



## United Motors Service - Delco

	<b>Model:</b> 3201 Delco	<b>Chassis:</b>	<b>Year:</b> Pre November 1935		
	<b>Power:</b>	<b>Circuit:</b>	<b>IF:</b>		
	<b>Tubes:</b>				
	<b>Bands:</b>				
<b>Resources</b>					
Riders 6 (VI) UNITED MOTORS 6-13					
Riders 6 (VI) UNITED MOTORS 6-14					
Riders 6 (VI) UNITED MOTORS 6-15					
Riders 6 (VI) UNITED MOTORS 6-16					

UNITED MOTORS SERVICE, INC  
MODELS 3201, 3202 Delco  
Below Serial 800,000  
Schematic, Voltage

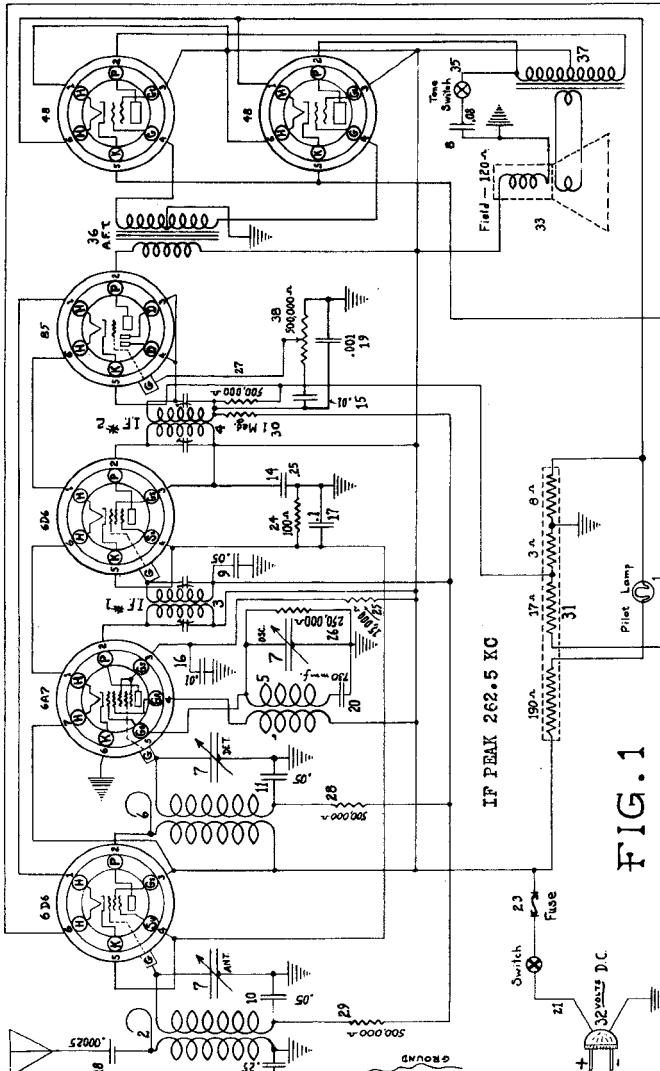


FIG. 1

TYPE	FUNCTION	H	P	Gs	Su	G	K	P-osc.
6D6	R.F. Amp.	6.3	32	.5	0	.5	-	-
6A7	1st Det.-osc.	6.3	32	-	0	0	0	32
6D6	I.F. Amp.	6.3	32	.5	0	.5	-	-
85	2nd Det.-AVC	6.3	30	-	0	1	-	-
48	Power Amp.	26.0	31.5	32	-	0	7	-
48	Power Amp.	26.0	31.5	32	-	0	7	-

Model 3201, table set  
with 6" speaker and 6D6  
Model 3202, console  
with 8" speaker

NOTE: The types 6D6, 6A7 and 85 tubes have the heater elements connected in series. If any one of these tube heaters should burn out, the others will fail to light.

MODELS 3201, 3202 Delco

Below Serial 800,000 UNITED MOTORS SERVICE, INC.

Alignment, Socket  
Trimmers, Parts

**Illus. Part Name**

Part No.	Description
1308978	Pilot light mounting
1308979	Dial 1400 KC coil
1308980	Table model #3201
1308981	Cabinet
1308982	Console model #3202
1308983	Coil
1308984	Antenna
1308985	Coil
1308986	Coil
1308987	Coil
1308988	Coil
1308989	Coil
1308990	Coil
1308991	Coil
1308992	Coil
1308993	Coil
1308994	Coil
1308995	Coil
1308996	Coil
1308997	Coil
1308998	Coil
1308999	Coil
1309000	Coil
1309001	Coil
1309002	Coil
1309003	Coil
1309004	Coil
1309005	Coil
1309006	Coil
1309007	Coil
1309008	Coil
1309009	Coil
1309010	Coil
1309011	Coil
1309012	Coil
1309013	Coil
1309014	Coil
1309015	Coil
1309016	Coil
1309017	Coil
1309018	Coil
1309019	Coil
1309020	Coil
1309021	Coil
1309022	Coil
1309023	Coil
1309024	Coil
1309025	Coil

## PEAKING I.P. Stages at 2821 KC

- (a) Connect the output of the signal generator to the grid cap of the 6AY7 tube (locate 6AY7 grid lead clip in place) and to the chassis frame. Make sure that the output selector is protected with a series condenser. This will prevent damage to the motor car trimmer if the signal generator output is connected to the chassis frame.
- (b) Turn the tuning condenser until the plates are entirely out of mesh.

(c) Set the signal generator on 2821 KC and feed this signal through the I.P. stages of the set.

- (d) Peak the I.P. trimmer located on the top of the 1st I.F. coil, Fig. 2. Then peak the trimmer located on the bottom of the 2nd I.F. coil, same coil, Fig. 5. Due to the detuning effect the primary winding occurs over the secondary. It will then be necessary to raise the top trimmer for maximum output.
- (e) Peak the I.P. trimmer located on the top of the 2nd I.F. coil, Fig. 2. Then peak the trimmer located on the bottom of the 2nd I.F. coil setting all adjustments for maximum output.

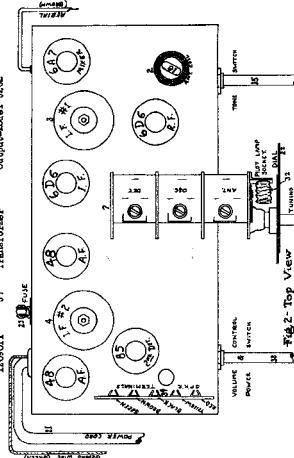
NOTE: In the event that the I.P. stages are badly out of alignment at 2821 KC the operation outlined in paragraph (d) and (e) should be repeated.

## PEAKING GANG CAPACITOR AT 1400 MC

- (a) With the condenser plates completely out of mesh, the 1600 KC indicator line should be exactly in the upper vertical position. If it is not, loosen the two set screws in the selector dial hub and make the necessary adjustment. Then rotate the dial until the 1400 MC indicator line is exactly in the upper vertical position.

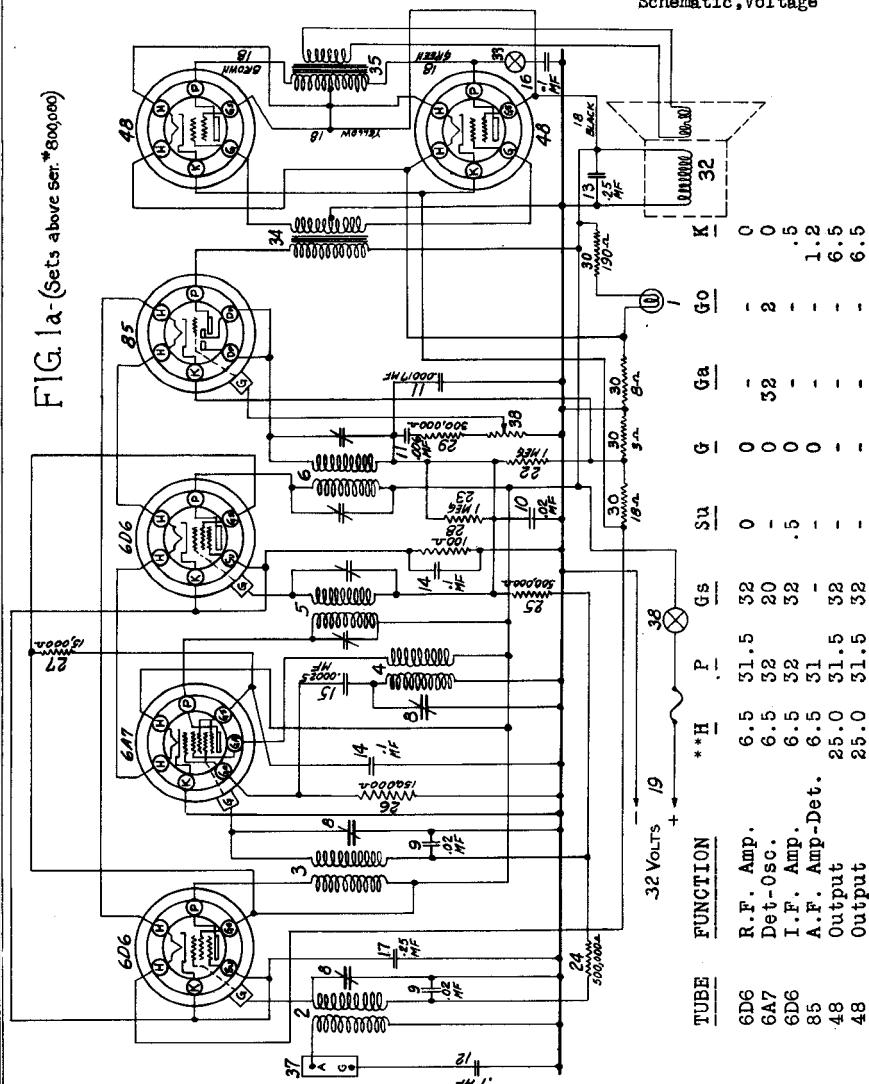
- (b) Coil up the antenna lead to within a foot of the chassis and set the oscillator at 1400 MC. Feed the signal generator output into the antenna wires. Turn the antenna selector dial to the "OFF" position. Turn the gang capacitor at the front of the chassis and by slowly turning the dial, a few turns of the portion of the antenna wire nearest the chassis around the signal generator output lead. This will ordinarily provide sufficient coupling between the signal generator and the antenna circuit to insure the signal generation. If the signal does not come on, increase the antenna length or move the antenna to another location. If these steps do not work, then the chassis will have to be taken, however, not to permanently damage the insulation.

- (c) Peak the osc. trimmer condenser, Fig. 2, until the oscillator output can be heard in the speaker, then turn the Ant. and Det. controls to maximum definition. Turn the control knobs one-half turn each to maximum definition. Turn the control knobs back one-half turn each. Repeat the adjustment several times until no further improvement can be made.
- NOTE: To avoid VFO action and to insure sharp taking of all trimmers, reduce the gain selector controls until the meter scale will give a reasonable deflection on the output meter scale.



**UNITED MOTORS SERVICE, INC.**  
**MODELS 3201,3202 Delco**  
 Above Serial 800,000  
 Schematic, Voltage

FIG. 1a-(Sets above Ser. #800,000)



\*\* The filament voltages shown are measured across the filament prongs of each tube and not from filament to chassis frame.

MODELS 3201, 3202 Delco

Above Serial 800,000 UNITED MOTORS SERVICE, INC.

Alignment, Data  
Socket, Trimmers, Chassis

#### GENERAL DESCRIPTION

The Models 3201 and 3202 are both 32 volt 6 tube superheterodyne receivers with A.V.C. The only difference between the two receivers is that the Model 3201 has a table top cabinet and a speaker. While the Model 3202 has a console cabinet and no speaker. The frequency range of these sets is from 540 to 1700 kilocycles.

#### POWER SUPPLY SYSTEM

The unique feature of these receivers is that the maximum plate or screen voltage used is 32 volts, and the positive lead of the power cord connects directly to the plates and screens of the tubes and the negative lead connects to the chassis.

The filaments of the two type 665 tubes, the type 6AT and the type 6B are connected in series and are supplied by being connected directly across the 32 volt power supply in series with the 18 and 3 ohm sections of the resistor strip (illus. #30, Fig. 1a). The filaments of the two type 48 output tubes are each connected in parallel across the 32 volt power supply in series with the 6 ohm section of the resistor strip (illus. #30, Fig. 1a).

#### METHOD OF BIASING

The 665 R.F. and I.F. tubes obtain their residual bias from a common bias resistor of 100 ohms (illus. #38) and the control grids of both of these tubes receive a negative voltage from the A.V.C. circuit dependent on the volume control. In addition, the 665 tubes have 15 ohms connected directly to ground and its control grid also receives a negative voltage for grid bias from the A.V.C. circuit when a signal is tuned in. The bias on the 6S tube is obtained by connecting its filament to ground through a 10 ohm resistor and returning the grid circuit to ground through the volume control. The bias on the two type 48 output tubes is also obtained by connecting their cathodes to a positive point with respect to ground and returning the center tap on the input transformer to ground.

#### CIRCUIT GROUND

DO NOT ground the chassis except through the use of the "GND" terminal of the terminal strip located on back of the chassis. This terminal connects to the chassis frame through a series condenser in order to prevent a short circuit when operating the receiver on a 32 volt system with the positive side grounded.

#### OSCILLATION

A few receivers below Serial No. 866175 may have a tendency to oscillate due to the lack of capacity by-passing the common bias oscillator (illus. #28, Fig. 2a) for the two 665 tubes. The majority of these sets have the oscillator bypassed by the use of an additional condenser of .28 mfd. capacity connected from the 665 R.F. tube cathode to the chassis. In cases where this condenser has not been included in the chassis and is not present, connect .11 microfarad and a parallel 1200100 condenser across the 665 R.F. tube cathode to the chassis. This condenser has been included in production on all sets above Serial #866176 (illus. #17, Fig. 2a) and should eliminate all cases of oscillation from low capacity.

#### PEAKING PROCEDURE

All of the adjustable condensers, commonly called "trimmer" condensers, are very accurately adjusted at the factory and will not need any further adjustment unless they are tampered with in the field or a defective coil has been replaced. DO NOT attempt to change the setting of any trimmer condensers unless it is definitely known that the adjustment is necessary. If re-adjustment is found necessary, the circuits can be properly adjusted only with the use of a test oscillator and an output meter.

#### Connecting Output Meter

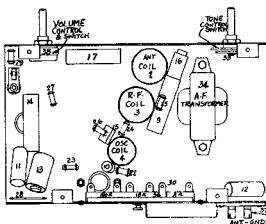
Connect one terminal of the output meter to the plate prong of one of the two type 48 output tubes (leave 6AT grid lead clip in place) and to the chassis ground. Make sure that the output meter is protected with a series condenser to prevent D.C. from flowing through the meter circuit. If the meter is not protected, connect a .1 mfd. condenser in series with the lead to the chassis frame.

#### Peaking I.F. Stages at 456 K.C.

- (a) Connect the output of the test oscillator to the grid cap of the 6AT tube (leave 6AT grid lead clip in place) and to the chassis ground.
- (b) Turn the tuning condenser rotor plates until they are completely out of mesh.
- (c) Set the test oscillator on 456 kilocycles.
- (d) Peak the I.F. trimmers located on the top of the 2nd I.F. coil (illus. #6, Fig. 3a) for maximum output.
- (e) Then peak the I.F. trimmers located on the top of the 1st I.F. coil (illus. #5, Fig. 3a) for maximum output.
- (f) In order to insure accurate setting of the I.F. trimmers the above adjustments should be repeated using the lowest test oscillator output that will give a reasonable deflection of the output meter pointer. Make all adjustments for maximum output.

#### Peaking Gang Condenser at 1400 K.C.

- (a) Connect the output of the test oscillator to the "ANT." and "GND" terminals of the receiver chassis with the ground connection of the oscillator connecting to the "GND" terminal of the receiver chassis.
- (b) Set the receiver dial on 1400 K.C. This position can be determined with the chassis out of the cabinet by moving the dial so that the 1400 K.C. mark is in a vertical position.
- (c) Set the test oscillator on 1400 K.C.
- (d) Adjust the parallel trimmer for the oscillator section (3rd section from receiver dial with the small rotor plates) of the condenser gang for maximum output.
- (e) Then adjust the parallel trimmers for the other two sections of the gang condenser for maximum output.
- (f) To insure accurate setting of the trimmer condensers the above adjustments should be repeated using the lowest test oscillator output that will give a reasonable deflection of the output meter pointer. This is necessary in order to prevent the A.V.C. from leveling out the output as the adjustments are made.
- (g) Place few drops of Duco Cement over the adjusting screws and trimmer blades to prevent the adjustments from shifting. Do not allow any cement to get on the mica insulators.



BOTTOM VIEW OF CHASSIS  
FIG 2a

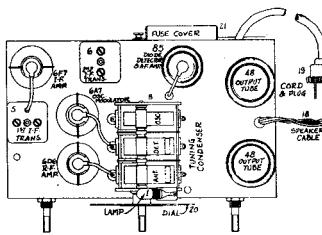


FIG 3a  
TOP VIEW OF CHASSIS