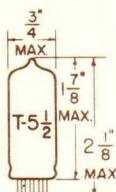


TUNG-SOL

HEPTODE
MINIATURE TYPE

GLASS BULB

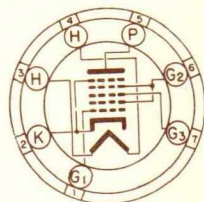
COATED UNIPOTENTIAL CATHODE

HEATER

12.6 VOLTS 0.15 AMP.

AC OR DC

ANY MOUNTING POSITION

BOTTOM VIEW
MINIATURE BUTTON
7 PIN BASE

7CH

THE 12AF6 IS A PENTAGRID CONVERTER WITH A UNIPOTENTIAL CATHODE IN THE 7 PIN MINIATURE CONSTRUCTION. IT IS INTENDED AS A COMBINED OSCILLATOR AND MIXER IN SUPERHETERODYNE RECEIVERS WHERE THE HEATER, PLATE AND SCREEN GRID POTENTIALS ARE OBTAINED DIRECTLY FROM AN AUTOMOTIVE BATTERY.

DIRECT INTERELECTRODE CAPACITANCES

WITH EXTERNAL SHIELD #316 CONNECTED TO PIN #2

MIXER GRID TO PLATE: (G ₃ TO P) MAX.	0.25	μf
MIXER GRID TO OSCILLATOR GRID: (G ₃ TO G ₁) MAX.	0.15	μf
RF INPUT: G ₃ TO (H+K+G ₁ +G ₂ +G ₄ +G ₅ +P)	7.2	μf
OSCILLATOR INPUT: G ₁ TO (H+K+G ₁ +G ₂ +G ₄ +G ₃ +G ₅)	7.2	μf
MIXER OUTPUT: P TO (H+K+G ₁ +G ₂ +G ₄ +G ₃ +G ₅)	12.0	μf
OSCILLATOR GRID TO CATHODE: (G ₁ TO K+G ₅)	5.0	μf
OSCILLATOR OUTPUT: K TO (H+G ₂ +G ₄ +G ₃ +P)	20	μf
OSCILLATOR GRID TO PLATE: (G ₁ TO P) MAX.	.05	μf

RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

MAXIMUM HEATER-CATHODE VOLTAGE	±30	VOLTS
MAXIMUM PLATE VOLTAGE	30	VOLTS
MAXIMUM GRIDS #2 & #4 VOLTAGE	30	VOLTS
MAXIMUM GRIDS #2 & #4 SUPPLY VOLTAGE	30	VOLTS
MAXIMUM NEGATIVE DC GRID #3 VOLTAGE	30	VOLTS
MAXIMUM POSITIVE DC GRID #3 VOLTAGE	0	VOLTS
MAXIMUM CATHODE CURRENT	20	MA.
MAXIMUM GRID #3 CIRCUIT RESISTANCE	10	MEGOHMS

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CONVERTER SERVICE — SELF EXCITATION ^A

HEATER VOLTAGE	12.6	VOLTS
PLATE VOLTAGE	12.6	VOLTS
GRID #3 VOLTAGE	0.50 ^B	VOLTS
GRIDS #2 & #4 VOLTAGE	12.6	VOLTS
GRID #1 VOLTAGE (OSCILLATOR GRID) RMS	2.5	VOLTS
GRID #1 RESISTANCE (OSCILLATOR GRID)	33 000	OHMS
PLATE RESISTANCE (APPROX.)	0.8	MEGOHMS
GRID #1 CURRENT (OSCILLATOR GRID)	60	μA
CONVERSION TRANSCONDUCTANCE	320	μMHOS
PLATE CURRENT	450	μA
GRIDS #2 & #4 CURRENT	1 000	μA
CATHODE CURRENT	1 500	μA
GRID #3 VOLTAGE FOR $G_c = 5 \mu\text{MHOS}$ (APPROX.)	-3.5	VOLTS
GRID #3 VOLTAGE FOR $G_c = 20 \mu\text{MHOS}$ (APPROX.)	-3.0	VOLTS

CONVERTER SERVICE — EXTERNAL EXCITATION

HEATER VOLTAGE	12.6	VOLTS
GRID #3 VOLTAGE	0	VOLTS
GRID #1 VOLTAGE (OSCILLATOR GRID) RMS	0.85	VOLTS
GRIDS #2 & #4 CONNECTED TO PLATE	12.6	VOLTS
CONVERSION TRANSCONDUCTANCE	300	μMHOS
CATHODE CURRENT	1 900	μA
GRIDS #2 & #4 CURRENT	1 200	μA
PLATE CURRENT	670	μA
GRID #1 CURRENT	45	μA
GRID #3 VOLTAGE FOR $G_c = 10 \mu\text{MHOS}$	-3.2	

OSCILLATOR CHARACTERISTICS — NOT OSCILLATING

GRID #3 VOLTAGE	0	VOLTS
GRID #1 VOLTAGE (OSCILLATOR GRID)	0	VOLTS
GRID #2 & #4 CONNECTED TO PLATE	12.6	VOLTS
TRANSCONDUCTANCE BETWEEN GRID #1 & GRID #2 & #4 CONNECTED TO PLATE	4 000	μMHOS
AMPLIFICATION FACTOR BETWEEN GRID #1 & GRID #2 & #4 CONNECTED TO PLATE	9	
CATHODE CURRENT	4.5	MA.
GRID #1 VOLTAGE (APPROX.) FOR $I_b = 10 \mu\text{A}$.	-3.5	VOLTS

* THIS TUBE IS INTENDED TO BE USED IN AUTOMOTIVE SERVICE FROM A NOMINAL 12 VOLT BATTERY SOURCE. THE HEATER IS THEREFORE DESIGNED TO OPERATE OVER THE 10.0 TO 15.9 VOLTAGE RANGE ENCOUNTERED IN THIS SERVICE. THE MAXIMUM RATINGS OF THE TUBE PROVIDE FOR AN ADEQUATE SAFETY FACTOR SUCH THAT THE TUBE WILL WITHSTAND THE WIDE VARIATION IN SUPPLY VOLTAGES.

^A SCREEN FEEDBACK. $G_{2,4}$ TO CATHODE VOLTAGE APPROXIMATELY 13% OF G_1 TO CATHODE VOLTAGE.

^B AVERAGE CONTACT POTENTIAL DEVELOPED ACROSS A 2.2 MEGOHM GRID RESISTOR.