

***Service and
Maintenance
Manual***

HS-1/2

Paper Handler/Stacker
for FS-1500[A]/FS-3500[A]
Revision 1.02



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Revision 1.00 May, 1993

NOTICE

The information in this manual is subject to change without notification. Additional pages may be inserted in future editions. The user is asked to excuse any technical inaccuracies or typographical errors in the present edition.

No responsibility is assumed if accidents occur while the service person is following the instructions in this manual.

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INFORMATION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio / TV technician for help.

Changes or modifications not expressly approved by the manufacturer for compliance could void the user's authority to operate the equipment.

NOTE ON USING SERIAL INTERFACE

The HS-1 kit, when purchased in European countries, includes a ferrite noise absorber that should be installed onto the serial interface cable, if the printer is connected to the computer through the serial interface. Instruction on how to install the noise absorber is provided with the package containing the noise absorber and ROMs.

IMPORTANT NOTICE TO SERVICE PERSON

Before attempting service on the equipment, including disassembling, re-assembling, troubleshooting, and adjustment, read this manual carefully. During performing service, use extreme care to avoid possible electric shock hazard, burn, and human injuries. Make sure the printer is not provided with any safety facilities other than those primarily intended for the safety of users.

PREFACE

This manual contains information pertaining to service and maintenance of the Kyocera sorter/stacker. The information in this manual contains the following chapters:

Chapter 1: General Information

Chapter 2: Maintenance

Chapter 3: Parts Catalog

Chapter 4: Hardware Notes

Appendix: Schematic Diagram

Legend

Throughout the manual, **WARNING** denotes precautions which, if ignored, could result in personal injury, and/or irrevocable damage to the equipment. **Note** denotes precautions which, if ignored, could result in damage to the equipment.

Chapter 1: General information

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1.1. General

This chapter explains basic considerations and precautions to be observed when repairing, maintaining and inspecting the paper handler/stackers HS-1 and HS-2. The precautions are fairly extensive; however, to prevent accidents, it is very important that the service person read the precautions carefully, and observe them at all times.

This chapter also includes the names of the parts of the product, instructions for installation of the product, and the specifications.

1.2. Product Description

The paper handler/stacker HS-1 is intended for use with printer model FS-1500/A; and HS-2 is intended for use with printer model FS-3500/A. (The /A represents the units produced for the U.S. and Canada.)

The paper handler/stacker is mounted at the back of the printer when the printer is installed together with the duplexer (DU-1) and routes paper which has its one side printed towards the inlet slot on the rear side of the duplexer for printing on the other side. Due to difference in the heights of the two printer models, the HS-2 is supplied with a base that fills in the distance between the paper handler/stacker's bottom and the top of the duplexer.

The HS-1/HS-2 also replaces the face-up stack tray of the printer and accepts approximately 500 pages of printed output.

The paper handler/stacker has a motor and rollers to drive paper as it passes through the paper handler/stacker and the built-in electronics for controlling the motor. Technical explanation for the electronics circuits is made in chapter 3, *Hardware Notes*, in this manual.

Topics covering the installation and operations of the printer are fully detailed in the paper handler/stacker's *User's Manual*.

1.2.1. Original packing list

The paper handler/stacker package contains each of the following items in the indicated quantities.

- ❖ HS-1 or HS-2 paper handler/stacker, 1
- ❖ Base for HS-2 paper handler/stacker (not required/supplied for HS-1), 1
- ❖ Instruction manual, 1

1.2.2. Names of parts

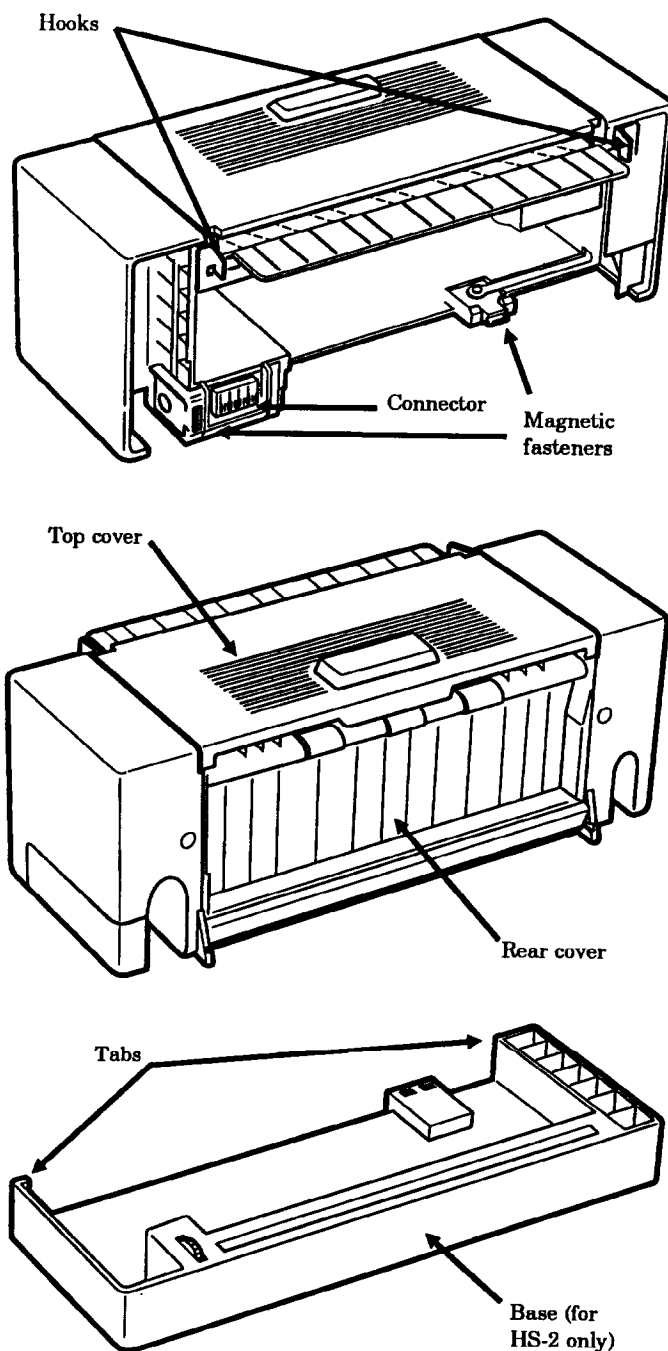
The paper handler/stacker has the following parts. See figure on next page.

«Connector» The connector mates with a connector on the printer.

«Hooks» The hooks fit into mounting slots on the rear of the printer.

«Magnetic fasteners» The magnetic fasteners stick to the printer's metallic chassis, holding the stacker firmly to the printer's rear side.

FIG. 1.1. PARTS OF THE PAPER HANDLER/STACKER



«Top cover/rear cover» The covers open to allow access to the interior of the stacker in the event of a paper jam.

«Base» Relays paper between the paper handler/stacker and option units such as the PF-5 paper feeder. The base is included only in the HS-2 kit for the FS-3500/A, and is not used when printing with the FS-1500/A.

«Tabs» Fit to the left and right edges of the printer's rear panel.

1.3. Precautions concerning service and maintenance

Only a qualified technician should perform service on the equipment, who is familiar with fundamental safety countermeasures as dictated for all electronics technicians. Observe the following precautions during service and maintenance of the sorter. These are to prevent the possible personal injuries to the technician and the damage to the equipment.

1.3.1. Precautions

Always observe the following precautions when maintaining or inspecting the paper handler/stacker.

- ❖ When performing any maintenance or inspection procedure, first unplug the power cord. Make sure that the printer power is turned off before replacing circuit boards or electrical components in the paper handler/stacker.
- ❖ To prevent electrostatic discharge damage to electrical circuits, be sure to wear an antistatic band when handling the circuit boards.
- ❖ Be particularly careful when reconnecting the power after having repaired or replaced a component that has the potential for causing an electric shock.
- ❖ If the paper handler/stacker is to be transported or stored for a lengthy period of time, the unit should be packed in its original packaging.
- ❖ If packed in their original packaging, these units can be stacked five high for up to six months. They should not be stacked sideways or upside down, however.
- ❖ Store the paper handler/stacker in a cool, dark, dry area. Avoid storage in dusty areas.
- ❖ Ship units out on a first in, first out basis.

1.3.2. Replacement parts

Be sure to use only Kyocera-recommended supplies and components. Kyocera assume no liability in the event of damage resulting from the use of unauthorized components.

Chapter 2: Maintenance

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- 2.1. Introduction, 2—2
- 2.2. Disassembly procedures, 2—3
 - 2.2.1. Removing the cover, 2—3
 - 2.2.2. Belt hookup, 2—4
 - 2.2.3. Drive gears arrangement, 2—4
- 2.3. Cleaning procedure, 2—5

2.1. Introduction

This chapter explains the following subjects:

Section 2.2 explains with illustrations the disassembly procedures required to replace parts. It also contains the driving belt hookup and gears meshing for easy reassembly. Section 2.3 explains procedures for lubricating those parts inside the paper handler/stacker which require periodic lubrication.

2.2. Disassembly procedures

This section provides procedures for disassembling the paper handler/stacker. The exploded diagram in chapter 5 will also help locating the components.

Before beginning any disassembly procedure, be sure to read the notes below:

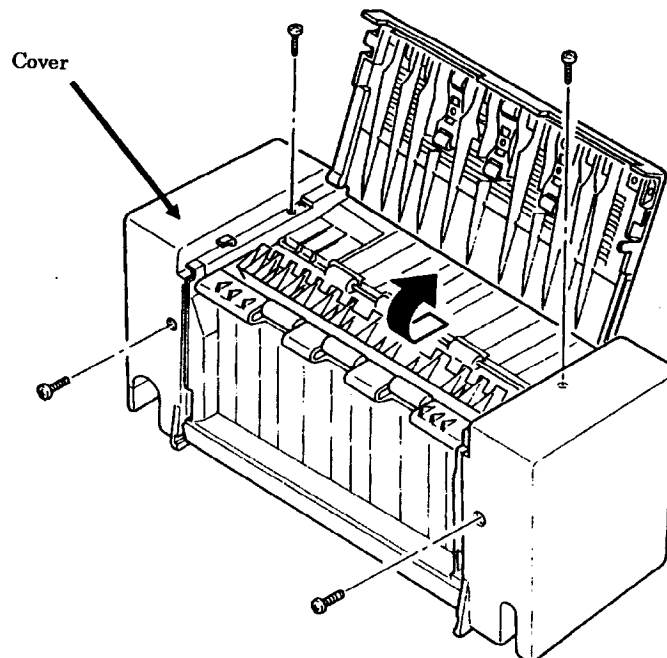
- ❖ Before removing the paper handler/stacker from the printer, be sure to turn off the printer power and disconnect the connecting cables that may be running underneath the paper handler/stacker.
- ❖ Be sure to use the correct screws when installing a component. Using incorrect screws can result in the threads of the screws being stripped, which may lead in turn to other problems. Frequent insertion and removal of self-tapping screws can cause damage to screw holes. Do not tighten screws excessively.
- ❖ When removing or installing circuit boards, wear a grounded wrist strap to protect against damage due to discharge of static electricity.

Before proceeding, make sure printer power is switched off. Remove the face-up stack tray from the paper handler/stacker. Remove the paper handler/stacker from the printer's rear panel.

2.2.1. Removing the cover

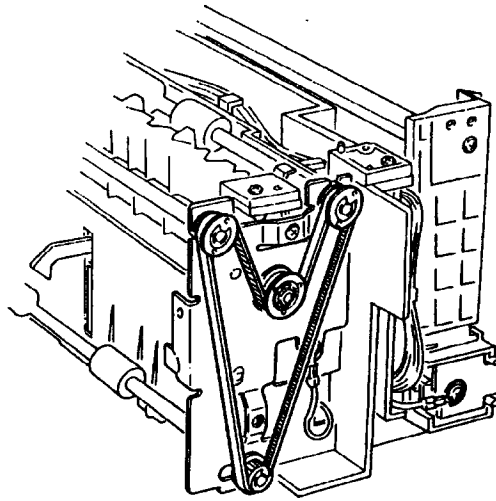
To remove the cover, open the top lid as shown below. Remove four screws. Remove the cover.

FIG. 2.1. REMOVING THE COVER



2.2.2. Belt hookup

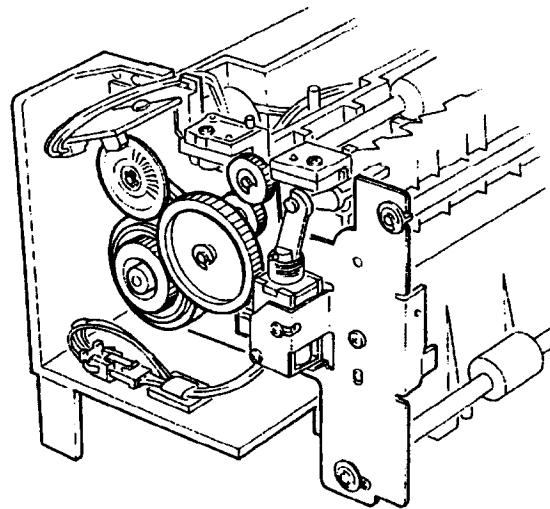
FIG. 2.2. BELT HOOKUP



2.2.3. Drive gears arrangement

NOTE: The gears no periodic lubrication.

FIG. 2.3. GEAR ARRANGEMENT



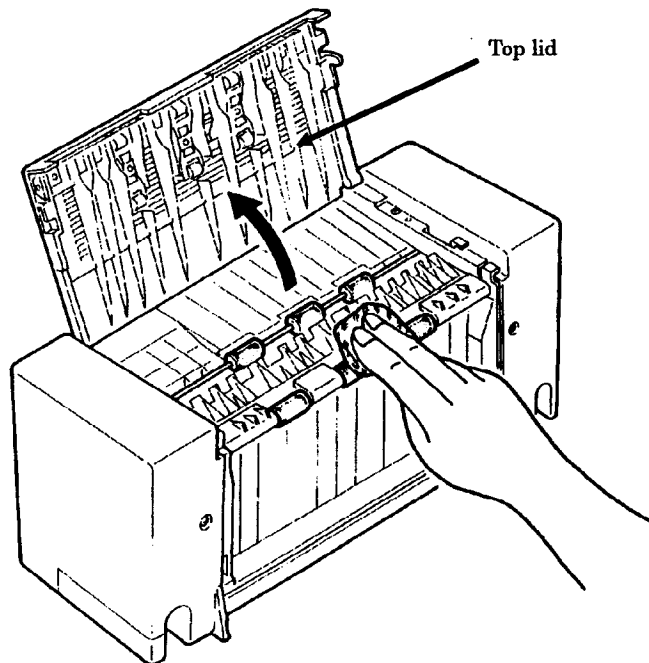
NOTE: Gears are oiled at the factory.
Do not touch them by naked hand.

2.3. Cleaning procedure

After the paper handler/stacker has been used for a certain period of time, tiny paper scraps and dust will begin to accumulate on the rollers. Because these scraps and dust will hamper proper paper feeding, periodic cleaning is necessary using the procedure explained below.

Open the top lid. Clean the feed rollers with a cloth moistened with alcohol.

FIG. 2.4. CLEANING ROLLERS



Chapter 3: Parts catalog

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- 3.2. Exploded view (HS-1/HS-2), 3—4
- 3.3. Exploded view for HS-2 base unit, 3—7

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3.1. Introduction

This chapter lists the main parts of the paper handler/stacker and shows exploded view of the major assemblies. Note that the HS-1 and HS-2 are the same in the exploded view except that the HS-2 has an extra base unit which is shown in section 3.3.

The headings in the parts tables are explained below.

REF.: The reference number that corresponds to the part in the exploded view.

PART CODE: The part code of the part.

DESCRIPTION: The name and model of the part.

QTY: The quantity of that particular part used in the paper handler/stacker.

Recommended parts: A recommended part is indicated in the **REMARKS** column.

3.1.1. Ordering

Recommended parts are those parts remarked specifically as Recommended in the **REMARKS** column. Part codes for other parts are shown only for reference purposes. To avoid errors in parts orders, always specify the following information:

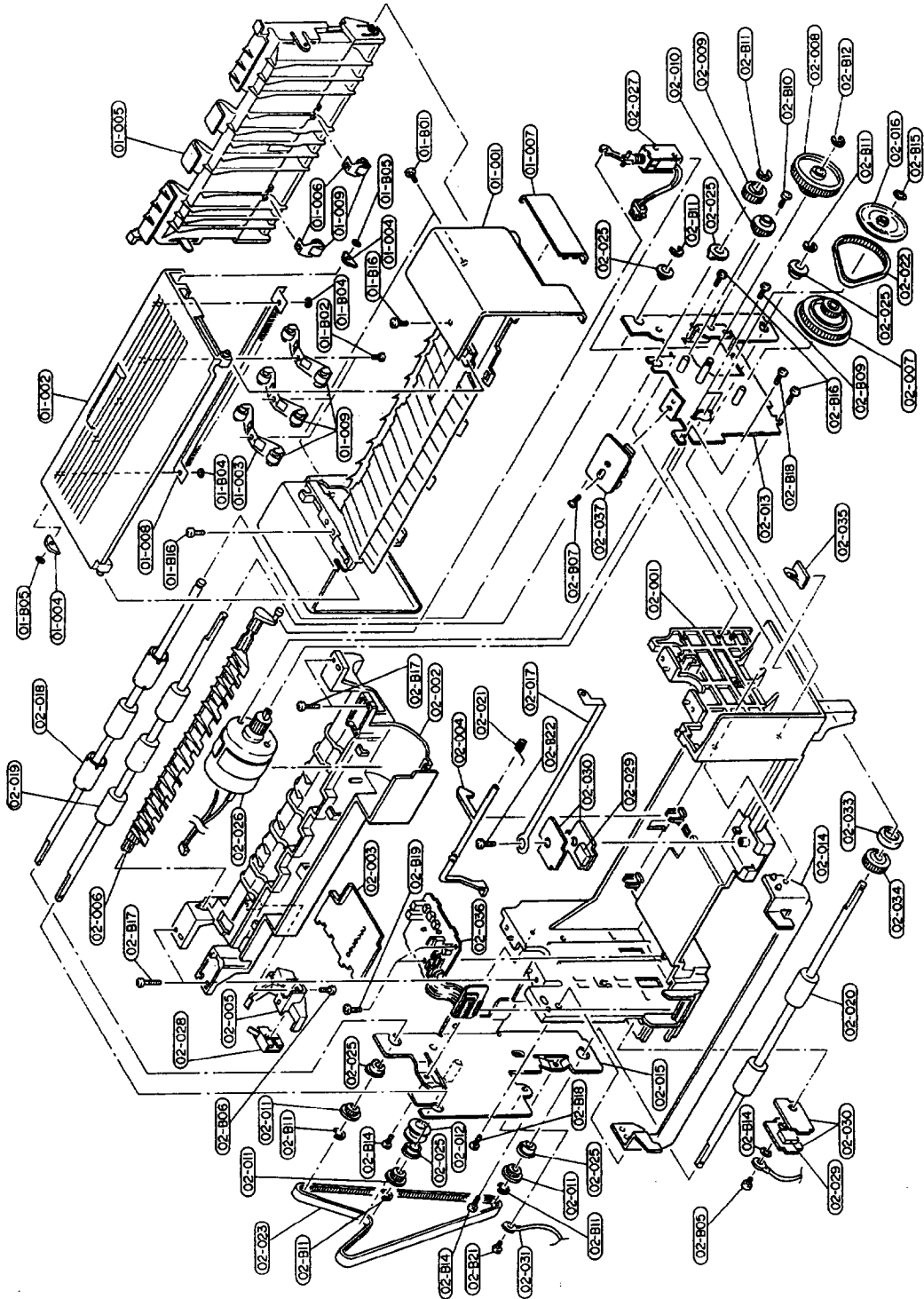
Part description

Part code

Quantity required

Reference number in the exploded view

3.2. Exploded view (HS-1/HS-2)



| REF. | PART CODE | DESCRIPTION | QTY | REMARKS |
|--------|-----------------|--------------------|-----|---------|
| 01-001 | 5MVB877SH004 | COVER | 1 | |
| 01-002 | 5MVB872SH012 | LID TOP | 1 | |
| 01-003 | 5MMX621LD006 | SPRING ROLLER | 3 | |
| 01-004 | 5MVX211DB011 | LEVER LOCK | 2 | |
| 01-005 | 5MVB872SH013 | LID REAR | 1 | |
| 01-006 | 5MMX222LD010 | SPRING ROLLER | 2 | |
| 01-007 | 5MVS739SH001 | COVER CONNECTOR | 1 | |
| 01-008 | 5MMX711AD002 | BRUSH EXIT | 1 | |
| 01-009 | 5MVM273DB003 | ROLLER PINCH | 8 | |
| 01-B01 | 5MBTPB3008TN | BIND T.T SCREW (+) | 2 | |
| 01-B02 | 5MBTPB3006WZ | BIND T.T SCREW (+) | 3 | |
| 01-B04 | 5MBCS2025XSP | CS STOP RING | 2 | |
| 01-B05 | 5MBCS3025XSP | CS STOP RING | 2 | |
| 02-001 | 5MVX877SH001 | BASE | 1 | |
| 02-002 | 5MVX866SH007 | GUIDE INNER | 1 | |
| 02-003 | 5MVS667SH002 | LID PWB | 1 | |
| 02-004 | 5MVX642SH004 | LEVER SENSOR | 1 | |
| 02-005 | 5MVX542DB002 | HOLDER SWITCH | 1 | |
| 02-006 | 5MVX832SB006 | GUIDE FLAP | 1 | |
| 02-007 | 5MVG368DB001 | GEAR Z28-P56 | 1 | |
| 02-008 | 5MVG148DB018 | GEAR Z14-Z36 | 1 | |
| 02-009 | 5MVG127DB029 | GEAR Z14 | 1 | |
| 02-010 | 5MVG127DB030 | GEAR FEED Z14 | 1 | |
| 02-011 | 5MVG327DB003 | PULLEY P17 | 1 | |
| 02-012 | 5MVM177DB004 | BELT IDLE PULLEY | 3 | |
| 02-013 | 5MMS777SL004 | FRAME RIGHT | 1 | |
| 02-014 | 5MMX822SL002 | BRACKET HOOK | 1 | |
| 02-015 | 5MMS767SL005 | FRAME LEFT | 1 | |
| 02-016 | 5MVM196DB003 | PLATE ENCODER | 1 | |
| 02-017 | 5MML623DB001 | PLATE EARTH | 1 | |
| 02-018 | 5MMT875SN001 | ROLLER EXIT | 1 | |
| 02-019 | 5MMT875SN002 | ROLLER FEED A | 1 | |
| 02-020 | 5MMT875SN003 | ROLLER FEED B | 1 | |
| 02-021 | 5MMW161LD014 | SPRING SENSOR | 1 | |
| 02-022 | 5MVM150RB007 | BELT MOTOR Z70 | 1 | |
| 02-023 | 5MVM170RB025 | BELT TRANS Z164 | 1 | |
| 02-025 | 5MMM176CJ005 | BUSHING SBK | 6 | |
| 02-026 | 5AAYHS1***04 | DC MOTOR ASSY | 1 | |
| 02-027 | 5AAYHS1***05 | SOLENOID ASSY | 1 | |
| 02-028 | 5ESM010234***01 | MICRO SWITCH | 1 | |
| 02-029 | 5MMK224FJ001 | MAGNET | 2 | |
| 02-030 | 5MMS227SL003 | PLATE MAGNET | 4 | |
| 02-031 | 5AACCNLY0GEA | CONCORD S00677 | 1 | |
| 02-032 | 5MVVSHS1***1 | SER. NO. LABEL | 1 | |
| 02-033 | 5MVX321DB014 | PLATE ADJUST | 1 | |

| REF. | PART CODE | DESCRIPTION | QTY | REMARKS |
|--------|-----------------|--------------------|-----|-------------|
| 01-001 | 5MVB877SH004 | COVER | 1 | |
| 01-002 | 5MVB872SH012 | LID TOP | 1 | |
| 01-003 | 5MMX621LD006 | SPRING ROLLER | 3 | Recommended |
| 01-004 | 5MVX211DB011 | LEVER LOCK | 2 | |
| 01-005 | 5MVB872SH013 | LID REAR | 1 | |
| 01-006 | 5MMX222LD010 | SPRING ROLLER | 2 | Recommended |
| 01-007 | 5MVS739SH001 | COVER CONNECTOR | 1 | Recommended |
| 01-008 | 5MMX711AD002 | BRUSH EXIT | 1 | |
| 01-009 | 5MVM273DB003 | ROLLER PINCH | 8 | Recommended |
| 01-B01 | 5MBTPB3008TN | BIND T.T SCREW (+) | 2 | |
| 01-B02 | 5MBTPB3006WZ | BIND T.T SCREW (+) | 3 | |
| 01-B04 | 5MBCS2025XSP | CS STOP RING | 2 | |
| 01-B05 | 5MBCS3025XSP | CS STOP RING | 2 | |
| 02-001 | 5MVX877SH001 | BASE | 1 | |
| 02-002 | 5MVX866SH007 | GUIDE INNER | 1 | |
| 02-003 | 5MVS667SH002 | LID PWB | 1 | |
| 02-004 | 5MVX642SH004 | LEVER SENSOR | 1 | Recommended |
| 02-005 | 5MVX542DB002 | HOLDER SWITCH | 1 | |
| 02-006 | 5MVX832SB006 | GUIDE FLAP | 1 | |
| 02-007 | 5MVG368DB001 | GEAR Z28-P56 | 1 | |
| 02-008 | 5MVG148DB018 | GEAR Z14-Z36 | 1 | |
| 02-009 | 5MVG127DB029 | GEAR Z14 | 1 | |
| 02-010 | 5MVG127DB030 | GEAR FEED Z14 | 1 | |
| 02-011 | 5MVG327DB003 | PULLEY P17 | 1 | |
| 02-012 | 5MVM177DB004 | BELT IDLE PULLEY | 3 | Recommended |
| 02-013 | 5MMS777SL004 | FRAME RIGHT | 1 | |
| 02-014 | 5MMX822SL002 | BRACKET HOOK | 1 | |
| 02-015 | 5MMS767SL005 | FRAME LEFT | 1 | |
| 02-016 | 5MVM196DB003 | PLATE ENCODER | 1 | |
| 02-017 | 5MML623DB001 | PLATE EARTH | 1 | |
| 02-018 | 5MMT875SN001 | ROLLER EXIT | 1 | Recommended |
| 02-019 | 5MMT875SN002 | ROLLER FEED A | 1 | Recommended |
| 02-020 | 5MMT875SN003 | ROLLER FEED B | 1 | Recommended |
| 02-021 | 5MMW161LD014 | SPRING SENSOR | 1 | Recommended |
| 02-022 | 5MVM150RB007 | BELT MOTOR Z70 | 1 | Recommended |
| 02-023 | 5MVM170RB025 | BELT TRANS Z164 | 1 | Recommended |
| 02-025 | 5MMM176CJ005 | BUSHING SBK | 6 | |
| 02-026 | 5AAYHS1***04 | DC MOTOR ASSY | 1 | Recommended |
| 02-027 | 5AAYHS1***05 | SOLENOID ASSY | 1 | Recommended |
| 02-028 | 5ESM010234***01 | MICRO SWITCH | 1 | Recommended |
| 02-029 | 5MMK224FJ001 | MAGNET | 2 | |
| 02-030 | 5MMS227SL003 | PLATE MAGNET | 4 | |
| 02-031 | 5AACCNLY0GEA | CONNCORD S00577 | 1 | |
| 02-032 | 5MVVSHS1***1 | SER. NO. LABEL | 1 | |
| 02-033 | 5MVX321DB014 | PLATE ADJUST | 1 | |

| REF. | PART CODE | DESCRIPTION | QTY | REMARKS |
|--------|----------------|--------------------------|-----|-------------|
| 02-034 | 5MVG127DB032 | GEAR FEED Z16S | 1 | |
| 02-035 | 5MMX321SM001 | CORD KEEP | 1 | |
| 02-036 | 5AAYHS1***06 | PWB UNIT AAPRDVR2001 | 1 | Recommended |
| 02-037 | 5AAPRSSR2001AH | P.W. BOARD ASSY (SENSOR) | 1 | Recommended |
| 02-B06 | 5MBTPB3008WZ | BIND T.T SCREW (+) | 1 | |
| 02-B07 | 5MBTPB3006TZ | BIND T.T SCREW (+) | 1 | |
| 02-B09 | 5MBSPP2603NZ | BIND HEAD SCREW (+) | 2 | |
| 02-B10 | 5MBSPP3003NZ | BIND HEAD SCREW (+) | 2 | |
| 02-B11 | 5MBCE4060XSW | E STOP RING | 6 | |
| 02-B12 | 5MBCE4060XSW | E STOP RING | 3 | |
| 02-B14 | 5MBWW54102LD | WAVE WASHER | 1 | |
| 02-B14 | 5MBTPB3008WZ | BIND T.T SCREW (+) | 2 | |
| 02-B15 | 5MBCS5025XSP | CS STOP RING | 1 | |
| 02-B16 | 5MBTPB3010WZ | BIND T.T SCREW (+) | 2 | |
| 02-B17 | 5MBTPB3010WZ | BIND T.T SCREW (+) | 4 | |
| 02-B18 | 5MBTPB3010TZ | BIND T.T SCREW (+) | 2 | |
| 02-B19 | 5MBTPB3008WZ | BIND T.T SCREW (+) | 2 | |
| 02-B21 | 5MBTPB3004TZ | BIND T.T SCREW (+) | 1 | |
| 02-B22 | 5MBTP43006WZ | TP TAP SCREW (+) | 1 | |

PART LIST FOR HS-2 BASE

| REF. | PART CODE | DESCRIPTION | QTY | |
|--------|--------------|-------------------|-----|-------------|
| 01-001 | 5MVB875SH005 | CASE | 1 | |
| 01-002 | 5MMS527SL001 | ARM | 1 | |
| 01-003 | 5MMT875SN004 | ROLLER FEED C | 1 | Recommended |
| 01-004 | 5MMX322LD009 | SPRING ROLLER C | 2 | Recommended |
| 01-005 | 5MVG138DB043 | GEAR COUNTER Z26S | 1 | |
| 01-006 | 5MVG127DB032 | GEAR FEED Z16S | 1 | |
| 01-008 | 5MVM273DB003 | ROLLER PINCH | 2 | Recommended |
| 01-009 | 5MMS227SL003 | PLATE MAGNET | 2 | |
| 01-010 | 5MMK224FJ001 | MAGNET | 1 | |
| 01-011 | 5MVM176DB006 | BUSHING POM | 4 | |
| 01-B01 | 5MBTP43006WZ | TP TAP SCREW (+) | 1 | |
| 01-B02 | 5MBCE4060XSW | E-STOP RING | 4 | |

Chapter 4: Hardware notes

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- 4.2. Motor speed shifter , 4—3
- 4.3. Motor driver, 4—5
- 4.4. Block diagram and terminal configurations, 4—7

4.1. Introduction

This chapter describes the operation of the electrical circuits in the paper handler/stacker. Referring to the schematic diagram in Appendix while reading in this chapter will help easy understanding of the operation of the electrical circuits.

The electrical circuits of the paper handler/stacker serve the following functions:

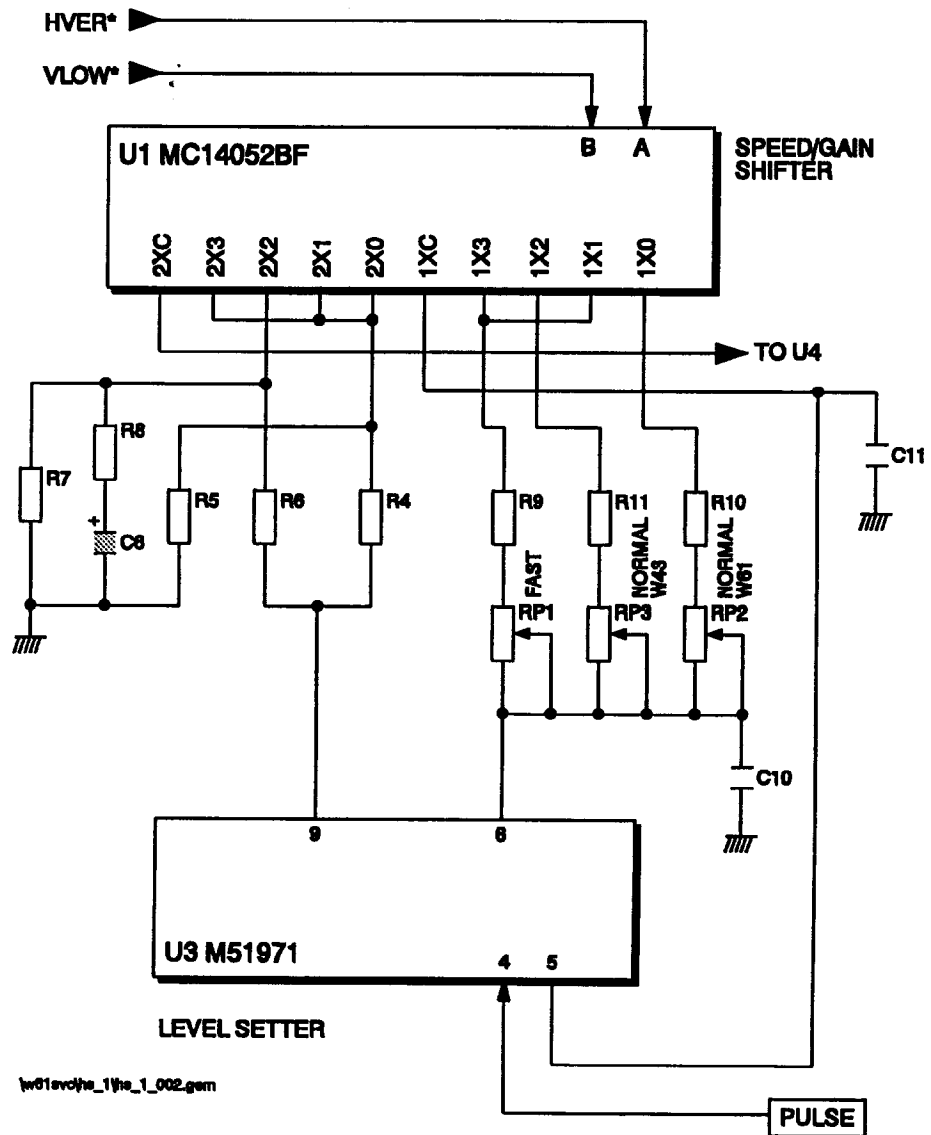
- ❖ **Motor speed shifter**
- ❖ **Motor driver**

4.2. Motor speed shifter

The HS-1 accordingly shifts the speed of paper transportation during duplex printing by means of the speed shifter circuit. While the printed paper enters the HS-1 but its end is yet pinched by the printer's fuser rollers, the HS-1 pulls the paper in normal (slow) paper transporting speed. As the paper leaves the fuser, the HS-1's motor starts to revolve in faster speed.

Figure 4.1. below shows the system comprised of a speed shifter and a gain controller. The speed shifter changes the speed of motor revolution in three speeds of low, middle, and high. Three different speeds of paper transportation are necessary as the FS-1500/A (10-ppm) and the FS-3500/A (18-ppm) have different printing speed.

**FIG. 4.1.
MOTOR SPEED
SHIFTER**



w01sv0hs_1\hs_1_002.gsm

Change of motor speed is commanded by the printer's main logic controller using instruction signals of \overline{HVER} and \overline{VLOW} . The driver U3 sets up the different levels necessary for U1 to generate the signals for different motor speeds.

With model FS-3500, for example, when the part of the paper is still being caught by the fuser rollers, the printer's main logic controller sets the level of both \overline{HVER} and \overline{VLOW} to be low, requesting the HS-1 to pull the paper in normal (slower) speed. This causes the potential at U1 pin 1x0 to receive the level necessary to provide the middle speed output for U4 at pin 1xC.

To ensure the stable revolution in each motor speed, U3 also acts to fine-tune the gain of U1. The signal for this appears at pin 9 of U3 and given to pin 2x0 of U1.

Table 4.1. below summarizes combinations of levels for the \overline{HVER} and \overline{VLOW} signals to determine the motor speed. It also shows the resistors that U3 uses to set up the levels for U1 to accordingly drive U4.

TABLE 4.1. PRINTER COMMANDS LEVELS FOR MOTOR SPEED

| \overline{HVER} | \overline{VLOW} | MOTOR SPEED | RELATIVE PAPER FEEDING SPEED | SPEED SETTING ADJ. BY | GAIN ADJ. BY |
|-------------------|-------------------|-------------|---|-----------------------|--------------|
| Low-level | Low-level | Medium | Normal paper feeding for FS-3500/A (18-ppm) | R10 and RP2 | R4 and R5 |
| Low-level | High-level | Slow | Normal paper feeding for FS-1500/A (10-ppm) | R11 and RP3 | R6—R8 and C6 |
| High-level | Low-level | Fast | Fast paper feeding for both printer models | R9 and RP9 | R4 and R5 |

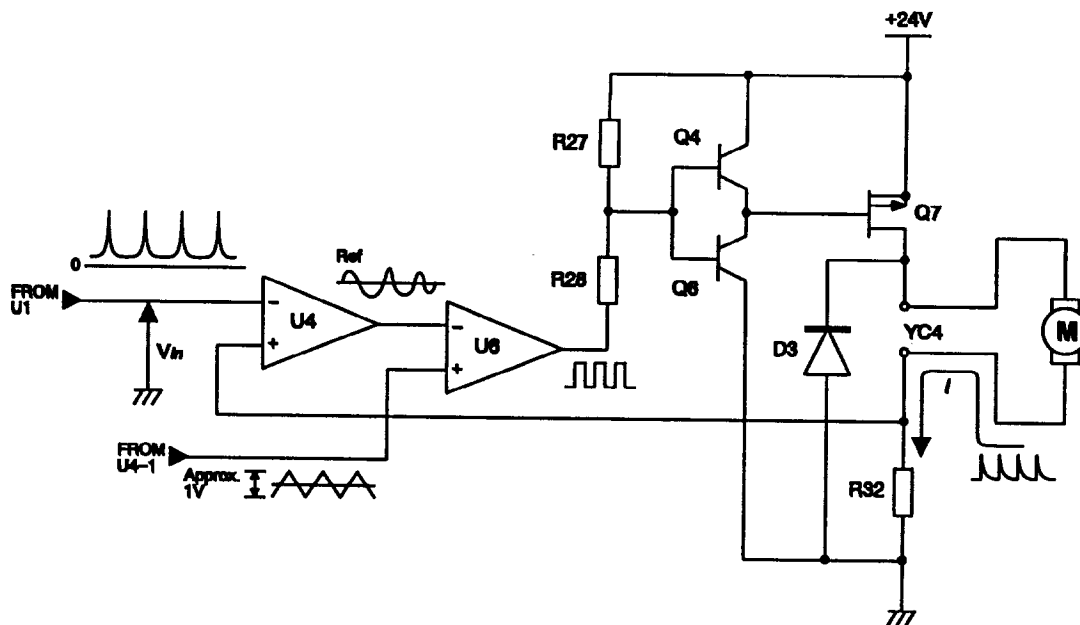
Resistors and a capacitor for gain setup of U1 (R4 through R8, C6) also serve as a motor current limiter. The motor current is limited to 0.75A in slow mode and 1.0A in middle and fast modes.

The driver U3 makes comparison of the input signal, given by U1 and arriving at pin 5, and the motor's encoder output, arriving at pin 4, and generates the difference signal at pin 9 for controlling the U1 gain, thus maintaining the constant motor revolution.

4.3. Motor driver

Figure 4.2. shows a simplified motor driver circuit schematic diagram.

FIG. 4.2. MOTOR DRIVER



The motor is constant-current-driven. U4 continuously compares the motor speed shifter (U1) output (told previously) with the current flowing through the motor. This comparison is represented by the following formula:

$$V_{in} = R_{32} \times i \quad (R_{32}: \text{Speed detection resistor})$$

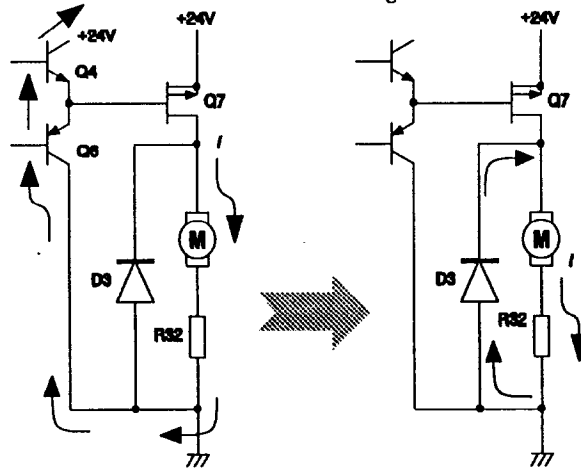
The U4's reference output is automatically adjusted so that the above formula is continuously fulfilled. U6 pulse-modulates the U4 output. The complimentary buffers, Q4 and Q6 switch Q7 on and off which finally controls the motor to revolve.

The motor is constantly switched on and off while U4 makes comparison on the U1 output and the motor current. To smooth the motor revolution, diode D3 is provided to induce the *flywheel effect* which is explained as follows. (Refer to Figure 3.3. on next page.)

FIG. 4.3. FLYWHEEL EFFECT OF D3

The current given by the +24V source circulates through Q7, etc., and drives the motor.

At the moment Q7 is turned off, the *flywheel current*, induced by the electromagnetic energy stored in the motor's inductance, flows momentarily through D3 and turns the motor.



4.4. Block diagram and terminal configurations

This section summarizes configurations of all board terminals.

FIG. 4.4. BOARDS WIRING AND TERMINALS

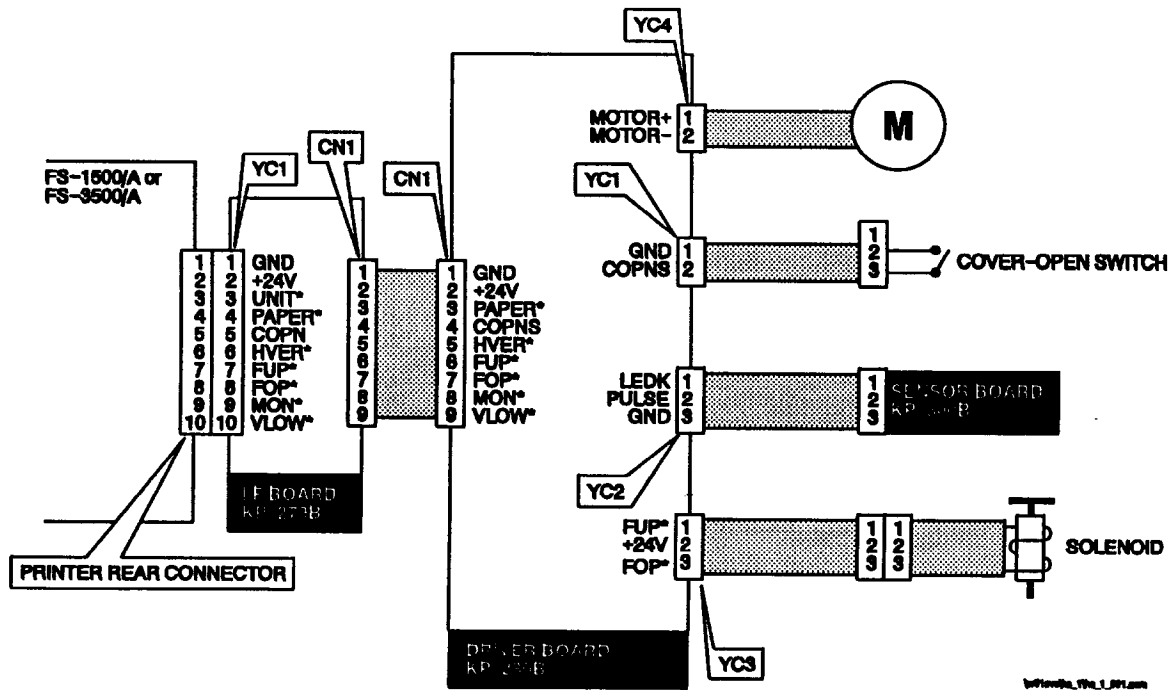


TABLE 4.2. TERMINAL CONFIGURATIONS

| BOARD | CONNECTOR | TERMINAL | SIGNAL NAME | DEFINITION |
|--------------------------|-----------|----------|-------------|------------------------|
| KP-280B, Driver board | CN1 | 1 | GROUND | Ground |
| | | 2 | +24V | +24V power |
| | | 3 | PAPER | Paper is not present |
| | | 4 | COPNS | Rear cover is open |
| | | 5 | HVER | Speed control |
| | | 6 | FUP | Select face-up stack |
| | | 7 | FOP | Select face-down stack |
| | | 8 | MON | Motor control |
| | | 9 | VLOW | Speed control |

| BOARD | CONNECTOR | TERMINAL | SIGNAL NAME | DEFINITION |
|-------------------------------|-----------|----------|-------------|--------------------------|
| KP-280B, Driver board | YC1 | 1 | GROUND | Ground |
| | | 2 | COPNS | Rear cover is open |
| | YC2 | 1 | LEDK | Encoder drive signal |
| | | 2 | PULSE | Encoding signal |
| | | 3 | GROUND | Ground |
| | YC3 | 1 | FUP | Select face-up stack |
| | | 2 | +24V | +24V power |
| | | 3 | FOP | Select face-down stack |
| | YC4 | 1 | MOTOR+ | + motor power |
| | | 2 | MOTOR- | - motor power |
| KP-279B, In- terface board | YC1 | 1 | GROUND | Ground |
| | | 2 | +24V | +24V power |
| | | 3 | UNIT | Option unit is installed |
| | | 4 | PAPER | Paper is not present |
| | | 5 | COPN | Rear cover is open |
| | | 6 | HVER | Speed control |
| | | 7 | FUP | Select face-up stack |
| | | 8 | FOP | Select face-down stack |
| | | 9 | MON | Motor control |
| | | 10 | VLOW | Speed control |
| | CN1 | 1 | GROUND | Ground |
| | | 2 | +24V | +24V power |
| | | 3 | PAPER | Paper is not present |
| | | 4 | COPNS | Rear cover is open |
| | | 5 | HVER | Speed control |
| | | 6 | FUP | Select face-up stack |
| | | 7 | FOP | Select face-down stack |
| | | 8 | MON | Motor control |
| | | 9 | VLOW | Speed control |

Chapter 5: Troubleshooting

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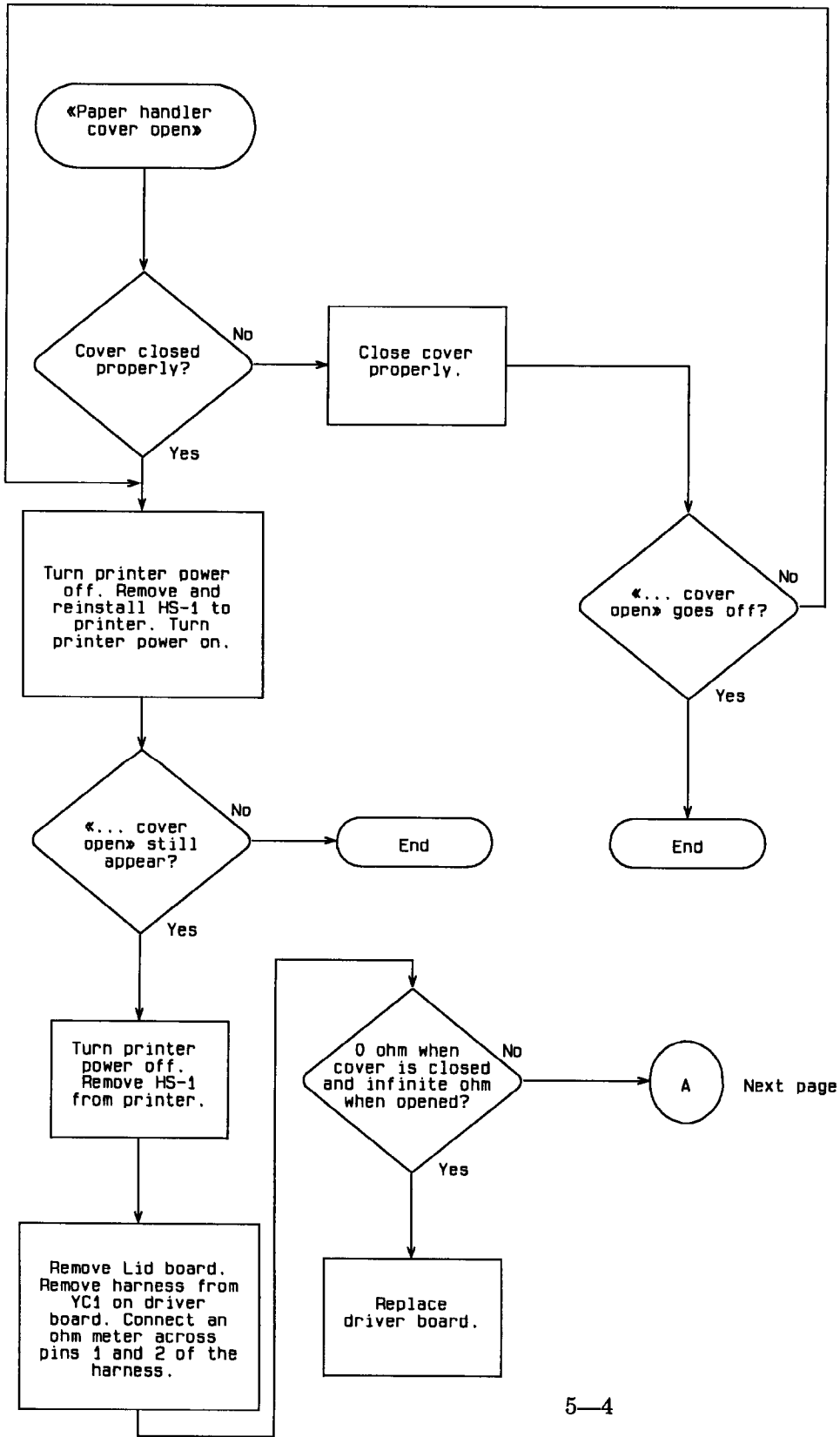
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5.1. Introduction

This chapter explains procedures for identifying and correcting problems (troubleshooting).

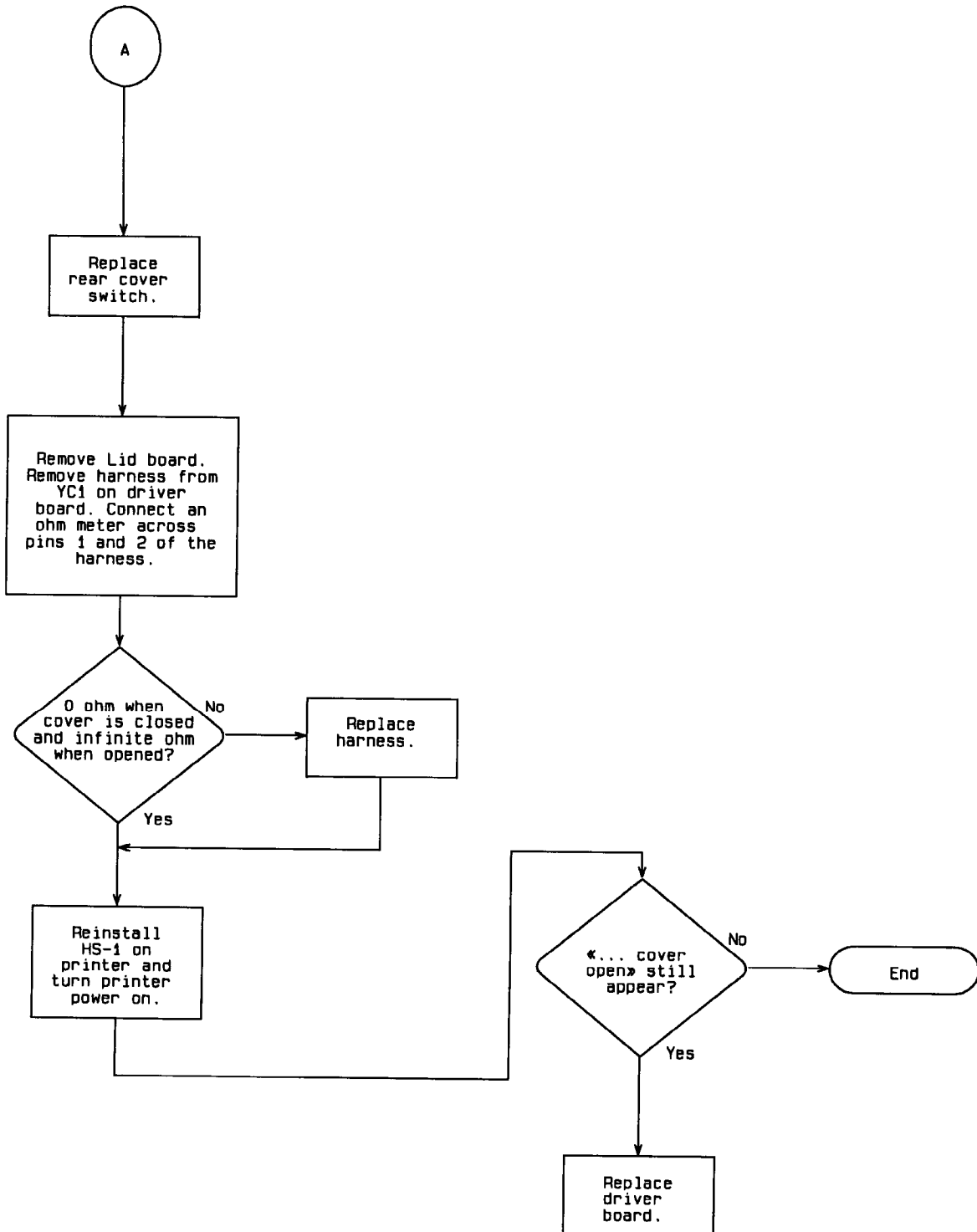
5.2. Troubleshooting flowcharts

5.2.1. Paper handler cover open error



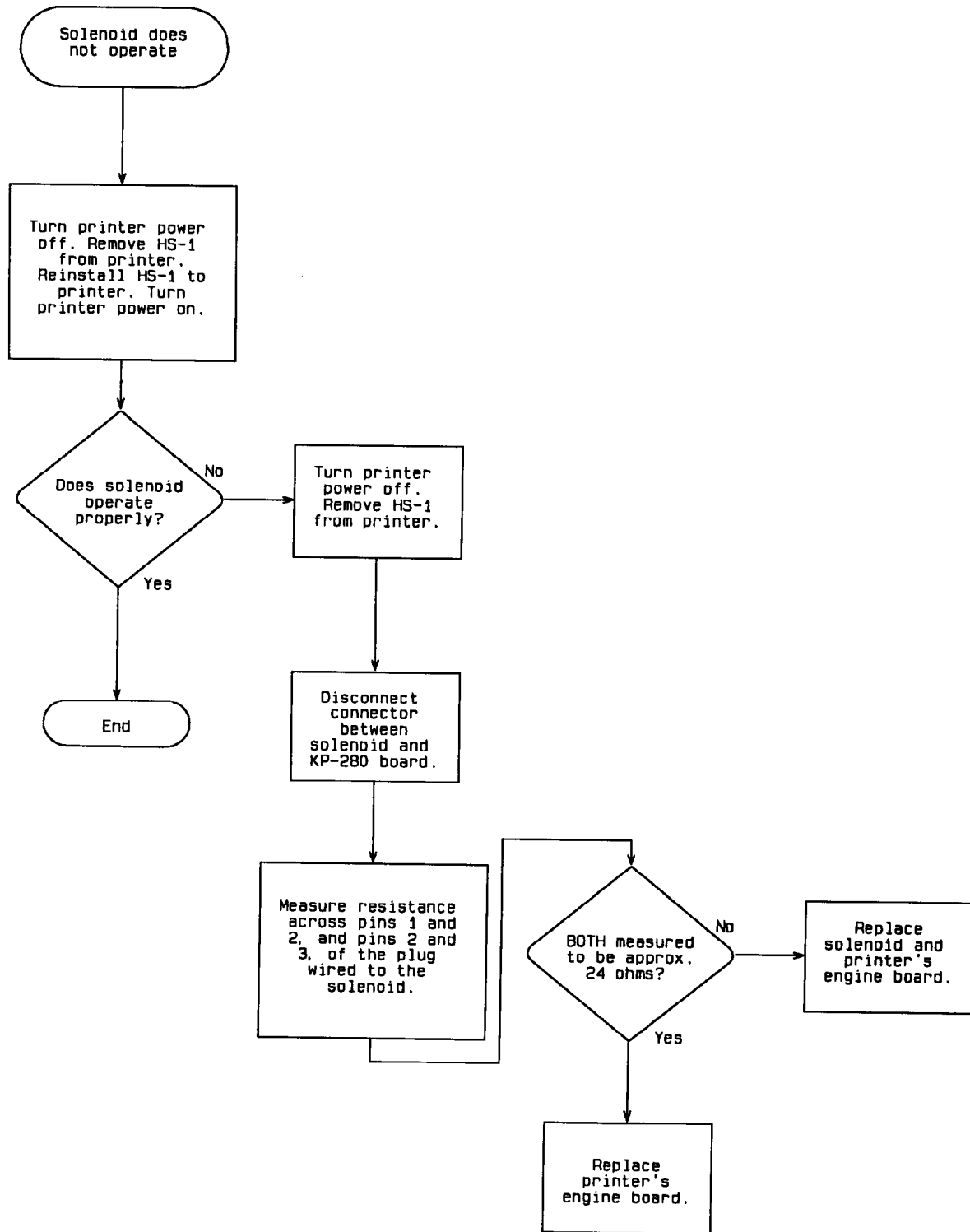
5.2.2. Paper handler cover open error—continued

«Paper handler cover open» error - Continued



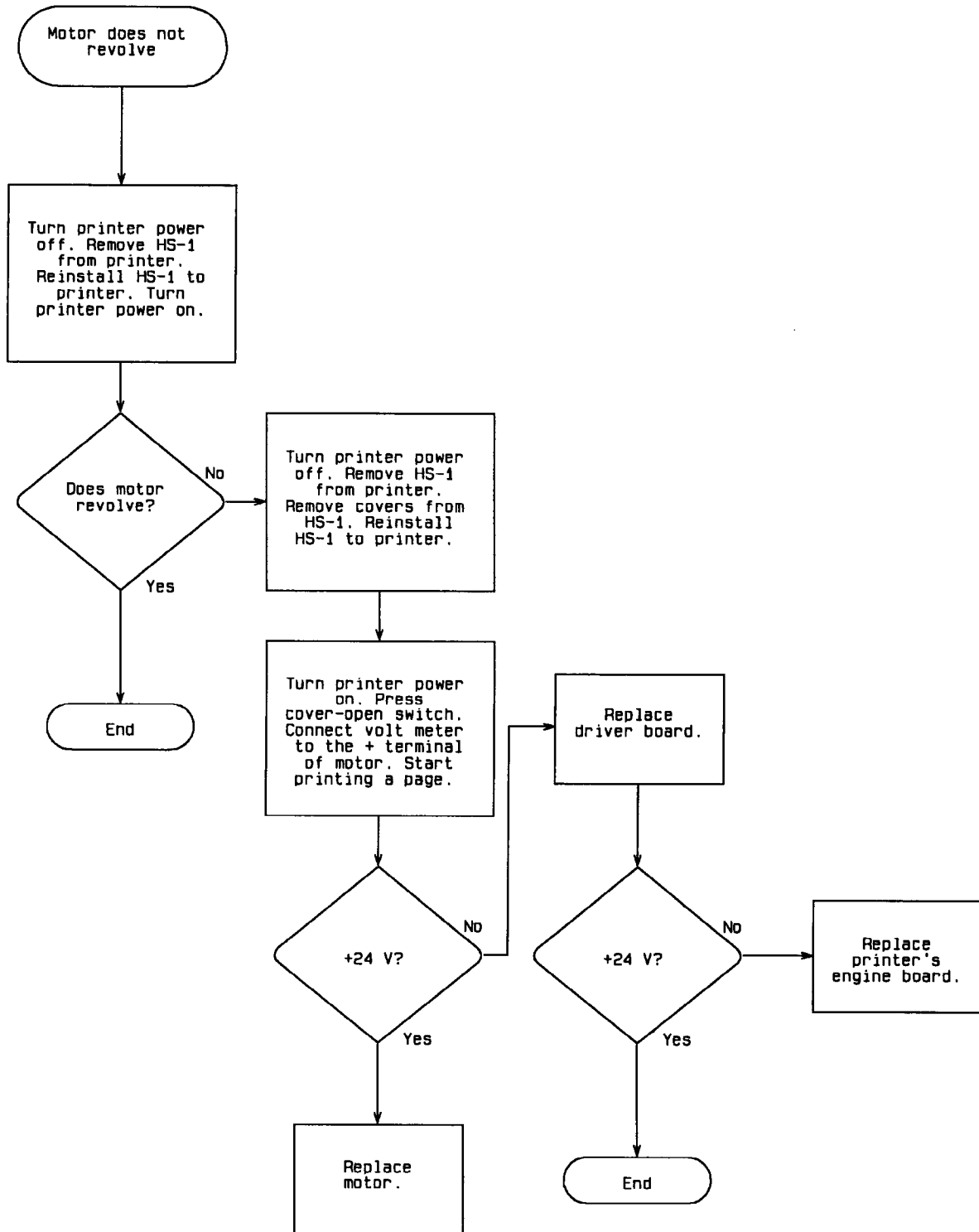
5.2.3. Solenoid error

Solenoid error



5.2.4. Motor error

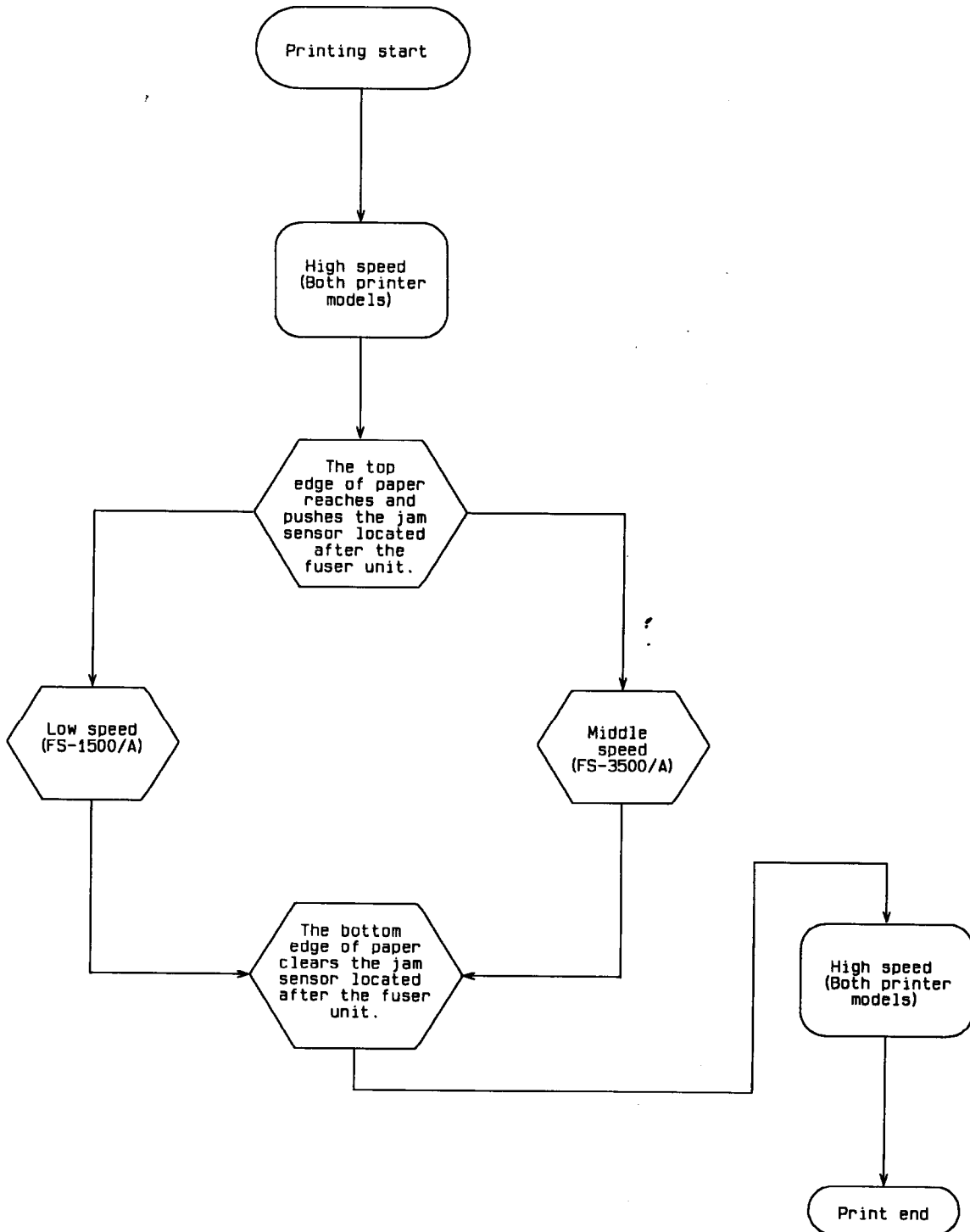
Motor error



5.2.5. Motor speed shift error

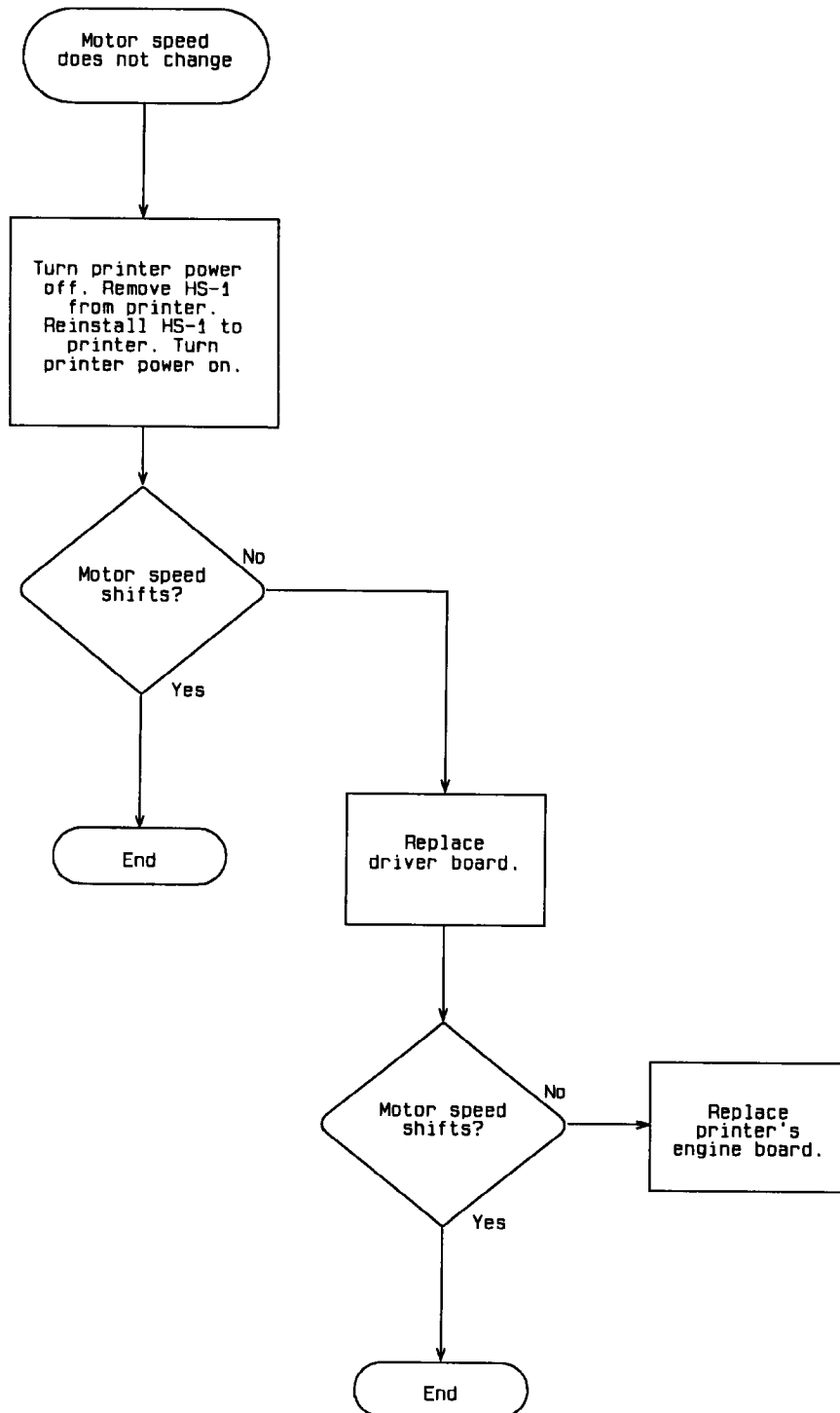
Motor speed shift chart

The following chart shows transition of motor speed for the reference purpose. See next page for starting the actual troubleshooting regarding the motor speed shift error.



5.2.6. Motor speed shift error—continued

Motor speed shift error - Continued



5.2.7. Paper jam does not go off

Paper jam does not go off

