



Excellence in Electronics

**CK7571/
QK685**

GENERAL DESCRIPTION

The CK7571/QK685 is a high resolution electrical output Recording Storage Tube capable of repeating information stored for many hours up to 20,000 times without serious deterioration of signal strength or quality. It requires magnetic deflection but it can be focused either magnetically or electro-statically, or using a combination of both. The properties of integration ability, dynamic range, storage duration and speed of operation in the various modes are approximately equivalent quantitatively with those found in the prototype tube CK6835/QK464A.

GENERAL CHARACTERISTICS

Resolution (Magnetic Focus)	. . . . .	1000 Lines Minimum
Resolution (Electrostatic Focus)	. . . . .	700 Lines Nominal
Output Capacitance	. . . . .	12 uuf Nominal
Grey Levels	. . . . .	5
Gun Type	. . . . .	Tetrode
Deflection	. . . . .	Magnetic
Max. Defl. Angle	. . . . .	30°
Focusing	. . . . .	Electrostatic or Magnetic
Mounting Position	. . . . .	Any

MECHANICAL CHARACTERISTICS

Overall Length	. . . . .	13-3/16 Nominal
Bulb Diameter	. . . . .	2 3/4" Nominal
Neck Diameters	. . . . .	1 1/2" Maximum
Storage Screen Diameter	. . . . .	2"
Base	. . . . .	Small Shell Duodecal
Lens Buttons	. . . . .	JETEC Type J1-22



**RECORDING
STORAGE
TUBE**



DETAILED ELECTRICAL INFORMATION

CONDITIONS OF OPERATION

Application of the recording storage tube involves four operations, namely: prime, write, read and erase. Any form of scanning may be utilized for the above operations. These operations are performed in the following manner and sequence:

Prime — Priming is accomplished by uniformly charging the storage surface. To prime the storage screen reduce the screen voltage below the critical potential (usually 30 V) and scan the raster with 10 to 50 μA depending on priming speed desired.

Write — Set control grid bias at cutoff either manually or automatically and apply signal to be stored. Signal voltage amplitude required will depend on the sweep speed employed and is measured in terms of average cathode current.

Read — Set grid bias to permit an unmodulated beam current of approximately 2 μA . If the storage screen voltage is properly set, the stored signal will modulate the beam and an output can be taken from the signal electrode.

Erase — Erasing is performed by writing a DC signal into the tube, thus normalizing the storage element at full modulation level. The signal electrode and storage screen voltages should be the same for this operation. A beam current of 10 μA is normally used. This operation can be eliminated in many applications where only partial erasures are desired or where the time which can be allotted *priming* is one second or more.

STORAGE ABILITY

The length of time a tube will retain the stored information is a function of the operating conditions and varies inversely as the cathode current.

When reading with a low beam current of about 1.0 μA at a television repetition rate and scan, several thousand consecutive readings can be made without any appreciable deterioration of the stored signal. This indicates that a single spot element can be read continuously for approximately 5 milliseconds without significant fading or reorientation of the charge.

The tube is capable of storage information for many hours without appreciable change or deterioration and may be read up to 20,000 times after the delay period and still yield satisfactory results.

RESOLVING POWER

The resolution of the storage tube at the 50% modulation level is usually in excess of 1000 lines across the diameter and is obtainable when the minimum current for writing a fully modulated signal is employed and the focus coil magnetic shell is designed to minimize astigmatism. Resolution is also dependent on the orientation of the focus coil with respect to the gun, and the sharpness of focus across the storage screen. Therefore, for applications requiring optimum resolution, dynamic focusing is often desirable.

FOCUS

Using a standard BM411 focus coil, approximately 19 MA of current will be required for dc magnetic focusing. If dc electrostatic focus is used, the focus voltage will be approximately 400 volts. For magnetic dc focus and electrostatic dynamic focus, it is recommended that the electrostatic focus electrode be set at 1000 volts dc and that the magnetic focus current be adjusted for optimum spot size in the center of the storage screen (approximately 16 MA will be required). With these static conditions, the dynamic waveform applied to the electrostatic focus element will rise from the 1000 volts dc value to approximately 1150 volts dc as the beam is scanned from the center of the screen to the edge. (The rise will be slow for the first half of this distance and then at an increasing rate.)

RECORDING STORAGE TUBE

ELECTRICAL

(All Voltages Measured With Respect to Cathode)

Heater

Heater Voltage	6.3 V ± 10%
Heater Current	0.6 A

Maximum Ratings

Anode Voltage (A1)	5000 Vdc
Grid #1 (control electrode) Voltage	
Negative Bias	-125 Vdc
Positive Bias	0 Vdc
Positive Peak Value	+2 Vdc
Grid #2	1000 Vdc
Focus Anode Voltage (A2)	5000 V
Lens #1	800 Vdc
Lens #2	500 Vdc
Decelerator Screen	800 Vdc
Storage Screen	500 Vdc

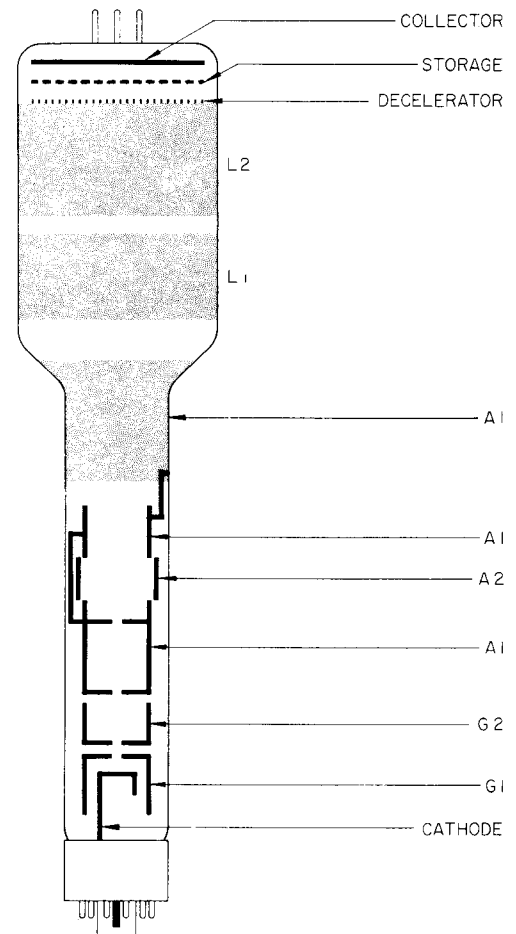
Typical Operating Conditions

Cathode	0 V
G1 (Control Grid) Cutoff	-30 V
G2 (Screen Grid)	400 V
L1 (Collimating Lens)	750 V
L2 (Collimating Lens)	400 V
Anode (A1)	3500 V
Focus Anode (A2)	
Electrostatic	400 V
Magnetic	3500 V
Decelerator	750 V
Collector	750 V

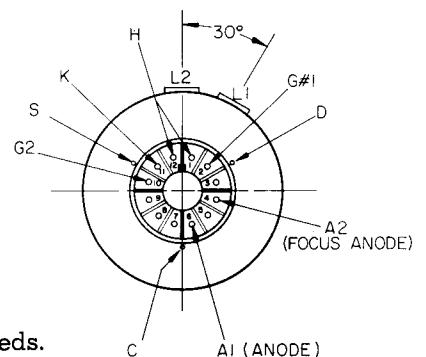
	Prime	Read	Erase	Write
Storage Screen	20 V	15 V	†	300 V
Cathode Current	25 μα	5 μα	50 μα	*
Signal Electrode				
Current (peak)		0.5 μα		

* This value must be determined experimentally depending on scan speeds.

† Should be shorted to Decelerator Screen during Erase.



S-STORAGE SCREEN (BLACK DOT), C-COLLECTOR (RED DOT), D-DECELERATOR (YELLOW DOT)

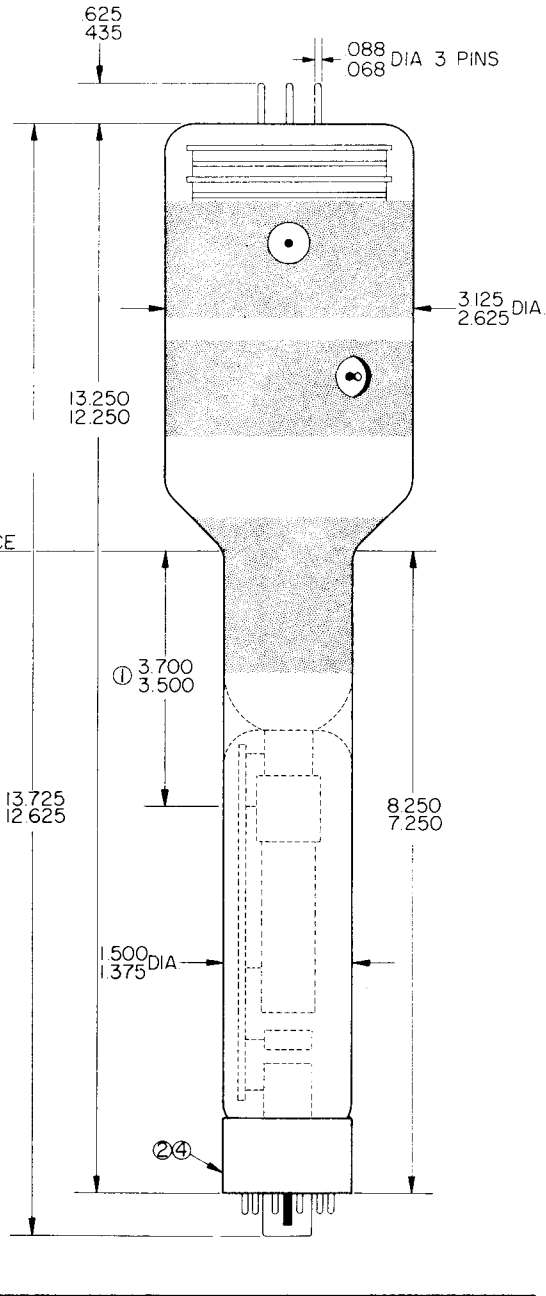




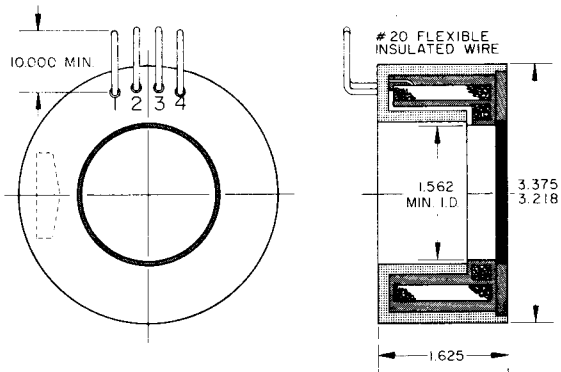
RECORDING STORAGE TUBE

NOTES:

- 1) LOCATION OF DEFLECTION YOKE AND THE GAP OF THE FOCUSING COIL MUST BE WITHIN THIS SPACE
- 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 A CIRCLE CONCENTRIC WITH CONE AXIS, AND HAVING A DIAMETER OF 2.000
- 3) TOP PIN CONNECTIONS SHOULD HAVE FLEXIBLE LEADS AND BE ALLOWED TO MOVE FREELY
 S-STORAGE SCREEN (BLACK DOT)
 C-COLLECTOR (RED DOT)
 D-DECELERATOR (YELLOW DOT)
- 4) B12-43 12 PIN BASE
- 5) LENS BUTTONS JEDEC TYPE J1-22 LENS #2 BUTTON NEAR STORAGE ASSEMBLY



BM-411 FOCUS COIL



- LEADS
- #1 - S1
 - #2 - F1
 - #3 - S2
 - #4 - F2

TICKLER COIL
 RESISTANCE - 35 TO 50 OHMS (AT 20°C)
 MAX. CURRENT - 30 mA RMS
 VOLTAGE RATING - 250 V.
 INDUCTANCE - 45 MILLIHENRIES APPROX.

FOCUS COIL
 RESISTANCE - 6500 TO 9000 OHMS (AT 20°C.)
 MAX. CURRENT - 25 mA dc.
 VOLTAGE RATING - 250 V.

NOTES:

- 1) - FOR USE WITH CK6835/QK464A, CK7571, OR CK7572 RECORDING STORAGE TUBES.
- 2) - TICKLER COIL IS PROVIDED TO PERMIT COMPENSATING FOR IMPROPER FOCUS AT THE EDGES OF A PATTERN CAUSED BY THE VARIATION IN DISTANCE FROM THE CENTER OF DEFLECTION TO a) THE CENTER OF A STORAGE AREA OF A STORAGE TUBE, AND b) THE

- PERIPHERY OF A STORAGE AREA THIS TICKLER COIL USEFUL ONLY FOR SLOW SCANNING SPEEDS.
- 3) - WHEN NOT REQUIRED, THE TICKLER COIL MAY BE LEFT UNCONNECTED
- 4) - SHELL MATERIAL - ANNEALED SWEDISH IRON OR EQUIVALENT