

April 1958

CATHODE-RAY OSCILLOGRAPH**OBL, OBL-1,
-2, -3, -3a**

Cathode-Ray Oscilloscope Navy Model OBL-3

FUNCTIONAL DESCRIPTION

The Models OBL, OBL-1, OBL-2, OBL-3, and OBL-3a are instantaneous waveform indicating devices using a three-inch cathode-ray tube. They will present both recurrent and transient electrical and mechanical phenomena such as analysis of audio frequency distortion, amplifier gain, filter behaviour, phase shift, modulation in voice and tone transmission, and faults in radio and sound equipment. They also present a trace as a function of time on a substantially linear time base.

The Models OBL, OBL-1, OBL-2, and OBL-3 are portable equipments similar in design and function and intended for general use for viewing waveforms and for studying envelope characteristics. The Model OBL-3a is designed for rack mounting and is used mainly for measurement of frequency spread of FSK transmissions.

No field changes in effect at time of preparation (25 October 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS**OBL**

SWEEP RANGE: 8 to 30000 cps.
 INPUT IMPEDANCE: 1 meg across 20 uuf.
 DEFLECTION SENSITIVITY (PER INCH):
 DIRECT TO PLATES: 35.0 v rms AC, 100v DC.
 THRU AMPLIFIERS: 0.5 v rms.
 FREQUENCY RESPONSE: Uniform from 10 to 100000 cps.
 VOLTAGE GAIN: Substantially in excess of 40.
 POWER REQUIREMENTS: 105 to 125 v, 60 to 70 cps, 65 W.

OBL-1

SWEEP RANGE: 15 to 30000 cps.
 INPUT IMPEDANCE

Y-AXIS

THRU AMPLIFIER: 1 meg across 37 uuf.
 DIRECT TO PLATES: 4.7 meg across 45 uuf.

X-AXIS: Same as for Y-axis.

Z-AXIS: 0.5 meg across 50 uuf.

DEFLECTION SENSITIVITY (PER INCH)

MAX AMPLIFICATION

VERTICAL: Approx 0.85 v rms.
 HORIZONTAL: Approx 0.70 v rms.

DIRECT TO PLATES

VERTICAL: 40 v rms.
 HORIZONTAL: 30 v rms.

AMPLIFIER GAIN (APPROX): 45.

FREQUENCY RESPONSE (AMPLIFIERS)

Y-AXIS

FULL GAIN: Uniform within 2 db of the value at 1000 between 10 and 100000 cps.

GAIN CONTROL AT MIDSCALE: Uniform within 14 db of the value at 1000 cps between 10 and 100000 cps.

X-AXIS: Same as for Y-axis.

Z-AXIS: Uniform within 2 db of the response at 1000 cps down to 30 cps.

POWER REQUIREMENTS: 115 or 230 v, 50 to 400 cps, 50 W.

OBL-2

SWEEP RANGE: 10 to 30000 cps.

INPUT IMPEDANCE

Y-AXIS

THRU AMPLIFIER: 1 meg across 25 uuf.

DIRECT TO PLATES: 6.5 meg across 10 uuf.

X-AXIS

THRU AMPLIFIER: 1 meg across 25 uuf.
 DIRECT TO PLATES: 6.5 meg across 8 uuf.

DEFLECTION SENSITIVITY (PER INCH): 0.4 v rms with gain control at max for vertical and horizontal amplifiers.

AMPLIFIER GAIN: Exceeds 60 at 1000 cps for vertical and horizontal amplifiers.

FREQUENCY RESPONSE (10 CPS TO 100 KC)

MAX GAIN: Uniform within 1 db.

Test-Wave Form Measuring

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GAIN CONTROL AT MIDSCALE: Uniform within
12 db (down 1 db at 15 kc).POWER REQUIREMENTS: 105 to 125 v, 50 to 60
cps, 30 W.

OBL-3,-3a

SWEEP RANGE: 7 to 30000 cps.

INPUT IMPEDANCE

Y-AXIS

THRU AMPLIFIER: 1 meg across 35 uuf.

DIRECT TO PLATES: 1 meg across 20
uuf.

X-AXIS

THRU AMPLIFIER: 1 meg across 35 uuf.

DIRECT TO PLATES: 2 meg across 20
uuf.

DEFLECTION SENSITIVITY (PER INCH)

MAX AMPLIFICATION

VERTICAL: 0.8 v rms.

HORIZONTAL: 1.0 v rms.

DIRECT TO PLATES

VERTICAL: 88.5 v DC or 31.5 v rms.

HORIZONTAL: 120 v DC or 42.5 v rms.

AMPLIFIER GAIN: 40.

FREQUENCY RESPONSE (AMPLIFIERS)

MAX GAIN: ± 2 db from 10 to 100000 cps.GAIN CONTROL AT MIDSCALE: Within 15 db.
from 10 to 100000 cps.POWER REQUIREMENTS: 105 to 125 v, 50 to
70 cps, 40 W.**MANUFACTURER'S OR CONTRACTOR'S DATA**Hickok Electrical Instrument Company,
Cleveland, Ohio.Contract NXsr-49743, dated 28 November
1944 (OBL).Allen B. DuMont Laboratories, Inc.,
Passaic, N.J.Contract NXsr-33622, dated 11 May 1943
(OBL-1).Reiner Electronics Company, Inc., New York,
N. Y.Contract NXsr-41057, dated 22 November
1943 (OBL-2).Triumph Manufacturing Company, Chicago,
Illinois.Contract NXsr-48370, dated 29 January
1944 (OBL-3).**TUBE AND/OR CRYSTAL COMPLEMENT**

OBL

(1) 3BP1 (1) 5R4WGB (1) 5Y3WGTB

(4) 6SJ7 (1) 884

Total Tubes: (8)

OBL-1

(1) 2X2A (1) 3BP1 (4) 6SJ7

(1) 6X5WGT (1) 884

Total Tubes: (8)

OBL-2

(1) 2X2A (1) 3BP1 (4) 6SH7

(1) 6X5WGT (1) 884

Total Tubes: (8)

OBL-3, -3A

(1) 2X2A (1) 3BP1 (2) 6AC7WA

(1) 6X5WGT (1) 884

Total Tubes: (6)

No Crystals.

REFERENCE DATA AND LITERATURENAVSHIPS 900471-1B: Technical Manual for
Navy Model OBL Cathode-Ray Oscillograph.NAVSHIPS 900227(A): Technical Manual for
Cathode-Ray Oscillograph Navy Model OBL-1.NAVSHIPS 900576: Technical Manual for
Cathode-Ray Oscillograph Model OBL-2.NAVSHIPS 900224-1B: Technical Manual for
Navy Model OBL-3 Cathode-Ray Oscillograph.NAVSHIPS 92228: Technical Manual for Trans-
mitter Control-Monitor Model AN/FRO-3.**TYPE CLASSIFICATION**

DESIGN COGNIZANCE BUSHIPS

PROCUREMENT COGNIZANCE

STOCK NO.

R.D.B. IDENT. NO. 3.3.1

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (C.u.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Cathode-Ray Oscillograph Model OBL	5.5	18 x 22 x 24	90
1	Cathode-Ray Oscillograph Model OBL-1	2.7		42
1	Cathode-Ray Oscillograph Model OBL-2	1.8	9-3/4 x 15 x 21	51

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Test-Wave Form Measuring

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CATHODE-RAY OSCILLOGRAPH

OBL, OBL-1,
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EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	OBL Cathode Ray Oscillograph OBL	8 x 11-1/2 x 14	30
1	OBL-1 Cathode-Ray Oscillograph Model OBL-1	8 x 11-1/2 x 14	28
1	OBL-2 Cathode-Ray Oscillograph Model OBL-2	6 x 10-3/4 x 14-1/4	26
1	OBL-3 Cathode-Ray Oscillograph Model OBL-3	7-1/2 x 11-1/8 x 14-1/2	23
1	OBL-3a Cathode-Ray Oscillograph Model OBL-3a	7 x 17-1/2 x 20-1/2	

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4.3 OBL: 3