DYNATRON Models HFC11, HFC11M, HFC12, HFC13, HFC14, RG60, RG61, RG62, RG63, RG64, RG65, RG66, RG67, RG68, RG69, SRX25, TRV20

General Description: The SRX25 tuner/amplifier assembly is used throughout the Dynatron range of models as listed above. There are slight mechanical differences however, chiefly confined to the length of front panel used.

Short panel 15¼ in. *is used for models*—RG60, RG61, RG62, RG63, RG64, RG69, HFC13 and HFC14.

Medium panel 17 in. *models*—RG65, RG66, RG67 and RG68.

Long Panel 18 in. *models*—HFC11 and 11M, HFC12 and TRV20.

The chassis are further sub-divided into SRX25DL and SRX25S series by the use of alternative mains' transformers.

SRX25DL—RG62, RG63, RG65, RG66, RG67, HFC12, HFC13, HFC14 and TRV20.

SRX25S—RG60, RG61, RG64, RG68, RG69, HFC11 and HFC11M.

TRV20 has a pick-up socket provided at the rear socket panel to accept either a Piezo ceramic or Magnetic cartridge. Frequency compensation is to R.I.A.A. curve and is automatically applied for each type of cartridge depending on the manner in which the plug is wired.

The A.F. amplifiers used in this series of models are electrically similar to the Dynatron Model HFC 10 and reference should be made to the information given elsewhere in this volume when servicing this section of the receiver.

Waveband Coverage: V.H.F. 87–108 MHz; M.W. 185–570 mtrs. 1620–525kHz; L.W. 1100–2000 mtrs. 150–270kHz.

Dismantling (Removal of SRX25 Series Chassis)

RG60, RG61, RG62, RG63, RG64, and HFC14: Remove cross-head screws from front edge and rear of control panel fascia. Remove external plugs from sockets panel. Lift up front edge of fascia to expose chassis and remove leads to gram motor, interior lamp, pick-up, loudspeaker and mains transformer. Feed mains lead through aperture at rear of cabinet and withdraw fascia and chassis together.

RG65, RG66, RG67, RG68: Remove sockets section cover panel from rear of cabinet after removing external plugs. Remove mains transformer plug lead and disconnect loudspeaker leads. Release sockets panel from its mounting studs. Remove cross-head screws from top of fascia and smaller screws from rear of fascia edge. Lift up chassis complete and remove leads to gram motor, interior light and pick-up. Withdraw fascia and chassis with sockets panel up through cabinet.

HFC11 and 11M, HFC12, TRV20: Remove base of cabinet and release four screws holding main chassis to front of cabinet, also two nuts holding sockets panel.

(*a*) HFC11 and 12—Release plugs connecting gram motor, pick-up and mains transformer.

(*b*) TRV20—Release mains transformer plug lead.

RG69: Remove base of cabinet and release plug leads for gram motor, interior lamp, loudspeakers and mains transformer. Remove two nuts holding sockets panel to cabinet. Remove screws holding fascia panel and withdraw complete assembly through top of cabinet.

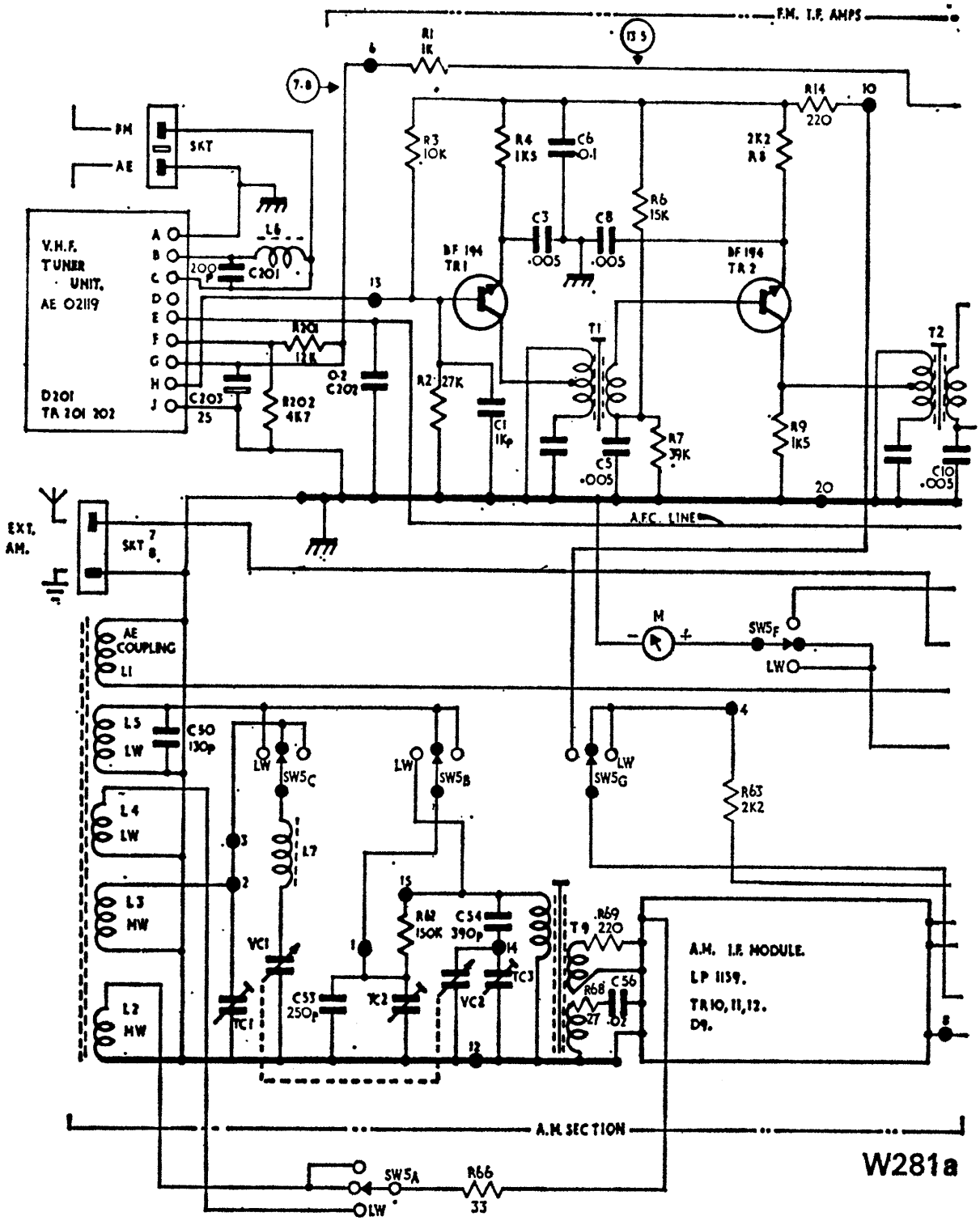
HFC13: Release fixing screws and lift motor board to gain access to rear sockets panel mountings and mains transformer plug. Remove cross-head screws from tuner fascia panel top and right-hand edge. Lift fascia panel with main chassis attached and when all plugs are removed withdraw chassis and sockets panel up through cabinet.

Dismantling (Main Chassis): To work on underside of audio print panel, release the two special studs securing board and lift up panel by hinging on the cable form immediately behind the control potentiometers (front of chassis).

To work on underside of receiver print panel, release four special studs securing board and unsolder leads to ferrite aerial and tuning gang so that the board may be lifted and hinged on the cable form at front of chassis.

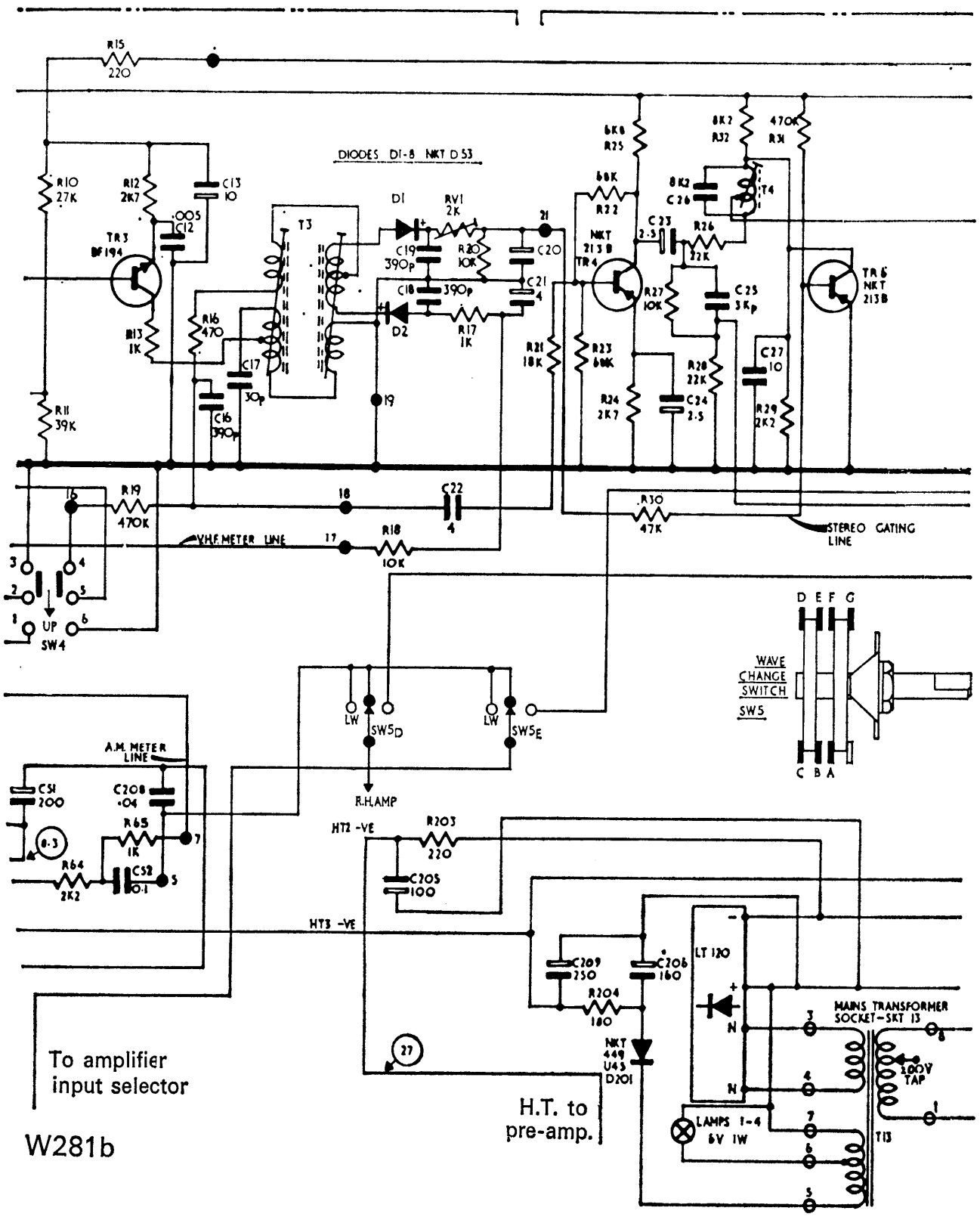
Circuit Description

Power Supply: Supply volts are provided by T13 and rectifier LT120, C207 being the reservoir. Fuses F3 and F2 of 1 amp rating provide protection for right-hand and left-hand channels output stages. T13 has code number



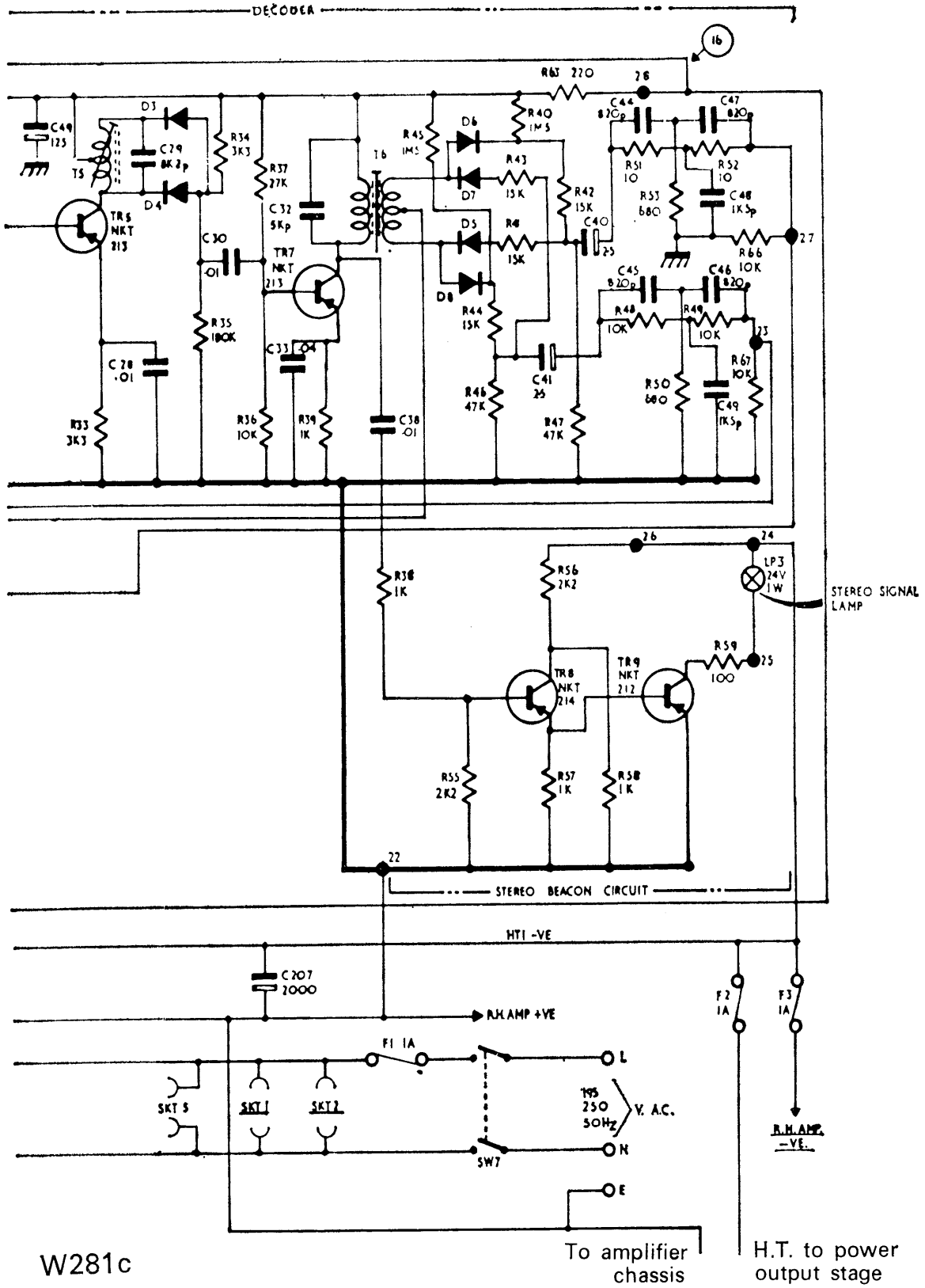
(W281a) Circuit Diagram (R.F., I.F. and Power Supplies)—HFC11 and Associated Models (Part)

15702 for the 25S series and 15703 for the 25DL series chassis. Sockets SKT1 and SKT2 are for turntable motor and interior lamp connection and SKT5 is the shuttered mains outlet socket of 200 watts capacity fitted to the rear sockets panel. All power is controlled by toggle switch SW7 via fuse F1 of 1 amp rating. Scale lamps are 6·5 V 0·3 A M.E.S. type. D201 diode and R204, C206 and C209 form a separate power supply for the Radio Tuner Section.



(W281b) Circuit Diagram (R.F., I.F. and Power Supplies)—HFC11 and Associated Models (Part)

Radio Tuner Section A.M.: The A.M. and F.M. tuner sections are quite separate; consider first the A.M. section. Waveband selection is by SW5. The appropriate aerial coil is tuned by gang section VC1 with TC1 trimmer for M.W. and TC2 for L.W. External A.M. aerial coupling coil L1 is connected via contacts on SW4 AFC switch so that the external aerial if connected to SKT7 can be selected at will by operating SW4. T9 oscillator coil is tuned

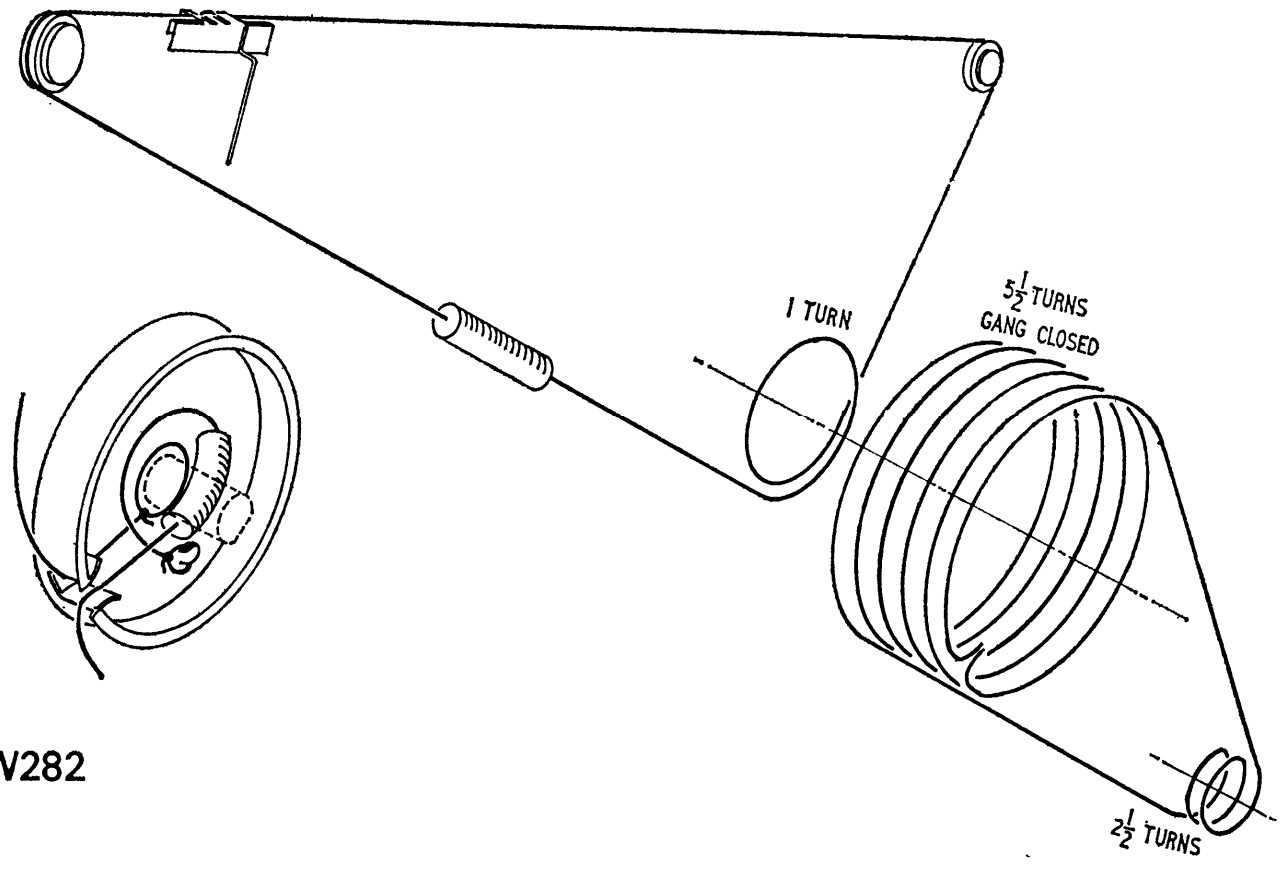


(W281c) Circuit Diagram (R.F., I.F. and Power Supplies)—HFC11 and Associated Models (Continued)

by VC2; TC2 trims M.W. and TC3 L.W. The I.F. amplification is carried out by module LP1159. This unit is factory aligned for accurate band-pass characteristics and a factory replacement should be fitted if service is required. The detector load is provided by R64, R65 and the tuning meter, selected by SW5F for the correct polarity. A.M. audio signals obtained from the junction of R64 and R65 via C52 are selected by SW5D, E and passed to the selector switch SW1.

Radio Section F.M. V.H.F.: Dipole aerial input to V.H.F. tuner unit AE02119 feeds to R.F. amplifier TR201 and thence to mixer TR202. A.F.C. voltage is applied to capacitor diode D201 via point E decoupled by C202. I.F. output from tuner is fed to 10·7 MHz I.F. amplifier, TR1, TR2 and TR3 which feeds the ratio detector transformer T3 and associated diodes D1, D2. The operating conditions of TR3 are chosen to enable adequate limiting to occur at an aerial input signal of less than 10μV to improve A.M. rejection. RV1 part of D1 load is for detector balance and R16 forms remainder of D1 load. Load of D2 is composed of R15 and R17. The polarity of the tuning meter is changed by SW5F and meter is connected across R17. From the tertiary winding of T3 demodulated F.M. signals pass to the Decoder unit.

Decoder: Here let us assume that a stereo signal is being received so that a 19kHz pilot tone will be present in the output from the detector circuit and fed to TR4 base. TR4 is a pre-amplifier and provides two outputs—the first passing to the secondary of demodulator transformer T6 and the second to T4 tuned to 19kHz in base of TR5. In the collector circuit of TR5 is T5 with



W282

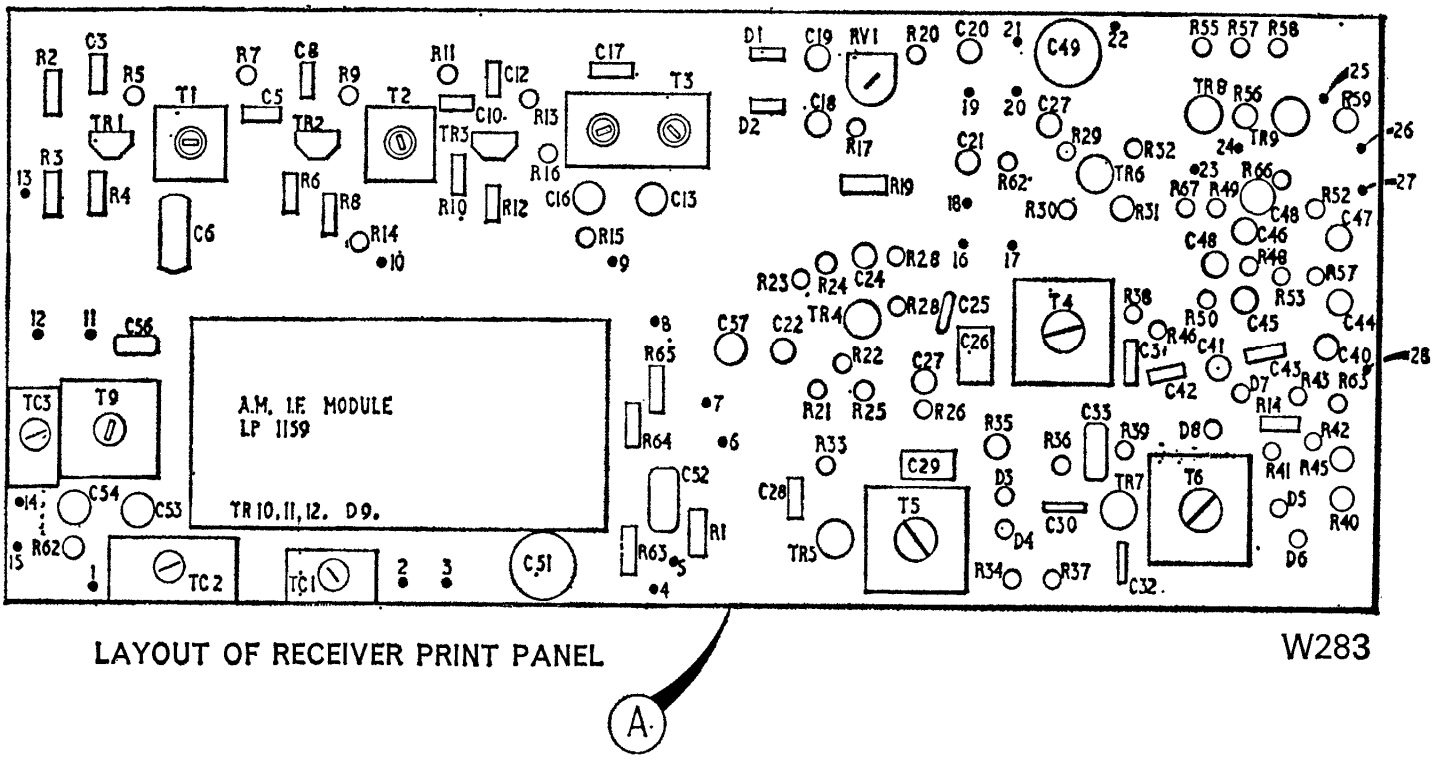
(W282) Drive Cord (Viewed from Front-Gang Closed) HFC11 and Associated Models

diodes D4 and D5 forming a frequency doubler to provide a switching signal at 38kHz feeding to TR7. T6 and diodes D5, D6, D7 and D8 perform the demodulation and switching functions to provide correctly phased left- and right-hand signals via C41 and C40 to the filter and de-emphasis networks terminating at points 23 and 27 respectively. 38kHz from TR7 via C38 is fed to TR8 to switch on TR9. TR9 collector current lights stereo beacon LP5, a 24V, 1 watt L.E.S. tubular lamp. To prevent spurious triggering of the stereo decoder by noise and also to ensure that a satisfactory channel separation is obtained there must be a large enough voltage available from the detector diode D1 load R16 to turn "off" gating transistor TR6. An adequate aerial signal must therefore be made available. If TR6 continues to conduct, its collector current through R32 will keep the base bias of TR6 too low for proper operation and there will be no 38kHz signal generated. Therefore the demodulator switching will be inoperative and there will not be any 38kHz signal from TR7 collector to the stereo beacon circuit and LP5 will not light.

When receiving a monaural broadcast V.H.F. signal there will be no pilot tone signal and the audio signals will pass directly from TR4 to the secondary of T6. The absence of 19kHz tone means that the 38kHz switching voltages will not be generated and the demodulator diodes will not be switched. The decoder unit is thus automatic in operation. Please note that realignment of the Decoder circuits should NOT be attempted unless complete encoding equipment is available.

D.C. TEST VOLTAGES

TR	*Type*	*Function*	*e*	*b*	*c*
1	BF 194	1st F.M. I.F.	13·25	12·5	—
2	BF 194	2nd F.M. I.F.	10·5	9·75	—
3	BF 194	3rd F.M. I.F.	5·5	5	·8
4	NKT 213 B	Decoder Pre-Amp	2·65	2·6	5·6
5	NKT 213	Decoder Amp 19 Kc.	—	—	12·75
6	NKT 213	Decoder Gate	—	—	—
7	NKT 213	Decoder 38 Kc. Amp	3·18	3·2	12·75
8	NKT 214	Beacon Amp	—	—	9·5
9	NKT 212	Beacon Switch	—	—	31
10	AF 115		—	—	—
11	AF 117	I.F. Module LP1139	—	—	—
12	AF 117		—	—	—
201	AF 178	R.F. Amp	—	—	—
202	AF 115	Osc. Mixer	—	—	—
VT	*Type*	*Function*	*e*	*b*	*c*
1	BC 173	Pre-amp Gram.	9·5	8·25	5
102	BC 172	Tone Control Amp	9·2	7·3	6
3	BC 172	A.F. Amp	14·25	13·5	1·2
4	NKT 213	Driver	1·1	1·2	15
5	NKT 717	Phase Splitter	15·25	15	—
6	NKT 212	Drivers	15·5	15·5	31
7	NKT 452	Output	—	—	16·5
8	NKT 452	Output	15·5	—	31



(W283) Component Layout (Receiver Unit)—HFC11 and Associated Models