SYLVANIA TYPE 17CLP4

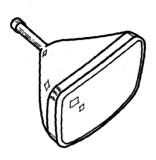
Silver Screen "85"

Television Picture Tube

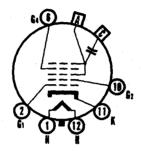
17" Direct Viewed Rectangular Glass Type Spherical Faceplate Gray Filter Glass

Aluminized Screen Electrostatic Focus 90° Magnetic Deflection Short Neck Tube

External Conductive Coating



GENERAL DATA



19-1

Focusing Method	Electrostatic Magnetic
Horizontal Diagonal Phosphor Fluorescence Persistence	85 Degrees 90 Degrees Aluminized P4 White Short to Medium
Faceplate. Light Transmittance (approx.)	Gray Filter Glass 74 Percent
ELECTRICAL DATA	
Direct Interelectrode Canacitances (approx.)	6.3 Volts 0.6 ± 5% Ampere 11 Seconds
Cathode to All Other Electrodes	5 μμf 6 μμf 2300 μμf Max. 1800 μμf Min.
Ion Trap MagnetEx	ternal, Single Field Type
MECHANICAL DATA	
Minimum Useful Screen Dimensions (Maximum Assured)	45% x 111% Inches 155% Inches 149 Sq. Inches J1-21 B6-63 12L
RATINGS	
MAXIMUM RATINGS (Absolute Maximum Value	·e)
Anode Voltage. Grid No. 4 Voltage (Focusing Electrode)550 Grid No. 2 Voltage.	
Negative Bias Value Negative Peak Value Positive Bias Value	155 Volts d c 220 Volts 0 Volts d c
Positive Peak Value Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed	2 Volts
15 Seconds. After Equipment Warm-up Period. Heater Positive with Respect to Cathode	450 Volts 200 Volts 206 Volts
SYLVANIA PICTURE T	UBEŠ

SYLVANIA TYPE 17CLP4 (Cont'd)

TYPICAL OPERATING CONDITIONS

Anode Voltage	14	.000	Volts d c
Grid No. 4 Voltage for Focus	-48 to -∔	-264	Volts of c
Out a No O Vallage	,	200	14.11. 3.
Grid No. 2 Voltage		300	Volts d c
Grid No. 1 Voltage Required for Cutoffs	_25 to	_72	Valte da
Cita_ito. i voitage itequited for Cuton	-30 10	-12	TOI IS U.U
Ion Trap Magnet Strength (approx.)		35	Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms Max.

- Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying four (4) times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three (3) times rated heater voltage divided by rated heater current.
 External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 17CNP4

Silver Screen "85"

TELEVISION PICTURE TUBE

17" Direct Viewed Rectangular Glass Type

Lightweight Tube Spherical Faceplate Gray Filter Glass

Aluminized Screen

Electrostatic Focus

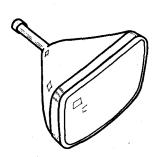
90° Magnetic Deflection Short Neck Tube

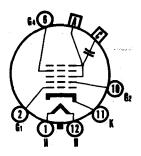
No Ion Trap

External Conductive Coating

Cathode Drive Design

Low Grid No. 2 Voltage





12-L

CHARACTERISTICS

GENERAL DATA	
Focusing Method	Electrostatic Magnetic
Horizontal	85 Degrees
_ Diagonal	90 Degrees
Phosphor	Aluminized P4 White
Persistence	Short to Medium
Faceplate	Gray Filter Glass
Light Transmittance (approx.)	77 Percent
ELECTRICAL DATA	
Heater Voltage	6.3 Volts
Heater Current	0.6 ± 5% Ampere
Heater Warm-up Time¹. Direct Interelectrode Capacitances (approx.)	11 Seconds
Cathode to All Other Electrodes	5 μμf
Grid No. 1 to All Other Electrodes	6 uuf
External Conductive Coating to Anode ²	1500 μμf Max. 1000 μμf Min.
MECHANICAL DATA	1000 μμι Ινίιιι.
Minimum Useful Screen Dimensions	
(Maximum Assured)	14¾ x 11¼ Inches
Nominal Overall Length	15 Inches
Minimum Useful Screen Area	155 Square Inches
Bulb Contact (Recessed Small Cavity Cap)	J132½ C or Equivalent
Base (Small Shell Duodecal 6-Pin)	B6-63
Basing	12L
Weight (approx.)	101/2 Pounds
RATINGS	
MAXIMUM RATINGS (Absolute Maximum Value	ues) ^ş
Anode Voltage	17,600 Volts d c
Grid No. 4 Voltage (Focusing Electrode)55	0 to +1100 Volts d c
Grid No. 2 Voltage	70 Voits a c
Positive Bias Value	150 Volts d c
Negative Peak Value	
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed	
15 Seconds	450 Volts
After Equipment Warm-up Period	200 Volts
Heater Positive with Respect to Cathode	200 Volts

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 17CNP4 (Cont'd)

TYPICAL OPERATING CONDITIONS'

Anode Voltage	14,000 Volts d c
Grid No. 4 Voltage for Focus	0 to +400 Volts d c
Grid No. 2 Voltage	50 Volts d c
Cathode Voltage Required for Cutoff4	35 to 50 Volts d c

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms Max.

- 1. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying four (4) times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three (3) times rated heater voltage divided by rated heater current.

 2. External conductive coating must be grounded.

 3. This type is designed for cathode-drive service. All voltages shown are positive with respect to Grid No. 1 Voltage, unless otherwise indicated.
- 4. For visual extinction of focused raster. Extinction of stationary focused spot will require that these values increase approximately 5 volts.

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

17CP4 (Cont'd)

CIRCUIT VALUES

1.5 Megohms Max Grid No. 1 Circuit Resistance.....

NOTES:

- Visual extinction of undeflected focused spot.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 30 foot lamberts on a 14% x 101% inch picture area.

WARNING

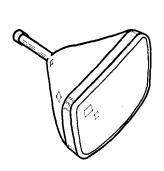
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

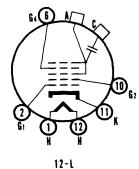
SYLVANIA TYPE 17FP4

TELEVISION PICTURE TUBE

17" Direct Viewed Rectangular Glass Type Gray Filter Glass **External Conductive Coating**

Magnetic Deflection **Electrostatic Focus** Spherical Faceplate Single Field Ion Trap





GENERAL DATA		
Focusing Method		Electrostatic Magnetic
Deflecting Angle (approx.) Horizontal Diagonal		65 Degrees 70 Degrees
Phosphor. Fluorescence Persistence		P4 White Medium
Faceplate		Gray Filter Glass 66 Percent
ELECTRICAL DATA		
Heater Voltage		6.3 Volts 0.6 Ampere
Cathode to All Other Electrodes. Grid No. 1 to All Other Electrodes. External Conductive Coating to Anode¹		5 μμf 6 μμf 750 μμf Μα
Ion Trap Magnet	External,	500 μμf Mi Single Field Typ

17FP4 (Cont'd)

MECHANICAL DATA

Minimum Useful Screen Dimensions	$\times 14\frac{1}{4}$	Inches
Bulb Contact (Recessed Small Cavity Cap)	J1-21	
Base (Small Shell Duodecal 6-Pin)	B6-63	
Basing	12L	

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage Grid No. 4 Voltage (Focusing Electrode) Grid No. 2 Voltage	5000	Volts d o Volts d o Volts d o
Grid No. 1 Voltage Negative Bias Value Positive Bias Value Positive Peak Value	0	Volts d o Volts d o Volts
Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed 15 Seconds After Equipment Warm-up Period Heater Positive with Respect to Cathode	410 150	Volts Volts Volts

RECOMMENDED OPERATING CONDITIONS

incommittees of Elizability Control of the Control of C	
Anode Voltage	Volts d c
Grid No. 3 Voltage	
Grid No. 2 Voltage	Volts d c
Grid No. 1 Voltage Required for Cutoff ² 33 to -77	
Ion Trap Magnet Strength (approx.)	Gausses

CIRCUIT VALUES

Grid No.	1 Circuit	Resistance	1.5 Megohms
			NA

NOTES:

- External conductive coating must be grounded.
 Visual extinction of undeflected focused spot.

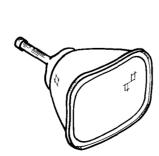
WARNING

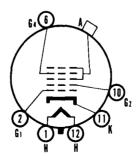
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 17GP4

TELEVISION PICTURE TUBE

17" Direct Viewed Magnetic Deflection Rectangular Metal Type **Electrostatic Focus** Frosted Gray Filter Glass Spherical Faceplate Single Field Ion Trap





12-M

17GP4 (Cont'd)

CHARACTERISTICS

GENERAL DATA		
Focusing Method Deflecting Method Deflecting Angle (approx.)		ostatic Inetic
Horizontal Diagonal	70 D	egrees egrees
Phosphor Fluorescence Persistence	w	⊃4 hite dium
Faceplate Frosted G Light Transmittance (approx.)	ray F	
ELECTRICAL DATA		
Heater Voltage Heater Current (approx.) Direct Interelectrode Capacitances (approx.)	0.6	Volts Ampere
Cathode to All Other Electrodes	5 6 ngle i	μμf μμf Field Type
MECHANICAL DATA		
Base (Small Shell Duodecal 6-Pin) B	8 x 10 letal (16-63 12M	11/16 Inches Cone Lip
RATINGS		
MAXIMUM RATINGS (Design Center Values)		
	5000	Volts d c Volts d c Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value	0	Volts d c Volts d c Volts
Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to		
Exceed 15 Seconds After Equipment Warm-up Period Heater Positive with Respect to Cathode	180	Volts Volts Volts
RECOMMENDED OPERATING CONDITIONS		
Grid No. 4 Voltage	3620 300	Volts d c
Grid_No. 1 Voltage Required for Cutoff ¹ —33 to lon Trap Magnet Strength (approx.)	0 −77 40	Volts d c Gausses
CIRCUIT VALUES		
Grid No. 1 Circuit Resistance	1.5	Megohms Max

1. Visual extinction of undeflected focused spot.

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

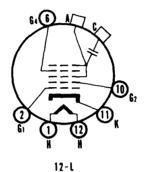
SYLVANIA TYPE 17HP4/17RP4 Silver Screen "85"→17HP4B

TELEVISION PICTURE TUBE

17" Direct Viewed
Rectangular Glass Type
Gray Filter Glass
External Conductive Coating
17HP4A has a Frosted Faceplate
17HP4B has an Aluminized Screen



GENERAL DATA



•

GENERAL SALVA		
Focusing Method Deflecting Method Deflecting Angle (approx.)		rostatic gnetic
Horizontal Diagonal Phosphor	70 D	egrees egrees P4
Fluorescence Fluorescence Peristence Faceplate	W Me	hite dium Iter Glass
Light Transmittance (approx.)		ercent
ELECTRICAL DATA		
Heater Voltage. Heater Current (approx.). Direct Interelectrode Capacitances (approx.)		Volts Ampere
Cathode to All Other Electrodes	6	μμf μμf
External Conductive Coating to Anodel	1500 750	
Ion Trap MagnetExternal	, Single	Field Type
MECHANICAL DATA Minimum Useful Screen Dimensions Bulb Contact (Recessed Small Cavity Cap) Base (Small Shell Duodecal 6-Pin) Basing	J1-21 B6-63	41/4 Inches
RATINGS		
MAXIMUM RATINGS (Design Center Values)		
Anode Voltage Grid No. 4 (Focusing Electrode) Voltage500 to Grid No. 2 Voltage Grid No. 1 Voltage	+1000	Volts d c Volts d c Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value	0	Volts d c Volts d c Volts
Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to		
Exceed 15 Seconds		Volts Volts
Heater Positive with Respect to Cathode		Volts

17HP4/17RP4, 17HP4B (Cont'd)

RECOMMENDED OPERATING CONDITIONS

Anode Voltage	Volts d c
Grid No. 4 Voltage	Volts d c
Grid No. 2 Voltage	Volts d c
Grid No. 1 Voltage Required for Cutoff228 to -72	Volts d c
Ion Trap Magnet Field Strength (approx.)	Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

17HP4A

The Sylvania Type 17HP4A is identical to Type 17HP4 except for having a frosted faceplate.

17HP4B

The Sylvania Type 17HP4B is identical to Type 17HP4 except for having an aluminized screen.

17RP4

The Sylvania Type 17RP4 is identical to Type 17HP4.

WARNING

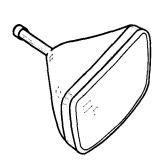
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

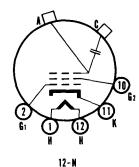
SYLVANIA TYPE 17JP4

TELEVISION PICTURE TUBE

17" Direct Viewed Rectangular Glass Type Gray Filter Glass **External Conductive Coating**

Magnetic Deflection Magnetic Focus Spherical Faceplate Single Field Ion Trap





17 JP4 (Cont'd)

CHARACTERISTICS

CHARACIERIOTICS	
GENERAL DATA	
Focusing Method. Deflecting Method. Deflecting Angle	Magnetic Magnetic
Horizontal Diagonal Phosphor	65 Degrees 70 Degrees P4
Fluorescence Persistence Faceplate	White Medium
Light Transmittance (approx.)	66 Percent
ELECTRICAL DATA	
Heater Voltage Heater Current (approx.) Direct Interelectrode Capacitances (approx.) Cathode to All Other Electrodes.	6.3 Volts 0.6 Ampere 5 μμf
Grid No. 1 to All Other Electrodes. External Conductive Coating to Anode1	5 μμ1 6 μμf 750 μμf Max
Ion Trap Magnet External	500 μμf Min
	, orngro i lota i ypo
MECHANICAL DATA Minimum Useful Screen Dimensions Bulb Contact (Recessed Small Cavity Cap) Base (Small Shell Duodecal 5-Pin) Basing	141/4 × 103/4 Inches J1-21 B5-57 12N
RATINGS	
MAXIMUM RATINGS (Design Center Values)	
Anode Voltage	18000 Volts d c
Grid No. 2 Voltage Grid No. 1 Voltage Negative Bias Value	125 Volts d c
Positive Bias Value Positive Peak Value Peak Heater-Cathode Voltage	0 Volts d c 2 Volts
Heater Negative with Respect to Cathode During Warm-up Period Not to	
Exceed 15 Seconds. After Equipment Warm-up Period Heater Positive with Respect to Cathode	410 Volts 150 Volts 150 Volts
RECOMMENDED OPERATING CONDITIONS	
Anode Voltage	300 Volts d.c.
Grid No. 1 Voltage Required for Cutoff ² 33 Focusing Coil Current (approx.) ³ lon Trap Magnet Field Strength (approx.)	100 Ma d c 35 Gausses
CIRCUIT VALUES	
Grid No. 1 Circuit Resistance	1.5 Megohms Max
NOTES:	· · · · · · · · · · · · · · · · · · ·
External conductive coating must be grounded. Visual extinction of undeflected focused and.	

External conductive coating must be grounded.
 Visual extinction of undeflected focused spot.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 20 foot lamberts on a 10¾ x 14¼ inch picture area.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 17LP4/17VP4 Silver Screen "85"→17LP4A

TELEVISION PICTURE TUBE

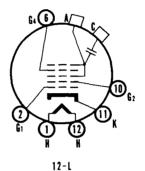
17" Direct Viewed
Rectangular Glass Type
Gray Filter Glass
External Conductive Coating

Magnetic Deflection
Electrostatic Focus
Cylindrical Faceplate
Single Field Ion Trap

17LP4A has an Aluminized Screen



GENERAL DATA



12

GENERAL DATA		
Focusing Method		rostatic gnetic
Horizontal Diagonal D	70 D	egrees Jegrees
Phosphor Fluorescence Persistence Faceplate Light Transmittance (approx.)	Me Gray Fi	P4 hite dium liter Glass ercent
ELECTRICAL DATA		
Heater Voltage. Heater Current (approx.). Direct Interelectrode Capacitances (approx.)		Volts Ampere
Cathode to All Other Electrodes	6 1500	μμf μμf μμf Max μμf Min
Ion Trap MagnetExternal,	750 Single	μμτ ΙνίΙη Field Type
MECHANICAL DATA		
Minimum Useful Screen Dimensions. Bulb Contact (Recessed Small Cavity Cap). Base (Small Shell Duodecal 6-Pin). Basing.	J1-21	41/4 Inches
RATINGS		
MAXIMUM RATINGS (Design Center Values)		
Anode Voltage. Grid No. 4 (Focusing Electrode) Voltage500 to Grid No. 2 Voltage. Grid No. 1 Voltage	+1000	Volts d c Volts d c Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value	0	Volts d c Volts d c Volts
Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to	410	Volts
Exceed 15 Seconds. After Equipment Warm-up Period. Heater Positive with Respect to Cathode	180	Volts Volts

17LP4/17VP4, 17LP4A (Cont'd)

RECOMMENDED OPERATING CONDITIONS

Anode Voltage) Volts d c
Grid No. 4 Voltage56 to +310	Volts d c
Grid No. 2 Voltage) Voits d c
Grid No. 1 Voltage Required for Cutoff ² 28 to -7:	2 Volts d c
Ion Trap Magnet Strength (approx.)	Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms

NOTES:

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

17LP4A

The Sylvania Type 17LP4A is identical to the Type 17LP4 except for having an aluminized screen.

17VP4

The Sylvania Type 17VP4 is identical to Type 17LP4.

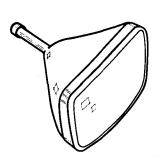
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

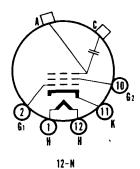
SYLVANIA TYPE 17QP4 17QP4A

TELEVISION PICTURE TUBE

17" Direct Viewed Rectangular Glass Type **Gray Filter Glass**

Magnetic Deflection Magnetic Focus Cylindrical Faceplate External Conductive Coating Single Field Ion Trap 17QP4A has an Aluminized Screen





17QP4, 17QP4A (Cont'd)

CHARACTERISTICS

GENERAL DATA		
Focusing Method Deflecting Method Deflecting Angle (approx.)		gnetic gnetic
Horizontal Diagonal Phesphor	70 E	egrees Jegrees P4
Fluorescence Persistence Faceplate	Mε	hite dium ilter Glass
Light Transmittance (approx.)	72 P	ercent
ELECTRICAL DATA		
Heater Voltage. Heater Current (approx.). Direct Interelectrode Capacitances (approx.)	0.6	Volts Ampere
Cathode to All Other Electrodes	6	μμf μμf
External Conductive Coating to Anode1	1500 750	uuf Mir
Ion Trap Magnet External,	Single	Field Type
MECHANICAL DATA		
Minimum Useful Screen Dimensions	J1-21	Inches
RATINGS		
MAXIMUM RATINGS (Design Center Values)		
Anode Voltage Grid No. 2 Voltage Grid No. 1 Voltage		Volts d c Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value	0	Volts d c Volts d c Volts
Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to	~	• 0113
Exceed 15 Seconds After Equipment Warm-up Period Heater Positive with Respect to Cathode.	150	Volts Volts Volts
RECOMMENDED OPERATING CONDITIONS		
Anode Voltage. Grid No. 2 Voltage. Grid No. 1 Voltage Required for Cutoff ² 2i Focusing Coil Current (approx.)	300 3 to -72 95	Ma dc
Ion Trap Magnet Strength (approx.)	30	Gausses
Grid No. 1 Circuit Resistance	1.5	Megohms Max
NOTES:		

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 20 foot lamberts on a 10¾ x 14¼ inch picture area.

The Sylvania Type 17QP4A is identical to the Type 17QP4 except for having an aluminized screen, and a maximum anode voltage rating of 18,000 volts instead of 16,000 volts.

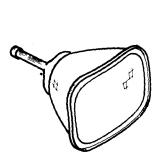
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

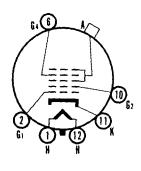
SYLVANIA TYPE 17TP4

TELEVISION PICTURE TUBE

17" Direct Viewed Rectangular Metal Type Elect Frosted Gray Filter Glass Sphe Single Field Ion Trap

Magnetic Deflection Electrostatic Focus Spherical Faceplate





12-M

0131101100	
GENERAL DATA	
	rostatic gnetic
Horizontal 66 Diagonal 70 D	Degrees Degrees P4
Fluorescence W. Persistence Me	/hite sdium
FaceplateFrosted Gray F Light Transmittance (approx.)	'ercent
ELECTRICAL DATA	
Heater Current (approx.)	Volts Ampere
Cathode to All Other Electrodes	μμf μμf Field Type
MECHANICAL DATA	
Minimum Useful Screen Dimensions.143% x 10Bulb Contact.Metal CBase (Small Shell Duodecal 6-Pin)B6-63Basing.12M	1½ Inches one Lip
RATINGS	
MAXIMUM RATINGS (Design Center Values)	
Anode Voltage 16000 Grid No. 4 Voltage (Focusing Voltage) -500 to +1000 Grid No. 2 Voltage 500 Grid No. 1 Voltage 500	Volts d c Volts d c Volts d c
Negative Bias Value 125 Positive Bias Value 0 Positive Peak Value 2	Volts d c Volts d c Volts
Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to	
After Equipment Warm-up Period	Volts Volts Volts
RECOMMENDED OPERATING CONDITIONS	
Anode Voltage 14000 Grid No. 4 Voltage -55 to +300 Grid No. 2 Voltage 300 Grid No. 1 Voltage Required for Cutoff! 33 to 7	Volts d c Volts d c Volts d c
Ion Trap Magnet Strength (approx.)	Gausses

17TP4 (Cont'd)

CIRCUIT VALUES

NOTE

1. Visual extinction of undeflected focused spot.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 17YP4

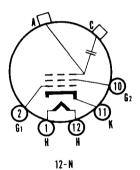
TELEVISION PICTURE TUBE

17" Direct Viewed Rectangular Glass Type Gray Filter Glass

Gray Filter Glass Cylindrical Faceplate External Conductive Coating Single Field Ion Trap

Magnetic Deflection Magnetic Focus Cylindrical Faceplate Single Field Ion Trap





GENERAL DATA	
Focusing Method	Magnetic
Deflecting Method	Magnetic
Deflecting Angle (approx.) Horizontal Diagonal Phosphor Fluorescence Persistence Faceplate Light Transmittance (approx.)	65 Degrees 70 Degrees P4 White Medium Gray Filter Glass 72 Percent
ELECTRICAL DATA	
Heater VoltageHeater Current (approx.)	6.3 Volts 0.6 Ampere
Cathode to All Other Electrodes. Grid No. 1 to All Other Electrodes External Conductive Coating to Anode¹	5 μμf 6 μμf 750 μμf Μαχ
Ion Trap MagnetExternal	500 μμf Min , Single Field Type
MECHANICAL DATA	
Minimum Useful Screen Dimensions Bulb Contact (Recessed Small Cavity Cap) Base (Small Shell Duodecal 5-Pin) Basing	10¾ x 14¼ Inches J1-21 B5-57 12N

17YP4 (Cont'd)

RATINGS

MAXIMUM RATINGS (Design Center Values)		
Anode Voltage Grid No. 2 Voltage Grid No. 1 Voltage		Volts d c Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value Peak Heater-Cathode Voltage	0	Volts d c Volts d c Volts
Heater Negative with Respect to Cathode During Warm-up Period Not to		
Exceed 15 Seconds		Volts
After Equipment Warm-up Period		Volts Volts
neater Positive with nespect to Cathode	150	Voits
RECOMMENDED OPERATING CONDITIONS		
Anode Voltage Grid No. 2 Voltage Grid No. 1 Voltage Required for Cutoff ² 33 Focusing Coil Current (approx.) ³ Ion Trap Magnet Strength (approx.)	300 to -77 100	Volts d c Volts d c Volts d c Ma d c Gausses
CIRCUIT VALUES Grid No. 1 Circuit Resistance	1.5	Megohms
NOTES:		Max

- External conductive coating must be grounded.
 Visual extinction of undeflected focused spot.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 20 foot lamberts on a 10¾ x 14¼ inch picture area.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 19AP4 19AP4A 19AP4B 19AP4C 19AP4D

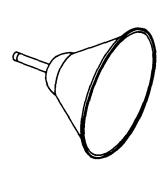
TELEVISION PICTURE TUBE

19" Direct Viewed Round Metal Type Clear Faceplate

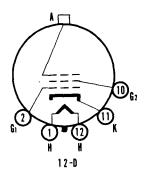
Magnetic Deflection Magnetic Focus Spherical Faceplate

Single Field Ion Trap

19AP4A has a Gray Filter Glass Faceplate 19AP4B has a Frosted Gray Filter Glass Faceplate 19AP4C has a Frosted Gray Filter Glass Faceplate and an Aluminized Screen 19AP4D has a Frosted Faceplate



GENERAL DATA



Focusing Method. Deflecting Method. Deflecting Angle (approx.) Phosphor. Fluorescence Persistence Faceplate.	Magnetic Magnetic 66 Degrees P4 White Medium Clear
ELECTRICAL DATA	
Heater Voltage. Heater Current (approx.) Direct Interelectrode Capacitances (approx.) Cathode to All Other Electrodes. Grid No. 1 to All Other Electrodes. Ion Trap Magnet. External,	6.3 Volts 0.6 Ampere 5 $\mu\mu$ f 7 $\mu\mu$ f Single Field Typ
MECHANICAL DATA	
Minimum Useful Screen Diameter Bulb Contact Base (Small Shell Duodecal 5-Pin). Basing.	173/8 Inches Metal Cone Lip B5-57 12D

19AP4, 19AP4A, 19AP4B, 19AP4C, 19AP4D (Cont'd)

RATINGS

MAXIMUM RATINGS (Design Center Values)		
Anode Voltage. Grid No. 2 Voltage. Grid No. 1 Voltage		Volts d c Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode	Ó	Volts d c Volts d c Volts
During Warm-up Period Not to Exceed 15 Seconds. After Equipment Warm-up Period. Heater Positive with Respect to Cathode	150	Volts Volts Volts
RECOMMENDED OPERATING CONDITIONS		
Anode Voltage. Grid No. 2 Voltage. Grid No. 1 Voltage Required for Cutoff!33 Focusing Coil Current (approx.)². Ion Trap Magnet Strength (approx.)	300 to -77 115	Volts d c Volts d c Volts d c Ma d c Gausses
CIRCUIT VALUES		
Grid No. 1 Circuit Resistance	1.5	Megohms Max

NOTES:

- Visual extinction of undeflected focused spot.
 For JETEC focusing coil 106 or equivalent three inches from reference line, bias adjusted to 20 foot lamberts on a 15% x 11% inch picture area.

19AP4A

The Sylvania Type 19AP4A is identical to the Type 19AP4 except for having a gray filter glass faceplate.

The Sylvania Type 19AP4B is identical to the Type 19AP4 except for having a frosted gray filter glass faceplate.

The Sylvania Type 19AP4C is identical to the Type 19AP4 except for having a frosted gray filter glass faceplate and an aluminized screen.

The Sylvania Type 19AP4D is identical to the Type 19AP4 except for having a frosted faceplate.

WARNING

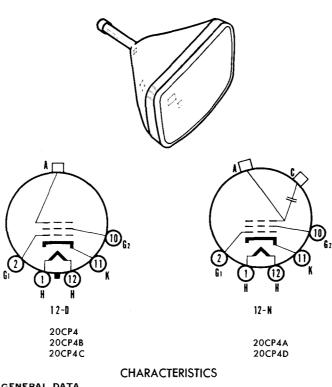
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 20CP4
20CP4A
Silver Screen "85" > 20CP4B
20CP4C
Silver Screen "85" > 20CP4D

TELEVISION PICTURE TUBE

20" Direct Viewed
Rectangular Glass Type
Gray Filter Glass
Single Field Ion Trap
20CP4A has an External Conductive Coating
20CP4B has an Aluminized Screen
20CP4C has a Frosted Faceplate
20CP4D has an External Conductive Coating and

an Aluminized Screen



GENERAL DATA	
Focusing Method	Magnetic Magnetic
Deflecting Angle (approx.)	_
Horizontal	
Diagonal	70 Degrees
PhosphorFluorescence	
Persistence	
Faceplate	Gray Filter Glass
Light Transmittance (approx.)	73 Percent

20CP4, 20CP4A, 20CP4B 20CP4C, 20CP4D (Cont'd)

ELECTRICAL DATA

Heater Voltage	6.3 Volts
Heater Current (approx.)	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	•
Cathode to All Other Electrodes	
Grid No. 1 to All Other Electrodes	6 μμf
Ion Trap MagnetExternal,	Single Field Type

MECHANICAL DATA

Minimum Useful Screen Dimensions		Inches
Bulb Contact (Recessed Small Cavity Cap)		
Base (Small Shell Duodecal 5-Pin)	B5-57	
Basing	12 D	

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage	18000 Volts d c
Grid No. 2 Voltage	410 Volts d c
Grid No. 1 Voltage	
Negative Bias Value	125 Volts d c
Positive Bias Value	0 Volts d c
Positive Peak Value	2 Volts
Heater Negative with Respect to Cathode	
During Warm-up Period Not to	
Exceed 15 Seconds	410 Volts
After Equipment Warm-up Period	150 Volts
Heater Positive with Respect to Cathode	150 Volts

RECOMMENDED OPERATING CONDITIONS

Anode Voltage	16,000	Volts d c
Grid No. 2 Voltage	300	Volts d c
Grid No. 1 Voltage Required for Cutoff33	to -77	Volts d c
Focusing Coil Current (approx.)2	110	Ma dc
Ion Tran Magnet Strength (approx.)	35	Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Megohms
	Max

NOTES:

- Visual extinction of undeflected focused spot.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 20 foot lamberts on a 12¾ x 17 inch picture area.

20CP4A

The Sylvania Type 20 CP4A is identical to the Type 20 CP4 except for having an external conductive coating which must be grounded.

External Conductive Coating to Anode Capacitance	
Maximum	750 μμf
Minimum	500 μμf
Basing	12N

20CP4B

The Sylvania Type 20CP4B is identical to the Type 20CP4 except for having an aluminized screen.

20CP4C

The Sylvania Type 20 CP4C is identical to the Type 20 CP4 except for having a frosted faceplate.

20CP4D

The Sylvania Type 20 CP4D is identical to the Type 20 CP4 except for having an external conductive coating which must be grounded, and an aluminized screen.

External Conductive Coating to Anode Capacitance	
Maximum	750 μμf
Winimum	500 μμf
Basing	12 N

WARNING

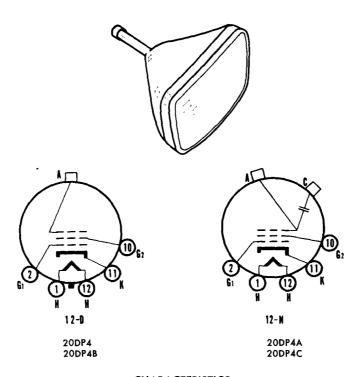
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 20DP4A
20DP4A
Silver Screen "85"→20DP4B
Silver Screen "85"→20DP4C

TELEVISION PICTURE TUBE

20" Direct Viewed Rectangular Glass Type Gray Filter Glass Magnetic Deflection Magnetic Focus Spherical Faceplate

Single Field Ion Trap
20DP4A has an External Conductive Coating
20DP4B has an Aluminized Screen
20DP4C has an External Conductive Coating and
an Aluminized Screen



GENERAL DATA	
Focusing Method	Magnetic
Deflecting Method	Magnetic
Deflecting Angle (approx.)	
Horizontal	66 Degrees
Diagonal	70 Degrees
Phosphor	P4
Fluorescence	
Persistence	
Faceplate	
Light Transmittance (approx.)	73 Percent

20DP4, 20DP4A, 20DP4B, 20DP4C (Cont'd)

ELECTR	ICAL	DA.	ГΑ
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Heater Voltage	6.3 Volts
Heater Current (approx.)	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes	5 μμf
Grid No. 1 to All Other Electrodes	6 μμf
Grid No. 1 to All Other Electrodes	Single Field Type

MECHANICAL DATA

Minimum Useful Screen Dimensions		Inches
Bulb Contact (Recessed Small Cavity Cap)	J1-21	
Base (Small Shell Duodecal 5-Pin)	B5-57	
Basing	12 D	

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage	18000 Volts d c	
Grid No. 2 Voltage	410 Volts d c	
Grid No. 1 Voltage		
Negative Bias Value		
Positive Bias Value		
Positive Peak Value	2 Volts	
Peak Heater-Cathode Voltage		
Heater Negative with Respect to Cathode		
During Warm-up Period Not to		
Exceed 15 Seconds	410 Volts	
After Equipment Warm-up Period	180 Volts	
Heater Positive with Respect to Cathode	180 Volts	

RECOMMENDED OPERATING CONDITIONS

Anode Voltage	O Volts d c
	0 Volts d.c.
Grid No. 1 Voltage Required for Cutoff1	2 Volts d c
Focusing Coil Current (approx.)29	5 Madc
Ion Trap Magnet Strength (approx.)	5 Gausses

CIRCUIT VALUES	
Grid No. 1 Resistance	1.5 Megohms Max

- Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 20 foot lamberts on a 12¾ x 17 inch picture area.

20DP4A

The Sylvania Type 20DP4A is identical to Type 20DP4 except for the addition of an External Conductive Coating which must be grounded.

External Conductive Coating to Anode Capacitance	
Maximum	750 μμf
Minimum	500 μμf
Basing	12 N

The Sylvania Type 20DP4B is identical to Type 20DP4 except for having an aluminized screen.

20DP4C

The Sylvania Type 20DP4C is identical to Type 20DP4 except for the addition of an External Conductive Coating which must be grounded, and an aluminized

External Conductive Coating to Anode Capacitance	
Maximum	750 µµf
Minimum	500 μμf
Basing	12 N

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Anode Rated Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 20HP4 20HP4A/20LP4 20HP4B

Silver Screen "85"→20HP4C

Silver Screen "85"→ 20HP4D

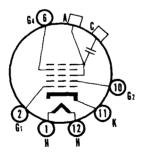
TELEVISION PICTURE TUBE

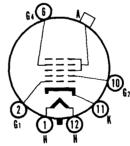
20" Direct Viewed Rectangular Glass Type Gray Filter Glass

Magnetic Deflection Electrostatic Focus Spherical Faceplate

Single Field Ion Trap
20HP4A has an External Conductive Coating
20HP4B has a Frosted Faceplate
20HP4C has an Aluminized Screen
20HP4D has an External Conductive Coating and
an Aluminized Screen







12-L

20HP4A/20LP4 20HP4D 12-M

20HP4B 20HP4C

CHARACTERISTICS

GENERAL DATA Focusing Method Electrostatic Deflecting Method Magnetic Deflecting Angle (approx.) 6 Horizontal 70 Degrees Diagonal 70 Degrees Phosphor P4 Fluorescence White Persistence Medium Faceplate Gray Filter Glass Light Transmittance (approx.) 73 Percent

20HP4, 20HP4A/20LP4, 20HP4B, 20HP4C, 20HP4D (cont'd)

ELECTRICAL DATA

Heater Voltage	6.3 Volts
Heater Current (approx.)	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes	5 μμf
Grid No. 1 to All Other Electrodes	6 μμf
Grid No. 1 to All Other Electrodes	Single Field Type

MECHANICAL DATA

Minimum Useful Screen Dimensions	123/4 x 17 Inches
Bulb Contact (Recessed Small Cavity Cap)	J1-21
Base (Small Shell Duodecal 6-Pin)	
Basing	

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage	000	Volts d c
	0	Volts d c Volts d c Volts
Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed 15 Seconds	180	Volts Volts Volts

RECOMMENDED OPERATING CONDITIONS

Anode Voltage	Volts d c
Grid No. 4 Voltage56 to +310	Volts d c
Grid No. 2 Voltage	
Grid No. 1 Voltage Required for Cutoff128 to -72	Volts d c
Ion Trap Magnet Strength (approx.)	Gausses

CIRCUIT VALUES

arid No	. 1 Circuit	Resistance	1.5 Megohms May

NOTE:

 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

20HP4A/20LP4

The Sylvania Type 20HP4A is identical to Type 20HP4 except for having an external conductive coating which must be grounded. The Sylvania Type 20LP4 is identical to the Sylvania Type 20HP4A.

External Conductive Coating to Anode Capacitance	
Maximum	1500 uuf
Minimum	750 µµf
Basing	12L

20HP4B

The Sylvania Type 20HP4B is identical to Type 20HP4 except for having a frosted faceplate.

20HP4C

The Sylvania Type 20HP4C is identical to Type 20HP4 except for having an aluminized screen.

20HP4D

The Sylvania Type 20HP4D is identical to the Type 20HP4 except for having an external conductive coating which must be grounded, and an aluminized screen.

External Conductive Coating to Anode Capacitance	
Maximum	1500 uuf
Minimum	750 µµf
Basing	12L

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

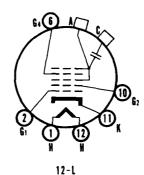
SYLVANIA TYPE 20MP4

TELEVISION PICTURE TUBE

20" Direct Viewed Rectangular Glass Type Gray Filter Glass Spherical Faceplate External Conductive Coating Single Field Ion Trap

Magnetic Deflection Electrostatic Focus





GENERAL DATA	
Focusing Method Deflecting Method Deflecting Angle (approx.)	Electrostatic Magnetic
Horizontal. Diagonal Phosphor	66 Degrees 70 Degrees P4
Fluorescence Persistence Faceplate Light Transmittance (approx.)	White Medium Gray Filter Glass 66 Percent
ELECTRICAL DATA	
Heater Voltage	6.3 Volts 0.6 Ampere
Cathode to All Other Electrodes. Grid No. 1 to All Other Electrodes. External Conductive Coating to Anode ¹ .	5 μμf 6 μμf 750 μμf Max
Ion Trap MagnetExternal	500 μμf Min Single Field Type
MECHANICAL DATA	
Minimum Useful Screen Dimensions. Bulb Contact (Recessed Small Cavity Cap). Base (Small Shell Duodecal 6-Pin). Basing.	J1-21 B6-63
RATINGS	
MAXIMUM RATINGS (Design Center Values)	
Anode Voltage Grid No. 4 Voltage (Focusing Voltage)500 to Grid No. 2 Voltage Grid No. 1 Voltage	16000 Volts d c +1000 Volts d c 500 Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value	125 Volts d c 0 Volts d c 2 Volts
Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to	
Exceed 15 Seconds. After Equipment Warm-up Period Heater Positive with Respect to Cathode	410 Volts 180 Volts 180 Volts
	100 40113
RECOMMENDED OPERATING CONDITIONS	
Anode Voltage	to +300 Volts d c 300 Volts d c 3 to -77 Volts d c
ion risk magnet oriength (approxi/	TO Claussos

20MP4 (Cont'd)

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms

- External conductive coating must be grounded.
 Visual extinction of undeflected focused spot.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21ACP4/21AMP4 Silver Screen "85"→21ACP4A/21AMP4A

TELEVISION PICTURE TUBE

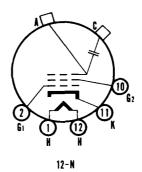
21" Direct Viewed Rectangular Glass Type

Gray Filter Glass External Conductive Coating Single Field Ion Trap

Magnetic Deflection Magnetic Focus Spherical Faceplate

21ACP4A/21AMP4A has an Aluminized Screen





CHARACTERISTICS

GENERAL DATA

Focusing Method	Magnetic Magnetic
Horizontal	85 Degrees
_ Diagonal	90 Degrees
Phosphor	P4
Fluorescence	White
PersistenceFaceplate	Medium Gray Filter Glass
Light Transmittance (approx.)	71 Percent

ELECTRICAL DATA

ELECTRICAL DATA	
Heater Voltage	6.3 Volts
Heater Current (approx.)	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	•
Cathode to All Other Electrodes	5 μμf
Grid No. 1 to All Other Electrodes	6 μμf
External Conductive Coating to Anode1	750 μμf Max
· · · · · · · · · · · · · · · · · · ·	500 μμf Min
Ion Trap Magnet External,	Single Field Type

21ACP4/21AMP4 21ACP4A/21AMP4A (Cont'd)

MECHANICAL DATA

Minimum Useful Screen Dimensions	1/8 x 15	Inches
Bulb Contact (Recessed Small Cavity Cap)		
Base (Small Shell Duodecal 5-Pin)	B5-57	
Basing	12 N	

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage Grid No. 2 Voltage Grid No. 1 Voltage		
Negative Bias Value	0	Volts d c Volts d c
Positive Peak ValuePeak Heater-Cathode Voltage	2	Volts
Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed 15 Seconds.	410	Volts
After Equipment Warm-up Period		Volts Volts

RECOMMENDED OPERATING CONDITIONS

Anode Voltage		
Grid No. 2 Voltage	300	Volts d c
Grid No. 1 Voltage Required for Cutoff ²	to -72	Volts d c
Focusing Coil Current (approx.)3100	$\pm 20\%$	Ma dc
Ion Trap Magnet Strength (approx.)	35	Gausses

CIRCUIT VALUES

Grid No. 1 Circui	t Resistance	1.5 Megohms
		Max

NOTES:

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of the stationary focused spot will require that these values be about 5 volts more negative.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 20 foot lamberts on a 191/8 x 15 inch picture area.

21ACP4A/21AMP4A

The Sylvania Type 21ACP4A/21AMP4A is identical to the Type 21ACP4/-21AMP4 except for having an aluminized screen.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

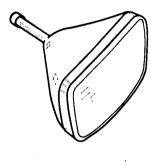
SYLVANIA TYPE 21AFP4 21YP4 Silver Screen "85"→21YP4A

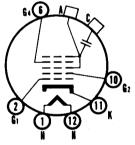
TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type Gray Filter Glass Magnetic Deflection Electrostatic Focus Spherical Faceplate

Single Field Ion Trap

21YP4 has an External Conductive Coating
21YP4A has an External Conductive Coating and
an Aluminized Screen





12-L

12-M

21YP4 21YP4A 21AFP4

CHARACTERISTICS

GENERAL DATA	
Focusing Method	Electrostatic Magnetic
Deflecting Angle (approx.) Horizontal Diagonal	65 Degrees 70 Degrees
Phosphor. Fluorescence	P4 White
Persistence. Faceplate	Medium
Light Transmittance (approx.)	72 Percent
ELECTRICAL DATA	
Heater Voltage	6.3 Volts
Heater Current (approx.)	0.6 Ampere
Direct Interelectrode Capacitances (approx.) Cathode to All Other Electrodes	5 μμf
Grid No. 1 to All Other Electrodes	6 μμf , Single Field Type

SYLVANIA PICTURE TUBES

21AFP4, 21YP4, 21YP4A (Cont'd)

MECHANICAL DATA	
Minimum Useful Screen Dimensions	½ x 14¾ ₆ Inches J1-21 B6-63 12M
RATINGS	
MAXIMUM RATINGS (Design Center Values)	
Anode Voltage500 to - Grid No. 4 (Focusing Electrode) Voltage500 to - Grid No. 2 Voltage	18000 Volts d c +1000 Volts d c 500 Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode	125 Volts d c 0 Volts d c 2 Volts
During Warm-up Period Not to Exceed 15 Seconds After Equipment Warm-up Period Heater Positive with Respect to Cathode	410 Volts 180 Volts 180 Volts
RECOMMENDED OPERATING CONDITIONS	40000 M-H1 -
Anode Voltage	+350 Volts d c 300 Volts d c to -72 Volts d c
CIRCUIT VALUES	
Grid No. 1 Circuit Resistance	1.5 Megohms Max
NOTES: 1. Visual extinction of focused raster. Extinction of the st spot will require that these values be about 5 volts more ne	ationary focused
21YP4	
The Sylvania Type 21 YP4 is identical to Type 21AFP4 exce external conductive coating, which must be grounded.	pt for having an
External Conductive Coating to Anode Capacitance Maximum Minimum Basing	750 μμf 500 μμf 12L
21YP4A	
The Sylvania Type 21 YP4A is identical to Type 21 AFP4 exceexternal conductive coating which must be grounded, and an a	ept for having an luminized screen.
External Conductive Coating to Anode Capacitance Maximum Minimum Basing	750 μμf 500 μμf 12L

WARNING

X-ray radiation shielding may be necessary to protect against posible danger of personal injury from prolonged exposure at close range if this tube is-operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21ALP4 Silver Screen "85"→2]ALP4A

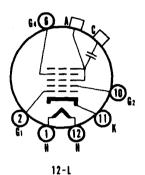
TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type **Gray Filter Glass**

Magnetic Deflection **Electrostatic Focus Spherical Faceplate** External Conductive Coating Single Field Ion Trap

21 ALP4A has an Aluminized Screen





CHARACTERISTICS	
GENERAL DATA Focusing Method Deflecting Method Deflecting Angle (approx.)	Electrostatic Magnetic
Horizontal Diagonal Phosphor	85 Degrees 90 Degrees P4
Fluorescence Persistence Faceplate Light Transmittance (approx.)	White Medium Gray Filter Glass 71 Percent
ELECTRICAL DATA	
Heater Voltage	6.3 Volts 0.6 Ampere
Cathode to All Other Electrodes	5 μμf 6 μμf 750 μμf Max 500 μμf Min
ion Trap Magnet External	, Single Field Type
MECHANICAL DATA Minimum Useful Screen Dimensions. Bulb Contact (Recessed Small Cavity Cap) Base (Small Shell Duodecal 6-Pin). Basing	19½ x 15 Inches J1-21 B6-63 12L
RATINGS	
MAXIMUM RATINGS (Design Center Values)	
Anode Voltage	18000 Volts d c +1000 Volts d c 500 Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value Peak Heater-Cathode Voltage	125 Volts d c 0 Volts d c 2 Volts
Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed 15 Seconds After Equipment Warm-up Period Heater Positive with Respect to Cathode	410 Volts 180 Volts 180 Volts

21ALP4, 21ALP4A (Cont'd)

RECOMMENDED OPERATING CONDITIONS

Anode Voltage	Volts d c
Grid No. 4 Voltage64 to +352 \	Volts d c
Grid No. 2 Voltage	Volts d c
Grid No. 1 Voltage Required for Cutoff ²	
Ion Trap Magnet Strength (approx.)	Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms

NOTES:

 External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

21ALP4A

The Sylvania Type 21 ALP4A is identical to the Type 21 ALP4 except it has an aluminized screen.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21ALP4B

Silver Screen "85"

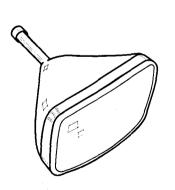
TELEVISION PICTURE TUBE

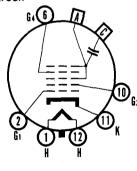
21" Direct Viewed **Magnetic Deflection** Rectangular Glass Type **Electrostatic Focus**

Gray Filter Glass Spherical Faceplate

Single Field Ion Trap **External Conductive Coating**

Aluminized Screen





12-L

CHARACTERISTICS

GENERAL DATA Electrostatic Focusing Method Deflecting Method Deflecting Angle (approx.) Horizontal Magnetic 85 Degrees 90 Degrees P4 Diagonal Phosphor Fluorescence White Medium Gray Filter Glass 71 Percent Persistence.... Faceplate Light Transmittance (approx.)

21ALP4B (Cont'd)

ELECTRICAL DATA	
Heater Voltage	6.3 Volts
Heater Current (approx.) Direct Interelectrode Capacitances (approx.)	0.6 Ampere
Cathode to All Other Electrodes	5 μμf 6 μμf
External Conductive Coating to Anodel	500 μμf Min.
Ion Trap Magnet	Single Field Type
MECHANICAL DATA	
Minimum Useful Screen Dimensions Bulb Contact (Recessed Small Cavity Cap) Base (Small Shell Duodecal 6-Pin). Basing	1936 x 15 Inches J1-21 B6-63 12L
RATINGS	

MAXIMUM RATINGS (Design Center Values)

Anode Voltage		Volts (
Grid No. 4 Voltage (Focusing Electrode) 500 to	+1000	Vo!ts	d c
Grid No. 2 Voltage		Volts of	
Grid No. 1 Voltage			
Negative Bias Value	125	Volts of	d c
Positive Bias Value	0	Volts of	d c
Positive Peak Value	2	Volts	
Peak Heater-Cathode Voltage			
Heater Negative with Respect to Cathode			
During Warm-up Period Not to			
Exceed 15 Seconds	410	Volts	
After Equipment Warm-up Period	180	Volts	
Heater Positive with Respect to Cathode		Volts	

RECOMMENDED OPERATING CONDITIONS

Anode Voltage	16000	Volts d c
Grid No. 4 Voltage64 to	+352	Volts d c
Grid No. 2 Voltage	300	Volts d.c.
Grid No. 1 Voltage Required for Cutoff?28 to	n —72	Volts d c
Ion Trap Magnet Strength (approx.)	35	Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance................................ 1.5 Megohms Max.

NOTES:

- 1. External conductive coating must be grounded.
- Visual extinction of focused raster. Extinction of stationary focused spot will require that these values he about 5 volts more negative.

WARNING:

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturers Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21ANP4A 21ANP4A

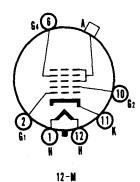
TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type Gray Filter Glass Magnetic Deflection Electrostatic Focus Spherical Faceplate

Single Field Ion Trap 21ANP4A has an Aluminized Screen

21ANP4, 21ANP4A (Cont'd)





CHARACTERISTICS

GENERAL DATA	
Focusing Method Deflecting Method Deflecting Angle (approx.)	Electrostatic Magnetic
Horizontal Diagonal	85 Degrees 90 Degrees P4
Phosphor Fluorescence Fluorescence Fraceplate Glight Transmittance (approx.)	White Medium
ELECTRICAL DATA	
Heater Voltage. Heater Gurrent (approx.). Direct Interelectrode Capacitances (approx.) Cathode to All Other Electrodes.	6.3 Volts 0.6 Ampere
Grid No. 1 to All Other Electrodes	5 μμf 6 μμf ingle Field Type
MECHANICAL DATA	
	x 15 Inches J1-21 36-63 12 M
RATINGS	
MAXIMUM RATINGS (Design Center Values)	
Grid No. 4 Voltage (Focusing Electrode)500 to + Grid No. 2 Voltage	8000 Volts d c 1000 Volts d c 500 Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value Peak Heater-Cathode Voltage	125 Volts d c 0 Volts d c 2 Volts
Heater Negative with Respect to Cathode During Warm-up Period Not to	
Exceed 15 Seconds After Equipment Warm-up Period Heater Positive with Respect to Cathode	410 Volts 180 Volts 180 Volts
RECOMMENDED OPERATING CONDITIONS	
Anode Voltage	+352 Volts d c 300 Volts d c -72 Volts d c
CIRCUIT VALUES Grid No. 1 Circuit Resistance	de Maribio
	1.5 Megohms Max

21ANP4A

The Sylvania Type 21 ANP4A is identical to the Type 21 ANP4 except it has an aluminized screen.

 Visual extinction of focused raster. Extinction of the stationary focused spot will require that these values be about 5 volts more negative.

WARNING

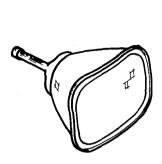
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21AP4

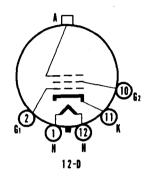
TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Metal Type Gray Filter Glass Frosted Faceplate

Magnetic Deflection Magnetic Focus Spherical Faceplate Single Field Ion Trap



GENERAL DATA



GENERAL DATA		
Focusing Method Deflecting Method Deflecting Angle (approx.)		gnetic gnetic
Horizontal	70 D	egrees egrees P4
Phosphor. Fluorescence Persistence. Faceplate. Light Transmittance (approx.)	Me Gray F	/hite dium
ELECTRICAL DATA		
Heater Voltage Heater Current (approx.) Direct Interelectrode Capacitances (approx.) Cathode to All Other Electrodes. Grid No. 1 to All Other Electrodes. Ion Trap Magnet. External,	0.6 5 6	Volts Ampere μμf μμf Field Type
MECHANICAL DATA		
Minimum Useful Screen Dimensions 18 Bulb Contact 18 Base (Small Shell Duodecal 5-Pin) 18 Basing 19		11/ ₁₆ Inches Cone Lip
RATINGS		
MAXIMUM RATINGS (Design Center Values)		
Anode Voltage Grid No. 2 Voltage Grid No. 1 Voltage		Volts d c Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value. Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to	Õ	Volts d c Volts d c Volts
Exceed 15 Seconds. After Equipment Warm-up Period Heater Positive with Respect to Cathode	180	Volts Volts Volts
RECOMMENDED OPERATING CONDITIONS		
Anode Voltage	300 to -77 110	Volts d c Volts d c Volts d c Ma d c Gausses
CIRCUIT VALUES		
Grid No. 1 Circuit Resistance	1.5	Megohms Max

21AP4 (Cont'd)

NOTES:

Visual extinction of undeflected focused spot.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 30 foot lamberts on an 183% x 131% inch picture area.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21AQP4 21AQP4A

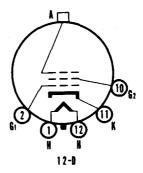
TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type **Gray Filter Glass**

Magnetic Deflection Magnetic Focus Spherical Faceplate

Single Field Ion Trap 21AQP4A has an Aluminized Screen





GENERAL DATA		
Focusing Method	Magnetic	
Deflecting Method	Magnetic	
Deflecting Angle (approx.)	0	
Horizontal	85 Degrees	
Diagonal	90 Degrees P4	
PhosphorFluorescence	White	
Persistence	Medium	
Faceplate		
Light Transmittance (approx.)	71 Percent	
ELECTRICAL DATA		
Heater Voltage	6.3 Volts	
Heater Current (approx.)	0.6 Ampere	
Direct Interelectrode Capacitances (approx.)		
Cathode to All Other Electrodes	5 μμ f	
Grid No. 1 to All Other Electrodes External	6 μμf Single Field Tyne	
Ton Trap Wagnot,	, omgo mod mypo	
MECHANICAL DATA		
Minimum Useful Screen Dimensions	191/8 x 15 Inches	
Bulb Contact (Recessed Small Cavity Cap)	J1-21	
Base (Small Shell Duodecal 5-Pin)	B5-57 12D	

21AQP4, 21AQP4A (Cont'd)

RATINGS

MAXIMUM RATINGS (Design Center Values)		
Anode Voltage	18000	Volts d c
Grid No. 2 Voltage	500	Volts d c
Grid No. 1 Voltage	105	Volts d c
Negative Bias Value		Volts d c
Positive Peak Value		Volts
Peak Heater-Cathode Voltage		
Heater Negative with Respect to Cathode During Warm-up Period Not to		
Exceed 15 Seconds	410	Volts
After Equipment Warm-up Period	180	Volts
Heater Positive with Respect to Cathode	180	Volts
RECOMMENDED OPERATING CONDITIONS		,
Anode Voltage	16000	Volts d c
Grid No. 2 Voltage	300	Volts d c
Grid No. 1 Voltage Required for Cutoff1	to -72	Volts d c
Ion Trap Magnet Strength (approx.)		
CIRCUIT VALUES		
Grid No. 1 Circuit Resistance	1.5	
NOTES:		Max
110125.	1.0	1.0

- Visual extinction of focused raster. Extinction of the stationary focused spot will require that these values be about 5 volts more negative.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 20 foot lamberts on a 191/2 x 15 inch picture area.

21AQP4A

The Sylvania Type 21 AQP4A is identical to the Type 21 AQP4 except for having an aluminized screen.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21ATP4

Silver Screen "85"

TELEVISION PICTURE TUBE

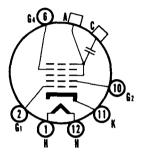
21" Direct Viewed

Magnetic Deflection Rectangular Glass Type
Gray Filter Glass
External Conductive Coating
Aluminized Screen

Single Field Ion Trap



GENERAL DATA



12-L

GENERAL DATA			
Focusing Method. Deflecting Method. Deflecting Angle (approx.)		rostat gnetic	ic
Horizontal	90 D	egree: legree: P4	
FluorescencePersistence	W Me	hite dium	lace
Faceplate	71 P	ercen	t
ELECTRICAL DATA			
Heater Voltage. Heater Current (approx.). Direct Interelectrode Capacitances (approx.)		Volts Ampe	
Cathode to All Other Electrodes	5	μμf μμf	
External Conductive Coating to Anode1	1500	ииf	Max
Ion Trap Magnet	1200 Single	μμf Field	Min Type
MECHANICAL DATA			
Minimum Useful Screen Dimensions	J1-21 B6-63	Inche	8
RATINGS			
MAXIMUM RATINGS (Design Center Values)			
Anode Voltage. Grid No. 4 Voltage (Focusing Electrode)500 to Grid No. 2 Voltage	18000 +1000 500	Volts Volts Volts	d c d c d c
Negative Bias Value Positive Bias Value Postive Peak Value	0	Volts Volts Volts	d c
Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to	410	V-11-	
Exceed 15 Seconds	180	Volts Volts Volts	
RECOMMENDED OPERATING CONDITIONS			
Anode Voltage	+352 300 to -72	Volts Volts Volts	d c d c

21ATP4 (Cont'd)

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms Max

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21ATP4A

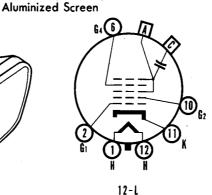
Silver Screen "85"

TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type **Gray Filter Glass External Conductive Coating**

Magnetic Deflection **Electrostatic Focus Spherical Faceplate** Single Field Ion Trap





CHARACTERISTICS GENERAL DATA

GENERAL DATA	
Focusing Method	Electrostatic Magnetic
Horizontal	85 Degrees
_ Diagonal	90 Degrees
Phosphor	P4
Fluorescence	White
Persistence	Medium
Faceplate	Gray Filter Glass
Light Transmittance (approx.)	71 Per cent
ELECTRICAL DATA	•
Heater Voltage	6.3 Volts
Heater Current (approx.)	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	0.0 1poro
Cathode to All Other Electrodes	5 μμf
Grid No. 1 to All Other Electrodes	6 μμf
External Conductive Coating to Anode	1500 μμf Max.
	1200 mf Min
Ion Trap Magnet	External, Single Field Type
MECHANICAL DATA	
Minimum Useful Screen Dimensions	101/ v 15 lashes
Bulb Contact (Recessed Small Cavity Cap)	191/ ₈ x 15 Inches J1-21
Base (Small Shell Duodecal 6-Pin).	B6-63
Basing	12L
	126

21ATP4A (Cont'd)

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage		20,000	Volts d	C
Grid No. 4 Voltage (Focusing Electrode)	500 to	+1000	Volts d	Ċ
Grid No. 2 Voltage		500	Volts d	c
Grid No. 1 Voltage				-
Negative Bias Value		125	Volts d	С
Positive Bias Value			Voits d	
Positive Peak Value		2	Volts	-
Peak Heater-Cathode Voltage				
Heater Negative with Respect to Cathode				
During Warm-up Period Not to				
Exceed 15 Seconds		410	Volts	
After Equipment Warm-up Period		180	Volts	
Heater Positive with Respect to Cathode		180	Volts	

RECOMMENDED OPERATING CONDITIONS

Anode Voltage	16,000 Volts d c
Grid No. 4 Voltage	-64 to +352 Volts d c
Grid No. 2 Voltage	300 Volts d c
Grid No. 1 Voltage Required for Cutoff?	-28 to -72 Volts d c
Ion Tran Magnet Strength (approx.)	35 Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms Max.

NOTES:

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21AUP4 Silver Screen "85"→2]AUP4A

TELEVISION PICTURE TUBE

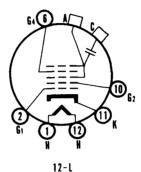
21" Direct Viewed Rectangular Glass Type Gray Filter Glass

Magnetic Deflection **Electrostatic Focus** Spherical Faceplate External Conductive Coating Single Field Ion Trap

21AUP4A has an Aluminized Screen



GENERAL DATA



GENERAL ENTA			
Focusing Method Deflecting Method Deflection Angle		trostatic ignetic	
Horizontal	72 E	Degrees Degrees P4	
Phosphor Fluorescence Persistence	W	/hite dium	
Faceplate Light Transmittance (approx.)	Gray F 71 F	ilter Glass Percent	s
ELECTRICAL DATA			
Heater Voltage. Heater Current (approx.). Direct Interelectrode Capacitances (approx.)		Volts Ampere	
Cathode to All Other Electrodes		$\mu\mu_{\underline{f}}$	
External Conductive Coating to Anode1	750	μμf μμf Ma	
lon Trap MagnetExternal,	500 Single	μμf Mi Field Typ	
MECHANICAL DATA			
Minimum Useful Screen Dimensions	J1-21 B6-63	Inchés	
RATINGS			
MAXIMUM RATINGS (Design Center Values)			
Anode Voltage. Grid No. 4 Voltage (Focusing Electrode)500 to Grid No. 2 Voltage	+1000	Volts d c Volts d c Volts d c	
Grid No. 1 Voltage			
Negative Bias ValuePositive Bias Value	125	Volts d c	
Positive Peak Value Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode	ž	Volts	
During Warm-up Period Not to			
Exceed 15 Seconds		Volts Volts	
Heater Positive with Respect to Cathode		Voits	

21AUP4, 21AUP4A (Cont'd)

RECOMMENDED OPERATING CONDITIONS

Anode Voltage	000 Voltsdc
Grid No. 4 Voltage64 to +3	352 Volts d c
Grid No. 2 Voltage	300 Volts d c
Grid No. 1 Voltage Required for Cutoff ² 28 to	-72 Volts d c
Ion Trap Magnet Strength (approx.)	35 Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance

NOTES:

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

21AUP4A

The Sylvania Type 21 AUP4A is identical to Type 21 AUP4 except for having an aluminized screen.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 21AUP4B

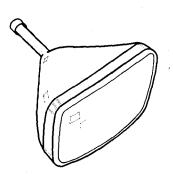
Silver Screen "85"

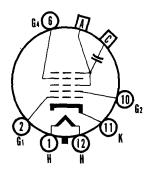
TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type **Gray Filter Glass External Conductive Coating**

Magnetic Deflection **Electrostatic Focus** Spherical Faceplate Single Field Ion Trap

Aluminized Screen





12-L

CHARACTERISTICS

GENERAL DATA Focusing Method..... Deflecting Method.... Electrostatic Magnetic Deflecting Angle (approx.) Horizontal Diagonal Phosphor 67 Degrees 72 Degrees White Fluorescence Persistence Medium Gray Filter Glass 71 Per cent aceplate.....Light Transmittance (approx.).....

21AUP4B (Cont'd)

ELECTRICAL DATA Heater Voltage
Ion Trap Magnet External, Single Field Type
MECHANICAL DATA
Minimum Useful Screen Dimensions. 191 x x 15 Inches Bulb Contact (Recessed Small Cavity Cap) J1-21 Base (Small Shelf Duodecal 6-Pin) B6-63 Basing 12L
RATINGS •
Anode Voltage
RECOMMENDED OPERATING CONDITIONS
Anode Voltage 16,000 Volts d c Grid No. 4 Voltage 64 tq + 352 Volts d c Grid No. 2 Voltage 300 Volts d c Grid No. 1 Voltage Required for Cutoff ² 28 to -72 Volts d c Ion Trap Magnet Strength (approx.) 35 Gausses
CIRCUIT VALUES
Grid No. 1 Circuit Resistance 1.5 Megohms Max.
NOTES.

NOTES:

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

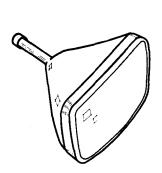
SYLVANIA TYPE 21AVP4 Silver Screen "85"→21AVP4A

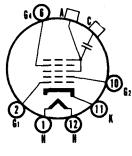
TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type Gray Filter Glass

Magnetic Deflection **Electrostatic Focus** Spherical Faceplate External Conductive Coating Single Field Ion Trap

21AVP4A has an Aluminized Screen





12-L

CHARACTERIOTICS		
GENERAL DATA		
Focusing Method. Deflecting Method. Deflection Angle		rostatic gnetic
Horizontal Diagonal Phosphor	72 D	Degrees Degrees P4
Fluorescence Persistence Face plate	W Me	hite dium
Light Transmittance (approx.)	71 F	Percent
ELECTRICAL DATA		
Heater Voltage. Heater Current (approx.). Direct Interelectrode Capacitances (approx.)		Volts Ampere
Cathode to All Other Electrodes. Grid No. 1 to All Other Electrodes. External Conductive Coating to Anode!	6 1500	μμf μμf μμf Max
Ion Trap MagnetExternal	1200	uuf Min
MECHANICAL DATA		•
Minimum Useful Screen Dimensions	J1-21 B6-63	
RATINGS		
MAXIMUM RATINGS (Design Center Values)		
Anode Voltage Grid No. 4 Voltage (Focusing Electrode)500 to Grid No. 2 Voltage Grid No. 1 Voltage	+1000	Volts d c Volts d c Volts d c
Negative Bias Value Positive Bias Value Positive Pak Value Positive Peak Value	0	Volts d c Volts d c Volts
Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Perjod Not to	-	
Exceed 15 Seconds. After Equipment Warm-up Period. Heater Positive with Respect to Cathode.	180	Volts Volts Volts
rioutor rositive with ricepool to Oathous	100	TOILS

21AVP4, 21AVP4A (Cont'd)

RECOMMENDED OPERATING CONDITIONS

Anode Voltage		16000 Volts d c
Grid No. 4 Voltage	,64 to	+352 Volts d c
Grid No. 2 Voltage		300 Volts d c
Grid No. 1 Voltage Required for Cutoff2:	28	to -72 Volts d c
Ion Trap Magnet Strength (approx.)		35 Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

21AVP4A

The Sylvania Type 21AVP4A is identical to Type 21AVP4 except for having an aluminized screen.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

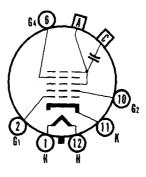
SYLVANIA TYPE 21AVP4B

Silver Screen "85"

TELEVISION PICTURE TUBE

21" Direct Viewed Magnetic Deflection Rectangular Glass Type **Electrostatic Focus Gray Filter Glass** Spherical Faceplate **External Conductive Coating** Single Field Ion Trap Aluminized Screen





12-1

GENERAL DATA	
Focusing Method.	 Electrostatic
Deflecting Method Deflection Angle	Magnetic
Horizontal	 67 Degrees
Diagonal	 72 Degrees
Phosphor	 P4
Fluorescence	 White
Persistence	 · Medium
Faceplate	 Gray Filter Glass
Light Transmittance (approx.)	71 Percent

21AVP4B (Cont'd)

LECTRICAL DATA			
Heater Voltage		Volts	
Heater Current (approx.)	0.6	Ampere	
Direct Interelectrode Capacitances (approx.)			
Cathode to All Other Flectrodes.		μμţ	
Grid No. 1 to All Other Electrodes	6	$\mu\mu$ f	
External Conductive Coating to Anode	1500	μμί Max.	
	1200	μμf Min.	
Ion Trap Magnet Ext	ernal, S	ingle Field 1	ype
IECHANICAL DATA			
Minimum Useful Screen Dimensions	1/8 x 15	Inches	
Buth Contact / Recessed Small Cavity Uap)	J1-21		
Rase (Small Shell Duodecal 6-Pin)	□ 0~03		
Basing	12L		
RATINGS			
IAXIMUM RATINGS (Design Center Values)			
A de Vallaga	20,000	Voits d c	
Grid No. 4 Voltage (Focusing Electrode). 500 to	+1000	Volts d c	
Grid No. 2 Voltage	500	Volts d c	
Grid No. 1 Voltage			
Negative Bias Value		Volts d c	
Positive Bias Value		Volts d c	
Positive Peak Value	2	Volts	
Peak Heater-Cathode Voltage:			
Heater Mogative with Respect to Cathode			
During Warm-up Period not to Exceed 15 Secs		Volts	
After Equipment Warm-up Period		Volts	
Heater Positive with Respect to Cathode	180	Volts .	

Anode Voltage	16,000 Volts d c
Grid No. 4 Voltage	-64 to +352 Volts d C
Grid No. 2 Voltage	300 Volts d c
Grid No. 1 Voltage Required for Cutoff?	-28 to -72 Volts d c
Ion Trap Magnet Strength (approx.)	35 Gausses

CIRCUIT VALUES

Grid No. 1 Circui	t Resistance	1.5 Megohms Ma	٧.

NOTES:

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

WARNING:

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts. whichever is less.

SYLVANIA TYPE 21AWP4

Silver Screen "85"

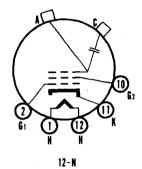
TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type Gray Filter Glass

Magnetic Deflection Magnetic Focus Spherical Faceplate External Conductive Coating Single Field Ion Trap

Aluminized Screen





CHARACIERISTICS			
GENERAL DATA			
Focusing Method		Magnetic Magnetic	
Deflecting Angle (approx.) Horizontal		67 Degrees 72 Degrees	
Diagonal		P4 White	
Persistence. Face plate.		Medium	
Light Transmittance (approx.)	.,	71 Percent	
ELECTRICAL DATA			
Heater VoltageHeater Current (approx.)		6.3 Volts 0.6 Ampere	

Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes 5 μμf	
Grid No. 1 to All Other Electrodes 6 μμf	
	Max
1200 μμί	
Ion Trap Magnet External, Single Field T	ype

MECHANICAL DATA		
Minimum Useful Screen Dimensions	1/8 x 15	Inches
Bulb Contact (Recessed Small Cavity Cap)	J1-21	
Base (Small Shell Duodecal 5-Pin)	B5-57	
Basing	12 N	

KAIINGS		
MAXIMUM RATINGS (Design Center Values)		
Anode Voltage Grid No. 2 Voltage Grid No. 1 Voltage		Volts d c Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value Peak Heater-Cathode Voltage	Õ	Volts d c Volts d c Volts
Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed 15 Seconds	180	Volts Volts Volts

21AWP4 (Cont'd)

RECOMMENDED OPERATING CONDITIONS

Anode Voltage	000 Volts d c
Grid No. 2 Voltage	300 Volts d c
Grid No. 1 Voltage Required for Cutoff ² 28 to	-72 Volts d c
Focusing Coil Current (approx.)3108 ± 2	20% Madc
Ion Trap Magnet Strength (approx.)	35 Gausses

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms

NOTES:

- External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.
 For JETEC focusing coil 109 or equivalent three inches from reference line, bias adjusted to 20 foot lamberts on a 191/8 x 15 inch picture area sharply focused at center of screen.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

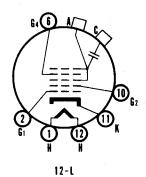
SYLVANIA TYPE 21AYP4

TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type Gray Filter Glass External Conductive Coating

Magnetic Deflection Electrostatic Focus Spherical Faceplate Single Field Ion Trap





Focusing Method	GENERAL DATA		
Horizontal	Deflecting Method		
Fluorescence Persistence . Medium Persistence . Gray Filter Glass Light Transmittance (approx.)	Horizontal Diagonal	70 E	Degrees
Heater Voltage	Fluorescence Persistence Faceplate	M Me Gray F	hite dium ilter Glass
Heater Current (approx.) 0.6 Ampere	ELECTRICAL DATA		
Grid No. 1 to All Other Electrodes. 6 \(\frac{\mu}{\mu} \mu \) f \(\text{External Conductive Coating to Anode!} \) 1500 \(\mu \mu \) f \(\text{Max} \) f \(\text{Max} \) f \(\text{Min} \) lon Trap Magnet . External, Single Field Type \) MECHANICAL DATA Minimum Useful Screen Dimensions . 17 x 1234 Inches Bulb Contact (Recessed Small Cavity Cap) . J1-21 Base (Small Shell Duodecal 6-Pin) . B6-63 Basing . 12L RATINGS MAXIMUM RATINGS (Design Center Values) Anode Voltage . 18000 Volts d c Grid No. 2 Voltage (Focusing Electrode)500 to +1000 Volts d c Grid No. 2 Voltage . 500 Volts d c Positive Bias Value . 2 Volts d c Positive Bias Value . 2 Volts d c Positive Bias Value . 2 Volts d c Positive Bas Value . 2 Volts d c Positive Poak Value . 2 Volts d c Positive Poak Value . 2 Volts After Equipment Warm-up Period . 180 Volts After Equipment Warm-up Period . 180 Volts After Equipment Warm-up Period . 180 Volts Heater Positive with Respect to Cathode . 180 Volts Anode Voltage . 64 to +352 Volts d c Grid No. 4 Voltage . 64 to +352 Volts d c Grid No. 4 Voltage . 64 to +352 Volts d c Grid No. 4 Voltage . 67 to +352 Volts d c Grid No. 1 Voltage . 67 to +352 Volts d c Grid No. 1 Voltage . 67 to -2 Volts d c Grid No. 1 Voltage . 67 to -28 to -72 Volts d c Grid No. 1 Voltage . 67 to 40 to 10	Heater Current (approx.)		
MECHANICAL DATA	Grid No. 1 to All Other Electrodes	1500	μμf μμf Max
Minimum Useful Screen Dimensions	Ion Trap MagnetExternal	, Single	μμτ IVIIn Field Type
MAXIMUM RATINGS (Design Center Values) Anode Voltage	Minimum Useful Screen Dimensions	J1-21 B6-63	Inches
Anode Voltage	RATINGS		
Grid No. 2 Voltage 500 Volts d c Grid No. 1 Voltage 125 Volts d c Positive Bias Value 125 Volts d c Positive Bias Value 0 Volts d c Positive Peak Value 2 Volts Peak Heater-Cathode Voltage Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed 15 Seconds 410 Volts After Equipment Warm-up Period 180 Volts Heater Positive with Respect to Cathode 180 Volts Heater Positive with Respect to Cathode 180 Volts RECOMMENDED OPERATING CONDITIONS Recommended 1600 Volts d c Grid No. 4 Voltage 64 to +352 Volts d c Grid No. 2 Voltage 300 Volts d c Grid No. 2 Voltage 272 Volts d c Grid No. 1 Voltage 672 Volts d c 673 Voltage 674 Voltage 674 Voltage 674 Voltage 674 Voltage 675 Volts d c 675 Voltage 675 Volta	MAXIMUM RATINGS (Design Center Values)		
Negative Bias Value	Grid No. 2 Voltage	18000 +1000 500	Volts d c Volts d c Volts d c
Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed 15 Seconds	Negative Bias Value Positive Bias Value Positive Peak Value	0	Volts d c
After Equipment Warm-up Period	Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed 15 Seconds.	410	Volts
Anode Voltage 16000 Volts d c Grid No. 4 Voltage -64 to +352 Volts d c Grid No. 2 Voltage 300 Volts d c Grid No. 1 Voltage Required for Cutoff² -28 to -72 Volts d c	After Equipment Warm-up Period		
Grid No. 4 Voltage	RECOMMENDED OPERATING CONDITIONS		
	Grid No. 4 Voltage	0 +352 300 to -72	Volts d c Volts d c Volts d c

21AYP4 (Cont'd)

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms

NOTES:

External conductive coating must be grounded.
 Visual extinction of focused raster. Extinction of stationary focused spot will require that these values be about 5 volts more negative.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

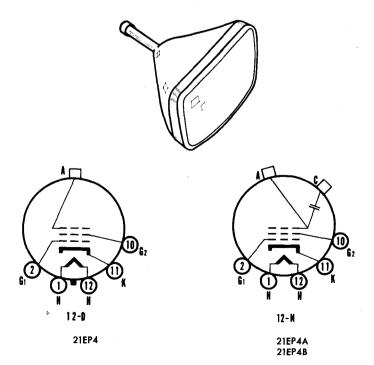
> SYLVANIA TYPE 21EP4 21EP4A Silver Screen "85"→21EP4B

TELEVISION PICTURE TUBE

21" Direct Viewed Rectangular Glass Type **Gray Filter Glass**

Magnetic Deflection Magnetic Focus Cylindrical Faceplate

Single Field Ion Trap 21EP4A has an External Conductive Coating 21EP4B has an External Conductive Coating and an Aluminized Screen



SYLVANIA PICTURE TUBES

21EP4, 21EP4A, 21EP4B (Cont'd)

CHARACTERISTICS

GENERAL DATA	
Focusing Method. Deflecting Method. Deflecting Angle (approx.)	Magnetic Magnetic
Horizontal Diagonal Phosphor	65 Degrees 70 Degrees P4
Fluorescence Persistence Faceplate Light Transmittance (approx.)	White Medium Gray Filter Glass
Light Transmittance (approx.)	72 Percent
ELECTRICAL DATA Heater Voltage. Heater Current (approx.) Direct Interelectrode Capacitances (approx.)	6.3 Volts 0.6 Ampere
Cathode to All Other Electrodes	5 μμf 6 μμf Single Field Type
MECHANICAL DATA	
Minimum Useful Screen Dimensions	J1-21 B5-57
RATINGS MAXIMUM RATINGS (Design Center Values)	
Anode VoltageGrid No. 2 VoltageGrid No. 1 Voltage	18000 Volts d c 500 Volts d c
Negative Bias Value Positive Bias Value Positive Peak Value Peak Heater-Cathode Voltage	125 Volts d c 0 Volts d c 2 Volts
Pleater Negative with Hespect to Cathode During Warm-up Period Not to Exceed 15 Seconds	410 Volts
Heater Positive with Respect to Cathode	180 Volts
RECOMMENDED OPERATING CONDITIONS Anode Voltage	16000 Volts d.c
Anode Voltage. Grid No. 2 Voltage Grid No. 1 Voltage Required for Cutoff ¹ . —28 Focusing Coil Current (approx.) ² .	300 Volts d c 3 to -72 Volts d c 95 Ma d c
lon Trap Magnet Strength (approx.)	35 Gausses
CIRCUIT VALUES Grid No. 1 Circuit Resistance	1.5 Megohms Max
NOTES:	
 Visual extinction of focused raster. Extinction of the static will require that these values be about 5 volts more negating. For JETEC focusing coil 109 or equivalent three inches for bias adjusted to 20 foot lamberts on a 191/6 x 137/6 inch picture. 	ive. rom reference line,
21EP4A	
The Sylvania Type 21EP4A is identical to Type 21EP4 excexternal conductive coating, which must be grounded.	ept for having an
External Conductive Coating to Anode Capacitance Maximum. Minimum. Basing.	750 μμf 500 μμf 12 N
21EP4B	
The Sylvania 21 FP4B is identical to Type 21 FP4 except for I	havina an external

The Sylvania 21EP4B is identical to Type 21EP4 except for having an external conductive coating which must be grounded, and an aluminized screen.

External Conductive Coating to Anode Capacitance	
Maximum	750 µµf
Minimum	500 μμf
Minimum	
Basing	12 N

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.