



Moving to FN15vf

**Project to re-locate the WCARC
VHF/UHF Weak Signal Beacons
from
FN15wg on the VE3XK Tower
to
FN15vf north of Almonte
on a Christie-Walther tower site**

The FN15wg Setup





Moving to FN15vf

Step 1

- Prepare new 50 ft Heliax Feedlines using the 3/8” Andrews LDF2-50 Heliax donated by WCARC
Treasurer Ken Asmus - VA3KA

PL-259 to Heliax LDF2-50



- 3/8" nominal size
- 50 MHz - 0.73 dB loss /100 ft
- 150 MHz - 1.286 dB loss / 100 ft (RG-8X - 4.5 dB/100 ft)
- 200 MHz - 1.494 dB loss /100 ft
- 450 MHz - 2.29 dB loss / 100 ft (RG-8X - 8.1 dB/100 ft)
- 1250 MHz - 3.98 dB loss / 100 ft
- LMR-400 losses/100 ft: 150 MHz - 1.5dB, 450 MHz - 2.7 dB

PL-259 to Heliax LDF2-50



N- Female

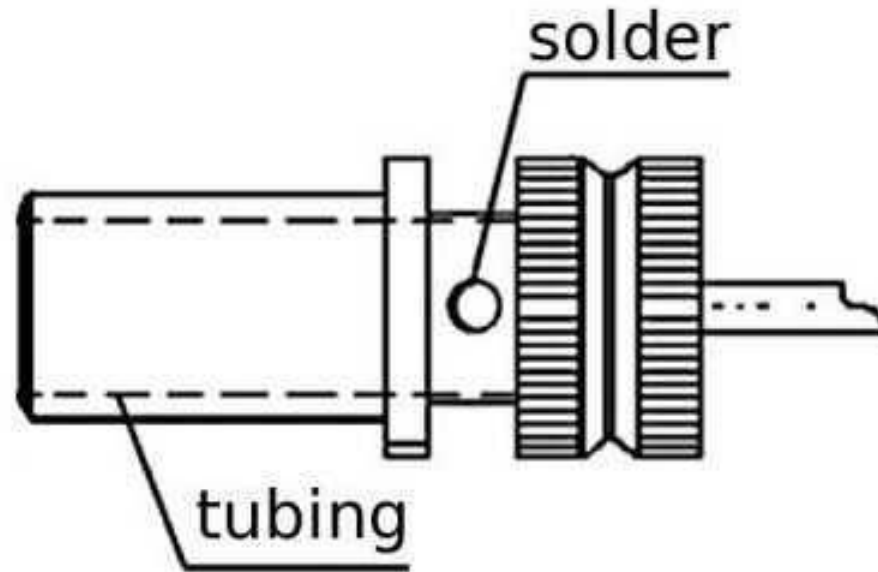


N-Male

Typical 1/2" Heliax connectors thread onto outer conductor.
New - \$40+, used - \$20 - \$30. Less at fleamarkets for Type N.
Standard PL-259 connectors can be adapted to fit, as follows.

PL-259 to Heliax LDF2-50

*Not shown -
Coupling Ring
(threads over
plug assembly
shown)*



- PL-259 Tubing Inside Diameter - 9.5 mm
- LDF2-50 Outer Conductor Outside Diameter - 9.652 mm
- PL-259 Centre Pin Inside Diameter - 2.2 mm
- LDF2-50 Inner Conductor Outside Diameter - 3.048 mm



PL-259 to Heliax LDF2-50

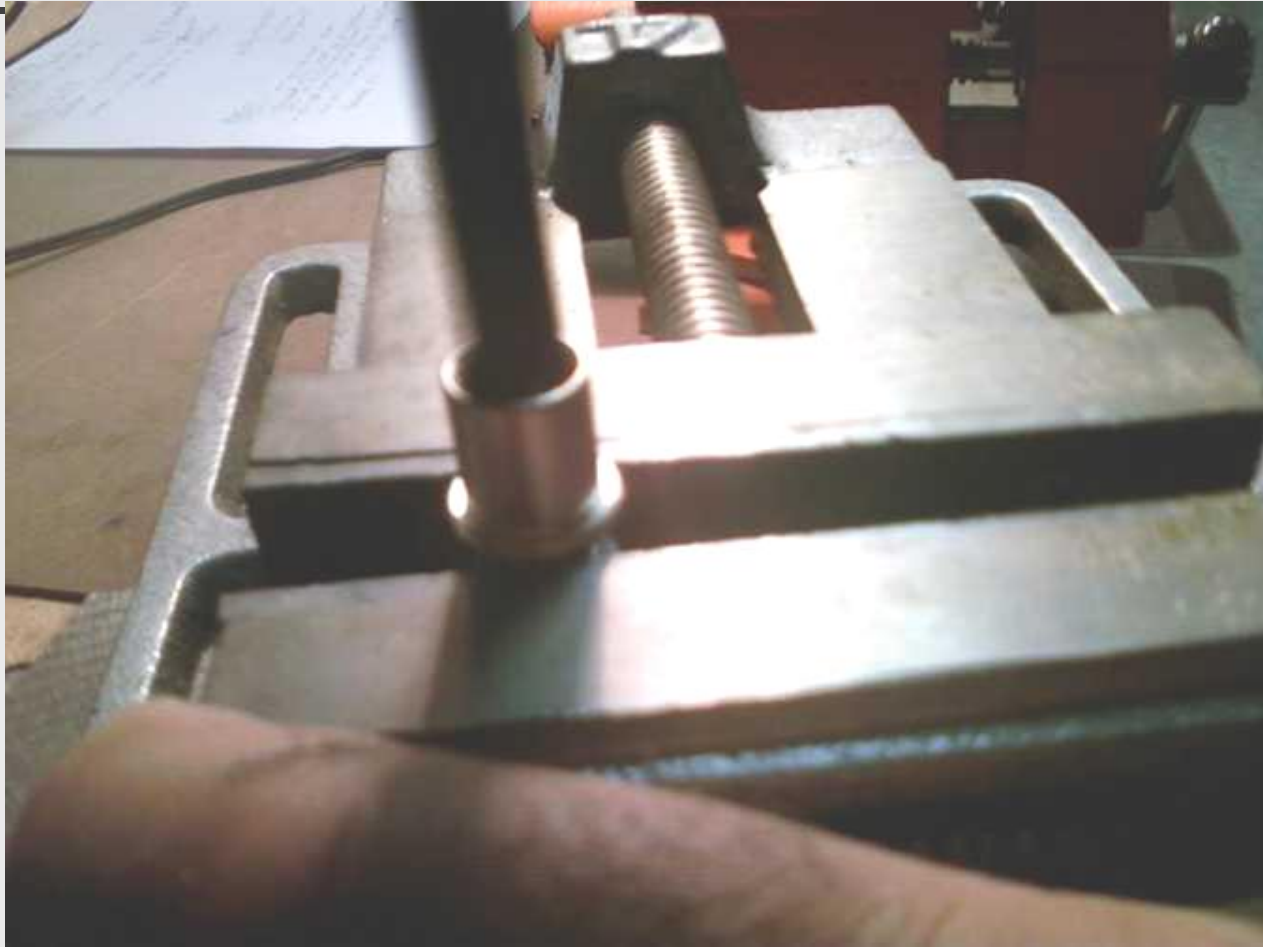
The First Problem

- Enlarge the PL-259 Tubing Inner Diameter from 9.5 mm to accommodate the LDF2-50 outer conductor diameter of 9.652 mm
- Next standard drill size above 3/8" is 25/64" (9.92 mm)

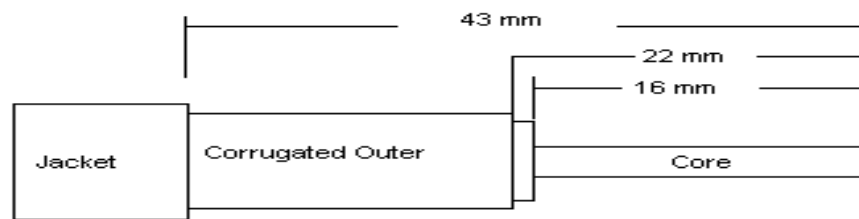
Solution

- Carefully drill out the PL-259 tubing taking care not to remove too much metal from the area around the solder holes. Drill a bit past the solder holes to accommodate the LDF2-50 outer conductor when inserted.

PL-259 to Heliacx LDF2-50



PL-259 to Heliax LDF2-50



Heliax Stripping Instructions

- Use tubing cutter or Dremel saw tool to cut through the jacket, corrugated copper outer conductor, and foam dielectric insulation using the above dimension drawing

Core Grinding

- Using Dremel sanding drum, grind core down from 3.048 mm diameter to less than 2.2 mm. Use a PL-259 to check the fit along the length of the exposed core.

PL-259 to Heliax LDF2-50



“Stripping” the heliax using a Dremel tool saw

PL-259 to Heliacx LDF2-50



Grinding down heliac core using Dremel sanding drum tool



PL-259 to Heliax LDF2-50

Preparation for Soldering

- Position the modified PL-259 over the modified LDF2-50
- The corrugated outer conductor should show through the solder holes and the modified LDF2-50 core should project out to the tip of the PL-259 centre pin
- Make final adjustments to the stripping and drilling dimensions if necessary using the Dremel tool. It should not be necessary to grind down the thin heliax outer shield.
- Ensure the PL-259 threaded coupling ring is on the cable and properly oriented before starting to solder.

PL-259 to Heliacx LDF2-50



Fine tuning of PL-259 inner diameter using reamer tool



PL-259 to Heliax LDF2-50

Soldering

- Conventional solder works, but “Solder-It” silver bearing solder paste provides lower melting point (430F), 5X strength and extremely high electrical conductivity.
 - Use a fine point butane torch for best results and to avoid dielectric damage due to excess heat.
 - Apply solder paste to centre pin and through solder holes.
 - Apply the butane flame to the work not the solder. When the surrounding area gets up to 450F the solder paste will quickly flow. Remove heat immediately.
- Note: Silver solder is not shiny when cool after melting.*

PL-259 to Heliax LDF2-50



SOLDER-IT silver solder paste melts at only 450F



PL-259 to Heliac LDF2-50

The Finishing Touches

- After soldering is complete, slide down and screw on the threaded coupling ring
- Securely seal the cable to the connector body using X-TREME TAPE self-bonding silicone rubber tape.
- Add cable colour-coding tape if needed for your application.

Sources

- X-TREME TAPE: \$9 - Benson's Auto Parts - Bell's Cors
- SOLDER-IT: www.solderit.com

Moving to FN15vf



The Christie-Walther pager tower north of Almonte

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On site, we had to connect the new heliax feedlines ...

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... and slip the beacon mast into our heavy duty 2" mast, before lifting the assembly over the fence and standing it up

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Lower portion of tower showing our mast attached to fence

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VE3WCC Beacon enclosure hung on the tower with LDF2-50 dressed around mid-line of fence to mast on the south side

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Heliax formed into loop for ease of site maintenance access

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**VE3WCC/B in operation next to Christie - Walther Pager Tower.
Feedpoint elevation 485 ft ASL - same as at VE3XK**

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The re-location team: Barney - VA3BGB, Andy - VE3NVK, Phil - VE3CIQ and Doug - VE3XK (with Tom - VE3ELM on camera)



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Additional Work Completed after the Move

- Installation of station identification EPROM programmed with Grid FN15vf identifier.
- Rebuild of Keyer Module to obtain 5 MS time constant on the P-Channel MOSFET keyer output.
- Replacement of UHF feed-through adapters with UHF Female bulkhead connectors, thus eliminating three coaxial adapters per band.



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The Results?

- Within the first day, Ken - VA3KA monitored a DX-spot stating that VE3WCC/b 6M beacon had been heard in Newfoundland. From FN15wg it had been heard in Florida, and 2M beacon heard south of Brantford near Lake Erie!
- Various WCARC members have reported hearing the other beacons - in some cases better than at the temporary initial location on the VE3XK tower. Better feedlines? Better location? Both?
- Ken - VA3KA reports that key clicks are gone now.
- Keep listening. Spread the word. We need more people listening to the beacons and more signal strength reports.