



TV 2019 KLYSTRON

TV 2019 is a very high power sealed-off amplifier klystron able to deliver a 10 MW peak power in "S" band.

It is specially designed to be used on particle accelerators.

It includes five resonators : four of them are pretuned in the factory and the fifth one, the output resonator, is at a fixed frequency.

The R.F. input is made on a "N" type coaxial plug and the output through one ceramic window set up on a waveguide.

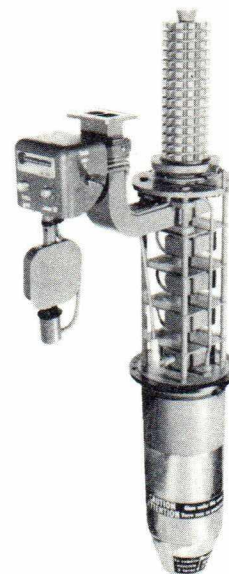
Each tube is tuned at the factory at a specified central frequency in the range 2700 - 3100 Mc/s.

Beam focalization is insured by a TV 19.009 focus coil external to the tube.

The tube body and the window are cooled by a water flow and the collector by vaporization of water.

TV 2019 high frequency amplifier, of very large peak and average powers, has the following advantages :

- High gain : 55 dB.
- High efficiency (more than 40 %).
- High operating reliability due to the Vapotron*cooling technique of the collector.
- Long life, the tube being fitted with an active getter.



Electrical

Cathode	
Heater voltage	
Heater current, approximately	
Heater warm-up time	min.

CHARACTERISTICS

unipotential, indirectly heated
25 V $\pm$ 10 % (1)
24 A
15 mn.

Mechanical

Dimensions	
Mounting position	
Weight	
Envelope	
R.F. input	
R.F. output	

see drawing page 4
vertical, cathode down
60 Kg approximately
metal, ceramics and glass
UG 22 D/U plug.
RG 48/U waveguide with reduced rectangular flange (see drawing page 3)
UG 496/U plug
STAUBLI plug, small size

Active getter input	
Cooling water inlet	

(1) The exact heating voltage is indicated on the testing sheet of each tube. This voltage is to be observed within $\pm$ 10 %.

* C.F.T.H. reg. trade mark.

TV 2019

January 1964 - Page 2/4

**Accessories**

R.F. input connector	UG 21 D/U (coaxial line RG 143/U)
Waveguide flange	RH 1.404.158 or equivalent, must fit the flange of the klystron (see drawing page 3)
Active getter connector	UG 60 D/U
Water inlet connector	STAUBLI connector (provided with each tube), fits a 8 or 13 mm. inner diameter tube. When disconnected from the plug, the connector locks the water circuit.
Focus coil	TV 19.009
Heater-cathode connector	TV 19.201
Vapodyne* system	see data NZ 1253

TYPICAL OPERATION(Load : VSWR $\leq$ 1.1)

Beam voltage	170 kV
Beam current	150 A
Output, peak	10.2 MW
Output, average	15.3 kW
Gain	55 dB
Bandwidth (- 1 dB)	15 Mc/s
Efficiency	40 %
Pulse duration	5 μ s
Pulse repetition rate	300 pps
Duty cycle	. 002
Water flow	3 l/mn
Water inlet pressure	1 kg/cm ²

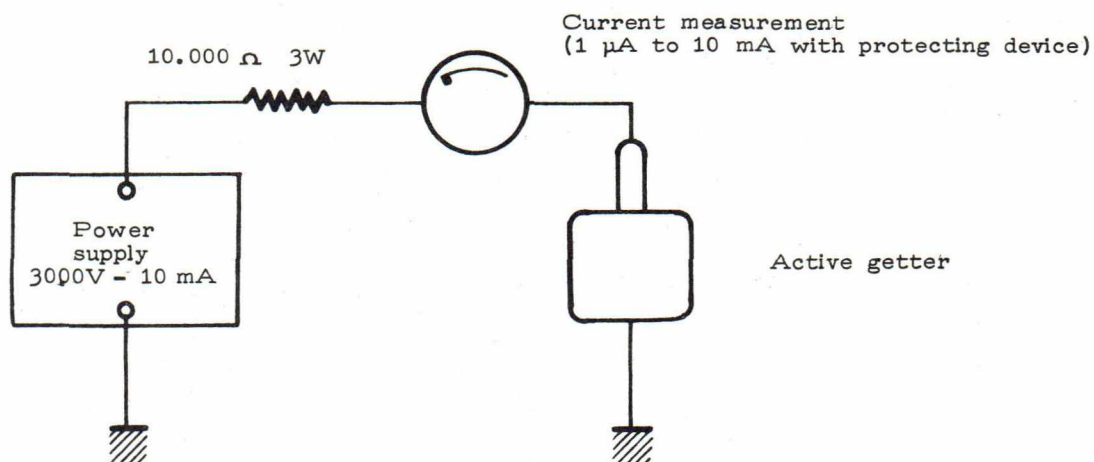
MAXIMUM RATINGS

(non simultaneous)

Heater surge current	50 A
Beam voltage	190 kV
Average applied power	50 kW
Collector dissipation	50 kW
Duty cycle	.002
Load V.S.W.R.	1.5
Absolute pressure on the output window	4 kg/cm ²
Cooling water inlet temperature	50 °C
Cooling water flow	min. 3 l/mn
Cooling water inlet pressure	max. 8 kg/cm ² gen.

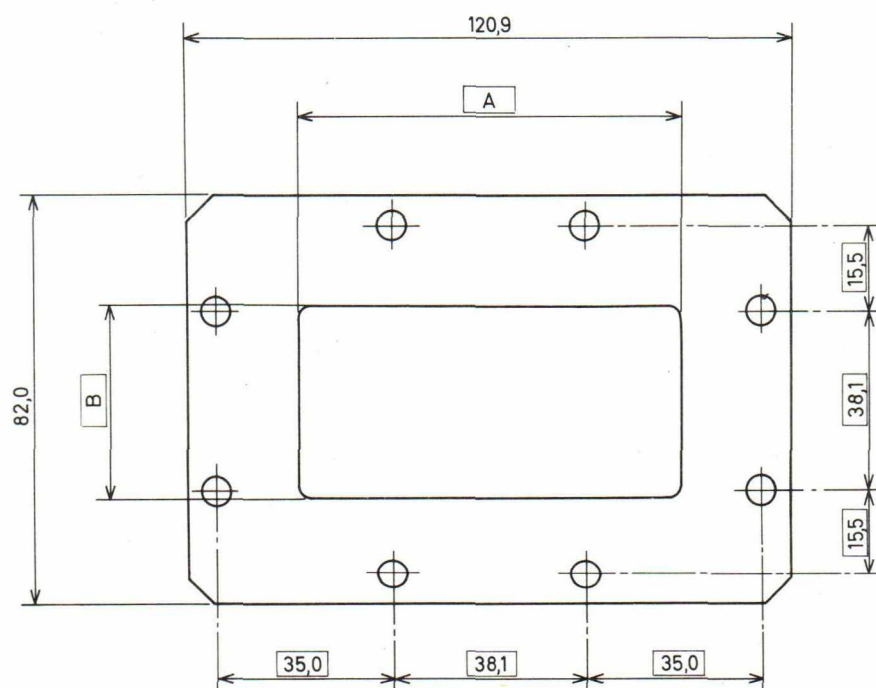
*C.F.T.H. reg. trade mark.

ACTIVE GETTER FEEDING CIRCUIT



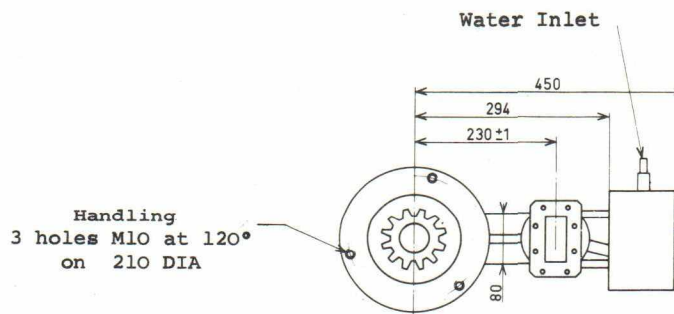
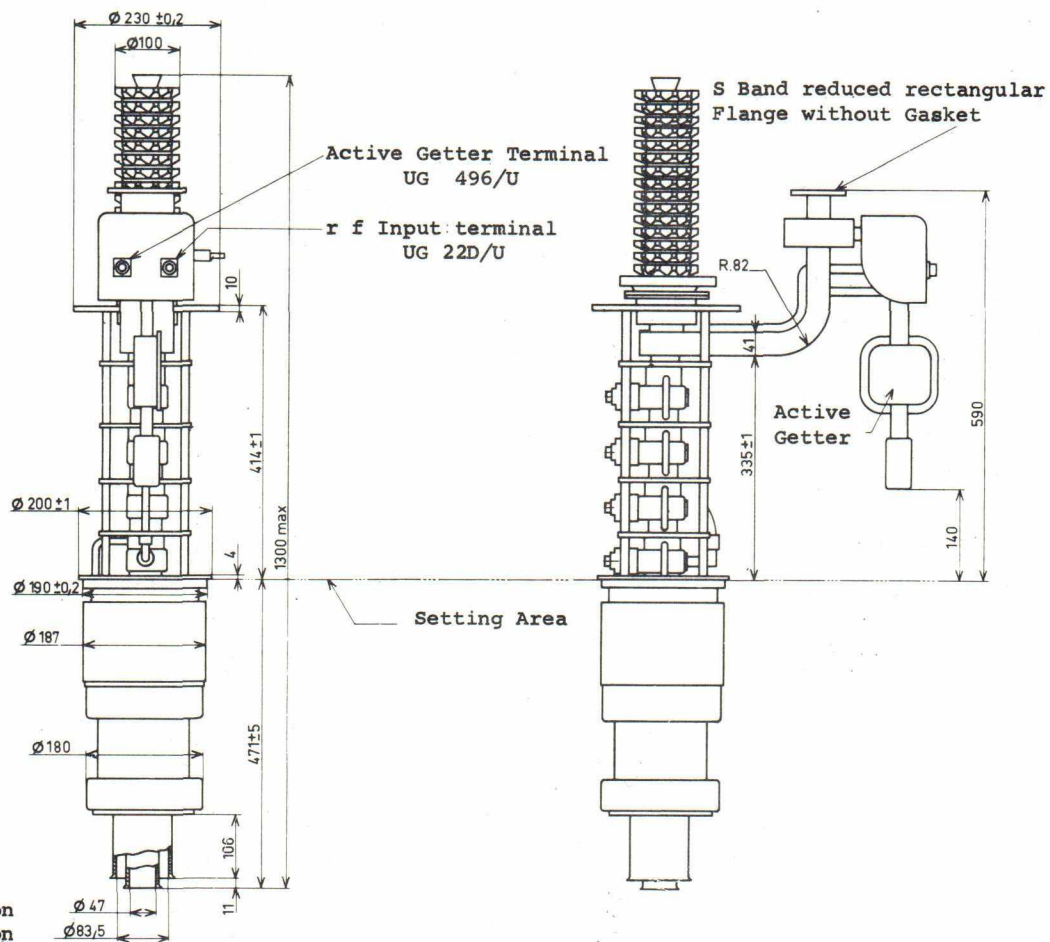
The active getter operation requires the use of a TV 19500 permanent magnet supplied with TV 19.009 Focus Coil.

KLYSTRON OUTPUT FLANGE



all dimensions in mm.

8 holes ϕ 6,2 $^{+0,2}_{-0,2}$
group ϕ 6,2 $^{+0,2}_{-0,2}$ AB



All dimensions in mm