MOTOMAN MAINTENANCE REMINDER OPTION

VERSION 1.0 INSTRUCTIONS

FOR DX200

Upon receipt of the product and prior to initial operation, read these instructions thoroughly, and retain for future reference.

MOTOMAN INSTRUCTIONS

MOTOMAN-MANIPULATOR INSTRUCTIONS
DX200 INSTRUCTIONS
DX200 OPERATOR’S MANUAL (for each purpose)
DX200 MAINTENANCE MANUAL

The DX200 operator’s manual above corresponds to specific usage. Be sure to use the appropriate manual.

Part Number: 180401-1CD
Revision: 0
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www.motoman.com
Motoman Maintenance Reminder

DANGER

- This instruction manual is intended to explain the Motoman Maintenance Reminder application. Read and understand this instruction manual thoroughly before installing and operating the Motoman Maintenance Reminder application.

- General items related to safety are listed in Chapter 1: Safety of the DX200 Instructions. To ensure correct and safe operation, carefully read the DX200 Instructions before reading this manual.

CAUTION

- The drawings and photos in this manual are representative examples and differences may exist between them and the delivered product.

- Yaskawa may modify this application without notice when necessary due to product improvements, modifications, or changes in specifications.

- If such modification is made, the manual number will also be revised.

- If the manual is damaged or lost, contact a Yaskawa representative to order a new copy. The representatives are listed on the back cover. Make sure to tell the representative the part number listed on the front cover.

- Yaskawa is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification will void product's warranty.
We suggest obtaining and reviewing a copy of the ANSI/RIA National Safety Standard for Industrial Robots and Robot Systems (ANSI/RIA R15.06-2012). You can obtain this document from the Robotic Industries Association (RIA) at the following address:

Robotic Industries Association
900 Victors Way
P.O. Box 3724
Ann Arbor, Michigan 48106
TEL: (734) 994-6088
FAX: (734) 994-3338
www.roboticsonline.com

Ultimately, well-trained personnel are the best safeguard against accidents and damage that can result from improper operation of the equipment. The customer is responsible for providing adequately trained personnel to operate, program, and maintain the equipment. NEVER ALLOW UNTRAINED PERSONNEL TO OPERATE, PROGRAM, OR REPAIR THE EQUIPMENT!

We recommend approved Yaskawa training courses for all personnel involved with the operation, programming, or repair of the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial 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.
Notes for Safe Operation

Read this manual carefully before installation, operation or inspection of the Motoman Maintenance Reminder application.

In this manual, the Notes for Safe Operation are classified as “DANGER”, “WARNING”, “CAUTION”, or “NOTICE”.

**DANGER**
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Safety Signs identified by the signal word DANGER should be used sparingly and only for those situations presenting the most serious hazards.

**WARNING**
Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury. Hazards identified by the signal word WARNING present a lesser degree of risk of injury or death than those identified by the signal word DANGER.

**CAUTION**
Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury. It may also be used without the safety alert symbol as an alternative to “NOTICE”.

**NOTICE**
NOTICE is the preferred signal word to address practices not related to personal injury. The safety alert symbol should not be used with this signal word. As an alternative to “NOTICE”, the word “CAUTION” without the safety alert symbol may be used to indicate a message not related to personal injury.

Even items described as “CAUTION” may result in a serious accident in some situations.

**NOTICE**
To ensure safe and efficient operations at all times, follow all instructions, even if not designated as "DANGER", “WARNING” and “CAUTION".
Motoman Maintenance Reminder

Notes for Safe Operation

DANGER

• Maintenance and inspection must be performed by specified personnel.
  Failure to observe this caution may result in electric shock or injury.
• For disassembly or repair, contact your Yaskawa representative.
• Do not remove the motor, and do not release the brake.
  Failure to observe these safety precautions may result in death or serious injury from unexpected turning of the manipulator’s arm.
• Before operating the manipulator, check that servo power is turned OFF pressing the emergency stop buttons on the front door of the DX200 and the programming pendant. When the servo power is turned OFF, the SERVO ON LED on the programming pendant is turned OFF.

Injury or damage to machinery may result if the emergency stop circuit cannot stop the manipulator during an emergency. The manipulator should not be used if the emergency stop buttons do not function.

Fig. : Emergency Stop Button

• Once the emergency stop button is released, clear the cell of all items which could interfere with the operation of the manipulator. Then turn the servo power ON.

Injury may result from unintentional or unexpected manipulator motion.

Fig. : Release of Emergency Stop

• Observe the following precautions when performing teaching operations within the P-point maximum envelope of the manipulator:
  – Be sure to use a lockout device to the safeguarding when going inside. Also, display the sign that the operation is being performed inside the safeguarding and make sure no one closes the safeguarding.
  – View the manipulator from the front whenever possible.
  – Always follow the predetermined operating procedure.
  – Keep in mind the emergency response measures against the manipulator’s unexpected motion toward you.
  – Ensure that you have a safe place to retreat in case of emergency.

Improper or unintended manipulator operation may result in injury.

• Confirm that no person is present in the P-point maximum envelope of the manipulator and that you are in a safe location before:
  – Turning ON the power for the DX200.
  – Moving the manipulator with the programming pendant.
  – Running the system in the check mode.
  – Performing automatic operations.

Injury may result if anyone enters the P-point maximum envelope of the manipulator during operation. Always press an emergency stop button immediately if there is a problem.

The emergency stop buttons are located on the right of front door of the DX200 and the programming pendant.
CAUTION

- Perform the following inspection procedures prior to conducting manipulator teaching. If problems are found, repair them immediately, and be sure that all other necessary processing has been performed.
  - Check for problems in manipulator movement.
  - Check for damage to insulation and sheathing of external wires.
- Always return the programming pendant to the hook on the cabinet of the DX200 after use.
  The programming pendant can be damaged if it is left in the manipulator's work area, on the floor, or near fixtures.
- Read and understand the Explanation of Warning Labels in the DX200 Instructions before operating the manipulator:
Definition of Terms Used Often in This Manual

The MOTOMAN is the Yaskawa industrial robot product.

The MOTOMAN usually consists of the manipulator, the controller, the programming pendant, and supply cables.

In this manual, the equipment is designated as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX200 controller</td>
<td>DX200</td>
</tr>
<tr>
<td>DX200 programming pendant</td>
<td>Programming pendant</td>
</tr>
<tr>
<td>Cable between the manipulator and the controller</td>
<td>Manipulator cable</td>
</tr>
</tbody>
</table>

Descriptions of the programming pendant keys, buttons, and displays are shown as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming Pendant</td>
<td>Character Keys</td>
</tr>
</tbody>
</table>
|                            | The keys which have characters printed on them are denoted with [ ].
|                            | ex. [ENTER]                                   |
|                            | Symbol Keys                                   |
|                            | The keys which have a symbol printed on them are not denoted with [ ] but depicted with a small picture.
|                            | ex. PAGE key                                  |
|                            | The Cursor is an exception, and a picture is not shown. |
|                            | Axis Keys, Numeric Keys                       |
|                            | “Axis Keys” and “Numeric Keys” are generic names for the keys for axis operation and number input. |
|                            | Keys pressed simultaneously                   |
|                            | When two keys are to be pressed simultaneously, the keys are shown with a “+” sign between them. |
|                            | ex. SHIFT key +COORD key                      |
|                            | Mode Key                                       |
|                            | Three kinds of modes that can be selected by the mode key are denoted as follows: REMOTE, PLAY, or TEACH |
|                            | Button                                         |
|                            | Three buttons on the upper side of the programming pendant are denoted as follows: HOLD button, START button, EMERGENCY STOP button |
|                            | Displays                                       |
|                            | The menu displayed in the programming pendant is denoted with { }. ex. {JOB} |
|                            | PC Keyboard                                    |
|                            | The name of the key is denoted ex. Ctrl key on the keyboard |
Registered Trademark

In this manual, names of companies, corporations, or products are trademarks, registered trademarks, or bland names for each company or corporation. The indications of (®) and (™) are omitted.

Safeguarding Tips

All operators, programmers, maintenance personnel, supervisors, and anyone working near the system must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. General safeguarding tips are as follows:

• Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation of this equipment, the operator's manuals, the system equipment, and options and accessories should be permitted to operate this equipment.

• Improper connections can damage the equipment. All connections must be made within the standard voltage and current ratings of the equipment.

• The system must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.

• In accordance with ANSI/RIA R15.06-2012, section 4.2.5, Sources of Energy, use lockout/tagout procedures during equipment maintenance. Refer also to Section 1910.147 (29CFR, Part 1910), Occupational Safety and Health Standards for General Industry (OSHA).

Mechanical Safety Devices

The safe operation of this equipment is ultimately the users responsibility. The conditions under which the equipment will be operated safely should be reviewed by the user. The user must be aware of the various national codes, ANSI/RIA R15.06-2012 safety standards, and other local codes that may pertain to the installation and use of this equipment.

Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location. The following safety equipment is provided as standard:

• Safety barriers
• Door interlocks
• Emergency stop palm buttons located on operator station

Check all safety equipment frequently for proper operation. Repair or replace any non-functioning safety equipment immediately.
Programming, Operation, and Maintenance Safety

All operators, programmers, maintenance personnel, supervisors, and anyone working near the system must become familiar with the operation of this equipment. Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this equipment should be permitted to program, or maintain the system. All personnel involved with the operation of the equipment must understand potential dangers of operation.

- Inspect the equipment to be sure no potentially hazardous conditions exist. Be sure the area is clean and free of water, oil, debris, etc.

- Be sure that all safeguards are in place. Check all safety equipment for proper operation. Repair or replace any non-functioning safety equipment immediately.

- Check the E-Stop button on the operator station for proper operation before programming. The equipment must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.

- Back up all programs and jobs onto suitable media before program changes are made. To avoid loss of information, programs, or jobs, a backup must always be made before any service procedures are done and before any changes are made to options, accessories, or equipment.

- Any modifications to the controller unit can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to the controller unit. Making any changes without the written permission from Yaskawa will void the warranty.

- Some operations require standard passwords and some require special passwords.

- The equipment allows modifications of the software for maximum performance. Care must be taken when making these modifications. All modifications made to the software will change the way the equipment operates and can cause severe personal injury or death, as well as damage parts of the system. Double check all modifications under every mode of operation to ensure that the changes have not created hazards or dangerous situations.

- This equipment has multiple sources of electrical supply. Electrical interconnections are made between the controller and other equipment. Disconnect and lockout/tagout all electrical circuits before making any modifications or connections.

- Do not perform any maintenance procedures before reading and understanding the proper procedures in the appropriate manual.

- Use proper replacement parts.

- Improper connections can damage the equipment. All connections must be made within the standard voltage and current ratings of the equipment.
Maintenance Safety

Turn the power OFF and disconnect and lockout/tagout all electrical circuits before making any modifications or connections.

Perform only the maintenance described in this manual. Maintenance other than specified in this manual should be performed only by Yaskawa-trained, qualified personnel.

Summary of Warning Information

This manual is provided to help users establish safe conditions for operating the equipment. Specific considerations and precautions are also described in the manual, but appear in the form of Dangers, Warnings, Cautions, and Notes.

It is important that users operate the equipment in accordance with this instruction manual and any additional information which may be provided by Yaskawa. Address any questions regarding the safe and proper operation of the equipment to Yaskawa Customer Support.
Customer Support Information

If assistance is needed with any aspect of the Motoman Maintenance Reminder system, please contact Yaskawa Customer Support at the following 24-hour telephone number:

(937) 847-3200

Yaskawa Customer Support also has an e-mail address for routine technical inquiries, to contact Yaskawa Customer Support through e-mail use the following address:

technical@motoman.com

When using e-mail to contact Yaskawa Customer Support, please provide a detailed description of the issue, along with complete contact information. Please allow approximately 24 to 36 hours for a response to the inquiry.

NOTICE
Use e-mail for routine inquiries only. If there is an urgent or emergency need for service, replacement parts, or information, contact Yaskawa Customer Support at the telephone number shown above.

Please have the following information ready before calling Customer Support:

- **System**
- **Primary Application**
- **Controller**
- **Software Version**
- **Robot Serial Number**
- **Robot Sales Order Number**

Motoman Maintenance Reminder

DX200

Access this information on the Programming Pendant's LCD display screen by selecting {MAIN MENU} - {SYSTEM INFO} - {VERSION}

Located on the robot data plate

Located on the DX200 controller data plate
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1 Overview

The Motoman Maintenance Reminder Option is a combination of applications that work together to keep the user notified of various maintenance items that require attention.

By combining a MotoPlus application with a pendant application and modified ladder, the user can be alerted to various maintenance items as well as signal external devices like a PLC or supervisory system.

To use the Motoman Maintenance Reminder option, a configuration file is created that contains up to 64 total reminder items. These items cover maintenance items for the robot arm, robot controller, and peripheral equipment like positioners. The user can add additional items that they can configure.

Four different types of maintenance item triggers are supported. Servo hours, calendar, I/O, and M-Register activations allow the user to receive notification in a variety of ways.

Each reminder triggers a robot user alarm or a robot user message. In addition, a designated “General Purpose Input” is assigned which can be used in the robot inform job or in the robot ladder. Each maintenance item triggers this unique input allowing interaction to a Program Logic Controller (PLC) or Human Machine Interfaces (HMI).

Example of User Alarm Generated by an Active Maintenance Item
2 Configuration File Editor

In addition to the MotoPlus and Pendant applications the Motoman Maintenance Reminder option requires a configuration file that resides on a dedicated USB thumb drive inserted in the CPU USB port. This thumb drive also maintains the maintenance history file and user list associated with the system.

The configuration file is a comma separated text file named “MaintFile.csv”. The filename cannot be changed and is case sensitive. It must reside in the root of the thumb drive.

This file should be edited using the included Windows based configuration file editor. Using the editor reduces the chance of errors as values and combinations are validated before updating the actual file.

The USB thumb drive can be removed from the CPU USB port for editing when desired. Insert the thumb drive into the computer where the configuration editor is loaded. Upon starting the editor, you will see the following screen.
No activities are available until you open an existing file or create a new blank file. Opening an existing MaintFile.csv loads the “Maintenance Item List.”

See section 2.2.7 “Action Buttons” for how to delete, add, or update a maintenance item.

2.1 Description

The description text box will act as the main identifier of the maintenance item. It is limited to 79 characters.
2.2 Item Type

The item type drop down box allows the user to select between the four types of maintenance items.

2.2.1 Servo Hours

Selecting “Servo Hours” will change the “Item Detail” panel to the “Servo Hours” item detail.

2.2.1.1 Item Detail

- “Interval Hours” - is the servo hours count between activation of this item.
- “Warning Hours” - is the hours count before setting an item to a yellow highlight within the maintenance reminder pendant application.

NOTICE

If you do not want a warning, set the “Warning Hours” value equal to the “Interval Hours”.
2.2.2 Calendar Based

The calendar based item detail panel will allow the user to select the time interval in years, months and/or days.

2.2.3 I/O Signal

The I/O signal detail panel allows the user to select or type the CIO (Concurrent I/O) address of any signal to monitor. When this signal activates, the maintenance item is triggered.
2.2.4 M-Register

The M-Register detail panel allows the user to select a M-Register to monitor and set the trigger value for a maintenance reminder. There are 10 M-Registers dedicated to the maintenance reminder function. They are registers 260 to 269, inclusive.

2.2.5 Completion Details

The completion details panel is common to all entries. It consists of three items, the last completion date, the servo hours at the last completion, and the user who acknowledged the last action. Not all these items may be relevant for a maintenance item but are provided for reference.

For example, a “Servo Hours” item only triggers based on the servo hour interval. But the last date is still captured for this event. This information may be useful to the user if considering switching the maintenance item to a calendar based event.
2.2.6 Notification Settings

The notification settings panel is common to all entries. It consists of two items, the “Notification Type”, and the “Universal Input Notification” number.

![Notification Settings Panel]

2.2.6.1 Notification Type

The notification type can be selected between “User Alarm” and “User Message”.

- A user alarm stops the robot operating until the alarm is acknowledged.
- A “User Message” displays a notice on the bottom of the pendant display alerting the operator that a maintenance is needed. The robot will continue operation.

2.2.6.2 Universal Input Notification

In either type of notification, the input notification signal will trigger. There is 64 designated universal input signals, 4017 to 4080. These signals correspond to user inputs 4017 to 4080. Each item in the list must use a unique notification input value. This means the list is limited to a maximum of 64 maintenance items.

These input signals can be used in robot INFORM jobs or with ladder modifications for resetting the activation or notifying external equipment of the maintenance item status.
2.2.7 Action Buttons

The three action buttons located at the bottom of the screen operate on the current file. The action is immediate and the current file is written without any additional action required.

---

**NOTICE**

Once pressing the {Delete} button or {Update} button, the Maintenance Item cannot be returned to their previous state.

---

### 2.2.7.1 {Delete} Button

The {Delete} button deletes the highlighted Maintenance Item. There is a confirmation screen that displays once pressing the {Delete} button to confirm the item is to be deleted.

### 2.2.7.2 {Append New} Button

{Append New} button adds a new item to the end of the list. To add a new item configure the various selections and click {Append New}.

### 2.2.7.3 {Update} Button

Existing items can be modified by clicking any branch of the item tree to select the item. Change the item details and click the {Update} button to save them.
3 Maintenance Reminder Pendant Application

The Motoman Maintenance Reminder pendant application allows the user to view the status of existing maintenance items as well as acknowledge and “log” completion status for those items.

To launch the Motoman Maintenance Reminder pendant application, start by touching the (MAINT. REMINDER) button located under “SETUP”.

3.1 Motoman Maintenance Reminder Screen

The Motoman Maintenance Reminder application groups the maintenance items into three categories:

- Servo Time Based Items
- Calendar Based Items
- Event Based Items.
3.1 Motoman Maintenance Reminder Screen

If a maintenance item is set to alarm when due alarm code 8900 will display with the subcode of the item in the maintenance list.

3.1.1 Servo Time Based Items

A servo hour maintenance item activates on an accumulated servo hour interval. The interval hours indicate the duration between events.

The warning interval will cause the item to be highlighted in yellow when viewed in the pendant application to indicate that an item is nearing activation. When the item is highlighted in red maintenance is required now.

If you do not want a warning, set the warning hours equal to the interval hours.
3.1.2 Calendar Based Items

Calendar Based Items are triggered based on time intervals. A calendar based event does not have a warning function. The interval can be a combination of years, months, or days. The due date is calculated by adding the calendar interval to the last action date.
3.1.3 Event Based Items

There are two types of event based items, I/O and M-Register.

3.1.3.1 I/O Signal Maintenance Item

The I/O based type allows the user to monitor any valid CIO address. When the signal associated with that address is activated, the maintenance item will trigger.

The user should monitor the designated notification output to know when to deactivate the maintenance request signal. When the notification signal turns off, it indicates that the maintenance item has been cleared by a user logging the completion of the maintenance item from the pendant.
3.1.3.2 M-Register Maintenance Item

The second type of event based item is the M-Register.

There are 10 M-Registers dedicated to the maintenance reminder function. They are registers 260 to 269, inclusive.

When setting up the M-register item the user assigns a trigger value. When the M-Register value is equal to or greater than the trigger value, the maintenance item is activated.

<table>
<thead>
<tr>
<th>Type</th>
<th>Address</th>
<th>Trigger Value</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment Mark</td>
<td>CE0</td>
<td>260</td>
<td>Bill</td>
</tr>
<tr>
<td>External Leads</td>
<td>CE0</td>
<td>261</td>
<td>John</td>
</tr>
<tr>
<td>Connector Base</td>
<td>CE0</td>
<td>262</td>
<td>JKL</td>
</tr>
<tr>
<td>L-Axis Connectors</td>
<td>MREG</td>
<td>260 &gt;= 50</td>
<td>600</td>
</tr>
<tr>
<td>L-Axis Balance</td>
<td>CE0</td>
<td>263</td>
<td>PQR</td>
</tr>
</tbody>
</table>

3.1.4 Log a Maintenance Item as Complete

To log an item as complete, select a “Current User”, then select the item in the list and press the (Complete Item) button.
3.1.5 Log File Viewer

The {View Logs} button gives the user a simplified way to review a range of maintenance events on the pendant. By selecting a start and end date and then clicking {View}, the user is presented with a listing of all the logged events within that date range.

![Log File Viewer Example]

The log file can also be exported to either a pendant USB thumb drive or pendant CF/SD card. Log files are a .csv file and can be viewed using any text file viewer or Excel.

3.1.6 Manage Users

By pressing the {Manage Users} button users can be added or deleted.

3.2 Maintenance Reminder Application Failure Alarms

There are two application failure alarms. Both of these alarms can occur after a controller startup, if there is a failure during initialization of the application.

Table 3-1: Application Failure Alarms

<table>
<thead>
<tr>
<th>Alarm Code</th>
<th>Alarm Message</th>
<th>Alarm Code Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8900[254]</td>
<td>Warning: Maint reminder failure</td>
<td>USB drive is not plugged into the controller's CPU board. Because of that, the application couldn't read the maintenance list... So the user will not receive any maintenance reminders.</td>
</tr>
<tr>
<td>8900[255]</td>
<td>Warning: Maint reminder failure</td>
<td>There was a failure while attempting to read the maintenance list. So, the user will not receive any maintenance reminders.</td>
</tr>
</tbody>
</table>
4 Ladder Logic

Motoman Maintenance Reminder works in conjunction with the robot ladder. The standard functionality of the ladder logic changes will already be in place when the user receives the system. However, if user generated maintenance items are used, or advanced notifications to the PLC's or HMI's are desired, the user will need to make the appropriate ladder modifications to support those communications.

Refer to Concurrent I/O manual for ladder modification information. The DX200 Concurrent I/O manual Part Number is 165294-1CD.
5  Reserved Resources

The following resources are reserved for use by the Motoman Maintenance Reminder.

- Network Inputs
  - 27290 to 27367 - 64 Inputs
- Universal Inputs
  - 4017 to 4080 - 64 Inputs
- M-Registers
  - 260 to 269 - 10 Registers
- User Message
  - User Message #22 - “PREVENTATIVE MAINTENANCE DUE NOW”
Appendix A

A.1 Configuration File Format

The configuration file format is a comma separated, no spaces format. The first line contains a heading.

**The Columns Are:**

1. **Item:** Name of Maintenance Item. Text, max length 79 characters.
2. **Interval:** Hours required before maintenance is required. Integer.
3. **Yellow Interval:** Hours required before warning of upcoming maintenance. Integer.
4. **Last Completed:** Servo clock seconds when maintenance was last performed. Integer.
5. **CalendarInterval:** “YY/MM/DD HH:MM” string for calendar interval.
6. **LastCompDT:** Last complete DateTime string (YYYY/MM/DD HH:MM)
7. **Message/Alarm:** Indicates whether maintenance should trigger message or alarm. Text, ‘M’/’A’
8. **External Output:** Address of I/O output desired when maintenance triggered. Integer. Required… all events will output a signal regardless of if they are used. These must be unique and will be enforced as such using the maintenance file editor.
9. **Input Monitor:** Address of I/O to monitor for maintenance trigger if not time-based. 0 if N/A. If greater than 1000000, signifies M register and trigger threshold count is in Interval field.
10. **Servo/Calendar:** ‘S’ or ‘C’ for servo or calendar time. N/A if Input Monitor is non-zero. (Use ‘N’ in this case)
11. **User Name:** Initials of user who last performed the maintenance for this item. Text, max length 12 characters.

**Example File Entries**

| Item, Interval, Yellow Interval, Last Completed, CalendarInterval, LastCompDT, Message/Alarm, External Output, Input Monitor, Servo/Calendar, User Name |
|---|---|---|---|---|---|---|---|---|---|---|
| Alignment Mark, 0,0,442800,00/00/00 00:00,2017/01/14 10:54,A,27290,20310,N,ABC |
| External Leads, 24,22,7200,00/00/00 00:00,2017/04/06 11:02,A,27291,0,S,Unknown |
| Baseplate Mounting Bolts, 0,0,360000,01/00/00 00:00,2017/04/06 10:10,M,27292,0,C,Amy |
| Connector Base, 0,0,00/00/00 00:00,2017/01/14 10:31,M,27293,20311,N,JKL |
| LU-Axis Connectors, 0,0,00/00/00 00:00,2017/01/14 08:18,M,27294,20312,N,MLN |
A.2 Example Ladder Modification for User Defined Maintenance Item

Setup: The user wants to monitor an external process. The signal to trigger the maintenance request is wired to universal input #47, relay #00066.

An I/O maintenance item is configured to monitor CIO address #00066 and the "notification" signal chosen is 4024, relay #05037.

An output is designated that will signal the external equipment to turn off the maintenance request. This is universal output #77, relay #30105.

MotoPlus monitors CIO #00066. When it energizes, a maintenance request is generated. Output 4024 is turned on and will stay on until the operator 'logs' the completion of the maintenance item. When this happens 4024 will turn off triggering the falling edge one shot 70051.

The falling edge one shot, 70051 and the maintenance request signal, 00066 'on', will energize a latch to lock on the designated output signal 30105.

This latch remains active until the external maintenance request signal turns off. When the request turns off, the latch is broken and the handshake is complete.
MOTOMAN
MAINTENANCE REMINDER OPTION

VERSION 1.0 INSTRUCTIONS

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