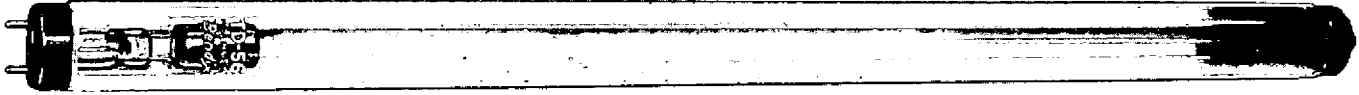


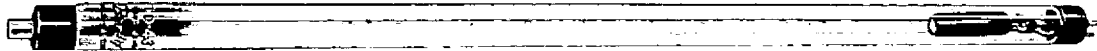


8286 8293  
8287 8290  
7988 8291

# GAS NOISE SOURCES - NEON, PULSE



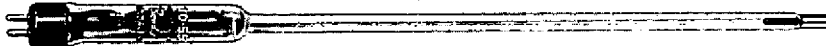
8286  
TD-56



8287  
TD-43



7988 8293  
TD-44 TD-58



8290  
TD-55



8291  
TD-51

## DESCRIPTION

These tubes are designed primarily for use as pulse-operated noise sources in microwave measurements. They may be used also in DC operation. When used in standard mount assemblies, they function as untuned terminations over the entire recommended transmission bandwidths of the guides.

	8286/TD-56	8287/TD-43	7988/TD-44 8293/TD-58	8290/TD-55	8291/TD-51
Waveguide	RG-48/U	RG-49/U RG-50/U	RG-52/U	RG-91/U	RG-53/U
Frequency kMc	2.60 - 3.95	3.95 - 5.85 5.85 - 8.20	8.20 - 12.40	12.40 - 18.00	18.00 - 26.50
Insertion Angle	10°E	10°E	10°E	10°E	10°E

Electron Tube Products  
Red Bank Division  
Eatontown, N. J.





## GAS NOISE SOURCES - NEON, PULSE

RATINGS							
Characteristic	Unit	8286/TD-56	8287/TD-43	7988/TD-44	8293/TD-58*	8290/TD-55	8291/TD-51
Anode Current (Peak)	ma	225	200	200	200	200	200
Anode Current (Average)	mAdc	200 max.	175 max	175 max	175 max	175 max	175 max
Tube Voltage drop (Average)	Vdc	265	210	205	208	230	260
Tube Dissipation (Average)	Watts	53	42	41	42	46	52
Starting Voltage (Note 1, 3)	KV	2.5-3.5	2.5-3.5	2.5-3.5	2.5-3.5	2.5-3.5	2.5-3.5
Starting Current (Note 2, 3)	mAdc	190	190	190	190	300	300
Ambient Temp. Range	°C	-55°to+85°	-55°to+85°	-55°to+85°	-55°to+85°	-55°to+85°	-55°to+85°
VSWR (Cold)		1.15 max	1.20 max	2.10 max	1.10 max	1.15 max	1.20 max
VSWR (Hot)		1.10 max	1.35 max	1.20 max	1.20 max	1.15 max	1.15 max
Nr-1 Tube in Mount @ Rated Average Current (Notes 4, 5, 6)	db	17.90±.25	17.81±.30 for RG-49/u 17.86±.30 for RG-50/u	17.95±.30	18.00±.25	17.85±.30	17.94±.35

Note 1: With the noise source in a case grounded mount, starting voltages were measured as shown in Figures 1 and 2.

Note 2: With the noise source in a case grounded mount and the starting current through the choke ( $I_{start}$ ) of Figure 3 adjusted to the value stated, the noise source will start within three attempts of closing and opening switch SW.

Note 3: In general the starting voltage will decrease with a starting pulse of either a faster rise time or longer pulse width.

Note 4: The excess noise ratio (Nr-1) is defined in db as  $Nr-1 = 10 \log \left( \frac{T_e}{290} - 1 \right)$  where  $T_e$  is the effective electron temperature.

Note 5: For values of Nr-1 at other than rated currents, contact The Bendix Corporation, Red Bank Division, Eatontown, New Jersey.

Note 6: The values of Nr-1 for the comparison standards are traceable to the National Bureau of Standards.

\* The TD-58 is a low loss glass version of the TD-44.

# GAS NOISE SOURCES - NEON, PULSE

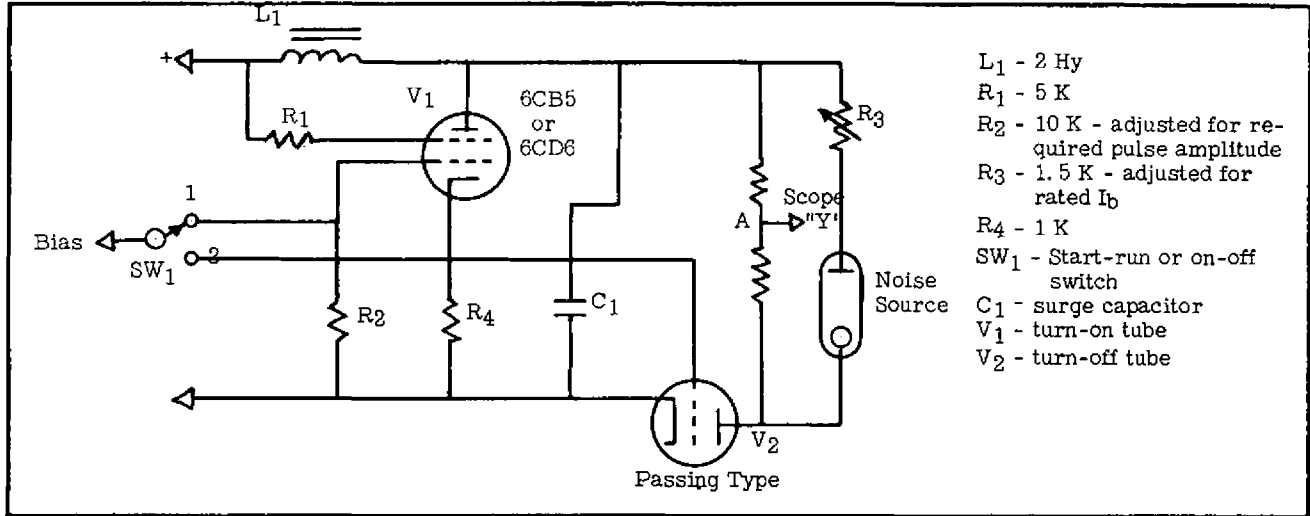


FIGURE 1: Typical Starting and Operating Circuit for Pulse Operation

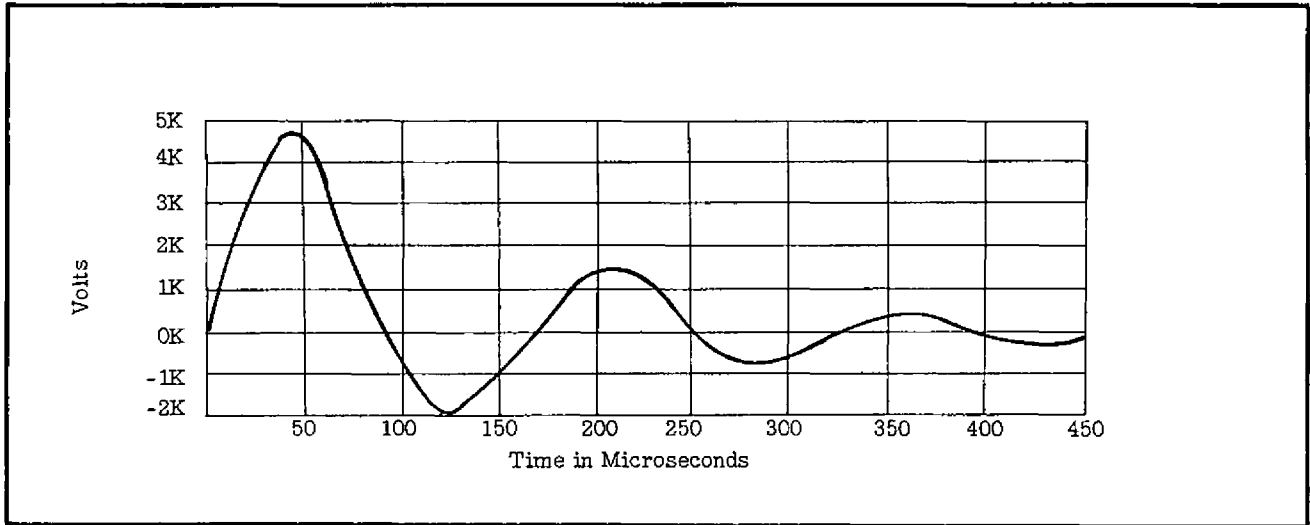
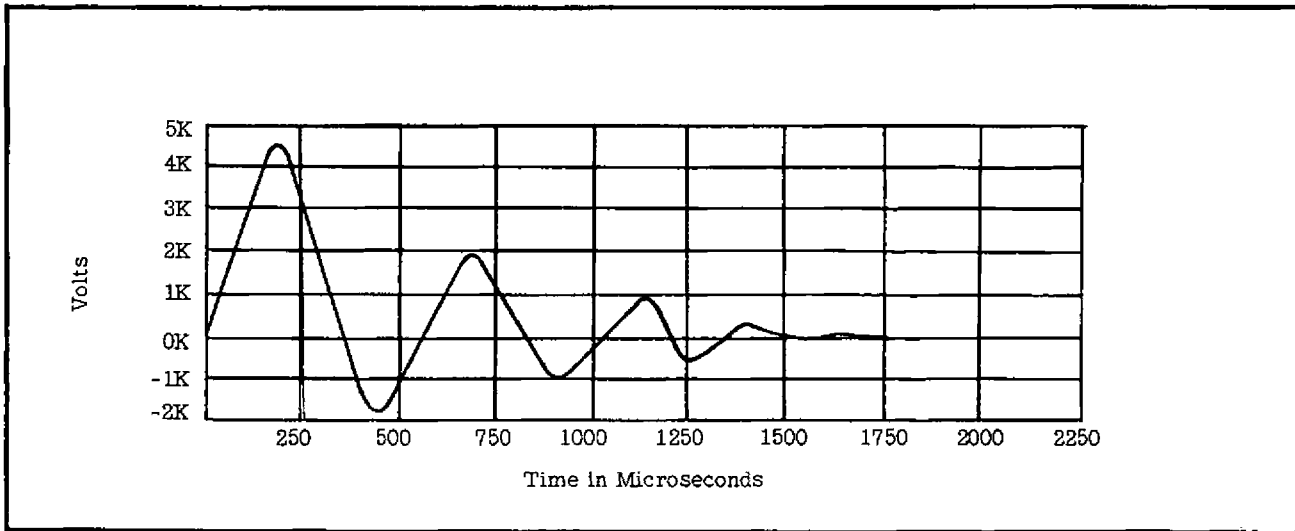
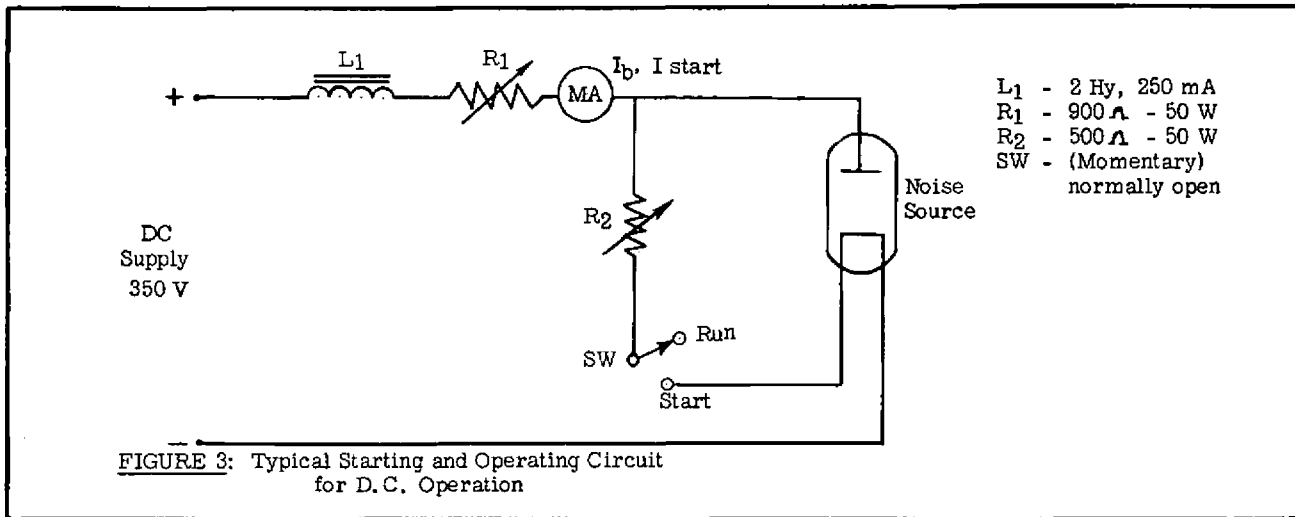


FIGURE 2: Typical Starting Pulse Appearing at A of Figure 1

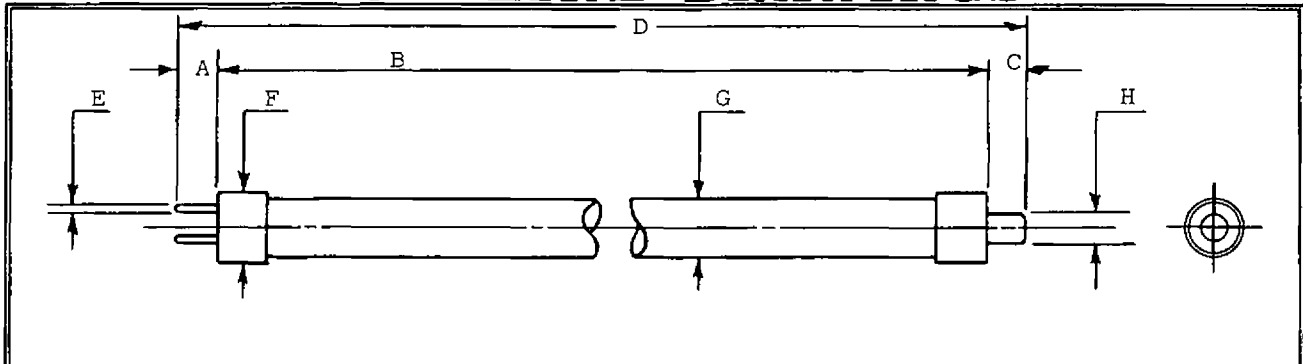
The pentode or beam tube,  $V_1$ , acts as a switch interrupting the current flow in  $L_1$  when the bias switch,  $SW_1$ , is in position 1. The resultant voltage spike developed is impressed across the noise source. The current limited by  $R_3$  to rated value. The noise source is turned off when the bias switch,  $SW_1$ , is in position 2, causing the current through the passing tube,  $V_2$ , to be interrupted. The circuit can be modified to drive the grids of the switch tube and passing tube with pulses, thus pulsing the noise output.

# GAS NOISE SOURCES - NEON, PULSE

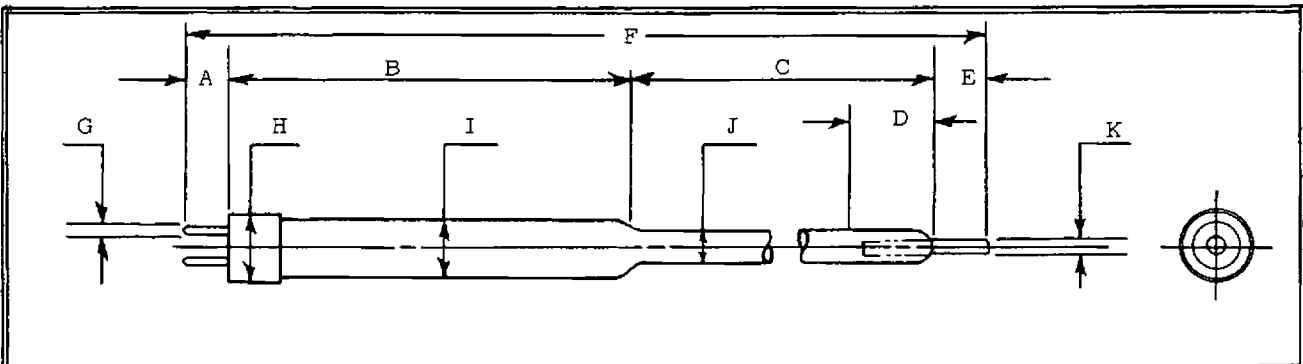


The run-start switch shown in the typical circuit provides the high voltage surge or spike necessary to initiate the discharge. In the start position, current passes through the choke. As the switch is released to the run position, a high surge voltage appears momentarily across the tube, caused by the collapse of the magnetic field in choke "L". This high voltage initiates the discharge in the noise source which is then sustained by the power supply voltage and stabilized by the resistance  $R_1$ .

# OUTLINE DRAWINGS

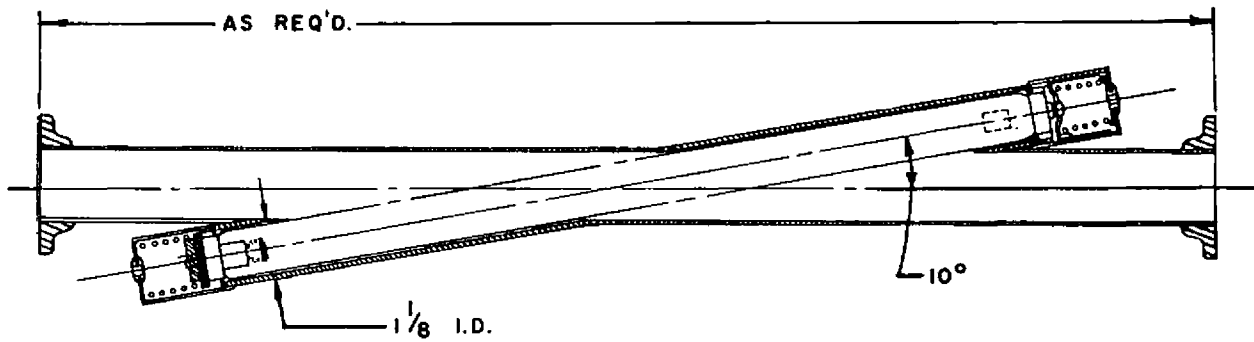


DIM.	8286/TD-56		8287/TD-43		DIM.	8286/TD-56		8287/TD-43	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	.260	.325	.260	.325	E	.090	.105	.090	1.05
B	16.937	17.437	13.875	14.375	F		.990		.555
C	.310	.360	.270	.320	G	.975	1.050	.547	.579
D	17.625	18.000	14.375	15.000	H	.305	.325	.245	.265

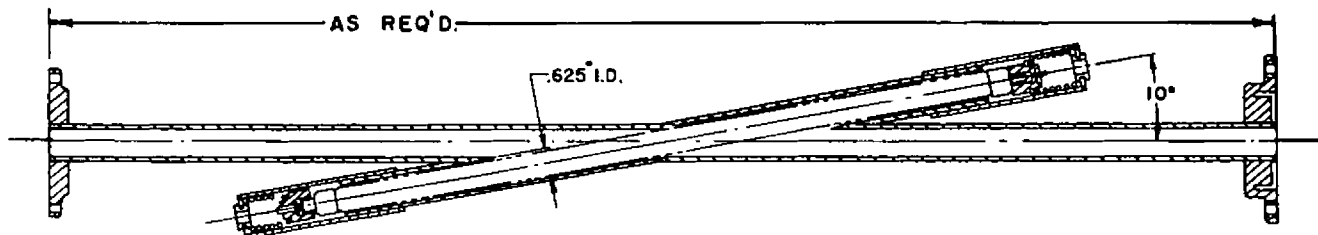


DIM.	7988/TD-44 8293/TD-58		8290/TD-55		8291/TD-51		DIM.	7988/TD-44 8293/TD-58		8290/TD-55		8291/TD-51	
	Min.	Max.	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.	Min.	Max.
A	.260	.325	.260	.325	.260	.325	G	.090	.105	.090	.105	.090	.105
B		2.750		2.750		2.750	H		.555		.555		.555
C	8.625		7.375		6.187		I		.579		.500		.500
D (see note)		1.500*	N.A.	N.A.	N.A.	N.A.	J	.370	.380	.235	.265	.160	.194
E		.500		.500		.500	K		.187		.187		.187
F	11.937	12.250	10.875	11.250	9.687	10.000							

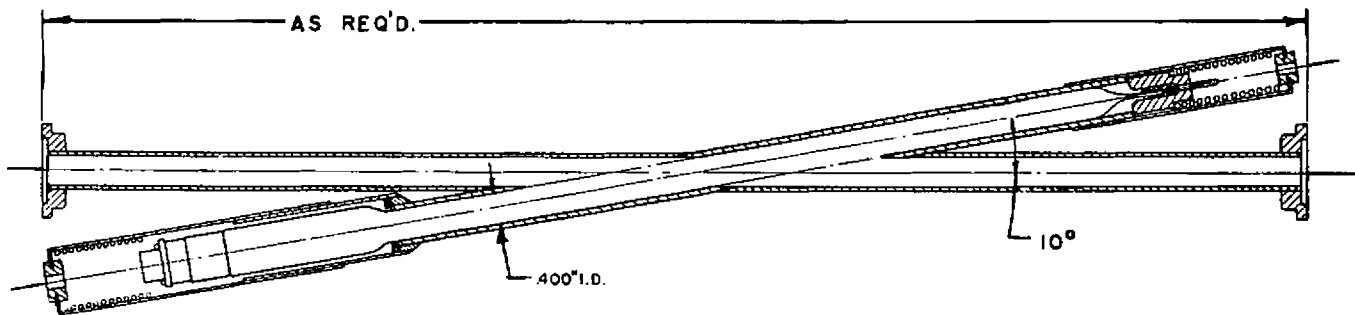
\* = .380 max., No min., Dim. on Dia. for this Lgth. of tube .



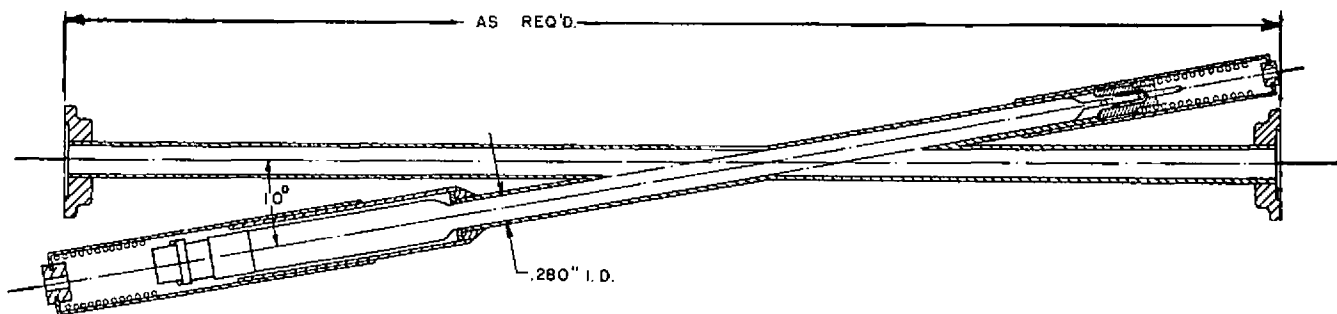
WAVEGUIDE MOUNT ASS'Y. RG-48/U



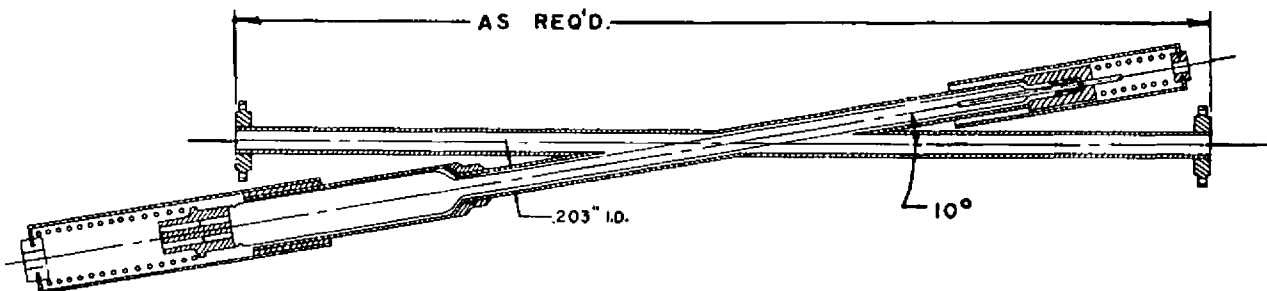
WAVEGUIDE MOUNT ASS'YS. RG-49/U OR RG-50/U



WAVEGUIDE MOUNT ASS'Y. RG-52/U



WAVEGUIDE MOUNT ASS'Y. RG-91/U



WAVEGUIDE MOUNT ASS'Y. RG-53/U