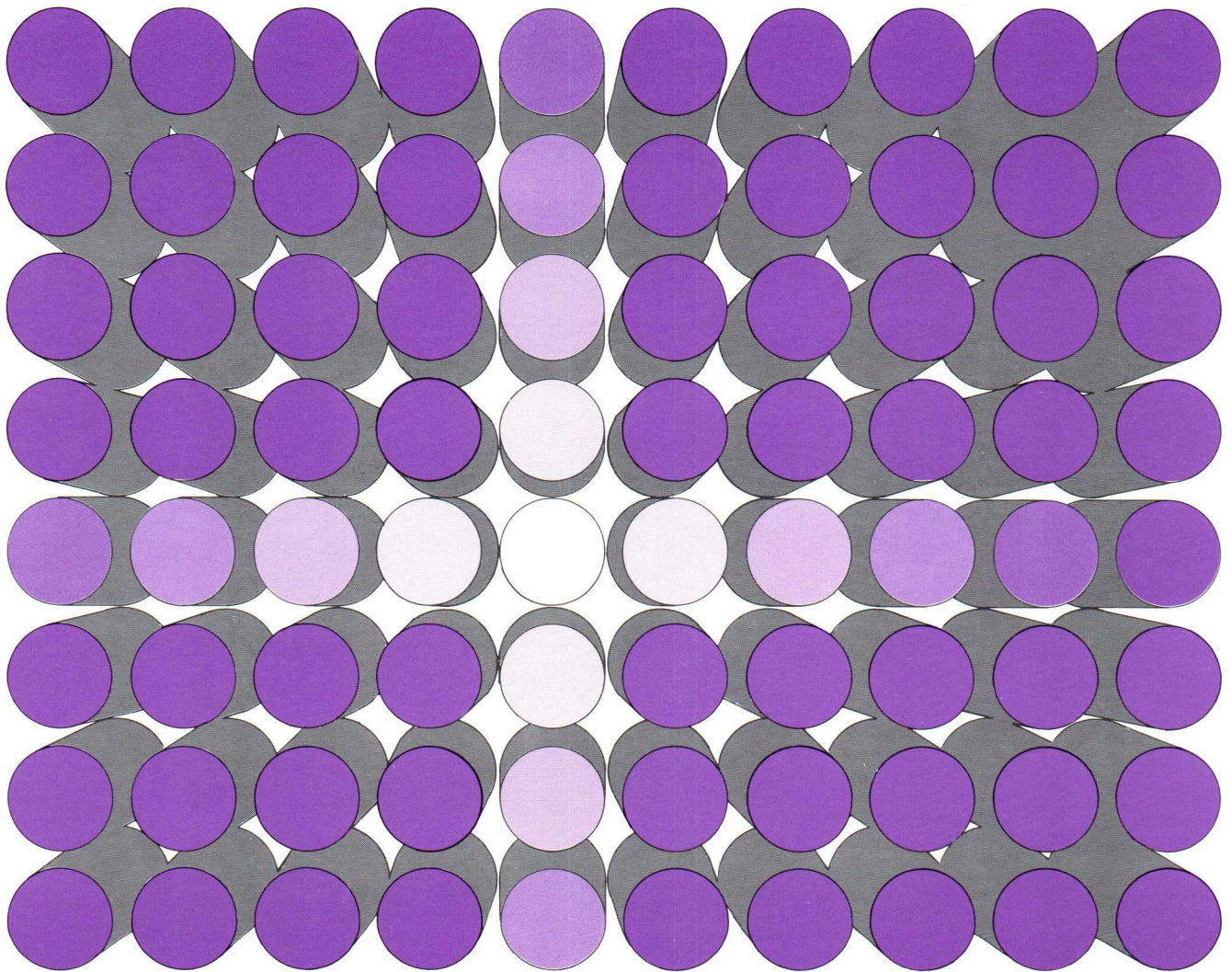
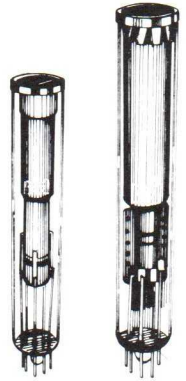


# HAMAMATSU

## VIDICONS



**HAMAMATSU TV CO., LTD.**



# CONTENTS

Selection Guide .....	2
Correct Use of Vidicons .....	3
General Descriptions and Applications .....	4, 5
Specifications and Typical Operating Conditions	
Visible Vidicons	
1 inch dia. MM Types .....	6, 7
1 inch dia. SM, CM, SS Types .....	8, 9
2/3 inch dia. and 1-1/2 inch dia. Types .....	10, 11
Silicon Vidicons .....	12, 13
Infrared Vidicons .....	14, 15
UV, Visible Vidicons and X-Ray Vidicon .....	16, 17
Spurious Signal Specifications .....	18
Bases and Sockets .....	19
Vidicon Yoke Assemblies .....	20, 21

## SELECTION GUIDE

	Focusing and Deflection	Magnetic Focusing Magnetic Deflection		Electrostatic Focusing Magnetic Deflection			Combined Focusing Magnetic Deflection	Electrostatic Focusing Electrostatic Deflection	Heater Power (W)		
		Diameter mm (inch)		18 (2/3'')	25 (1'')	18 (2/3'')	25 (1'')	38 (1-1/2'')		25 (1'')	25 (1'')
		Mesh Connection		18 (2/3'')	25 (1'')	18 (2/3'')	25 (1'')	38 (1-1/2'')		25 (1'')	25 (1'')
Visible	Integral	-		7262A	-	-	-	-	-	0.6	
		-		7735A	-	-	-	-	-	3.8	
	Separate	8844 N747	8541 8573 N736	N887	8134	8480	8816	25PE12	0.6		
		-		8507	-	-	-	-	-	3.8	
Infrared	Integral	-		N156 N157	-	-	-	-	0.6		
	Separate	-		N214	-	-	-	-	0.6		
X-Ray	Separate	-		N603	-	-	-	-	0.6		
Ultraviolet and Visible	Integral	-		N371	-	-	-	-	0.6		
	Separate	-		N983	-	-	-	-	0.6		

### MEASURING CONDITIONS

Scanning System : Interlaced 525 TV lines and 30 frames/second.

Setting Position : Keeping the plane containing the axis of the tube and the index pin horizontal, setting the index pin on the left hand side from the view of the photoconductive surface end.

Scanning Area : 18 mm (2/3 inch) dia. Type . . . . . 6.6 mm x 8.8 mm  
 25 mm (1 inch) dia. Type . . . . . 9.5 mm x 12.7 mm  
 38 mm (1-1/2 inch) dia. Type . . . . . 15.3 mm x 20.3 mm

## CORRECT USE OF VIDICONS

Here are some notes for better usage on the vidicon type camera tubes. Please pay attention to the following cautions to get better performance from vidicons.

(There are normal cautions, so individual specifications shall be ahead of this note.)

### MUST BE AVOIDED

- Beam current to be kept on target without normal scanning.
- Taking an image of the SUN.
- Under scanning or change scanning size.
- Rotate vidicon from its original position in coil assembly.
- Give higher target voltage than specified.

### SHOULD BE DONE

- Adjust scanning area to provide specified target area.
- New scanning size should be matched to former raster pattern.
- Adjust beam current, target voltage, focusing, alignment and lens iris mutually to obtain uniform dark background image of target and detail on the highlight level portion in the picture.

### WARNING

The high voltage used by vidicons may present shock hazard. They should be installed and handled only by qualified personal that have been instructed in handling of high voltage. Designs of equipment utilizing vidicon should incorporate appropriate interlocks to protect the operate and service personal.

### WARRANTY

All Hamamatsu vidicons are warranted to the original purchasers for a period of 12 months following the date of shipment. The warranty is limited to repair or replacement of any defective material due to defects in workmanship or materials used in manufacture.

- A: Any claims of damage of shipment must be made directly to the deliverling carrier within 5 days.
- B: Customer must inspect and test all vidicons within 30 days after shipment. Failure to accomplish said incoming inspection shall limit all claims to 75% of invoice value.
- C: No credit will be issued for broken vidicons unless in the opinion of Hamamatsu the damage is due to a seal crack traceable to a manufacturing defect.
- D: No credit will be issued for any vidicons which in the judgement of Hamamatsu have been damaged, abused modified, or which the serial number or type number has been obliterated or defaced.
- E: No vidicons will be accepted for return unless permission has been obtained from Hamamatsu in writing, the shipment has been returned, prepaid and insured, the vidicons are packed in their original box and accompanied by the original datasheet furnished to the customer with the tube, and a full written explanation of the reason for the rejection of each vidicon.
- F: This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

## GENERAL DESCRIPTIONS AND APPLICATIONS

The development and design of specialized image Pickup Tubes is a unique capability of HAMAMATSU. In the field of vidicon camera Tubes, HAMAMATSU offers the technique for the wide range of applications including visible, infrared, X-ray and ultraviolet. Our HAMAMATSU Vidicon type camera tube is compact, simple operation, low power and will be able to expect longer life.

### ■ Vidicons for visible light

Hamamatsu vidicons for visible light have varieties of 18 mm (2/3"), 25 mm (1") and 38 mm (1-1/2") diameter size and are classified in 4 types according to their focusing and deflection method, so Hamamatsu vidicons will mate with almost every cameras in the wide field applications. The "Target" of  $Sb_2S_3$  features stable operation and moderate sensitivity. A simple ASC (Automatic Sensitivity Control) circuit with the target voltage control using series resistor only can be necessary.

### Applications

Film pickup in broadcast  
Education  
Medicine  
Security  
Industry  
Process control  
Surveillance

### ■ Silicon Vidicons

This vidicon type utilizes silicon photodiode array as a target and has the characteristics of high sensitivity, low dark current, very low lag and non burn-in. The capability of exposing to the direct sun light without any damage and the wide spectral response expanded to near IR region are also unique features of Si-target vidicon and applicable for wide field.

### Applications

Security  
Industry  
Medicine  
Surveillance  
Military  
Education

### ■ Ultraviolet Vidicons

The N371 has sensitivity for the ultraviolet radiation with  $As_2Se_3$  target and fused silica faceplate. The covering spectral response is from 200 to 600 nm. The N983 is also ultraviolet vidicon having a target of CdSe and fused silica faceplate. It has low lag characteristic and the spectral response of 200 to 700 nm. Hamamatsu Ultraviolet Vidicons are suited to used with the Ultraviolet Microscope.

### Applications

Judgment or inspection of jewels  
Check-up forged documents  
Study of Biology  
Investigation of flame.

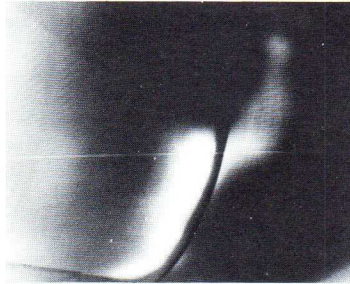
■ **Infrared Vidicons**

The N156, N157 and N214 are infrared sensitive vidicons having a target of PbO-PbS layer. The spectral response covers visible to 2.0  $\mu\text{m}$  with high sensitivity. N214 has separate field mesh connection to ensure high resolution.

**Applications**

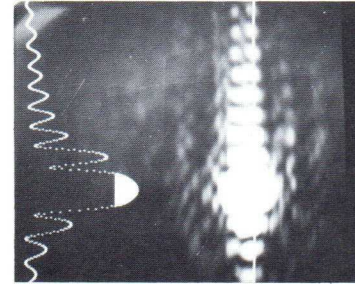
Surveillance  
 Judgement of jewels or forgery document  
 Reflectography of paintings or antiques  
 Scientific analysis medical analysis  
 Control of blast furnace

Temperature distribution on the cement kiln.

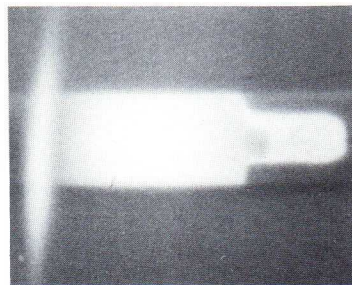


Laser pattern

The curve on the left side shows the intensity of Laser light.

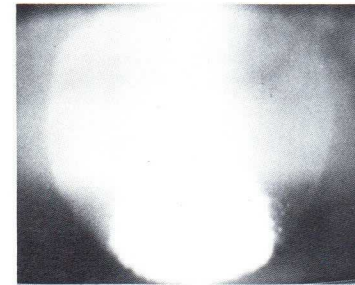


Heated soldering iron



Temperature distribution of the surface of the molten iron in a blast furnace.

The white portion indicates unbalance smelting.



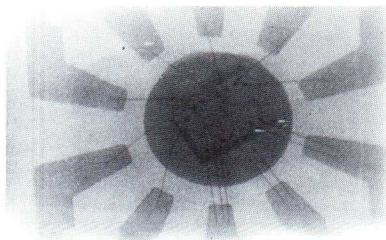
■ **X-ray Vidicon**

The N603 is a 25 mm (1") type vidicon designed to be used for image pickup of X-ray. The target made by PbO has the capability of direct conversion of X-ray to electron image and output signal is read by the electron beam scanning, so the N603 provides high resolution image of X-ray.

**Applications**

Nondestructive inspection for small parts, IC, insect and plant.

Lead connections of IC



Small fish



Flower



# VISIBLE VIDICONS( I )

Type	Typical Applications	Remarks	Overall Length (mm)	Focusing Method	Deflection Method	Heater for Unipotential Cathode		Grid No. 6 Voltage (V)	Grid No. 5 Voltage (V)
						Voltage AC or DC (V)	Current (mA)		

## 25 mm (1 inch) Dia. Types

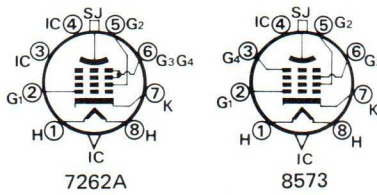
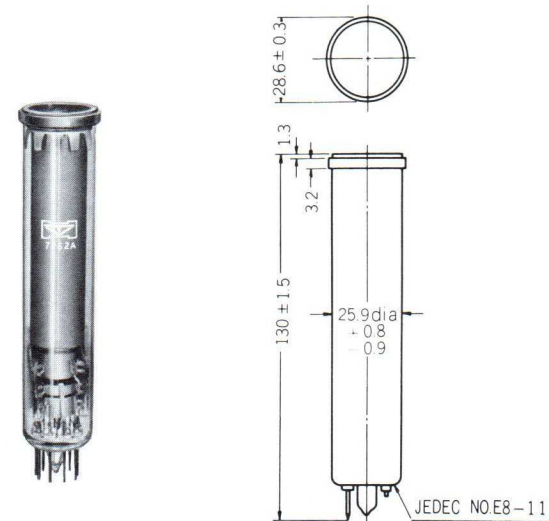
7262A(H)	Live TV Cameras	· Short Type	130	Magnetic	Magnetic	6.3	95	—	—
7735A(H)	Live TV Cameras	· Standard Type	159	Magnetic	Magnetic	6.3	600	—	—
8507 8507(H) 8507(K)	Film Pickup Cameras for Broadcast Industrial TV Cameras	· High Resolution	159	Magnetic	Magnetic	6.3	600	—	—
8541 8541(H) 8541(K)	Film Pickup Cameras for Broadcast Industrial TV Cameras	· High Resolution	159	Magnetic	Magnetic	6.3	95	—	—
8573(H)	Industrial TV Cameras	· Short Type · High Resolution	130	Magnetic	Magnetic	6.3	95	—	—

↑ The Types of (H) and (K) are classified by Spurious Signal Specifications (See Page 18)

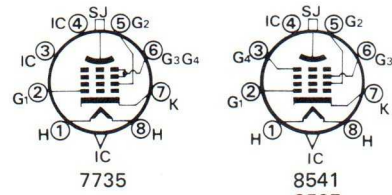
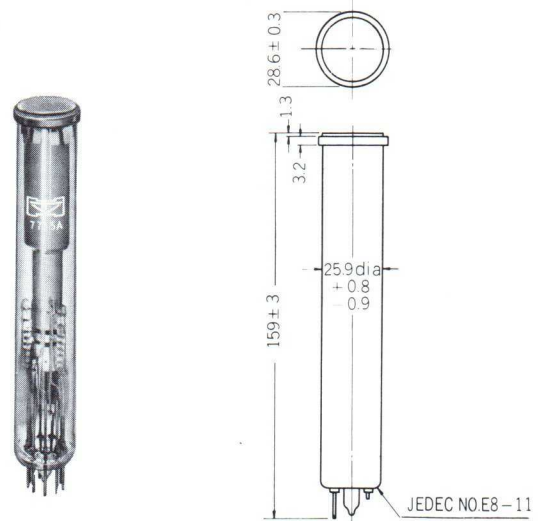
unit:mm

7262A 8573

7735A 8507 8541



(bottom view)



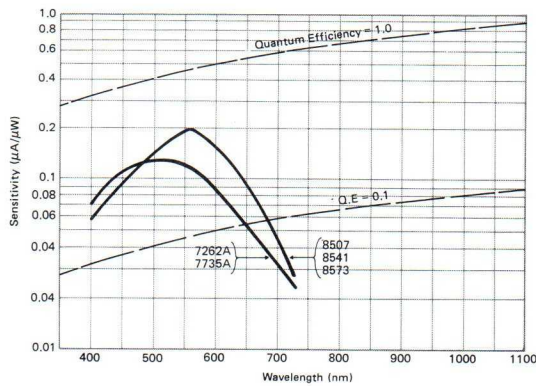
(bottom view)



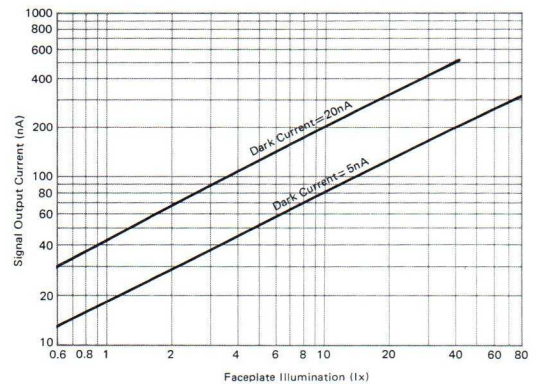
Typical Operating Conditions and Characteristics												Type
Grid No.4 Voltage (V)	Grid No.3 Voltage (V)	Grid No.2 Voltage (V)	Grid No.1 Voltage (V)	Field Strength at Center of Focusing Coil (G)	Target Voltage (V)	Faceplate Illumination (lx)	Dark Current (nA)	Signal Output Current (nA)	Limiting Resolution at Center (TV Lines)	Amplitude Response at 400 TV Lines (%)	Decay Lag after 3 TV Fields (%)	
250 ~ 300		300	-45~-100	40	10 ~ 50	10	20	200	700	25(A)	20(a)	7262A(H) 7735A(H)
500	270 ~ 330	300	-45~-100	41	20 ~ 40	10	20	200	750	40(B)	20(a)	8507 8507(H) 8507(K)
750	400 ~ 500	300	-45~-100	53	20 ~ 40	10	20	200	900	50(C)	20(a)	
750	400 ~ 500	300	-45~-100	53	10 ~ 20	100	5	350	900	50(C)	15(b)	
500	270 ~ 330	300	-45~-100	41	20 ~ 40	10	20	200	750	40(B)	20(a)	8541 8541(H) 8541(K)
500	270 ~ 330	300	-45~-100	41	20 ~ 40	10	20	200	750	40(B)	20(a)	8573(H)

See Amplitude Response Characteristic Curves Below  $\rightarrow$   
 See Decay Lag Characteristic Curves Below  $\rightarrow$

### SPECTRAL RESPONSE

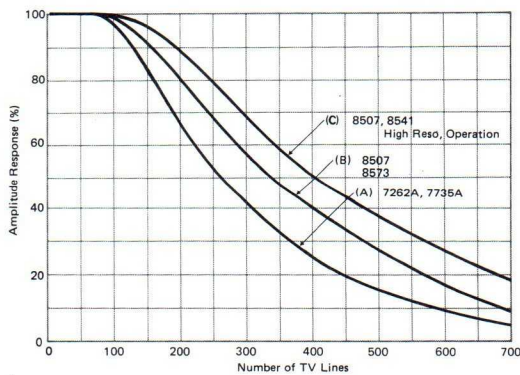


### LIGHT TRANSFER CHARACTERISTICS



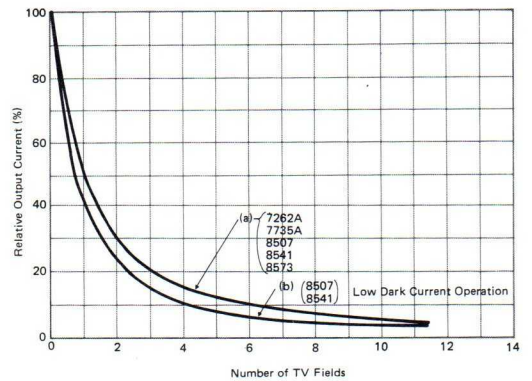
### AMPLITUDE RESPONSE

(See "Amplitude Response" in the Table)



### DECAY LAG CHARACTERISTICS

(See "Decay Lag" in the Table)



# VISIBLE VIDICONS (II)

Type	Typical Applications	Remarks	Overall Length (mm)	Focusing Method	Deflection Method	Heater for Unipotential Cathode		Grid No. 6 Voltage (V)	Grid No.5 Voltage (V)
						Voltage AC or DC (V)	Current (mA)		

## 25 mm (1 inch) Dia. Types

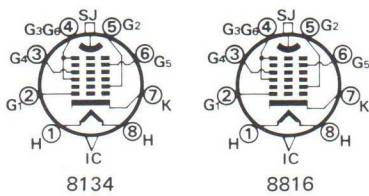
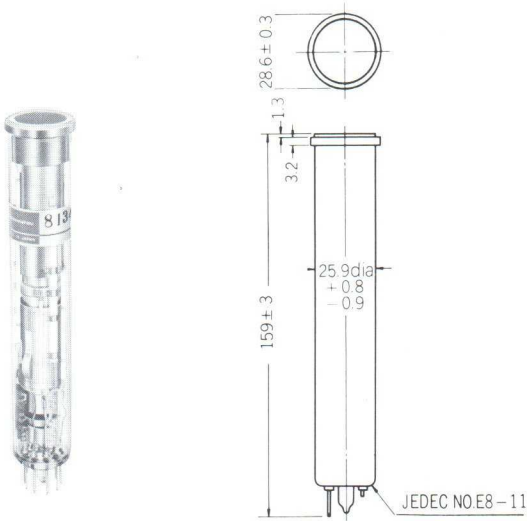
8134 8134(H)	Film Pickup Cameras for Broadcast Industrial TV Cameras	· High Resolution · Low Shading · Low Distortion	159	Electrostatic	Magnetic	6.3	95	500 750 750	300 450 450
8816(H)	Film Pickup Cameras	· Very High Resolution · Low Shading · Low Distortion	159	Combined	Magnetic	6.3	95	500 750 750	300 450 450
25PE12	Industrial TV Cameras for Special Scanning Systems	· Electrostatic Focus and Deflection	159	Electrostatic	Electrostatic	6.3	95	—	350 500

↑ The Types of (H) are classified by Spurious Signal Specifications. (See Page 18)

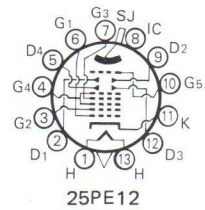
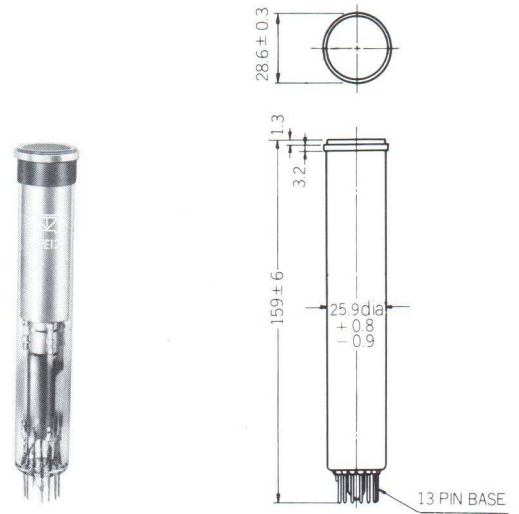
unit:mm

8134 8816

25PE12



(bottom view)

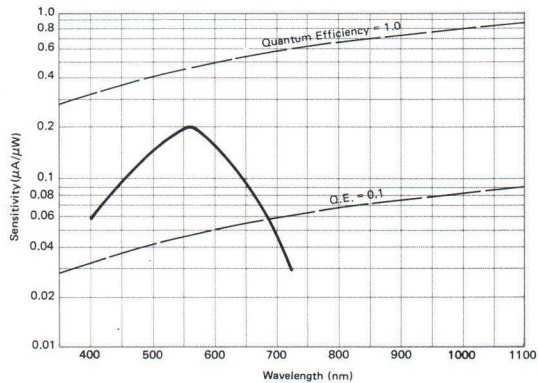


(bottom view)

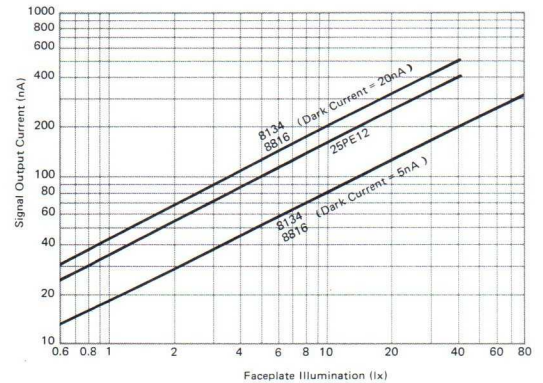
Typical Operating Conditions and Characteristics													Type
Grid No.4 Voltage (V)	Grid No.3 Voltage (V)	Grid No.2 Voltage (V)	Grid No.1 Voltage (V)	Field Strength at Center of Focusing Coil (G)	Target Voltage (V)	Faceplate Illumination (lx)	Dark Current (nA)	Signal Output Current (nA)	Limiting Resolution at Center (TV Lines)	Amplitude Response at 400 TV Lines (%)	Decay Lag after 3 TV Fields (%)		
50 ~ 100 90 ~ 150 90 ~ 150	500 750 750	300 300 300	-45 ~ -100 -45 ~ -100 -45 ~ -100	- - -	20 ~ 40 20 ~ 40 10 ~ 20	10 10 100	20 20 5	200 200 350	700 800 800	25(A) 35(B) 35(B)	20(a) 20(a) 15(b)	8134 8134(H)	
150 ~ 250 150 ~ 250 150 ~ 250	500 750 750	300 300 300	-45 ~ -100 -45 ~ -100 -45 ~ -100	26 26 26	20 ~ 40 20 ~ 40 10 ~ 20	10 10 100	20 20 5	200 200 350	800 1000 1000	40(C) 50(D) 50(D)	20(a) 20(a) 15(b)	8816(H)	
200 300	0 ~ 60 0 ~ 60	300 300	-45 ~ -100 -45 ~ -100	- -	20 ~ 40 20 ~ 40	5 5	20 20	100 100	350 450	-(E) 15(F)	25(c) 25(c)	25PE12	

See Amplitude Response Characteristic Curves Below →  
 See Decay Lag Characteristic Curves Below →

### SPECTRAL RESPONSE

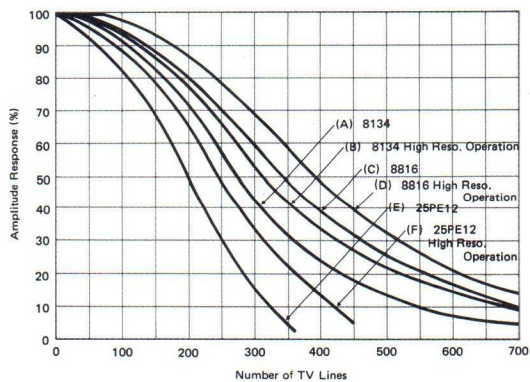


### LIGHT TRANSFER CHARACTERISTICS



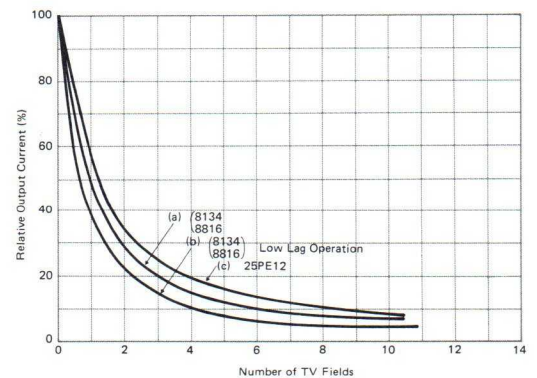
### AMPLITUDE RESPONSE

(See "Amplitude Response" in the Table)



### DECAY LAG CHARACTERISTICS

(See "Decay Lag" in the Table)



# VISIBLE VIDICONS(III)

Type	Typical Applications	Remarks	Overall Length (mm)	Focusing Method	Deflection Method	Heater for Unipotential Cathode		Grid No. 6 Voltage (V)	Grid No. 5 Voltage (V)
						Voltage AC or DC (V)	Current (mA)		

## 18 mm (2/3 inch) Dia. Types

8844	Compact Live TV Cameras	<ul style="list-style-type: none"> <li>· Very Small Type</li> <li>· High Resolution</li> <li>· Low Lag</li> </ul>	103	Magnetic	Magnetic	6.3	95	—	—
N887	Compact Live TV Cameras	<ul style="list-style-type: none"> <li>· Very Small Type</li> <li>· Low Lag</li> </ul>	103	Electrostatic	Magnetic	6.3	95	500	300

## 38 mm (1-1/2 inch) Dia. Type

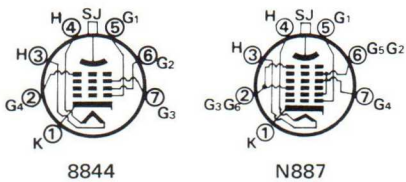
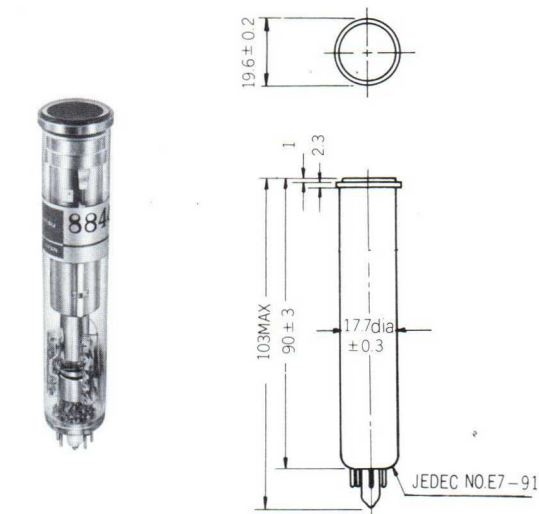
8480 8480(H)	Film Pickup Cameras for Broadcast Data Transmission Applications	<ul style="list-style-type: none"> <li>· Very High Resolution</li> <li>· Low Shading</li> <li>· Low Lag</li> </ul>	260	Electrostatic	Magnetic	6.3	95	1400 1400	700 ~ 840 700 ~ 840
-----------------	---	--	-----	---------------	----------	-----	----	--------------	------------------------

↳ The Type of (H) is classified by Spurious Signal Specifications (See Page 18)

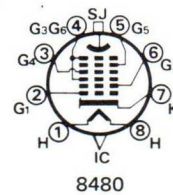
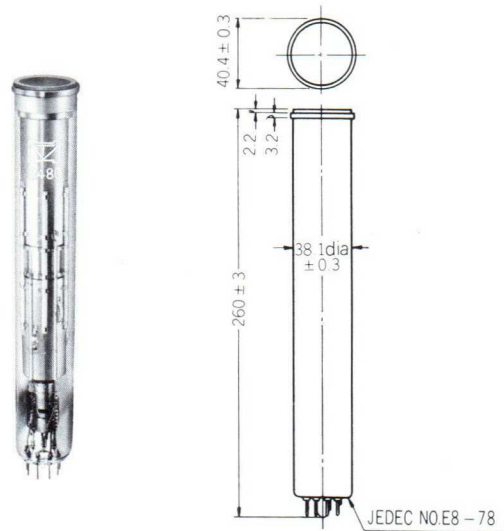
unit:mm

8844 N887

8480



(bottom view)

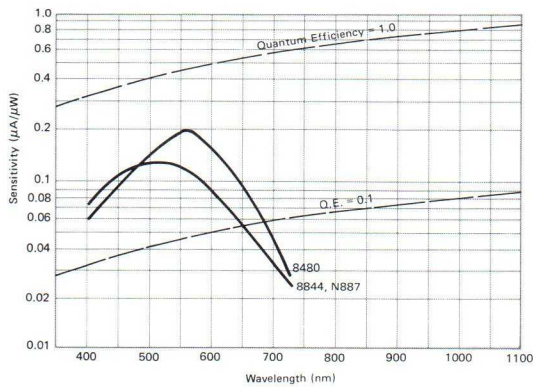


(bottom view)

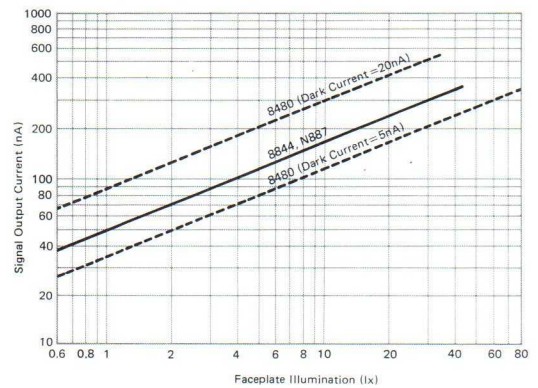
Typical Operating Conditions and Characteristics												Type
Grid No.4 Voltage (V)	Grid No.3 Voltage (V)	Grid No.2 Voltage (V)	Grid No.1 Voltage (V)	Field Strength at Center of Focusing Coil (G)	Target Voltage (V)	Faceplate Illumination (lx)	Dark Current (nA)	Signal Output Current (nA)	Limiting Resolution at Center (TV Lines)	Amplitude Response at 400 TV Lines (%)	Decay Lag after 3 TV Fields (%)	
400 500	230 ~ 270 280 ~ 340	300 300	-35 ~ -80 -35 ~ -80	50 55	10 ~ 40 10 ~ 40	15 15	20 20	200 200	700 750	25(A) 30(B)	15(a) 15(a)	8844
60 ~ 85	500	300	-45 ~ -100	-	10 ~ 40	15	20	200	600	17(C)	15(a)	N887
230 ~ 260 230 ~ 260	1400 1400	300 300	-45 ~ -100 -45 ~ -100	-	20 ~ 50 10 ~ 30	10 80	20 5	300 350	1200 1200	60(D) 60(D)	25(b) 20(c)	8480 8480(H)

See Amplitude Response Characteristic Curves Below  $\nearrow$   
 See Decay Lag Characteristic Curves Below  $\nearrow$

### SPECTRAL RESPONSE

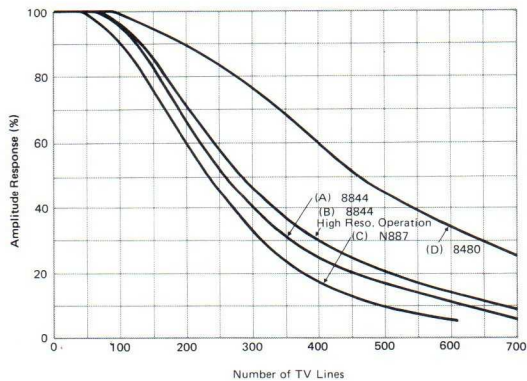


### LIGHT TRANSFER CHARACTERISTICS



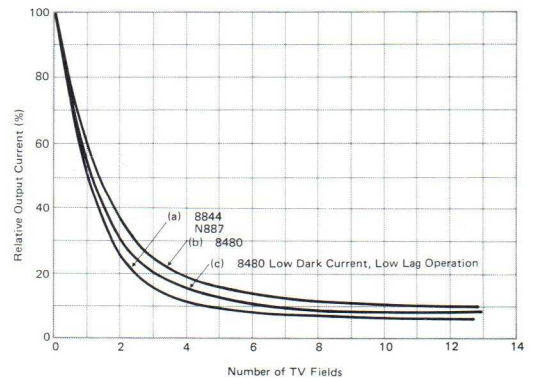
### AMPLITUDE RESPONSE

(See "Amplitude Response" in the Table)



### DECAY LAG CHARACTERISTICS

(See "Decay Lag" in the Table)



# SILICON VIDICONS

Type	Typical Applications	Remarks	Overall Length (mm)	Maximum Ratings		Focusing Method	Deflection Method	Heater for Unipotential Cathode		Grid No.6 Voltage (V)	Grid No.5 Voltage (V)
				Grid No.4 Voltage (V)	Grid No.3 Voltage (V)			Voltage AC or DC (V)	Current (mA)		

## 18 mm (2/3 inch) Dia. Types

N747(T) N747(S)	TV Telephones High Sensitivity TV Cameras	· Very High Sensitivity · Low Dark Current · No Burn-in · Very Low Lag	103	400	400	Magnetic	Magnetic	6.3	95	—	—
--------------------	---	---	-----	-----	-----	----------	----------	-----	----	---	---

## 25 mm (1 inch) Dia. Types

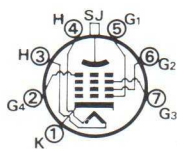
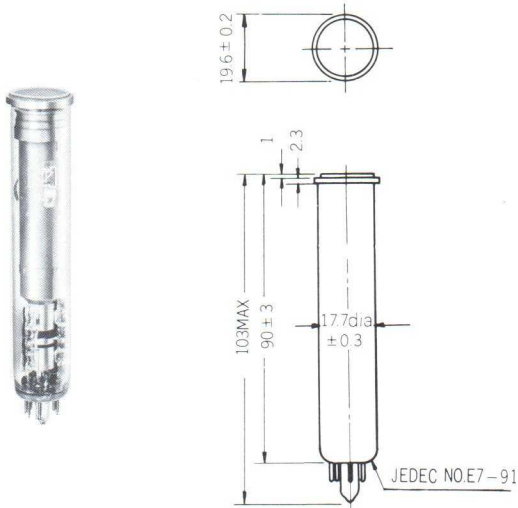
N736(T) N736(S)	TV Telephones High Sensitivity TV Cameras	· Very High Sensitivity · Low Dark Current · No Burn-in · Very Low Lag	159	500	500	Magnetic	Magnetic	6.3	95	—	—
--------------------	---	---	-----	-----	-----	----------	----------	-----	----	---	---

↑ The Types of (T) and (S) are classified by Spurious Signal Specifications (See Page 18)

unit:mm

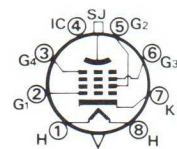
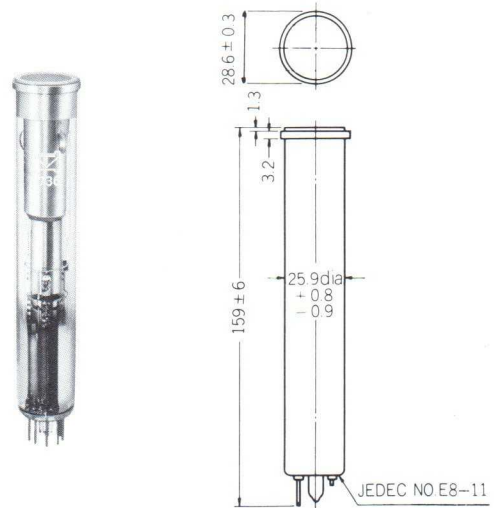
N747

N736



N747

(bottom view)



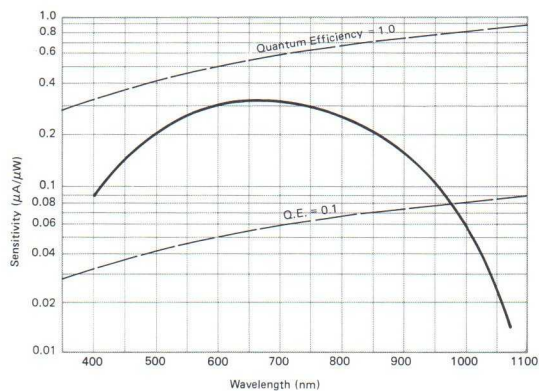
N736

(bottom view)

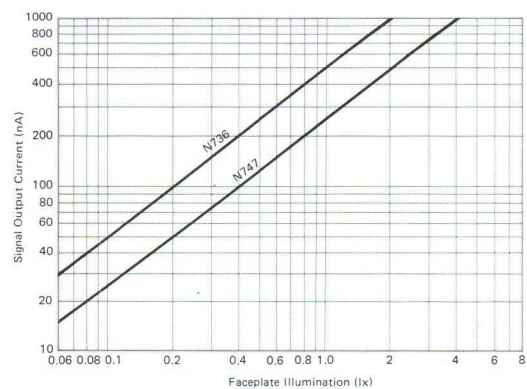
Typical Operating Conditions and Characteristics												Type
Grid No.4 Voltage (V)	Grid No.3 Voltage (V)	Grid No.2 Voltage (V)	Grid No.1 Voltage (V)	Field Strength at Center of Focusing Coil (G)	Target Voltage (V)	Faceplate Illumination (lx)	Dark Current (nA)	Signal Output Current (nA)	Limiting Resolution at Center (TV Lines)	Amplitude Response at 400 TV Lines (%)	Decay Lag after 3 TV Fields (%)	
300	160 ~ 200	300	-35 ~ -80	40	10	1	5	250	400	8	6	N747(T) N747(S)
300	160 ~ 200	300	-35 ~ -100	33	10	0.5	10	250	500	20	12	N736(T) N736(S)

See Amplitude Response Characteristic Curves Below →  
 See Decay Lag Characteristic Curves Below →

### SPECTRAL RESPONSE

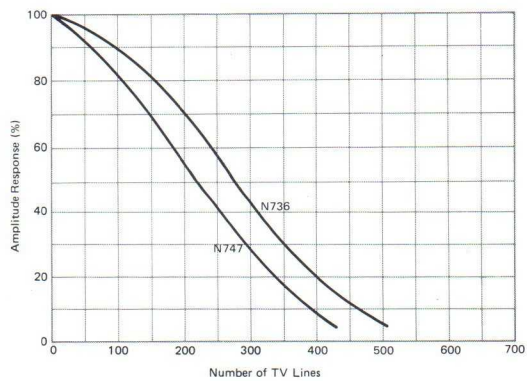


### LIGHT TRANSFER CHARACTERISTICS



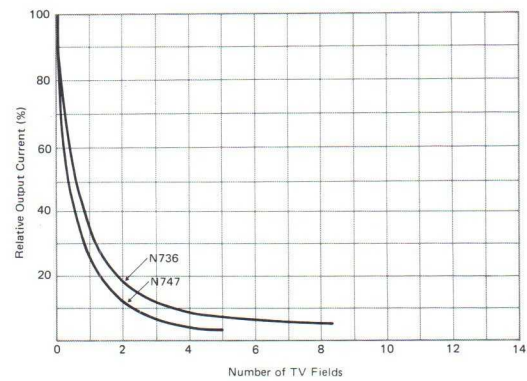
### AMPLITUDE RESPONSE

(See "Amplitude Response" in the Table)



### DECAY LAG CHARACTERISTICS

(See "Decay Lag" in the Table)



# INFRARED VIDICONS

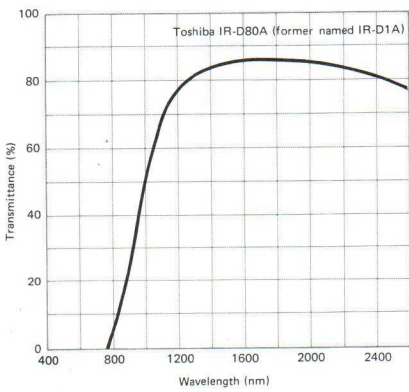
Type	Typical Applications	Remarks	Overall Length (mm)	Target Voltage Esj		Focusing Method	Deflection Method	Heater for Unipotential Cathode		Grid No.6 Voltage (V)	Grid No.5 Voltage (V)
				Recommended Value	Maximum Value			Voltage AC or DC (V)	Current (mA)		

## 25 mm (1 inch) Dia. Types

N156 N156-01	Infrared TV Cameras	· Spectral Response Range 0.4 ~ 2.0 $\mu\text{m}$	159	described in each data sheet	described in each data sheet	Magnetic	Magnetic	6.3	95	—	—
N157 N157-01		· Spectral Response Range 0.4 ~ 2.0 $\mu\text{m}$ · Short Type	130			Magnetic	Magnetic	6.3	95	—	—
N214 N214-01		· Spectral Response Range 0.4 ~ 2.0 $\mu\text{m}$ · High Resolution	159			Magnetic	Magnetic	6.3	95	—	—

The Types of -01 are classified by Spurious Signal Specifications. (See Page 18)

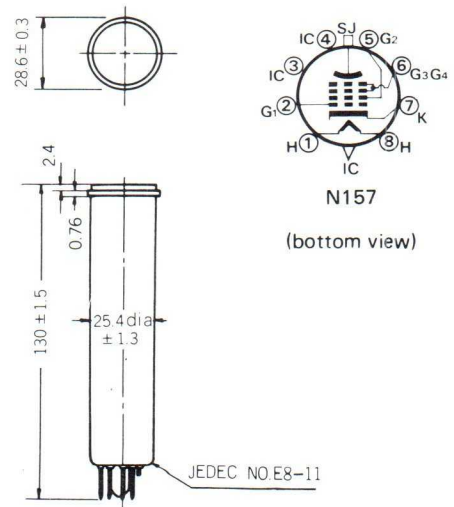
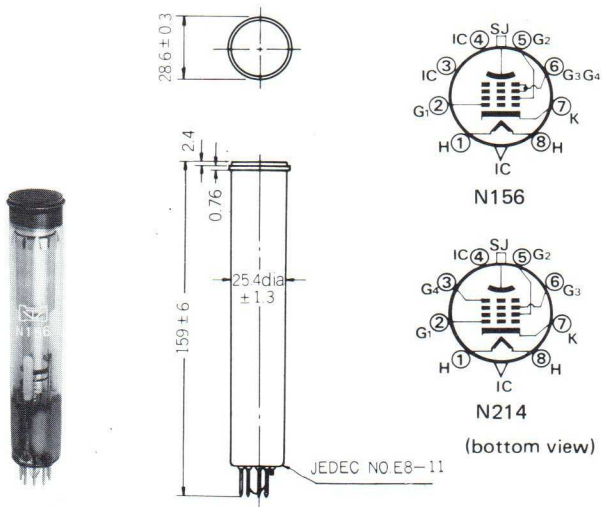
## TRANSMITTANCE OF IR FILTER



unit:mm

N156 N214

N157





Typical Operating Conditions and Characteristics												Type
Grid No.4 Voltage (V)	Grid No.3 Voltage (V)	Grid No.2 Voltage (V)	Grid No.1 Voltage (V)	Field Strength at Center of Focusing Coil (G)	Target Voltage (V)	Faceplate Illumination	Dark Current (nA)	Signal Output Current (nA)	Limiting Resolution at Center (TV Lines)	Amplitude Response at 400 TV Lines (%)	Decay Lag after 3 TV Fields (%)	

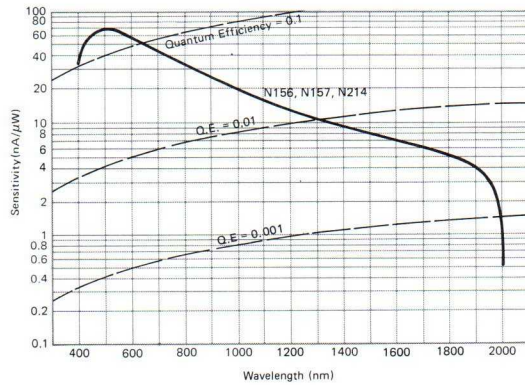
A lamp operated at 2856K and Toshiba IR-D80A are used →

250 ~ 300		300	-45 ~ -100	40	20 ~ 80	10 /x + IR-D80A	20	200	600	18	60	N156 N156-01
												N157 N157-01
500	270 ~ 330	300	-45 ~ -100	41	20 ~ 80	10 /x + IR-D80A	20	200	700	24	60	N214 N214-01

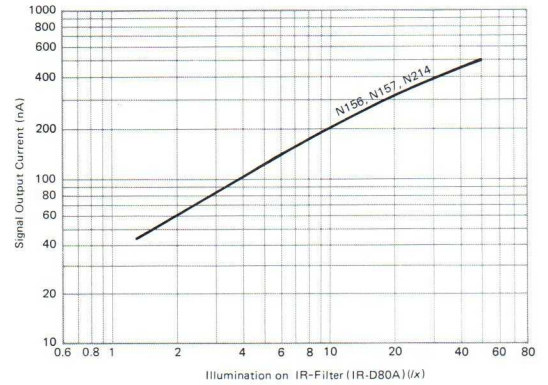
See Amplitude Response Characteristic Curves Below. →

See Decay Lag Characteristic Curves Below. →

### SPECTRAL RESPONSE

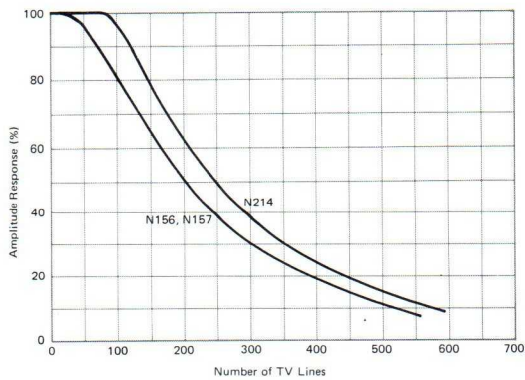


### LIGHT TRANSFER CHARACTERISTICS



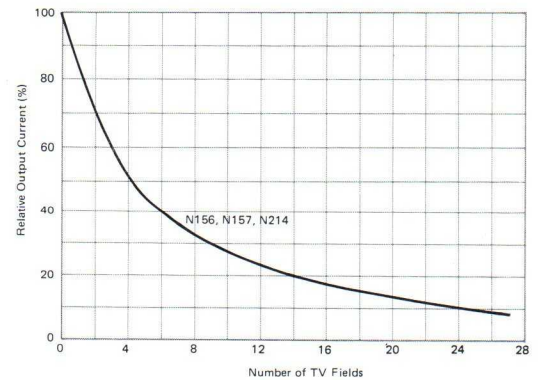
### AMPLITUDE RESPONSE

(See "Amplitude Response" in the Table)



### DECAY LAG CHARACTERISTICS

(See "Decay Lag" in the Table)



# X-RAY VIDICON

25 mm (1 inch) Dia. Type

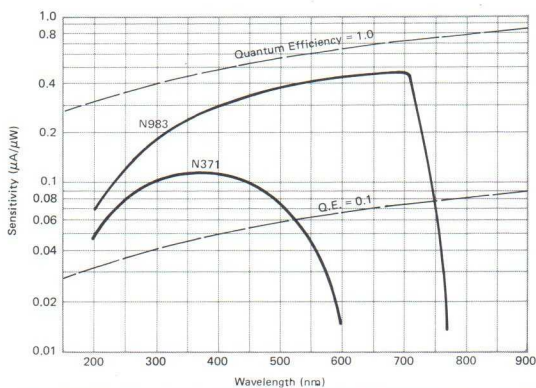
Type	Typical Applications	Remarks	Overall Length (mm)	Target Voltage Esj		Focusing Method	Deflection Method	Heater for Unipotential Cathode		Grid No.6 Voltage (V)	Grid No.5 Voltage (V)
				Recommended Value	Maximum Value			Voltage AC or DC (V)	Current (mA)		
N603	X-ray TV Cameras	Beryllium Faceplate	159	described in each data sheet	described in each data sheet	Magnetic	Magnetic	6.3	95	-	-

# ULTRAVIOLET ~ VISIBLE VIDICONS

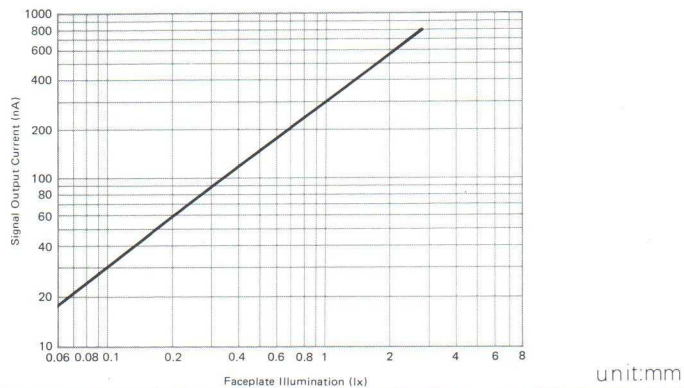
25 mm (1 inch) Dia Types

Type	Typical Applications	Remarks	Overall Length (mm)	Target Voltage Esj		Focusing Method	Deflection Method	Heater for Unipotential Cathode		Grid No.6 Voltage (V)	Grid No.5 Voltage (V)
				Recommended Value	Maximum Value			Voltage AC or DC (V)	Current (mA)		
N371	Ultraviolet TV Cameras 2 Dimensional Spectroscopy	• Spectral Response Range 0.2 ~ 0.6 $\mu\text{m}$ • Fused-Silica Faceplate	159	described in each data sheet	described in each data sheet	Magnetic	Magnetic	6.3	95	-	-
N983		• Spectral Response Range 0.2 ~ 0.7 $\mu\text{m}$ • Fused Silica Faceplate									

## SPECTRAL RESPONSE

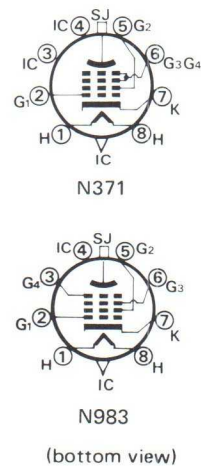
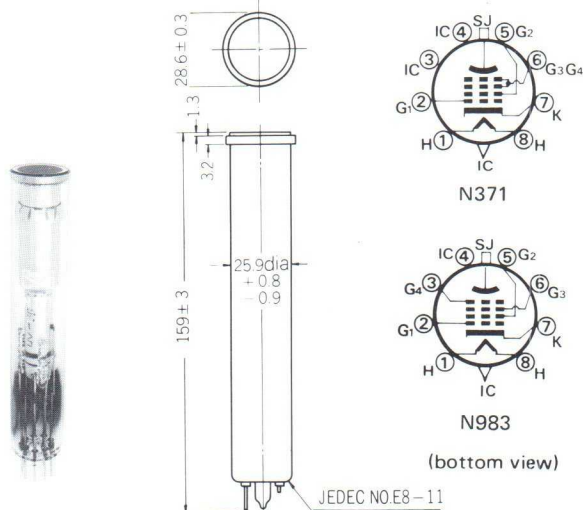
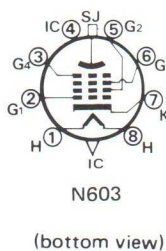
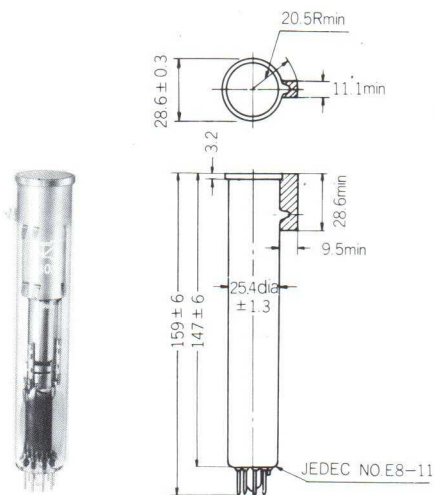


## LIGHT TRANSFER CHARACTERISTIC OF N983



N603

N371 N983



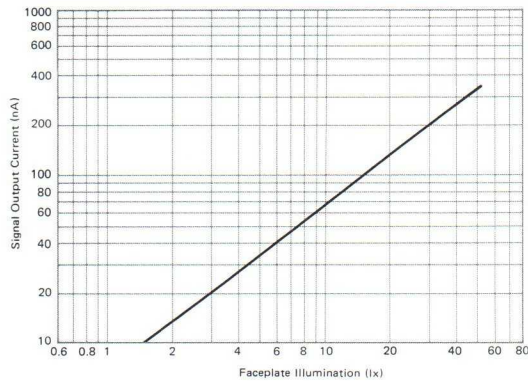
Typical Operating Conditions and Characteristics													Type
Grid No.4 Voltage (V)	Grid No.3 Voltage (V)	Grid No.2 Voltage (V)	Grid No.1 Voltage (V)	Field Strength at Center of Focusing Coil (G)	Target Voltage (V)	Faceplate Irradiance (R/min.)	Dark Current (nA)	Signal Output Current (nA)	Limiting Resolution at Center (TV Lines)	Amplitude Response at 400 TV Lines (%)	Decay Lag after 3 TV Fields (%)		
430	250 ~ 300	300	-45 ~ -100	40	10 ~ 50	100	1	100	500	10(A)	20	N603	

Approx. 250 lp/cm  $\rightarrow$   
 See Amplitude Response Characteristic Curves Below.  $\rightarrow$   
 See Decay Lag Characteristic Curves Below.  $\rightarrow$

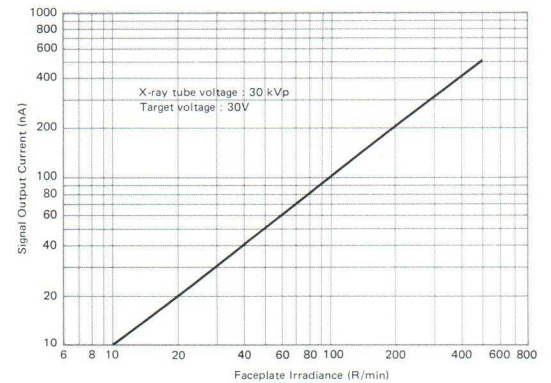
Typical Operating Conditions and Characteristics													Type
Grid No.4 Voltage (V)	Grid No.3 Voltage (V)	Grid No.2 Voltage (V)	Grid No.1 Voltage (V)	Field Strength at Center of Focusing Coil (G)	Target Voltage (V)	Faceplate Illumination (lx)	Dark Current (nA)	Signal Output Current (nA)	Limiting Resolution at Center (TV Lines)	Amplitude Response at 400 TV Lines (%)	Decay Lag after 3 TV Fields (%)		
270 ~ 300		300	-45 ~ -100	40	10 ~ 50	30	1	200	700	25(B)	35	N371	
500 750	270 ~ 330 400 ~ 500	300 300	-45 ~ -100 -45 ~ -100	41 53	15 ~ 45 15 ~ 45	0.5 0.5	1 1	160 160	750 900	40(C) 50(D)	20 20	N983	

See Amplitude Response Characteristic Curves Below.  $\rightarrow$   
 See Decay Lag Characteristic Curves Below.  $\rightarrow$

### LIGHT TRANSFER CHARACTERISTIC OF N371

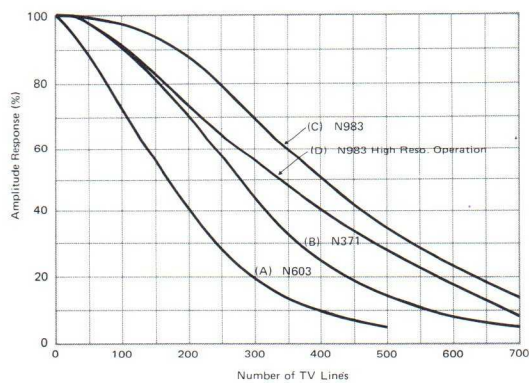


### RADIATION TRANSFER CHARACTERISTIC OF N603



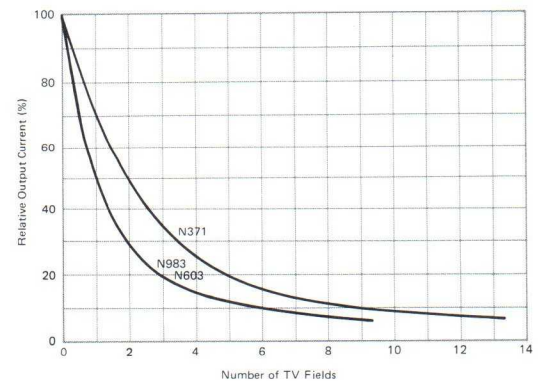
### AMPLITUDE RESPONSE

(See "Amplitude Response" in the Table)



### DECAY LAG CHARACTERISTICS

(See "Decay Lag" in the Table)

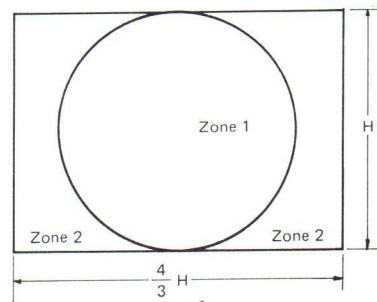


# SPURIOUS SIGNAL SPECIFICATIONS

## Specification 1

This test is performed using an uniformly diffused white test chart that is separated into two zones as shown in the right. The tube is operated under the conditions specified in "Typical Operating Conditions" with the lens adjusted to provide an output current of 200 nanoamperes after setting the target voltage at a value of typical condition. The focusing voltage or coil current is also adjusted to provide maximum picture resolution. Spurious signals are evaluated by size which is represented by equivalent numbers of raster lines in a 525 TV line system. The following each table shows the maximum allowable spot numbers for each zone.

To be classified as a spot, a contrast ratio greater than 1.4:1 must exist for white spot and greater than 2:1 for black spot. The spurious signals such as smudges, lines, streaks, mottled background, graying background and uneven background having contrast ratio greater than 1.4:1 will apply correspondingly to spots. Minimum separation between any 2 spots greater than 2 TV lines is limited to a distance equivalent to 16 TV lines.



- 1) 7262A(H), 7735A(H), 8134(H), 8816  
8507(H), 8541(H), 25PE12  
8480(H), 8844, 8573(H), N983

Number of TV lines	Number allowed	
	Zone 1	Zone 2
6 over	0	0
6 to but not including 4	0	2
4 to but not including 1	3	4
1 and under	*	*

- 2) 8507(K), 8541(K)

Number of TV lines	Number allowed	
	Zone 1	Zone 2
4 over	0	0
4 to but not including 3	0	1
3 to but not including 1	2	3
1 and under	*	*

- 3) 8134, 8507, 8541, 8480

Number of TV lines	Number allowed	
	Zone 1	Zone 2
3 over	0	0
3 to but not including 1	1	2
1 and under	*	*

- 4) N736(T), N747(T)

Number of TV lines	Number allowed	
	Zone 1	Zone 2
6 over	0	0
6 to but not including 4	0	2
4 to but not including 1	3	5
1 and under	*	*

- 5) N736(S), N747(S)

Number of TV lines	Number allowed	
	Zone 1	Zone 2
4 over	0	0
4 to but not including 3	0	2
3 to but not including 1	3	4
1 and under	*	*

\* Spots with size of 1 TV line or under are allowed unless concentration causes a smudged appearance.

When the number of spots with certain size exceeds the number specified in the relevant column of tables above, the exceeding spots are allowed to be regard as spots of greater size than actually they are.

## Specification 2

This test is performed using an uniformly diffused white test chart that is separated into three zones as shown in the right. The tube is operated under the conditions specified in "Typical Operating Conditions" with the focusing coil current adjusted to provide the maximum picture resolution.

Infrared Vidicons (N156, N157, N214).

- Adjusting target voltage for dark current to be a value of 20nA and also adjusting the lens to provide an output current of 200nA using tungsten filament lamp operated at a distribution temperature of 2856K as a light and infrared filter Toshiba IR-D80A.

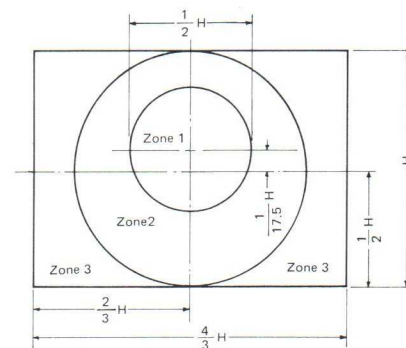
Ultraviolet ~ Visible Vidicon (N371, Specification of N983 is listed above)

- Adjusting the lens to provide a faceplate illumination of 30 luxes and also adjusting the target voltage to provide an output current of 200nA. A 2856K tungsten filament lamp is used.

X-Ray Vidicon (N603)

- Adjusting the distance between the X-ray source and the vidicon to provide a faceplate irradiance of 13 miliroentgens/minute and also adjusting the target voltage to provide an output current of 60nA using aluminium plate of 1.5 mm thick as a filter; the radiation source is Shimadzu WELTES-160E operated at a tube voltage of 70kVp and tube current of 6mA.

Then readjusting the tube voltage and the tube current to provide an output current of 200nA.



The following table shows maximum allowable spot size and maximum allowable degrading marks (see **Note**) for each zone. The maximum allowable spot size applies to all spots having contrast ratio greater than 1.4:1.

The types having suffix of "-01" are distinguished by specifications of shading and picture resolution as well as spurious signals.

Type No.	Maximum Allowable Spot Size			Maximum Allowable Degrading Mark			Center Resolution min. (TV lines)	Shading max. (%)
	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3		
N156 N157 N214	5 to but not including 6	6 to but not including 7	7 to but not including 8	50	60	80	400 600	40 30
N156-01 N157-01 N214-01	6 to but not including 7	6 to but not including 7	7 to but not including 8	60	90	120	400 550	55 45
N603 N371	5 to but not including 6	6 to but not including 7	7 to but not including 8	50	60	80	400	40

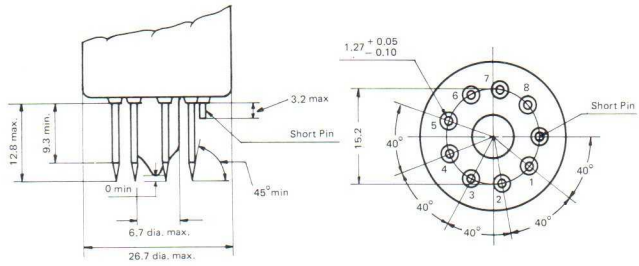
(Note) Degrading Marks

Contrast Ratio Size equivalent TV lines	1.4 ≤ C.R. < 2	Over 2
under 1.4	0	0
1.4 ≤ a < 2	0	3
2 ≤ b < 3	3	6
3 ≤ c < 4	6	12
4 ≤ d < 5	12	20
5 ≤ e < 6	20	30
6 ≤ f < 7	30	40
7 ≤ g < 8	40	50

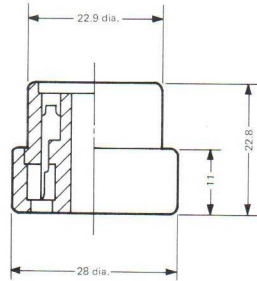
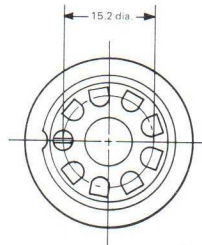
- The spot size in this case is the average value.
- Spots of contrast ratio less than 1.4:1 will be excepted.
- When a spot consists of several parts having their several contrast ratio, at first calculating digrading marks of each part and adopting maximum part marks.
- The spurious signals such as smudges, lines, streaks, mottled background, grainy background and uneven background will apply correspondingly to spots.

# VIDICON BASES AND SOCKETS

Base No. E8-11 ( 7262A, 8573, 7735A, 8507, 8541, 8134, 8816, N736, N156, N157, N214, N603, N371, N983 )

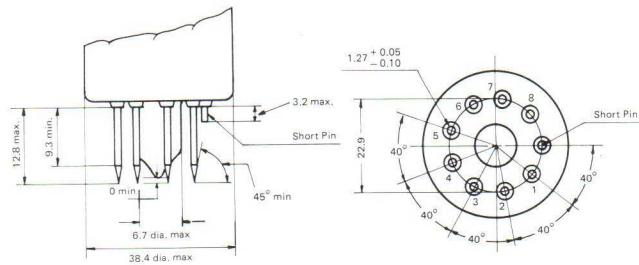


Socket No. E678-8C

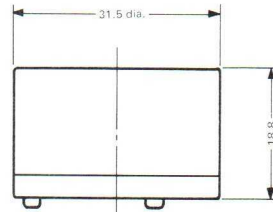
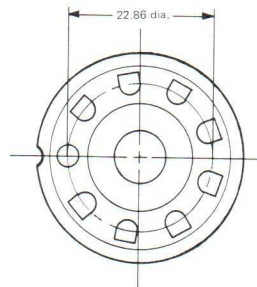


Insulation Resistance  
 . . . . . 1000MΩ min. (at 500Vdc)  
 Withstand Voltage  
 . . . . . 2000Vac (for 1 minute)  
 Contact Resistance  
 . . . . . 10mΩ max. (2 Vdc, 1A)

Base No. E8-78 ( 8480 )

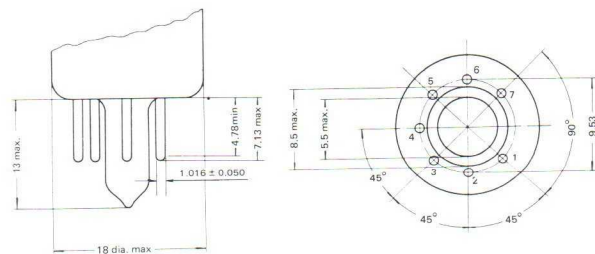


Socket No. S8-605E-00

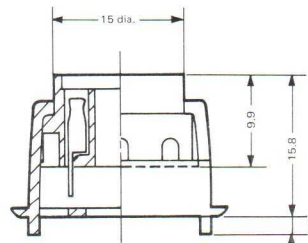
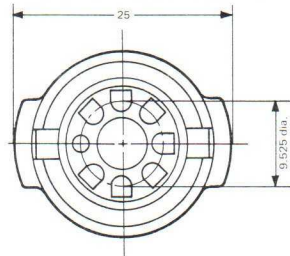


Insulation Resistance  
 . . . . . 1000 MΩ min. (at 500 Vdc)  
 Withstand Voltage  
 . . . . . 2000 Vac (for 1 minute)  
 Contact Resistance  
 . . . . . 7 mΩ max. (at 2Vdc, 1A)

Base No. E7-91 ( 8844, N887, N747 )



Socket No. S7-502B-40



Insulation Resistance  
 . . . . . 1000 MΩ min. (at 500 Vdc)  
 Withstand Voltage  
 . . . . . 700 Vac (for 1 minute)  
 Contact Resistance  
 . . . . . 10 mΩ max. (at 2 Vdc, 1A)

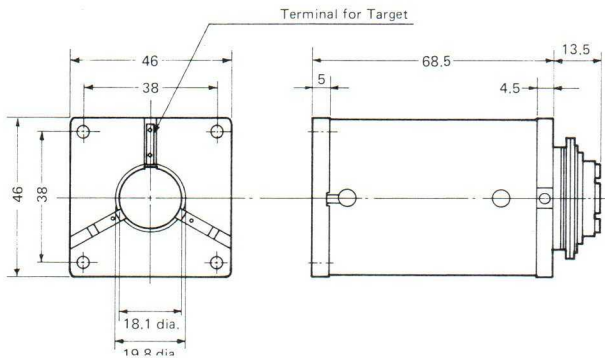
# YOKE ASSEMBLIES

## Selection Guide

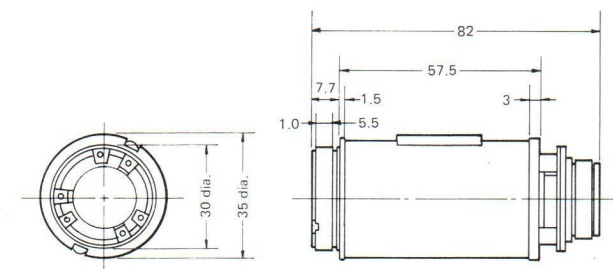
For Use With		Type	Features	Focusing Coil		Deflection Coil						Alignment			
Size mm(inch)	Type			R ( $\Omega$ )	mA/G	Horizontal			Vertical			Coil		Magnet	
					L (mH)	R ( $\Omega$ )	I (mApp)	L (mH)	R ( $\Omega$ )	I (mApp)	R ( $\Omega$ )	mA/G	max. (G)	min. (G)	
18(2/3)	8844 N747	KV-12S	For compact ITV, MM, Square	55	120/50	0.88	2.9	150	32	146	20	—	—	4	1
		KV-12SB	High Impedance Type of KV-12S	175	65/50	0.88	3.2	150	32	146	20	—	—	4	1
		KV-16BG	For Ultra Compact ITV, MM, Circular	104	75/50	0.84	4.2	180	32	140	20	—	—	4	1
		KV-22B	For Compact ITV, With F. B. Adj.	50	120/50	0.88	2.9	150	32	146	20	—	—	4	1
		KV-22C	High Impedance Type of KV-22B	175	65/50	0.88	2.9	150	32	146	20	—	—	4	1
	N877	KV-19G	For Ultra Compact ITV, SM, Circular	—	—	0.9	4.4	100	26	145	16	—	—	4	0.3
		KV-19JA	For Compact ITV, With F. B. Adj. SM, Circular	—	—	0.9	4.4	100	26	145	16	—	—	4	0.3
25 (1)	7262A, 7735A N156, N157 N371	KV-9G	For Popular Type ITV, MM, Square	100	90/40	1.6	4.4	150	70	120	33	—	—	4	1
		KV-10	For Common Type ITV, MM, Circular	100	90/40	1.6	4.4	150	70	120	33	—	—	4	1
		KV-13J	Common ITV, With F.B. Adj. MM, Circular	100	90/40	1.6	4.4	150	70	120	33	—	—	4	1
	8541, 8573 8507, N736 N214, N983	KV-8L	For Broadcasting, MM, Square	120	110/55	1.0	4.6	170	55	200	35	148	40/4	—	—
		KV-8G	For High Resolution Use, Shielded MM, Circular	171	100/60	1.4	5.4	220	31.5	205	40	160	40/4	—	—
		KV-9L	For Multi-Use ITV, High Resolution Type of KV-9G	100	90/40	1.6	4.4	150	70	120	33	—	—	4	1
		KV-13M	For Multi-Use ITV High Resolution Type of KV-13J	100	90/40	1.6	4.4	150	70	120	33	—	—	4	1
	N603	E1164	For Side-tip Tube (similar to KV-8L)	120	110/55	1.0	4.6	170	55	200	35	148	40/4	—	—
	8134	KV-6A	For Broadcasting, SM, Square	—	—	0.45	2.0	140	18	88	13	130	50/4	—	—
	8816	KV-14CA	For High Resolution ITV, CM, Square	400	30/26	1.2	5.1	140	28	195	25	170	60/4	—	—
38(1-1/2)	8480	KV-15A	For Broadcasting, SM, Square	—	—	1.7	5.8	100	31	46	15	160	50/4	—	—

Made by chuomusen Co., LTD. (Tokyo Japan) except E1164

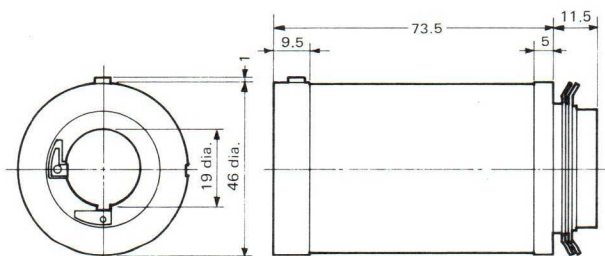
KV-12S KV-12SB



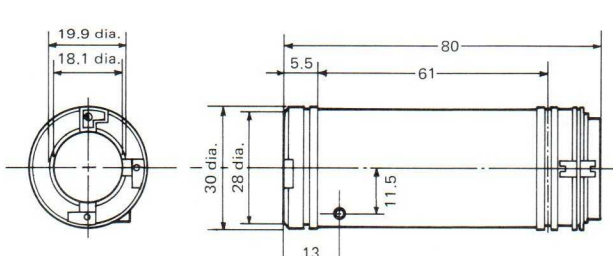
KV-16BG



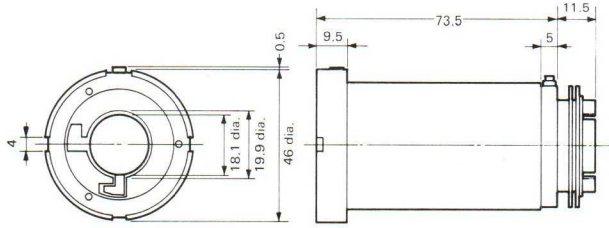
KV-22B KV-22C



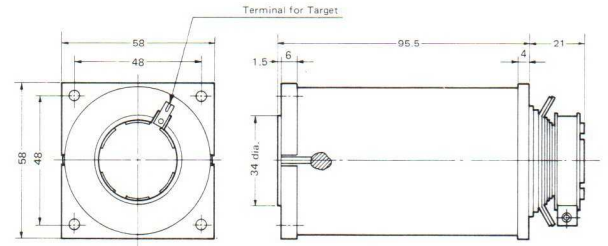
KV-19G



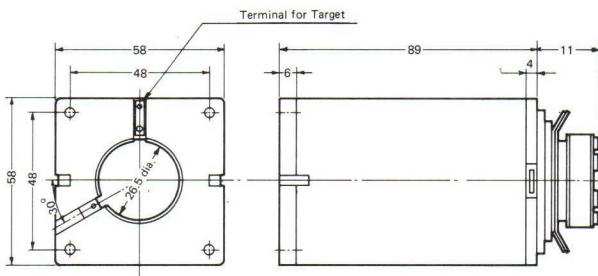
KV-19JA



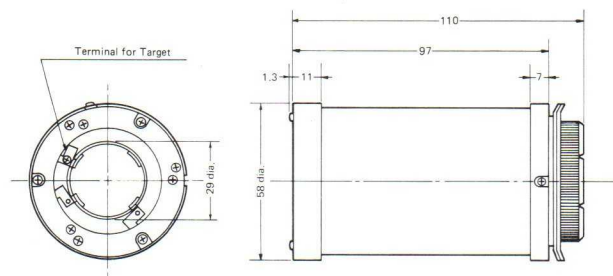
KV-9G KV-9L



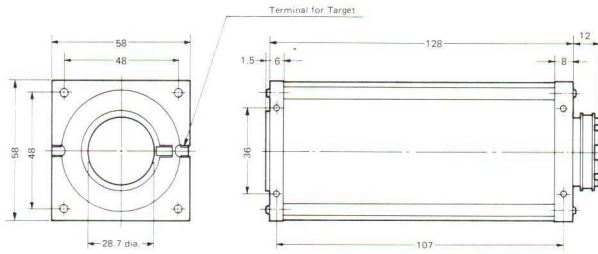
KV-10



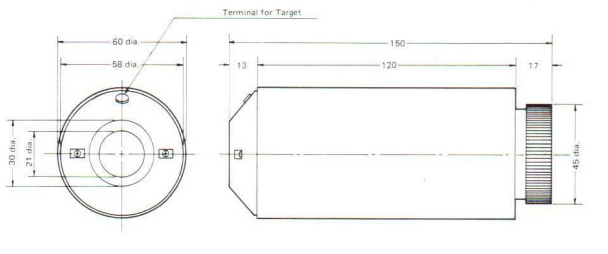
KV-13J



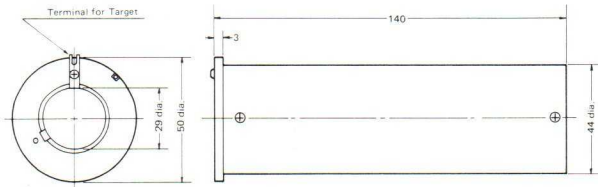
KV-8L



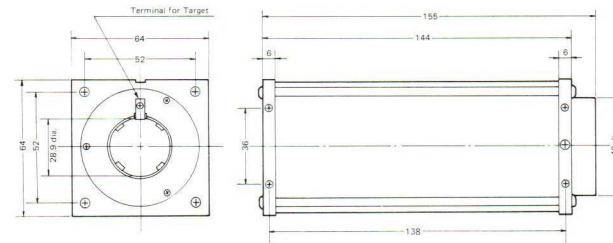
KV-8G

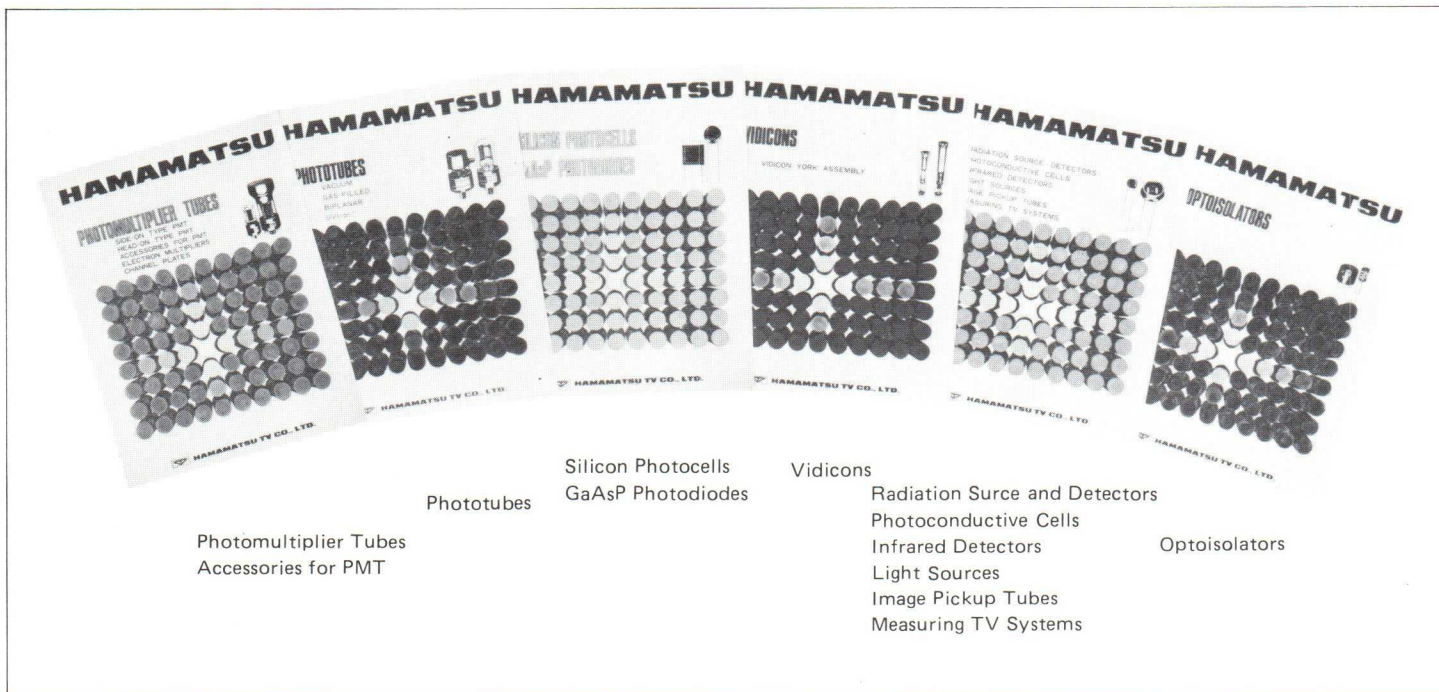


KV-6A



KV-14CA





Photomultiplier Tubes  
Accessories for PMT

Phototubes

Silicon Photocells  
GaAsP Photodiodes

Vidicons

Radiation Source and Detectors  
Photoconductive Cells  
Infrared Detectors  
Light Sources  
Image Pickup Tubes  
Measuring TV Systems

Optoisolators

FOR OTHER HAMAMATSU PRODUCTS INFORMATION, OUR LATEST CATALOGS ILLUSTRATED ABOVE ARE AVAILABLE ON REQUEST.



**HAMAMATSU**

**HAMAMATSU TV CO., LTD**

1126-1 Ichino-cho, Hamamatsu, Japan  
Phone: (0534) 34-3311 Telex: 04225-185  
Azabudai Building 6F  
2-2-1 Azabudai, Minatoku, Tokyo, Japan  
Phone: (03) 584-4931

**HAMAMATSU CORPORATION**

120 Wood Avenue, Middlesex, N.J. 0884C U.S.A.  
Phone: (201) 469-6640 Telex: 833-403  
(WESTERN U.S.A. OFFICE)  
2680 Bayshore Frontage Road  
Mountain View, Calif. 94043 U.S.A.  
Phone: (415) 965-2300 Telex: 345594

*FOR MEASURING TV SYSTEMS.*

**HAMAMATSU SYSTEMS INC.**

332 Second Avenue, Waltham, Mass. 02154 U.S.A.  
Phone: (617) 890-3440

**HAMAMATSU TELEVISION EUROPA GMBH**

Mühlbachstrasse 20, Postfach 23  
D-8031 Seefeld/Hechendorf, F.R. Germany  
Phone: (08152) 7771 Telex: 527719 SEMUR D

*EUROPIAN SALES REPRESENTATIVES*

**HAKUTO INTERNATIONAL (UK) LTD.**

Hakuto House  
557-563 Rayleigh Road, Leigh-on-Sea,  
Essex SS9 5HP England  
Phone: (0702) 526622 Telex: 99353

**INTER COMPOSANTS**

9, Impasse des Petits Marais  
92230 Port de Gennevilliers, France  
Phone: 773. 19.80+ Telex: 610584

**MESS-U. REGELTECHNIK**

Seefeld/Hechendorf  
Mühlbachstrasse 20 Postfach 23, F.R. Germany  
Phone: (08152) 7771 Telex: 527719

**INSTRUMENT AB LAMBDA**

Postbox 27023  
S-102 51 Stockholm 27 Sweden  
Phone: 08-63 14 70 Telex: 10645

**HESA S.P.A.**

Viale Teodorico 25 Milano 20149 Italy  
Phone: (02) 34. 91. 693 Telex: 37219