

the digital group

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FLOPPY CABLING PROCEDURE SHUGART

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CABLING PROCEDURE

The cables you have received provide all connections for signals from the Floppy Disk Controller Card, through the backplane of the CPU Cabinet, to each of the individual drives. The exact cabling arrangement is determined by the number and type of drives implemented. Figures and tables have been provided for connecting both Innovex and Shugart Drives. For Innovex Drives, Table 1 provides the detailed pin-for-pin information for the controller card, the backplane and the drive connector paddlecard. For example, pin 4 on the controller card is connected to pin 19 of the CPU backplane, through the flat cable to drive connector pin 4 (Write Fault Reset). Numbering on the CPU backplane is from left to right when viewed from inside the cabinet. Table 2 provides the same information applying to Shugart Drives and to the Drive connector J1. Figure 8 applies to both Shugart and Innovex Drives. Figure 9 shows the drive cable assembly to connect an Innovex drive; Figure 10 shows the drive cable assembly to install a Shugart Drive in a system detailing connections between the CPU cabinet (disk controller card) and the drive connector on the rear of the drive.

To connect either Shugart or Innovex Drives follow the instructions steps corresponding to the drives you have received. If you have any questions or problems contact the Digital Group or a Digital Group dealer.

Shugart Cabling Steps

1. Using Figure 8 and Table 2, install the Molex connectors from the back of the motherboard to the CPU cabinet backplane. A 22-pin edge connector is provided for the backplane. Note that optional I/O pins on the drive are connected to grounded pins on the CPU backplane. To use these I/O pins, remove the corresponding wire from the Molex cable.
2. Using an ohmmeter, verify all signal connections to eliminate bad or wrong connections.
3. Connect the flat cable to the CPU backplane and the individual drives. (See Figure 6.) A Shugart PC board connector and sufficient cable are provided for each drive when you order a complete system. You must specify the number of drives in your system when ordering cable to assure getting the right number of drive connections. **Be sure that the drive connector is properly connected to the drive electronics board connector, J1. The label on drive connector pin 2 must face pin 2 on drive electronics PC board connector J1. Reversing this cable may cause damage to the drive by applying voltage to an incorrect pin.** The CPU backplane paddlecard should be installed by the labeling on the paddlecard. For each drive used set the device select jumper on the Shugart PC board. Jumpering is accomplished through use of a 2-position shorting plug on J1. See Figure 3 in the Floppy Disk Documentation or User Options section in the Shugart OEM or Theory of Operation manual.
4. In order for the drive to function properly in a multi-drive system, the last drive on the interface must have four lines terminated. As shipped from the factory, drives have jumpers on terminator posts T3, T4, T5, and T6. Remove these shorting plugs from all drives except the last one on the interface.
5. Using an ohmmeter, verify all signal connections between the CPU backplane and the drive connector using Table 1 as a guide.

Innovex Cabling Steps

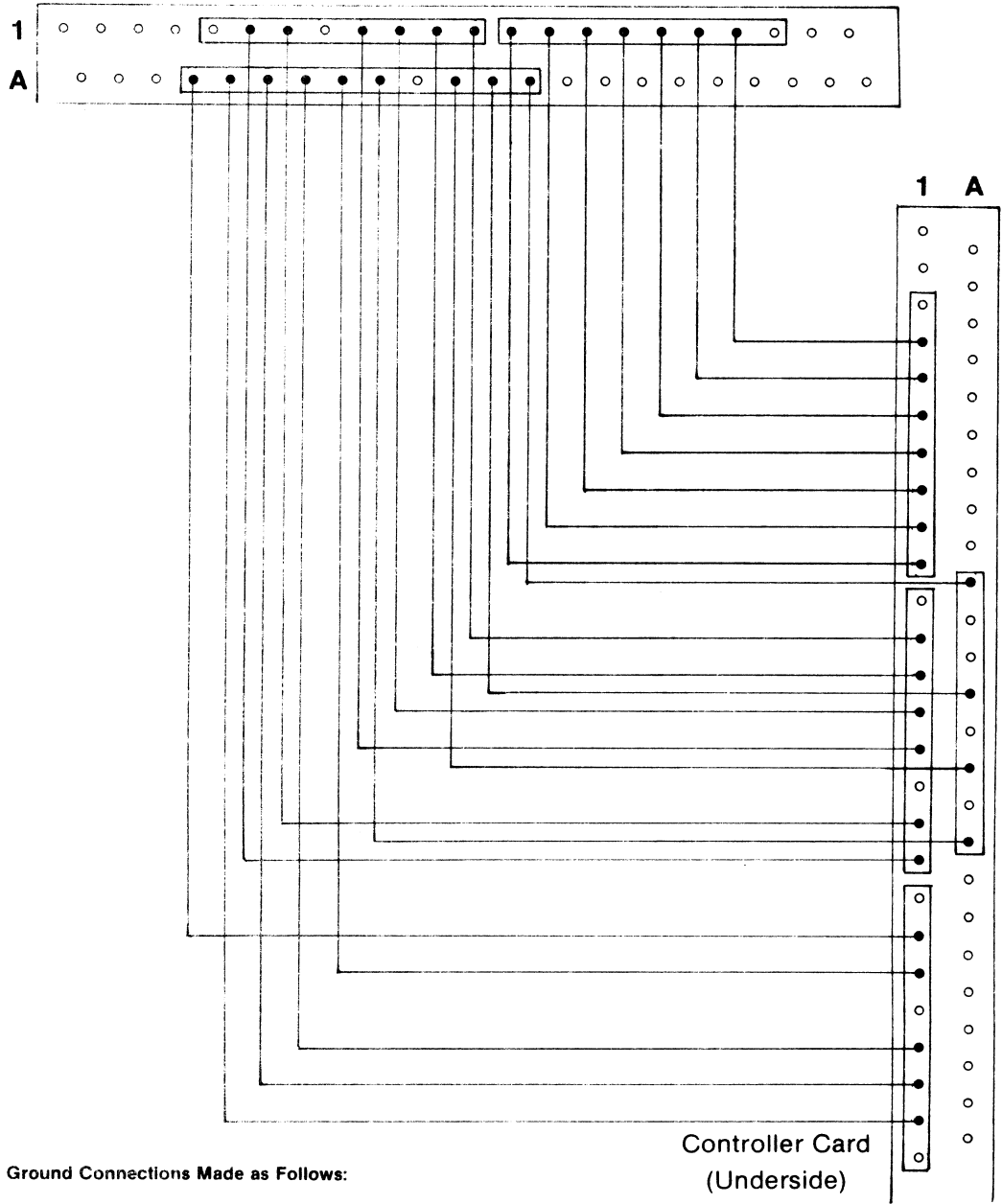
1. Using Figure 8 and Table 1, install the Molex connectors from the back of the motherboard to the CPU cabinet backplane. A 22-pin edge connector is provided for the backplane.
2. Using an ohmmeter, verify all signal connections to eliminate bad or wrong connections.
3. Connect the flat cable to the CPU backplane and the individual drives. (See Figure 9.) Be sure that the end marked Innovex Paddlecard is the end that is attached to each drive. An Innovex Paddlecard and sufficient cable are provided for each drive when you order a complete system. Otherwise, you must order the proper cable for the number of drives in your system.
4. For each drive used, install a device select jumper on the Innovex Paddlecard. Each drive must be specified through direct jumpering on its paddlecard for the proper device select number. (See Table 1).
5. Using an ohmmeter, verify all signal connections between the CPU backplane and the Innovex Paddlecard (L1-L22).

Whenever additional drives are added to your system, additional cables will be required. An upgrade kit that enables you to daisy chain from your existing cable is available. Assembly instructions for the additional cable(s) is provided with the upgrade kit.

**Figure 8—Molex Wiring Detail
(Assembled Molex Connectors)**

CPU Backplane Connector
(Viewed from inside cabinet)

Bottom Row of Connector Pins Shown Offset for Clarity



Ground Connections Made as Follows:

CPU Backplane	Controller Card
Pin K	Pin U
Pin M	Pin S
Pin N	Pin P
Pin P	Pin L

Note: This drawing shows the controller card as it would be viewed through the motherboard.
(Top View)

TABLE 1 — INNOVEX

CONTROLLER CARD

CPU BACKPLANE DRIVE CONNECTIONS

CONTROLLER PIN	FUNCTION	CPU BACKPLANE PIN	Innovex Paddlecard
4	Write Fault Reset	19	L4
5	Index	18	L5
6	Step	17	L6
7	Write Current Enable	16	L7
8	A Ready	15	L8
9	Write Fault	14	L9
10	Write Data	13	L10
12	Track 00	12	L12
13	A0 Select	11	Drive 1 Select
14	Sector	10	L14
15	Direction	9	L15
17	Read Data	7	L17
18	Head Load	6	L18
20	-5V DC	D	L20
21	Low Current	J	L21
23	A1 Select	H	Drive 2 Select
24	B0 Select	F	Drive 3 Select
25	B1 Select	E	Drive 4 Select
POWER SUPPLY CONNECTIONS			L1, R1, L22, R22 - LOGIC GND
			L2, R2 - +24 V DC
			L3, R3 - +24 V GND
			L11, R11 - +5 V DC

TABLE 2 — SHUGART

CONTROLLER CARD

CPU BACKPLANE DRIVE CONNECTIONS (See Figure 9 in the Shugart OEM Manual and Figure 2 in the Floppy Disk documentation)

CONTROLLER PIN	FUNCTION	CPU BACKPLANE PIN	SHUGART PCB CONNECTOR J1
5	Index	18	20
6	Step (Step Out)	17	36
7	Write Gate (Write Current Enable)	16	40
8	A Ready	15	22
10	Write Data	13	38
12	Track 00	12	42
13	A0 Select	11	26
14	Sector (801 Only) (B Ready)	10	24
15	Direction (Step In)	9	34
17	Read Data (Raw Data)	7	46
18	Head Load	6	18
20	-5V DC	D	2 & 4
23	A1 Select	H	28
24	B0 Select	F	30
25	B1 Select	E	32

DC POWER SUPPLY, CONNECTOR J5

PIN 2 — +24V RETURN LINE
PIN 1 — +24V DC
PIN 5 — +5V DC
PIN 3, PIN 6 — GND

Device selection provided by installation of an appropriate shorting plug

Note that J5, pin 4 is connected to J1, pins 2 and 4

Note: Controller pin 14 (Sector) is not used by the Shugart drive. Pin 24 on the Shugart connector is labeled B Ready.

FIGURE 9 - DRIVE CABLE ASSEMBLY
 SHOWN IS A SINGLE DRIVE CABLE WITH ASSEMBLED UPGRADE CABLE

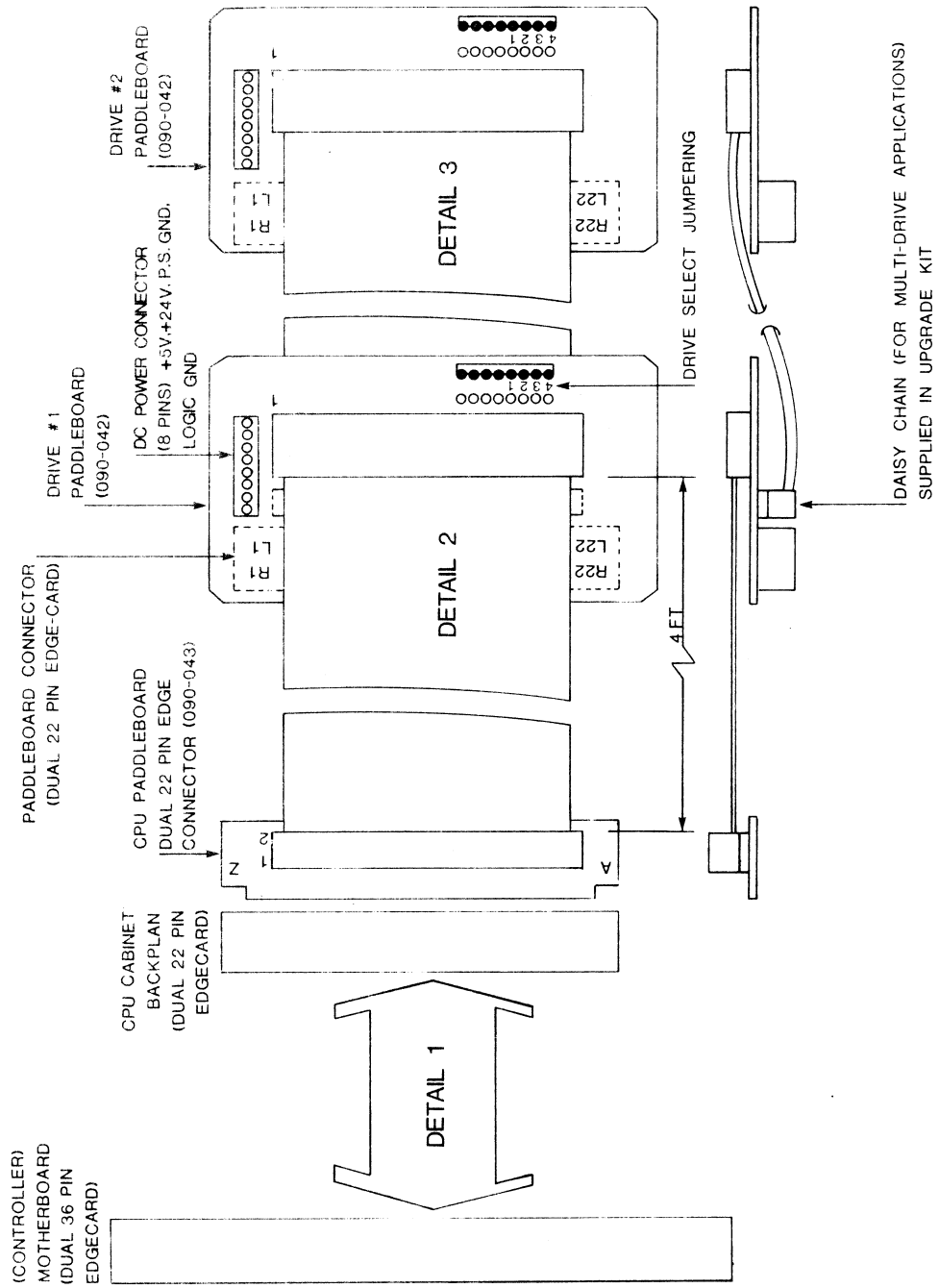


FIGURE 10
DRIVE CABLE ASSEMBLY

