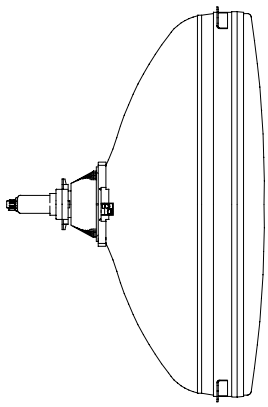
Panasonic

Colour Picture Tube

W 76 EKV 60X

Product Specification



MATSUSHITA ELECTRONICS (EUROPE) GmbH 08/99

Panasonic

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Product Specification

Colour Picture Tube

SuperPigment Plus

W76 EKV 60X

Customer

Signature

Colour Picture Tube
W 76 EKV 60X

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Contents

3 Short Description

Useful screen diagonal	76 cm	Heater voltage (stab.) U_F = 6,0 V
Glass diagonal	70,8 cm	Heater current I_F = 559 mA
Deflection angle	102°	Anode voltage with full load
Neck diameter	32,5 mm	U_A = 25 - 35 kV
Overall length	494 ± 5 mm	Focusing voltage 18,0 - 24,0 % U_A
Mass	42,0 kg	
Glass transmission effective		77,0 %

Aspect ratio	16:9
Screen	vertical line with black matrix pure flat and square
Phosphors	cadmium free green, gold activated, High density pigmented red High density pigmented blue
Shadow mask assembly	slotted type of Thermal Expansion
Electron gun	in-line, Hi-Bipotential MPF/L-OLF/DQ-DAF external multipol unit
Magnetic shield	inner magnetic shield
Implosion protection	shrink frame technology
Base cap	B10-304
Exposure	northern hemisphere 35 +20/-10 µT
Scanning-line system	525 and/or 625 scanning-lines
Deflection yoke	* north/south pincushion free, * self converging * 50 or 100 Hz * fully coma corrected
Other features	* soft flash technology *SVM coil * Cathode ray tube intrinsically safe up to 29,9 kV according to appendix III Röntgenverordnung (newly

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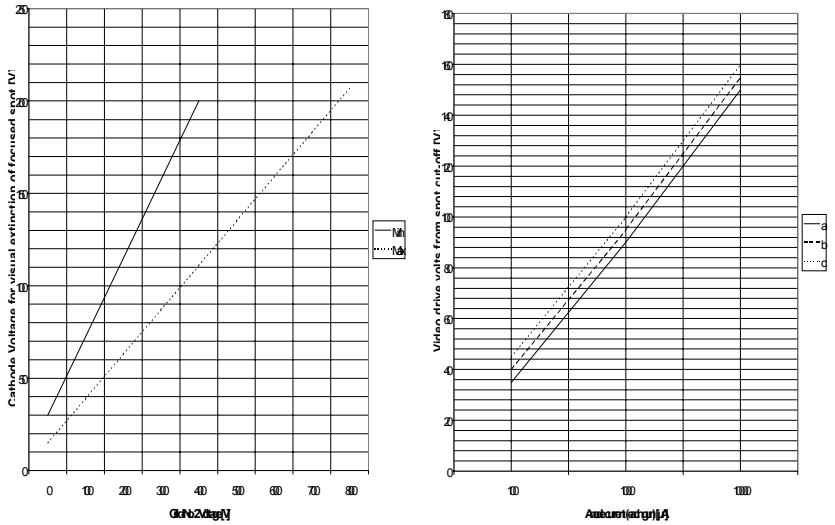
Typical Operating Conditions

Voltages are specified with respect to grid 1

Anode voltage	U_A = 32,0 kV
Focusing voltage	$U_{G3,G5-1}$ = 5,76 - 7,68 kV
Dynamic focusing voltage	$U_{G4,G5-2}$ see Chart
Cut-off voltage grid 2 (V_{kc} = 170V)	$U_{G2,G4}$ = 315 - 670 V
Heater voltage (stab.)	U_F = 6.0 V
Heater current	I_F = 559 mA

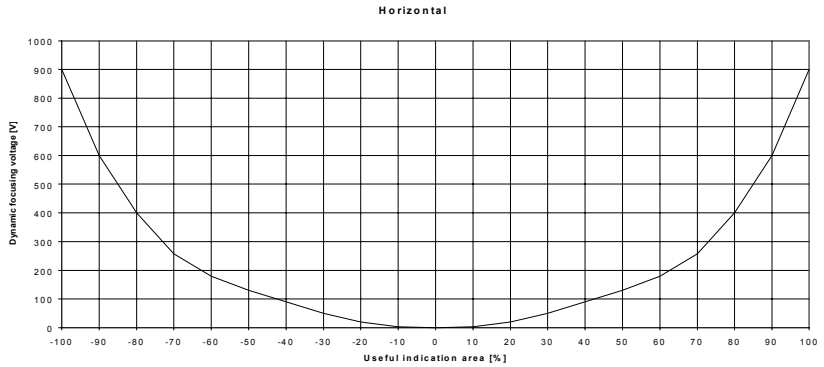
Cut-off Voltage Range

Video Drive Characteristics

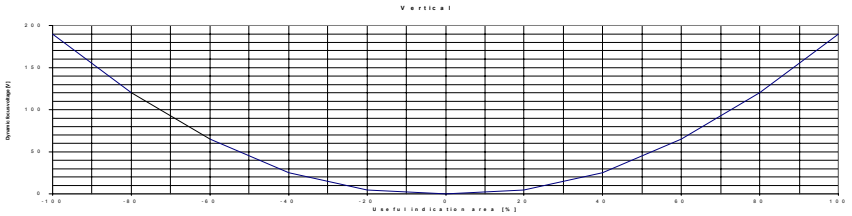


Dynamic Focusing Design Chart

Horizontal



Vertical



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Circuit Design Values

Voltages are specified with respect to grid 1

Anode voltage	U_A = 25 - 35 kV
Grid 3,5-1 focus voltage	$U_{G3,G5-1}$ = 18,0 - 24,0 % of U_A
Grid 4,5-2 focus voltage	$U_{G4,G5-2}$ = 18,0 - 24,0 % of U_A + U_d
Grid 1 reference point	U_{G1} = 0 V

Cut-off voltage range	see chart

Grid 2 cut-off voltage	U_{G2}	= 315 - 670	V
Recommended cathode voltage for black level adjustment	U_K	= 170	V
Video drive characteristics	Figure 5		
Grid 1 to all other electrodes	C_{G1}	= 18	pF
Cathode to all other electrodes	C_K	= 12	pF
Grid 4,5-2 to all other electrodes	$C_{G3,G5}$	= 11	pF
Grid 3,5-1 to all other electrodes	$C_{G3,G5}$	= 14	pF
Anode to external conductive coating	$C_{A/M}$	= 2700 - 3300	pF
Anode to metal rimband	$C_{A/Z}$	= 300 - 400	pF
Leakage current cathode-heater	$I_{KF\ max}$	= 5	µA
Test conditions	U_A	= 0	V
grid 1, 2 and 3 has to be connected to the cathode of the gun in test	U_{KF}	= 275	V
Leakage currents, flashovers, stray emission			
Test conditions	U_K	= 305	V
for these three items	U_A	= 35	kV
	U_{G2}	= 420	V
Leakage currents			
grid 3,5-1	$I_{G3, G5\text{-}1\ max.}$	= ± 5	µA
grid 4,5-2	$I_{G4, G5\text{-}2\ max.}$	= ± 5	µA
grid 2	$I_{G2\ max.}$	= ± 5	µA
grid 1	$I_{G1\ max.}$	= ± 7,5	µA
Flashovers	$U_{G3,G5}$	= 6,7	kV
within 1 minute	max. 2		
within 15 minutes	max. 5		
Stray emission			
Vertical deflection switched off, no brightening on screen visible.	$U_{G3,G5}$	= 6,7	kV
Warm-up-time	max.	18	s
Test conditions	U_F	= 6,0	V
	R_1	~ 0,1	Ω
Regulated power supply	I	> 6	A

The measuring time is from switch on of the heaters until a raster is visible.
Brightness and contrast controls should be set for normal operation.

Colour coordinates	x	y
red	0,653	0,323
green	0,286	0,607
blue	0,141	0,061

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6 Glass- and Screen Data

Cathode currents for white	D	= 9600 K +5 M.P.C.D.
CIE-coordinates	x	= 0,282
	y	= 0,294
red	38%	
green	32%	
blue	30%	

Cathode current ratio	
red-blue	0,9.....1,5
red-green	1,0.....1,6
blue-green	0,6.....1,2

Glass transmission at screen centre	77,0 %
Brightness at the screen centre	≈ 95 cd/m² ± 10%
Test conditions	U_A = 32,0kV, I_A = 1 mA
Overscanning	105%
Exact adjustment for horizontal and vertical linearity	
Colour temperature white	D 9600 K

Phosphors	
green -	cadmium free, gold activated
blue -	High density pigmented
red -	high density pigmented

Persistence of phosphors	
Time to decay to 10% of initial peak value - medium short	
red	ca. 100 µs
green	20 - 40 µs
blue	11 - 17 µs

Pitch at the centre of tube	0,67 mm
(horizontal screen pitch - center to center distance of identical color phosphor stripes)	

Surface	ARAS colored film

Visible screen area (nominal)	2443 cm²

Deflection angle	
diagonal	102°
horizontal	93°
vertical	61°

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Notes for Test and Adjustment

Adjustment of focus voltage	$U_{G3, G5}$
Conditions:	U_A = 29,5 kV, U_K = 170 V, I_{AP} = 3,5 mA ①

Test chart crosshatch pattern
18 squares = 19 grid lines horizontal
14 squares = 15 grid lines vertical
103% picture width and height.
Optimal adjustment of focus between horizontal- and vertical lines at the centre of the screen.

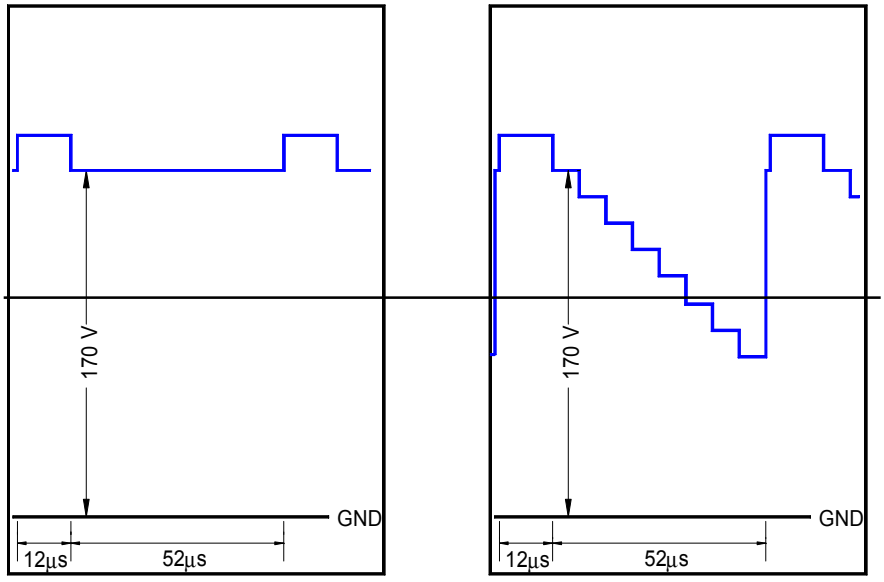
Test cut-off voltage area	U_{G2}
Conditions:	U_A = 32,0 kV

Beam undeflected and brightness- and contrast controls to minimum.

U_K at the cathode to be tested	U_K = 170 V
U_K to other cathodes	U_K = 250 V

Turn U_{G2}-control from 200 V to cut-off.
The cut-off has to be within the range of 317 - 670 V.
①The peak beam current of 3,5 mA corresponds roughly to 400 µA average.

Recommended Cathode Voltage



Adjustment of grid 2 voltage U_{G2}

a) Individual cut-off adjustment
Set brightness- and contrast controls to minimum. All three cathodes at 170V. Increase U_{G2} until the cut-off spot of the first gun appears. Reduce U_K of the two other guns until their cut-off spot is reached.

b) Automatic cut-off with black-level clamping
Set brightness- and contrast controls to minimum. Connect one of the three cathodes to an oscilloscope. Set DC-input to display 200 V. Turn U_{G2}-control to the recommended cathode voltage of 170 V.

c) Automatic cut-off without black-level clamping
Test pattern grey scale.
Adjust contrast- and brightness-controls to linear grey scale.
Absolute values of voltage jumps from step to step are constant.
The last grey value is different to the black level. Set contrast control at I_A ~ 500 µA. Turn $U_{G2, G4}$-control to the recommended cathode voltage of 170 V, (see figure 7).

8 Mechanical Data and Dimensional Drawings

Overall length	494,0 ± 5,0 mm
Neck diameter	32,5 ±0,7 mm
Outside dimensions	
Diagonal (including rimband)	818,2 ± 2,4 mm
Horizontal (including lugs)	732,3 ± 2,4 mm
Vertical (including lugs)	456,3 ± 2,4mm
Screen Dimensions	
Diagonal	760,0 ± 3,8 mm
Horizontal	662,4 ± 3,3 mm
Vertical	372,6 ± 1,9 mm
Area	2443 cm² nominal
Base	JEDEC B 10-304
Anode contact	7,92 IEC 67-III-2, JEDEC J1-21
Weight	appr. 42,0kg

Notes to outline drawings

① Anode contact 7,92 according to IEC 67-III-2, JEDEC J1-21
② This area is free of external conductive coating and must be kept clean.
③ Implosion protection frame and external conductive coating are galvanically separated from each other. They can be connected taking into consideration the existing safety regulations.
④ The external conductive coating must be connected to the negative high voltage terminal. Conduction cross-section A=1 mm².
⑤ The tube base is in a circle of a diameter max. = 55 mm with respect to the tube axis. The socket has to be connected by flexible wires only.
⑥ Nominal dimensions of the position of the fixing screws. The nominal dimensions are designed for the use of fixing screws with a diameter up to 9,5 mm.
⑦ One out of the four mounting lugs may deviate by max. 1 mm to the plane of the other three.
⑧ The Z-points are reference points for the distance to X and Y. (Figure 9)
⑨ Minimum space to be reserved for mounting lug.
⑩ Joint plate not included. Maximum thickness of joint plate is 3,7 mm.

9 Limiting Values

Heater voltage	U_F	= 5,7 - 6,3 V	.....Ⓘ
Anode voltage	$U_{A\,max}$	= 35	kV
Anode voltage	$U_{A\,min.}$	= 25	kV
Anode current	$I_{A\,max.}$	= 2,2	mA ...Ⓘⅴ
Dynamic focusing voltage grid 5-2	$U_{G5\text{-}2\,max.}$	= 13	kV
Focusing voltage grid 3,5-1	$U_{G3/G5\text{-}1\,max.}$	= 13	kV
Difference grid 5-2/grid 3,5-1	$U_{Difference\,max.}$	= 3	kV
Voltage between grid 3,5 and grid 6	$U_{G3/G5/g6\,max.}$	= 24	kV
Screen grid voltage peak	$U_{G2/G4p\,max.}$	= 1,2	kV

Cathode voltages			
positive	$U_{K\,max.}$	= 200	V
negative	$-U_{K\,max.}$	= 0	V
positive peak voltage	$U_{KP\,max.}$	= 400	V
negative peak voltage	$-U_{KP\,max.}$	= -2	V

Voltages between heater and cathode			
Heater negative to cathode	$U_{-FK\,max.}$	= 250	V .....Ⓘⅱ
Heater positive to cathode	U_{+FK}	= 0	V
Heater to cathode peak voltage			
Heater negative to cathode	$U_{-FKP\,max.}$	= 385	V
Heater to cathode peak voltage			
Heater positive to cathode	$U_{+FKP\,max.}$	= 0	V .....Ⓘⅴ

Shock acceleration during transport and handling) Ⓘⅲ

Y-axis and Screenside of Z axis	343 m/s²
X-axis	294 m/s²
Neckside of Z-axis	117 m/s²

Ⓘ To secure good emission characteristics through the life, it is recommended to regulate the heater voltage at 6,3 V.

Ⓘⅱ During warm up period of max. 15 sec the maximum voltage between heater and cathode must not exceed 385 V. This voltage must be reduced to 275 V at least time proportionally within 45 sec.

Ⓘⅲ The tube has an integrated implosion protection according to VDE and BSI requirements. Rough tube mechanical treatment might lead to implosions.

Ⓘⅳ short term average (with ABL circuit) $I_{A\,max.}$ = 2,00 mA
long term average (with ABL circuit) $I_{A\,max.}$ = 1,55 mA

Ⓘⅴ It is recommended to keep cathode potential positive against heater.

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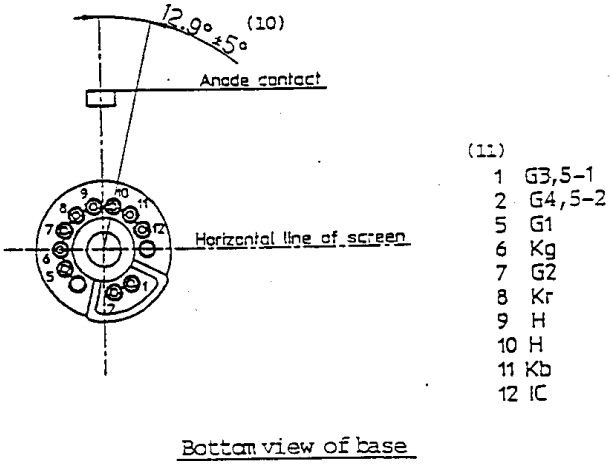
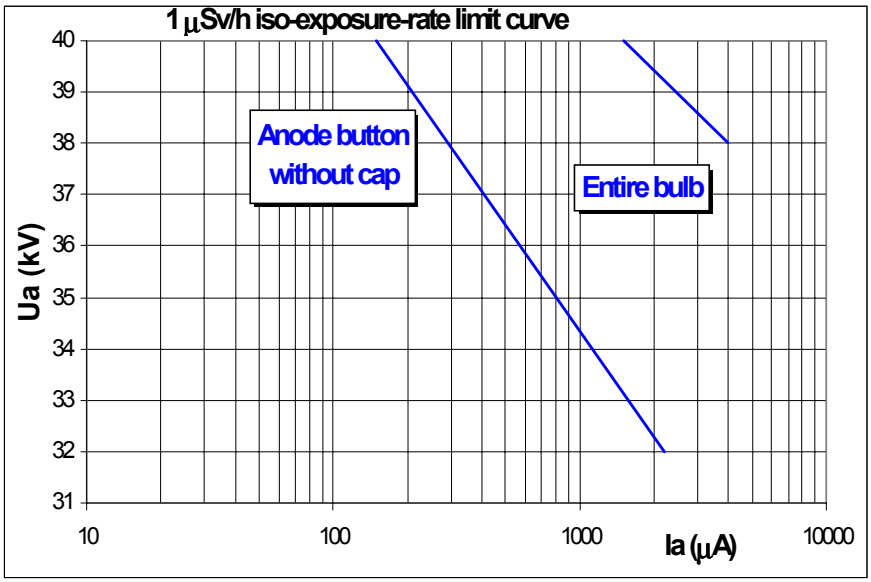
Tube Base



Cut-off voltage ratio	U_K-Quotient = 1,16
X-radiation	max. 1 µSv/h
Test conditions Dose rate measuring in the distance of 100 mm to the glass surface.	
ISO-dose rate Maximum Parameters: Anode voltage - anode current	Figure 20 1 µSv/h

ISO Dose Rate



Customer has to take care, that adequate shielding of anode contact is provided

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Screen- and Glass-Blemishes
Limits

The size of the blemish is defined by length plus width divided by two. Judgement of defects should not be done before 10 minutes after switch on.	(L + W) / 2
Viewing distance to classify the contrast degree is	60 cm
For definition of defect size and contrast degree template can be used.	
Defects with high contrast The defect remains visible if template is moved from 0,7 to 1,3 filter.	
Defects with medium contrast Defect disappears if template is moved from 0,7 to 1,3 filter.	
Screen zones Zone A, centre area Zone B. outside area Zone C is defined as the unscreened area of the faceplate.	365 x 285 mm

Blemishes, High Contrast

Blemish size (mm)	Limited blemishes A	A+B	Distance (mm)
>1,0	0	0	-
0,8...<1,0	0	1	-
0,5...<0,8	1	3	80
0,25..<0,5	2	4	50 ①
< 0,25 ②	unlimited	unlimited	-

Blemishes, Medium Contrast

Blemish size (mm)	Limited blemishes A	A+B	Distance (mm)
>1,0	0	0	-
0,8...<1,0	1	2	80
0,5...<0,8	4	8	50 ①
< 0,5 ②	unlimited	unlimited	-

① Accepted are three defects, minimum distance of 2 failures is 50 mm.
② Blemish size unlimited. Limited only by cloud in a viewing distance of 1 m.

Scratches , Stains on the faceplate
The sum of all scratches with a width

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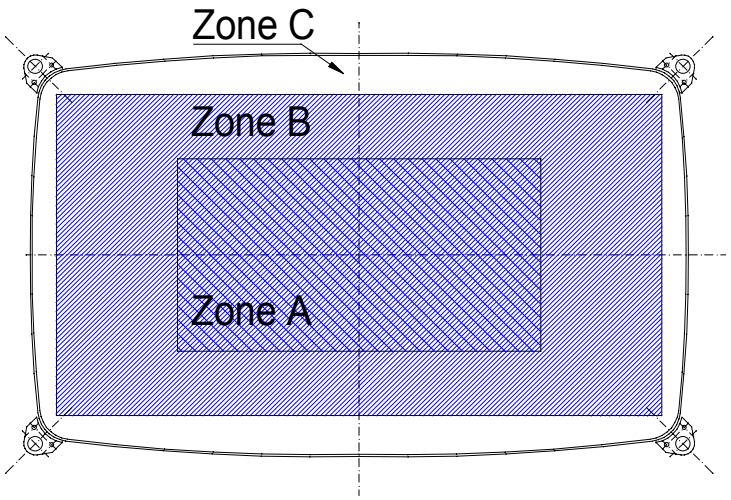
Figure 23:
Screen Zones



of 0.05-0.15 mm should not exceed
180 mm.

Viewing distance	~1,0 m
Ambient light (activated screen)	~1 Lux
Ambient light (non-activated screen)	~1.000 Lux

Scratches on the Faceplate

Width (mm)	Length (mm)	Distance (mm)
</= 0,05	unlimited	-
0,05...<0,10	50	19
0,10...</= 0,15	13	45
> 0,15	-	-

Stains on the Faceplate

Stain size (mm)	Limited stains		Distance (mm)
	A	A+B	
> 1,3... </= 1,8	1	2	80
> 0,8... </= 1,3	2	3	80

11 Geometry and Convergence Specification

For the judgement of geometry and converg
ence the following conditions are valid:

1. Warm up time	15 min
2. Anode voltage	U_A = 29,5 kV
3. Heater voltage	U_F = 6,0 V
4. $U_{G2, G4}$ adjustment related to recommended cathode voltage	$U_{G2, G4}$ = 315 - 670 V U_K = 170 V
5. Focusing voltage adjustment for optimum of focus for vertical and horizontal lines at the centre	$U_{G3, G5}$ I_{AP} = 3,5 mA
6. Screen has to face east	
7. Test pattern	Cross hatch pattern, white pattern
8. Colour temperature adjustment to white	D = 6500 K
9. Tube has to be degaussed properly.	

Raster distortion

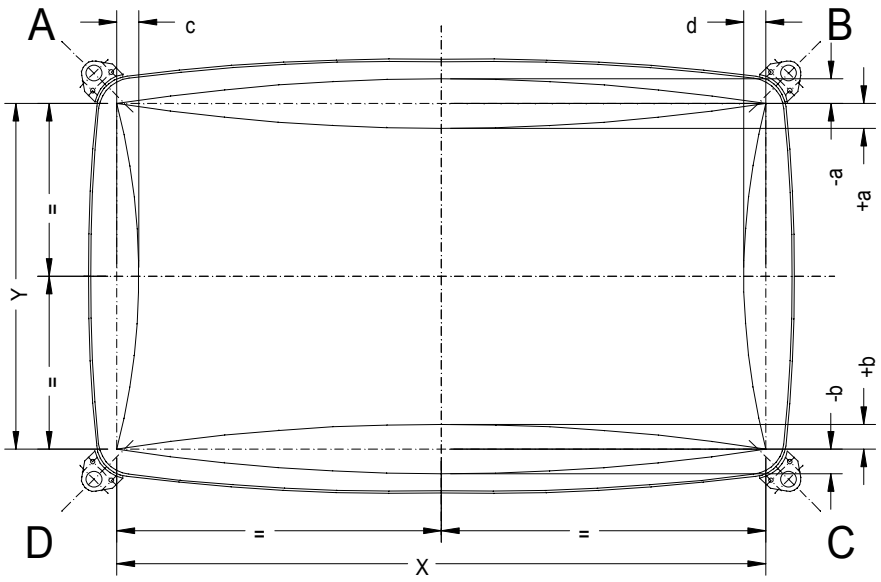
Test pattern	Cross hatch pattern, only green.
The peak beam current of 200 µA corresponds roughly to 25 µA average.	I_P = 200 µA

Linearity, picture width and height should be correctly adjusted.

Overscanning	5%

			max. (%)
north-south distortion	[2(a+b)/(AD+BC)]	•100%	1
north-south symmetry	[2(a-b)/(AD+BC)]	•100%	1
east-west distortion	[2(c+d)/(AB+CD)]	•100%	8,5
east-west symmetry	[2(c-d)/(AB+CD)]	•100%	1
horizontal trapezium	[(AD-BC)/(AD+BC)]	•100%	1
vertical trapezium	[(AB-DC)/(AB+DC)]	•100%	1
orthogonality		α = 90 +/- 0,35°	

Raster Distortion, Separate



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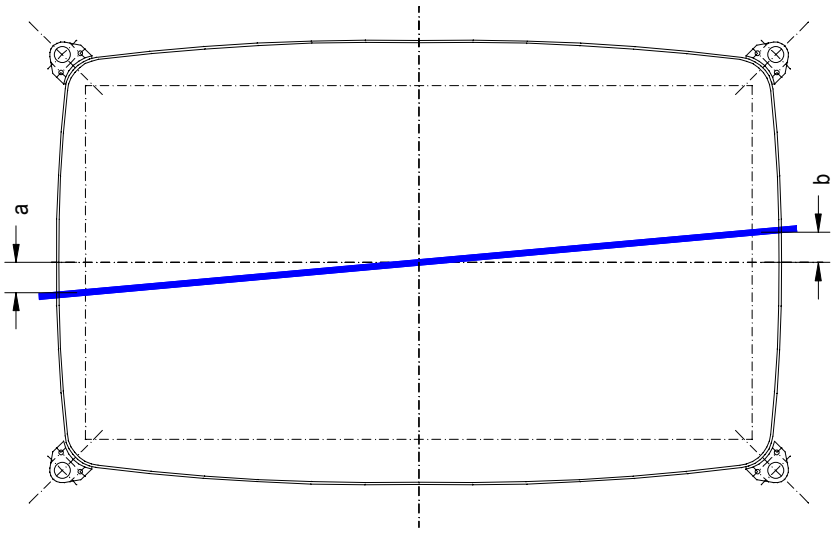
Rasterrotation
Cross hatch pattern only green.
Difference between the mechanical and
the electrical centre line.

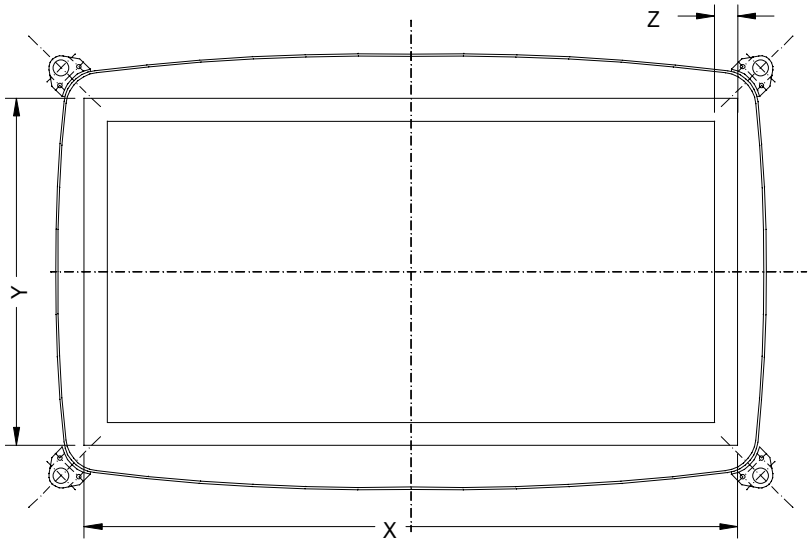
Raster Rotation



a + b max. (mm)	4,0

Sum of raster distortion
All raster failures have to be inside the shown frame.

Raster Distortion, Sum



X = 630 mm
Y = 335 mm
Z = 6 mm

Rastershift

Horizontal	max. 6,5 mm
Vertical	max. 6,5mm

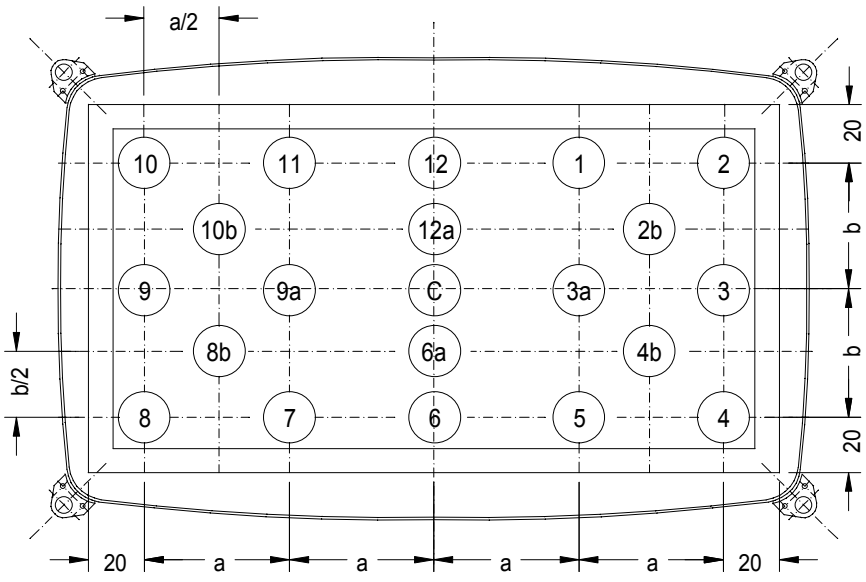
Scanning switched off. Beam current adjusted to a visible spot. The value is the distance of the spot to the mechanical centre.

Convergence

Test pattern cross hatch white. I_{AP} = 3500 µA

The peak beam current of 3500µA corresponds roughly to 400 µA average.

Convergence



C	0,4 mm
2, 4, 8, 10	2,1 mm
3, 6, 9, 12	1,4 mm
1, 5, 7, 11	1,6 mm
3a, 9a	1,2 mm
2b, 4b, 8b, 10b	1,4 mm

Maximum values shown are related to the distance between the centre of blue-,red- and green lines, in vertical and horizontal direction.

White uniformity

Test pattern white

Beam current	I_A = 1000 µA
Viewing distance	2 m
Ambient light	~1 Lux

Tube has to be degaussed. Check after 30 minutes warm-up.
Tube is acceptable if there are no distinct colour differences visible.

Purity

Test pattern white

Beam current	I_A = 1000 µA
Viewing distance	2 m

Tube has to be degaussed. Wait for 30 minutes for the tube to warm up, then check each colour red, green and blue. The tube is acceptable if there is no discolouration visible.

12 General Notes

Absolute maximum ratings are limiting values of operating and environmental conditions applicable to any electronic device of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

12.1 Limit Values by IEC Publication

The equipment manufacturer must design so that, initially and throughout life, no absolute maximum value for the intended service is exceeded with any device under the worst probable operating conditions:

* supply voltage variation
* equipment and control adjustment
* components spread and variation
* load variations
* signal variations
* environmental conditions and also picture tube spread and variations.

12.2 Voltage between Heater and Cathode

The voltage between heater and cathode should be as small as possible.

12.3 Voltages between Cathode and Grids 1, 2, 3

Do not operate the tube unless all electrodes are connected to a DC potential. Do not exceed the limit value of any electrode. No electrode should be connected to a high voltage potential.
Test- or check circuits should be agreed with Matsushita Electronics (Europe) GmbH.

12.4 Screen

To avoid screen damages please pay attention to the following:

* Do not operate the tube with a stationary cross hatch pattern or a similar test pattern.
* Do not operate picture tube with a stationary luminary spot, except with an extremely low beam current.
* Afterglow should not exceed 1,5 sec.
* The anode voltage U_A has to be reduced to less than 15 kV within 1 sec after switch off or switching into standby.
* If no bleeder resistor is used it has to be ensured by circuit design, that the tube will be discharged in a time <1 sec.

12.5 Spark Gaps

To avoid possible damages to tube or circuitry by internal flash over, spark gaps should be used.
For the connection of the spark gaps to the external conductive coating, the shortest possible wires should be used.
The connection to the external conductive coating should cover a large area.
Isolation resistors should be used in series with each grid and cathode wire.
The spark gaps should be designed for a breakdown voltage at the focusing electrode of 14 kV, at the other electrodes of 2kV.

12.6 Cancelling Coil for Earth Magnetic Field

The beam landing pattern of 76 cm Wide tube is sensitive to the earth magnetic field.
To get good landing pattern, an inner magnetic shield is installed in the tube.But even by this inner magnetic shield the magnetic field of tube axis (gun direction) could not be perfectly shielded. Therefore, with this magnetic field the beam landing pattern is deteriorated.
A proposal to solve the problem is a cancelling coil mounted behind the panel of the tube to eleminate the influence of the earth magnetic field of tube axis direction.

Coil size: 740 mm x 485 mm

Coil ampereturns: (adjustment ranges)

- 12 AT - + 12AT

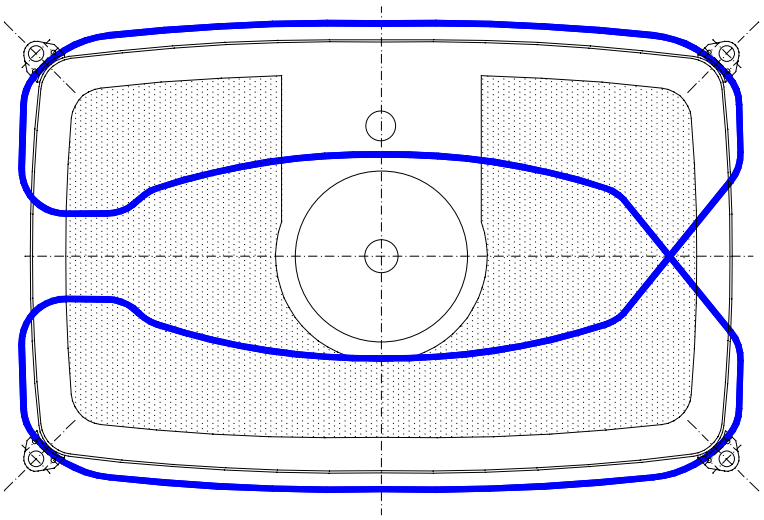
12.7 Degaussing

The tube has an internal shielding against external magnetic fields. The shield and the mask should be degaussed automatically whenever the TV-set is switched on.
To get sufficient degaussing a magnetomotive force with an initial value of minimum 625 ampere turns peak per coil is needed. (Equivalent to 2500 peap-to-peak ampere turns with both coils)
The time of current decay has to be continuously. The value of the degaussing current after 4 cycles should be 50% of the initial value (4 cycles 50Hz = 80 ms, 60Hz = 67 ms). Page 20 show top and side view of a possible layout of the degaussing coil, Page 21 shows a recommended degaussing circuit.
The reduction of current per half wave must be less than 10 percent. The residual value of magnetic flux must be less than 0,25 ampere turns peak per coil .

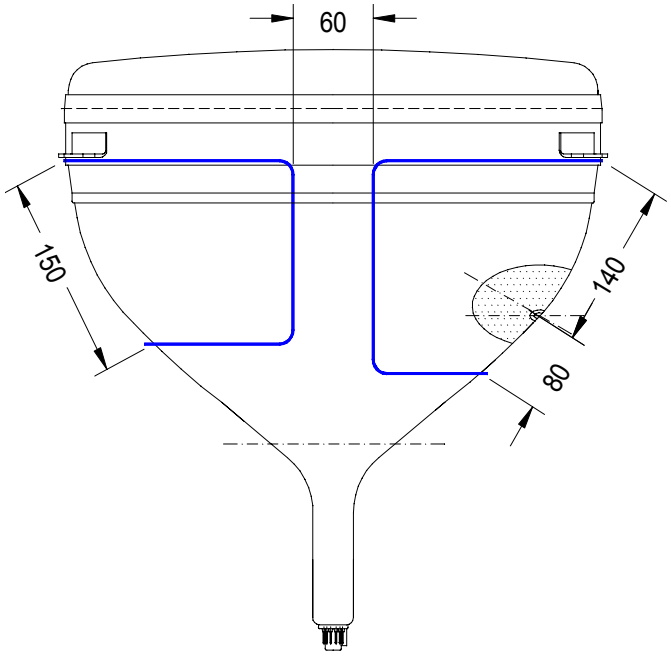
To avoid coupling of line frequency current a sufficient capacitor should be connected in parallel to the degaussing coil.

When using external degaussing coils vertical deflection of tube must be switched off. In this case the initial value of magnetic field strength at front panel should be min. 160 A/m .

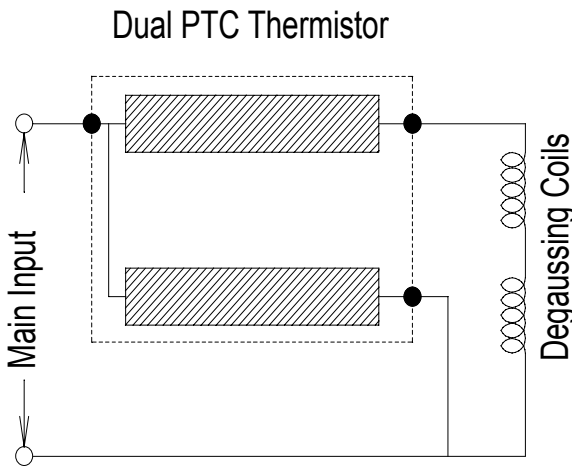
Placement of Degaussing Coil, Top View



Placement of Degaussing Coil, Side View



Degaussing Circuit



12.8
Implosion Protection

All picture tubes from Matsushita Electronics (Europe) GmbH are implosion protected according to VDE DIN 57860, IEC 65, BSI and CCIB. Care should be taken not to scratch or knock any part of the tube. Please handle tube careful to avoid any risk of implosion.
In all handling procedures prior to insertion into the cabinet, there is a risk of personal injury as a result of severe accidental damage to the tube. It is therefore recommended that protective clothing should be worn, particularly eye shielding.
Remember when replacing or servicing the tube assembly that a residual electrical charge may be carried by the anode contact and also the external coating if not earthed. Before removing the tube assembly from the equipment, earth the external coating and short the anode contact to the coating.
The final customer has to be informed about statements of implosion protection

12.9
Handling

Avoid any mechanical stress to the neck components during transport and handling, it could cause loss of performance.

12.10
Cabinet Design

Design of the cabinet has to be done according to 1:1 drawing and not to a tube sample or this specification.

12.11
Microphony

Intense vibration of the loudspeakers inside the TV set can result in a visible modulation of brightness. This can be minimized by a suitable design of the TV cabinet.

Colour Picture Tube
W 76 EKV 60X

12.12 Transport

To avoid tube damage during transport, the following has to be taken into consideration:

a. Single tubes
Single tubes must be delivered in Matsushita Electronics (Europe) GmbH designed packaging only and transported in the printed position.

b. TV set
This must be transported in the packing designed by the set manufacturer in the position printed on the carton. If the tube is transported with it's faceplate in a horizontal position it could cause irreparable damage to the shadow mask

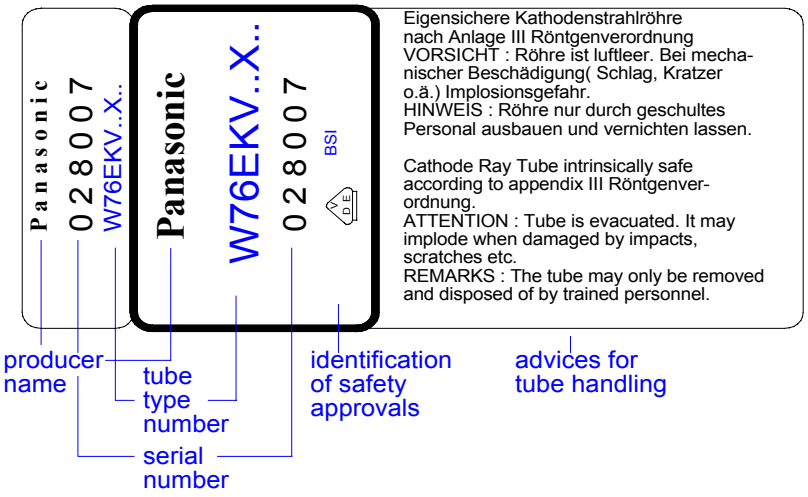
12.13 Storage

a. Tubes must only be stored in dry and clean storage facilities. Tubes and polystyrene have to be protected against rain and humidity.
b. Temperature of tube should be room temperature.

12.14 Type Designation by Pro Electron and Tube Label

Type ..... W 76 EHV 60X
TV picture tube ..... W
Screen diagonal (cm) 76
Family code (tube) ..... EHV
Member of family code 60
Tri-colour screen X
Code of deflection yoke ..... see separate yoke specification
..... (50Hz and 100Hz available)

Tube Label (Example)



13 Used Formula Signs

Voltages	
Anode voltage	U_A
Cathode voltage	U_K
Voltage cathode to heater	U_{KF}
Peak cathode voltage	U_{KP}
DC voltage grid 1, 2, 3, 4, 5	U_{G1}, $U_{G2, G4}$, $U_{G3, G5}$
DC voltage between grid 2,4 and cathode	$U_{G2, G4/K}$
Voltage between grid 3,5 and grid 6	$U_{G3, G5/G6}$
Screen grid voltage peak	$U_{G2, G4p}$
Heater negative to cathode	U_{-FK}
Heater positive to cathode	U_{+FK}
Heater to cathode peak voltage	U_{-FKP}
Voltage between heater and cathode	U_{+FK}
Heater positive to cathode	
Heater voltage	U_F
Voltage peak to peak	U_{PP}
Currents	
Anode current	I_A
Cathode Current	I_K
Leakage current cathode-heater	I_{KF}
Current Grid 1, 2, 3	I_{G1}, I_{G2}, I_{G3}
Heater current	I_F
Beam current	I_A
Deflection current horizontal peak to peak	$I_{HP\ P}$
Deflection current vertical peak to peak	I_{VPP}
Capacities	
Outside capacity	C
Grid 1 to all other electrodes	C_{G1}
Cathode to all other electrodes	C_K
Grid 3 to all other electrodes	C_{G3}
Anode to external conductive coating	$C_{A/M}$
Anode to metal rimband	$C_{A/Z}$
Grid 1 to cathode	$C_{G1/k}$
Resistance	
Active resistance of horizontal deflection coils	R_H
Active resistance of vertical deflection coils	R_v
Resistance of wires to cathodes green, red, blue	R_{KG}, R_{KR}, R_{KB}
Resistance of wires to grids 1, 2, 3	R_{G1}, R_{G2}, R_{G3}

ndices

Anode	A
Heater	F
Grid	G
Cathode	K
Outside conductive coating	M
Peak to peak	p-p
Edge to edge	e-e
Limit value	max.
Peak value	P
Point on Panel Diagonal	Z

Different Dimensions and Abbreviations

Ambient temperature	T amb
Absolut beam limiter	ABL
Anti-Reflection Anti-Static	ARAS
Brightness or inductance	L
British Standard Institution	BSI
DC	direct current
eff.	effective
Inductance horizontal deflection coils	L_H
Inductance vertical deflection coils	L_V
International Electrotechnical Commission	IEC
International Standards Organisation	ISO
Joint Electron Device Engineering Council	JEDEC
Minimum Perception Colour Difference	M.P.C.D.
Multi Functional Triode	MFT
Multi Pre Focus	MPF
N, S, E, W	north, south, east, west
Large Overlapped Field Lens	L-OLF
Double Quadrupole Dynamic Astigmatism and Focus Correction	DQ-DAF
Pulse duration	t_P
Sensitivity	LI²e-e
Sensitivity	RI²e-e
Verband Deutscher Elektrotechniker e.V.	VDE

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Additional Agreements

Panasonic

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