StepIR™

Dream Beam 11
Assembly Manual

2112 116TH AVE NE SUITE 1-5, BELLEVUE WA, 98004 **WWW.STEPPIR.COM** TEL: (425)-453-1910 FAX: (425)-462-4415

We would like to say thank you for purchasing a SteppIR product! We greatly appreciate your business and look forward to a long and positive rlationship.

Sincerely,

The SteppIR Team

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STEPPIR ANTENNAS LIMITED PRODUCT WARRANTY

Our products have a limited warranty against manufacturers defects in materials or construction for two (2) years from date of shipment. Do not modify this product or change physical construction without the written consent of Fluidmotion Inc, dba SteppIR Antennas.

This limited warranty is automatically void if the following occurs: improper installation, unauthorized modification and physical abuse, or damage from severe weather that is beyond the product design specifications.

SteppIR Antenna's responsibility is strictly limited to repair or replacement of defective components, at SteppIR Antennas discretion. SteppIR Antennas will not be held responsible for any installation or removal costs, costs of any ancillary equipment damage or any other costs incurred as a result of the failure of our products.

In the event of a product failure, a return authorization is required for warranty repairs. This can be obtained at www.steppir.com. Shipping instructions will be issued to the buyer for defective components, and shipping charges to the factory will be paid for by the buyer. SteppIR will pay for standard shipping back to the buyer. The manufacturer assumes no further liability beyond repair or replacement of the product.


DB11 YAGI
If it fits here, it will fit anywhere!
Small Size, Big Performance.
StepIR™
DREAM BEAM 11
WEIGHT - 63 lbs (28.57kg)
WIND LOAD - 5.9 sqft (0.54sqm)
TURNING RADIUS - 10.5ft (3.20m)
FREQUENCY COVERAGE - 13.9Mhz - 54 Mhz
OPTIONAL 40M DIPOLE AVAILABLE
BOOM LENGTH - 11 ft (3.35m)
LONGEST ELEMENT - 19 ft (5.79m)
POWER RATING - 3KW continuous
BAND ACTIVE ELEMENTS
40m* 1
20m 2
17m 3
15m 3
12m 3
10m 3
6m 3
*40m dipole available as an option and will have a reduced power rating on 40m only.
BS7H
W6RGG on Scarborough reef DXpedition.
2112 116TH AVE NE SUITE 1-5, BELLEVUE WA, 98004 WWW.STEPPIR.COM TEL: (425) 453-1910 FAX: (425) 462-4415
Picture is an artistic rendition to show scale and portability of antenna.

DB11 Yagi – Component Checklist 72-2011-01

Use this list to ensure that everything you ordered has been included in the shipment It is a good idea to mark the options you have purchased, for future reference.

MAIN ANTENNA BOX

☑	QTY	PART NUMBER	ITEM
	1	70-3401-01	20M Driven element (no lid) N-Type_____
	1	70-3407-01	DB11 Director element (no lid)
	1	70-3407-01	DB11 Reflector element (no lid)
	1	09128	SDA100 Controller must include dual relay PCB, DB11 firmware
		Marked on controller label	SDA100 OPTIONS: Interface (01321)_____ A.L.P. (01323)_____ Remote (01324)_____ Tuning Relay (01322)_____
	1		Power supply and cord 24 volt (09001)_____ 33 volt (09002)_____
	1	71-0010	SDA100 operators manual
	1		DB11 assembly manual
	1	72-0022-xx	Terminal strip kit (**Not included with connector box Option**)
	6	60-1006-21	Fernco rubber boot
	1	72-0050-11	DB11 Hardware kit, nuts and bolts
	1	72-0051-11	DB11 Small parts kit

SWEEP BOX

☑	QTY	PART NUMBER	ITEM
	6	10-1153-01	DB11 style sweep
	3	10-1151-11	Return bracket 12 inch
	1	10-1021-42	8 inch mast plate
	1	72-0052-11	DB11 Saddle kit
	1	Check length	Control cable, 16 Conductor_____ or 20 Conductor (40m dipole opt)_____
		01504	OPTION: Connector junction box for DB11 with manual 70-2037
			OPTION: surge suppressor 06108 = 8pos 06112 = 12pos 06116 = 16pos
	14	21-5013	Cable 6 conductor 22 ga shielded Qty shown indicates feet
	8	21-5001-01	Cable 4 conductor 22 ga shielded Qty shown indicates feet
	1	21-6301-80	Coax jumper cable, 8 ft
	2	21-6301-30	Coax jumper cable, 3 ft 6 in
	3	70-2030-01	40M Element Mounting Plate with gasket.
	1	70-3001-01	Coax Switch assembly, box, lid hardware and screws.

DB11 Yagi – Component Checklist (continued) 72-2011-01

BOOM BOX

☑	QTY	PART NUMBER	ITEM
	1	10-1202-01	1 -3/4 inch x 72 inch boom section
	1	10-1202-61	1-3/4 inch x 62 inch boom section
	1	10-1203-31	1 1/2 inch x 8 inch boom splice
	6	70-2041-01	Telescoping Poles (DB11 poles Cut to 97.5 inches by customer)

DB11 YAGI - ANTENNA KIT CONTENTS

DB 11 Hardware Kit
72-0050-11

QTY	SPARES	PART NUMBER	ITEM
30	2	60-0017-00	10-32 x 3/4" Pan head
30	4	60-0018	#10 Washer
32	2	60-0019	10-32 Nylock nut
28	2	60-0030	1/4 inch Nylock nut
16	2	60-0041	1/4 inch Washer
28	2	60-0046	5/16 inch Nylock nut
4	1	60-0062	1/4 inch x 2 3/4 inch bolt
8	1	60-0065	5/16 inch x 3 1/2 inch bolt
20	1	60-0075	5/16 inch x 3 1/4 inch bolt
10	1	60-0112	10-32 x 3/8 inch set screw
2	0	60-0113	10-32 x 5/8 inch pan head
24	1	60-0140	1/4 inch x 5/8 inch bolt

DB 11 Terminal Strip Kit
72-0022-21

QTY	PART NUMBER	ITEM
6	10-1154-01	Boot, DB11 return. (comes pre-mounted on the telescoping poles)
6	60-0150	Cap for return tube, .843" (red)
1	20-6020-1	Terminal strip, 1 position
2	20-6020-4	Terminal strip, 4 position
2	20-6020-6	Terminal strip, 6 position
1	70-1102-01	Terminal housing assembly
1	60-6000-40	Hose clamp, 3 1/2 in #56
1	10-1029-01	Connector protector

DB 11 Saddle Kit
72-0056-01

QTY	PART NUMBER	ITEM
24	10-1601-03	1 3/4 in Aluminum Saddle
4	10-1601-22	2 in Aluminum Saddle

DB 11 Small Parts kit 72-0051-12

QTY	PART NUMBER	DESCRIPTION on Bag
12	60-6000-15	Pn 60-6000-15, Hose clamp, ½ x 1- ½, #16, QTY 12
12	60-6000-50	Pn 60-6000-50, Hose clamp, 5/16 x 1, #10, QTY 12
1	09-0001	Pn 09-0001, Tape, ¾ PVC electrical QTY 1
1	09-0004	Pn 09-0004, Silicone tape 1 X 10 foot QTY 1
2	09-0005	Pn 09-0005, Tape, 1-1/2 Supper 88 electrical, QTY 2
12	09-0013	Pn 09-0013, 1 x 2 inch Grip tape, QTY 12
24 inch	09-1022	Pn 09-1022, Coax seal 1/2" x 24 inch
1	10-1028-01	Pn 10-1028-01, Anti Seize tube, QTY 1
1	10-1619-01	Pn 10-1619-01, Coax switch bracket, QTY 1
6	60-1006-41	Pn 60-1006-41, Boot, DB11 return. (QTY 6 on poles)
6	60-0150	Pn 60-0150 , Cap for return tube .843 in

EHU Wiring Instructions

Follow the directions below for wiring each of your DB11 element housing units (EHU) from the respective EHU to either the terminal housing, or the connector junction box, if you have purchased this option.

NOTE:
This assembly sheet only shows you the correct way to assembly and wire the EHU to the boom. It DOES NOT take into account the orientation of the EHU on the boom.

- Follow **figure 1** for wiring and routing cable in the wire tray on the lip of the EHU.
- Depending on EHU type there will be 4 conductor or 6 conductor wire. Follow the wiring code that is printed on the circuit board inside the EHU as shown in **note A**.
- Be sure to unplug the top portion of the connector when wiring, as you cannot see the correct wiring code until the upper plug is removed. The correct wiring code is printed closest to the terminal block and reads left to right: **Bk, R ,G, W, Blu, Br**.
- Trim about 1 inch of the jacket and foil sheild (including drain wire) off the end of the cable.

Figure 1 **Wiring EHU**

NOTE:
Wire the cable to the correct terminal on the wiring connector board. Follow the color code on the circuit board as shown in figure 1A. Route the wire into the wire tray. Place a .25" piece of the provided coax-seal over the cable and form it so that its flush with the wire tray. Do this in the 3 locations shown below. (This will keep the cable in place and prevent water from leaking into the EHU.)

Fig. 1

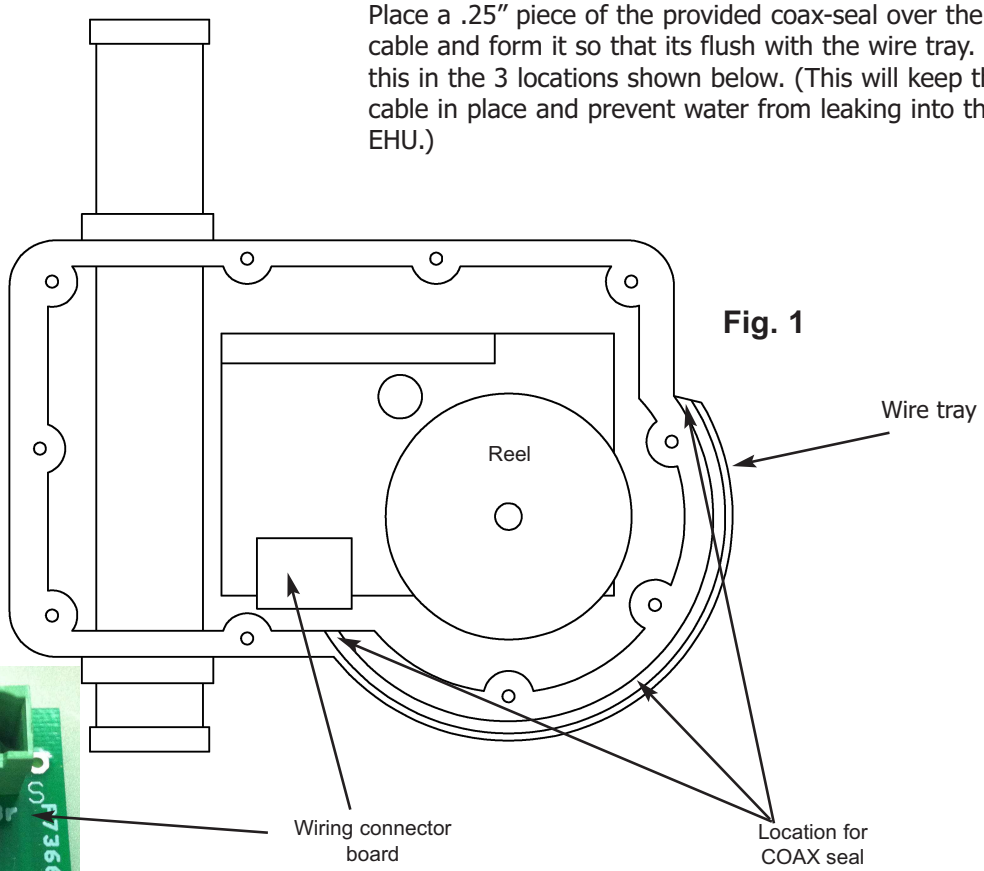
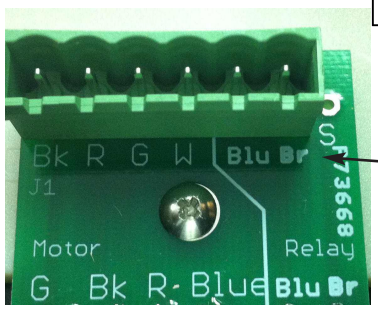


Fig 1A



← SteppIR Use only, **do not** use this line for wiring!

RECOMMENDED TOOLS FOR ASSEMBLING THE ANTENNA:

- **12” Level**
- **25’ Tape Measure**
- **5/16”, 7/16”, 1/2”, 9/16”, 3/8” sockets and wrench**
- **(deep well works best)**
- **Screwdriver**
  #1 Flat head
  #1 Phillips
  #2 Phillips
- **Volt-ohm meter**
  Razor Knife
- **3/32 allen wrench**
- **2 work benches for assembling antenna (saw horses or clamping work benches work the best)**
- **5/16” nut driver**
  (or drill works well with driver bit)
- **Pliers**
- **Hammer**
- **Wire Cutters and strippers**
- **Torque wrench (capable of 5-20 ft lbs) (6.8-27.1 Nm)**

STARTING ASSEMBLY

In the hardware kits we have provided extra hardware. This is a precaution in case fasteners are lost or damaged during assembly.

A large, cleared flat area is ideal for assembly of an antenna of this size and complexity. Typically, an area 16ft x 24ft would be ideal. We recommend using sawhorses or sturdy tables when installing the boom. By having the boom elevated, it is easier to ensure that the elements are level.

If you do not have room near the tower to assemble the antenna, we suggest you find a place that you can put the antenna together in it’s entirety and then disassemble as needed for transportation to the tower area.

Use of a level for adjusting the Element Housing Units (EHU’s) is highly recommended. This is a surprisingly accurate and consistent method. Simply place the level on the mast plate, and adjust each element accordingly.

BOOM ASSEMBLY PROCEDURE

Locate boom pieces in the Antenna Boom Box

QTY 1	**1 3/4" x 62"**
QTY 1	**1 3/4" x 72"**
QTY 1	**1 1/2" x 8" center splice**

NOTES: Our boom pieces are drilled using a precision drill press. This ensures that all of the bolts are snug when assembled. With the DB series antennas, if a boom piece is ever damaged, we can now replace the individual boom piece, as opposed to the entire boom.

Always apply anti-sieze lubricant to stainless steel hardware. This will prevent galling, which destroys the bolts and can be a real problem getting apart. Each bolt has a specific length for the aluminum boom piece it is holding together. The bolts will be a little bit long, so we provide you with 5 stainless steel washers per bolt to make up the difference. It is critical you use these washers, so that only the shank of the bolt is engaging the aluminum tubing

- Apply a thin film of anti seize or a spray-on lubricant (i.e. WD-40, Dry Lube) to the male engagement area of the boom sections.
- Secure the 60-0062 1/4" bolts, nuts and washers onto the boom. Each boom bolt will require qty 4 of the 60-0041 washer, used as spacers.
- Repeat this for each section until the boom is completely assembled as shown in **figure 2**.

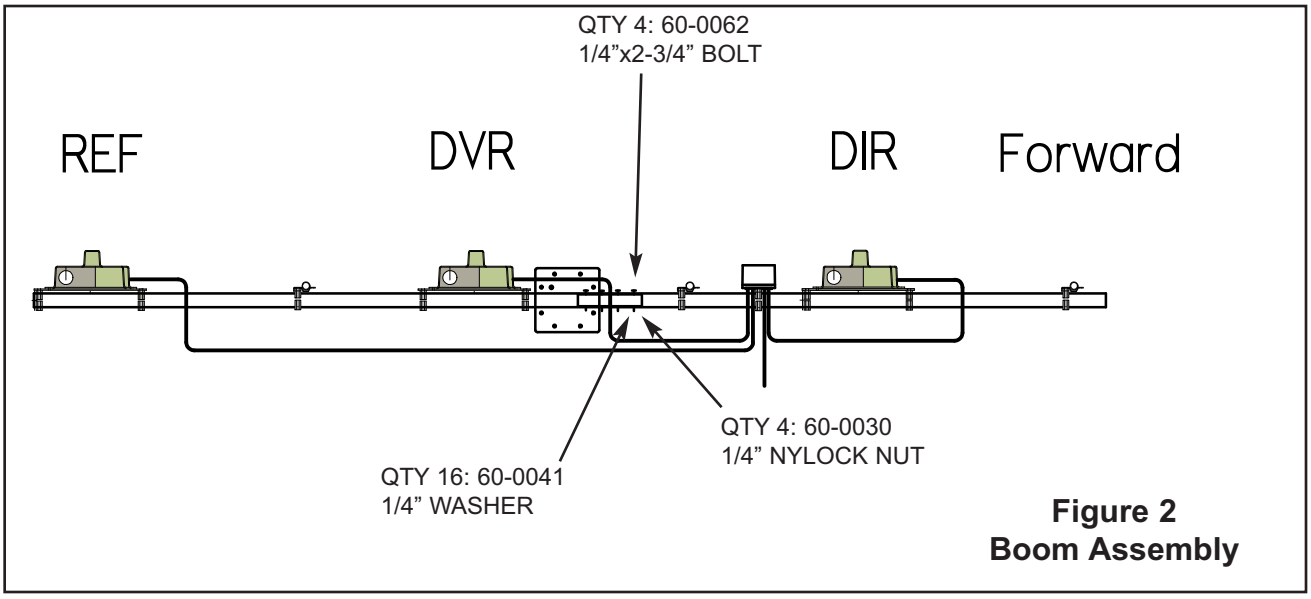


Figure 2
Boom Assembly

ELEMENT HOUSING UNIT SPACING

Locate the three Element Housing Units (EHU) with gaskets, in the Antenna Box

QTY 1 Driven EHU 20m (This is the only EHU that uses 4 conductor wire)
QTY 2 Director / Reflector EHU DB11 (both are identical and use 6 conductor wire)

Refer to figure 4 on page 9 for the hardware required to connect the EHU's to the boom.

NOTES:

Spacing of the elements in relation to each other is critical. Take great care to ensure that the elements are mounted as shown in **figure 3** below. All dimensions are taken from the center of the element, which is the center-point of fiberglass tube that houses the copper beryllium strip, both at the EHU and at the return EST. Refer to the CTR marks below showing actual radiating element for eachof the 3 EHU's and return EST's.

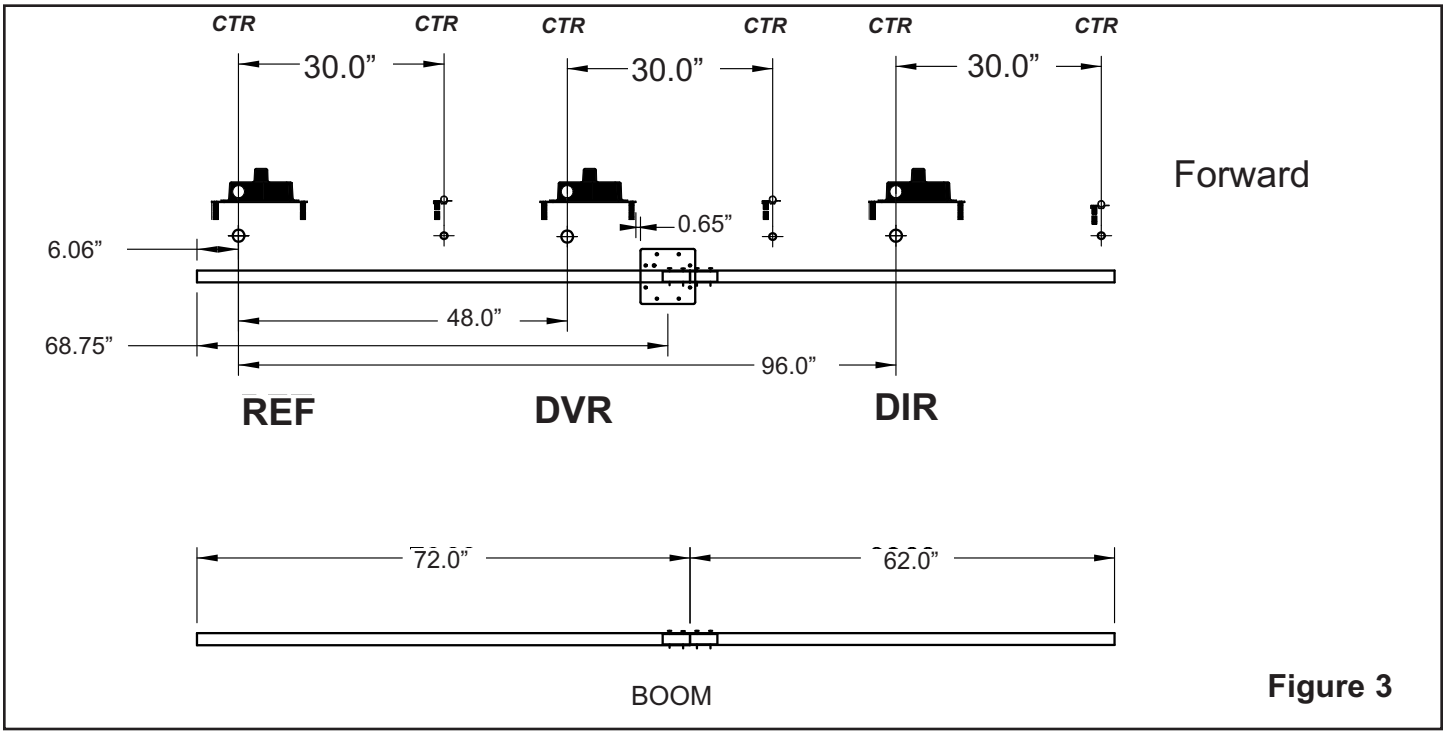
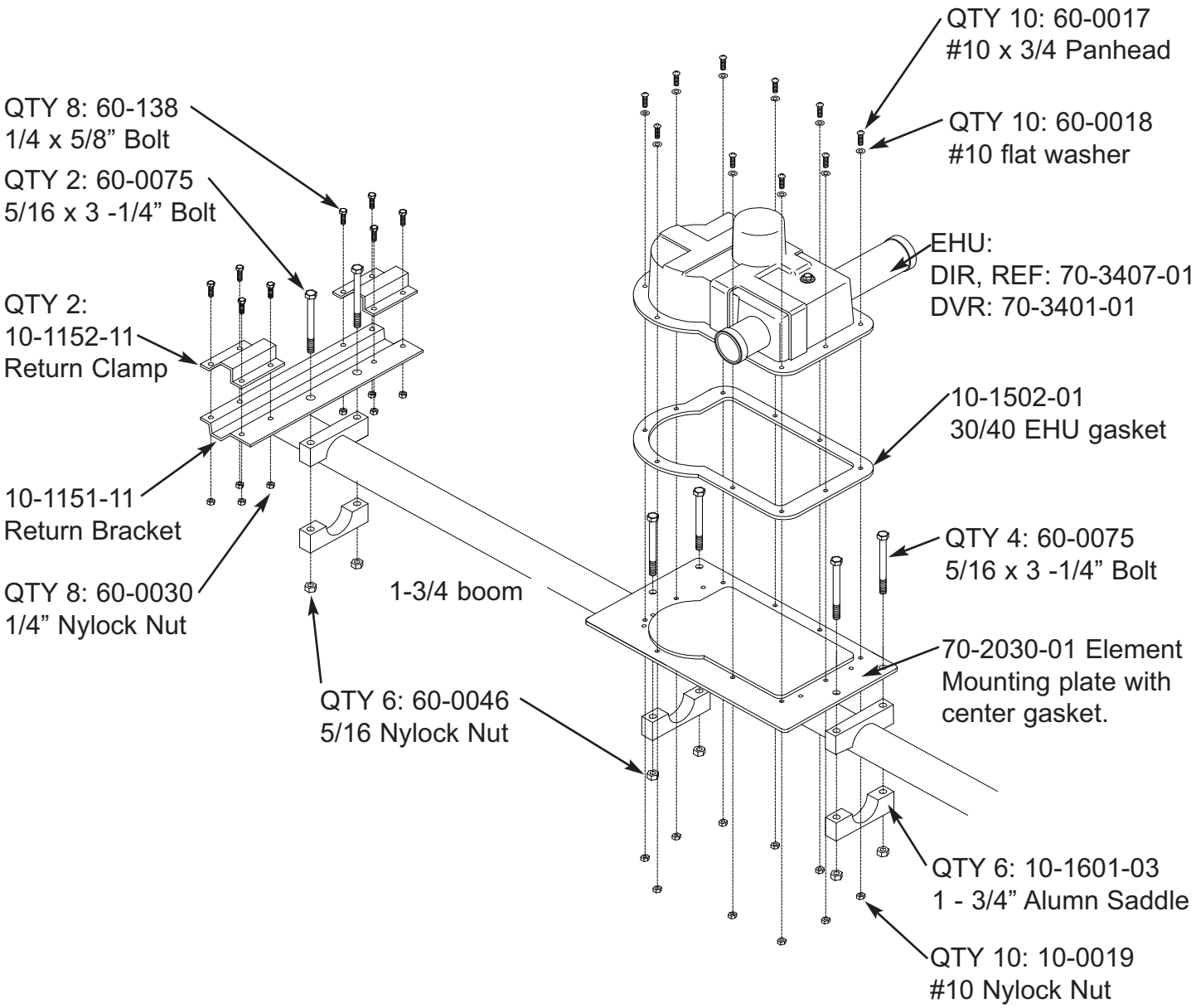


Figure 3

ELEMENT HOUSING ASSEMBLY PROCEDURE

- Attach the appropriate EHU to the mounting plate and return mounting bracket. Then attach the mounting plates to the boom. See **figure 4.**
- Use a level to check the EHU and Return mounting bracket before tightening the aluminum saddles to the boom. When the plate is level tighten the saddle bolts to 20 ft/lbs (27.09Nm).

Figure 4



WIRING THE CONTROL CABLE FOR THE ANTENNA SWITCH

Locate the following kits:

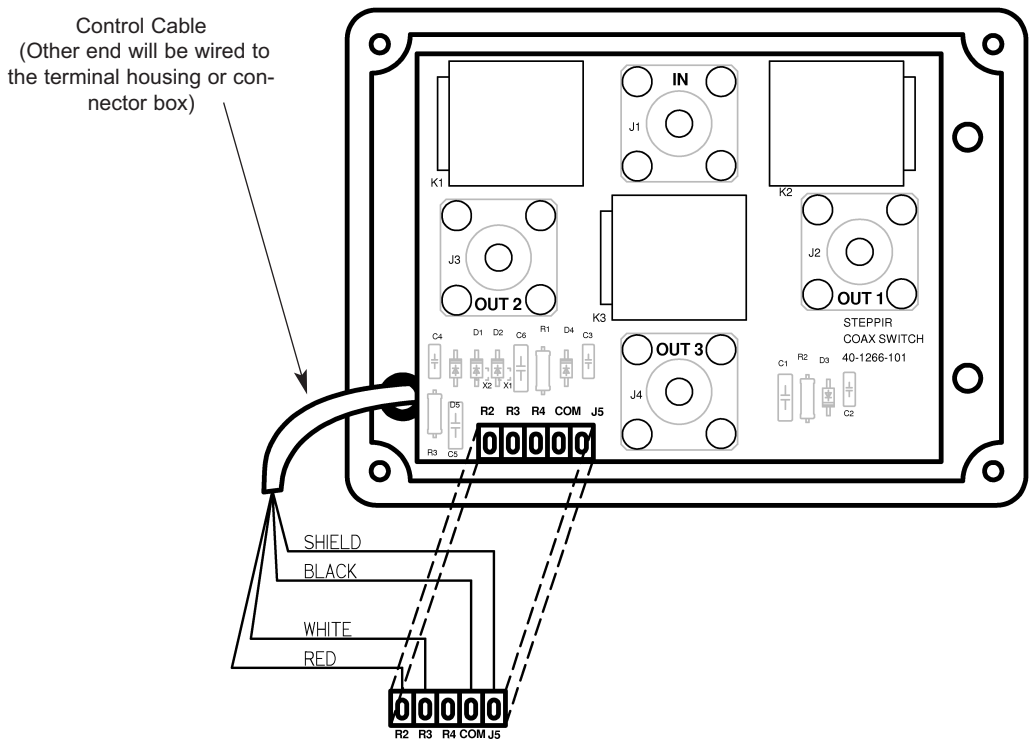
QTY 1	**72-0053-01**	**Antenna Cable Kit**
QTY 1	**70-3001-01**	**COAX Switch Assy**

Refer to figure 6 for assembly hardware required for this step.

- Follow **figure 5** for wiring the control cable to the Coax Antenna Switch
  Once wired correctly, the cable must be pulled through the drain hold on the lid of the Coax Antenna Switch.
- The loose end of the control cable will be wired to the terminal housing or connector junction box, if this option was purchased. This procedure will be completed in a later step of the assembly process. For now, let the control cable hang unattched while the coax antenna switch is mounted to the antenna.
- DO NOT secure the lid and gasket to the enclosure until the final testing has been completed.

Figure 5 **Control Wiring for Coax Antenna Switch**

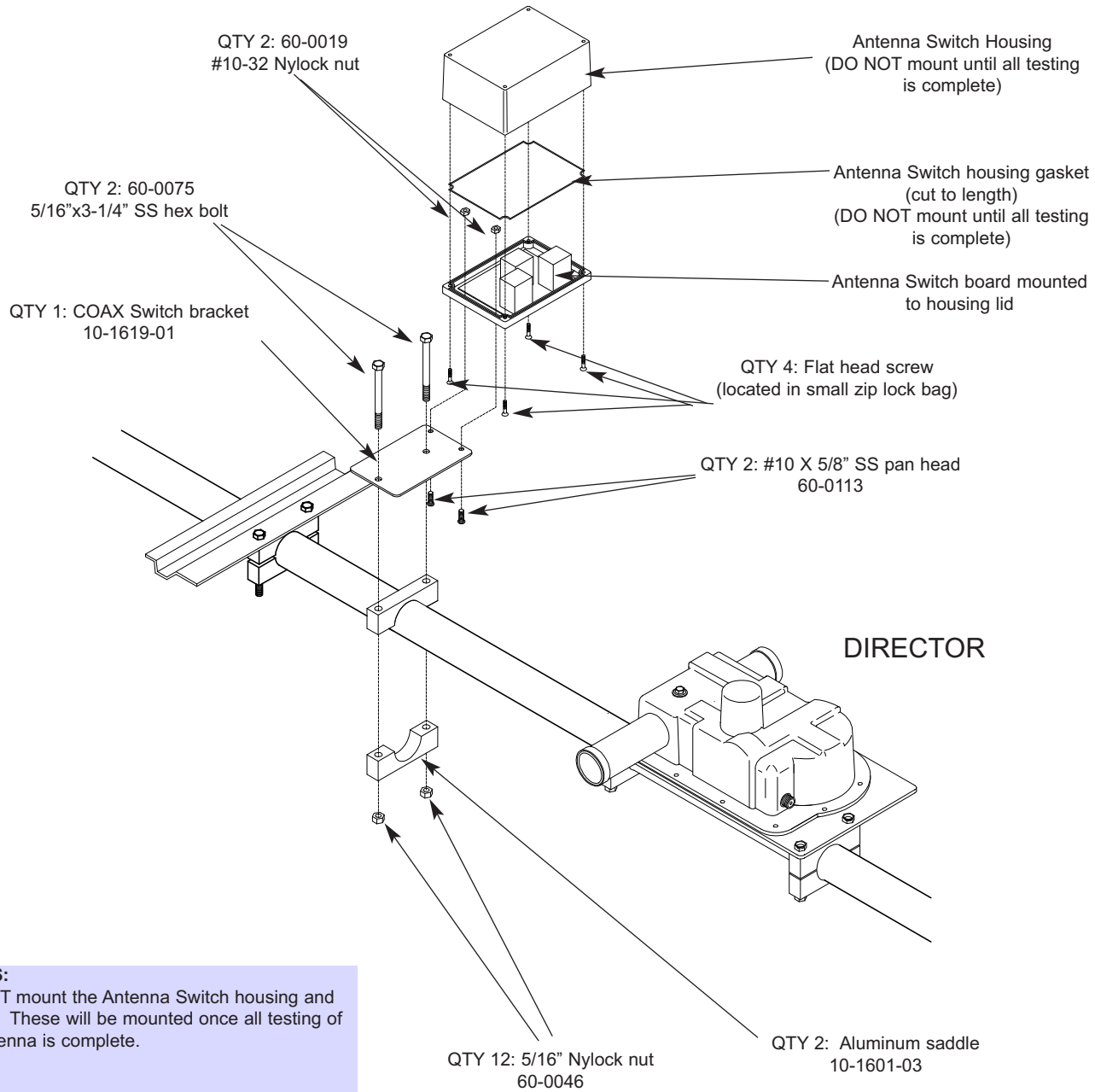
Inside view of Coax Antenna Switch



MOUNTING COAX ANTENNA SWITCH

- First attach the Coax Switch Bracket to the Antenna Switch Housing Lid.
- Leave the Antenna Switch PCB exposed, so testing can be completed before the lid and gasket are permanently secured to the antenna.
- Attach the assembly to the boom, without the lid and gasket (as shown in **figure 6**.

Figure 6 **Coax Antenna Switch Assembly**



NOTES:
DO NOT mount the Antenna Switch housing and gasket. These will be mounted once all testing of the antenna is complete.

WIRING THE COAX CABLE TO THE ANTENNA SWITCH

Notes: Take care not to bend the cable over any sharp corners of the boom assembly, or particularly, the top plate on the antenna tower, or the cable could be damaged. Do not bend the cable in a smaller diameter than 10 inches. Do not clamp anything over the cable that could possibly pinch, or damage it. A short-circuit of the cable may cause damage to the electronic controller.

- The coax cables have been made specifically for each individual element.
- Follow **figure 7** and **figure 8** below for connecting the coax to the antenna switch box.
- Tighten all coax connectors with pliers to ensure a good connection.
- Weather-proofing should be done when all testing and assembly have been completed.

Figure 7 **Wiring Coax to Elements**

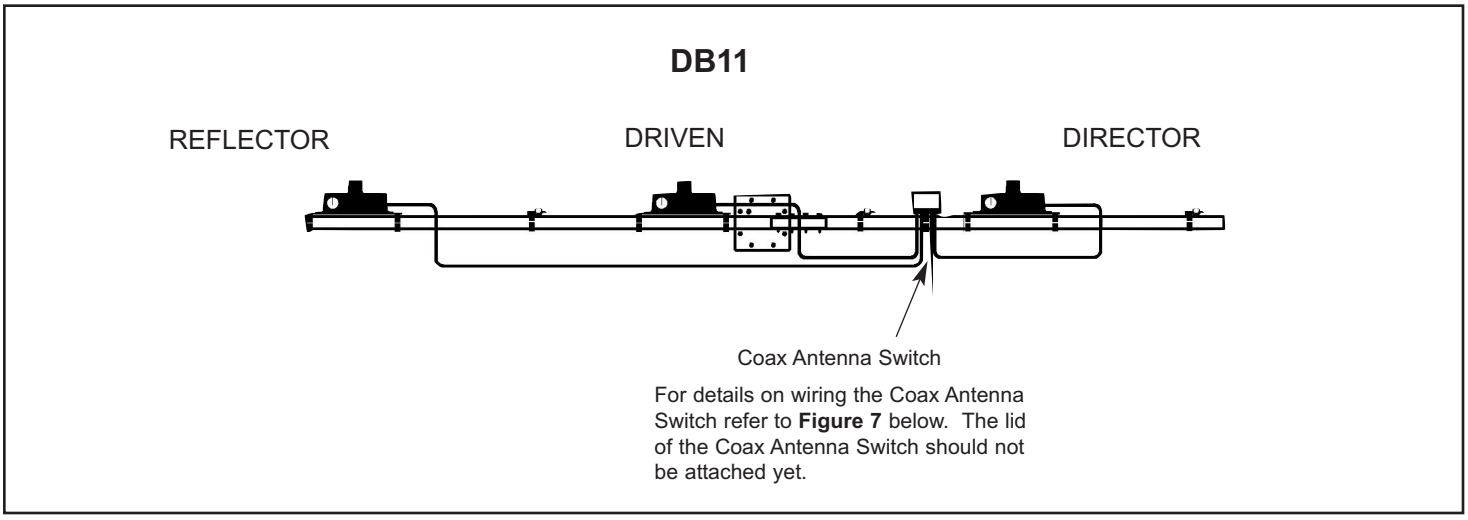
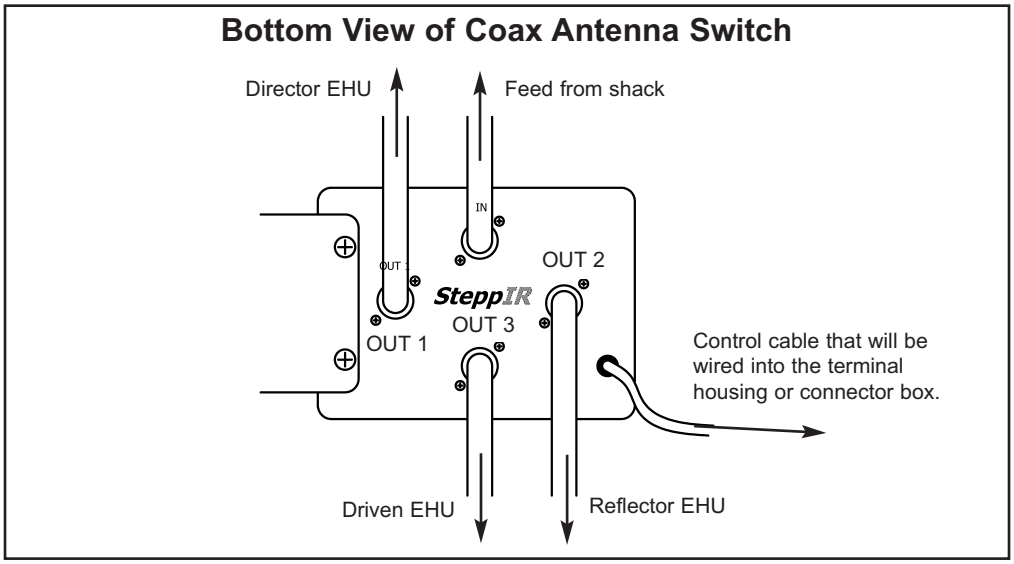


Figure 8 **Wiring Coax Antenna Switch**



MOUNTING TERMINAL HOUSING

Locate the following kit for assembling Terminal Housing:

QTY 1 72-0022-11 Terminal Housing Kit

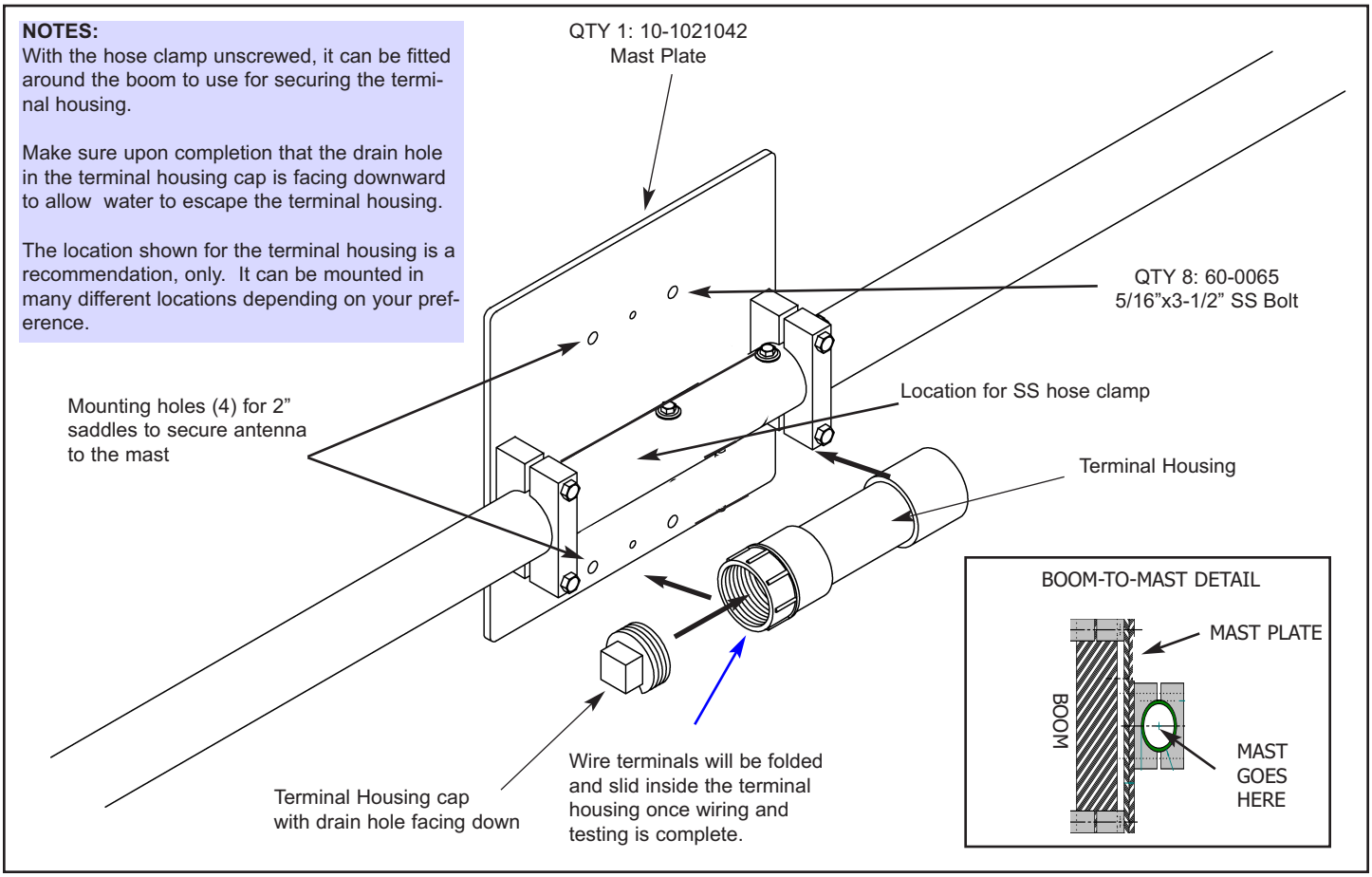
NOTES: If you purchased the optional Connector Junction Box option for your antenna, the terminal housing kit will **not** be included. Refer to the separate connector junction box instruction manual for installation.

The terminal housing can be installed anywhere along the middle of the boom. Location is not critical, as long as all the element control cables can reach the terminal housing. We recommend you mount the terminal housing as close to the mast plate as possible. Refer to **figure 9** below for mounting.

- Unscrew the SS hose clamp 056 (60-6000-40) so that it can be fitted around the boom.
- Use the SS hose clamp to secure the terminal housing to the boom or mast. The housing can be horizontal or vertical.
- Regardless of the mounting orientation make sure that the hole in the end cap of the terminal housing will be facing downward when you attach it. This it to allow the housing to drain and prevent water from collecting inside the housing.

DO NOT SEAL THE TERMINAL HOUSING
IT NEEDS TO BREATHE OUT OF THE BOTTOM DRAIN HOLE

Figure 9 **Terminal Housing Assembly**



SECURING THE COAX AND ELEMENT CONTROL CABLE TO THE BOOM

NOTES: Take care not to bend the coax or control cable over any sharp corners of the boom assembly, or particularly, the top plate on the antenna tower, or the coax/control cable could be damaged. Do not clamp anything over the coax/control cable that could possibly pinch, or damage it.

When taping the cable to the boom, start on the ends of the boom and work towards the mast plate. This will allow you to trim the cable to the exact length if desired.

We recommend labeling all the wires at the terminal housing location. Knowing which wire goes to each EHU could be very handy in the event of any control cable issues at a later date, when the antenna is in the air!

- Secure the coax and control cables from the EHU's to the boom.
- Use the outdoor electrical tape (09-0001) to secure the cable to the boom
- Only two wraps of the tape are needed to hold the cable to the boom.
- Tape the control cable and coax cable to the boom approximately every two feet.
- Once both cables have been secured to the terminal housing or connector junction box, the control cable can be trimmed to length or coiled up and out of the way.
- The actual wiring of the control cable will be addressed on the next page.

*Below is a picture of an actual DB11 when fully installed. This will give you a birds eye view of how the antenna should look when completed. Shown here is the prototype 40m dipole currently in development. This DB11 is installed at the SteppIR factory, home of the SteppIR Amateur Radio Club - call sign **WB7IR**.*

PROCEDURE FOR WIRING THE ELEMENT HOUSINGS

NOTES: If you have purchased the connector junction box option you will need to use the provided manual for wiring, as it is different than the instructions for the terminal housing kit.

- Ensure all of the control cables are taped and secured to the boom.
- If you have purchased the connector box option refer to the connector junction box manual for correct wiring.
- Apply a thin coat of connector protector to each of the exposed wires.
- Follow **figure 10** for correct wiring. Note that the shield wires are all connected together as one single wire and use a single position terminal strip separate from the other terminal blocks. Be careful not to over tighten the screws on the terminal blocks.
- Perform all tests on the antenna to ensure wiring is correct, then complete the following procedures - these will generally be the last items done before putting the antenna on the tower.
- Once the control cables from the EHU's and control cable are correctly wired, fit the terminal strip into the terminal housing that has been mounted in it's respective location.
- Make a couple of wraps of electrical tape around the control cable bundle where it will pass through the notch in the threaded plug. This will help to protect the cable sheath from the threads in the plastic tube.
- Guide the control cable into the drain hole on the black screw on cap.
- Tighten the cap onto the terminal housing, **CAUTION**: Be careful not to cut or damage the control cable as you tighten the terminal housing cap.

Preliminary WIRING AND MECHANICAL EHU TESTING

Refer to the SDA 100 manual for conducting the preliminary testing for the EHU's

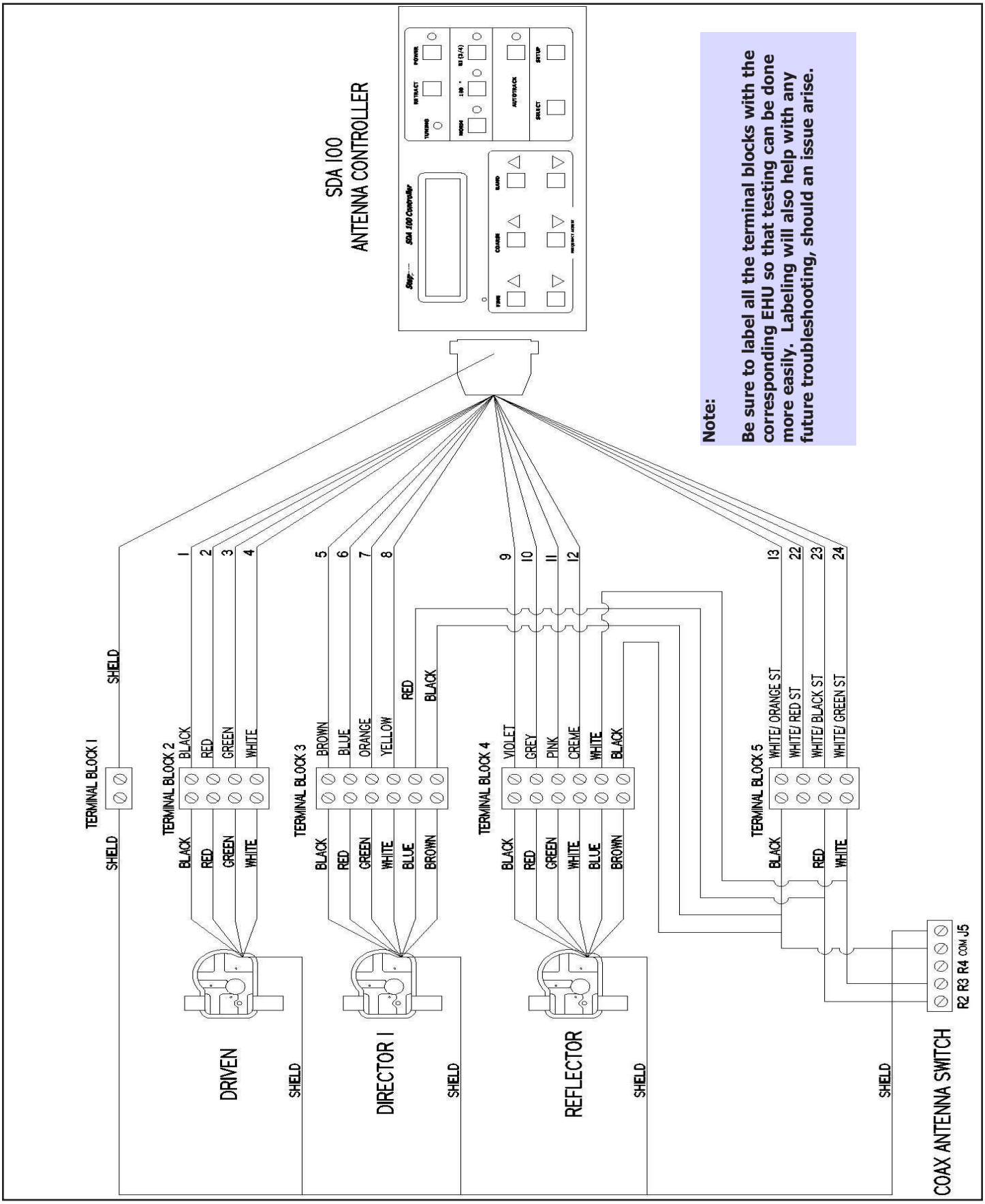
NOTES:

This test is to ensure that the wiring of the EHU's has been done correctly. It is critical that the wiring be done exactly as shown in figure 9. Incorrect wiring can cause poor performance and potentially damage the antenna or antenna controller.

Once all the EHU's are correctly wired and each EHU is being properly adjusted by the electronic controller, the initial testing is completed.

Other tests will need to be conducted to ensure that the relays are working correctly inside the EHU's and also inside the Coax Antenna Switch. These tests will be done once the tele scoping poles and sweeps have been assembled.

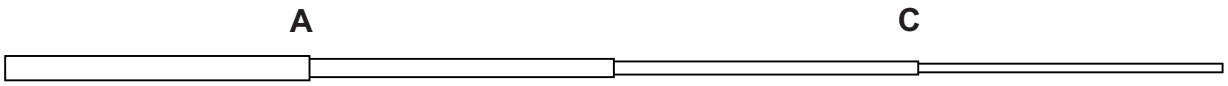
Figure 10 **DB 11 Wiring Diagram**



PROCEDURE FOR TAPING THE TELESCOPING POLES

Telescoping Poles: The telescoping poles come packed with all 4 sections together for shipping purposes only. When installing, the pole sections will need to be separated, with the two larger sections comprising one single pole assembly, and the two smaller sections comprising another single pole assembly. See **drawing 70-2042-01** for further details on how to assemble the poles. The pole sections are taped using 1.5" wide 3M Super 88 tape. This tape is wider than normal, to prevent the telescoping pole joints from twisting in high winds. See **figure 11** below for correct tape lengths for each respective joint.

Figure 11 **Lengths for 1 1/2 inch PVC tape**



Note:
Measurements are taken when the tape is unstretched and laying naturally.

Tape should be stretched to 50% when being applied to the fiberglass poles.

The drawing is showing 3 joint sections of a single pole, but you will only be concerned with joints A and C, because the single pole will be creating two separate pole assemblies as shown in drawing 70-2042-01.

A 40in / 102cm

C 22in / 56cm

- Once the pole is extended and within the correct length the joints can be taped as follows.
- Start the tape with one complete wrap of electrical tape around the telescoping pole section joint.
- Make sure to smooth the tape as you wind it around the joint. To prevent any air bubbles and to create better adhesion.
- Wrap the tape past the joint by about 3 inches using a half-overlapping method. Wrap back down to the smaller fiberglass pole section using the same technique so that you finish where you started.
- Apply the last full wrap with no tension, to prevent from the tape coming undone and flagging over time.
- CAUTION: never tear the tape to terminate it, use a knife or scissors to cut the tape.
- Rub the end of the tape firmly to ensure the tape is bonded and smooth out any air bubbles.
- Repeat this for joints A and C on the telescoping pole.

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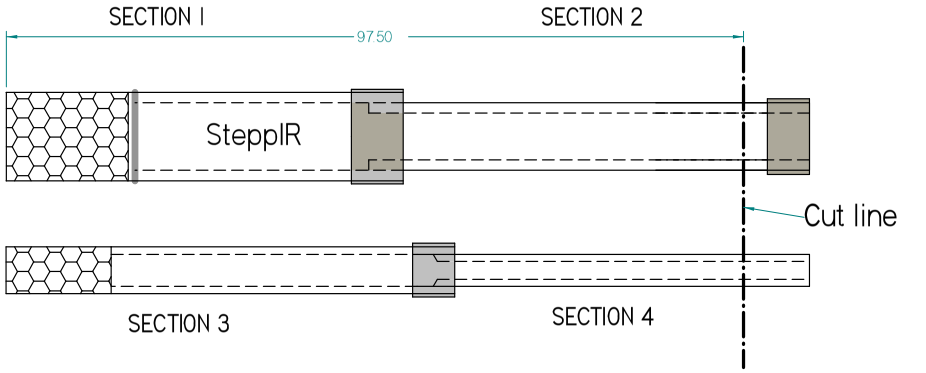

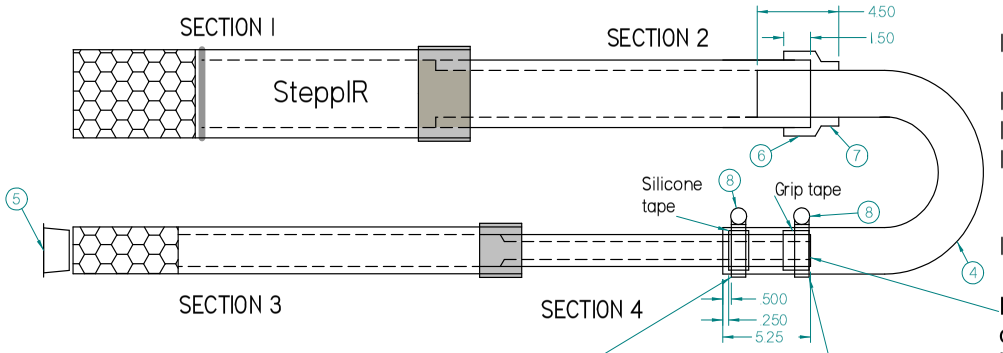

Ensure that inside edge or fiberglass pole tip is smooth.

Align this clamp over center of silicone tape

Align grip tape with the end of the pole. Place clamp so it is over the grip tape and aligned with the end of the pole (5.25")

1. Separate single pole into two poles; sections 1, 2 and Sections 3, 4.
2. Fully extend sections 1 and 2.
3. Fully extend sections 3 and 4.
4. Cut pole made from sections 1, 2 to a length of 97.5" at tip (1.16" OD)
5. Cut Pole made from sections 3, 4 to a length of 97.5" at tip (.74" OD)
6. Mark tip of section 4 @ 5.25" from the end.
7. Place silicone tape as shown at 5" from the end of section 4, 3 wraps each wrap directly on top of the other.
8. Place grip tape at the end of section 4.
9. Mark the end of section 2 @ 1.5" back from where it was cut.
10. Install plastic coupler over section 2 until it lines up with the mark.
11. Determine which end of poly tube to install into section 2 coupler so that the drain holes are pointing downward.. Mark the end of poly tube that will be going inside the coupler at 4.5" from end of the tube.
12. Install marked end of poly tube into section 2 coupler until mark lines up with edge of coupler.
13. Install section 1 into the element housing, again ensuring that the loop drain holes are pointing downward.
14. Install section 3 into the element return bracket.
15. Slip all the necessary clamps over the pole(s).
16. Slip loose end of poly tube over small pole. Align end of tube with mark on section 4 and tighten clamps in the positions shown. Do not over tighten clamp on coupler (6) holding poly tube to coupler.
17. Insert red plastic plug (5) in end of section 3 as far as it will go.

Materials:

1.	10-1013-01	18 foot pole
2.	09-0013	Grip tape
3.	09-0004	Silicone tape, 1" black
4.	10-1153-01	Plastic sweep tube
5.	60-0150	Red plastic plug
6.	10-1154-01	Coupler
7.	60-6000-15	SS Hose clamp 1/2
8.	60-6000-50	SS Hose clamp 5/16

NOTE:
Before attaching the plastic sweep loop, make sure the label that says "THIS WAY UP". Failure to do this puts the drain holes up and water will collect in the element. In the event the label has come off or is damaged, remember that the drain holes must point downward.

SteppIR Antennas

DB 11 element support tube

70-2042-01

03/09/11

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PROCEDURE FOR SECURING TELESCOPING POLES TO ELEMENT HOUSING UNIT

Locate the following kits for assembling the Telescoping Poles:

QTY 1	**72-0012-04**	**Rubber Boot Kit**
QTY 1	**72-0050-11**	**Hardware Kit**

- To secure the telescoping poles to the element housing unit, first slide a rubber boot over the base section of the telescoping pole as shown in **figure 12**.
- Slide the rubber boot over the metal ring on the EST of the element housing as shown in figure 11. Make sure the large hose clamp on the rubber boot slides over the metal ring on the EST of the element housing unit.
- The hose clamp that is located on the smaller end of the rubber boot should be positioned so that it is past the black raised ring on the telescoping pole (fig 12). This will help keep the telescoping pole securely attached, in addition to the gripping pressure applied by the clamp itself. Once the rubber boot is in the correct location, tighten both hose clamps as shown in **figure 13**.
- Due to the possbility of cold flow of the plastic boot material, be sure to re-tighten the hose clamps after approximately 30 minutes to ensure a tight connection.
- Repeat the same process for each of the remaining element tubes.
- Using the 1/4 inch bolts, nuts and return brackets, secure the element return tubes to the boom as shown earlier in figure 3.

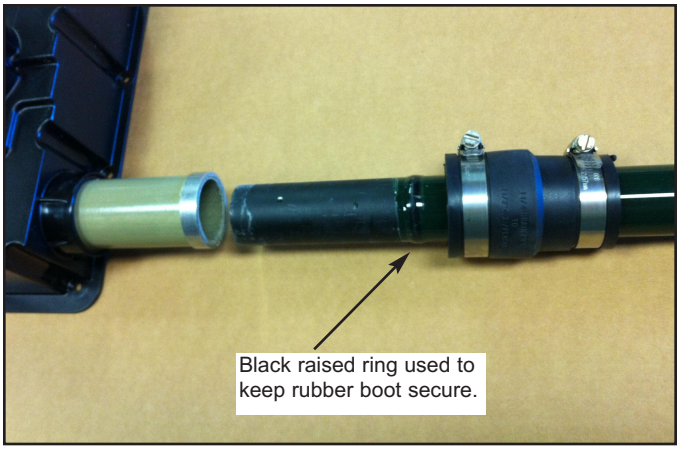

Fig. 12

Fig. 13

INSTALLING THE OPTIONAL DB25 CONTROL CABLE SPLICE (70-6010-01)

(FOR CONNECTING CONTROL CABLE TO THE SDA 100 CONTROLLER)

Figure 1

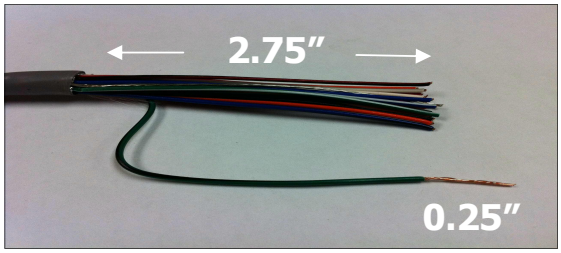

Figure 2

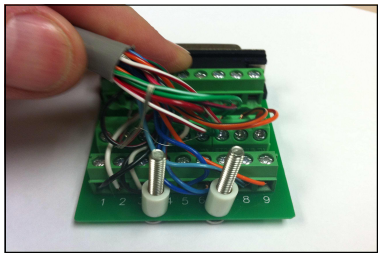

Figure 3

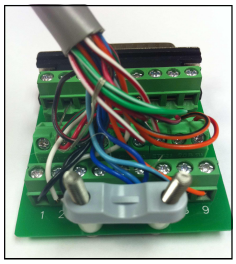

Figure 4

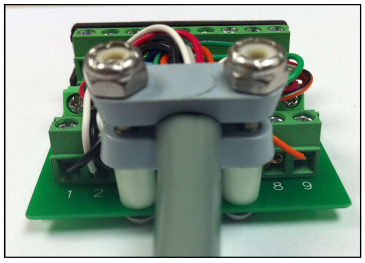

Figure 5

Figure 6

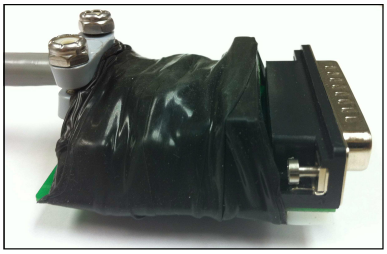

Figure 7

The DB25 control cable splice allows for much more convenient connection of control cable to the SteppIR controller. By utilizing this connector splice, there is no need to cut the DB25 connector off and re-solder when running cable through conduit. In addition, now you can purchase custom cable lengths to within 1 foot of your desired length, eliminating potential for excess cable. To install the DB25 control cable splice, follow these instructions:

1. Locate the parts needed for installation shown in figure 1.
2. Strip the grey jacket and aluminum shielding off of the control cable as shown in figure 2, approximately 2.75” from end of control cable, being careful not to damage the individual wires. Strip the plastic insulation off of each of the control cable wires, approximately 0.25” in length should be bare wire. It helps to twist each of the stranded wires, to aid in the placing of the wire into the terminal headers. Tinning the wires also works well.
3. Connect each wire to the appropriate terminal as shown in figure 3. Consult the drawing on the next page for the correct wiring sequence, there are multiple wiring sequences on this drawing depending on your model of antenna.
4. Insert the two stainless steel screws into the circuit board, as shown in figure 3. Slide the two plastic spacers onto the screws.
5. Insert the first half of the strain relief clamp onto the two screws (half-round cutout facing upward) on the two screws (fig 4). Be careful not to pull the wires out of the terminal headers as you push the strain relief clamp downward.
6. Insert the second half of the strain relief clamp onto the two screws (half-round cutout facing downward, fig 3).
7. Position the control cable in between the two halves of the strain relief clamp, be sure that the jacketing of the cable is in between the clamps as shown in figure 5.
8. Using the nuts, tighten down until the cable is nice and snug, but do not over tighten (fig 5).
9. Plug the DB25 splice into the back of the controller and tighten the jack screws to secure the DB25 to the controller housing, as shown in figure 6.
10. While it is not required, you may optionally use silicone wrap to cover the wiring, as shown in figure 7.

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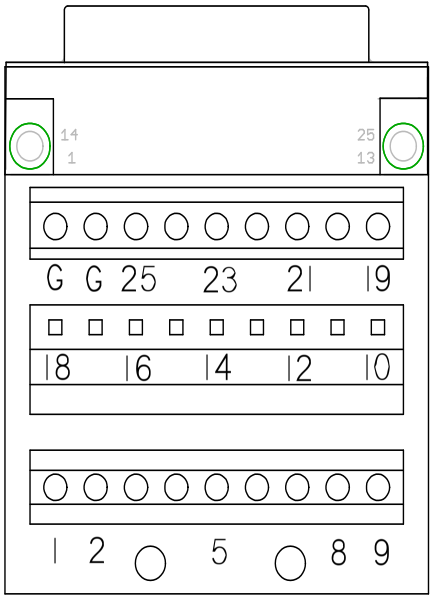
70-6010-01



Cable Pin out by cable type.

Adapter Pin number	20 conductor	16 conductor Standard 4E	16 conductor DB11, DB18	12 conductor Yagi	2X4 Conductor	4 Conductor
1	BLACK	BLACK	BLACK	BLACK	Black	Black
2	WHITE	RED	RED	BROWN	Red	Red
3	WHITE/ BLACK STRIPE	GREEN	GREEN	RED	Green	Green
4	BLACK/ WHITE STRIPE	WHITE	WHITE	ORANGE	White	White
5	BLUE	BROWN	BROWN	YELLOW	Black	
6	BLUE/ WHITE STRIPE	BLUE	BLUE	GREEN	Red	
7	BLUE/ RED STRIPE	ORANGE	ORANGE	BLUE	Green	
8	BLUE/ BLACK STRIPE	YELLOW	YELLOW	VIOLET	White	
9	ORANGE	VIOLET	VIOLET	GREY		
10	ORANGE/ RED STRIPE	GREY	GREY	WHITE		
11	ORANGE/ BLACK STRIPE	PINK	PINK	PINK		
12	GREEN	CREME	CREME	CREME		
13	BLACK/ RED STRIPE		WHITE/ ORANGE ST			
14	GREEN/ WHITE STRIPE	WHITE/ BLACK ST				
15	GREEN/ BLACK STRIPE	WHITE/ RED ST				
16	RED	WHITE/ GREEN ST				
17	RED/ WHITE STRIPE	WHITE/ ORANGE ST				
18						
19						
20						
21						
22	WHITE/ RED STRIPE		WHITE/ RED ST			
23	RED/ BLACK STRIPE		WHITE/ BLACK ST			
24	RED/ GREEN STRIPE		WHITE/ GREEN ST			
G	Drain	Drain	Drain	Drain	Drain	Drain

FLUIDMOTION INC.

Cable Adapter, controller

21-6010-01

Date: 03/15/05

SteppIR TM

FINAL ANTENNA TEST

At this point the antenna should be 98% completely assembled and ready to be secured to the tower. Before this is done the antenna relays must be tested to insure that the antenna will operate correctly. This is very critical for the antenna to be able to switch each of the EHU's from passive to driven when needed. If wiring was done incorrectly then the relays will not switch at the correct time, if at all. Follow the below test procedure to insure the antenna is wired correctly.

This test should be conducted while the antenna is on the ground. The controller will need to be connected to the antenna and also plugged into the power supply. In additions, the wire terminals will need to be exposed from the terminal housing at the middle of the boom. In the case of the connector junction box it may help to wait to install the lid of the connector box, for ease of testing. The coax antenna switch box lid should not have been installed yet either. The wire terminal on the coax antenna switch will need to be exposed to complete this test. Follow **figure 14** and **figure 15** for completing the final wiring test.

Figure 14 **NORMAL MODE Relay Test**

NOTE:
During the test you do not need to unscrew any of the terminals. All voltages can be pulled off of the screw head of the testing terminal.

Polarity does matter for testing the voltage. The voltage present will be slightly less then the supply voltage (24v or 33v DC, depending on which power supply option you have).

Testing Procedure:

With the controller plugged in you will first need to tune the antenna to anywhere within the 20m band.

Make sure that the antenna is in the "NORMAL MODE".

Once the red TUNING LED light has stopped flashing on the controller, perform the 3 different tests shown to the right.
This would also be a good time to listen to the elements while they are moving.

Ensure that all the elements are running smoothly and no stalling occurred as the copper elements move through the sweeps.

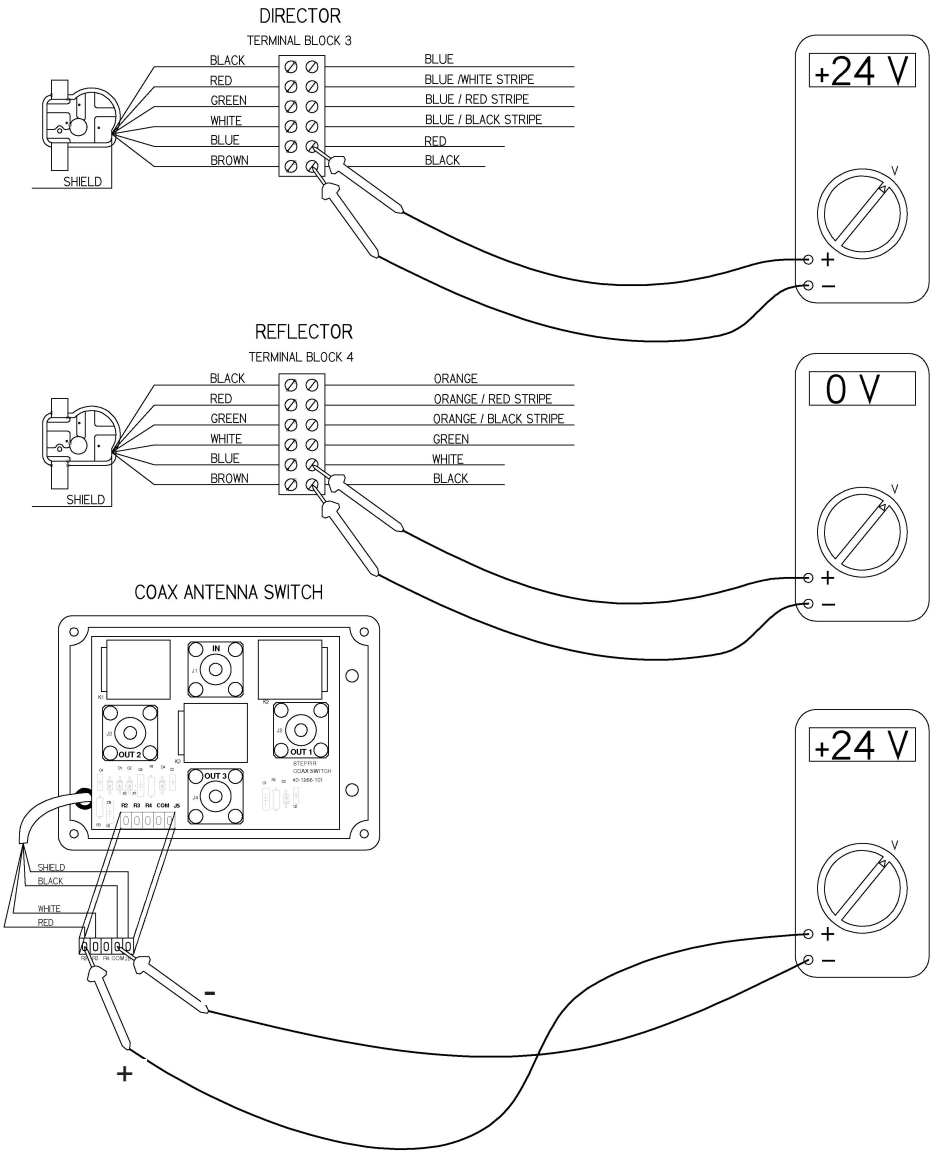


Figure 15 **180 Mode Relay Test**

NOTE:
During the test you do not need to unscrew any of the terminals. All voltages can be pulled off of the screw head of the testing terminal.

Polarity does not matter for testing the voltage. It does not matter if you use the positive or common probe of the volt meter.

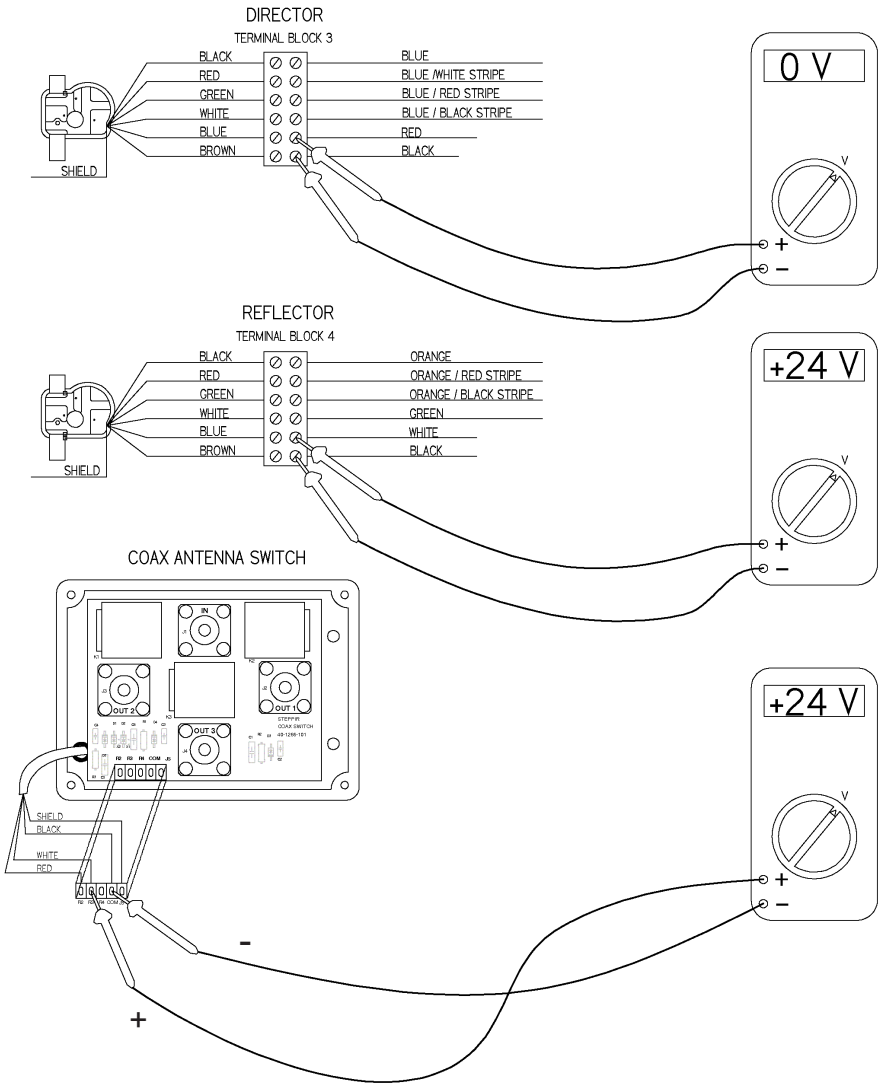
Testing Procedure:

With the antenna still in the 20M band press the “180” button on the controller. Make sure the LED light next to the 180 button is lit.

Once the red TUNING LED light has stopped flashing on the controller. Perform the 3 different tests shown to the right.

If all the voltages were correct from all six tests, press the RETRACT button to send the elements to the home position.

Once the red TUNING LED light has stopped flashing and the controller power is off, unplug the power and control cables from the controller.
If not all the voltages were correct refer back to the wiring diagram and double check to make sure all wires are in the correct location.



Once the correct voltages have been tested assembly can now be completed by securing the terminal blocks and wiring inside the terminal housing **figure 8**. Also the lid of the Coax Antenna Switch can now be secured along with the gasket shown in **figure 4.**

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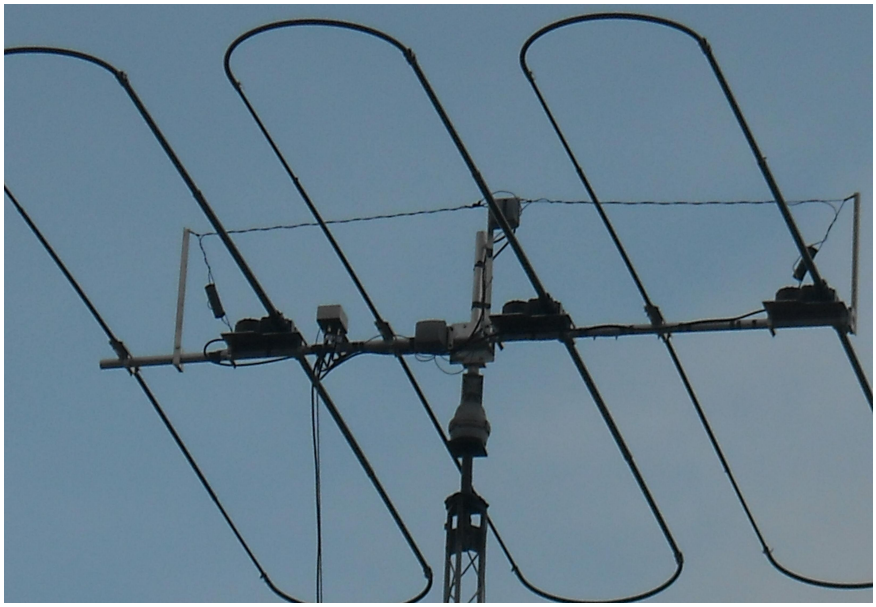

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