

PL 175A

**Beam
Pentode**



The PL-175A is a 400-watt plate dissipation beam pentode which incorporates the exclusive Penta vane-type suppressor grid. In most cases, the tube may be used to replace directly the 4-400A, with no circuit modifications, and only slight readjustment of tuning controls. In Class-AB1 amplifier applications, such replacement can result in 20% to 40% greater output. The suppressor grid terminates in the tube base shell, and is designed to be operated at zero voltage. The base shell must be grounded to the chassis by means of suitable spring clips.

ELECTRICAL CHARACTERISTICS

Filament - Thoriated Tungsten

Voltage	5.0	volts
Current	14.5	amperes
Grid-Screen Amplification Factor		4.5
Interelectrode Capacitances		
Grid - Plate	0.06	$\mu\mu\text{fd}$
Input	15.1	$\mu\mu\text{fd}$
Output	9.8	$\mu\mu\text{fd}$

MECHANICAL CHARACTERISTICS

Base	5-pin, metal shell
Maximum Overall Dimensions	
Length	6.63 inches
Diameter	3.56 inches
Mounting Position	Vertical, base up or down

MAXIMUM RATINGS - CCS (Continuous Commercial Service)

	Class - AB ₁ R-F or Audio	Class - C CW or FM	
DC Plate Voltage	4000	4000	volts
DC Screen Voltage	1000	600	volts



P E N T A L A B O R A T O R I E S

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ELECTRON TUBES FOR INDUSTRY



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DC Suppressor-Grid Voltage.....	100	100	volts
DC Plate Current	350	350	ma
Screen-Grid Input	25	25	watts
Plate Dissipation.....	400	400	watts

TYPICAL OPERATION - CLASS C C-W OR FM AMPLIFIER

Grounded-Cathode Circuit

DC Plate Voltage	2000	2000	2500	2500	3000	3000	4000	4000	volts
DC Screen-Grid Voltage	500	600	500	600	500	600	500	600	volts
DC Suppressor-Grid Voltage.....	0	0	0	0	0	0	0	0	volts
DC Control-Grid Voltage	-160	-180	-160	-180	-160	-180	-180	-200	volts
DC Plate Current	350	350	350	350	350	350	350	350	ma
DC Screen-Grid Current	46	42	41	40	38	36	34	29	ma
DC Control-Grid Current	14	8	12	7	11	6	10	6	ma
Peak R-F Control-Grid Voltage....	226	226	218	226	214	218	236	239	volts
Driving Power (Approx)	3.1	1.8	2.6	1.6	2.4	1.3	2.4	1.4	watts
Plate Power Input	700	700	875	875	1050	1050	1400	1400	watts
Plate Dissipation (Approx)	200	190	230	220	275	265	360	345	watts
Useful Power Output.....	460	190	230	220	275	265	360	345	watts

TYPICAL OPERATION - CLASS AB1 LINEAR R-F AMPLIFIER

Single-Sideband, Suppressed Carrier; Grounded-Cathode Circuit

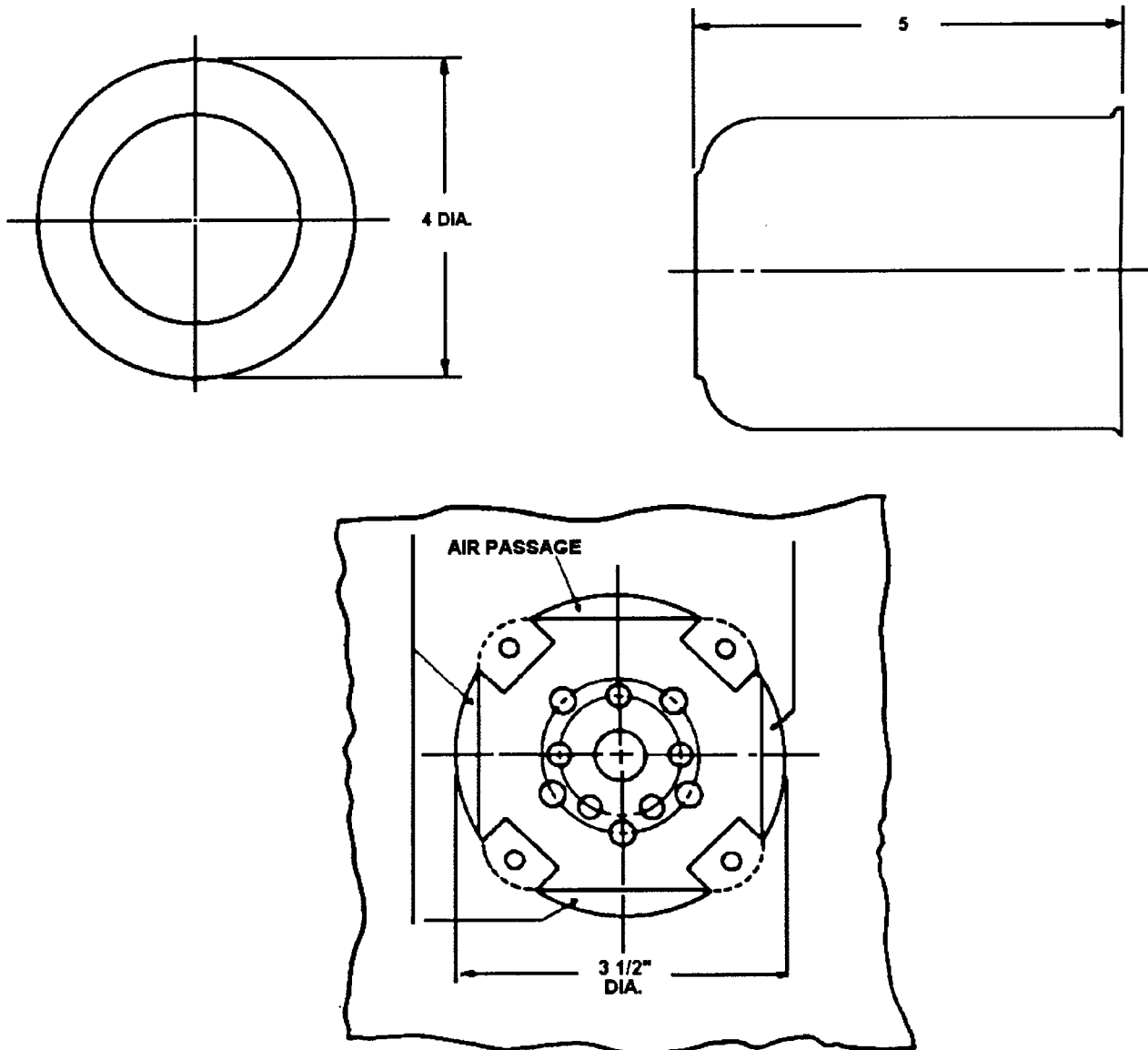
DC Plate Voltage	2000	2500	3000	3500	volts
DC Screen-Grid Voltage	750	750	750	750	volts
DC Suppressor-Grid Voltage	0	0	0	0	volts
DC Control-Grid Voltage	-135	-143	-150	-160	volts
Zero-Signal DC Plate Current	125	100	80	75	ma
Zero-Signal DC Screen Current	3	1	1	1	ma
Maximum-Signal DC Plate Current.....	350	350	350	350	ma
Maximum-Signal DC Screen Current.....	37	35	29	24	ma
Intermodulation Distortion Level					
Third Order	-39	-34	-31	-31	db
Fifth Order	-42	-41	-40	-40	db
Maximum-Signal Plate Power Input.....	700	875	1050	1225	watts
Maximum-Signal Plate Dissipation (approx)	225	265	305	345	watts
Maximum-Signal Useful Power Output	445	570	680	790	watts



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COOLING

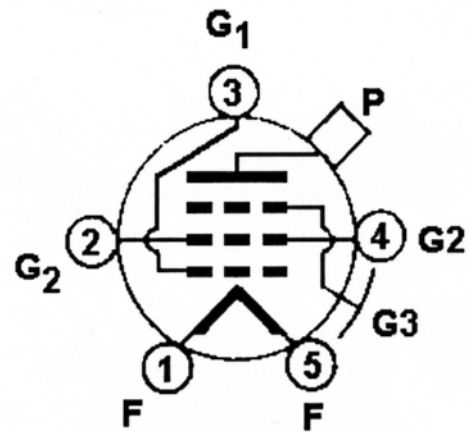
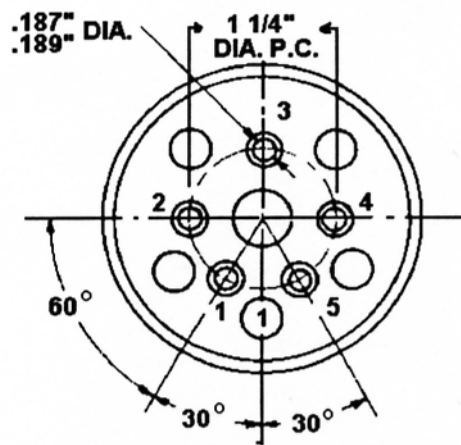
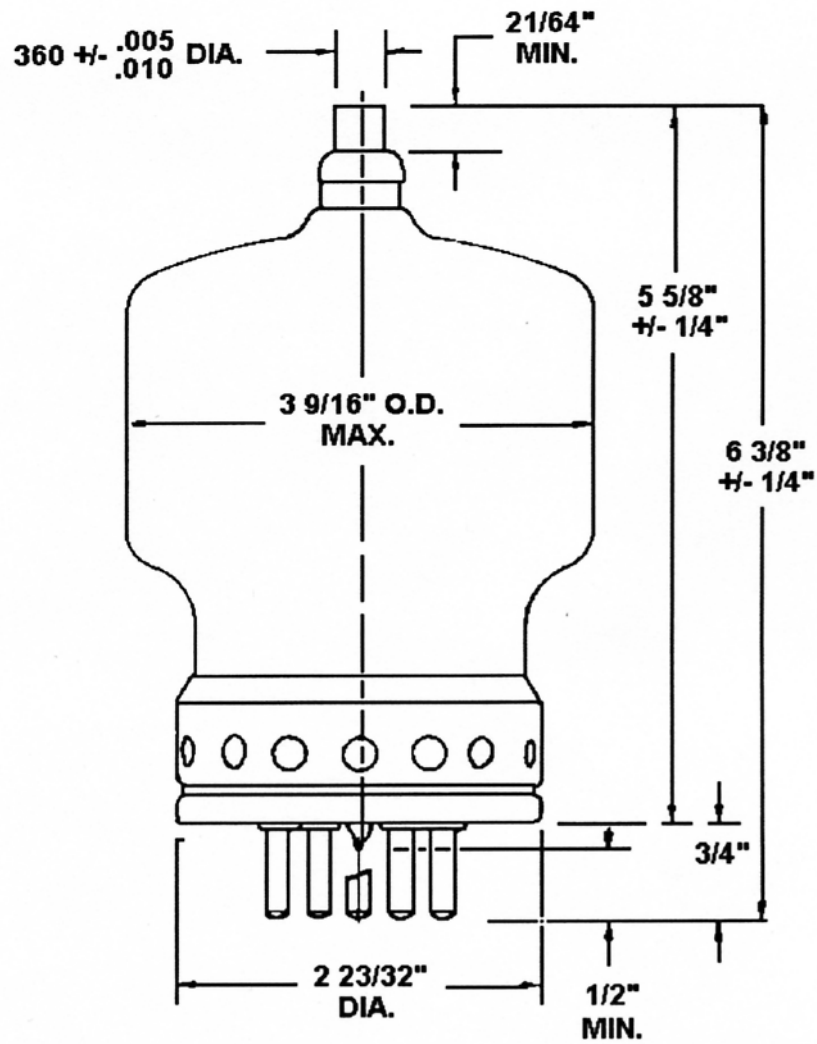
Forced air cooling of the seals at the base end of the PL-175A is required in all classes of service. A flow of 5 c.f.m. of cooling air should be passed through the base. Adequate envelope cooling at 400 watts plate dissipation requires 15 c.f.m. of cooling air past the envelope and across the plate seal. Proper distribution of cooling air may be obtained by the use of a type PL-C1 chimney, with chassis cut out as shown below.



**CHASSIS CUT-OUT AND SOCKET MOUNTING FOR
PROPER AIR DISTRIBUTION FROM PRESSURIZED
CHASSIS (JOHNSON NO. 122-275 SOCKET)**



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