

B-2083

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23 June 1943

NRL Report No. B-2083

NAVY DEPARTMENT

Report of Test

on

Horn, Proposed Types H-10 and H-11
(Manufacturer's Type WP-1)

Submitted by

Maslo Marine Manufacturing Company
Reading, Pennsylvania

NAVAL RESEARCH LABORATORY
ANACOSTIA STATION
WASHINGTON, D. C.

Number of Pages: Text - 4 Plates - 6

Authorization: BuShips Ltr. S48-25(350) of 9 October 1942.

Date of Test: May and June 1943

Tested by: J. S. Bryant, Principal Engineering Aide.

Reviewed by: G. K. C. Hardesty, Associate Electrical Engineer, Asst. Supt., I. C. Division

W. B. Roberts, Electrical Engineer, Superintendent, I. C. Division.

Approved by: A. H. Van Keuran, Rear Admiral, USN, Director

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BuShips (5)

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AUTHORIZATION FOR TEST

1. This problem was authorized by reference (a), and other references pertinent to this problem are listed as references (b) and (c).

Reference: (a) BuShips Ltr. S48-25(350) of 9 October 1942.
(b) BuShips Ltr. S65-4(350)EN28/A2 of 2 June 1942.
(c) Maslo Marine Mfg. Co. Drwg. No. 281 - WP-2 Air Whistle.

OBJECT OF TEST

2. The object of this test was to determine conformance of the sample horn with specification, reference (b), and to obtain data for the purpose of specification development.

ABSTRACT OF TEST

3. The sample horn was set up at this Laboratory in suitable test circuits where its performance was carefully observed for compliance with the specification. An inspection to determine compliance in the matter of materials, design, and workmanship, concluded the test.

CONCLUSIONS

(a) The subject horn failed to comply with the requirements of reference (b) in the following respects:

- (1) Allowable power consumption was exceeded by 2682 watts when operated at 115 volts, d.c., and 1710 watts when operated at 115 volts, 60 cycles.
- (2) Failure after 2-1/4 hours during the endurance test due to broken vanes in the compressor.
- (3) The ventilated motor is not of watertight construction.

RECOMMENDATIONS

(a) That the subject horn be NOT APPROVED for Naval use in its present form. It is to be noted that the sample submitted is a type WP-1 instead of a WP-2 on which the Bureau's authorization for test was based.

DESCRIPTION OF MATERIAL

4. The subject horn was submitted by Maslo Marine Manufacturing Company, Reading, Pennsylvania, as proposed types H-10 and H-11. It incorporates a diaphragm type horn, the air being supplied from a motor operated, rotary type compressor. It is designed to operate from a supply of 115 volts, direct potential, or 115 volts, 60 cycles.

5. The type WP-1 compressor is of the rotary vane type and is directly connected to the motor. The rotor has three slots, each provided with two phenolic vanes which contact the rotor housing. The air enters the motor housing at the commutator end and is forced out through an opening, tapped 1/2-inch (IPS), in the top of the compressor housing.

6. The motor is of the series type and is equipped with ball bearings. It is enclosed in a cast iron housing attached to a cast base by two 3/8-inch steel cap screws threaded into the base. The compressor housing is secured to the motor housing by four 1/4-inch steel cap screws threaded into lugs on the motor housing.

7. The type M5 horn is provided with a 4-inch diameter phosphor bronze diaphragm secured between flat fiber gaskets by a ring threaded into the diaphragm housing and locked by a brass machine screw. The projector is sweated into the diaphragm housing. The pedestal, cast integral with the housing, is drilled for four 5/16-inch mounting screws and is provided with an opening in the bottom, threaded 3/8-inch (IPS) for connecting to the compressor. As received, the horn was mounted on the compressor by means of a connecting pipe nipple.

8. The assembly is finished with gray paint. Further details in the design and construction of the subject horn are shown by photographs, Plates 3 to 6.

METHOD OF TEST

9. The subject horn was operated at 115 volts, direct potential and at 115 volts, 60 cycles, to determine its electrical characteristics, sound pressure outputs, and air pressures at the horn.

10. The acoustical analyses of the horn were made when the horn was operated from a supply of air controlled by a regulator, at the pressures produced by the compressor (11.1 pounds at 115 v.d.c. and 7.4 pounds at 115 v.a.c.) Plate 1 shows the analyses at 18 feet in a soundproof room and Plate 2 shows the analyses at 100 feet in open air.

11. The sample was subjected to an endurance test at which time there was allowed 1 second to bring the motor up to rated speed and 5 seconds of signalling each minute. Due to the failure of the compressor, no further tests could be conducted.

RESULTS OF TEST

12. The test results obtained were as follows:

RESULTS OF TEST (Cont'd)

Requirements

	Test Values	
	(As Type H-10)	(As Type H-11)
Voltage: Table (a) of reference (b).	Tested at 115 volts, d.c.	Tested at 115 volts, 60 cycles.
Amperes: Not specified.	25.5 amperes.	21.2 amperes.
Watts: Table (a) of reference (b).	*2932 watts.	*1960 watts.
Air pressure at horn: not specified.	11.1 pounds.	7.4 pounds.
Sound pressure output: Table (a) of reference (b).	Complied. 120 db when operated by the compressor. 110 db when operated from air supply at 11.1 pounds.	Complied. 120 db when operated by the compressor. 108 db when operated from air supply at 7.4 pounds.
Pitch of note: Table (a) of reference (b).	See Plates 1 and 2.	See Plates 1 and 2.
Weight: Table (a) of reference (b).	Complied. 4 1/4 pounds, 2 ounces.	
Endurance test: Requested by para. 2a of reference (a).	*Failed after 2-1/4 hours due to broken vanes. See Plate 6.	
Watertight construction: Table (a) of reference (b).	*The sample is not of watertight construction.	

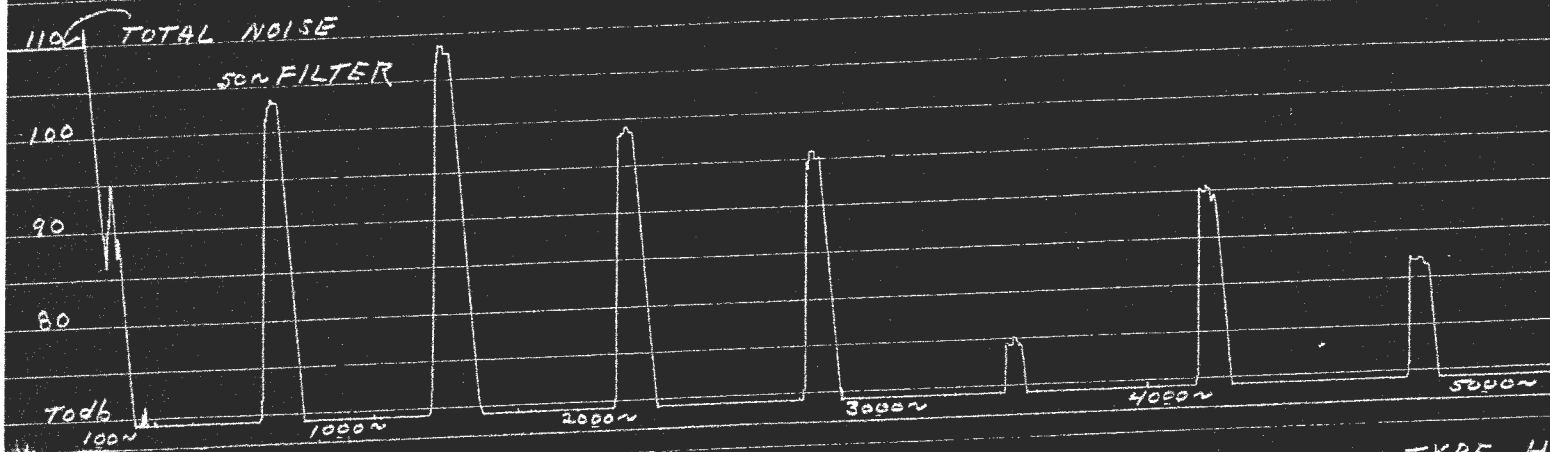
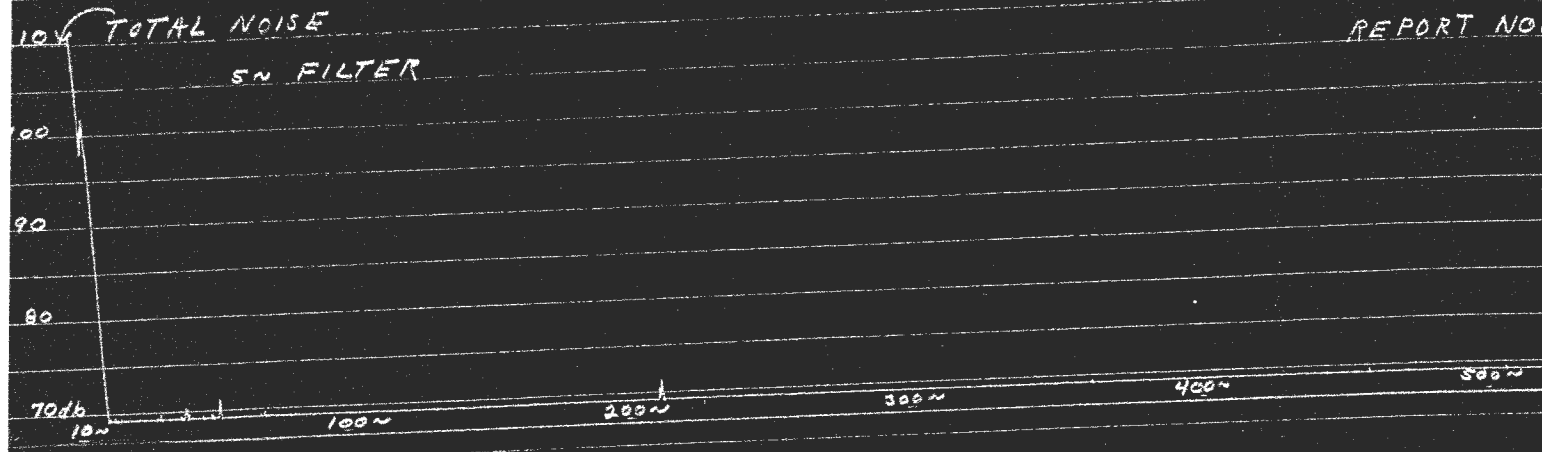
*Denotes failure to comply with reference (b).

CONCLUSIONS

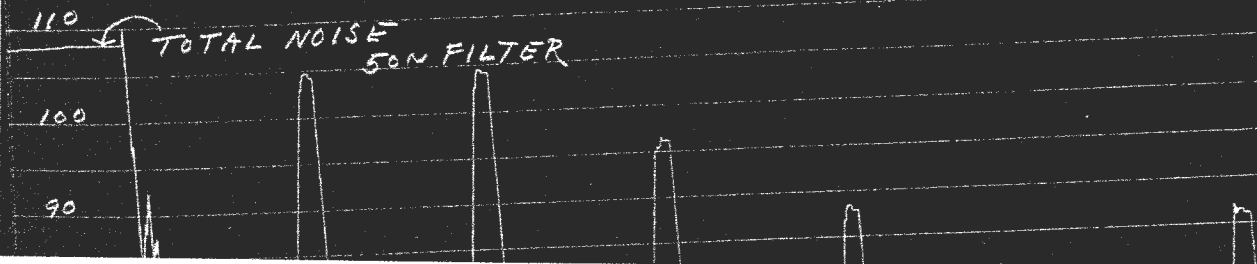
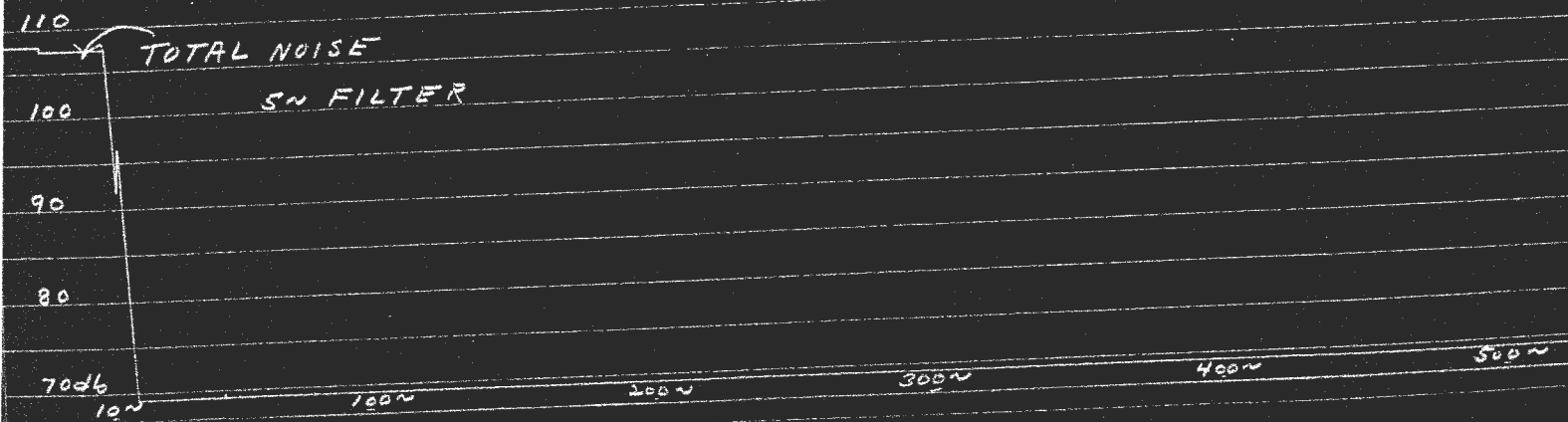
13. The subject horn failed to comply with the requirements of reference (b) in the following respects:

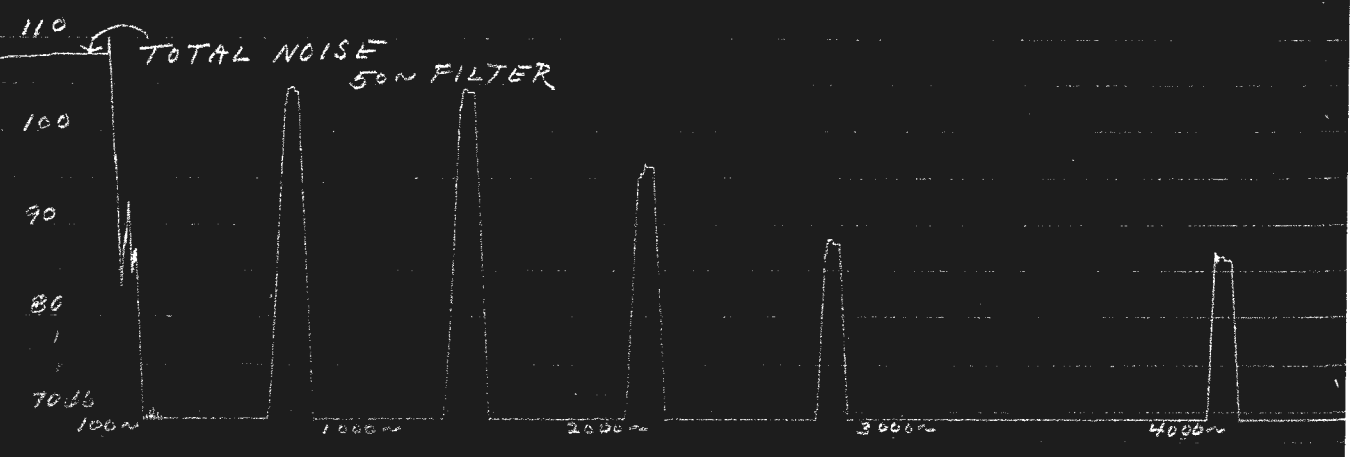
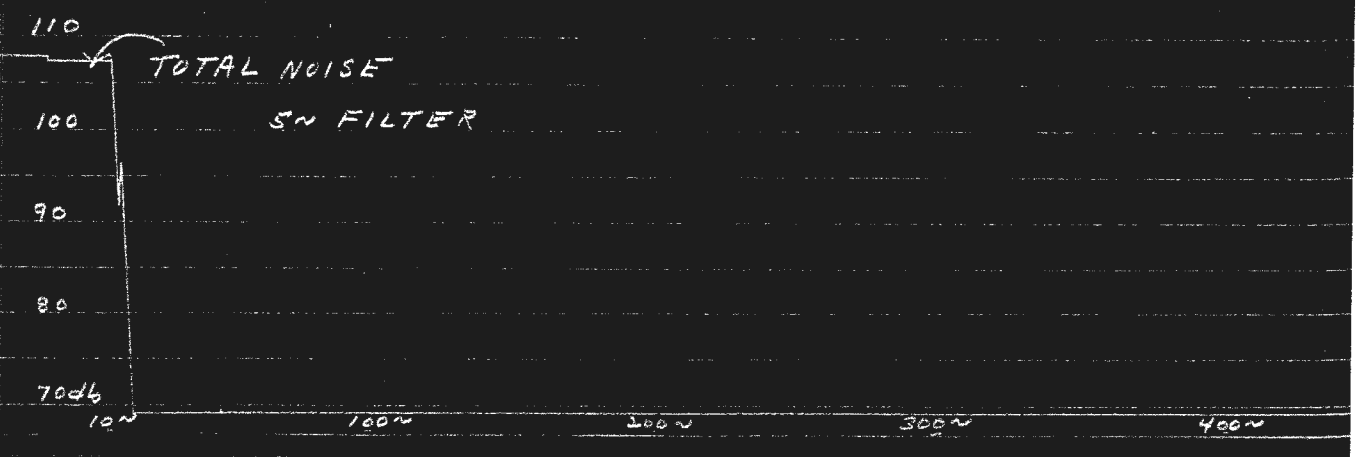
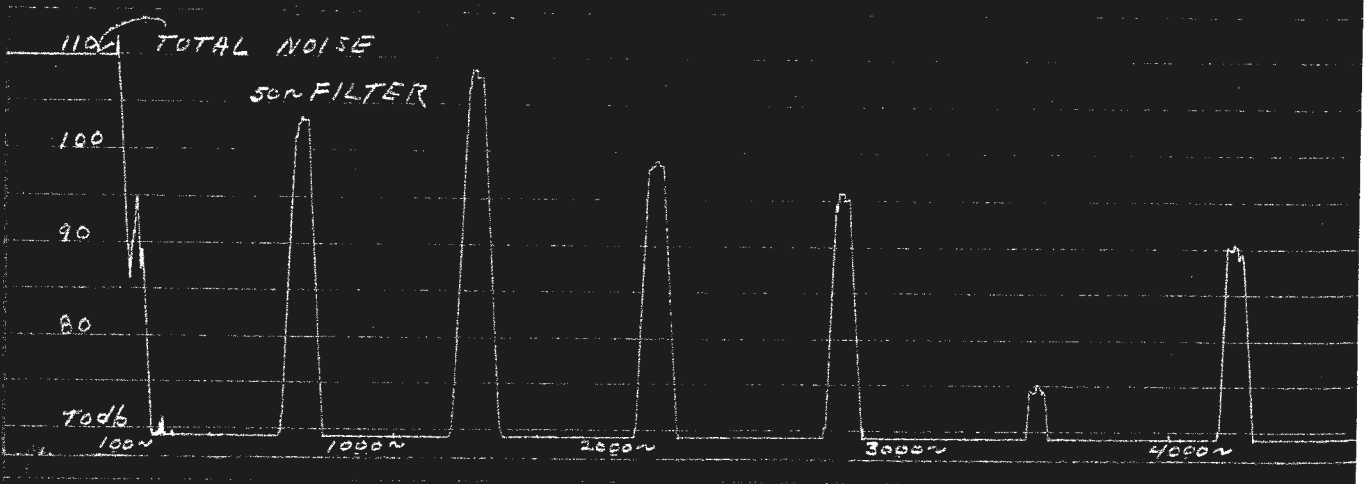
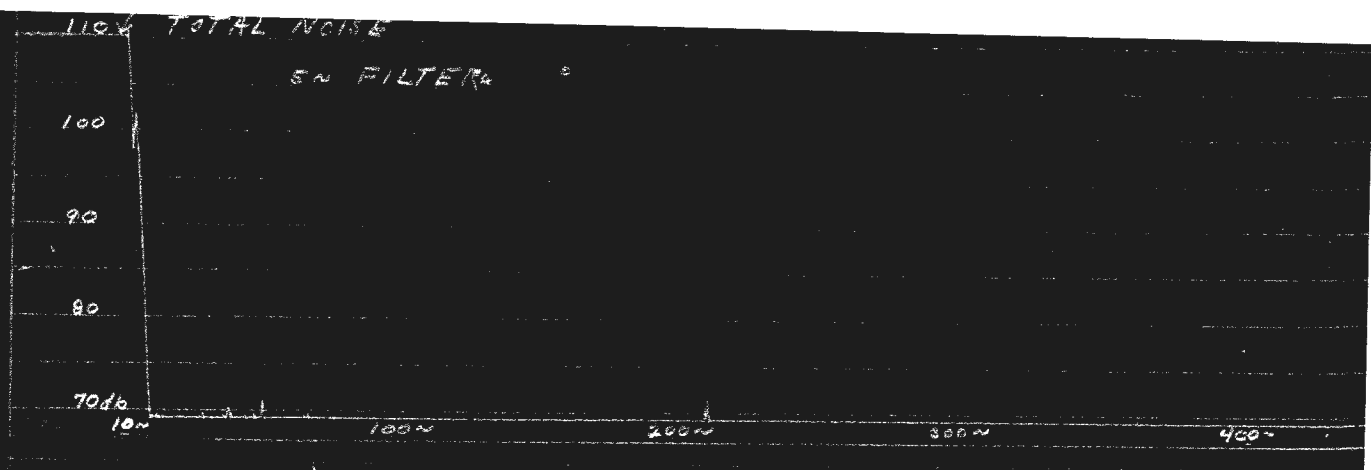
- (1) Allowable power consumption was exceeded by 2682 watts when operated at 115 volts, d.c., and 1710 watts when operated at 115 volts, 60 cycles.
- (2) Failure after 2-1/4 hours during the endurance test due to broken vanes in the compressor.
- (3) The ventilated motor is not of watertight construction.

MASLO MARINE
TYPE H-10
REPORT NO. B



TYPE H-10





MASLO. PIRKINE

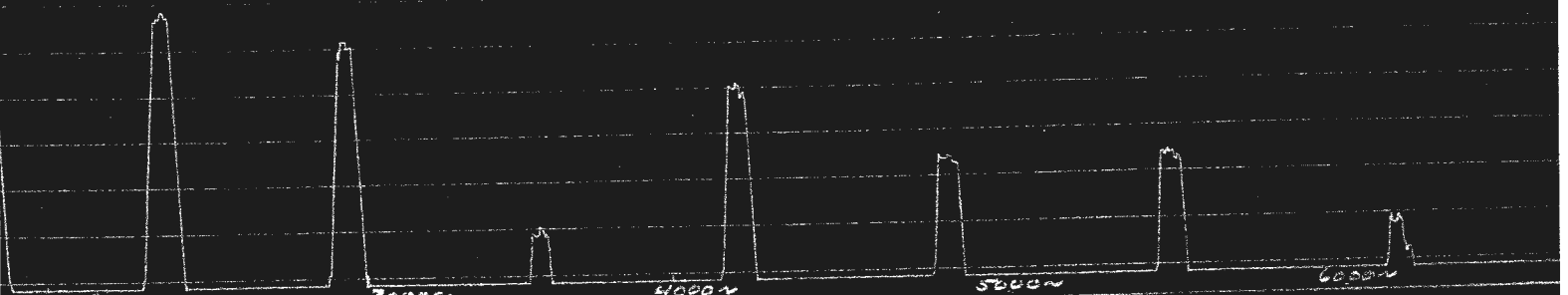
TYPE H-10 HORN

REPORT NO. B-2083

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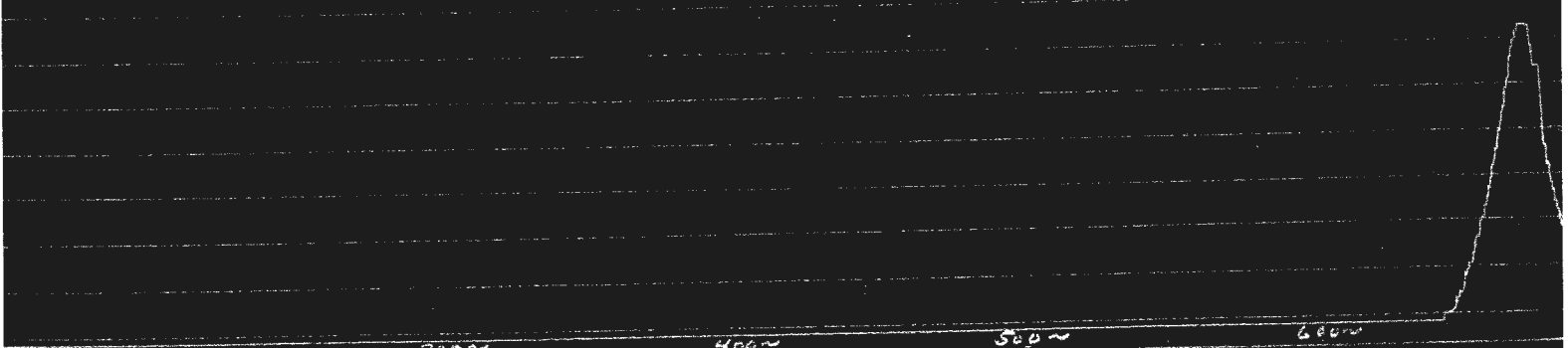


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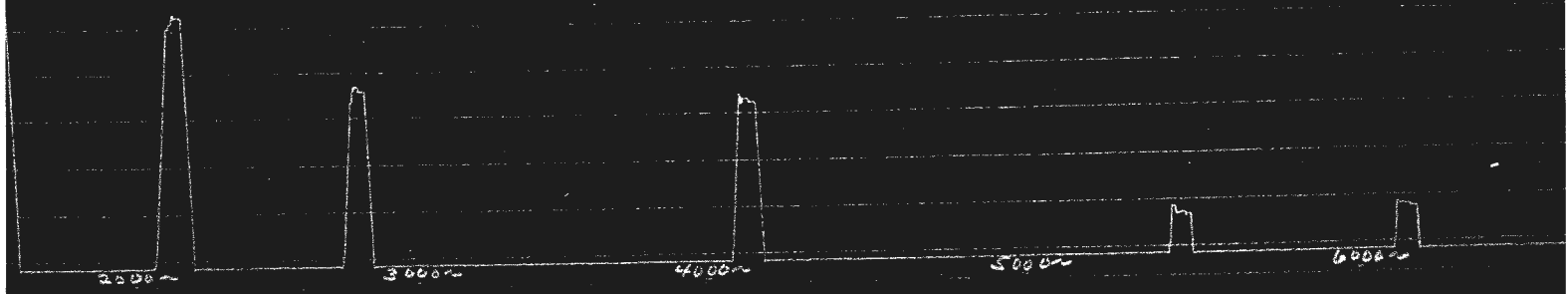
TYPE H-11 HORN

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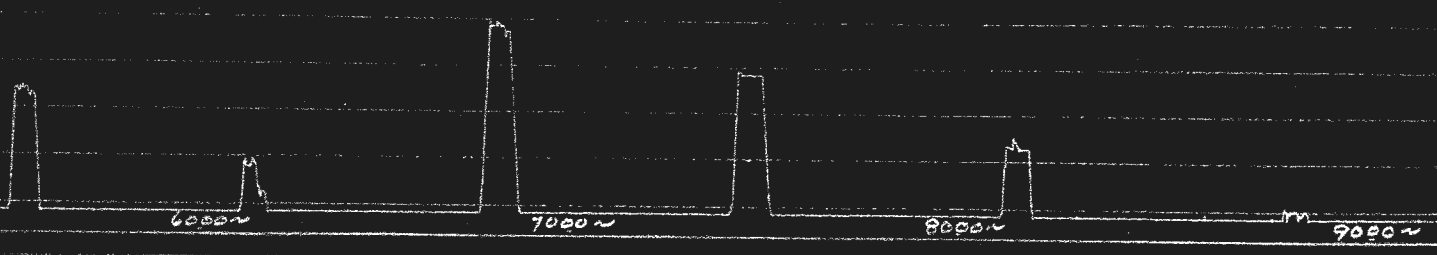
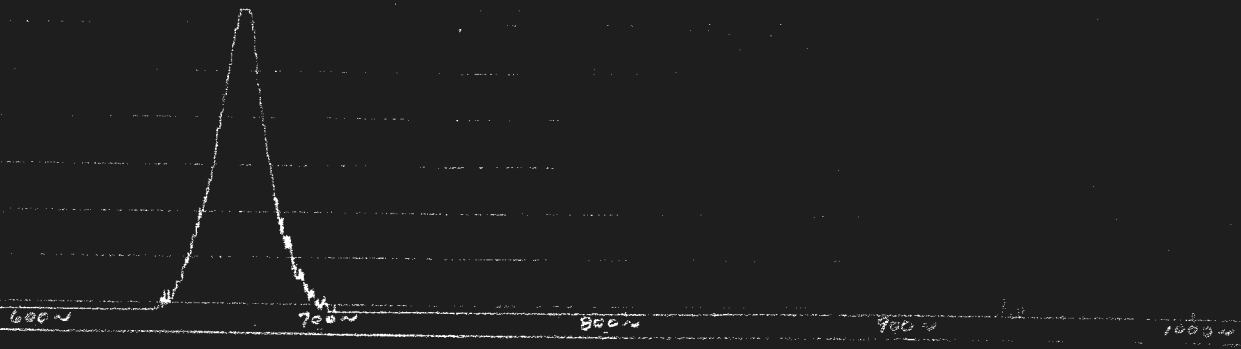
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LINE MFG. CO.

-10 HORN

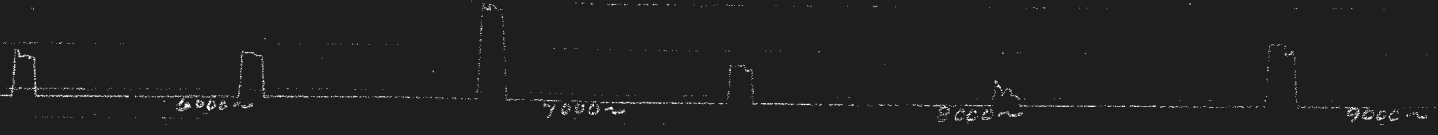
O. B-2083



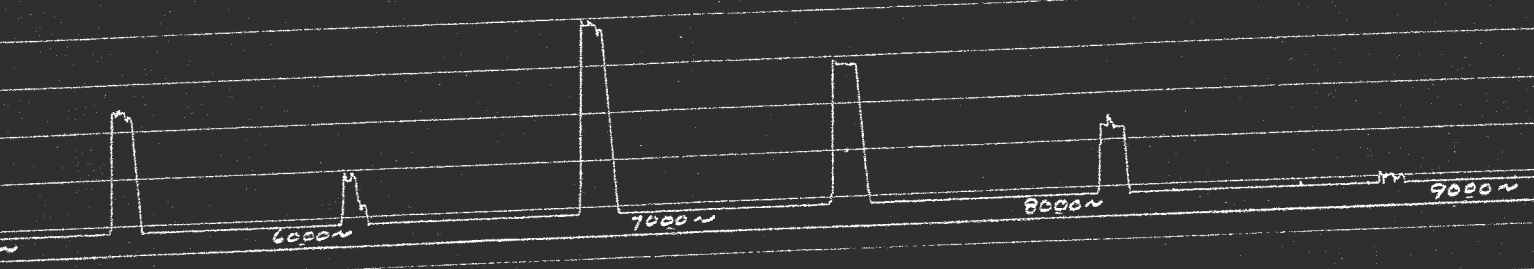
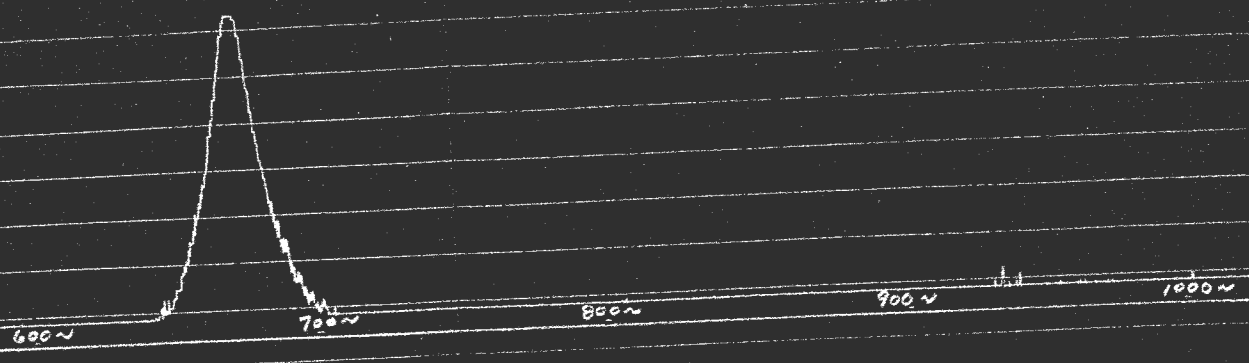
-11 HORN



PLATE 1



INE MFG. CO.
10 HORN
O. B-2083



H-11 HORN

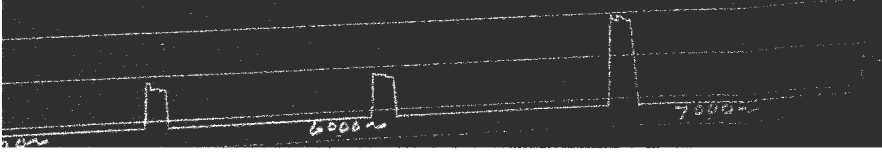
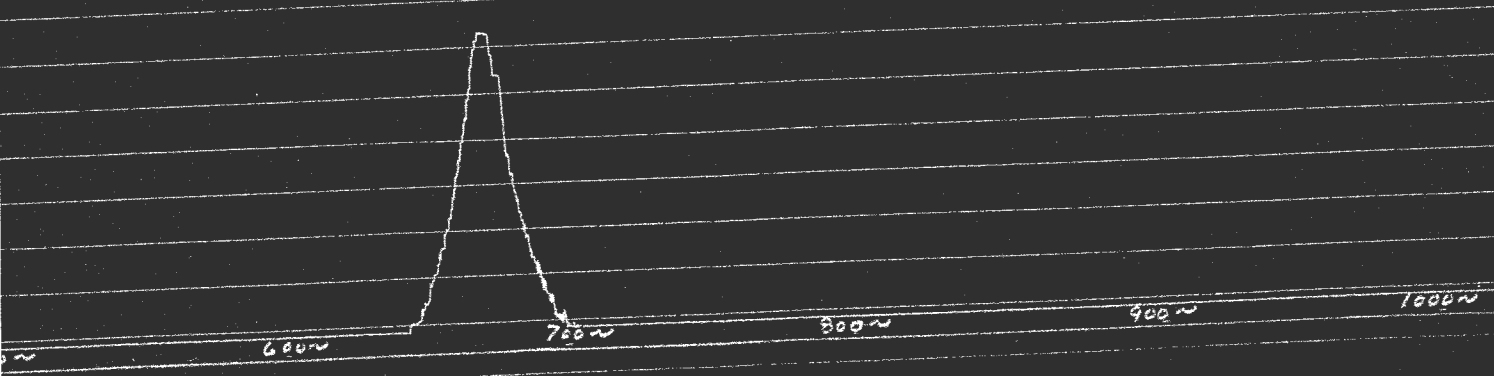
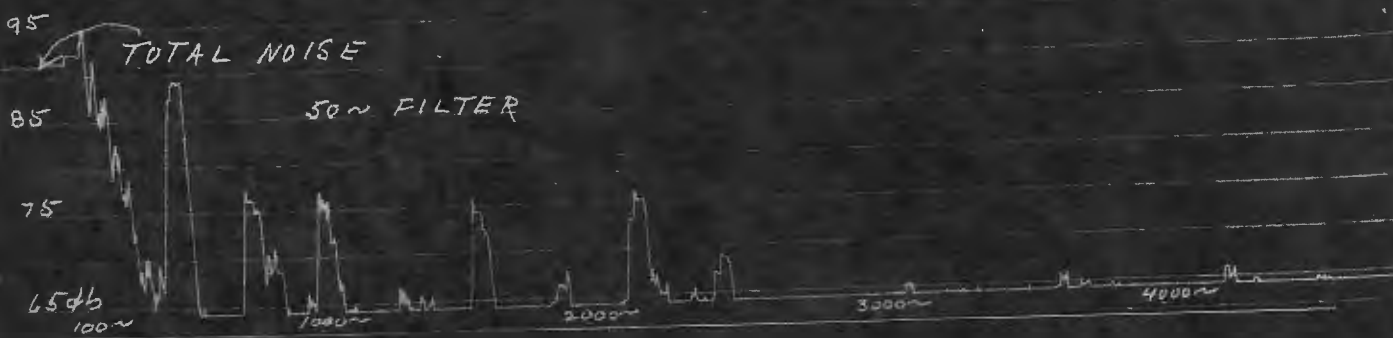
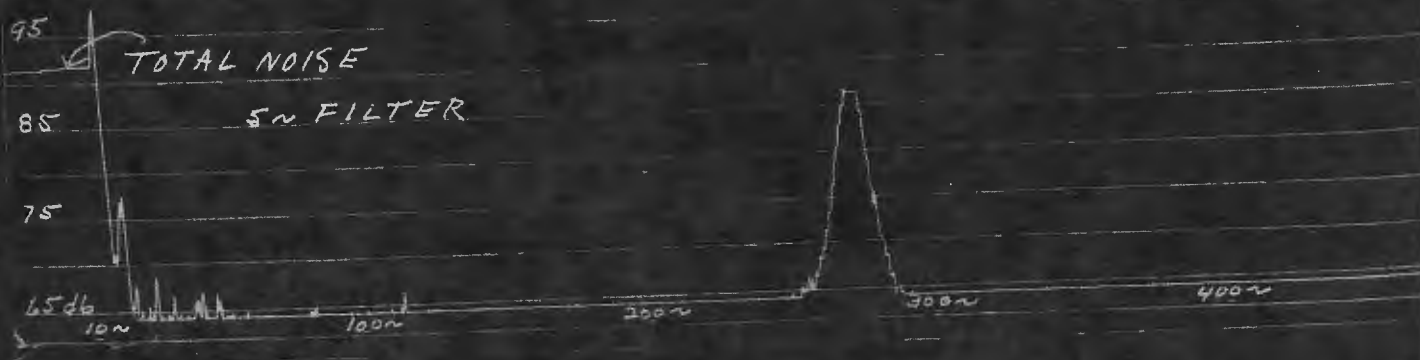
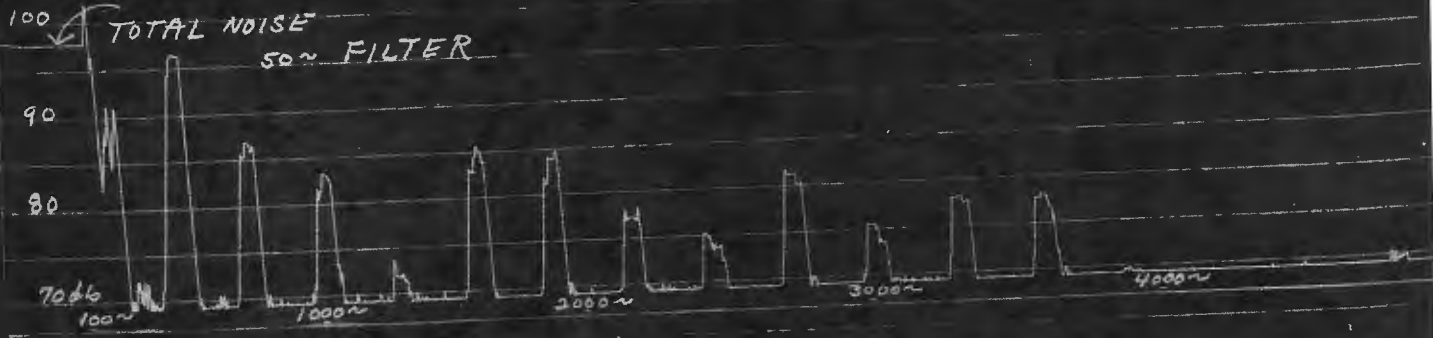
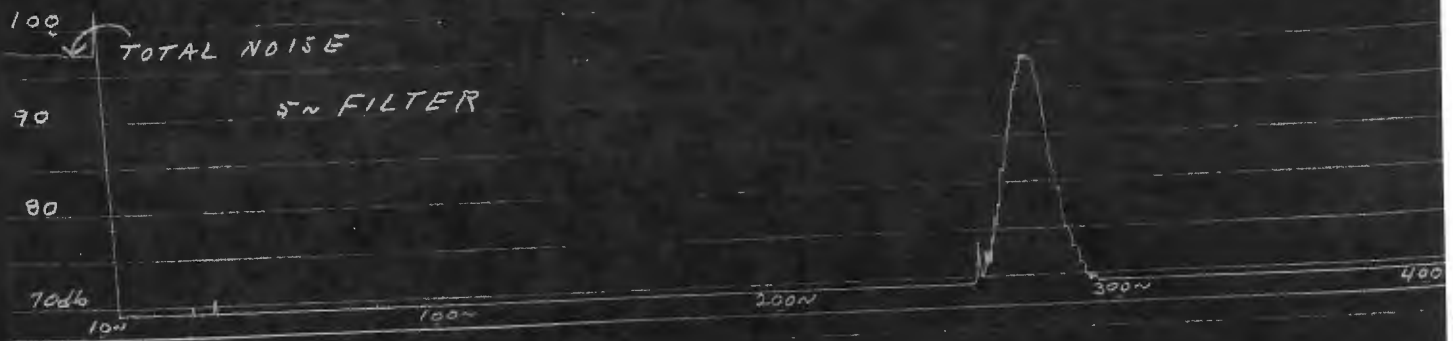
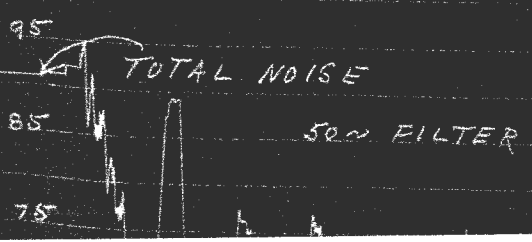
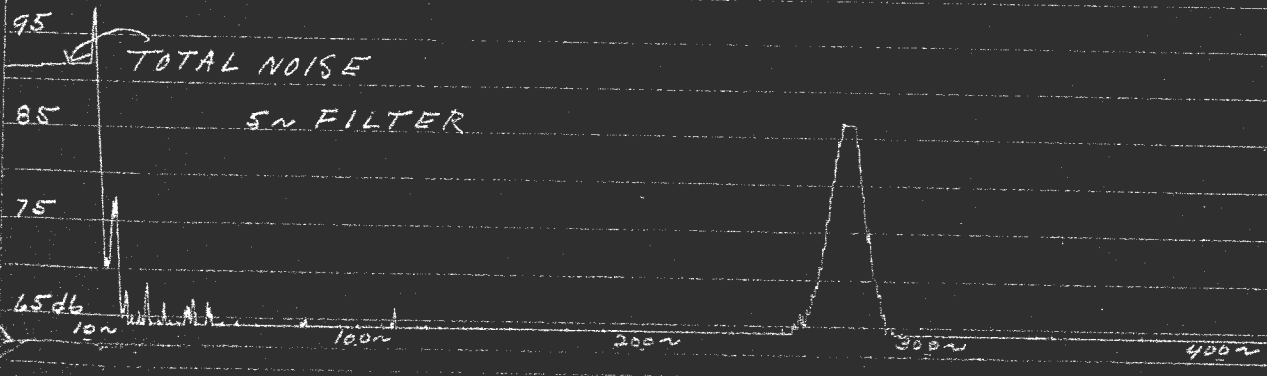
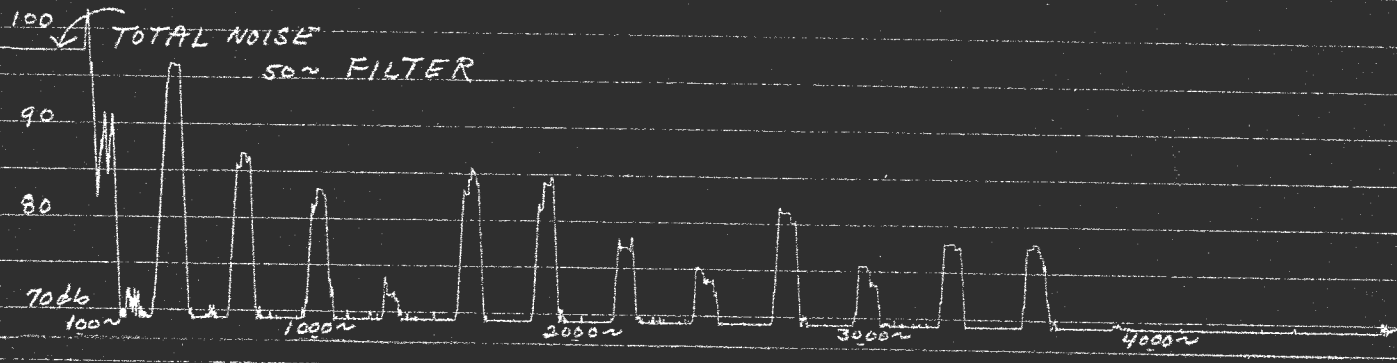
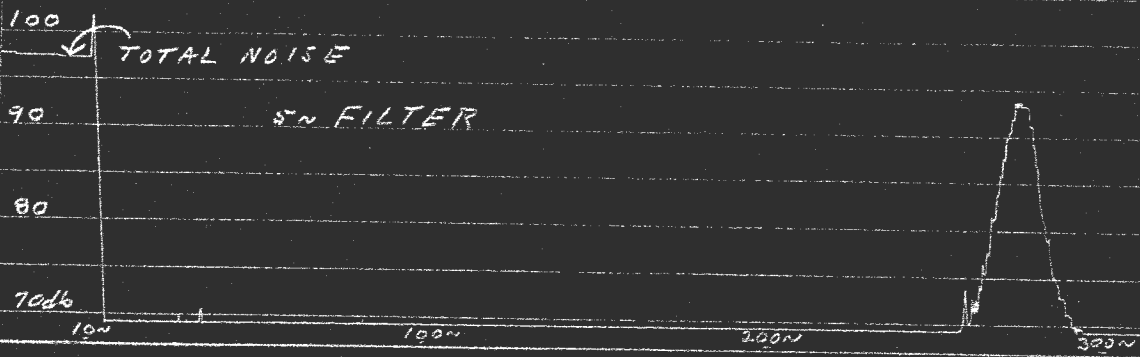
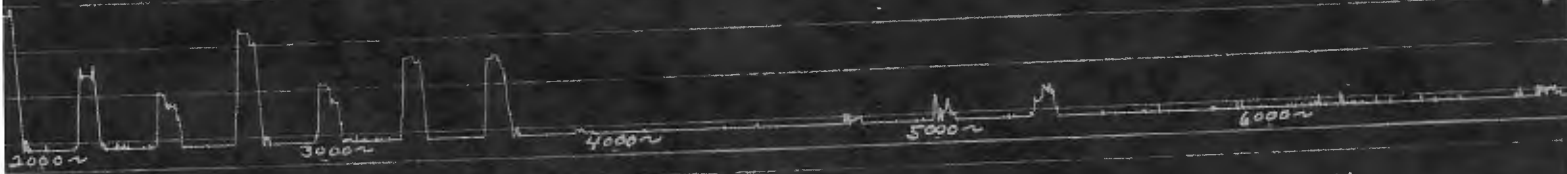


PLATE 1

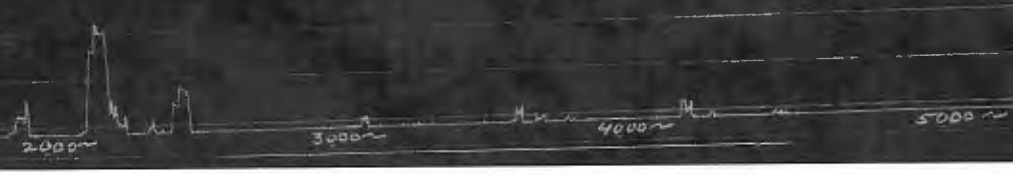
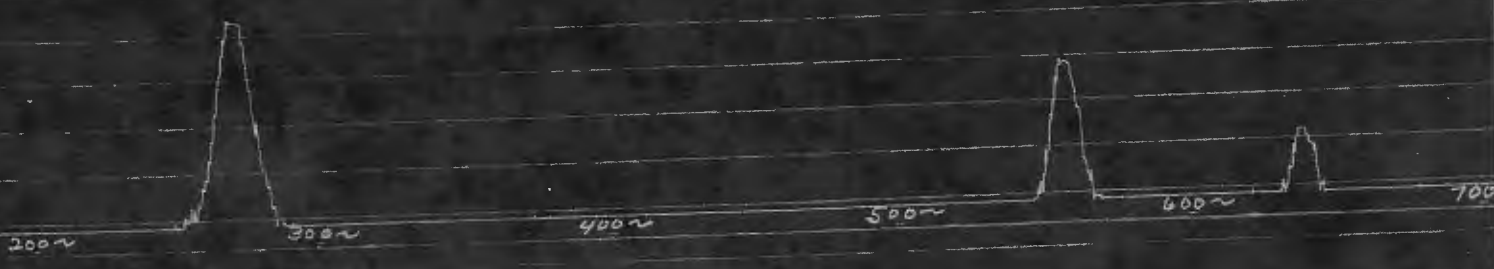




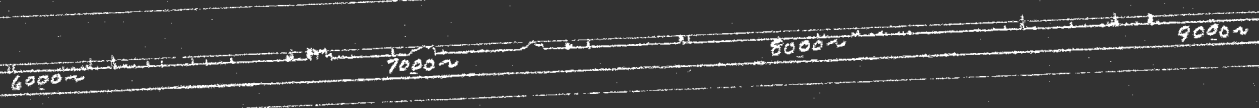
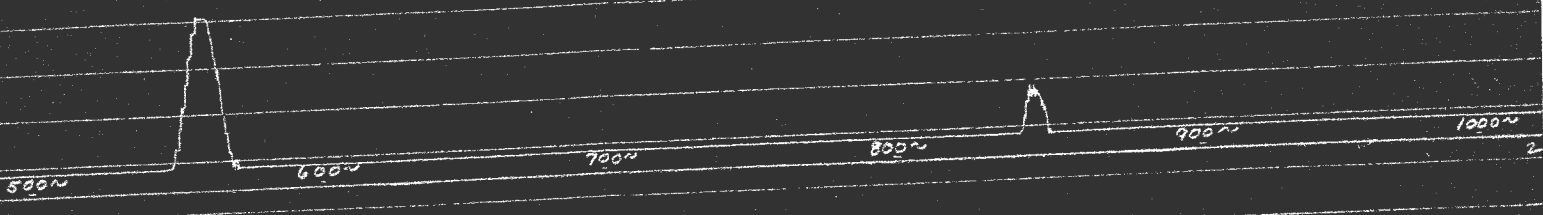
TYPE H-10 HORN
REPORT NO. B-2083
ANALYSIS AT 100 FEET
IN OPEN AIR



TYPE H-11 HORN



ARINE MFG. CO.
H-10 HORN
T NO. B-2083
5 AT 100 FEET
IN AIR



OF H-11 HORN

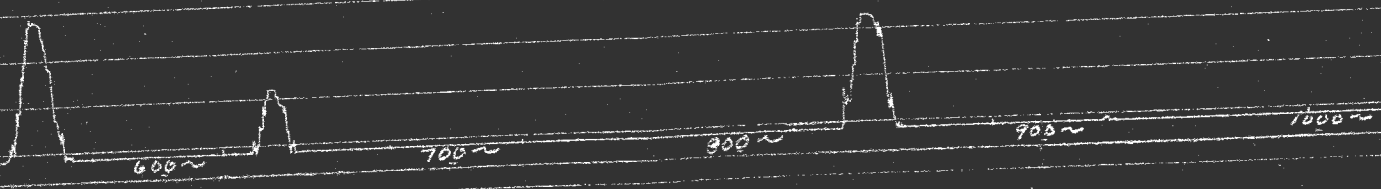


PLATE 2

H-10 HORN

NO. B-2083

AT 100 FEET

N AIR



H-11 HORN

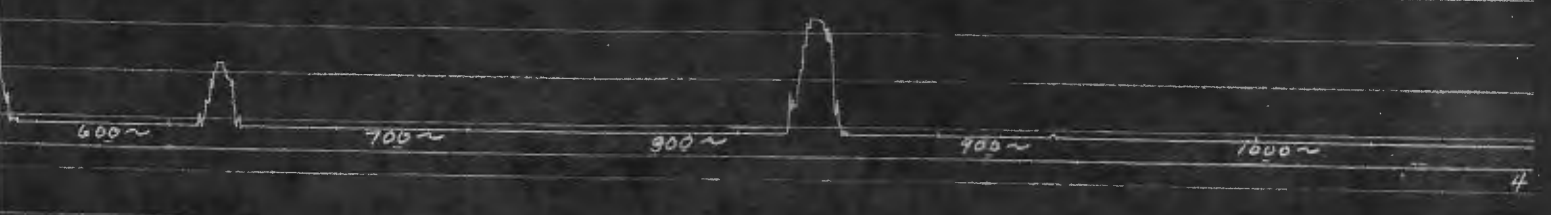


PLATE 2



PLATE 3

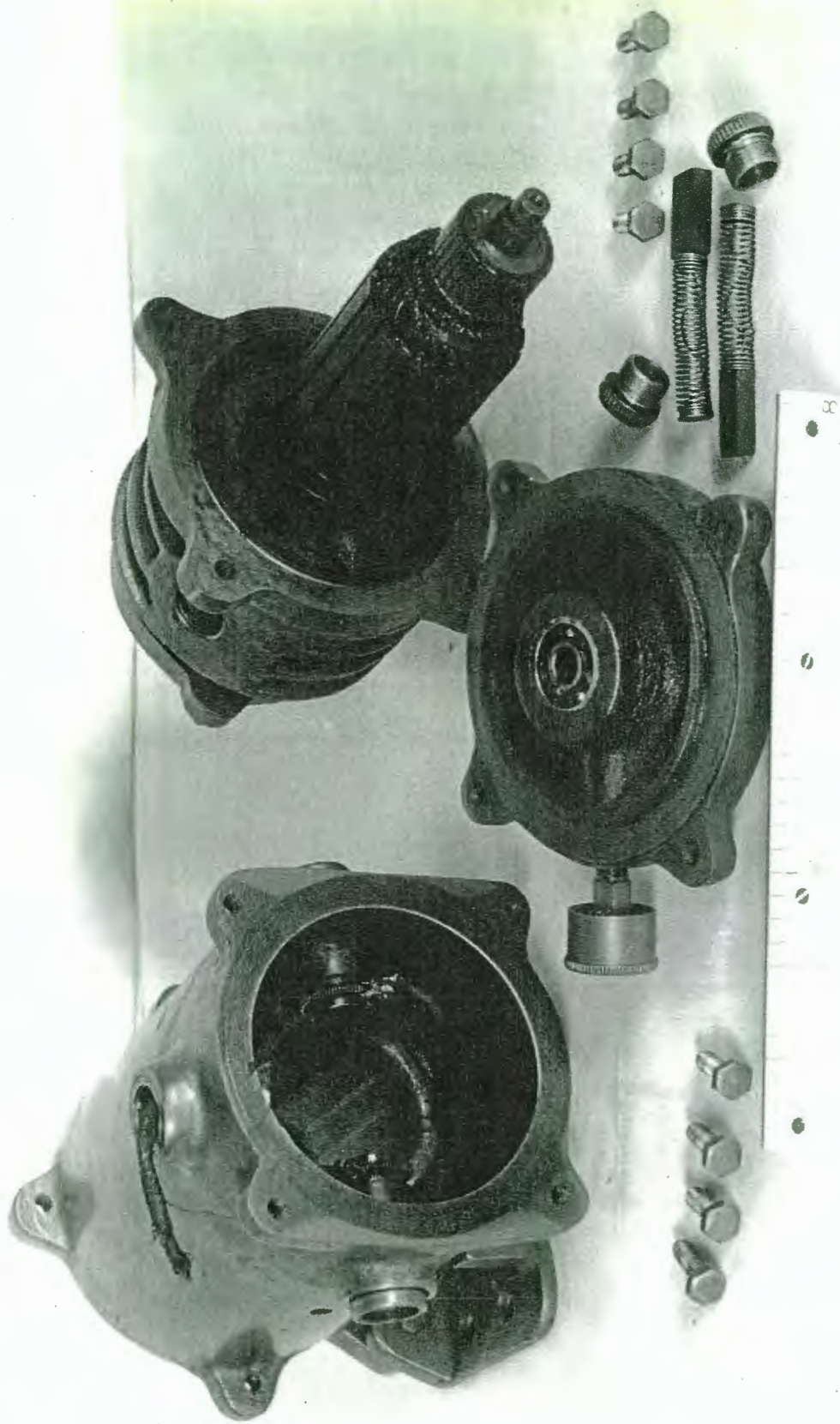


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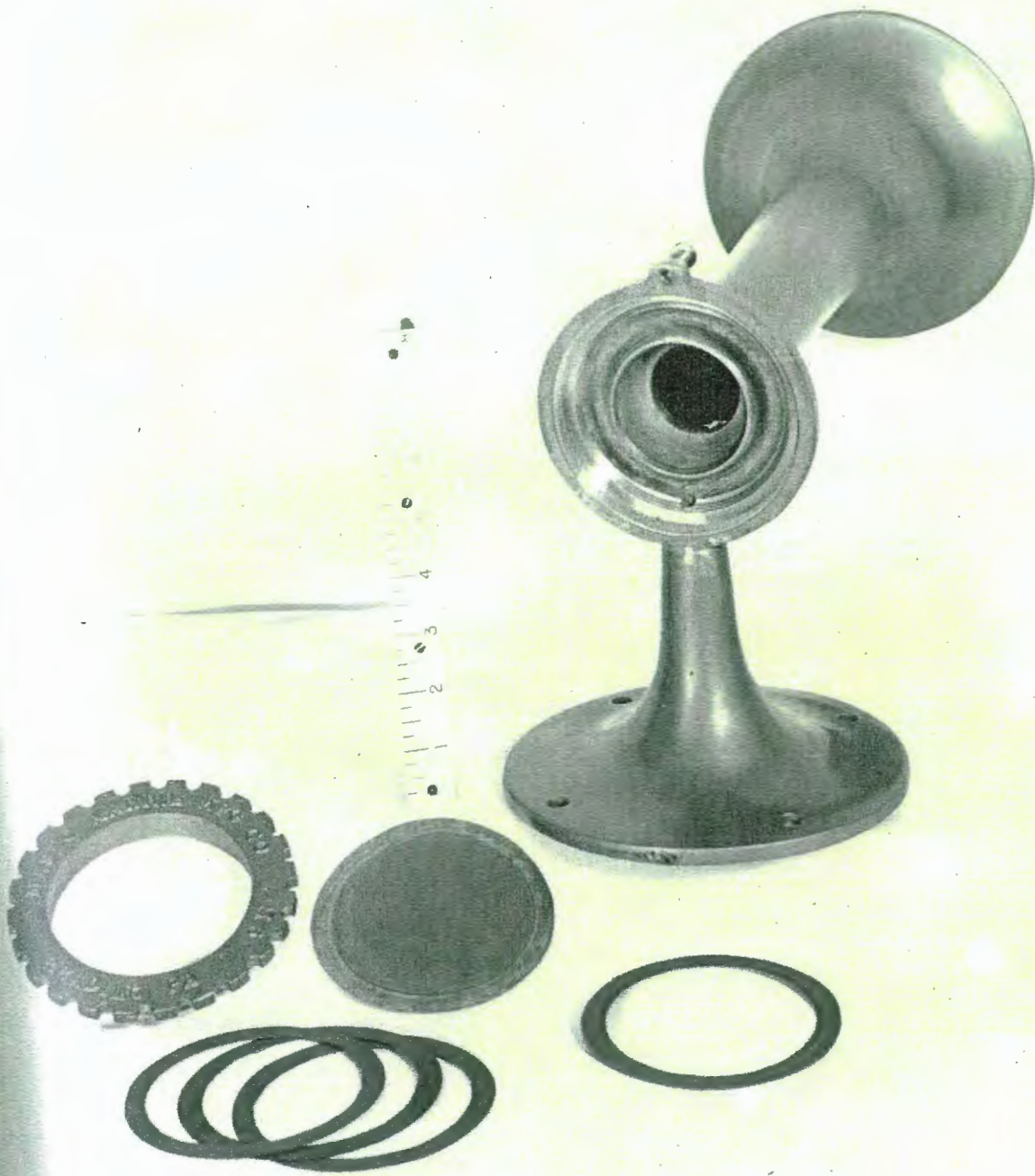


PLATE 5.

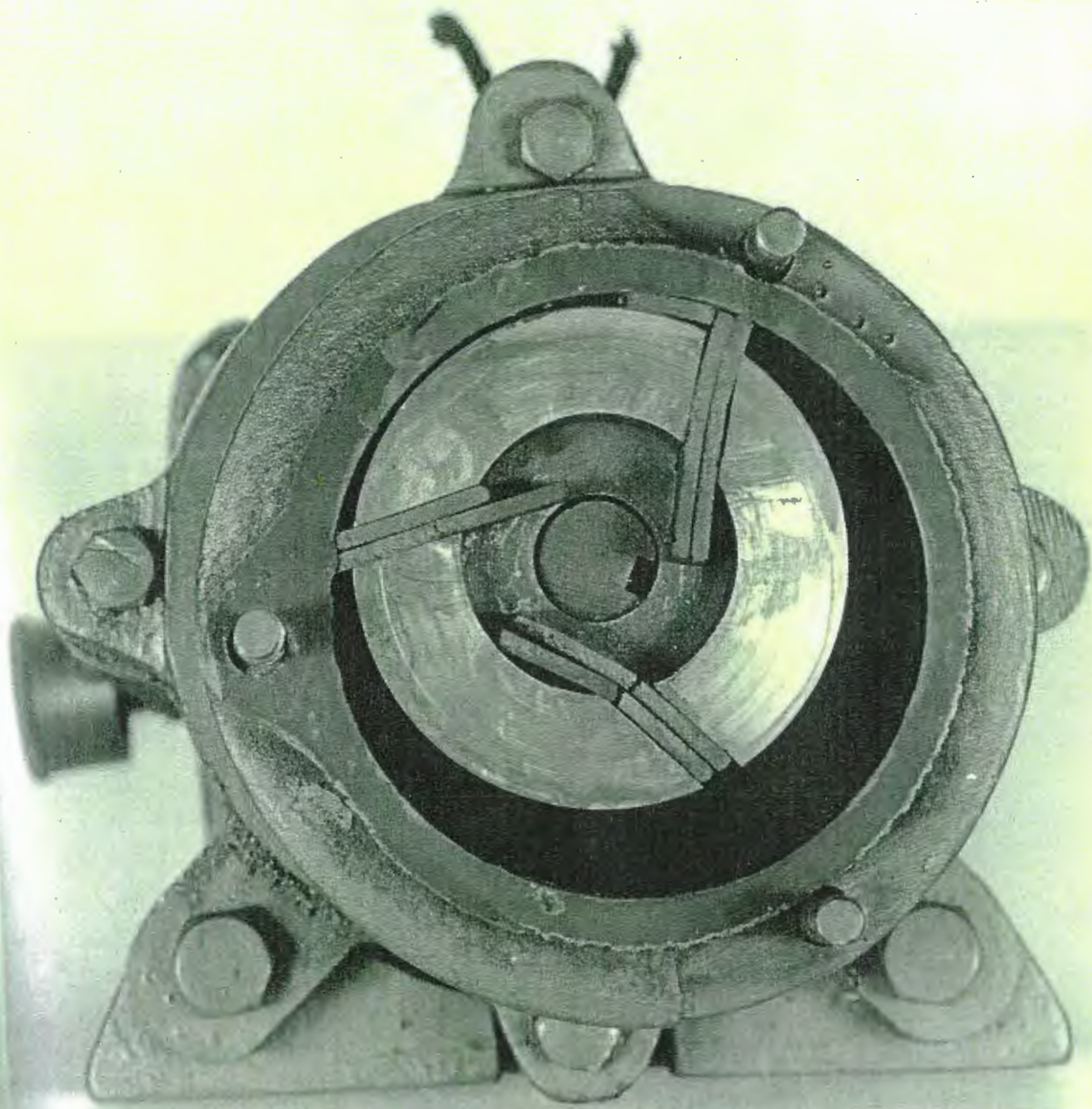


PLATE 6



PLATE 3



PLATE 5



PLATE 6