

Service Manual & Parts List

FOR

8-Tube Superheterodyne Receiver with Three Tuning Bands

AND AUTOMATIC VOLUME CONTROL

A. C. OPERATED

115 Volts

Series 683-S
683-S1

25 or 60 Cycle

SPECIFICATIONS

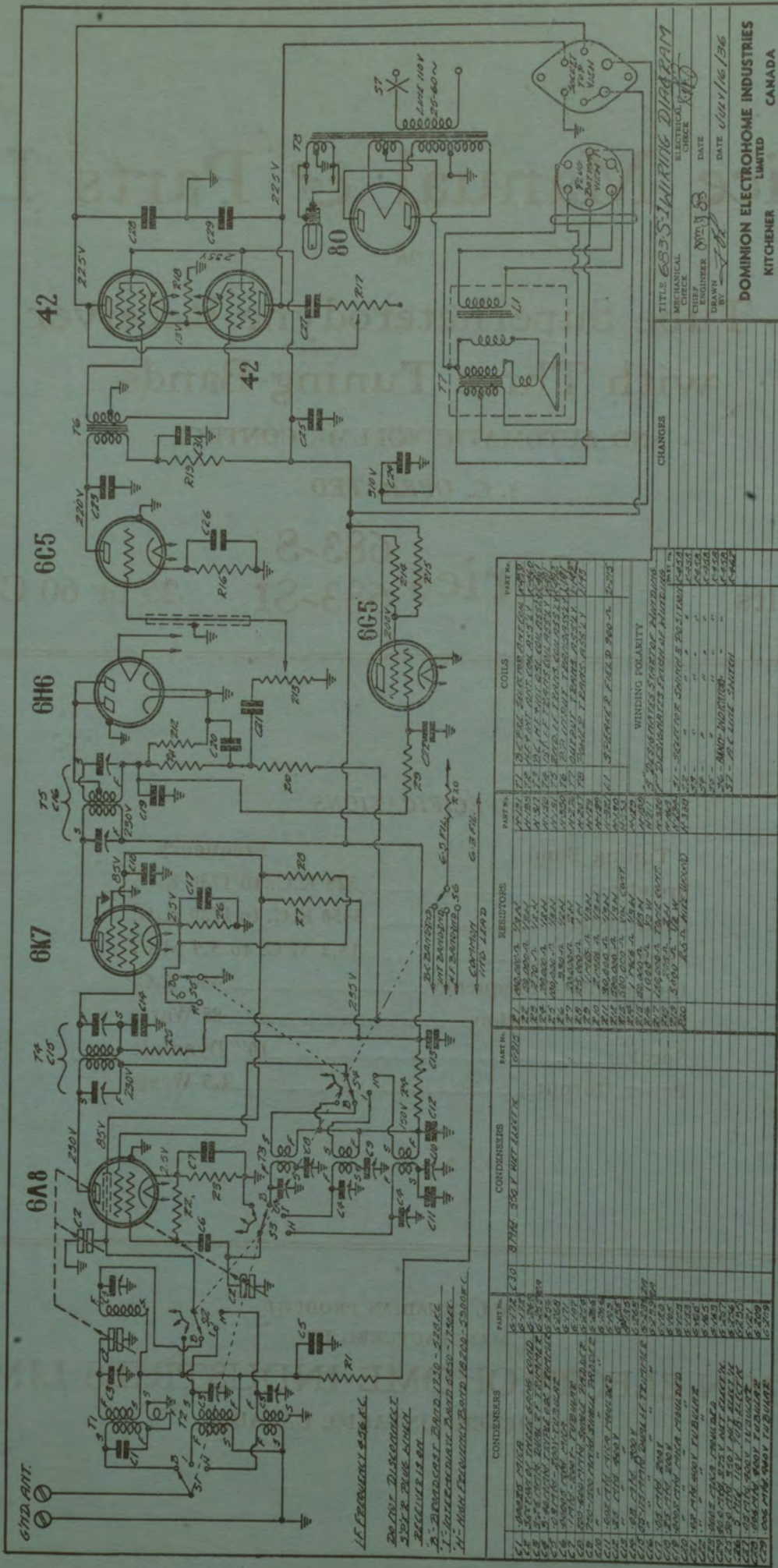
Tuning Band	Frequency
Broadcast.....	528 K.C. to 1730 K.C.
Intermediate.....	5850 K.C. to 1730 K.C.
Short Wave.....	18.2 M.C. to 5.9 M.C.
Intermediate Frequency.....	456 K.C.
Power Consumption.....	85 Watts
Speaker.....	10" Dynamic
Power Output.....	4.5 Watts

AN ALL CANADIAN PRODUCT

MANUFACTURED BY

DOMINION ELECTROHOME INDUSTRIES LIMITED

KITCHENER, ONTARIO, CANADA



TITLE 683-S WIRING DIAGRAM
 MECHANICAL CHECKER [Signature]
 ELECTRICAL CHECKER [Signature]
 ENGINEER [Signature]
 DRAWN BY [Signature]
 DATE 10/11/36

DOMINION ELECTROHOME INDUSTRIES LIMITED
 KITCHENER CANADA

CONDENSERS		RESISTORS		COILS	
PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
C1	500K 50V TUBULAR	R1	500K 50V	L1	500K 50V
C2	500K 50V TUBULAR	R2	500K 50V	L2	500K 50V
C3	500K 50V TUBULAR	R3	500K 50V	L3	500K 50V
C4	500K 50V TUBULAR	R4	500K 50V	L4	500K 50V
C5	500K 50V TUBULAR	R5	500K 50V	L5	500K 50V
C6	500K 50V TUBULAR	R6	500K 50V	L6	500K 50V
C7	500K 50V TUBULAR	R7	500K 50V	L7	500K 50V
C8	500K 50V TUBULAR	R8	500K 50V	L8	500K 50V
C9	500K 50V TUBULAR	R9	500K 50V	L9	500K 50V
C10	500K 50V TUBULAR	R10	500K 50V	L10	500K 50V
C11	500K 50V TUBULAR	R11	500K 50V	L11	500K 50V
C12	500K 50V TUBULAR	R12	500K 50V	L12	500K 50V
C13	500K 50V TUBULAR	R13	500K 50V	L13	500K 50V
C14	500K 50V TUBULAR	R14	500K 50V	L14	500K 50V
C15	500K 50V TUBULAR	R15	500K 50V	L15	500K 50V
C16	500K 50V TUBULAR	R16	500K 50V	L16	500K 50V
C17	500K 50V TUBULAR	R17	500K 50V	L17	500K 50V
C18	500K 50V TUBULAR	R18	500K 50V	L18	500K 50V
C19	500K 50V TUBULAR	R19	500K 50V	L19	500K 50V
C20	500K 50V TUBULAR	R20	500K 50V	L20	500K 50V
C21	500K 50V TUBULAR	R21	500K 50V	L21	500K 50V
C22	500K 50V TUBULAR	R22	500K 50V	L22	500K 50V
C23	500K 50V TUBULAR	R23	500K 50V	L23	500K 50V
C24	500K 50V TUBULAR	R24	500K 50V	L24	500K 50V
C25	500K 50V TUBULAR	R25	500K 50V	L25	500K 50V
C26	500K 50V TUBULAR	R26	500K 50V	L26	500K 50V
C27	500K 50V TUBULAR	R27	500K 50V	L27	500K 50V
C28	500K 50V TUBULAR	R28	500K 50V	L28	500K 50V
C29	500K 50V TUBULAR	R29	500K 50V	L29	500K 50V

For 683-S circuit refer to "circuit description."

CIRCUIT DESCRIPTION

On intermediate or short wave, the 6A8 tube is coupled to the antenna circuit by a tuned antenna coil. On broadcast, however, the tube is preceded by a pre-selector stage consisting of two tuned coils. The desired band is obtained by a three position selector switch. The oscillator coil is a self-contained unit consisting of three oscillator coils and a parallel trimming condenser for each secondary.

The 6A8 tube which functions as an oscillator and first detector, is coupled to the 6K7 I. F. amplifier, by the I. F. transformer T4. A second I. F. transformer T5 couples the 6K7 tube to the 6H6 second detector tube. The diode load developed across R12 is fed to the 6C5 audio amplifier tube by C21 and controlled by R13. The output of the 6C5 is transformer coupled by T6 to the 42 push pull stage which, in turn, is transformer coupled to the dynamic speaker.

The automatic volume control voltage developed across R12 supplies, through the isolating resistors R11 and R10, a negative voltage (which is automatically regulated in proportion to the incoming signal) to the 6K7 tube, and when on broadcast or intermediate band, to the 6A8 tube also.

A 6G5 tuning indicator tube is used, the function of which is to give a visual indication of the amount of automatic volume control voltage developed across R12. Since the A.V.C. voltage is highest at resonance, the 6G5 tube gives an accurate indication of tuning.

A conventional power supply is used, employing the speaker field L1 (900 ohms cold) as a filter reactance, in series with the "B" supply. Two self-regulating electrolytic condensers are used, which, in addition to filtering, keep the "B" supply at a nominal voltage when the receiver is first turned on, thus protecting the component parts of the circuit from a high voltage surge.

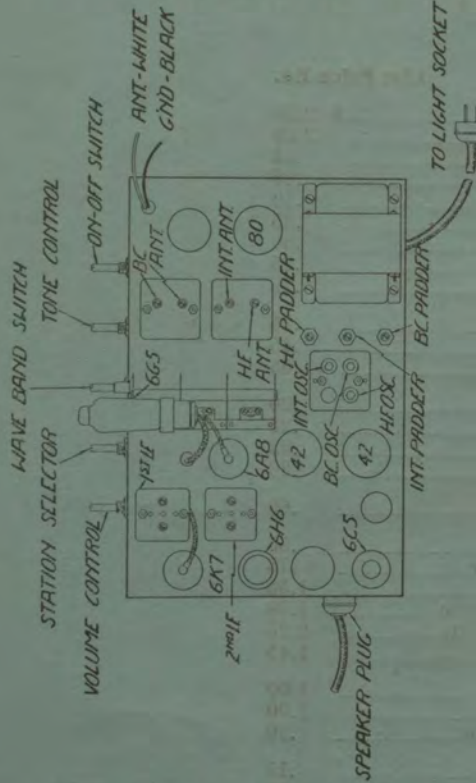
The circuit diagram of the 683 S1 Model is shown in this manual. Our earlier model, the 683-S differed from the Model 683-S1 in the following respects:

The resistance of the volume control R13 was two megohms. The 6C5 audio grid obtained its bias through a filter circuit, consisting of a one-half megohm resistor and a 50 Mfd. condenser, from the center tap of the H. T. secondary which was 85 ohms from ground. The 6C5 cathode was then connected directly to ground. The 6C5 plate filter, R19 and C30, was not in the circuit.

These changes were necessary to overcome the difficulties encountered with some of the 6C5 metal tubes.

ALIGNMENT AND CALIBRATION

These receivers are carefully aligned and calibrated at the factory with precision instruments. It is very important that all other causes of faulty operation be investigated before attempting to realign the receiver.



VOLTAGES

All voltages indicated on the diagram are measured from the chassis with a voltmeter of 1000 ohms per volt. Readings were taken with volume control turned full on, line voltage at 115 volts and antenna and ground leads shorted together.

The equipment necessary for this consists of two essential items, namely:

- (1) A signal generator to supply with accuracy, the frequencies:
 - (a) 456 K.C., (b) 1500 K.C., (c) 600 K.C., (d) 15 M.C., (e) 2 M.C., (f) 6 M.C., (g) 5 M.C.
- (2) A dependable output meter.

When aligning, never use more R. F. signal than produces half scale deflection on the output meter. The lower the R. F. input, the greater the accuracy of alignment.

I. F. ALIGNMENT

Set the signal generator to 456 K.C., and connect the output to the grid cap of the 6A8 tube through a .1 Mfd. condenser. The generator ground is connected to the chassis ground post or frame, which must be externally grounded. The receiver dial is set to its highest frequency (gang open), the selector switch turned to the broadcast position, and the volume control turned full on.

The I. F. trimmers, located as shown on the tube layout chart, are then adjusted by means of a non-metallic screw driver until maximum output results.

R. F. ALIGNMENT

Broadcast Band
1500 K. C. Set the signal generator to 1500 K.C., and connect its output lead to the antenna post of

D. C. RESISTANCE OF WINDINGS

T1 B. C. Antenna and Pre-Selector Coil	Sec'y 3 ohms
Pre-Sel. Primary	19 ohms
Sec'y	3 ohms
T2 H. F. Antenna Transformer	Sec'y 6 ohms
Int.	8 ohms
S. W. Primary	6 ohms
Sec'y	Small
T3 Oscillator Transformer	Sec'y 5 ohms
B. C. Primary	2 ohms
Int.	2 ohms
S. W. Primary	1.1 ohms
F. Transformer	Sec'y .5 ohms
T4 1st I. F. Transformer	Sec'y Small
T5 2nd I. F. Transformer	Sec'y 12 ohms
Primary	13 ohms
Sec'y	Finish to tap 11.5 ohms
T6 Input Transformer	Primary 1175 ohms
Secondary	1700 ohms per half
T7 Output Transformer	Primary 215 ohms per half.
T8 Power Transformer	Primary 6.3 ohms
Secondary	130 ohms per half
L1 Speaker Field Coil	900 ohms

the receiver in series with a .00025 Mfd. condenser. The ground from the signal generator must be connected to the chassis ground post or frame and externally grounded.

With the band selector switch in the broadcast position, the dial of the receiver set at 1500 K.C. and the volume control turned full on, adjust the broadcast oscillator trimming condenser, located as shown on the tube layout chart, until a signal is heard. Note: There may be two signals present, use the one obtained by the minimum capacity setting of the trimming condenser and adjust it to its peak. Then adjust the broadcast antenna and pre-selector trimming condensers to maximum output.

600 K. C. Set the receiver dial and the signal generator to 600 K.C. Adjust the 600 K.C. padding condenser for maximum output. While making this adjustment rock the tuning control back and forth through the signal until maximum output results.

Following this, it is advisable to repeat the procedure outlined for 1500 K.C. to compensate for any slight discrepancy caused by the adjustment of the series padding condenser. The broadcast band sensitivity is 12 microvolts at 1500 K.C. and 16 microvolts at 600 K.C.

Intermediate Band

5 M. C. Set the signal generator at 5 M. C. and connect its output to the antenna post of the receiver through a 400 ohm resistor. The ground of the signal generator

(Continued on next page)

is connected to the chassis frame or ground post and externally grounded. Turn the band selector switch to intermediate band, the receiver dial to 5 M. C. and the volume control full on.

Adjust the intermediate oscillator trimming condenser, shown on the tube layout chart, until a signal is heard. Note: There may be two signals present, use the one obtained by minimum capacity setting and adjust the trimming condenser to the peak of the signal. Then adjust the intermediate antenna trimming condenser for maximum output.

2 M. C. The intermediate padding condenser is ad-

justed at 2 M. C. The same procedure as outlined for the adjustment of the 600 K.C. padding condenser is used only, of course, on 2 M. C. instead of 600 K.C.

Short Wave Band

15 M.C. and 6 M.C. The same procedure is employed as outlined for the intermediate band only, of course the parallel trimming condenser is adjusted at 15 M.C. and the series padding condenser at 6 M.C.

The high frequency sensitivity is as follows:

15 microvolts at 5 M.C., 25 microvolts at 2 M.C., 12 microvolts at 15 M.C., 28 microvolts at 6 M.C.

PARTS AND PRICE LIST

SERIES 683-S—683-S1

Part No.	Description	List Price Ea.
A-387	Dial Scale (Series 683-S only)	\$ 2.20
A-449	Dial Scale (Series 683-S1 only)	2.20
A-388	Band Indicator Strip	.15
A-181	Rubber Corner Bumper	.05
A-361	Rear Bumper Strip	.10
A-371	Medium Single Knob	.25
A-372	Ratio Knob, Large	.30
A-373	Small Single Knob	.25
A-374	Dual Dummy Knob	.25
B-522	Planetary Mounting Bracket	.25
B-470	Planetary Shaft Pulley	.45
B-163	Cord Tension Spring	.05
C-220-RA	Square I. F. Shield	.20
C-260	Square R. F. Shield	.25
C-210	Small Grid Clip	.02
C-261	Square Oscillator Shield	.30
F-123	Four-wire Pilot Lamp Cable	.60
G-254	200-600 Mmfd. Single Padder, B. C.	.55
G-266	750-1500 Mmfd. Single S. W. Padder	.75
G-235	5 Mfd. 110 volt Tubular Electrolytic	1.55
G-256	50 Mfd. 350 volt S. R. Wet Electrolytic	1.70
G-257	40 Mfd. 375 volt S. R. Wet Electrolytic	2.25
G-215	8 Mfd. 500 volt Wet Electrolytic	1.45
H-353	Volume Control	1.00
H-320-RA	Tone Control	1.00
H-338	2.5 Ohm 1/3 Watt Candhom Resistor	.30
K-153	Four-Prong Socket	.15
K-145	Six-Prong Socket	.15
K-264	Eight-Prong Socket	.20
K-465-RA	Tuning Indicator Plug and Socket	1.15
K-462-RA	On-Off Switch	.75
K-458-RA	Band Selector Switch	2.60
K-457-RA	Planetary Drive Assembly	.75
K-509	Rubber Line Cord	.70
K-480	Indicator Tube Mounting Bracket	.25
K-459	B. C. Antenna Coil Assembly	3.70
K-460	Short Wave Antenna Coil	2.60
K-461	All Band Oscillator Coil Assembly	4.25
K-498	1st I. F. Transformer	2.10
K-499	2nd I. F. Transformer	2.00
L-141	Input Transformer Assembly	2.70
D-216	Input Transformer Coil only	1.75
L-143	Power Transformer Assembly	10.75
K-467	10" Dynamic Speaker with Output Transformer	14.85
D-215	Speaker Field Coil, 900 ohms	3.50
L-142	Output Transformer Assembly	2.60
D-214	Output Transformer Coil only	1.45