



# 16ADP7

## OSCILLOGRAPH TUBE

**Magnetic Focus**  
**Magnetic Deflection**  
**53° Deflection Angle**

**Metal-Shell Envelope**  
**Long-Persistence Screen**  
**Filterglass Face**

**14-3/8" Min. Screen Dia.**  
**16" Max. Diameter**  
**22" Max. Length**

TENTATIVE DATA

RCA-16ADP7 is a 16-inch oscillograph tube of the metal-shell type utilizing magnetic focus and magnetic deflection. It is intended particularly for those applications, such as radar indicator service, where grid No. 1 is pulse-modulated at low frequency to provide a temporary record of electrical phenomena, but it is also useful in general oscillographic applications where a temporary record of electrical phenomena is desired. The long-persistence, cascade (two-layer) screen used in the 16ADP7 exhibits bluish fluorescence of short persistence and greenish-yellow phosphorescence which persists for several minutes under conditions of adequate excitation and low ambient light.

Featured in the 16ADP7 is a limiting aperture at the end of the electron gun to produce a sharper, rounder spot on the screen, and hence greater effective resolution, especially at high values of beam current. This feature makes the 16ADP7 particularly useful in those applications where pulse-modulated operation causes high grid-No. 1 drive and resultant high beam current.

The high-quality faceplate of the 16ADP7 is made of Filterglass to provide increased contrast between the trace and the background. The Filterglass faceplate incorporates a neutral light-absorbing material which reduces ambient-light reflections from the phosphor and reflections within the faceplate itself in a much higher ratio than it reduces the directly viewed light of the trace. As a result, improved trace contrast is obtained. Also, having a relatively flat surface, the faceplate facilitates the use of an external, transparent, calibrated scale.

Because of its long persistence, the 16ADP7 is particularly useful where either low-speed non-recurring phenomena or high-speed recurring phenomena are to be observed. Furthermore, two or more phenomena can be observed simultaneously on the screen by means of a suitable switching arrangement. The persistence is such that the 16ADP7 without filter can be operated with scanning frequencies as low as 30 cycles per second without excessive flicker. When used with yellow filter, such as Wratten No. 15 (G), the 16ADP7 can be operated with much lower scanning frequencies.

The persistent light of the 16ADP7 permits the user to view a curve produced on the face of the tube by a single, high-speed sweep of the electron beam and, if desired, to make a tracing of the curve for record purposes.

Use of a yellow filter, such as Wratten No. 15 (G), over the tube face reduces the effect of the fluorescence in the observation of the phosphorescence. Use of a blue filter, such as Wratten No. 47A, reduces the observed phosphorescence and thus makes the screen appear to have only fluorescence.

Operation of the 16ADP7 as a short-persistence tube is suggested only when a short-persistence tube with P11 phosphor is not available. Because the persistence of the 16ADP7 used in this way is somewhat longer than the persistence of the P11 phosphor, any contemplated application should be limited either to visual observation or to photographic recording where the film does not move at more than moderate speed.



# 16ADP7

## DATA

### General:

Heater, for Unipotential Cathode:		
Voltage (AC or DC) . . . . .	6.3	volts
Current. . . . .	0.6	ampere
Direct Interelectrode Capacitances (Approx.):		
Grid No.1 to All Other Electrodes. . . . .	6	$\mu\mu\text{f}$
Cathode to All Other Electrodes. . . . .	5	$\mu\mu\text{f}$
Faceplate (With about 66% light transmission). . . . .		Filterglass
Phosphor . . . . .		P7
Fluorescence . . . . .		Blue
Persistence. . . . .		Short
Phosphorescence. . . . .		Greenish-Yellow
Persistence. . . . .		Long
Focusing Method. . . . .		Magnetic
Deflection Method. . . . .		Magnetic
Deflection Angle (Approx.) . . . . .		$53^\circ$
Maximum Overall Length . . . . .		22"
Greatest Diameter at Lip . . . . .		$15\text{-}7/8" \pm 1/8"$
Minimum Useful Screen Diameter . . . . .		$14\text{-}3/8"$
Ultor <sup>®</sup> Terminal. . . . .		Metal-Shell Lip
Base . . . . .		Small-Shell Duodecal 7-Pin (JETEC No. B7-51)
Mounting Position. . . . .		Any

### Maximum Ratings, Design-Center Values:

ULTOR <sup>®</sup> VOLTAGE . . . . .	14000 max.	volts
GRID-No.2 VOLTAGE:		
Positive value (DC or Peak AC) . . . . .	410 max.	volts
Negative value (DC or Peak AC) . . . . .	180 max.	volts
GRID-No.1 VOLTAGE:		
Negative bias value. . . . .	180 max.	volts
Positive bias value <sup>▲</sup> . . . . .	0 max.	volts
Positive peak value. . . . .	2 max.	volts
PEAK GRID-No.1 DRIVE FROM CUTOFF . . . . .	65 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. . . . .	125 max.	volts
Heater positive with respect to cathode. . . . .	125 max.	volts

### Typical Operation:

Ultor Voltage* . . . . .	12000	volts
Grid-No.2 Voltage. . . . .	250	volts
Grid-No.1 Voltage for Visual Extinction of Undelected Focused Spot. . . . .	-27 to -63	volts
Grid-No.2 Current. . . . .	-15 to +15	$\mu\text{amp}$
Focusing-Coil Current (DC) <sup>○○</sup> . . . . .	$95 \pm 15\%$	ma
Spot Position. . . . .	##	

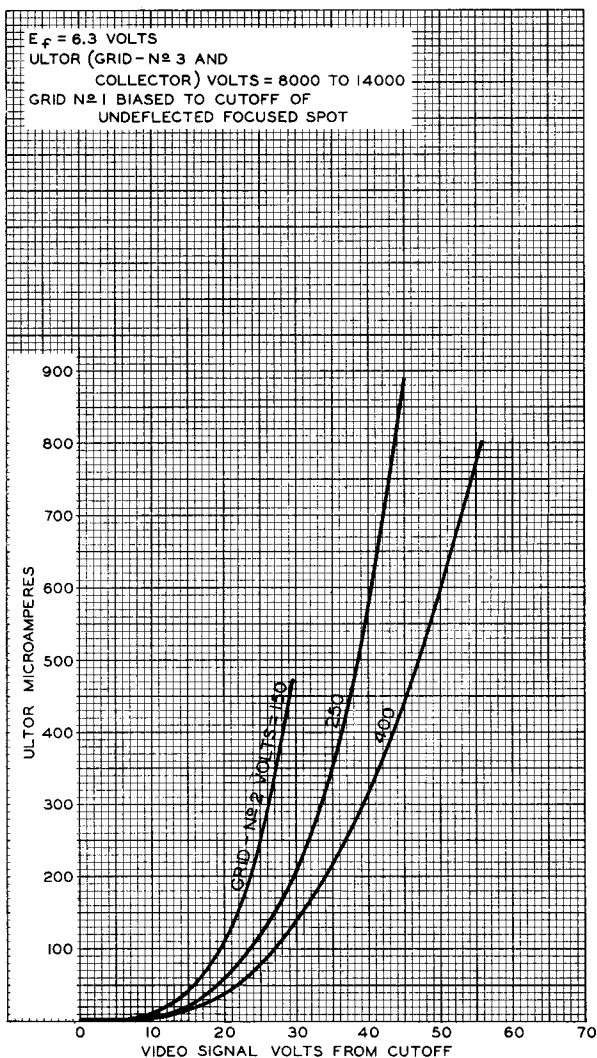
### Maximum Circuit Values:

Grid-No.1-Circuit Resistance . . . . .	1.5 max.	megohms
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# 16ADP7

- In the 16ADP7, grid No.3 which has the ultor function, and collector are connected together within the tube and are conveniently referred to collectively as "ultor". The "ultor" in a cathode-ray tube is the electrode, or the electrode in combination with one or more additional electrodes connected within the tube to it, to which is applied the highest dc voltage for accelerating the electrons in the beam prior to its deflection.
- ▲ At or near this rating, the effective resistance of the ultor supply should be adequate to limit the ultor input power to 6 watts.
- \* Brilliance and definition decrease with decreasing ultor voltage. In general, the ultor voltage should not be less than 8000 volts.
- ∞ For specimen focusing coil similar to JETEC Focusing Coil No.109 positioned with air gap toward faceplate and center line of air gap 3-1/4" from Reference Line (see *Outline Drawing*) and ultor current of 200 microamperes. The indicated tolerance on focusing-coil current is on basis that distance from Reference Line to grid No.1 is controlled as shown in Detail of Grid-No.1 Position on page 4.
- # The center of the undeflected, unfocused spot will fall within a circle having 25-mm radius concentric with the center of the tube face.



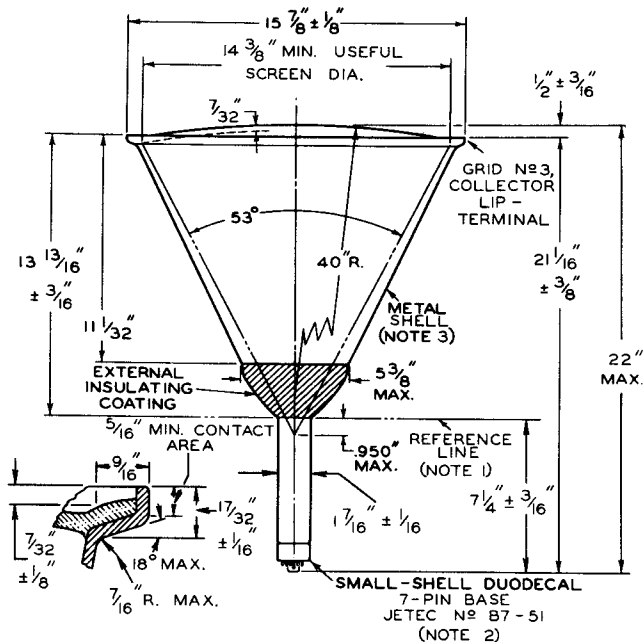
92CM-7692

Average Grid-Drive Characteristics of Type 16ADP7.



I6ADP7

**DIMENSIONAL OUTLINE**



DETAIL OF LIP

92CM - 7690

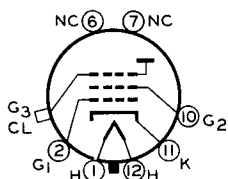
**NOTE 1:** REFERENCE LINE IS DETERMINED BY POSITION WHERE REFERENCE-LINE GAUGE (JETEC NO. 112) 1.500" + 0.003" - 0.000" I.D. AND 2" LONG WILL REST ON FUNNEL.

**NOTE 2:** SOCKET FOR THIS BASE SHOULD NOT BE RIGIDLY MOUNTED; IT SHOULD HAVE FLEXIBLE LEADS AND BE ALLOWED TO MOVE FREELY. BOTTOM CIRCUMFERENCE OF BASE SHELL WILL FALL WITHIN CIRCLE CONCENTRIC WITH METAL-SHELL AXIS AND HAVING DIAMETER OF 3".

**NOTE 3:** METAL SHELL AND GLASS FACE OPERATE AT HIGH VOLTAGE. ANY MATERIAL IN CONTACT WITH THE SHELL OR THE FACE MUST BE INSULATED TO WITHSTAND THE MAXIMUM APPLIED ULTRAVOLTAGE.

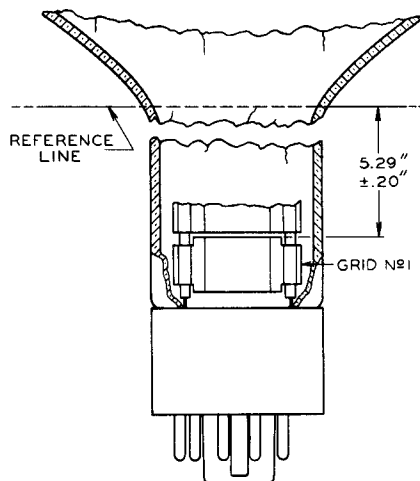
**SOCKET CONNECTIONS**

Bottom View



- PIN 1: HEATER
- PIN 2: GRID NO. 1
- PIN 6: NO CONNECTION
- PIN 7: NO CONNECTION
- PIN 10: GRID NO. 2
- PIN 11: CATHODE
- PIN 12: HEATER
- CAP: GRID NO. 3, COLLECTOR

**DETAIL OF GRID-NO. 1 POSITION**



92CS-7689