

AL-705

QRP MAGNETIC LOOP
40M - 10M (7 - 29.7 MHz)

DESCRIPTION

The AL-705 is a HF 40 to 10 meter (7 - 29.7 MHz) Magnetic Loop antenna that is rated at 20W PEP SSB, 10W CW & Digital.



Assembly Instructions

WARNING – Never use the Inner or Outer Coaxial cables of the AL-705 as a jumper coax.

Assemble the Loop

1) Attach the Outer Loop Element to the black match box by screwing the PL-259 connectors on the Outer Loop into the SO-239 connectors on the match.

2) Attach the Inner Loop using the included Nylon clips to the approximate center of the Outer Loop Element.

Connect your equipment

Attach the feedline's PL259 to the SO239 on the T-Connector in the center of the (small) coupling loop, then connect the other end of the feedline to your equipment.

Make adjustments to your Mic Gain settings

For all voice modes, adjust your equipment's Mic Gain so your meter does not peak when speaking, which will typically a setting between 9 and 11. This will ensure you do not have a distorted voice transmission by keeping the antenna and equipment from being overdriven.

SITE SELECTION AND OPERATION

- 1) Do not place the tuning box on a metal surface. Also, keep the loop at least 18 inches from metal objects.
- 2) Place the loop greater than 1 loop diameter high (about 3 feet or higher).
- 3) The loop can be placed higher, so it can see above and past obstacles.
- 4) All antennas are affected by the physical environment that surrounds them. For maximum performance, best practice for antenna placement should be considered when placing the loop in its' operating position. For example, do not expect the same performance from the loop when indoors as you are experiencing on another antenna that is outside. Similarly, an antenna placed at 12 feet, while your loop might be setting at a height of 3 feet, will often perform better as it can see above and past obstacles.
- 5) In home installations where the roof is composed of asphalt shingles, you will typically see a little more than 1 S-Unit of loss, but usually no more than 1.75 S-Units of loss.
- 6) In home installations where the exterior walls have a chicken type wire under stucco or aluminum siding makes it nearly impossible for any antenna to function properly. If you are forced to operate in this situation, then place the antenna in front of the largest window, after removing any metal screen.
- 7) Near field radiation patterns of a magnetic loop are mainly in the plain of the loop, not through the center. Facing the center of the loop at a noise source can, however, help to null out interference caused by noisy electronics.
- 8) Far field radiation patterns of a magnetic loop are mainly in the plain of the loop, however, the surrounding environment can affect radiation patterns, which may naturally begin to overlap. This effect can minimize the far field directionality of a loop.

TUNING TIPS

The AL-705 antenna has a built-in tuning knob on the Alpha Match. It is with this black knob that you tune the antenna to the lowest SWR of 2.5:1 or less 10-40 meters. NOTE – It is easier to match and learn to tune the loop on 40 meters. The following technique has proven to be the easiest method for tuning the AL-705 in nearly all scenarios:

TUNING

- 1) After attaching your coax to your radio, set your radio for minimum power output.
- 2) Set your rig to SSB Mode, turn the volume up, and listen for the loudest noise floor as you turn the black knob on the match to the right.
- 3) You can then fine tune the Alpha Match with the black knob till the SWR meter on your rig's internal meter or your antenna analyzer is as low as possible.

TUNING TIPS

(Offset frequency while tuning for hand capacitance)

- a. To off-set the effect of hand capacitance while tuning, a technique called reverse tuning can be used. To reverse tune a magnetic loop, tune for minimum SWR while touching the Black Knob on the Alpha Match, say 1.9:1; and then when you remove your hand you might see 4.3:1 for example. Then all you must do is tune for 4.3:1 while your hand is on the knob to achieve an SWR of 1.9:1 when you remove your hand.

(Tuning with equipment, without touching the antenna)

- a. An antenna analyzer or SWR meter (whether internal to the rig or inline) can be used to find the lowest SWR after step 1 & 2 under TUNING is performed. This can be done without you having to touch the antenna. While watching the SWR on your equipment, change the frequency on your rig or analyzer till minimum SWR is shown on the meter.