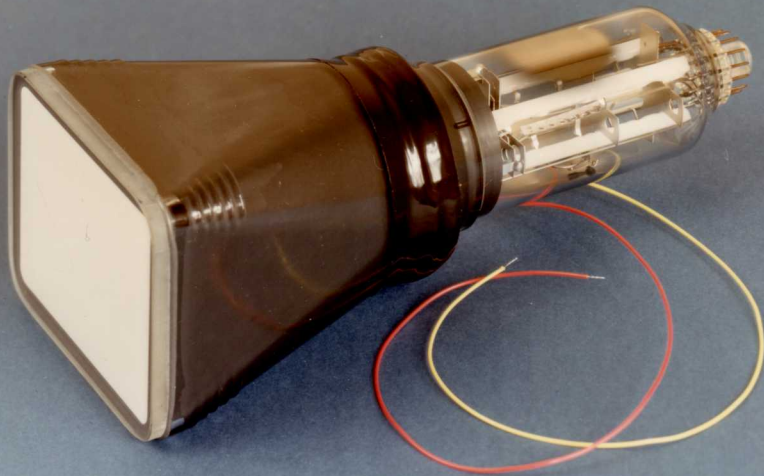
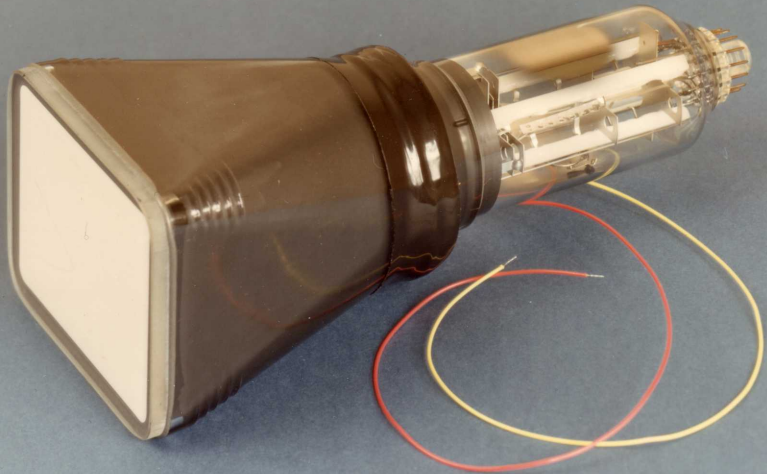


VRIJGAVE FABRICAGE

TYPE D12-130 .. / ...



KWALITEITSLAB. PROF. BUIZEN



Ontw/Proeffabr.
overzicht

E L C O M A	KWALITEITS LAB. PHILIPS HEERLEN		
	KHR-89/VL-125	1	1983.08.31

INHOUD RfP DOSSIER D12-130 ../...

ONTVANGEN	
Ontv.	5 SEP. 1983
A. G. SIEBEN	

- Besprekingsverslag KHR-89/VL -126
 - Handtekeningenformulier
 - Foto van de buis
 - Budgetoverzicht
 - Preliminary data (gewijzigd konform bespr. verslag)
(inclusief gewijzigd interne meetrastertekening)
 - Meeteis d.d. 1983.08.10; bladzijde 362-005 uitwisselen
 - Meetresultaten:
 - * Vrijgaverapport KHR-89/SB-634
 - * D12-130 .. meetresultaten KHR-89/VL-123
 - * Gemiddelde karakteristiekligging KHR-89/SB-633
 - * Ligtest KHR-89/VL-117
 - * Levensduur KHR-89/VL-119
 - * Opbrengstlijst (Hr. Schoder) d.d. 1983.08.22
 - Konkurrentie-onderzoek 12 cm mono d.d. 1983.08.05
 - Overzicht gereedschappen en produktie-apparatuur KHR-20/83-07--47/JS/GA
 - Flow-diagram: met/zonder inwendig meetraster
- Verwijderen { Sam kanon 3322 137 47000 blad 260-001 en 260-002
en
Ingedrukt kanon 3322 137 47010 blad 260-002
- Pompen III d.d. 1983.08.23
 - Branden en sweepen d.d. 1983.08.23 RV-5-5-57/1
Blad 001 uitwisselen d.d. 1983.09.06
 - Speciale materialen KHR-20/83-07-050/HK/GA
 - Ingangskontrolle d.d. 1983.06.29
 - Meetinformatie speciale onderdelen d.d. 1983.07.12
 - Materiaalbalans d.d. 1983.06.20 JBA/hr/024
 - Stempelen en verpakken d.d. 1983.08.09
(met/zonder raster)
 - Octrooi
 - Kostprijs KHR-12/83-072 AV/OD
 - Garantie situatie

E L C O M A	KWALITEITS LAB. PHILIPS HEERLEN		
	KHR-89/VL-126	1	1983.08.31

BESPREKING RfP VOOR D12-130 ../...

Gehouden op : 1983.08.25

Aanwezig : H.H. Offermans - Schröder - Handels - Zeppenfeld -
Koppelmans - Hermans - Cobben - Mordang - Sieben -
Modderman (tijd.) - Vleeschouwers

1. TYPE D12-130 ..

- Buis uit de V-ballon matrix, n.l.: - 12 cm konus
- kanon van D10-181
- Uitvoeringsvarianten: * met/zonder raster
* nieuwe 0,65 W katode
* 1,5 W/QHC
* GY/GH/GM fosfor
- Commerciële type-aanduiding D12-130 ..
- Commerciële naam voor dit raster met cijfers /119

2. BESPREKING

2.1 Ontwikkelingsoverzicht is niet aanwezig.

2.2 Publikatie

Besproken werden de preliminary data.

Op bladzijde 3: note over spoelen = 0,7% per k wordt 0,4% per k, (max. 270 at 80°C) vervalt.

E L C O M A	KWALITEITS LAB. PHILIPS HEERLEN		
	KHR-89/VL-126	2	1983.08.31

2.3 Meeteis

Aanpassen van cap. Ck/R naar $2,9 \pm 0,6$ pF voor 0,65 W katode.

2.4 Meetresultaat

Opmerkingen :

- Magnetisch corrigeren is noodzakelijk m.b.t. rastervervorming en resthelderheid.
- Meetmethode voor het meten van de resthelderheid is niet optimaal, buizen zijn visueel goed maar volgens deze meetmethode uitval of grens. Betere meetmethode is in ontwikkeling.

2.5 Flow-diagram

Kanon is identiek aan D10-181 behalve 0,65 W katode.

2.6 Meetinformatie speciale onderdelen

Concentriciteit van de gemeten koni voldoet niet aan de eis van 0,8 mm.

2.7 Commerciële planning

Aanlopend, tot 2.000 stuks op jaarbasis in 1985.

2.8 Zwakke punten (zie ook meetresultaten)

- Systematisch afschaduwen in X-ri t.g.v. het gebruik van oude indrukmallen (na magnetiseren wel goed).
- Systematisch kussen + slinger in de X-lijn.
Een en ander hangt samen met de keuze van één standaardkanon voor 2 typen en gebruik van standaard X-platen.
Oplossing is mogelijk via de nieuwe kanonkonstructie (L.T. \approx 1,5 jaar).

2.9 Konklusie

Per 1983.08.25: RfP verleend.





J. Vleeschouwers

Ondergetekenden verklaren zich accoord met de

Vrijgave Fabricage

van INSTRUMENT CATHODE-RAY TUBE

Type: D12-130 ../...

<u>Naam</u>	<u>Afdeling</u>	<u>Handtekening</u>
E. MODDERMAN	Commerciële afd.	
H. KOPPELMANS	Ontwikkelings afd.	 H. Koppelmans Jell-Feet.
J. HERMANS	Fabricage afd.	
A. SIEBEN	Kwaliteits lab.	

Datum 1983.08.25

ONTVANGEN
Ontv. 27 SEP. 1983
A. G. SIEBEN

Kwal.Afd.Prof.Componenten
 RAR-80/83 120
 1983-09-23.

M E D E D E L I N G

De oscillograafbuis type D12-130/... heeft op 25-08-1983
 Release for Production verkregen te Heerlen.



Drs. R.R.P.Varekamp.

<u>Kopie de H.H.:</u>	<u>Eindhoven</u>	<u>Heerlen</u>
<u>Directie</u> :	Ir. Sprenger	
<u>Bedr.Leiding</u> :		Snijders, Dr.Groenewegen
<u>Ontwikkeling</u> :		Dr. Zeppenfeld
<u>Fabrikage</u> :		Hermans
<u>C.A.</u> :	Weijer, Modderman	
<u>Kwal.Lab.</u> :	Honig	Sieben
<u>M.I.S.D.</u>		Jamar
<u>Gem.Bel.</u> :	Stolte	
<u>V.O.B.</u> :	v. Buul	
<u>Adm.</u> :		Bastings
<u>Techn.Publ.</u> :	Slingerland	
<u>C.P.D.</u> :	Wilms.	

Budget
overzicht

Budget - overzicht t.b.v. D 12 - 130

1. IK 4414 STUDIE 10 - 12 cm MONO

begroot en uitgegeven

na aftrek spec. gereedschap kfl 400

dit kan worden onderverdeelt in

- studie (aug. 1980 t/m mei 1981) kfl 100
- ontw. 10, cm - ballen kfl 150
- ontw. kanon en type D 10 - 180 kfl 150

het kanon (mono - 30) kan in principe voor 10 - 12 - 14 - 18 cm buizen worden gebruikt. Van de kfl. 150 zal een deel aan de D 12 - 130 moeten worden toegevoerd.

2. IK 4422 12 cm V - ballen

aangevraagd en uitgegeven van

dec. 1981 t/m juni 1983 na

aftrek spec. gereedschap kfl 150

de 12 cm - ballen zal behalve voor de D 12 - 130 ook voor de bolgasbus 110 - D 12 worden gebruikt; ook een helix - versie is in discussie.

5 - aug. 1983

Kopie: Honig BFF-2
Koppelmaans

Hans Jofffeld

Publicate

DYNAMIC DEFLECTION DEFOCUSING CORRECTION

The tube has a special electrode, positioned between the x and y-plates, for dynamic correction of deflection defocusing, to improve the uniformity of the extremely good line width up to the screen edges. If use is made of this dynamic correction, a negative voltage proportional to, and approx. 50% of, the negative horizontal deflection plate voltage should be applied to this electrode (grid 6).

The correction-circuit impedance must be $\leq 100 \text{ k}\Omega$. To prevent distortion, the output impedances of the x-amplifiers should be $\leq 10 \text{ k}\Omega$.

If no correction is required, grid 6 should be connected to mean x-plate potential ($V_{g2(l)}$).

Angle between x and y-traces

90° note 2

Angle between x-trace and x-axis of the face plate

$\leq 50^*$

CAPACITANCES (approx. values)

x₁ to all other elements except x₂

C_{x1(x2)} 4,5 pF

x₂to all other elements except x₁

C_{x2(x1)} 4,5 pF

y₁to all other elements except y₂

C_{y1(y2)} 3,5 pF

y₂to all other elements except y₁

C_{y2(y1)} 3,5 pF

x₁to x₂

C_{x1x2} 2 pF

y₁to y₂

C_{y1y2} 1 pF

Control grid to all other elements

C_{g1} 6 pF

Cathode to all other elements

C_k 2,7 pF

g₆ to all other elements

C_{g6} 11 pF

± 25 at 20°C, increasing by 0.4% per K with temperature.

* The tube has a trace rotation coil, fixed onto the lower cone part. The coil has 1000 turns and a typical resistance of 180 Ω at 20 °C (~~max. 270 Ω at 80 °C~~). Approx. 6 mA causes 1° trace rotation. Thus maximum required voltage is approx. 12 V for tube tolerances ($\pm 5^\circ$) and earth magnetic field with reasonable shielding ($\pm 2^\circ$).



(-12 cm MONO 3 D gun of D10-181)

INSTRUMENT CATHODE-RAY TUBE

- mono accelerator
- 12 cm diagonal rectangular flat face
- dynamic deflection defocusing correction
- internal magnetic correction for astigmatism, vertical eccentricity and orthogonality
- Low heater power consumption
- for portable oscilloscopes with up to 25 MHz bandwidth, and read-out devices

QUICK REFERENCE DATA

Accelerator voltage	$V_{g2(l)}$	2000 V
Minimum useful scan area		80 x 64 mm
Deflection coefficient		
horizontal	M_x	32 V/cm
vertical	M_y	21 V/cm

OPTICAL DATA

Screen type	GY, colour green	
Screen persistence	medium short	
Useful screen area	>	82 x 66 mm
Useful scan area	>	80 x 64 mm
Spot eccentricity		
in horizontal direction	<	4 mm
in vertical direction	<	2 mm

note 2, page 7

HEATING

Indirect by a.c. or d.c.*

Heater voltage	V_f	6,3 V
Heater current	I_f	0,1 A
Heating time to attain 10% of the cathode current at equilibrium conditions	approx.	7 s

* Not to be connected in series with other tubes.

blue binder, tab 4



109 D 12

MECHANICAL DATA

Dimensions and connections (see also outline drawing)

Overall length (socket included)

$< 257\text{mm}$

Faceplate dimensions

$98 \pm 0,5\text{mm} \times 82 \pm 0,5\text{mm}$

Net mass

approx. 700g

Base

12 pin, all glass,
JEDEC B12-246

Mounting

The tube can be mounted in any position. It must not be supported by the base alone or near the base region and under no circumstances should the socket be allowed to support the tube.

Accessories

Socket with solder tags

type ~~55588~~ 55594

Socket with printed-wiring pins

type 55595

FOCUSING

electrostatic

DEFLECTION

x-plates

double electrostatic

symmetrical

y-plates

symmetrical

If use is made of the full deflection capabilities of the tube the deflection plates will block part of the electron beam, hence a low impedance deflection plate drive is desirable.

DYNAMIC DEFLECTION DEFOCUSING CORRECTION

The tube has a special electrode, positioned between the x and y-plates, for dynamic correction of deflection defocusing, to improve the uniformity of the extremely good line width up to the screen edges. If use is made of this dynamic correction, a negative voltage proportional to, and approx. 50% of, the negative horizontal deflection plate voltage should be applied to this electrode (grid 6).

The correction-circuit impedance must be $\leq 100 \text{ k}\Omega$. To prevent distortion, the output impedances of the x-amplifiers should be $\leq 10 \text{ k}\Omega$.

If no correction is required, grid 6 should be connected to mean x-plate potential ($V_{g2(l)}$).

Angle between x and y-traces

90° note 2

Angle between x-trace and x-axis of the face plate

$\leq 50^*$

CAPACITANCES (approx. values)

x₁ to all other elements except x₂

C_{x1(x2)} 4,5 pF

x₂ to all other elements except x₁

C_{x2(x1)} 4,5 pF

y₁ to all other elements except y₂

C_{y1(y2)} 3,5 pF

y₂ to all other elements except y₁

C_{y2(y1)} 3,5 pF

x₁ to x₂

C_{x1x2} 2 pF

y₁ to y₂

C_{y1y2} 1 pF

Control grid to all other elements

C_{g1} 6 pF

Cathode to all other elements

C_k 2,7 pF

g₆ to all other elements

C_{g6} 11 pF

± 25 at 20°C, increasing by 0.7% per K with temperature.

0,4

* The tube has a trace rotation coil, fixed onto the lower cone part. The coil has 1000 turns and a typical resistance of 130 Ω at 20 °C (~~max. 270 Ω at 80 °C~~). Approx. 6 mA causes 1° trace rotation. Thus maximum required voltage is approx. 12 V for tube tolerances (± 5°) and earth magnetic field with reasonable shielding (± 2°).



109 D 12

DIMENSIONS AND CONNECTIONS

Dimensions in mm

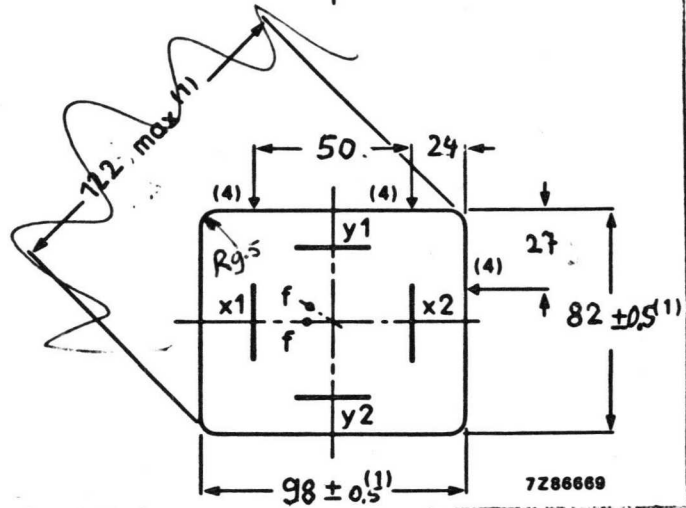
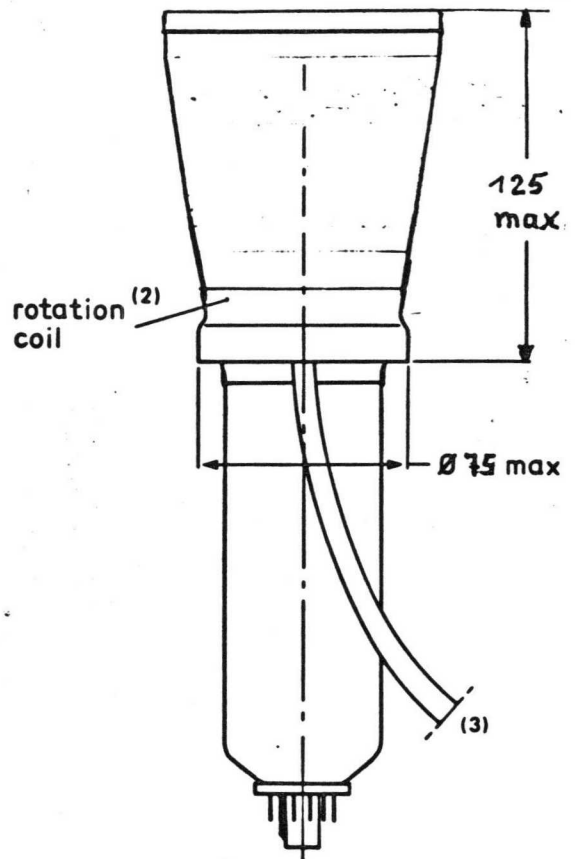
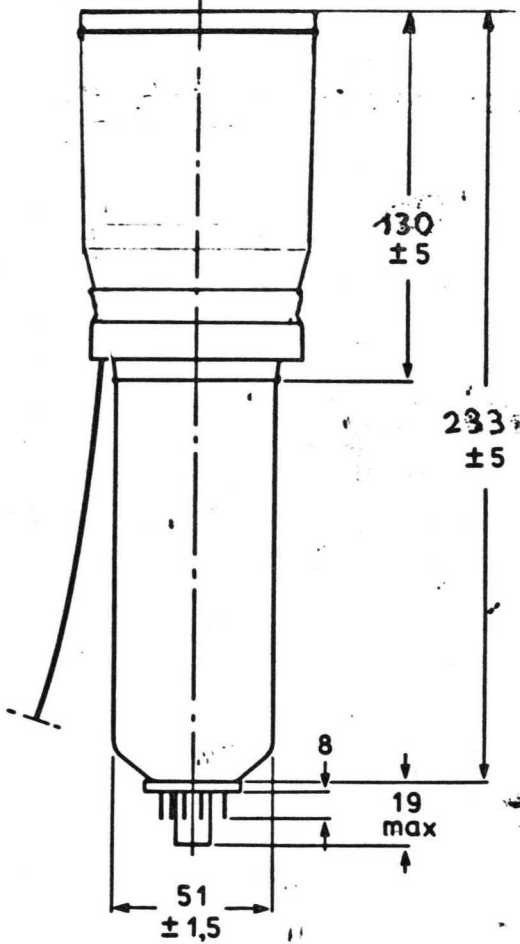


Fig. 1 Outlines; for notes see bottom of opposite page.

~~1983-05-27~~
1983-08-10

PHILIPS



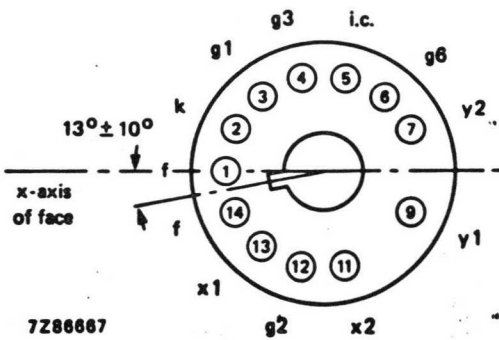


Fig. 2 Pin arrangement; bottom view.

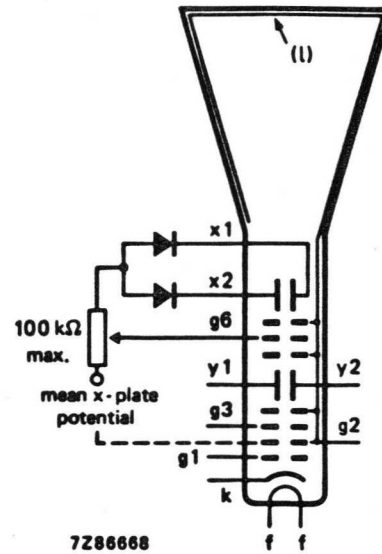


Fig. 3 Electrode configuration.

Notes to the drawing on opposite page.

1. Dimensions of face plate only. The complete assembly of face plate and cone (frit seal included) will pass through an opening of 104 mm x 85 mm (diagonal 125 mm).
2. The coil is fixed to the envelope with resin and adhesive tape.
3. The length of the connecting leads of the rotation coil is min. 350 mm.
4. Reference points on face plate for screen alignment.

TYPICAL OPERATION*

Conditions (note 1)

Accelerator voltage	$V_{g2(\ell)}$	2000 V	
Astigmatism control voltage	$\Delta V_{g2(\ell)}$	0 V	note 2
Focusing electrode voltage	V_{g3}	220 to 360 V	
Cut-off voltage for visual extinction of focused spot	$-V_{g1}$	22 to 65 V	

Performance

Useful scan			
horizontal		>	80 mm
vertical		>	64 mm
Deflection coefficient			
horizontal	M_x	<	32 V/cm
			35 V/cm
vertical	M_y	<	21 V/cm
			23 V/cm
Line width at 10 μ A beam current	l.w.	\approx	0, 2 mm note 3
Deviation of linearity of deflection		<	2 % note 4
Geometry distortion			see note 5
Grid drive for 10 μ A screen current	V_d	\approx	10 ¹¹ V (see also graph) ←

LIMITING VALUES (Absolute maximum rating system)

Accelerator voltage	$V_{g2(\ell)}$	max.	2200 V
Focusing electrode voltage	V_{g3}	max.	2200 V
Voltage between accelerator electrode and grid 6	$V_{g2/g6}$	max.	\pm 500 V
Voltage between accelerator electrode and any deflection plate	$V_{g2/x/y}$	max.	\pm 500 V
Control grid voltage	$-V_{g1}$	max.	200 V
		min.	0 V
Cathode to heater voltage			
positive	V_{kf}	max.	125 V
negative	$-V_{kf}$	max.	125 V
Grid drive, averaged over 1 ms	V_d	max.	20 V
Screen dissipation	W_ℓ	max.	3 mW/cm ²
Control grid circuit resistance	R_{g1}	max.	1 M Ω

* Notes are on page 7.

NOTES

1. The mean x-plate potential and the mean y-plate potential should be equal to $V_{g2(\bar{e})}$.
2. The tube features internal magnetic correction for *astigmatism, orthogonality and eccentricity calibration*. Optimum spot is obtained for V_{g2} equal to mean y-potential.
3. Measured with the shrinking raster method within the useful scan under typical operating conditions, adjusted for optimum focus and dynamic correction applied.

As the construction of the tube does not permit a direct measurement of the beam current, this current should be determined as follows:

- a) Under typical operating conditions, apply a small raster display (no overscan), adjust V_{g1} for a beam current of approx. $10 \mu\text{A}$ and adjust V_{g3} for smallest spot size at the centre of the screen. When measuring the beam current, grid 6 should be connected to $g2$ -potential and the diodes should be disconnected from the x-plates.
 - b) Under these conditions, but without raster, the deflection plate voltages should be changed to: $V_{y1} = V_{y2} = 2000 \text{ V}$; $V_{x1} = 1300 \text{ V}$; $V_{x2} = 1700 \text{ V}$, thus directing the total beam current to x_2 . Measure the current on x_2 and adjust V_{g1} for $I_{x2} = 10 \mu\text{A}$.
 - c) Set again for the conditions under a), without touching the V_{g1} control. The screen current of the resulting raster display is now $10 \mu\text{A}$.
Adjust V_{g3} for optimum focus in the centre of the screen and apply dynamic correction to grid 6 for optimum vertical line width.
4. The sensitivity at a deflection of less than 75% of the useful scan will not differ from the sensitivity at a deflection of 25% of the useful scan by more than the indicated value.
 5. A graticule consisting of concentric rectangles of $80 \text{ mm} \times 64 \text{ mm}$ and $78,3 \text{ mm} \times 62,3 \text{ mm}$ is aligned with the face plate (using the reference points). With optimum trace rotation correction, horizontal and vertical lines will fall between these rectangles.

