

engineering TUBE DATA

F-7185
POWER
TRIODE



Components Division

DESCRIPTION

THE F-7185 IS A THREE ELECTRODE TUBE DESIGNED FOR USE AS A MODULATOR OR AS AN R-F AMPLIFIER. ITS HIGH MUTUAL CONDUCTANCE AND LOW INTERNAL PLATE RESISTANCE MAKE IT IDEAL IN APPLICATIONS WHERE LOW DISTORTION IS REQUIRED. THE ANODE IS CAPABLE OF DISSIPATING 15 KILOWATTS DURING CONTINUOUS COMMERCIAL SERVICE. COOLING IS ACCOMPLISHED BY FORCED AIR. THE CATHODE IS A THORIATED TUNGSTEN FILAMENT AND MAY BE OPERATED ON D-C OR SINGLE PHASE A-C.

ELECTRICAL

FILAMENT VOLTAGE	5.0	VOLTS
FILAMENT CURRENT	260	AMPERES
FILAMENT STARTING CURRENT	1000	AMPERES
FILAMENT COLD RESISTANCE	.002	OHMS
FILAMENT HEATING TIME	15	SECONDS
AMPLIFICATION FACTOR		
$E_c = -800 \text{ V}$ $I_b = 3 \text{ AMPS}$	4.25	
PEAK CATHODE CURRENT (NOTE 1)	40	AMPERES
DIRECT INTER-ELECTRODE CAPACITANCE		
GRID PLATE	53	UUF
GRID FILAMENT	48	UUF
PLATE FILAMENT	7.5	UUF

NOTE 1

REPRESENTS MAXIMUM USABLE CATHODE CURRENT (PLATE CURRENT PLUS GRID CURRENT) FOR ANY CW CONDITION OF OPERATION.



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MECHANICAL

MOUNTING POSITION		VERTICAL, ANODE DOWN	
TYPE OF COOLING		FORCED AIR	
MAXIMUM INCOMING AIR TEMPERATURE		45	°C
MAXIMUM GLASS TEMPERATURE * (NOTE 2)		180	°C
MAXIMUM SEAL TEMPERATURE *		180	°C
REQUIRED AIR FLOW ON ANODE (NOTE 3)			
PLATE DISSIPATION - Kw	15	12	10
AIR FLOW - CFM	1000	800	700
STATIC PRESSURE - INCHES OF WATER	3.5	2.3	1.7
RADIATOR TEMPERATURE *		200	°C
(MEASURED ON CORE AT END AWAY FROM INCOMING AIR)			
NET WEIGHT, APPROXIMATE		39	LBS

* A TEMPERATURE SENSITIVE LACQUER MANUFACTURED BY THE TEMPIL CORPORATION, 132 WEST 22ND STREET, NEW YORK 11, NEW YORK IS CONVENIENT FOR THIS MEASUREMENT.

NOTE 2

OPERATION AT THE UPPER LEVELS OF FREQUENCY MAY REQUIRE AIR FLOW ON THE DISH CENTER TO LIMIT THE OPERATING TEMPERATURE OF THE DISH AND SEALS TO WITHIN RATINGS. THIS MAY BE OBTAINED BY DEFLECTION OF THE ANODE COOLING AIR OR BY A SEPARATE BLOWER DELIVERING 50 CFM THROUGH A 3" NOZZLE.

NOTE 3

COOLING AIR SHOULD BE APPLIED BEFORE OR SIMULTANEOUS WITH THE APPLICATION OF ANY VOLTAGES. AIR FLOW SHOULD CONTINUE APPROXIMATELY ONE MINUTE AFTER THE REMOVAL OF ALL VOLTAGES. THESE RATINGS APPLY IF THE LOAD IS ESSENTIALLY RESISTIVE. THE PLATE DISSIPATION RATING SHOULD BE REDUCED 20% IF THE LOAD IS REACTIVE, SUCH AS OCCURS IN SHAKE TABLE APPLICATIONS.

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

AUDIO FREQUENCY POWER AMPLIFIER & MODULATOR - CLASS AB₁

<u>MAXIMUM RATINGS, ABSOLUTE VALUES</u>		CCS
D-C PLATE VOLTAGE	15,000	VOLTS
MAXIMUM SIGNAL D-C PLATE CURRENT *	10	AMPERES
MAXIMUM SIGNAL PLATE INPUT *	45	Kw
PLATE DISSIPATION *	15	Kw

* AVERAGED OVER ANY AUDIO FREQUENCY CYCLE OF SINE-WAVE FORM.

TYPICAL OPERATION

(UNLESS OTHERWISE SPECIFIED, VALUES ARE FOR TWO TUBES)

D-C PLATE VOLTAGE	12,000	VOLTS
D-C GRID VOLTAGE	-3,100	VOLTS
PEAK A-F GRID-TO-GRID VOLTAGE	6,000	VOLTS
ZERO SIGNAL D-C PLATE CURRENT	1.0	AMPERES
MAXIMUM SIGNAL D-C PLATE CURRENT	4.47	AMPERES
PEAK A-F PLATE-TO-PLATE VOLTAGE	19,000	VOLTS
EFFECTIVE LOAD RESISTANCE, PLATE-TO-PLATE	5,400	OHMS
MAXIMUM SIGNAL DRIVING POWER	0	WATTS
MAXIMUM SIGNAL POWER OUTPUT	33	Kw

RADIO FREQUENCY POWER AMPLIFIER - CLASS AB₁ SINGLE SIDEBAND
(SINGLE TUBE)

MAXIMUM RATINGS, ABSOLUTE RATINGS

CCS

D-C PLATE VOLTAGE	12,000	VOLTS
D-C GRID VOLTAGE	-4,000	VOLTS
D-C PLATE CURRENT	5	AMPERES
PLATE INPUT	30	Kw
FREQUENCY	30	MC

TYPICAL OPERATION

D-C PLATE VOLTAGE	9,500	VOLTS
D-C GRID VOLTAGE **	-2,400	VOLTS
ZERO SIGNAL D-C PLATE CURRENT	.5	AMPERES
SINGLE-TONE R-F (PEAK) GRID VOLTAGE	2,300	VOLTS
SINGLE-TONE D-C PLATE CURRENT	2.58	AMPERES
SINGLE-TONE D-C GRID CURRENT	0	AMPERES
SINGLE-TONE DRIVING POWER	0	WATTS
SINGLE-TONE PLATE POWER INPUT	24.5	Kw
SINGLE-TONE PLATE POWER OUTPUT	14	Kw

** ADJUST TO GIVE STATE ZERO-SIGNAL D-C PLATE CURRENT.

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RATINGS VERSUS FREQUENCY

MAXIMUM RATINGS APPLY UP TO 30 MEGACYCLES. THE TUBE MAY BE OPERATED AT HIGHER FREQUENCIES PROVIDED THE MAXIMUM VALUES OF PLATE VOLTAGE AND POWER INPUT ARE REDUCED ACCORDING TO THE TABULATION BELOW (OTHER MAXIMUM RATINGS ARE THE SAME AS SHOWN UNDER RADIO FREQUENCY POWER AMPLIFIER CONDITIONS). SPECIAL ATTENTION SHOULD BE GIVEN TO ADEQUATE VENTILATION OF THE BULB AT THESE FREQUENCIES.

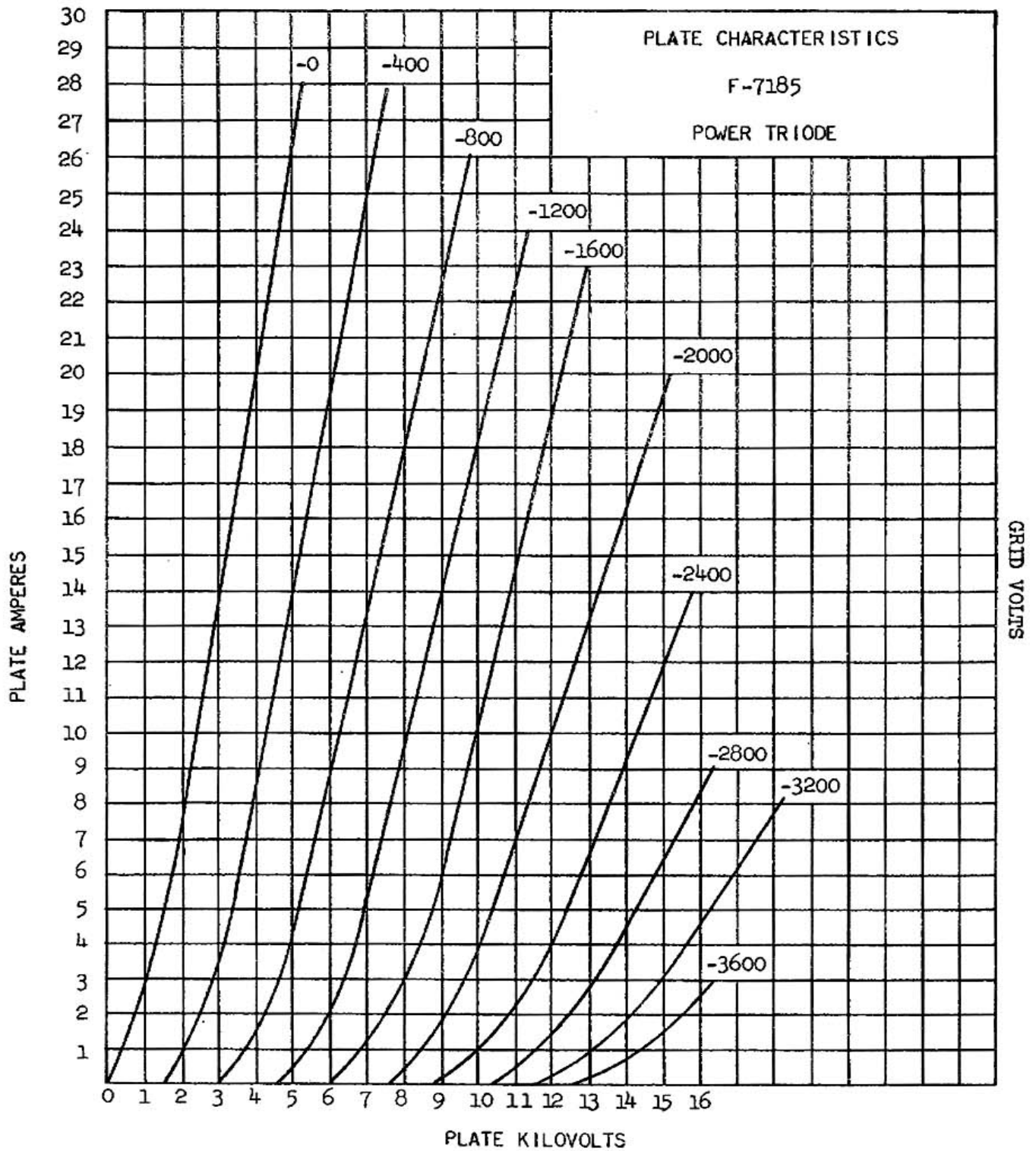
FREQUENCY	30	40	50	MEGACYCLES
PERCENTAGE OF MAXIMUM RATED				
PLATE VOLTAGE & PLATE INPUT	100	80	50	PER CENT

PULSE SERVICE OPERATIONS

IN PULSE SERVICE, IT IS POSSIBLE TO OPERATE THE TUBE UNDER CONDITIONS NOT PERMISSIBLE IN CW OPERATION. BECAUSE OF THE WIDE VARIETY OF OPERATION CONDITIONS, IT IS ADVISABLE THAT TUBE OPERATION RECOMMENDATIONS BE OBTAINED FROM OUR ENGINEERING DEPARTMENT FOR SPECIFIC CONDITIONS.

ADDITIONAL INFORMATION FOR SPECIFIC APPLICATIONS CAN BE OBTAINED FROM THE

ELECTRON TUBE APPLICATIONS SECTION
ITT COMPONENTS DIVISION
POST OFFICE BOX 412
CLIFTON, NEW JERSEY



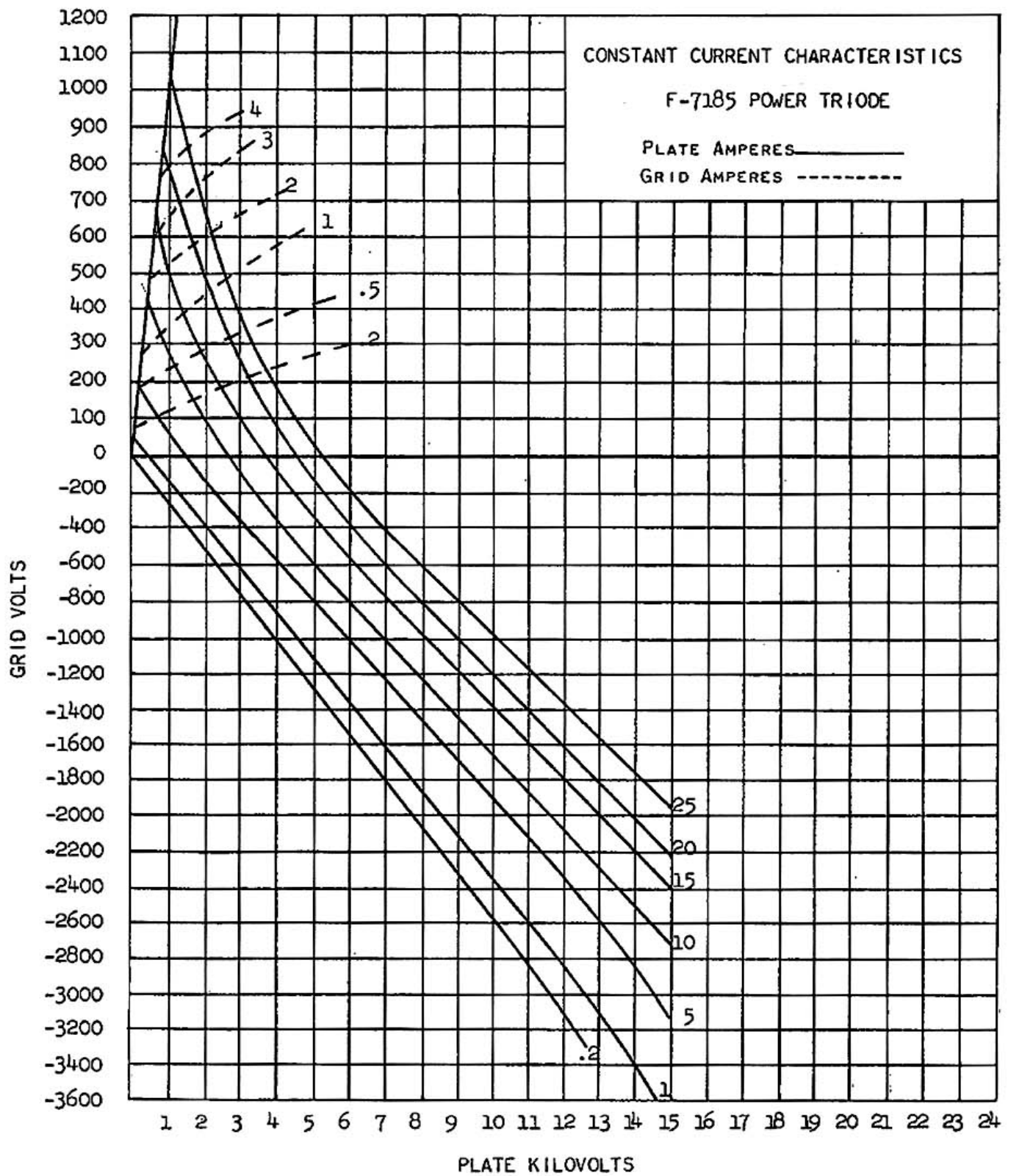
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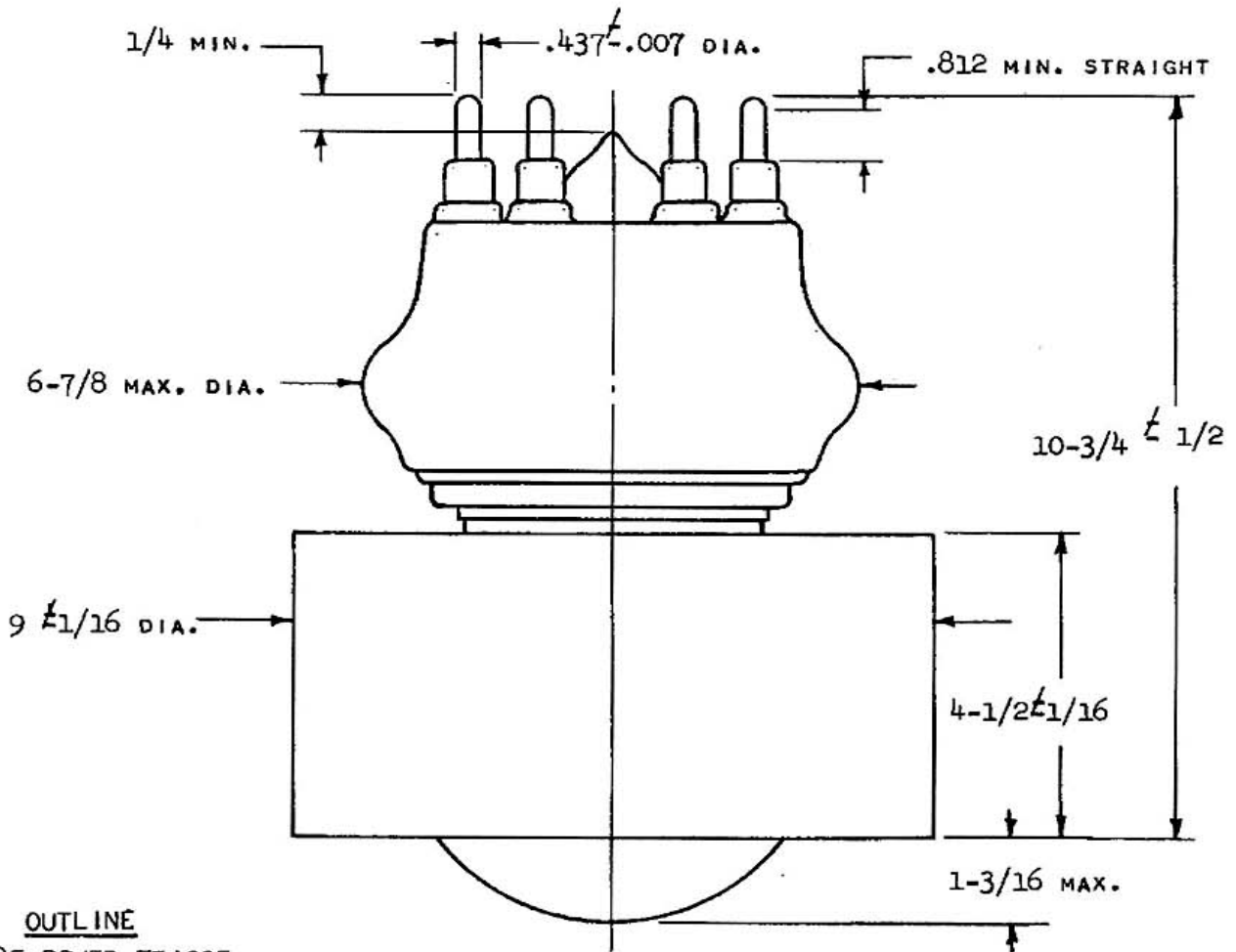
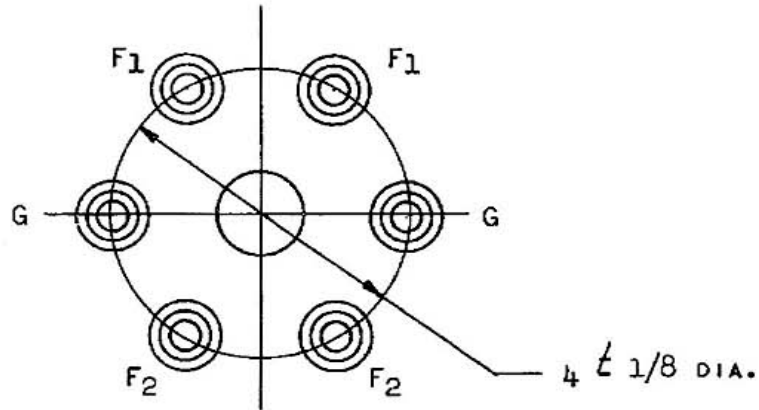
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TERMINALS

BLACK - GRID
YELLOW - FIL. 1
RED - FIL. 2



OUTLINE

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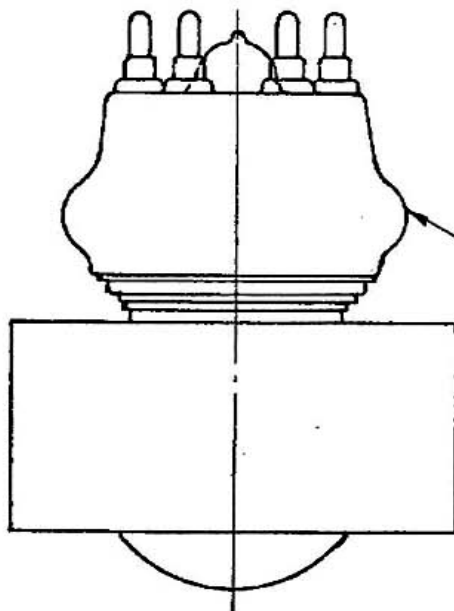
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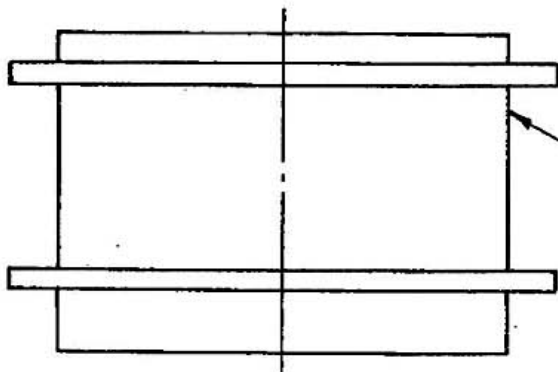
Spanner Wrench
RT-52843-1 2 required



Terminal Connector Assy.
RT-52578-1 6 required



Tube Types
F-6691
F-7185



Air Jacket
RT-53134
Size IV

ACCESSORIES