

ROBULET ENGINE
SITE PREPARATION GUIDE

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Office Automation Division
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INTRODUCTION

The purpose of this document is twofold:

1. To help the customer plan and prepare his or her site for installation of the System XXVI..
2. To serve as a guide for the Tymshare representative who, in conjunction with the customer representative, will inspect the customer site to see that it meets all of the installation criteria as outlined in this document. The site inspection will be verified by the Tymshare Computer Systems Support (TCSS) representative.

The planning, preparation, and site inspection will ensure that a minimum of difficulties will be encountered during the installation and operating life of the System XXVI.

The site inspection will encompass the areas of:

1. Equipment location requirements
2. Power requirements
3. Environmental requirements

This document describes the necessary requirements for each of these areas in addition to other pertinent information about the installation of the System XXVI. The customer site must meet all of the criteria outlined in this document before the System XXVI can be installed.

To resolve any electrical and/or air conditioning problems, the customer should contact the appropriate contractors.

NOTE: No installation will be made until all deficiencies at the site have been corrected.

EQUIPMENT DESCRIPTION AND SPECIFICATIONS

The System XXVI is housed in two cabinets, the CPU cabinet and the peripheral cabinet.

The CPU cabinet contains the following:

- CPU
- Console computer
- Floppy disks
- Power supplies
- Disk controllers
- Tape controller (with both a TYMNET interface and a real-time clock interface)

Depending on the installation, this cabinet may also contain the following:

- ARPANET interface
- Line printer interface (on the same board as the ARPANET interface)
- Data line scanner

The peripheral cabinet contains the peripherals for the system:

- Kennedy model 9100 tape transport
- Kennedy model 9219 tape formatter
- Three (3) disk drives consisting of CDC model BZ9A1, or Ampex Capricorn model 330, or a combination of these two models
- Large-scale integration 11/23 communication interface

A control console display terminal, which the operator uses to communicate with the System XXVI, will also be supplied.

Power for the CPU cabinet and peripheral cabinet is supplied by two cables that are connected to an AC power distribution panel. This panel is located in the rear of the peripheral cabinet, directly behind the tape transport. (See Figure 1.)

Each cabinet is equipped with its own fan to provide airflow across the internal components. No shock mounts are required under normal conditions.

EQUIPMENT SPACE REQUIREMENTS

The CPU cabinet and peripheral cabinet are normally placed beside one another and bolted together. Optionally, the cabinets may be bolted to the floor. A raised floor is not required for the System XXVI as long as the cables can be protected. (See the section "Cabling".)

A minimum of 30 inches should be left around the back and sides of the System XXVI. There should be 4 feet of clearance in front of the cabinets. This allows for the maintenance and removal of the peripheral equipment.

Each cabinet, with equipment installed, is 22 inches wide, 33 inches deep, and 70 inches high without leveling feet.

Space is also required for a desk or table, which the customer will supply, on which to place the control console display terminal.

A total of 90 square feet should be adequate for installation of the System XXVI.

In addition, storage space is needed for tapes and documentation. These should be located in the immediate area to provide ready access to the data files and operating documents.

More space will be required if additional peripheral equipment is to be installed. This will be at the customer's option. It will be the customer's responsibility to provide the required space and environmental conditions for this additional equipment.

There must be unobstructed access to the installation area before the equipment can be moved into place.

POWER REQUIREMENTS

The System XXVI operates on 115 volts AC (plus or minus 10%), single-phase power.

A split power distribution panel will be mounted in the peripheral cabinet. Each half of the panel will receive power from a flexible power cable. Each cable terminates in a Hubbell (NEMA L5-30, P/N 2611) twist-lock connector. A twist-lock receptacle, fed through a 30-amp breaker, must be supplied by the customer for each of the two cable connectors.

The individual units in each cabinet will be plugged into the power distribution panel. The total load will be balanced between the two halves of the power panel.

Two 20-amp toggle circuit breakers will be mounted in the power distribution panel for each of the incoming circuits. Each of these breakers will function as an on/off switch, as well as a circuit protector.

CLEAN POWER

It is vital that the power supplied to the System XXVI be free of hash, noise, transients, and other types of electromagnetic interference (EMI). Dirty power can degrade the operation of the System XXVI to the point where it cannot function.

Power for the System XXVI must be isolated at the source. All heavy electrical loads, air conditioning, industrial equipment, etc., must be isolated to their own circuit breakers. Heavily inductive loads should also be filtered where possible.

COMMUNICATION

There are two options for remote user communication with the System XXVI:

1. TYMNET node
2. Tymshare model 912 modem (or its equivalent)

For maintenance purposes, a modem and separate phone line are required. (See the section "Maintenance Requirements".)

NOTE: The same modem can be used for remote user communication and maintenance purposes.

CABLING

No more than 50 feet of hardwire cable can be used to connect the System XXVI to a TYMNET node. This 50-foot allowance includes any routing that might be needed to reach the node.

Each of the AC cables that supply power to the peripheral cabinet and CPU cabinet will be 15 feet in length and will terminate in a 30-amp twist-lock connector.

The modem should be positioned as close to the System XXVI as possible.

ENVIRONMENTAL CONSIDERATIONS

Proper temperature and humidity control are essential to continued long-term operation of the System XXVI. The system is designed to function properly within the limits of 55°F to 80°F, ^{AMBIENT TEMP} and 20% to 80% humidity with no condensation. The System XXVI can tolerate no more than a 10% per hour maximum change in relative humidity. Rapid swings in temperature should be avoided as well.

An additional one and one-half tons of air conditioning is required to offset the heat, 18,400 Btu, generated by the System XXVI.

Static electricity, a form of EMI, can interfere with the operation of the System XXVI. Installation sites with carpeting -- a source of static electricity -- must have anti-static pads placed beneath the computer equipment.

MONITORING

Power will be monitored for 72 hours before installation of the System XXVI. It is important that all of the equipment in the surrounding area be operating in its normal manner during this check.

The Dranetz model 606-3 power disturbance analyzer will be used by the Tymshare representative to monitor the input power for the System XXVI. The recording will be evaluated and, if necessary, the findings will be presented to the customer for corrective action.

NOTE: No installation will be made until power deficiencies have been corrected.

Environmental conditions -- temperature and humidity -- will be monitored for 72 hours before installation of the System XXVI. It is important that all normal activities take place at the installation site during this check.

The Honeywell model 612X/9HT hygrometer, or its equivalent, will be used by the Tymshare representative to monitor the environmental conditions at the installation site. The model 612X/9HT can be configured as either a one-day or a seven-day recorder. It will be configured as a seven-day recorder for this series of environmental checks. The recordings will be evaluated and, if necessary, the findings will be presented to the customer for corrective action.

NOTE: No installation will be made until environmental deficiencies have been corrected.

MAINTENANCE REQUIREMENTS

Tymshare computer maintenance personnel must have access to the System XXVI 24 hours per day, 7 days per week, and must be provided with any necessary building security clearance.

There must be someone on site who can be contacted a minimum of 8 hours per day, 5 days per week.

A standard telephone, with a receiver cord long enough to allow maintenance personnel to view the front and back of all computer equipment, should be installed near the equipment to facilitate maintenance communications.

A modem, with auto-answer capability, and a separate phone line should be connected to the console computer to provide 24-hour remote access to the System XXVI.

PROCEDURES TO BE PERFORMED BY THE TYMSHARE REPRESENTATIVE

1. Sketch a diagram of the installation site. Use the blank form provided in this document. (See Figure 3.) A sample site diagram is provided for reference. (See Figure 2.) Your site diagram should include the following:
 - a. Installation area and dimensions
 - b. Location of doors and other openings
 - c. Proposed location and orientation of two System XXVI cabinets
 - d. Proposed location and orientation of additional peripherals
 - e. Location of circuit breakers (identify equipment)
 - f. Location of connectors
 - g. Proposed location of table with control console display terminal
 - h. Access to installation area
 - i. Additional comments
2. Complete the attached questionnaire.
3. Forward a copy of the site diagram, the questionnaire, and the power and environmental recordings to the address listed on the questionnaire. This package should arrive at Tymshare a minimum of two weeks prior to the scheduled shipment of the System XXVI to the customer site.

ROBERTS EXHIBIT PERIPHERAL CABINET

REAR VIEW

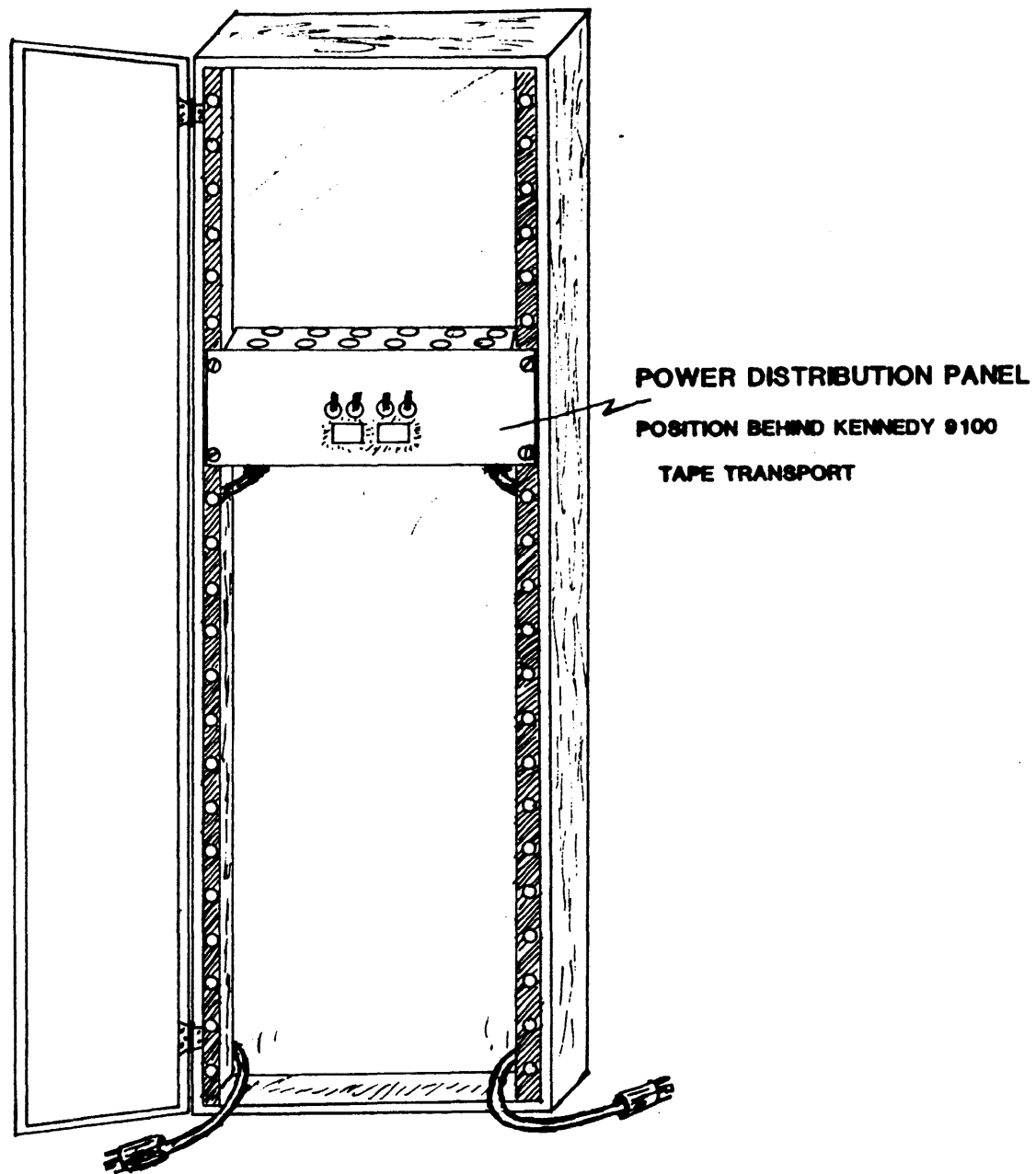
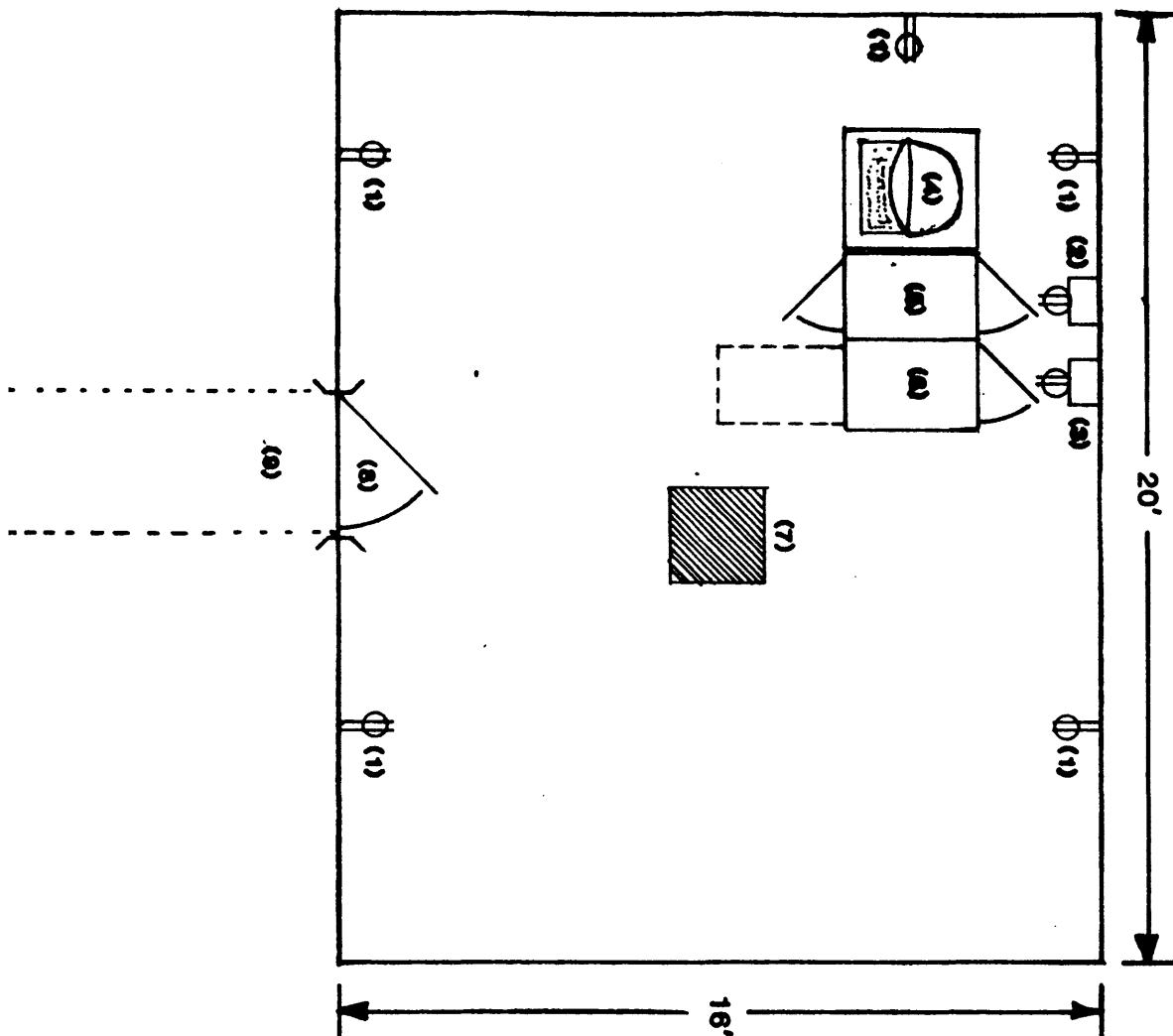


Fig. 1

SAMPLE



- (1) SERVICE OUTLETS
- (2) 30 AMP BREAKER & TWIST-LOCK OUTLET
- (3) 30 AMP BREAKER & TWIST-LOCK OUTLET
- (4) CONSOLE VDT
- (5) F-4 GPU
- (6) F-4 PERIPHERALS
- (7) AIR CONDITIONING DUCT
- (8) DOOR
- (8) ACCESS TO COMPUTER ROOM

Fig. 2

MACDONNELL DOUGLAS

| | | |
|----------------------------|--|-----------------------------|
| COMPANY: ABC CORP. | SITE ADDRESS: 800 WAY DRIVE, KING, PA. | EQUIPMENT: F-4 SYS. |
| PREPARED BY: D. MILLER, GE | DATE: 6/7/68 | APPROVED BY: R. KELLY, DMGR |
| | | DATE: 6/8/68 |
| | | SCALE: 1/4"=1' |

Fig. 3

MACDONNELL DOUGLAS

| | | | | |
|---------------------|----------------------|---------------------|--------------|-----------------------|
| COMPANY: | SITE ADDRESS: | EQUIPMENT: | | |
| PREPARED BY: | DATE: | APPROVED BY: | DATE: | SCALE: 1/4"-1' |

SITE INSPECTION QUESTIONNAIRE

DATE: _____

CUSTOMER: _____

ADDRESS: _____

CUSTOMER REPRESENTATIVE: _____

I. INSTALLATION AREA

1. WILL THE SYSTEM BE INSTALLED IN:

- A. AN OPEN AREA _____?
- B. A COMPUTER ROOM _____?

2. IF A COMPUTER ROOM, WHAT IS THE WIDTH OF THE DOORWAY INTO THE ROOM? _____ INCHES.

3. IS THE PATH FROM THE RECEIVING AREA TO THE INSTALLATION AREA CLEAR? YES _____ NO _____

4. WILL THERE BE ANY DIFFICULTIES IN MOVING THE SYSTEM FROM THE RECEIVING AREA TO THE INSTALLATION SITE? YES _____ NO _____

IF YES, EXPLAIN! _____

(USE REVERSE SIDE OF QUESTIONNAIRE IF MORE SPACE NEEDED)

A. IS THE CUSTOMER AWARE OF THE PROBLEM? YES _____ NO _____

B. WILL THE CUSTOMER CORRECT THE PROBLEM? YES _____ NO _____

5. IS THE FLOOR IN THE INSTALLATION AREA CARPETED? YES _____ NO _____

6. WILL ANTI-STATIC MATS BE REQUIRED? YES _____ NO _____

7. ARE THERE ANY FIXED OBSTRUCTIONS IN THE INSTALLATION AREA, SUCH AS POSTS, STAIRS, ETC.? YES _____ NO _____

EXPLAIN: _____

8. IF INSTALLED IN A COMPUTER ROOM, IS THERE A RAISED FLOOR? YES _____ NO _____

9. ARE OTHER SYSTEMS OR SYSTEM COMPONENTS LOCATED IN THE INSTALLATION AREA? YES _____ NO _____

EXPLAIN: _____

- 10. CAN ALL CABLES AND EQUIPMENTS BE POSITIONED SO AS NOT TO BLOCK THE OPERATOR AS HE MOVES AROUND THE ROOM? YES _____ NO _____
- 11. TWO TWIST-LOCK HUBBLE WALL OUTLET CONNECTORS ARE REQUIRED FOR THE F-4. THEY SHOULD BE MOUNTED CLOSE TOGETHER AND NEAR THE REAR OF THE F-4 SYSTEM.
 - A. ARE THESE CONNECTORS INSTALLED AND IN THE PROPER LOCATION? YES _____ NO _____
- 12. EACH OF THE ABOVE CONNECTORS MUST RECEIVE ITS POWER FROM A SEPARATE 30 AMP, ROOM MOUNTED, CIRCUIT BREAKER.
 - A. ARE THESE BREAKERS PRESENT? YES _____ NO _____
 - B. ARE THEY RATED AT 30 AMPS? YES _____ NO _____
- 13. CHECK THE TYPE OF AIR CONDITIONING IN USE.
 - A. WATER COOLED _____
 - B. REFRIGERATION _____
 - C. NONE _____
 - D. OTHER _____

EXPLAIN: _____

- 14. THE SYSTEM XXVI GENERATES APPROXIMATELY 18,000 BTU/HR OF HEAT. THIS WILL ADD ONE AND ONE-HALF TONS OF AIR CONDITIONING REQUIREMENT TO ANY EXISTING SYSTEM.
 - A. WILL THE EXISTING SYSTEM DISSIPATE THE ADDITIONAL 18,000 BTU/HR LOAD? YES _____ NO _____
- 15. IF IN DOUBT, EXPERT OPINION SHOULD BE SOUGHT.
 - A. SHOULD AN AIR CONDITIONING ENGINEER DETERMINE THE ADEQUACY OF THE EXISTING SYSTEM? YES _____ NO _____
- 16. IN YOUR OPINION, CAN TEMPERATURES WITHIN THE PARAMETERS OF 55 TO 85 DEGREES BE MAINTAINED? YES _____ NO _____
- 17. CAN THE AIR CONDITIONING BE SHUT OFF BY MISTAKE IN THE EVENINGS OR ON THE WEEKENDS? YES _____ NO _____
- 18. WHERE ARE THE AIR CONDITIONING CIRCUIT BREAKERS LOCATED? _____

- 19. WHERE ARE THE SYSTEM XXVI BACK UP BREAKERS LOCATED? _____

20. IF A NODE IS TO BE USED, WHERE IS ITS LOCATION IN RELATION TO THE SYSTEM XXVI?

21. ALLOWING FOR ROUTING THE CABLE AND PROVIDING THE PROPER AMOUNT OF SLACK ON EITHER END, HOW MUCH CABLE WILL BE REQUIRED TO HARDWIRE THE COMPUTER TO THE NODE? _____ FEET

22. LIST ANY CONDITIONS YOU HAVE OBSERVED THAT MIGHT PREVENT OR DEFER THE SUCCESSFUL INSTALLATION OF THE SYSTEM?

23. MAIL THE QUESTIONNAIRE, INSTALLATION LAYOUT AND RECORDINGS TO THE FOLLOWING ADDRESS:

TYMSHARE, INC.
3300 CAPITOL AVENUE
FREMONT, CA 94538

ATTN: STAN FOX

I HAVE MADE THE SITE INSPECTION AND FOUND IT TO BE AS INDICATED ABOVE.

TYMSHARE REPRESENTATIVE _____

SIGNATURE

AUGMENT ENGINE INSTALLATION MANUAL

Document Outline

1.0 Shipping information

- 1.1 Shipped to customer normally by padded van
- 1.2 Depending upon surface between receiving dock and installation site, may be rolled on its own positioning casters.
- 1.3 Relatively light floor load of 1.05 pounds per sq. in.
- 1.4 Units will be received with all covers installed.
- 1.5 Entire system will be staged prior to a shipment to customer.
- 1.6 Three packages, a peripheral cabinet, a CPU cabinet and an accessory box containing cables, documentation, etc.

2.0 Physical installation

- 2.1 Peripheral cabinet positioned on the right of the CPU cabinet as you face the front of the unit.
(Line drawing of front of system with titles)
- 2.2 Position the CPU cabinet exactly where it is to be installed
- 2.3 Lower the leveling feet until the CPU cabinet is level and no longer resting on its wheels.
- 2.4 Face the CPU cabinet. Remove the right side panel.
- 2.5 Face the peripheral cabinet. Remove the left side panel
- 2.6 Position the open left side of the peripheral cabinet against the open right side of the CPU cabinet.
- 2.7 Lower the leveling feet until the peripheral cabinet is level and no longer resting on its wheels.
- 2.8 The two cabinets can be bolted together at this point if it is necessary.

3.0 System Interconnect General

- 3.1 All peripherals, whether installed in the peripheral cabinet or external to it, are connected to the CPU via the I/O panel in the top of the CPU cabinet. The I/O Panel is located above the card cages.
- 3.2 Peripherals are connected to the I/O panel in the CPU cabinet via flat cables.
- 3.3 Connectors mounted on the I/O panel are wired to the inputs and outputs of the various controllers, and the Console Computer.

AUGMENT ENGINE INSTALLATION MANUAL

Document Outline

3.0 System Interconnect General (Continued)

- 3.4 The flat cables are connected to the individual peripherals at one end and plugged into the connectors on the I/O panel in the CPU cabinet at the other.
- 3.5 Figure 1 indicates the connector/s for each of the peripheral units, both local and remote.
- 3.6 The card cages are laid out top to bottom and designated A, B, and C. See section on System Layout
- 3.7 The card cages are positioned directly below the I/O panel.
- 3.8 For purposes of system interconnect, we are concerned only with row "A" of the card cage.
 - 3.8.1 All of the inputs & outputs to and from the CPU pass through row "A"
 - 3.8.2 Row "A" contains the Console Computer, the Disk Controller, the Line printer Controller/Arponent interface and the Input/Output interface board.
 - 3.8.3 The row "A" Input/Output pins on the back plane are wired directly to the designated connector on the I/O panel.
 - 3.8.4 Flat cables plugged into these connectors are coupled directly to the devices that are external to the CPU, and all communication between the devices and the CPU is sent and received over these cables.

4.0 External Disk Memory installation

- 4.1 The system is currently configured for up to four Disk drives, because of the limitations of the current Disk Controllers.
 - 4.1.1 The two possible operating configurations are radial, where the disk drives are connected in parallel from the controller, and daisy chain, where the disk drives are essentially connected in series. (Line drawing of each configuration)
 - 4.1.2 One of the options under either the radial or daisy chain configuration is dual port where two controllers are used in a timesharing manner to operate the disk drives.

AUGMENT ENGINE INSTALLATION MANUAL

4.0 External Disk Memory installation (Continued)

- 4.1.3 The other option is single port where the disk drives are operated by a single controller.
- 4.1.3 The System XXVI is configured for daisy chain, single port operation See Fig. 2
- 4.1.4 Two cables are required to provide the data and controls to be read from or written to the disk drives.
 - 4.1.4.1 The "A", or Control cable, is a 60 lead ribbon cable that provides control signals to each of the disk drives. The 60 lead cable is split into three 20-lead groups with three 26 pin connectors installed. The three plugs are installed in the I/O panel. The other end of the cable is plugged into the disk drive designated as the first drive in the chain.
 - 4.1.4.2 A second "A" cable is connected between the control output connector of the first drive and the control input connector on the disk drive designated as the next drive in the chain, and so on until the last drive in the chain is reached.
 - 4.1.4.3 The final drive in the chain will have a control terminator installed on the control output connector.
 - 4.1.4.4 The "B" or Read/Write cable, is a 26 lead ribbon cable. A "B" cable is connected directly between the I/O panel and each individual disk drive. See fig.

5.0 Tymnet I/O Interface

- 5.1 The four Tymnet I/O connectors provide System access to the Tymnet network via the LSI/23 micronode.
 - 5.1.1 Two forty-pin connectors in the LSI/23 are connected to the I/O panel via ribbon cables.
 - 5.1.1.1 One forty-pin ribbon cable, with mating female connector on one end, is required to connect the LSI/23 to the I/O Panel.
 - 5.1.1.2 The forty-lead flat cable is split into two twenty-lead cables at the I/O panel.
 - 5.1.1.3 A twenty-six pin plug is mounted on each of the twenty-lead fault cables from the LSI/23.