

engineering TUBE DATA

F-6398
POWER TRIODE



Components Division

Tentative Specification

DESCRIPTION

The F-6398 is a three-electrode tube designed and manufactured by the Vacuum Tube Department of the I T & T Components Division for use as a radio frequency amplifier, oscillator, or Class B modulator. The anode is water cooled, capable of dissipating 225 kilowatts. The cathode is a thoriated tungsten filament. Maximum ratings apply up to 22 megacycles.

ELECTRICAL

Filament Voltage	15.5 volts
Filament Current	420 amperes
Filament Starting Current	1000 max. amperes
Amplification Factor	
$E_c = -200$ volts; $I_b = 5$ amperes	21
Inter-electrode Capacitances	
Grid-Plate	125 μmf
Grid-Filament	140 μmf
Plate-Filament	4 μmf

MECHANICAL

Mounting Position	Vertical, anode down
Type of Cooling	Water and Forced Air
Maximum Outgoing Water Temperature	70 °C
Water Flow	40 gpm
Specified water flow must start upon application of any voltages and may be removed simultaneously with filament and plate power.	
Air Flow	
To air manifold	300 cfm min.
To filament seals	40 cfm min.
Cooling air to start with the application of any voltages and may be removed simultaneously with filament and plate power.	
Maximum Glass Temperature	180 °C
Net Weight	65 pounds, approx.

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COMPONENTS DIVISION

INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

P. O. BOX 412, CLIFTON, NEW JERSEY

F-6398
POWER TRIODE

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PLATE-MODULATED RADIO-FREQUENCY POWER AMPLIFIER - CLASS C TELEPHONY
(Carrier conditions per tube for use with a maximum modulation factor of 1.0)

MAXIMUM RATINGS, ABSOLUTE VALUES

D-C Plate Voltage	20 kilovolts
D-C Grid Voltage	-4 kilovolts
D-C Plate Current	16.5 amperes
D-C Grid Current	5 amperes
Plate Input	320 kilowatts
Plate Dissipation	150 kilowatts

TYPICAL OPERATION

D-C Plate Voltage	17 kilovolts
D-C Grid Voltage	-2.5 kilovolts
Peak R-F Grid Voltage	3.55 kilovolts
Peak R-F Plate Voltage	14 kilovolts
D-C Plate Current	16 amperes
D-C Grid Current, approx.	2.2 amperes
Driving Power, approx.	7.9 kilowatts
Power Output, approx.	200 kilowatts

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR - CLASS B

MAXIMUM RATINGS, ABSOLUTE VALUES

D-C Plate Voltage	25 kilovolts
Maximum Signal D-C Plate Current*	20 amperes
Maximum Signal Plate Input*	500 kilowatts
Plate Dissipation*	225 kilowatts

TYPICAL OPERATION

(Unless otherwise specified, values are for two tubes)

D-C Plate Voltage	14	18 kilovolts
D-C Grid Voltage	-675	-830 volts
Peak A-F Grid-to-Grid Voltage	2760	3320 volts
Zero Signal D-C Plate Current	4	4 amperes
Maximum Signal D-C Plate Current	32	38 amperes
Effective Load Resistance Plate-to-Plate	960	1065 ohms
Maximum Signal Driving Power, approx.	2440	4500 watts
Maximum Signal Power Output, approx.	300	480 kilowatts

*Averaged over any audio frequency cycle
of sine-wave form.

RADIO FREQUENCY POWER AMPLIFIER AND OSCILLATOR - CLASS C TELEGRAPHY
(Key down conditions without AM)

MAXIMUM RATINGS, ABSOLUTE VALUES

D-C Plate Voltage	25 kilovolts
D-C Grid Voltage	-4 kilovolts
D-C Plate Current	25 amperes
D-C Grid Current	5 amperes
Plate Input	500 kilowatts
Plate Dissipation	225 kilowatts

TYPICAL OPERATION

D-C Plate Voltage	18 kilovolts
D-C Grid Voltage	-2.3 kilovolts
Peak R-F Grid Voltage	3.6 kilovolts
D-C Plate Current	24 amperes
D-C Grid Current, approx.	3.6 amperes
Driving Power, approx.	11 kilowatts
Power Out, approx.	325 kilowatts

RADIO FREQUENCY POWER AMPLIFIER AND OSCILLATOR - PULSED OPERATION

MAXIMUM RATINGS, ABSOLUTE VALUES

D-C Plate Voltage	30 kilovolts
D-C Grid Voltage	-8 kilovolts
Peak Cathode Current	400 amperes
Plate Dissipation	225 kilowatts
Pulse Length	.010 seconds
Duty Cycle	.03

TYPICAL OPERATION

D-C Plate Voltage	25 kilovolts
D-C Grid Voltage	-5 kilovolts
D-C Plate Current (during Pulse)	75 amperes
D-C Grid Current (during Pulse)	10 amperes
Peak Power Output	1300 kilowatts

MODULATOR TUBE - PULSED OPERATION
(Switch Tube Applications)

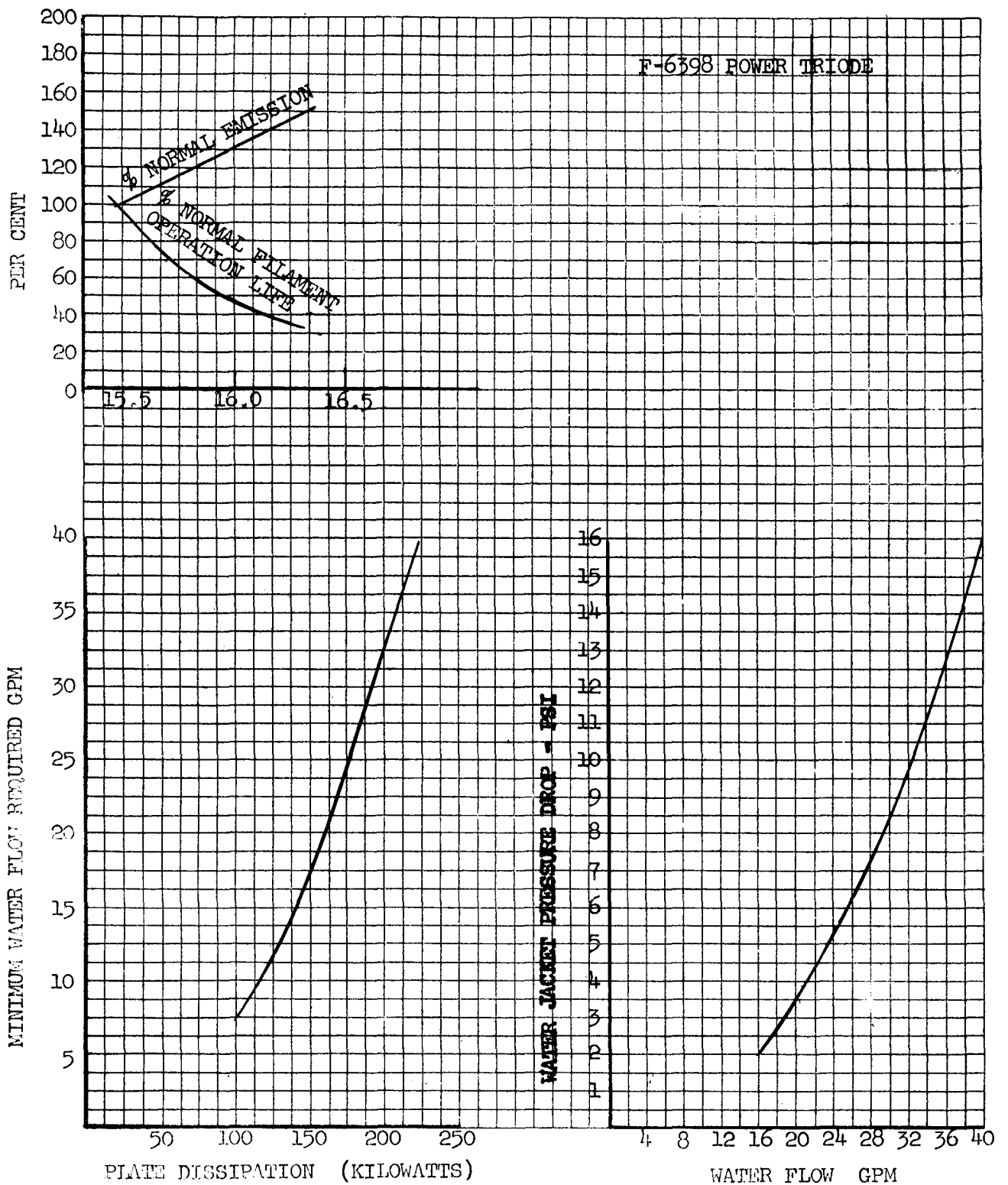
MAXIMUM RATINGS, ABSOLUTE VALUES

D-C Plate Voltage	65	65 max. kilovolts
Peak Positive Voltage (Instantaneous)	70	70 max. kilovolts
D-C Grid Voltage	-8	-8 max. kilovolts
Peak Positive Grid Voltage	8	8 max. kilovolts
Pulse Plate Current	350	**450 max. amperes
Pulse Grid Current	150	**250 max. amperes
Pulse Cathode Current	400	**550 max. amperes
Grid Dissipation	6	6 max. kilowatts
Duty Factor	.002	.002 max.
Pulse Length	15	15 max. μ sec.

TYPICAL OPERATION

D-C Plate Voltage	50 kilovolts
Pulse Plate Current	300 amperes
D-C Grid Voltage	-4 kilovolts
Pulse Grid Current	90 amperes
Pulse Positive Grid Voltage	3 kilovolts
Duty Factor	.001
Pulse Length	10 μ sec.
Plate Output Voltage	44 kilovolts

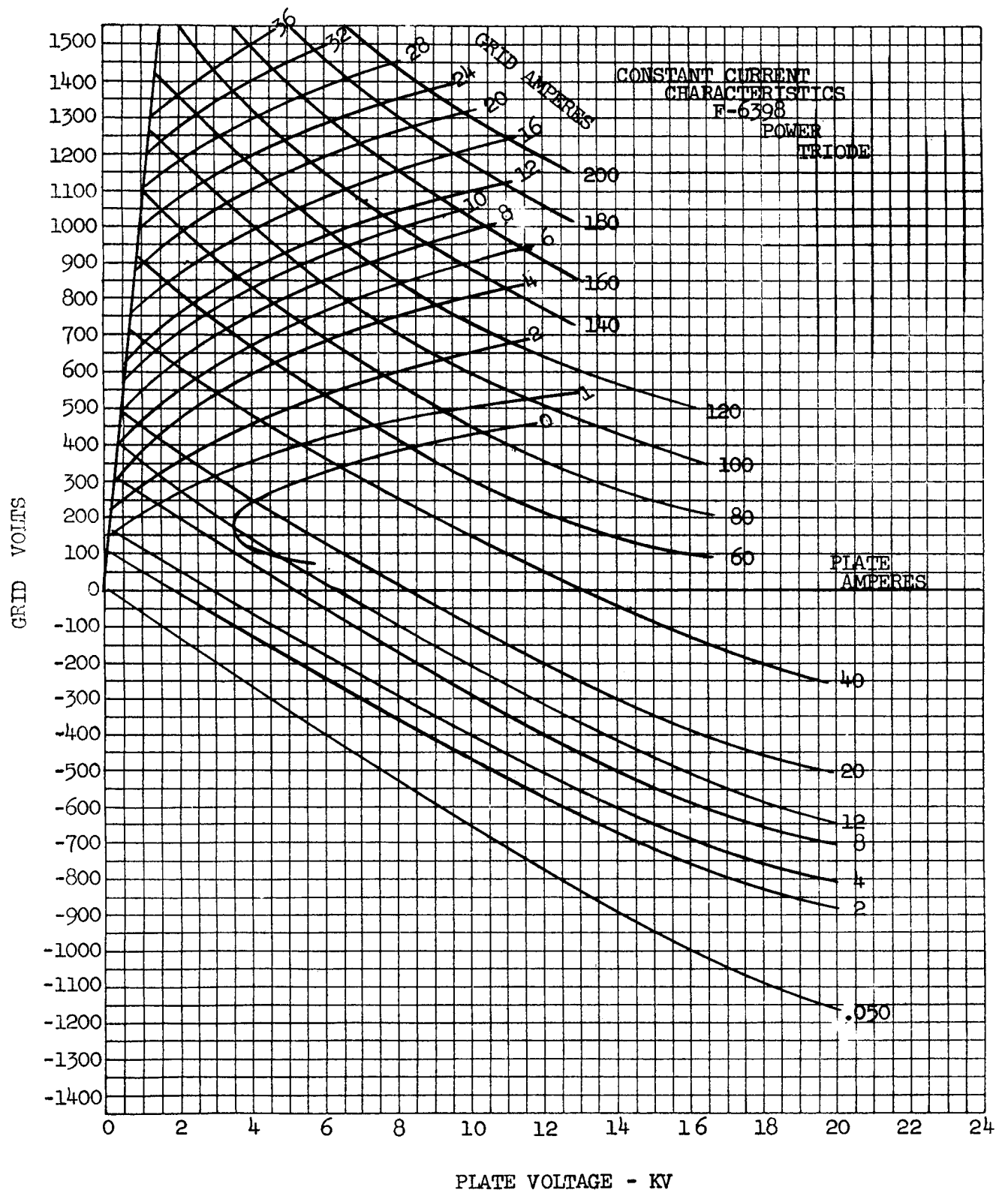
**These ratings apply only under elevated
filament temperatures - $E_f = 16.75$ v.



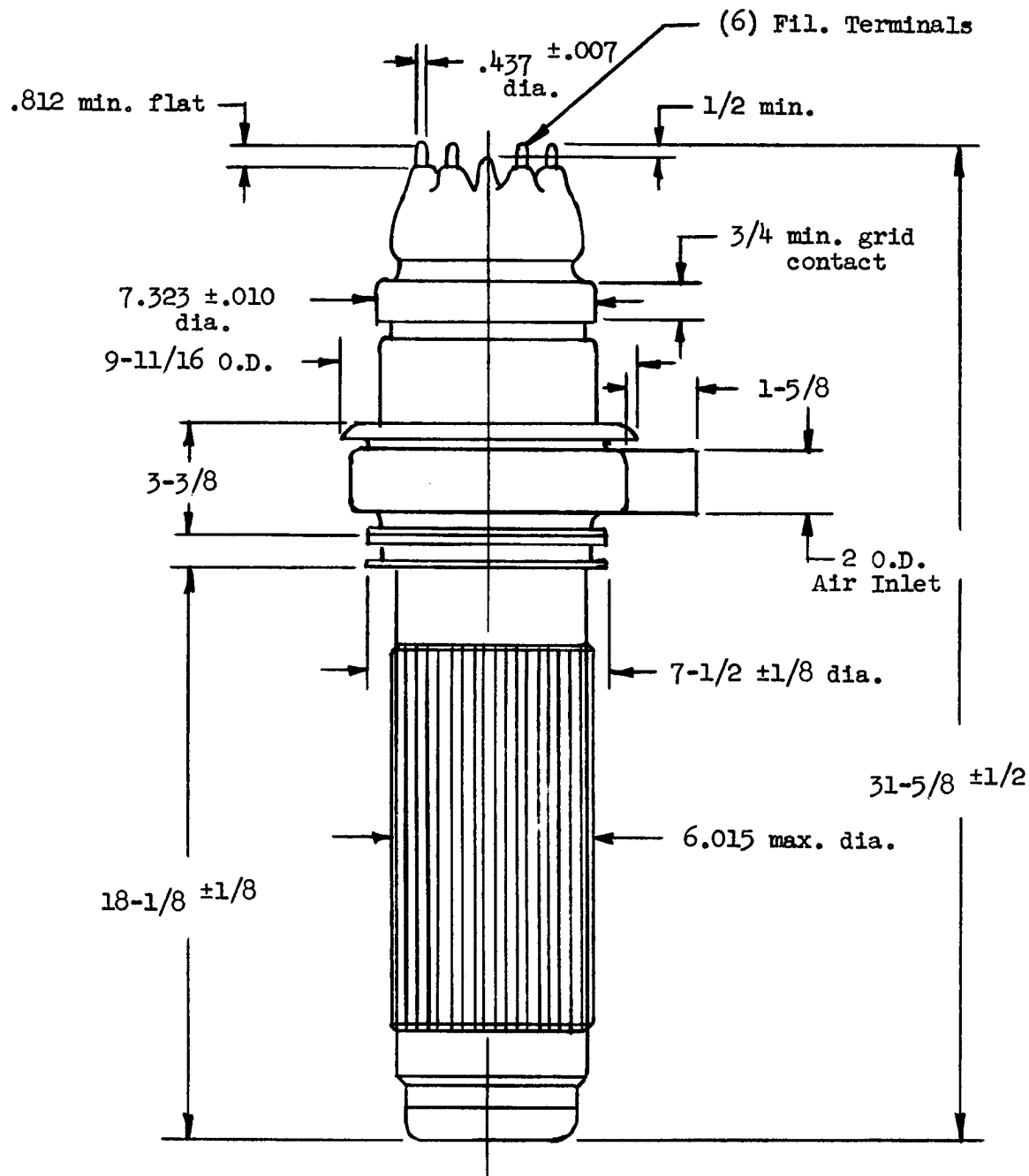
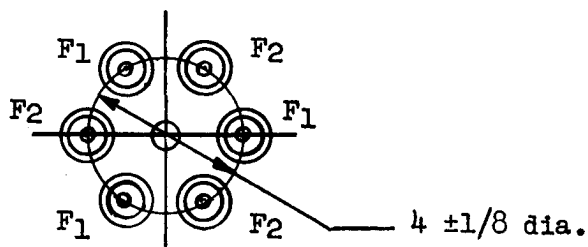
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FIL. #1 -- Yellow
 FIL. #2 -- Red



OUTLINE

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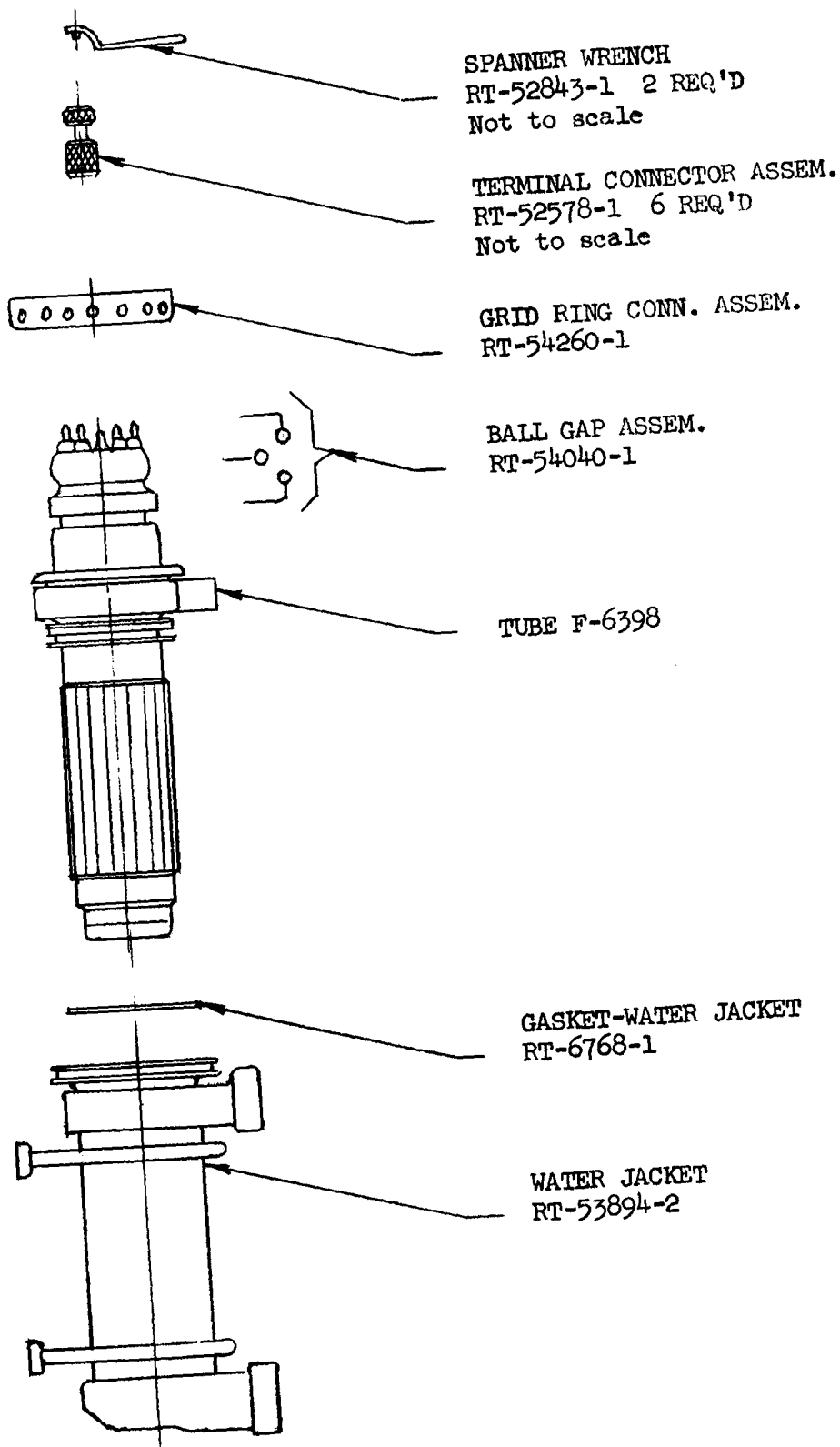
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ACCESSORIES

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