

MICR MODULE OEM DESIGN GUIDE AND SPECIFICATION

FOR MAGTEK PART NUMBERS

**22210002, 22210004, 22210005,
22210006, 22210008**

Manual Part Number: 99875130-7

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REGISTERED TO ISO 9001:2000

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Limited Warranty

MagTek, Inc. warrants that the Product described in this document is free of defects in materials and workmanship for a period of one year from the date of purchase where the date of purchase is defined as the date of shipment from MagTek. During this warranty period, MagTek shall, at their option, repair or replace without charge for either parts or labor, any failure, malfunction, defect or nonconformity which prevents the product from performing in accordance with MagTek's published technical specifications and manuals.

This warranty does not apply to wear of the magnetic read head. This warranty shall not apply if the product is modified, tampered with, or subject to abnormal working conditions. This warranty does not apply when the malfunction results from the use of the Product in conjunction with ancillary or peripheral equipment where it is determined by MagTek that there is no fault in the Product itself.

Notification by the Customer to MagTek of any condition described above should be directed to the Customer's MagTek Sales Representative or to MagTek's Help Desk at (651) 415-6800. If the Product is to be returned from the Customer to MagTek, a returned material authorization (RMA) will be issued by MagTek. The Customer shall be responsible for shipping charges to MagTek, (20801 S. Annalee Ave., Carson, CA 90746). MagTek shall be responsible for shipping charges back to the Customer.

Repair or replacement as provided under this warranty is the exclusive remedy. This warranty is in lieu of all other warranties, express or implied.

FCC WARNING STATEMENT

This equipment has been tested and found to comply with the limits for Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

FCC COMPLIANCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference. And (2) this device must accept any interference received, including interference that may cause undesired operation.

CANADIAN DOC STATEMENT

This digital apparatus does not exceed the Class B limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

CE STANDARDS

Testing for compliance to CE and FCC requirements was performed by an independent laboratory. The unit under test was found compliant to Class B.

UL/CSA

This product is recognized per Underwriter Laboratories and Canadian Underwriter Laboratories 1950.

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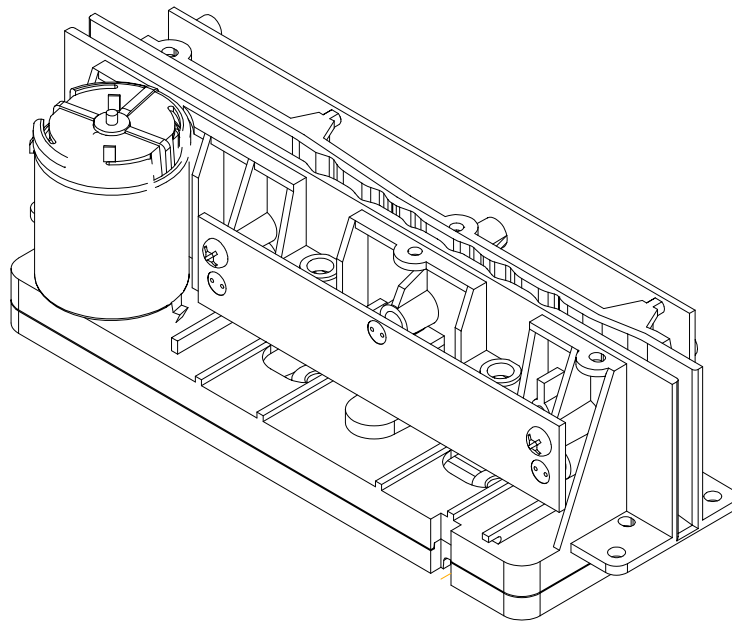
SECTION 1. INTRODUCTION

This document provides technical information required to integrate the MICR Module check reader with a host device. This information is intended for design engineers responsible for the integration of the MICR module into the host device.

For the mechanical interface, this document provides mechanical design requirements such as critical areas and dimensions, attachment and alignment features available, and guidelines for integrating entry and exit paths. Also included is information on optional EMF shielding.

For the electrical interface, this document provides power requirements, connector type, pin list and communication protocol. Also included are the data output format and the command set for the MICR Module check reader.

An illustration of the MICR Module check reader is shown below.



MICR MODULE EVALUATION KIT

Mag-Tek offers an optional kit for evaluating the module (P/N 22210003). Contact your Mag-Tek Representative or the factory for more information and pricing.

Table 1-1. MICR Module Evaluation Kit Checklist

Part Number	Description
22210303	ASM, RS232 INTERFACE CABLE WITH POWER
64300075	ADAPTER, 240VAC/+5VDC 2.0A REGULATED PLUG
22000021	SOFTWARE, MICRBASE WINDOWS PROG
30037385	PC DRIVER, WIN 95/NT RS232/KB (DISK)
30037334	PC SFTWR MTD DRIVER TESTER (DISK)
99875102	MANUAL, SETUP PROG, INSTALL AND OPERATE MICRBASE
99875130	MANUAL, DESIGN KIT, OEM-MICR MODULE
99875125	MANUAL, PROG REF, MAG-TEK DEVICE FOR WINDOWS

SECTION 2. MECHANICAL DESIGN REQUIREMENTS

This section includes the mechanical requirements needed to ensure a successful integration of the MICR module into a Host device. Drawings and information are provided for critical areas and dimensions. Also included are Mag-Tek's recommendations for optimal functionality. Refer to drawing P/N 22210201, sheets 1-6, in Section 5, for information for the following:

CRITICAL AREAS AND DIMENSIONS

The following areas and dimensions are critical for the integration of the MICR Module.

Length

The overall length of the unit is 6.000" (see sheet 1, side view). This dimension does NOT include the length of the entry and exit path required for optimal check reading (see Entry and Exit Paths below).

Width

The width of the unit's main body is 1.970" (see sheet 1, top view). However, the overall width of the unit increases to 2.040" by including the extension of the motor shield (see Motor Shield Extension below). If the optional EMF external shield is used, the overall width further increases to 2.070" (see EMF Shielding below).

Height

The height of the unit's main body is 1.760" (see sheet 1, side view). However, the overall height of the unit increases to 1.873" by including the top and bottom extensions of the motor shaft (see Motor Shaft Extension below). If the optional EMF external shield is used, the overall height further increases to 1.960" (see EMF Shielding below).

Motor Shield Extension

The motor shield extends 0.070" beyond the plastic body of the unit (see sheet 2, detail B).

Motor Shaft Extension

The initial production unit has the motor shaft extending beyond the plastic body at both ends. The latest production units use a new motor with a shorter shaft; neither end extends beyond the plastic. See Section 5, Mechanical Drawings, sheets 1 and 2.

ATTACHMENT

- The MICR module provides 4 mounting holes with a 0.125" diameter (see sheet 3, Mounting Features).
- For mounting alignment, the design provides 2 elongated holes 0.105" wide and 2 pins with a 0.095" diameter (see sheet 3, detail D).

CHECK PATH ALIGNMENT

- The housing of the host device must maintain the integrity of the width and shape of the check path to ensure optimal check reading (see sheet 3, Check Path Detail).
- For alignment, the MICR module provides 4 holes on the top of the check path (see sheet 3). Two holes with a 0.100" diameter are located over the MICR head; the other two are elongated holes 0.100" wide, one each over the Entry and Exit Paths (See Sheet 3, Mounting Features).

ENTRY PATH

The user must align the check properly before the automatic drive mechanism takes control of the check. The goal is to prevent tilting of the check while the MICR reading operation is in progress.

For this purpose, the MICR module design requires that an Entry path be provided as an extension to the actual check path in the MICR module device. The Entry path must provide a flat surface that is visually accessible and of reasonable length. This surface becomes a reference plane for check alignment, allowing the user to align the check by dropping it and guiding it forward in the entry path.

Recommendation

A minimum length of 2.0" is recommended for the Entry path.

EXIT PATH

It is recommended that an Exit path be provided as an extension to the actual check path in the MICR module device. This is to prevent long check documents from dropping out after the check reading operation. (Largest size document allowed by ANSI Standards is 8.75 " x 3.67 "). This is especially important for applications that require a two-way transport (back and forth) of the check. It may be less necessary for one-way applications where the check must always exit at the back.

Recommendation

A minimum length of 0.5" is recommended for the Exit path.

ENTRY AND EXIT PATH ALIGNMENT

- The inside walls interfacing the MICR module must have rounded edges. However, care must be taken not to create a gap that may catch the leading edge of the checks. It is recommended that the radius of the rounded edges should not be greater than 0.030".
- For lateral alignment, the walls of the check path extend at both ends (see sheet 3, detail E). It is recommended that the mating walls (from the Entry or Exit path) overlap these extensions to provide proper alignment.
- For horizontal alignment, use datum plane A as reference. The bottom surface of the Exit and Entry path must be positioned lower than the module's path and within 0.021" (see sheet 2, detail C). It is also recommended that the bottom surface of the Entry and Exit path should have rounded edges at the interface point, with a radius not greater than 0.030".

EMF SHIELDING

MICR reading is susceptible to EMF interference (noise with amplitude large enough to affect check reading). Possible sources of EMF noise are monitors, AC adapters, or magnetic devices.

In noisy environments, the MICR Module will require the use of an EMF shield. The mechanical design allows for a shield that wraps around the sides and bottom of the MICR Module. The shield attaches to the bottom of the main body with two screws. An external shield made of steel is shown in sheet 6. If the shield is attached to the MICR module, notice that the overall width increases to 2.070", and the overall height also increases to 1.960" (see sheet 6, MICR Module with External Shield).

Note

The material, the thickness, and the shape of the external shield may vary according to the intensity of the EMF interference and physical constraints of the host device.

FUNCTIONAL COMPONENTS

The location for the following components is provided on sheet 5:

- Motor
- Magnet
- Front and rear drive
- Entry, middle, and exit sensors

The distances shown use the centerline of the MICR head as the plane of reference.

SECTION 3. ELECTRICAL DESIGN REQUIREMENTS

This section includes the electrical requirements needed to interface with the MICR module. Information is provided on power, connectors and signals.

POWER REQUIREMENTS

The MICR module requires 5V at 100 mA for the electronics. Additionally, the MICR module requires 5V at 350 mA for the motor (with a 650 mA peak). Therefore, the total power requirements are 5V at a maximum of 750 mA.

ELECTRICAL INTERFACE

The MICR module uses a TTL serial interface. The TTL signals are normally high at 5V. The TTL signals are active low at 0V.

INTERFACE CONNECTOR

The electrical interface to MICR module is located on the J1 port of the main board. The connector mounted on J1 is an 8-pin Molex connector # 53254-0810. An interface cable connecting to this port would require the mating Molex connector # 51065-0800.

INTERFACE PIN LIST

The pin numbers and signal description for connector J1 are listed below in Table 3-1 (using the MICR module as reference).

Table 3-1. Connector J1 Pin List

PIN	SIGNAL	DESCRIPTION
1	┌ PWR MTRPWR	Electronics Power: 5V - 100 mA
2		Aux Motor Power: 5V -350 mA / 650 mA peak
3	TXD	Transmit Data. Transmits data from the MICR module to the Host.
4	RXD	Receive Data. Receives data from the Host to the MICR module
5	CTS	Clear To Send. When this signal is active, it indicates that the Host is ready to receive data. The MICR module will not send data until this signal is active.
6	RTS	Request To Send. When this signal is active, it indicates that the MICR module is ready to operate.
7	┌ MTRGND GND	Return for Motor power
8		Return for Electronics power

Note

Pins 1 and 2 are connected on the board through a 0 ohm resistor, R65. Pins 7 and 8 are connected on the board through a 0 ohm resistor, R1. These resistors can be removed to isolate power supplies.

OPTIONAL LED CONNECTION

This unit has a connector for an optional bicolor LED that can be used to display MICR Module status. See Section 5, Mechanical Drawing, Optional LED Connection.

Table 3-2. LED Pin List

Pin	Signal	Description
1	LED Green	Green LED Anode (10 mA)
2	LED Ground	Common Cathode
3	LED Red	Red LED Anode (10 mA)

SECTION 4. COMMANDS

This section describes the use of commands and programmable options available for the MICR Module.

COMMAND FORMAT

All commands sent to the MICR Module must conform to the following format:

[**COMMAND**] [**DATA**] <**CR**>

where:

- [**COMMAND**] is 2 or 3 alpha characters.
- [**Data**] is optional as described below for each command.
- <**CR**> is always required.
- All characters are ASCII
- No spaces, brackets, or angle brackets required.

SWA - SWITCH A COMMAND

The SWA command controls the communication parameters, shown in Table 4-1. The data for this command consists of 8 ASCII bits ("0" = hex 30 and "1" = hex 31).

Table 4-1. SWA Command

BITS								PARAMETERS
7	6	5	4	3	2	1	0	
					0	0	0	Reserved
					0	0	1	Baud Rate: 300
					0	1	0	Baud Rate: 600
					0	1	1	Baud Rate: 1200
					1	0	0	Baud Rate: 2400
					1	0	1	Baud Rate: 4800
					1	1	0	Baud Rate: 9600
					1	1	1	Baud Rate: 19200
			0	0				Data and Parity: 8, None
			0	1				Data and Parity: 7, Mark(1)
			1	0				Data and Parity: 7, Even
			1	1				Data and Parity: 7, Odd
		0						CTS: Use
		1						CTS: Ignore
	0							Number of Stop Bits: 1
	1							Number of Stop Bits: 2
0								Intercharacter Delay: No
1								Intercharacter Delay: Yes

To execute, send the SWA command as follows:

SWA 01010101<CR> (with data)
or
SWA <CR> (without data)

When sending data, all 8 bits must be provided. The MICR Module will execute the command but it will not reply. To make this command permanent, use the SA (Save) command described at the end of this section.

If no data is sent, the MICR Module responds with the current settings for SWA.

Note

The new settings for the serial port will not become effective until the RS (Reset) command is executed. The Reset command is described at the end of this section.

SWA PARAMETERS

The SWA functions are listed in Table 4-1 and described below.

Baud Rate

The baud rate is one of seven speeds at which the MICR Module communicates with the Host. The lowest speed is 300 baud, and the highest is 19200.

Data and Parity

The number of data bits and the parity bit are interrelated. If even, odd, or mark parity is selected, the MICR Module will use seven data bits per byte with one parity bit. If a parity of none is selected, the MICR Module will use eight data bits per byte.

CTS

When CTS (Clear to Send) is set to IGNORE, the MICR Module sends data to the Host without waiting for the CTS signal to be active. When CTS is set to USE, the MICR Module waits for the CTS signal to be active before sending data.

Number of Stop Bits

The number of stop bits is either 1 or 2. Normally, one stop bit is used for most applications.

Two stop bits are used to allow extra time for slower Host equipment.

Intercharacter Delay

The intercharacter delay is used to increase the time between characters transmitted from the MICR Module. The time is increased to 13 milliseconds. This parameter affects character rate but not baud rate (i.e., each character takes the same time to transmit but the time between characters is increased).

SWB - SWITCH B COMMAND

The SWB command controls the message format, shown in Table 4-2. The data for this command consists of 8 ASCII bits ("0" = hex 30 and "1" = hex 31).

To execute, send the SWB command as follows:

SWB 01010101<CR> (with data)

or

SWB <CR> (without data)

When sending data, all 8 bits must be provided. The MICR Module will execute the command but it will not reply. The new settings become effective immediately. To make this command permanent, use the command SA (Save) described at the end of this section.

If no data is sent, the MICR Module responds with the current settings for SWB.

Table 4-2. SWB Command

BIT								PARAMETERS
7	6	5	4	3	2	1	0	
							0	<LF>: No
							1	<LF>: Yes
						0		<CR>: No
						1		<CR>: Yes
					0			<ETX>: No
					1			<ETX>: Yes
				0				<ESC>: No
				1				<ESC>: Yes
			0					<STX>: No
			1					<STX>: Yes
		0						Send Data After Error?: No
		1						Send Data After Error?: Yes
	0							Send Status After Data?: No
	1							Send Status After Data?: Yes
0			0	0	0	0	0	Comm Mode: 0 - Data Only
1			0	0	0	0	0	Comm Mode: 1 - Data <CR>
0			0	0	0	0	1	Comm Mode: 2 - Data -<LF>
0			0	0	0	1	1	Comm Mode: 3 - Data -<CR><LF>
0			0	1	0	0	0	Comm Mode: 4 - <ESC> Data
0			0	1	0	1	0	Comm Mode: 5 - <ESC> Data<CR>
0			1	0	1	0	0	Comm Mode: 6 - <STX> Data<ETX>
1			0	0	0	0	1	Comm Mode: 7 - <STX>Data<ETX><LRC>

SWB PARAMETERS

The SWB functions are listed in Table 4-2 and described below.

Control Characters

Control Characters may be added to the MICR data message. The characters are always in the following locations:

<STX> <ESC> data <ETX> <CR> <LF>

The control characters, descriptions, and hex values are shown in Table 4-3.

Table 4-3. Control Characters

CONTROL CHARACTER	DESCRIPTION	HEX VALUE
<STX>	Start of Text	02
<ESC>	Escape	1B
<ETX>	End of Text	03
<CR>	Carriage Return	0D
<LF>	Line Feed	0A

For example, if <STX> and <CR> are set to YES, the message from the MICR Module will look like this:

MICR Data: <STX>data<CR>

Communication Modes

The selection of comm modes is a quick way of selecting multiple Control Characters. For instance, to send a carriage return/line feed pair after the data, you can specify Comm Mode 3.

Comm Mode 7, also known as Packet Mode, calculates an LRC (Longitudinal Redundancy Check), and appends it to the data message. Also, if a <NAK> (hex 15) character is received in this mode, the MICR Module will resend the last message.

Send Data After Error

The request Send Data After Error specifies whether the MICR Module will return data to the Host after a read error. If YES is selected and the MICR Module detects a read error, the MICR Module will still send the data back to the Host. If NO is selected and the MICR Module finds an error, it will discard the data and nothing will be sent. The error conditions are listed in Table 4-4.

Send Status After Data

The Send Status After Data option makes the MICR Module append a two-digit error/status code to the end of the MICR data. For most formats (See Appendix A), the error/status code will always be preceded by a forward slash (/). The error/status codes are listed in Table 4-4.

For example, if a Canadian check (code 08) is read and had no errors, and the MICR data is “1234567890”, then the message from the MICR Module will look like this:

MICR Data: 1234567890/08

The status code is always at the end of the data, not the end of the message. For example, using the above conditions, with the message format set to send <STX> and <ETX>, the message from the MICR Module will look like this:

MICR Data: <STX>1234567890/08<ETX>

Table 4-4. Error and Status Codes

PRIORITY	CODE	TYPE	DESCRIPTION
9	01	Error	No MICR data: no transit and no account found
8	09	Status	Mexican check
7	08	Status	Canadian check
6	05	Error	Transit error: No transit, bad character, bad length, bad check digit
5	07	Error	Account error: No account, bad character
4	04	Error	Check # error: Bad character in check number
4	04	Status	No check number
3	03	Status	Low MICR signal, good read
2	10	Status	Business check
1	11	Status	Amount field present
0	00	Status	Good read

Notes:

- The LED indicator will turn red on all error conditions.
- The absence of a check number is not considered an error.
- If a multiple error condition occurs, the error or status code with the highest priority is reported.
- All unreadable MICR characters are transmitted as an “?” ASCII character (hex 3F), except for Format 00xx (See Appendix A).

SWC - SWITCH C COMMAND

The SWC command controls miscellaneous functions, shown in Table 4-5. The data for this command consists of 8 ASCII bits (“0” = hex 30 and “1” = hex 31).

To execute, send the SWC command as follows:

SWC 01010101<CR> (with data)
or
SWC <CR> (without data)

When sending data, all 8 bits must be provided. The MICR Module will execute the command but it will not reply. The new settings become effective immediately. To make this command permanent, use the SA (Save) command described at the end of this section.

If no data is sent, the MICR Module responds with the current settings for SWC.

Table 4-5. SWC Command

BITS								PARAMETERS
7	6	5	4	3	2	1	0	
							0	CMC-7 Character Set: No
							1	CMC-7 Character Set: Yes
					0	0		Invalid Commands: ?<CR>
					0	1		Invalid Commands : No Reply (Header Required)*
					1	0		Invalid Commands: No Reply (No Header Required)
					1	1		Ignore all Commands
				0				Active RTS: No
				1				Active RTS: Yes
0	0	0	0					These bits are always set to 0

*Header Required means all commands must be preceded by a GS character (Hex 1D).

SWC PARAMETERS

The SWC functions are listed in Table 4-5 and described below.

CMC-7 Character Set

If NO is selected the MICR Module will only read E13-B characters. When YES is selected, the MICR Module will read both CMC-7 and E13-B characters (see Appendix B). However, the MICR Module will only output raw data ("as is" on the check) for checks with CMC-7 characters.

Invalid Command Response

Invalid command response is the action the MICR Module takes upon receipt of a command it does not recognize. It can also be used to stop the MICR Module from receiving any more commands.

The first option “?**<CR>**” is the default. If the MICR Module receives an unrecognized command, it will return a question mark and carriage return to the Host. The MICR Module will then return to an idle state and wait for further commands or check/credit card reads.

For the second option, “no reply - header required,” the MICR Module will only execute commands preceded by a GS ASCII character (hex 1D). All other commands will be ignored. Also, the MICR Module will not reply to invalid commands.

For the third option, “no reply,” the MICR Module will execute all valid commands, but it will not reply to invalid commands.

The fourth option, “ignore all commands,” causes the MICR Module to ignore any further commands. Even the SA (Save) command is ignored and therefore this fourth option is only temporary. To make this option permanent or to reset it, you must use an Insta-Change check.

Active RTS

When this function is set to YES, the MICR Module will raise RTS and wait 5 seconds for CTS to become active before sending any data. If the 5 seconds expire and CTS is not active, the data message will be discarded and nothing will be sent

HW - HARDWARE COMMAND

This command controls miscellaneous hardware options, shown in Table 4-6. The data for this command consists of 8 ASCII bits (“0” = hex 30 and “1” = hex 31).

To execute, send the HW command as follows:

HW 01010101<CR> (with data)
or
HW <CR> (without data)

When sending data, all 8 bits must be provided. The MICR Module will execute the command but it will not reply. The new settings become effective immediately. To make this command permanent, use the SA (Save) command described at the end of this section.

If no data is sent, the MICR Module responds with the current settings for HW.

Table 4-6. HW Command

7	6	5	4	3	2	1	0	PARAMETERS
						0	0	Check return: Always return check to entry
						0	1	Check return: Never return check to entry
						1	0	Check return: Return check to entry slot if good read only
						1	1	Check return: Return check to entry slot if bad read only
	0							Hold at entry: No
	1							Hold at entry: Yes
0								Hold at exit: No
1								Hold at exit: Yes
		0	0	0	0			These bits are always set to 0

HW PARAMETERS

The HW functions listed in Table 4-6 are described below.

Check Return

This parameter controls the return of the check after the check is read.

For the first option, "always return to entry", the MICR Module will always return the check to the entry side regardless of the check read status (also see "hold at entry" below).

For the second option, "never return to entry", the MICR Module will never return the check to the entry side regardless of the check read status. The check will always be returned through the exit side (also see "hold at exit" below).

For the third option, "return to entry if good read only", the MICR Module will only return the check to the entry side if there are no errors after the check read (also see "hold at entry" and "hold at exit" below).

For the fourth option, "return to entry if bad read only", the MICR Module will only return the check to the entry side if there are errors detected after the check read (also see "hold at entry" and "hold at exit" below).

Hold at Entry

This parameter determines if the check is held or released at the entry side after a check read. If YES is selected, the check will be held with the pinch rollers at the entry side. If NO is selected, the check will move past the pinch rollers and it will not be held.

This parameter only applies if the MICR Module has been programmed to return the check through the entry side after a check read (see "check return" above). The parameter is ignored otherwise.

Hold at Exit

This parameter determines if the check is held or released at the exit side after a check read. If YES is selected, the check will be held with the pinch rollers at the exit side. If NO is selected, the check will move past the pinch rollers and it will not be held.

This parameter only applies if the MICR Module has been programmed to return the check through the exit side after a check read (see "check return" above). The parameter is ignored otherwise.

RC - RELEASE CHECK COMMAND

The RC command instructs the MICR module to turn the motor on and move the check past the pinch rollers (at the entry or exit side) to release it.

This command will be executed if the check was being held previously at the entry or exit side (see "hold at entry" and "hold at exit" above). The parameter is ignored otherwise.

To execute, send the RC command followed by a carriage return as follows:

RC <CR>

RR - REPEAT READ COMMAND

The RR command instructs the MICR module to read the check again.

This command will be executed if the check was being held previously at the entry or exit side (see "hold at entry" and "hold at exit" above). The parameter is ignored otherwise.

To execute, send the RR command followed by a carriage return as follows:

RR <CR>

RTH - RETURN & HOLD COMMAND

The RTH command instructs the MICR module to move the check to the opposite side from its current location. At the opposite side, the check will be held with the pinch rollers.

This command will be executed if the check was being held previously at the entry or exit side (see "hold at entry" and "hold at exit" above). The parameter is ignored otherwise.

To execute, send the RTH command followed by a carriage return as follows:

RTH <CR>

RTR - RETURN & RELEASE COMMAND

The RTR command instructs the MICR module to move the check to the opposite side from its current location. At the opposite side, the check will move past the pinch rollers and it will not be held.

This command will be executed if the check was being held previously at the entry or the exit side (see "hold at entry" and "hold at exit" above). The parameter is ignored otherwise.

To execute, send the RTH command followed by a carriage return as follows:

RTR <CR>

DM - DISABLE MODULE COMMAND

The command disables the check reading function. The motor will not activate if a check is placed in the slot. Communications are not affected. If installed, the LED will turn off. To execute, send the DM command followed by a carriage return as follows:

DM<CR>

EM - ENABLE MODULE COMMAND

This command enables the check reading function. If installed, the LED will turn green. To execute, send the EM command followed by a carriage return as follows:

EM<CR>

FC - FORMAT CHANGE COMMAND

Formats are used by the MICR Module to process and transmit the MICR fields. The format command allows the selection of a format from the Format List, Appendix A.

The data for this command consists of 4 digits (ASCII characters 0-9). To execute, send the command as follows:

FC 6600<CR> (with data)

or

FC <CR> (without data)

When sending data, all 4 digits must be provided. The MICR Module will execute the command but it will not reply. The new settings become effective immediately. To make this command permanent, use the SA (Save) command described below.

If no data is provided, the MICR Module will respond with the current format number.

PN - FIRMWARE PART NUMBER COMMAND

This command requests the Mag-Tek Firmware Part Number. To execute, send the PN command followed by a carriage return as follows:

PN<CR>

The Part Number is returned as follows:

"SW=[8 digit MagTek Firmware part #][released rev letter][2 digit internal control]"

"SW=222xxxxxAnn"

RS - RESET COMMAND

The Reset command resets the MICR firmware to the normal operating state of waiting for a check or card to be read. The command also resets the serial port to the most recent settings provided by the SWA command. To execute, send the RS command followed by a carriage return as follows:

RS<CR>

SA - SAVE COMMAND

All changes are considered temporary until the Save command is executed. The Save command saves all changes to the MICR Module memory and makes them permanent. The MICR Module will execute the command but it will not reply. To execute, send the SA command followed by a carriage return as follows:

SA<CR>

ST - STATUS COMMAND

This command requests the current status of the Check Reader (Enabled/Disabled) and its sensors (Blocked/Unblocked). To execute, send the ST command followed by a carriage return as follows:

ST<CR>

The Status is returned as follows:

"ST="[*check reader status E/D*] [*entry sensor B/U*] [*middle sensor B/U*] [*exit sensor B/U*]
"ST=EUUU"

VR - VERSION COMMAND

This command requests the Firmware Control Version information. To execute, send the VR command followed by a carriage return as follows:

VR<CR>

The Version is returned as follows:

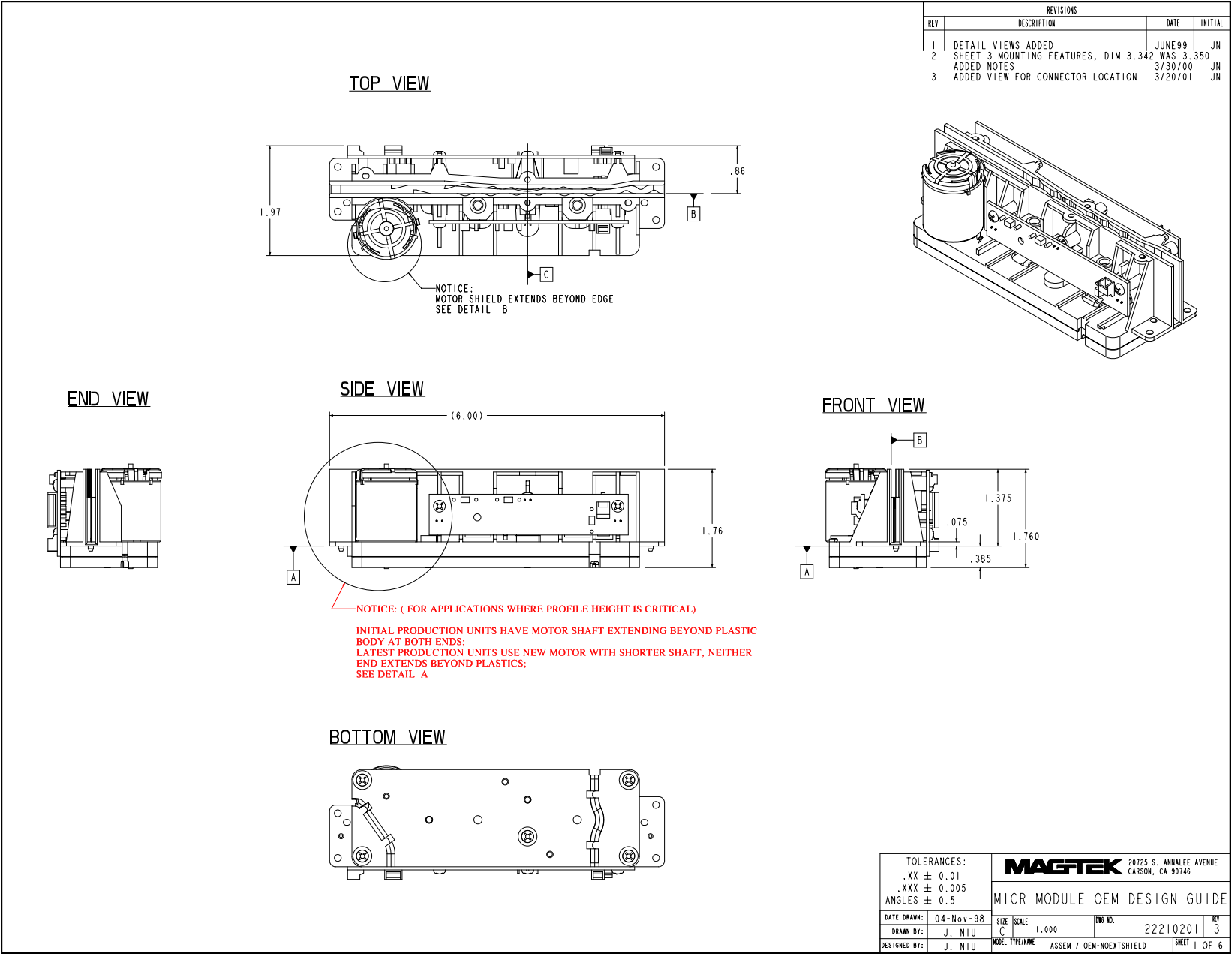
"Version OR [*5 digit revision control*] A

"Version OR x.xx.xA

SECTION 5. MECHANICAL DRAWINGS

The following drawings are required for the integration of the MICR Module.

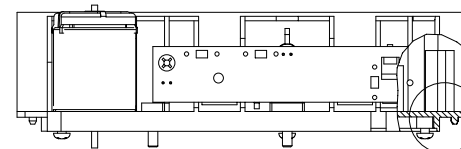
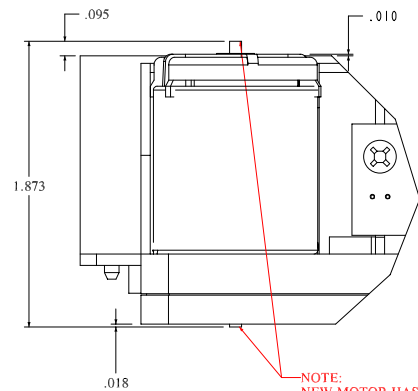
Part Number	Title	Sheets
22210201	MICR Module Assembly	6
(No Number)	Optional LED Connection	1



Section 5. Mechanical Drawings

REVISIONS			
REV	DESCRIPTION	DATE	INITIAL

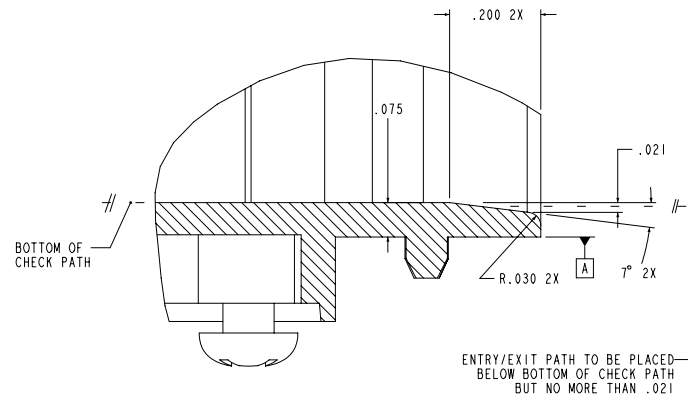
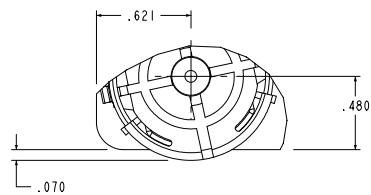
DETAIL A
SCALE 2.000



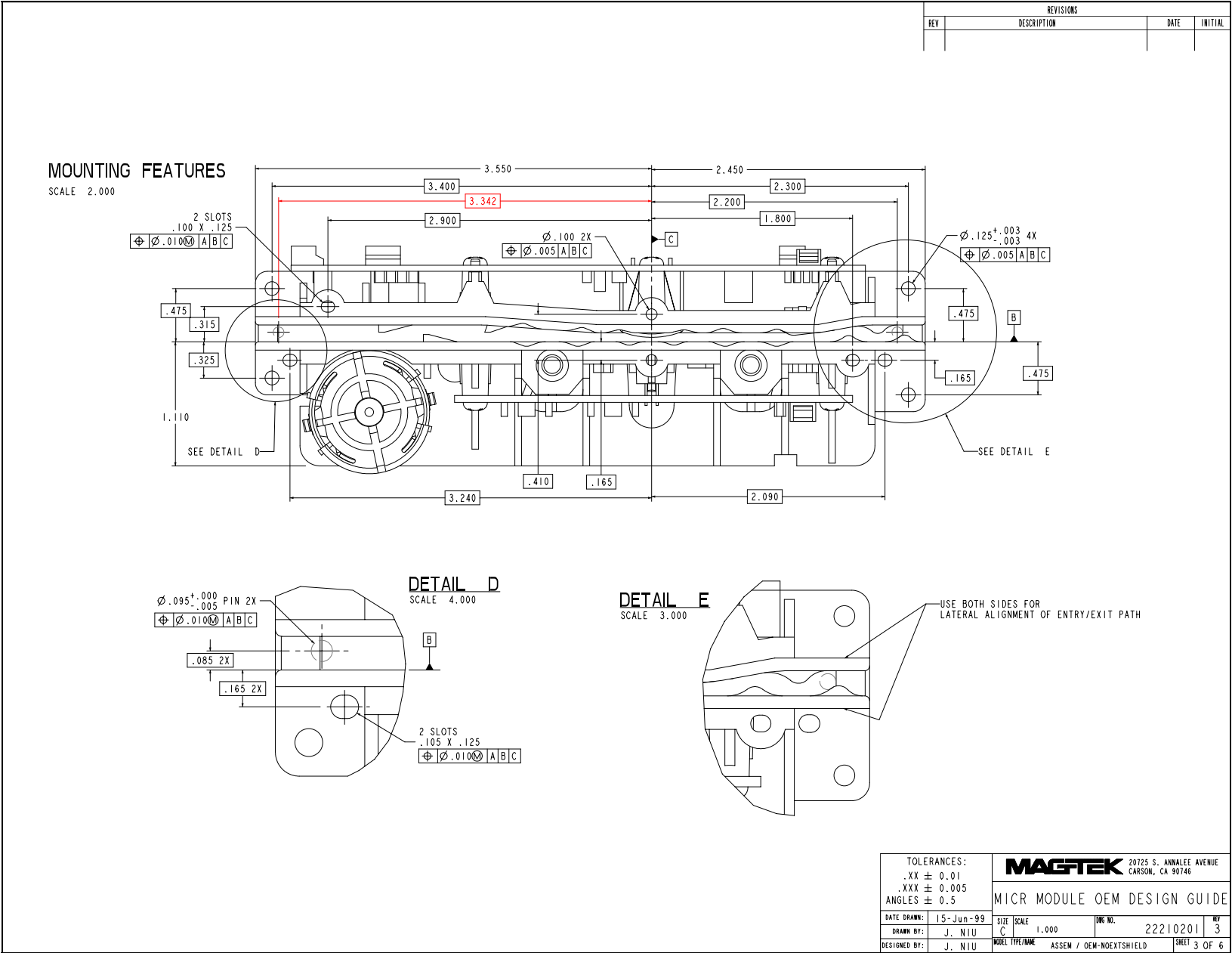
LOCAL CROSS SECTION SHOWN
SECTION B-B
SCALE 1.000

DETAIL C
SCALE 6.000

DETAIL B
SCALE 2.000

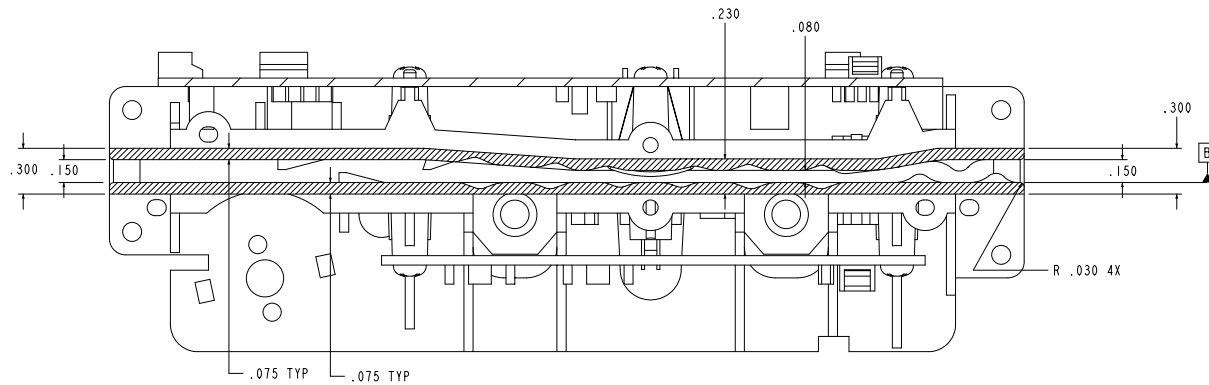


TOLERANCES: .XX ± 0.01 .XXX ± 0.005 ANGLES ± 0.5		MAGTEK 20725 S. ANNALIEE AVENUE CARSON, CA 90746	
DATE DRAWN: 04-NOV-98		MICR MODULE OEM DESIGN GUIDE	
DRAWN BY: J. NIU	SIZE C	SCALE 1.000	REV 3
DESIGNED BY: J. NIU	MODEL TYPE/NAME	ASSEM / OEM-NOEXTSHIELD	SHEET 2 OF 6



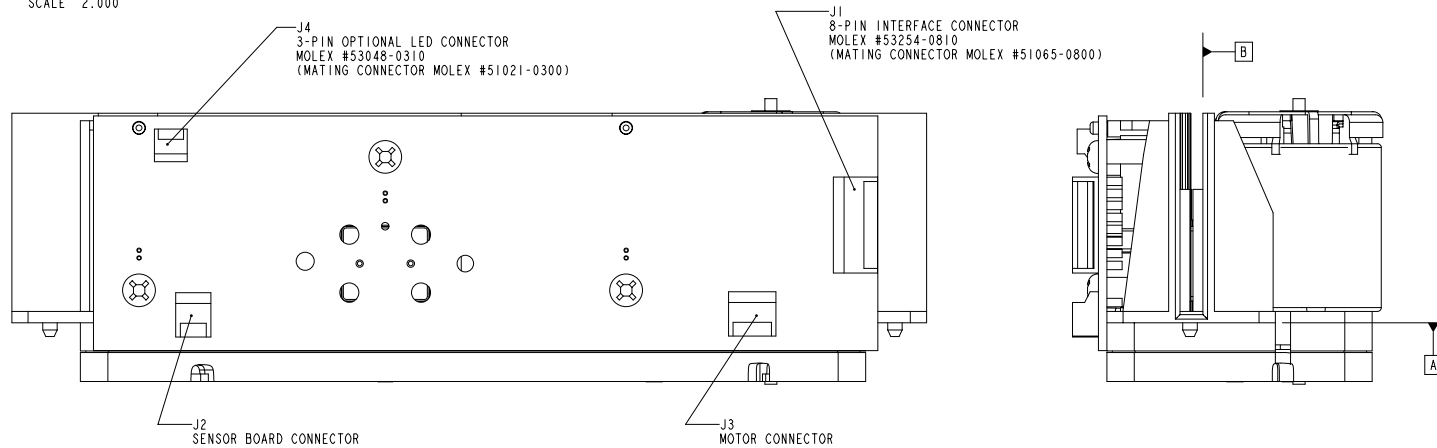
CHECK PATH DETAIL

SECTION A-A
SCALE 2.000



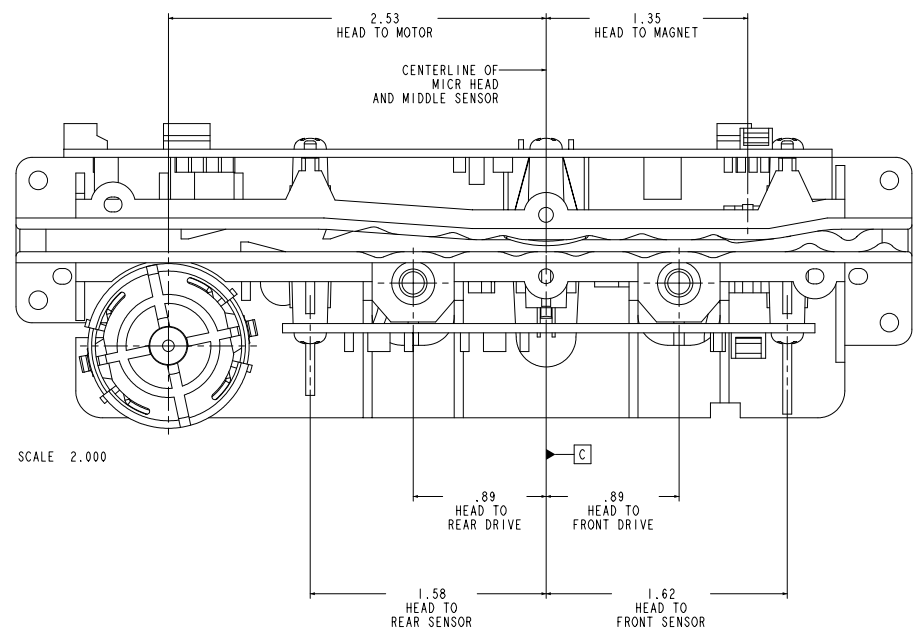
CONNECTOR LOCATION DETAIL

SCALE 2.000



TOLERANCES:		MAGTEK		20725 S. ANNALEE AVENUE CARSON, CA 90746					
.XX ± 0.01		MICR MODULE OEM DESIGN GUIDE							
.XXX ± 0.005									
ANGLES ± 0.5									
DATE DRAWN:	04-Nov-98	SIZE	C	SCALE	1.000	FIG. NO.	22210201	REV	3
DRAWN BY:	J. NIU	MODEL TYPE/NAME		ASSEM / OEM-NOEXTSHIELD		SHEET		4 OF 6	
DESIGNED BY:	J. NIU								

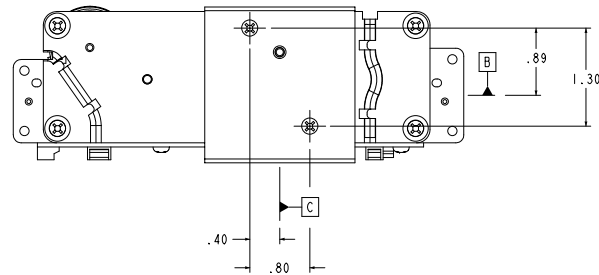
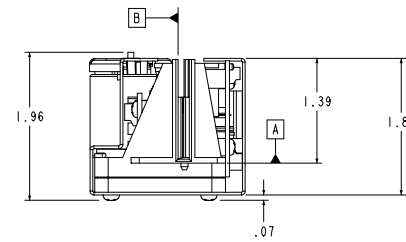
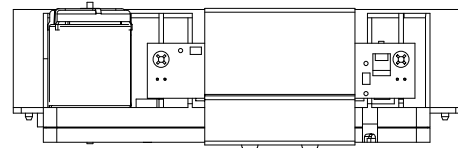
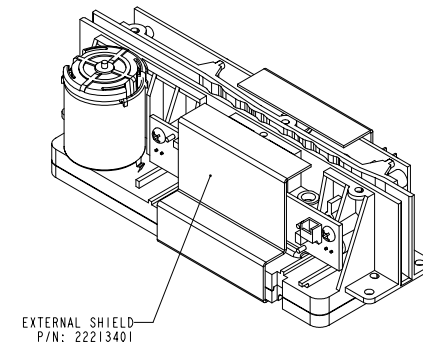
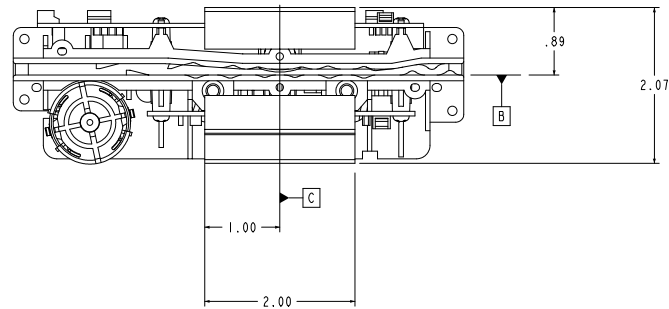
DISTANCES BETWEEN FUNCTIONAL COMPONENTS



REVISIONS			
REV	DESCRIPTION	DATE	INITIAL

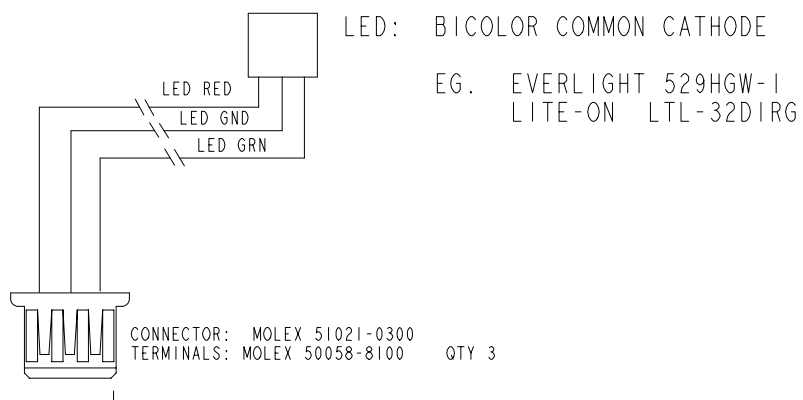
TOLERANCES:		MAGTEK 20725 S. ANNALIEE AVENUE CARSON, CA 90746	
.XX ± 0.01		MICR MODULE OEM DESIGN GUIDE	
.XXX ± 0.005			
ANGLES ± 0.5			
DATE DRAWN:	15-JUN-99	SIZE	SCALE
DRAWN BY:	J. NIU	C	1.000
DESIGNED BY:	J. NIU	MODEL TYPE/NAME	ASSEM / OEM-NOEXTSHIELD
		DWG NO.	22210201
		REV	3
		SHEET 5 OF 6	

MICR MODULE WITH OPTIONAL EXTERNAL SHIELD



TOLERANCES:		MAGTEK 20125 S. ANNALEE AVENUE CARSON, CA 90146	
.XX ± 0.01		MICR MODULE OEM DESIGN GUIDE	
.XXX ± 0.005			
ANGLES ± 0.5			
DATE DRAWN:	06-Jan-99	SIZE	SCALE
DRAWN BY:	J. NIU	C	1.000
DESIGNED BY:	J. NIU	MODEL TYPE/NAME	ASSEM / OEM-MOEXTSHIELD
		FIG. NO.	22210201
		REV	3
		SHEET	6 OF 6

OPTIONAL LED CONNECTION



J4
3-PIN LED CONNECTOR
MOLEX 53048-0310

MAIN BOARD

APPENDIX A. FORMAT LIST

For check reading, the MICR Reader provides the flexibility to format the MICR fields and build a specific output string that will be transmitted to the Host. These output strings are referred to as formats. The Reader has a built-in list of formats (described below) from which the user may select one to become the active format every time a check is read. The formats may be selected using the FC command (Section 4, Commands) or Insta-Change checks provided by Mag-Tek.

Each format is assigned a 4-digit number. The first two digits indicate the format number, and the last two digits are specific parameters used for various functions by each format. For example, in format “0415”, the “04” refers to format number 4 and the 15 refers the maximum number of characters allowed for the account field.

Note

The formats listed in this section apply only to U.S. and Canadian checks. The MICR line on checks from other countries will not be broken or parsed as described in these formats.

A complete description for each format follows.

Fmt 00xx: Raw Data Format - sends the entire MICR line - where:

xx - specify what symbol set to use. Choose from the table
Add xx + 16 - change multiple spaces to one space
Add xx + 32 - Remove all spaces

Examples:

MICR LINE: T122000218T 1234 5678 9U 1321
FC0001 - t122000218t 1234 5678 9o 1321
(+16) FC0017 - t122000218t 1234 5678 9o 1321
(+32) FC0033 - t122000218t123456789o1321.

xx	Transit	On-Us	Amount	Dash	Error
00	T	U	\$	-	?
01	t	o	a	d	?
02	T	O	A	D	?
03	T	U	\$	-	*
04	T	U	\$	0	?
05	T	U	\$	0	*
06	t	o	a	0	?
07	T	U	\$	none	?

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Fmt 01xx: Parsed Text Format

FC0100 - Parsed text with dashes
FC0101 - Parsed text, replace dashes with "d"
Field Labels - TR-transit, AC-account #, CK-check #, AM-amount, TP-tpc, EP-epc
Example: - PTTR444455556;AC 999-222-3;CK11045

Fmt 02xx: Parsed Text Format with Error Labels

FC0200 - Parsed text with dashes
FC0201 - Parsed text, replace dashes with "d"
Error Labels - PE-parsed error, NE-no error, TR-transit error, CK-chk # error, TC-transit check digit error, AM-amount error, OU-on us/account# error, TP-tpc error
Examples: - PTTR444455556;AC999-222-3;CK11045/PENE
- PTTR111?11111;AC123456/PETR ("?" = unreadable character)

Fmt 03xx: [acct #]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- keep spaces and dashes

Fmt 04xx: [acct #]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 05xx: [acct #]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- replace spaces and dashes with zeros

Fmt 06xx: [acct #]

- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- replace spaces and dashes with zeros

Fmt 07xx: [acct #]

- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- remove spaces and dashes

Fmt 08xx: [transit] [acct #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 09xx: [transit] [acct #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- replace spaces and dashes with zeros

Fmt 10xx: [transit] [acct #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- replace spaces and dashes with zeros

Fmt 11xx: [transit] 'T' [acct #] 'A' [check #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field

Fmt 12xx: [transit] 'T' [acct #] 'A' [check #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled

Fmt 13xx: [transit] 'T' [acct #] 'A' [check #] '000'

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled

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Fmt 14xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - always 6 characters, zero filled

Fmt 15xx: [bank #] [acct #]

- [bank #]: - all characters in the field
 - keep spaces and dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes

Fmt 16xx: [bank #] [chk dgt] [acct #]

- [bank #]: - all characters in the field
 - keep spaces and dashes
- [chk dgt]: - all characters (one character long)
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes

Fmt 17xx: [transit] [acct #]

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - keep spaces and dashes

Fmt 18xx: [acct #] "/" [check #]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - keep spaces and dashes
- [check #]: - all characters in the field

Fmt 19xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - replace spaces and dashes with zeros
- [check #]: - all characters in the field

Fmt 20xx: [transit] [acct #] <CR> [check #]

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - replace spaces and dashes with zeros
- [check #]: - all characters in the field

Fmt 21xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - always xx characters, zero filled;
 when xx=00 all characters are sent

 - replace spaces and dashes with zeros
- [check #]: - all characters in the field

Fmt 22xx: [bank #] [acct #] [check #]

- [bank #]: - all characters in the field
 - keep dashes
- [acct #]: - always xx characters, zero filled;
 when xx=00 all characters are sent
 - replace spaces and dashes with zeros
- [check #]: - all characters in the field

Fmt 23xx: [error #] [transit] [acct #] [check #] 'S'

- [error #]: - one digit, always present
 - '0' read OK
 - '1' read error: bad char empty field, invalid length, validation
- [transit]: - always 9 characters, zero filled
 - keep dashes
- [acct #]: - always xx characters, trailing spaces;
 when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - always 6 characters, zero filled
 - remove spaces and dashes

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Fmt 24xx: [transit] 'T' [acct #] 'A' [check #] 'C' [amount] '\$'

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - always 6 characters, zero filled
- [amount]: - all characters in the field

Fmt 25xx: 'M' 'C' [transit] 'D' [acct #] 'E' [check #]

- [transit]: - all characters in the field
 - remove dashes and keep spaces (contig spcs = 1 spc)
 - if the field is empty, remove 'C'
- [acct #]: - include leading characters
 - maximum of xx characters; when xx=00 all characters are sent
 - remove dashes and keep all spaces
 - if the field is empty, remove 'D'
- [check #]: - all characters in the field
 - if the field is empty, remove 'E'

Fmt 26xx: [acct #]

- [acct #]: - work with characters in acct and transit fields
 - a window of xx characters; xx must be greater than 00
 - remove spaces and dashes

Fmt 27xx: [acct #]

- [acct #]: - work with characters in the acct field only
 - a window of xx characters; xx must be greater than 00
 - remove spaces and dashes

Fmt 28xx: [acct #]

- [acct #]: - work with characters in the acct field only
 - a window of xx characters; xx must be greater than 00
 - minimum of 6 digits, fill with zeros if necessary
 - remove spaces and dashes

Fmt 29xx: 'C' '/' [transit] '/' [acct #] '/' [check #] '/' [status]

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - maximum of 6 digits
- [status]: - this is a programmable option that must be enabled (See Table 4-4).

Fmt 30xx: [zero fill] [transit] [acct #]

- [zero fill]: - if length of (transit+account) is less than xx;
 xx must be greater than 00
- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - all characters in the field
 - remove spaces and dashes

Fmt 31xx: [transit] '/' [acct #] '/' [check #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - maximum of 10 digits
 - remove spaces and dashes
 - if no check number, remove preceding slash ('/')

Fmt 3200: '^' [transit] '^' [acct #] '^' [check #] '^' [status]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - all characters in the field
 - remove spaces and dashes
- [check #]: - all characters in the field
 - remove spaces and dashes
- [status] : - this is a programmable option that must be enabled (See Table 4-4).

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Fmt 3300: '=' [transit] '=' [acct #] '=' [check #] '=' [status]

- [transit]: - all characters in the field
 - remove dashes
- [acct #] : - maximum of 14 digits
 - remove spaces and dashes
- [check #]: - maximum of 8 digits
 - remove spaces and dashes
- [status]: - this is a programmable option that must be enabled (See Table 4-4.)

Fmt 34xx: [transit] [acct #] [zero fill]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - all characters in the field
 - remove spaces and dashes
- [zero fill]: - zero filled up to xx; xx must be greater than 00

Fmt 3500: MA [aux] B [epc] C [tran] D [acct] E [chk] F [tpc] G [amt]

This format is defined specifically for Target Test Checks. A description of the Target Test Check must be loaded in the exception table.

- [aux], [epc], [tran], [chk], [tpc], [amt]:
 - all characters in the field
 - keep spaces and dashes
- [acct]: - all characters in the field
 - keep spaces and remove dashes

Fmt 36xx: Read OK : [transit] [acct #] [check #] '/'
 Read error: '0' '/'

- [transit]: - all characters in the field
 - remove spaces and dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - always 6 characters, zero filled
 - remove spaces and dashes

Fmt 37xx: [ABA] [chk dgt] [acct #]

- [ABA], [chk dgt]:
 - all characters in the field
 - keep spaces and dashes
- [acct #]:
 - work with characters in the acct field only
 - window of xx characters; xx must be greater than 00
 - remove spaces and dashes

Fmt 38xx: 'T' [transit] 'A' [acct #] 'C' [check #]

- [transit]:
 - all characters in the field
 - keep dashes
- [acct #]:
 - maximum of xx characters; when xx=00 all characters are sent
 - include leading characters
 - keep spaces and dashes
- [check #]:
 - all characters in the field

Fmt 39xx: [transit] <CR> [acct #]

- [transit]:
 - all characters in the field
 - remove dashes
- [acct #]:
 - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and keep dashes

Fmt 40xx: [country code] [transit] [acct #]

- [country code]:
 - '1' for US checks
 - '2' for Canadian checks
- [transit]:
 - all characters in the field
 - remove dashes
- [acct #]:
 - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes

Fmt 4100: 'S' 'T' [transit] 'A' [acct #] 'C' [check #]

- [transit]:
 - all characters in the field
 - remove dashes
- [acct #]:
 - all characters in the field
 - place a slash ('/') after 10th character
 - if 10 characters or less, precede with a slash ('/')
 - remove spaces and dashes
- [check #]:
 - always 6 characters, zero filled
 - remove spaces and dashes

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Fmt 42xx: US check : [transit] [acct #]

 Can check: '9' [transit] [acct #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - always xx characters; zero filled;
 when xx=00 all characters are sent.
 - remove spaces and dashes

Fmt 43xx: [check #] <CR> <CR> [transit] <CR> [acct #]

- [check #]: - maximum of 6 digits
 - remove spaces and dashes
- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes

Fmt 44xx: [transit] [acct #]

- [transit]: - all characters in the field
 - if Canadian check, replace dash with a space
- [acct #]: - always xx characters, trailing spaces,
 when xx=00 all characters are sent
 - remove spaces and dashes

Fmt 45xx: [transit] <CR> [acct #] <CR> [check #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces, dashes and leading zeros
- [check #]: - all characters in the field

Fmt 46xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - always xx characters, zero filled;
 when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - always 6 characters, zero filled
 - remove spaces and dashes

Fmt 47xx: [transit] 'T' [acct #] 'A' [check #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - all characters in the field

Fmt 48xx: [transit] 'T' [acct #] 'A'

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes

Fmt 49xx: [transit] '/' [acct #] '/' [check #] '/' [check type]

- [transit]: - always 9 characters, zero filled
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - maximum of 9 digits
- [check type]:- personal checks ('1'); commercial checks ('2')

Fmt 50xx: 'T' [transit] 'T' 'O' [acct #] 'O' [check #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - all characters in the field

Fmt 51xx: '=' [transit] '=' [acct #] '='

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes

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Fmt 52xx: 'T' [transit] 'T' [acct #] 'A' [check #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - all characters in the field
 - remove dashes and spaces

Fmt 53xx: '/' [transit] '/' [acct #] '/' [check #] '/' [tpc] '/' [status] '/'

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - all characters in the field
- [tpc]: - all characters in the field
- [status]: - this is a programmable option that must be enabled (See Table 4-4)

Fmt 54xx: [transit] [acct #] [check #] [status]

- [transit]: - always 12 characters, zero filled
 - remove dashes
- [acct #]: - always xx characters, zero filled;
 when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - always 12 characters, zero filled
 - remove dashes and spaces
- [status]: - this is a programmable option that must be enabled (See Table 4-4)

Fmt 55xx: 'C' '/' [acct #] '/' [transit] '/' [check #] '/' 0000000000

- [acct #]: - always xx characters, zero filled;
 when xx=00 all characters are sent
 - remove spaces and dashes
- [transit]: - all characters in the field
 - remove dashes
- [check #]: - always 6 characters, zero filled
 - remove dashes and spaces

Fmt 56xx: [transit] <CR> [acct #] <CR> [check #] <CR> [amount]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - all characters in the field
 - remove dashes and spaces
- [amount]: - all characters in the field
 - remove dashes and spaces

Fmt 57xx: [acct #] <CR> [amount]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [amount]: - all characters in the field
 - remove dashes and spaces

Fmt 58xx: [short transit] [acct #] ':'

- [transit]: - 3 rightmost characters
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes

Fmt 59xx: [transit] [acct #] <TAB> [check #] [amount]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - always 9 characters, zero filled
 - remove dashes and spaces
- [amount]: - all characters in the field
 - remove dashes and spaces
 - insert decimal point ('.') before 2nd rightmost digit

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Fmt 60xx: [transit] '/' [acct #] '/' [check #] '/' [check type]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - maximum of 10 characters
 - remove spaces and dashes
 - if no check #, remove preceding slash ('/')
- [check type]:- personal checks ('1'); commercial checks ('2')

Fmt 61xx: [transit] <TAB> [acct #] <TAB> [check #] <TAB>

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces, dashes and leading zeros
- [check #]: - all characters in the field

Fmt 62xx: 'T' [transit] 'T' [acct #] 'A' [check #] 'S' [status]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - all characters in the field
 - remove dashes and spaces
- [status]: - this is a programmable option that must be enabled (See Table 4-4).

Fmt 63xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - always 4 characters, zero filled
 - remove spaces and dashes

Fmt 64xx: [transit] [acct #] [check #] [amount]

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - always xx characters, trailing spaces;
 when xx=00 all characters are sent
 - keep spaces and dashes
- [check #]: - always 6 characters (N is on quick-init check), trailing spaces
 - remove spaces and dashes
- [amount]: - all characters in the field
 - remove spaces and dashes
 - insert decimal point ('.') before 2nd rightmost digit

Fmt 65xx: '!' [transit] '/' [acct #] '/' [check #] '/' [amount]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - all characters in the field
 - remove dashes and spaces
- [amount]: - all characters in the field
 - remove dashes and spaces

Fmt 66xx: [transit] [acct #] <CR> '7' '1' <CR>

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes

Fmt 67xx: <CR> <CR> [check #]

- [check #] : - maximum of xx characters; when x=00 all characters are sent
 - remove spaces and dashes

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Fmt 68xx: [transit] <TAB> [acct #] <TAB> [check #] <TAB> [amount] <TAB>

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - all characters in the field
 - remove dashes and spaces
- [amount]: - all characters in the field
 - remove dashes, spaces and leading zeros
 - insert decimal point ('.') before 2nd rightmost digit

Fmt 69xx: Read OK : [transit] [acct #] [check #]

 Read error: '0' '/'

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - always xx characters, trailing spaces;
 when xx=00 all characters are sent
 - remove spaces and dashes
- [check #]: - always 6 characters, zero filled
 - remove dashes and spaces

Fmt 70: [transit] ',' [acct #] ',' [check #] ',' [amount]

- [transit]: - all characters in the field
 - keep dashes
- [acct #]: - always N characters (N is on quick-init check), space filled
 - remove spaces and dashes from the account
- [check #]: - always 8 characters, zero filled
 - remove dashes and spaces
- [amount]: - all characters in the field
 - remove dashes and spaces
 - if amount is not present, remove last ','

Fmt 71: [acct #] '?' [check #]

- [acct #]: - work with a window of N characters in the acct field
 - always N characters (N is on quick-init check), zero filled
 - remove spaces and dashes
- [check #]: - maximum of 4 characters
 - remove spaces and dashes

Fmt 72: [transit] <TAB> [acct #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of N characters (N is on quick-init check)
 - remove spaces and dashes

Fmt 73: [transit] <CR> [acct #] <CR> [check #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - maximum of N characters (N is on quick-init check)
 - remove spaces and dashes
- [check #]: - all characters in the field
 - remove dashes and spaces

Fmt 74: [transit] [acct #] [check #]

- [transit]: - all characters in the field
 - remove dashes
- [acct #]: - always N characters (N is on quick-init check), zero filled
 - remove spaces and dashes
- [check #]: - always 8 characters, zero filled
 - remove spaces and dashes

Fmt 75xx: [transit] <CR> [acct #] <CR> [check #] <CR> [status]

- [transit]: - always 9 characters, zero filled
 - keep dashes; remove spaces
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove dashes and spaces
- [check #]: - maximum of 12 characters
 - remove dashes and spaces

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Fmt 76xx: 'T' [transit] 'A' [acct #] 'C' [check #] 'M' [raw data]

- [transit]: - all characters in the field
 - remove dashes and spaces
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
 - remove dashes and spaces
- [check #]: - all characters in the field- remove dashes and spaces
- [raw data]: - translate MICR symbols to t,o,a,d

Fmt 7700: The Flexible Format















Select this format to activate a preloaded Flexible Format. The Flexible Format is a feature that allows the user to create custom MICR formats. The Flexible formats can be easily created and downloaded using the Windows based MICRbase program provided by Mag-Tek (P/N 22000021). For more detailed information refer to Section 7 in the MICRbase reference manual (P/N 99875102).

APPENDIX B. CHECK READING

The characters printed on the bottom line of commercial and personal checks are special. They are printed with magnetic ink to meet specific standards. These characters can be read by a MICR Reader at higher speeds and with more accuracy than manual data entry. Two MICR character sets are used world wide; they are: E13-B and CMC-7. The E13-B set is used in the US, Canada, Australia, United Kingdom, Japan, India, Mexico, Venezuela, Colombia, and the Far East. The CMC-7 set is used in France, Spain, other Mediterranean countries, and most South American countries.

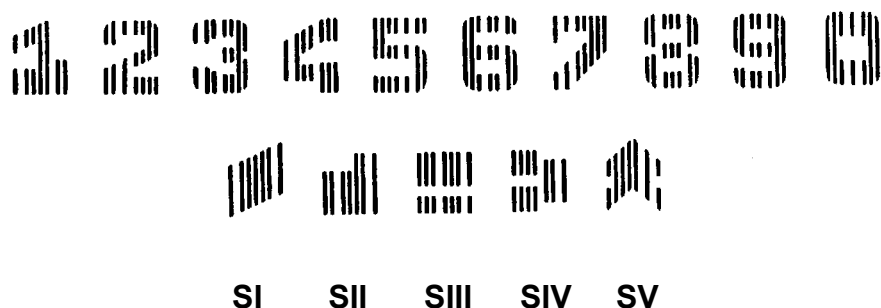
E13-B CHARACTER SET

The MICR font character set E13-B includes digits 0 through 9 and four symbols. The numbers found on U.S. checks are of the E13-B character set. The numbers and symbols of E13-B are as follows:

		
		 Transit symbol
		 Dash Symbol
		 On-Us Symbol
		 Amount Symbol

CMC-7 CHARACTER SET

The numbers and symbols of the CMC-7 character set are as follows:



The nonnumeric CMC-7 characters are translated by the MICR Reader as shown in Table B-1.

Table B-1. CMC-7 Nonnumeric Characters

CMC-7 Character	MICR Reader Output
SI	A
SII	B
SIII	C
SIV	D
SV	E

CHECK LAYOUTS

Personal checks with MICR fields are shown in Figure B-1. Business checks are shown in Figure B-2. The digits 1 through 4 in the illustrations are described below under MICR Fields.

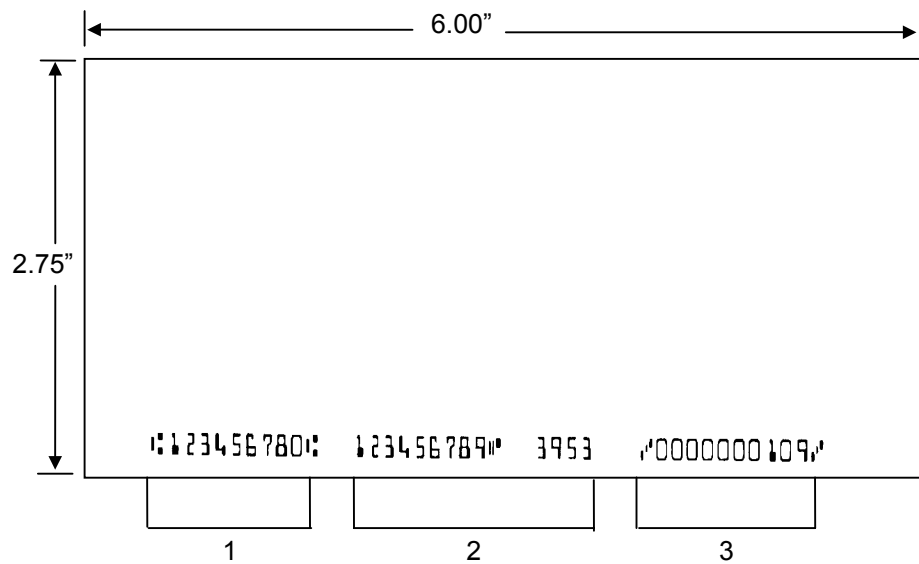


Figure B-1. Personal Checks

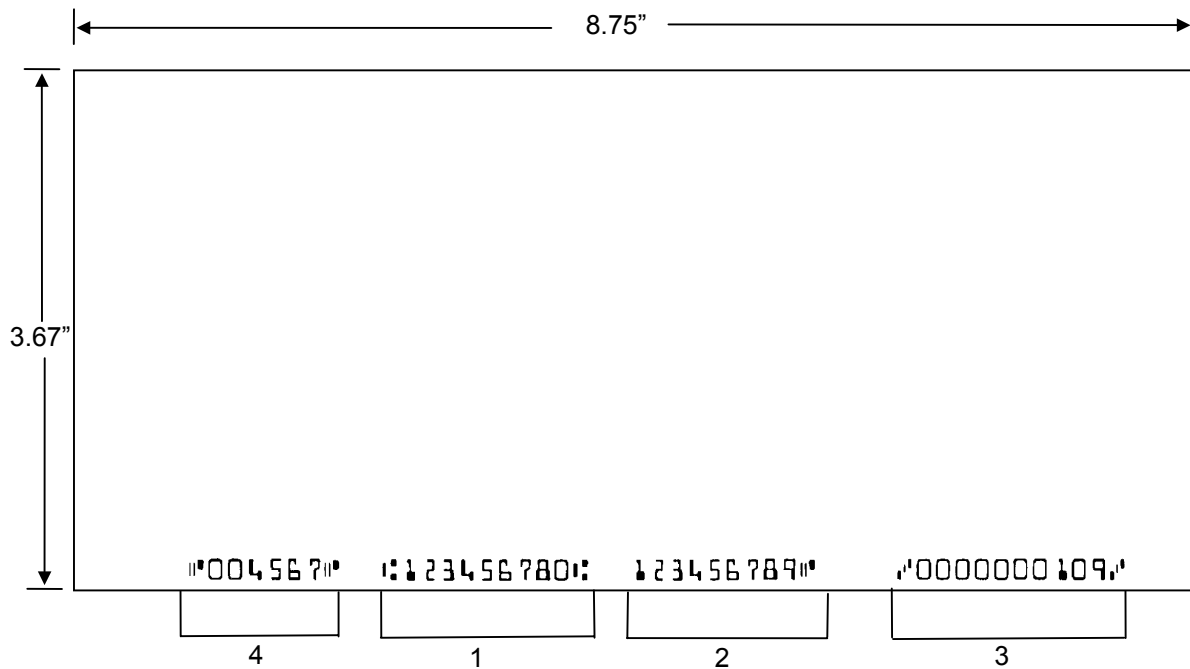


Figure B-2. Business Checks

MICR FIELDS

The numbers 1 through 4 refer to the numbers below the checks on the illustration and represent the 4 MICR fields.

1-Transit Field

The Transit field is a 9-digit field bracketed by two Transit symbols. The field is subdivided as follows:

- Digits 1-4 Federal Reserve Routing Number
- Digits 5-8 Bank ID Number (American Banking Association)
- Digit 9 Check Digit

2-On-Us Field

The On-Us field is variable, up to 19 characters (including symbols). Valid characters are digits, spaces, dashes, and On-Us symbols. The On-Us field contains the account number and may also contain a serial number (Check number) and/or a transaction code. Note that an On-Us symbol must always appear to the right of the account number.

3-Amount Field

The Amount field is a 10-digit field bracketed by Amount symbols. The field is always zero-filled to the left.

4-Auxiliary On-Us Field

The Auxiliary On-Us field is variable, 4-10 digits, bracketed by two On-Us symbols. This field is not present on personal checks. On business checks, this field contains the check serial number.

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