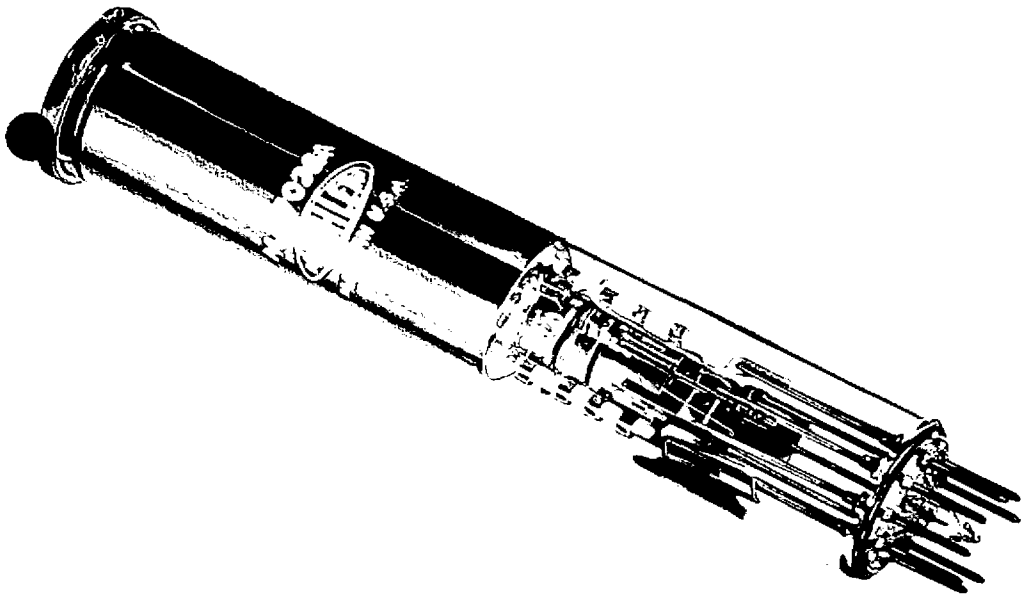


MACHLETT

ML-7038A

DESCRIPTION & RATINGS

DESCRIPTION

The **ML-7038A** is a small, high-quality camera tube for industrial television applications. Its resolution capability is about 600 television lines.

The **ML-7038A** utilizes a unique photoconductive surface having uniform thickness, which permits constant voltage gradient and uniform dark current across the scanned area. Because of the uniform thickness of its photoconductive surface, the **ML-7038A** can produce substantially uniform sensitivity over the entire scanned area. While dark current and sensitivity both increase with target voltage, the uniformity of the dark current makes it possible to operate the **ML-7038A** at higher values of target voltage and dark current than are permissible with previous types of vidicons. As a result, higher effective sensitivity can be obtained with the **ML-7038A.**

Featured in the design of the **ML-7038A** are an extremely flat faceplate free from optical distortion and an envelope without a side tip. The tipless envelope allows the use of a longer deflecting yoke. In addition, the tipless structure simplifies the layout of optical arrangements for light splitting in a color camera.

No alignment correction is required. The novel design of the gun gives good alignment of the beam without auxiliary alignment correcting coils or magnets. This feature also protects the beam from misalignment due to stray magnetic fields.

GENERAL CHARACTERISTICS

Heater, for Unipotential Cathode:		
Voltage (AC or DC)	6.3 ± 10%	volts
Current	0.6	amp
Direct Interelectrode Capacitance: ‡		
Target to All Other Electrodes	4.6	$\mu\mu f$
Spectral Response	S-18	
Photoconductive Layer:		
Maximum Useful Diagonal of Rectangular Image (4 x 3 aspect ratio)	0.62	inch
Orientation of Quality Rectangle — Proper orientation is obtained when the horizontal scan is essentially parallel to the plane passing through the tube axis and short index pin.		
Focusing Method	Magnetic	
Deflection Method	Magnetic	
Overall Length	6.25" ± 0.25"	
Greatest Diameter	1.125" ± 0.010"	
Bulb	T8	
Base	Small-Button Ditetrar 8-Pin (JETEC No. E8-11)	
Socket	Cinch No. 54A18088, or equivalent	
Operating Position	Any	
Weight (Approx.)	2 oz.	

from JEDEC release #2695, Jan. 18, 1960

TYPICAL OPERATING CONDITIONS

Typical Operation (For scanned area of ½" x ⅜" and faceplate temperature of 30° to 35°C)

Grid No. 4 (Decelerator) & Grid No. 3 (Beam-Focus Electrode*) Voltage	250★ to 300	volts
Grid No. 2 (Accelerator) Voltage	300	volts
Grid No. 1 Voltage for Picture Cutoff ‡‡	−45 to −100	volts
Average "Gamma" of Transfer Characteristic for signal-output current between 0.02 μa and 0.2 μa	0.65	
Visual Equivalent Signal-to-Noise Ratio (Approx.) □	300:1	
Minimum Peak-to-Peak Blanking Voltage:		
When applied to grid No. 1	75	volts
When applied to cathode	20	volts
Field strength at Center of focusing Coil (Approx.)	40	gausses

MAXIMUM RATINGS

Maximum Ratings, Absolute Values (For scanned area of ½" x ⅜")

Grid No. 3 & Grid No. 4 Voltage	350	volts
Grid No. 2 Voltage	350	volts
Grid No. 1 Voltage		
Negative bias value	125	volts
Positive bias value	0	volts
Peak Heater-Cathode Voltage:		
Heater negative with respect to cathode	125	volts
Heater positive with respect to cathode	10	volts
Dark Current	0.25	μa
Peak Target Current	0.55	μa
Faceplate:		
Illumination	1000	ft-c
Temperature	60	°C

	For Max. Sensitivity	For Avg. Sensitivity	For Min. Lag.	
Faceplate Illumination (Highlight)	2	7	14	ft-c
Max. Target Current to Produce Specified Dark Current**	110	80	50	volts
Dark Current	0.2◀	.08	.02	μa
Target Voltage†	60 to 100	40 to 65	25 to 45	volts
Target Current (Highlight)††	0.4 to 0.5	.38 to .48	.32 to .42	μa
Signal-Output Current: #				
Peak	0.2 to 0.3	0.3 to 0.4	0.3 to 0.4	μa
Average	.08 to 0.1	0.1 to 0.2	0.1 to 0.2	μa

‡ This capacitance, which effectively is the output impedance of the ML-7038A, is increased when the tube is mounted in the deflecting-yoke and focusing-coil assembly. The resistive component of the output impedance is in the order of 100 megohms.

* Beam focus is obtained by combined effect of Grid No. 3 voltage which should be adjustable over indicated range, and a focusing coil having an average field strength of 40 gausses.

★ Definition, focus uniformity, and picture quality decrease with decreasing Grid No. 4 and Grid No. 3 voltage. In general, Grid No. 4 and Grid No. 3 should be operated above 250 volts.

‡‡ With no blanking voltage on Grid No. 1.

□ Measured with high-gain, low-noise, cascode-input-type amplifier having bandwidth of 5 Mc. Because the noise in such a system is predominately of the high-frequency type, the visual equivalent signal-to-noise ratio is taken as the ratio of highlight video-signal current to rms noise current, multiplied by a factor of 3.

** The target voltage for each ML-7038A must be adjusted to that value which gives the desired operating dark current.

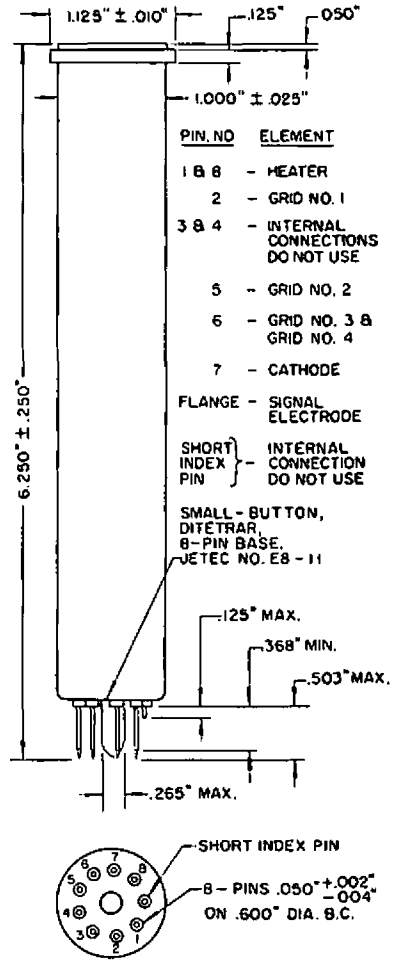
† Indicated range for each type of service serves only to illustrate the operating target-voltage range normally encountered.

◀ The deflecting circuits must provide extremely linear scanning for good black-level reproduction. Dark-current signal is proportional to the scanning velocity. Any change in scanning velocity produces a black-level error in direct proportion to the change in scanning velocity.

†† Video amplifiers must be designed properly to handle target currents of this magnitude to avoid amplifier overload or picture distortion.

\# Defined as the component of the target current after the dark-current component has been subtracted.

DIMENSIONS — ML-7038A



MACHLETT LABORATORIES, INC.

SPRINGDALE MACHLETT **CONNECTICUT**

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