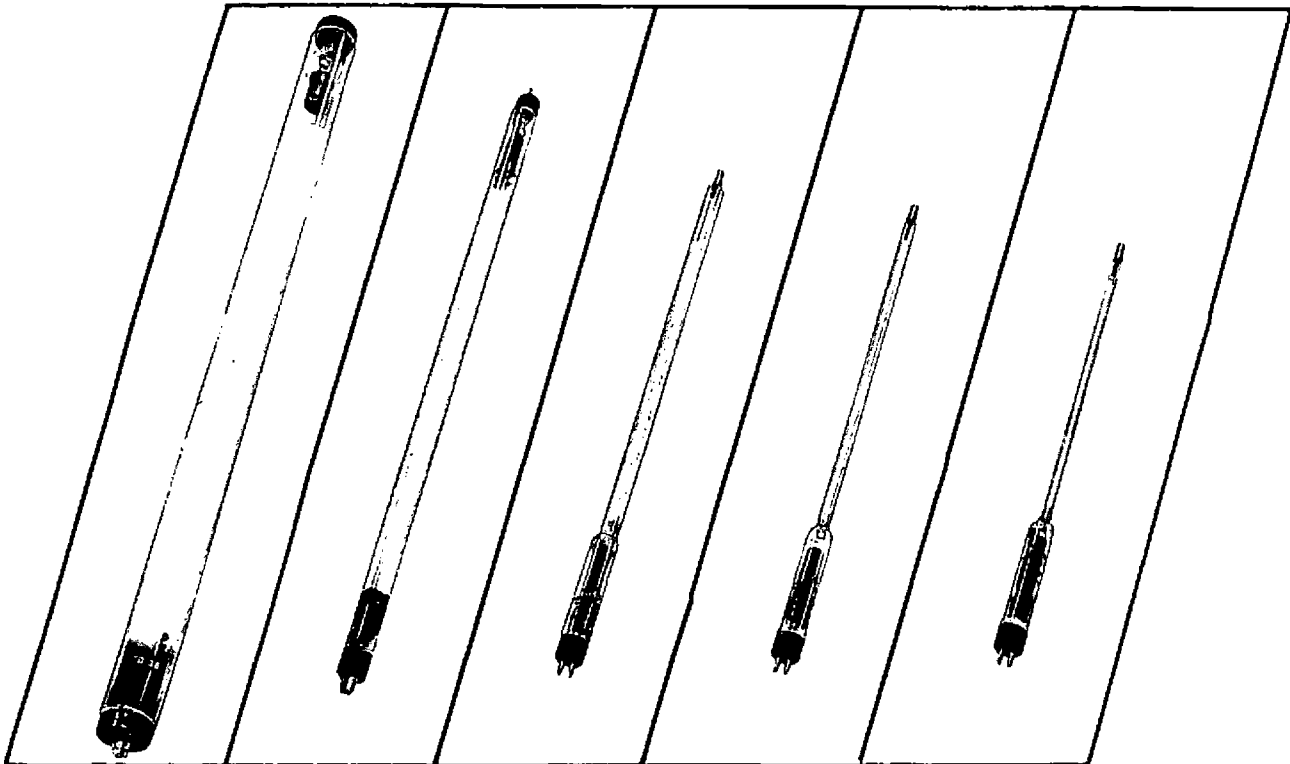




GAS NOISE SOURCES. ARGON. PULSE

8151 7999
8030 8031
8152-8059



8151
TD-38

7999
TD-39

8152 8059
TD-40 TD-72

8030
TD-41

8031
TD-42

DESCRIPTION

These tubes are designed primarily for use as pulse-operated noise sources in super high frequency (SHF) 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.

	8151/TD-38	7999/TD-39	8152/TD-40 8059/TD-72	8030/TD-41	8031/TD-42
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.

Publication No. RT21-4

from JEDEC release #3850, Aug. 20, 1962



GAS NOISE SOURCES. ARGON. PULSE

RATINGS							
Characteristic	Unit	8151/TD-38	7999/TD-39	8152/TD-40	8059/TD-72**	8030/TD-41	8031/TD-42
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	145	130	125	128	125	125
Tube Dissipation (Average)	Watts	28	23	21	21	21	22
Starting Voltage for Pulse Operation (Note 1. 3)	KV	2.0-3.3	2.0-3.5	2.0-3.3	2.0-3.3	2.0-3.3	2.0-3.3
Starting Current for D. C. Operation (Note 2. 3)	mAdc	190	170	170	170	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)		1.10 max	1.10 max	2.10 max	1.10 max	1.10 max	1.25 max
VSWR (Hot)		1.10 max	1.10 max	1.15 max	1.10 max	1.10 max	1.15 max
Nr-1 Tube in Mount @ Rated Current (Note 4. 5)	db	15.27 ± .20	15.20 ± .20 for RG-49/ 15.28 ± .20 for RG-50/	15.62 ± .20	15.65 ± .20	15.91 ± .25	16.00 ± .25

- 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 SW₁.
- 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 are traceable to the National Bureau of Standards.

** The TD-72 is a low loss glass version of the TD-40.



GAS NOISE SOURCES. ARGON. PULSE

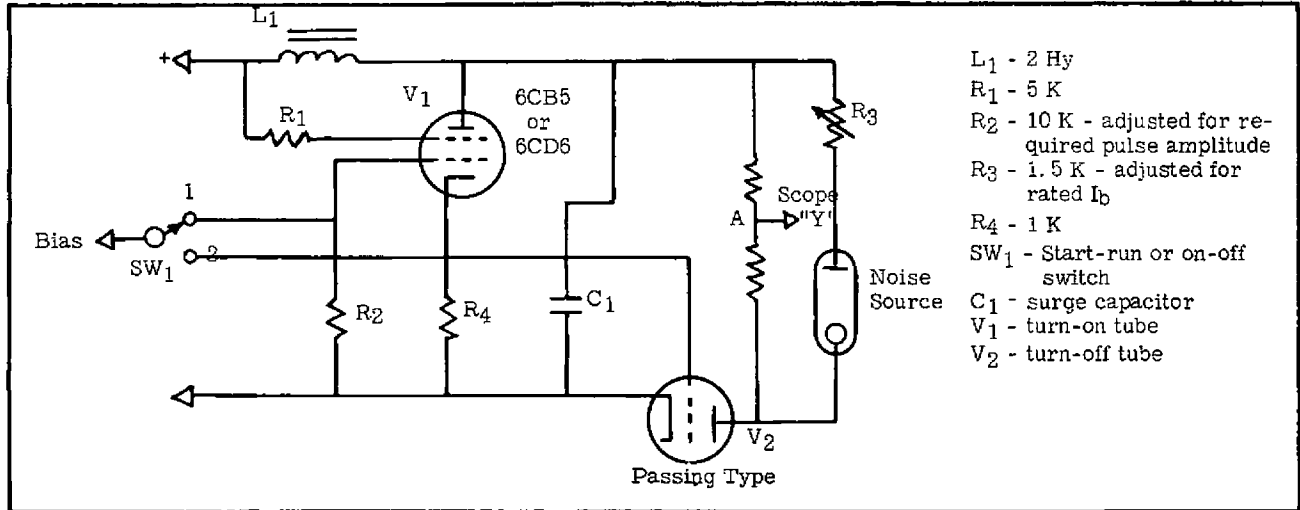


FIGURE 1: Typical Starting and Operating Circuit for Pulse Operation

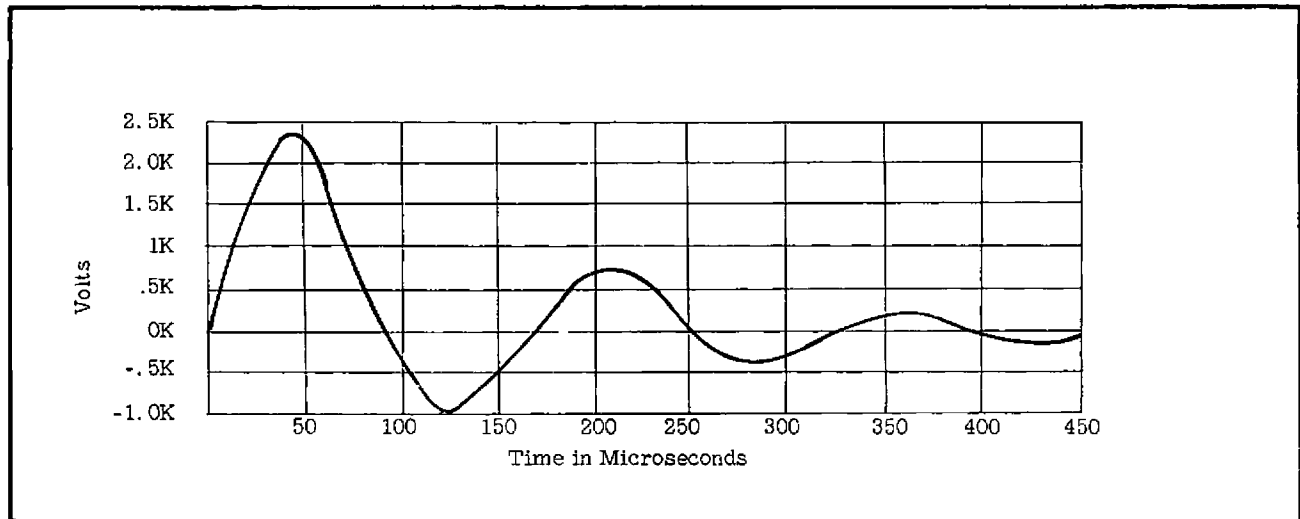


FIGURE 2: Typical Starting Pulse Appearing at A of Figure 1

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. ARGON, PULSE

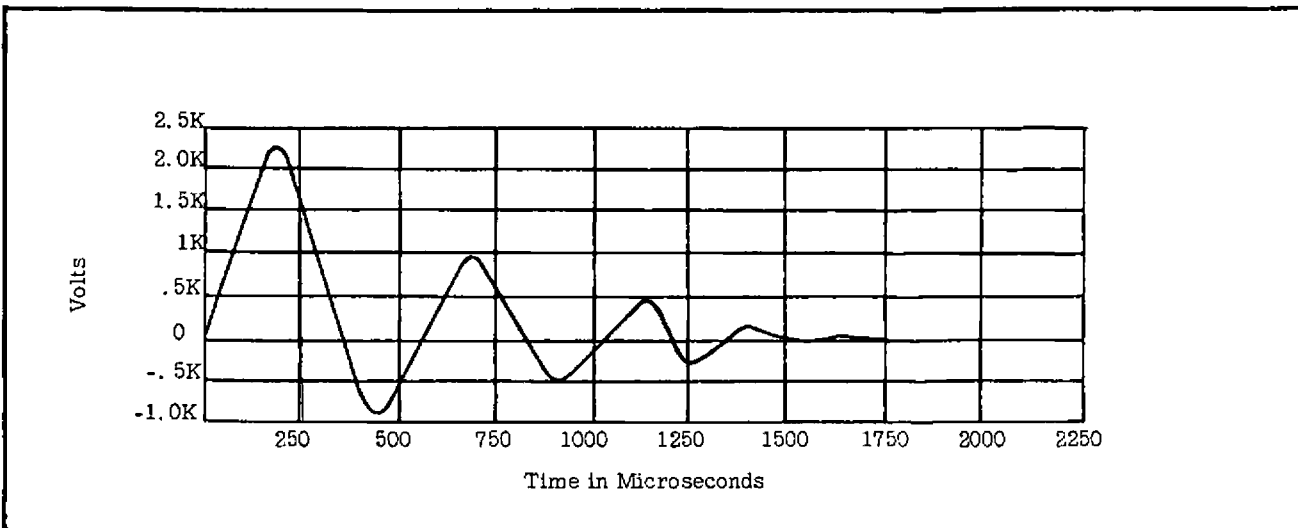
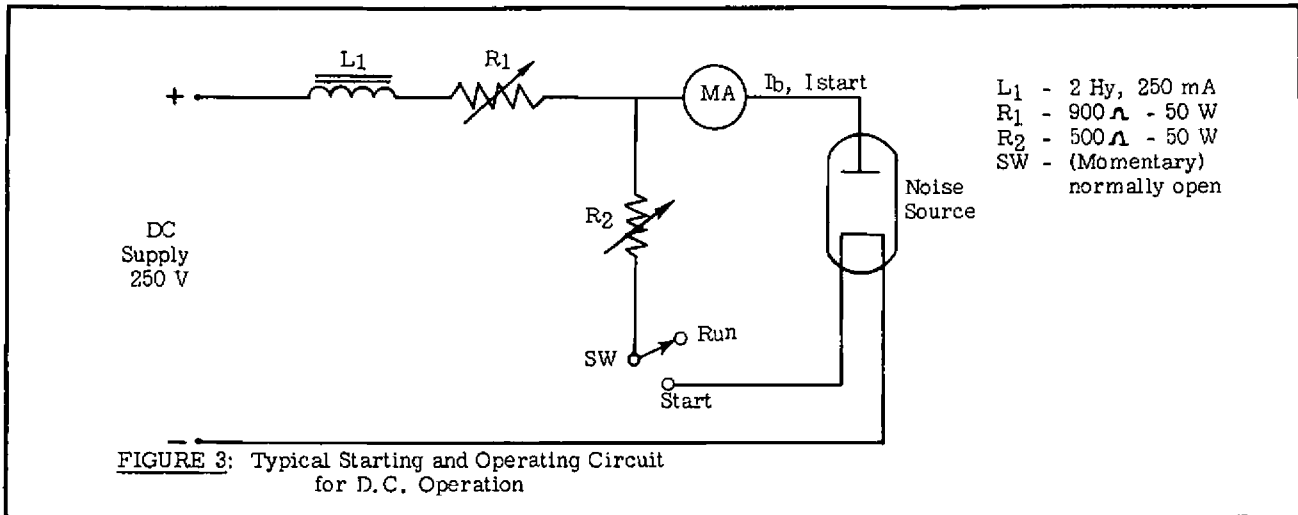
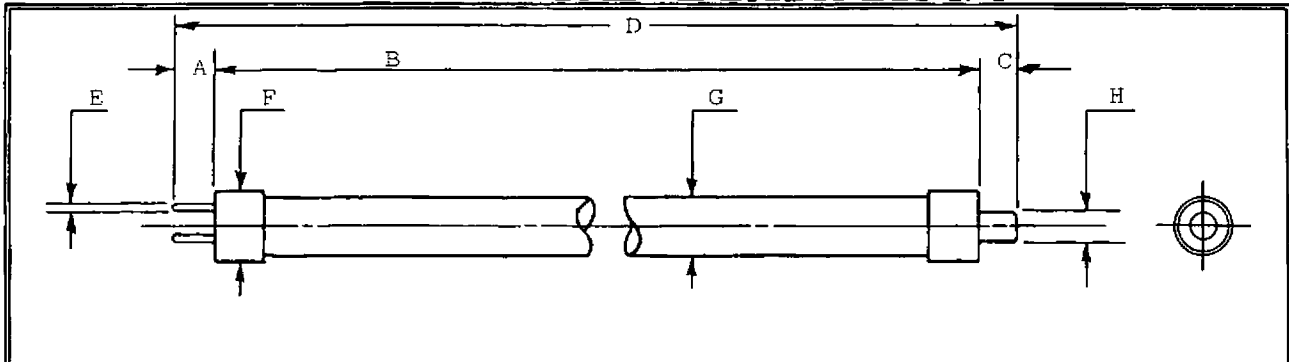


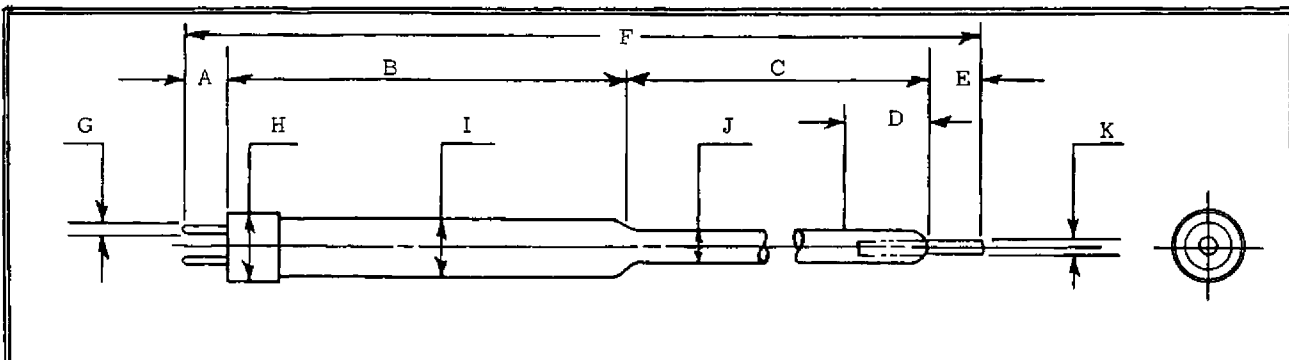
FIGURE 4: Typical Starting Pulse of Figure 3.

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_1 ". 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

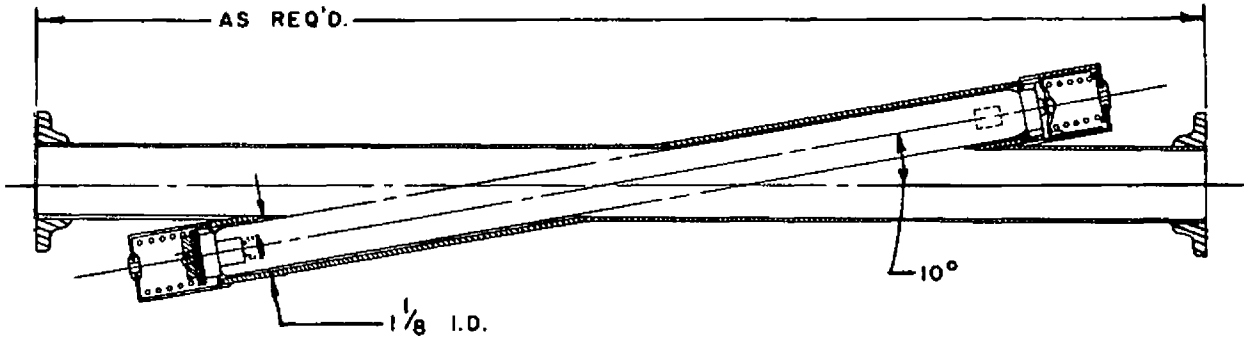


DIM.	8151/TD-38		7999/TD-39		DIM.	8151/TD-38		7999/TD-39	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	.260	.325	.260	.325	E	.090	.105	.090	1.05
B	16.937	17.437	13.875	14.375	F		.990		.555
C	.310	.360	.270	.320	G	.975	1.050	.547	.579
D	17.625	18.000	14.375	15.000	H	.305	.325	.245	.265

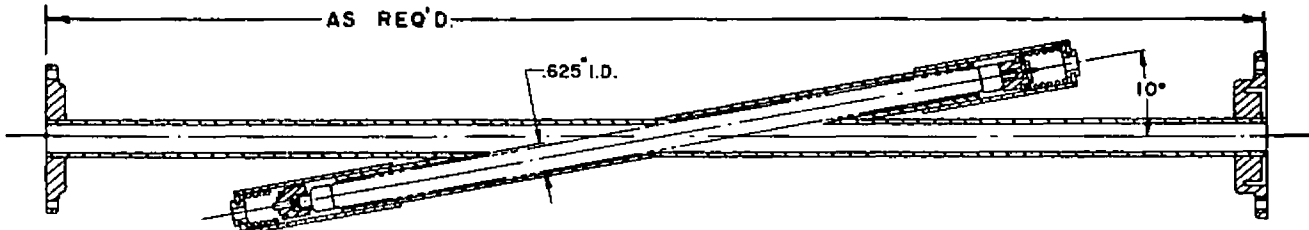


DIM.	8152/TD-40 8059/TD-72		8030/TD-41		8031/TD-42		DIM.	8152/TD-40 8059/TD-72		8030/TD-41		8031/TD-42	
	Min.	Max.	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.	Min.	Max.
A	.260	.325	.260	.325	.260	.325	G	.090	.105	.090	.105	.090	.105
B		2.750		2.750		2.750	H		.555		.555		.555
C	3.625		7.375		6.187		I		.579		.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							

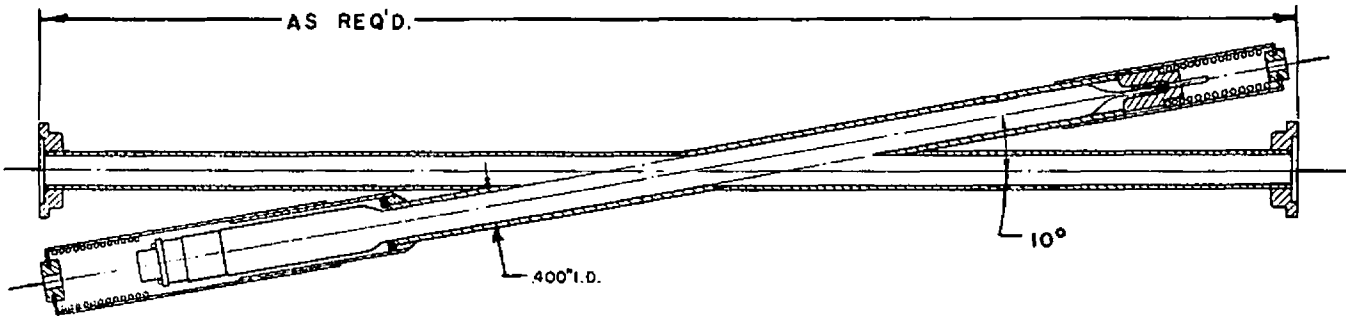
* = .380 max., No min., Dim. on Dia. for this Lgth. of tube .



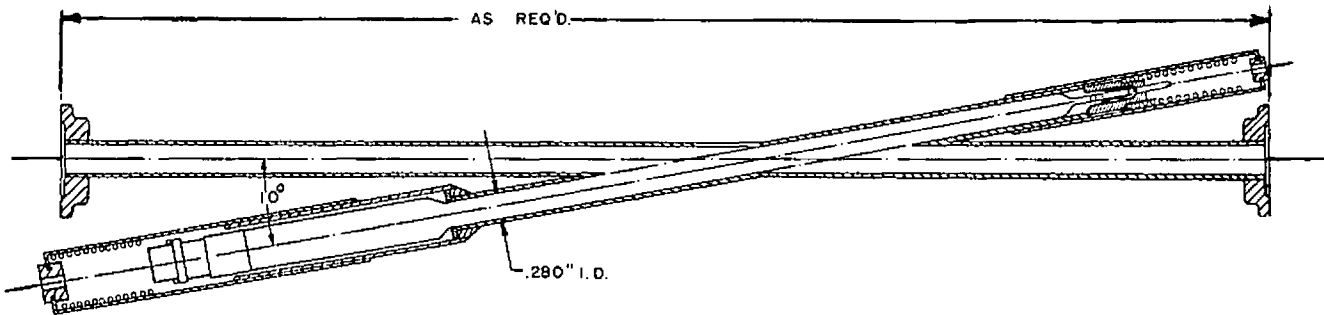
WAVEGUIDE MOUNT ASS'Y. RG-48/U



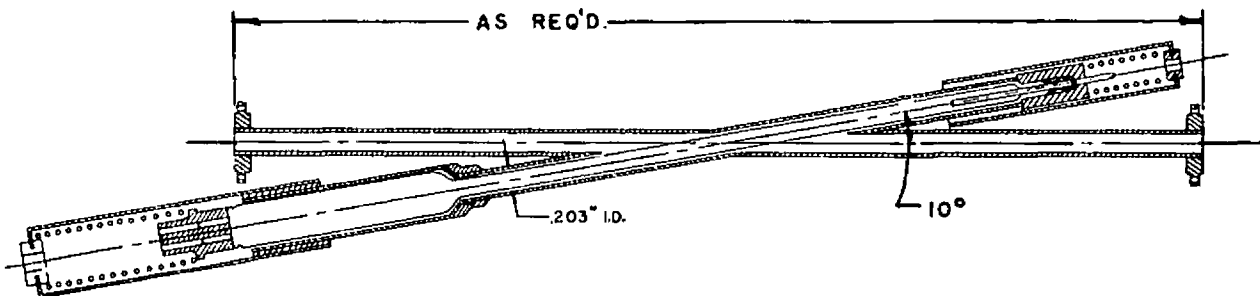
WAVEGUIDE MOUNT ASS'YS. RG-49/U OR RG-50/U



WAVEGUIDE MOUNT ASS'Y. RG-52/U



WAVEGUIDE MOUNT ASS'Y. RG-91/U



WAVEGUIDE MOUNT ASS'Y. RG-53/U