



M200D

INSTRUCTION BOOK

HOLDEN ELECTRONICS CO.

526 W. GULF BANK
HOUSTON, TEXAS 77037

(713) 448-9883

OUT OF WARRANTY UNITS

Units returned to HEC out of warranty will be repaired at a nominal charge and returned C.O.D. freight charges at customer's expense. Customer may request an invoice in advance, upon receipt of payment, unit will be shipped. Repaired units are not subject to a new warranty or an extension of any existing warranty. The 90 day warranty expires 90 days from date of purchase (or 120 days from date of shipment from factory). A rough check of the warranty period can be made by the serial number. The first two or three digits are the month and year the unit was shipped; example, 2301 - the two is February and three is 1973, or 11301 - the 11 is November and three is 1973.

WARRANTY

HEC warrants each unit for a period of 90 days from date of sale (not to exceed 120 days from date of shipment from the factory). Tubes and component failure due to abuse will not be covered by this warranty. HEC reserves the right to determine whether parts failed normally or from improper operation.

CUSTOMER NAME _____

CUSTOMER ADDRESS _____

DATE OF PURCHASE _____ MODEL _____

SERIAL NUMBER _____ DEALER _____

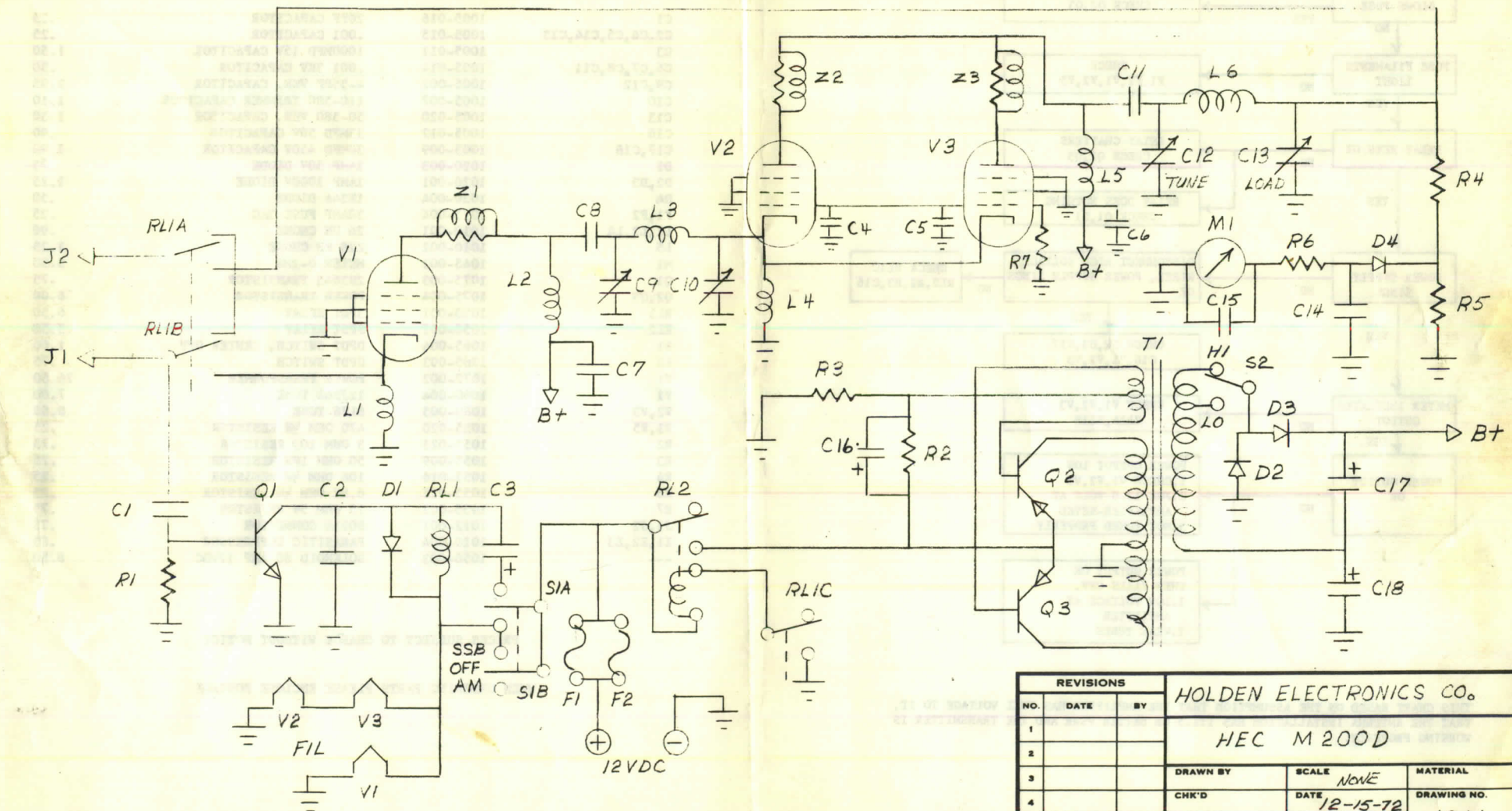
DEALER'S ADDRESS _____

T21 (STAMP)

OR700 (STAMP)

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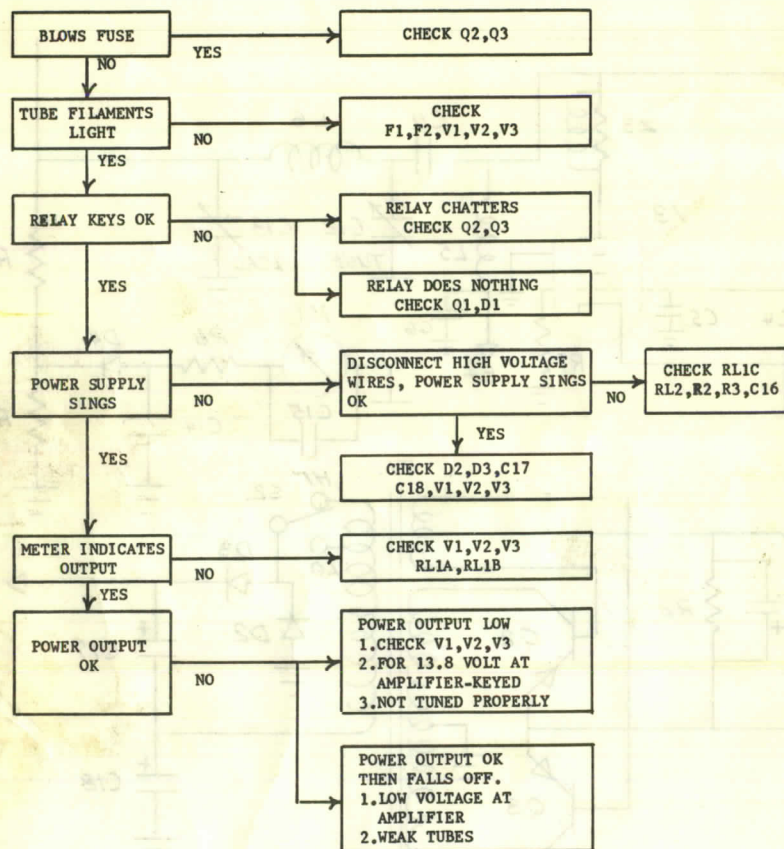
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REVISIONS			HOLDEN ELECTRONICS CO.		
NO.	DATE	BY			
1			HEC M 200D		
2					
3			DRAWN BY	SCALE	MATERIAL
4			CHK'D	DATE	DRAWING NO.
5			TRACED	APP'D	

TROUBLESHOOTING

M200D



THIS CHART BASED ON THE ASSUMPTION THAT THE AMPLIFIER HAS FULL VOLTAGE TO IT, THAT THE ANTENNA INSTALLATION HAS 1:1.5 OR BETTER VSWR AND THE TRANSMITTER IS WORKING PROPERLY.

PARTS LIST

M200D

ITEM	P/N	DESCRIPTION	PRICE EACH
C1	1005-016	20PF CAPACITOR	.25
C2,C4,C5,C14,C15	1005-015	.001 CAPACITOR	.25
C3	1005-011	1000MFD 15V CAPACITOR	1.50
C6,C7,C8,C11	1005-014	.001 3KV CAPACITOR	.50
C9,C12	1005-002	4-55PF VER. CAPACITOR	2.95
C10	1005-007	110-580 TRIMMER CAPACITOR	1.10
C13	1005-020	50-380 VER. CAPACITOR	1.30
C16	1005-012	33MFD 50V CAPACITOR	.90
C17,C18	1005-009	30MFD 450V CAPACITOR	1.90
D1	1020-003	1AMP 50V DIODE	.75
D2,D3	1020-001	1AMP 1000V DIODE	1.25
D4	1020-004	1N34A DIODE	.50
F1,F2	1025-004	30AMP FUSE 3AG	.25
L1,L2,L4	1010-001	24 UH CHOKE	.90
L5	1010-002	Z28 RF CHOKE	1.25
M1	1045-001	METER 0-1MA	5.50
Q1	1075-003	2N3643 TRANSISTOR	.75
Q2,Q3	1075-004	POWER TRANSISTOR	6.00
RL1	1050-001	3PDT RELAY	6.50
RL2	1050-002	SPDT RELAY	5.50
S1	1065-004	DPDT SWITCH, CENTER OFF	1.00
S2	1065-003	DPDT SWITCH	.75
T1	1072-002	POWER TRANSFORMER	26.50
V1	1080-004	12JB6A TUBE	7.00
V2,V3	1080-005	6LF6 TUBE	8.50
R1,R5	1055-020	470 OHM 1/2W RESISTOR	.25
R2	1055-023	3 OHM 10@ RESISTOR	.75
R3	1055-009	50 OHM 10W RESISTOR	.75
R4	1055-016	10K OHM 1/2W RESISTOR	.25
R6	1055-015	6.8K OHM 1/2W RESISTOR	.25
R7	1055-002	25 OHM 5W RESISTOR	.75
J1,J2	1012-001	S0239 CONNECTOR	.75
Z1,Z2,Z3	1010-004	PARASITIC SUPPRESSOR	.85
---	1050-003	SOLENOID 80 AMP 12VDC	8.50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

WHEN ORDERING PARTS PLEASE ENCLOSE POSTAGE

Before returning a unit to the factory (other than freight damage) check your installation. Quite often units are returned to us with nothing wrong other than being completely out of tune. Check your tuning instruction carefully. Check your antenna SWR; to do this, simply remove the connectors from your amplifier and insert an SWR bridge. The reading should be as low as possible. With mobile units you must have heavy gauge wire for both positive and negative; also, a good battery.

WARRANTY CLAIMS

If the amplifier is covered by the 90 day warranty and the problem cannot be solved, return the unit to the factory. Enclose a brief report of the problem you are having. Package the unit very carefully, with a heavy unit such as a B500, we recommend a box within a box. WE DO NOT RECOMMEND PARCEL POST FOR ANY UNIT. UPS, Motor Freight or Air Freight is best, some Motor Freight Lines have a 100 lb. minimum, others charge for only the weight of the unit. Shipping charges must be prepaid by the shipper; if sent collect the charges will be billed to the customer. If the unit has failed because of component failure or HEC workmanship, the unit will be repaired and returned prepaid. If in our opinion the amplifier has been abused (such as burned tubes) the customer will be billed for the repair. HEC will not pay labor on any warranty other than at the factory. HEC will replace warranty parts (other than tubes) replaced by dealers and/or individuals. Defective components should be returned to HEC along with the serial number and model of the defective unit.

GENERAL

All HEC amplifiers are manufactured with the highest quality parts and workmanship available. HEC engineers are continually updating and making improvements as new ideas and components become available. Each HEC amplifier is tested at full power before shipment.

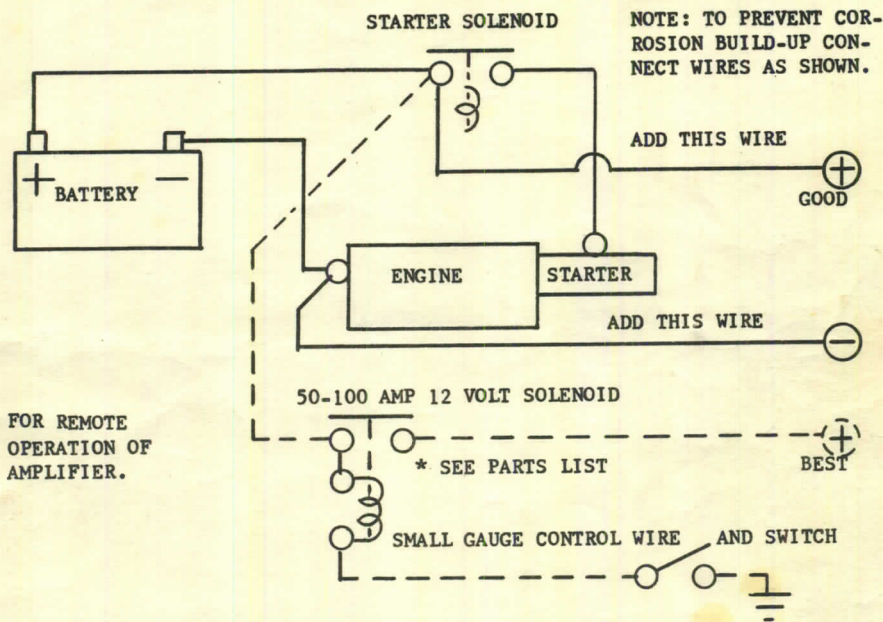
SHIPPING DAMAGE

Unpack your HEC amplifier very carefully, save the packing, and preferably remove the lid. See that the tubes are in place and check for internal damage (some units are shipped with tubes removed to prevent damage). If there is obvious shipping damage, it is imperative that you contact the carrier (UPS - Bus - Etc.) and file all necessary insurance claims. Request confirmation from the carrier that the cost of repair will be covered if the unit is returned to the factory for repair. DO NOT RETURN A DAMAGED UNIT TO HEC WITHOUT COMPLYING WITH ABOVE. Repackage the unit carefully (preferably a box within a box) and forward a copy of the insurance claim.

INSTALLATION

MOBILES

THE HEC LINEAR AMPLIFIER SHOULD BE INSTALLED IN A WELL VENTILATED LOCATION. BOTH A HOT AND GROUND WIRE OF THE SAME GAUGE SHOULD BE PROVIDED.



MINIMUM WIRE GAUGE, M125 12GA., M200 10GA., M300 8GA. WIRE SHOULD BE STRANDED TYPE. ALL CONNECTIONS SHOULD BE CLEAN AND WIRE LUGS USED.

THE VOLTAGE OF 13.8 (MEASURED AT THE AMPLIFIER WITH THE AMPLIFIER KEYPED) MUST BE MAINTAINED FOR MAX OUTPUT. A ONE VOLT LOSS DUE TO BAD CONNECTIONS OR WIRE SIZE TO SMALL WILL REDUCE THE OUTPUT BY APPROXIMATELY 10%.

POWER OUTPUT IS BASED ON FULL 13.8 VOLTS AT THE AMPLIFIER AND A VSWR OF 1:1.5 OR BETTER.

* * * NOTE * * *

A QUARTER WAVE LENGTH SECTION OF RG-58 COAX APPROXIMATELY 9 FEET BETWEEN THE TRANSMITTER AND LINEAR IS RECOMMENDED ON ALL MODELS.

THE M200D IS A HIGH PERFORMANCE GROUNDED GRID LINEAR AMPLIFIER.
THE M200D IS DESIGNED TO OPERATE IN THE 25 - 30 MHz BAND.

DRIVE: 1 - 6 WATTS AM -- UP TO 15 WATTS SSB.

POWER OUTPUT: HI - 150 TO 200 WATTS (RMS) WITH 3 WATTS INPUT.
LO - 50 TO 100 WATTS (RMS) WITH 3 WATTS INPUT.

PRIMARY POWER: 13.8 VDC 2½ AMPS STAND-BY 37 AMPS TRANSMIT.

CONTROLS

DRIVE: THIS TUNES THE PLATE CIRCUIT OF THE INTERNAL DRIVER STAGE.
TUNE: TUNES THE PLATE CIRCUIT OF THE POWER AMPLIFIER STAGE.
LOAD: LOADS THE OUTPUT TO THE ANTENNA.

SWITCHES

AM-OFF-SSB: POWER OFF IN CENTER POSITION -- UP POSITION FOR AM
MODE -- DOWN POSITION FOR SSB MODE.
HI-LO: IN HI POSITION, THE UNIT HAS FULL OUTPUT; IN LO POSITION,
THE OUTPUT WILL BE 50 TO 100 WATTS.

TUNING AND OPERATING

CONNECT A NINE (9) FOOT SECTION OF RG-58 COAX (NOT SUPPLIED WITH
UNIT) FROM THE TRANSCEIVER TO THE XMIT CONNECTOR ON THE AMPLIFIER.
NOTE: THE NINE FOOT COAX IS IMPORTANT, THIS PROVIDES A MATCHING
NETWORK BETWEEN YOUR RADIO AND THE AMPLIFIER. CONNECT YOUR ANTENNA
TO THE ANTENNA CONNECTOR. CONNECT HOT WIRE AND GROUND WIRE (SEE
INSTALLATION DIAGRAM). TURN UNIT ON -- ALLOW ONE MINUTE FOR WARM
UP. POSITION HI-LO SWITCH TO LO FOR INITIAL TUNING. POSITION
KNOBS WITH WHITE LINE STRAIGHT UP. DEPRESS YOUR MIKE BUTTON; FIRST
TUNE DRIVE THEN TUNE AND LOAD. POSITION HI-LO SWITCH TO HI, REPEAT
ADJUSTMENTS FOR MAXIMUM INDICATION ON THE METER. NEXT, TURN LOAD
CLOCKWISE UNTIL METER DROPS ONE OR TWO DIVISIONS. REPEAT TUNE
CONTROL. THE METER SHOULD DEFLECT FORWARD WITH MODULATION WHEN
PROPERLY LOADED.

NOTE: IF YOU USE AN IN-LINE WATTMETER, USE IT ONLY FOR INITIAL
TUNING, NOT LOADING. A WATTMETER IS DESIGNED TO MEASURE WATTS, NOT
MODULATION. YOUR M200D CAN BEST BE LOADED WITH THE FRONT PANEL
METER.

IF THE UNIT FAILS TO LOAD PROPERLY, CHECK YOUR SWR; IT SHOULD BE
1.5:1 OR BETTER. TO MEASURE THE SWR, REMOVE CONNECTORS FROM THE
AMPLIFIER AND INSERT YOUR SWR BRIDGE.

INSTALLATION

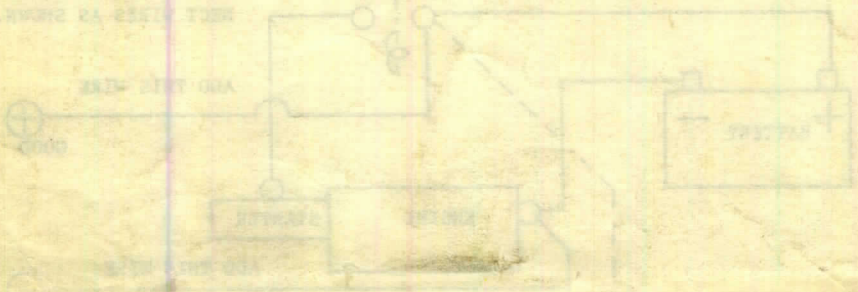
WIRING

THE WIRE GAUGES SHOULD BE INSTALLED IN A WELL VENTILATED LOCATION WITH A HOT AND GROUND WIRE OF THE SAME GAUGE BE PROVIDED.

WIRE TO BE USED FOR
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STARTER SOLINOID

AND THE WIRE



20-30 AMP 12 VOLT BATTERY

SEE PAGE 101

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