AEG-TELEFUNKEN

Übersicht 1980
Survey 1980

Oszilloskop-, Monitor-, Radar- und Feinpunktröhren
Oscilloscope-, Monitor-, Radar- and Flying-Spot-Tubes

AEG-TELEFUNKEN
bietet als einer der größten Hersteller von Elektronenstrahlröhren ein umfangreiches Programm.

Oszilloskopröhren
für alle Anwendungsgebiete.

Monitorröhren
für Industrie, Elektromedizin und MIL-Anwendungen.

Feinpunktröhren
für Schreib- und Abtastzwecke.

Radarröhren
Ein- und Mehrfarbschirme (Penetron).

Sonderröhren
nach Kundenspezifikationen.

Dieser Kurzkatalog vermittelt Ihnen die wichtigsten technischen Daten für Röhren, die wir für Neu-Entwicklung und Erstbestückung anbieten.

Weitere Informationen übersenden wir Ihnen gern auf Anforderung.

Änderungen, die dem technischen Fortschritt dienen, sind vorbehalten.

AEG-TELEFUNKEN
is one of the most important manufacturer of cathode ray tubes and offers a comprehensive program.

Oscilloscope tubes
for all purposes.

Monitor tubes
for industrie, electromedicine and MIL-applications.

Flying spot tubes
for writing and scanning applications.

Radar tubes
single- and multicolour screens (Penetron).

Special tubes
according to customer specifications.

This catalogue summarizes the most important datas of cathode ray tubes, we offer for new developments and product applications.

More detailed information may be supplied upon request.

We reserve the right to improve the design which serves the technical advancement.

Röhrenwerk · *Tube factory*
Ulm, Söflinger Strasse

„Stuttgarter Luftbild, freigeg. durch Regierungs-Präsidium Stuttgart Nr. 9/38093"

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Zweistrahlröhre für Oszilloskope
Dual-beam tube for oscilloscopes

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Monitorröhren
Monitor tubes

Typ · *Type*	Seite · *Page*	Typ · *Type*	Seite · *Page*
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Radarröhren
Radar tubes

Typ · *Type*	Seite · *Page*	Typ · *Type*	Seite · *Page*
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F 17-100		F 58-100	
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(K 1987)		10 WP...	
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Feinpunktröhren
Flying spot tubes

Typ · *Type*	Seite · *Page*
Q 13-10	10/11
Q 13-120	
Q 23-100	
Q 25-100	
Q 28-103	

Die jeweils lieferbaren Schirmarten sind den Datenblättern zu entnehmen.
Refer to data sheets for deliverable screen types.

Wichtige Hinweise

- Die Röhren sind luftleer. Bei mechanischer Beschädigung (durch Schlag, Kratzer o.ä.) besteht Implosionsgefahr.

- Der Nachbeschleunigungsanschluß der Röhren kann infolge der Röhrenkapazitäten auch noch lange Zeit nach dem Abschalten Hochspannung führen.

  Zur Entladung sollen daher die letzte Beschleunigungselektrode und der leitende Außenbelag mehrmals kurzgeschlossen bzw. geerdet werden.

- Bei Betrieb der Röhren mit Beschleunigungsspannungen über 5 kV werden schwache Röntgenstrahlen erzeugt. Bei Betrieb innerhalb der Grenzdaten bleibt die Dosisleistung unter dem zulässigen Wert von $36 \cdot 10^{-12}$ A/kg (0,5 mR/h).

  Gesetzliche und sonstige Vorschriften, in denen u. a. zulässige Höchstwerte und/oder eine Kennzeichnungspflicht für die Geräte festgelegt sind (z.B. Röntgenverordnung, Arbeitsschutz und Unfallverhütungsvorschriften, Umweltschutzgesetze) sind vom Anwender (insbesondere Gerätehersteller, Betreiber usw.) in jedem Falle zu beachten.

Important notes

- *The tube is evacuated. Mechanical damage (by strike, scratches etc.) may cause danger of implosion.*

- *Due to the tube capacitances the post accelerating voltage connector of the tube may carry HT for a longer period after deenergizing.*

  The last accelerating electrode and the conducting outercoating must be discharged by shorting them several times or by connecting them to ground potential.

- *During operation with acceleration voltages in excess of 5 kV a small amount of X-rays are being produced. At operation within the maximum ratings the dose rate remains below the permissible amount of $36 \cdot 10^{-12}$ A/kg (0,5 mR/h).*

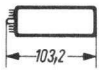
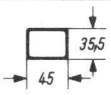
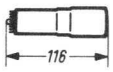
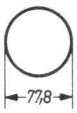
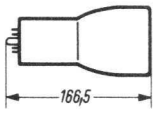
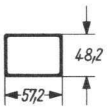
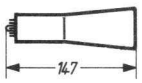
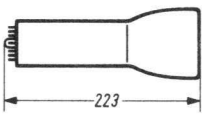
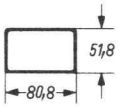
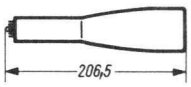
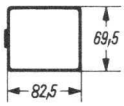
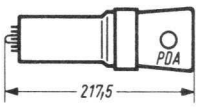
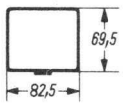
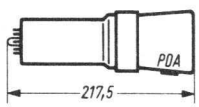
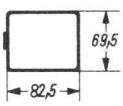
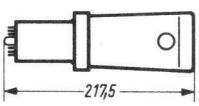
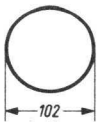
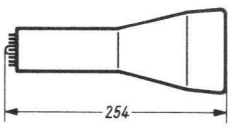
  All government regulations and other specifications must be strictly observed by users, especially by OEM's.

Elektronenstrahlröhren für Oszilloskope (Vorzugstypen)
Cathode-ray tubes for oscilloscopes (Preference types)

Typ *Type*	Beschreibung und Anwendung *Description and application*	Sockel *Base*	Betriebswerte (alle Spannungen auf Kathode bezogen) *Typical operation (all voltages referred to cathode)*						
			U_F	I_F	$-U_{WE}$	$U_{D^1)}$ U_{ACC1}	U_{FOC}	$\triangle U_{AT}$	U_{AST}
		Nr.	V	mA	V	kV	V	V	V
D 3–11	Allgemeine Anzeigezwecke *General purpose indicating devices*	1	6,3	300	7...21 14...42	0,5 1 (1,5)	50...150 100...300	–	–
D 3–111				92					
D 5–100	Taschenfernsehgeräte *Pocket TV sets*	2	0,55	60	18...35	2 (2,5)	150...250	–	1900...2100
D 7–16	Kleinoszilloskope und Anzeigegeräte *Small sized oscilloscopes and indicating devices*	4	6,3	92	22...38	0,8 (1,5)	50...90	–	–
D 7–180	Kleinoszilloskope und Anzeigegeräte *Small sized oscilloscopes and indicating devices*	2	0,55	60	18...35	2 (2,5)	150...250	–	1900...2100
D 7–210	Service-Oszilloskope *Service oscilloscopes*	5	6,3	300	15...35	1 (2,5)	100...180	–	–
D 9–10	Kleine, tragbare Oszilloskope *Small sized portable oscilloscopes*	6	6,3	92	23...47 45...95	1 2 (2,75)	120...170 200...340	–	–
D 10–19	Netzelektrode, aluminisierter Schirm, große Helligkeit *Mesh electrode, aluminized screen, high brightness*	7	6,3	92	50...90 75...135	1 1,5 (2)	20...60 40...90	–	960...1040 1460...1540
D 10–191	Netzelektrode, für tragbare Oszilloskope *Mesh electrode, for portable oscilloscopes* D 10–194: mit aluminisiertem Schirm *with aluminized screen*				45...95	0,5 (1)	0...40	–	460...540
D 10–194					35...70	0,5 (1)	40...90	–	460...540
D 10–193	Austastelektrode, Netzelektrode, für tragbare Oszilloskope *Blanking electrode, mesh electrode, for portable oscilloscopes*	8	6,3	92	45...95	0,5 (1)	90...130	±40	460...540
D 10–250	Wendelförmige Nachbeschleunigungselektrode, für tragbare Oszilloskope *Helical PDA electrode, for portable oscilloscopes*	9	6,3	92	30...70 40...90	0,75 1 (2)	30... 70 40...100	–	700... 800 950...1050
D 10–260	Ohne Nachbeschleunigung, für Kleinoszilloskope *Without PDA, for small sized oscilloscopes*	5	6,3	300	19...50	1,5 (2,5)	150...270	–	–

Bemerkungen · ***Remarks:***[1]) Grenzwerte in ( ) · *Maximum ratings in ( )*

Schirmform und max. Abmessungen in mm
Screen shape and max. dimensions in mm

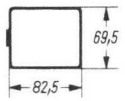
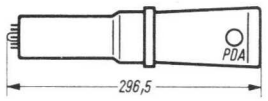
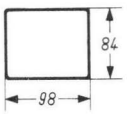
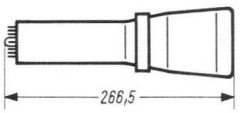
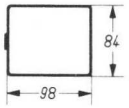
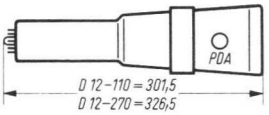
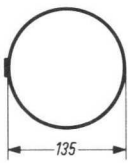
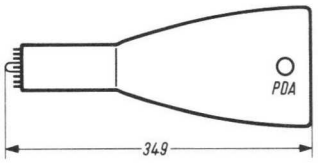
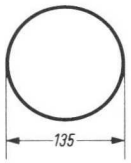
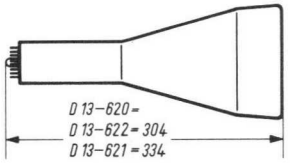
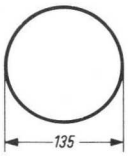
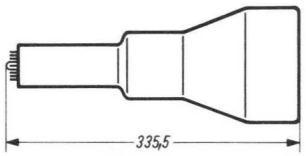
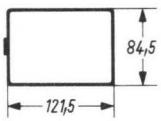
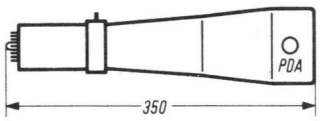
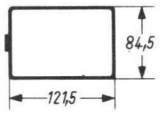
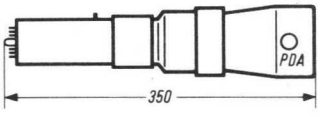
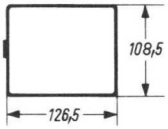
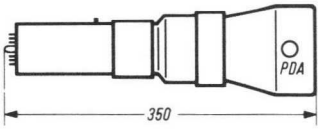
U_{GEO}	U_{MESH}	U_{PDA}[1])	D_1D_2	D_3D_4	Ausnutzbare Auslenkung *Useful scan*	
V	V	kV	V/cm	V/cm	mm x mm	
–	–	–	41... 61 82...122	47... 69 94...138	27x27	 
–	–	–	90...110 (Y)	90...110 (X)	40x30	 
–	–	–	41...46 (Y)	19,5...23,5 (X)	65x60	 
–	–	–	ca. 67 (Y)	ca. 71 (X)	54x40	 
–	–	–	27...31	10,7...12,5	60x50	 
–	–	–	13,7...17 27,5...34	13,5...16 27...32	70x40	 
950...1050 1450...1550	925...1035 1425...1535	9 9 (10)	14...17,5 21...26	14,4...17,6 21,5...26,5	68x56	 
460..540	410...505	3 (6)	7...8,7	7,2...8,5		
460...540	435...525	5 (8)	7...8,4	6,9...8		
460...540	410...515	3 (6)	7...8,7	7,2...8,5	68x56	 
700... 800 950...1050	–	2,5 3 (6)	25...31 32...38	10,8...13,2 13,6...16	68x56	 
–	–	–	28...32,5	12,6...14,5	80x60	 

Elektronenstrahlröhren für Oszilloskope (Vorzugstypen)
Cathode-ray tubes for oscilloscopes (Preference types)

Typ *Type*	Beschreibung und Anwendung *Description and application*	Sockel *Base*	Betriebswerte (alle Spannungen auf Kathode bezogen) *Typical operation (all voltages referred to cathode)*						
			U_F	I_F	$-U_{WE}$	$U_{D^1)}$ U_{ACC1}	U_{FOC}	ΔU_{AT}	U_{AST}
		Nr.	V	mA	V	kV	V	V	V
D 10-650	Netzelektrode, hohe Ablenkempfindlichkeit, kurze Baulänge, für Service-Oszilloskope *Mesh electrode, high deflection sensitivity,* *short overall length,* *for service oscilloscopes*	3	6,3	92	36... 72 54...110	1 1,5 (2)	80...130 120...195	–	960...1040 1450...1550
D 12-100	Ohne Nachbeschleunigung, für Service-Oszilloskope *Without PDA,* *for service oscilloscopes*	11	6,3	300	20...50 25...65	1,5 2 (2,5)	165...280 220...370	–	–
D 12-101				92					
D 12-110	Netzelektrode, hohe Ablenkempfindlichkeit, kurze Baulänge für Service-Oszilloskope *Mesh electrode, high deflection sensitivity*	3	6,3	92	36... 72 54...110	1 1,5 (2)	80...130 120...190	–	960...1040 1460...1540
D 12-270	*short overall length,* *for service oscilloscopes*			240	35...60	1 (2)	120...200	–	950...1050
D 13-40	Wendelförmige Nachbeschleunigungselektrode, für Service-Oszilloskope *Helical PDA electrode,* *for service oscilloscopes*	13	6,3	300	45... 75 60...100	1,5 2 (2,5)	175...240 240...300	–	1460...1540 1940...2060
D 13-41	D 13-40: mit aluminisiertem Schirm *with aluminized screen*	16			35...55	1 (2,5)	120...200	±40	960...1040
D 13-620 **D 13-622**	Service-Oszilloskope *Service oscilloscopes* D 13-620: ca. 700 g D 13-622: ca. 950 g	5	6,3	300	25...65	2 (2,5)	220...370	–	–
D 13-621		14			45...75	2 (2,5)	340...500	–	1960...2040
D 13-650	Netzelektrode, hohe Ablenkempfindlichkeit, kurze Baulänge, für Service-Oszilloskope *Mesh electrode, high deflection sensitivity,* *short overall length,* *for service oscilloscopes*	17	6,3	240	45... 90 54...110	1,25 1,5 (2)	100...160 120...190	–	1210...1290 1450...1550
D 14-11	Austastelektrode, Netzelektrode, für Breitbandoszilloskope *Blanking electrode, mesh electrode,* *for wideband oscilloscopes*	18	6,3	92	40...95	1,5 (2,5)	100...200	±60	1450...1550
D 14-111	Austastelektrode, Netzelektrode, gute Linearität, für Breitbandoszilloskope *Blanking electrode, mesh electrode,* *high linearity,* *for wideband oscilloscopes*	18	6,3	300	50... 90 60...110	1,25 1,5 (2)	20...160 40...200	±50 ±60	1210...1290 1450...1550
D 14-131	Austastelektrode, Netzelektrode, gute Linearität, für Breitbandoszilloskope *Blanking electrode, mesh electrode,* *high linearity,*	18	6,3	300	50... 90 60...110	1,25 1,5 (2)	20...160 40...200	±50 ±60	1200...1300 1440...1560
D 14-132	*for wideband oscilloscopes*			92					

Bemerkungen · ***Remarks:***[1]) Grenzwerte in ( ) · *Maximum ratings in ( )*

Schirmform und max. Abmessungen in mm
Screen shape and max. dimensions in mm

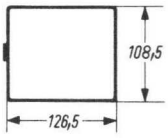
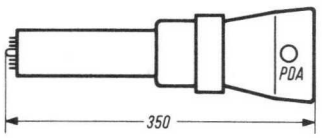
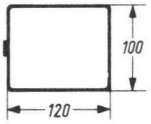
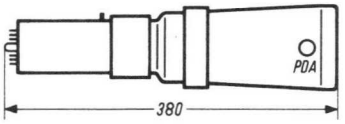
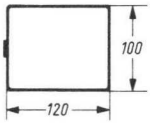
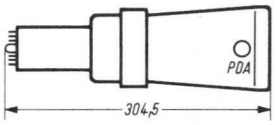
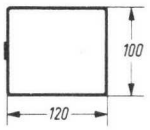
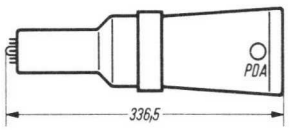
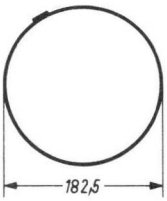
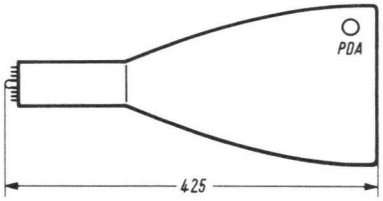
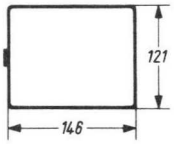
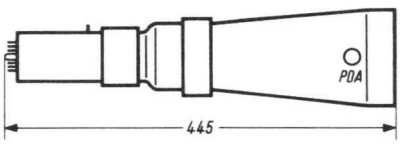
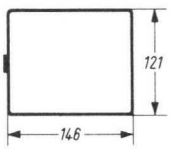
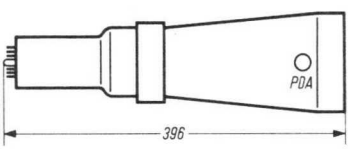
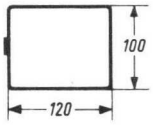
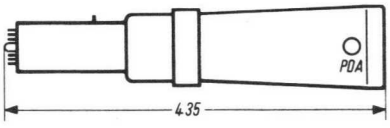
U_{GEO}	U_{MESH}	U_{PDA}[1])	D_1D_2	D_3D_4	Ausnutzbare Auslenkung *Useful scan*	
V	V	kV	V/cm	V/cm	mm x mm	
960...1040 1450...1550	935...1015 1425...1535	7 8 (10)	10,5...12,8 15,8...19,2	4,3...5,3 6,5...8	68 x 56	 
–	–	–	26...31 35...41,5	12...14,3 16...19	80 x 64	 
960...1040 1460...1540	935...1025 1435...1525	8 12 (13)	10,5...12,8 15,8...19,2	4,3...5,3 6,5...8	80 x 64	 
950...1050	925...1040	8 (13)	10...13	3...3,8		
1460...1540 1940...2060	–	4,5 6 (7,5)	25,5...30 34...40	11...13,5 15...18	100 x 80	 
960...1040	–	3 (7,5)	17,5...21	7,5...9,5		
–	–	–	25...31	13,5...15,5	100 x 80	 
–	–	–	20...25	11,3...13,7		
1210...1290 1450...1550	1185...1275 1425...1535	10 12 (13)	10...12 12...14,5	4,5...5,5 5,4...6,6	100 x 80	 
1450...1550	1425...1525	10 (12)	10...12,1	4,5...5,5	100 x 60	 
1210...1290 1450...1550	1185...1265 1425...1525	12,5 12,5 (13)	8...10 9,6...12	4,2...4,8 5...5,8	100 x 60	 
1200...1300 1480...1560	1175...1275 1415...1535	12,5 12,5 (13)	8...10 9,6...12	4,8...5,5 5,8...6,6	100 x 80	 

Elektronenstrahlröhren für Oszilloskope (Vorzugstypen)
Cathode-ray tubes for oscilloscopes (Preference types)

Typ *Type*	Beschreibung und Anwendung *Description and application*	Sockel *Base*	Betriebswerte (alle Spannungen auf Kathode bezogen) *Typical operation (all voltages referred to cathode)*						
			U_F	I_F	$-U_{WE}$	U_{D1}) U_{ACC1}	U_{FOC}	ΔU_{AT}	U_{AST}
		Nr.	V	mA	V	kV	V	V	V
D 14-140	Netzelektrode, sehr große Helligkeit, für Ultraschall-Prüfgeräte *Mesh electrode, very high brightness, for ultrasonic test sets*	19	6,3	300	38...68 50...90	1,5 2 (3)	60...200 100...250	–	1440–1560 1920...2080
D 14-220	Hohe Ablenkempfindlichkeit und Genauigkeit, für Breitbandoszilloskope *High deflection sensitivity and high accuracy, for wideband oscilloscopes*	20	6,3	300	50...90	1,3 (3)	200...400	U_S: 1,3 kV	1240...1360
D 14-221	D 14-221: sehr große Helligkeit *very high brightness*				80...130	2,5 (3)	400...600	–	2450...2550
D 14-230	Wendelförmige Nachbeschleunigungselektrode, kurze Baulänge *Helical PDA electrode, short overall length*	10	6,3	300	30...60 45...90	1 1,5 (2,5)	53...93 80...140	–	950...1050 1450...1550
D 14-231				92					
D 14-650	Netzelektrode, hohe Ablenkempfindlichkeit, kurze Baulänge, für Service-Oszilloskope *Mesh electrode, high deflection sensitivity, short overall length, for service oscilloscopes*	3	6,3	240	45... 90 54...110	1,25 1,5 (2)	100...160 120...190	–	1210...1290 1450...1550
D 18-11	Wendelförmige Nachbeschleunigungselektrode, aluminisierter Schirm *Helical PDA electrode, aluminized screen*	12	6,3	300	50...110	2 (3)	160...350	–	1940...2060
D 18-150	Netzelektrode, hohe Ablenkempfindlichkeit, für Breitbandoszilloskope mit großem Bildschirm *Mesh electrode, high deflection sensitivity, for wideband oscilloscopes with large screen*	20	6,3	300	77...140	2 (3)	300...600	U_S: 2 kV	1940...2060
D 18-650	Netzelektrode, hohe Ablenkempfindlichkeit, kurze Baulänge, für Oszilloskope mit großem Bildschirm *Mesh electrode, high deflection sensitivity, short overall length, for oscilloscopes with large screen*	3	6,3	240	45...90	2 (2,5)	170...270	–	1940...2060
E 14-120	Zweistrahlröhre, Netzelektrode, hohe Ablenkempfindlichkeit und Genauigkeit *Dual-beam tube, mesh electrode, high sensitivity and high accuracy*	15	6,3	600	45...85	1,25 (2)	400...500	–	1200...1300

Bemerkungen · ***Remarks:***[1]) Grenzwerte in ( ) · *Maximum ratings in ( )*

Schirmform und max. Abmessungen in mm
Screen shape and max. dimensions in mm

U_{GEO}	U_{MESH}	U_{PDA}[1])	D_1D_2	D_3D_4	Ausnutzbare Auslenkung *Useful scan*	
V	V	kV	V/cm	V/cm	mm x mm	
1450...1550 1940...2060	1425...1535 1915...2045	12 16 (18)	13,5...16,5 18...22	7,9...9,8 10,5...13	100 x 80	 
1240...1360	1215...1345	18 (20)	5,5...7,5	3...3,5	100 x 80	 
2450...2550	2425...2535	18 (20)	16...18	8...9		
950...1050 1450...1550	–	3 4,5 (7,5)	18,6...20,4 24...30	8...10 11,7...14,3	100 x 80	 
1210...1290 1450...1550	1185...1275 1425...1535	10 12 (13)	10...12 12...14,5	4,5...5,5 5,4...6,6	100 x 80	 
1940...2060	–	6 (9)	24...31	14...18	150 x 120	 
1940...2060	1915...2045	18 (20)	7,6	3,8	120 x 100	 
1940...2060	1945...2045	16 (18)	ca. 16	ca. 6,6	120 x 100	 
1200...1300	1175...1285	12,5 (15)	ca. 12	ca. 5	100 x 80	 

Elektronenstrahlröhren mit magnetischer Strahlablenkung (Vorzugstypen)
Cathode-ray tubes with magnetic beam deflection (Preference types)

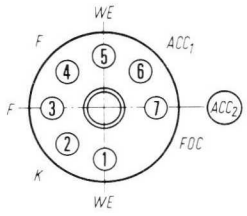
Typ *Type*	Beschreibung und Anwendung *Description and application*	Sockel Base	Betriebswerte (alle Spannungen auf Kathode bezogen) *Typical operation (all voltages referred to cathode)*						
			U_F	I_F	$-U_{WE}$	U_{ACC_1}	U_{FOC}	U_{ACC_2} [1]	Ausnutzbare Schirmfläche *Useful screen area*
			V	mA	V	V	V	kV	mm x mm
Monitorröhren · *Monitor tubes*									
M 14–100	Industrielle und elektro-medizinische Sichtgeräte, Daten-Monitore *Industrial and electro-medical display units, data monitors*	A	12	75	15...39	300	0...300	8 (10)	109 x 85
M 17–11 **M 17–111**		B	11	72	32...58	250	0...350	11 (13)	124 x 93
M 17–210		E	6,3	300	60...112	600	0...400	16 (18)	124 x 93
M 23–100		A	12	75	33...77	400	0...350	9 (12)	183 x 140
M 28–12		B	11	72	32...58	250	0...350	11 (14)	228 x 171
M 31–200		B	11	72	32...58	250	0...350	11 (14)	257 x 195
M 31–120									
M 31–140	Daten-Monitore, 875 Zeilen *Data monitors, 875 lines*	D	6,3	300	50...112	600	0...400	16 (18)	257 x 195
M 31–150		E							
M 38–121	Monitore, 875 Zeilen *Monitors, 875 lines*	E	6,3	300	50...112	600	0...400	16 (18)	226 x 290
M 44–120									346 x 270
M 44–121	Monitore · *monitors,* 1000 Zeilen · *lines*	E	6,3	300	50...93	2500	2600...2800	18 (20)	346 x 270
M 44–130	Monitore · *monitors,* 1000 Zeilen · *lines*	K	6,3	300				18 (20)	346 x 270
M 50–120	Monitore · *monitors,* 625 Zeilen · *lines*	E	6,3	300	60...112	600	0...400	16 (18)	394 x 308
M 61–120	Monitore · *monitors,* 875 Zeilen · *lines*	E	6,3	300	60...112	600	0...400	16 (18)	481 x 375
Radarröhren · *Radar tubes*									
F 7–100	Mit Planschirm *With flat-faced screen*	–	6,3	300	45...70	–	magn.	15	⌀62
F 8–100	Mit Planschirm *With flat-faced screen*	–	6,3	300	50...100	–	2600	18	⌀68,9
F 17–100	Mit Planschirm *With flat-faced screen*	B	11	72	32...58	250	0...350	11	⌀155
F 18–100 **K 1987**		H	6,3	300	12...20	300	0...350	10	⌀152
F 31–150	Mit Metallrahmen *With rimguard*	J	6,3	600	28...72	300	0...300	10	⌀279
F 42–10	Mit Metallrahmen · *With rimguard*	C	6,3	300	62...95	300	–100...+350	12	⌀365
F 42–101	Ohne Metallrahmen · *Without rimguard*								
F 58–100		E	6,3	300	60...130	2200	2000...4000	18	⌀508
10 KP...		G	6,3	600	25...70	250	magn.	9	⌀230
10 WP...		J	6,3	600	28...72	300	0...300	10	⌀230
Feinpunktröhren · *Flying spot tubes*									
Q 13–10	Linienbreite 33 µm *Line width 33 µm*	F	6,3	300	35...110	1000	magn.	20 (22)	⌀108
Q 13–120	Linienbreite 20 µm *Line width 20 µm*	F	6,3	300	50...100	2000	magn.	20	⌀108
Q 23–100	Linienbreite 25 µm *Line width 25 µm*	G	6,3	300	35...110	2000	magn.	23 (25)	⌀195
Q 25–100	Linienbreite 50 µm *Line width 50 µm*	G	6,3	300	33...77	2000	magn.	20 (25)	⌀228
Q 28–103	Linienbreite 25 µm *Line width 25 µm*	G	6,3	300	35...110	2000	magn.	20 (25)	⌀250

Bemerkungen · ***Remarks:*** [1]) Grenzwerte in ( ) · *Maximum ratings in ( )*

Max. Hals-⌀ *Max. nec ⌀*	Ablenk ∢ *Deflection ∢*	Gesamtlänge *Overall length*
mm	°	mm
21	70	180
21	75	204
29,6	75	225
21	90	219
21	90	250
21	90	277
	110	233
29,6	90	310
	110	241
29,6	110	279,5
		291
29,6	110	326,5
38	110	
29,6	110	319
29,6	110	370
21,2	45	187
22,5	28	244
21	75	205
22,8	70	221
38	55	466,5
38	53	613
27,5	57	681,5
38	50	457
38	50	440
38	42	430
38	40	505
35,5	45	764
38	50	645
38	50	680

Sockelschaltungen
Base diagrams

A



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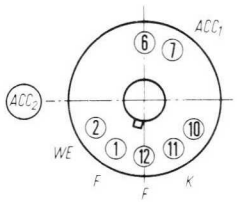

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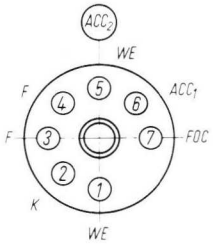
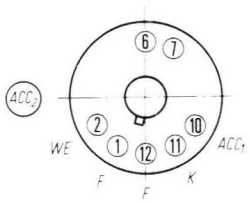


G



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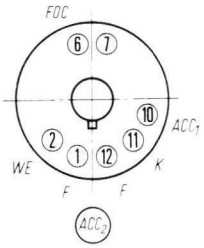

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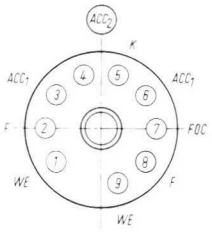
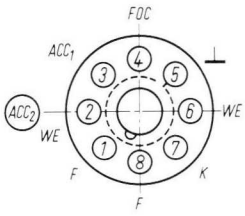
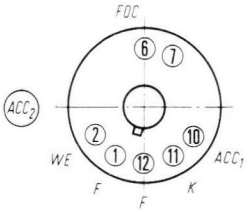


D



J



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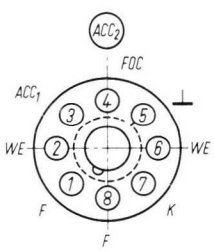

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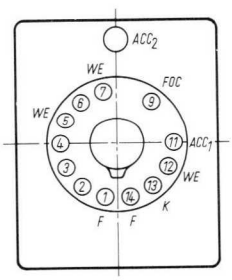

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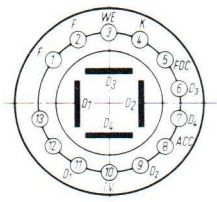

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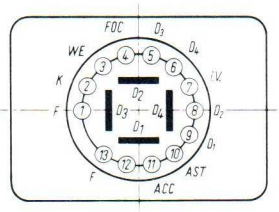

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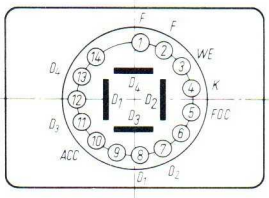

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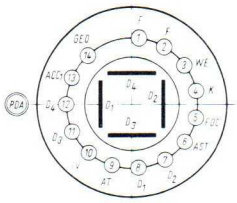

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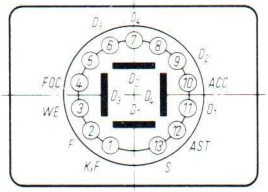

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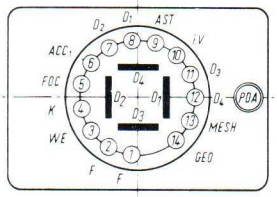

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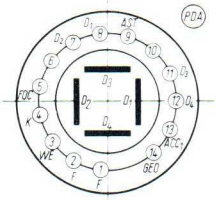

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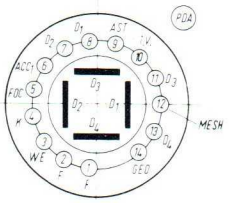

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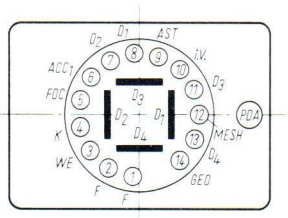

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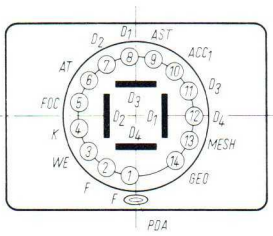

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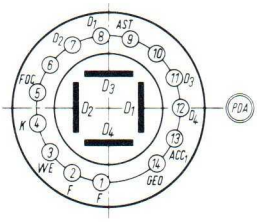

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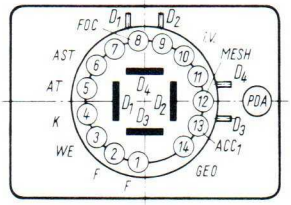

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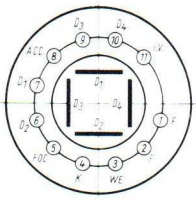

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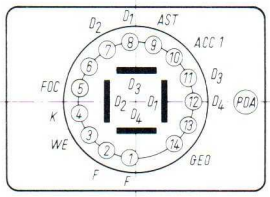

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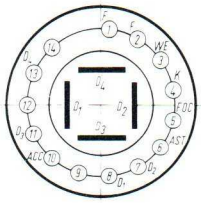

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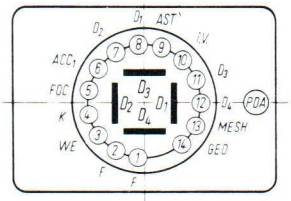

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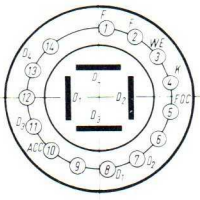

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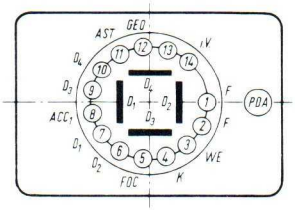

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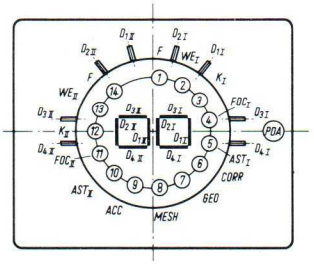

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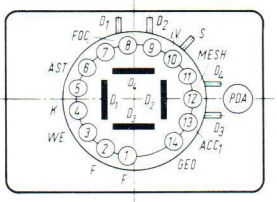

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