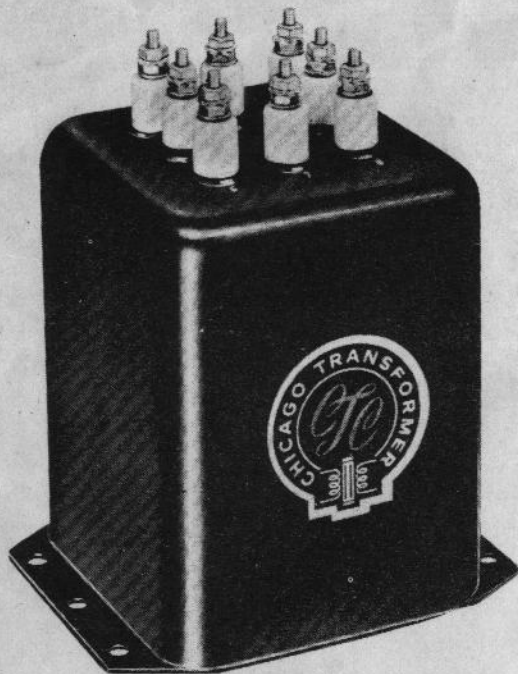


# Use of CHICAGO Splatter Chokes, Nos. SR-300 and SR-500

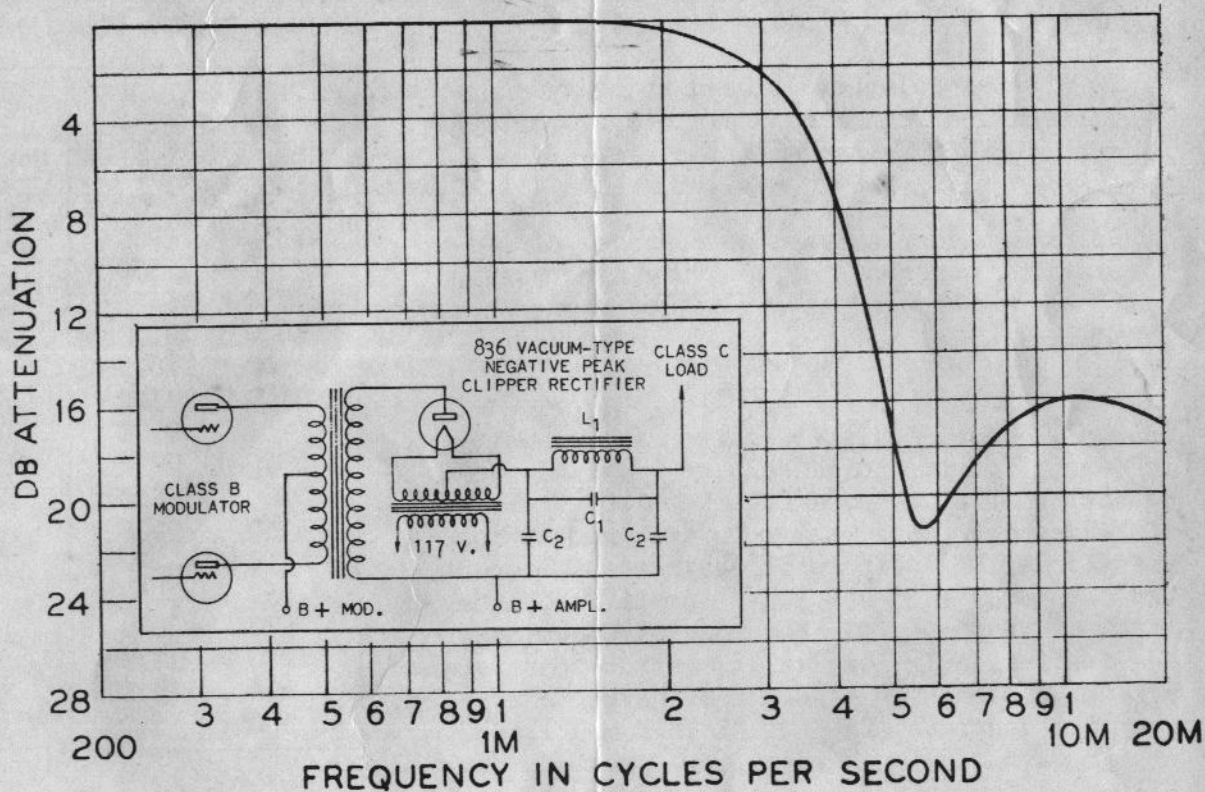


## SPECIFICATIONS

CHICAGO Splatter Chokes, Nos. SR-300 and SR-500, are rated for 300 and 500 ma. of d-c current respectively. Specifically designed for use in high level "clipper filters," they are tapped to cover a wide range of inductances at relatively constant Q. The multiple inductance values obtainable from these units are shown in the table below right.

Insulation of the two chokes is adequate to withstand the high peak voltages developed during periods of extremely heavy modulation, such as when extended positive peak modulation is employed.

Typical of the high level "clipper filters" for which these chokes are designed is the one shown in the circuit diagram, accompanying the curve, at above right.



## CIRCUIT NOTES

A single 836 vacuum-type rectifier will pass up to 250 ma. A pair in parallel will handle 500 ma. In low voltage application, the 5R4GY or 5Z3 can be employed advantageously. **CAUTION:** Mercury vapor rectifier tubes are unsuitable for splatter suppressor application due to a slowing up or retarded action in the deionization of the tubes, which causes objectionable high frequency transients to appear in adjacent channels.

The filament transformer used for the rectifier must have adequate insulation to withstand a minimum of three times the Class C operating voltage, and preferably should have low capacity between windings and winding to core. CHICAGO Filament Transformer No. F-210H will meet these requirements. The "working voltage" insulation of  $C_1$  should be equal to the d-c operating voltage, and that of  $C_2$  at least three times the operating voltage for maximum life.

## FEATURES OF FILTER

1. Eliminates splatter caused by heavy modulation and minimizes harmonic distortion generated in the modulator stage.
2. Limits band width to 3,000 cycles.
3. Permits higher average percentage of modulation, thereby effectively increasing the "get through" capability of a signal.
4. Automatically self-adjusting.

This high level "clipper filter" is completely devoid of the difficulties normally encountered in low level clipping as a result of excessive phase shift in the modulation transformer. A low pass filter, placed between the modulator and modulated amplifier, limits the frequency of the modulation voltage to a sufficiently low value that no splatter will be present as a result of harmonic frequencies generated in the Class B modulator. A high vacuum clipper rectifier precedes the filter and provides a proper gating effect, conducting at modulation levels up to 100%. When the modulation level exceeds 100%, the output of the modulator stage swings the instantaneous plate voltage on the final amplifier below zero. The rectifier then stops conducting and negative peak clipping is confined to the rectifier instead of being imposed on the modulated amplifier. Since the modulating voltage is limited so as not to exceed the d-c voltage of the Class C amplifier, and therefore never goes negative, there will be no clipping of the negative peaks to generate spurious and objectionable side bands in the modulated stage.

## FILTER VALUES FOR 3,000-CYCLE CUT-OFF — CHOKE VALUES & TERMINAL NOS.

LOAD IMPEDANCE Greater But less than than		L <sub>1</sub> Henrys	C <sub>1</sub> Mfd.	C <sub>2</sub> Mfd.	D-C Resistance in Ohms SR-500 SR-300		Terminal Nos.
19200	20800	1.500	.00073	.0019	67	105	1 & 8
17350	19200	1.390	.00079	.0020	66	103	2 & 8
15500	17350	1.170	.00091	.0023	64	100	3 & 8
13750	15500	1.120	.00098	.0025	63	99	4 & 8
11800	13750	.990	.00116	.0030	61	95	5 & 8
10500	11800	.860	.00133	.0034	39	65	1 & 7
9100	10500	.780	.00146	.0038	38.5	63.5	2 & 7
7750	9100	.640	.00178	.0046	36.5	60	3 & 7
6550	7750	.570	.00200	.0051	36	59	4 & 7
5200	6550	.460	.00256	.0066	34.5	56	5 & 7
4350	5200	.380	.00310	.0080	13.2	27	1 & 6
3450	4350	.325	.00360	.0093	12.5	25	2 & 6
2650	3450	.240	.00500	.0131	10.5	22	3 & 6
1970	2650	.200	.00610	.0157	10.0	20.5	4 & 6
1200	1970	.124	.00950	.0240	8.5	17.5	5 & 6
620	1200	.069	.01720	.0440	5.0	9	1 & 5
300	620	.027	.03860	.1000	3.5	6	1 & 4

The 3,000-cycle cut-off frequency, chosen for calculating the values in the table above, has proven to be a good compromise for voice work. With a lower cut-off frequency, articulation may suffer, while a higher cut-off frequency requires excessive channel width. An M-derived filter was selected because of its excellent attenuation and constant impedance characteristics. The L and C values for various Class C impedances have been determined accurately. They are not critical — a deviation of ±10% will not effect the overall performance of the filter. Greater attenuation can be obtained, if required, by cascading two sections.

**CHICAGO STANDARD TRANSFORMER CORPORATION**

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# CHICAGO

## CHICAGO LOW PASS FILTER No. LPF-2

Originally designed and intended for commercial aircraft communication service, the LPF-2 can be advantageously employed in all types of amateur, police and commercial voice communication equipment.

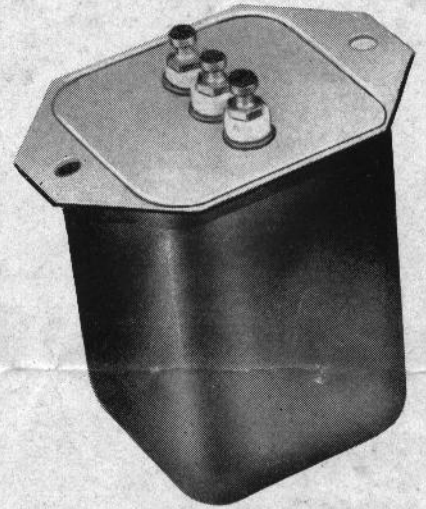
In voice work, a good compromise between intelligibility and band width is 3,000 cycles. At this frequency, the speech intelligibility is as good as with unlimited high frequency response. If the cut off frequency is greater than 3,000 cycles, the band width requirements become excessive. In the basic design of LPF-2, we have selected 3,000 cycles as an arbitrary frequency at which cut off should begin.

As indicated on the adjoining attenuation curve, frequencies above 3,000 cycles are sharply cut off, thereby affording a substantial reduction in band width requirements. By selecting plate coupling and cathode bypass condenser values, the power consuming bass frequencies can also be attenuated or cut off below 200 cycles. The use of a low pass filter in the speech amplifier audio system permits a higher average percentage of modulation in addition to confining the signal within a narrow pass band.

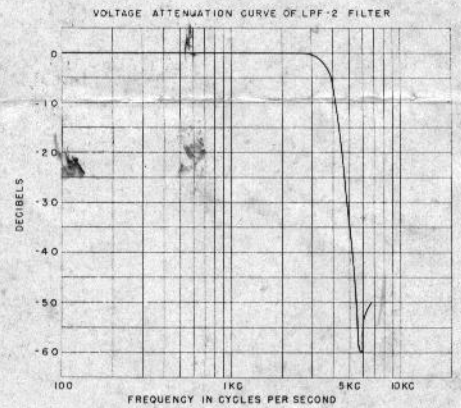
Electrically, the filter operates out of a source impedance of 50,000 ohms (plate of a 6C4, 6J5 or equivalent) to a 50,000 ohm grid.

The low pass filter will function satisfactorily at input signal levels up to 10 volts RMS. A plate blocking condenser must be used between the input of the filter and the preceding audio amplifier stage, since none is incorporated in the filter proper. The insertion loss of the LPF-2 is relatively low, being in the order of 0.8 db. If greater attenuation than that which can be obtained from a single section is desired or required, two sections can be cascaded.

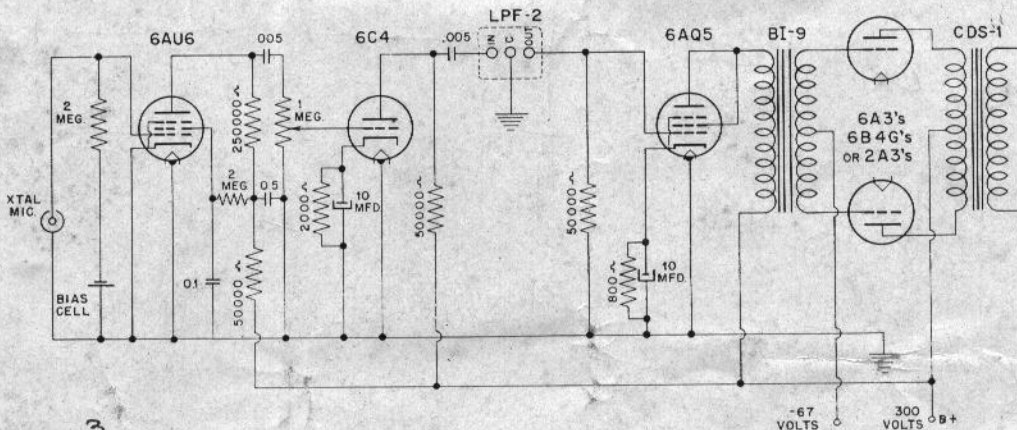
Typical manner in which the filter can be connected into existing speech equipment or incorporated in newly designed apparatus is indicated below.



LIST PRICE . . . . . \$26.50



TYPICAL 15-WATT SPEECH AMPLIFIER EMPLOYING THE LPF-2 FILTER



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