



IGNITRON

SPECIAL DESIGN FEATURES

1. Stainless-steel, seam-welded construction
2. Uniform water cooling
3. Strong, compact design
4. Easy to install
5. Copper terminals
6. Flexible anode lead
7. Mercury-pool cathode allows extremely high instantaneous currents to be passed through the tube without damage.

DESCRIPTION

The ability of this tube to carry very high peak currents for short periods makes it especially suited to welder-control service. It may also be used for conversion in low-power circuits and for intermittent rectifier service.

Ease of installation, economical use of space, and reliability of operation are assured by design features inherent in the steel-jacketed construction.

The FG-235-A is similar to the FG-258-A and the FG-271. All of these tubes can be used for a wide

range of applications where welds are made infrequently or in rapid succession.

The current range required for the welding operation determines which tube to use. Another factor, of course, is the nature of the material to be welded. Low-resistance materials, such as the aluminum alloys, require more current than such high-resistance metals as stainless steel.

The FG-235-A ignitron is equivalent to a 600-ampere magnetic contactor.

TECHNICAL INFORMATION

These data are for reference only. For design information refer to specifications.

GENERAL CHARACTERISTICS

| | | |
|--|-----|---------------------------|
| Peak voltage drop, approx. | 12 | volts |
| Net weight, approx. | 9 | pounds |
| Shipping weight, approx. | 17 | pounds |
| Type of cooling | | water |
| Maximum outlet water temperature | 40 | centigrade |
| Minimum flow | 1.5 | gallons per minute |
| Minimum inlet water temperature | 10 | centigrade |
| Pressure drop per tube at minimum flow | 4.1 | pounds per square inch |
| Temperature rise at minimum flow, approx. (Average current 100 amperes per anode) | 3 | centigrade |

MAXIMUM RATINGS

A-C Welder-Control Service—Frequencies From 25 to 60 Cycles—Ratings Are For Any Voltage From 250 to 600 Volts Rms*†

| | | |
|---|------|---|
| Maximum demand | 1200 | kva |
| Corresponding average anode current | 75.6 | amperes |
| Maximum average anode current | 140 | amperes |
| Corresponding demand | 400 | kva |
| Maximum time of averaging anode current* | | |
| At 500 volts rms | 7.1 | seconds |
| At 250 volts rms | 14 | seconds |
| Maximum surge current, peak amperes | 280 | per cent of maximum rms demand cur- rent |

Intermittent Rectifier Service‡—Frequencies From 25 to 60 Cycles

| | | |
|---|------|---------|
| Maximum peak anode voltage | | |
| Inverse | 500 | volts |
| Forward | 500 | volts |
| Maximum anode current | | |
| Instantaneous | 1600 | amperes |
| Average, per tube | 100 | amperes |
| Averaging time | .3 | seconds |
| Surge, peak amperes, averaging time 0.15 second | 6000 | amperes |
| Ignitor ratings same as for welder-control service | | |

Ignition Requirements (same for both classes of service)

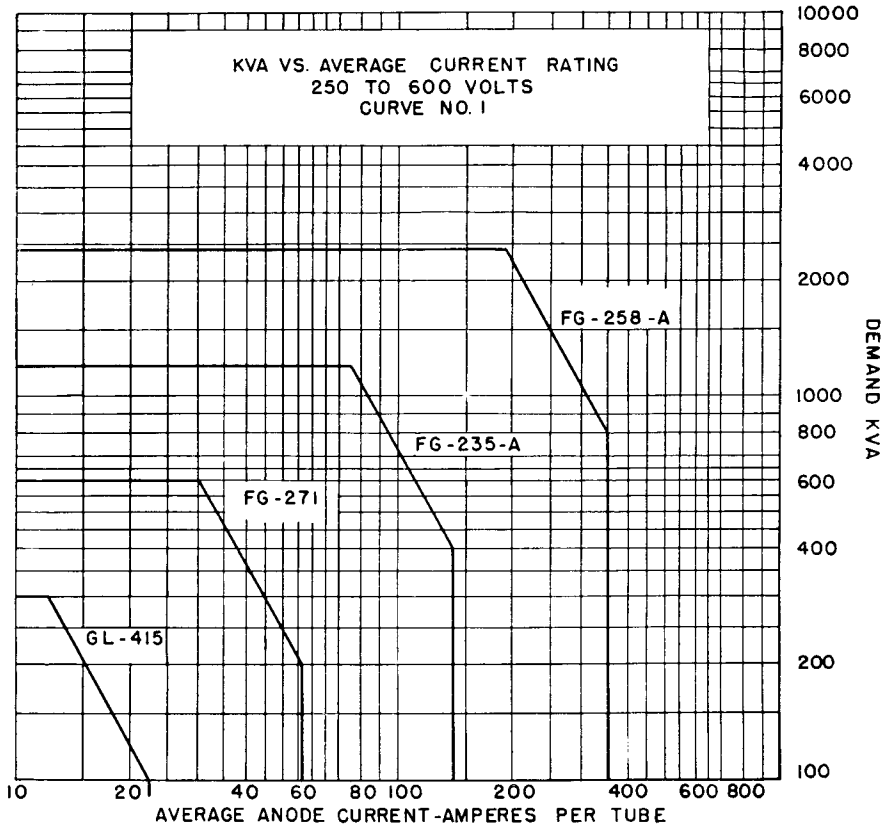
| | | |
|--|-----|--------------|
| Ignitor voltage | | |
| Maximum instantaneous allowed, ignitor positive | 900 | volts |
| Maximum instantaneous required, ignitor positive | 200 | volts |
| Maximum instantaneous allowed, ignitor negative | 5 | volts |
| Ignitor current | | |
| Maximum instantaneous allowed | 100 | amperes |
| Maximum instantaneous required§ | 30 | amperes |
| Maximum average allowed | 1 | ampere |
| Ignitor ignition time, maximum§ | 100 | microseconds |
| Ignitor current averaging time | .5 | seconds |

* With the use of log-log paper, straight line interpolation between the two points tabulated may be used to determine other detailed ratings.

† Rms demand voltage, current, and kva are all on the basis of full-cycle conduction (no phase delay) regardless of whether or not phase control is used. For voltages below 250 volts, use the 250-volt rating.

§ Ignition will occur if either maximum required instantaneous positive potential is applied or maximum required instantaneous current flows for the rated maximum ignitor ignitron time.

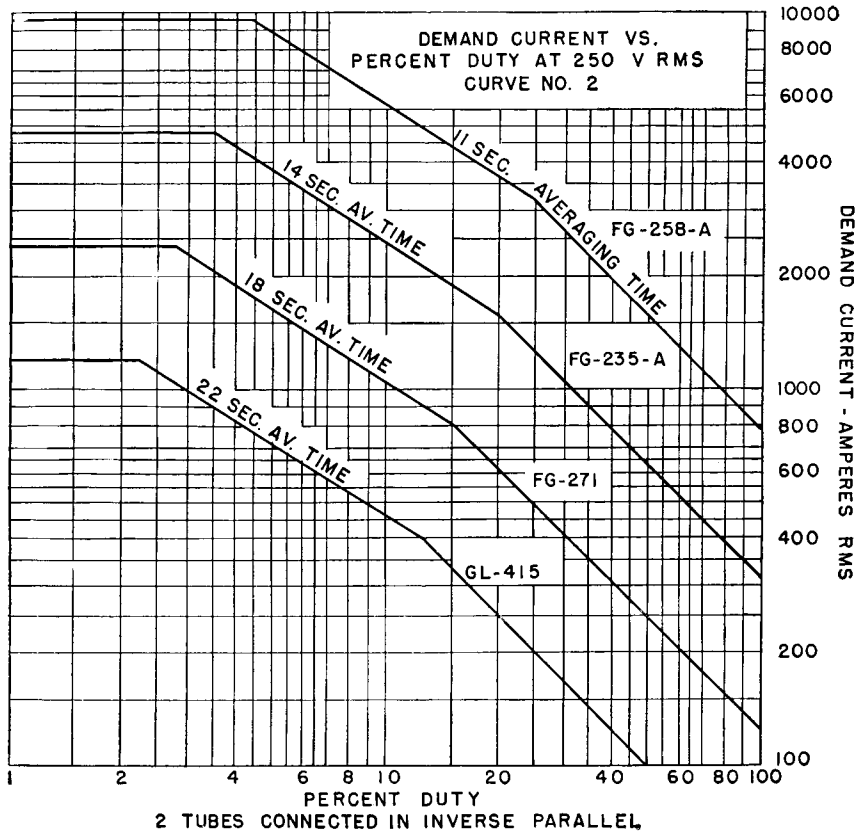
‡ Curves of Figures 1, 2, and 3 must not be used for intermittent rectifier service.



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FIG. 1

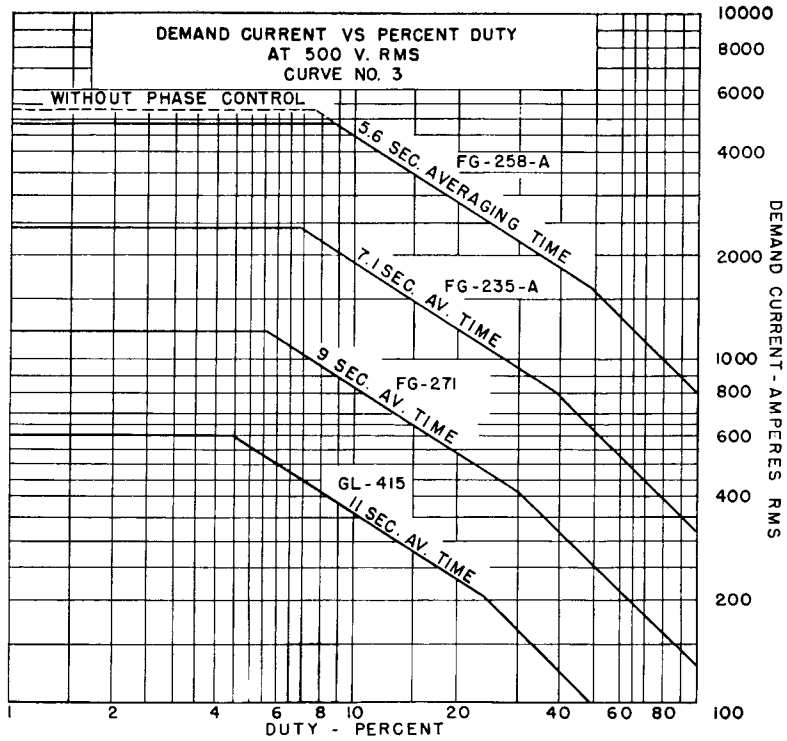
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FIG. 2

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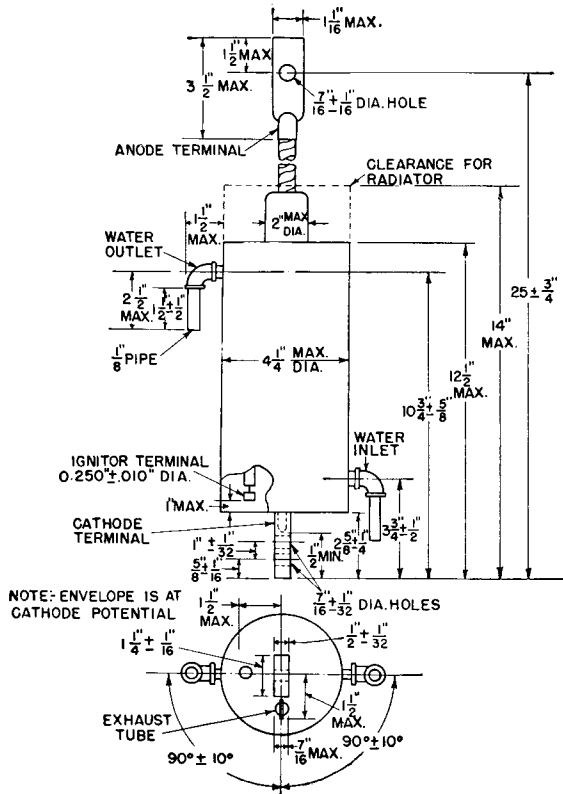


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2 TUBES CONNECTED IN INVERSE PARALLEL

FIG. 3

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K-5309175

OUTLINE FG-235-A IGNITRON

11-28-44

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