

**Subject:**

MICROPHONE HOWL

MODEL D 22-1

**INSTALLATION**

AND

**SERVICE DIVISION**

**RCA Manufacturing Company, Inc**  
NATIONAL OFFICE  
Camden, N. J.

**Date** Nov. 12, 1935

**Number** 3.156-B

**Classification**

Instructions  
and  
Activities

**INSTRUCTIONS AND INFORMATION**

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The high level of sound energy within the cabinet of the D 22-1 may occasionally cause acoustic regeneration or a sustained howl. This condition occurs only during record reproduction and is due to vibrating elements in the 6L7 of the audio expander stage.

Improvements have recently been effected in the manner of supporting the 6L7 elements so that the tendency to howl is eliminated. D 22-1 instruments and tubes of the 6L7 type received lately should, therefore, be free from "howling" tendencies.

The "howl" produced by the original type of 6L7 is usually at a frequency of about 2000 cycles. Any "howl" experienced with the later type will be at a frequency of approximately 400 cycles.

The improved 6L7 is being shipped in the first detector socket of the D 22-1 receiver chassis as well as in the expander stage so that they may be interchanged if "howl" occurs.

W.J. Zaun  
Installation and Service

Camden, New Jersey.

**Subject:**

MODEL D22-1

**INSTALLATION**

AND

**SERVICE DIVISION**

**RCA Manufacturing Company, Inc**  
NATIONAL OFFICE  
Camden, N. J.

**Date** Nov. 29, 1935

**Number** 3.1640-B

**Classification**

Instructions  
and  
Activities

**INSTRUCTIONS AND INFORMATION**

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It is important that some educational work be done to make our dealers and distributors cognizant of the necessity for more careful attention to installation, preliminary adjustments and demonstration of this instrument. Its price is comparable to that of an automobile, which on delivery receives a complete check with slight adjustments. We consider that such procedure should be accorded the D 22-1.

Intensive tests are now being conducted in Camden to obviate troubles so far reported. Special check is being made on turntable "wow", spindle eccentricity, microphonic howl, all tubes, cabinet finish, pick-up heads and audio quality at low gain. Instruments coming through distributors should be again thoroughly tested to assure that our tests are taking effect. Troubles should be promptly reported, giving the usual complete information on serial number, code number, classification and description of fault.

Cabinet backs are to be installed on all instruments shipped to date. A supply of these backs will be forwarded to each distributor in accordance with his D 22 purchase. Please see that he carries out the operation of getting them installed.

Reference should be made to letters 7.6B and 3.156B. A supply of the improved 6L7 is on hand at all District Offices.

Improvement of quality on phono reproduction may be gained by adding a 80 mmfd capacitor from terminal #4 to #6 on the input pack.

W.J. Zaun  
Installation and Service

Camden, New Jersey.

**Subject:**

Pickup Head

Model D 22-1  
Part Number 11481

**INSTALLATION**

AND

**SERVICE DIVISION**

**RCA Manufacturing Company, Inc**  
NATIONAL OFFICE  
Camden, N. J.

**Date** Jan. 14, 1936

**Number** 3.180-B

**Classification**

Instructions  
and  
Information

**INSTRUCTIONS AND INFORMATION**

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Trouble may be experienced with the D22-1 pickup head due to instability of the armature centering adjustment. Improvements have been made in recent production to minimize this condition by decreasing the diameter of the centering spring and making a more substantial attachment of the same spring to the pickup armature. These later heads should give no trouble, however, if your observations are to the contrary a report should be promptly made.

The improved head may be identified by inspection of the armature and centering spring arrangement. The spring is looped around the armature and its end hooked around its straight portion.

When unstable adjustment is obtained with the original type of pickup the complete head should be replaced with one of the later improved type. The original heads should be accumulated for return to Camden on a Field Removal Tag for credit.

W.J. Zaun  
Installation and Service

Camden, New Jersey.

**Subject:**

Reduction of "Wows"

MODEL D 22-1

**INSTALLATION**  
AND  
**SERVICE DIVISION**

**RCA Manufacturing Company, Inc**  
NATIONAL OFFICE  
Camden, N. J.

**Date** November 18, 1935**Number** 7.6B**Classification**

Rejecting  
and  
Inspection.

## INSTRUCTIONS AND INFORMATION

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"Wows" may originate in the worm or worm gear of the motor due to unevenness of either part or manufacturing variations. It is extremely difficult in the field to correct for these conditions even if the two are lapped in. Furthermore, lapping in is a difficult job in the field and whether an improvement would result is questionable.

The end thrust of the rotor is adjustable. This adjustment is fairly critical and, in general should not be tampered with in the field. It has been found possible, however, to reduce "wows" considerably by proper adjustment of this end thrust provided the setting was poor in the first place. This is a possible source of "wow" which should be tampered with last.

A very important source of "wows" is located in the top spindle bearing of the motor. This bearing is housed in a die casting which fits very closely in an opening in the top of the motor casting. This die-casting is held in place by two screws which serve to clamp it in position. It has been found possible to reduce "wows" by 50% by proper alignment of this bearing. Both screws are accessible from the top of the motorboard after the turntable has been removed. Particular care should be taken, however, that the main gear of the automatic mechanism is not damaged during adjustment of one of those clamping screws. In making the adjustment, use either a constant frequency record at approximately 1,000 cycles or a musical selection having sustained notes in which the "wow" can be noticed. After having determined that "wows" are present, the two clamping screws should be loosened and the turntable placed back in position and another listening test made. During both these tests care should be taken that the record is properly centered, otherwise eccentricity of the record groove with respect to the spindle will give misloading results. Also, the listening test should not be based upon one position of the record on the turntable since none of our recordings are "wowless" but have around .3% speed variation in themselves. It can be seen from this that if the small percentage "wow" in the record adds to the "wow" in the turntable, a much greater speed variation is obtained than when the two are in opposition.

After having made the latter test and provided no change in "wows" is noticed after two or three trials with record positions, the top bearing casting should be rotated part of a revolution and the clamping screws again tightened. With this condition repeat the tests just given and note the results. As a further check it would probably be desirable to make another test with the clamping screws loosened. By doing this it should be possible to reduce the "wow" content by as much as 50% in practically all cases unless by chance the original adjustment was the best one possible.

There are, of course, other factors contributing to "wows" such as spindle eccentricity, turntable wobble, vertically and record groove eccentricity with respect to the spindle. Many times, rotating the turntable 180° with reference to its original position on the spindle will help decrease the amount of vertical turntable wobble.

All of the above tests should be made with only one record on the turntable, since record slippage if two records were used, would give misleading results.

The bearings of the motor should be checked to see that they are properly lubricated.

W.J. Zaun  
Installation and Service

Camden, New Jersey.