

107.

Cathode Ray

TUBES
OSCILLOGRAPHS
ACCESSORIES

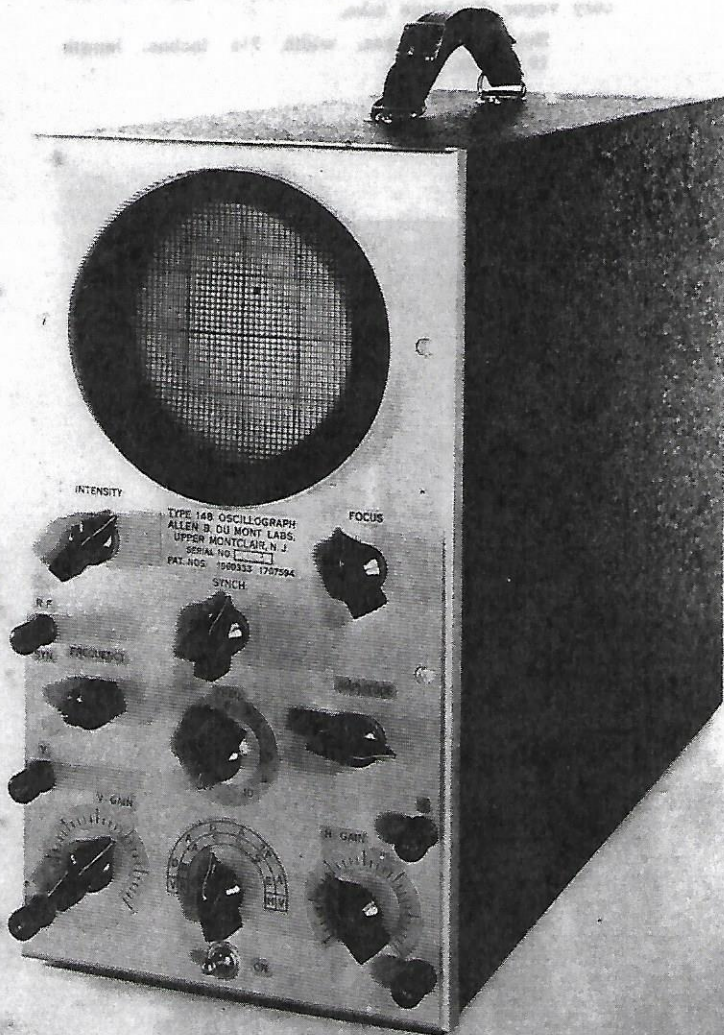


ALLEN B. DU MONT LABORATORIES, INC.
UPPER MONTCLAIR, N.J., U.S.A.

DU MONT TYPE 148 OSCILLOGRAPH

SINGLE CONTROL SWITCH
ALL CONTROLS READILY ACCESSIBLE

3" \$94.50
5" \$106.50



Other Features

Position controls for both horizontal and vertical axis.

Completely AC operated from 110-120 volt mains.

Convenient operation by having all controls and input terminals well spaced on front panel.

Chassis divided into compartments for sweep and amplifier circuits to minimize any coupling.

Uses

MANUFACTURERS. For production testing or experimental development.

SCHOOLS AND COLLEGES. For visual presentation of alternating current phenomena, sound or voice waves and effect of changing circuit constants.

AMATEURS AND EXPERIMENTERS. For checking percentage modulation, phase shift, distortion in amplifiers, frequency, fidelity and overloading.

RADIO DEALERS. For comparison of receiver characteristics and window display.

SERVICE ENGINEERS. For visual alignment of tuned circuits, measuring hum, gain and distortion in audio amplifiers.

SALES DEPARTMENTS. For demonstrating visually value of product and how it functions.

SPECIFICATIONS

Cathode Ray Tube

Either a type 34-XH or 54-XH Du Mont Cathode Ray Tube may be used in this unit. The type 34-XH tube has a 3" diameter screen while the 54-XH tube has a 5" diameter screen. The sensitivity of the type 34-XH tube is .38mm/volt and the type 54-XH tube is .68mm/volt. These tubes have an indirectly heated cathode and are equipped with two sets of electrostatic deflection plates. The fluorescent screen used on these tubes is of the high intensity short persistence type. The type 34-XH tube is interchangeable with the National Union 908 or the RCA 906 and the 54-XH is interchangeable with the National Union 907A.

Intensity of Trace

The trace may be readily observed in daylight and no hood is required. Photographs may be easily made with ordinary commercial equipment.

Focusing

This is accomplished by adjustment of the focus and brilliance controls on the front panel.

Deflection Factor

(Reciprocal of Sensitivity)

50 volts per inch when signal direct to deflection plates. 2.0 volts per inch when signal through one stage amplifier. .2 volts per inch when signal through two stage amplifier. These values are for DC volts with the type 54-XH tube. With the 34-XH tube the deflection factor is approximately half.

Exclusive Features

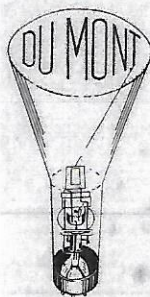
The sweep circuit of the 148 Du Mont oscillograph is basically new and allows waves of from 10 to 500,000 cycles per second to be observed with good linearity. The return trace has been speeded up and does not interfere with the pattern at high frequencies as occurs with conventional sweeps. The sweep can easily be synchronized with fractions of the wave as well as with multiples of the wave.

The amplifiers in this unit are arranged so that they may either be used as single stage amplifiers for each set of deflection plates or else as a two stage amplifier for the vertical deflection plates.

The method of applying the signal and the sweep voltages in various combinations to the deflection plates is all taken care of by a single control knob greatly simplifying operation.

A calibrated scale is supplied with this unit when used with a five inch cathode ray tube. The scale and large viewing screen of the tube make for more accurate determinations.

The front panel of the instrument is finished in Chromium making the dials and lettering which are black very easy to read.



TWO STAGE AMPLIFIER

Amplifiers

Two wide frequency range amplifiers are provided. One may be used for horizontal and one for vertical deflection or the two amplifiers stages may be cascaded to amplify the signal to the vertical deflection plates. The amplifiers are linear from 10 to 100,000 cycles and have a gain of approximately 25. When used in cascade the gain is approximately 250. The amplifier gain controls have scales for the purpose of resetting and comparison.

Sweep Circuit

A basically new sweep circuit is used in this unit which has a number of advantages over previous circuits. The frequency range of the sweep is from 10 to 100,000 cycles per second allowing both audio and radio frequency waves to be observed. As a type-57 pentode is used as a current limiting tube the linearity of the sweep is considerably improved over systems charging the sweep condenser through a fixed resistance. The discharge tube used is a Du Mont type-128 mercury vapor tube which has a much faster de-ionization time than a gas discharge tube and greatly increases the speed of the return trace. Another feature of the sweep circuit is its ability to synchronize with fractions of a wave as well as the fundamental or sub-multiples of the wave. The sweep circuit may be synchronized when the wave is fed direct to the deflection plates or through the one or two amplifier stages to the deflection plates. Arrangements are also provided so that the sweep circuit may be synchronized either with the applied signal or else with any desired frequency different from the signal frequency. The controls for this circuit are rough and fine frequency control, sweep amplitude control and synchronization control.

Centering Adjustments

Two screw driver adjustments are provided at the side of the case for both vertical and horizontal beam centering adjustment.

Calibrated Scale

A removable calibrated scale is provided so that accurate determinations may be made.

Switching

A single knob operating a six position five gang switch permits the following:

1. To apply signals direct to the vertical and horizontal deflection plates.
2. To apply signals to the vertical and horizontal deflection plates through separate one stage amplifiers.
3. To apply the signal direct to the vertical deflection plates and apply the sweep voltage to the horizontal deflection plates.
4. To apply the signal through a one stage amplifier to the vertical deflection plates and apply the sweep voltage to the horizontal deflection plates.
5. To apply the signal through a two stage amplifier to the vertical deflection plates and apply the sweep voltage to the horizontal deflection plates.
6. To apply the signal through a one stage amplifier to the vertical deflection plates, the sweep voltage to the horizontal deflection plates and apply any desired frequency signal to the synchronization circuit.

Power Supply

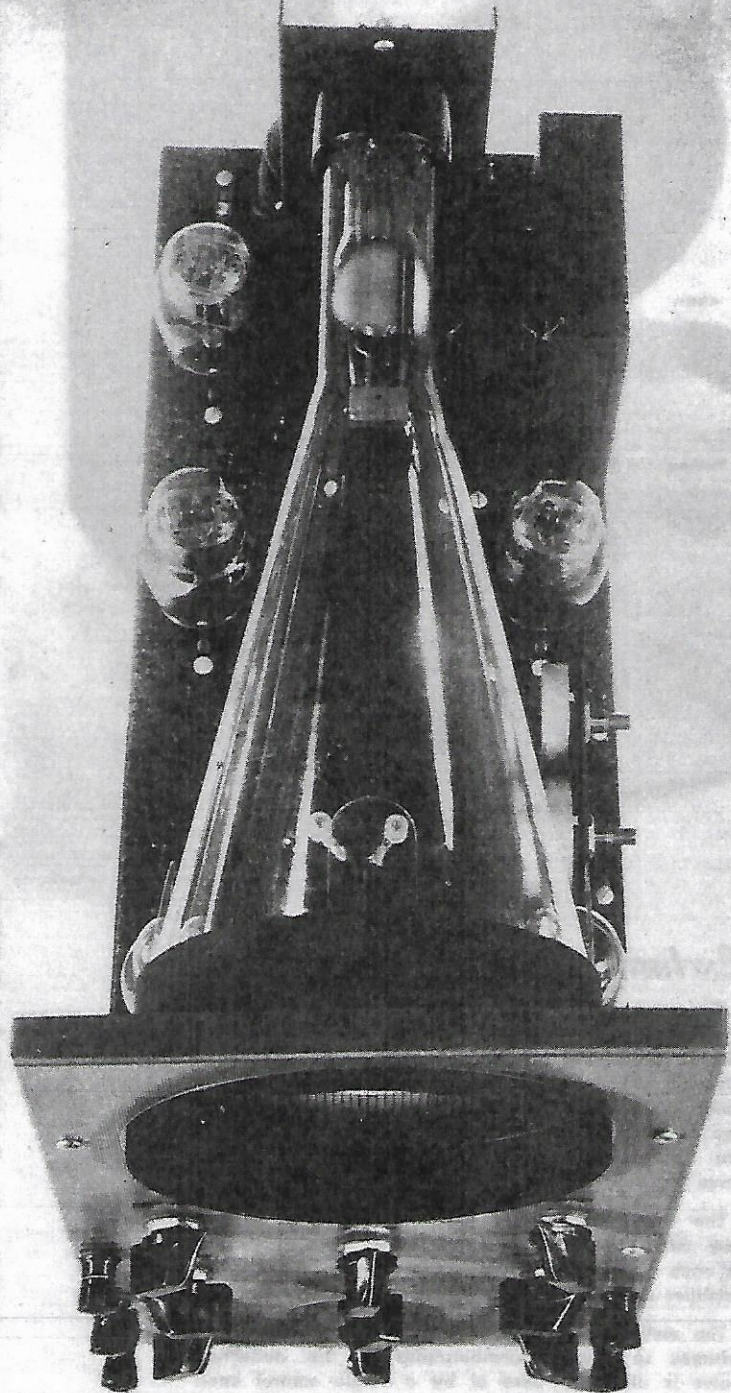
Completely AC operated from 110-120 Volt lines. Power consumption 40 Watts.

Tubes Supplied

One type 34-XH or 54-XH Du Mont cathode ray tube, 2 type-53 amplifier tubes, 1 type 80 rectifier tube, 1 type-57 current limiting tube and one type-128 mercury vapor discharge tube.

Height 14 inches, width 7½ inches, length 18 inches.

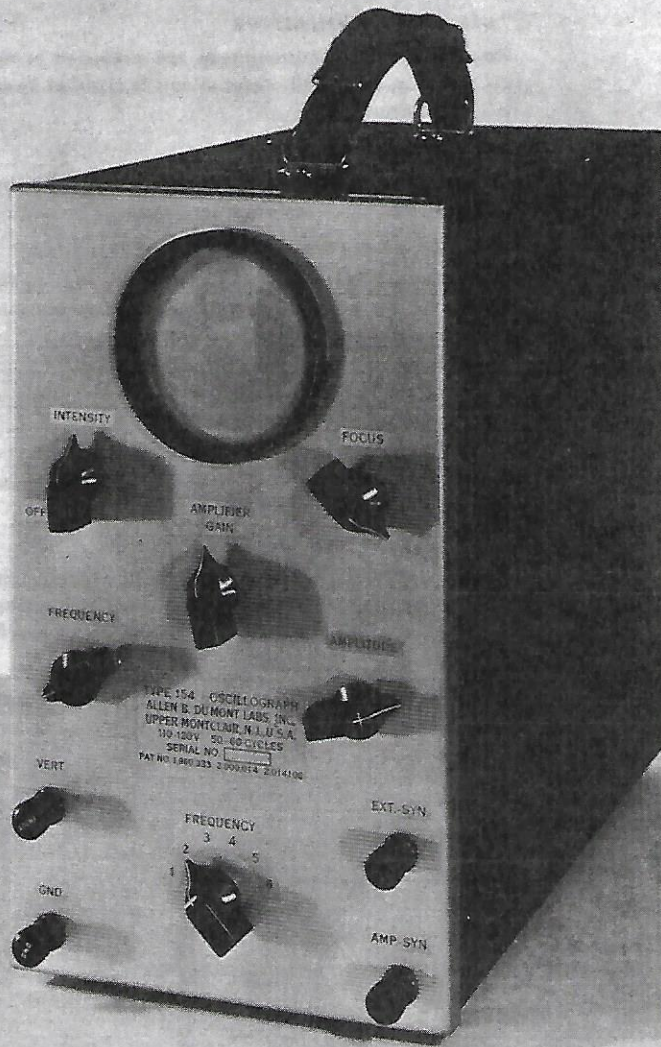
Weight 40 lbs.



ALLEN B. DUMONT LABORATORIES, INC.
UPPER MONTCLAIR, N. J.
U. S. A.

DU MONT TYPE 154 OSCILLOGRAPH

74-50



A New Simplified OSCILLOGRAPH

Introduced by America's Pioneer
Oscilloscope Manufacturers

Type 154 Du Mont portable cathode ray oscillograph has been especially designed to meet the needs of radio service engineers. It contains all the essential features of the larger model now extensively used in various government departments, colleges and large industrial concerns.

Allen B. Du Mont Laboratories are the oldest manufacturers of cathode ray oscillograph equipment in this country and have pioneered many exclusive features.

We were the first to produce a long life high vacuum tube. The first to offer a portable cathode ray oscillograph—the first to offer the time delay screen—the first to offer an electronic switch enabling two phenomena to be observed on a cathode ray oscillograph simultaneously and the first to offer a linear sweep enabling R. F. waves to be observed.

Exclusive Features

The sweep circuit of the type 154 Du Mont oscillograph utilizes the discharge of a condenser rather

than the charge of a condenser for the linear sweep circuit. This together with a pentode constant current tube enables waves from 10 to a million cycles per second to be observed and synchronized with perfect linearity.

The amplifier in this unit provides a voltage gain of 100 between 10 and 100,000 cycles per second and 25 at a million cycles.

The input impedance to the amplifier is 500,000 ohms.

Binding posts are provided on this unit as shown in the illustration so that signals may be applied directly to the deflection plates without going thru any coupling capacitor. This enables DC potentials to be observed and allows very high frequency patterns to be applied directly to the deflection plates.

Due to the wide frequency range of the amplifier all switches have been eliminated reducing coupling and capacity between circuits and greatly simplifying the operation of the unit, without sacrifice of flexibility and allowing any frequency signal between 10 and one million cycles per second to be applied to the input terminals and observed.

A chromium front panel enables the dials and lettering to be easily read.

Other Features

Position controls for both horizontal and vertical axis.

Completely AC operated from 110-120 volt mains.

Uses

MANUFACTURERS. For production testing or experimental development.

SCHOOLS AND COLLEGES. For visual presentation of alternating current phenomena, sound or voice waves and effect of changing circuit constants.

AMATEURS AND EXPERIMENTERS. For checking percentage modulation, phase shift, distortion in amplifiers, frequency, fidelity and overloading.

RADIO DEALERS. For comparison of receiver characteristics and window display.

SERVICE ENGINEERS. For visual alignment of tuned circuits, measuring hum, gain and distortion in audio amplifiers.

SALES DEPARTMENTS. For demonstrating visually value of product and how it functions.

SPECIFICATIONS

Cathode Ray Tube

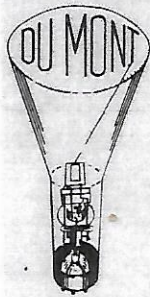
Type 34-XH Du Mont cathode ray tube is supplied with the unit. This tube has a three inch diameter screen of high visual brilliance. It is of the high vacuum electron lens focus type and is extremely strong mechanically. The sensitivity of the type 34 XH tube is .38 mm/volt. The tube has an indirectly heated cathode and is equipped with two sets of electro static deflection plates. This tube is interchangeable with the National Union 908 or the RCA 906.

Intensity of Trace

The trace may be readily observed in daylight and no hood is required. Photographs may be easily made with ordinary commercial equipment.

Focusing

This is accomplished by adjustment of the focus and intensity controls on the front panel.



Deflection Factor

(Reciprocal of Sensitivity)

75 Volts per inch when signal direct to deflection plates.

.75 Volts per inch when signal thru amplifier.

These values are for DC volts.

Amplifier

A type-57 tube utilizing the principals of a high fidelity television amplifier provides a voltage gain of 100 between 10 and 100,000 cycles and a voltage gain of 25 at a million cycles.

Sweep Circuit

A basically new sweep circuit is used in this unit having a number of advantages over previous circuits. The frequency range of the sweep enables waves from 10 to a million cycles to be observed. The discharging of the condenser is used for the sweep rather than the charging of the condenser enabling this wide range of sweep and together with a type-57 used as a constant current tube providing extremely linear operation without any return trace. Other systems utilizing the charging of the sweep condenser thru a fixed resistance do not compare in operation with the type of sweep used in this unit.

The discharge tube used is a Du Mont type 885 (interchangeable with RCA 885) which enables quick starting of the sweep circuit and very stable operation. The sweep circuit may be synchronized either with the wave applied to the deflection plates or any other synchronizing pulse. It is also possible in the case of weak signals to utilize the amplifier for both amplifying the signal fed to the deflection plates

and also the signal fed to the discharge tube for locking in. The controls for this circuit are rough and fine frequency control and sweep amplitude control. Synchronization is obtained by applying any desired signal to the binding posts provided.

Centering Adjustments

Two screw driver adjustments are provided at the side of the case for both vertical and horizontal beam centering adjustment.

Calibrated Scale

A removable calibrated scale is provided so that accurate determinations may be made.

Direct Connections to Deflection Plate

Five Binding Posts are provided at the rear of the unit so that by removing two jumpers signals may be applied directly to the deflection plates.

Power Supply

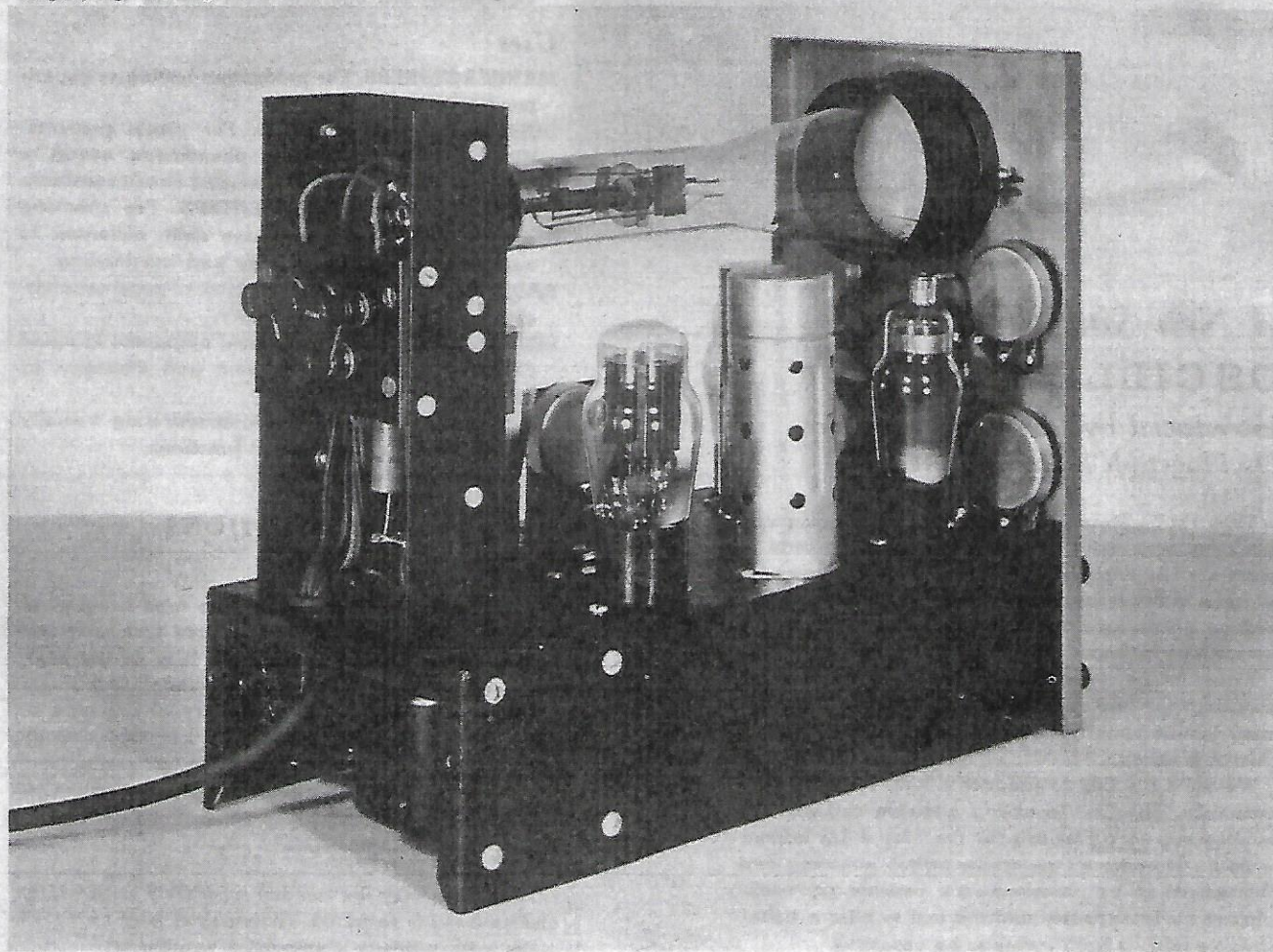
Completely AC operated from 110-120 Volt lines. Power consumption 30 Watts.

Tubes Supplied

One type 34-XH Du Mont Cathode Ray Tube. One type-57 Amplifier Tube, one type-57 constant current tube, one type 885 discharge tube and two type 80 rectifier tubes.

Size Height 11 inches, width 6½ inches, length 13 inches.

Weight 18 lbs.



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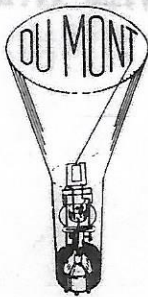
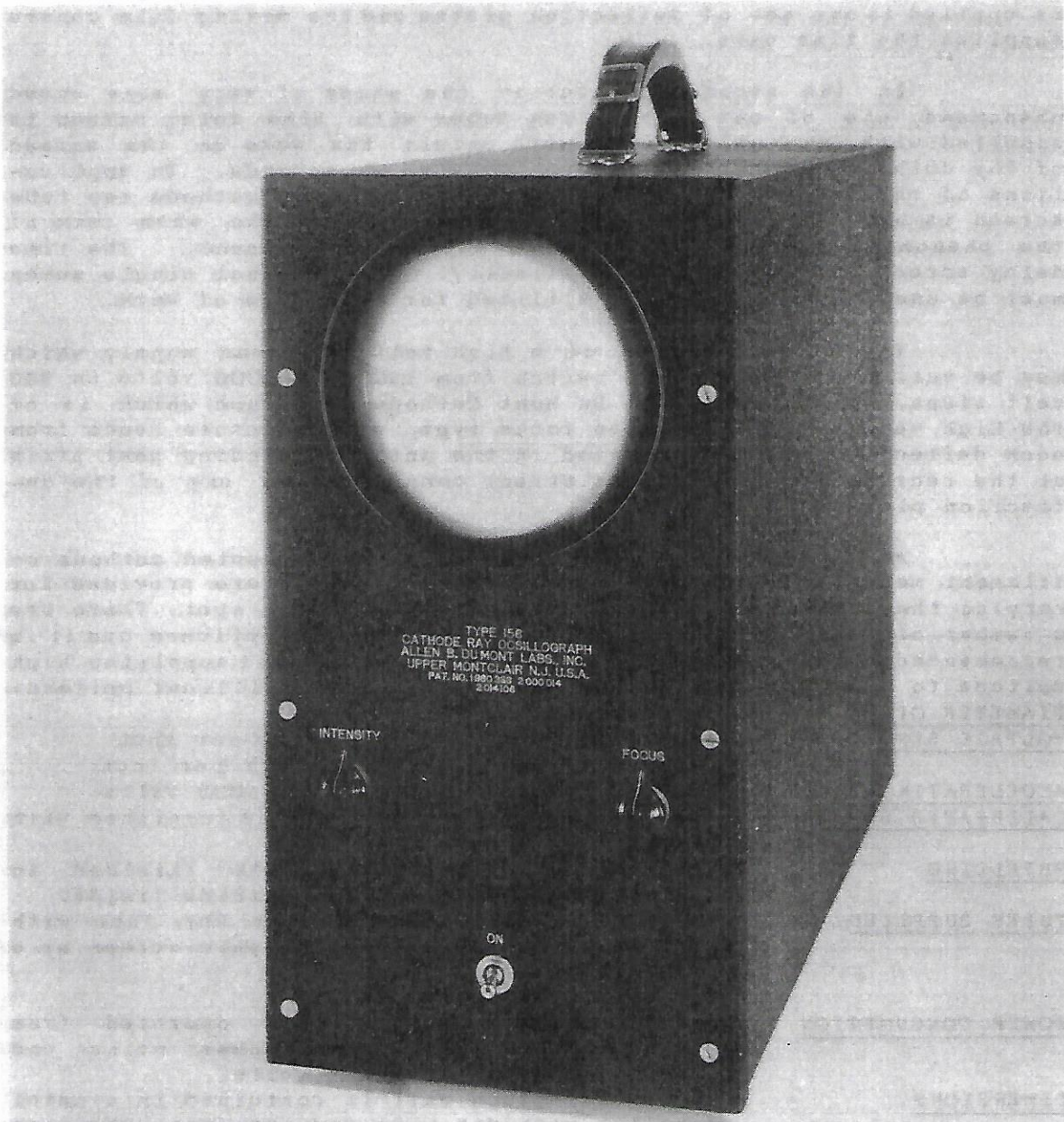
\$102.50

THE TYPE 156 DU MONT OSCILLOGRAPH

WITH VARIABLE HIGH VOLTAGE POWER SUPPLY

FOR HIGH SPEED PHOTOGRAPHIC RECORDING

OR APPLICATIONS REQUIRING TIME DELAY SCREEN



ALLEN B. DU MONT LABORATORIES, INC.

UPPER MONTCLAIR, N.J.

U. S. A.

DATA ON DU MONT TYPE 156 OSCILLOGRAPH

The type 156 Du Mont Cathode Ray Oscillograph is designed for use in recording in connection with the moving film camera or for observing very slow speed phenomena below 10 cycles per second.

When the oscillograph is to be used for the first application we supply with this unit a cathode ray tube giving a blue trace of high actinic value and extremely short persistence. The phenomena is applied to one set of deflection plates and the moving film camera supplies the time axis.

In the second application the study of very slow speed phenomena, one of our cathode ray tubes with time delay screen is supplied with the unit which will retain the wave on the screen of the cathode ray tube for approximately 30 seconds. In applications of this character when the ordinary type of cathode ray tube screen is used it is impossible to get an idea of the wave form of the phenomena because of the slow motion of the spot. The time delay screen overcomes this difficulty. An external single sweep must be used when the unit is utilized for this type of work.

This unit consists of a high voltage power supply which may be varied by means of a switch from 1500 to 3000 volts in 500 volt steps. A Type 54-8-H Du Mont Cathode Ray Tube which is of the high vacuum electron lense focus type, with separate leads from each deflection plate, is mounted in the unit. A binding post strip at the rear of the unit allows direct connection to any of the deflection plates.

As the type 54-8-H tube has an indirectly heated cathode no filament meter or adjustment is necessary. Controls are provided for varying the brilliance of the tube and focusing the spot. There are a number of uses of this unit outside of the two mentioned and it is recommended in any application requiring a compact unit supplying high voltage to the cathode ray tube and hence a very brilliant pattern.

<u>DIAMETER OF SCREEN</u>	5 Inches
<u>VOLTAGE SENSITIVITY</u>	1500 volts anode. 75 DC volts per inch 3000 volts anode. 150 DC volts per inch
<u>ACCELERATING ELECTRODE VOLTAGE</u>	1500, 2000, 2500 or 3000 Volts
<u>CALIBRATED SCALE</u>	A removable calibrated scale is furnished with the unit.
<u>SHIELDING</u>	The instrument is completely shielded to minimize interference from outside fields.
<u>TUBES SUPPLIED</u>	1 Type 54-8-H Du Mont Cathode Ray Tube with either a high speed photographic screen or a time delay screen 1 Type 879 Rectifier Tube
<u>POWER CONSUMPTION</u>	The instrument is entirely operated from 110-120 volts 50-60 cycle power mains and consumes approximately 35 Watts.
<u>DIMENSIONS</u>	The oscillograph unit is contained in a metal case 14" high 7½" wide and 18" deep. The case has a handsome crackle finish and is provided with rubber feet and a leather carrying strap.
<u>NET WEIGHT</u>	Complete unit with tubes - 35 lbs.
<u>PRICE ON APPLICATION</u>	

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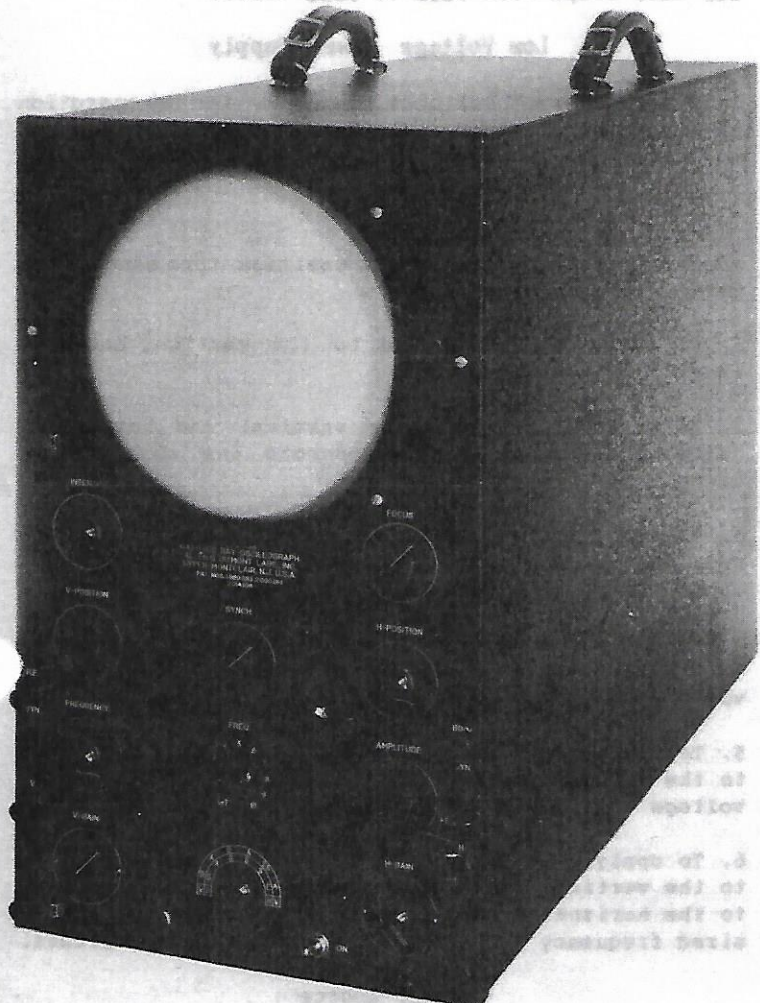
UPPER MONTCLAIR, N.J.

U. S. A.

DU MONT Type 158 OSCILLOGRAPH

with 9" CATHODE RAY TUBE.....

\$ 250.00



THIS UNIT consists of a 9" Du Mont cathode ray tube, a separate power supply for the cathode ray tube which may be varied in 500 volt steps from 1500 to 3000 volts, and a power supply to furnish the necessary voltages to the amplifiers and linear sweep circuit. Position controls and switching means are provided so that the input signal may be fed as desired to the deflection plates.

When this unit is used with 1500 volts on the anode of the cathode ray tube, it is extremely sensitive, a 158 volt signal (AC) causing full scale deflection when it is applied directly to the deflection plates and a signal of only .64 volts (AC) will cause full scale deflection when applied through the two stage amplifier.

When the unit is operated with 3000 volts on the anode an extremely brilliant trace is obtained, allowing high speed transients to be readily photographed. This high

voltage is ideal to operate our time delay tubes which will retain the image for as much as a minute when operated in a darkened room. Because of the brilliant spot of the time delay tubes as compared with the afterglow the operation under ordinary illumination is similar to that obtained with a Willemite (green) screen.

The type 94-8-H tube supplied with this unit is of the high vacuum electron lens focus type and has separate leads from each deflection plate.

Exclusive Features

The sweep circuit of the 158 Du Mont oscilloscope is basically new and allows waves of from 10 to 500,000 cycles per second to be observed with good linearity. The return trace has been speeded up and does not interfere with the pattern at high frequencies as occurs with conventional sweeps. The sweep can easily be synchronized with fractions of the wave as well as with multiples of the wave.

The amplifiers in this unit are arranged so that they may either be used as single stage amplifiers for each set of deflection plates or else as a two stage amplifier for the vertical deflection plates.

The method of applying the signal and the sweep voltages in various combinations to the deflection plates is all taken care of by a single control knob, greatly simplifying operation.

Other Features

Position controls for both horizontal and vertical axis.

Sweep may be synchronized with 60 cycles from post or front panel regardless of signal applied to deflection plates.

Completely AC operated from 110-120 volt mains.

Convenient operation by having all controls and input terminals well spaced on front panel.

Binding posts provided at rear so DC potentials or very high frequencies may be applied directly to deflection plates. As leads are taken out separately from each deflection plate, signals may be fed to them through a symmetrical push pull arrangement.

Chassis is divided into compartments for sweep and amplifier circuits to minimize any coupling.

Specifications

A type 94-8-H Du Mont cathode ray tube is supplied with

this unit. This tube has a 9" screen and has a sensitivity of .54 mm/volt (1500 volts anode). These tubes have an indirectly heated cathode and are equipped with two sets of electrostatic deflection plates. The 94-8-H tube ordinarily supplied gives a green trace and is of the short persistence type. We can supply this tube on special order with either a time delay screen or a high speed photographic screen (blue).

Intensity of Trace

A brilliant trace is obtained which may be readily observed in daylight. High speed transients may be readily photographed.

Focusing

This is accomplished by adjustment of the focus and brilliance controls on the front panel.

Deflection Factor (Reciprocal of Sensitivity)

50 volts per inch when signal direct to deflection plates. 2.0 volts per inch when signal through one stage amplifier. .2 volts per inch when signal through two stage amplifier.

Amplifiers

Two wide frequency range amplifiers are provided. One may be used for horizontal and one for vertical deflection or the two amplifiers stages may be cascaded to amplify the signal to the vertical deflection plates. The amplifiers are linear from 10 to 400,000 cycles and have a gain of approximately 25. When used in cascade the gain is approximately 250. The amplifier gain controls have scales for the purpose of resetting and comparison.

Sweep Circuit

A basically new sweep circuit is used in this unit which has a number of advantages over previous circuits. The frequency range of the sweep is from 10 to 100,000 cycles per second allowing both audio and radio frequency waves to be observed. As a type-57 pentode is used as a current limiting tube the linearity of the sweep is considerably improved over systems charging the sweep condenser through a fixed resistance. The discharge tube used is a Du Mont type-128 mercury vapor tube which has a much faster de-ionization time than a gas discharge tube and greatly increases the speed of the return trace. Another feature of the sweep circuit is its ability to synchronize with fractions of a wave as well as the fundamental or sub-multiples of the wave. The sweep circuit may be synchronized when the wave is fed direct to the deflection plates or through the one or two amplifier stages to the deflection plates. Arrangements are also provided so that the sweep circuit may be synchronized either with the applied signal or else with any desired frequency different from the signal frequency. The controls for this circuit are rough and fine frequency control, sweep amplitude control and synchronization control.

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Centering Adjustments

Two knobs on the front panel enable vertical and horizontal beam centering.

High Voltage Power Supply

This furnishes all the voltages necessary for the cathode ray tube. The anode voltage may be varied in 500 volt steps from 1500 to 3000 volts.

Low Voltage Power Supply

This furnishes all voltages necessary for the operation of the sweep circuit, amplifiers and position control circuit.

Switching

A single knob operating a six position five gang switch permits the following:

1. To apply signals direct to the vertical and horizontal deflection plates.
2. To apply signals to the vertical and horizontal deflection plates through separate one stage amplifiers.
3. To apply the signal direct to the vertical deflection plates and apply the sweep voltage to the horizontal deflection plates.
4. To apply the signal through a one stage amplifier to the vertical deflection plates and apply the sweep voltage to the horizontal deflection plates.
5. To apply the signal through a two stage amplifier to the vertical deflection plates and apply the sweep voltage to the horizontal deflection plates.
6. To apply the signal through a one stage amplifier to the vertical deflection plates, the sweep voltage to the horizontal deflection plates and apply any desired frequency signal to the synchronization circuit.

Power Source

Completely AC operated from 110-120 Volt lines. Power consumption 80 Watts.

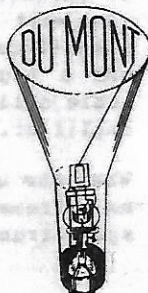
Tubes Supplied

One type 94-8-H Du Mont cathode ray tube, 2 type-53 amplifier tubes, 1 type 80 rectifier tube, 1 type 879 rectifier tube, 1 type-57 current limiting tube and 1 type-128 mercury vapor discharge tube.

Height 20 inches, width 12 inches, length 26 inches.

Weight 80 lbs.

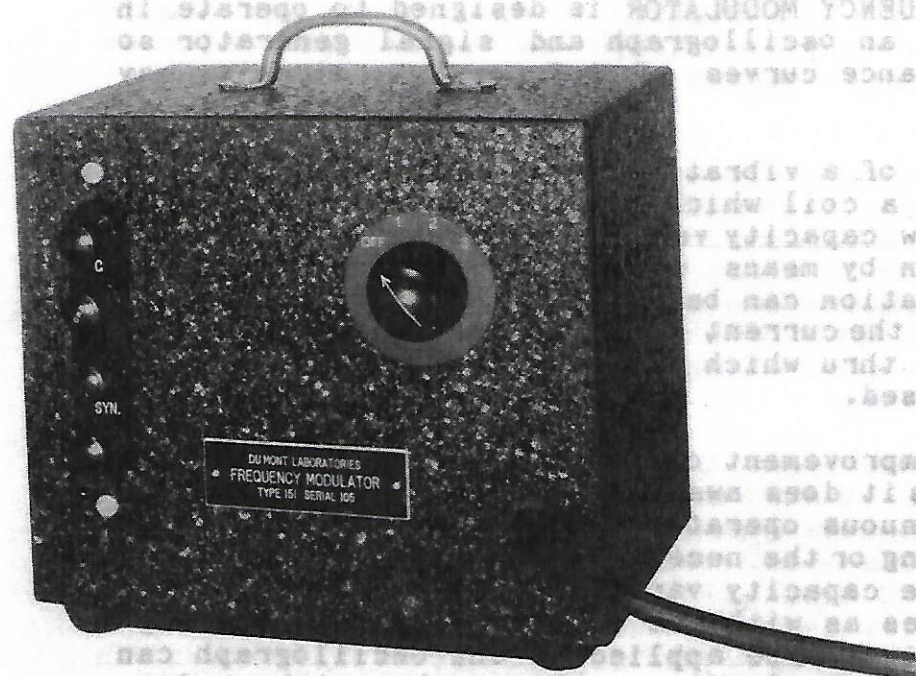
Price on Application



NEW MODEL 151
FREQUENCY MODULATOR

DATA ON TYPE 151 FREQUENCY MODULATOR

The Type 151 FREQUENCY MODULATOR is designed to operate in conjunction with an oscillograph and signal generator so that visual resonance curves be obtained.



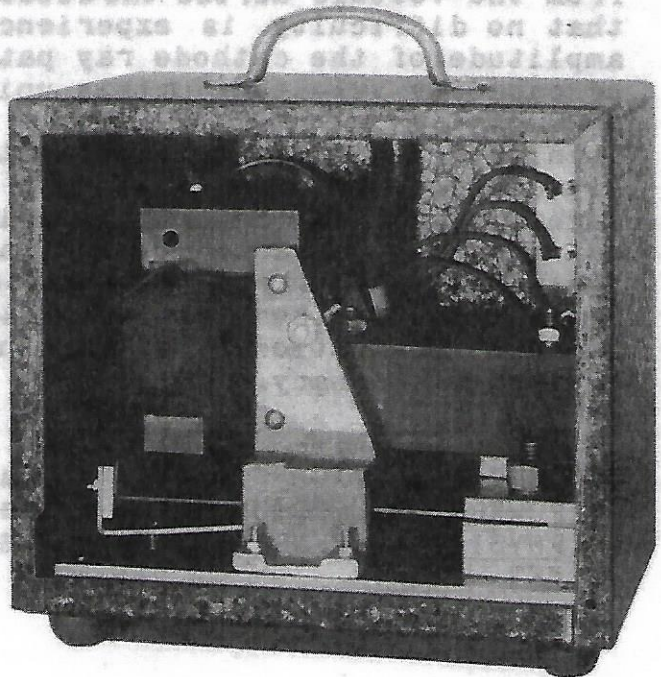
FRONT VIEW

The unit consists of a vibrator plate across a low capacity vibrator plate which means that the amplitude of vibration can be varied which varies the current through the vibrator which is crossed or decreased.

This unit is an improvement over previous units as it does not require continuous operation without overheating or the need for further care as the capacity is increased to 20 cycles as compared to the previous unit which was limited to 10 cycles. The output is taken from the vibrator plate instead of being taken from the plate and cathode of the detector or in the case of diode detection from the vibrator across the diode load resistor. This means that no distortion is experienced in obtaining sufficient amplitude of the vibrator pattern. The higher frequency vibrator also eliminates flicker.

or it is connected as that the tuning capacity of the vibrator in frequency of the vibrator is necessary between

REAR VIEW WITH
DUST COVER REMOVED



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ALLEN B. DU MONT LABORATORIES, INC.
UPPER MONTCLAIR, N. J.
U. S. A.

151 JRGK WBY
FREQUENCY MODULATOR

DATA ON TYPE 151 FREQUENCY MODULATOR

The Type 151 FREQUENCY MODULATOR is designed to operate in conjunction with an oscillograph and signal generator so that visual resonance curves of R.F. or I.F. circuits may be obtained.

The unit consists of a vibrating reed actuated by the magnetic field from a coil which together with a stationary plate acts as a low capacity variable condenser. The reed is set into vibration by means of the 60 cycle current. The amplitude of vibration can be varied by a tap switch on the unit which varies the current thru the exciting coil and in this way the range thru which the capacity varies may be increased or decreased.

This unit is an improvement over the previous motor driven condenser units as it does away with bearing or motor trouble and enables continuous operation for long periods of time without overheating or the necessity of oiling the bearings. Furthermore as the capacity variation occurs at 120 cycles instead of 20 cycles as with the motor driven unit, the signal from the receiver to be applied to the oscillograph can be taken off the output feeding to the speaker without danger of distortion, instead of being taken from the plate and cathode of the detector or in the case of diode detection from the voltage across the diode load resistor. This means that no difficulty is experienced in obtaining sufficient amplitude of the cathode ray pattern. The higher frequency of capacity variation in this unit also eliminates flicker.

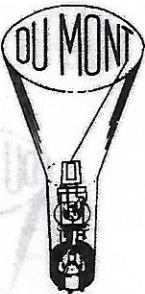
When using the frequency modulator it is connected so that its capacity is in parallel with the tuning capacity of the signal generator. Hence a variation in frequency of the signal generator is caused by the variation in capacity between the vibrating reed and the stationary plate. A synchronizing pulse obtained from binding posts on the unit is applied to the synchronization circuit of the oscillograph to hold the pattern stationary.

<u>SUPPLY VOLTAGE</u>	110-120 Volts 60 cycles
<u>POWER CONSUMPTION</u>	20 Watts
<u>PHYSICAL DIMENSIONS</u>	Height 6½" Depth 7¼" Width 5"
<u>NET WEIGHT</u>	13 Lbs.

PRICE \$22.50

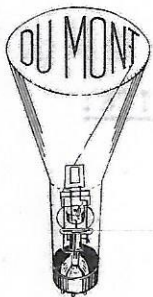
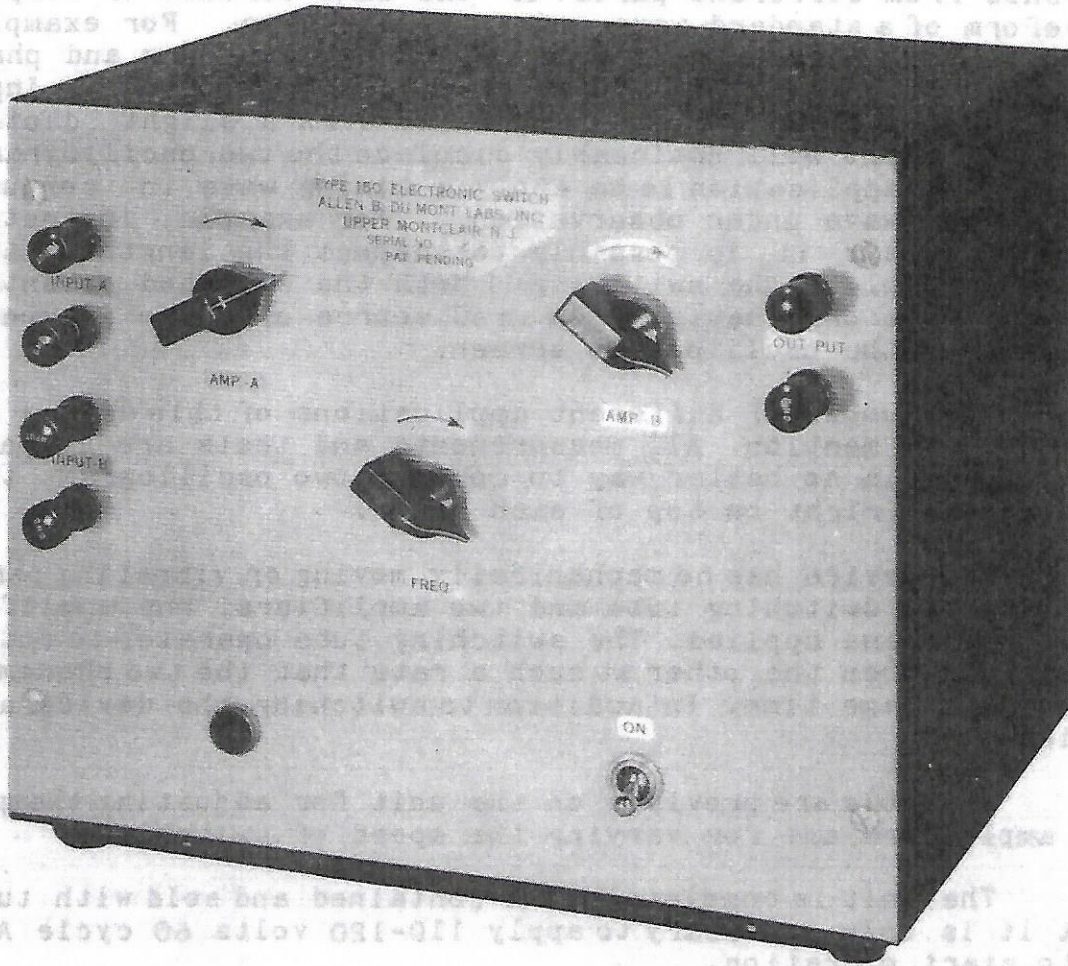
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Printed in U.S.A.

NEW MODEL 150
SIMPLIFIED ELECTRONIC SWITCH



TYPE 150 ELECTRONIC SWITCH AND AMPLIFIER

ALLEN B. DU MONT LABORATORIES, INC.

UPPER MONTCLAIR, N. J.

U. S. A.

DATA ON TYPE 150 ELECTRONIC SWITCH

The Type 150 ELECTRONIC SWITCH is a new development which greatly increases the value of the cathode ray oscillograph by permitting simultaneous observation of any two voltage or current phenomena. Thus this device can be used to inspect and compare the wave form and phase of two voltages or currents from different parts of the same circuit or compare the waveform of a standard wave and any other wave. For example, it is possible to see the input and output waveform and phase displacement of an amplifier. In a perfect amplifier the input and output waves cover one another, while even a slight distortion or phase shift will noticeably displace the two oscillograms. Another useful application is to apply a timing wave in conjunction with the wave under observation. For example, in testing switches or relays it is possible to inspect the length of time it takes to complete the switching if both the switched potential and a timing wave originating from an AC source of known frequency are present on the oscillograph screen.

The number of different applications of this device are too numerous to mention. All measurements and tests are comparisons and there is no better way to compare two oscillograms than by placing them right on top of each other.

The device has no mechanically moving or vibrating parts. It consists of a switching tube and two amplifiers, one amplifier for each phenomena applied. The switching tube operates to cut in one amplifier, then the other at such a rate that the two phenomena appear at the same time. In addition to switching the device also amplifies.

Controls are provided on the unit for adjusting the gain of the amplifiers and for varying the speed of switching.

The unit is completely self contained and sold with tubes so that it is only necessary to apply 110-120 volts 60 cycle A.C. to it to start operation.

<u>FREQUENCY RANGE OF AMPLIFIER</u>	10-500,000 Cycles per second.
<u>GAIN OF AMPLIFIER ON AUDIO FREQUENCIES</u>	40
<u>TUBES SUPPLIED</u>	One 6A6-One RK33-One 6E6 and One 80.
<u>POWER CONSUMPTION</u>	30 Watts
<u>PHYSICAL DIMENSIONS</u>	Height 8½" Depth 8" Width 10"
<u>NET WEIGHT</u>	17 Lbs.
<u>PRICE FOR COMPLETE UNIT</u>	\$42.50
<u>ALL PRICES F. O. B. FACTORY - SUBJECT TO CHANGE WITHOUT NOTICE.</u>	

ALLEN B. DU MONT LABORATORIES, INC.

UPPER MONTCLAIR, N. J.

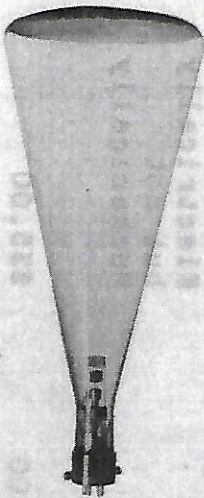
U. S. A.

DU MONT CATHODE RAY TUBES

ELECTRON LENS FOCUS TYPE



TYPES 34-XH AND 54-XH - These cathode ray tubes having three and five inch screens respectively are especially designed for operation in Du Mont Cathode Ray Oscillographs, altho they are interchangeable with corresponding tubes commercially available. An indirectly heated cathode provides a source of electrons which are focused and accelerated by means of suitable electrodes acting together as an electron lens. A grid electrode varies the beam current which effects the brilliance of the trace. Deflection of the beam is accomplished by means of two sets of deflection plates at right angles to each other. The fluorescent screen material used produces a brilliant, luminous spot with a greenish tint which is easily visible in a well lighted room. These tubes enable a sharply defined trace to be obtained and the life is comparable with that of the better receiving tubes. The rigid mechanical construction prevents damage in handling or shipping.



TYPES 54-8-H AND 94-8-H - These tubes are designed for operation at extremely high anode voltages and provide increased brilliance for special applications. To obtain sufficient insulation between electrodes the special patented Du Mont well type construction is used. This consists of a stem made in the form of an annular well with electrodes mounted in it and also above it. All low voltage leads are taken out at the bottom of this annular well and the high voltage leads thru a press at the top obviating any danger of insulation break down. In these tubes separate leads are taken from each deflection plate. The type 54-8-H tube has a five inch diameter screen and the type 94-8-H tube a nine inch diameter screen. A very brilliant luminous spot with a greenish tint is produced by the impact of the electrons on the fluorescent screen material.

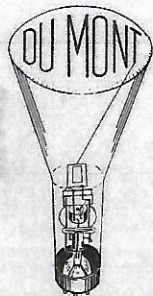
EXCLUSIVE DESIGN FEATURES * These tubes are now being supplied with a collector electrode between the deflection plates and the screen and an entirely new design of the electron lens system enables a finer trace to be obtained which is uniform over the entire screen.

SPECIAL SCREENS

HIGH SPEED PHOTOGRAPHIC SCREEN - Any of the tubes mentioned above can be supplied for \$2.50 additional with a special screen giving a blue trace of high actinic value and extremely short persistence. This screen is recommended for moving film recording or any high speed photographic work.

TIME DELAY SCREEN - We can also supply any of these tubes with our time delay screen for \$5.00 additional. This screen developed by this laboratory allows retention of the pattern for several minutes when used in a darkened room. It is particularly valuable for studying very slow speed phenomena and can also be used for the study of transients.

NOTE - The above screens are most effective when used with the type 54-8-H or 94-8-H tubes operated with high accelerating electrode voltage.



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TECHNICAL DATA ON DU MONT HIGH VACUUM ELECTRON LENS FOCUS CATHODE RAY TUBES

<u>GENERAL CHARACTERISTICS</u>	<u>TYPE 34-XH</u>	<u>TYPE 54-XH</u>	<u>TYPE 54-8-H</u>	<u>TYPE 94-8-H</u>
Screen Size (Inches)	3	5	5	9
Overall Length	11 15/32	15 17/32	15 17/32	21
No. Deflection Plates	4 (2 common)	4 (2 common)	4 (seperate leads)	4 (seperate leads)
Base	7 prong	7 prong	5 prong	5 prong
Screen	Short	Short	Short	Short
	Persistence	Persistence	Persistence	Persistence
Color of Screen	Greenish	Greenish	Greenish	Greenish
Type of Cathode	Indirect	Indirect	Indirect	Indirect
	Heater	Heater	Heater	Heater
Construction	Standard	Standard	Well Type	Well Type

ELECTRICAL CHARACTERISTICS

Filament Volts (AC or DC)	2.5	2.5	2.5	2.5
Filament Current	2.1	2.1	2.1	2.1
Focus Electrode Volts	450 Max	450 Max	900 Max	900 Max
High Voltage Electrode	1500 Max	1500 Max	3000 Max	3000 Max
Grid Voltage	Never Positive	Never Positive	Never Positive	Never Positive
Grid Voltage for Current				
Cut Off Approx. Volts	-60	-60	-120	-120
Fluorescent-Screen Input				
Power per. sq.cm. (Average)				
Max Milliwatts	10	10	10	10
Sensitivity in mm/volt at 1000 Volts Anode	.38	.68	.68	.85

INTERCHANGEABLE WITH

Nat.Union 908 RCA 906	Nat.Union 907A RCA 906 Electrically but not Mechanically	Nat.Union 907 RCA 905	Nat.Union 903
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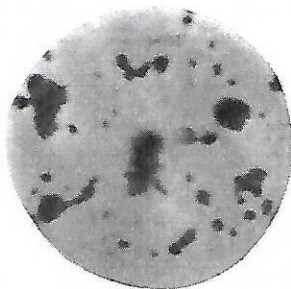
PRICE

\$15.00	\$35.00	\$40.00	\$85.00
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All prices F.O.B. Factory - Subject to change without notice.

FOR FURTHER INFORMATION WRITE
ALLEN B. DU MONT LABORATORIES, INC.
UPPER MONTCLAIR, NEW JERSEY.
U S. A.

AN ELECTRON MICROSCOPE FOR STUDENT DEMONSTRATION WORK



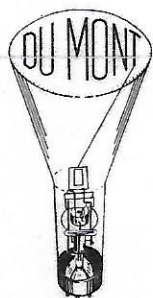
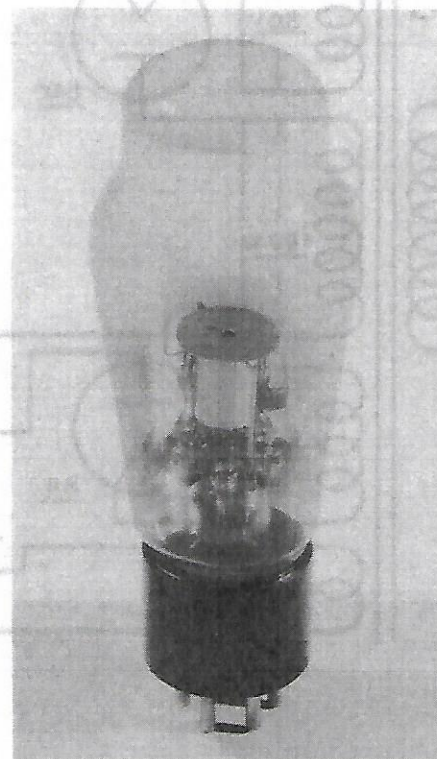
Altho the theory of electron lenses has been known for a long time, it has only been in recent years that these principles have been employed in commercial devices such as the cathode ray tube. Experimental work is now being undertaken to develop the electron telescope and electron microscope, using this same principle to a point where they will serve useful functions.

At the present time, the main use of the electron microscope is the study of emitting materials and surfaces as well as the study of the structure of various metals. The proposed use of the electron telescope is in connection with a fog penetration device working in the infra-red region.

The Type 889 Electron Microscope is offered to demonstrate the principles of electron lenses and how they can be used to serve the function of a microscope. This tube enlarges the cathode surface approximately twenty-five times and projects it on a fluorescent screen at the end of the tube.

Data on the 889 electron microscope is given below and on the back of this sheet. A simple power supply is shown which may be used to supply the necessary voltages to operate it.

DIAMETER OF SCREEN	2 Inches
OVERALL LENGTH OF BULB	6-3/4 Inches
BASE	7 prong
SCREEN	Short Persistence
COLOR OF SCREEN	Greenish
TYPE OF CATHODE	Indirect heater
FILAMENT VOLTS (AC or DC)	1.5
FILAMENT AMPERES	1.5
FOCUS ELECTRODE VOLTS	0 to -300
HIGH VOLTAGE ELECTRODE	500 to 1000
PRICE	\$10.00
F.O.B.	Upper Montclair, N.J.

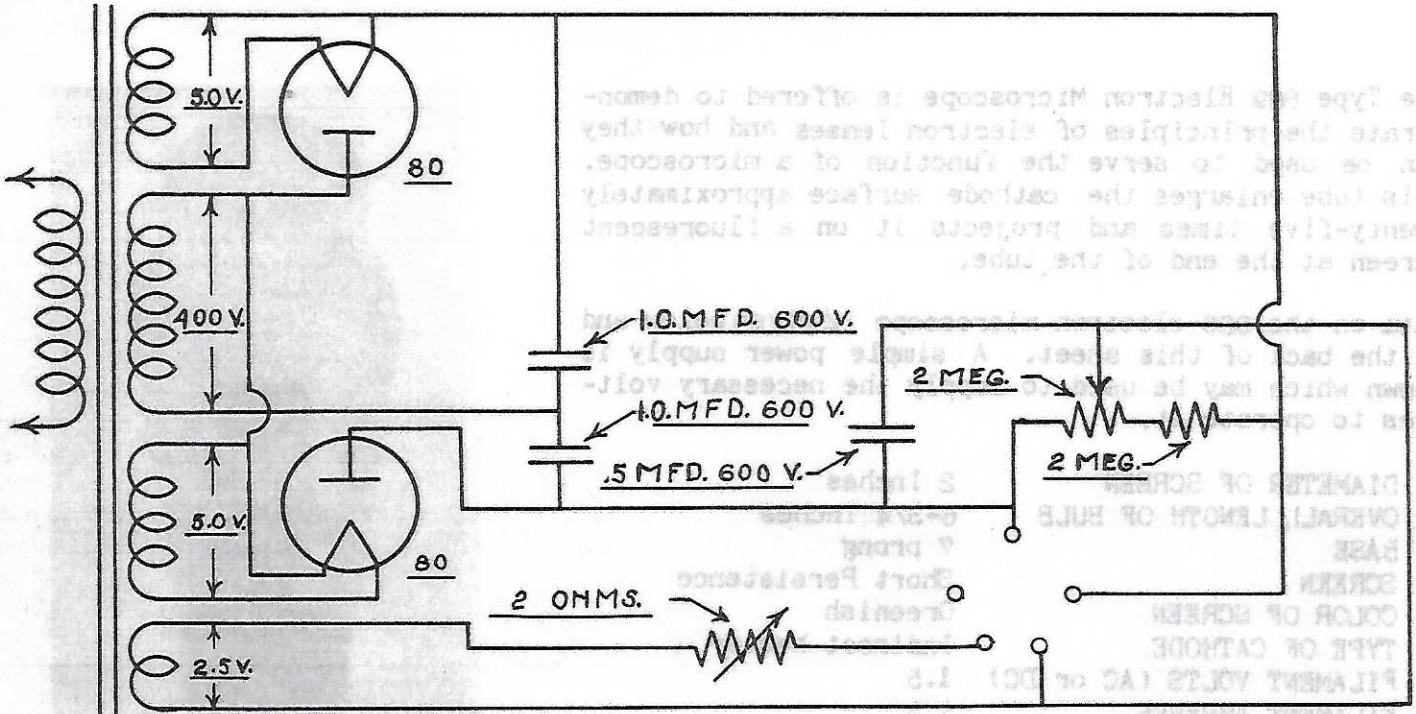


ALLEN B. DU MONT LABORATORIES, INC.
UPPER MONTCLAIR, N. J.
U. S. A.

Since the theory of electron lenses has been known for a long time, it has only been in recent years that these principles have been applied in commercial devices such as the cathode ray tube. Experimental work is now being undertaken to develop the electron microscope and electron microscope using this same principle as a point where they will serve useful functions.

At the present time, the main use of the electron microscope is for the study of welding materials and in the structure of various metals. The proposed use of the electron microscope is in connection with a low penetration device working in the infra-red region.

POWER SUPPLY FOR TYPE 889 ELECTRON MICROSCOPE



The Type 889 Electron Microscope is offered to demonstrate the principles of electron lenses and how they can be used to serve the function of a microscope. This tube utilizes the cathode surface approximately twenty-five times and projects it on a fluorescent screen at the end of the tube.

A simple power supply is shown which may be used for the necessary voltages. The diameter of screen is 2 inches. The overall length of bulb is 9 inches. The base is of the type 889. The color of screen is greenish. The type of cathode is of the type 889. The filament volts (AC or DC) is 1.5.

FOCUS ELECTRODE VOLTS 0 to -500
HIGH VOLTAGE ELECTRODE 500 to 1000
210.00
PRICE
9.0.8.

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UPPER MERIDEN, CT., U.S.A.

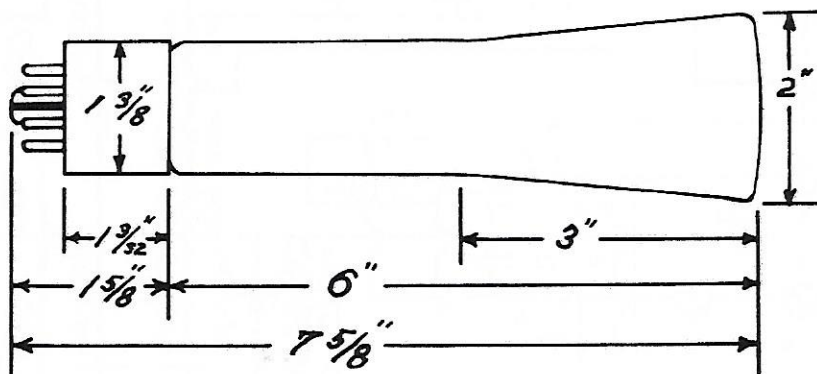
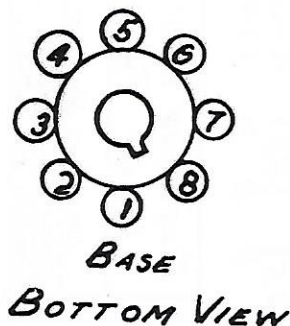


DU MONT TYPE 24-XH CATHODE RAY TUBE

RATING AND CHARACTERISTICS

General Characteristics

Screen Size	2 Inches
Overall Length	7 5/8 Inches
Number of Deflection Plates	4 (2 common)
Base	Large Octal 8-Pin



Pin 1—Anode No. 2 Plates D ₂ & D ₄	Pin 5—Control Grid
Pin 2—Heater and Cathode	Pin 6—Lower Plate D ₃
Pin 3—Anode No. 1	Pin 7—Heater
Pin 4—Upper Plate D ₁	Pin 8—
Screen	Short Persistent
Color of Screen	Greenish
Type of Cathode	Indirect Heater

Electrical Characteristics

Heater Voltage (A.C. or D.C.)	6.3 volts
Heater Current6 amperes

Maximum Ratings

High Voltage Electrode (anode No. 2)	600 max. volts
Focus Electrode (anode No. 1)	300 max. volts
Grid Voltage	Never Positive
Grid Voltage for Current Cut-off	-60 approx. volts
Power Per Sq. Cm. of Screen	10 max. Milliwatts

Typical Operating Conditions

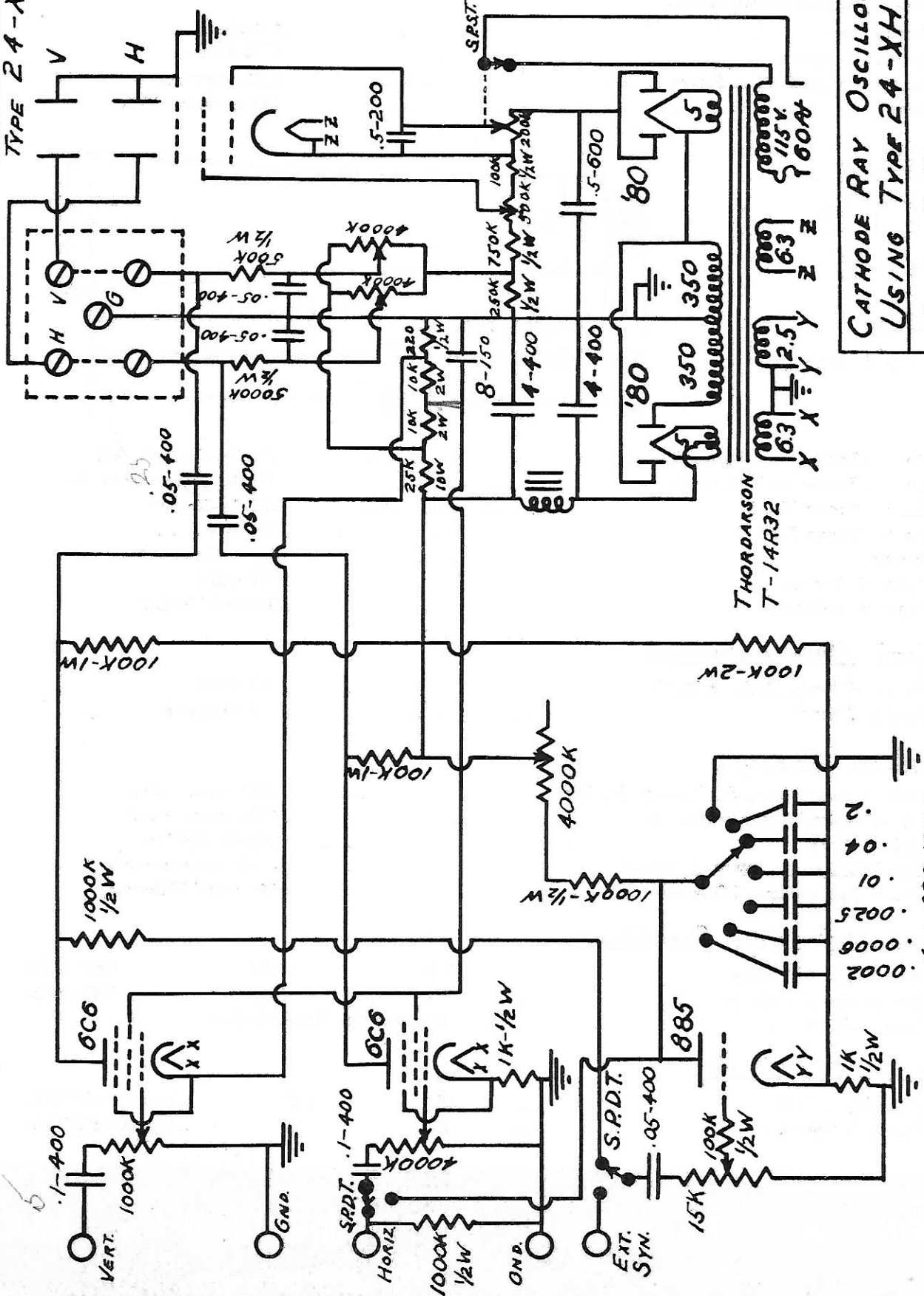
Anode No. 2 Voltage	400	500	600 Volts
Anode No. 1 Voltage	80	100	120 Volts
Grid Voltage	Adjusted for Suitable Spot		

Deflection Sensitivity

Plates D ₁ and D ₂21	.17	.14 mm/volt D.C.
Plates D ₃ and D ₄23	.19	.16 mm/volt D.C.

ALLEN B. DU MONT LABORATORIES, Inc.
Upper Montclair, New Jersey

CATHODE RAY TUBE
TYPE 24-XH



ALL 400 VOLTS

CATHODE RAY OSCILLOGRAPH
USING TYPE 24-XH TUBE

DRAWING No. 166
DRAWN BY: *W.P.T.*
CHECKED BY: *T.T.G.*

DATE 5/27/37

ALLEN B. DU MONT LABORATORIES
UPPER MONTCLAIR, N. J.

DATA ON DU MONT DISCHARGE TUBES FOR USE AS SWEEP CIRCUIT OSCILLATORS

DU MONT TYPE 128A

The 128A replaces the old type 128 mercury discharge tube. It is a grid controlled gaseous discharge tube of the heater-cathode type and is designed for use as a sweep circuit oscillator in cathode ray tube circuits. It offers the combined features of long life, quick starting and extreme stability at all frequencies up to and including 100,000 cycles per second. This tube is particularly recommended where a large sweep voltage is desired and can be used to supply this voltage without the use of amplifiers.

NOTE:—This tube is used in our type 148 Oscillograph having a 5" cathode ray tube and our type 158 Oscillograph having a 9" cathode ray tube.

DU MONT TYPE 885

The 885 is a grid controlled gaseous discharge tube of the heater cathode type and is likewise designed for use as a sweep circuit oscillator in cathode ray tube circuits. It is recommended for use in circuits not requiring large sweep voltages or where an amplifier is used to increase the sweep voltage.

NOTE:—This tube is used in our type 154 Oscillograph with 3" cathode ray tube.

CHARACTERISTICS	TYPE 128A	TYPE 885
Heater Voltage (AC or DC)	2.5 Volts	2.5 Volts
Heater Current	2.00 Amperes	1.4 Amperes
Grid-Plate Capacitance	2.5 uuf	3.5 uuf
Grid-Cathode Capacitance	3.0 uuf	3.5 uuf
Plate-Cathode Capacitance	2.0 uuf	2.5 uuf
Tube Voltage Drop (Approximate)	16 Volts	16 Volts
Plate Voltage (Instantaneous)	1000 max. Volts	300 max. Volts
Peak Plate Current	300 max. Milliamperes	300 max. Milliamperes
Grid Voltage	0 to - 4.5	0 to - 30
Average Plate Current:		

For Frequencies below 200 Cycles per Second 3 max. Milliamperes
For Frequencies above 200 Cycles per Second 2 max. Milliamperes

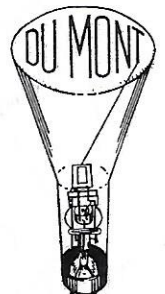
DATA ON DU MONT TYPE 879 HALF-WAVE HIGH-VACUUM RECTIFIER

The 879 is a high-vacuum, half-wave rectifier of the hot-cathode type for use in suitable rectifying systems to supply the d-c voltage requirements of cathode-ray tubes.

CHARACTERISTICS

Filament Voltage (A.C.)	2.5 Volts
Filament Current	1.75 Amperes
A-C Plate Voltage (RMS)	2650 max. Volts
Peak Inverse Voltage	7500 max. Volts
Peak Plate Current	100 max. Milliamperes
D-C Output Current (Continuous)	7.5 max. Milliamperes

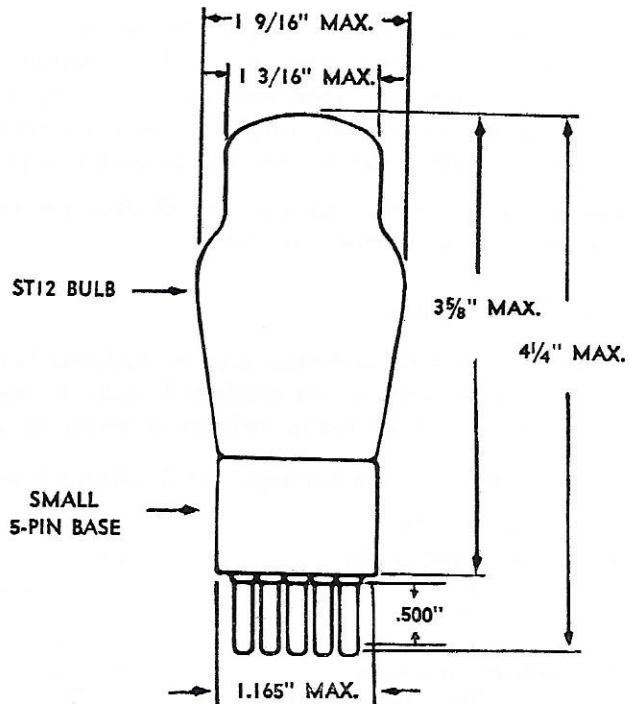
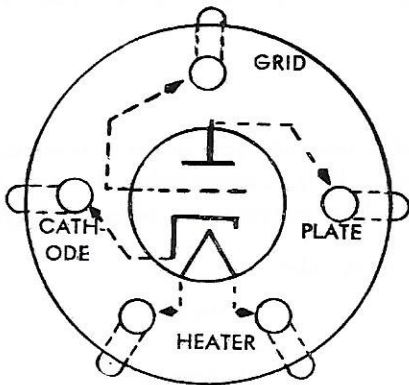
NOTE:—This tube is used in our type 158 Oscillograph with 9" cathode ray tube.



ALLEN B. DU MONT LABORATORIES, Inc.
Upper Montclair, New Jersey

TUBE DIMENSIONS AND SOCKET CONNECTIONS OF DU MONT 128A AND DU MONT 885 DISCHARGE TUBES

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS



TUBE DIMENSIONS AND SOCKET CONNECTIONS OF DU MONT 879 HALF-WAVE HIGH-VACUUM RECTIFIER TUBE

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS

