TITLE

TEST INSTRUCTIONS FOR SETPOINT CONTROL

FIRST MADE FOR SPEEDTRONIC

REVIS

ELEMENTARY DIAGRAM - IC3600SSLD1 SH..3.0,.3.1

TEST EQUIPMENT

±12V POWER SUPPLY, 50MA
+5V POWER SUPPLY, 0.3A
+28V POWER SUPPLY, 20MA
1 VOLTMETER PRECISION, 1MV TO ±10V F.S.
1 VOLTMETER TO ALSO READ MA
1 MICROAMMETER
1 SCOPE.
1 WAVETEK SIGNAL GENERATOR
1 VARIABLE DC POWER SUPPLY, 0V TO ±10V (PRECISION)
1 CONNECT PER FIG. 1. (SW1, 2, 3 OPEN)

FIGURE 1
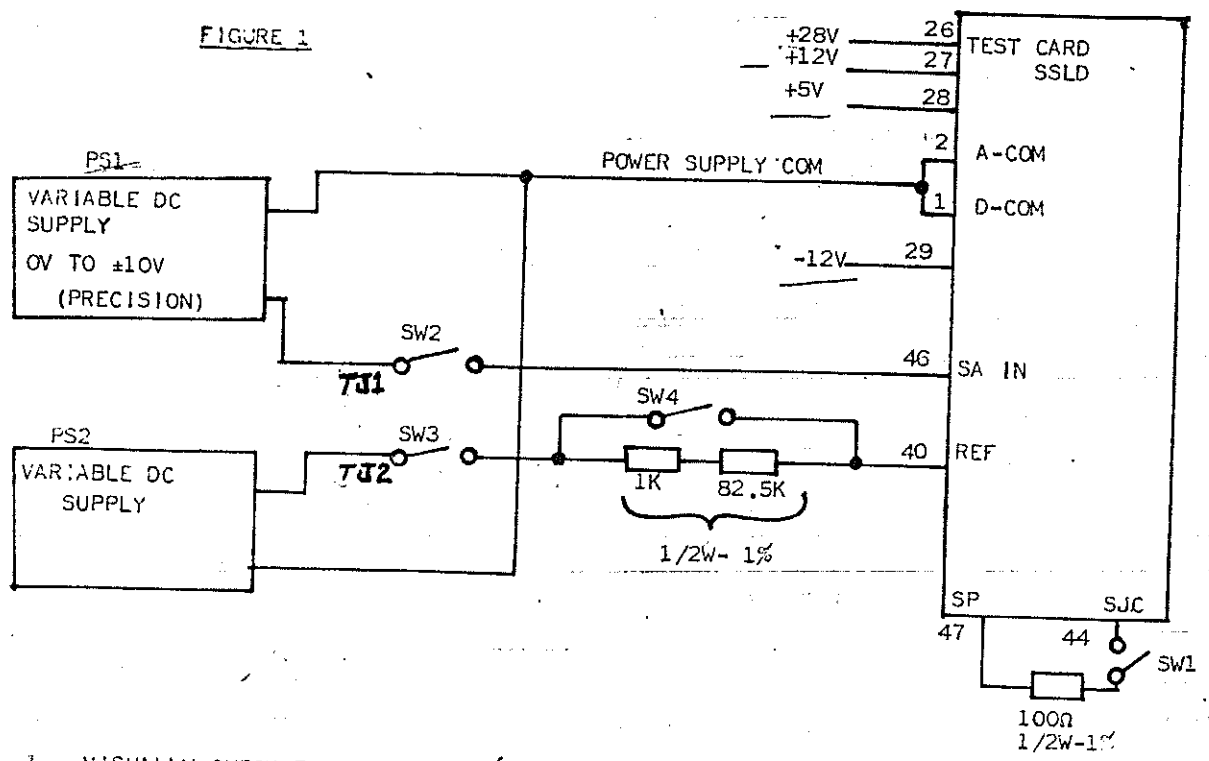
1. VISUALLY CHECK THE FOLLOWING COMPONENTS. CHECK THAT THE POLARITY OF DIODES IS CORRECT.

   CR1,   CR11, CR12
   R71 thru R73 - 100 Ohm   R21 - 10K
   R45 - 825 Ohm

   → R71 = 100 Ω
   R72, R73 = 121 Ω (ACCORDING TO ELEM & M.L.)

2. ATTACH 8-20KHz LOADS TO EACH OF THE FOLLOWING TERMINALS
   (15), (17), (23), (22), (21), (30), (16), (33)

3. APPLY POWER TO THE CARD PER FIGURE 1.

4. INPUT GATE LEAKAGE - CONNECT IN TURN THE FOLLOWING PINS TO 2.5V THRU A MICROAMMETER. MEASURE THE FOLLOWING CURRENTS.

TJ3   PINS
          (3), (4), (5), (6), (7), (30), (25),
          (24), (31),

          MAX CURRENT MICROAMP
          40 EACH

JWG 780415   REG45UE

DL22

2520

PRINTS

CODE IDENT

12 13 14
(14), (18), (19)   80 EACH

5. INPUT LOADING - CONNECT A MILIAMMETER BETWEEN COMMON AND EACH TERMINAL LISTED IN TURN.
    MEASURE THE FOLLOWING CURRENTS:

| PINS	MAX CURRENT MILIAMP
(3), (4), (5),(6), (7), (36), (25),(24),(31)	1.7 EACH
(14), (18), (19)	3.5 EACH
(32)	5 5.35 mA

6A. CONNECT THE SCOPE TO PIN **(13)**. OPEN PINS (3), (4), (5), (6), (7), (8), (11), JUMPER
    PIN (9) TO PIN (10). CHECK THAT THE PULSE ON PIN (13) IS PER FIG. A

FIG. A

4.2 TO 5.0V _____ ⊓ _____ 6 to 12 microsec _____ ⊓ _____ T _____ ⊔

0.4V
0V
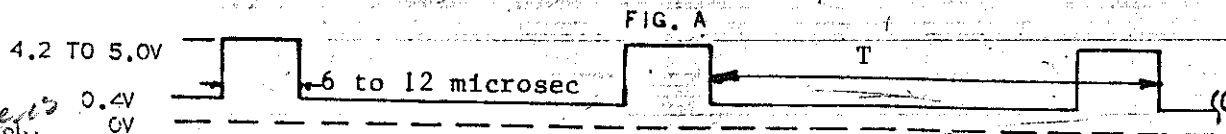
ADJUST T TO 264 ± 20 MILISEC BY ADJUSTING R109. (TURN FIRST R109 FULLY CCW)

6B. CHECK THAT THE PULSE ON PIN 22 IS PER FIG. B.

4.2 TO 5.0V ⊓ _____ 6 to 12 microsec _____ FIG. B _____ 2T _____ ⊔

0.4V
0V

7DN
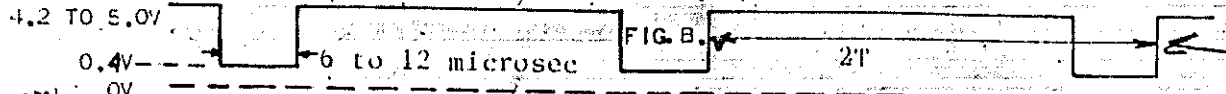
6C. CHECK THAT 2T IS AS FOLLOWS FOR CONDITIONS GIVEN: PINS (8), (9), (10), (11) OPEN

CONDITION	2T MILISEC-PIN 22
PIN (3), (4), (5), (6), (7) OPEN PER FIG. B	176 ± 20
PIN (5) TO COMM, PINS (3), (4), (6), (7) OPEN	90 ± 10
PIN (4) TO COMM, PINS (5), (3), (6), (7) OPEN	45 ± 6
PIN (3) TO COMM, PINS (5), (4), (6), (7) OPEN	30 ± 4
PIN (6) TO COMM, PINS (3), (4), (5), (7) OPEN	20 ± 3
PIN (7) TO COMM, PINS (3), (4), (5), (6) OPEN	550 ± .1 650

(handwritten brace: MAKE SURE S7 IS OPEN FROM PREVIOUS STEP)

D. PINS (3), (4), (5), (6), (7) OPEN

CONDITION	2T MILISEC-PIN 22
PIN (9) JUMPER TO PIN (10) PER FIG. B	530 ± 50
PIN (9) JUMPER TO PIN (10) JUMPER TO PIN (8)	700 ± 70
REMOVE JUMPERS BETWEEN PINS (8), (9) AND (10).	

7A. Connect Pin (46) to COMM. Connect the precision voltmeter to Pin (47), meter
    return must not carry card current (Connect to 51). Adjust R6 so that the
    voltage at Pin (47) is 0 ±1.0 milivolts. Remove Pin (46) from COMM.

7B. CLOSE SW2 & ADJUST VARIABLE DC SUPPLY (PS1) TO OBTAIN +8.0V ± 0.001V ON PIN (46).
    ADJUST R5 FOR -8.0V ± 0.005V ON PIN (47). READJUST PS1 FOR -10V ± 0.001V ON PIN (46)
    AND CHECK VOLTAGE ON PIN (47) TO BE +10V ± 0.05V.

7C. OPEN SW2. CONNECT PINS (44), (46)   DIRECTLY TO PIN 50 USING SHORT LEAD.

8A. CLOSE SW1. (R1 CW)

B. ADJUST R4 UNTIL PIN (39) SWITCHES TO 0V ±0.4V AND THEN TURN POT BACK JUST UNTIL PIN
    (39) SWITCHES TO +5V ±0.5V

C. ADJUST R3 UNTIL PIN (37) SWITCHES TO 0V ±0.4V AND THEN TURN POT BACK JUST UNTIL PIN (37)
    SWITCHES TO +5V ±0.5V

Handwritten margin notes: "Make sure R7 and R55 are Not Reversed", "C7 & R55", "Note TIME is 530 MS with SW#7 UP ON Pin 22", "SW7", "SW8", "SW9", "036", "0363"

REVIS

1. CWF 11/7/73
2. SEH 1/10/74 CHANGED 6A
3. BU9286Y JVG 8-15-79
5. BU945ABE KMH 10/10/80

PRINTS

R1
R2
R3
R4
R5
R6
DL22
2520

CODE IDENT

D. REMOVE CONNECTION BETWEEN PINS (44) AND (50). CLOSE SW3. ADJUST PS2 TO OBTAIN +7MV to +10MV ON PIN (44). CHECK PIN (39) TO BE +5V ± 0.5V. SLOWLY TURN POT R4 CCW MONITORING PIN (39) UNTIL VOLTAGE SWITCHES TO 0V±0.4V. TURN POT R4 BACK JUST SO PIN (39) SWITCHES TO +5V ± 0.5V. (Meter return to 51)

E. ADJUST PS2 TO OBTAIN −7MV to −10MV ON PIN (44). CHECK PIN (37) TO BE +5V ±0.5V. SLOWLY TURN POT R3 CW MONITORING PIN (37) UNTIL VOLTAGE SWITCHES TO 0V±0.4V TURN POT R3 BACK JUST SO PIN (37) SWITCHES TO +5V ± 0.5V.

OPEN SW1 AND REMOVE PIN 44 FROM COMM. CLOSE SW4

9A. ADJUST PS2 TO +5±0.005V AS MONITORED ON PIN (40). ADJUST POT R1 SO THAT THE VOLTAGE AT PIN (44) IS 0±0.001V. CHECK THAT THE VOLTAGE AT PINS (37) AND (39) ARE 0V ± 0.4V. REMOVE PIN (46) FROM PIN (50). CLOSE SW2.

B. ADJUST PS1 FOR −10±0.005V ON PIN (46). ADJUST PS2 TO +1±0.005V. ON PIN (40). ADJUST R2 SO THAT THE VOLTAGE AT PIN (44) IS 0±0.001V. CHECK THAT THE VOLTAGE AT PINS (37) AND (39) IS 0V ± 0.4V.

C. ADJUST PS2 TO +1.020±0.005V. CHECK THAT THE VOLTAGE AT PIN (39) IS 5±0.5V AND AT PIN (37) IT IS 0±0.5V. READJUST PS2 TO 2.980±0.005V AND READJUST PS1 TO −5V ±0.005V ON PIN (46). CHECK THAT THE VOLTAGE AT PIN (39) IS 0±0.5V AND THE VOLTAGE AT PIN (37) IS 5±0.5V. OPEN SW2, SW3, AND SW4.

10. CHECK THE TRUTH TABLE FOR THE INPUT SEQUENCE INDICATED. A LOGIC "0" MUST BE LESS THAN 0.4V. A LOGIC "1" MUST BE GREATER THAN 3.5V. PERFORM THE TEST SEQUENTIALLY STEP BY STEP, from top to bottom, checking the output states at each step. If a card is plugged into a prewired fixture in Step 3, Pin 32 must be opened then regrounded for each card.

INPUT

TEST CARD CIRCUIT NAME	TEST CARD TERMINAL NO	STEP 1	2	3	4	5	6
UP	(19) 1	1	1	0	0	1	1
DN	(36) 2	0	1	1	0	0	0
MM1	(25) 3	0	1	1	1	1	0
MM2	(24) 4	1	0	1	1	1	0
MM3	(31) 5	1	1	0	1	1	0
OPSTA	(14) 6	0	1	-	-	-	-
OPSTB	(18) 7	1	0	-	-	-	-
OINH	(32) 8	1	1	0	1	1	1

OUTPUT

| TEST CARD CIRCUIT NAME	TEST CARD TERMINAL NO	STATE FOR STEP # 1	2	3	4	5	6
OENB	(33) 5	0	1	1	1	1	0
DN/OUP	(16) 4	0	0	1	1	0	0
OEMP	(30) 5	1	1	1	0	1	1
OFUL	(21) 5	1	1	1	1	0	1
PRA	(15) 4	1	0	-	-	-	-
PRB	(17) 4	0	1	-	-	-	-
PRC	(23) 5	1	1	-	-	-	-

11. CONNECT THE SCOPE WITH ONE VERTICAL CHANNEL ON PIN (13) AND THE OTHER CHANNEL ON PIN (22). CONNECT PIN (7) TO COMM. CHECK THAT THE WAVEFORMS ARE AS FOLLOWS.

200µS

WAVEFORM AT PIN (13)

OV

OV
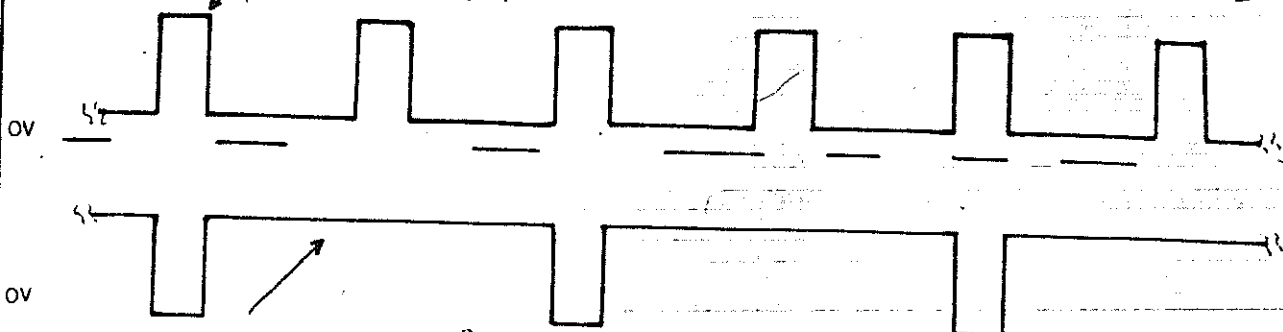
WAVEFORM AT PIN (22) (If dual wave form is not correct, try looking with one channel of scope at each pin separately.)

12. CONNECT A SIGNAL GENERATOR AS SHOWN.

TJ4   1K   1/2W-5%   SW5   (18)   IC3600SSLD   OPRSB

(1,51)   DCOM   OLD   12
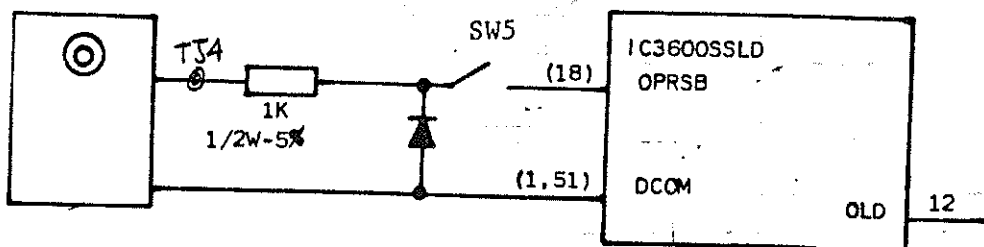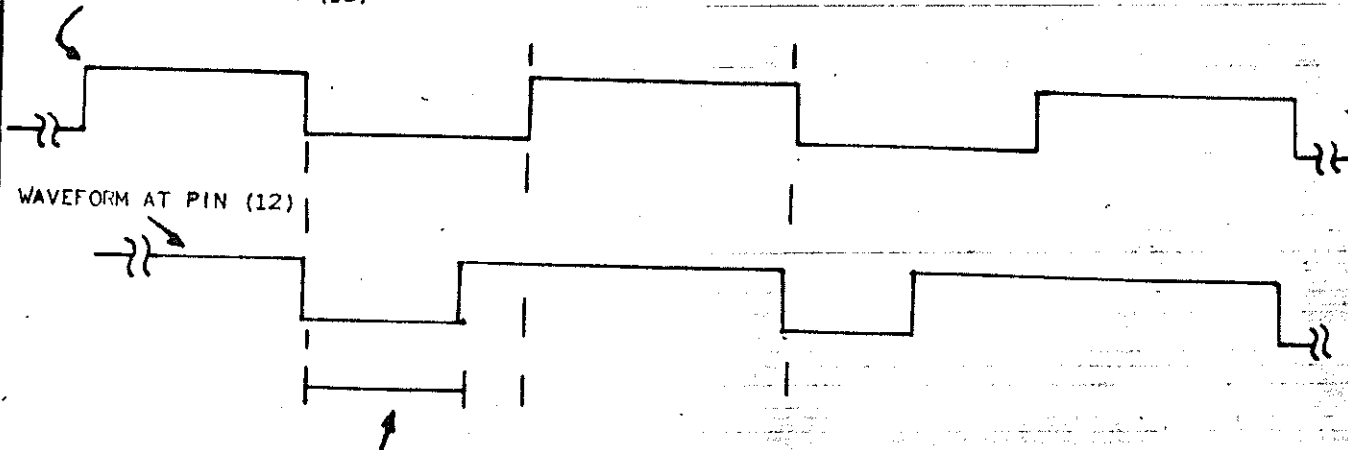
CLOSE SW5. SET THE SIGNAL GENERATOR TO A 4KHZ, 4.5V PP. SQUARE WAVE OUTPUT AT PIN (18). CHECK THAT THE WAVEFORM AT PIN (12) IS AS FOLLOWS.

WAVEFORM AT PIN (18)

WAVEFORM AT PIN (12)

PULSE WIDTH. MIN 40 MICROSEC - MAX 80 MICROSEC.

Auxillary   Test   Card
IC3600SSLD

SSLD

SSLD

+12V
(27)

R5 1K R6 1K R7 1K R8 1K R9 1K R10 1K R11 1K R12 1K

ALL DIODES
ARE 58A8200P1

COM.

(15) (16) (17) (21) (22) (23) (30) (33) (1) (51) (2) (50)

ORANGE

TJ3
M.AMP
METER

1 OFF
2 (3) SXT
3 (4) QTR
4 (5) HLF
5 (6) AT
6 (7) PST
7 (36) DN
8 (25) MM1
9 (24) MM2
10 (31) MM3
11 (14) OPSTA
12 (18) OPSTB
13 (19) UP
14 (32) OINH

(46)

TJ1   SW2   SW8
      SW1   SW9

100 (44)   SW10
R1

(47)

SW11

(18)   SW5   CR1

TJ4   1K
SIG. (RED)   R4
GEN.

SW6   (8)
                 FA
(9)
TRS   SW7
                 (10)
                 TW

            R2   R3
TJ2 SW3   1K   82.5K   (40)
PS2 (BROWN)   SW4   REF