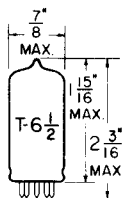


TUNG-SOL**DOUBLE TRIODE**

MINIATURE TYPE

**GLASS BULB**

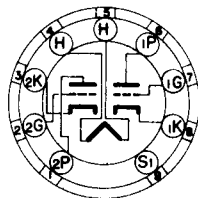
COATED UNIPOTENTIAL CATHODE

HEATER

5.6 VOLTS 0.45 AMP.

AC OR DC

ANY MOUNTING POSITION

**BOTTOM VIEW**MINIATURE BUTTON
9 PIN NOVAL

9AJ

THE 5BQ7A IS A MEDIUM-MU DOUBLE TRIODE USING THE 9 PIN MINIATURE CONSTRUCTION. IT IS INTENDED FOR USE AS THE FIRST RF AMPLIFIER TUBE IN TUNERS OF VHF TELEVISION RECEIVERS OR AS A LOW NOISE IF PRE-AMPLIFIER TUBE IN UHF TELEVISION RECEIVERS EMPLOYING A CRYSTAL MIXER. HIGH TRANSCONDUCTANCE, LOW INPUT CAPACITANCE, LOW INPUT LOADING AND LOW PLATE TO CATHODE CAPACITANCE MAKES IT ESPECIALLY USEFUL IN THE DIRECT-COUPLED RF STAGE OF TELEVISION RECEIVERS UTILIZING A DRIVEN RF-GROUNDED-GRID AMPLIFIER OR THE CASCODE TYPE OF CIRCUIT. THERMAL CHARACTERISTICS OF THE HEATER ARE CONTROLLED SUCH THAT HEATER VOLTAGE SURGES DURING THE WARM-UP CYCLE ARE MINIMIZED PROVIDED IT IS USED WITH OTHER TYPES WHICH ARE SIMILARLY CONTROLLED.

DIRECT INTERELECTRODE CAPACITANCES

WITH EXTERNAL SHIELD #315

	UNIT #1	UNIT #2	
GRID TO PLATE	1.15	1.15	$\mu\mu\text{f}$
INPUT	2.85	----	$\mu\mu\text{f}$
INPUT (GROUNDED GRID)	----	4.95	$\mu\mu\text{f}$
OUTPUT	1.35	----	$\mu\mu\text{f}$
OUTPUT (GROUNDED GRID)	----	2.27	$\mu\mu\text{f}$
PLATE TO CATHODE (MAX.)	0.15	0.15	$\mu\mu\text{f}$
HEATER TO CATHODE	2.65	2.70	$\mu\mu\text{f}$
PLATE OF UNIT #1 TO PLATE OF UNIT #2 (MAX.)	0.010		$\mu\mu\text{f}$
PLATE OF UNIT #2 TO PLATE AND GRID OF UNIT #1 (MAX.)	0.024		$\mu\mu\text{f}$

RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER VALUES

CLASS A₁ AMPLIFIER - EACH TRIODE UNIT

HEATER VOLTAGE	5.6	VOLTS
MAXIMUM HEATER CATHODE VOLTAGE:		
HEATER NEGATIVE WITH RESPECT TO CATHODE	200 ^A	VOLTS
TOTAL DC AND PEAK		
HEATER POSITIVE WITH RESPECT TO CATHODE	100	VOLTS
DC	200 ^A	VOLTS
TOTAL DC AND PEAK	250 ^A	VOLTS
MAXIMUM PLATE VOLTAGE	2	WATTS
MAXIMUM PLATE DISSIPATION	20	MA.
MAXIMUM CATHODE CURRENT	0.5	MEG OHM
MAXIMUM GRID CIRCUIT RESISTANCE	11.0	SEC.
HEATER WARM-UP TIME (APPROX.)*		

^A UNDER CUT-OFF CONDITIONS, IN RF-GROUNDED-GRID CIRCUITS WITH DIRECT-COUPLED DRIVE, IT IS PERMISSIBLE FOR THIS VOLTAGE TO BE AS HIGH AS 300 VOLTS.

* HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE 3 TIMES THE NOMINAL HEATER OPERATING RESISTANCE.

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A₁ AMPLIFIER - EACH UNIT

	DESIGN CENTER VALUES	
HEATER VOLTAGE	5.6	VOLTS
HEATER CURRENT	0.45	AMP.
PLATE VOLTAGE	150	VOLTS
CATHODE BIAS RESISTOR	220	OHMS
AMPLIFICATION FACTOR	39	
PLATE RESISTANCE	6 100	OHMS
TRANSCONDUCTANCE	6 400	MMHOS
PLATE CURRENT	9	MA.
GRID VOLTS (APPROX.) FOR $I_b = 10 \mu\text{AMP.}$	-10	VOLTS

PUSH-PULL RF GROUNDED GRID CIRCUIT - EACH UNIT

HEATER VOLTAGE	5.6	VOLTS
HEATER CURRENT	0.45	AMP.
PLATE VOLTAGE	150	VOLTS
GRID VOLTAGE (OBTAINED FROM CATHODE RESISTOR)	-2	VOLTS
CATHODE RESISTOR (COMMON TO BOTH UNITS)	100	OHMS
PLATE CURRENT	10	MA.

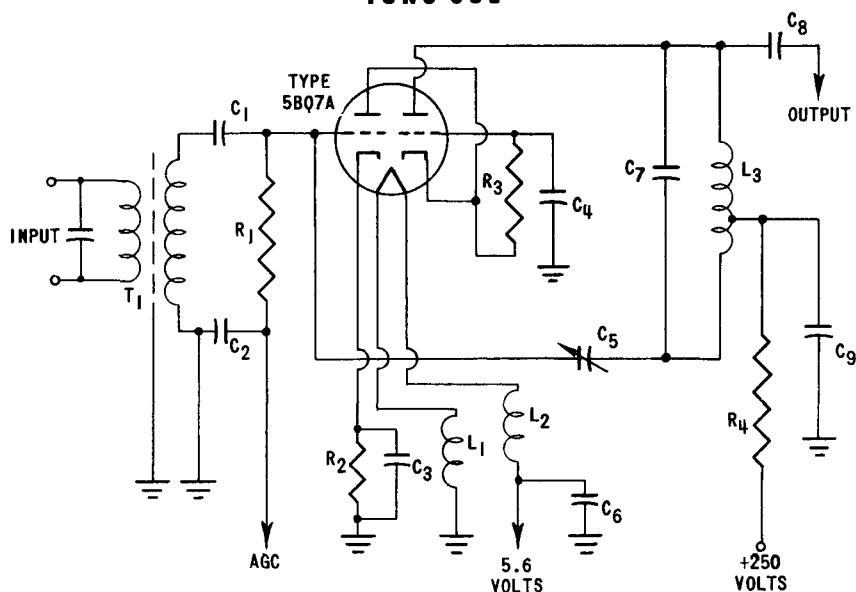
RF GROUNDED GRID CIRCUIT WITH DIRECT-COUPLED DRIVE

UNIT #1 (DRIVER TUBE) IS DIRECTLY COUPLED TO UNIT #2 (DRIVEN RF-GROUNDED-GRID AMPLIFIER TUBE) AS SHOWN IN ACCOMPANYING CIRCUIT.

	UNIT #1	UNIT #2	
HEATER VOLTAGE	5.6	5.6	VOLTS
HEATER CURRENT	0.45	0.45	AMP.
PEAK HEATER CATHODE VOLTAGE: HEATER NEGATIVE WITH RESPECT TO CATHODE	1	250	VOLTS
PLATE SUPPLY VOLTAGE	250	250	VOLTS
PLATE VOLTAGE	135	115	VOLTS
GRID VOLTAGE	-1	---	VOLTS
GRID RESISTOR	---	0.5	MEGOHM
PLATE CURRENT	10	10	MA.
GRID CURRENT	0	0	MA.
GRID VOLTAGE (APPROX.) FOR $I_b = 10 \mu\text{AMP.}$	-14	---	VOLTS.

SIMILAR TYPE REFERENCE: Except for heater ratings and heater warm-up time the 5BQ7A is identical to the 6BQ7A.

TUNG-SOL

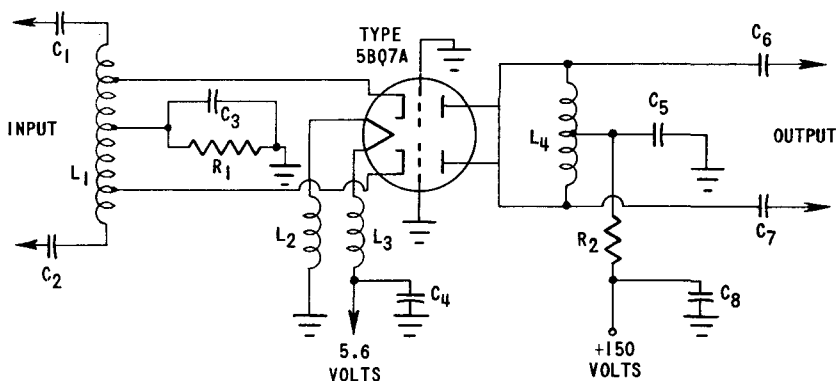


C1: 33 μ f, 400 VOLTS
 C2: 1000 μ f, 400 VOLTS
 C3: 1000 μ f, 400 VOLTS
 C4: 1000 μ f, 400 VOLTS
 C5: 0.5 to 1.5 μ f, 400 VOLTS
 C6: 1000 μ f, 400 VOLTS
 C7: 2 μ f, 400 VOLTS
 C8: 33 μ f, 400 VOLTS
 C9: 1000 μ f, 400 VOLTS

L1, L2: BIFILAR CHOKES, EACH 10
 TURNS NO. 18 ENAMEL WIRE
 1/4" COIL FORM
 L3: TUNED CIRCUIT ELEMENT OF
 TUNER. VALUE DEPENDS ON DIS-
 TRIBUTED CIRCUIT CAPACITANCES.
 TO DETERMINE TAP POINT, TAP
 DOWN TO 80 TO 90% OF TOTAL
 NUMBER OF TURNS

R1: 10000 OHMS, 0.5 WATT
 R2: 100 OHMS, 0.5 WATT
 R3: 50000 OHMS, 0.5 WATT
 R4: 100 OHMS, 0.5 WATT
 T1: TUNED CIRCUIT ELEMENT
 OF TUNER. VALUE DE-
 PENDS ON DISTRIBUTED
 CIRCUIT CAPACITANCES.

DRIVEN RF-GROUNDED GRID AMPLIFIER CIRCUIT WITH DIRECT COUPLED DRIVE

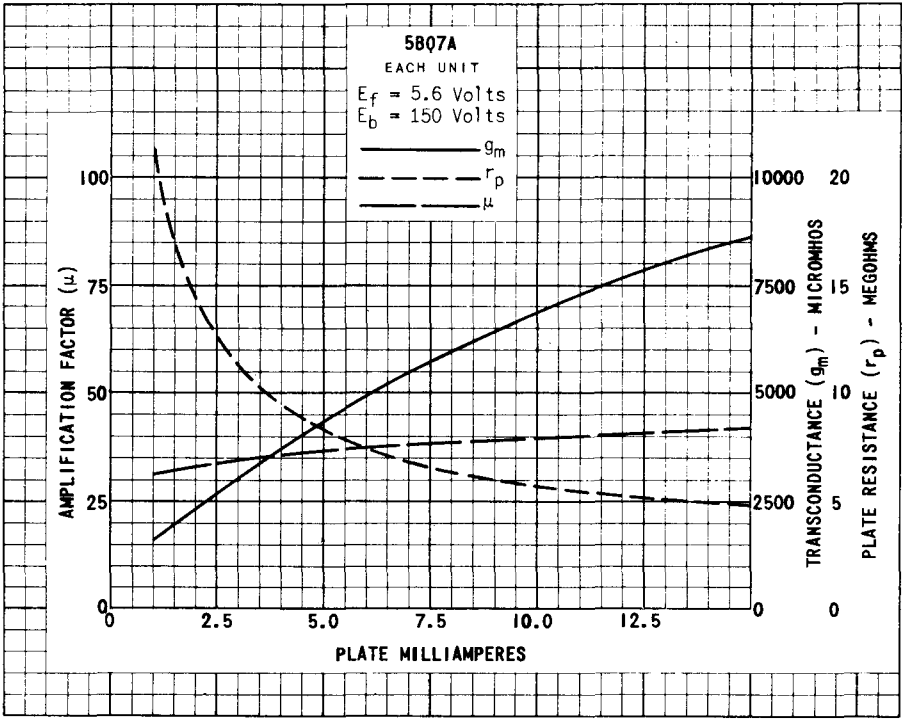
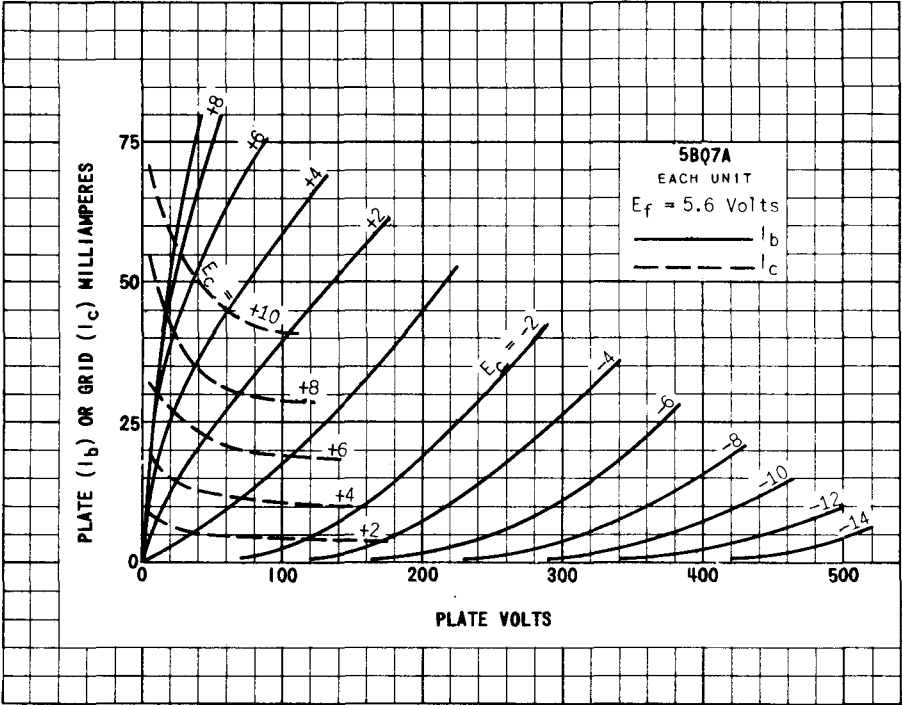


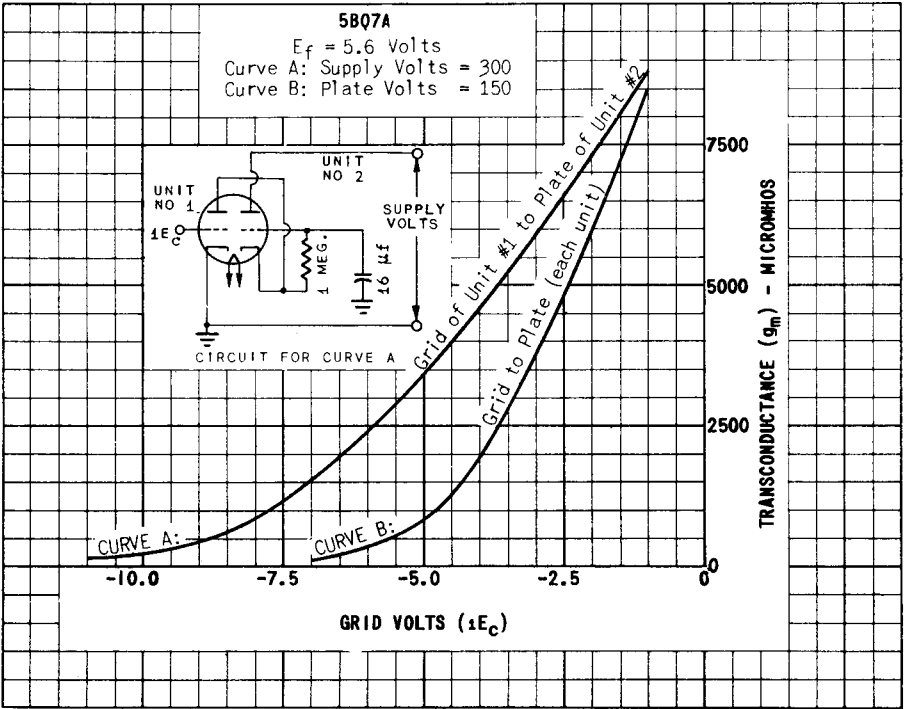
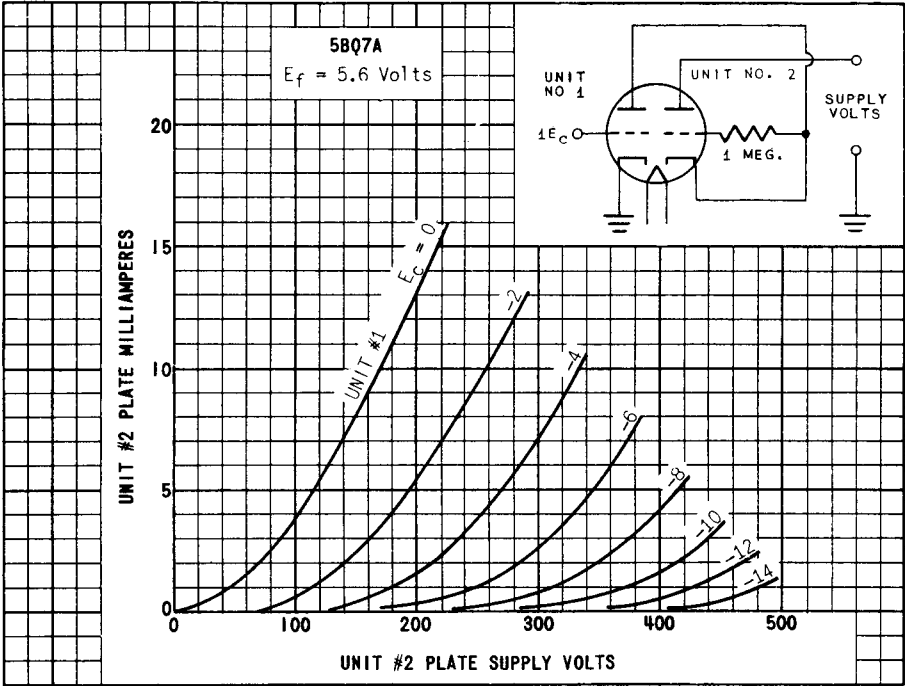
C1 C2 C3 C4 C5:
 1000 μ f, 400 VOLTS
 C6 C7:
 100 μ f, 400 VOLTS
 C8: 1000 μ f, 400 VOLTS

L1 L4: TUNED CIRCUIT ELEMENTS
 OF TUNER. VALUES DEPEND
 ON DISTRIBUTED CIRCUIT
 CAPACITANCES.

L2 L3: BIFILAR CHOKES,
 EACH 10 TURNS OF
 NO. 18 ENAMEL WIRE,
 1/4" COIL FORM.
 R1 R2: 100 OHMS, 0.5 WATT

PUSH-PULL RF GROUNDED-GRID CIRCUIT





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