Auto Tuned Multi-Band HF Stealth Antenna System
DXE-ATSA-1

DXE-ATSA-1-INS Revision 0c

DXE-ATSA-1 shown with optional DXE-SA80-AOK

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**Introduction**

Living in an area where antennas are not allowed? DX Engineering has designed a complete antenna system that will allow Ham Radio Operators living under the shadow of HOA controlled areas to get on the air easily.

Typically, with even a short 26 foot wire antenna, you can be on the air on all bands 40M and up – And with the included DX Engineering 45 foot vertical wire antenna element you can be on all bands 80M - 10M! Every antenna installation is different. In some cases, an excellent, hi-performance radial system may cause the tuner to have difficulty tuning certain frequencies in the 80 meter band. If this is encountered, the best solution is to install the optional DXE-SA80-AOK 80 Meter Tuning Coil (see page 15).

The very low profile Remote Tuning Unit [RTU] is easily hidden - even in small bushes or shrubs - and the only thing that shows is the wire antenna element which can be very small diameter for a near-zero visual impact.

This is a complete system including the tuner, MatchBoxx™, stainless steel mounting shelf with integral radial plate, the radial wire, three patented serpentine insulators and all hardware. Everything is supplied that you will need for a no compromise installation that will get you on the air and operating right under their noses.

This system can be used if your shack is on the main floor, basement or any other location as long as you can run any size coax to the RTU located outside. There are no extra control lines necessary since the RTU is completely self contained and even the power necessary to run it is carried by the coax. There is no coax loss due to high SWR since the RTU will automatically match your coax to the antenna at any HF frequency within seconds.

The included MFJ-927 IntelliTuner™ (RTU) lets you rapidly tune the DXE-ATSA-1 stealth antenna automatically.

The DXE-ATSA-1 uses the MFJ-927 Remote Tuner as the central tuning engine, however, there are certain segments of the amateur bands that even this fine tuner will not be able to tune. That's where the DX Engineering MatchBoxx™ really shines. The custom engineered MatchBoxx™ was specifically designed and manufactured to work with the MFJ-927 and the 46 foot vertical element in a winning combination allowing you to talk to the world on the amateur bands.

MFJ's exclusive InstantRecall™, IntelliTune™ and AdaptiveSearch™ algorithms give you fast automatic tuning with more than 20,000 non-volatile VirtualAntenna™ memories. The tuner includes a highly efficient switching L-network with wide matching capability, 1.8 to 30 MHz coverage, a radio interface port, and heavy-duty 10 amp/1000 volt relays.

The MFJ tuner is rated at 200 watts SSB/CW. Furnished with MFJ-4117 Bias Tee for inserting 12 VDC from your power source (or DXE-PSW-12D1A power supply) on the coaxial cable to the remote tuner.
Tools Required

Nut Drivers  1/4”, 5/16”, 3/8”, 7/16”
Open End Wrenches  5/16”, 3/8”, 7/16”
Wire Cutter
Wire Stripper
Terminal Crimper
Optional (for radial wires) Soldering Iron and Solder

*Please* read and understand the instruction manual that comes with the **MFJ-927** Remote IntelliTuner™ Automatic Antenna Tuner.

There is information included in that manual that is critical to proper operation of both the IntelliTuner™ Automatic Antenna Tuner and the Bias "T".

There is also troubleshooting information and tuner reset information that may be very helpful.

Manual Updates

Every effort is made to supply the latest manual revision with each product. Occasionally a manual 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 manual.

Assembly Steps

The **DXE-ATSA-1** Auto Tuned Multi-Band HF Stealth Antenna System is assembled in the following steps:

- Installing Ground Spikes and Antenna Insulator on Shelf
- MatchBoxx™ installed on Shelf
- MFJ-927 Tuner installed on Shelf
- Connecting Ground Wire and Tuner Wires to Shelf and MatchBoxx™
- Site Selection
- Coaxial Cable Installation
- Radial System and Attaching Ground Radial Wires to Shelf
- Wire Antenna Element to MatchBoxx™
- Attaching Wire Antenna Element to the End Insulators
- Attaching Support Rope to the End Insulators
- Bias "T" connections
- Using the MFJ-927 Auto-Tuner
### Parts List for the DXE-ATSA-1

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DX Engineering custom Laser Cut Stainless Steel Mounting Shelf with integral Radial Wire connection points</td>
</tr>
<tr>
<td>4</td>
<td>Laser Cut Stainless Steel Leg</td>
</tr>
<tr>
<td>1</td>
<td>DXE-RADW-500 Bulk Radial Wire</td>
</tr>
<tr>
<td>1</td>
<td>DXE-STPL-100P Metal Lawn Staples - 100</td>
</tr>
<tr>
<td>2</td>
<td>DX Engineering custom molded End Insulator with special serpentine wire slots - patented</td>
</tr>
<tr>
<td>1</td>
<td>MFI-927 IntelliTuner™ with external Bias &quot;T&quot;, 2.1 mm dc cord and MFJ instruction manual</td>
</tr>
<tr>
<td>1</td>
<td>UHF Right Angle Adapter</td>
</tr>
<tr>
<td>1</td>
<td>SYN-DBR-94-100 3/32&quot; Dia. Double Braided Dacron/Polyester Rope, 100 Foot Roll</td>
</tr>
<tr>
<td><strong>Mounting legs to shelf</strong></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1/4-20 x 1&quot; long Stainless Steel Hex Head Bolt</td>
</tr>
<tr>
<td>8</td>
<td>1/4&quot; Stainless Steel External Tooth Washer</td>
</tr>
<tr>
<td>8</td>
<td>1/4&quot; Stainless Steel Flat Washer</td>
</tr>
<tr>
<td>8</td>
<td>1/4-20 Stainless Steel Nyloc Hex Nut</td>
</tr>
<tr>
<td><strong>Antenna Insulator and mounting it to shelf</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>DX Engineering custom molded End Insulator with special serpentine wire slots</td>
</tr>
<tr>
<td>1</td>
<td>10-24 x 3/4&quot; Stainless Steel Hex Head Bolt</td>
</tr>
<tr>
<td>1</td>
<td>#10 Stainless Steel External Tooth Washer</td>
</tr>
<tr>
<td>1</td>
<td>10-24 Stainless Steel Nyloc Hex Nut</td>
</tr>
<tr>
<td>1</td>
<td>MatchBoxx™ mounting to shelf</td>
</tr>
<tr>
<td>4</td>
<td>10-24 Stainless Steel Nyloc Hex Nut</td>
</tr>
<tr>
<td>4</td>
<td>10-24 Stainless Steel Hex Nut</td>
</tr>
<tr>
<td>12</td>
<td>#10 Stainless Steel Thin Flat Washer</td>
</tr>
<tr>
<td>1</td>
<td>#10 Stainless Steel External Tooth Star Washer (for GND wire attachment)</td>
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<tr>
<td><strong>External Connections to MatchBoxx™ (Installed on MatchBoxx™)</strong></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>10-24 Stainless Steel Wing Nut</td>
</tr>
<tr>
<td>3</td>
<td>#10 Stainless Steel Split Washer</td>
</tr>
<tr>
<td>9</td>
<td>#10 Stainless Steel Flat Washer</td>
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<tr>
<td>3</td>
<td>#10 Stainless Steel External Tooth Washer</td>
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<tr>
<td>3</td>
<td>10-24 Stainless Steel Hex Nut</td>
</tr>
<tr>
<td><strong>Wire assemblies</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>45 Foot Wire Antenna Element, Ring Terminal - Soldered on one end</td>
</tr>
<tr>
<td>1</td>
<td>6.5&quot; Wire from &quot;Tuner&quot; on MatchBoxx™ to MFJ 927 Tuner (one end ring terminal soldered, other end stripped 1/2&quot; &amp; soldered)</td>
</tr>
<tr>
<td>1</td>
<td>3.5&quot; Wire from GND to Radial Plate connection - Ring Terminals both ends &amp; soldered</td>
</tr>
<tr>
<td><strong>Set of Stainless Steel hardware for radial wire attachment (20)</strong></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>10-24 Stainless Steel Hex Head Bolt x 1/2&quot; long</td>
</tr>
<tr>
<td>20</td>
<td>#10 Stainless Steel External Tooth Washer</td>
</tr>
<tr>
<td>20</td>
<td>#10 Tinned Ring Terminal</td>
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<tr>
<td>20</td>
<td>#10 Stainless Steel Flat Washer</td>
</tr>
<tr>
<td>20</td>
<td>#10 Stainless Steel Split Washer</td>
</tr>
<tr>
<td>20</td>
<td>10-24 Stainless Steel Hex Nut</td>
</tr>
<tr>
<td><strong>Hardware for mounting Tuner to shelf (shelf has PEM nuts)</strong></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6-32 x 1/2&quot; Stainless Steel Hex Head Bolt</td>
</tr>
</tbody>
</table>
Recommended Optional Items

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DXE-PSW-12D1A AC Adapter 12 VDC/1000 ma</td>
</tr>
<tr>
<td>1</td>
<td>UMI-81343 Anti-Seize, 1 oz Squeeze Tube</td>
</tr>
<tr>
<td>1</td>
<td>SUM-900031 Automatic Wire Stripper/Crimper/Cutter, 24-10 Ga.</td>
</tr>
<tr>
<td>1</td>
<td>DXE-3M2155 3M Temflex™ 2155 Rubber Splicing Tape</td>
</tr>
<tr>
<td>1</td>
<td>TRM-06132 Scotch® Super 33+ Vinyl Electrical Tape</td>
</tr>
</tbody>
</table>

Shelf

The shelf is the mounting platform for all of the parts. **Figure 1** is the top view of the DX Engineering custom laser cut stainless steel mounting shelf with integral radial wire connection points and shows all the holes with a reference for what will be installed in them.

**Figure 1**
Shelf
Top View

**Top View**
- 8 Holes - 4 Ground Spikes
- 4 Holes - MatchBoxx mounting
- 4PEMS - Tuner mounting
- 19* Holes - Radial Wire mounting
- 1 Hole - Wire Antenna Insulator
- 2 Holes - not used
- 1* Hole - Optional 80M Coil
Installing Ground Spikes and Antenna Insulator

**Note:** UMI-81343 Anti-Seize should be used on all stainless steel hardware to prevent galling.

Using the included stainless steel hardware, mount the four ground spikes as shown in Figure 2 to the shelf using a 7/16" nut driver. The spikes point downward. The external tooth washer is installed between the bottom of the shelf and the top of the spike to ensure a good RF connection.

![Image of Spike Mounting](image)

**Figure 2 - Spike Mounting**

Mount the patented wire antenna serpentine insulator to the shelf using one hex bolt, flat washer and Nyloc hex nut using a 5/16" and 3/8" nut driver as shown in Figure 3. [The other 2 insulators in this hardware pack are used later in the installation procedure.]

![Image of Wire Antenna Insulator](image)

**Figure 3 - Wire Antenna Insulator**
Installing MatchBoxx™

Installing the MatchBoxx™ to the shelf is a two step procedure. First install the stainless steel hardware using a 5/16” and 3/8” nut driver on each of the four corners of the MatchBoxx™ as shown in Figure 4. Tighten securely, but do not over tighten.

![Figure 4](image1.jpg)

Install the MatchBoxx™ through the bottom of the shelf, and install the flat washer and Nyloc nut using a 3/8” nut driver as shown in Figure 5.

![Figure 5](image2.jpg)

Installing MFJ-927 Tuner to Shelf

Install the included right angle UHF adapter firmly onto the SO-239 connector labeled "TRANSMITTER" in the direction as shown in Figure 6.

![Figure 6](image3.jpg)
The MFJ-927 Tuner is held onto the shelf using four hex head bolts that get screwed into four PEM nuts that are permanently installed in the shelf.

Place the tuner on the top of the shelf so there is access to the SO-239 and red binding post through the open area on the bottom of the shelf as shown in **Figure 6**.

Line up the four mounting holes with the PEM nuts and install the four 6-32 x 1/2" Stainless Steel Hex Head Bolts using a 1/4" nut driver as shown in **Figure 7**.

**Figure 7**

**Connecting Wires to the MatchBoxx™, Tuner and Shelf**

One 3-1/2" wire with ring terminals on both ends is connected from the "GND" connector on the MatchBoxx™ to the hex bolt used on the MatchBoxx™. This wire connects the MatchBoxx™ to the shelf (ground) as shown in **Figure 8**.

Remove the existing Nyloc hex nut and flat washer. Install an external tooth washer, then one end of the 3-1/2" wire, the flat washer and Nyloc hex nut. Do not tighten. If the ring terminal is allowed to move, it will make connecting the other end of the 3-1/2" wire a bit easier.

On the MatchBoxx™ "GND" terminal, remove the wing nut, split washer and flat washer. Install the other end of the 3-1/2" wire coming from the shelf grounding point. Re-install the flat washer, lock washer and wing nut. Tighten the wing nut firmly. Do not over tighten. Pliers are not needed.

Move the ring terminal at the other end so the wire is placed properly and tighten the Nyloc nut.

**Figure 8**
The 6-1/2" wire with one ring terminal is installed from the MatchBoxx™ "TUNER" connection to the MFJ-927 red binding post labeled "WIRE" as shown in Figure 9.

On the MatchBoxx™ "TUNER" terminal, remove the wing nut, split washer, and flat washer. Install the end of the 6-1/2" wire with the ring terminal. Re-install the flat washer, lock washer and wing nut. Tighten the wing nut firmly. Do not over tighten. Pliers are not needed.

Loosen the red binding post on the MFJ-927 tuner by turning it counter-clockwise. There is a small hole in the binding post's center that the "TUNER" wire gets inserted. Insert the wire so it goes completely through the binding post, but not far enough to have the wire insulation interfere with the post. Once in place firmly tighten the binding post to capture the "TUNER" wire.

Figure 9 - Wire from "TUNER" to Red Binding Post on MFJ-927 Tuner
Site Selection

Select a mounting location for the DXE-ATSA-1 clear from power lines, structures and other antennas. **Consider overhead power lines, utility cables and wires.**

The vertical wire element should be mounted away from local noise sources or other metallic objects which can re-radiate noise and affect the tuning, radiation pattern and SWR.

Adequate space should be available for the radial wires which will extend out from the DXE-ATSA-1 in a 25 foot radius.

When installing the unit, the four ground spikes **must** be pushed into the soil to provide a good RF ground.

If your soil is not a good RF ground (sandy, real hard dirt, etc.), adding a customer supplied ground rod which is installed near the DXE-ATSA-1 and connected to the DXE-ATSA-1 at one of the radial wire connection points will help provide a good RF ground.

Refer to **Figure 17** for examples of installation sites.

Coaxial Cable Installation

The customer supplied coaxial cable should be run from the operating position (radio room) to the base of the DXE-ATSA-1. Ideally, the coaxial cable is buried below the soon to be installed radial field. This will help prevent RF currents being fed back into the coaxial cable by the radial wires.

The coaxial cable is connected to the MFJ-927 tuner using the supplied right angle UHF connector previously installed on the "TRANSMITTER" SO-239 connector as shown in **Figure 10**.

Once the coaxial cable is installed, use the optional DXE-3M21553M Temflex and TRM-06132 tape to weatherproof the connections.
Radial System

The use of a radial system is a key requirement for a high performance quarter wave vertical antenna system. With a vertical antenna system, the radials are the second half of the antenna. The radials contribute to the radiation efficiency of the entire vertical antenna system.

Included with the DXE-ATSA-1 is one 500 foot roll of radial wire, a 14 gauge stranded copper with a black relaxed PVC insulation wire. At a minimum, 20 radials, each 25 feet long, should be used with this antenna. Using extra radials may help overcome unknown poor-soil conditions, improve bandwidth, and ensure the best performance possible from the vertical antenna. DXE-RADW Radial Wire, a 14 gauge stranded copper with a black relaxed PVC insulation wire is suggested for the best results.

The wire radials should placed as symmetrically as possible straight from the feedpoint around the DXE-ATSA-1 and spaced evenly, regardless of how many radials are used. Do not cross or bunch any radial wires as this nullifies their effectiveness. If you have limited space, put in as many straight radials as you can. Refer to Figure 11.

Radial wires can be laid on the roots of the grass using the included DXE-STPL Radial Wire Anchor Pins to hold them down. Using enough staples will ensure the wires will not be snagged by mowers, people, or animals. Grass will quickly overgrow the radials and it will be virtually impossible to see them.

An article describing this process is available on the DX Engineering website in the Tech Info section. Radials can also be buried just under the surface by using a power edger to make a slit in the soil.

Attaching Ground Radial Wires to the DXE-ATSA-1 Shelf

Using the included 500 foot spool of radial wire, cut 20 wires at 25 feet each. Strip off insulation at one end of each wire and install and crimp one #10 Ring Terminal as shown in Figure 12. As an option, the ring terminals may also be soldered to help ensure positive electrical connection and long life.
Using the 20 sets of supplied #10 stainless steel hardware (Bolt, Flat Washer, Star Washer, Split Washer, Nut) connect the 20 ground radial wires to the DXE-ATSA-1 shelf as shown in Figure 13. (You will use two radial wires on the corner nearest the insulator.)

**Antenna Wire Element MatchBoxx™ Connection**

The Vertical Wire Element included with the DXE-ATSA-1 is 45 feet long. This will allow you to tune from 80 meters through 10 meters. If your installation will not allow a 45 foot length, the wire may be cut to 26 feet which will allow you to tune on 40 through 10 meters.

Weave the soldered terminal on the wire antenna element through the serpentine insulator installed on the DXE-ATSA-1 shelf allowing enough slack to connect it to the MatchBoxx™ wing nut titled "ANT" as shown in Figure 14.

On the MatchBoxx™ "ANT" terminal, remove the wing nut, split washer, and flat washer. Install the end of the wire antenna element with the ring terminal. Re-install the flat washer, lock washer and wing nut. Tighten the wing nut firmly. Do not over tighten. Pliers are not needed.
Attaching Wire Antenna Element Wire to the End Insulators

Depending on your installation, you may use one or two end insulators.

If you are going straight to a tree (for example) you will probably use only one end insulator.

If you are going from the DXE-ATSA-1 to a roof eve or other interim support, then to a tree, you will probably use two end insulators (see Figure 17 for examples).

The end of antenna element wire is woven through the patented serpentine end insulator as shown in Figure 15. Note the way the wire is woven through the end insulator, especially the side where the antenna wire is coming from. There is a dip or cupped out area to assist in a smooth wire transition point. It is not necessary to loop, wrap or solder the wire end. The serpentine insulator will grip the wire.

Attaching Support Rope to the End Insulators

The included DX Engineering Double-braided Polyester Rope SYN-DBR-94-100 is attached to the patented end insulator (depending on your installation) using a non-slip knot. One suggestion for attaching the rope is shown in Figure 16. The ends of the rope should be cauterized with a small flame to prevent the rope braid from fraying.
Figure 17 - Various options putting up the antenna element.

Connect the antenna element from the DXE-ATSA-1 to a tree.
Connect the antenna element from the DXE-ATSA-1 to a tree, then to another tree.
Connect the antenna element from the DXE-ATSA-1 to a roof eve, then to a tree.

Patented Serpentine Insulators
Bias "T" Connections

Refer to the MFJ-927 manual for details on the Bias "T". The Bias "T" supplies the DC power required in the remote tuner using the coaxial cable that goes from the Bias "T" to the remote tuner. The Bias "T" is usually located in the radio room and has +12 VDC connected to it. Make certain the coaxial cables are properly connected to the Bias "T" as shown in Figure 18. Ensure the ON/OFF switch on the Bias "T" is turned ON when using the system.

![Figure 18](image1.png)

The customer supplied coaxial cable from the Bias "T" (located in the radio room) is connected to the MFJ tuner SO-239 labeled "TRANSMITTER" using the right angle UHF adapter (included) as shown in Figure 19.

![Figure 19](image2.png)

Using the MFJ-927 Auto-Tuner

When using the tuner, refer to the MFJ-927 manual for details. If you try tuning and it seems that the tuner will not tune up as it should, try 'band switching'. Band switching for this means going up or down one band, re-tune, and then go back to the desired band and re-tune again. Another option is to disable memory storage of tuning solutions. This would force the MFJ-927 tuner to re-tune every time it is used on a different band or frequency. Refer to the MFJ-927 manual for details.

Grounding at the unit is important. Ensure you have a good ground at the tuning unit.
When installing the unit, the four ground spikes **must** be pushed into the soil to provide a good ground.

If your soil is not a good ground (sandy, real hard dirt, etc.), adding a customer supplied ground rod which is connected to the unit at one of the radial connection points will help provide a good ground.

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**Please** read and understand the instruction manual that comes with the MFJ-927 Remote IntelliTuner™ Automatic Antenna Tuner. There is information included in that manual that is critical to proper operation of both the MFJ-927 Remote IntelliTuner™ Automatic Antenna Tuner and the Bias "T". There is also troubleshooting information and tuner reset information that may be very helpful.

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**Removing the Tuner**

To access the inside of the MFJ-927 tuner it will have to removed from the shelf. Remove your coaxial cable from the right angle UHF adapter and remove the wire going from the tuner's red binding post to the MatchBoxx™. Remove the four hex head bolts holding the tuner on the shelf as shown in **Figure 20**.

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**Installing the Optional 80 meter Tuning Coil - DXE-SA80-AOK**

The **DXE-SA80-AOK** 80 meter coil add-on kit is custom designed for use with the ATSA antenna system. In some ATSA antenna installations with excellent radial systems, achieving the best SWR on a vertical element for 80 meters may be difficult without some means of adjusting feedpoint impedance.
The **DXE-SA80-AOK** allows easy adjustment for lowest SWR. The **DXE-SA80-AOK** will aid in tuning a low impedance antenna to the minimum SWR in the customer selected portion of the 80 meter band without affecting operation on the other, higher frequency bands. The #12 AWG coil wire is tin-nickel plated for high power handling, corrosion resistance, ease of soldering and long term reliability.

Refer to the shelf hole layout drawing in Figure 1. There is one radial wire mounting hole used to mount the **DXE-SA80-AOK**. Remove the existing radial wire and hardware. Move the removed radial wire to the next radial mounting hole and connect it there (double up on one radial mounting hole). Mount the insulated coil mounting bracket to the "L" bracket on the coil assembly using the hex head bolt, two flat washers, star washer and Nyloc nut as shown in Figure 21.

![Figure 21](image1.png)

Install the coil assembly to the mounting shelf using the hex bolt, two flat washers, one external tooth washer and Nyloc hex nut as shown in Figure 22.

![Figure 22](image2.png)

The wire with ring terminals goes from the end of the coil to the MatchBoxx™ "ANT" connection as shown in Figure 23.

![Figure 23](image3.png)
The end of the 45 foot vertical antenna element is routed through previously mounted insulator to the coil insulator. The wire then goes through the large hole on the coil insulated bracket to the end of the coil (end where the "L" bracket is attached) as shown in Figure 24.

![45 Ft. Vertical Wire Element](image)

**Figure 24**

**Tuning the DXE-SA80-AOK**

The coil is shipped with the tap set at the third turn in the coil. This setting should be the correct position for most installations. Perform on-air tuning in the 80 meter band. Adjustments to the coil tap may be made by moving the tap one turn at a time, and the re-test the tuning. Once a satisfactory (low SWR, easy to tune) setting is made, the coil tap may be soldered in place on the coil. Soldering the tap in place on the coil will ensure that over time, the coil setting will remain solid and environmental issues (dust, dirt, dirty air) will not affect the setting.

**Optional Items**

**DXE-SA80-AOK - 80 Meter Coil Add-On Kit**
The 80 meter coil add-on kit is custom designed for use with the DXE-ATSA antenna system. In some ATSA antenna installations with excellent radial systems, achieving the best SWR on a vertical element for 80 or 40 meters may be difficult without some means of adjusting feedpoint impedance. The DXE-SA80-AOK allows easy adjustment for lowest SWR. The DXE-SA80-AOK will aid in tuning a low impedance antenna to the minimum SWR in the customer selected portion of the 80 meter band without affecting operation on the other, higher frequency bands. The #12 AWG coil wire is tin-nickel plated for high power handling, corrosion resistance, ease of soldering and long term reliability.

**DXE-PSW-12D1A - AC Adapter 12 VDC/1000 mA**
The DXE-PSW-12D1A is an AC Wall Transformer Adapter to furnish 12 Volts DC at 1000 mA from 110 Vac 60 Hz input, fused output. It features a standard 2.1 mm plug connection for 12 Vdc. Outer connection is GROUND Center Pin is input for +12 VDC. Ideal separate power source for the Remote Antenna Tuner Kit.
UMI-81343 - Anti-Seize, 1 oz. Squeeze Tube
1 oz squeeze tube of Anti-Seize. Protects metal parts against rust, corrosion, and seizure Particularly effective on stainless steel bolts and nuts which have a high likelihood of seizure.
- Squeeze tube
- Lubricant and sealant
This part is classified hazardous and is limited to domestic UPS Ground shipping only

SYN-DBR-94-100  3/32 in. Diameter, Dbl-Braid Dacron/Polyester Rope, 100 ft. Roll
Synthetic Textile Industries Double-braided Dacron/Polyester ropes are not weakened by decay or mildew and provide excellent resistance to abrasion. The color sealed black polyester yarn used in the braided jacket also protects the cord from damage due to ultra-violet light.
- 100’ spool
- 3/32” diameter rope
- Double-braided Dacron/Polyester rope
- Excellent resistance to abrasion
- NOT weakened by decay or mildew
- UV-Resistant
- Rated for a load of 260 lbs

DXE-SSVC-1PG  Stainless Steel V-Clamp w/ground lug, 1/2” to 3/4” pipe -
This V-Saddle is made in one size that fits steel tubing, pipe or rod from 1/2 to 3/4” OD as used in antenna construction. The supplied U-bolt is long enough to attach tubing to thick plates and is made with anti-corrosive properties. It is the same as the DXE-SSVC-1P except for the tab with hole for a 1/4” bolt for grounding purposes. A 1/4” stainless steel hex bolt and hardware are included. The special Stainless Steel saddle has serrated teeth that will clamp to the pipe securely by biting into the surface. For this reason, it is not recommended for softer aluminum tubing or pipe.
- Used to clamp 1/2” to 3/4” (OD) steel tubing, pipe or rod
- Designed for attachments that don't require resistance to torque
- U-bolt and V-saddle made from high-strength 18-8* stainless steel
The use of an anti-seize compound is HIGHLY recommended to achieve proper torque and prevent galling.

DXE-TCB05-RT01  Braid Tinned Copper 1/2” wide #10 ring terminals 1 ft
Ideal for point-to-point connections, this 1/2” wide tinned braided copper strap is one foot long with a #10 ring terminal on each end.

SUM-900031 - Automatic Wire Stripper/Crimper/Cutter, 24-10 Ga.
Our wire stripper uses a spring-loaded design to make quick work of wires ranging from 24 to 10 gauge. Just insert the wire, squeeze the handle, and listen for the click. That’s the sound of another perfect wire stripping job performed in about 2 seconds- a fraction of the time it takes your pocket knife to do the same job. An adjustable wire length guide helps you make uniform strips, and a built-in wire cutter and crimper helps you complete your wiring job.
- Spring-loaded design
- Strips wires ranging from 24 to 10 gauge
- built-in wire cutter and crimper

TRM-06132 - Scotch Super 33+ Vinyl Electrical Tape
Scotch® Super 33+ is highly conformable and super stretchy in all weather applications. This tape provides flexibility and easy handling for all around performance. It combines PVC backing with excellent electrical insulating properties to provide primary electrical insulation for splices up to 600V and protective jacketing. Recommended as a protective overwrap for DXE-3M2155 rubber splicing tape in RF connector weatherproofing.
**DXE-3M21553M - Temflex™ 2155 Rubber Splicing Tape**

3M Temflex™ 2155 Rubber Splicing Tape is a conformable self-fusing rubber electrical insulating tape. It is designed for low voltage electrical insulating and moisture sealing applications. For outdoor use, it should be protected from UV deterioration with an overwrap of TRM-06132 Vinyl Electrical Tape.

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**Technical Support**

If you have questions about this product, 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

For best service, please take a few minutes to review this manual before you call.

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**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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