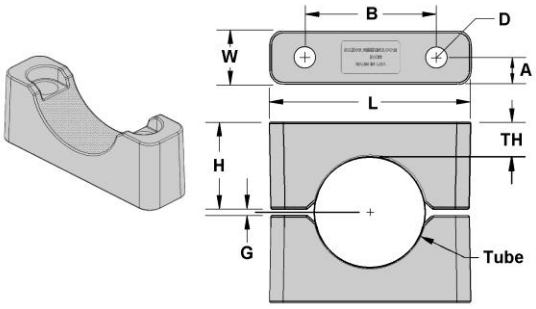
Super Duty and Heavy Duty Saddle clamps must be used on a flat surface or a customer supplied backing plate



Nominal Size OD (Tube)	P Series Part Number	L	W	H	TH	G	A	B	D
2	DXE-SDS-200P	3.64	2.00	1.57	0.565	0.060	1.000	2.40	0.390
2-1/2	DXE-SDS-250P	4.15	2.25	1.82	0.565	0.060	1.125	2.90	0.390
3	DXE-SDS-300P	4.65	2.50	2.06	0.556	0.060	1.250	3.40	0.390

Reinforcement Plates
DXE-SDSBP-200
DXE-SDSBP-250
DXE-SDSBP-300

Reinforcement plates (included with SDS P series) laser from premium 1/4" thick steel. All dimensions are in Inches



Nominal Size OD (Tube)	AP Series Part Number	L	W	H	TH	G	A	B	D
3/4	DXE-HDS-075AP	1.898	0.75	0.690	0.375	0.12	0.375	1.00	0.266
1	DXE-HDS-100AP	2.148	1.00	0.815	0.375	0.12	0.50	1.25	0.266
1-1/4	DXE-HDS-125AP	2.398	1.00	1.065	0.500	0.12	0.50	1.50	0.266
1-1/2	DXE-HDS-150AP	2.898	1.00	1.190	0.500	0.12	0.50	1.75	0.266
1-3/4	DXE-HDS-175AP	3.148	1.00	1.315	0.500	0.12	0.50	2.00	0.266
2	DXE-HDS-200AP	3.648	1.00	1.565	0.625	0.12	0.50	2.375	0.397

Reinforcement Plates
DXE-HDSBP-075A
DXE-HDSBP-100A
DXE-HDSBP-125A
DXE-HDSBP-150A
DXE-HDSBP-175A
DXE-HDSBP-200A

Reinforcement plates (included with HDS AP series) laser cut from premium 1/8" thick steel. All dimensions are in Inches

Personal injury and property damage can occur without proper installation

Always use a lubricant such as Never Seez®, Jet-Lube SS-30, or Anti Seize to prevent the stainless steel hardware from seizing

Hex Bolt Sets for Heavy Duty and Super Duty Saddle Clamps

Armor Coated Part Number	Bolt Size	Length	Thread Length
DXE-HDSBOLT-2-5	1/4-20	2-1/2	3/4 to 1
DXE-HDSBOLT-2-75	1/4-20	2-3/4	3/4 to 1
DXE-HDSBOLT-3-5	1/4-20	3-1/2	3/4 to 1
DXE-HDSBOLT-4	1/4-20	4	3/4 to 1
DXE-SDSBOLT-4-5	3/8-16	4-1/2	1 to 1-5/16
DXE-SDSBOLT-5	3/8-16	5	1 to 1-5/16
DXE-SDSBOLT-5-5	3/8-16	5-1/2	1 to 1-5/16
DXE-SDSBOLT-6	3/8-16	6	1 to 1-5/16
DXE-SDSBOLT-6-5	3/8-16	6-1/2	1 to 1-9/16

Stainless Steel Part Number	Bolt Size	Length	Thread Length
DXE-HDSBOLT2-5S	1/4-20	2-1/2	3/4 to 1
DXE-HDSBOLT2-75S	1/4-20	2-3/4	3/4 to 1
DXE-HDSBOLT3-25S	1/4-20	3-1/4	3/4 to 1
DXE-HDSBOLT3-5S	1/4-20	3-1/2	3/4 to 1
DXE-HDSBOLT3-75S	1/4-20	3-3/4	3/4 to 1
DXE-HDSBOLT4-5S	3/8-16	4-1/2	3/4 to 1

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Rev. 9

P Series Sets contain 2 Bolts, 2 Nuts, 2 Flat Washers and 2 Split Washers
AP Series Sets contain 2 Bolts, 2 Nuts, 4 Flat Washers and 2 Split Washers

Cycle 24 Galvanized Economy Saddle Clamps

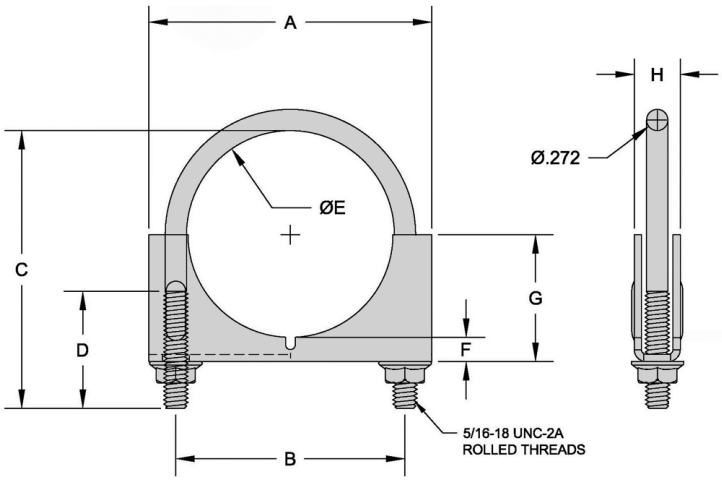
Cycle 24 Galvanized Economy Saddle Clamps offer U-bolt clamps that are an inexpensive solution for your antenna and tower projects. Their galvanized steel saddles and U-bolts will last for many years in outdoor environments.

All of their saddle clamps feature serrated flange nuts for locking power. Their 3/8 in. diameter U-bolts feature a unique, flat surface at the top of the U-bolt for improved gripping of the tubing. The 3 in. and 3 1/2 in. saddles are closed and spot-welded on the ends, before galvanizing, for increased strength and longevity. All Cycle 24 saddle clamps are strong. Because of this, care must be taken not to crush aluminum tubing when tightening these clamps.

Bolt diameters and threads:
* U-bolts for tubing sizes 1-1/4 in. through 2-1/8 in. available in 5/16-18 threads
* U-bolts for tubing size 2 in. are available with 5/16-18 threads or 3/8-16 threads
* U-bolts for tubing sizes 2-1/4 in. through 3-1/2 in. available with 3/8-16 threads

NOTE: Due to added thickness on the saddle caused by the galvanizing process, the 2-in. 5/16 thread clamp is NOT recommended for use on steel masts of 2-in. O.D. For steel masts use the 2-in. 3/8 thread product.

Cycle 24 Economy Clamp U-bolts with a bolt diameter of 5/16 in. are suitable for plates up to 3/16 in. thick when using saddles. If saddles are not used, the 5/16 in. U-bolt will accommodate a 1/4 in. thick plate. U-bolts with a bolt diameter of 3/8 in. are suitable for plates up to 9/16 in. thick.



5/16" U-Bolts - Clamp Sizes 1.25' through 2.125":											
Size:	**Part number:**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**Gauge:**	**Weight lbs.:**
1.25"	CYT-CL125SG	2.44	1.75	2.12	1.00	1.48	0.26	0.99	0.56	13	0.23
1.50"	CYT-CL150SG	2.69	1.94	2.47	1.00	1.67	0.34	1.16	0.59	13	0.28
1.75"	CYT-CL175SG	2.88	2.19	2.87	1.00	1.92	0.31	1.25	0.59	13	0.31
2.00"	CYT-CL2000516SG	3.13	2.44	3.06	1.00	2.17	0.27	1.36	0.59	13	0.34
2.125"	CYT-CL2125SG	3.38	2.56	3.12	1.00	2.23	0.38	1.51	0.59	13	0.35

All dimensions are in inches

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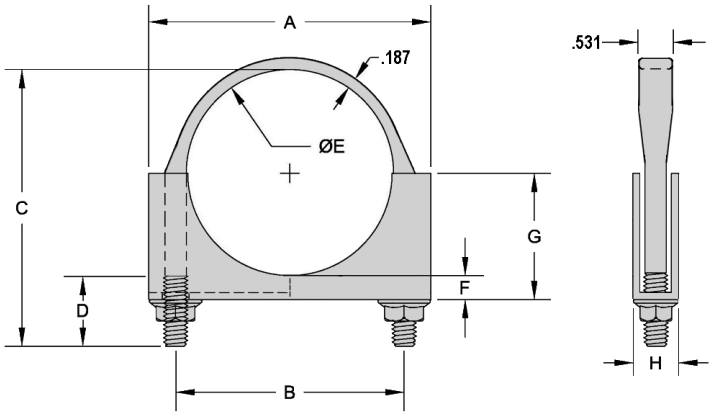
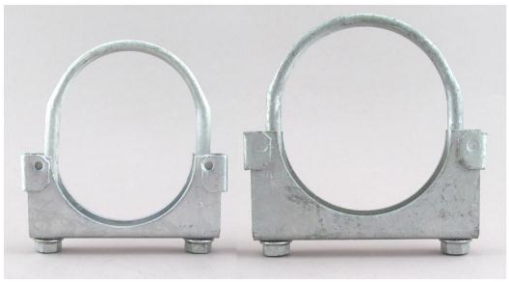
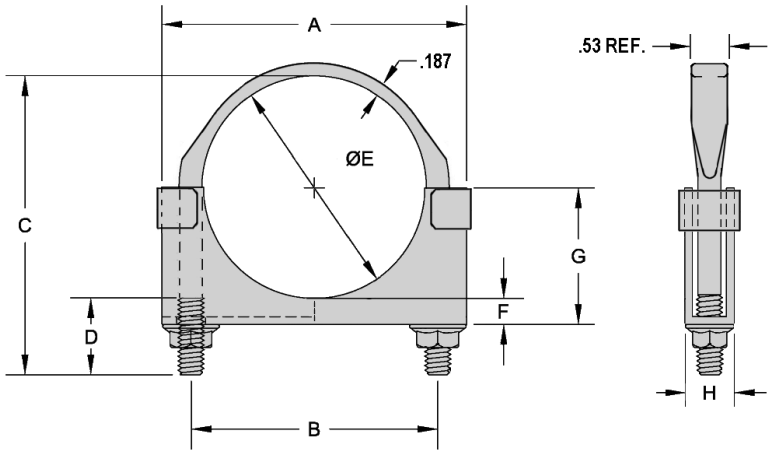


3/8" U-Bolts - Clamp Sizes 2” through 2.5”:											
Size:	Part number:	A	B	C	D	E	F	G	H	Gauge:	Weight lbs.:
2.00"	CYT-CL200038SG	3.25	2.5	3.82	1.5	2.17	0.31	1.42	0.64	11	0.41
2.25"	CYT-CL2250SG	3.5	2.75	3.94	1.5	2.42	0.32	1.55	0.64	11	0.46
2.50"	CYT-CL2500SG	3.75	3.00	4.19	1.5	2.67	0.33	1.68	0.64	11	0.5

All dimensions are in inches





3/8" U-Bolts - Clamp Sizes 3” and 3.5”:											
Size:	Part number:	A	B	C	D	E	F	G	H	Gauge:	Weight lbs.:
3.00"	CYT-CL3000SG	4.38	3.5	4.54	1.5	3.17	0.3	1.9	0.82	11	0.71
3.50"	CYT-CL3500SG	4.88	4.00	5.04	1.5	3.67	0.56	2.4	0.82	11	0.89

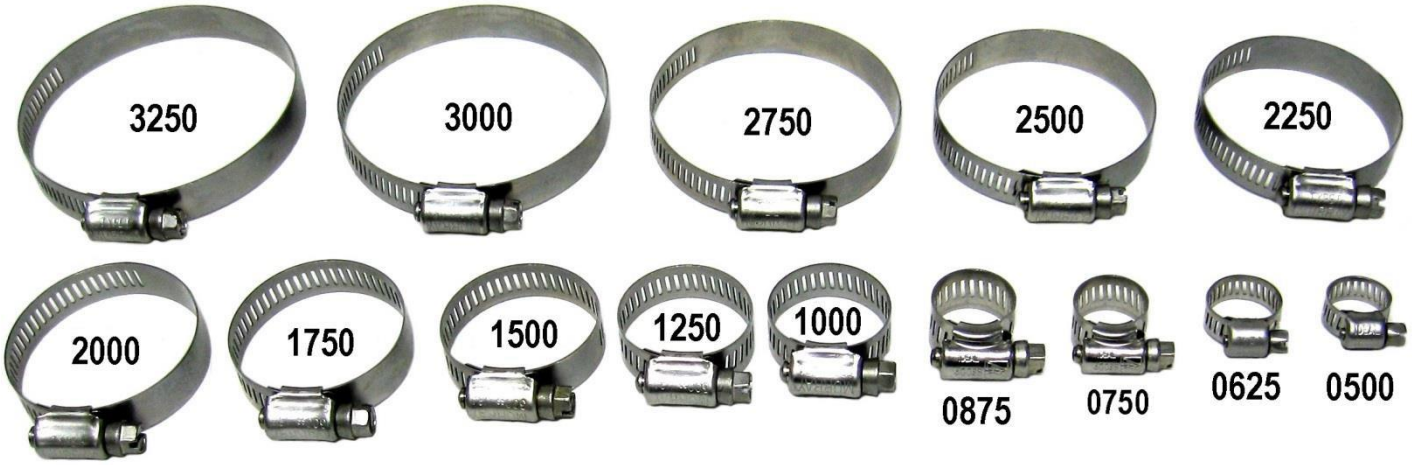
All dimensions are in inches

Warranty

All products manufactured by DX Engineering are warranted to be free from defects in material and workmanship for a period of one (1) year from date of shipment. DX Engineering’s sole obligation under these warranties shall be to issue credit, repair or replace any item or part thereof which is proved to be other than as warranted; no allowance shall be made for any labor charges of Buyer for replacement of parts, adjustment or repairs, or any other work, unless such charges are authorized in advance by DX Engineering. If DX Engineering’s products are claimed to be defective in material or workmanship, DX Engineering shall, upon prompt notice thereof, issue shipping instructions for return to DX Engineering (transportation-charges prepaid by Buyer). Every such claim for breach of these warranties shall be deemed to be waived by Buyer unless made in writing. The above warranties shall not extend to any products or parts thereof which have been subjected to any misuse or neglect, damaged by accident, rendered defective by reason of improper installation, damaged from severe weather including floods, or abnormal environmental conditions such as prolonged exposure to corrosives or power surges, or by the performance of repairs or alterations outside of our plant, and shall not apply to any goods or parts thereof furnished by Buyer or acquired from others at Buyer’s specifications. In addition, DX Engineering’s warranties do not extend to other equipment and parts manufactured by others except to the extent of the original manufacturer’s warranty to DX Engineering. The obligations under the foregoing warranties are limited to the precise terms thereof. These warranties provide exclusive remedies, expressly in lieu of all other remedies including claims for special or consequential damages. SELLER NEITHER MAKES NOR ASSUMES ANY OTHER WARRANTY WHATSOEVER, WHETHER EXPRESS, STATUTORY, OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS, AND NO PERSON IS AUTHORIZED TO ASSUME FOR DX ENGINEERING ANY OBLIGATION OR LIABILITY NOT STRICTLY IN ACCORDANCE WITH THE FOREGOING.

Specifications subject to change without notice.

Stainless Steel Element Clamps



Typically elements are built using 0.058-inch wall tubing, which allows successive sizes to telescope together with good contact. These clamps are used to hold the telescoping tubing in place at the length that you have chosen. These clamps also work well for telescoping fiberglass tubing.

DX Engineering Element Clamps are **Marine Grade** - meaning they are made **entirely** of stainless steel as opposed to the normal hardware store variety. High Nickel Alloy Stainless Steel meets the demands of severe corrosive environments.

Tube Size	Band Width	Nut Driver	DX Engineering Part Number	Description
0.500”	0.313”	1/4”	**DXE-ELC-0155-10P**	Element Clamp, 10 pack
0.625”	0.313”	1/4”	**DXE-ELC-0625-10P**	Element Clamp, 10 pack
0.750”	0.500”	5/16”	**DXE-ELC-0750-10P**	Element Clamp, 10 pack
0.875”	0.500”	5/16”	**DXE-ELC-0875-10P**	Element Clamp, 10 pack
1.000”	0.500”	5/16”	**DXE-ELC-1000-10P**	Element Clamp, 10 pack
1.125 to 1.250”	0.500”	5/16”	**DXE-ELC-1250-10P**	Element Clamp, 10 pack
1.375 to 1.500”	0.500”	5/16”	**DXE-ELC-1500-10P**	Element Clamp, 10 pack
1.625 to 1.750”	0.500”	5/16”	**DXE-ELC-1750-10P**	Element Clamp, 10 pack Also used as a Hustler BTV Replacement Part
1.875 to 2.000”	0.500”	5/16”	**DXE-ELC-2000-10P**	Element Clamp, 10 pack
2.125 to 2.250”	0.500”	5/16”	**DXE-ELC-2250-5P**	Element Clamp, 5 pack
2.375 to 2.500”	0.500”	5/16”	**DXE-ELC-2500-5P**	Element Clamp, 5 pack
2.625 to 2.750”	0.500”	5/16”	**DXE-ELC-2750-5P**	Element Clamp, 5 pack
2.875 to 3.000”	0.500”	5/16”	**DXE-ELC-3000-5P**	Element Clamp, 5 pack
3.125 to 3.250”	0.500”	5/16”	**DXE-ELC-3250-5P**	Element Clamp, 5 pack

DX Engineering strongly suggests you choose your element clamp size based on the tube size as listed. This actual tube size restricts the amount of clamp band being outside the worm drive area to help prevent the user from being accidently cut by the bands sharp edges.

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Multi-Packs are also available in popular sizes:

Part Number	Size Range	Multi-Pack Contents
DXE-ECL-MP1	0.500 TO 1.500”	0500, 0625, 0750, 0875, 1000, 1250, 1500 (Two of each clamps - total of 14 clamps)
DXE-ECL-MP2	1.000 TO 2.250”	1000, 1250, 1500, 1750, 2000, 2250 (Two of each clamps - total of 12 clamps)
DXE-ECL-MP3	2.125 TO 3.250”	2250, 2500, 2750, 3000, 3250 (Two of each clamps - total of 10 clamps)

Band Clamps with Stud

These marine grade stainless steel band clamps are great for mounting items or making connections to a tube or pipe with an outside diameter ranging from 0.500" to 3.250".

Each stainless steel band clamp has a 3/4 inch long, 10-24 stud welded to it, which allows attachments without drilling holes that could weaken element or tower tubing. Use a straight slot screwdriver or nut driver to tighten.

Stainless steel attachment hardware consisting of flat washers, split-ring lock washers, external star washers and 10-24 hex nuts are included. Sold in a package of two.

When installing stainless steel hardware, it is suggested that **UMI-81343, UMI-81464, DXE-NSBT8**, **DXE-NMBT8 - Never-Seez**® or **Anti-Seize** be used to prevent thread galling

Ideal* Tube Size OD (Inches)		Size Range* OD (Inches)	Band Width	Nut Driver Size	DX Engineering Part Number	Sold in Packages of 2 with # 10 Stainless Steel Hardware
0.500	**1/2**	0.32 to 0.58	0.313	1/4”	**DXE-ECLS-050**	Band Clamp with Stud
0.625	**5/8**	0.42 to 0.68	0.313	1/4”	**DXE-ECLS-062**	Band Clamp with Stud
0.750	**3/4**	0.57 to 0.83	0.313	1/4”	**DXE-ECLS-075**	Band Clamp with Stud
0.875	**7/8**	0.64 to 0.87	0.500	5/16”	**DXE-ECLS-087**	Band Clamp with Stud
1.000	**1**	0.70 to 1.00	0.500	5/16”	**DXE-ECLS-100**	Band Clamp with Stud
1.125-1.250	**1-1/8 - 1-1/4**	0.83 to 1.25	0.500	5/16”	**DXE-ECLS-125**	Band Clamp with Stud
1.500	**1-1/2**	1.01 to 1.50	0.500	5/16”	**DXE-ECLS-150**	Band Clamp with Stud
1.750	**1-3/4**	1.15 to 1.75	0.500	5/16”	**DXE-ECLS-175**	Band Clamp with Stud
2.000	**2**	1.31 to 2.00	0.500	5/16”	**DXE-ECLS-200**	Band Clamp with Stud
2.250	**2-1/4**	1.31 to 2.25	0.500	5/16”	**DXE-ECLS-225**	Band Clamp with Stud
2.500	**2-1/2**	1.56 to 2.50	0.500	5/16”	**DXE-ECLS-250**	Band Clamp with Stud
2.750	**2-3/4**	1.81 to 2.75	0.500	5/16”	**DXE-ECLS-275**	Band Clamp with Stud
3.000	**3**	2.06 to 3.00	0.500	5/16”	**DXE-ECLS-300**	Band Clamp with Stud
3.250	**3-1/4**	2.31 to 3.25	0.500	5/16”	**DXE-ECLS-325**	Band Clamp with Stud

*** Although the “Size Range” is listed, DX Engineering strongly suggests you choose your studded band clamp based on the “Ideal Tube Size”. The “Ideal Tube Size” restricts the amount of clamp being outside the worm drive to help prevent the user from being accidently cut.**

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Stainless Steel Hardware Thread Galling

Occasionally a customer will call with a problem about the stainless steel hardware sent with our products. Usually the complaint is the hardware “seized” or “froze up”. When that happens, the only thing that can usually be done is to cut the clamp or bolt apart to get it loose. So why do we use the hardware that freezes up?

There is nothing wrong with the hardware. What is wrong is how users unknowingly mistreat it.

The hardware we use is top quality stainless steel. We use stainless steel for a few reasons: it’s tough, it lasts a long time and it won’t corrode over time. If the hardware was common steel, it would corrode which can make disassembly nearly impossible.

So why does stainless steel hardware freeze up? The problem is called “Thread Galling”.

Thread galling is common with fasteners made of stainless steel, aluminum, titanium, and other alloys which self-generate an oxide surface film for corrosion protection. During tightening, as pressure builds between the contacting and sliding thread surfaces, protective oxides are broken, possibly wiped off, and interface metal high points shear or lock together. This cumulative clogging-shearing-locking action causes increasing adhesion. In the extreme, galling leads to seizing - the actual freezing together of the threads. If tightening is continued, the fastener can be twisted off or its threads ripped out.

Sometimes this is referred to as "cold welding”. Anyone who has had or seen a bolt and nut with this problem can understand this description. It’s not cheap hardware; it’s the lack of common preventative measures that should be taken when using stainless steel hardware.

So, what can we do to eliminate the possibility of galling?

Lubricating the threads frequently eliminates thread galling. The suggested lubricants for our stainless steel hardware are Jet-Lube SS-30, Anti-Seize or Never-Seez® products available from DX Engineering.
Using a thread lubricant on new stainless steel hardware is a must. We have seen a stainless steel V-bolt seize up even when putting the hardware on by hand! Just spinning on the nut produced enough heat between the threads to cause them to freeze up!

Using a good thread lubricant on all stainless steel hardware is a must. A small amount of this lubricant on the threads will do the job and you will not have to ‘break your knuckles’ getting frozen hardware removed.

Recommended Thread Lubricants

JTL-12555	**Jet-Lube SS-30 Pure Copper Anti-Seize**	http://www.dxengineering.com/parts/jtl-12555
PTX-80078	**Permatex Ant-Seize 80078**	http://www.dxengineering.com/parts/ptx-80078
DXE-NMCBT8	**Never-Seez, Mariner’s Choice**	http://www.dxengineering.com/parts/dxe-nmcbt8
DXE-NSBT8	**Never-Seez, Regular Grade**	http://www.dxengineering.com/parts/dxe-nsbt8

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Aluminum Tubing Antenna Elements

HIGH STRENGTH ALUMINUM TUBING

Rugged aluminum alloy 6061 and 6063 are most commonly used for seamless structural tube and pipe. It is popular in structural use for both its high strength and great, long lasting appearance. Alloy 6063 provides great resistance to general corrosion, including resistance to stress-corrosion cracking. DX Engineering Type 6061-T8 and 6063-T832 drawn - not extruded - aluminum tubing in 3, 6 and 12 foot lengths. Tubing with slits has four precision cut slits on one end. The 12 foot lengths are in multiple quantities due to shipping requirements.

3 Foot Length - Type 6063-T832

Size OD	Size OD	Slit Part Number	Not Slit Part Number	Wall	Weight (lbs)
0.375	3/8	-	1240	.058	0.200
0.500	1/2	1241	1494	.058	0.286
0.625	5/8	1242	1495	.058	0.356
0.750	3/4	1243	1496	.058	0.428
0.875	7/8	1244	1497	.058	0.516
1.000	1	1245	1498	.058	0.612
1.125	1-1/8	1246	1499	.058	0.644
1.250	1-1/4	1247	1500	.058	0.736
1.375	1-3/8	1248	1501	.058	0.784
1.500	1-1/2	1249	1502	.058	0.936
1.625	1-5/8	1250	1503	.058	0.960
1.750	1-3/4	1251	1504	.058	1.082
1.875	1-7/8	1252	1505	.058	1.132
2.000	2	1253	1506	.058	1.248
2.000	2	-	1255	**.120**	2.562
2.125	2-1/8	1254	1507	.058	1.340

6 Foot Length - Type 6063-T832

Slit Part Number	Not Slit Part Number	Wall	Weight (lbs)
-	1189	.058	0.402
1205	1480	.058	0.576
1206	1481	.058	0.714
1207	1482	.058	0.864
1208	1483	.058	1.042
1209	1484	.058	1.188
1210	1485	.058	1.304
1211	1486	.058	1.486
1212	1487	.058	1.556
1213	1488	.058	1.868
1214	1489	.058	1.918
1215	1490	.058	2.148
1216	1491	.058	2.276
1217	1492	.058	2.502
1218	1493	.058	2.680

12 Foot Length - Type 6063-T832

Not Slit Pkg Part Number	Wall	Quantity Per Pkg
1805-95B	.058	95
1806-60B	.058	60
1807-90B	.058	90
1808-68B	.058	68
1809-42B	.058	42
1810-60B	.058	60
1811-42B	.058	42
1812-30B	.058	30
1813-46B	.058	46
1814-63B	.058	63
1815-33B	.058	33
1816-42B	.058	42
1817-23B	.058	23
1818-23B	.058	23
1819-27B	.058	27

All Part Numbers: DXE-AT#### Slit = One end. Four slits 1.25" long x 0.05" wide
All dimensions listed are in inches. OD = Outside Diameter

6 and 12 foot Lengths - 0.120" Heavy Wall - Type 6061-T8 - No Slit

Size OD	Size OD	Part Number	Wall	Length	Weight (pounds)
1.500	1-1/2	1311	.120	6 feet	3.69
1.750	1-3/4	1312	.120	6 feet	4.33
2.000	2	1313	.120	6 feet	5.00
2.250	2-1/4	1314	.120	6 feet	5.65
2.500	2-1/2	1315	.120	6 feet	6.33
2.750	2-3/4	1316	.120	6 feet	6.94
3.000	3	1317	.120	6 feet	7.63
3.00	3	1325	.120	12 Feet	15.26

Package Part Number	Length	Quantity Per Pkg
1820-14B	12 feet	14
1821-8B	12 feet	8
1822-12B	12 feet	12
1823-9B	12 feet	9
1824-9B	12 feet	9
1825-4B	12 feet	4
1826-4B	12 feet	4

All Part Numbers: DXE-AT#### All dimensions listed are in inches. OD = Outside Diameter

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DXE-AT-INS Rev. 5

When assembling *any* aluminum tubing sections together you should take the following steps:

1. Make sure the edges are smooth and not sharp. Deburring may be necessary, since burrs and shavings can occur on seams as well as edges. All surfaces need to be completely smooth to allow easy assembly of tubing sections. DX Engineering's aluminum tubing adheres to the stated specs closely so even the theoretical clearance between sections is very small. On the order of 4-thousandths of an inch total clearance (2 thousandths on the radius), it won't take much dirt to cause a jam when the next size tube is inserted.

Caution

Aluminum tubing edges can be very sharp.
Take precautions to ensure you do not get accidentally cut.
Eye protection is also recommended.

The raised particles and shavings that appear when the aluminum tubing is machined are referred to as burrs, and the process by which they are removed is known as deburring.

Deburring is a finishing method used in manufacturing. Our aluminum tubing is machine cut on both ends. The slit tubing is also machine slit on one end. You should further assure that there are no ragged edges, burrs or protrusions.

DX Engineering recommends the **DXE-UT-KIT-DBR Tube Deburring Tools**, **DXE-22166 Slim Grip Deburring Tool**, or the **DXE-22600 Deburring Tool with Extending Handle and Extra Blades** for this operation.

2. Clean the outside of the aluminum tubing to clear any dirt or foreign material that would cause the clamps to malfunction during assembly.

3. Clean the inside of the aluminum tubing to clear out any dirt or foreign material that would cause the aluminum tubing sections to bind during assembly. Do not use any type of oil or general lubricant between the aluminum tubing sections. Oils or general lubricants can cause poor electrical connections for radio frequencies. The use of **JTL-12555 Jet-Lube™ SS-30** is highly recommended. **SS-30** is an electrical joint compound which effects a substantial electrical connection between metal parts such as aluminum tubing or other antenna pieces. Using **SS-30** assures high conductivity at all voltage levels by displacing moisture and preventing corrosion or oxidation.

4. **When assembling the aluminum tubing sections, ensure the area is clear of grass, dirt or other foreign material that could cause problems during assembly of the closely fitted aluminum sections.**

Stainless Steel Element Clamps (**DXE-ECL** Series) are available from DX Engineering. Slide all the **DXE-ECL** element clamps over each aluminum tubing section as needed before putting the tubing sections together. You can lightly tighten the element clamps just below the slits on each of the aluminum tubing sections to hold them until needed.

Align the element clamp screws on each aluminum tube section to face the same direction. At final assembly, the body of the element clamp should be positioned between the slits in the aluminum tube and approximately 1/8" from the edge of the aluminum tube as shown.

Fiberglass Tubing

DX Engineering Heavy duty 1/8" wall extruded fiberglass tubing in telescoping lengths. The strong 8 foot lengths are ideal for building your own antenna support - such as quad spreaders and insulated UHF stacking frames - even push-up masts.

These 8 ft. lengths of high-quality 1/8 in. wall pultruded fiberglass tubing are designed to smoothly telescope together with the next adjacent size.

DX Engineering Fiberglass Tubing features a soft gray color that is uniform from piece to piece to make an eye-pleasing assembly and is finished to be highly UV resistant. The optional slit ends are ideal for clamping without drilling holes which weakens the tubing.

Size OD	Size OD	Slit One End Part Number	# of Slits	No Slit Part Number
0.500	1/2	-	-	**DXE-FT0500-8**
0.750	3/4	**DXE-FT0750-8S**	2	**DXE-FT0750-8**
1.000	1	**DXE-FT1000-8S**	2	**DXE-FT1000-8**
1.250	1-1/4	**DXE-FT1250-8S**	4	**DXE-FT1250-8**
1.500	1-1/2	**DXE-FT1500-8S**	4	**DXE-FT1500-8**
1.750	1-3/4	**DXE-FT1750-8S**	4	**DXE-FT1750-8**
2.000	2	**DXE-FT2000-8S**	4	**DXE-FT2000-8**
2.250	2-1/4	**DXE-FT2250-8S**	4	**DXE-FT2250-8**
2.500	2-1/2	**DXE-FT2500-8S**	4	**DXE-FT2500-8**
2.750	2-3/4	**DXE-FT2750-8S**	4	**DXE-FT2750-8**
3.000	3	**DXE-FT3000-8S**	4	**DXE-FT3000-8**

All tubes are 8 foot lengths.

Dimensions listed are in inches. OD = Outside Diameter

Fiberglass Diameter	lb per ft
0.50	0.11
0.75	0.16
1.00	0.22
1.25	0.32
1.50	0.41
1.75	0.47
2.00	0.56
2.25	0.62
2.50	0.68
2.75	0.74
3.00	0.88

DX Engineering Fiberglass Tubing Specifications

Property	Test Method	Direction	Specification	Unit
Ultimate Tensile Strength	ASTM D-638	Longitudinal	30,000	PSI
	ASTM D-638	Transverse	6,500	PSI
Tensile Modulus	ASTM D-638	Longitudinal	2,500,000	PSI
	ASTM D-638	Transverse	800,000	PSI
Ultimate Compressive Strength	ASTM D-695	Longitudinal	30,000	PSI
	ASTM D-695	Transverse	15,000	PSI
Compressive Modulus	ASTM D-695	Longitudinal	2,300,000	PSI
	ASTM D-695	Transverse	800,000	PSI
Ultimate Flexural Strength	ASTM D-790	Longitudinal	30,000	PSI
	ASTM D-790	Transverse	10,000	PSI
Flexural Modulus	ASTM D-790	Longitudinal	1,600,000	PSI
	ASTM D-790	Transverse	800,000	PSI
Shear Strength Short Beam	ASTM D-2344	Longitudinal	4,500	PSI
	ASTM D-2344	Transverse	4,500	PSI
Impact Strength Izod	ASTM D-256	Longitudinal	25	Ft-lb/in
	ASTM D-256	Transverse	4	Ft-lb/in
Hardness	ASTM D-2583	Perpendicular	50	
Modulus of Elasticity		Longitudinal	2,500,000	PSI
Electric Strength Short Time	ASTM D-149	Perpendicular	200	V/mil
Electric Strength Short Time (In Oil)	ASTM D-149	Parallel	35	kV/in
Thermal Coefficient of Expansion	ASTM D-149	Longitudinal	0.000005	in/in/°C
Thermal Conductivity		Longitudinal	4	BTU/hr/sq ft/in/°F
Density	ASTM D-792	Longitudinal	0.0656	lbs/in^3

Warranty

All products manufactured by DX Engineering are warranted to be free from defects in material and workmanship for a period of one (1) year from date of shipment. DX Engineering's sole obligation under these warranties shall be to issue credit, repair or replace any item or part thereof which is proved to be other than as warranted; no allowance shall be made for any labor charges of Buyer for replacement of parts, adjustment or repairs, or any other work, unless such charges are authorized in advance by DX Engineering. If DX Engineering's products are claimed to be defective in material or workmanship, DX Engineering shall, upon prompt notice thereof, issue shipping instructions for return to DX Engineering (transportation-charges prepaid by Buyer). Every such claim for breach of these warranties shall be deemed to be waived by Buyer unless made in writing. The above warranties shall not extend to any products or parts thereof which have been subjected to any misuse or neglect, damaged by accident, rendered defective by reason of improper installation, damaged from severe weather including floods, or abnormal environmental conditions such as prolonged exposure to corrosives or power surges, or by the performance of repairs or alterations outside of our plant, and shall not apply to any goods or parts thereof furnished by Buyer or acquired from others at Buyer's specifications. In addition, DX Engineering's warranties do not extend to other equipment and parts manufactured by others except to the extent of the original manufacturer's warranty to DX Engineering. The obligations under the foregoing warranties are limited to the precise terms thereof. These warranties provide exclusive remedies, expressly in lieu of all other remedies including claims for special or consequential damages. SELLER NEITHER MAKES NOR ASSUMES ANY OTHER WARRANTY WHATSOEVER, WHETHER EXPRESS, STATUTORY, OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS, AND NO PERSON IS AUTHORIZED TO ASSUME FOR DX ENGINEERING ANY OBLIGATION OR LIABILITY NOT STRICTLY IN ACCORDANCE WITH THE FOREGOING.

Specifications subject to change without notice.

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DX Engineering Maxi-Core® Balun Selection Chart

Antenna Types	Suggested Balun(s)		
Dipole, coax fed, resonant	DXE-BAL050-H05-A	DXE-BAL050-H10-A	DXE-BAL050-H11-C
Dipole, double extended	DXE-BAL200H10AT	DXE-BAL200H11CT	
Dipole, folded, 300 ohm feed	DXE-BAL300-H10-A		
Dipole, folded, coax fed, resonant	DXE-BAL300-H10-A		
Dipole, folded, multi-wire	DXE-BAL450-H10-A		
Dipole, folded, non-resonant	DXE-BAL300-H10-A		
Dipole, folded, two-wire	DXE-BAL200-H10-A	DXE-BAL200-H11-C	
Dipole, inverted vee, non-resonant	DXE-BAL050H10AT	DXE-BAL050H11CT	
Dipole, inverted vee, resonant	DXE-BAL050-H05-A	DXE-BAL050-H10-A	DXE-BAL050-H11-C
Dipole, ladder line fed, non-resonant	DXE-BAL050H10AT	DXE-BAL050H11CT	
Dipole, linear load, ladder line fed	DXE-BAL200H10AT	DXE-BAL200H11CT	
Dipole, long, non-resonant	DXE-BAL200H10AT	DXE-BAL200H11CT	
Dipole, multi-band resonant	DXE-BAL050-H05-A	DXE-BAL050-H10-A	DXE-BAL050-H11-C
Dipole, off-center fed (80/20 OCF)	DXE-BAL200H10AT	DXE-BAL200H11CT	
Dipole, snake type, ladder line fed	DXE-BAL200H10AT	DXE-BAL200H11CT	
Dipole, trap	DXE-BAL050-H10-A	DXE-BAL050-H11-C	
Doublet, multi-band, ladder line fed	DXE-BAL050H10AT	DXE-BAL050H11CT	
Horizontal vee doublet	DXE-BAL450-H10-A		
Inverted vee, coax fed, resonant	DXE-BAL050-H05-A	DXE-BAL050-H10-A	DXE-BAL050-H11-C
Log periodic, 150-250 ohm feedpoint	DXE-BAL200-H10-A	DXE-BAL200-H11-C	
Log periodic, 50 ohm, direct coax feed	DXE-BAL050-H05-A	DXE-BAL050-H10-A	DXE-BAL050-H11-C
Log periodic, 75-150 ohm feed	DXE-BAL100-H11-C		
Long wire with ground system	DXE-BAL200H10AT	DXE-BAL200H11CT	
Loop, horizontal, coax fed	DXE-BAL200-H10-A	DXE-BAL200-H11-C	
Loop, horizontal, non-resonant	DXE-BAL050H10AT	DXE-BAL050H11CT	
Loop, terminated, resonant (rhombic)	DXE-BAL600-H10-A		
Loop, vertical, non-resonant	DXE-BAL050H10AT	DXE-BAL050H11CT	
Loop, vertical, resonant, coax feed	DXE-BAL100-H11-C		
Matched 450 ohm systems	DXE-BAL450-H10-A		
Multi-band, ladder line fed	DXE-BAL050H10AT	DXE-BAL050H11CT	
Multi-band, remote balun	DXE-BAL200H10AT	DXE-BAL200H11CT	
Quad - 100 ohm feed	DXE-BAL100-H11-C		
Rhombic, resonant	DXE-BAL600-H10-A		
Rhombic, terminated	DXE-BAL600-H10-A		
Unipole, folded, resonant	DXE-BAL100-H11-C		
Unipole, multi-wire	DXE-BAL200H10AT	DXE-BAL200H11CT	
V-beams, resonant	DXE-BAL600-H10-A		
V-beams, terminated	DXE-BAL600-H10-A		
Windom, balanced feed	DXE-BAL450-H10-A		
Windom, conventional single wire	DXE-BAL200H10AT	DXE-BAL200H11CT	
Yagi, 100 ohm feedpoint	DXE-BAL100-H11-C		
Yagi, 200 ohm feedpoint (KT-34, X-7)	DXE-BAL200-H10-A	DXE-BAL200-H11-C	
Yagi, 50 ohm, direct coax feed	DXE-BAL050-H05-A	DXE-BAL050-H10-A	DXE-BAL050-H11-C
Yagi, gamma matched	DXE-BAL050-H05-A	DXE-BAL050-H10-A	
Yagi, hairpin/beta matched	DXE-BAL050-H05-A	DXE-BAL050-H10-A	DXE-BAL050-H11-C
Yagi, trap tri-bander	DXE-BAL050-H05-A	DXE-BAL050-H10-A	DXE-BAL050-H11-C
Note for Web use - Move Mouse over **Antenna Type** and you can follow a link to the DX Engineering website where the balun(s) are located			

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Note: A balun mounting bracket is required to take the strain off of the balun connections. DX Engineering has various balun mounting brackets available.

DX Engineering High-Power Transmission Line Transformers and Baluns with patented **Maxi-Core**® technology let your antenna perform to its fullest potential and reduce the stresses on your equipment. Only DX Engineering baluns will deliver the power to your antenna with minimum loss and perform a perfect transition from balanced to unbalanced. This will provide the strongest signal that your antenna is capable of producing consistently with the lowest SWR under given conditions, resulting in less stress on your transmitter so that components will last longer and operate better. DX Engineering baluns exhibit far wider bandwidths than conventional baluns because more of the flux is confined to the immediate vicinity of the core, so much more energy goes to your antenna. Extremely high efficiency is achieved over the entire frequency range.

Additional features include:

- A better match from the coax impedance to the impedance of the antenna for the lowest SWR
- Force equal currents for maximum efficiency and better patterns
- Exhibit an increased operating bandwidth over other baluns
- Allow for use of antenna tuner and maximum power amplifier without damage ("T" baluns only)
- Reduce transmit RFI and receive noise
- Unbalanced output uses PTFE/silver SO-239 connector
- Handle high power (up to 10 kW per published spec) with minimum energy loss
- Mounted in sturdy aluminum boxes designed for outdoor use
- Convenient mounting holes
- Perform at the highest levels of efficiency in transmit or receive applications
- Balanced input uses ceramic insulators with stainless steel hardware

DX Engineering Balun Part Number	Ratio	CW Power Rating	SSB Power Rating	Impedance	Case Style	Figure	Weight	Comments
DXE-BAL050-H05-A	1:1	2kW	5kW	50 Ω	Formed	1	1.7 lb	
DXE-BAL050-H10-A	1:1	5kW	10kW	50 Ω	Formed	2	2.3 lb	
DXE-BAL050-H11-C	1:1	10kW	10kW+	50 Ω	Cast	3	2.8 lb	
DXE-BAL050H10AT	1:1	5kW	10kW	50 Ω	Formed	2	2.9 lb	Designed to work with Tuner
DXE-BAL050H11CT	1:1	10kW	10kW+	50 Ω	Cast	3	2.8 lb	Designed to work with Tuner
DXE-BAL100-H11-C	2:1	10kW	10kW+	50 Ω	Cast	4	3.7 lb	
DXE-BAL200-H10-A	4:1	5kW	10kW	200 Ω	Formed	2	2.4 lb	
DXE-BAL200-H11-C	4:1	10kW	10kW+	200 Ω	Cast	4	3.6 lb	
DXE-BAL200H10AT	4:1	5kW	10kW	200 Ω	Formed	2	2.9 lb	Designed to work with Tuner
DXE-BAL200H11CT	4:1	10kW	10kW+	200 Ω	Cast	4	3.6 lb	Designed to work with Tuner
DXE-BAL300-H10-A	6:1	5kW	10kW	300 Ω	Formed	2	2.9 lb	
DXE-BAL450-H10-A	9:1	5kW	10kW	450 Ω	Formed	2	2.9 lb	
DXE-BAL600-H10-A	12:1	5kW	10kW	600 Ω	Formed	2	2.9 lb	
Frequency Range is 1.8 through 30 MHz.				**Top termination is 10-32 studs with Wing Nuts.**				**SO-239 Coaxial Cable Connection.**

Figure 1

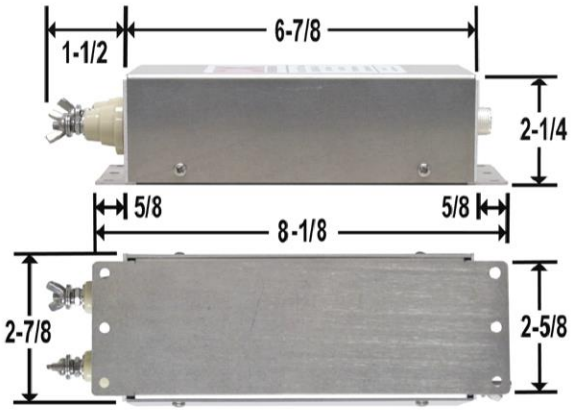


Figure 2

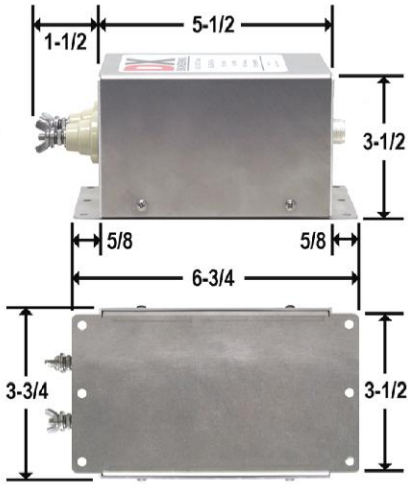


Figure 3

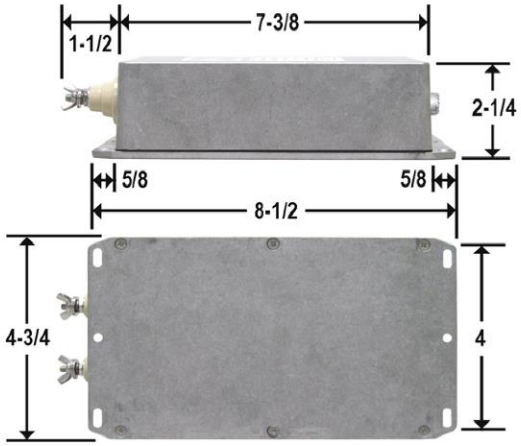
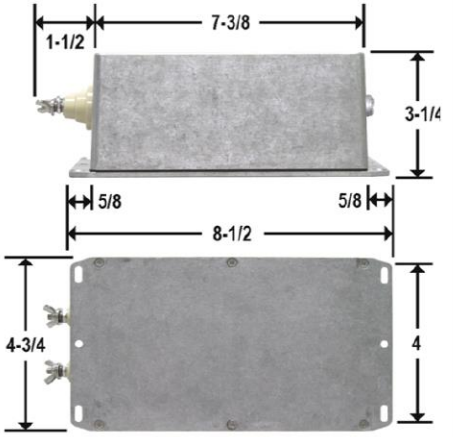


Figure 4



COMTEK Balun Selection Chart

Rev 2

Part Number	Ratio	Cores	Wrap	Dipole, coax fed, resonant (3)	Dipole, double extended (2)	Dipole, folded, coax fed, resonant (2)	Dipole, folded, resonant (2)	Dipole, folded, two-wire (2)	Dipole, inverted vee, resonant (3)	Dipole, multi-band resonant (3)	Dipole, off-center fed (OCF) (2)	Dipole, resonant, 75 ohm coax fed (3)	Dipole, trap (3)	Inverted vee, coax fed, resonant (3)	Log periodic, 150-250 ohm feedpoint (2)	Log periodic, 50 ohm coax feed (3)	Log periodic, 50 ohm, direct coax feed (4)	Loop, horizontal, coax fed (2)	Loop, horizontal, resonant (2)	Yagi, 200 ohm feedpoint (KT-34, X-7) (2)	Yagi, 50 ohm, direct coax feed (4)	Yagi, gamma matched (4)	Yagi, hairpin/beta matched (4)	Yagi, trap tri-bander (4)
COM-BAL-11150DT	1:1	2	Coax	X					X	X		X	X	X		X	X				X	X	X	X
COM-BAL-11150T	1:1	1	Coax														X				X	X	X	X
COM-BAL-41130T	4:1	1	Wire		X	X	X	X			X				X			X	X	X				
COM-BAL-41150T	4:1	2	Wire		X	X	X	X			X				X			X	X	X				

COMTEK Jerry Sevick W2FMI Series Current Baluns

COMTEK Jerry Sevick W2FMI Series Current Baluns were inspired by the writing of Jerry Sevick, as published in his book "*Understanding, Building, and Using Baluns and Ununs*", also available from DX Engineering.

COMTEK baluns are value-engineered to provide maximum performance at minimum cost, while providing a superb, efficient match between unbalanced coax and balanced antennas.

When mounting the balun, ensure the four weep holes are not blocked and preferably facing downward and a balun mounting bracket is used to take the strain off of the balun connections.

COMTEK Baluns feature:

- Jerry Sevick design with modern improvements from DX Engineering's in-depth balun research and development
- Unique high-voltage compensating capacitors for unequaled SWR bandwidth
- Outstanding ferrite mix coated toroid core with special design to accommodate close coupling without excessive stress
- Exceptionally high and consistent common mode impedance across the specified band, which provides isolation where it is needed most
- Special wire size selection and PTFE-insulated wire sleeves provide exact impedance matching and superb insulation, unlike common Thermaleze wire
- Typical insertion loss is less than 0.2 dB
- Power handling 1.8 to 54 MHz*:
  - COM-BAL-11150T 3 kW CW / 5 kW SSB
  - COM-BAL-11150DT 5 kW CW / 7 kW SSB
  - COM-BAL-41130T 3 kW CW / 5 kW SSB
  - COM-BAL-41150T 5 kW CW / 7 kW SSB

  *May be used up to 54 MHz with reduced ratings.
- Gasketed SO-239 connectors are silver plated and have PTFE insulation
- Sealed in a 4 in. x 4 in. x 2 in. NEMA box with weep holes.
- Stainless steel hardware
- Balun Mounting Bracket is required to take the strain off of the balun connections

COM-BAL-11150DT

COM-BAL-41150T

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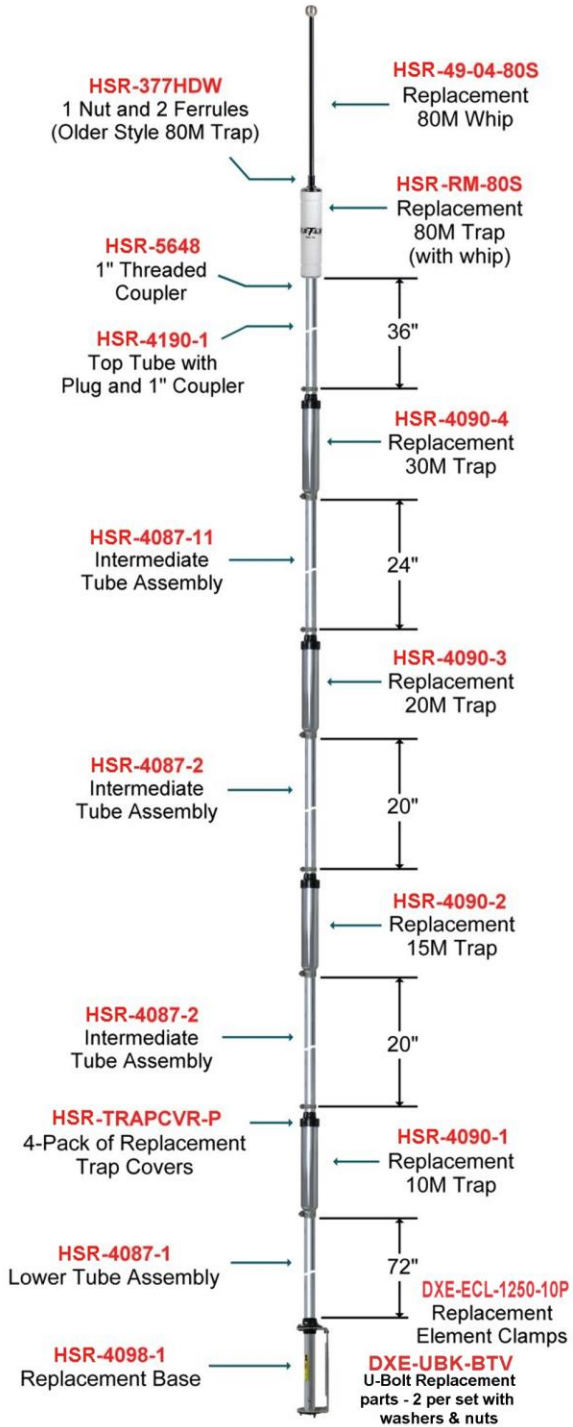
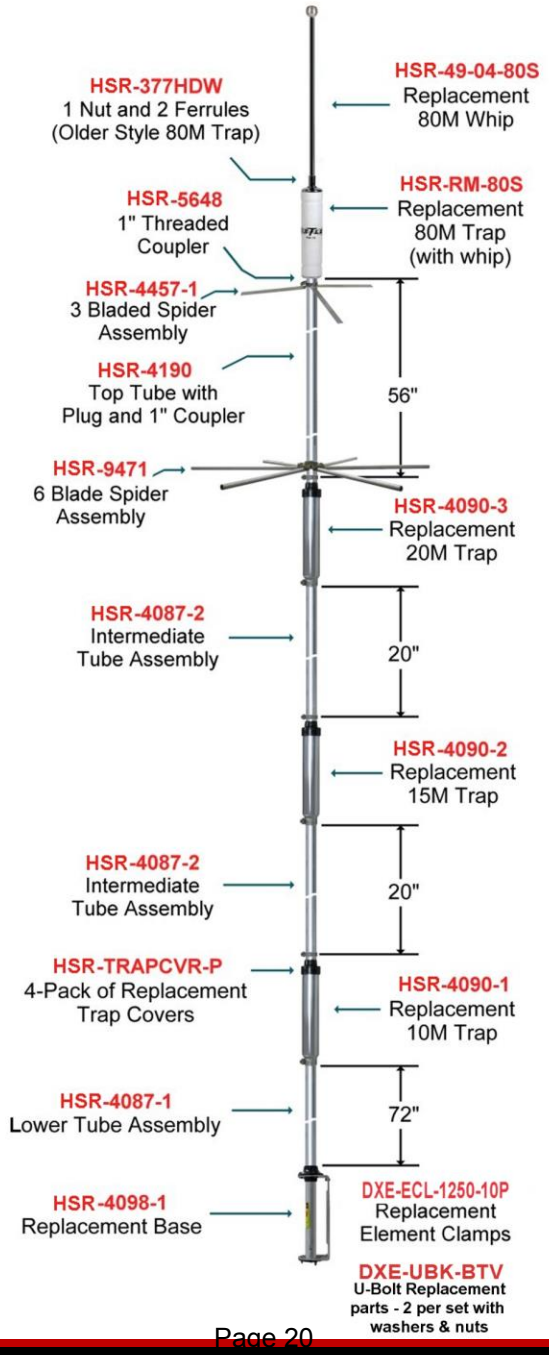
6 BTV Replacement Parts



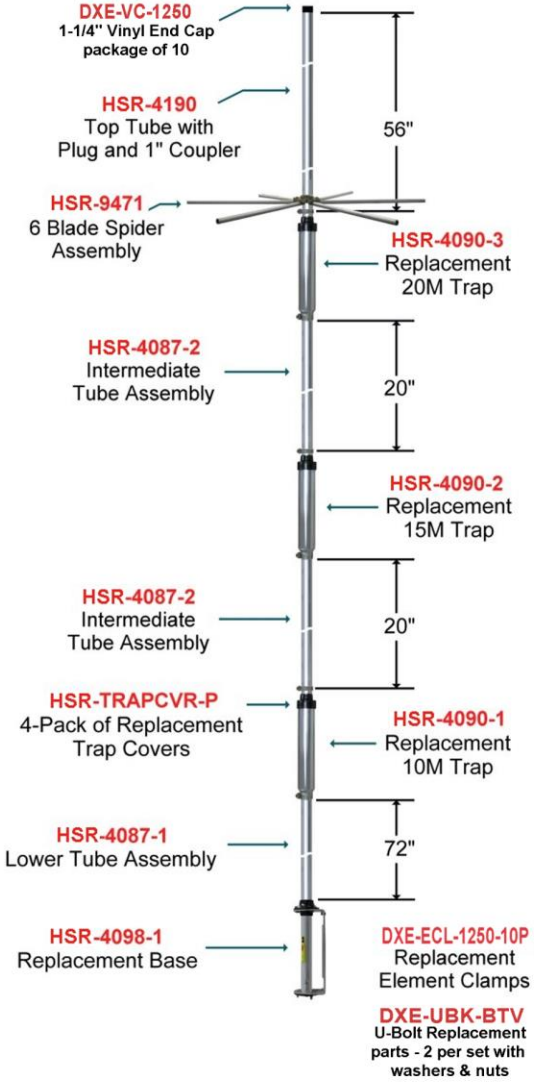
5 BTV Replacement Parts



DX ENGINEERING

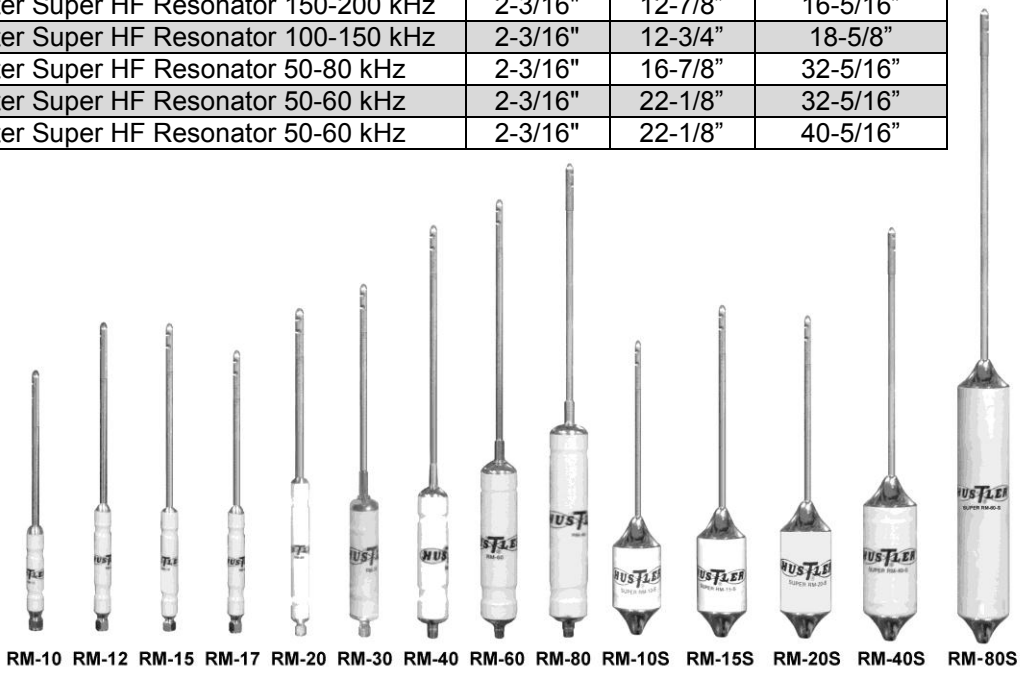
Sept 2016

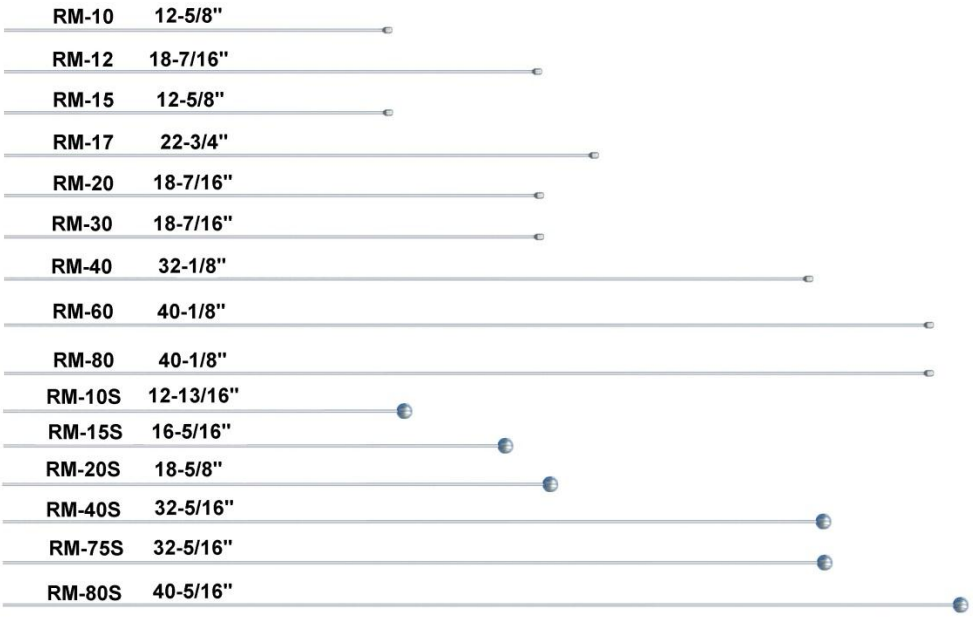
4 BTV Replacement Parts

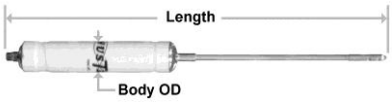


Hustler HF Resonators

Part #	Part Name	Body OD	Length	Whip Length
HSR-RM-10	10 Meter Hustler HF Resonator 150-250 kHz	5/8"	10-3/4"	12-5/8"
HSR-RM-12	12 Meter Hustler HF Resonator 100-150 kHz	5/8"	11-7/8"	18-7/16"
HSR-RM-15	15 Meter Hustler HF Resonator 100-150 kHz	5/8"	11-7/8"	12-5/8"
HSR-RM-17	17 Meter Hustler HF Resonator 120-150 kHz	5/8"	11-1/4"	22-3/4"
HSR-RM-20	20 Meter Hustler HF Resonator 80-100 kHz	5/8"	12-7/8"	18-7/16"
HSR-RM-30	30 Meter Hustler HF Resonator 50-60 kHz	5/8"	13-1/2"	18-7/16"
HSR-RM-40	40 Meter Hustler HF Resonator 40-50 kHz	1-3/8"	16-7/8"	32-1/8"
HSR-RM-60	60 Meter Hustler HF Resonator 40-50 kHz	1-3/8"	18-1/2"	40-1/8"
HSR-RM-80	80 Meter Hustler HF Resonator 25-30 kHz	1-3/8"	19-7/8"	40-1/8"
HSR-RM-10S	10 Meter Super HF Resonator 250-450 kHz	2-3/16"	12"	12-13/16"
HUS-RM-15S	15 Meter Super HF Resonator 150-200 kHz	2-3/16"	12-7/8"	16-5/16"
HSR-RM-20S	20 Meter Super HF Resonator 100-150 kHz	2-3/16"	12-3/4"	18-5/8"
HSR-RM-40S	40 Meter Super HF Resonator 50-80 kHz	2-3/16"	16-7/8"	32-5/16"
HSR-RM-75S	75 Meter Super HF Resonator 50-60 kHz	2-3/16"	22-1/8"	32-5/16"
HSR-RM-80S	80 Meter Super HF Resonator 50-60 kHz	2-3/16"	22-1/8"	40-5/16"



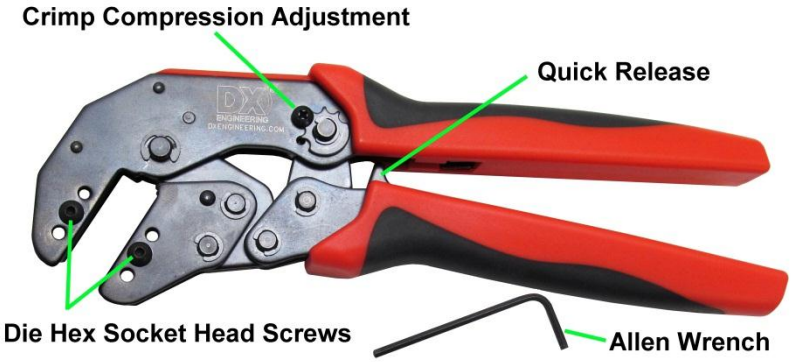




6 August 2012

Die Set Installation Information
for use with
DXE-UT-KIT-CRIMP and CRMP2

The DX Engineering Crimp Dies are installed into both the DX Engineering Ultra-Grip and Ultra-Grip-2 Crimp Tools using the same procedure. Using the Allen Wrench, remove the two Die Hex Socket Head Screws from the crimper.




DXE-UT-KIT-CRIMP


DXE-UT-KIT-CRMP2

Insert the Die Set as shown in the picture below. Slightly close the Crimp Tool to help hold the Die Set in place. Re-install the two Die Hex Socket Head Screws. Squeeze the crimper completely and it should then automatically release and you are ready to use the Crimp Tool. There is an adjustment on the Crimp Tool that will vary the amount of compression when the tool is completely squeezed and a Die Set is installed. The factory setting should be fine for all of the DX Engineering Die Sets available. If you need to adjust it, loosen the Phillips Head Screw and move the adjuster to loosen or tighten the compression. Additionally, there is a quick release lever that will allow you to open the crimp tool if it becomes jammed while compressing a crimp. Pushing this lever toward the jaws will release the ratchet allowing the tool to open.

When installing the Powerpole® Die Set, use the supplied longer screw and Nyloc Nut and washer to allow for the addition of the Powerpole® crimp connector holder.

More detailed information on using the crimp tools can be found on www.DXEngineering.com in the detailed manual for either the **DXE-UT-KIT-CRIMP** or the **DXE-UT-CRMP2**.

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Fax: (330) 572-3279 - E-mail: DXEngineering@DXEngineering.com

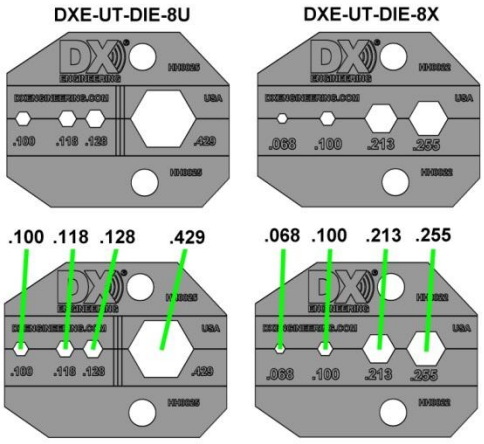
DXE-UT-KIT-CRIMP Complete Kit contains:

- **DXE-UT-CRIMP** Ultra-Grip Crimp Connector Hand Tool
- **DXE-UT-DIE-8U** Crimp Die for RG-8U/213/LMR-400 size cable
- **DXE-UT-DIE-8X** Crimp Die for RG-8X/LMR-240 size cable
- **DXE-UT-DIE-PP** Crimp Die for Powerpole® 15, 30, 45A contact
- **CNL-911** Coaxial cable shears
- **DXE-170M** Precision braid trimmers
- 2.5 mm Allen Wrench
- **DXE-CRIMP-CASE** Custom Tool Case

DXE-UT-KIT-CRMP2 Complete Kit contains:

- **DXE-UT-CRMP2** Ultra-Grip-2 Crimp Connector Hand Tool
- **DXE-UT-DIE-8U** Crimp Die for RG-8U/213/LMR-400 size cable
- **DXE-UT-DIE-8X** Crimp Die for RG-8X/LMR-240 size cable
- **DXE-UT-DIE-PP** Crimp Die for Powerpole® 15, 30, 45A contact
- **DXE-UT-DIE-INS** for insulated crimp style terminals 22-18/15-14/12-10 AWG
- **DXE-UT-DIE-UNIS** for uninsulated crimp style terminals 20-28/26-24/12-10/8 AWG
- **CNL-911** Coaxial cable shears
- **DXE-170M** Precision braid trimmers
- 2.5 mm Allen Wrench
- **DXE-CRIMP-CASE** Custom Tool Case

Close up showing the various sized die opening for the UT-DIES-8U and UT-DIE-8X



Optional Dies Available from DX Engineering

DXE-UT-DIE-8U Crimp Die for RG-8U/213/LMR-400 size cable
DXE-UT-DIE-8X Crimp Die for RG-8X/LMR-240 size cable
DXE-UT-DIE-PP Crimp Die for Powerpole® 15A, 30A and 45A contacts
DXE-UT-DIE-INS for insulated crimp style terminals 22-18/15-14/12-10 AWG
DXE-UT-DIE-UNIS for uninsulated crimp style terminals 20-28/26-24/12-10/8 AWG

DXE-UT-DIE-8U

DXE-UT-DIE-8X

DXE-UT-DIE-PP

DXE-UT-DIE-INS

DXE-UT-DIE-UNIS

DX Engineering and Amphenol Connex coaxial cable crimp connectors available from DX Engineering:

UHF Type

DXE-PL259CS8U-6/12/24 DX Engineering Next Generation Crimp/Solder UHF Male Connector
Silver plated PL-259 body, solder center conductor, 50 ohm, PTFE dielectric, crimp shield. For DXE-400 MAX, DXE-8U, DXE-RG-11/U, DXE-213U, RG-8/U, LMR-400 type, most RG-213/U and equivalent coax cables with center conductors up to 10 AWG. Packages of 6, 12 or 24.

DXE-PL259CS8X-6/12/24 DX Engineering Next Generation Crimp/Solder UHF Male Connector
Silver plated PL-259 body, solder center conductor, 50 ohm, PTFE dielectric, crimp shield. For DXE-8X, RG-8X, LMR-240 type and equivalent coax cables with center conductors up to 10 AWG. Packages of 6, 12 or 24.

AMP-182100 Amphenol Connex UHF Male Crimp Connector 182100
Brass body with nickel plate, gold plated center pin contact, 50 ohm, yellow phenolic dielectric. For LMR-200 and equivalents.

AMP-182102 Amphenol Connex UHF Male Crimp Connector 182102
Silver plated nickel body, shell and center pin. 50 ohm. PTFE dielectric. Nickel plated copper crimp ferrule. For some RG-8/U, most RG-213/U and equivalents with 12-13 AWG center conductors.

AMP-182115-10 Amphenol Connex UHF Male Crimp Connector 182115-10
Silver plated brass body, shell and center pin, nickel plated copper crimp ferule. 50 ohm. PTFE dielectric. For RG-8X, LMR-240 and equivalent cables.

AMP-182130-10 Amphenol Connex UHF Male Crimp Connector 182130-10
Silver plated brass body, shell and center pin. Nickel plated copper crimp ferrule. 50 ohm. PTFE dielectric. Fits DXE-8U, DXE-400MAX, LMR-400 and equivalent cables and RG-8U with 10-11 AWG center conductors.

N-Connector Type

AMP-172100 Amphenol Connex N-Type Male Crimp Connector 172100
White bronze finished brass with gold plated contact. PTFE dielectric. 50 ohm. For RG-58, LMR-195, and equivalents.

AMP-172102 Amphenol Connex N-Type Male Crimp Connector 172102
White bronze finished brass with gold plated contact. PTFE dielectric. 50 ohm. For RG-8 (with 12-13 AWG center conductors), RG-213, RG-393 and equivalents.

AMP-172102H243 Amphenol Connex N-Type Male Crimp Connector 172102H243
White bronze finished brass with gold plated contact. PTFE dielectric. 50 ohm. For DXE-400MAX, DXE-8U, RG-8 (with 10-11 AWG center conductors), LMR-400 and equivalents.

AMP-172135 Amphenol Connex N-Type Male Crimp Connector 172135
Coaxial Cable Connector, Solderless crimp, PTFE dielectric. N Type Male for RG-8X, LMR-240, 50 ohm.

BNC Type

AMP-112116 Amphenol Connex BNC Male Crimp Connector 112116
Nickel finished brass with gold plated contact. Delrin dielectric. 50 ohm. For RG-58, LMR-195, and equivalents.

AMP-112533 Amphenol Connex BNC Male Crimp Connector 112533.
Nickel finished brass with gold plated contact. Delrin dielectric. 50 ohm. For RG-8X, LMR-240, and equivalents.

Reference Chart
for use with the
DXE-UT-KIT-CRIMP and CRMP2

Connector Type	PL-259	PL-259	PL-259	PL-259	PL-259	PL-259	Type N	Type N	Type N	Type N	BNC	BNC
Connector P/N	DXE-PL259CS8U	DXE-PL259CS8X	AMP-182100	AMP-182102	AMP-182115-10	AMP-182130-10	AMP-172100	AMP-172102	AMP-172102H243	AMP-172135	AMP-112116	AMP-112533

Use Die DXE-UT-	DIE-8U	DIE-8X	DIE-8X	DIE-8U	DIE-8X	DIE-8U	DIE-8X	DIE-8U	DIE-8U	DIE-8X	DIE-8X	DIE-8X
Hex Crimp Center Pin*	Solder Pin	Solder Pin	0.068	0.100	0.068	0.118	0.100	0.100	0.118	0.100	0.068	0.068
Hex Crimp Ferrule*	0.429	0.255	0.213	0.429	0.255	0.429	0.213	0.429	0.429	0.255	0.213	0.255

Coax Part Type												
DXE-400MAX	XX					XX			XX			
DXE-11U	XX			XX								
DXE-213U	XX			XX				XX				
DXE-58AU	XX		XX				XX				XX	
DXE-8U	XX					XX			XX			
DXE-8X		XX			XX					XX		XX
LMR-195							XX				XX	
LMR-200			XX									
LMR-240		XX			XX					XX		XX
LMR-400	XX					XX			XX			
RG-213	XX			XX				XX				
RG-393	XX			XX				XX				
RG-58			XX				XX				XX	
RG-8 with 12-13 AWG center conductor	XX			XX				XX				
RG-8U with 10-11 AWG center conductor	XX					XX			XX			
RG-8X		XX			XX					XX		XX
Belden 8214	XX					XX			XX			
Belden 9913	XX					XX			XX			
Belden 8267/8237	XX			XX				XX				

(* dimensions are in inches)

Please refer to the manual for the **DXE-UT-KIT-CRIMP** or **DXE-UT-CRMP2** for details.

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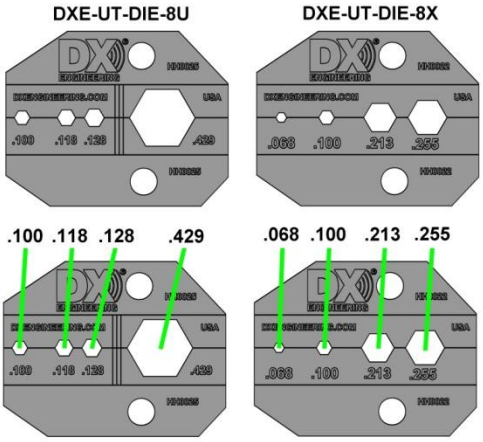
DXE-UT-KIT-CRIMP Complete Kit contains:
DXE-UT-CRIMP Ultra-Grip Crimp Connector Hand Tool

- **DXE-UT-DIE-8U** Crimp Die for RG-8U/213/LMR-400 size cable
- **DXE-UT-DIE-8X** Crimp Die for RG-8X/LMR-240 size cable
- **DXE-UT-DIE-PP** Crimp Die for Powerpole® 15, 30, 45A contact
- **CNL-911** Coaxial cable shears
- **DXE-170M** Precision braid trimmers
- 2.5 mm Allen Wrench
- **DXE-CRIMP-CASE** Custom Tool Case

DXE-UT-KIT-CRMP2 Complete Kit contains:
DXE-UT-CRMP2 Ultra-Grip-2 Crimp Connector Hand Tool

- **DXE-UT-DIE-8U** Crimp Die for RG-8U/213/LMR-400 size cable
- **DXE-UT-DIE-8X** Crimp Die for RG-8X/LMR-240 size cable
- **DXE-UT-DIE-PP** Crimp Die for Powerpole® 15, 30, 45A contact
- **DXE-UT-DIE-INS** for insulated crimp style terminals 22-18/15-14/12-10 AWG
- **DXE-UT-DIE-UNIS** for uninsulated crimp style terminals 20-28/26-24/12-10 AWG
- **CNL-911** Coaxial cable shears
- **DXE-170M** Precision braid trimmers
- 2.5 mm Allen Wrench
- **DXE-CRIMP-CASE** Custom Tool Case

Close up showing the various sized die opening for the UT-DIES-8U and UT-DIE-8X



Refer to the chart for the die openings used for the various coaxial connectors.

Optional Dies Available from DX Engineering

DXE-UT-DIE-8U Crimp Die for RG-8U/213/LMR-400 size cable
DXE-UT-DIE-8X Crimp Die for RG-8X/LMR-240 size cable
DXE-UT-DIE-PP Crimp Die for Powerpole® 15A, 30A and 45A contacts
DXE-UT-DIE-INS for insulated crimp style terminals from xx ga to xx ga
DXE-UT-DIE-UNIS for uninsulated crimp style terminals xx ga to xx ga

DXE-UT-DIE-8U

DXE-UT-DIE-8X

DXE-UT-DIE-PP

DXE-UT-DIE-INS

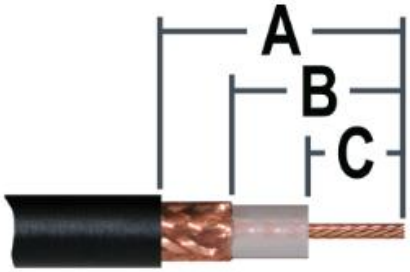
DXE-UT-DIE-UNIS

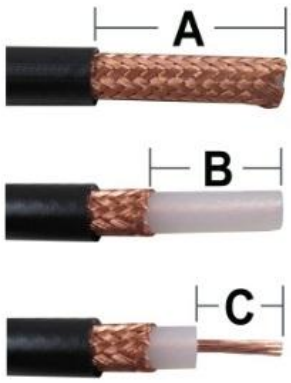
Crimp Connector Stripping Length Preparation Information

The following chart shows the trim lengths for the DX Engineering and Amphenol Connex coaxial cable crimp style connectors

Connector Type	Connector P/N	A	B	C
PL-259	DXE-PL259CS8U-6/12/24	1.218”	0.891”	0.544”
	DXE-PL259CS8X-6/12/24	1.218”	0.891”	0.544”
	AMP-182100	1.217”	0.890”	0.544”
	AMP-182102	1.218”	0.891”	0.544”
	AMP-182115-10	1.218”	0.891”	0.544”
	AMP-182130-10	1.218”	0.891”	0.544”
Type N	AMP-172100	0.630”	0.303”	0.157”
	AMP-172102	0.631”	0.304”	0.158”
	AMP-172102H243	0.631”	0.304”	0.158”
	AMP-172135	0.630”	0.303”	0.157”
BNC	AMP-112116	0.631”	0.304”	0.158”
	AMP-112533	0.634”	0.307”	0.157”

(Dimensions in inches. Information obtained from engineering drawings)





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Heil Headset Connections

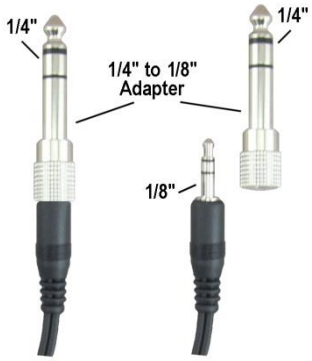
DX Engineering offers Heil Headsets which are very popular and in use by Amateur Operators around the world. From time to time, customers question how to properly hook up a Heil headset with a Foot (or Hand) Switch to their Radio. The pictures below show a typical connection scheme for a Heil Pro Set (**HLS-PS-6**) a DX Engineering (**DXE-FS-001**) Foot Switch connected to a radio using the **HLS-AD-1-K** Adapter Cable.

Connections to radios are similar. Depending on your radio, you need a radio specific Heil adapter cable.

Typical Heil Pro Set

Note the adapter cable 1/4" Jack is labeled as "PTT FOOTSWITCH" This is where the Foot or Hand Switch plugs in. ***NOT the headphones!***

Typical Connections - Headset - Adapter Cable - Foot Switch - Radio



Note the Connection to your radio Phone (or Headphone or Speaker) jack can be either a 1/8" (3.5 mm) or 1/4" connection. The Heil headset includes the adapter.

Depending on the Heil Headset model - you may be able to use the headset on a PC - Make sure the headset and PC are compatible BEFORE plugging in the Headset. Consult the original equipment manufacturer for any possible compatibility issues. DX Engineering assumes no liability for any damage caused by using products specifically designed for one use and then repurposed for another use.

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DX Engineering
300 Ω Ladder Line

DX Engineering 300 ohm Ladder Line is rated for over full legal power and is super strong, featuring two 18-gauge conductors consisting of 19 strands of copper-clad steel wire. Also known as window line, this is the same high-quality ladder line used in DX Engineering multi-band dipole antennas. DX Engineering 300 ohm Ladder Line has 272 ohm nominal impedance and an 88 percent velocity factor.

DXE-LL300-1C - 100 Foot length
DXE-LL300-2C - 200 Foot length
DXE-LL300-3C - 300 Foot length
DXE-LL300-4C - 400 Foot length
DXE-LL300-5C - 500 Foot length

Following are typical loss measurements made on a randomly selected 100 foot length of DX Engineering LL300 300 ohm ladder line.

MHz	Dry loss dB	Damp loss dB
1	-0.240	
2	-0.320	
4	-0.415	
6	-0.437	
8	-0.459	-1.410
10	-0.485	
14	-0.515	
18	-0.646	
22	-0.568	-1.530
26	-0.625	
30	-0.668	
35	-0.773	
40	-0.640	
50	-0.690	-2.150

The "damp loss" measurements are only a point of interest made by merely spraying the line with a mist which dried rapidly after application. These typical figures illustrate the effect of water on ladder line. These losses return to normal dry figures as the moisture evaporates.

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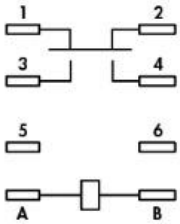
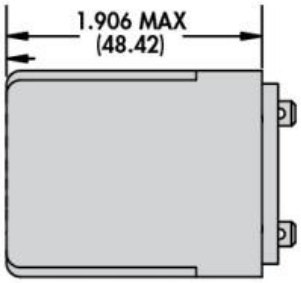
DXE-RLY-SD
DXE-RLY-HP

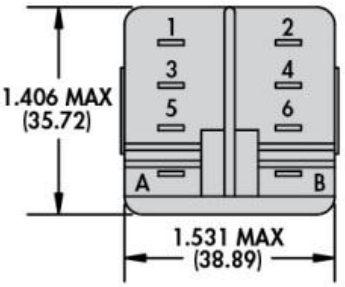
Relay Information

DXE-RLY-SD

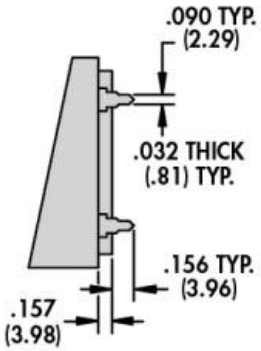


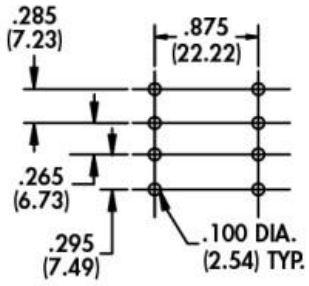
SPDT-N.C.-N.O.





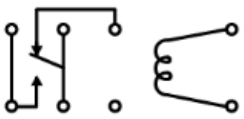
PRINTED CIRCUIT TERMINAL



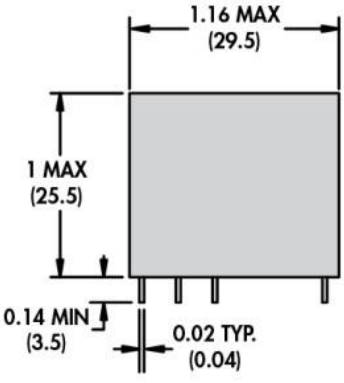


DXE-RLY-HP

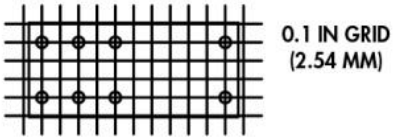
WIRING DIAGRAM
TOP VIEW



SPDT 20 AMP



CIRCUIT BOARD PIN SPACING
VIEWED FROM COMPONENT SIDE



Vinyl Boom, Tubing and Pipe End Caps

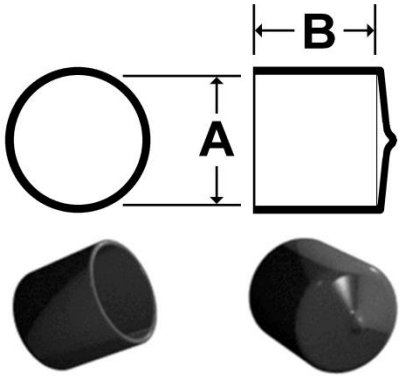
Seal the ends of your boom, tubing or pipe with quality vinyl caps. Sizes fit from 1/8 inch to 3 inch OD. Keep moisture out to help reduce corrosion. Help prevent water or snow from collecting in the tube that might freeze and split the tube and keep out the bugs.

Made from a strong UV rated material, they will withstand the abuse of nature and keep your installation safe and good-looking for years.

- UV-Rated Black Vinyl
- Great for outside installations
- Will fit securely over the OD of the boom, tube or pipe
- Models available for PL-259 and SO-239 connectors

SO-239

PL-259



DX Engineering Part Number:	Tube OD size	"A" Cap ID	"B" Cap Length	Quantity per Pack
DXE-VC-0125	1/8"	0.110"	1"	20
DXE-VC-0250	1/4"	0.228"	1/2"	20
DXE-VC-0375	3/8"	0.343"	1/2"	20
DXE-VC-0500	1/2"	0.437"	1/2"	20
DXE-VC-0612 (for SO-239)	0.612"	0.531"	1/2"	20
DXE-VC-0625	0.625"	0.562"	1"	20
DXE-VPC-0677 (for PL-259)	0.718"	0.677"	1-7/16"	20
DXE-VC-0750	3/4"	0.6875"	1"	10
DXE-VC-0875	7/8"	0.8125"	1"	10
DXE-VC-1000	1"	0.9375"	1"	10
DXE-VC-1125	1-1/8"	1.062"	1"	10
DXE-VC-1250	1-1/4"	1.187"	1"	10
DXE-VC-1312	1-5/16"	1.250"	1/2"	10
DXE-VC-1375	1-3/8"	1.312"	1"	8
DXE-VC-1500	1-1/2"	1.4375"	1"	6
DXE-VC-1625	1-5/8"	1.500"	1"	4
DXE-VC-1750	1-3/4"	1.687"	1"	4
DXE-VC-1875	1-7/8"	1.750"	1"	4
DXE-VC-2000	2"	1.875"	1"	2
DXE-VC-2125	2-1/8"	2.000"	1"	2
DXE-VC-2250	2-1/4"	2.125"	1"	2
DXE-VC-2375	2-3/8"	2.250"	1"	2
DXE-VC-2500	2-1/2"	2.375"	1"	2
DXE-VC-2750	2-3/4"	2.625"	1"	2
DXE-VC-3000	3"	2.875"	1"	2

Dimensions are in Inches

DXE-VC-INS Rev. 1a

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Inch - Fraction - Decimal - mm Conversion Chart

Inches				Decimal	mm
			1/64	0.0156	0.3969
		1/32		0.0313	0.7938
			3/64	0.0469	1.1906
	1/16			0.0625	1.5875
			5/64	0.0781	1.9844
		3/32		0.0938	2.3813
			7/64	0.1094	2.7781
1/8				**0.1250**	**3.1750**
			9/64	0.1406	3.5719
		5/32		0.1563	3.9688
			11/64	0.1719	4.3656
	3/16			0.1875	4.7625
			13/64	0.2031	5.1594
		7/32		0.2188	5.5563
			15/64	0.2344	5.9531
1/4				**0.2500**	**6.3500**
			17/64	0.2656	6.7469
		9/32		0.2813	7.1438
			19/64	0.2969	7.5406
	5/16			0.3125	7.9375
			21/64	0.3281	8.3344
		11/32		0.3438	8.7313
			23/64	0.3594	9.1281
3/8				**0.3750**	**9.5250**
			25/64	0.3906	9.9219
		13/32		0.4063	10.3188
			27/64	0.4219	10.7156
	7/16			0.4375	11.1125
			29/64	0.4531	11.5094
		15/32		0.4688	11.9063
			31/64	0.4844	12.3031
1/2				**0.5000**	**12.7000**

Inches				Decimal	mm
			33/64	0.5156	13.0969
		17/32		0.5313	13.4938
			35/64	0.5469	13.8906
	9/16			0.5625	14.2875
			37/64	0.5781	14.6844
		19/32		0.5938	15.0813
			39/64	0.6094	15.4781
5/8				**0.6250**	**15.8750**
			41/64	0.6406	16.2719
		21/32		0.6563	16.6688
			43/64	0.6719	17.0656
	11/16			0.6875	17.4625
			45/64	0.7031	17.8594
		23/32		0.7188	18.2563
			47/64	0.7344	18.6531
3/4				**0.7500**	**19.0500**
			49/64	0.7656	19.4469
		25/32		0.7813	19.8438
			51/64	0.7969	20.2406
	13/16			0.8125	20.6375
			53/64	0.8281	21.0344
		27/32		0.8438	21.4313
			55/64	0.8594	21.8281
7/8				**0.8750**	**22.2250**
			57/64	0.8906	22.6219
		29/32		0.9063	23.0188
			59/64	0.9219	23.4156
	15/16			0.9375	23.8125
			61/64	0.9531	24.2094
		31/32		0.9688	24.6063
			63/64	0.9844	25.0031
1				**1.0000**	**25.4000**

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email: DXEngineering@DXEngineering.com

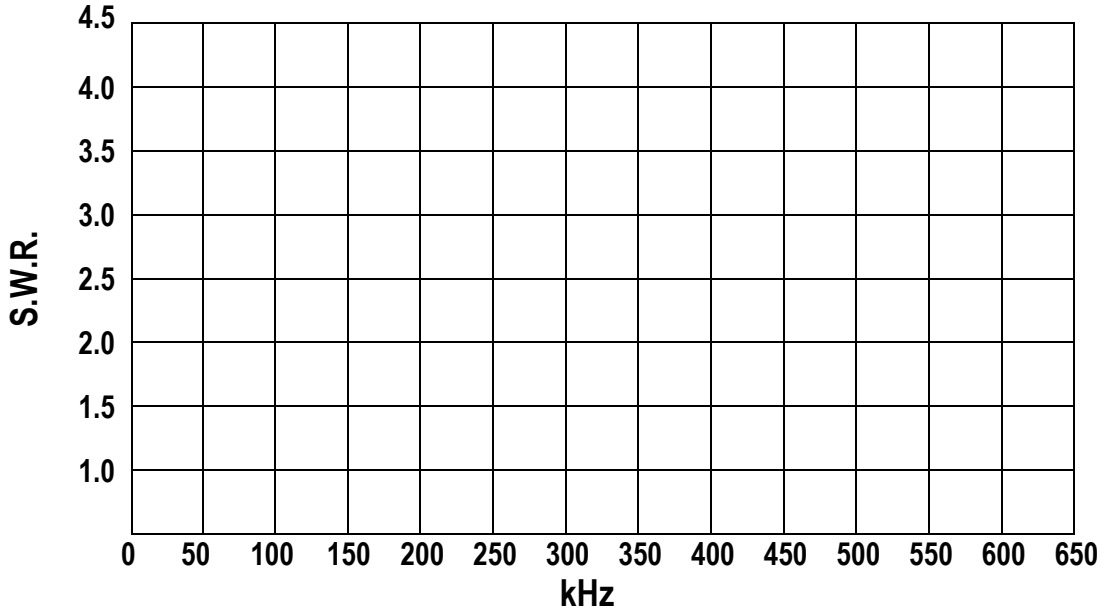
DX Engineering
S.W.R. Reference Chart

On a regular basis (yearly) or when your install, repair, change something, make a new chart and do a comparison to older data. By comparing results you may see differences that will alert you to something in the system needing additional attention.

Keeping this information on file for each antenna and each band and being able to reference the information will help you maintain your system.

Date: **Antenna:** **Band:**

Comments:



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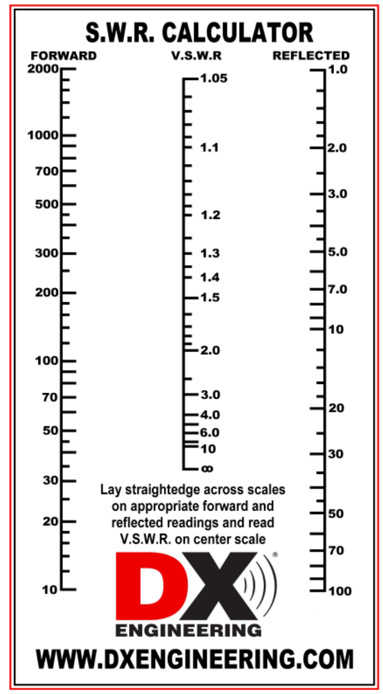
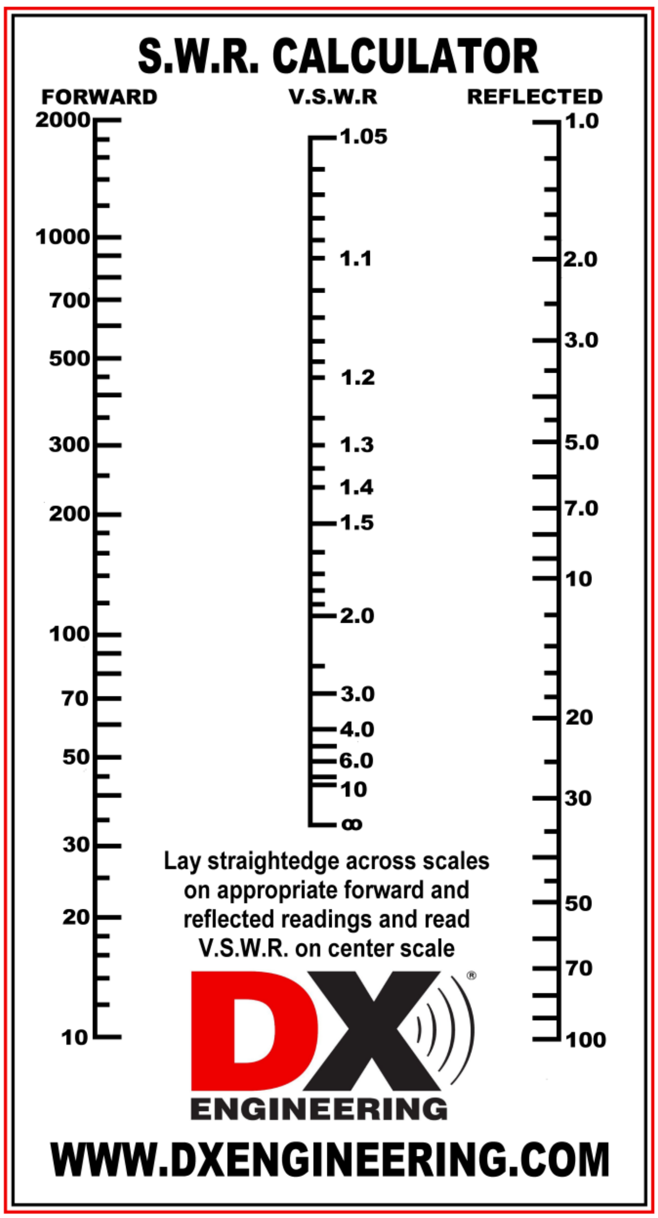
DX Engineering
S.W.R. Calculator

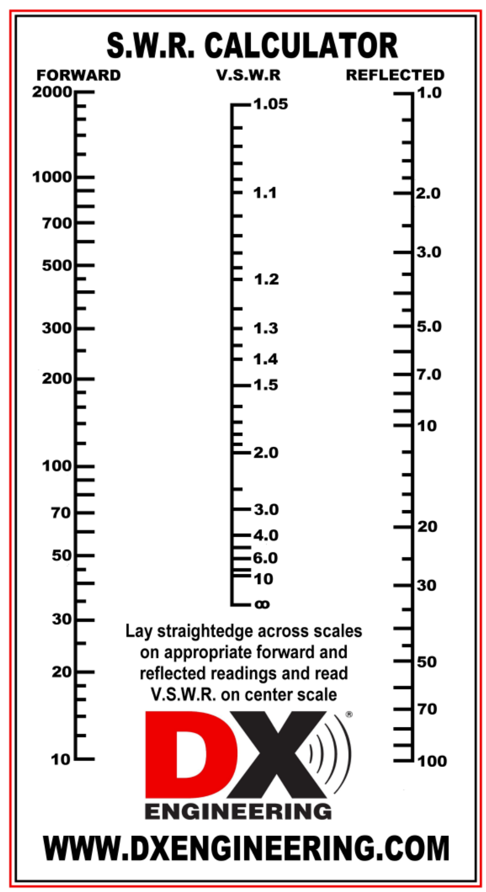


Sometimes something old is new, or something old is still good. This is one of those items from the past that Amateur Radio Operators can use to determine SWR.

Three sizes are included so you can have just the right one in the tool box or ham shack.

Our suggestion - Laminate this page and cut out the chart (or charts) you want to keep on hand.





NTE FUSE REFERENCE CHARTS

Rated Current	5 X 20mm Miniature Glass Fast Acting Fuse	6 x 30mm Miniature Glass Fast Acting Fuse	6 x 30mm Miniature Glass Slow Blow Fuse
100mA	NTE-74-5FG100MAC	NTE-74-6FG100MAC	NTE-74-6SG100MAC
125mA	NTE-74-5FG125MAC	NTE-74-6FG125MAC	NTE-74-6SG125MAC
150mA		NTE-74-6FG150MAC	NTE-74-6SG150MAC
160mA	NTE-74-5FG160MAC		
175mA		NTE-74-6FG175MAC	NTE-74-6SG175MAC
187mA		NTE-74-6FG187MAC	NTE-74-6SG187MAC
200mA	NTE-74-5FG200MAC	NTE-74-6FG200MAC	NTE-74-6SG200MAC
250mA	NTE-74-5FG250MAC	NTE-74-6FG250MAC	NTE-74-6SG250MAC
300mA		NTE-74-6FG300MAC	NTE-74-6SG300MAC
315mA	NTE-74-5FG315MAC		
375mA		NTE-74-6FG375MAC	NTE-74-6SG375MAC
400mA	NTE-74-5FG400MAC		NTE-74-6SG400MAC
500mA	NTE-74-5FG500MAC	NTE-74-6FG500MAC	NTE-74-6SG500MAC
600mA		NTE-74-6FG600MAC	NTE-74-6SG600MAC
630mA	NTE-74-5FG630MAC		
750mA		NTE-74-6FG750MAC	NTE-74-6SG750MAC
800mA	NTE-74-5FG800MAC		
1.0A	NTE-74-5FG1A-C	NTE-74-6FG1A-C	NTE-74-6SG1A-C
1.25A	NTE-74-5FG1-25AC	NTE-74-6FG1-25AC	NTE-74-6SG1-25AC
1.5A		NTE-74-6FG1-5A-C	NTE-74-6SG1-5A-C
1.6A	NTE-74-5FG1-6A-C	NTE-74-6FG1-6A-C	NTE-74-6SG1-6A-C
2.0A	NTE-74-5FG2A-C	NTE-74-6FG2A-C	NTE-74-6SG2A-C
2.5A	NTE-74-5FG2-5A-C	NTE-74-6FG2-5A-C	NTE-74-6SG2-5A-C
3.0A		NTE-74-6FG3A-C	NTE-74-6SG3A-C
3.15A	NTE-74-5FG3-15AC		
4.0A	NTE-74-5FG4A-C	NTE-74-6FG4A-C	NTE-74-6SG4A-C
5.0A	NTE-74-5FG5A-C	NTE-74-6FG5A-C	NTE-74-6SG5A-C
6.0A		NTE-74-6FG6A-C	
6.3A	NTE-74-5FG6-3A-C		
7.0A		NTE-74-6FG7A-C	NTE-74-6SG7A-C
8.0A	NTE-74-5FG8A-C	NTE-74-6FG8A-C	NTE-74-6SG8A-C
10A	NTE-74-5FG10A-C	NTE-74-6FG10A-C	NTE-74-6SG10A-C
12A			NTE-74-6SG12A-C
15A			NTE-74-6SG15A-C
20A			NTE-74-6SG20A-C

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NTE FUSE REFERENCE CHARTS

Rated Current	5 X 20mm Miniature Ceramic Slow Blow Fuse	6 x 30mm Miniature Ceramic Fast Acting Fuse	6 x 30mm Miniature Ceramic Slow Blow Fuse
1.0A	NTE-74-5SC1A-C	NTE-74-6FC1A-C	NTE-74-6SC1A-C
1.25A	NTE-74-5SC1-25AC		NTE-74-6SC1-25AC
1.5A			NTE-74-6SC1-5A-C
1.6A	NTE-74-5SC1-6A-C		NTE-74-6SC1-6A-C
2.0A	NTE-74-5SC2A-C	NTE-74-6FC2A-C	NTE-74-6SC2A-C
2.5A	NTE-74-5SC2-5A-C	NTE-74-6FC3A-C	NTE-74-6SC2-5A-C
3.0A			NTE-74-6SC3A-C
3.15A	NTE-74-5SC3-15AC		
4.0A	NTE-74-5SC4A-C	NTE-74-6FC4A-C	NTE-74-6SC4A-C
5.0A	NTE-74-5SC5A-C	NTE-74-6FC5A-C	NTE-74-6SC5A-C
6.0A		NTE-74-6FC6A-C	
6.25A			NTE-74-6SC6-25AC
6.3A	NTE-74-5SC6-3A-C		
7.0A		NTE-74-6FC7A-C	NTE-74-6SC7A-C
8.0A	NTE-74-5SC8A-C	NTE-74-6FC8A-C	NTE-74-6SC8A-C
10A	NTE-74-5SC10A-C	NTE-74-6FC10A-C	NTE-74-6SC10A-C
12A		NTE-74-6FC12A-C	NTE-74-6SC12A-C
15A		NTE-74-6FC15A-C	NTE-74-6SC15A-C
20A		NTE-74-6FC20A-C	NTE-74-6SC20A-C

Rated Current	ATC	ATM	Color Code
10A	NTE-74-AF10A-C	NTE-74-MAF10A-C	Red
15A	NTE-74-AF15A-C	NTE-74-MAF15A-C	Blue
20A	NTE-74-AF20A-C	NTE-74-MAF20A-C	Yellow
25A	NTE-74-AF25A-C	NTE-74-MAF25A-C	Natural
30A	NTE-74-AF30A-C	NTE-74-MAF30A-C	Green
5A	NTE-74-AF5A-C	NTE-74-MAF5A-C	Tan
7.5A	NTE-74-AF7-5A-C	NTE-74-MAF7-5A-C	Brown

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Wire Antenna Insulators

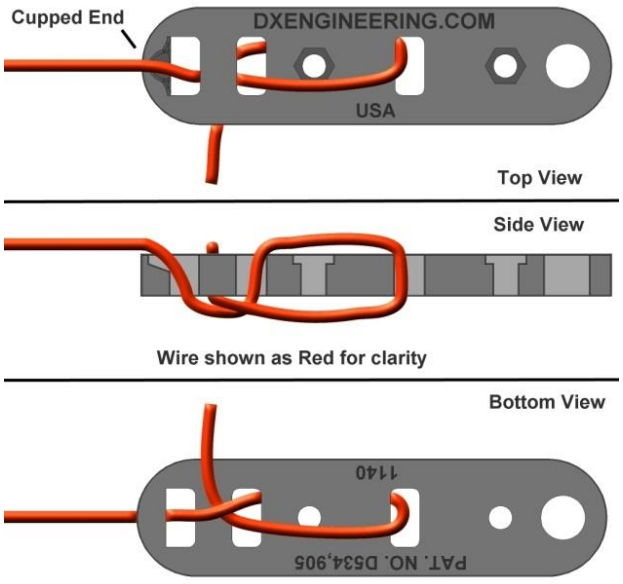
DXE-UWA-END-KIT

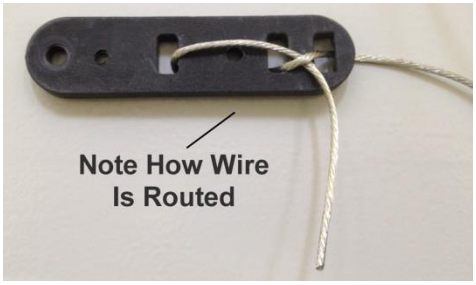
Dipole Wires and End Insulators

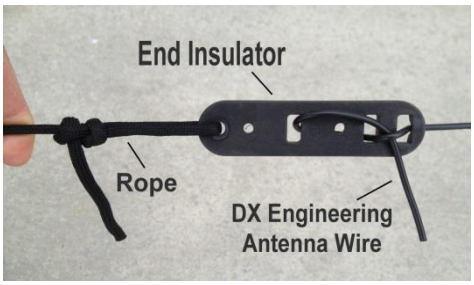
DX Engineering Wire Antenna End Insulators are patented (US Patent No. D534,905) insulators featuring a unique serpentine wire grip for DX Engineering's insulated antenna wire or other wire used for making dipole antennas. The End Insulators also are used with DX Engineering's high strength, high power 300 ohm ladder line used for a folded dipole. The serpentine wire grip and loop is strong enough to support the antenna wires with no soldering of the wire required. This allows for fast and easy field adjustments of antenna length. The **DXE-UWA-END-KIT** includes eight of these unique insulators.

The End Insulators are installed at the far ends of the dipole wires. One on each end. Route the dipole wire in a serpentine manner as shown.
Note the wire enters the End Insulator at the cupped area.

Once tuning is completed at low power, and the dipole leg wires are trimmed to length you can add an extra tuck in the wire end as shown below to provide even more gripping power on the dipole wires. Wrapping or soldering of the wires is not required.







Attaching Rope to the End Insulators

Using DX Engineering Double-braided Polyester Rope **SYN-DBR**, the rope is secured to the End Insulators using a non-slip knot. The rope hole (diameter) on the end insulators are 0.34".

One suggestion for attaching the rope to the End Insulators is shown below. The ends of the rope should be cauterized with a small flame to prevent the rope braid from fraying.

Non-Slip Knot using SYN-DBR Double-braided Polyester Rope

Technical Support
If you have questions about DX Engineering products, or if you experience difficulties during the installation, contact DX Engineering at (330) 572-3200. You can also e-mail us at:
DXEngineering@DXEngineering.com

Warranty
All products manufactured by DX Engineering are warranted to be free from defects in material and workmanship for a period of one (1) year from date of shipment. DX Engineering's sole obligation under these warranties shall be to issue credit, repair or replace any item or part thereof which is proved to be other than as warranted; no allowance shall be made for any labor charges of Buyer for replacement of parts, adjustment or repairs, or any other work, unless such charges are authorized in advance by DX Engineering. If DX Engineering's products are claimed to be defective in material or workmanship, DX Engineering shall, upon prompt notice thereof, issue shipping instructions for return to DX Engineering (transportation-charges prepaid by Buyer). Every such claim for breach of these warranties shall be deemed to be waived by Buyer unless made in writing. The above warranties shall not extend to any products or parts thereof which have been subjected to any misuse or neglect, damaged by accident, rendered defective by reason of improper installation, damaged from severe weather including floods, or abnormal environmental conditions such as prolonged exposure to corrosives or power surges, or by the performance of repairs or alterations outside of our plant, and shall not apply to any goods or parts thereof furnished by Buyer or acquired from others at Buyer's specifications. In addition, DX Engineering's warranties do not extend to other equipment and parts manufactured by others except to the extent of the original manufacturer's warranty to DX Engineering. The obligations under the foregoing warranties are limited to the precise terms thereof. These warranties provide exclusive remedies, expressly in lieu of all other remedies including claims for special or consequential damages. SELLER NEITHER MAKES NOR ASSUMES ANY OTHER WARRANTY WHATSOEVER, WHETHER EXPRESS, STATUTORY, OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS, AND NO PERSON IS AUTHORIZED TO ASSUME FOR DX ENGINEERING ANY OBLIGATION OR LIABILITY NOT STRICTLY IN ACCORDANCE WITH THE FOREGOING.

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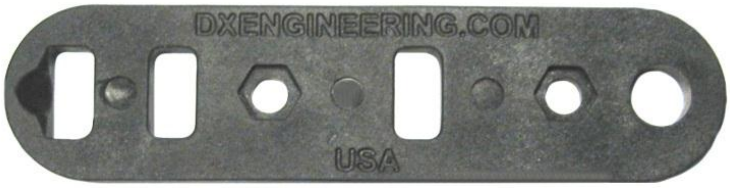
How Strong are the DX Engineering End Insulators?



Over 6 years ago, DX Engineering introduced the patented (***US Patent No. D534,905***) serpentine style end insulators (**DXE-UWA-END-KIT**) which are custom molded from high impact fiberglass impregnated nylon for tremendous breaking strength and UV protection. Since then, thousands of the DX Engineering End Insulators have been installed around the world.

The End Insulators were specifically designed to provide a strong wire gripping method by routing DXE Engineering Antenna Wire (**DXE-ANTW** series) through a series of slots in a serpentine manner. This allows easy, one-step length adjustment for tuning a dipole without having to terminate the wires.

DX Engineering Antenna Wire is a 14 gauge, 19 strand copper wire with a black 'relaxed' PVC insulation. This means the wire remains flexible, lays out flat and won't coil up when tension is removed. This wire has been proven to be superior for dipole antennas and has consistently provided years of service without any problems.

Even when used in conjunction with heavier Baluns and long runs of antenna wire, the End Insulators continue to provide excellent holding capacity without wire slippage or creeping. DX Engineering uses the End Insulators in many of our products and assemblies, and sells them separately for your own projects.

Over the years, Amateur Radio Operators have used many different wire types to construct antennas. This prompted our Engineering Department to evaluate the DX Engineering End Insulators with several other types of commonly used wire.

We took samples of four types of wire and the DX Engineering End Insulators to an independent test laboratory and commissioned a series of pull tests. Tests using the four wire types showed varied results.

The four types of wire tested were:

- DX Engineering Antenna Wire
- Typical 'Big-Box' store 14 gauge Insulated Wire
- Bare 14 gauge Copper-Clad Steel Wire
- 7-Strand Copper-Clad Steel Bare Wire
- Tinned Copper Flexible Weave Wire with no insulation

When the tests were completed, the results for the DX Engineering Antenna Wire proved that it was still the overall product of choice for use with the End Insulators.

When using the 'Big-Box' insulated wire, it was noted that the wire had a very thin clear plastic-like substance over the insulation and this would shed much like a snake skin, contributing to creep and slippage.

The single strand bare copper-clad steel wire was not easy to bend through the End Insulators and showed a tendency to coil up when relaxed (as expected). But once routed through the serpentine slots it did show very good resistance to slippage.

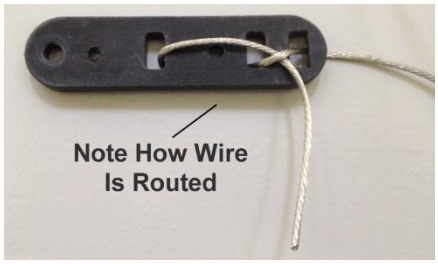
The 7-strand bare copper wire showed a tendency to coil up easily when not pulled taut (it had a "helical memory") and it would creep and slip faster than compared to the previously tested types.

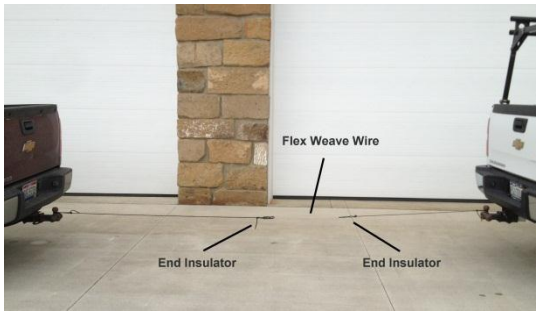
The flexible weave tinned copper wire was the last one tested. As expected, this type of wire was found to creep and slip through the serpentine slots most easily.

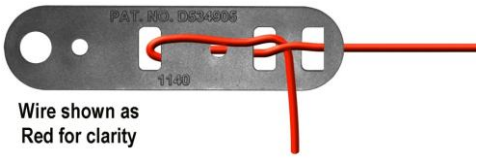
Following the test laboratory tests, DX Engineering personnel decided to investigate various ways to enhance the pull strength of the End Insulators. After making a few tests they came upon a very simple, solderless solution that dramatically increases the termination strength to the point of breaking the wire before it could creep or pull out.

The ultimate test of the insulator/wire junction does not require a strain gauge to measure. If the wire itself fails, the results cannot be more conclusive that the installation is the strongest possible.

They used the worst case type of wire - the Flexible Weave tinned copper wire (with no insulation). They routed the wire through the serpentine slots with an added loop back and through as shown in the picture below.

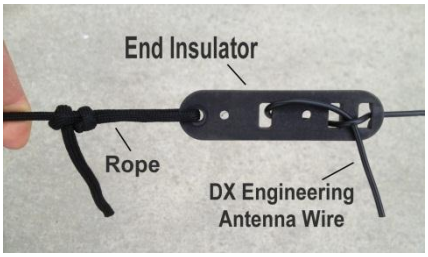


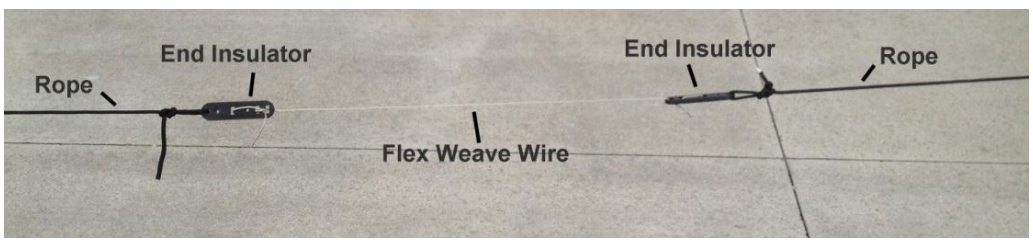




Using two trucks as anchors, they tied the ends securely to the rear of each while one slowly drove forward. The wire did not slip or creep. In fact it seemed to grip even tighter. The wire did stretch slightly and then broke. It broke in the area between the two trucks, not at the End Insulator. They repeated the test and the results were the same. The DX Engineering End Insulators held up 100% without failure.

Based on the tests, DX Engineering now suggests routing the wire through the End Insulators as shown. It will provide extra strength and prevent any creep or slippage of various types of antenna wire.





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Deburring Tool Kit

DXE-UT-KIT-DBR

The right tools you need for deburring Aluminum, Copper, Steel, Fiberglass and PVC Tubing/Pipe

Included in the complete kit:

1 - **Custom Made Case** with pre-cut High Density Foam
1 - **DXE-UT-2125** Deburring Tool for 3/8” to 2-1/8” OD
1 - **DXE-UT-3500** Deburring Tool for 1-7/8” to 3-1/2” OD
1 - **DXE-22600** Deburring tool with extra blades
1 - Half round file and handle

DXE-UT-KIT-DBR Rev.1

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DX Engineering Made in USA

All the tools you need for deburring Aluminum, Copper, Steel, Fiberglass and PVC Tubing/Pipe

These utility tools, designed and manufactured in the USA, are ideal for reaming and deburring rough-cut tubing edges with minimum effort. The **DXE-UT-2125** is usable on all tubing/pipe sizes from 3/8" to 2-1/8" OD, while the **DXE-UT-3500** is for 1-7/8" to 3-1/2" OD tubing/pipe. The ***complete*** kit **DXE-UT-KIT-DBR** includes both tools, a small hand deburring tool with extra blades and a half round file with handle.

Ideal for deburring aluminum tubing prior to telescoping sections together, these tools assure a smooth fit without galling and seizing that can occur with the slightest roughness. Only a couple of revolutions with very light pressure is needed to produce excellent results. They can be used on aluminum, copper, fiberglass, stainless steel, PVC plumbing pipe, etc.

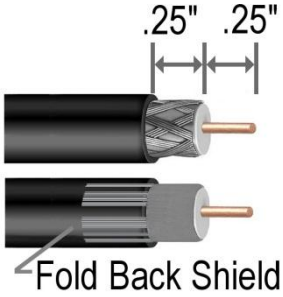
Flush cut the tube straight (90 degree cut). Select the size tool for the size tube/pipe you have. Gently with a light circular motion, rotate the tool on the end of the tube/pipe. If you press too hard, it will 'chatter' and not give you a smooth deburring action. Once you get the right feel for using the tools, your tubing or pipe will be deburred perfectly smooth. The tools have cutters on both sides which allows deburring both the inside and outside of your tubing or pipe.

Take normal precautions when handling any fiberglass material. There may be fiberglass dust, slivers or particles present when the fiberglass parts were manufactured. The use of typical fiberglass handling safety gear (gloves, dust mask, eye shield, clothing, etc.) when handling and working with fiberglass is recommended. Use a damp rag to wipe the parts. **Do not** use compressed air to clean fiberglass parts. Measures can be taken to reduce exposure after a person has come in contact with fiberglass. Eyes should be flushed with water and any area of exposed skin should be washed with soap and warm water to remove fibers. Clothing worn while working with fiberglass should be removed and washed separately from other clothing. The washing machine should be rinsed thoroughly after the exposed clothing has been washed. Check with your local or state safety and/or environmental agencies for more detailed precautions.

Compression Tool for Snap-N-Seal® 75 Ω Coax Connectors DXE- SNS-CT1

DXE-SNS-CT1-INS Rev 4a

1. Place the coaxial cable end into the **DXE-CPT-659** Cable Striper and rotate the tool around the cable until the cutting action is complete as shown.



Fold the braided shield back onto the outer jacket.

2. Insert the prepared **DXE-F6 - 75Ω F-6 Style Direct Bury Coaxial Cable** fully into the **Snap-N-Seal®** F-Connector as shown. Ensure the center conductor is slightly sticking out the end is as shown.

3. Place the **Snap-N-Seal®** connector with coaxial cable into the **DXE-SNS-CTI** Compression tool as shown.

4. Fully squeeze the **DXE-SNS-CTI** Compression Tool handles together to completely compress the **Snap-N-Seal®** connector as shown.

5. Remove completed coaxial cable assembly from **DXE-SNS-CTI** Compression Tool.

Available Accessories for the DXE-SNS-CT1 F-Connector Compression Tool

75Ω F-6 Style Direct Bury Coax, 1000 ft. Spool - DXE-F6-1000

Hi Quality, 75Ω F6 type "Flooded" Coax Sold by the spool, or as Custom Cable Assemblies

Center Conductor:

- 18WG Copper-Clad Steel
- 19Nominal Diameter: 0.040 in.

Dielectric:

- Gas Expanded Polyethylene
- Nominal Diameter Over Dielectric: 0.180 in.

Shield:

1st Shield:

- Aluminum-Polypropylene-Aluminum
- Laminated Tape with overlap Bonded to the Dielectric
- Nominal Diameter Over Tape: 0.187 in.

2nd Shield:

- 34 AWG Aluminum Braid Wire
- 60% Coverage

Jacket:

- PE (Flooded for Underground)
- Nominal Diameter Over Jacket: 0.272 in.
- Nominal Jacket Thickness: 0.030 in.

Electrical Properties:

- Impedance: 75.0 +/- 3.0 Ω
- Velocity of Propagation: 85.0% Nominal

We recommend the use of Snap-N-Seal connectors to ensure a high quality and weather resistant feedline connection. The proper compression tool must be used to install these connectors.

DXE-SNS6-25 - Watertight Coax Connector, Snap-N-Seal® for CATV F-6 Cable, 25 pieces

Snap-N-Seal® is an environmentally sealed CATV F coax connector system for harsh environments. The connectors have a unique, 360 degree radial compression system that offers the signal leakage protection required for high performance receive systems.

- Quad sealed system prevents moisture from migrating into the connection
- 360 degree radial compression provides superior RF integrity (-95dB typical, 60% bonded foil cable)
- Easy cable preparation
- Connector to cable retention of 40 lbs minimum
- Superb impedance match to 1 GHz
- Manufactured of high quality 360 brass, cadmium plated with yellow chromate coating for maximum corrosion resistance
- UV-resistant plastic and O-rings provide a reliable environmentally sealed connector

DXE-CPT-659 - Coax Cable Stripper for CATV F-6, RG-6 and RG-59 coax. Includes 1 Replacement Blade

Prepares CATV F6, RG-6 and RG-59 coax cable for the installation of an "F" type connector

- One-step cutting motion
- Precision cut
- No nicks or scratches to conductor
- Includes 1 replacement blade

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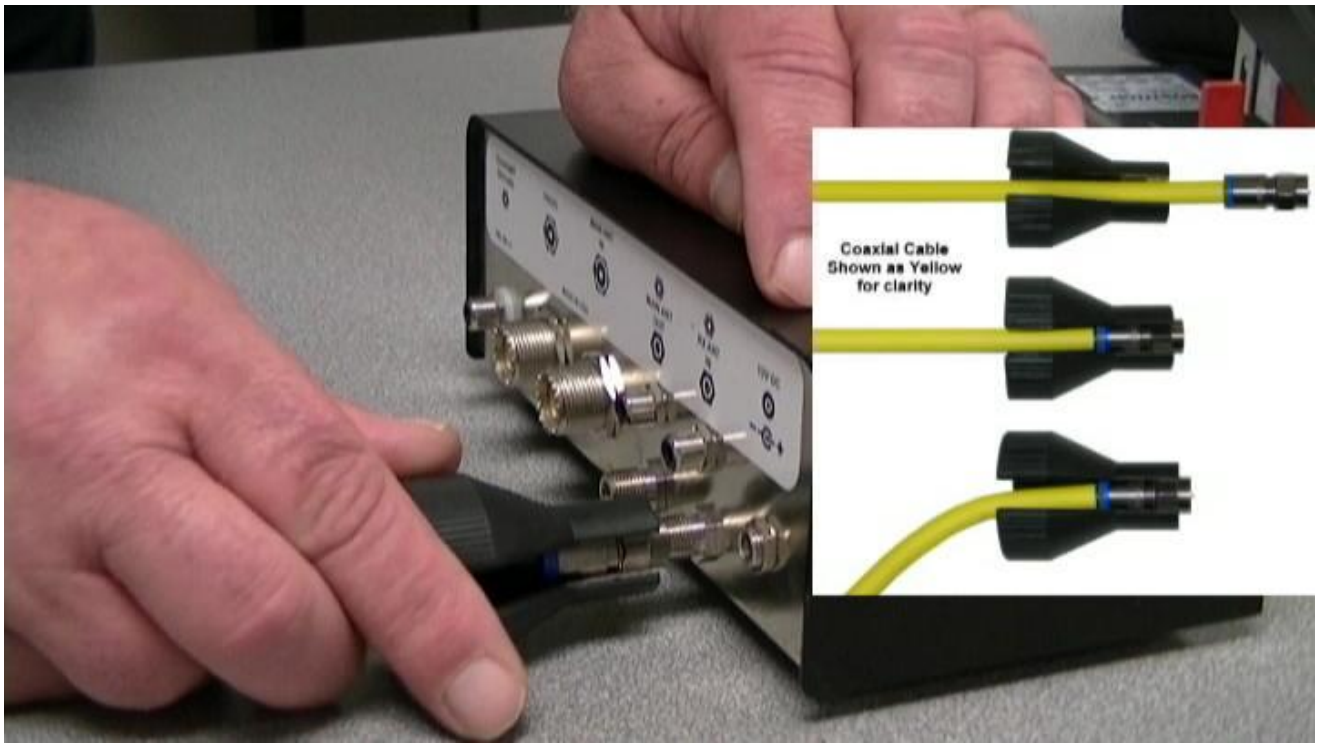
Using the DXE-CIT-1 F Connector Tightening Tool

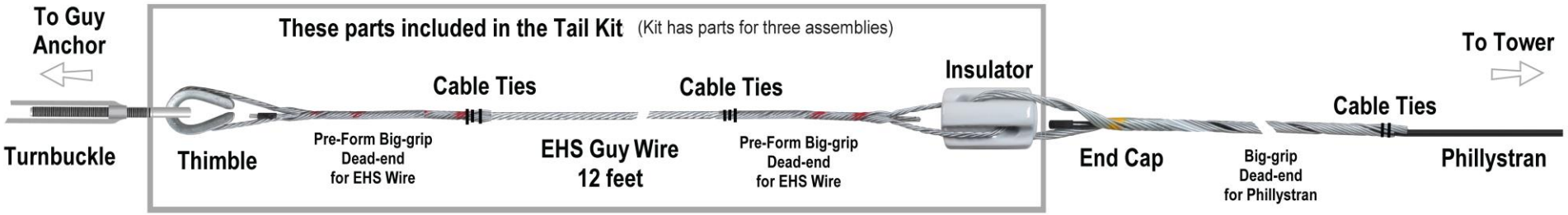
The **DXE-CIT-1** F Connector Tightening Tool makes putting on or taking off F Connector real easy. Especially if the connectors are located close to each other. Not only can these be used for Amateur Radio, but they work just fine on Cable TV lines, TV's, DVR's and anything that uses F Connectors.



Insert the coaxial cable with the F Connector in the slotted side of the DXE-CIT-1 Tightening tool. Seat the connector in the tool. Place the connector on the unit and screw in the F-Connector clock-wise using the tool until the connector is tight. Remove the tool from the coaxial cable connector.

Reverse the process to remove an F Connector from your unit.

Selection Chart for the DX Engineering Tail Kits



Typical Installation of the DX Engineering Tail Kit

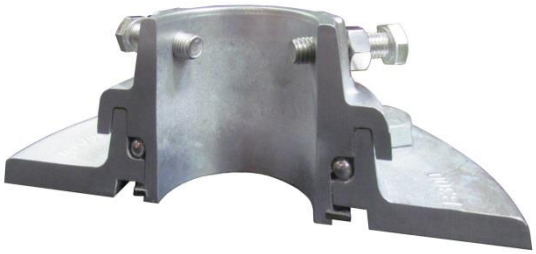
Part Number	Description	Description	Qty
DXE-PT-4000-3P	HPTG-4000I TAIL KITS (for systems using Phillystran PHI-HPTG-4000I Guy Line)	502 Insulator	3
		3/16" x 12 Ft - EHS Guy Wire	36 ft
		Pre-form Big-grip Dead-End for 3/16" EHS Guy Wire	6
		Thimble, EY414-12 (.375")	3
		Cable Ties, 11"	18
DXE-PT-6700-3P	HPTG-6700I TAIL KITS (for systems using Phillystran PHI-HPTG-6700I Guy Line)	502 Insulator	3
		1/4" x 12 Ft - EHS Guy Wire	36 ft
		Pre-form Big-grip Dead-End for 1/4" EHS Guy Wire	6
		Thimble, EY414-14 (.437")	3
		Cable Ties, 11"	18
DXE-PT-11200-3P	HPTG-11200I TAIL KITS (for systems using Phillystran PHI-HPTG-11200I Guy Line)	504 Insulator	3
		5/16" x 12 Ft - EHS Guy Wire	36 ft
		Pre-form Big-grip Dead-End for 5/16" EHS Guy Wire	6
		Thimble, EY414-14 (.437")	3
		Cable Ties, 11"	18

Note: User **MUST** be familiar with, understand, and follow all recommended or mandatory safety and installation instructions that are available or supplied by the original manufacturers of the materials/parts listed above. DX Engineering is not responsible for any damages or injuries as a result of using the kits listed above.

2” Thrust Bearing

DXE-TB-300

DX Engineering TB-300 Advanced Design Thrust Bearings offer a major advance in mechanics that solve the issues with competing bearings. TB-300 tower mast bearings have a newly engineered bearing race that doesn't bind and keeps the enclosed chrome steel ball bearings very clean. Compared with other tower mast thrust bearings, our bearings are firm and strong with a silky smooth rotation.



The TB-300 is used for masts of up to 2 in. outside diameter. TB-300 thrust bearings mate with tower bearing plates for ROHN, American Tower or Amerite towers.

These heavy-duty bearing assemblies are cast from high-strength aluminum, precision machined and assembled with high-quality chrome steel ball bearings.

DX Engineering TB-300 2 in. thrust bearings mount directly to the pre-drilled "Flat-Top" Tower Section models 25AG4 and 45AG4. These Thrust Bearings are also used on Bearing Plate models BPL25G, BPL45G, or BPL55G which may be added to straight 25G, 45G or 55G Tower Sections, respectively. They may also be used on the combination model BAS25G Bearing Accessory Shelf for straight 25G Tower Sections.

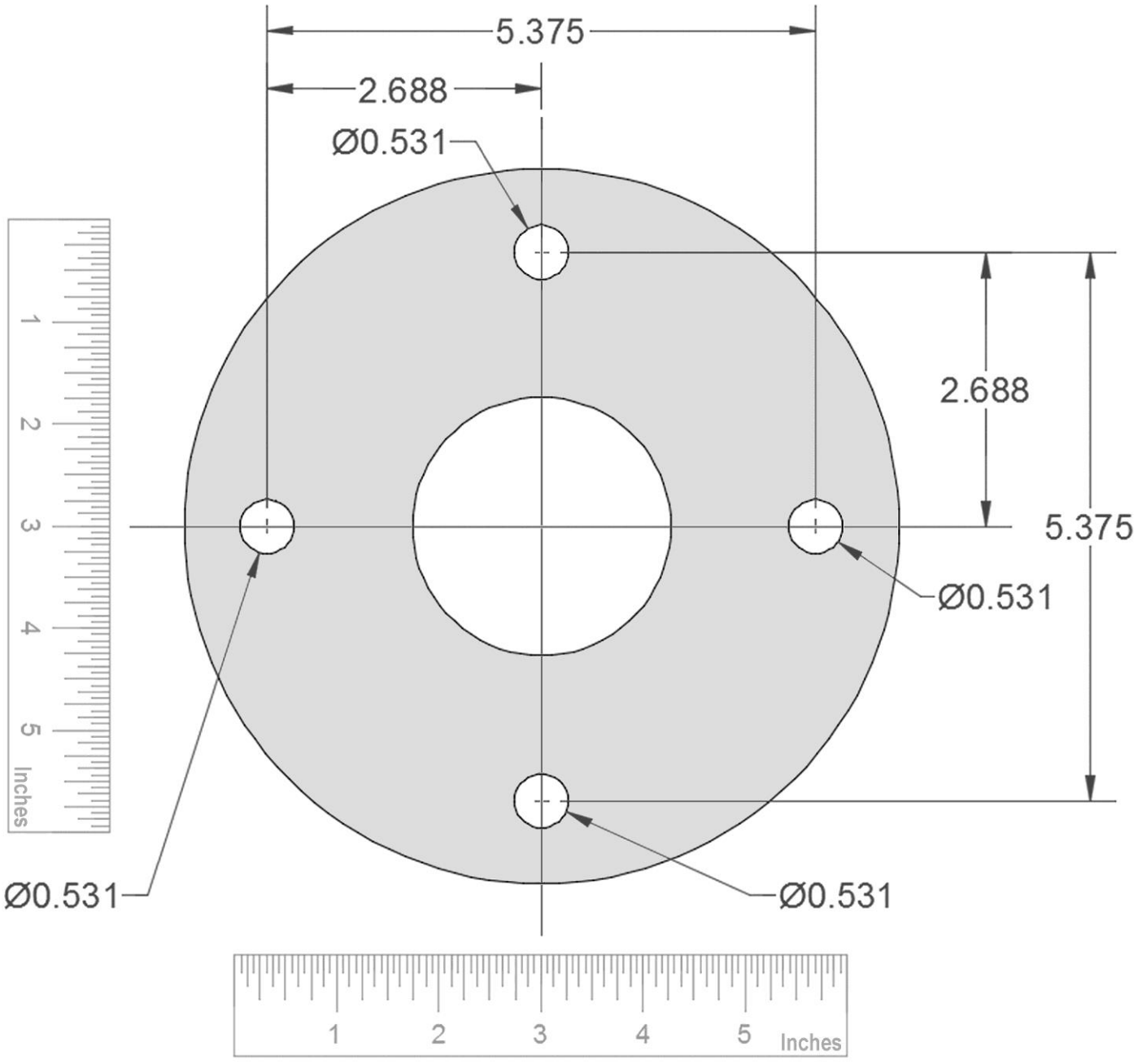
TB-300 bearings may also be used on any American Tower or Amerite Tower and accessory that corresponds to the ROHN part numbers listed above, including tower-top bearing shelves for AME-25, 45 and 55 series towers.

Designed and built for greatly improved longevity, our 2 in. mast thrust bearings reduce the load on your rotator motor more efficiently than the old standard version.

DXE-TB-300-INS Rev 0a

2” Thrust Bearing Drill Template

DXE-TB-300



DXE-TB300 DRILL TEMPLATE

Drawing is scaled to the rulers shown

Technical Support
If you have questions about DX Engineering products, or if you experience difficulties during the installation, contact DX Engineering at (330) 572-3200. You can also e-mail us at: DXEngineering@DXEngineering.com

Information and Instruction Sheet Updates
Every effort is made to supply the latest information or instruction sheet revision with each product. Occasionally an information or instruction sheet will be updated between the time your DX Engineering product is shipped and when you receive it. Please check the DX Engineering web site (www.dxengineering.com) for the latest revision information or instruction sheet.

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