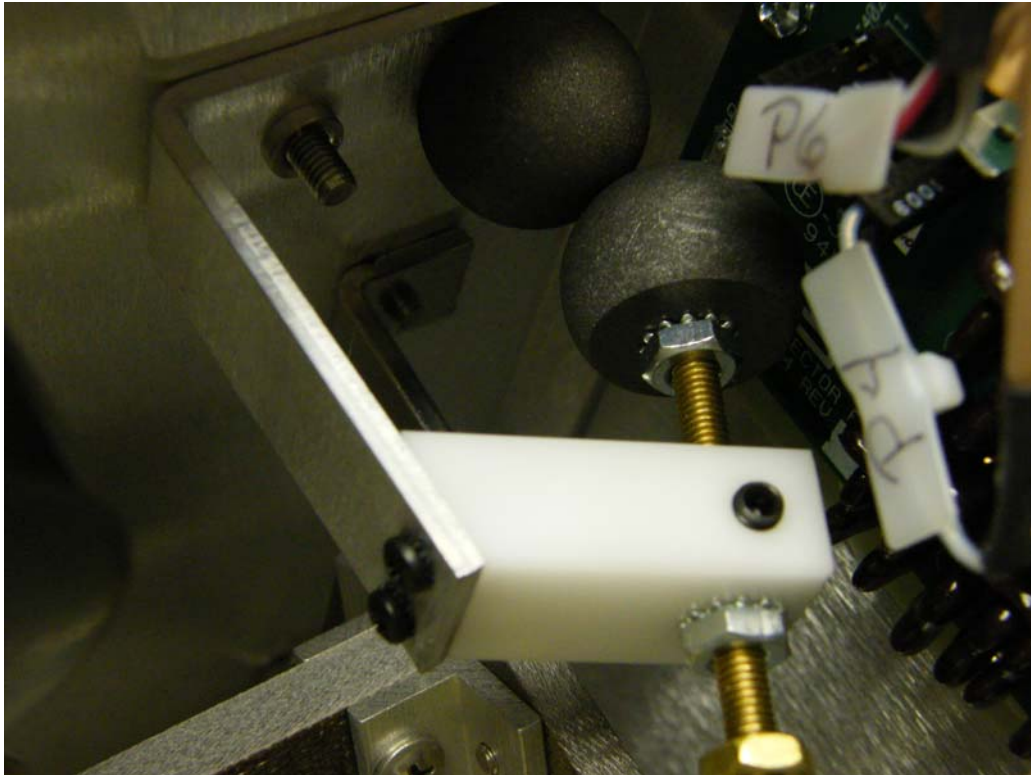




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AM SPARK GAP RETROFIT Application Guide

597-8888
8-5-11
REV B

**Carbon Ball Spark Gap replacing Glass Tube Spark Gap
in AM500A/AM1A and AM2.5E/AM5E/AM6A/AM10A
597-8888 AM SPARK GAP RETROFIT
Application Guide**

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1 Carbon Ball Spark Gap replacing Glass Tube Spark Gap in AM500A/AM1A and AM2.5E/AM5E/AM6A/AM10A

1.1 Overview

This application guide is for replacing the glass tube spark gap with a carbon ball spark gap in the AM500A, AM1A, AM2.5E, AM5E, AM6A or AM10A. Broadcast Electronics stopped using the glass tube spark gaps in 2011.

Warning: The replacement carbon ball spark gap may be susceptible to extraneous elements; to ensure proper operation please ensure that foreign material (dust, insects, etc) and environmental conditions (condensing humidity) are removed from the transmitter environment. Note: The previous version of spark gap was vacuum sealed.

Kit Number	Product	Old Spark Gap #	New Gap	Pin Gage #
977-8888-001	AM500A/AM1A	140-0034 (AM500A) or 140-0020 (AM1A)	.020"	300-8888-020
977-8888-002	AM2.5E	140-0031	.030"	300-8888-030
977-8888-003	AM5E/AM6A	140-0024	.050"	300-8888-050
977-8888-004	AM10A	140-0022	.060"	300-8888-060

2 Upgrade Preparation

2.1 Overview / Estimated Completion Time For Retrofit

These kits contain the necessary items to replace the glass tube spark gap in the AM500A/AM1A/AM2.5E/AM5E/AM6A/AM10A.

It will take approximately 150 minutes to complete the installation.



2.2 Items / Tools required for the Retrofit Process

- ☐ 7/32" (.218" dia.) Drillbit
- ☐ Right Angle Drill, AM2.5E/AM5E/AM6A/AM10A
(total length of drillbit and drill under 10")
- ☐ Regular Power Drill, AM500A/AM1A
- ☐ 3/32" Hex Key
- ☐ 7/16" Wrench or Nutdriver
- ☐ Two 3/8" Wrenches
- ☐ No. 1 Phillips Screwdriver
- ☐ No. 1 Phillips Torque Screwdriver capable of measuring 4 IN LBS
- ☐ 977-8888-001 KIT, SPARK GAP RETROFIT, AM500A/AM1A or
977-8888-002 KIT, SPARK GAP RETROFIT, AM2.5E or
977-8888-003 KIT, SPARK GAP RETROFIT, AM5E/AM6A or
977-8888-004 KIT, SPARK GAP RETROFIT, AM10A
- ☐ 420-0110, (Qty 2) SCREW, #10-32 X 5/8"
- ☐ 420-0496, (Qty 1) SET SCREW, #10-32 X 3/8"
- ☐ 421-0102, (Qty 2) NUT, KEP, #10-32
- ☐ 421-0801, (Qty 3) NUT, BRASS, #10-32
- ☐ 423-0002, (Qty 2) SPLIT LOCK WASHER, #10
- ☐ 423-0007, (Qty 2) INTERNAL TOOTH WASHER, #10 BRONZE
- ☐ 459-0189, (Qty 2) BALL, SPARK GAP
- ☐ 459-0191, (Qty 1) BLOCK, SPARK GAP
- ☐ 459-0192, (Qty 1) THREADED SHAFT, SPARK GAP
- ☐ 471-5494, (Qty 1) SUPPORT, SPARK GAP
- ☐ 500-211, (Qty 2) SEM SCREW, #4-40 X 3/8"
- ☐ 300-8888-020 PIN GAGE, .020" DIA. for AM500A/AM1A or
300-8888-XXX PIN GAGE, .XXX" DIA. for AM2.5E or
300-8888-050 PIN GAGE, .050" DIA. for AM5E/AM6A or
300-8888-XXX PIN GAGE, .XXX" DIA. for AM10A

2.3 Carbon Ball Spark Gap Assembly





421-0102

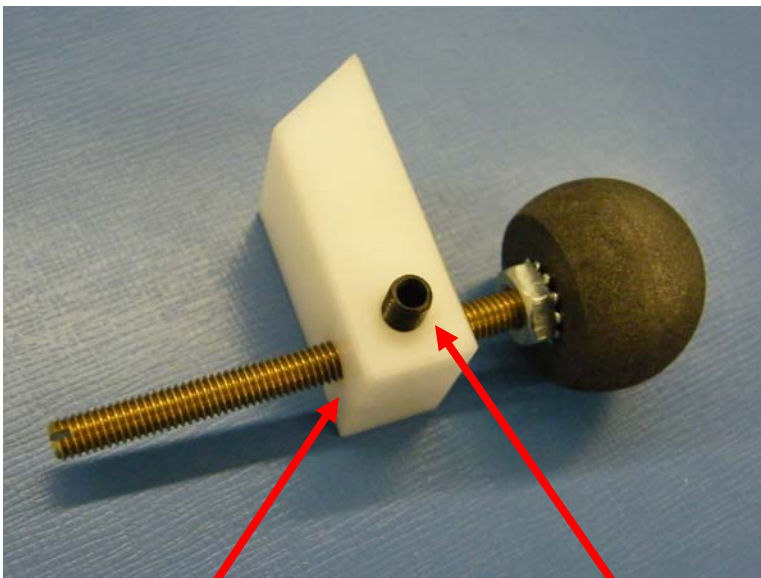
459-0192



CAREFULLY screw shaft into 459-0189 until it bottoms. Make sure that the screw is square with the flat on the ball when you first engage threads. The first few threads are very delicate and can be easily broken if the screw is cross-threaded.

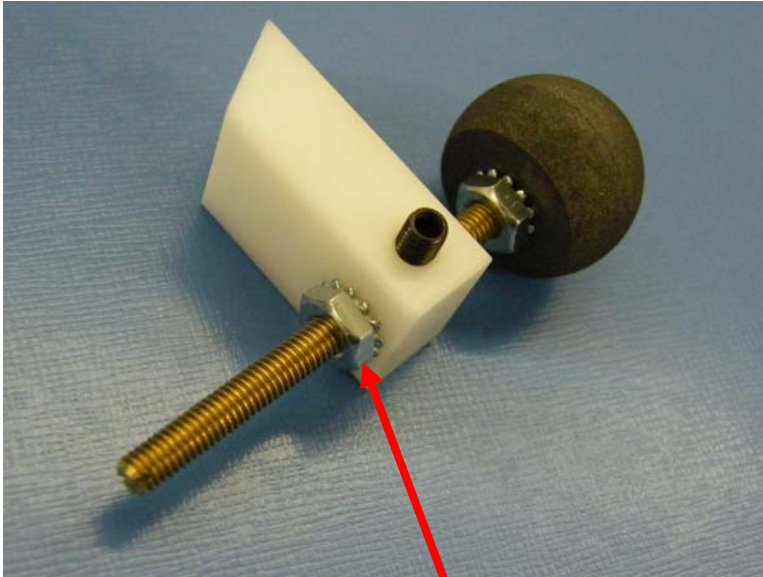


CAREFULLY tighten nut while holding shaft with small flat blade screwdriver to keep it from turning. This is to secure the ball.

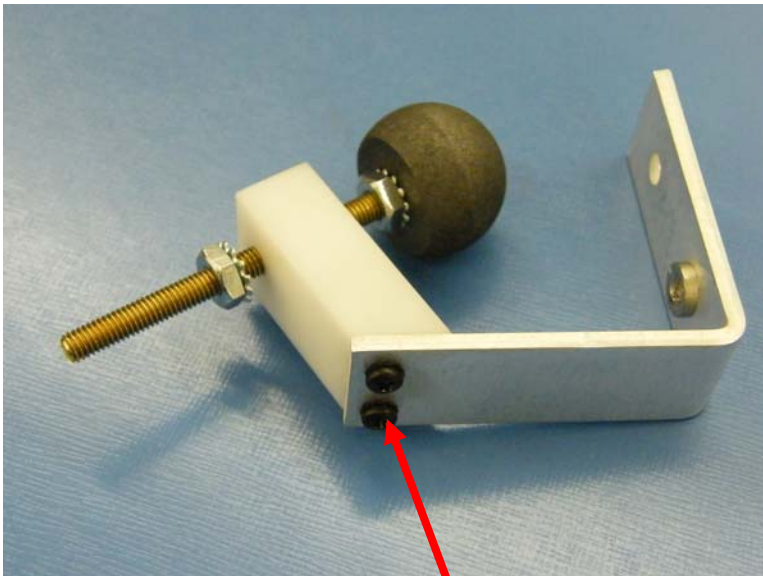


Insert 420-0496.
Do not tighten until later.

Screw assembly into 459-0191 as shown.



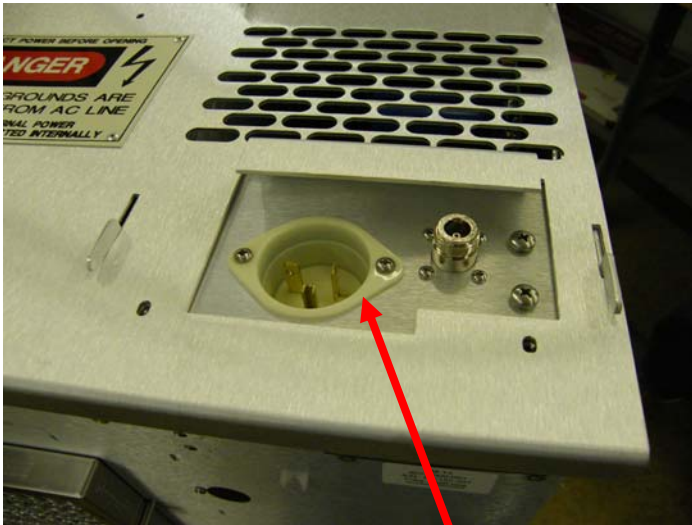
**Add 421-0102.
Do not tighten
until later.**



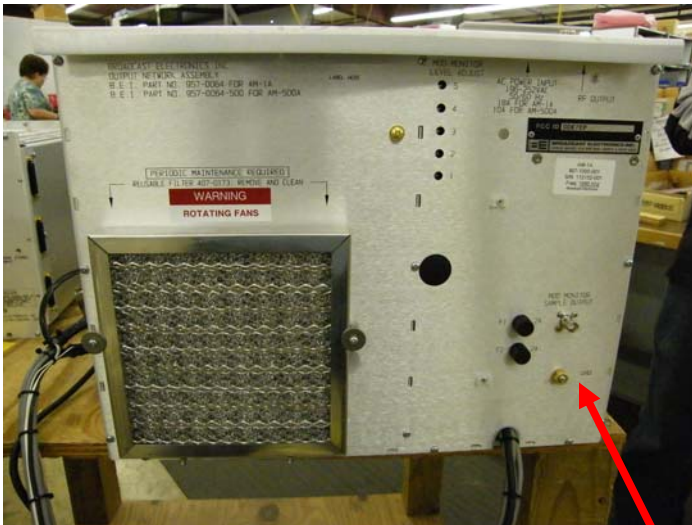
Mount 471-5494 with (2)500-211.

2.4 Installation for AM500A/AM1A (For AM2.5E/AM5E/AM6A/AM10A skip to page 17)

Disconnect power to transmitter.



Disconnect power and RF output.



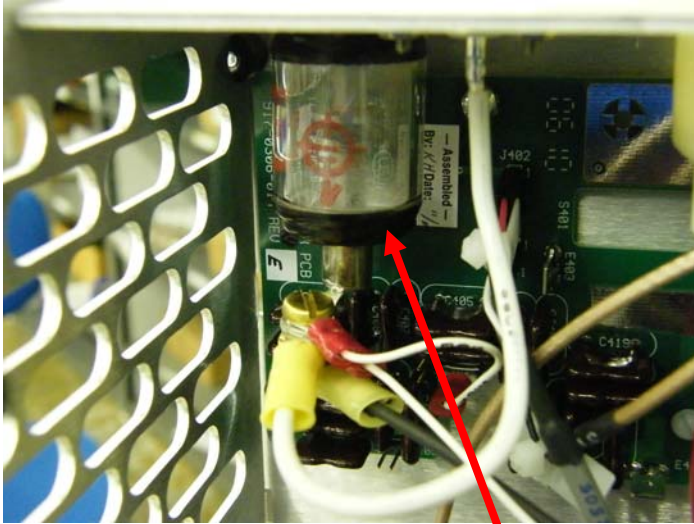
Disconnect sample and ground.



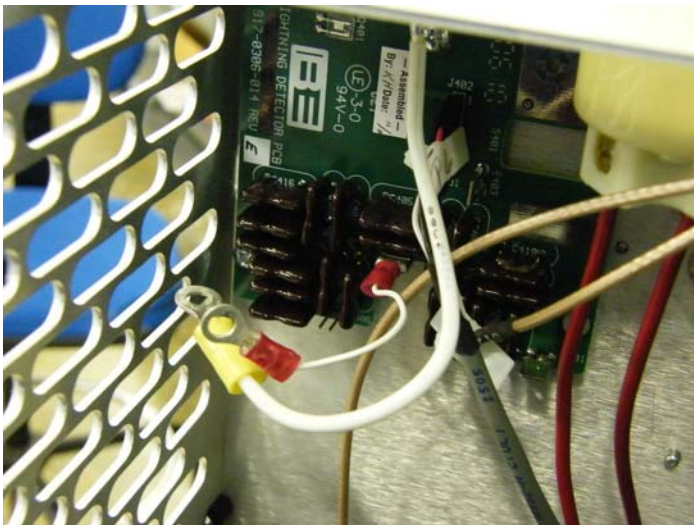
Remove output network box from rack if necessary.



**Remove screws and save.
Remove cover and save.**

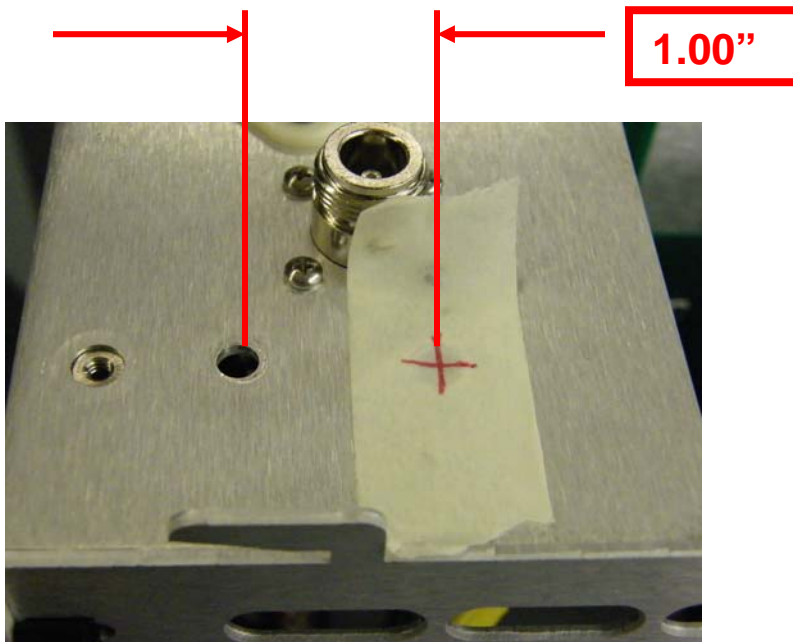


Your glass tube spark gap should look like this.

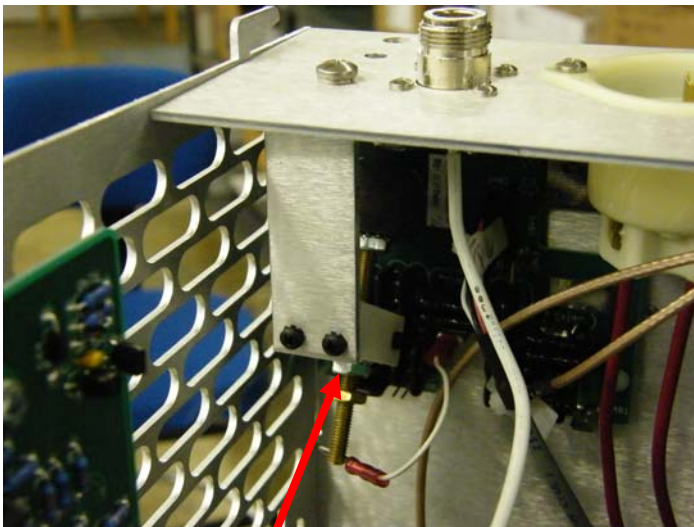


Use 3/8" wrench and Phillips screwdriver to remove hardware attaching wires to cap of glass tube spark gap.

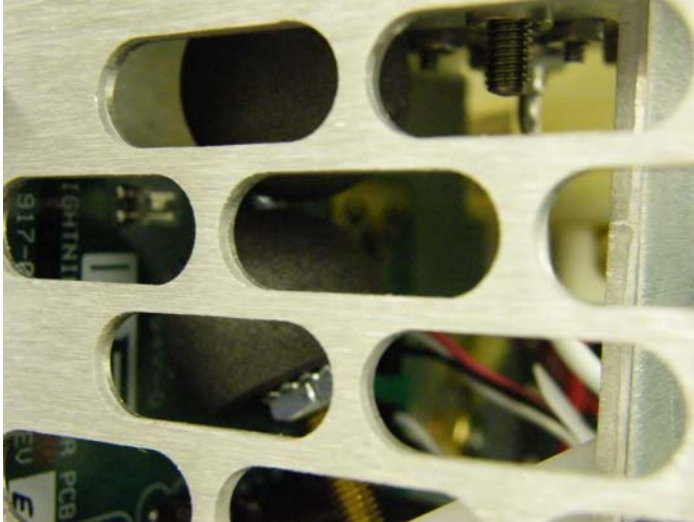
**Use 3/8" wrench or nutdriver to remove hardware attaching glass tube spark gap to top.
Note that this is done from above.**



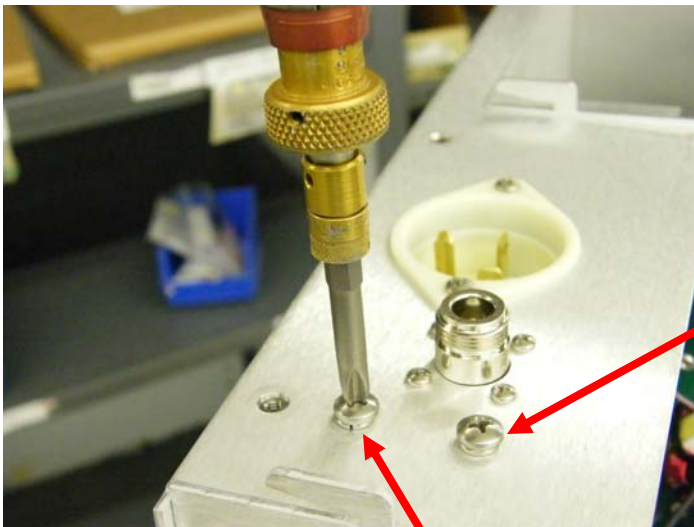
Measure and mark 1.00" forward of the existing spark gap hole. Drill and deburr a 7/32" (.218" dia.) hole.



**Mount assembly with 420-0110 and 423-0002.
Note location and orientation. Leave loose for now.**



CAREFULLY mount another 459-0189 with 420-0110 and 423-0002 through the other holes in 471-5494 and rear panel. Make sure that the screw is square with the flat on the ball when you first engage threads. The first few threads are very delicate and can be easily broken if the screw is cross-threaded. Do not tighten yet.



Torque to 30 IN LBS

**Torque to 4 IN LBS
Excessive torque will
break carbon spark ball.**

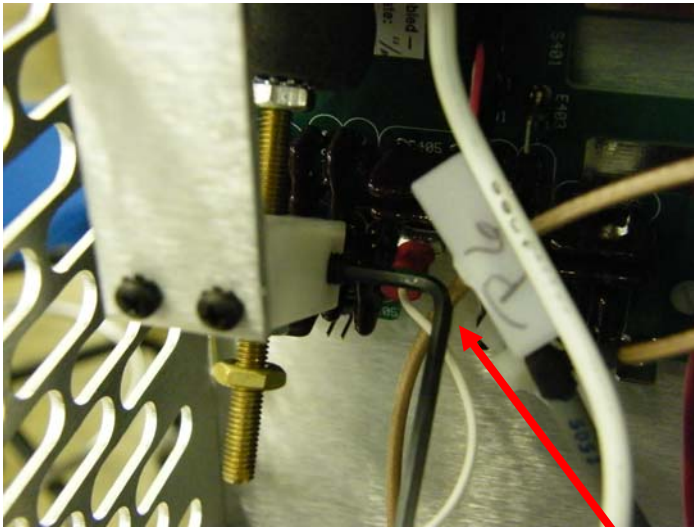


Adjust gap by screwing shaft in block until pin gage passes through with very little resistance.

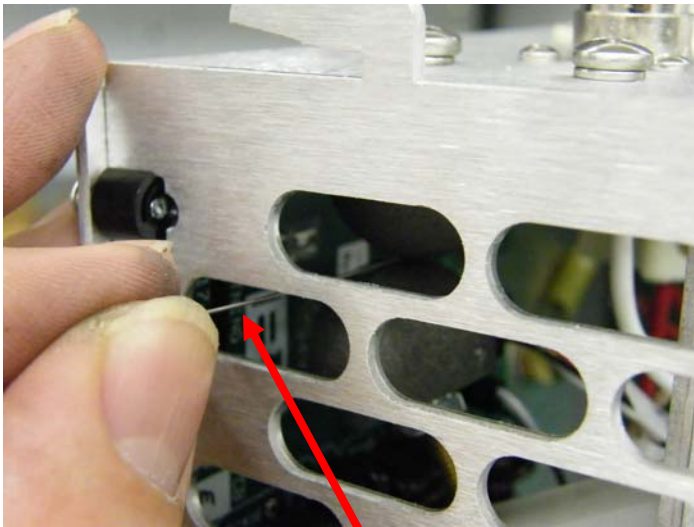
**Use 300-8888-020 PIN GAGE, .020" DIA. for AM500A/AM1A or
300-8888-030 PIN GAGE, .030" DIA. for AM2.5E or
300-8888-050 PIN GAGE, .050" DIA. for AM5E/AM6A or
300-8888-060 PIN GAGE, .060" DIA. for AM10A.**



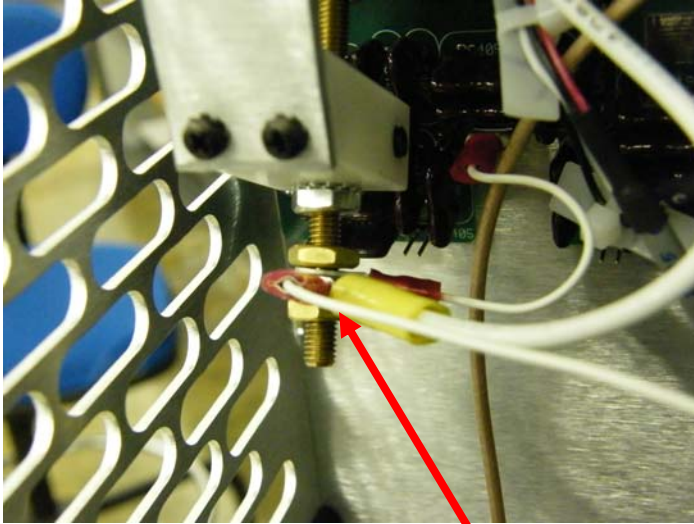
**Tighten nut with 3/8" wrench
while holding ball to keep it from turning.**



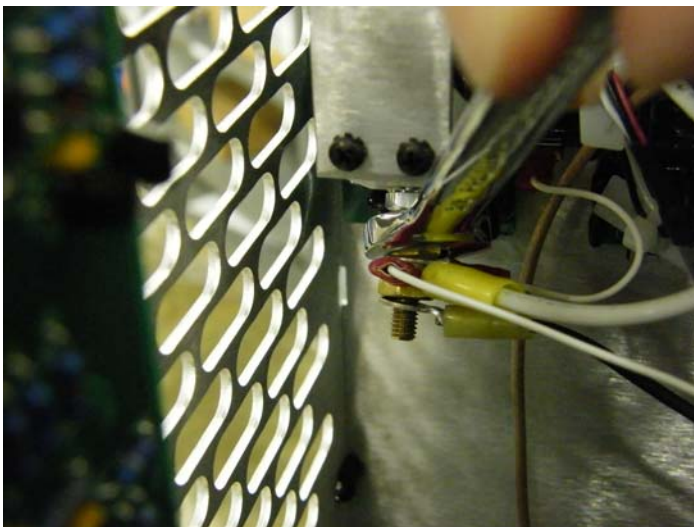
**Tighten set screw with
3/32" hex key.**

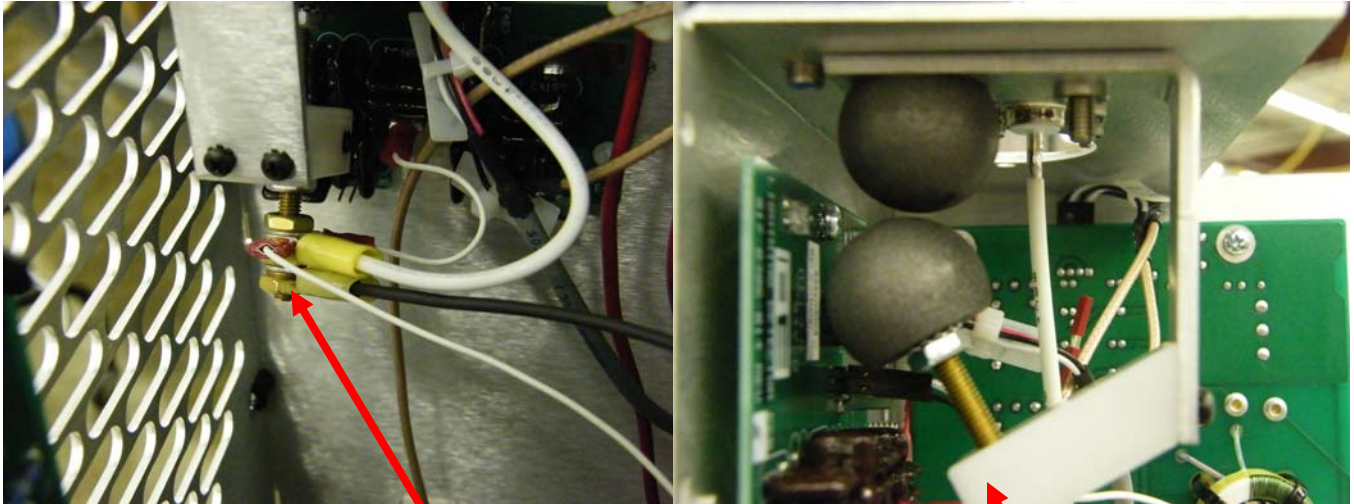


**Check gap and
adjust if necessary.**



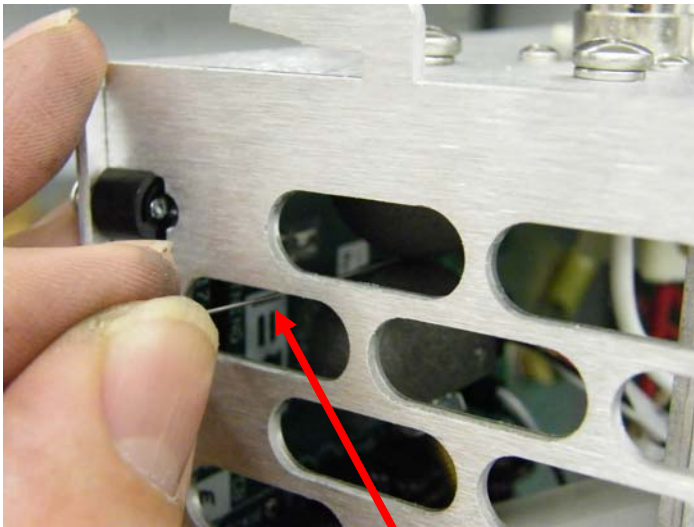
Mount wire 305, wire 306 and wire 301 between 421-0801 and 423-0007. Last, screw on another 421-0801 and tighten with 3/8" wrench while holding the first nut with another 3/8" wrench to keep it from turning. Do not let the first nut touch the steel nut that is up against the block and do not let shaft turn.





Mount black wire from coil L3 with 421-0801 and 423-0007. Tighten with 3/8" wrench while holding the first nut with another 3/8" wrench to keep it from turning. Do not let shaft turn.

This is how it looks with the side panel off.



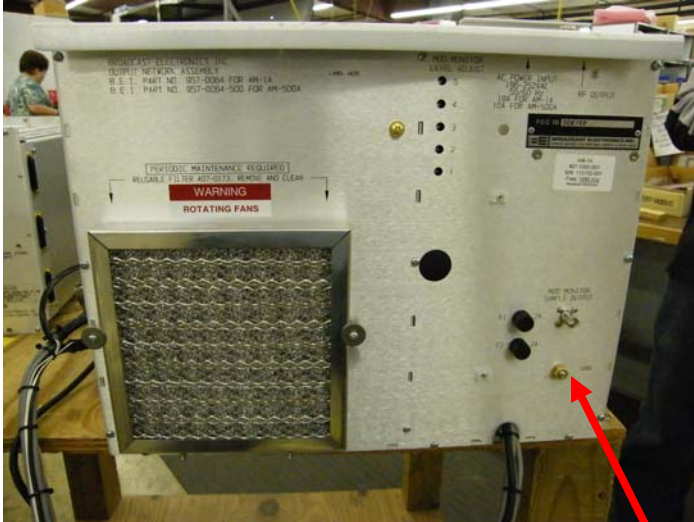
Check gap and adjust if necessary.



**Replace cover from page 7.
Replace screws from page 7.**



Install output network box in rack if necessary.



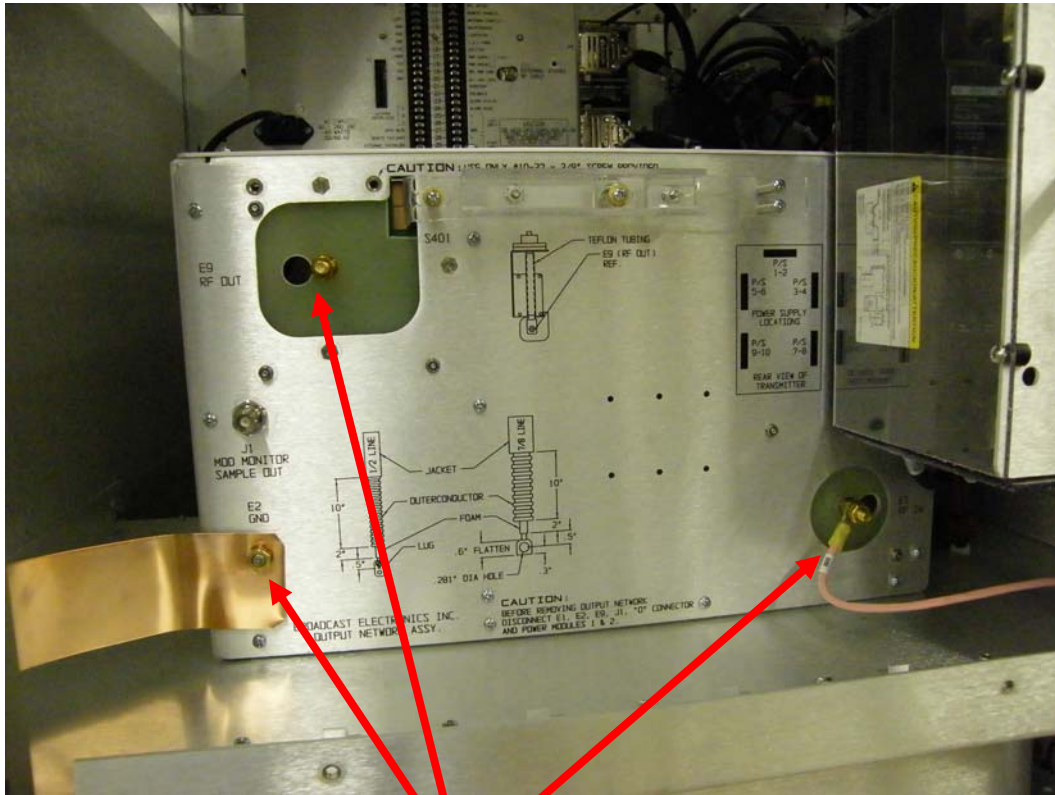
Reconnect sample and ground.



**Reconnect power and RF output.
You are done with the retrofit of
your AM500A or AM1A.**

2.5 Installation for AM2.5E/AM5E/AM6A/AM10A

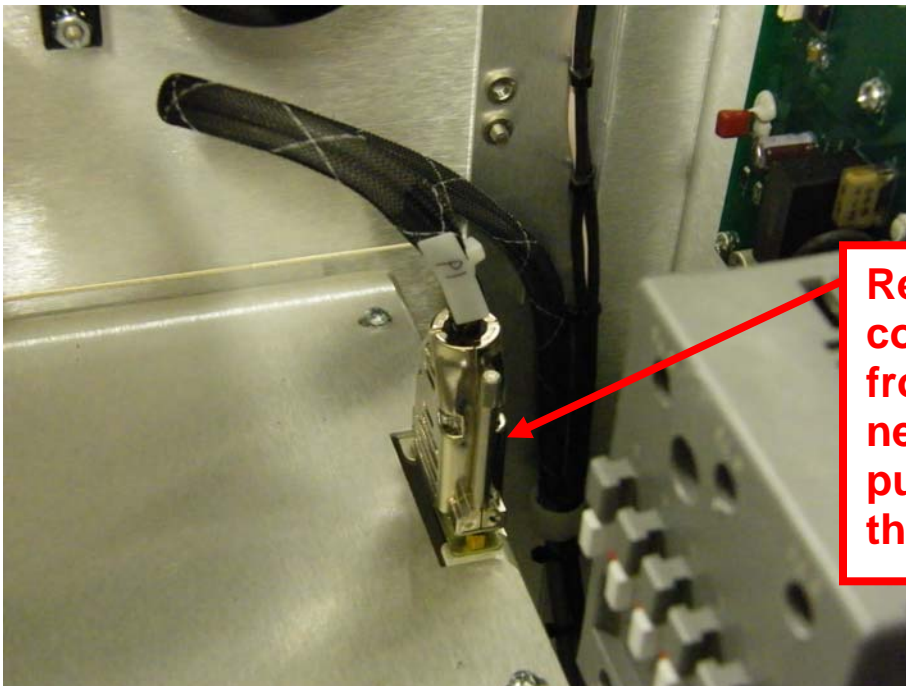
Disconnect power to transmitter.



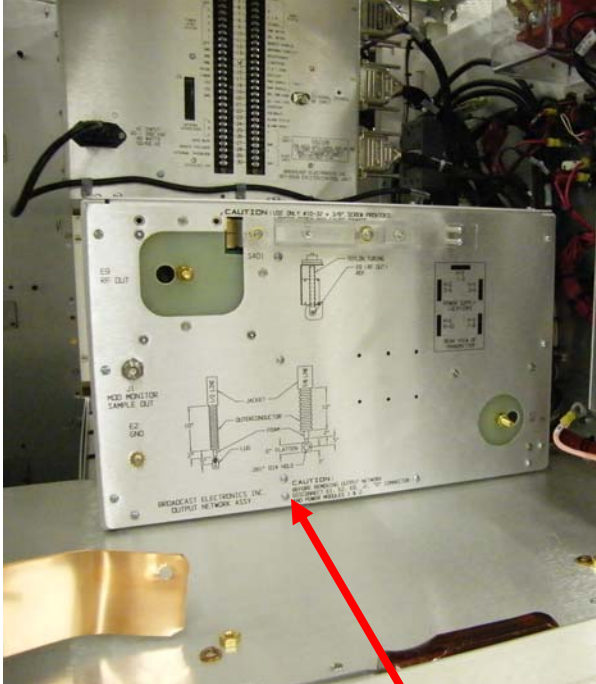
Use 7/16" wrench or nut driver to remove ground strap, RF input wire and RF output line (not shown). Save hardware.



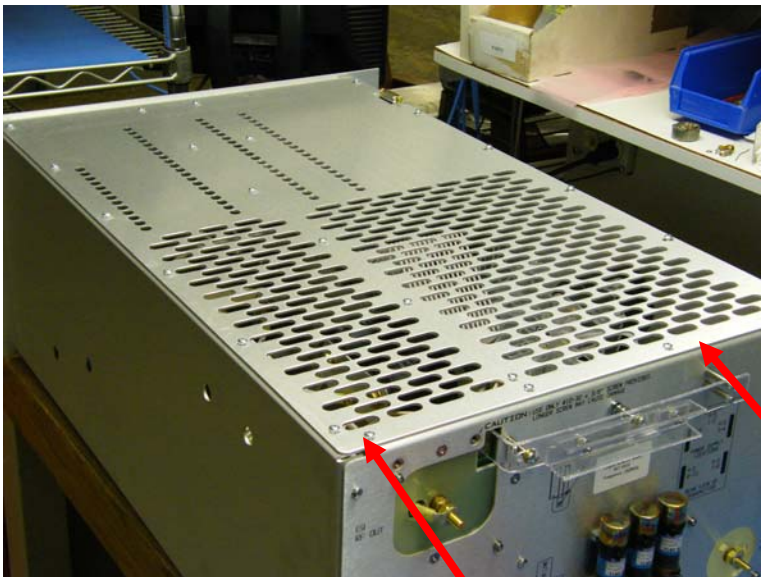
Remove and save the four screws on the front of the output network.



Remove "D" connector at front of output network and push cable out of the way.

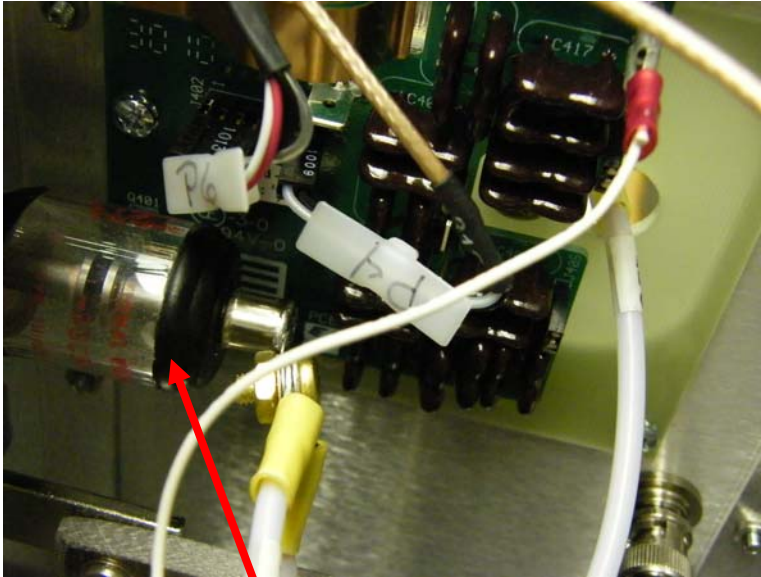


Remove output network.

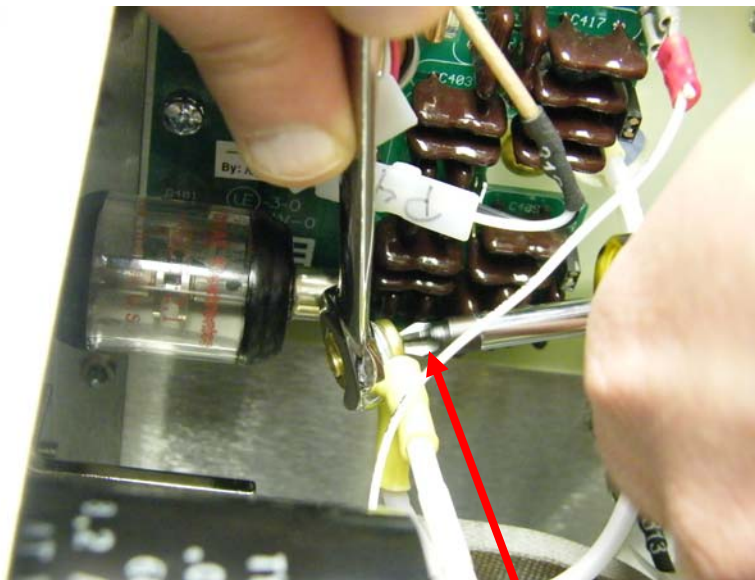


Remove and save top cover.

Remove and save all screws holding down cover.



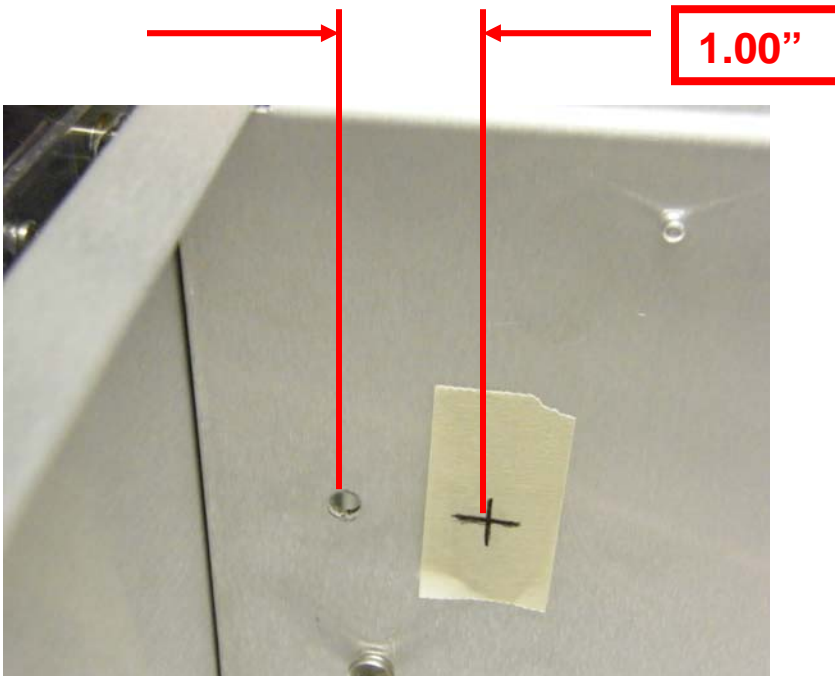
Your glass tube spark gap should look like this.



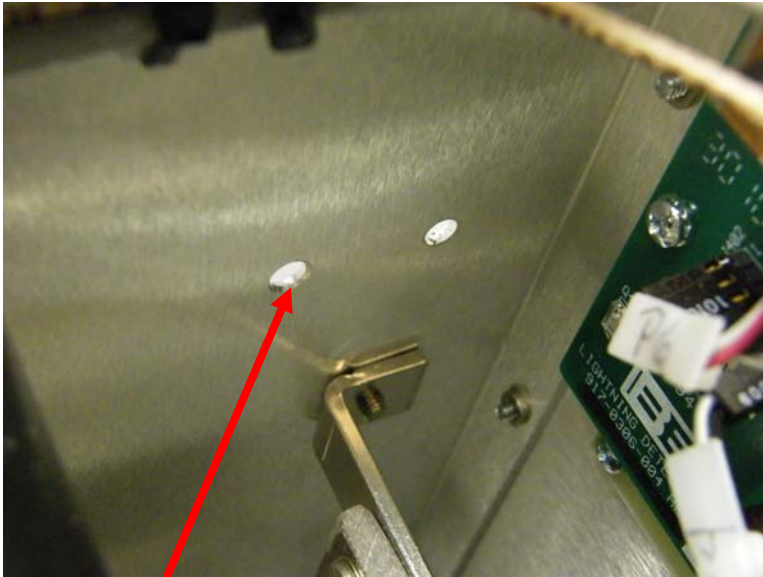
Use 3/8" wrench and Phillips screwdriver to remove hardware attaching wires to cap of glass tube spark gap.



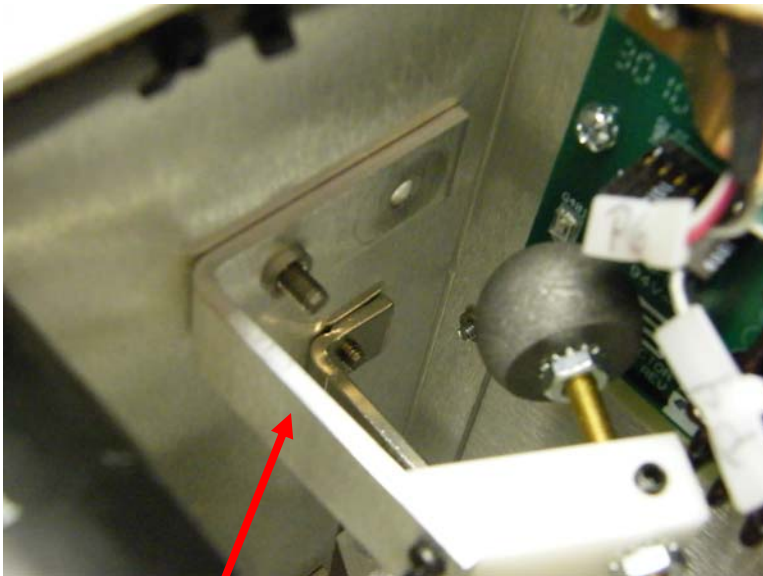
**Use 3/8" wrench or nutdriver to remove hardware attaching glass tube spark gap to partition.
Note that this is done from the other side of the partition.**



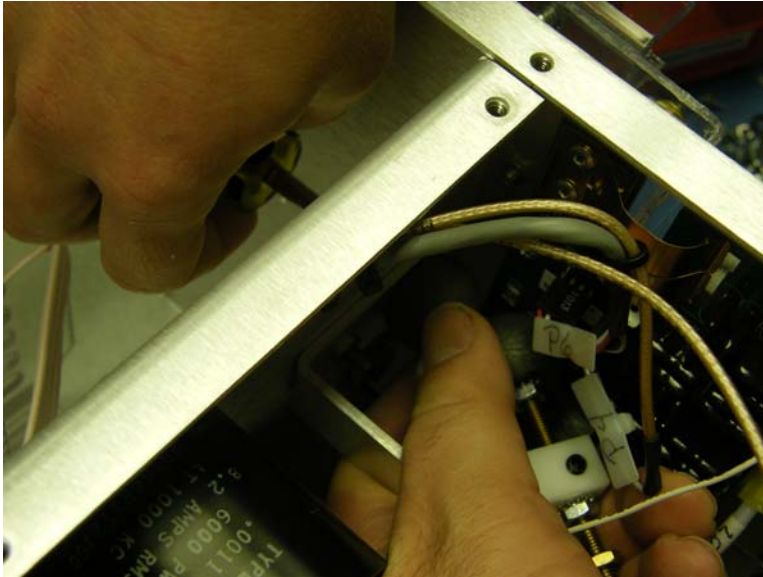
Measure and mark 1.00" forward of the existing spark gap hole. Drill and deburr a 7/32" (.218" dia.) hole. There is 10" of space total for the drill and drillbit.



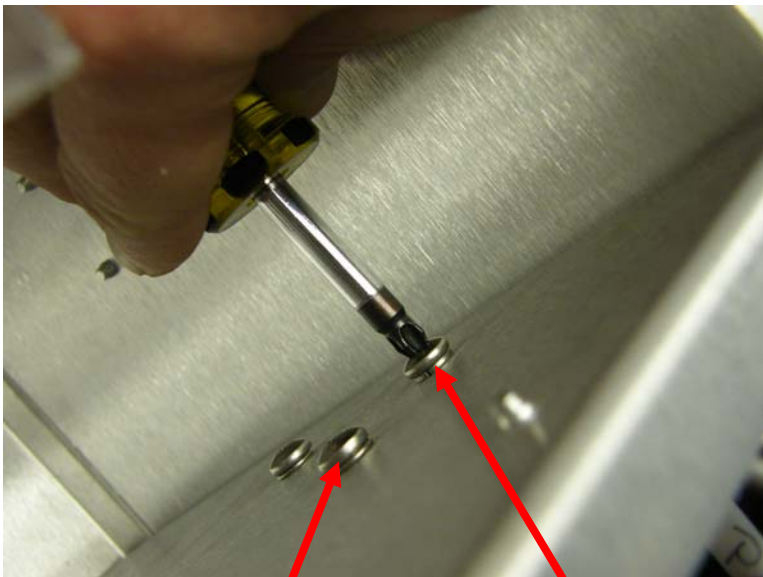
New hole.



**Mount assembly with 420-0110 and 423-0002.
Note location and orientation. Leave loose for now.**

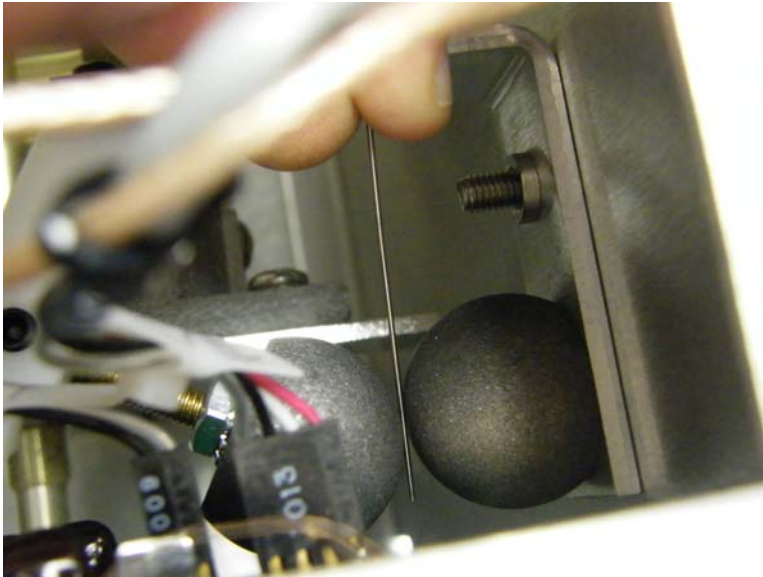


CAREFULLY mount another 459-0189 with 420-0110 and 423-0002 through the other holes in 471-5494 and partition. Make sure that the screw is square with the flat on the ball when you first engage threads. The first few threads are very delicate and can be easily broken if the screw is cross-threaded. Do not tighten yet.



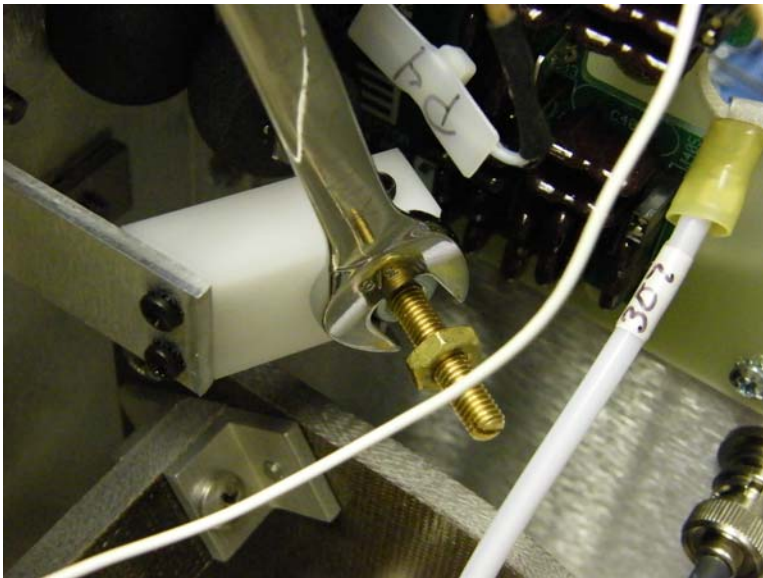
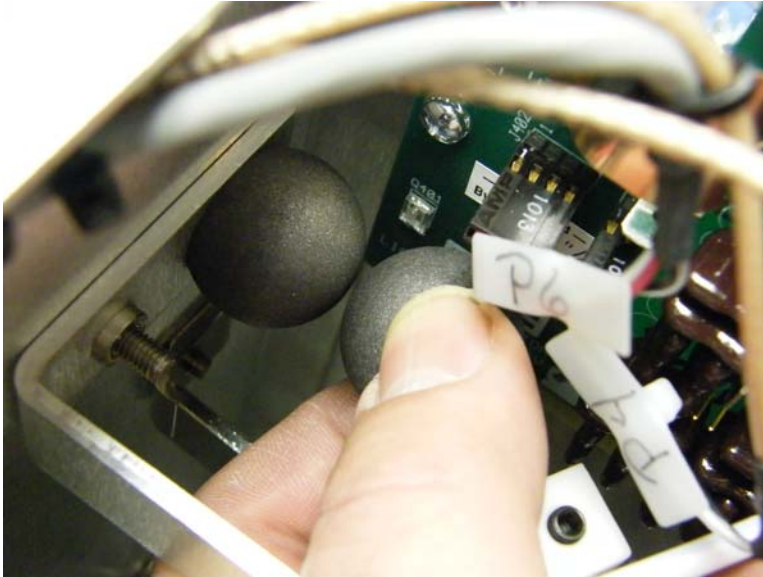
Torque to 30 IN LBS

**Torque to 4 IN LBS
Excessive torque will
break carbon spark ball.**

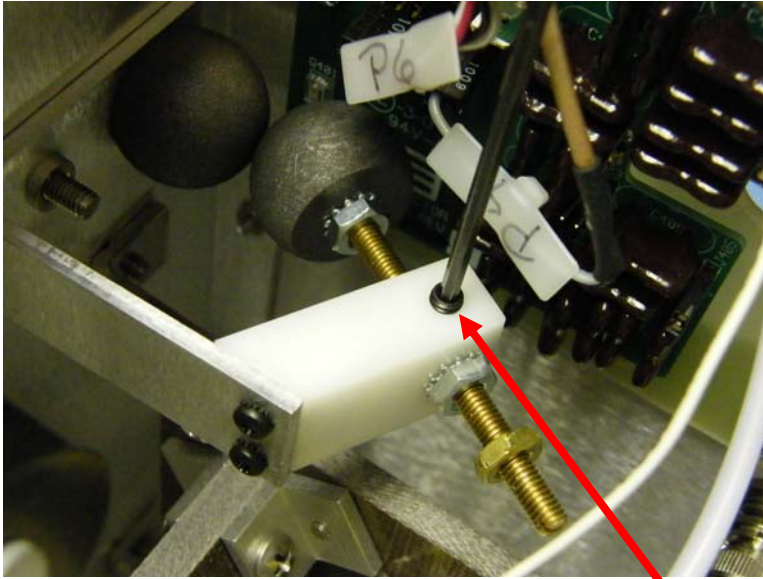


Adjust gap by screwing shaft in block until pin gage passes through with very little resistance.

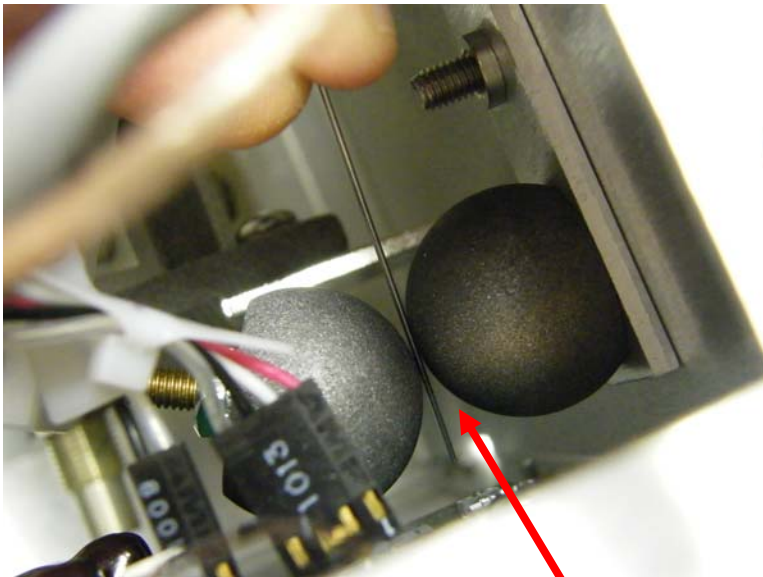
**Use 300-8888-020 PIN GAGE, .020" DIA. for AM500A/AM1A or
300-8888-030 PIN GAGE, .030" DIA. for AM2.5E or
300-8888-050 PIN GAGE, .050" DIA. for AM5E/AM6A or
300-8888-060 PIN GAGE, .060" DIA. for AM10A.**



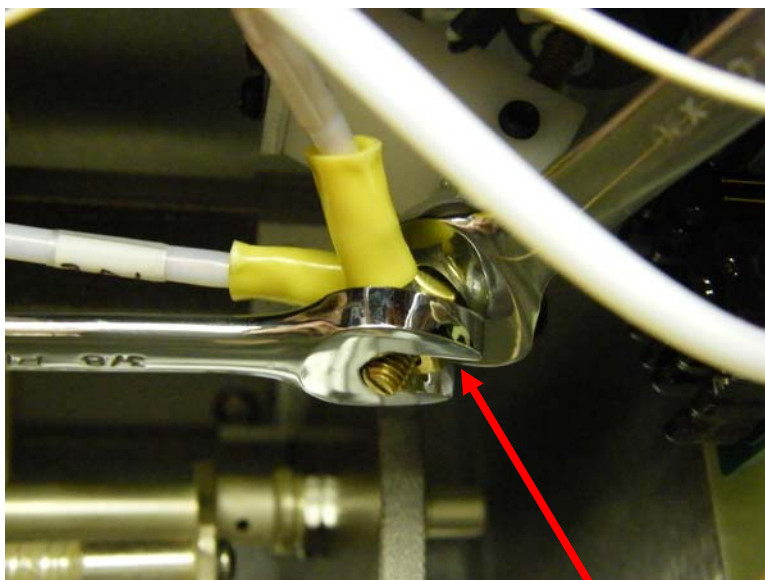
**Tighten nut with 3/8" wrench
while holding ball to keep it from turning.**



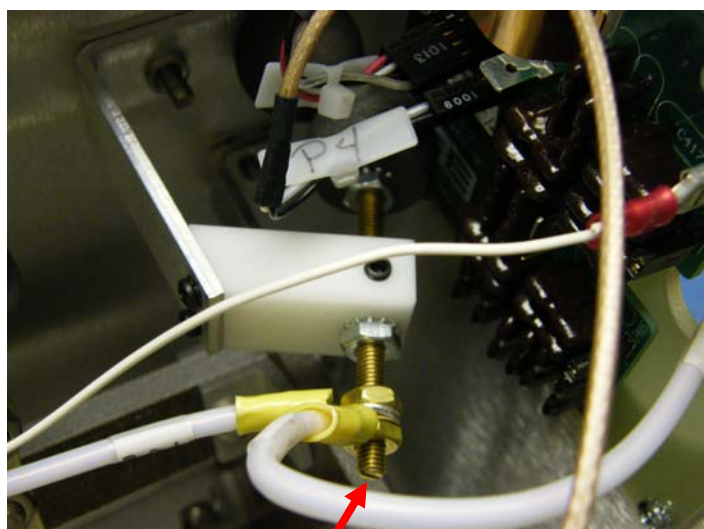
**Tighten set screw with
3/32" hex key.**



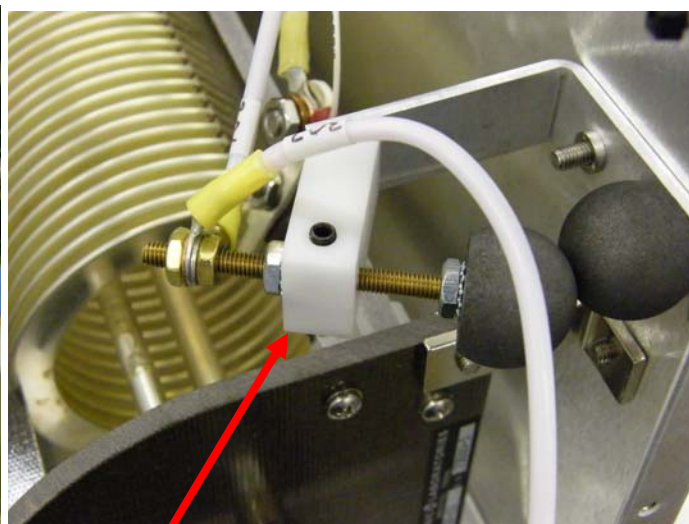
**Check gap and
adjust if necessary.**



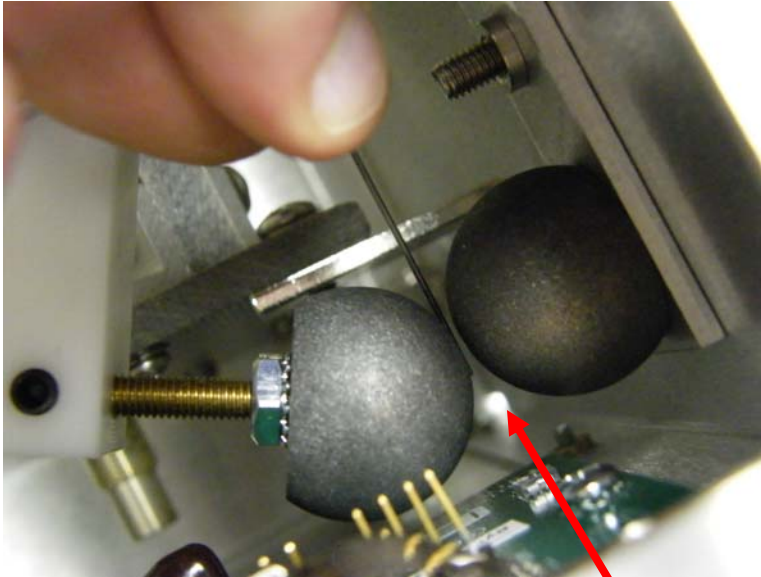
Mount wire 306 and wire 307 between 421-0801 and 423-0007. Last, screw on another 421-0801 and tighten with 3/8" wrench while holding the first nut with another 3/8" wrench to keep it from turning. Do not let the first nut touch the steel nut that is up against the block and do not let shaft turn.



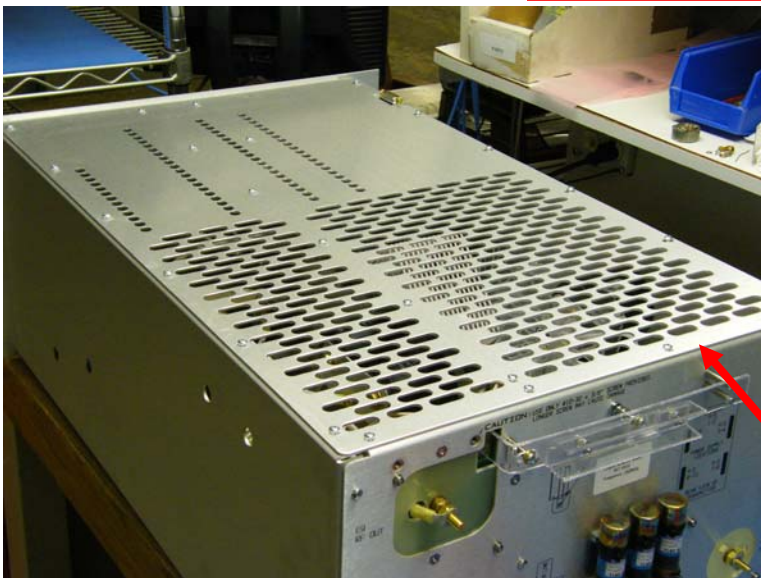
It should look like this.



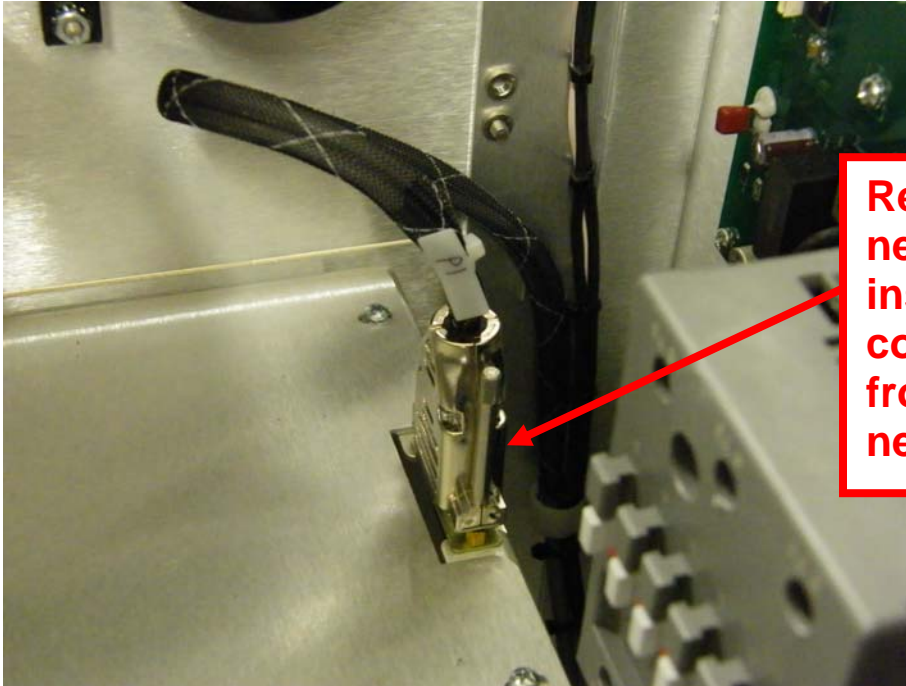
This is how it looks with the rear panel off.



Check gap one last time and adjust if necessary.



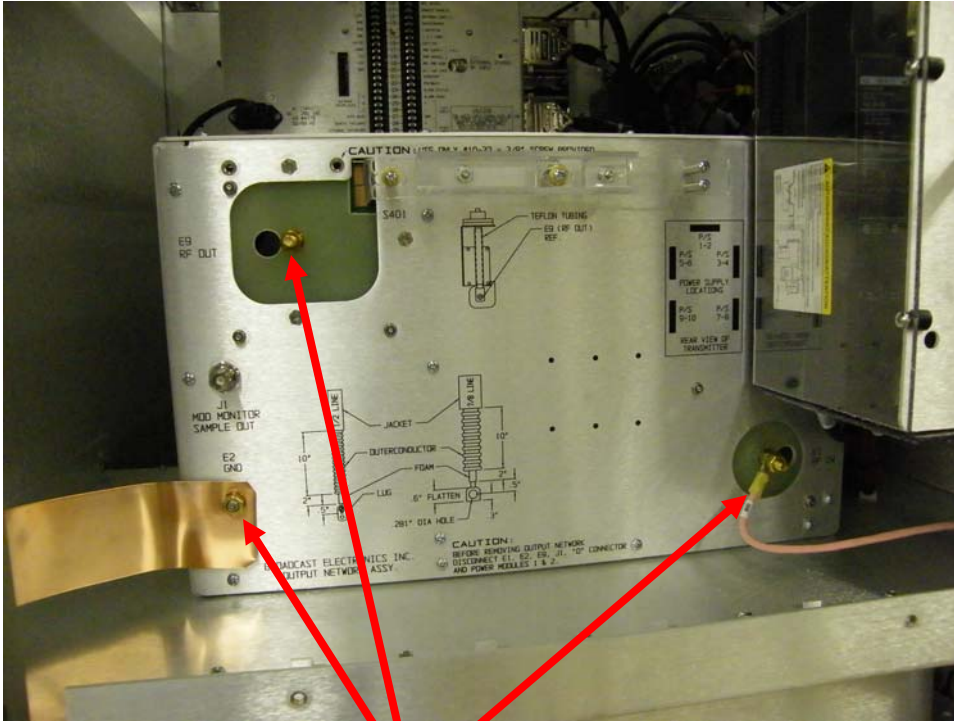
Replace top cover with hardware saved from page 19.



Replace output network and install "D" connector at front of output network.



Replace screws saved from page 18.



Use 7/16" wrench or nut driver to securely install ground strap, RF input wire and RF output line (not shown). Use hardware saved from page 17. You are done with the retrofit of your AM2.5E, AM5E, AM6A, or AM10A.

3 RF Technical Services Contact Information

RF Technical Services -

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