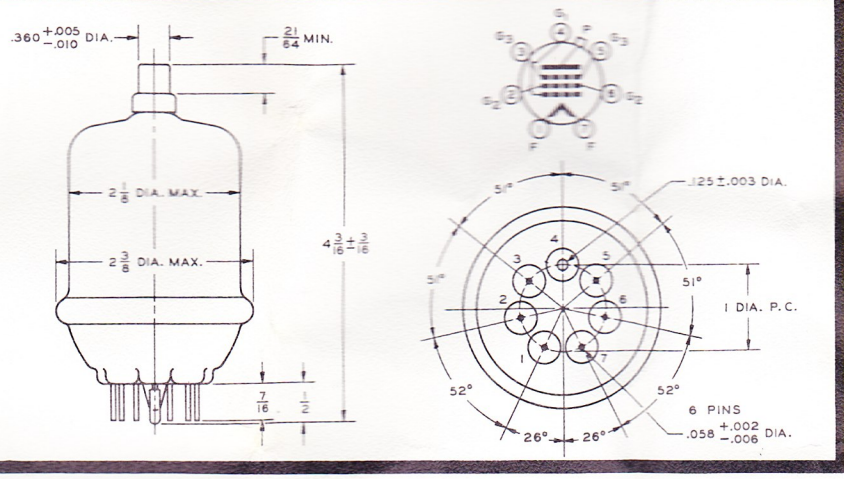

PL-177A

Beam Pentode

The PL-177A is a 75-watt radiation-cooled beam pentode incorporating the exclusive Penta vane-type suppressor grid, which allows optimum performance with zero suppressor-grid voltage in many applications. Outstanding features of the PL-177A are its capabilities for high power output at relatively low plate voltage and low distortion as a linear r-f or audio amplifier.

ELECTRICAL CHARACTERISTICS

Filament -- Thoriated Tungsten	
Voltage	6.0 volts
Current	3.2 amperes
Grid-Screen Amplification Factor	5
Interelectrode Capacitances	
Grid-Plate	0.06 μμfd.
Input	7.5 μμfd.
Output	4.2 μμfd.
Transconductance (500 v. Eb, 400 v. Ec2, 150 ma. Ib)	4500 μmhos

MECHANICAL CHARACTERISTICS

Base[1]	7-pin Septar, EIA E7-2
Maximum Overall Dimensions	
Length	4.38 inches
Diameter	2.38 inches
Mounting Position	Vertical, base up or down

MAXIMUM RATINGS — CCS (Continuous Commercial Service)

(Frequencies up to 175 Mc.)	Class-AB_1 R-F or Audio	Class-C CW or FM	
D-C Plate Voltage	2000	2000	max. volts
D-C Screen-Grid Voltage	600	600	max. volts
D-C Suppressor-Grid Voltage	100	100	max. volts
D-C Plate Current	175	150	max. ma.
Screen-Grid Input	10	10	max. watts
Plate Dissipation	75	75	max. watts

[1] Fits E. F. Johnson Co. sockets 122-101 or 122-247.

10 August 1962

Form 505R-3

PENTA LABORATORIES, INC.

312 NORTH NOPAL STREET • SANTA BARBARA, CALIFORNIA

PL-177A

TYPICAL OPERATION — Class C C-W or FM Amplifier
Grounded-Cathode Circuit

D-C Plate Voltage	600	750	1000	1500	2000 volts
D-C Screen-Grid Voltage	400	400	400	400	400 volts
D-C Suppressor-Grid Voltage	0	0	0	0	0
D-C Control-Grid Voltage	-90	-90	-105	-115	-125 volts
D-C Plate Current	150	150	150	150	150 ma.
D-C Screen-Grid Current	18	17	16	14	12 ma.
D-C Control-Grid Current	6	6	5	5	5 ma.
Peak R-F Grid Voltage (approx.)	130	125	140	155	165 volts
Driving Power (approx.)	0.75	0.75	0.70	0.75	0.80 watts
Screen-Grid Power Input	7.2	6.8	6.8	6.4	4.8 watts
Plate Power Input	90	112	150	225	300 watts
Plate Dissipation	30	38	40	45	50 watts
Useful Power Output[2]	55	66	100	160	220 watts

TYPICAL OPERATION — Class AB_1 Linear R-F Amplifier[3]
Single-Sideband, Suppressed Carrier; (Intermittent Modulation)
Grounded-Cathode Circuit

D-C Plate Voltage	1000	1500	2000 volts
D-C Screen-Grid Voltage	600	600	600 volts
D-C Suppressor-Grid Voltage	0	0	0
D-C Control-Grid Voltage[4]	-98	-110	-115 volts
Zero-Signal D-C Plate Current	40	30	25 ma.
Zero-Signal D-C Screen Current	0	0	0
Maximum-Signal D-C Plate Current	175	175	175 ma.
Maximum-Signal D-C Screen Current	10	8	7 ma.
Maximum-Signal Peak R-F Grid Voltage	96	108	112 volts
Intermodulation Distortion Level[5]			
Third Order	-34	-30	-30 db
Fifth Order	-40	-40	-41 db
Maximum-Signal Plate Power Input	175	262	350 watts
Maximum-Signal Plate Dissipation[6]	70	110	125 watts
Maximum-Signal Useful Power Output[2]	96	140	210 watts

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2 Actual useful power output delivered to load from typical amplifier. So-called "plate power output" is approximately 10 per cent higher, and is equal to difference between power input and plate dissipation.

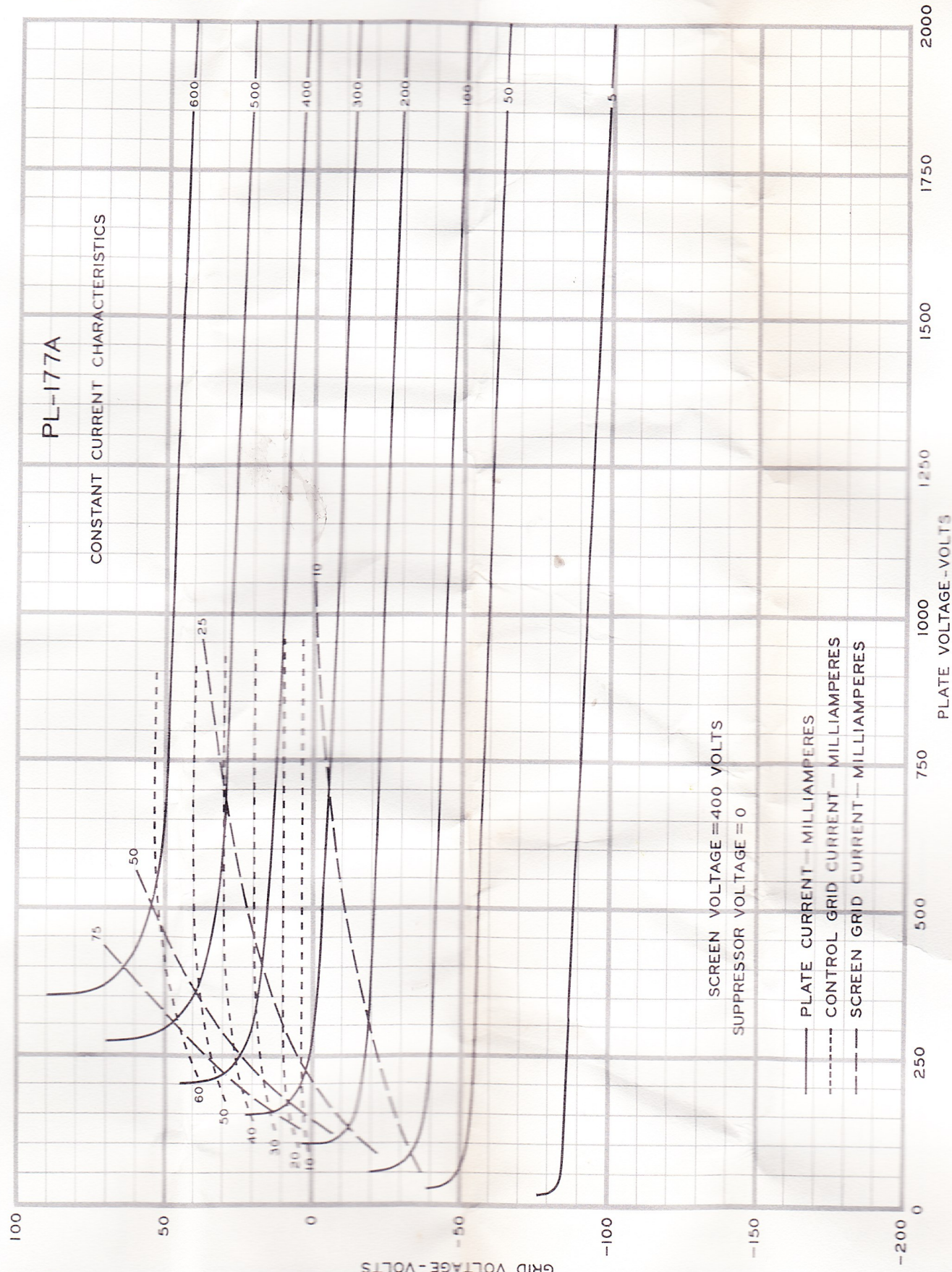
3 D-C current and power values shown are for peak conditions, or for single-tone modulation at full signal.

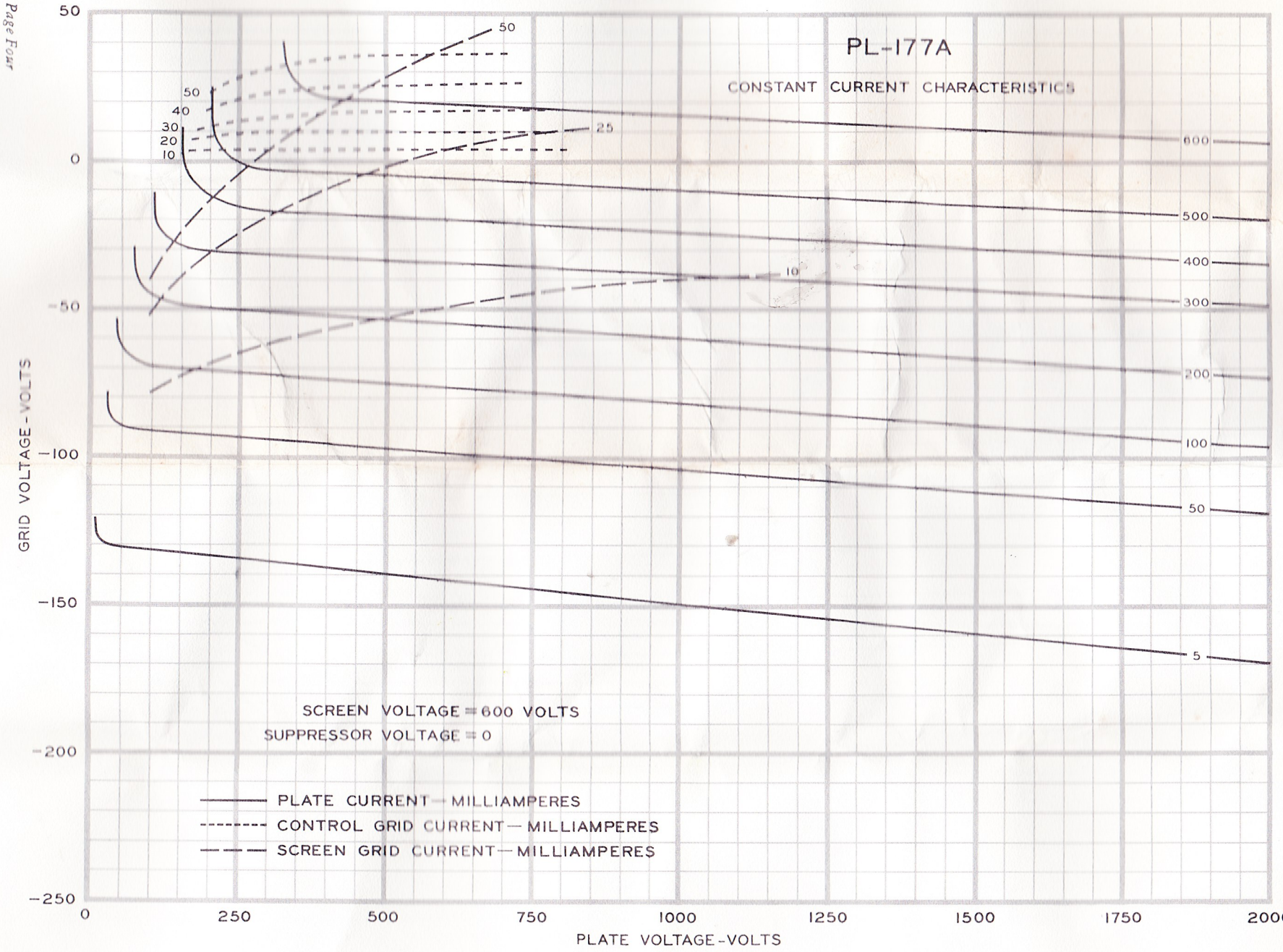
4 Approximate value; adjust to give stated zero-signal plate current.

5 Referenced against maximum-signal (or PEP) output. Two equal tones. No degenerative feedback.

6 Plate dissipation values shown for information only. During normal operation with intermittent modulation, average plate dissipation will not exceed 75-watt maximum rating.

PL-177A


PL-177A
CONSTANT CURRENT CHARACTERISTICS
600
500
400
300
200
100
50
5
75
50
25
10
60
50
40
30
20
10
SCREEN VOLTAGE = 400 VOLTS
SUPPRESSOR VOLTAGE = 0
PLATE CURRENT — MILLIAMPERES
CONTROL GRID CURRENT — MILLIAMPERES
SCREEN GRID CURRENT — MILLIAMPERES
GRID VOLTAGE - VOLTS
100
50
0
-50
-100
-150
-200
0
250
500
750
1000
1250
1500
1750
2000
PLATE VOLTAGE - VOLTS


PL-177A
CONSTANT CURRENT CHARACTERISTICS
50
40
30
20
10
50
25
10
600
500
400
300
200
100
50
5
SCREEN VOLTAGE = 600 VOLTS
SUPPRESSOR VOLTAGE = 0
PLATE CURRENT — MILLIAMPERES
CONTROL GRID CURRENT — MILLIAMPERES
SCREEN GRID CURRENT — MILLIAMPERES
GRID VOLTAGE - VOLTS
50
0
-50
-100
-150
-200
-250
0
250
500
750
1000
1250
1500
1750
2000
PLATE VOLTAGE - VOLTS

PL-177A

PL-175A
Beam Pentode

Fil. Volts	Fil. Current Amps.	Plate Diss. Max. W.	Plate Volt Max.	Plate Current Ma., Max.	Screen Voltage Max.	Price
5.0	14.5	400	4,000	350	800	$ 50.00

400-watt beam pentode incorporating patented Penta vane-type suppressor grid. Replaces 4-400A; 20% to 40% increase in output in Class-AB_1 linear amplifier applications. Suppressor grid terminates in base shell and is designed to be operated at ground potential.

PL-177A
Beam Pentode

Fil. Volts	Fil. Current Amps.	Plate Diss. Max. W.	Plate Volt Max.	Plate Current Ma., Max.	Screen Voltage Max.	Price
6.0	3.2	75	2,000	175	600	$ 29.00

Small beam pentode incorporating exclusive Penta vane-type suppressor grid. Maximum ratings apply to 175 Mc. Highly efficient at plate voltages as low as 600 volts. Excellent as low-distortion linear r-f, a-f amplifier. Maximum useful power output, Class-AB_1, 220 watts.

PL-177WA
Beam Pentode

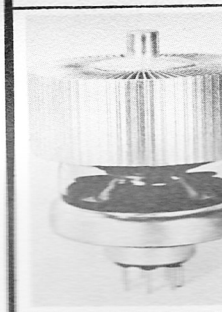
Fil. Volts	Fil. Current Amps.	Plate Diss. Max. W.	Plate Volt Max.	Plate Current Ma., Max.	Screen Voltage Max.	Price
6.0	3.2	75	2,000	175	600	$ 33.50

Ruggedized version of PL-177A. Directly interchangeable. May be mounted in any position. Withstands high levels of shock and vibration. Exclusive vane-type suppressor grid permits high efficiency at relatively low plate voltages.

PL-6549
Beam Pentode

Fil. Volts	Fil. Current Amps.	Plate Diss. Max. W.	Plate Volt Max.	Plate Current Ma., Max.	Screen Voltage Max.	Price
6.0	3.2	75	2,000	175	600	$ 29.00

Similar to PL-177A except conventional suppressor grid. Recommended for replacement use only.

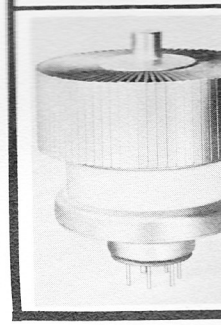


PL-8295/PL-172
Beam Pentode

Fil. Volts	Fil. Current Amps.	Plate Diss. Max. W.	Plate Volt Max.	Plate Current Ma., Max.	Screen Voltage Max.	Price
6.0	8.2	1000	3,000	1000	600	$135.00

1000-watt beam pentode. Provides high power gain and good efficiency at relatively low plate voltages. Cooled by forced air. Widely used as Class-AB_1 linear amplifier, delivering over 1500 watts useful power output. Also excellent for Class-AB_2, Class-B, and Class-C service.

Spec. MIL-E-1/1350 *



PL-8295A
Beam Pentode

Fil. Volts	Fil. Current Amps.	Plate Diss. Max. W.	Plate Volt Max.	Plate Current Ma., Max.	Screen Voltage Max.	Price
6.0	8.2	1000	3,000	1000	600	$152.00

Ceramic beam pentode. Direct replacement for the PL-8295/172. Extremely resistant to shock and vibration; high allowable operating temperature capability. Requires less cooling air than PL-8295/172. Ideal in linear amplifier applications requiring ruggedness, reliability and high efficiency.