DPS 6 PLUS
MTU9921/9922
GCR/PE
Magnetic Tape Unit Operation

Honeywell

DPS 6 PLUS
MTU9921/9922
GCR/PE Magnetic Tape Unit
Operation
Addendum A

SUBJECT

Additions and Changes to the Manual

SPECIAL INSTRUCTIONS

This is the first addendum to HD52-00, dated November 1986. Insert the attached pages acording to the collating instructions on the back of this cover. Change bars in the margin indicate new or changed information.

Note:

Insert this cover sheet behind the front cover to indicate the updating of the document with Addendum A.

ORDER NUMBER

HD52-00A

January 1987

Honeywell

Collating Instructions

To update the manual, remove old pages and insert new pages as follows:

Remove	Insert
3-5, 3-6	3-5, 3-6
4-1, 4-2	4-1, 4-2
4-3, 4-4	4-3, 4-4

DPS 6 PLUS
MTU9921/9922
GCR/PE
Magnetic Tape Unit Operation

SUBJECT

General Description, Programming Operation, and Maintenance Procedures for the MTU9921/9922 Magnetic Tape Units

The following notice is provided in accordance with the United States Federal Communications Commission's (FCC) regulations.

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HD52-00

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Honeywell

About This Manual

This manual contains hardware-oriented descriptions and instructions for operators of the MTU9921/9922 GCR/PE Magnetic Tape Units for DPS 6 PLUS systems. Section 1 outlines the device capabilities. Section 2 describes the various controls and indicators with which an operator should become familiar before operating the unit. Section 3 explains how to operate the unit. Section 4 provides preventive, remedial, and tape maintenance procedures as well as diagnostic tests. The Appendix outlines tape unit specifications.

Readers are invited to use the Technical Publications Remarks form at the end of the manual to note any publication errors or to offer any suggestions for improvement.

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HD52-00

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Section 1
Introduction

The MTU9921/9922 magnetic tape units, designed for use with DPS 6 PLUS systems, are buffered, 9-track, dual-density magnetic tape units that offer 6250-bpi Group Coded Recording (GCR) and 1600-bpi Phase-Encoded (PE) operation. Each tape unit has three operating performance modes: 25-ips start/stop, 25-ips streaming mode, and 75-ips streaming mode. Depending on data flow between the tape subsystem and the host system, the unit automatically selects the mode which provides the maximum throughput.

Each tape unit is located in a separate cabinet. Each tape unit is suitable for mounting on tabletop, system, or an optional tape stand (available from Honeywell). Up to four drives per MTC9901 Tape Controller may be used with a system. The first tape unit must be the MTU9921 primary unit; up to three MTU9922 secondary units may be added as required.

Figure 1-1. MTU9921/9922 (on optional tape stand)

Each tape unit contains a 128K-byte electronic data buffer, capable of storing commands and data records. Buffered data is transferred between the host system and the tape unit at the channel data rate which is faster than the typical tape writing rate. As a result, the tape unit can continue read or write operations despite short interruptions in data flow with the host system. Many applications will operate at a much greater throughput rate than with a 75-ips, non-buffered tape unit.

Unlike many other tape units, the tape units contain no tape capstan with motor drive, tension arms, or vacuum columns. The tape is driven by reel motors that are electronically servo-controlled to regulate tape speed and tape tension. The tape is guided over the read/write head by air bearings that sense tape motion and tension to help control supply and take-up reel motors.

Features

- Buffer disable

- Simple loading and operating procedures

- Simplified tape path and quick-release reel latch designed for each of operation

- Servo-controlled reel motors eliminating vacuum columns, capstans, or tension arms

- Full set of operator controls and indicators for major device functions and maintenance

- 128K-byte data buffer

- Integrity features to help ensure accuracy of data written and retrieved from storage media

- Write enable feature allowing file protection from accidental write operation

- Reading/writing on one tape unit simultaneously with rewinding/unloading on other units

- Read/write functions accomplished in ECMA/ANSI-compatible format

- Two-digit display to monitor offline diagnostic tests

- Automatic selection of transport modes (25-ips start/stop, 25-ips streaming, 75-ips streaming)

- Optional tape stand or corner unit

Supplies and Accessories

Honeywell markets a complete line of computer tape, tape-packaging options, and cleaning accessories. For further information, refer to the *National Distribution Operations Sales Catalog: Supplies and Accessories,* Order No. GF60.

Section 2
Controls and Indicators

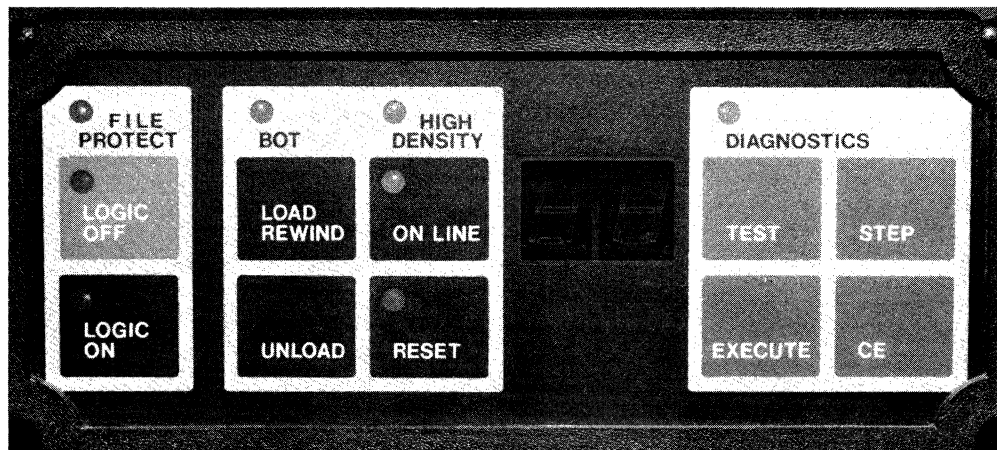This section describes the tape unit indicators and touch-sensitive controls. Become familiar with these controls and indicators to ensure proper tape unit operation.

Operation Panel

Figure 2-1 shows the layout of the operation panel buttons and indicators. All buttons on the panel are touch-sensitive. Button and indicator functions are summarized in Table 2-1.

Figure 2-1. Operation Panel

Table 2-1. Controls and Indicators

Button/Indicator		Description
FILE PROTECT	Indicator	Lights to indicate absence of a write-enable ring in supply reel; write operation is inhibited.
LOGIC OFF	Button	When pressed, tape unit is non-operational.
	Indicator	Lights when unit is non-operational and in standby power condition.
LOGIC ON	Button	If pressed when circuit breaker is set to ON, tape unit is powered on and operational.
	Indicator	Lights when tape unit is powered on and operational.
BOT	Indicator	Lights when tape is positioned at beginning-of-tape.
LOAD/ REWIND	Button	If pressed when tape unit is powered on and tape is threaded, causes a load operation to be performed (i.e., tape is positioned at BOT). If tape is loaded, causes a rewind operation to beginning-of-tape.
UNLOAD	Button	If pressed when tape is loaded, tape unloads from take-up reel and tape path onto supply reel. If tape is threaded, but not loaded, unit slowly unloads tape onto supply reel.
HIGH DENSITY	Indicator	Lights when unit is in GCR mode. (When indicator is turned off, unit is in PE mode.)
ONLINE	Button	If pressed when tape is loaded, goes online and becomes available for system control.
	Indicator	Lights when tape unit is online.
RESET	Button	If pressed, takes unit offline, stops tape motion, and clears error status.
	Indicator	Lights when error condition exists, or at completion of diagnostic test.
TWO-DIGIT DISPLAY	Indicator	Lights when unit is in offline diagnostic/test mode. It displays diagnostic/test numbers and results of microdiagnostic or exerciser routines when in offline diagnostic/test mode. When RESET indicator lights during an error condition, display shows either a diagnostic fault code or an online operational failure code.
DIAGNOS-TICS	Indicator	Lights when unit is in diagnostic/test mode.
TEST	Button	If pressed when unit is not online, places the unit in diagnostic/test mode.
EXECUTE	Button	If pressed when unit is in diagnostic/test mode, initiates diagnostic test according to number shown on two-digit display.
STEP	Button	If pressed when unit is in diagnostic/test mode, sequences diagnostic/test numbers.
CE	Button	If pressed when unit is in diagnostic/test mode, initiates special diagnostics (see Section 4 for further information).

Section 3

Operation

This section describes the operation procedures for the tape unit. To minimize the possibility of error or damage to the tapes, it is important that the operator understand the use and function of the various controls and indicators previously explained in Section 2.

CAUTION

Be sure to release the door stop before closing the tape unit door. Failure to do so will result in door alignment problems.

Power-on Sequence

The power supply circuit breaker (Figure 3-1) is located at the top-right corner of the tape deck. Press this circuit breaker to the ON position (side 1 pressed down). The LOGIC OFF indicator will light momentarily. While the power-on automatic self-test is executed, the LOGIC ON and DIAGNOSTICS indicators light and 00 appears on the two-digit display. When the self-test is successfully completed and the unit is ready for operation, the DIAGNOSTICS indicator and two-digit display turn off, and the LOGIC ON and FILE PROTECT indicators light.
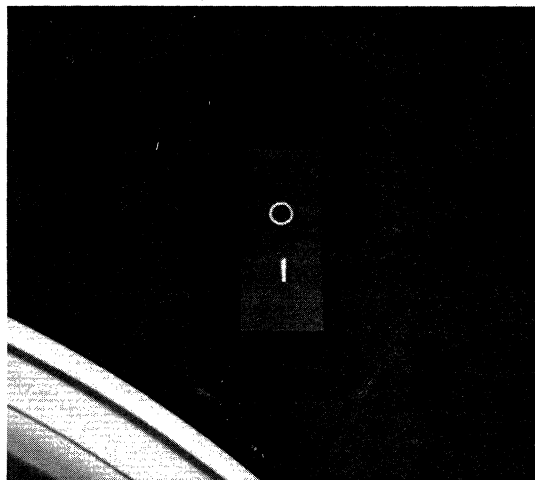
Figure 3-1. Circuit Breaker

Power-off Sequence

Press the power supply circuit breaker to the OFF position (side 0 pressed down) to power down the tape unit.

Note: Pressing the LOGIC OFF button causes the tape unit to enter a standby power condition. Although the unit is not operational when the LOGIC OFF button is pressed, the ac line voltage is still present in the unit.

Tape Loading

CAUTION

Exercise care when handling magnetic tape and the reel on which it is mounted.

To load tape, follow these steps.

1. Make sure the tape unit is powered on and the LOGIC ON indicator is lit.

2. Unlock the hub latch by pressing the hub release button (Figure 3-2) on the face of the supply reel hub.
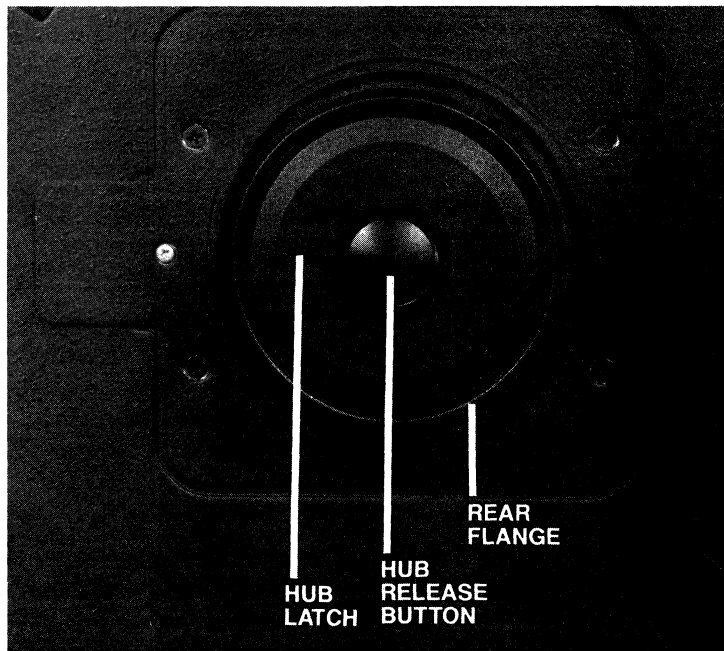
Figure 3-2. Rear Flange, Hub Latch, and Hub Release Button

3. Mount the supply reel onto the hub (clear plastic side of the reel facing you). The back of the reel will be pressed against the rear flange (Figure 3-2). If a write-enable ring is present on the reel, the flange will be pressed in. The flange will be inserted into the groove at the back of the reel if a write-enable is not present.

4. Secure the reel onto the hub by pressing the hub latch.

5. Thread the magnetic tape over the tape path as shown in Figure 3-3. (A diagram of the tape path also appears on the tape deck.)

CAUTION

Be sure to position the tape correctly over all tape path components in order to avoid tape damage.
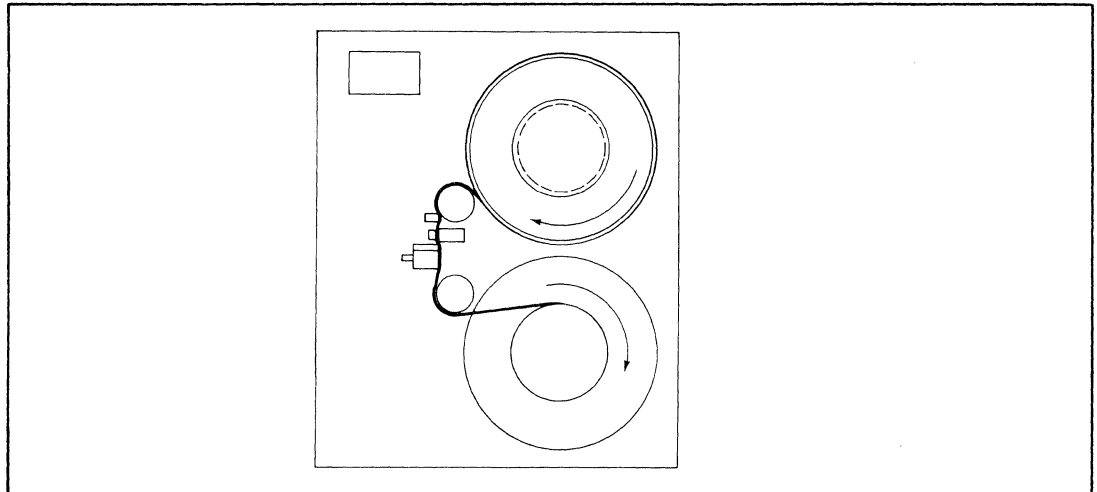
Figure 3-3. Tape Path

6. Wrap the tape onto the take-up reel using the following procedures.

   a. Secure the tape leader by inserting your index finger through the opening in the take-up reel nearest to the tape end. Make sure to hold your finger on the tape approximately one inch from the end of the tape.

   Note: Hang the tape over the take-up reel (Figure 3-4) after threading for easier tape wrapping.
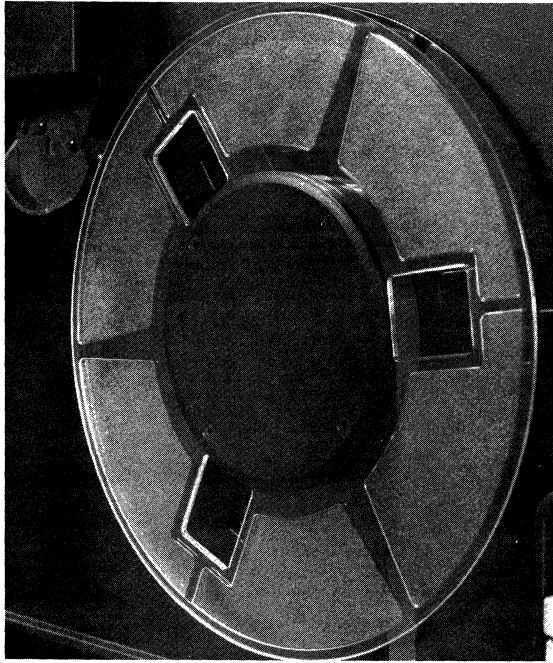
Figure 3-4. Tape Over Take-up Reel

    b. With your finger still securing the tape leader, turn the take-up reel clock-
      wise (Figure 3-5) until the tape leader is smoothly wound beneath one layer
      of the tape. While turning the take-up reel, be sure to provide slack from
      the supply reel by turning it with your free hand.
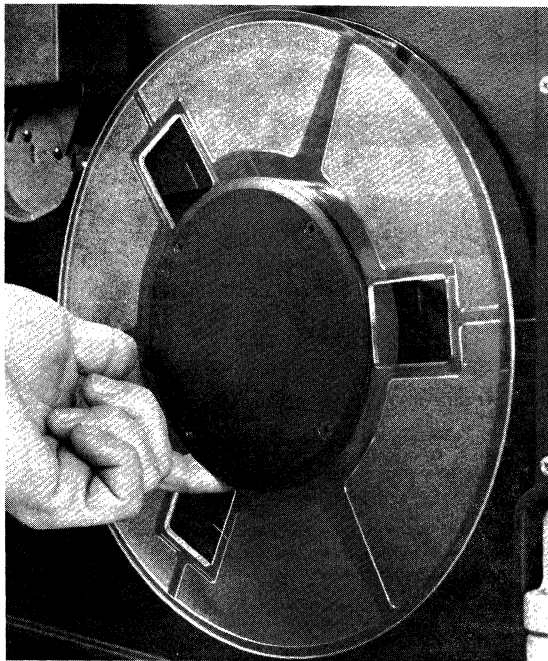
Figure 3-5. Tape Wrapping

    c. Remove your finger and carefully place the same finger over the portion of
      the tape which is covering the tape leader. Make another complete clock-
      wise rotation of the reel.

d. When the tape leader is secured beneath two layers of tape, remove your finger and rotate the reel one or two more times until the tape is taut.

7. Close the dust cover door and press the LOAD/REWIND button to execute a search for the BOT marker. When BOT is found, the BOT indicator will light.

   Note: If no BOT is found, the tape unloads and the RESET indicator lights. If this occurs, refer to "Missing or Defective BOT Marker" in Section 4.

8. After the BOT indicator lights, check the density mode of the tape unit. (When the HIGH DENSITY indicator is lit, the unit is in the GCR mode. When the HIGH DENSITY indicator is not lit, the unit is in the PE mode.) If necessary, change the density (see "Changing Density" below).

9. Once the correct density is determined (BOT indicator still lit), press the ON LINE button to place the unit online. The ON LINE button may be pressed while the load operation is in progress. On completion of the load operation, the ON LINE indicator will light.

Changing Density

During the power-on sequence, the tape unit defaults to the PE mode. When a density change is required, follow these procedures.

1. Make sure the tape is positioned at the BOT marker. The BOT indicator will be lit.

2. Press the RESET button and then the LOAD/REWIND button to select the new density.

The HIGH DENSITY indicator lights when the tape unit is in the GCR mode. The HIGH DENSITY indicator is not lit when the tape unit is in the PE mode.

Tape Rewinding

To rewind tape, follow these steps.

1. If the tape unit is operating online and the tape is past the BOT marker, press the RESET button to place the tape unit offline. The ON LINE indicator will turn off.

2. Press the LOAD/REWIND button. The tape will rewind at rewind speed (2.5 minutes to rewind a 2400-ft reel of tape) and position itself at the BOT marker. The BOT indicator will light.

Tape Unloading

To unload tape, follow these steps.

1. If the tape unit is operating online, press the RESET button to place the unit
   offline. The ON LINE indicator will turn off.

2. Press the UNLOAD button. The tape will leave the take-up reel and tape path
   component areas to rewind onto the supply reel (2.5 minutes to rewind a 2400-
   ft reel of tape).

Tape Dismounting

Tape must be unloaded prior to dismounting. If the tape is loaded on the take-up
reel, it must be unloaded according to "Tape Unloading" above.

To dismount the tape, follow these steps.

1. Open the dust cover door and press the hub release button (Figure 3-3) on the
   face of the supply reel hub. The hub will unlatch and the supply reel can be
   removed.

2. Close the dust cover door to prevent dust accumulation on the tape deck
   components.

Section 4

Operator Maintenance

This section describes preventive, remedial, and tape maintenance procedures which must be followed for the tape unit to operate properly. The tape unit is designed to provide a high degree of reliability to the user while minimizing maintenance requirements. The low maintenance feature, however, is entirely dependent on the proper care and handling of the tape unit and magnetic tape.

Preventive Maintenance

Cleaning must be performed daily or during each eight-hour shift under normal operating conditions (every four hours when the tape unit is exposed to excessive contamination).

When cleaning, remember that the recommended solvents and equipment *must* be used as indicated. Cleaning should be done with a lint-free cloth or cotton, lint-free, foam-tipped swab moistened with Honeywell All Purpose Cleaner. *Do not use isopropyl alcohol.* After applying cleaner, allow a few minutes for the excess fluid to evaporate before mounting a tape.

Cleaning tools and materials are available from the Honeywell *National Distribution Operations Sales Catalog: Supplies and Accessories,* Order No. GF60.

- Lint-free Cloths – M2914

- Cotton Lint-Free Foam Swabs – M2913

- Honeywell All Purpose Cleaner – M2917

Before performing the following maintenance, open the dust cover door and make sure the supply reel and head assembly dust covers (Figure 4-1) are removed.

CAUTION

Set the power supply circuit breaker to the OFF position (0 side pressed down).
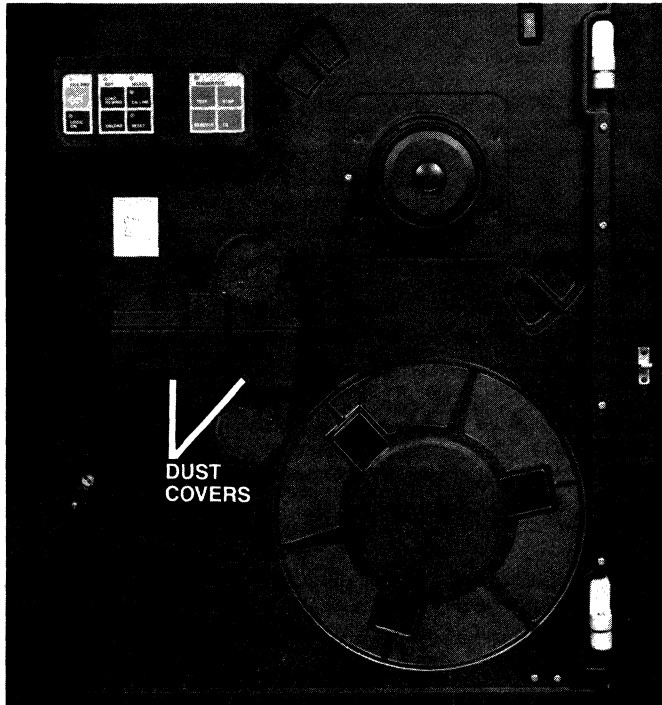
Figure 4-1. Head Assembly Dust Covers

Figure 4-2 illustrates the tape deck components that must be cleaned as follows:

* Magnetic head – Clean the magnetic head recording surface using a lint-free cloth moistened with Honeywell All Purpose Cleaner. Make sure to wipe the recording surface in the same direction that the tape moves across the head (from top to bottom) applying sufficient pressure to remove all foreign matter from the head. Repeat as necessary to insure it is clean.

* Tape cleaner – Use a foam-tipped swab moistened with Honeywell All Purpose Cleaner to remove dirt and oxide deposits from the tape cleaner blades.

* EOT/BOT sensor – Use a foam-tipped swab moistened with Honeywell All Purpose Cleaner to remove dirt and oxide deposits from the EOT/BOT sensor.
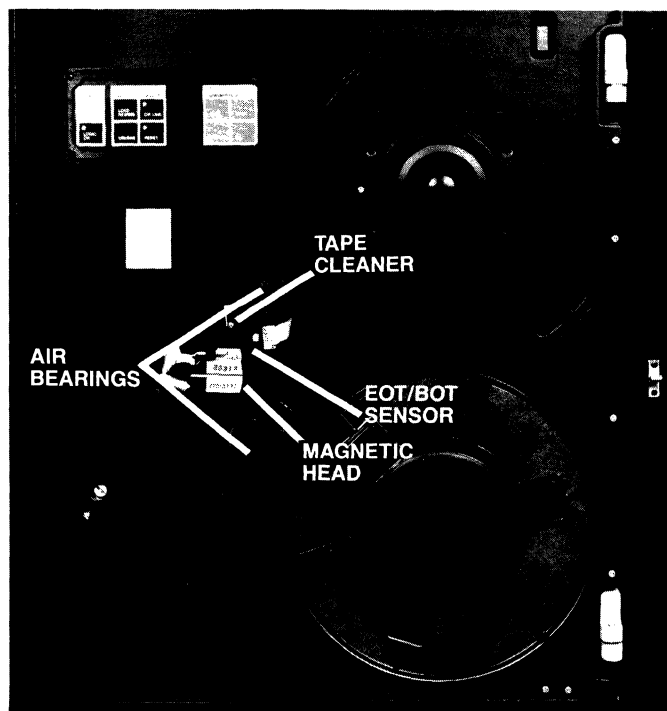
Figure 4-2. Components to Be Cleaned

- Air bearings (upper and lower) – Clean both air bearings with a lint-free cloth moistened with Honeywell All Purpose Cleaner. Make sure not to soak the cloth with solvent.

- Head assembly dust covers – Clean dust and dirt deposits from the head assembly dust covers with a lint-free cloth moistened with Honeywell All Purpose Cleaner.

- Supply reel hub pads – Clean the supply reel hub pads (Figure 4-3) with a lint-free cloth moistened with Honeywell All Purpose Cleaner. Make sure not to soak the cloth with solvent.
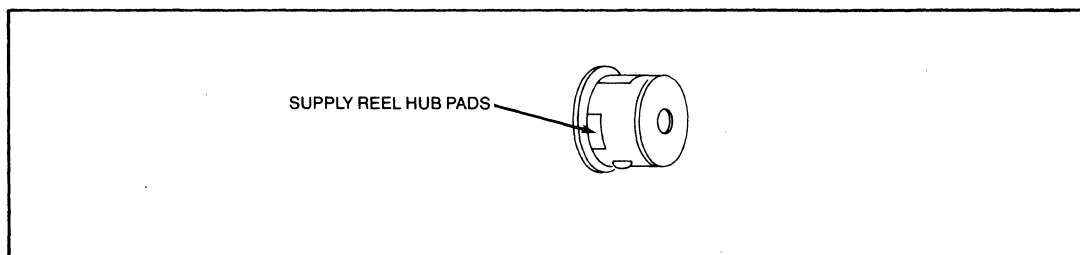
Figure 4-3. Supply Hub Pads

Remedial Maintenance

If an error occurs, the operator is made aware of the abnormal condition with fault codes that appear on the two-digit display. Some error conditions may be resolved with operator action (e.g., missing BOT marker and improper threading). If an error occurs which cannot be resolved by the operator, Honeywell must be contacted according to the terms of your service agreement (see "Service" at the end of this section). Before contacting Honeywell, run the necessary operator diagnostic tests to ensure faster maintenance response.

Power-on Self Test

A built-in power-on self test is automatically executed when the tape unit is powered on and each time the LOGIC ON button is pressed. When the self test is executed, a code 00 appears on the two-digit display and the LOGIC ON and DIAGNOSTICS indicators light. When the test is successfully completed, the two-digit display and DIAGNOSTICS turn offindicator and the LOGIC ON and FILE PROTECT indicators light. If an error condition is detected, a fault code appears on the display. Record the fault code and report it to Honeywell according to the terms of your service agreement.

Functional Fault Recovery

If a fault condition occurs during online operation, a fault code appears on the two-digit display and the RESET indicator lights. Refer to Table 4-1 for corrective procedures. If a problem persists after executing corrective procedures, record the fault code and report it to Honeywell according to the terms of your service agreement.

In some cases, corrective procedures call for further testing (i.e., your system diagnostic test and the operator diagnostic test 01). If you are a TACPAC user, refer to *TACPAC II System Problem Analysis Guide,* Order No. US08, for system testing information. Operator Diagnostic Tests 01, 02, and 03 information is provided below. Upon completion of all diagnostic testing, all fault codes must be recorded by the operator and reported to Honeywell according to the terms of your service agreement.

Table 4-1. Functional Fault Recovery Procedures

Fault Code	Cause	Corrective Procedures
10	Operator door open	Ensure that front door is securely closed.
11	Tape not threaded	Thread tape.
12	Hub not latched	Check that the supply reel hub is latched, the BOT marker is located correctly, or correct the tension fault which occurred during the load operation.
		If a tension fault occurred, the tape may be wound too tightly and not stablized. Thread the tape (do not load) and press the LOAD button and then the TEST button to reset the tension of the tape.
13	Tape incorrectly threaded	Refer to Figure 3-3 to ensure that tape is threaded correctly.
14	BOT marker fault	Check that BOT marker is positioned correctly (see Figure 4-4). If fault condition still occurs, replace with tape of known good quality.
15	RESET button aborted LOAD/UNLOAD	RESET button was pressed inadvertently by operator. Reinitiate test.
16	Tape not write enabled	Check for presence of a write-enable ring in rear of supply reel. Install ring if one is not present.
17	EOT marker fault	Check for presence of EOT marker. If fault condition still occurs, replace with tape of known good quality.
18	Tape already loaded	Tape was loaded when the test was initiated. Thread tape, but do not press LOAD button.
20 through 29	Tape/Unit fault	Execute appropriate system diagnostic test and operator diagnostic Test 01.
30 through 99	Unit fault	Execute the appropriate system diagnostic test and operator diagnostic Test 01.

Operator Diagnostic Test 01

Operator diagnostic test 01 must be run when specified in Table 4-1. Upon completion of the test, refer to Table 4-2 for corrective procedures.

When no errors are detected during diagnostic test 01, the test runs for approximately 13 minutes, if a 2400-ft, 10.5-inch tape reel is used. Test time varies with other size tape reels. The test is interrupted and a numeric fault code appears on the two-digit display when a fault is detected.

Certain test 01 fault codes are prerequisites for further operator diagnostic testing. Table 4-2 lists the fault codes which require further testing. Upon completion of all diagnostic testing, all fault codes must be recorded by the operator and reported to Honeywell according to the terms of your service agreement.

Initiate operator diagnostics test 01 as follows:

1. Power up the tape unit. The LOGIC ON indicator should light. If an error occurs during the power-on self test a fault code will appear on the two-digit display. Follow the appropriate corrective actions (Table 4-1) to clear all fault conditions. If the corrective procedures in Table 4-1 are not effective or a fault code not listed in Table 4-1 appears on the two-digit display,continue with this test.

2. Thread a write-enabled work tape through the tape path and onto the take-up reel. *Do not* load the tape.

3. Close the dust cover door.

4. Press the TEST button. The DIAGNOSTICS indicator will light and 01 will be indicated on the two-digit display.

5. Press the EXECUTE button. The test will begin by checking the display panel with the two-digit display incrementing from 00, 11, 22...99. Check that all of the digits are displayed properly.

Next, the following indicators will be lit: FILE PROTECT, LOGIC ON, ON LINE, RESET, and DIAGNOSTICS.

An error-free test runs to completion and the tape unit performs a REWIND/UNLOAD operation. An 00 is indicated on the display and the RESET indicator is lit.

If an error is detected, the diagnostic halts, a numerical code appears on the display, and the RESET indicator lights. Record the code number and refer to Table 4-2 for corrective procedures.

Table 4-2. Diagnostics Test 01 Corrective Procedures

Fault Code	Cause	Corrective Procedures
01 and 02	Read/Write errors	Clean magnetic head and tape path according to procedures in "Preventive Maintenance." If fault condition still occurs, replace with tape of known good quality.
03 and 04		1. Run diagnostic test 03[a]. 2. Record code displayed during test 03 and report it and any other fault codes to Honeywell according to terms of your service agreement.
05	Read/Write errors	Clean magnetic head and tape path according to procedures in "Preventive Maintenance." If fault condition still occurs, replace with tape of known good quality.
06		1. Run diagnostic test 03[a]. 2. Record code displayed during test 03 and report it and any other fault codes to Honeywell according to terms of your service agreement.
07 through 09	Read/Write errors	Clean magnetic head and tape path according to procedures in "Preventive Maintenance." If fault condition still occurs, replace with tape of known good quality.
10	Operator door open	Ensure that front door is securely closed.
11	Tape not threaded	Thread tape.
12	Hub not latched	Check that supply reel hub is latched, BOT marker is located correctly, or correct tension fault which occurred during load operation.
13	Tape incorrectly threaded	Refer to Figure 3-3 to ensure that tape is threaded correctly.
14	BOT marker fault	Check that BOT marker is positioned correctly (see Figure 4-4). If fault condition still occurs, replace with tape of known good quality.
15	RESET button aborted LOAD/UNLOAD	RESET button was pressed inadvertently by operator. Reinitiate test.
16	Tape not write enabled	Check for presence of write-enable ring in rear of supply reel. Install ring if one is not present.
17	EOT marker fault	Check for presence of EOT marker. If fault condition still occurs, replace with tape of known good quality.
18	Tape already loaded	Tape was loaded when the test was initiated. Thread tape, but do not press LOAD button.
20 and 21		Mount tape of known good quality.
23		Mount tape of known good quality.

Table 4-2 (Cont). Diagnostics Test 01 Corrective Procedures

Fault Code	Cause	Corrective Procedures
24		1. Run diagnostic test 02[b].
		2. Record code displayed during test 02 and report it and any other fault codes to Honeywell according to terms of your service agreement.
25		1. Run diagnostic test 03[a].
		2. Record code displayed during test 03 and report it and any other fault codes to Honeywell according to terms of your service agreement.
26		1. Run diagnostic test 02[b].
		2. Record code displayed during test 02 and report it and any other fault codes to Honeywell according to terms of your service agreement.
27 through 29		Mount tape of known good quality.
30 and 31		1. Run diagnostic test 02[b] and 03[c].
		2. Record codes displayed during tests and report them and any other fault codes to Honeywell according to terms of your service agreement.
32 and 33		1. Run diagnostic test 03[a].
		2. Record code displayed during test 03 and report it and any other fault codes to Honeywell according to terms of your service agreement.
34		Mount tape of known good quality.
35		1. Run diagnostic test 03[a].
		2. Record codes displayed during test 03 and report it and any other fault codes to Honeywell according to terms of your service agreement.
36		1. Run diagnostic tests 02[b] and 03[c].
		2. Record codes displayed during the tests and report them and any other fault codes to Honeywell according to terms of your service agreement.
37 through 48		Contact Honeywell according to terms of your service agreement and report all recorded fault codes. Note that Code 40 means Buffered mode.
52		1. Run diagnostic test 03[a].
		2. Record code displayed during test 03 and report it and any other fault codes to Honeywell according to terms of your service agreement.
53 through 99		Contact Honeywell according to terms of your service agreement and report all recorded fault codes.

[a]Operator diagnostic test 01 is a prerequisite of test 03.

[b]Operator diagnostic test 01 is a prerequisite of test 02.

[c]Execute the operator diagnostic tests in sequence.

Operator Diagnostic Test 02

Note: This test should be executed only when specified in "Operator Diagnostic Test 01."

To initiate Diagnostic Test 02 follow these procedures:

1. Make sure the tape unit is powered on.

2. Thread a write-enabled work tape through the tape path and onto the take-up reel. *Do not* load the tape.

3. Close the dust cover door.

4. Press the RESET button.

5. Press the TEST button. The DIAGNOSTICS indicator will light and an 01 will be indicated on the two-digit display.

6. Press the STEP button. An 02 will be indicated on the two-digit display.

If a 70 is indicated on the two-digit display, an illegal operator sequence has been detected and Operator Test 01 must be run. If a 71 is indicated on the two-digit display, ensure that the tape is threaded and repeat the test.

When the test ends a numerical code appears on the display and the RESET indicator lights. Record this code and any other fault codes and contact Honeywell according to the terms of your service agreement (see "Service" later in this section).

Operator Diagnostic Test 03

Note: This test should be executed only when specified in "Operator Diagnostic Test 01."

To initiate Diagnostic Test 03 follow these procedures:

1. Make sure the tape unit is powered on.

2. Mount a write-enabled work tape onto the supply hub. *Do not* thread the tape.

3. Close the dust cover door.

4. Press the RESET button.

5. Press the TEST button. The DIAGNOSTICS indicator will light and an 01 will be indicated on the two-digit display.

6. Press the STEP button twice. An 03 will be indicated on the two-digit display.

If a 94 is indicated on the two-digit display, ensure that the tape is not threaded. If a 95 is indicated on the two-digit display, repeat the test.

When the test ends a numerical code appears on the display and the RESET indicator lights. Record this code and any other fault codes and contact Honeywell according to the terms of your service agreement (see "Service" below).

Service

Your MTU9921/9922 GCR/PE tape unit has a 90-day warranty beginning on the date of shipment from Honeywell.

If you purchased a Honeywell maintenance contract, warranty service will be provided in accordance with the terms of your maintenance contract. Perform the instructions specified in your contract and contact Honeywell according to the telephone number provided.

If you have not purchased a maintenance contract and your equipment requires service after the warranty has expired, contact the Honeywell National Response Center for information on service options.

National Response Center telephone numbers are:

    800-241-1634   Outside Georgia
    800-282-4350   Within Georgia
       982-3066   Local – Atlanta, GA

When you call the National Response Center, you will be asked for your identification number.

If you do not have a maintenance contract, you will be asked for your proof of purchase number which is recorded on your PROOF OF PURCHASE FORM. This will indicate to the attendant whether or not your equipment is still under warranty. The National Response Center will collect some additional information, and forward your service request to the appropriate Honeywell organization which, in turn, will return your call to provide the assistance you need.

Tape Maintenance

Tape must be maintained to ensure the proper operation of the tape unit. When maintaining tape, keep in mind the physical layout of ½-inch magnetic tape, as illustrated in Figure 4-4. A full reel of tape has a nominal recording length of 2400 ft (732 m). The entire length of the tape is oxide-coated. Beginning- and end-of-tape sensing is controlled by reflective markers affixed to the Mylar-base side of the tape. The beginning-of-tape (BOT) marker is attached approximately 16.0 ft (4.9 m) from the physical beginning of the tape, and the end-of-tape (EOT) marker is attached approximately 25.0 ft (7.6 m) from the physical end of the tape.
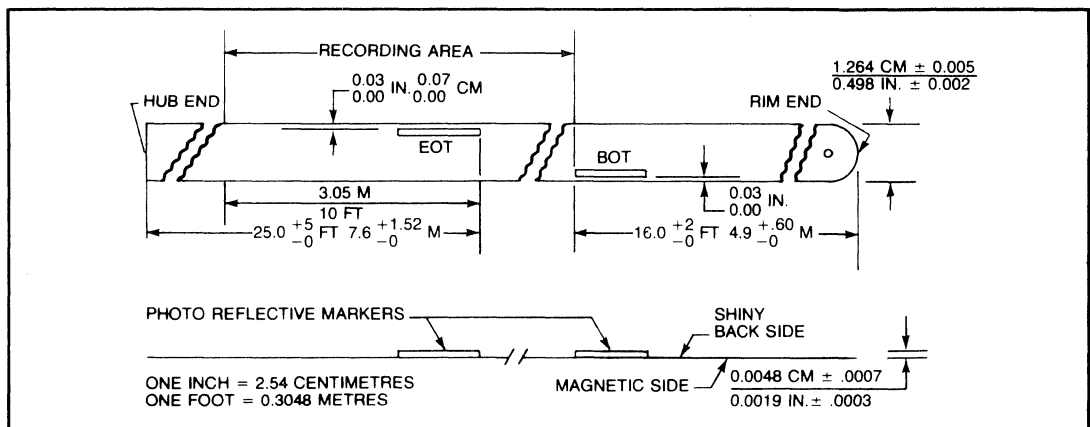
Figure 4-4. Magnetic Tape Layout

Missing or Defective BOT Marker

A missing or defective beginning-of-tape (BOT) marker prevents the completion of the load operation. Not sensing BOT, the unit rewinds the tape onto the supply reel. To check the BOT marker, do the following:

1. Open the dust cover door.

2. Remove the supply reel to inspect the condition and location of the patch.

3. Add or replace the BOT patch if necessary, and remount the reel (see Figure 4-4 for physical specifications).

4. Close the dust cover door and press the RESET button.

5. Resume normal operations to load the tape (see Section 3).

Missing or Defective EOT Marker

A missing or defective end-of-tape (EOT) marker may cause writing past the appropriate end of the tape. The end-of-tape will come off the supply reel and the unit will cycle down. If this occurs the operator should perform the following:

1. Open the front door.

2. Manually unwind about 25-30 feet of tape from the take-up reel.

3. Inspect the condition and location of the EOT marker.

4. Add or replace the EOT patch, if necessary (see Figure 4-4 for physical specifications).

5. Wind the tape onto the empty supply reel several turns past the EOT marker. The tape must be threaded correctly over all tape path components.

6. When the tape is properly threaded and taut, close the dust cover door and press the RESET button.

7. Press the LOAD/REWIND button to begin the load. The tape will rewind to the BOT marker when the load is complete and the BOT indicator will light.

8. Resume normal operations.

Tape Handling, Storage, and Shipping

A tape that has been subjected to abusive treatment in handling, storage, or shipping, or used on an old and damaged reel can cause read/write failures and should not be used. See the following guidelines for proper magnetic tape handling, storage, and shipping:

1. Keep tapes clean. Dust and dirt can reduce the intensity of reading or recording signals by altering the distance between the head and the tape. Therefore:

   • Never touch the tape's oxide coating; body oils on tape attract dust and lint.

   • Keep the tape in its dust-proof container until just prior to use on the tape drive.

   • Keep tape containers clean and dust-free inside and out. Don't leave containers open when the tape is in use.

   • Keep the dust cover door closed when the tape unit is not in use.

   • Avoid dangling the free end of the tape on the floor when changing reels.

- Don't eat, drink, or smoke in the computer room. Smoke and ashes are dirt; hot ashes are destructive to magnetic tape.
- Identify reels with adhesive stickers, which are easily removed and leave no residue. Change the label, don't erase it, eraser particles are dirt.

2. Handle and store tapes with care. Avoid damaging tapes and reels or placing tapes where temperature, dust, or magnetic fields could affect them adversely.

- Make sure that the tape leader is properly wound when the tape is returned to its container. This avoids accidental crushing of the tape leader edges and possible damage to the tape itself.
- Avoid dropping reels. If the tape is dropped, the reel may break or become dirty, resulting in possible damage to the tape. Reel damage can be determined by a visual inspection. Never use a reel that may damage the tape or the tape drive.
- Always store tapes in containers in a dust-free cabinet. The containers should be placed on edge so that the reel is in an upright position. Stacking tape reels one on top of the other is not recommended since the excessive weight of the stacked reels may damage the bottom containers.
- Never place reels of tape on top of a tape drive as this exposes them to heat and dust from the cooling system.
- Never store reels of tape in an area where strong magnetic fields are present or where they may come in contact with magnetic materials.
- Whenever possible, store tapes in the controlled environment where they are to be used to avoid subjecting them to excessive handling and variations in temperature and humidity. The surrounding atmosphere should be controlled within the following limits:

    Temperature (operational): 60°F to 90°F (15°C to 33°C)
    Relative humidity (operational): 20% to 80%

- All tapes should be allowed to reach environmental equilibrium before being used.
- For long-term storage, the reel of tape in its container should be hermetically sealed in a moisture-proof bag.
- When mounting or dismounting tapes, handle the tape reels by the hub and not by the flanges which could result in damaged tape edges and eventual loss of contact with the magnetic head.
- In loading, when mounting a reel onto the tape unit, apply pressure to the hub and not to the flanges.
- Make routine library inspection of tape reels. Check for protruding tape edges. Exposed edges are vulnerable to damage and cause loss of contact with the tape drive head.

3. Ship tapes properly. Whenever it is necessary to mail or ship recorded tapes to other locations, take certain precautions to ensure the safety and integrity of the tapes in transit.

- The outer shipping container into which the canisters are placed must afford the necessary strength and ridigity to protect the tapes from damage caused by dropping or crushing. Pack wood or cardboard spacing material between the tapes and the outer shipping container for physical protection as well as for isolation from any magnetic fields that could cause accidental tape erasure. Three inches of this bulk spacing should constitute adequate protection from stray magnetic fields.

- While a 100% watertight container is not necessary, a reasonable degree of water resistance must be ensured. For example, the container should be able to protect the contents from damage if it is left on a loading dock in the rain.

- Though the free end of a reel of tape should always be secured, it is particularly important when preparing reels for shipping. While in storage, either a hold-down sponge or vinyl strip may be used. During shipping, however, it is advisable to use both.

- Tape in transit may be subjected to temperature extremes. Temperatures as low as -40°C might be encountered in an aircraft cargo hold at high altitudes. A temperature of 120°F could easily be encountered in a motor vehicle in the summer sun. It must again be emphasized that all incoming tapes should be allowed to reach environmental equilibrium before being used.

Media Requirements

The magnetic tape media to be used with these magnetic tape units must comply with American National Standards Institute standard, X3.40-1983, Unrecorded Magnetic Tape for Information Interchange.

A magnetic tape that does not meet these standards can degrade the performance of a tape unit. In addition, a non-standard tape can cause astual damage to the tape unit itself or excessive wear to the unit.

Characteristics of non-standard tapes include poor edge conditions, abrasive surface, interlayer slippage, and poor oxide adhesion (which can cause particles to separate from the tape causing errors on that tape and poor performance of subsequent tapes used on the tape unit). It should be noted that 1.0-mil tape is not allowed by ANSI X3.40-1983.

Magnetic tapes purchased from Honeywell meet the American National Standards Institute standards and are recommended for use on Honeywell magnetic tape units. American National Standards Institute standards are available from:

American National Standards Institute, Inc.
1430 Broadway
New York, NY 10018

Appendix

Specifications

Performance Characteristics:
Number of Tracks — 9

Tape Density:
GCR — 6250 bpi
PE — 1600 bpi

Read/Write Speed: 25-ips start/stop, 25-ips streaming, or 75-ips streaming

Rewind Speed: 2.5 minutes for 2400-ft reel (185-ips)

GCR Mode Transfer Rate:
High Speed — 469K bytes/second
Low Speed — 156K bytes/second

PE Mode Transfer Rate:
High Speed — 120K bytes/second
Low Speed — 40K bytes/second

Interblock Gap:
PE — 0.6 in. (1.5 cm), nominal; 1.2 in. (3.0 cm), max
GCR — 0.3 in. (0.8 cm), nominal; 0.6 in. (1.6 cm), max

Tape Head: Dual read/write, separate erase head

Recording Format: Compatible with ANSI standards (X3.39-1973, X3.54-1976, X3.40-1983) for recorded magnetic tape information interchange

Tape Media: Compatible with ANSI standards (X3.39-1973, X3.54-1976, X3.40-1983) for recorded magnetic tape information interchange

Physical Characteristics:
Height — 61.5 in. (156.2 cm)
Width — 24.0 in. (61.0 cm)
Depth — 36.4 in. (92.5 cm)
Weight (MTU9921) – 141 lb (63.87 kg)
Weight (MTU9922) – 141 lb (63.87 kg)

Electrical Characteristics:
Voltage — 120 Vac, 410%, – 15%, single-phase
Frequency – 60 Hz, ±0.6 Hz
Power Consumption – 300 VA (standby and loaded); 550 VA (max) (start/stop)
Heat Generation — 1025 Btu/hr

Environmental Characteristics:
Operating Temperature — 60° F to 90° F (15° C to 33° C)
Relative Humidity — 20% to 80% (noncondensing)

Cables:

Power Cord — 10.0 ft (3.0 m)

System to Primary Tape Unit — 10.0 ft (3.0 m)

Primary Tape Unit to Secondary Tape Unit — 3.0 ft (.9 m)

Tape Supplies:

M1317 — 6250 bpi, 1200 ft (365.8 m) bulk

M1316 — 6250 bpi, 2400.0 ft (731.5 m) bulk

Options:

M7621 — GCR/PE tape stand

M7620 — Corner Unit

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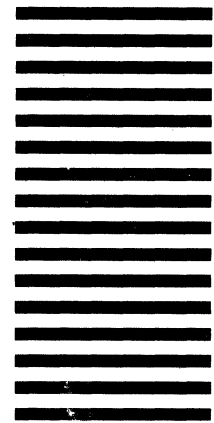
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