"DATASPEED®" PRINTER (RECEIVE-ONLY) STATION

TROUBLESHOOTING

1. GENERAL

1.01   This section provides the troubleshooting for the DATASPEED Printer (Receive-Only) Station. It is being reissued to incorporate all recent engineering changes and technical information not previously presented. Since Issue 1 was printed in limited quantity, this is the first general distribution of this section.

1.02   The information in this issue is primarily concerned with troubleshooting basic electronic failure. Other troubleshooting procedures will be picked up in later issues.

2. TEST EQUIPMENT

2.01   The test equipment required for troubleshooting the DATASPEED Printer consists of a DATS 1 Simulator and a KS14510 Volt-Ohm-Milliammeter or equivalent.

3. TROUBLESHOOTING

3.01   The preliminary tests are intended to locate the source of trouble either in the logic and printer area or the data set and interface area. They are also intended to eliminate minor troubles caused by fuses, lamps, and the paper supply.

3.02   The trouble charts are arranged to provide step by step procedures to isolate the trouble to a particular component or circuit card. This is accomplished by use of the DATS 1 Simulator in conjunction with a KS14510 Volt-Ohm-Milliammeter or equivalent.

3.03   Because of the difficulty encountered in locating failures in industrial microcircuits and replacing them on location, it is intended that defective circuit cards will be replaced by the serviceman and will be repaired at a central location.

   CAUTION: DO NOT TOUCH PLATEN AREA OR HIGH VOLTAGE CONNECTORS OR TERMINALS WHILE POWER IS ON. DISCONNECT ALL POWER FROM THE SET BEFORE REMOVING OR REPLACING CIRCUIT CARDS.

PRELIMINARY TESTS

3.04   The following steps are used primarily for the troubleshooting of fuses, lamps, and paper jams.

   (a)   Check for 117 v ac at the external power source and that the power cord is properly connected at the rear of the set.

   (b)   Check the input ac, and motor and fan fuses adjacent to the switch in the front of the cabinet.

   (c)   Check all DAPS fuses. Check interlock fuse on paper transport.

   (d)   Check the paper supply and the low paper switch. Make sure that the paper is properly installed in the transport, and that there is no paper jam.

   (e)   Place the ac switch in the ON position, close the enclosure door, and depress the PAPER ADVANCE key. The PAPER ADVANCE lamp and PRINTER ON lamp should light and the printer should feed paper.

   (f)   When the PRINTER ON key is depressed, the lamp should light if the interlocks are closed.

(g) Within 30 seconds, the READY lamp should light. If not, depress the READY key to test. Failure of the READY lamp to remain lit indicates trouble in either the paper jam circuit, the DAPS, or the tracing drive. These will be covered in the trouble charts.

(h) Check the BREAK, TRANS START, and PAPER ALARM lamps by depressing each key.

(i) Place a call to the test center and request a transmission. Be sure to specify the length of time.

(j) If the station is equipped with special modifications (Discrete Calling Generator, etc), arrange to test these functions with a transmitter similarly equipped.

(k) Check the copy and return the station to service.

SPECIAL CASES

3.05 In the event that the trouble is caused by something other than a fuse, lamp, or paper jam, and it is not clearly defined, the following steps should be taken.

(a) Open and remove the front door of the cabinet.

(b) Place the ac switch in the OFF position, release the thumbscrews securing the DAD and DAIF module, slide the module forward, and remove the DAIF/AA1 connector.

(c) Connect the DATS/A1 connector to the DAIF/AA1 connector (not to the module), and connect the Volt-Ohm-Milliammeter to the DATS meter terminals. The DATS switches should be: REC. MSG. — OFF; CHAR. AVAIL. — OFF; OUTPUT — L.V.; POLARITY — NORM. Position of the CODE LEVEL switches is not critical. The module may be returned to the cabinet if desired.

(d) Place the ac switch on the cabinet in the ON position and place the cabinet interlock switch in the bypass position. The READY lamp should light within 30 seconds.

(e) Check the voltages at the DATS 1 test points using the red, low voltage test probe of the DATS 1 (polarity to the meter may be reversed for -12 v dc by use of the POLARITY switch). The meter must be set to the appropriate voltage range (+48 v will not be present for up to 30 seconds).

CAUTION: DO NOT ATTEMPT ANY FURTHER TEST WITH THE DATS 1 IF THE LOGIC VOLTAGES (+18 v, +6 v, -12 v) ARE NOT PRESENT AND CORRECT. NEVER ATTEMPT TO USE THE DATS 1 SIMULATOR PROBES UNLESS THE UNIT IS PROPERLY CONNECTED AND THE POWER IS ON.

(f) Select a printing character by use of the CODE LEVEL switches and place the REC. MSG switch in the ON position. Printer ON lamp, motors, fans, and DAPS lamp should turn on. Printer may line feed once. (In early sets, fans and copy light will turn on with the ac switch.)

(g) Place CHAR. AVAIL. switch to ON position. Printer should print continuous lines of selected character.

(h) Place CHAR. AVAIL. switch to MAN. position. Depress and release MAN. STEP pushbutton. Printer should print selected character once for each operation.

(i) If a failure occurs during this procedure refer to the trouble charts. If the set operates satisfactorily, trouble is in data set or interface area. Check the data set through the test center to isolate the trouble. The charts indicate the procedure for locating interface troubles.

4. TROUBLE CHARTS

4.01 Following are charts covering most trouble observations and their probable causes. Also included are figures showing all test points and connector pins at the front and rear of the DAD and DAG modules. Signals should be checked at these points only, as described in the trouble charts.

CAUTION: USE EXTREME CARE WHEN REMOVING OR REPLACING REAR COVERS TO AVOID SHORTING TERMINALS.

CHART 1

"DATASPEED" PRINTER (RO) STATION TROUBLESHOOTING

NO.	TROUBLE OBSERVED	ANALYSIS AND PROBABLE CAUSE
1.	PRINTER ON lamp does not light when key is depressed.	Open interlock switch in front door, rear door, or cover. Operate cabinet bypass switch and or bypass cover with TP330131 assembly and recheck.
2.	READY lamp does not remain lit when key is depressed and released.	1. Open interlock. See item no. 1. 2. Paper out or paper jam. 3. Failure in power supply check for 48 volts at test point on DATS 1. 4. Circuit failure on tracing drive. Check for 48 volts at DAD/C203. Check also for 48 volts at DAD/C205. If both are present after READY key has been depressed replace TP322146 Printer Drive circuit card. Operate the RECEIVE MESSAGE switch on the DATS 1 and observe whether the HV ON light on the DAPS turns on. If it does, and if a circuit card is not available immediately, the set may be returned to service and will operate without the READY light turning on until a circuit card becomes available.
3.	READY lamp extinguishes when RECEIVE MESSAGE switch is turned on.	1. Over voltage condition. Remove the DAR/A2 connector from the manifold. Operate the output switch on the DATS 1 to the HV position and insert the black high voltage probe of the DATS 1 into pin 1 of the DAR/A2. Select the twelve volt range dc on the volt-ohm-milliammeter. Operate the RECEIVE MESSAGE switch on the DATS 1 to ON. Depress and hold the READY key. The meter should read approximately 1.9 volts. Release the READY key and return the RECEIVE MESSAGE key to the OFF position. Repeat the above procedure for pin 3, 0.8 volts; pin 5, 0.8 volts; pin 6, 1.9 volts; pin 8, 1.35 volts; pin 10, 2.85 volts. If pin 8 reads 2.2 volts depress the PAPER ADVANCE key and release. If these voltages are not observed, replace the appropriate high voltage tube on the TP322146 Printer Drive and again check the voltages. If over voltage is still observed, replace the TP322146 Printer Drive. 2. Defective over voltage circuit in DAPS. With the low voltage probe on DAD/C117 turn the RECEIVE MESSAGE switch ON, depress the READY pushbutton, and observe the voltmeter. If voltage is greater than 5v dc (up to 12v dc) replace the DAPS Power Supply.

"DATASPEED" PRINTER (RO) STATION TROUBLESHOOTING (continued)

NO.	TROUBLE OBSERVED	ANALYSIS AND PROBABLE CAUSE
4.	Distorted or missing characters in <u>one</u> column.	Dirty jet or electrode; remove the manifold cover and select a printing character in the code level switches of the DATS 1. Operate RECEIVE MESSAGE switch to ON, character available to ON, and use the nozzle wiper to remove the foreign material or blockage in the jet or electrodes. Do not use any paper, brushes or similar articles to clean the electrodes and jets. CAUTION: TAKE EXTREME CARE THAT NO FOREIGN OBJECTS OR FOREIGN MATERIAL FALL INTO THE TANK WHEN THE COVER IS REMOVED.
5.	Distorted printing of pairs of characters.	Improper spacing between manifold and paper transport mechanism; check with GO-NO-GO gauge and correct as necessary.
6.	Distorted printing -- narrow characters.	Defective horizontal amplifier tube or circuit; remove DAR/A2 connector from manifold, place output switch on DATS 1 HV position and insert the high voltage probe of DATS 1 into pin 8 of the DAR/A2 connector. Operate the CHARACTER AVAILABLE switch to MAN., depress and release the PAPER ADVANCE button on the printer and operate the RECEIVE MESSAGE switch on the DATS 1 to ON. The meter should be set on the 12-volt dc scale. Observe a 1.35 volt reading on the voltmeter. Depress the MANUAL STEP pushbutton and release it once. On the DATS 1 the meter reading should be 2.2 volts. Operate the RECEIVE MESSAGE switch to OFF, place the high voltage probe in pin 10 of the DAR/A2 connector and turn the RECEIVE MESSAGE switch ON. Depress and release the PAPER ADVANCE on the printer and observe the voltage on the meter to be 2.85 volts. Depress and release the MANUAL STEP pushbutton once, observe the meter reading to be 2.0 volts. Operate the RECEIVE MESSAGE switch to OFF and remove the high voltage probe from the DAR/A2 connector. If these voltages are not observed during this test, replace the appropriate horizontal amplifier tube and recheck. If the voltages are not observed with a good tube, replace the TP322146 Printer Drive circuit card.
7.	Defective printing -- missing or distorted pairs of characters across the line.	Defective vertical amplifier tube or circuit; replace appropriate vertical amplifier tube and recheck. If condition persists, replace the TP322146 Printer Drive circuit card.
8.	Defective printing -- missing pair or pairs of characters.	Defective reed switch or driver circuit; with power OFF, ground pin A311 in the DAG front panel, taking care that no other pins are grounded. Turn the ac power ON. When the READY lamp comes up operate

"DATASPEED" PRINTER (RO) STATION TROUBLESHOOTING (continued)

NO.	TROUBLE OBSERVED	ANALYSIS AND PROBABLE CAUSE
		the RECEIVE MESSAGE switch on the DATS 1 to ON, the CHARACTER AVAILABLE switch to MAN., depress the PAPER ADVANCE button and release, and operate the output switch to HV. Using the high voltage probe and the MANUAL STEP switch, step the printer to the suspected column and observe 550 volts at the rear of the Spacing Drive circuit card TP322145. The meter reading will be 0.55 volts on the 3-volt scale. If 550 volts is not observed, replace the circuit card. Take care that the 550 volts is present at the suspected column and not during the printing of the two previous characters. If 550 volts does appear, the problem could be a clogged jet or blocked electrodes which should be cleaned with a nozzle wiper.
9.	Overprinting.	Shorted reed switch; with power OFF carefully ground the DAG/A311 terminal in the front of the character generator. Turn the ac switch ON. When the READY lamp lights, operate the RECEIVE MESSAGE switch in the DATS 1 to operate, the output switch to HV and operate the CHARACTER AVAILABLE switch to ON. Select a printing character in the code level switches and using the high voltage probe check for 0.55 volts at the output of the suspected reed at the rear of the TP322145 Spacing Drive circuit card. If 0.55 volts is present at all times, the reed is shorted and the circuit card must be replaced. If 0.55 volts does not appear continuously, manually operate the printer through a line to determine whether 0.55 volts appears more than once per line. This may indicate a defective circuit pack on the spacing drive circuit card or a defective circuit pack on the Output Logic assembly TP322150. Use the low voltage probe with the DATS output switch in the LV position and, referring to the assembly drawing for the spacing drive circuit card, step printer to the suspected defective column. Probe points A, B, C, D, and L to determine whether the circuit pack is turning on at the proper time or whether it is being turned on improperly. This will indicate whether the circuit pack on the TP322145 Spacing Drive assembly is defective or whether the circuit pack on the TP322150 circuit board assembly is defective. Replace as necessary.
10.	Single particular character missing from all columns or distorted in all columns.	Open diode on memory program board or loose tab on memory sheet; check and repair and/or replace as necessary.
11.	Several particular characters missing or distorted in all columns.	Defective X or Y drivers on TP322151 Input Logic circuit board assembly in the character generator; using the DATS 1 check all printing characters to determine whether a particular X or particular Y driver is associated with the loss of the characters

"DATASPEED" PRINTER (RO) STATION TROUBLESHOOTING (continued)

NO.	TROUBLE OBSERVED	ANALYSIS AND PROBABLE CAUSE
		involved. If so, replace the TP322151 circuit board assembly.
12.	No line feed - set does not line feed from PAPER ADVANCE pushbutton or when receiving traffic.	Motor control circuit card in paper transport mechanism defective; depress PAPER ADVANCE pushbutton and check that motors in paper transport turn on. Listen for sound of line feed escapement operating. If the motors turn on, the card is not defective. If the motors do not turn on, check for 117 volts ac at pins 8 and 9 of the DAT/A1 connector on the side of the transport, and also check for 48 volts dc at pin 14 of the DAT/A1 connector when the PAPER ADVANCE pushbutton is depressed. If both voltages are present, replace the circuit card in the transport.
13.	No line feed - transport motors turn on but set will not line feed from the PAPER ADVANCE push-button or while receiving traffic.	Binds in line feed mechanism or defective line feed circuit driver card; if with the PAPER ADVANCE pushbutton depressed and motors on, the sound of the escapement mechanism cannot be heard, replace the line feed driver circuit card located in the Ink Heater and Line Feed Assembly. If the escapement operates, remove the line feed motor drive belt to determine if the motor is turning on. If so, check for binds in the line feed mechanism.
14.	No line feed - set will line feed from PAPER ADVANCE pushbutton but will not line feed during receiving traffic.	Defective ASCII or Baudot control board in character generator; set up a line feed character in the code level switches of the DATS 1. Operate the output switch to PULSE. Using the low voltage probe observe pin 125 at the front of the DAG output logic assembly board and operate the CHARACTER AVAILABLE switch to ON. With the CHARACTER AVAILABLE switch ON the meter reading should be approximately 3 volts on the 12-volt scale. With the CHARACTER AVAILABLE switch OFF, the meter will switch to either 0 or +6 volts.
15.	Very light printing or no printing.	Defective ink heater or ink heater overheated and thermostat tripped; remove the recorder cover and check to see if the manual reset switch has been tripped, and reset if necessary. Within 15 minutes the manifold ink heater should have brought the ink up to the proper temperature. If not, replace the recorder.
16.	No printing.	Loss of high voltage; operate the RECEIVE MESSAGE switch to ON. Operate the OUTPUT switch to HV with the meter set to the 12-volt dc scale. Use the high voltage probe to measure approximately 6 volts on the printer platen, approximately 4 volts at the mask. Operate the polarity switch to INVERTED and measure approximately 1.8 volts at the manifold. If none of these voltages are present, check the 167-volt

"DATASPEED" PRINTER (RO) STATION TROUBLESHOOTING (continued)

NO.	TROUBLE OBSERVED	ANALYSIS AND PROBABLE CAUSE
		ac from the DAPS power supply. If this voltage is present replace the high voltage power supply in the transport. If only the manifold voltage is missing, with the RECEIVE MESSAGE switch in the OFF position, remove the high voltage cap and regulator assembly. Check the 2.5 kv output of the high voltage power supply. It should read approximately 2 volts on the volt-ohm-milliammeter with the polarity switch in the INVERTED position. If this voltage is present replace the high voltage cap and regulator assembly. If this voltage is not present replace the high voltage power supply.
17.	No printing or printing fades out after several lines.	Defective ink pump or low ink; with the RECEIVE MESSAGE switch OFF check ink level and listen for pump operating. Ink should be flowing from overflow ports at both ends of the electrode assembly.

CHART 2

"DATASPEED" PRINTER INTERFACE TROUBLESHOOTING

Note: The DATS 1 cannot be used when the interface is connected to the DATASPEED Printer. Check first that the RO printer will operate from the DATS 1 and that the data set is operating correctly.

NO.	TROUBLE OBSERVED	ANALYSIS AND PROBABLE CAUSE
1.	Serial interface - set will not answer a call or disconnects in the middle of a call.	Defective TP322132 Data Set Control circuit card. With set in idle condition, pins 24, 25, 26, 27, and 29 should be negative. Pins 4, 12, and 35 should be logic ground. Pins 16, 18, 23, 30, and 33 should be +6v dc and pin 32 should be 48v dc. Pin 28 should be floating and go to logic ground when the high voltage is turned ON. Refer to 8251/AAA WD and TP322132 drawing and determine that the interlock, low paper, and BREAK switches cause the proper switching function. Attempt to receive a message and determine that the proper inputs switch. An alternate mark-space signal should generate approximately 3v dc at pin 16.
2.	Serial interface - set answers but does not print.	Check Data Set control pin 16 per item no. 1. If data is present and high voltage is on, cause is probably Receiver Distributor Control.
3.	Serial interface - set fails to print some characters or will print wrong characters.	Replace Shift Register and recheck.
4.	Parallel interface - all trouble symptoms.	All logic is contained on one card. Replace as necessary.

DAD   **D AG**
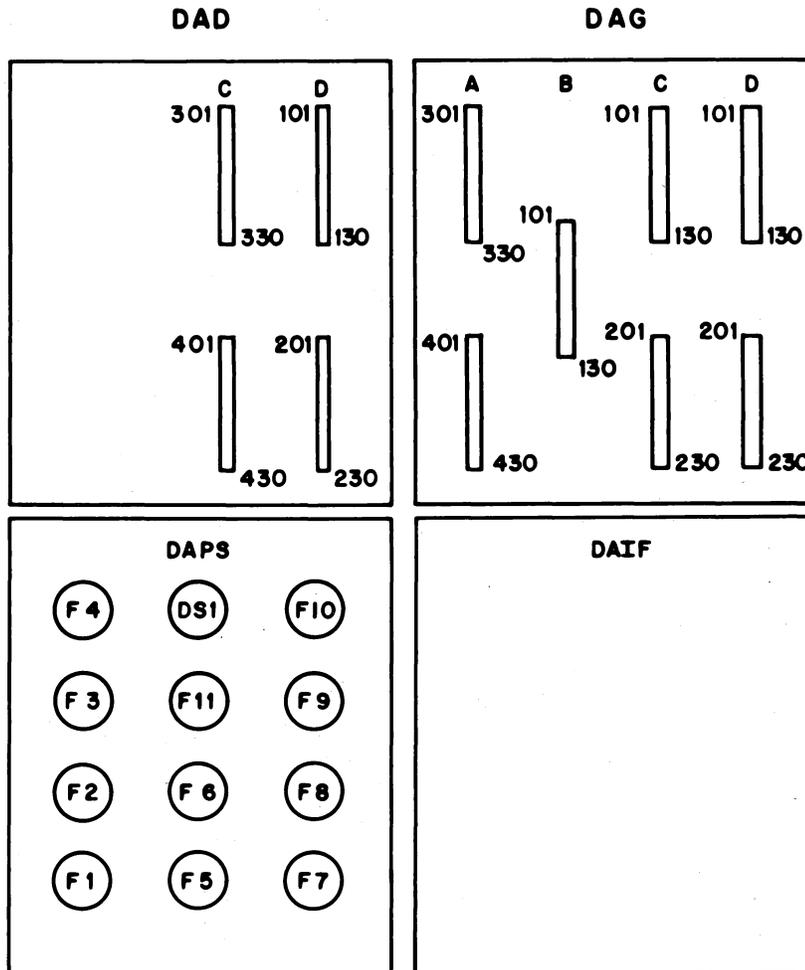
Figure 1 - Front Connectors for DATASPEED Printer (RO) Modules

DAG

DAD

DAG

D   DAG   A

301   330   101   130

401   430   201   230

DAD

D   C   DAD   A

301   330   101   130

401   430   201   230   201   210

DAPS

A3

01   10   A1

32   16

A2

17   01
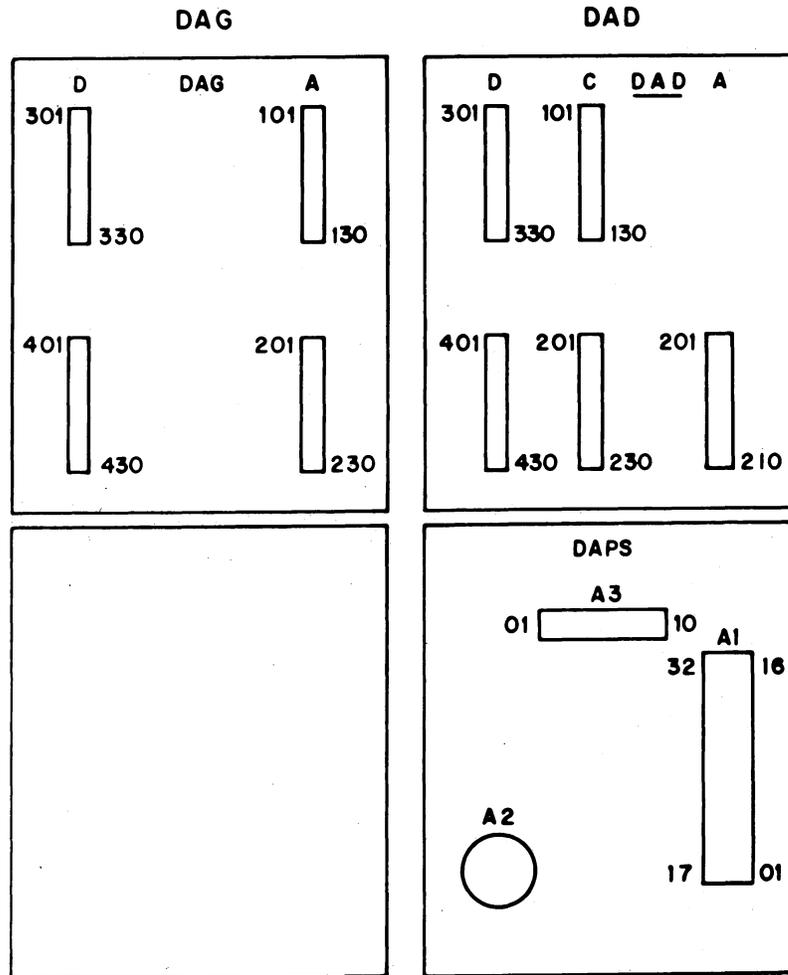
Figure 2 - Rear Connectors for DATASPEED Printer (RO) Modules

C 3

```
 1        2
 3        4
 5        6
 7        8
 9       10
11       12
13       14
15       16
17       18
19       20
```
VI FOLLOWER ⌠ 21   22
OUTPUT (VIU) ⌡ 23   24
```
25       26
```
V2 FOLLOWER ⌠ 27   28
OUTPUT (VIL) ⌡ 29   30

C 4

```
 1        2
 3        4
 5        6
 7        8
```
V3 FOLLOWER ⌠ 9   10
OUTPUT (V2U) ⌡ 11   12
```
13       14
```
V4 FOLLOWER ⌠ 15   16
OUTPUT (V2L) ⌡ 17   18
```
19       20
```
V5 FOLLOWER ⌠ 21   22
OUTPUT (HR) ⌡ 23   24
```
25       26
```
V6 FOLLOWER ⌠ 27   28
OUTPUT (HL) ⌡ 29   30
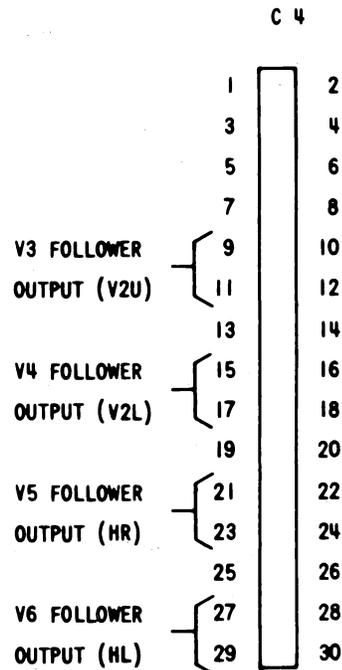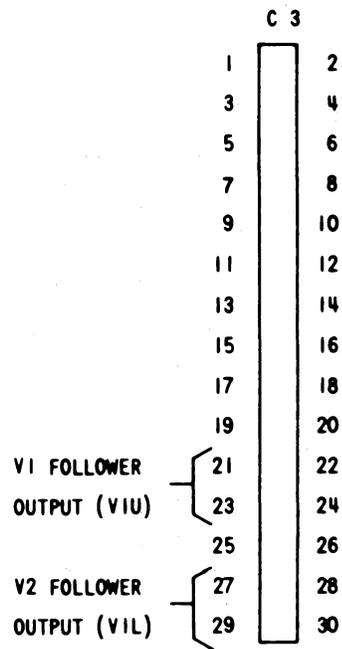
Figure 3 - Printer Drive Test Points - Front of DAD Module

D 1

EVEN	1	2	ODD
LOGIC CKT 33	3	4	LOGIC CKT 18
LOGIC CKT 37	5	6	LOGIC CKT 26
LOGIC CKT 34	7	8	LOGIC CKT 17
LOGIC CKT 38	9	10	LOGIC CKT 25
LOGIC CKT 35	11	12	LOGIC CKT 16
LOGIC CKT 39	13	14	LOGIC CKT 8
LOGIC CKT 36	15	16	LOGIC CKT 15
LOGIC CKT 40	17	18	LOGIC CKT 7
LOGIC CKT 24	19	20	LOGIC CKT 14
LOGIC CKT 32	21	22	LOGIC CKT 6
LOGIC CKT 23	23	24	LOGIC CKT 13
LOGIC CKT 31	25	26	LOGIC CKT 5
LOGIC CKT 22	27	28	LOGIC CKT 12
LOGIC CKT 30	29	30	LOGIC CKT 4

D 2

LOGIC CKT 21	1	2	LOGIC CKT 11
LOGIC CKT 29	3	4	LOGIC CKT 3
LOGIC CKT 20	5	6	LOGIC CKT 10
LOGIC CKT 28	7	8	LOGIC CKT 2
LOGIC CKT 19	9	10	LOGIC CKT 9
LOGIC CKT 27	11	12	LOGIC CKT 1
	13	14	
	15	16	
	17	18	
	19	20	
	21	22	
	23	24	
	25	26	
	27	28	
	29	30	

Figure 4 - Spacing Drive Test Points - Front of DAD Module

A3

(DAG/D123)	C.R.	1 2
(DAG/D125)	L.F.	3 4
(DAG/D127)	PAPER ADV.	5 6
(DAG/D129)	MEM.CLR. $\overline{MC}$	7 8
(DAG/D108)	OSCILLATOR	9 10
(DAG/D121)	HORIZ. TAB	11 12
(DAG/D104)	PRINT INH.	13 14
(DAG/D115)	REED INH.	15 16
(DAG/D112)	BIT $\overline{5M}$	17 18
(DAG/D113)	BIT 5	19 20
(DAG/D103)	START OF CYCLE	21 22
(DAG/D110)	PRINT INTERVAL	23 24
		25 26
		27 28
		29 30

A4

		1 2	Y1-1	(DAG/B129)
		3 4	Y1-2	(DAG/B127)
		5 6	Y2-1	(DAG/B125)
		7 8	Y2-2	(DAG/B123)
(DAG/B121)	Y3-1	9 10	X16	(DAG/B101)
(DAG/B119)	Y3-2	11 12	X15	(DAG/B102)
(DAG/B117)	Y4-1	13 14	X13	(DAG/B106)
(DAG/B115)	Y4-2	15 16	X14	(DAG/B104)
(DAG/B118)	X7	17 18	X2	(DAG/B128)
(DAG/B120)	X6	19 20	X1	(DAG/B130)
(DAG/B112)	X9	21 22	X3	(DAG/B126)
(DAG/B114)	X10	23 24	X4	(DAG/B124)
(DAG/B110)	X11	25 26	X8	(DAG/B116)
(DAG/B108)	X12	27 28	X5	(DAG/B122)
		29 30		

Figure 5 - Input Logic Connector Pins - Front of DAG Module

BI

(DAG/A410)	X16	1	2	X15	(DAG/A412)
		3	4	X14	(DAG/A416)
		5	6	X13	(DAG/A414)
		7	8	X12	(DAG/A427)
		9	10	X11	(DAG/A425)
		11	12	X10	(DAG/A421)
		13	14	X9	(DAG/A423)
(DAG/A415)	Y4-2	15	16	X8	(DAG/A426)
(DAG/A413)	Y4-1	17	18	X7	(DAG/A417)
(DAG/A411)	Y3-2	19	20	X6	(DAG/A419)
(DAG/A409)	Y3-1	21	22	X5	(DAG/A428)
(DAG/A408)	Y2-2	23	24	X4	(DAG/A424)
(DAG/A406)	Y2-1	25	26	X3	(DAG/A422)
(DAG/A404)	Y1-2	27	28	X2	(DAG/A418)
(DAG/A402)	Y1-1	29	30	X1	(DAG/A420)

Figure 6 - Program Board Connector Pins - Front of DAG Module

C1

(DAG/D201)	DC COM	1	2	Z16	(DAG/D215)
(DAG/D229)	H4	3	4	Z14	(DAG/D228)
(DAG/D227)	H2	5	6	Z12	(DAG/D224)
(DAG/D225)	H1	7	8	Z10	(DAG/D220)
(DAG/D223)	V8	9	10	Z8	(DAG/D216)
(DAG/D221)	V4	11	12	Z6	(DAG/D212)
(DAG/D219)	V2	13	14	Z4	(DAG/D208)
(DAG/D217)	V1	15	16	Z2	(DAG/D204)
		17	18		
		19	20		
		21	22		
		23	24		
		25	26		
		27	28		
		29	30		

C2

		1	2		
		2	4		
		5	6		
		7	8		
		9	10		
		11	12		
		13	14		
(DAG/D217)	V1	15	16	Z1	(DAG/D202)
(DAG/D219)	V2	17	18	Z3	(DAG/D206)
(DAG/D221)	V4	19	20	Z5	(DAG/D210)
(DAG/D223)	V8	21	22	Z7	(DAG/D214)
(DAG/D225)	H1	23	24	Z9	(DAG/D218)
(DAG/D227)	H2	25	26	Z11	(DAG/D222)
(DAG/D229)	H4	27	28	Z13	(DAG/D226)
(DAG/D201)	DC COM	29	30	Z15	(DAG/D230)

Figure 7 - Output Board Connector Pins - Front of DAG Module

D1

1	2
(DAG/A321) START OF CYCLE 3	4 PRINT INHIBIT (DAG/A313)
5	6
7	8 OSCILLATOR (DAG/A309)
9	10 PRINT INTERVAL (DAG/A323)
11	12 BIT $\overline{5M}$ (DAG/A317)
(DAG/A319) BIT 5 13	14
(DAG/A315) REED INH 15	16
17	18
19	20
(DAG/A311) HORIZ. TAB 21	22
(DAG/A301) C.R. 23	24
(DAG/A303) L.F. 25	26
(DAG/A305) PAPER ADV. 27	28
(DAG/A307) MEM. CLR. $\overline{MC}$ 29	30

D2

(DAG/C101-C209) DC COM 1	2 Z1 (DAG/C216)
3	4 Z2 (DAG/C116)
5	6 Z3 (DAG/C218)
7	8 Z4 (DAG/C114)
9	10 Z5 (DAG/C220)
11	12 Z6 (DAG/C112)
13	14 Z7 (DAG/C222)
(DAG/C102) Z16 15	16 Z8 (DAG/C110)
(DAG/C114-C215) V1 17	18 Z9 (DAG/C224)
(DAG/C113-C217) V2 19	20 Z10 (DAG/C108)
(DAG/C111-C219) V4 21	22 Z11 (DAG/C226)
(DAG/C109-C221) V8 23	24 Z12 (DAG/C106)
(DAG/C107-C223) H1 25	26 Z13 (DAG/C228)
(DAG/C105-C225) H2 27	28 Z14 (DAG/C104)
(DAG/C103-C227) H4 29	30 Z15 (DAG/C230)

Figure 8 - Output Logic Connector Pins - Front of DAG Module

D 3

I	2
3	4	+6V DC
5	6	DC COM
7	8
9	10
11	12	MONOSTABLE SUPPLY (DAG/A118)
13	14
15	16
17	18
19	20
21	22
23	24	+48V DC
25	26
27	28	+6V DC
29	30	DC COM

D 4

Left	Pin	Pin	Right
(DAG/D417) HORIZ. TAB	I	2	
(CP1/18-DAD/C228) PAPER ADV.	3	4	
(DAD/D304) COLUMN SELECT "E"	5	6	COLUMN SELECT $\overline{9}$ (DAD/D307-DAG/D422)
(DAD/D315) COLUMN SELECT "D"	7	8	COLUMN SELECT 9 (DAD/D306)
(DAD/D303) COLUMN SELECT "C"	9	10	COLUMN SELECT $\overline{8}$ (DAD/D309)
(DAD/D305) COLUMN SELECT "B"	11	12	COLUMN SELECT 8 (DAD/D308)
(DAD/D313) COLUMN SELECT "A"	13	14	COLUMN SELECT $\overline{7}$ (DAD/D311)
	15	16	COLUMN SELECT 7 (DAD/D310)
(DAG/D401) HORIZ. TAB	17	18	BIT 6 (L/R) (DAD/C223)
(DAD/D301) HORIZ. TAB ODD	19	20	LINE FEED (DAC/A116-DAD/C230)
(DAD/D302) HORIZ. TAB EVEN	21	22	PAPER ADV. CLOCK $\overline{(9)}$ (DAG/D406)
(DAD/C222) JET DOWN	23	24	VERT 8 (DAD/C215)
(DAD/C221) VERT I	25	26	HORIZ. I (DAD/C229)
(DAD/C219) VERT 2	27	28	HORIZ. 2 (DAD/C227)
(DAD/C217) VERT 4	29	30	HORIZ. 4 (DAD/C225)

Figure 9 - Output Logic Connector Pins - Rear of DAG Module

A1

1	2	48V DC
3	4	48V DC
5	6	DC COM
7	8	DC COM
9	10	
11	12	
13	14	
15	16	
17	18	MONOSTABLE SUPPLY (DAG/D312)
19	20	READY (DAPS/A111-CP1/08)
21	22	
23	24	
25	26	
27	28	
29	30	

+6V DC → 13
+6V DC → 15

A2

(DAIF/AA109) CHAR. AVAIL.	1	2
(DAIF/AA111) LEVEL 1 IN	3	4
(DAIF/AA112) LEVEL 2 IN	5	6
(DAIF/AA113) LEVEL 3 IN	7	8
(DAIF/AA114) LEVEL 4 IN	9	10
(DAIF/AA115) LEVEL 5 IN	11	12
(DAIF/AA106) LEVEL 6 IN	13	14
(DAIF/AA107) LEVEL 7 IN	15	16
	17	18
	19	20
	21	22
	23	24
	25	26
	27	28
	29	30

Figure 10 - Input Logic Connector Pins - Rear of DAG Module

D3

(DAG/D419)	ODD		1	2		EVEN	(DAG/D421)
(DAG/D409)	COLUMN SELECT "C"		3	4		COLUMN SELECT "E"	(DAG/D405)
(DAG/D411)	COLUMN SELECT "B"		5	6		COLUMN SELECT 9	(DAG/D408)
(DAG/D406)	COLUMN SELECT $\overline{9}$		7	8		COLUMN SELECT 8	(DAG/D412)
(DAG/D410)	COLUMN SELECT $\overline{8}$		9	10		COLUMN SELECT 7	(DAG/D416)
(DAG/D414)	COLUMN SELECT $\overline{7}$		11	12		+6V DC	
(DAG/D413)	COLUMN SELECT "A"		13	14			
(DAG/D407)	COLUMN SELECT "D"		15	16		DC COM	
	DC COM		17	18		550V DC	
			19	20		VALVE 33	(DAR/A341)
			21	22		VALVE 37	(DAR/A337)
(DAR/A318)	VALVE 26		23	24		VALVE 34	(DAR/A340)
(DAR/A327)	VALVE 17		25	26		VALVE 38	(DAR/A336)
(DAR/A319)	VALVE 25		27	28		VALVE 35	(DAR/A339)
(DAR/A328)	VALVE 16		29	30		VALVE 39	(DAR/A335)

D4

(DAR/A306)	VALVE 8		1	2		VALVE 36	(DAR/A338)
(DAR/A329)	VALVE 15		3	4		VALVE 40	(DAR/A334)
(DAR/A307)	VALVE 7		5	6		VALVE 24	(DAR/A320)
(DAR/A330)	VALVE 14		7	8		VALVE 32	(DAR/A342)
(DAR/A308)	VALVE 6		9	10		VALVE 23	(DAR/A321)
(DAR/A301)	VALVE 13		11	12		VALVE 31	(DAR/A343)
(DAR/A309)	VALVE 5		13	14		VALVE 22	(DAR/A322)
(DAR/A302)	VALVE 12		15	16		VALVE 30	(DAR/A344)
(DAR/A310)	VALVE 4		17	18		VALVE 21	(DAR/A323)
(DAR/A303)	VALVE 11		19	20		VALVE 29	(DAR/A345)
(DAR/A311)	VALVE 3		21	22		VALVE 20	(DAR/A324)
(DAR/A304)	VALVE 10		23	24		VALVE 28	(DAR/A346)
(DAR/A312)	VALVE 2		25	26		VALVE 19	(DAR/A325)
(DAR/A305)	VALVE 9		27	28		VALVE 27	(DAR/A347)
(DAR/A313)	VALVE 1		29	30		VALVE 18	(DAR/A326)

Figure 11 - Spacing Drive Connector Pins - Rear of DAD Module

C1

DC COM	1	2
	3	4
	5	6
-12V DC	7	8
+30V DC	9	10
+120V DC	11	12
	13	14
+18V DC	15	16
(DAPS/A123) OVER VOLTAGE	17	18
-6V DC	19	20
+120V DC	21	22
+120V DC	23	24
6.3V AC	25	26
6.3V AC	27	28
+6V DC	29	30

C2

	1	2	SPARE (DA1F/AA137)
(CP1/15) READY LAMP	3	4	
(DAPS/A113) REC. MSG.	5	6	
(DAG/D414) VERT.CNTL. $\overline{1\text{-}2}$	7	8	
(DA1F/AA126) REC. MSG.	9	10	
	11	12	
(DAG/D416) VERT.CNTL. 1-2	13	14	OVER VOLTAGE RESET (CP1/16)
(DAG/D424) V8	15	16	
(DAG/D429) V4	17	18	
(DAG/D427) V2	19	20	
(DAG/D425) V1	21	22	JET DOWN (DAG/D423)
(DAG/D418) L/R	23	24	
(DAG/D430) H4	25	26	
(DAG/D428) H2	27	28	PAPER ADV. (CP1/18)
(DAG/D426) H1	29	30	LINE FEED (DAG/D420)

Figure 12 - Printer Drive Connector Pins - Rear of DAD Module