

Teletron

CORPORATION

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SLINKY!

a lot of antenna
in a little space

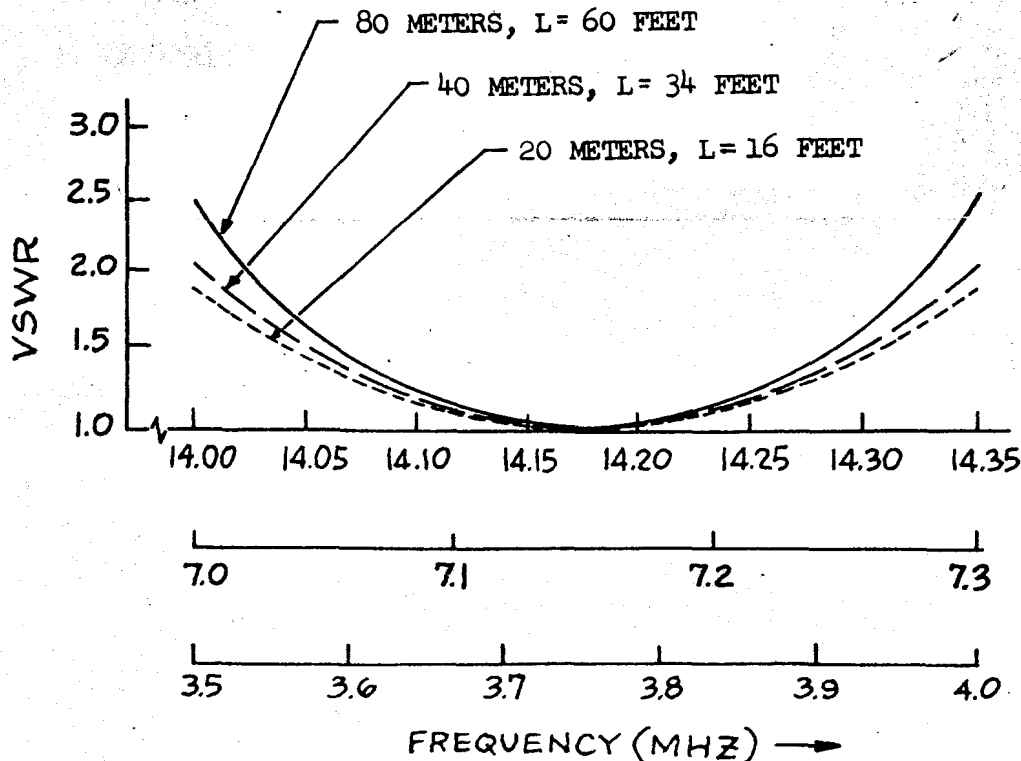
The SLINKY DIPOLE antenna for 80/75, 40 and 20 meters offers advantages in size, convenience and portability not available anywhere. For example, on the 80/75 meter band, the special distributed helical loading permits efficient operation at a length as short as 24 feet (1/10 wave-length) compared to the normal 134 feet required for a full sized half-wave dipole. Another advantage of the SLINKY is that with one setting the complete code and voice segments of each band are covered with low VSWR. The SLINKY can be erected and stored in minutes. No transmatch is required, and the antenna exhibits very low VSWR over all complete bands (see VSWR graph). The antenna was originally developed for indoor or field use, but many use it permanently outdoors by rigging securely. The antenna and materials are resistant to weather deterioration, and the coils are zinc coated for durability, good conductivity, and ease in soldering.

PERFORMANCE of the antenna is as good as that of a full sized dipole in the same environment; VSWR stays low over a very wide bandwidth. Power capacity is at least 1,000 watts CW and 2,000 watts PEP on SSB. The SLINKY dipole does not require an elaborate ground-plane system like a vertical.

THE SLINKY KIT comes with a pair of special 4 inch dia. by 4 inch long coils, balun, 50 feet RG-58/U coax, PL-259 connector, nylon rope, end-hooks and a complete instruction manual including tuning charts. Actually, the antenna can be tuned experimentally to any desired frequency between 3.4 and 70.MHZ! Band switching, which takes less than one minute, is done by changing the number of expanded turns in each arm of the dipole, so access to the antenna is needed to change bands. If access is not possible, additional coil pairs can be fed from the common feed, with each coil pair tuned to a separate band, like a fan dipole.

LENGTH of the antenna is any convenient length from 24 to 70 feet on 80/75, 12 to 35 feet on 40, 6 to 18 feet on 20 meters.

FINAL ADJUSTMENT of the SLINKY dipole requires only a VSWR bridge and an operating transmitter. Assembly of the kit takes about $\frac{1}{2}$ hour.



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SLINKY DIPOLE[®] INSTRUCTIONS

PARTS LIST

2 Special Slinky Coils, 4" dia. by 4" length
Center insulator card
Nylon cord
End hooks
50 feet RG58/U
UHF connector, PL259
Instruction sheet

General Guidelines

The Slinky[®] Dipole is a new type of practical, compact, easily erectable dipole antenna for use on 80, 40, and 20 meters. It achieves good impedance match to 50 ohm systems by virtue of the helical inductive loading provided by the spring structure. Its efficiency equals that of a full-sized dipole antenna when properly utilized. In general, it is always desirable to select a location and mounting configuration which will allow for the greatest overall length and as high above ground level and as clear from metallic obstructions as possible. This will allow for the radiation of the best possible signal. Although the Slinky Dipole will work satisfactorily at quite small lengths and low heights, this will be at the expense of efficiency.

Slinky has the advantage of requiring no additional external impedance matching network. When properly adjusted, the helical loading automatically provides the proper resonance and matching conditions. The VSWR of the antenna for 50 ohm systems will be less than 2.5:1 over the 80 meter band and less than 1.8:1 over the 40 and 20 meter bands without any antenna retuning, or can be made to be less than 1.4:1 at any frequency in either band by proper adjustment of the antenna.

The Slinky Dipole also includes a built-in balun to provide a balanced feeding current to the dipole arms. The balun takes the form of a coil of several turns of coaxial feedline. This inhibits the flow of RF current on the outer conductor of the coaxial line.

The entire antenna may be mounted in an attic, a room, hallway, garage, outdoors, or wherever is most practical. It is able to be set up or disassembled in a matter of minutes.

CAUTION. During operation, substantial RF voltages will exist on the antenna, especially at the ends of the dipole arms. Do not touch while in operation. At least one foot separation should always be maintained between any structure and the metal parts of the Slinky Dipole. Keep combustible material at least one foot from the antenna when in use. For protection during lightning storms, disconnect and ground the antenna, or use a lightning arrestor.

Assembly

1) Wind 6 1/2 turns of the RG58/U coax through the large holes in the center insulating card, as shown in Figure 1 through 4. The coil should be 4" in diameter, and should be taped using masking or electrical tape to form a stable coil. Attach PL259 coaxial connector to other end of coax.

2) Wind one turn of the end of each Slinky coil through the pair of 1/8" holes at the edges of the center insulating card. See Figure 1 through 4.

3) Separate the RG58/U coax center and outer conductors at the feed point, and solder the center conductor to one of the Slinky coils and the other (outer) conductor to the other Slinky coil, using rosin core solder (not acid core). Also, solder the Slinky to itself where it winds through the center insulating card. This prevents the Slinky coil from accidentally unwinding from the center insulating card. See Figure 1 through 4.

4) Select the mounting area and drive a nail or screw at each end for the supporting points. Tie the nylon cord to one support, thread the cord through the entire Slinky and balun assembly, and tie the cord to the other support, thus forming a supporting cord for the entire Slinky assembly. A vertical cord center support is desirable if practical, since it takes the strain off the end supports. Use the 1/8" hole in the top of the insulating card for attachment of the center support cord.

5) Measure the overall length available for the antenna, and using the tuning chart supplied, determine the approximate number of active Slinky coils required. Count out this number of turns starting from the center insulator card, and bunch the unused coils together at the end of the antenna using the end hooks and an additional short length of the nylon cord. Tie this cord to the end supports also. This setting, given by the tuning chart, is a good first approximation for average installations. Because of variations in the height above ground and coupling to nearby objects, the actual resonant condition of the antenna may differ from that given in the chart by up to 20%; thus, the need for the next step.

6) Plug the antenna connector to a VSWR bridge or meter. Check the VSWR over the band being used, and center the VSWR curve by adding or subtracting an equal number of turns from the ends of each arm of the antenna. Adding additional turns to the active portion of the antenna will lower the resonant frequency, and subtracting turns will raise it. The antenna is properly tuned when the VSWR is either minimum at the center of the desired band, or minimized at a chosen operating frequency in the band.

7) Do not make the overall length of the antenna longer or shorter than the extremes listed in the tuning chart. If the antenna is operated at a shorter length than given in the chart, the efficiency will tend to be poor and the bandwidth narrow. If the antenna is longer than that given by the chart, the Slinky will permanently deform and not recover to its original compact form when stored.

8) The Slinky Dipole is now ready for use. Remember, do not touch the antenna while it is in operation or a serious RF burn can result, as is the case with any transmitting antenna.

9) For storage, simply disconnect the strings and allow the antenna to resume its original compact cylindrical form.

Operating Hints

1) Always try to operate with the antenna as long as possible, but without exceeding the tabulated lengths.

2) The overall length and effective height of the antenna can both be increased effectively by keeping the center of the antenna high and drooping the ends of the antenna towards opposite low corners of the room or attic.

3) The antenna, especially when operating at short lengths, is a highly tuned structure and will be quite sensitive to the location and size of objects in the close vicinity of it. Therefore, try to choose a location which is free from other wires, metal walls, or pipes.

4) The antenna will withstand severe outdoor exposure better if a stronger nylon support rope is used, and if several of the Slinky coils are taped to the support rope to minimize shifting.

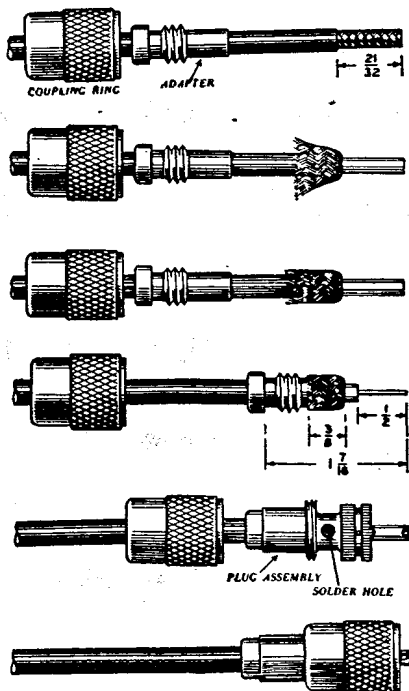
5) The higher the antenna is off the ground, the better will be its performance.

6) It is very helpful to mark the Slinky every 20 or 25 turns with tape. This simplifies the counting of the number of turns during initial setup. Once the antenna has been properly resonated on all bands, mark the resonant length in a similar manner with tape. This makes subsequent re-setting very easy.

7) Multi-element Approach - Additional Slinky coils can be fed from the original Slinky balun feed, but tuned to different bands, thus eliminating the need for any re-adjustment at all in switching bands. This method can be used where the antenna is rather inaccessible, as outdoors or in a tight crawl-space attic. For "permanent" installations, solder a shorting wire across the unused turns.

TELETRON DATA CORP.
BOX 84
KINGS PARK, NY 11754

83-ISP (PL-259) Plug with Adapters



1. — Cut end of cable even. Remove vinyl jacket $\frac{3}{8}$ " — *don't nick braid*. Slide coupling ring and adapter on cable.

2. — Fan braid slightly and fold back over cable.

3. — Compress braid around cable. Position adapter to dimension shown. Press braid down over body of adapter to dimension shown. Press braid down over body of adapter and trim.

4. — Bare $\frac{1}{2}$ " of center conductor — *don't nick conductor*. Pre-tin exposed center conductor.

5. — Screw the plug assembly on adapter. Solder braid to shell through solder holes. Solder conductor to contact sleeve.

6. — Screw coupling ring on back shell.

APPROXIMATE TUNING CHART

L = Overall Antenna Length in Feet

N = Number of Turns in each Half-Length

80 Meters (3.5 - 4.0 MHz)

| L | N |
|----|-----|
| 70 | 92 |
| 68 | 94 |
| 66 | 95 |
| 64 | 97 |
| 62 | 98 |
| 60 | 100 |
| 58 | 102 |
| 56 | 104 |
| 54 | 105 |
| 52 | 107 |
| 50 | 109 |
| 48 | 112 |
| 46 | 114 |
| 44 | 116 |
| 42 | 118 |
| 40 | 121 |
| 38 | 124 |
| 36 | 126 |
| 34 | 129 |
| 32 | 132 |
| 30 | 135 |
| 28 | 139 |
| 26 | 143 |
| 24 | 147 |

40 Meters (7.0 - 7.3 MHz)

| L | N |
|----|----|
| 35 | 45 |
| 34 | 46 |
| 33 | 47 |
| 32 | 48 |
| 31 | 49 |
| 30 | 50 |
| 29 | 51 |
| 28 | 52 |
| 27 | 53 |
| 26 | 54 |
| 25 | 55 |
| 24 | 56 |
| 23 | 57 |
| 22 | 58 |
| 21 | 59 |
| 20 | 60 |
| 19 | 61 |
| 18 | 62 |
| 17 | 63 |
| 16 | 65 |
| 15 | 66 |
| 14 | 68 |
| 13 | 70 |
| 12 | 72 |

20 Meters (14 - 14.35 MHz)

| L | N |
|----|----|
| 18 | 22 |
| 16 | 24 |
| 14 | 25 |
| 12 | 27 |
| 10 | 28 |
| 8 | 28 |
| 6 | 28 |

NOTE: As explained in the accompanying text, the above tuning chart is to be used as a first approximation to tuning your antenna. The effect of local environment can only be compensated for by final tuning in your particular installation.

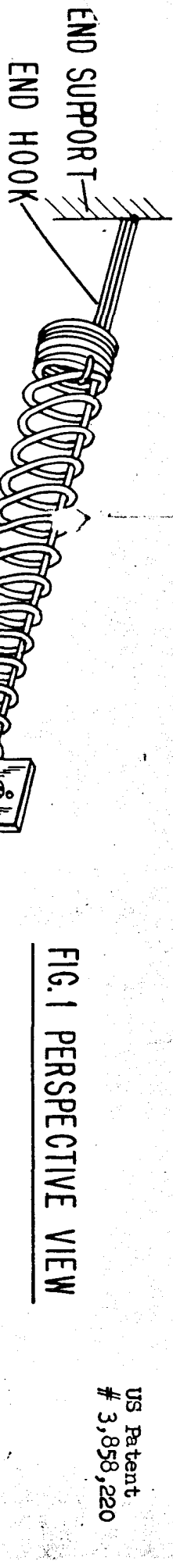


FIG. 1 PERSPECTIVE VIEW

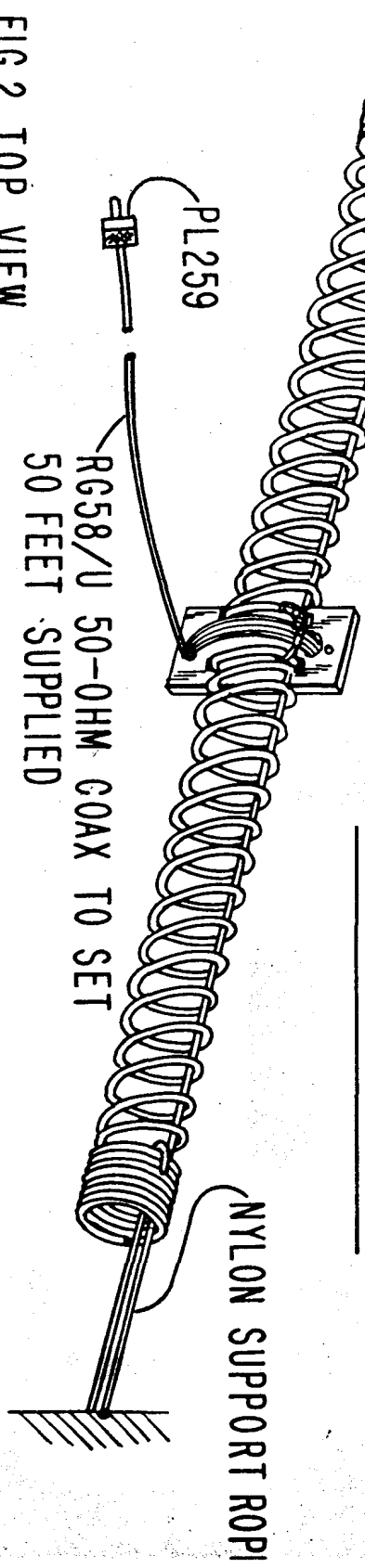


FIG. 2 TOP VIEW

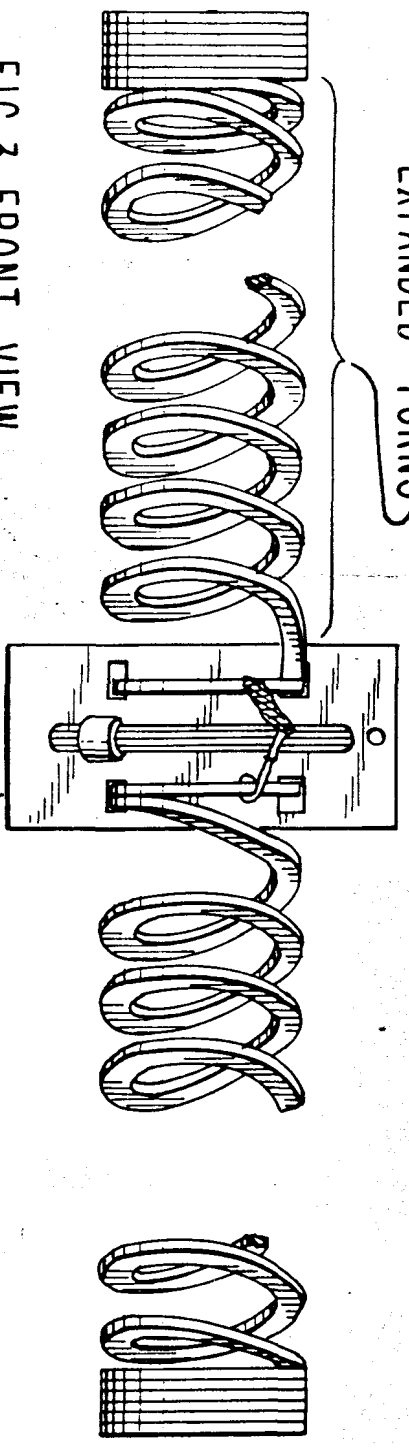
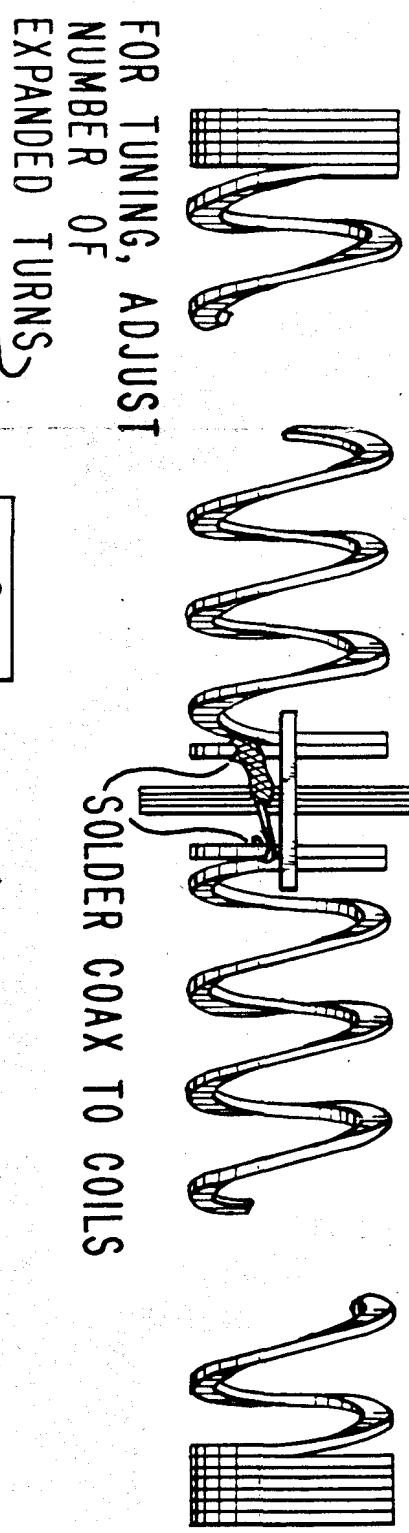


FIG. 3 FRONT VIEW

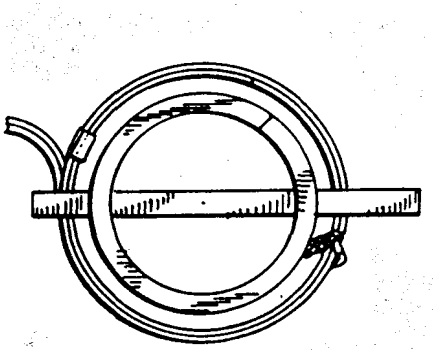


FIG. 4 END VIEW