

INSTALLATION AND SERVICE DIVISION
RCA MANUFACTURING CO., INC.
CAMDEN, N. J.

CLASSIFICATION	Technical - Photophone - Loudspeakers	DATE	April 27, 1937
SUBJECT:	MI-1428A, MI-1428B, AND MI-1443 HIGH FREQUENCY LOUDSPEAKERS	NUMBER	2C2-2.3
TO:	B-1, B-2, B-3, C-7, D-7, G-1, G-2, H-7		

MI-1428A, MI-1428B, AND MI-1443 HIGH FREQUENCY
LOUDSPEAKERS

ELECTRICAL SPECIFICATIONS

	MI-1428	MI-1443
Field voltage	13 volts	115 volts
Field current (hot)	1.7 amps.	170 ma
Field coil d-c resistance (hot)	8.4 ohms	678 ohms
Voice coil impedance	4 ohms	4 ohms
Voice coil d-c resistance	3.8 ohms	3.8 ohms

MECHANICAL SPECIFICATIONS

MI-1428A, MI-1428B, MI-1443

Height	9	inches
Depth	7-7/8	inches
Width	6-1/4	inches
Weight	28	pounds
Cone diameter	4-1/2	inches

NOTE: The MI-1443 mechanism is the same as the MI-1428 series excepting the field coil.

USE

Used in pairs for driver on MI-1464, -1465, -1466 and -1467 cellular type horns.

REPLACING CONE

1. Remove the eight 8-32 x 3/8 gun metal finish machine screws holding the side covers in place and remove the side covers.
2. For later convenience in handling, remove the black and yellow voice coil leads from the polarized male voice coil connector.
3. Remove the four 1/4-28 x 1 hex. head bolts and lockwashers which secure the throat to the field yoke.
4. Place the loudspeaker unit on a bench with the throat end uppermost and remove throat and yoke plate together from the field yoke.

NOTE: If the dowel pins are very tight it may be necessary to pry the yoke plate away from the field yoke, but care should be taken that the dowel pins are not bent or damaged.

5. Place the threaded end of throat downward and remove the copper voice coil leads from the screw terminals and remove cone centering screw and washer.
6. Remove the two 6-32 x 5/8 machine screws which secure the yoke plate to the throat, again using care not to damage the dowel pins.

NOTE: Each loudspeaker unit is individually dowelled so it will be found practically impossible to interchange throats, yoke plates or field yokes between various loudspeakers.

7. From the front of the throat remove the two 6-32 x 5/8 machine screws threaded into the cone clamping ring,
8. Remove the remaining six 6-32 x 3/8 machine screws from the cone clamping ring and remove the ring and cone.
9. Inspect the throat, yoke plate and air gap carefully and remove any foreign material.
10. Place the yoke plate in position on the field yoke assembly (voice coil terminal screw heads downward) and inspect the air gap formed between the field cone cap and the hole in the yoke plate. This air-gap should be uniform and usually will be found correct but in case it has shifted it is practically impossible to re-set it without the proper plug gauges.

If the air-gap is not uniform loosen the screw in the center of the core cap and insert the special gauge Stock No. 26528 in the gap. Now rotate the gauge and at the same time tighten the center screw. After the screw is tightened the gauge should be rotated in the gap to be sure that the core cap is exactly centered. (*NOTE: Each district office has one gauge.*)

11. Inspect the rivets which clamp the terminal strips to the yoke plate. If they are loose, hammer them tight, carefully avoiding striking the metal which is soft and easily dented. After tightening the rivets apply some ambroid cement (Duco Household Cement) around the edges of the terminal strips to prevent any subsequent loosening.
12. Check the leads soldered to the voice coil terminal boards and make sure that the yellow lead is connected to the terminal which is nearest the plug end of the field yoke (*see diagram*).
13. After checking again to see that all parts are clean and free from foreign matter, cut four pieces of strong, hard string or cord, each piece about 10 inches long and 0.050 inches thick (such as stout fish line). Thread the ends of one piece of cord through any two adjacent slots and pull the ends through the threaded end of the throat. Push the loop thus formed toward the outer rim of the throat (*see diagram*) and pull the free ends of the cord taut. Place the other three pieces of cord similarly at points approximately equi-distant around the rim of the throat. The use of these cords is to insure uniform spacing (about .050") between the front face of the cone and the machined rear surface of the throat casting. This same method is used in the factory on assembly of these units.

14. Check the new cone (Stock No. 26414). It should be made of bakelite and the pig-tail voice coil leads should be firmly connected to the cone. If they are loose, ambroid cement ("Duco" Household Cement) may be applied sparingly at this point.
15. Place the cone on the throat assembly so that it rests on the string loops and also in such a position that the outside or finish lead of the voice coil can be attached to the terminal nearest the plug end of the speaker. As stated previously, this is the terminal to which the yellow lead should be connected.
16. Place the cone clamping ring into position and replace the six inside clamping screws but do not tighten them.
17. Place the yoke plate in position over the cone so that the terminal with the yellow lead falls above the outside or finish lead of the voice coil. Secure the yoke plate to the throat with the two machine screws at the end of the yoke plate.
18. Center the voice coil in the air-gap by placing a single thickness of 35 mm motion picture film (0.006" thick) in the air-gap completely around the voice coil. It should be possible to slide the film around the air-gap more or less freely. When the cone has been centered, tighten the six machine screws in the back of the cone clamping ring and replace and tighten the two screws holding the clamping ring from the front of the throat.
19. With the film still in the air-gap, carefully pull out all the strings from the throat. This should permit the cone to move forward slightly so that the cone center will lie practically flush with the rear surface of the throat casting. Cones which do not lie flush should be rejected. Now insert and tighten the centering screw and washer and remove the film from the air-gap.
20. Attach the voice coil leads to the terminal screws. Avoid wrapping the leads around the screws and leave the loop in the leads as flexible as possible.
21. Before re-assembling, check the field coil connections to be sure that the finish lead (red) is attached to the narrow prong of the field coil connector and that the start lead (black) is connected to the wide prong.
22. Carefully replace the throat and yoke plate assembly on the field yoke by matching the dowel pins with the proper holes in the yoke, and clamp it in place with the four hex-head bolts and lockwashers. At this point the unit may be checked roughly by pushing on the rear of the cone with the fingers and listening for rubbing of the voice coil.
23. Attach the yellow voice coil lead to the narrow prong of the voice coil connector and attach the black voice coil lead to the broad prong of the connector. Dress all leads away from the rear of the cone and replace the two side covers. If the unit is to be stored, be sure the threaded dust cap is placed on the front of the throat.

24. Factory procedure includes a sound pressure measurement as well as a check for rattles on each unit. A field check for rattles can be made by running the frequency test film (or audio frequency oscillator) and adjusting the gain until 13 volts is obtained across the 15 ohm amplifier output. This puts approximately 6 watts into each of the two high frequency units when the conventional network is used between the amplifier and the loudspeakers (see SL 2C2-6.3)

SUMMARY OF POLARIZING INSTRUCTIONS

1. The outside or finish lead of voice coil is attached to terminal nearest receptacle end of speaker, thence via yellow wire to narrow prong of voice coil receptacle.
2. The start or inside lead of voice coil is attached to terminal farthest from receptacle end of speaker, thence via black wire to broad prong of voice coil receptacle.
3. The finish or outside lead of field coil is a red wire and is attached to the narrow prong of the twist-lock field receptacle.
4. The start or inside lead of field coil is a black wire and is attached to the broad prong of the twist-lock field receptacle.
5. With a positive polarity applied to the narrow prongs of both the voice coil and field connectors, the voice coil should move away from the magnet.

REPLACEMENT PARTS

MI-1428A, MI-1428B & MI-1443

DESCRIPTION	STOCK NO.
CAP - Dust cap	26417
COIL - 13 V. field coil (MI-1428)	27756
COIL - 115 V. field coil (MI-1443)	23950
CONE - Loudspeaker cone	26414
CONNECTOR - Male (For field coil)	26415
CONNECTOR - Female (For field coil)	20757
CONNECTOR - Male (For voice coil)	26416
CONNECTOR - Female (For voice coil)	21699

INSTALLATION AND SERVICE DIVISION

RCA MANUFACTURING CO., INC.

CAMDEN, N. J.

CLASSIFICATION: Technical Photophone - Loudspeakers

DATE April 28, 1937

SUBJECT: MI-1428B HIGH FREQUENCY SPEAKER

NUMBER SL-2C2-2.5

TO: B-1, B-2, H-7

During final test in the factory, it has been found that the bakelite cones in present production of MI-1428B loudspeakers have a tendency to "sing" at 1000 cycles. In order to overcome this condition, a felt ring has been glued to the bottom of the cone towards the pole piece. In addition a similar felt ring has been glued to the core cap on the pole piece.

Stock No. 26414 bakelite cone now being received into Camden stock also has the felt ring on the cone. An additional felt ring is furnished with each cone, which should be glued to the core cap, with Duco Household Cement, when this particular type cone is installed in an existing MI-1428A or MI-1428B.

ADOLPH GOODMAN
Service Division