

HOLDROMAN ENGINEERING CO. LTD.

HIGH POWER ANTENNA  
SWITCH EXCHANGES



HOLDROMAN ENGINEERING CO. LTD.  
20, THE SERVICE ROAD, THE WALK, POTTERS BAR, HERTS. EN6 1QA

ANTENNA EARTHING ISOLATOR UNIT HE 30 AEI MK VI Q6032

TECHNICAL DESCRIPTION

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ANTENNA EARTHING ISOLATOR UNIT HE 30 AEI MK VI Q6032

TECHNICAL DESCRIPTION

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- 1 General Assembly

Fig

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GENERAL DESCRIPTION

- 1 This Antenna Earthing Isolator Unit is designed to ensure further safety to the station personnel.
- 2 The unit is basically similar in design and construction as for the Antenna Earthing Isolator Unit HE 30 AEI MK VI NSN 5985-99-529-1995.
- 3 These units can be fitted to the matrix framework as part of the system as shown in Det 2920.

ENVIRONMENTAL CONDITIONS

- 4 The units are intended for installation in a transmitter hall or similar building where the temperature is normally within the range of 0 to +55 deg. C and the humidity does not exceed 95%.

DIMENSIONS AND WEIGHT

- |   |     |                  |        |          |
|---|-----|------------------|--------|----------|
| 5 | (a) | Height           | 165mm  | (6.5in)  |
|   | (b) | Width            | 165mm  | (6.5in)  |
|   | (c) | Depth            | 254mm  | (10in)   |
|   | (d) | Mounting Centres | 209mm  | (8.25in) |
|   | (e) | Weight           | 5.45kg | (12lb)   |

DATA SUMMARY/RF PERFORMANCES

6 Frequency Range

Up to 30MHz.

7 Power Rating

30kW.

8 Nominal Impedance

50 ohms.

9 Power Loss

Negligible for a single unit. Overall power loss in a complete system depending on the complexity of connection.

10 Standing Wave Ratio

For an installation of six transmitters and fourteen aerials the VSWR mismatch is calculated to be not worse than 1.15 : 1.

11 Operational Life

Life tests indicate that with four complete changes of switching each day the operational life will not be less than ten years.

FUNCTIONAL DESCRIPTION

12 The unit is designed to allow normal operation of the Antenna Exchange Outfit and automatic earthing of the antenna column when no cell unit in the column is operated.

13 The unit is also designed to connect a 1kW transmitter directly into the antenna switch column and inhibit the operation of any other transmitter from working into the antenna column.

14 An individual unit when earthed opens the 1kW transmitter interlock and control circuit and closes the exchanges interlock and control circuit.

15 An individual unit in the operated condition closes the 1kW transmitter interlock circuit and opens the exchanges interlock and control circuit.

OPERATIONAL SEQUENCE

16 Each unit is fitted with an individually coded key which is usually locked into the front cover of the unit and can be removed only after it has been rotated through 90 deg. in the operated condition; 1kW transmitter operated.

- 17 Rotating the key causes reed relay RLD to open and RLC to close.
- 18 This in turn de-energises RLB and energises RLA instead.
- 19 Contacts RLA/1 and RLA/2 close to allow interlock and revertive indication contacts to the 1kW transmitter.
- 20 Contacts RLB/1 and RLB/3 open to inhibit antenna exchange interlock and control.
- 21 Replacing the coded key and rotating through 90 deg. causes reed relay RLD to close and RLC to open.
- 22 This in turn de-energises RLA and energises RLB instead.
- 23 Contacts RLA/1 and RLA/2 open to inhibit interlock and revertive indication to the 1kW transmitter.
- 24 Contacts RLB/1 and RLB/2 close to allow normal operation of the exchange interlock and control circuits.
- 25 The key can now be removed and deposited with the engineer in charge of the station so that work may be carried out on the system in maximum possible safety.
- 26 The RF core path is also disconnected and the outgoing side short circuited to earth within the unit.

#### CIRCUIT WIRING

- 27 Using suitable cables the following connections to the antenna exchange circuit wiring and extended transmitter interlock and revertive signal facilities are to be made.

TB1 Pin 1	50V DC Neg
2	50V DC Pos
3	RLB/1 Exchange interlock broken when operated
4	RLB/1 Exchange interlock broken when operated
5	RLB/2 Revertive signal when earthed
6	RLB/2 Revertive signal when earthed
7	RLB/3 Antenna control broken when operated
8	RLB/3 Antenna control broken when operated
9	RLA/1 1kW Tx interlock closed when operated
10	RLA/1 1kW Tx interlock closed when operated
11	RLA/2 Revertive signal when operated
12	RLA/2 Revertive signal when operated
13	RLA/3 Spare
14	RLA/3 Spare
15	RLA/4 Spare
16	RLA/4 Spare

PARTS LIST 1  
GENERAL ASSEMBLY

The following table lists the parts identified in Det 2920 and Det 2929.

<u>ITEM</u>	<u>QTY</u>	<u>DETAIL</u>	<u>NATO STOCK NUMBER</u>	<u>DESCRIPTION</u>
1	1	0987		Outer Casting (Drilled)
2	1	0981		Front Panel (Drilled)
3	1	0003		Rear Panel
4	1	1367	5340-99-646-3154	Coded Lock H31/OH/C
5	1	1368	5985-99-646-2927	Coded Key
6	1	2256	5945-99-653-3328	Relay Mounting Bracket
7	1	0007	5985-99-788-6245	Rotor Bearing Plate
8	1	0985	3110-99-630-0217	Rotor Bearing Plate
9	1	0008	5999-99-529-9229	Tee Element (Long)
10	1	0009	5999-99-529-9230	Tee Element (Short)
11	1	0010	5985-99-529-8167	Rotor Drum
12	1	0011	5985-99-529-8168	Rotor Spindle Assembly
13	1	0011A		Rotor Drum Spindle
14	1	0011B		Blade
15	1	0011D	5985-99-523-5011	Rotor Assembly
16	1	0012	5985-99-529-8170	Rotor Bearing Spigot
17	2	0013		In/Output Tube Assembly
18	1	0013A		Flange
19	1	1423		N Type Socket
20	2	0013D		Tube
21	1	0013E	5820-99-630-0218	In/Output Coaxial Assy
22	1	2252		Dust Cover Assy
23	4	0984	5307-99-630-0306	Clamping Bolts
24	2	0016	5985-99-523-5013	Coaxial Core Assembly
25	2	0016A	5985-99-529-8172	Coaxial Core
26	4	0016B	5820-99-630-0219	Plunger Guide Pin
27	4	0016C	5360-99-630-0307	Spring
28	4	0016D	5985-99-523-5014	Contact Cap Assembly
29	1	2929		Coaxial Core Assembly
30	1	2919		Coaxial Core
31	1	0983	5985-99-788-6247	Connecting Coupling
32	1	2258	5820-99-630-0221	Cam Arm Assembly
33	2	2254		Reed Relay Mtg Bracket
34	1	1106		16 Way Terminal Board
35	3	0026	5970-99-529-9232	Insulator (Coaxial)
36	6	0026A	5315-99-529-9233	Pin
37	1	0004	5820-99-630-0222	Core Block
38	2	0982	5985-99-788-6248	Hexagon Spacer (Inner)
39	2	2253	5985-99-788-6249	D/Cover Mounting Pillar
40	1	0036	5975-99-788-6250	Earthing Plate
41	1	0037	5999-99-630-3954	Earthing Contact
42	2	0038	3120-99-800-9430	3/8" Oilite Bearing
43	1	2259	5340-99-640-5606	Cable Cleat
44	2	0070	5365-99-630-3476	Lock Mounting Pillar
45	1	0071		Rear Mounting Pillar
46	4	0139	5310-99-630-3477	Rack Spacer
47	4	0140	5310-99-134-2496	Washer
48	2	0251	5945-99-630-3905	Reed Relay F/R RSMO6A

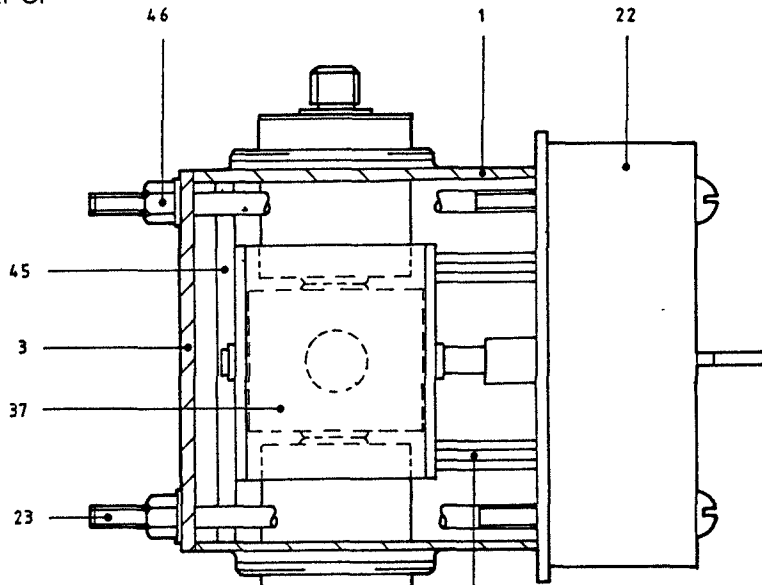
<u>ITEM</u>	<u>QTY</u>	<u>DETAIL</u>	<u>NATO STOCK NUMBER</u>	<u>DESCRIPTION</u>
49	1	0252	5999-99-522-4622	Magnet F/R RSH33
50	2	0253	5945-12-155-8013	Relay B110
51	2	0254	5935-99-529-5028	Relay Base BR/24N
52	2	0255	5945-99-529-5030	Relay Clip BR/24T9 .
53	1	2112		Identity Label
54	1	0266		MOD Label
55	2	0268	5305-99-633-4309	D/Cover Retaining Screw
56	2	0269		5/16" BSF Full Nut
57	2	1520	5961-99-118-2982	Diode IN4004
58	1	2922		N Type Output Assembly
59	1	2921		Body Assembly
60	2	2184		Relay Mounting Pillar

PART OF

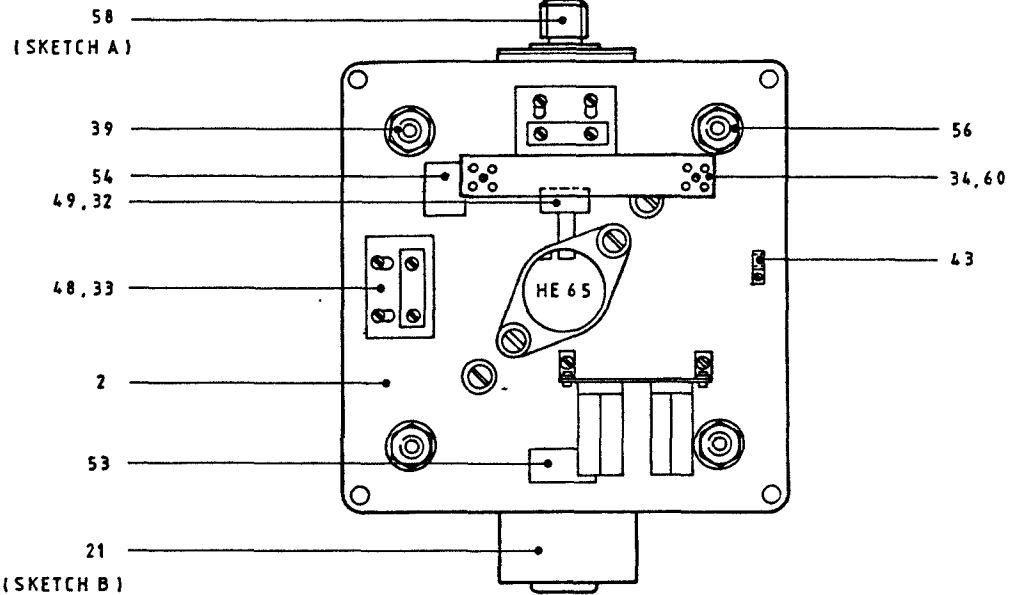
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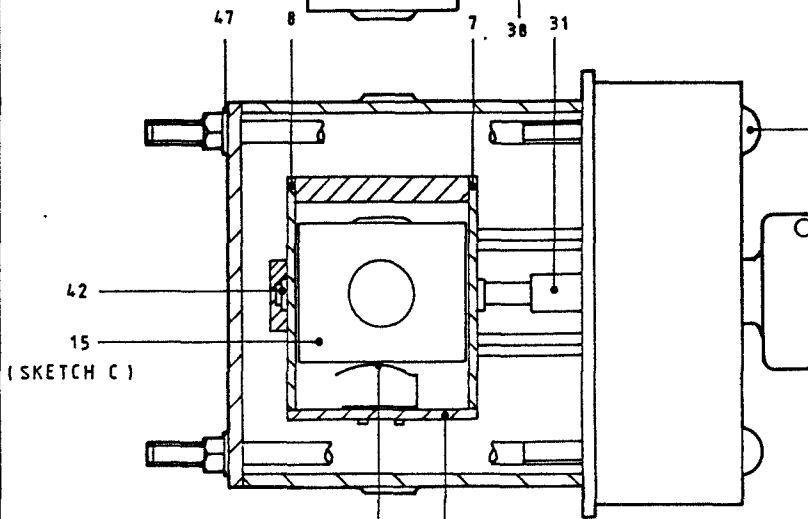
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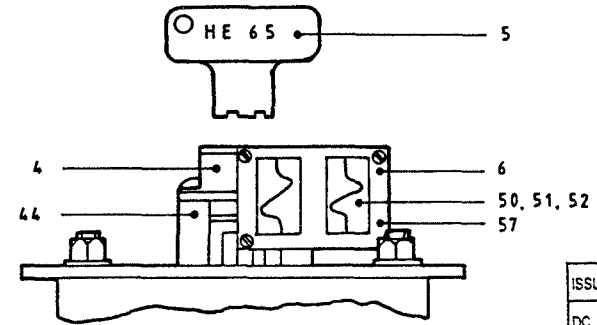
SIDE VIEW



FRONT VIEW



PLAN VIEW



TOP PLATE

ISSUE No.	0	1	2	3	4
DC No.					
ISSUED BY	MJG				
DATE	2-3-94				



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**TITLE** ANTENNA EARTHING

ISOLATOR UNIT GENERAL

ASSEMBLY HE 30AEIMKVIQ:6032.

DRAWN  
M. J. G

TRACED

CHECKED  
M. J. G

APPROVED

DATE  
2-3-94

**DRAWING No.** DETAIL 2920.

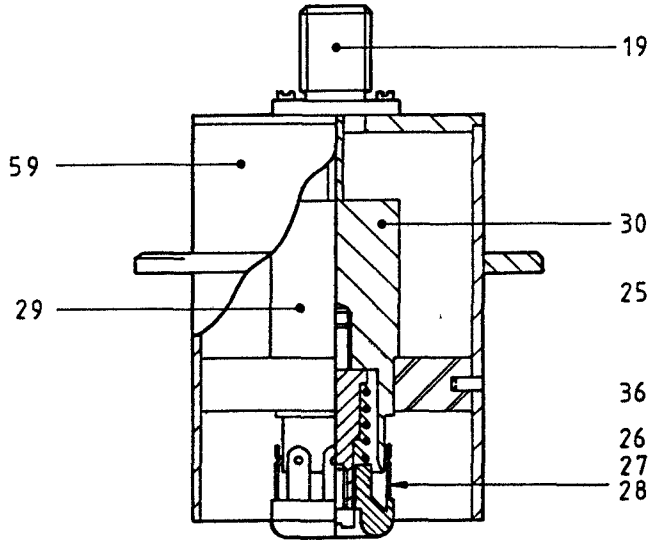


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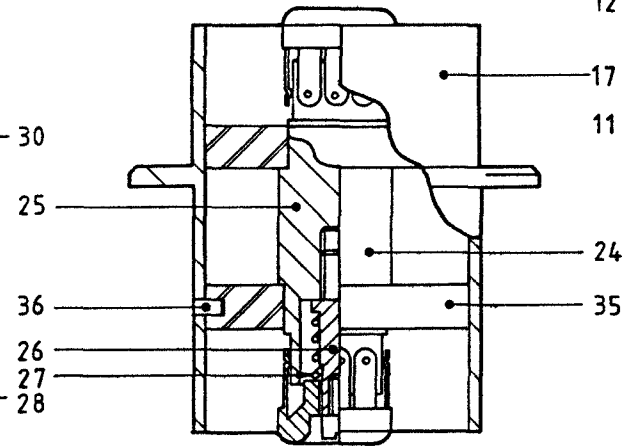
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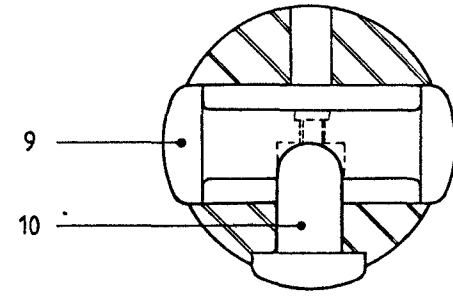
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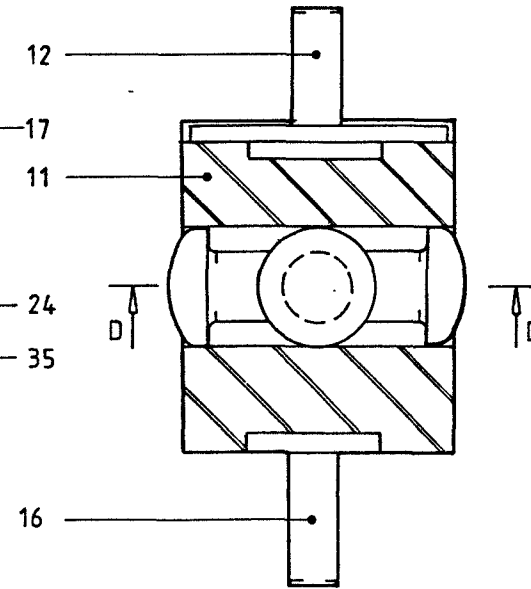
SKETCH A ITEM 58



SKETCH B ITEM 21



SECTION D-D



SKETCH C ITEM 15

ISSUE No.	0	1	2	3	4
DC No					
ISSUED BY	M.J.G.				
DATE	2.3.94				



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TITLE ANTENNA EARTHING

ISOLATOR UNIT ASSEMBLY

DETAILS. HE 30 AEI MKVI Q: 6032.

DRAWN  
M. J. G.

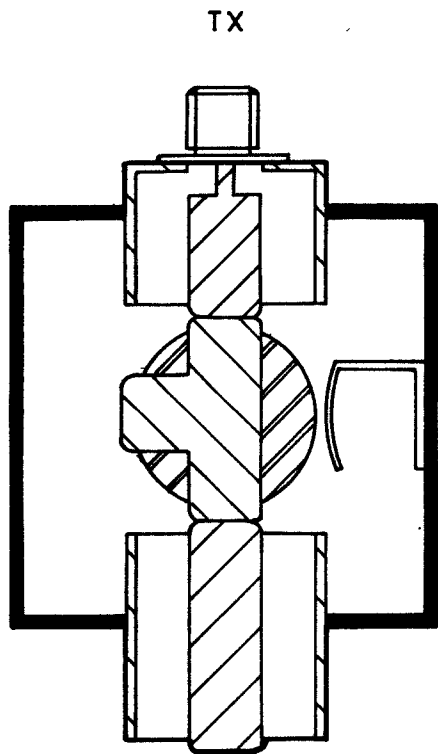
TRACED

CHECKED  
M. J. G.

APPROVED

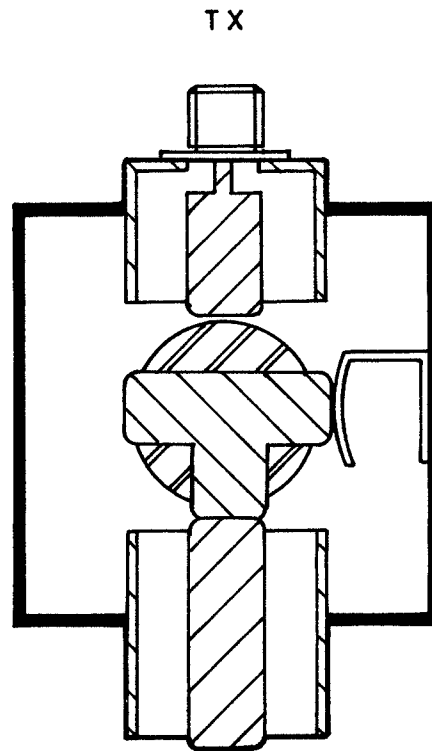
DATE  
2.3.94

DRAWING No. DETAIL 2929



ANTENNA

TRANSMITTER OPERATED



ANTENNA

ANTENNA GROUNDED

ISSUE No.	0	1	2	3	4
DC No.					
ISSUED BY	MJG				
DATE	2394				



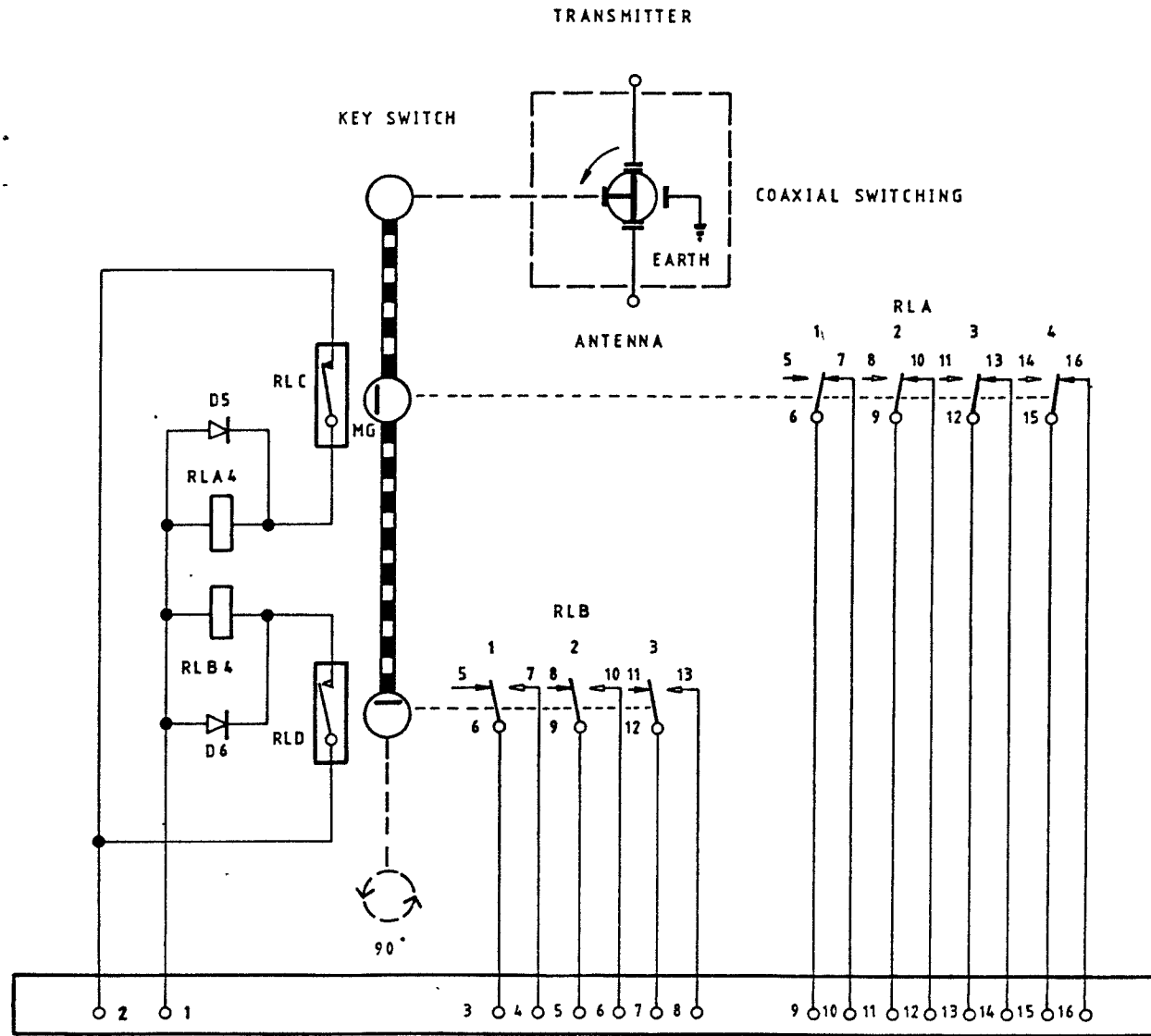
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**TITLE** ANTENNA EARTHING  
ISOLATOR UNIT SIMPLIFIED  
DIAGRAM HE 30 AEIMKVIQ6032

<b>DRAWN</b> M. J. G	<b>TRACED</b>	<b>CHECKED</b> M. J. G	<b>APPROVED</b>	<b>DATE</b> 2.3.94
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**DRAWING No.** DETAIL 2930.



ISSUE No.	0	1	2	3	4
DC No	-	1083			
ISSUED BY	MJG	MJG			
DATE	2394	1-9-94			



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**TITLE** ANTENNA EARTHING  
ISOLATOR UNIT CIRCUIT

DIAGRAM HE30AEIMKVIQ:6032

**DRAWN**  
M. J. G

**TRACED**

**CHECKED**  
M. J. G.

**APPROVED**

**DATE**  
2-3-94

**DRAWING No.** DETAIL 2931

ANTENNA EARTHING ISOLATOR UNIT HE 30 AEI MK VI Q6032  
REPAIR AND RECONDITIONING INSTRUCTIONS

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ANTENNA EARTHING ISOLATOR UNIT HE 30 AEI MK VI 06032

REPAIR AND RECONDITIONING INSTRUCTIONS

Para

- 1 General
- 2 Removal From The Rack
- 6 Dismantling and Inspection
- 13 Reassembly

GENERAL

- 1 Although these units have been designed to operate or to stand idle for very long periods; their construction and method of mounting onto the matrix rack allows a single unit to be replaced very quickly.

REMOVAL FROM THE RACK

- 2 Remove the dust cover assembly (Item 22) by releasing the two dust cover retaining screws (Item 55).
- 3 Unscrew the 16 way tail from the terminal board (Item 34).
- 4 Slide the clamping sleeve assembly (Det 1936) and covers onto the adjacent switch unit feeds.
- 5 Remove the nuts and washers at the rear of the rack taking care that the unit does not drop onto the unit below causing damage.

DISMANTLING AND INSPECTION

- 6 Remove the screws securing the input/output coaxial assemblies (Items 21 and 58) at the sides of the unit and withdraw the assemblies.
- 7 Remove the two dust cover mounting pillars (Item 39) secured to the dust cover assembly (Item 22) and the fixing nuts on the opposite corners.
- 8 The rear panel (Item 3) can now be slid out of the outer casting (Item 1) complete with the four clamping bolts (Item 23) still mounted on the rear mounting panel (Item 3).
- 9 The core block assembly (Item 37) complete and the switch mechanism still mounted on the front panel (Item 2) can now be removed from the outer casting (Item 1).
- 10 The rotor bearing plates (Item 8) can now be removed giving access to the rotor drum (Item 15).

11 The drums and contacts should be wiped with a clean dry rag and checked for ease of movement and signs of wear.

12 If there are any signs of burning or arcing; the defective parts should be replaced if necessary.

NOTE If the rotor drum has been removed; it is essential that it is replaced in the same position and not rotated through 180 deg.

REASSEMBLY

13 To reassemble the unit; the procedure described in paragraphs 6 to 12 should be carried out in the reverse order.