

COLLINS FM RING ANTENNA

37
M

The Collins 37M FM Ring Antenna is outstanding for these reasons:

- **Effective in multiplexing**
- **Capacitive adjustment**
- **Top or side mounting**
- **High gain**
- **Light weight and low windloading**
- **Equal distribution of power**

A proven design that has been imitated but never duplicated in efficiency during the past decade, the Collins 37M Antenna still maintains its position of leadership in FM broadcasting.

The simplicity of its electrical and mechanical design makes the 37M so light and compact that dead weight and windload are reduced to a minimum. This aerodynamic simplicity and low weight provide greater efficiencies and savings in new tower costs, erection time and maintenance expense. These features also eliminate undue oscillating and weaving of the tower and antenna.

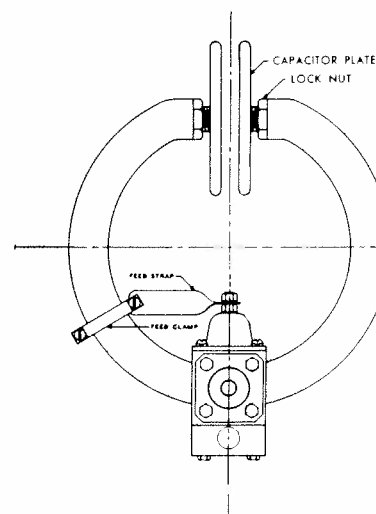
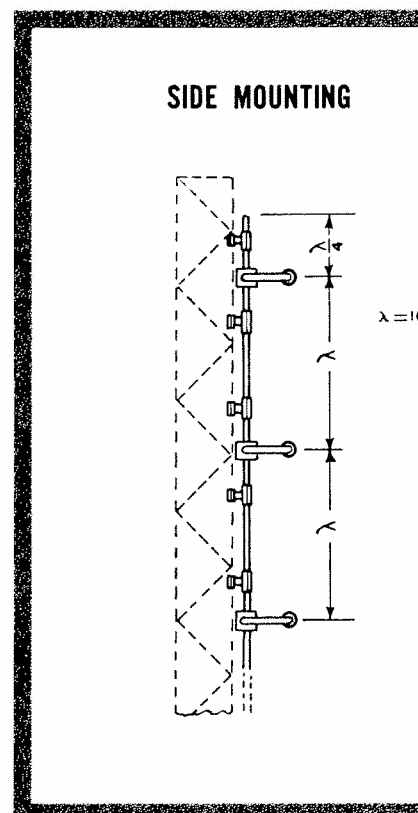
The Collins 37M Ring Antenna consists of only two basic parts: the radiating ring and the connecting inter-ring transmission line. Any number of rings, either odd or even, may be used to provide maximum flexibility in high power gain.

Only one inter-element transmission line is required to feed all rings in a multiple element array. The individual radiating rings are identical mechanically and electrically. They are both shunt fed and supported by a single interconnecting feed line, which consists of modified lengths of standard EIA rigid coaxial line insulated with Teflon. The Collins 37M FM Antenna feed system has a stub at the top of the array which is capacitive and adequately removes the inductive reactance created by the shunt feed on the ring. The 37M terminates in a standard EIA 50 ohm flange connection on the bottom element of the array for coupling directly to the transmission line.

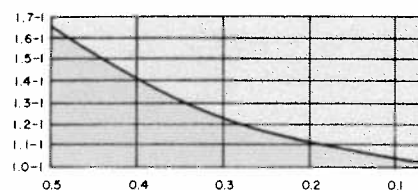
The horizontal radiation pattern of the Collins 37M FM Antenna is essentially circular for both top mounting and side mounting arrays. A maximum deviation of only 1 db is obtained in the top mounted arrangement, while the circular pattern of the side mounted array will generally equal that of the top mounted antenna. The extent of deviation from a circular pattern in the side mounted antenna is dependent on the type and size of tower on which the antenna is mounted. In cases of very large supporting structures and in all cases where guy wires are used, factory recommendations should be requested on spacing of insulators and guy wires and mounting of the antenna. Insulators should be placed where the guys attach to the tower and guys should also be broken with insulators every three feet for 15 feet in the immediate area of the antennas.

The voltage standing wave ratio of the Collins 37M Antenna can be maintained at better than 1.1:1 due to the inherently high stability of the tuning system. The capacitor plates of the 37M are adjustable for optimum performance and equal power distribution through all rings. These features allow an accurate prediction of the gain from the given number of loops in the array. Adequate bandwidth virtually eliminates detuning effects caused by changes in atmospheric conditions. The bandwidth and linearity of the antenna are more than adequate for multiplexing service.

The compactness and simplicity of the 37M allow maximum efficiency in ice removal. Each ring may be equipped with an internally mounted, 200-watt heating unit which consists of a cartridge type element inside each of the tuning capacitor plates and an additional flexible heating element extending the full circumference on the inside of the ring. The simplicity of the heating arrangement makes it possible to replace the elements in the field if necessary. The absence of large masses of metal assures efficient and practical de-icing of the antenna and capacitor, which is the most critical part of the antenna when icing occurs.



VOLTAGE STANDING WAVE RATIO



MOUNTING

The 37M Antenna is easy and quick to erect. There are no heavy hoisting problems so that many hours of erection time can be saved. Support brackets are specially fabricated for each installation to match the tower and mounting arrangement, thus minimizing erection problems at the site.

There are two methods of mounting the 37M Antenna:

1. Side mounting of any number of rings on a corner leg of the tower offers definite advantages. Either guyed or self-supporting towers will in nearly all cases support the side mounting 37M. Towers

which support top mounting television antenna arrays increase their usefulness with the addition of a side mounting 37M Antenna.

2. Top or pole mounting design is available on special order for installation on towers where no TV antenna is present or planned. This type of mounting provides the maximum in height and coverage. The light weight and windloading of the top mounting series allows erection on most guyed and self-supporting towers without extensive tower modification.

SIDE MOUNTING

Collins Type	No. of Rings	Power Gain	Field Gain	A Feet	On 1 5/8" Line		On 3 1/8" Line	
					B	Weight	B	Weight
37M-1	1	.9	.95	2-6±	24	23	32	46
37M-2	2	2.0	1.41	12-6±	68	55	100	100
37M-3	3	3.0	1.73	22-6±	114	86	170	175
37M-4	4	4.1	2.02	32-6±	160	119	240	240
37M-5	5	5.2	2.28	42-6±	206	152	310	305
37M-6	6	6.3	2.51	52-6±	252	185	380	370
37M-7	7	7.3	2.70	62-6±	298	218	450	435
37M-8*	8	8.4	2.90	72-6±	344	251	520	500

TOP MOUNTING

Collins Type	No. of Rings	Pwr. Gain	A Ft.	B Ft.	C Ft.	On 1 5/8" Line						On 3 1/8" Line					
						D Ft.	E Dia.	F Dia.	G Lbs.	H Ft.-Lbs.	Dead Wt.	D Ft.	E Dia.	F Dia.	G Lbs.	H Ft.-Lbs.	Dead Wt.
37M-1	1	.9	6		3	4-7	3 1/8"	3 1/8"	50	230	223	4-7	3 1/8"	3 1/8"	68	312	250
37M-2	2	2.0	16	10±	4	10	4 1/2"	4 1/2"	239	2,390	305	12-3	4 1/2"	4 1/2"	291	3,565	360
37M-3	3	3.0	26	20±	7	14-5	6 5/8"	6 5/8"	403	5,803	736	14-4	6 5/8"	6 5/8"	486	6,950	825
37M-4	4	4.1	36	30±	10	19	7 5/8"	7 5/8"	564	10,716	1169	18-9	7 5/8"	7 5/8"	678	12,713	1290
37M-5	5	5.2	46	40±	12	23	8 5/8"	7 5/8"	747	17,181	1652	22-8	9 5/8"	9 5/8"	919	20,769	2128
37M-6	6	6.3	56	50±	14	27-2	9 5/8"	8 5/8"	951	25,867	2285	26-7	10 3/4"	9 5/8"	1173	31,260	2770
37M-7	7	7.3	66	60±	15	31	10 3/4"	8 5/8"	1175	36,425	3218	31-3	10 3/4"	8 5/8"	1388	43,375	3485
37M-8*	8	8.4	76	70±	16-6	34-9	11 3/4"	9 5/8"	1417	49,241	4051	34-8	12 3/4"	11 3/4"	1696	58,682	4650

*Antennas with more than 8 rings quoted upon request.

- Windloads based on 20 lbs. per square foot on projected areas of cylindrical surfaces with all sections considered round.
- Power gains compared to half wave dipole.
- Antenna assemblies on 1 5/8" line are rated for power inputs at base of antenna up to 3 kw for a single ring array; 10 kw for four or more rings.
- Antenna assemblies on 3 1/8" line are rated for power inputs up to 3 kw per ring at base of antenna with maximum of 20 kw for seven or more rings.
- Antennas for power inputs in excess of 20 kw incorporate the use of a "T" feed at center of array.



CREATIVE LEADER IN COMMUNICATION

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