

# Reproducer groups

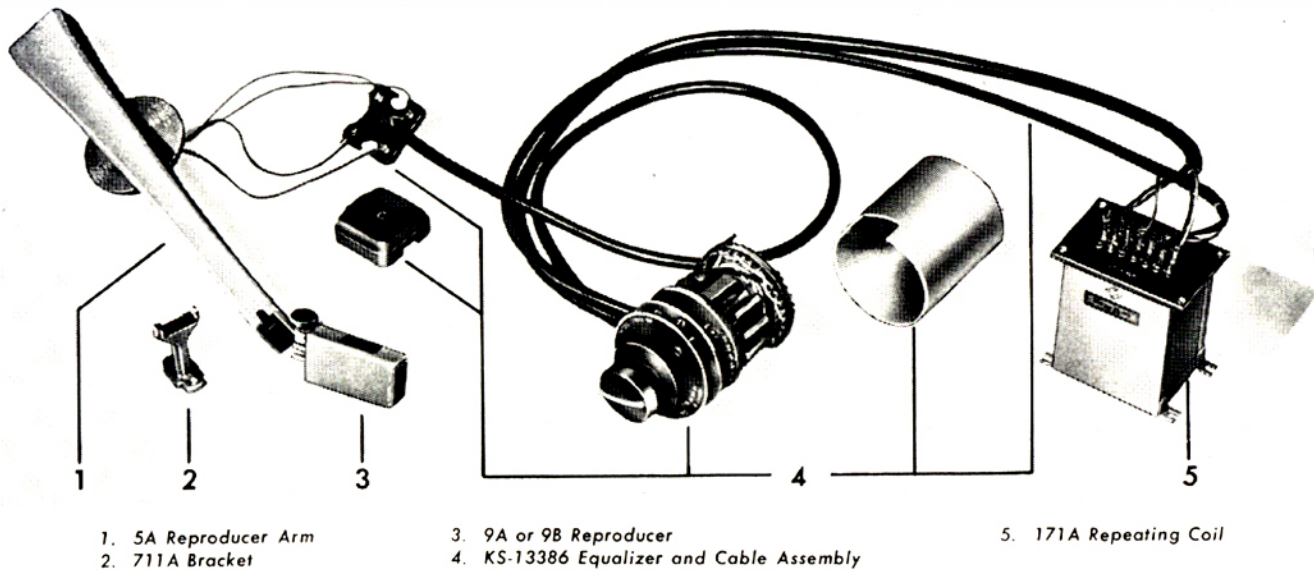


Figure 1 — 109 Type Reproducer Group.

## 109 TYPE REPRODUCER GROUP

**Use** — A professional combination of the versatile single element 9 Type Reproducer with its supporting arm and equalizer equipment. Used for faithful reproduction of both vertical and lateral-cut disc-type recordings.

### Description

*The 109AA Reproducer Group* consists of: 9A Reproducer, 5A Reproducer Arm, KS-13386 Equalizer and Cable Assembly, 171A Repeating Coil and 711A Bracket.

*The 109B Reproducer Group* includes the same equipment except that the 9B Reproducer is used in place of the 9A.

**Features** — A single unit designed to reproduce both lateral and vertical type recordings interchangeably.

- On lateral position vertical modulation is suppressed.
- On vertical position lateral modulation is suppressed.
- Low mechanical impedance assures faithful reproduction.
- Natural resonance outside operating range.
- Sturdy construction consistent with above features.
- Choice of modern equalizer curves.
- Jewel stylus tip.
- Attractive finish.

### 9 TYPE REPRODUCER

A dynamic (moving coil) type reproducer with the pick-up stylus arranged to move vertically for reproducing

from hill-and-dale records and transversely for reproducing from lateral-cut records. This instrument is capable of discriminating between the two different types of groove modulation. The signal and noise always present in the bottom of lateral record grooves, as vertical modulation, are suppressed when the reproducer is switched for lateral reproduction. Correspondingly, unwanted lateral modulation, inherent in the sides of vertical record grooves, is reduced to a minimum heretofore attainable only under scientific laboratory conditions when the reproducer is switched for vertical reproduction. The 9 Type Reproducer and associated 5A Reproducer Arm have been designed so that their natural period of resonance lies below the audio frequencies usually reproduced in any program system. This coupled with the low mechanical impedance of the 9 Type Reproducer minimizes vibratory pick-up and enables the full range of groove modulation to be faithfully reproduced. The jewel stylus tip, together with the extremely light pressure of the generating element on the record (only 35 grams) assure long record life.

There are two codes of 9 Type Reproducers differing only in stylus tip material and radius; they are mechanically and electrically interchangeable on the 5A Reproducer Arm.

The 9A Reproducer has a stylus tip of diamond with a nominal 2 mil tip radius. It gives especially good performance and long life on transcription type records made of

non-abrasive material, ideally suited for vertical cut records and laterals with narrow or medium groove cross section.

The 9B Reproducer has a stylus tip of sapphire with a nominal  $2\frac{1}{2}$  mil tip radius. The larger stylus tip improves the signal-to-noise ratio of newer lateral recordings which have a wider groove cross section. It can also be used for records containing an abrasive (phonograph records) and when so used the sapphire may wear sufficiently to alter reproduction, in which case it should be returned to our distributor for stylus renewal.

## 5A REPRODUCER ARM

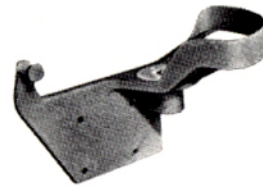
This arm has a four pin jack into which either of the 9 Type Reproducers plugs. The arm supports and counterbalances the reproducer and provides leads for connection to the KS-13386 Equalizer and Cable Assembly. The arm is sturdily constructed, attractively finished in bright aluminum crackle to match the reproducer and has sufficient mass to offer the inertia essential to good low frequency reproduction.

## 711A SUPPORTING BRACKET



The 711A Bracket is a simple T shaped arm rest supplied as part of the 109 Type Groups to support the reproducer end of the arm and reproducer when it is not resting on the record.

## 712A SUPPORTING BRACKET



By means of the 712A Bracket (not included in the code 109 type but available as an extra when ordered) the reproducer and arm can be adapted to cabinet types of transcription turntables which lack sufficient area on the table top to accommodate the base of the arm at the proper distance of  $13\frac{3}{4}$  inches from the center of the turntable platter. This bracket has a guard which protects the rear or weighted end of the arm from accidental contact.

## REPEATING COIL & EQUALIZER ASSEMBLY

The KS-13386 Equalizer and Cable Assembly and the 171A Repeating Coil form the equalizing, switching and impedance matching portion of the 109 Type Reproducer Groups.

The *Equalizer Switch* has seven reproducing positions, two for vertical and five for lateral. The seven reproducing characteristics are based on two fundamental frequency response characteristics which a survey of the recording field indicates are currently used for record production.

*Curve A* is the conjugate of the frequency response curve in general use in recording vertical transcriptions, some early lateral transcriptions and a few "instantaneous type" lateral transcriptions.

*Curve B* is the conjugate of the frequency response curve in general use in recording lateral transcriptions (NAB Standard and Orthacoustic) and phonograph records.

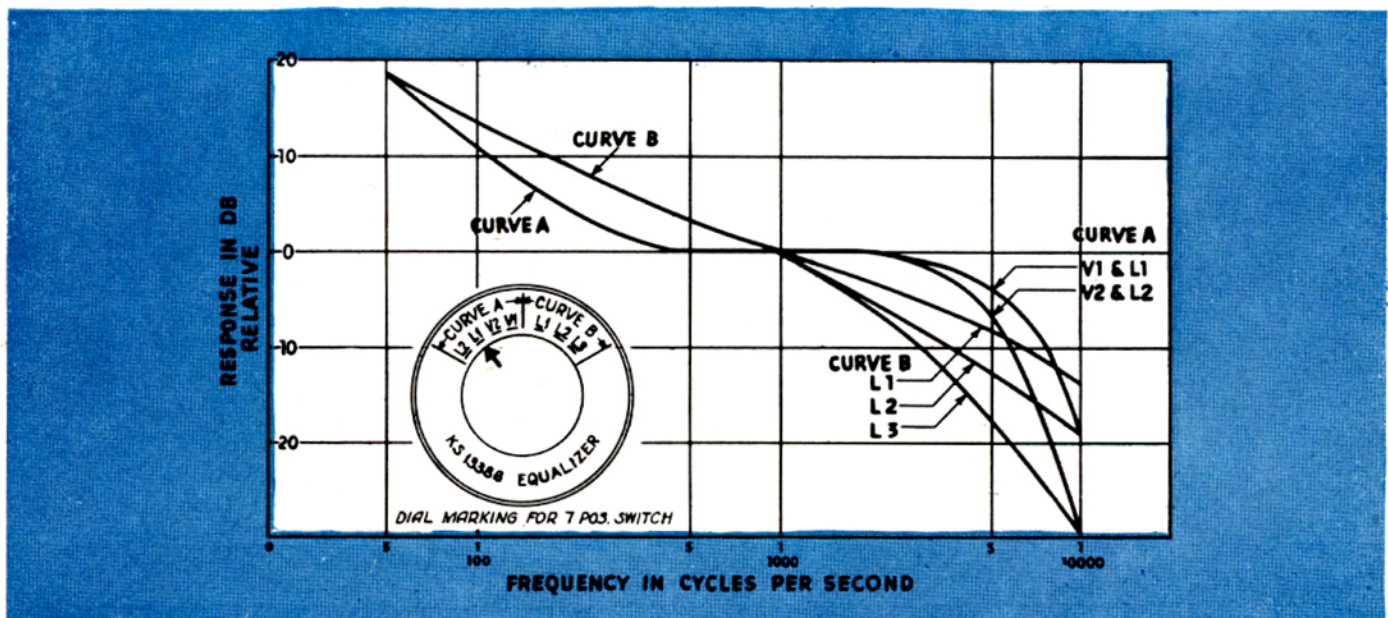


Figure 2 - Frequency Response Curves.



**Choice of Proper Equalizer Switch Position**

Choose one of the switch positions having the characteristic according to Curve A for reproduction of records made with the characteristic which is the conjugate of this curve. The overall frequency response between input to recording filter and output of reproducer group will then be as indicated in the following table for Curve A. Similarly, choose one of the switch positions indicated for Curve B for the reproduction of records made with the conjugate of Curve B.

TABLE I

Equalizer Switch Position	Recording Type	Overall System Response
Curve A	V1	Vertical Uniform 50 to 10,000 cycles
	V2	Vertical Uniform 50 to 2,500 with roll off to 15 db down at 10,000
	L1	Lateral Uniform 50 to 10,000 cycles
	L2	Lateral Uniform 50 to 2,500 with roll off to 15 db down at 10,000
Curve B	L1	Lateral Uniform 50 to 10,000 cycles
	L2	Lateral Uniform 50 to 1,000 with roll off to 5 db down at 10,000
	L3	Lateral Uniform 50 to 1,000 with roll off to 17 db down at 10,000

The repeating coil provides taps for feeding circuit impedances of 30, 250 or 500/600 ohms. This can feed directly into a resistive type circuit such as a constant impedance type mixer circuit. For feeding inductive or capacitive circuits such as a pre-amplifier input a simple L pad should be interposed between the repeating coil and the pre-amplifier for purposes of impedance stabilization. Failure to use this pad will unduly emphasize the high frequencies.

**Specifications for 109 Type Reproducer Groups**

**Frequency Response:** For representative transmission from input to recorder filter to output of reproducer group, see Table I.

For new transcriptions use V1 or L1 positions.  
 For old or worn transcriptions use V2 or L2 positions.  
 For phonograph records use L2 or L3 positions.

**Output Noise:** Dependent upon record — Experience indicates that representative signal-to-noise ratio at output for transcription is 45 db; for phonograph records, 20 db.

**Operates From:** Vertical or Lateral-cut disc records up to 16" diameter.

**Load Impedance:** 30, 250, or 500/600 ohm mixer or stabilized pre-amplifier input.

**CAUTION:** Reproducer Group must be operated into a proper resistive termination.

**Output Level:** Dependent upon record — Representative program level is -62 vu comparable to microphone output level.

**Specifications for 9 Type Reproducer Mounted on a 5A Arm**

**Dimensions:** Length 18 1/8", width 2" tapering to 7/8". Overall height 4". Base 3" in diameter. Height adjustable for platter above table 3/4" to 2".

**Weight:** Reproducer 1/2 lb.; Arm 3 1/2 lbs.; Total 4 lbs.

**Mounting:** Flat panel pivot center 13 3/4" from platter center.

**Finish:** Light aluminum crackle.

**Specifications for KS-13386 Equalizer**

**Dimensions:** Length — body 3 3/4", shaft 1 3/4" and cable 3 ft. Diameter — body 3", shaft 1/4".

**Mounting:** Mount on back of panel with shaft and two mounting screws through panel.

**Finish:** Bright aluminum. Black photo etched dial plate. Black knob.

**Specifications for 171A Repeating Coil**

**Dimensions:** Approximately 2-9/16" by 3 5/8" by 3 7/8".

**Mounting:** Base mounted on flat surface. Avoid locating in a-c field such as produced by turntable motor or unshielded supply line.

**Finish:** Gray enamel.

*Western Electric*

