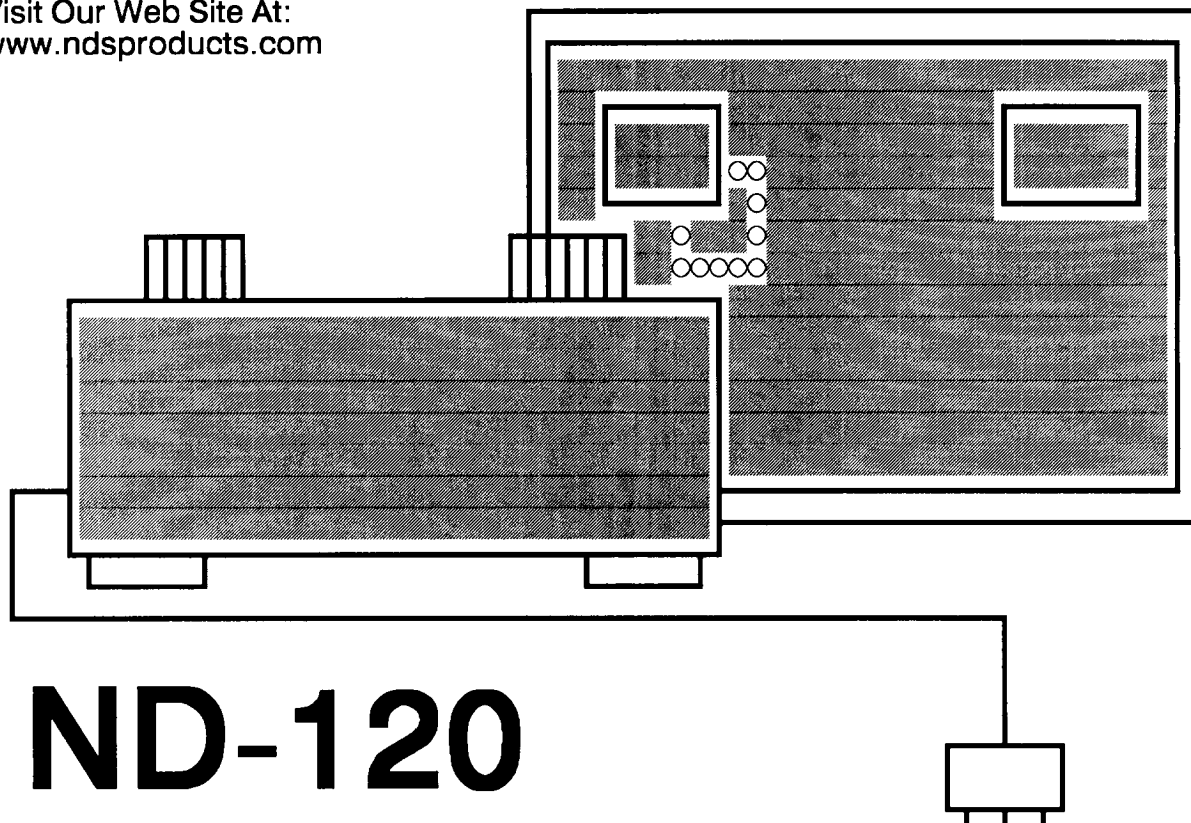


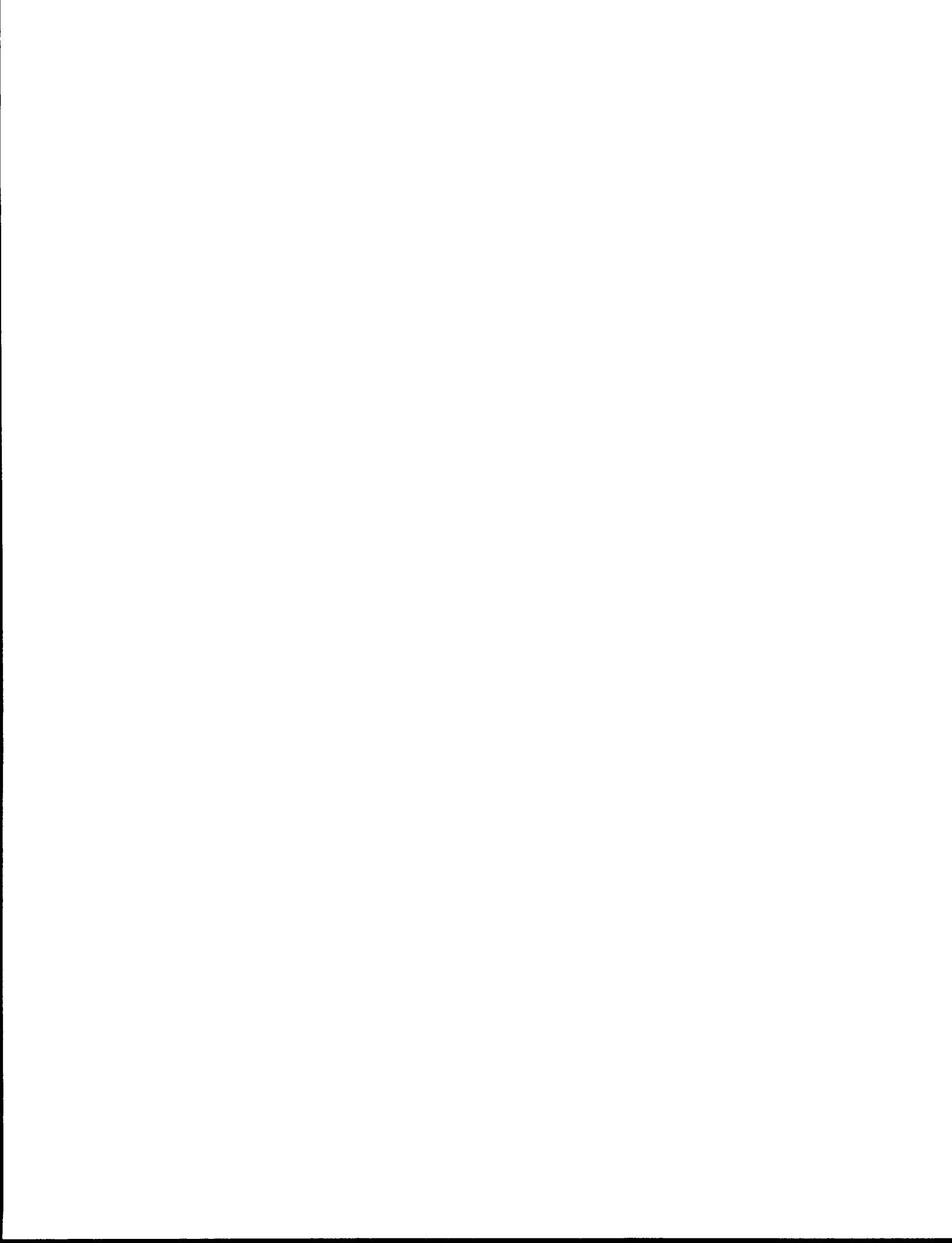
NDS PRODUCTS

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ND-120 DOSIMETER CHARGER OPERATION MANUAL

111 ANDERSON, PASADENA TX 77506, PHONE 713/475-2986, FAX 713/477-6741



CONTENTS

ND-120

PARAGRAPH		PAGE
1.0	WARRANTY	1
2.0	SPECIFICATIONS	2
3.0	INSTRUMENT OPERATION	2
4.0	MAINTENANCE	2
5.0	TROUBLE-SHOOTING	2
6.0	PARTS LIST	3
7.0	CIRCUIT DIAGRAM	4

NOTE: DUE TO NDS PRODUCTS' CONTINUING PROGRAM OF RESEARCH & DEVELOPMENT, ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AND MAY BE VARIED AT OUR DISCRETION.

2.0 WARRANTY:

NDS PRODUCTS WARRANTS THAT THE PRODUCTS COVERED HEREBY SHALL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR FROM DATE OF NDS SHIPMENT (GM TUBE IS WARRANTED BY THE OEM FOR 90 DAYS). THE FOREGOING WARRANTY DOES NOT APPLY TO ANY PRODUCTS WHICH HAVE BEEN SUBJECT TO MISUSE (INCLUDING STATIC DISCHARGE), NEGLIGENCE, ACCIDENT, OR MODIFICATION. NDS PRODUCTS' SOLE OBLIGATION TO BUYER HEREUNDER FOR PRODUCTS FAILING TO MEET THE AFORESAID WARRANTY SHALL BE, AT NDS PRODUCTS' DISCRETION, TO REPAIR AND RECALIBRATE THE NONCONFORMING PRODUCT OR TO REPLACE THE NONCONFORMING PRODUCT WHERE WITHIN THE WARRANTY PERIOD: 1) THE BUYER HAS RETURNED THE NONCONFORMING PRODUCT TO NDS PRODUCTS, FREIGHT PREPAID, & 2) NDS PRODUCTS HAS DETERMINED THE PRODUCT IS NONCONFORMING AND THAT SUCH NONCONFORMITY IS NOT A RESULT OF IMPROPER USE, REPAIR, MODIFICATION OR OTHER MISUSE BY THE BUYER.

THE FOREGOING WARRANTY AND REMEDIES ARE EXCLUSIVE AND ARE MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE. NDS PRODUCTS NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OR USE OF ITS PRODUCTS AND NDS PRODUCTS MAKES NO WARRANTY WHATSOEVER FOR PRODUCTS NOT MANUFACTURED BY NDS PRODUCTS. NDS PRODUCTS SHALL NOT BE LIABLE FOR DAMAGES DUE TO DELAYS IN DELIVERIES OR USE AND SHALL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND; WHETHER ARISING FROM CONTRACT, TORT, OR NEGLIGENCE, INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, LOSS OF GOODWILL, OVERHEAD OR OTHER LIKE DAMAGES.

2.0 SPECIFICATIONS:

THIS AC OPERATED INSTRUMENT WILL CHARGE (ZERO) ANY SELF READING DOSIMETER HAVING A STANDARD CHARGING END. THE CHARGER IS CONTAINED IN A TWO-PIECE ALUMINUM CASE WHICH IS SECURED BY FOUR THREADED FASTENERS, EACH HAVING A RUBBER BOOT FOR EASY REMOVAL.

3.0 OPERATION:

3.1 TO CHARGE (ZERO) DOSIMETER:

PLUG IN CHARGER TO ELECT OUTLET, TURN POWER SWITCH ON. IF THE DOSIMETER HAS A PROTECTIVE CONTACT CAP, REMOVE IT. PRESS THE DOSIMETER CONTACT LIGHTLY INTO THE CHARGER CONTACT TO ILLUMINATE THE DOSIMETER SCALE.

PRESS THE DOSIMETER FIRMLY UNTIL THE HAIRLINE RESPONDS TO ADJUSTMENT OF THE ZERO ADJUST KNOB AND PROCEED TO ADJUST HAIRLINE TO ZERO. THE HAIRLINE MAY HAVE TO BE PLACED TO THE LEFT OF ZERO TO COMPENSATE FOR A KICK TO THE RIGHT WHEN THE DOSIMETER IS REMOVED. ALWAYS REMOVE DOSIMETER SLOWLY BY RELAXING THE THE PRESSURE FROM THE CHARGER.

TO READ THE DOSIMETER, POINT THE CONTACT END TOWARD AN EXTERNAL LIGHT SOURCE AND LOOK THROUGH THE EYEPIECE. IF NO LIGHT SOURCE IS AVAILABLE, PLACE DOSIMETER ON CHARGING CONTACT AND PRESS LIGHTLY TO ILLUMINATE SCALE.

4.0 MAINTENANCE:

BEFORE OPENING CHARGER CASE, MAKE SURE UNIT IS NOT PLUGGED IN. ALWAYS KEEP THE CHARGER AND ESPECIALLY THE CHARGING CONTACT CLEAN BY USING A SOFT CLOTH. DO NOT USE SOLVENT OR CLEANING FLUID ON PLASTIC. ALWAYS KEEP THE PROTECTIVE CAP ON THE CHARGING CONTACT WHEN NOT IN USE.

5.0 TROUBLE-SHOOTING:

5.1 IF THE LIGHT IS WEAK OR FAILS TO GO ON WHEN CONTACT IS DEPRESSED:

5.1.1 CLEAN LIGHT SWITCH CONTACTS.

5.1.2 TIGHTEN OR REPLACE LIGHT BULB.

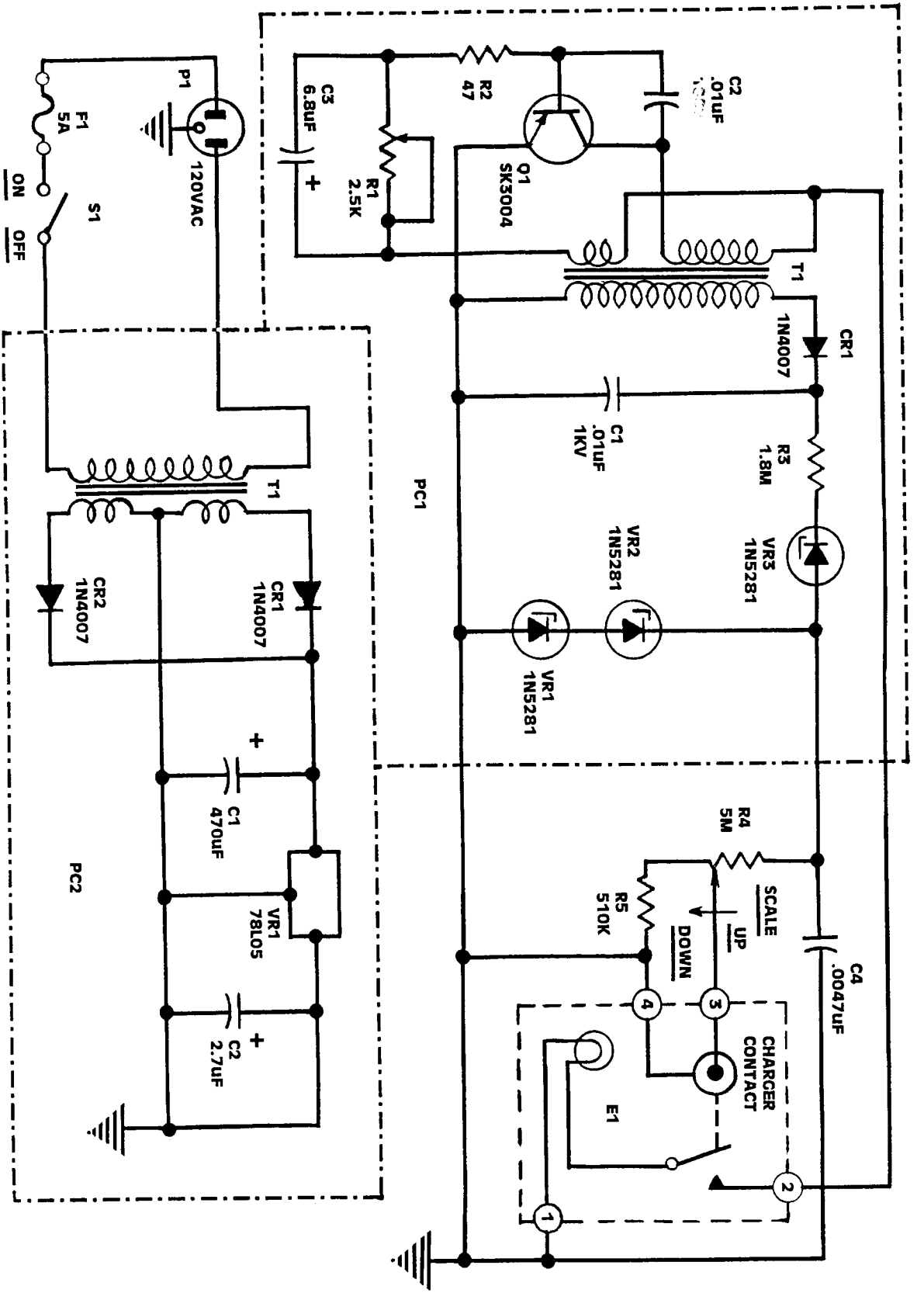
5.2 HAIRLINE MOVES ERRATICALLY:

5.3.1 CLEAN CHARGING CONTACTS ON CHARGER AND DOSIMETER.

5.3.2 REPAIR OR REPLACE CHARGER.

5.3.3 DOSIMETER IS FAULTY.

26-Sep-97		BILL OF MATERIAL		
980-0120-001		ND-120 PC1		REV A
ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	551-0100-001	PC1 PC FAB	1	PC1
2	100-1000-472	CAP CER DISC .0047 uF 1 KV 20% Y5P .25 LS	1	C4
3	100-1000-103	CAP CER DISC .01 uF 1 KV 20% Y5P .4 LS	1	C1
4	100-0100-103	CAP CER DISC .01 uF 100V 20% Y5P .25 LS	1	C2
5	105-0035-685	CAP ELE ALUM 6.8 uF 35V 20% AXL .8 LS	1	C3
8	150-0100-001	DIODE 1N4007 STANDARD RECOVERY	1	CR1
9	150-0400-001	DIODE 1N5281B ZENER	3	VR1-3
10	250-0100-470	RES CF 1/4W 5% 47.0 OHM	1	R2
11	250-0100-514	RES CF 1/4W 5% 510.0 K OHM	1	R5
12	265-0200-252	RES POT TRIMMER 2.5 K 1/2W	1	R1
13	250-1500-185	RES TF 1/2W 5% 1.8 M OHM 1KV 350PPM	1	R3
15	450-8050-001	TRANSFORMER DC-DC 8050	1	T1
16	475-0200-001	TRANSISTOR SK3004 POWER	1	Q1
980-6001-002		PC2 ASSY		REV A
ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	551-6001-002	PC2 PC FAB	1	PC2
2	105-0016-477	CAP ELE ALUM 470.0 uF 16V 20%	1	C1
3	111-0035-275	CAP ELE TANT 2.7 uF 35V 10%	1	C2
4	150-0100-001	DIODE 1N4007 STANDARD RECOVERY	2	CR1, 2
5	450-6210-001	TRANSFORMER AC-DC 6210	1	T1
6	590-0005-001	VOLTAGE REGULATOR 78L05CG 5V	1	VR1
990-0120-001		ND-120 UNIT ASSY		REV A
ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	700-4000-008	CABLE POWER 6 FT PLUG	1	
2	670-0100-001	CASE ALUM CHARGER	1	
3	720-0100-001	CHARGER ASSY CONTACT/CAP	1	E1
4	690-0120-001	DECAL ND-120	1	
5	670-0250-005	FUSE 250 VAC 5 AMP 1.25 LG	1	F1
6	665-4000-001	FUSE HOLDER PANEL MOUNT	1	XF1
7	660-0100-001	GROMMET FOOT	4	
8	660-6000-001	GROMMET WIRE .31 ID	1	
9	690-0100-001	KNOB BLK/ALUM INLAY .90 DIA	1	
10	575-0120-006	LAMP 6V	1	DS1
11	260-0100-506	RES POT CONTROL 5 MEG 10%/20% 2W	1	R4
12	375-0500-002	SWITCH ROCKER ON/OFF SPDT	1	S1



DATE: <i>DATE</i>	NBS PRODUCTS	
DRAWN: M. SMITH	ND-120	
CHECKED: <i>[Signature]</i>	CIRCUIT DIAGRAM	
ENGINEER: <i>[Signature]</i>	DWG: 820-0120-000	REV: B
DO NOT COPY, DISSEMINATE, OR USE FOR ANY OTHER PURPOSE WITHOUT AUTHORIZATION. DO NOT SCALE DRAWING.	SCALE: <i>[Symbol]</i>	SHEET: 1 of 1