

Cushcraft R7 just received !

Antenna foot



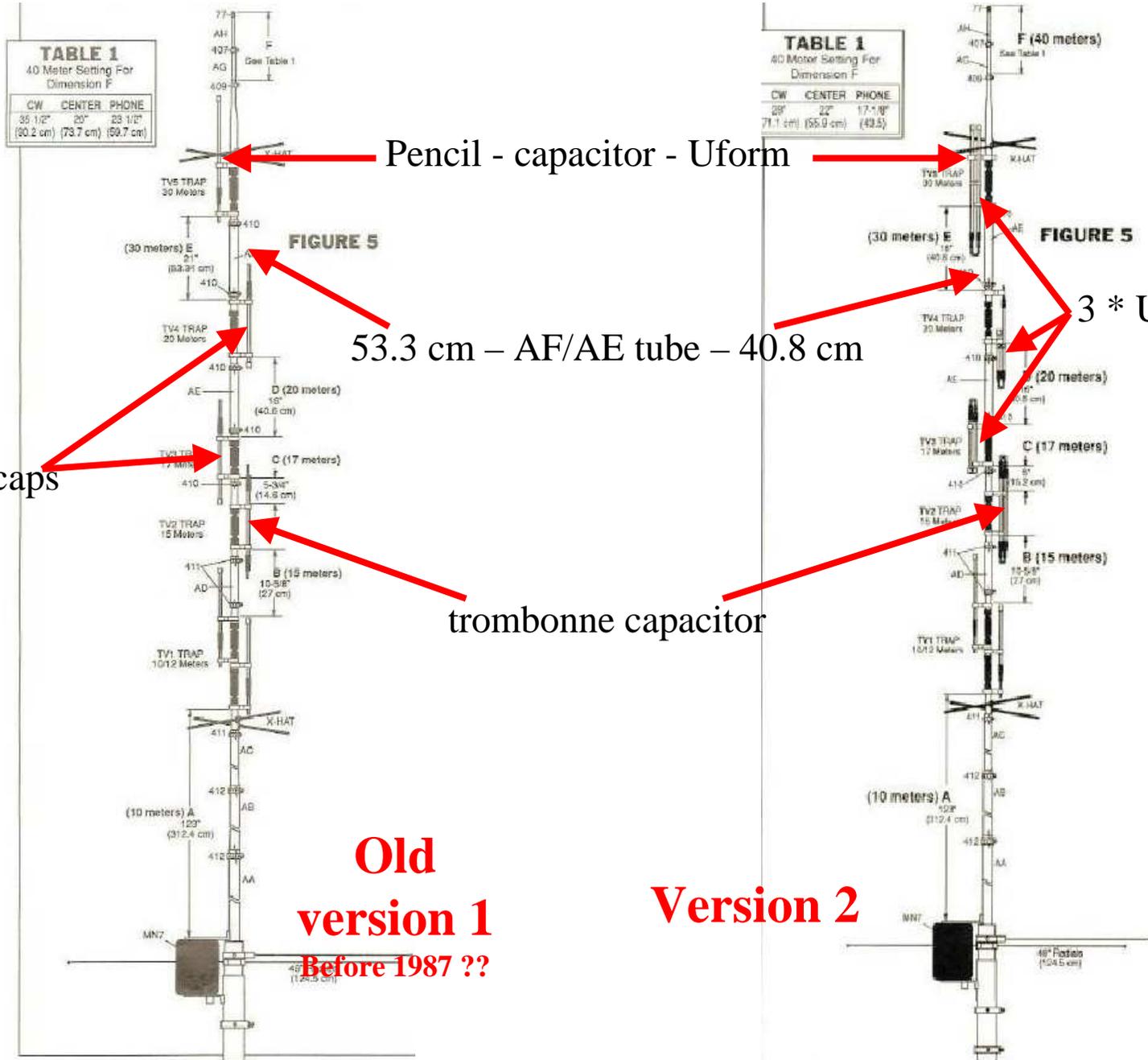
Broken plastic parts



Matching box: broken radiator bracket



Cushcraft R7 : the 2 versions



2 * U caps

53.3 cm – AF/AE tube – 40.8 cm

trombone capacitor

3 * U caps

Old version 1
Before 1987 ??

Version 2

Cushcraft R7 v1: rapid monting on the terrasse !



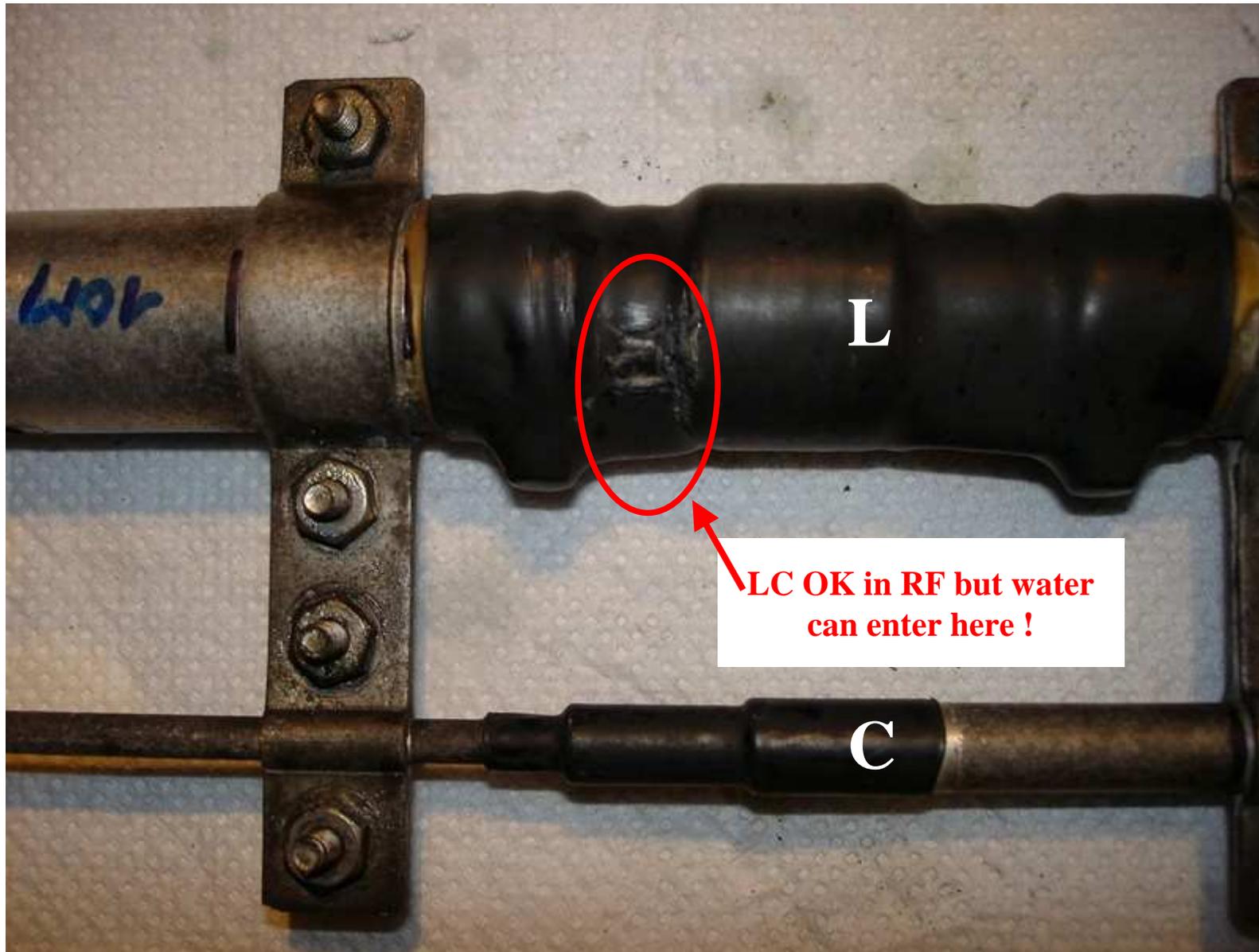
Heigth of the ground-plane : 40 cm from the terrasse surface

Cushcraft R7 : first meas with MFJ-269 SWR Analyser !

Band (M)	Min F (MHz)	Min SWR
10 (28.5)	28.47	1.3
12 (24.94)	No visible	-----
15 (21.3)	No visible	-----
17 (18.1)	20.56	1.6
20 (14.2)	15.24	1.5
30 (10.125)	10.46	1.7
40 (7.05)	7.9	>2
?	3.04	1.4

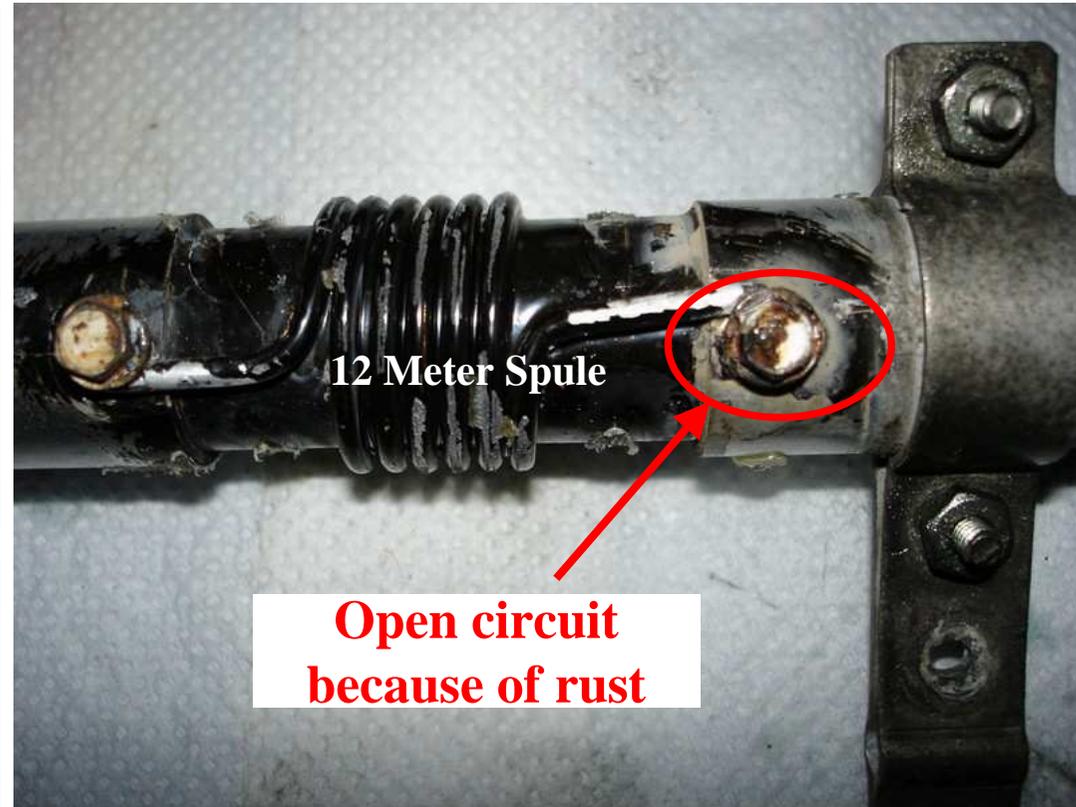
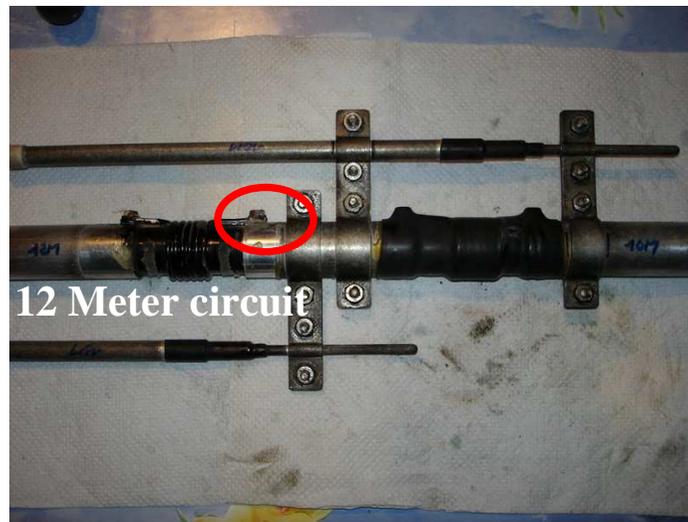
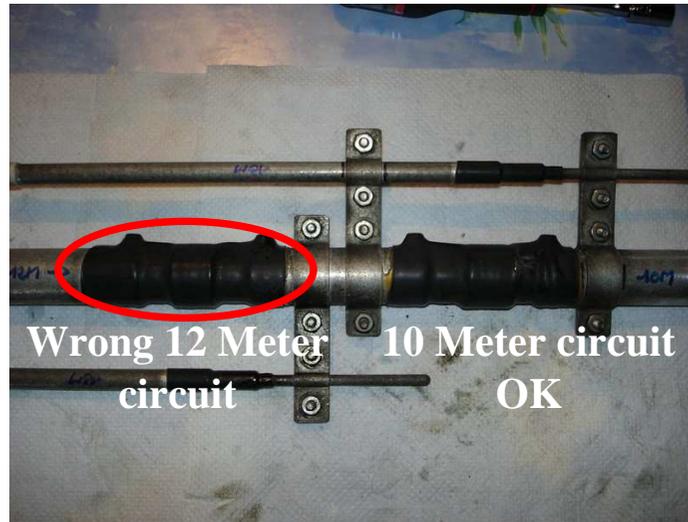
All resonances are out of band. Only the 10 meter band is needable !!!

Cushcraft R7 : 10 meter resonant circuit



Cushcraft R7 : 12 meter resonant circuit repairing

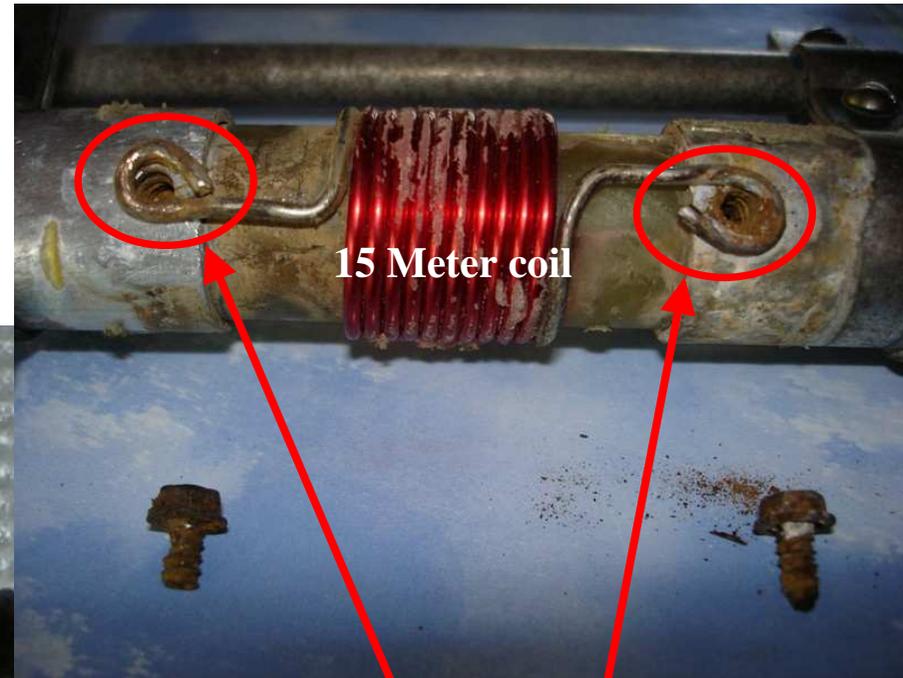
Meas with only an Ohmmeter



Both screws were replaced with similar inox ones

Cushcraft R7 : 15 meter resonant circuit repairing

Meas with only an Ohmmeter



Open circuit because of rust

Split in Metal. Obligation to drill an another hole for initial rigidity + glue

Cushcraft R7 : rapid mounting before new HF meas



Cushcraft R7 : meas with MFJ-269 after rapid repair

Band (M)	Min F (MHz)	Min SWR
10 (28.5)	28.6	1.4
12 (24.94)	24.79	1.6
15 (21.3)	21.2	1.6
17 (18.1)	18.034	1.4
20 (14.2)	14.105	1.4
30 (10.125)	10.1	1.5
40 (7.05)	7.046	1.05
?	2.98	1.6

All bands are now correct, except 17 and 12 Meter Band (too low).

But the mini SWR on every band is remaining high, except on 7 MHz

Cushcraft R7 : rain protection with plumber caoutchouc coating



Application on 15 meter coil. Ensure that Alu tube must be sealed to the epoxy one

Cushcraft R7 : meas with IC-706MKIIg after serious tube and clamp inner part sweeping

Band (M)	Min F (MHz)	Min SWR
10 (28.5)	28.680	1.4
12 (24.94)	24.9283	1.5
15 (21.3)	21.208	1.6
17 (18.1)	18.134	1.4
20 (14.2)	14.219	1.24
30 (10.125)	10.122	1.5
40 (7.05)	7.055	1.05
?	3.043	2.7

12 and 17 meter band LC were a little worked again

Cushcraft R7 : Meas with IC-706MKIIg

All tube dims between RC coils, at minimum

Antenna earth plan at 40 cm height from the terrasse plan

Band (M)	2	1.5	1.3	SWR min	1.3	1.5	2
10 (28.5)	26.807	27.666		28.6/1.3		29.821	>30.000
12 (24.94)	23.957	24.779		24.979/1.35		25.179	25.527
15 (21.3)	20.384	20.962	21.127	21.267/1.1	21.377	21.463	21.674
17 (18.1)	17.714	17.973	18.060	18.126/1.15	18.182	18.248	18.386
20 (14.2)	13.949	14.108	14.165	14.204/1.2	14.240	14.290	14.387
30 (10.125)	10.075	10.102		10.121/1.35	Opt LC	10.138	10.158
40 (7.05)	7.005	7.032	7.048	7.070/1.0	7.090	7.104	7.143
?				2.990/1.7			

Not really bad, but constructor specs min SWR aren't obtained on all bands

Cushcraft R7 : antenna ground plan height at 1.50M

With same antenna dims

Band (M)	Old min SWR	SWR min	F incr KHz	Consequence
10 (28.5)	28.6/1.3	29.611/1.5	+1000	Very affected !!
12 (24.94)	24.979/1.35	25.027/1.5	+48	Out of band
15 (21.3)	21.267/1.1	21.328/1.4	+61	OK
17 (18.1)	18.126/1.15	18.143/1.3	+17	OK
20 (14.2)	14.204/1.2	14.241/1.25	+37	OK
30 (10.125)	10.121/1.35	10.144/1.25	+23	OK
40 (7.05)	7.070/1.0	7.123/1.0	+53	Easy to realign
?	2.990/1.7	3.106	+116	

Conclusion : all SWR minimas are moving up, staying inband

Cushcraft R7 : other playing factors

Parameters	Influence on antenna resonance frequencies
Greater height of antenna ground from natural ground	going up. Must lengthen every tube between traps for each band
10/12/30 meter pencil traps: higher capacitor placement	going down
all traps: greater capacitance clamping distance on coil	going down

CONCLUSION:

- every different mounting place gives a different antenna mounting dimensions process
- insure good rigidity between alu and epoxy tubes with special plastic glue
- replace every screw with inox ones, if possible
- glue every alu/epoxyglass tube junction
- protect each coil from water with plumber retracting caoutchouc coating
- 12 & 15 meter traps places are strong affected by wind tortion, so put guy ropes just up the 15 meter one