Maintenance Manual

MatchPoint PLANX™

Servo-Driven Jigging System

Manual applies to U.S. and International equipment.

001098
Rev. B

Maintenance Manual

MatchPoint PLANX™

Servo-Driven Jigging System

U.S. and other patents pending.

Manual applies to U.S. and International equipment.

MiTek
Machinery Division
301 Fountain Lakes Industrial Drive
St. Charles, MO 63301
Phone: 800-523-3380
Sales fax: 636-328-9222
Customer Service fax: 636-328-9218
www.mii.com

Manual Set	001098
This Manual	001098-MT
Orig Creation Date	1 April 2008
Created By	R. Widder
Print Date	11 January 2024
Revision	B
Revision Date	31 January 2012
Revised By	R.Tucker
Approved By	M. Kanjee
Effectivity	All
Applicability	42185-501-240V, 42151-501-240V, 42190-501-240V, 42189-501-240V, 42161-501-240V, 42170-501-240V, 42180-501-240V

Legal Notice

Patents

Made and sold under one or more of the following patents:

U.S. 37,797	U.S. 5,468,118
U.S. 5,553,375	U.S. 6,079,325
U.S. 6,145,684	U.S. 6,330,963
U.S. 6,405,916	U.S. 6,651,306
U.S. 6,807,903	Other Patents Pending

Return Goods Policy

Return goods cannot be accepted without prior authorization and are subject to a restocking charge. The Seller certifies the articles specified herein were produced in compliance with all provisions of the Fair Labor Standards Act of 1938, as amended, including Section 12.—Rev. 6/98

Reporting Errors and Recommending Improvements

To report errors or recommend improvements to this manual, please complete the Document Evaluation Form in the appendices. Mail or fax the form to:

MiTek, Machinery Division
301 Fountain Lakes Industrial Drive
St. Charles, MO 63301
Attn: Engineering Manager
Fax: 636-328-9218

Your support in helping MiTek provide unsurpassed machinery and support is appreciated.

Contents

Contents

Contents

Notice of Change

Use this page to record Service Bulletins and Notices that you receive to keep your manual updated.

MatchPoint PLANX™

Servo-Driven Jigging System

Service Bulletin or Notice #	Dated	Title

Safety (English)

Refiérase a la página 22 para español.

For safety information in Spanish, refer to page 22.

Safety Indicators: Signal Words

The following signal words and colors are used throughout this document to indicate safety hazards. Pay careful attention when you see them. The level of severity differs for each signal word and color.

Signal words are accompanied by graphics showing what personnel should or should not do. The graphics are called safety symbols and are defined on page 13, but more specific text is provided every time a graphic is used throughout the manual. Everyone near the machine must be trained on how to read these safety indicators.

Failure to comply with the instructions accompanying each signal word may result in property damage, personal injury, or even death. Personnel must follow all safety procedures and practices to ensure the safest possible operation of this equipment. However, at no time is this document a substitute for common sense. Personnel must ensure that the work environment is safe and free of distractions.

DANGER

Indicates an imminently hazardous situation which, if not avoided, is likely to result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.

CAUTION

When CAUTION is used ***with*** the safety alert symbol (yellow triangle), it indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

When CAUTION is used ***without*** the safety alert symbol, it indicates a potentially hazardous situation which may result in equipment damage.

NOTICE

Calls attention to information that is significant to understanding the operation at hand.

ENVIRONMENTAL

Applies to conditions that may affect the environment but do not have an immediate, direct effect on personnel or equipment.

General Equipment Safety Rules

Because it is impossible to anticipate every circumstance that might involve a hazard, the safety information provided in this equipment manual and on the machine is not all-inclusive. If this machine is operated or serviced using a procedure not specifically recommended by the manufacturer, the procedure shall be approved by a professional engineer to ensure it will not render the equipment unsafe. Use extreme caution and common sense at all times!

Know Your Equipment

- Read this manual completely before using or maintaining the equipment. Do not operate this machine unless you have a thorough knowledge of the controls, safety devices, emergency stops, and operating procedures outlined in this manual.
- Read and follow all safety notes. Failure to comply with these instructions may result in economic loss, property damage, and/or personal injury including death.
- Refer to the lockout/tagout guidelines on the following pages to safely perform maintenance and troubleshooting of this equipment.
- Observe and obey all safety labels. Replace worn labels immediately.
- Use this equipment solely for the purpose described in this manual.
- Only qualified personnel should attempt to operate or perform maintenance on this equipment. “Qualified personnel” is defined as:

> *...a person or persons who, by possession of a recognized degree or certificate of professional training, or who, by extensive knowledge, training, or experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work—ANSI B30.2-1983*
>
> *...one who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved—NEC 2002 Handbook*

Personal Safety

- Always wear safety glasses and hearing protection in an industrial environment.
- Utilize a filtering face piece (dust mask) when working near sawdust.
- Wear proper clothing and appropriate personal protective equipment (e.g., safety glasses and hearing protection.) Do not wear loose clothing or jewelry. Confine long hair by tying it back.
- Use caution when lifting heavy parts or material.

Installing the Equipment

- Follow installation instructions completely.
- This equipment is not for use in a residential area.

Lockout/Tagout

- Before performing maintenance on the pneumatic or hydraulic systems, bleed the lines to eliminate pressure.
- Lockout/tagout all energized systems before performing maintenance on them. Refer to the *Lockout/Tagout Guidelines* section on page 5.

Keeping a Safe Environment

- Keep children away. All visitors should be kept a safe distance from the work area. Hazards may not be apparent to individuals unfamiliar with the machine.
- Keep work areas well lit.
- Keep the work area clean and free of any trip or slip hazards.
- Do not use the equipment in damp or wet locations, or expose it to rain or snow.
- Minimize dust clouds and protect your equipment by cleaning dust in this manner:
  - Vacuum dust prior to blowing with air
  - Shut down electrical power and sources of ignition
  - If using compressed air, it should be a low compression (no more than 15 psi)
  - Powered cleaning equipment such as vacuums must be consistent with local governmental codes for use in dusty conditions.

Operating and Maintaining the Equipment

- Ensure that all people, tools, and foreign objects are clear of the restricted zones before operating this equipment. The restricted zones are shown on page 11.
- Perform safety tests to ensure all E-stops are working properly before operating the equipment at the initial startup, after performing any maintenance, and in accordance with the maintenance schedule.
- In case of machine malfunction, stop the machine immediately using an E-stop and report the malfunction to a supervisor.
- Never leave the machine running unattended. Turn the power off! Do not leave the machine until all parts have come to a complete stop and all electrical power has been shut off.
- Check for worn or damaged parts regularly. Repair or replace them immediately.
- Keep the hydraulic, pneumatic, and electrical systems in good working order at all times. Repair leaks and loose connections immediately. Never exceed the recommended pressure or electrical power.

- Check that all safety devices are in working order before each shift starts. All protective guards and safety devices must be in place before and during use of the machine. Never disconnect or bypass any safety device or electrical interlock.
- Only qualified maintenance personnel shall remove or install safety devices.
- Periodically inspect the quality of the finished product.

Electrical Safety

- Do not use any liquids in the interior of electrical cabinets.
- When using solvents on and around the machine, remove power to the machine to eliminate the chance of sparking, resulting in explosion or fire. Wear a respirator approved for use with solvents. Wear protective clothing, gloves, and safety glasses.

Lockout/Tagout

Lockout/Tagout Guidelines

All lockout/tagout guidelines must be met according to OSHA 29 CFR 1910.147. A specific procedure should be included in your company's energy control program. This manual is not intended to replace your company's de-energizing or lockout/tagout procedure required by OSHA, but merely to provide general guidance.

The term "lockout," as used in this manual, means placing a lockout device on any and all energy sources to ensure that the energy isolating device and the equipment being controlled cannot be re-energized or operated until the lockout device is removed. The photos on the next page show where the electrical disconnects are located for this machine.

- Energy sources include electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- In the case of electrical energy sources, the main power and control power to the machinery must be turned off and physically locked in the "off" position.
- A lockout device is usually a keyed padlock.
- If more than one person is working in a restricted zone, use a group lockout device that will allow each person to use a lock that can be removed only by the person performing the maintenance.

"Tagout" means that a prominent warning is securely fastened to an energy-isolating device to indicate that the equipment shall not be operated.

Whenever you see this symbol, lockout/tagout!

Electrical Lockout/Tagout Procedures

When Working on a Machine Outside the Machine's Main Electrical Enclosure

If working on the electrical transmission line to the machine, follow the procedure on page 8.

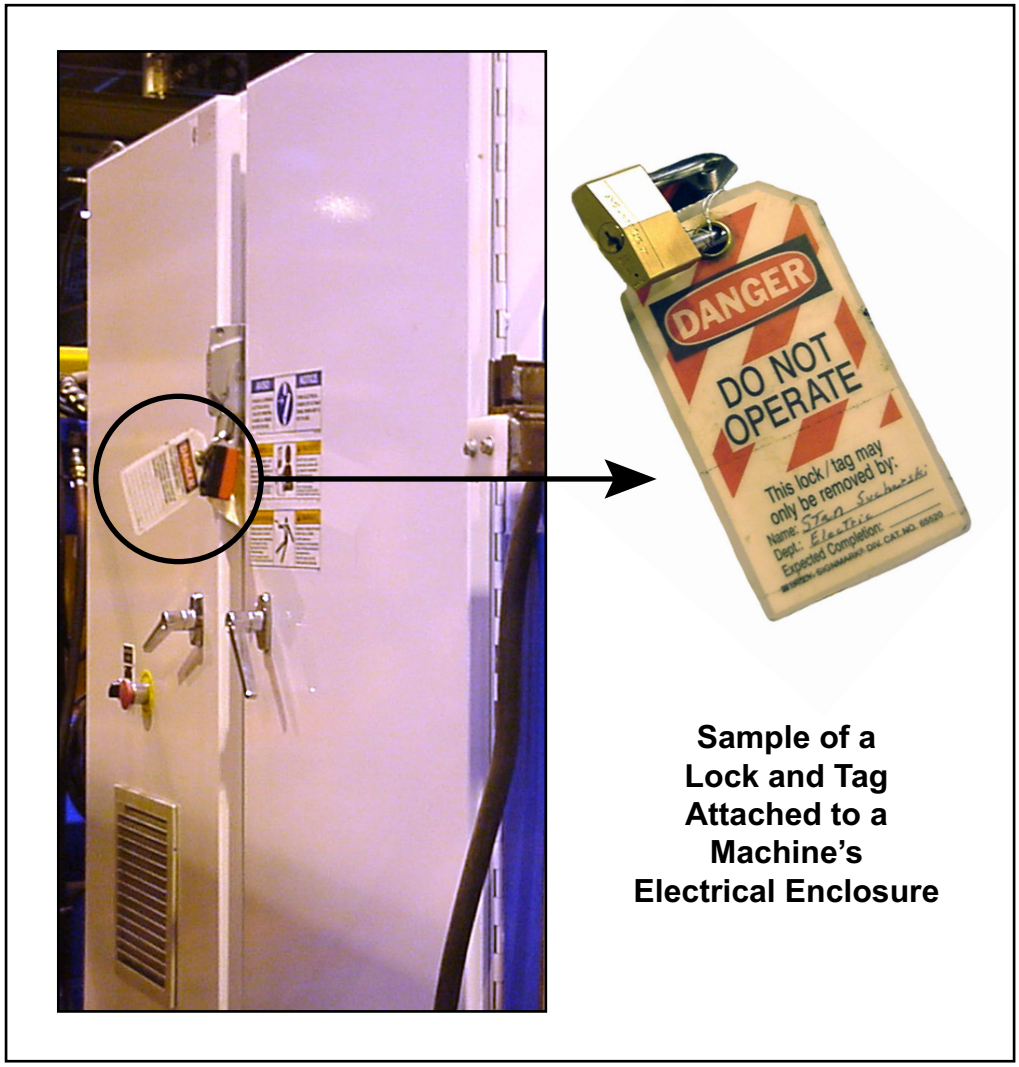
Before performing maintenance on any machine with electrical power, lockout/tagout the machine properly. When working on a machine outside of the machine's main electrical enclosure, not including work on the electrical transmission line to the machine, follow your company's approved lockout/tagout procedures which should include, but are not limited to the steps here.

1. Engage an E-stop on the machine.
2. Turn the disconnect switch handle to the "off" position. See Figure SAFETY-1.

	⚠ WARNING
	**ELECTROCUTION HAZARD.** **When the disconnect switch is off, there is still live power within the disconnect switch's enclosure. Always turn off power at the building's power source to the equipment before opening this electrical enclosure!**

3. Attach a lock and tag that meet OSHA requirements for lockout/tagout.
4. Restrain or de-energize all pneumatic components, hydraulic components, and other parts that could have live or stored power.

Figure SAFETY-1: Sample of a Lockout/Tagout Mechanism on an Electrical Enclosure



When Working on a Machine Inside the Machine's Main Electrical Enclosure or in the Electrical Transmission Line to the Machine

Before opening the main electrical enclosure, or attempting to repair or replace an electrical transmission line to the machine, lockout/tagout the machine properly. Follow your company's approved lockout/tagout procedures which should include, but are not limited to the steps here.

1. Engage an E-stop on the machine.
2. Shut the power to the machine off at the machine's power source which is usually an electrical service entry panel on the facility wall. One example of a locked-out power source panel is shown in Figure SAFETY-2.
3. Attach a lock and tag that meets OSHA requirements for lockout/tagout.
4. Open the door to the enclosure in which you need access, and using a multimeter, verify that the power is off.

Figure SAFETY-2: Sample of a Lockout/Tagout Mechanism on a Power Source Panel

Pneumatic System Lockout/Tagout Procedure

When Lockout/Tagout is Not Required

If working on components other than the pneumatic system, but that requires you to be near the vicinity of movable pneumatic components, you must, at a minimum, physically restrain the pneumatic components from moving. If this is not possible, lockout/tagout the entire pneumatic system.

When Lockout/Tagout is Required

Before attempting repair or maintenance on a pneumatic line or component, lockout/tagout the machine properly. Follow your company's approved lockout/tagout procedures.

Troubleshooting With an Energized Machine

Only a qualified electrician, using the personal protective equipment and following the procedures recommended in NFPA 70E should ever attempt service or repair of or near an energized area or component of the machine.

Whenever maintenance is performed while the equipment is electrically energized, there is a potential electric arc flash hazard. Refer to NFPA 70E for the personal protective equipment required when working with electrically energized components. Pneumatic and hydraulic components may move unexpectedly if not de-energized. Physically restrain any components capable of movement when working on or near those components.

Safety Test

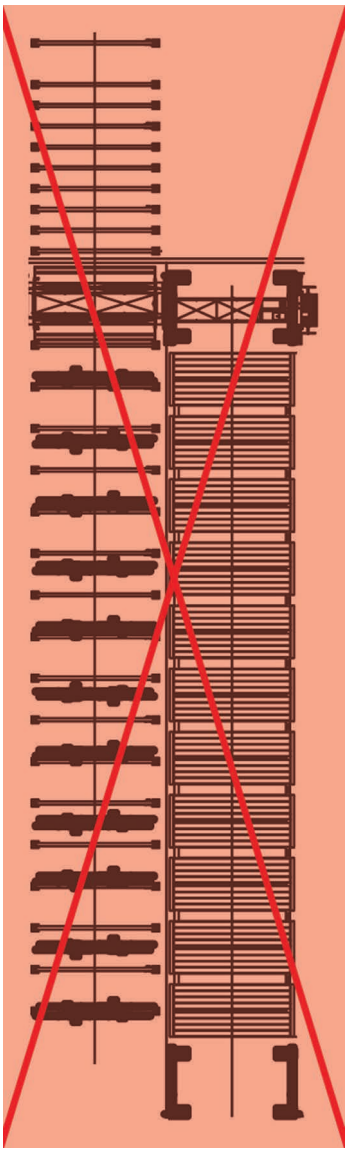
This test procedure MUST be performed by qualified personnel at startup and after ANY maintenance, adjustment, or modification. Testing ensures that the safety system and machine control system work together to properly stop the machine.

1. Start the system.
2. Test that the E-stop circuit prevents movement:
    a) While jigging a truss automatically, push the red E-stop button on the operator control station. All PLANX should stop immediately.
    b) Attempt to manually run the pucks on the first PLANX assembly by pressing the FWD/REV button located on the control box for that PLANX assembly.
    c) The pucks should not move! Repair the electrical system if the puck moves while the E-stop is actuated.
    d) Repeat for all other PLANX assemblies.
    e) Reset the E-stop circuit after testing by pulling straight out on the red Estop button, then pressing the RESET button.
3. Lockout/tagout.
4. Check that all guards and safety devices are in place and secure.
5. Inspect the timing belts (2 per PLANX) for excessive wear.
6. Inspect the Acme screws and nuts for excessive wear. Rotate the Acme screw to check the back side of crew.
7. Remove any foreign objects that may have fallen into the PLANX slot.
8. Ensure that the Acme screws are lubricated. See the Maintenance Checklist.
9. Remove the lockout/tagout devices.

Restricted Zone

	**⚠ DANGER** **Stay out of the restricted zone when equipment is in use. Serious injury or death may result if personnel are in the restricted zone.** **Always look for personnel in the restricted zone before operating equipment.**

Know the Restricted Zone



Marking the Restricted Zone

The restricted zone must be marked so everyone near the equipment can clearly see the area where danger may exist.

MiTek offers Restricted Zone Tape that is easy to apply and has text in English and Spanish. Some equipment comes with restricted zone tape. If your machine did not come with restricted zone tape, you may order it from MiTek Machinery Division Customer Service.

Instructions for where and how to apply restricted zone tape can be found in the gantry manual that came with your system or by obtaining Service Bulletin 181 from the MiTek Machinery Web site.

Safety Symbol Definitions

The safety symbols shown in this section can be found throughout the manual to indicate hazards that are related to this equipment. All personnel expected to operate or maintain this equipment should become familiar with these safety symbols and what they mean.

	This is the Electrical Hazard Symbol. It indicates that there are dangerous high voltages present inside the enclosure of this product and/or that a power source is present. To reduce the risk of fire or electric shock, do not attempt to open the enclosure or gain access to areas where you are not instructed to do so. Refer servicing to qualified service personnel only. This product should be operated only from the type of source indicated on the manufacturer's identification label. Installation should be in compliance with applicable sections of the national electric code. Consult your local building code before installing.
	This is the user caution symbol. It indicates a condition where damage to the equipment resulting in injury to the operator could occur if operational procedures are not followed. To reduce the risk of damage or injury, refer to accompanying documents, follow all steps or procedures as instructed.
	Operation of this equipment may result in flying debris and excessive noise. To reduce the risk of injury, wear only approved PPE.
 	Crush hazard! Keep hands clear.
	Keep hands away from moving parts.

	Do not use sling equipment rated for less than _____ lbs/___kgs when lifting this equipment.
	Crush hazard from above
	Trip hazard! Pay attention when walking in this area.
  	Keep hands and body clear.
 	WARNING! ___ MAN LIFT REQUIRED TO SAFELY MOVE THIS EQUIPMENT. REFER TO INSTALLATION MANUAL.







The operation of this equipment requires the use of PPE.

Do not operate without wearing required protective clothing.

 	Refer to manual- After installation, read the user's guide carefully before operating. Follow all operating and other instructions carefully.
	Circuits are live -lockout/tagout the upstream disconnecting means prior to opening for service.
	Lockout in a de-energized state
  	Lift Point - In order to reduce the likelihood of damage to the equipment, use only the lift points indicated in the manual.
	Use of lift equipment is mandatory.

	Consult material safety data sheet.
	Read all safety warnings and instructions before proceeding.
	Unplug equipment before servicing.
	Hazardous moving parts are located behind this access panel. Do not operate this equipment without all guards and covers in place.
 	Do not place containers with liquids such as coffee, water, sodas, etc. on this unit. Do not operate this equipment in a wet environment. Do not expose to water
	Use of fork lift equipment when moving this equipment will result in serious equipment damage. Refer to installation procedures.

	Do not use non-approved lubricants in this machine.
	Do not operate without guards and covers in place
	Do not weld
	Do not discard into municipal waste stream
	oil drop

Declarations of Conformity for CE Compliance

EU DECLARATION OF CONFORMITY WITH COUNCIL DIRECTIVE 2006/42/EC CE DECLARATION DE CONFORMITE AVEC DIRECTIVE 2006/42/EC	
Date of Issue:	30 OCT 2009
Directive:	Machinery Safety Directive, 2006/42/EC
Conforming Machinery:	Servo Planx™ S/N: As Stamped on Nameplate
Manufacturer:	MiTek Industries, Inc. 301 Fountain Lakes Industrial Drive St. Charles, MO 63301 USA
Authorized Representative	Syd Griffiths Managing Director Europe MiTek Industries Limited MiTek House Grazebrook Industrial Park Peartree Lane Dudley, West Midlands DY2 0XW England Ph: (44) 1384 451400
Harmonised Standards Referenced or Applied:	BS EN 12100-1:2003, BS EN 12100-2:2003, BS EN 13857:2008, BS EN ISO 13850:2008, BS EN 60204-1:2006, BS EN ISO 14121-1:2007, BS EN 349:1993+A1:2008, BS EN 953:1997 +A1:2009, BS EN 1037:1995+A1:2008, BS EN 60529:1992. BS EN 614-1:2006+A1:2009
Specifications with which Conformity is Declared:	Essential Health and Safety Requirements of Annex 1 of the Machinery Directive
We hereby certify that the machinery described above conforms with the essential health and safety requirements of Council Directive 2006/42/EC on the approximation of the laws of the Member States relating to the safety of machinery.	
Signed:	
Signatory:	Printed Name Manish Kanjee Title Engineering Manager Company Name MiTek Industries, Inc.
Technical File Reference Number	**SF10753A1.MII**

Notes Concerning Harmonized Standards Referenced or applied:

BS EN ISO 12100-1:2003	Safety of machinery. Basic concepts, general principles for design.
BS EN ISO 12100-2:2003	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles - /A1
BS EN 60204-1:2006	Safety of machinery. Electrical equipment of machines. General requirements.
BS EN ISO 13857:2008	Safety of machinery. Safety distances to prevent hazard zones being reached by upper and lower limbs.
BS EN 349:1993+A1:2008	Safety of machinery. Minimum gaps to avoid crushing of parts of the human body.
BS EN 953:1997 +A1:2009	Safety of machinery. Guards. General requirements for the design and construction of fixed and movable guards.
BS EN 1037:1995+A1:2008	Safety of machinery. Prevention of unexpected start-up
EN ISO 13850:2007	Safety of machinery — Emergency stop — Principles for design.
BS EN 60529:1992	Specification for degrees of protection provided by Enclosures (IP Code).
BS EN ISO 14121-1:2007	Safety of Machinery – Risk Assessment – Part 1: Principles
BS EN 614-1:2006+A1:2009	Safety of machinery — Ergonomic design principles —. Part 1: Terminology and general principles

Declaration of Noise Emissions

Declaration of Noise Emission

The MiTek® Industries, Inc. Model Servo Planx™ noise emission levels per ISO EN 11202 are as follows:

Electronics Console Work place noise level (Work Cycle)	79.0 dB (A)
Servo Planx™ Work place noise level (Work Cycle)	82.6 dB (A)
Ambient Correction Factor K3A calculated according to ISO EN 11204 Appendix A.	4 dB (A)

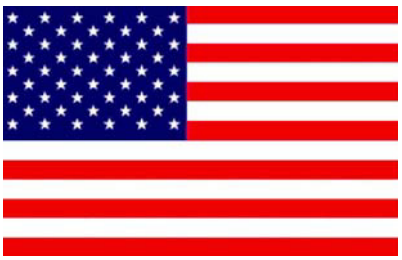
Measurements were made at a height of 1.5 m and 1 m from the machine.

The difference between the extraneous noise level and the sound intensity level at each measuring point is > 6 dB (A)

The figures quoted are emission levels and are not necessarily safe working levels. While there is a correlation between the emission and exposure levels this cannot be used reliably to determine whether or not further precautions are required.

Factors that influence the actual level of exposure of the workforce include characteristics of the work room, the other sources of noise, etc. such as the number of machines and other adjacent processes. Also, the permissible level of exposure can vary from country to country.

This information, however, will enable the user of the machine to make a better evaluation of the hazard and risk.



MiTek® Industries, Inc.
301 Fountain Lakes
Industrial Drive
St. Charles, MO 63301
USA

CE

Seguridad (Español)

Sea cuidadoso.

Protéjase.

Indicadores de seguridad: Palabras de aviso

Las siguientes palabras y colores de aviso se utilizan a lo largo de este documento para indicar riesgos de seguridad. Preste suma atención cuando los vea. El nivel de gravedad es diferente por cada palabra o color de aviso.

Las palabras de aviso van acompañadas por gráficos que muestran al personal lo que deben y no deben hacer. Los gráficos se llaman símbolos de seguridad y se definen en la página 13, pero se proporciona un texto más específico cada vez que se utiliza un gráfico por todo el manual. Todas las personas que estén cerca de una máquina tienen que ser capacitadas en cómo leer estos indicadores de seguridad.

No cumplir las instrucciones que acompañan cada palabra de aviso puede producir daños a la propiedad, lesiones personales e incluso la muerte. El personal debe seguir todos los procedimientos y prácticas de seguridad establecidos para asegurar el uso más seguro posible de este equipo. No obstante, en ningún caso este documento reemplaza el sentido común. El personal debe asegurarse de que el entorno de trabajo sea seguro y esté libre de distracciones.

PELIGRO

Indica una situación potencialmente peligrosa que, si no se evita, podría producir la muerte o lesiones graves.

ADVERTENCIA

Indica una situación potencialmente peligrosa que, si no se evita, podría producir la muerte o lesiones graves.

PRECAUCIÓN

Indica una situación potencialmente peligrosa que, si no se evita, puede producir lesiones menores o moderadas.

AVISO

Llama la atención a información importante para entender la operación que se desea realizar.

AMBIENTAL

Se aplica a condiciones que pueden afectar el entorno pero que no tienen un efecto inmediato o directo sobre el personal o el equipo.

Reglas de seguridad para el equipo de general

Debido a la imposibilidad de anticipar todas las circunstancias que podrían constituir un riesgo, la información de seguridad suministrada en este manual del equipo y sobre la máquina no es exhaustiva. Si se utiliza o realiza el mantenimiento de esta máquina utilizando un procedimiento no recomendado específicamente por el fabricante, el procedimiento deberá ser aprobado por un ingeniero profesional para asegurarse de que no afecte la seguridad del equipo. ¡Manéjese siempre con suma precaución y sentido común!

Conozca su equipo

- Lea este manual en su totalidad antes de utilizar o mantener el equipo. No utilice esta máquina a menos que esté perfectamente familiarizado con los controles, los dispositivos de seguridad, los frenos de emergencia y los procedimientos operativos que se describen en este manual.
- Lea y siga todas las notas de seguridad. El no cumplimiento de estas instrucciones podría producir pérdidas económicas, daños a la propiedad y lesiones personales, incluida la muerte.
- Refiérase a las pautas de bloqueo/etiquetado proporcionadas en las siguientes páginas para realizar el mantenimiento y solucionar problemas de este equipo en forma segura.
- Observe y cumpla con todas las etiquetas de seguridad. Cambie las etiquetas gastadas inmediatamente.
- Utilice este equipo únicamente para el propósito que se describe en este manual.
- Sólo personal calificado debe intentar utilizar o realizar el mantenimiento de este equipo. Por "personal calificado" se entiende:

> *...una persona o personas que, por el hecho de poseer un título o certificado de capacitación profesional reconocido o que, por sus amplios conocimientos o experiencia, han demostrado con éxito estar capacitados para resolver problemas relacionados con el tema y el trabajo en cuestión —ANSI B30.2-1983*
>
> *...una persona que posee habilidades y conocimientos relacionados con la construcción y uso de equipos e instalaciones eléctricas y que ha recibido capacitación en seguridad sobre los riesgos posibles—NEC 2002 Handbook*

Seguridad personal

- Use siempre lentes de seguridad y protección auditiva en un entorno industrial.
- Utilice una máscara protectora cuando trabaje cerca de aserrín.
- Utilice ropa adecuada y equipo de protección personal apropiado (por ejemplo, lentes de seguridad y protección auditiva.) No use ropa suelta ni joyas. Si tiene el cabello largo, áteselo para atrás.
- Proceda con precaución cuando levante piezas o materiales pesados.

Instalación del equipo

- Siga las instrucciones de instalación al pie de la letra.
- No utilizar este equipo en zonas residenciales.

Procedimientos de Bloqueo/Etiquetado

- Antes de realizar el mantenimiento de los sistemas neumáticos o hidráulicos, purgue las líneas para eliminar la presión.
- Bloquee y etiquete todos los sistemas energizados antes de realizar tareas de mantenimiento en ellos. Refiérase a la sección *Pautas de bloqueo/etiquetado* en la página 27.

Cómo mantener un entorno seguro

- Mantenga alejados a los niños. Todos los visitantes deben mantenerse a una distancia segura del área de trabajo. Los riesgos pueden no ser evidentes a las personas no familiarizadas con la máquina.
- Mantenga las áreas de trabajo bien iluminadas.
- Mantenga el área de trabajo limpia y libre de cualquier riesgo de tropiezo o resbalamiento.
- No utilice el equipo en lugares húmedos o mojados y no lo exponga a la lluvia o a la nieve.
- Minimice las nubes de polvo y proteja su equipo quitando el polvo de la siguiente manera:
  - Aspire el polvo antes de soplarlo con aire
  - Apague la alimentación eléctrica y todas las fuentes de ignición
  - Si usa aire comprimido, debe ser a compresión baja (no más de 15 psi)
  - El equipo eléctrico de limpieza como las aspiradoras debe cumplir con los códigos del gobierno local para uso en condiciones polvorientas.

Uso y mantenimiento del equipo

- Asegúrese de que no haya personas, herramientas y objetos extraños en las zonas restringidas antes de utilizar este equipo. Las zonas restringidas se indican en la página 33.
- Realice pruebas de seguridad para verificar que todos los frenos de emergencia funcionen adecuadamente antes de utilizar el equipo por primera vez, después de realizar cualquier tarea de mantenimiento y según la frecuencia de mantenimiento establecida.
- En caso de que la máquina no funcione correctamente, deténgala inmediatamente utilizando un freno de emergencia e informe el problema a un supervisor.

- No deje nunca la máquina encendida si no está junto a ella. ¡Apáguela! No la abandone hasta que todas las piezas se detengan completamente y hasta que se haya apagado la alimentación eléctrica.
- Verifique periódicamente que no haya piezas gastadas o dañadas. Repárelas o cámbielas inmediatamente.
- Mantenga los sistemas hidráulicos, neumáticos y eléctricos en buen funcionamiento en todo momento. Repare las fugas y las conexiones sueltas inmediatamente. No exceda nunca la presión ni potencia eléctrica recomendadas.
- Verifique que todos los dispositivos de seguridad estén en buen funcionamiento antes de comenzar de cada turno. Todos los dispositivos protectores y de seguridad deben estar en su lugar antes y durante el uso de la máquina. No desconecte ni evite nunca ningún dispositivo de seguridad ni interbloqueo eléctrico.
- Solo el personal de mantenimiento calificado puede quitar o instalar los dispositivos de seguridad.
- Inspeccione periódicamente la calidad del producto terminado.

Seguridad eléctrica

- No utilice líquidos en el interior de los gabinetes eléctricos.
- Cuando utilice disolventes sobre o alrededor de la máquina, desconecte la alimentación para eliminar las probabilidades de chispas, que pueden producir una explosión o incendio. Use un respirador aprobado para el uso con disolventes. Use ropa protectora, guantes y lentes de seguridad.

Bloqueo/Etiquetado

Pautas de bloqueo/etiquetado

Deben cumplir con todas las pautas de bloqueo/etiquetado conforme a la norma OSHA 29 CFR 1910.147. El programa de control de energía de la compañía debe incluir un procedimiento específico. El objetivo de este manual no es reemplazar el procedimiento de desenergización o bloqueo/etiquetado requerido por la OSHA, sino proporcionar pautas orientativas generales.

El término "bloqueo", según se utiliza en este manual, se refiere a la colocación de un dispositivo de bloqueo en las fuentes de energía para asegurar que el dispositivo aislador de energía y el equipo controlado por éste no puedan reenergizarse o utilizarse hasta que se retire dicho dispositivo. Las fotos de la página siguiente muestran los lugares en los que se encuentran los interruptores de desconexión eléctrica de esta máquina.

- Las fuentes de energía incluyen energía eléctrica, mecánica, hidráulica, neumática, química, térmica y otras.
- En el caso de fuentes de energía eléctrica, la alimentación principal y la alimentación de control a la maquinaria deben apagarse y bloquearse físicamente en la posición "off" (apagado).
- Por lo general, como dispositivo de bloqueo se utiliza un candado con llave.
- Si hay más de una persona trabajando en una zona restringida, utilice un dispositivo de bloqueo grupal que permita a cada persona utilizar un candado que sólo pueda ser retirado por la persona que realiza el mantenimiento.

"Etiquetado" significa que debe colocarse una advertencia fácil de ver en un dispositivo aislador de energía que indique que el equipo no debe utilizarse.

Siempre que vea este símbolo, ¡Bloquee/Etiquete!

Procedimientos de bloqueo/etiquetado eléctricos

Cuando trabaja en una máquina fuera del gabinete eléctrico principal de la máquina

Si trabaja en la línea de transmisión eléctrica a la máquina, siga el procedimiento de la página 30.

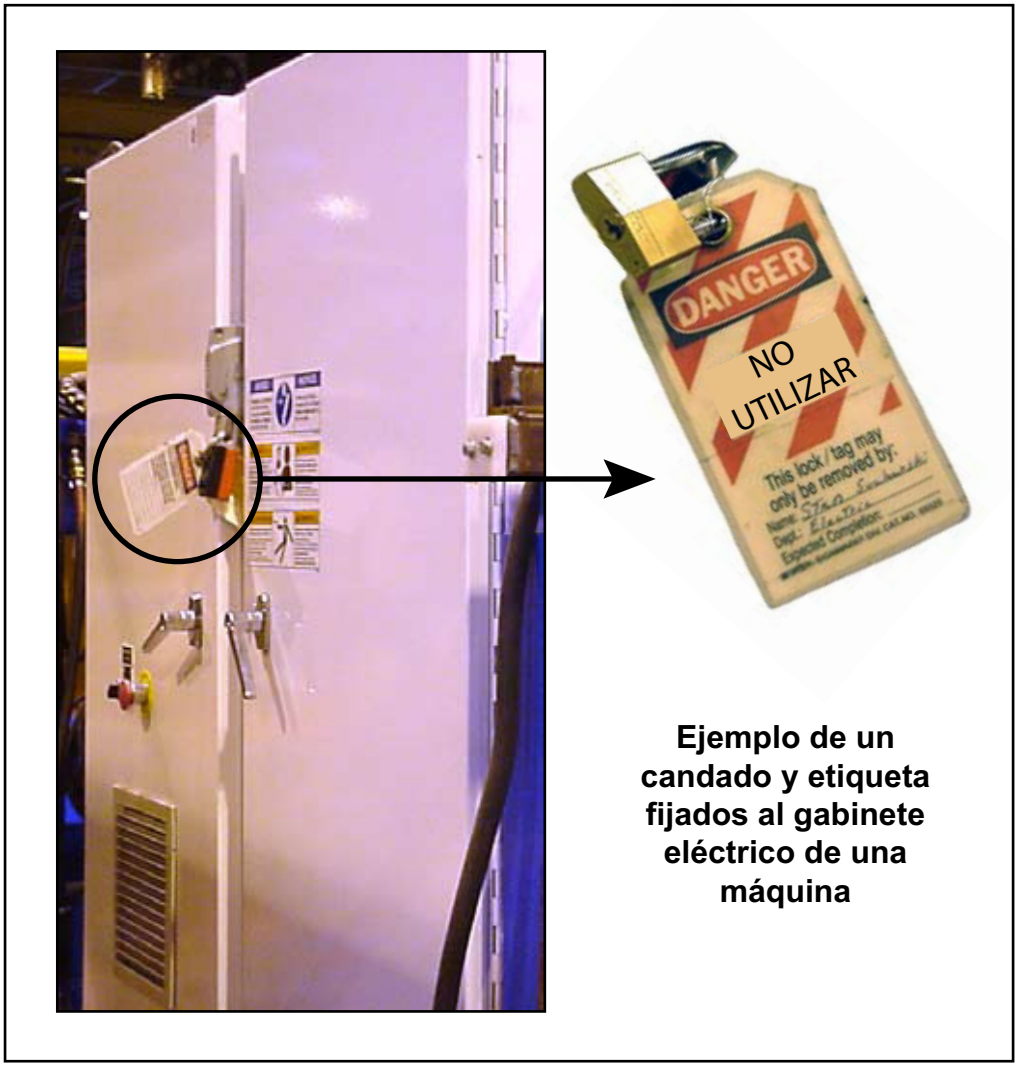
Antes de realizar el mantenimiento de cualquier máquina con alimentación eléctrica, bloquee y etiquete la máquina de forma adecuada. Cuando trabaje en una máquina fuera del gabinete eléctrico principal de la máquina, salvo en el caso de trabajos en la línea de transmisión eléctrica a la máquina, siga los procedimientos de bloqueo/etiquetado aprobados por la compañía, los cuales deberían incluir, entre otros, los pasos aquí indicados.

1. Coloque un freno de emergencia sobre la máquina.
2. Coloque el mango del interruptor con fusibles en la posición "apagado/apagada"..

	⚠ ADVERTENCIA
	**RIESGO DE ELECTROCUCIÓN.** **Cuando el interruptor con fusibles está apagado, sigue habiendo energía dentro del gabinete del interruptor. ¡Apague siempre la alimentación en la fuente de alimentación del edificio antes de abrir este gabinete eléctrico!**

3. Coloque un candado y una etiqueta que cumplan con los requisitos de bloqueo/etiquetado de la OSHA.
4. Trabe o desenergice todos los componente neumáticos, componentes hidráulicos y otras piezas que tengan alimentación directa o almacenada.

Figura SEGURIDAD-1: Ejemplo de un mecanismo de Bloqueo/Etiquetado en un gabinete eléctrico



Ejemplo de un candado y etiqueta fijados al gabinete eléctrico de una máquina

Cuando trabaje en una máquina dentro del gabinete eléctrico principal de la máquina o en la línea de transmisión eléctrica a la máquina

Antes de abrir el gabinete eléctrico principal o intentar reparar o reemplazar una línea de transmisión eléctrica a la máquina, bloquee y etiquete la máquina en forma adecuada. Siga los procedimientos de bloqueo/etiquetado aprobados por la compañía, los cuales deberían incluir, entre otros, los pasos aquí indicados.

1. Coloque un freno de emergencia sobre la máquina.

2. Apague la alimentación a la máquina en la fuente de alimentación, que, por lo general, es un panel de entrada de suministro eléctrico que se encuentra en una pared de las instalaciones. En la Figura SEGURIDAD 2 se muestra un ejemplo de panel de fuente de alimentación bloqueado.

3. Coloque un candado y una etiqueta que cumplan con los requisitos de bloqueo/etiquetado de la OSHA.

4. Abra la puerta del gabinete al que necesita acceder y usando un multímetro verifique que la alimentación esté apagada.

Figura SEGURIDAD-2: Ejemplo de un mecanismo de Bloqueo/Etiquetado en un panel de fuente de alimentación

Solución de problemas con una máquina energizada

Sólo un electricista calificado que utilice el equipo de protección personal y siga los procedimientos recomendados en la norma NFPA 70E debe intentar realizar tareas de reparación o mantenimiento en un área o componente energizados de la máquina o en su proximidad.

Cada vez que se realizan tareas de mantenimiento mientras el equipo está eléctricamente energizado, existe un riesgo potencial de formación de un arco eléctrico. Consulte en la norma NFPA 70E el equipo de protección personal requerido para trabajar con componentes eléctricamente energizados. Los componentes neumáticos e hidráulicos pueden moverse de manera imprevista si no se desenergizan. Trabe físicamente cualquier componente que pueda moverse cuando deba trabajar en ellos o en su proximidad.

Prueba de seguridad

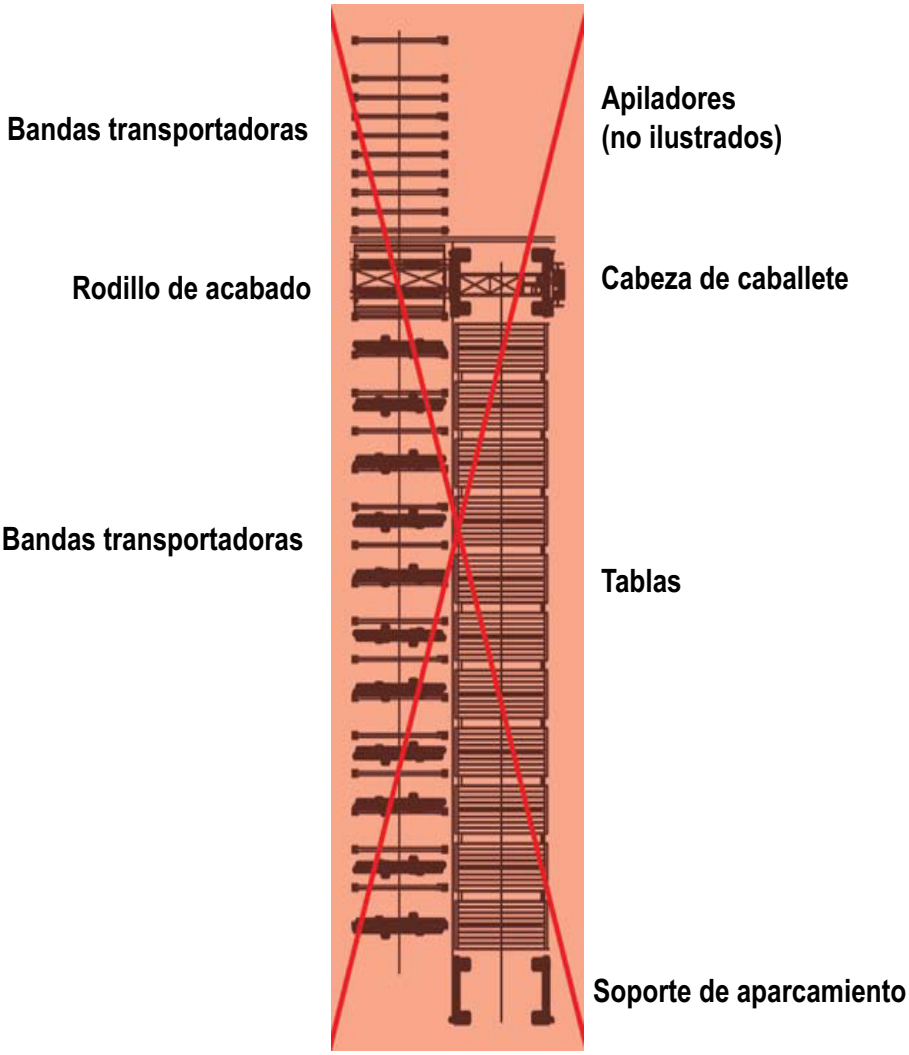
Este procedimiento de prueba DEBE ser realizado por personal calificado durante la puesta en marcha y después de CUALQUIER tarea de mantenimiento, ajuste o modificación. La prueba permite comprobar si el sistema de seguridad y el sistema de control de la máquina funcionan juntos y detienen la máquina de manera adecuada.

1. Ponga en marcha el sistema.
2. Pruebe que el circuito del freno de emergencia o E-stop evite el movimiento:
    a) Al mover automáticamente un armazón, presione el botón rojo del freno de emergencia en la estación de control del operador. Todos los PLANX deberán detenerse de inmediato.
    b) Intente poner a funcionar manualmente los discos del primer montaje PLANX presionando el botón FWD/REV localizado en la caja de control del montaje PLANX.
    c) ¡Los discos no deben moverse! Repare el sistema eléctrico si el disco se mueve estando activado el freno de emergencia.
    d) Repita el procedimiento para todos los demás montajes PLANX.
    e) Restablezca el circuito del freno de emergencia después de la prueba jalando hacia afuera el botón rojo E-stop y luego presionando el botón de RESET.
3. Procedimiento de bloqueo y etiquetado.
4. Compruebe que todos los protectores y dispositivos de seguridad estén en su lugar y asegurados.
5. Inspeccione que las bandas de encendido (2 por PLANX) no estén desgastadas.
6. Inspeccione los tornillos y las tuercas Acme para asegurarse de que no estén desgastados. Rote los tornillos Acme para revisar la parte posterior.
7. Elimine cualquier objeto extraño que haya podido caer en la ranura del PLANX.
8. Asegúrese de que los tornillos Acme estén lubricados. Consulte la Lista de comprobación de mantenimiento.
9. Quite los dispositivos de bloqueo/etiquetado.

Zona restringida

	⚠ PELIGRO
	**Manténgase afuera de la zona restringida cuando el equipo esté en uso. Pueden producirse lesiones graves o incluso la muerte si el personal está en la zona restringida.** **Asegúrese que no haya personal en la zona restringida antes de operar el equipo.**

Conocer la zona restringida



Marcar la zona restringida

Deberá marcarse la zona restringida de manera que todas las personas cerca del equipo puedan ver claramente el área donde pueda existir peligro.

MiTek ofrece la cinta de zona restringida o “Restricted Zone Tape”, fácil de aplicar y con texto en inglés y en español. Algunos equipos traen la cinta de zona restringida. Si su máquina no trajo la cinta de zona restringida, puede pedirla a MiTek Machinery Division Customer Service (Servicio al cliente de la división de maquinaria de MiTek).

Puede encontrar las instrucciones sobre dónde y cómo aplicar la cinta de zona restringida en el manual de su mesa o pórtico incluido con su sistema o pedir el Service Bulletin Kit 181 en la página web de MiTek Machinery.

Información adicional

Purpose of Chapter

This chapter explains how to navigate through the equipment manual and how to contact MiTek.

Introduction to the Manual

	⚠ WARNING
	**Read this manual completely before using this equipment!** **Do not operate this machine until you have a thorough understanding of all controls, safety devices, emergency stops, and operating procedures outlined in this manual.** **All hazard instructions must be read and observed. Failure to do so may result in economic loss, property damage, and/or personal injury.** **This manual must always be available to personnel operating and maintaining this equipment.**

Purpose and Scope of This Manual

In order for this manual to be useful, it must be kept in a location where operators and maintenance personnel have easy access to it.

This manual addresses the most recent versions of the equipment as of the creation or revision date on the title page. For earlier revisions, contact MiTek Customer Service. The part number is listed on the title page, but the revision you require depends on the date your equipment was manufactured.

This manual can be a valuable training tool.

- The *General Information* chapter contains information on truss terminology and provides basic information about the equipment.
- The *Operation* chapter teaches operators how to efficiently operate the machine.
- The *Maintenance* chapter is written specifically for maintenance personnel.
- The appendices provide valuable technical information.

Understanding This Manual

This manual addresses the *MatchPoint PLANX* precision jigging system.

Separate manuals exist for the Finish Roller, tables, and for any gantry heads used along with the *MatchPoint PLANX*.

Review the table of contents to understand the structure of the chapters and appendices. The manual is part number 001098.

Screen Shots

A screen shot is a printed view of what is visible on the computer screen.

Most screen shots are from *MatchPoint* software version 1.2.11. Screens from other versions may differ slightly.

Navigation

The graphics in Table 1-1 are used throughout the manual to quickly communicate a specific type of information.

Table 1-1: Navigational Tools Used Throughout the Manual

Graphic	What It Communicates
	Important safety note! When this graphic appears, you must lockout/tagout the equipment using approved methods described in OSHA 29 CFR 1910.147 before continuing with the procedure.
	Indicates tools required before beginning a procedure.
	A note that gives additional information to the steps or existing text.
	Refers reader to another section, table, graphic, or drawing to further explain something.

Formatting Cues

To follow the procedures in this manual, you must first understand the formatting cues used. Table 1-2 describes how to read the cues provided in this text.

Table 1-2: How to Read the Formatting Cues

If Text Looks Like...	It Indicates...	Example in Text
All caps	Key on keyboard or button on screen	Press ENTER
Initial cap and italic	Menu or field or virtual button that you must find or select	Click on the *File* menu
Initial cap only, no italics	Menu or field or virtual button when simply referring to it	While in the Main Menu
Plus sign (+)	Hold buttons at the same time	CTRL+ALT+DELETE
Greater Than sign (>)	Next selection	*File>Open*

Additional Resources

Supplemental Documentation

In addition to the equipment manual, refer to the manufacturer's documentation for individual components. The supplemental documentation is provided at the time of installation, or it may be found inside an electrical enclosure. Refer to these documents when you need more detailed information on these components than the MiTek manual provides.

Web Site

Visit the MiTek Web site at www.omnisaw.com or the MiTek web site at www.mii.com for up-to-date information on all MiTek and MiTek equipment. On the MiTek Web site, view the latest revision of this manual and all Service Bulletins, or order parts on-line through our *eStore*.

Contacting Us

For technical assistance or to order parts, contact MiTek's Customer Service Department using one of the methods listed in Figure 1-1.

Figure 1-1: Contacting MiTek

MiTek Machinery Division
Customer Service Department
301 Fountain Lakes Industrial Drive
St. Charles, MO 63301

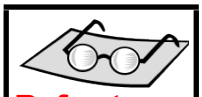
Parts Orders (with part number)
E-mail: mitekparts@mii.com

Technical Assistance
Phone: 800-523-3380
Fax: 636-328-9218
machinerysupport@mii.com

Web Site
www.mitek-us.com

Purpose of Chapter

This chapter provides step-by-step instructions as well as information to help you understand how your equipment works to enable you to make repairs and perform preventive maintenance.



Refer to...

Figure 1-1 to contact MiTek Customer Service

Introduction to Maintaining Your Equipment

This manual contains sufficient information for proper operation and maintenance under most conditions. Certain operating environments may necessitate preventive maintenance at more frequent intervals. Because consistent preventive maintenance is so important for keeping mechanical equipment in good operating condition, TKC recommends that you stock certain replacement parts to minimize downtime.

Review the table of contents and utilize the index to locate the information you need. The following appendices will also assist in maintaining and repairing your equipment:

- Troubleshooting
- Parts List
- Maintenance Checklists
- Drawing Set

Read the *Performing Maintenance Safely* section before beginning maintenance on this equipment.

	⚠ WARNING
	**ELECTROCUTION, CRUSH, AND CUT HAZARDS!** **Read this section AND the safety section in the preliminary pages before operating or maintaining this equipment.** **Do not operate this machine until you have a thorough understanding of all controls, safety devices, E-stops, and operating procedures outlined in this manual.** **Read and observe all hazard instructions. Failure to do so may result in economic loss, property damage, and/or personal injury.** **This manual must always be available to personnel operating and maintaining this equipment.**

Performing Maintenance Safely

Read the safety pages in the preliminary pages section and adhere to all rules and guidelines. This section provides additional safety information specific to maintenance topics.

Before Operating This Equipment

Adhere to these warnings before operating this equipment:

	⚠ WARNING
	**ELECTROCUTION, CRUSH, AND CUT HAZARDS!** **Read this section AND the safety section in the preliminary pages before operating or maintaining this equipment.** **Do not operate this machine until you have a thorough understanding of all controls, safety devices, E-stops, and operating procedures outlined in this manual.** **Read and observe all hazard instructions. Failure to do so may result in economic loss, property damage, and/or personal injury.** **This manual must always be available to personnel operating and maintaining this equipment.**

Lockout/Tagout

The lock and tag symbol shown here indicates that proper lockout/tagout procedures must be used prior to starting the procedure where the symbol occurs.

	⚠ WARNING
  	**ELECTROCUTION AND CRUSH/CUT HAZARD.** **Always turn the power off by activating an E-stop when the equipment is not in operation.** **Always verify that all power to the machine has been turned off and follow approved lockout/tagout safety procedures (OSHA 29 CFR 1910.147) before performing any maintenance on this equipment.** **If it is absolutely necessary to troubleshoot an energized machine, follow NFPA 70E for proper procedures and personal protective equipment.** **The components on this machine can cause severe injury if adjusted improperly. Follow all procedures in this manual thoroughly and do not make adjustments to the machine without guidance from MiTek.** **Only trained personnel should make mechanical adjustments to this machine.**

Making Adjustments and Replacing Parts

Be careful when making mechanical adjustments. Untrained personnel may damage the machine or cause harm to themselves and others.

	⚠ WARNING
	**CRUSH AND CUT HAZARDS.** **Always replace guards after servicing.** **Only qualified maintenance personnel shall repair, remove, or replace guards and safety devices.**

	NOTICE
	**Failure to follow the step-by-step procedure may result in incorrect adjustment of this machine and could cause incorrect setups. Only trained personnel should make mechanical adjustments to this machine.** **Use the exact replacement parts that are specified. Contact MiTek before substituting a different part.**

Wearing Personal Protective Equipment

	⚠ CAUTION
	Follow OSHA guidelines to utilize the proper personal protective equipment (PPE) while performing maintenance. The most common include eye protection, hearing protection, dust masks while blowing off sawdust, gloves while working with solvents, and fire retardant clothing when troubleshooting an energized machine.

Safety Test Procedure

	**⚠ WARNING** **CRUSH HAZARD.** **Perform the safety tests described before operating the equipment at the initial startup, after performing any maintenance, and in accordance with the maintenance schedule.**

To ensure the safe operation of the *MatchPoint PLANX* precision jigging system, all stops should be checked daily. See the *Safety Test* procedure on page OP10.

The test procedure **MUST** be performed by properly trained personnel at startup and after **ANY** maintenance, adjustment, or modification. Testing ensures that the safety system and machine control system work together to properly stop the machine.

It is recommended that this test be performed daily to ensure the safety features remain in working order.

wax pencil

Administrator password

Pre-Calibration Tests

Several tests must be performed before attempting to calibrate the machine. If these tests are not successfully completed, calibration may not be possible. The tests must be conducted for all *PLANX* to be calibrated.

Mechanical Tests

1. Check all the fasteners used to mount the *PLANX*. Check the hex head cap screws for tightness.
2. Check pulley alignment using a straight edge.
3. Make sure the pulley set screws are properly tightened.
4. Check belt tension. The belts should have approximately 1/4-in. deflection, measured in the middle between the two pulleys.
5. Check the motor fasteners for tightness.
6. Check puck fasteners for tightness.
7. Run the pucks up and down the table to ensure that they are not binding.
8. Remove the lockout/tagout devices and restart the machine.

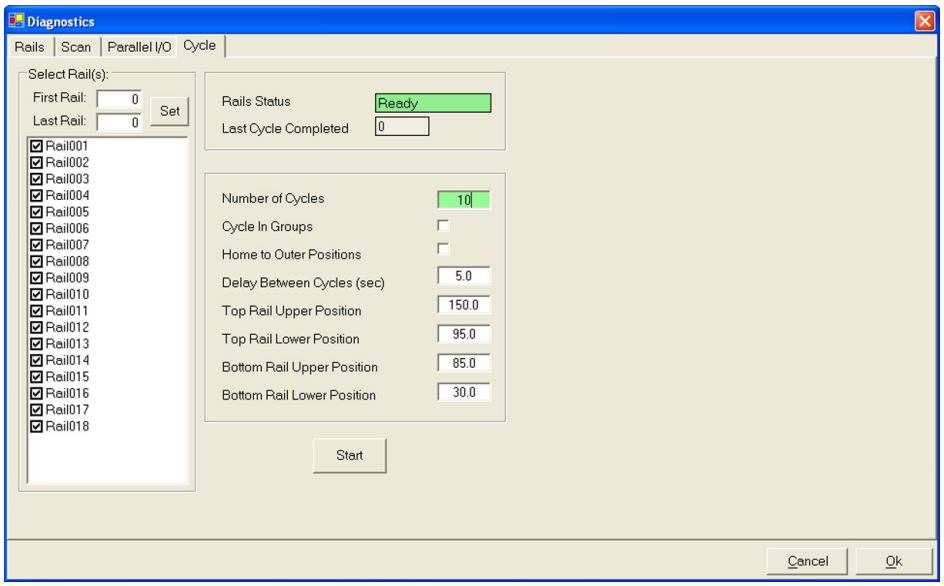
Tests During Cycle Mode

Cycling the *PLANX*

Read this entire procedure before beginning the tests.

1. Log on to the *MatchPoint* software as an Administrator.
2. Select *Diagnostics>Cycle.* See Figure 2-1.

Figure 2-1: Cycle Mode Screen



3. Enter the settings shown in Table 2-1. Double-click in the field to select the number.

Table 2-1: Settings for Cycling Pucks

Category	Setting
Number of Cycles	10
Delay Between Cycles	60
Top Rail Upper Position	120
Top Rail Lower Position	40
Bottom Rail Upper Position	120
Bottom Rail Lower Position	40

4. Select up to 20 *PLANX* to cycle. While you may cycle all the *PLANX* at once, it will be difficult to adequately evaluate the performance of many pucks cycling at the same time.

5. Click START to begin the cycles.

Mechanical Checks During Cycling

1. While the pucks are cycling, use a wax pencil to make a mark on the table at the positions where the pucks stop. The mark should be next to the inside edge of each Acme nut.

2. The pucks should go to the same marks during each cycle. If they do not, check the belts for proper tensioning and the pulleys for proper alignment.

Software Checks

Puck Diameter

1. Select *Tools>Options>General*.

2. The puck diameter should read 2.000.

If your puck diameter is set to a different value, you must change it to 2.000 before proceeding with calibration. You may change it back when calibration is complete.

Home Sensor Checks

1. Using the *MatchPoint* software, send the pucks to their home positions.
2. Use a wax pencil to make a mark on the table at the home position. The mark should be next to the inside edge of each Acme nut.
3. Move the pucks at least 12 in. off their home positions toward the center of the table using the manual controls.
4. Send the pucks back to their home positions using the *MatchPoint* software.
5. If the pucks have trouble moving to the correct positions to within 1/32", ensure that the flag does not stick and returns back to its original position.
6. Repeat this procedure a minimum of 10 times.

Calibrating the *PLANX*

The *MatchPoint PLANX* must be calibrated before the first use of the machine, and following the replacement of a *PLANX* or Acme nut. Proper calibration of the *PLANX* is necessary to ensure the jigging is accurate.

You must be logged in as an Administrator to calibrate the *PLANX*.

Calibration Settings

Figure 2-2 shows the tabs located in the Calibration window and their functions.

Table 2-2: Calibration Window

Tab Title	Function	Changing Settings
Rail Calibration	Used in the calibration process to ensure proper operation of the jigging system.	Follow the calibration procedure directions. See *Calibrating the PLANX* on page MT-47.
Rails	Displays the current measurements, calibration values, speed and acceleration for the rails.	These settings will be measured in the field once the *PLANX* are installed. If this data is lost, follow the steps in *Restoring Software Defaults and Constants*.on page MT-54.
Tables	Displays the current measurements for the table system. Used for graphic display only.	If this data is lost, follow the steps in *Restoring Software Defaults and Constants* on page MT-54.
Lifters	Displays the current measurements for the lifter system. Used for graphic display only.	If this data is lost, follow the steps in *Restoring Software Defaults and Constants* on page MT-54
Setups	Displays the current measurements for the setups.	If this data is lost, follow the steps in *Restoring Software Defaults and Constants* on page MT-54.
Rail Defaults	Used to manually set *PLANX* speed, velocity, and other parameters.	These values must be set before calibration. Do NOT set these values after calibration.
able Defaults	Displays table parameters.	These values must be set before calibration. Do NOT set these values after calibration.

Pre-Calibration

You must calibrate the jigging system for home positions and for inches per count before using the system and following the replacement of a *PLANX* or Acme nut.

calculator

calibration charts

masking tape

wax pencil

string line (longer than total length of tables)

pencil

Administrator password

tape measure with increments of 1/32"

1. Before beginning calibration, you must complete the pre-calibration tests beginning page MT-43.

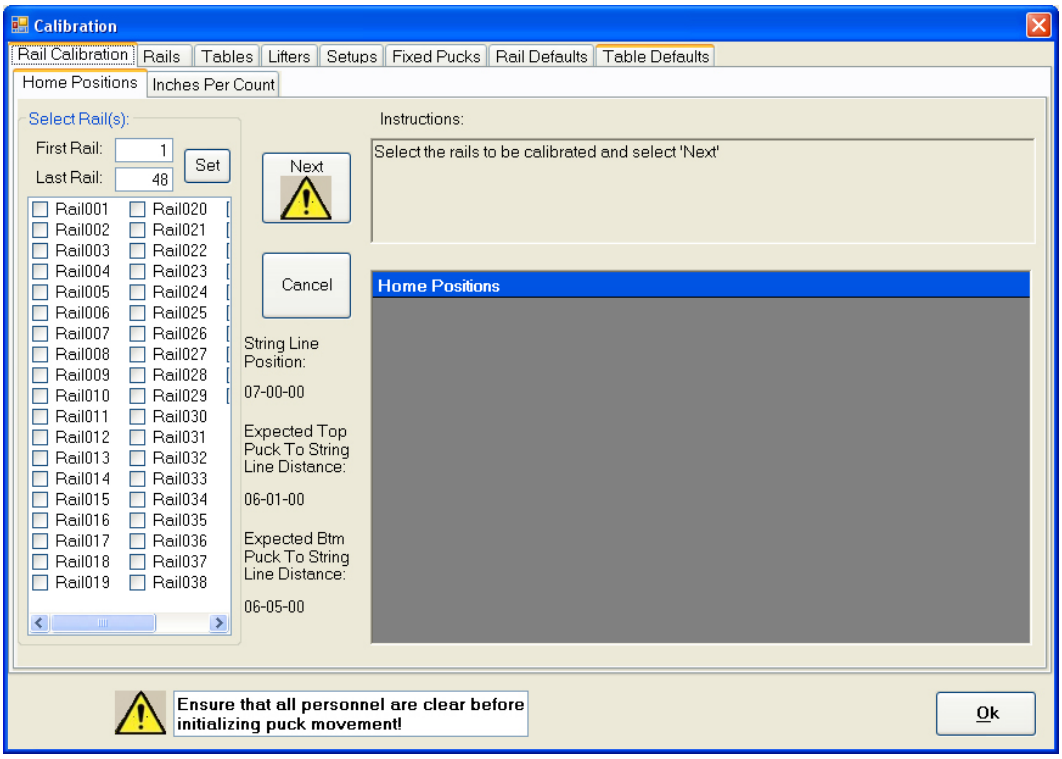
Calibration must be repeated until all Delta values are 0.000002 or less for Inches Per Count. Finish calibrating Inches Per Count before attempting to calibrate Home Positions.

2. Place a piece of wide masking tape on both the top-chord and bottom-chord sides of the table.
    - On the top-chord side, the masking tape should go from 6 in. to 2ft. On the bottom-chord side, the masking tape should go from 11ft 6 in. to 13 ft.
    - The masking tape should be flush against the table slot, and should go under the edge of the puck.
    - The masking tape must be on the same side of the slot on both the top and bottom-chord sides of the table.
3. Print several copies of the calibration chart found on page MT-73 in the appendices.

Calibration Procedure

1. Log in as an Administrator.
2. Select the *Calibration* menu in the *MatchPoint* software.
3. Select the *Rail Calibration* tab.

Figure 2-2: The Rail Calibration Tab on the Calibration Screen



Calibrating Inches Per Count

1. Select the *Inches Per Count* tab.
2. Verify that the Expected Move Distance reads 11-00-00, the Expected Top Puck Lower Position reads 01-08-00, and the Expected Bottom Puck Lower Position reads 01-00-00.
3. Select the checkboxes next to the rails to be calibrated.
4. Click NEXT.

	⚠ CAUTION
	**Ensure that all personnel are clear before initializing puck movement!**

5. Click NEXT to move the pucks to the lower calibration position for selected rails.
6. Make a mark on the masking tape next to the top of the top chord puck and at the bottom of the bottom-chord puck.

The Inches Per Count calibration procedure must be repeated several times. To avoid confusing the markings on the masking tape, label the marking IPC1 for the first home position calibration, IPC2 for the second, etc.

7. Click NEXT.

	⚠ CAUTION
	**Ensure that all personnel are clear before initializing puck movement!**

8. Click NEXT to move the pucks to the upper calibration position for selected rails.

9. Make a mark on the masking tape next to the top of the top chord puck and at the bottom of the bottom-chord puck.

10. Using a tape measure graduated to at least 1/16 in., measure the actual distance from the marks made in step 6 and step 9 to the closest 1/64 in.

    a) Enter the information in the calibration chart in the TC Measurement and BC Measurement columns next to the appropriate rail.

    b) Click NEXT.

    c) Enter the actual values under “Btm Actual” and “Top Actual” in the Calibration screen.

11. Click NEXT.

12. Check the values under “Top Delta” and “Btm Delta” in the *MatchPoint* software calibration chart. Record the values in the calibration chart to help track changes between calibrations.

Calibration must be repeated until all Delta values are 0.000002 or less for Inches Per Count. Finish calibrating Inches Per Count before attempting to calibrate Home Positions.

13. In the Select Rails box, use the mouse to deselect the rails for which you do not wish to save the calibration. The rails are factory numbered on each control panel.

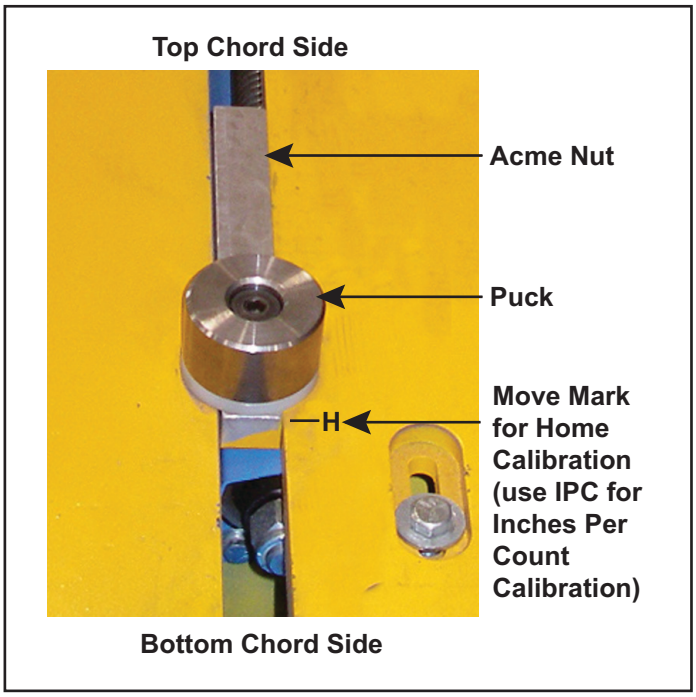
14. Click NEXT to save the calibration values.

15. Click NEXT to confirm the calibration values, or CANCEL to discard the values.

Calibrating Home Position

1. In the Calibrate Rails window shown in Figure 2-2, select the *Home Positions* tab.
2. Run a string line across the center of the table line. Place a 2x4 on its 2-in. nominal face to support the string line. The string must be high enough for the pucks to pass underneath.
3. Verify that the String Line Position reads 07-00-00, the Expected Top Puck to String Line Distance reads 06-01-00, and the Expected Bottom Puck to String Line Distance reads 06-05-00.
4. Deselect the checkboxes next to the rails you do not wish to calibrate.
5. Make sure the string line is high enough to avoid contact with the pucks. Click NEXT again to home the pucks for each rail.

Figure 2-3: Mark the Position



6. Click NEXT to move the pucks to the calibration position.
   a) Click NEXT again.
   b) Flip the 2x4 to the 4-in. nominal side.

c) Using a tape measure, measure the actual distance from the top edge of the top-chord puck and from the bottom edge of the bottom-chord puck to the string line for each *PLANX*, to the closest 1/32 in. See Figure 2-4.

Figure 2-4: Measure Actual Distance

d) Enter the information in the calibration chart in the TC Measurement column next to the appropriate rail.

e) Using a tape measure, measure the actual distance from the bottom puck to the string line for each rail, to the closest 1/32 in.

f) Enter the information in the calibration chart in the BC Measurement column next to the appropriate rail.

g) Enter the actual values under “Top Actual” and “Btm Actual” in the Calibration screen.

7. Click NEXT.

8. Check the values under “Top Delta” and “Btm Delta” in the *MatchPoint* software calibration chart. Record the values in the calibration chart to help track changes between calibrations.

Calibration must be repeated for each rail until all Delta values are 0.015625 or less for Home Positions.

9. In the Select Rails box, use the mouse to deselect the rails for which you do not wish to save the calibration.

10. Click NEXT.

11. Click NEXT to save the calibration values.

12. Click NEXT to confirm the calibration values, or CANCEL to discard the values.

Completing Calibration

Repeat the Home Position and Inches Per Count calibrations as necessary. Calibration must be repeated until all Delta values are 0.015625 or less for Home Positions and 0.000002 for Inches per Count.

Proper calibration should be reached within two calibrations.

Backing Up Calibration Data

It is recommended that you back up your calibration data once calibration is complete. If the data is not backed up, you will have to perform all pre-calibration checks and recalibrate the machine if the data is lost.

1. To select the location for backup, select *Tools>Options>Backup Locations*.
   - The default backup location is C:\Program Files\Koskovich\MatchPoint.
   - To change the backup location, click the BROWSE button and select a new backup location. Click OK when complete. It is recommended you select a backup location to a network drive that is regularly backed up.

2. Select *Tools>Backup*.

3. The software defaults and constants, including calibration data, will be automatically backed up to the specified location.

4. If your backup location is not a network drive that is regularly backed up, make copies of your backup files and save them on another PC.

Restoring Software Defaults and Constants

Some defaults and constants will be preset before your *MatchPoint PLANX* system is shipped. If any of this data is lost, follow these steps to restore the data.

1. In the *MatchPoint* software, select *Tools>Admin>Restore Config*.
2. Restart the *MatchPoint* software.

Reporting Software Errors

All software errors should be reported immediately.

1. Exit the *MatchPoint* software.
2. Log files are located in C:\Program Files\Koskovich\MatchPoint\Log. If possible, use *WinZip*® to compress the log files.
3. Send all the software log files and config.mdb to planxsupport@omnisaw.com, with “MatchPoint Software Error” in the subject line.
4. Include a description of the software problem in your e-mail, including software configuration, jig database, and any relevant contact information.

Jigging Maintenance

Stocking Replacement Pucks

It is a good idea to stock extra pucks to ensure the pucks in operation are in optimum condition. See the *Replacement Parts* appendix. As part of your annual preventive maintenance, we recommend taking inventory of all pucks you are currently using or have in stock. Replace any damaged pucks at this time.

Replacing a Motor

1. Open the bottom motor cover by removing the four (4) 1/4-20x3/4 hex bolts.
2. Disconnect the motor and encoder plugs and cut the Ty-Wrap.
3. Loosen the four (4) 3/8-16 hex bolts on the motor.
4. Lift the motor up slightly.
5. Remove the belt.
6. Remove the four (4) 3/8-16 hex bolts from the motor.
7. Remove the motor from the table.
8. Remove the pulley and key from the old motor.
9. Put the key and the pulley onto the new motor shaft at the same location and in the same orientation as it was on the old motor.
10. Tighten the set screws.
11. Bolt the motor assembly back in place on the table.
12. Replace the belt. See step 6 through step 7 of the *Belts* section on page MT-66. The belt should have approximately 1/4 in. deflection, measured in the center between the pulleys.
13. Check the pulleys for proper alignment using a straight edge.
14. Reconnect the quick disconnect and plug.
15. Re-install the motor cover.
16. Remove lockout/tagout devices and restart the machine.
17. Use the manual controls to verify the puck is moving in the correct direction and rewire the motor if necessary.

Replacing a Home Sensor Switch

1. Ensure that the puck is at least 12 in. from the bottom or top chord of the table.
2. Remove the bottom motor cover by removing the four (4) 1/4-20x3/4 hex bolts.
3. Remove the motor. See the *Replacing a Motor* section on page MT-55.
4. Remove the two (2) 10-24 screws that hold the flag assembly in place on the side of the motor enclosure box. The flag assembly cannot be removed with the motor in place.
5. Remove the flag assembly.
6. Remove the Hall effect switch from the mounting tab.
7. Place the new Hall effect switch in the mounting tab.
8. Slide the flag assembly back into position and tighten the two (2) 10-24 screws.
9. Reconnect the wiring.
10. Actuate the flag to ensure the flag moves freely. When in the home position, the flag plate should be engaged in the Hall effect switch.
11. Remove the lockout/tagout devices and restart the machine. Home the pucks before the next setup.

Replacing an Encoder

1. Remove the bottom motor cover by removing the four (4) 1/4-20x3/4 bolts
2. Remove the motor. See the *Replacing a Motor* section on page MT-55.
3. Remove any zip ties used to hold the encoder quick disconnect plug together.
4. Disconnect the DB-9 encoder connector.
5. Loosen the 1/4-20 screw that holds the encoder cover.
6. Remove the DB-9 connector from the mount plate.

Use caution when removing the screws. They are small and easily lost.

7. Remove the encoder assembly and mounting hardware.
8. Slide the new encoder and DB-9 connector into place.
9. Reattach the mounting hardware.
10. Tighten the screw.
11. Replace any zip ties used to attach the encoder.
12. Reattach the motor.
13. Reattach the motor bottom cover.

Complete all pre-calibration checks before attempting to calibrate the rail. See *Pre-Calibration Tests* on page MT-43.

14. Recalibrate the *PLANX* for Inches Per Count. See *Calibrating the PLANX* page MT-47.
15. Home the pucks before the next setup.
16. Remove the lockout/tagout devices and restart the machine.

Replacing an Electrical Card

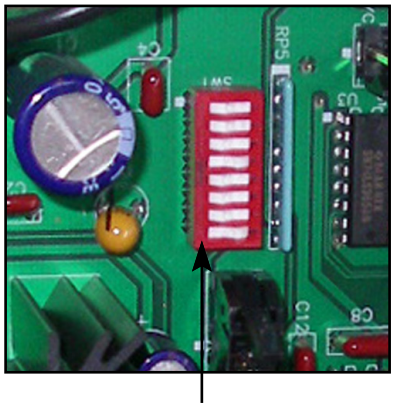
1. Remove the control box front or side panel as required.
2. Disconnect the wiring from the card, noting how it is wired.
3. Disconnect the card from the control box.
4. Insert the new card into the control box.
5. Reconnect the wiring to the card. Refer to your electrical schematic.
6. Reattach the control box panels.
7. Remove the lockout/tagout devices and restart the machine.
8. Home the pucks before the next setup.

Addressing the *PLANX* JSC Controller Cards

If the *PLANX* are not addressed correctly, you must reset the dip switches.

See Figure 2-5 to locate the dip switches inside the control box located on the *PLANX*.

Figure 2-5: Dip Switch Location



Node numbers correspond with puck numbers. For example, node 1 controls puck 1, node 2 controls puck 2, and so on. Up to 127 unique addresses can be controlled by the *MatchPoint* software.

The correct dip switch settings are shown in Table 2-3.

Table 2-3: Dip Switch Settings

Node	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
1	Open	Closed	Closed	Closed	Closed	Closed	Closed	Closed
2	Closed	Open	Closed	Closed	Closed	Closed	Closed	Closed
3	Open	Open	Closed	Closed	Closed	Closed	Closed	Closed
4	Closed	Closed	Open	Closed	Closed	Closed	Closed	Closed
5	Open	Closed	Open	Closed	Closed	Closed	Closed	Closed
6	Closed	Open	Open	Closed	Closed	Closed	Closed	Closed
7	Open	Open	Open	Closed	Closed	Closed	Closed	Closed
8	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed
9	Open	Closed	Closed	Open	Closed	Closed	Closed	Closed
10	Closed	Open	Closed	Open	Closed	Closed	Closed	Closed
11	Open	Open	Closed	Open	Closed	Closed	Closed	Closed
12	Closed	Closed	Open	Open	Closed	Closed	Closed	Closed
13	Open	Closed	Open	Open	Closed	Closed	Closed	Closed
14	Closed	Open	Open	Open	Closed	Closed	Closed	Closed
15	Open	Open	Open	Open	Closed	Closed	Closed	Closed
16	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed
17	Open	Closed	Closed	Closed	Open	Closed	Closed	Closed
18	Closed	Open	Closed	Closed	Open	Closed	Closed	Closed
19	Open	Open	Closed	Closed	Open	Closed	Closed	Closed
20	Closed	Closed	Open	Closed	Open	Closed	Closed	Closed
21	Open	Closed	Open	Closed	Open	Closed	Closed	Closed
22	Closed	Open	Open	Closed	Open	Closed	Closed	Closed
23	Open	Open	Open	Closed	Open	Closed	Closed	Closed
24	Closed	Closed	Closed	Open	Open	Closed	Closed	Closed
25	Open	Closed	Closed	Open	Open	Closed	Closed	Closed
26	Closed	Open	Closed	Open	Open	Closed	Closed	Closed
27	Open	Open	Closed	Open	Open	Closed	Closed	Closed
28	Closed	Closed	Open	Open	Open	Closed	Closed	Closed
29	Open	Closed	Open	Open	Open	Closed	Closed	Closed
30	Closed	Open	Open	Open	Open	Closed	Closed	Closed
31	Open	Open	Open	Open	Open	Closed	Closed	Closed
32	Closed	Closed	Closed	Closed	Closed	Open	Closed	Closed
33	Open	Closed	Closed	Closed	Closed	Open	Closed	Closed
34	Closed	Open	Closed	Closed	Closed	Open	Closed	Closed

Table 2-3: Dip Switch Settings (Continued)

Node	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
35	Open	Open	Closed	Closed	Closed	Open	Closed	Closed
36	Closed	Closed	Open	Closed	Closed	Open	Closed	Closed
37	Open	Closed	Open	Closed	Closed	Open	Closed	Closed
38	Closed	Open	Open	Closed	Closed	Open	Closed	Closed
39	Open	Open	Open	Closed	Closed	Open	Closed	Closed
40	Closed	Closed	Closed	Open	Closed	Open	Closed	Closed
41	Open	Closed	Closed	Open	Closed	Open	Closed	Closed
42	Closed	Open	Closed	Open	Closed	Open	Closed	Closed
43	Open	Open	Closed	Open	Closed	Open	Closed	Closed
44	Closed	Closed	Open	Open	Closed	Open	Closed	Closed
45	Open	Closed	Open	Open	Closed	Open	Closed	Closed
46	Closed	Open	Open	Open	Closed	Open	Closed	Closed
47	Open	Open	Open	Open	Closed	Open	Closed	Closed
48	Closed	Closed	Closed	Closed	Open	Open	Closed	Closed
49	Open	Closed	Closed	Closed	Open	Open	Closed	Closed
50	Closed	Open	Closed	Closed	Open	Open	Closed	Closed
51	Open	Open	Closed	Closed	Open	Open	Closed	Closed
52	Closed	Closed	Open	Closed	Open	Open	Closed	Closed
53	Open	Closed	Open	Closed	Open	Open	Closed	Closed
54	Closed	Open	Open	Closed	Open	Open	Closed	Closed
55	Open	Open	Open	Closed	Open	Open	Closed	Closed
56	Closed	Closed	Closed	Open	Open	Open	Closed	Closed
57	Open	Closed	Closed	Open	Open	Open	Closed	Closed
58	Closed	Open	Closed	Open	Open	Open	Closed	Closed
59	Open	Open	Closed	Open	Open	Open	Closed	Closed
60	Closed	Closed	Open	Open	Open	Open	Closed	Closed
61	Open	Closed	Open	Open	Open	Open	Closed	Closed
62	Closed	Open	Open	Open	Open	Open	Closed	Closed
63	Open	Open	Open	Open	Open	Open	Closed	Closed
64	Closed	Closed	Closed	Closed	Closed	Closed	Open	Closed
65	Open	Closed	Closed	Closed	Closed	Closed	Open	Closed
66	Closed	Open	Closed	Closed	Closed	Closed	Open	Closed
67	Open	Open	Closed	Closed	Closed	Closed	Open	Closed
68	Closed	Closed	Open	Closed	Closed	Closed	Open	Closed
69	Open	Closed	Open	Closed	Closed	Closed	Open	Closed
70	Closed	Open	Open	Closed	Closed	Closed	Open	Closed
71	Open	Open	Open	Closed	Closed	Closed	Open	Closed
72	Closed	Closed	Closed	Open	Closed	Closed	Open	Closed

Table 2-3: Dip Switch Settings (Continued)

Node	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
73	Open	Closed	Closed	Open	Closed	Closed	Open	Closed
74	Closed	Open	Closed	Open	Closed	Closed	Open	Closed
75	Open	Open	Closed	Open	Closed	Closed	Open	Closed
76	Closed	Closed	Open	Open	Closed	Closed	Open	Closed
77	Open	Closed	Open	Open	Closed	Closed	Open	Closed
78	Closed	Open	Open	Open	Closed	Closed	Open	Closed
79	Open	Open	Open	Open	Closed	Closed	Open	Closed
80	Closed	Closed	Closed	Closed	Open	Closed	Open	Closed
81	Open	Closed	Closed	Closed	Open	Closed	Open	Closed
82	Closed	Open	Closed	Closed	Open	Closed	Open	Closed
83	Open	Open	Closed	Closed	Open	Closed	Open	Closed
84	Closed	Closed	Open	Closed	Open	Closed	Open	Closed
85	Open	Closed	Open	Closed	Open	Closed	Open	Closed
86	Closed	Open	Open	Closed	Open	Closed	Open	Closed
87	Open	Open	Open	Closed	Open	Closed	Open	Closed
88	Closed	Closed	Closed	Open	Open	Closed	Open	Closed
89	Open	Closed	Closed	Open	Open	Closed	Open	Closed
90	Closed	Open	Closed	Open	Open	Closed	Open	Closed
91	Open	Open	Closed	Open	Open	Closed	Open	Closed
92	Closed	Closed	Open	Open	Open	Closed	Open	Closed
93	Open	Closed	Open	Open	Open	Closed	Open	Closed
94	Closed	Open	Open	Open	Open	Closed	Open	Closed
95	Open	Open	Open	Open	Open	Closed	Open	Closed
96	Closed	Closed	Closed	Closed	Closed	Open	Open	Closed
97	Open	Closed	Closed	Closed	Closed	Open	Open	Closed
98	Closed	Open	Closed	Closed	Closed	Open	Open	Closed
99	Open	Open	Closed	Closed	Closed	Open	Open	Closed
100	Closed	Closed	Open	Closed	Closed	Open	Open	Closed
101	Open	Closed	Open	Closed	Closed	Open	Open	Closed
102	Closed	Open	Open	Closed	Closed	Open	Open	Closed
103	Open	Open	Open	Closed	Closed	Open	Open	Closed
104	Closed	Closed	Closed	Open	Closed	Open	Open	Closed
105	Open	Closed	Closed	Open	Closed	Open	Open	Closed
106	Closed	Open	Closed	Open	Closed	Open	Open	Closed
107	Open	Open	Closed	Open	Closed	Open	Open	Closed
108	Closed	Closed	Open	Open	Closed	Open	Open	Closed
109	Open	Closed	Open	Open	Closed	Open	Open	Closed
110	Closed	Open	Open	Open	Closed	Open	Open	Closed

Table 2-3: Dip Switch Settings (Continued)

Node	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
111	Open	Open	Open	Open	Closed	Open	Open	Closed
112	Closed	Closed	Closed	Closed	Open	Open	Open	Closed
113	Open	Closed	Closed	Closed	Open	Open	Open	Closed
114	Closed	Open	Closed	Closed	Open	Open	Open	Closed
115	Open	Open	Closed	Closed	Open	Open	Open	Closed
116	Closed	Closed	Open	Closed	Open	Open	Open	Closed
117	Open	Closed	Open	Closed	Open	Open	Open	Closed
118	Closed	Open	Open	Closed	Open	Open	Open	Closed
119	Open	Open	Open	Closed	Open	Open	Open	Closed
120	Closed	Closed	Closed	Open	Open	Open	Open	Closed
121	Open	Closed	Closed	Open	Open	Open	Open	Closed
122	Closed	Open	Closed	Open	Open	Open	Open	Closed
123	Open	Open	Closed	Open	Open	Open	Open	Closed
124	Closed	Closed	Open	Open	Open	Open	Open	Closed
125	Open	Closed	Open	Open	Open	Open	Open	Closed
126	Closed	Open	Open	Open	Open	Open	Open	Closed
127	Open	Open	Open	Open	Open	Open	Open	Closed

Replacing a *PLANX*

1. Remove the five (5) 3/8-16 hex bolts that mount the *PLANX* to the table.
2. Remove the 1/4-in. roll pins at both ends of the *PLANX*.
3. Loosen the four (4) 1/4-20 hex bolts holding the side control box on the bottom-chord side keyhole mounting slots.

4. Remove the side control box.
5. Bolt the supplied 3/4-in. eye bolts to the top plate of the *PLANX*.
6. Lift the *PLANX* out of the table using the eye bolt.

	⚠ CAUTION
	**PERSONAL INJURY HAZARD.** **The rail weighs approximately 600 lb. Lift with an appropriately rated forklift or crane. Make sure all personnel are clear before lifting the *PLANX*.**

	NOTICE
	**EXERCISE CARE WHEN LIFTING THE *PLANX*.** **Do not damage the control box during lifting.**

7. Remove the control box from the table, being careful not to snag it on the table.
8. Orient the new *PLANX* assembly in the same direction as the one removed. The control box should be on the bottom-chord side of the table.

The control box should **NOT** be attached to the motor box.

	NOTICE
	**Insert the *PLANX* slowly. Failure to exercise caution may result in damage to the *PLANX* assembly.**

9. Position the *PLANX* over the table slot.

10. Lower the control box assembly through the table slot. Be careful not to damage the control box assembly.

11. Lower the *PLANX* onto the table mounts, making sure that the top plate of the *PLANX* is flush against the top and bottom edge of the table top plates. If the edges are not flush, make sure the difference in length is evenly split between the top- and bottom-chord ends of the table. For example, if the *PLANX* is 1/2-in. too short to be flush, it should be placed 1/4 in. in from the bottom edge on the bottom-chord side, and 1/4 in. in from the top edge on the top-chord side.

12. Center the *PLANX*. There should be a 1-in. gap between the *PLANX* and the next top plate of the table on both sides.

13. Check the full travel of the pucks and calibrate the machine. See *Calibrating the PLANX* on page MT-47.

14. Drill new holes for the roll pins, three (3) holes at each end of the *PLANX*. This will lock the *PLANX* in place.

15. Reattach the mounting hardware and tighten it.

16. Remove the lockout/tagout devices and restart the machine.

17. Calibrate the new *PLANX*. See *Calibrating the PLANX* page MT-47 for more information.

Replacing a Puck

The jigging is designed for durability and accuracy with minimal maintenance. It is important, however, to promptly remove from service any damaged fixtures or components. Damage may occur if the jigging is hit with a heavy object, dropped on the floor, or from daily wear. If damaged components are not replaced immediately, they may cause damage to other threaded parts as well as inaccuracies in the trusses built with those components.

Follow these steps to replace a puck:

1. Remove the 1/2x1 shoulder bolt and spring.
2. Remove the damaged puck.
3. Replace the puck and spring.
4. Reattach the 1/2x1 shoulder bolt.
5. Remove the lockout/tagout devices and restart the machine.

Recalibration is not necessary after replacing a puck.

Lubrication

Lubricate the Acme rods once a week with a kerosene ATF mixture of 1 gallon kerosene per 1 quart ATF.

	NOTICE
	**Do not overlubricate the Acme rods. Excessive lubrication may contaminate the flag assembly control boxes and cause improper movement and damage to the machine.** **Do not lubricate over the motor enclosures.**

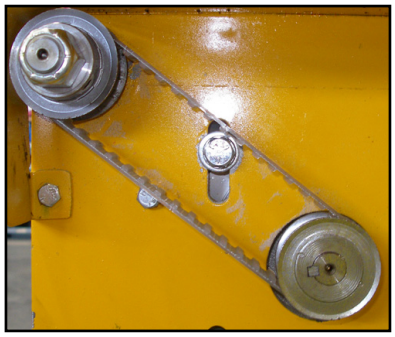
Proper amounts of motor oil and grease must be maintained at all times. The type of lubrication used, frequency of application, oxidation, and contamination of the lubricant affect service life and parts efficiency of gears and bearings.

	NOTICE
	**Mixing synthetic lubricants with mineral lubricants is not recommended. Check with your lubricant supplier.**

Replacing the Belt

1. Restrain any pneumatic components before attempting to replace the belt if the belt is located near the ejector slots.
2. Open the bottom motor cover by removing the four (4) 1/4-20x3/4 hex bolts.
3. Loosen the four (4) 3/8-16 hex bolts on the motor.
4. Lift the motor up slightly.
5. Remove the belt.
6. Replace the old belt with a new belt.
7. Lower the motor back into place. The belt should have a maximum on 1/4 in. of deflection, measured in the center between the pulleys.
8. Tighten the four (4) 1/4-20 hex bolts on the motor.

Figure 2-6: Belt



9. Replace the motor cover and tighten the four (4) 1/4-20x3/4 hex bolts.

10. Manually run the pucks back and forth, ensuring that the belt does not slip.

The pucks must be homed before being used in the next setup.

Cleaning and Inspecting the Machine

Daily

If it should become necessary to clean this equipment, disconnect the unit from its power source first. Do not use liquid cleaners, aerosols, abrasive pads, scouring powders or solvents, such as benzine or alcohol. Use a soft cloth lightly moistened with a mild detergent solution. Ensure the surface cleaned is fully dry before reconnecting power.

Blow out the slots in the rails daily with compressed air. Do not use compressed air on the flag assemblies.

	NOTICE
	**Do not use compressed air inside the electrical enclosures! It may force contaminates into the electrical connections.**

Weekly

If the Acme screw is removed, the 5/8-11 locknut on each end must be retorque to 55-60 ft-lb (75-80 Nm)

Inspect the pucks and Acme nuts for abnormal wear, cuts or cracking. Replace any damaged parts.

Check belts for proper tension and re-tension as needed. Replace worn belts. Check motor pulleys for abnormal wear, misalignment, and cracked or missing teeth. See *Replacing the Belt* on page MT-66.

Vacuum dirt and debris from electrical enclosures. Check pushbutton wires and terminals for tightness. Check all electrical components to make sure none have vibrated loose. Check all conduit for damage.

Lubricate the Acme screws. Refer to *Lubrication* on page MT-66.

Safety Notes for Troubleshooting

General Troubleshooting Safety Tips

	⚠ WARNING
	**ELECTROCUTION, HIGH PRESSURE, CRUSH, CUT, AND CHEMICAL HAZARDS!** **Read all notes in this section AND the safety section in the preliminary pages before operating or maintaining this equipment.** **Most solutions are described in more detail in the *Maintenance* chapter and may have more safety notes included there.**

- **Read all warnings** located in the safety section in the preliminary pages and adhere to them at all times.
- **When this graphic appears, lockout/tagout at the disconnect switch located on the equipment** using approved methods described in OSHA 29 CFR 1910.147 before continuing with the procedure or troubleshooting.
- If the lockout/tagout graphic does not appear, it is recommended that you still **de-energize the machine** unless energy is required for the troubleshooting process. If it is absolutely necessary to troubleshoot an energized machine, follow NFPA 70E for proper procedures and personal protective equipment.
- **All electrical work must be performed by a licensed electrician.**
- **Read this manual** for information and procedures related to the specific maintenance or troubleshooting issue before attempting any maintenance!
- **Safety goggles and a dust mask** must be worn for all cleaning steps outlined in this manual. When using cleaning and lubrication solutions, a respirator rated for use with those solutions must be worn as well as gloves resistant to the solution.

Electrical Troubleshooting Safety Tips

- **Make sure you have the proper tools needed for the job.** See *Tools Needed* on page MT-70.
- **Ensure the person performing the troubleshooting is qualified** from an electrical knowledge standpoint. If you feel uncertain about troubleshooting electrical power, remember, the cost of hiring an electrician far outweighs the cost of an injury.
- **Remove rings and watches that you are wearing.** They are extremely conductive material and may catch on small components.
- **Get a helper**. You are most likely going to need a third hand at some point, and you shouldn't perform electrical work without someone close by to help if you get hurt.
- **Be patient.** Take your time and stay alert. Never shortcut or become too confident in what you are doing; electrical power will always be stronger than you.
- **Take notes** recording what you have checked, and what the readings were. This is also a good way to check your work when you are finished. Sometimes, the machine won't work because a wire was removed for testing, and overlooked when cleaning up. Having proper notes will make the process go much more smoothly.
- **ALWAYS turn the power off** if you are checking for ohms or swapping PLC cards.
- **ALWAYS push an E-stop button** before approaching a machine for any reason, but if you are working with the encoders it is especially important. An interruption to a powered encoder may cause components to move without warning.
- **Wear appropriate personal protective equipment** (PPE) for working with live power.

Getting Started With Troubleshooting

Tools Needed

Gather these tools before beginning the troubleshooting process and before calling MiTek for technical assistance.

1. Slotted screwdriver, insulated
2. Phillips screwdriver, insulated
3. Equipment manual and drawings, specifically electrical schematics
4. Pen and paper to take notes and document settings
5. Multimeter

   A multimeter is an electronic measuring instrument. The analog versions were referred to as an analog volt-ohm-meter (VOM). A newer, digital model is called a digital-multi-meter (DMM). There are a large variety of volt-measuring devices available, but at a minimum, it should have these features:

   - Voltage (volts) measurement
   - Resistance (ohms) measurement
   - Ability to measure both AC and DC power
   - Autoranging feature
   - It is highly beneficial to also have the ability to measure current (amps)

6. Various additional tools depending on which parts are in question
7. Personal protective equipment as dictated by NFPA 70e

The First Steps

For Mechanical Troubleshooting

Always clean and lubricate the equipment as a first step in most troubleshooting processes. Most mechanical malfunctions are caused by inadequate preventive maintenance.

For Electrical Troubleshooting

1. Lockout/tagout at the disconnect switch located on the equipment.

	NOTICE
	**Do not use compressed air inside the electrical enclosures! It may force contaminates into the electrical connections. You may use canned air, which has a much lower compression than your plant air.**

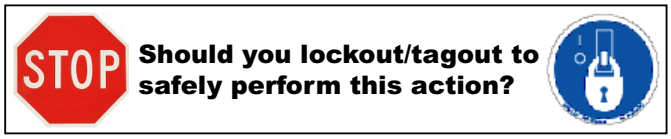
2. Vacuum and dust the electrical enclosure.

3. Remove the lockout/tagout equipment and attempt to run the machine again. If that didn't fix the problem, proceed with the next step.

4. Adhere to all regulations and guidelines given in NFPA 70e and in your company's energy control program. Some important safety tips are also addressed on page MT-69.

	⚠ WARNING
	**ELECTROCUTION HAZARD!** **All electrical work must be performed by a licensed electrician.** **If it is absolutely necessary to troubleshoot an energized machine, follow NFPA 70E for proper procedures and personal protective equipment.**

5. Determine where the electrical problem begins. To do this, you need a multimeter. If you are unfamiliar with your multimeter, consult the manufacturer's manual.
   - Determine if you are working with AC (alternating current) or DC (direct current) before checking for voltage. Your multimeter should measure both, but you'll have to tell it which one to measure.
   - Measure incoming and outgoing voltage to specific components. Proceed along a logical order determined by your machine's specific problem, and write down the order that you check each item and the amount of voltage that it registers.



Troubleshooting the *PLANX*

Table A-1: *MatchPoint PLANX* Not Operating Correctly

Problem	Possible Cause	Possible Solution
Pucks are moving but do not stop at the correct location	Belt is slipping	Adjust belt tension
	PLANX is not calibrated	Calibrate *PLANX*
	Flag is sticking	Free and actuate the flag to ensure it is moving freely
Motor will not run either manually or via the console	Main service breaker is tripped	Reset main service breaker
Rails are not responding to operator console	No communication	Ensure the cable from the operator console to the table enclosure is connected and is not damaged. Check the cables between table enclosures and between tables to make sure they are connected and not damaged.

Calibration Chart

Appendix B

Copy these pages for use during the calibration procedure.

Table B-1: Calibration Chart

	Setting Home				Inches Per Count			
PLANX #	**BC Measure ment**	**TC Measure ment**	**BC Delta**	**TC Delta**	**BC Move**	**TC Move**	**BC Delta**	**TC Delta**

Table B-1: Calibration Chart (Continued)

	Setting Home				Inches Per Count			
PLANX #	BC Measurement	TC Measurement	BC Delta	TC Delta	BC Move	TC Move	BC Delta	TC Delta

Table B-1: Calibration Chart (Continued)

	Setting Home				Inches Per Count			
PLANX #	BC Measure ment	TC Measure ment	BC Delta	TC Delta	BC Move	TC Move	BC Delta	TC Delta

Table B-1: Calibration Chart (Continued)

	Setting Home				Inches Per Count			
PLANX #	BC Measure ment	TC Measure ment	BC Delta	TC Delta	BC Move	TC Move	BC Delta	TC Delta

Table B-1: Calibration Chart (Continued)

	Setting Home				Inches Per Count			
PLANX #	BC Measure ment	TC Measure ment	BC Delta	TC Delta	BC Move	TC Move	BC Delta	TC Delta

Table B-1: Calibration Chart (Continued)

	Setting Home				Inches Per Count			
PLANX #	**BC Measurement**	**TC Measurement**	**BC Delta**	**TC Delta**	**BC Move**	**TC Move**	**BC Delta**	**TC Delta**

Training Checklist

Appendix C

- [ ] Starting the system each day
- [ ] Setting software paths to truss files
- [ ] Importing a single truss file
- [ ] Viewing the truss on the software screen
- [ ] Manipulating the truss in the software
- [ ] How to report software errors
- [ ] Setting targets
- [ ] Setting pucks
- [ ] Hook dimensions
- [ ] Calibration
- [ ] When to recalibrate
- [ ] Building a truss
- [ ] Correcting a truss that does not fit in a jig
- [ ] Unjamming a puck
- [ ] Lubricating the Acme screws

Appendix D

Navigating the Parts List Appendix

Finding the Part Number

The parts list provided here shows spare parts that should be kept in stock at all times. Use one of the methods shown in Table D-1 to locate your part number.

For a complete list of replacement parts, or if you're unsure of which spare part you need and would like to see a picture, use the electronic Parts Guide for this machine. The electronic Parts Guide was included with this manual on a CD-ROM. It can also be found on our Web site.

Table D-1: How to Find Your Part Number

Using the Spare Parts List in the Manual	Using Our Web Site: www.mii.com/machinery	Using Your Parts Guide CD-Rom
If it is a part that should be kept in stock, it is listed in the Parts List in the manual and in the electronic Parts Guide. Locate the correct part name and description in the manual to find the part number. If you're unsure of which part you need, use the electronic Parts Guide instead to see a picture.	1. Click *Machinery*, then roll your cursor over *Ordering Parts*. 2. Click on *Parts Guide* to access the Quick Reference Parts Guide. 3. Choose your equipment name and browse through the pictured parts to find your part number.	1. Place the CD in your computer's CD drive. It should automatically launch a Main Menu screen. 2. Click the graphic for the machine for which you are ordering parts. 3. Browse through the pictured parts to find your part number.

Ordering the Parts With Your Part Number

There are several easy ways to order your part after you determine the part number. Each column in Table D-2 describes one method.

Table D-2: How to Order Your Part Using the Part Number

Using Our *eStore*™ (an account is required)	Using E-Mail	Using the Phone
Access our on-line *eStore* using one of the following methods: Click the *eStore* link from the Web site **OR** Click the *eStore* link from the Parts Guide **OR** Type http://estore.mii.com into your web browser	Send an e-mail to mitekparts@mii.com with all relevant information, including the part number.	Call 1-800-523-3380 and select “Parts Orders”.

Safety Notes for Replacing Parts

	NOTICE
	Only use the exact replacement parts that are specified by MiTek. Substitutions may harm your equipment.

	⚠ WARNING
	CRUSH OR CUT HAZARD Perform the safety tests described in the *Safety Test* section on OP10 before operating the equipment at the initial startup, after performing any maintenance, and in accordance with the maintenance schedule.

	⚠ WARNING
	ELECTRICAL HAZARD! All electrical work must be performed by a licensed electrician. Follow approved lockout/tagout procedures (OSHA 29 CFR 1910.147).

	⚠ WARNING
 	ELECTROCUTION HAZARD. Always turn the power off by activating an E-stop when the equipment is not in operation. Always verify that all power to the machine has been turned off and follow approved lockout/tagout safety procedures (OSHA 29 CFR 1910.147) before performing any maintenance on this equipment.

Table D-3: Replacement Parts

TKC Part #	Part Description	Keep in Stock
42203-501	Hall effect motor assembly	1
194620	Cable, PLANX test	1
194632	Control card (PCTL)	2
194633	Display card assembly (SPDA)	1
194635	Spec EXT communication card	2
358026	Eyebolt, 3/4-10x2, shank #13672	2
446116	Washer, rubber, .13x2” ODx.88ID	8
508787	Hall effect flag sensor assembly	2
509014	Pin extraction tool	1
509015	Crimper tool	1
509016	IDC Connector crimp tool	1
519793	Contacts, microfit, sockets	15
691900	Restricted Zone Tape (safety tape)	1

Navigating the Maintenance Checklists

These checklists guide you through all preventive maintenance tasks required to keep this equipment in top working condition.

These pages are supplied with the intent that you will photocopy them and leave the original in the manual for future use. Space is provided in each chart to place the date that the work is done and the initials of the person performing the work.

Each checklist should be completed at the time intervals stated at the top of each page.

For example:

> Perform the Monthly Checklist once a month, in addition to the Weekly and Daily checklist for that day.

Safety Notes For Maintenance Checklists

	⚠ WARNING
	**CRUSH OR CUT HAZARD!** **Perform the safety tests described in the *Safety Test* section on OP10 before operating the equipment at the initial startup, after performing any maintenance, and in accordance with the maintenance schedule.**

	⚠ WARNING
	**ELECTROCUTION HAZARD.** **Always turn the power off and activate an E-stop when the equipment is not in operation.** **Always verify that all power to the machine has been turned off and follow approved lockout/tagout safety procedures (OSHA 29 CFR 1910.147) before performing any maintenance on this equipment.**

MatchPoint PLANX™ Jigging System

Daily Checklist

Month and Year:

_____

Week:

_____

⚠ WARNING

Lockout/tagout before performing any maintenance!

If power is required, ensure all personnel are clear.

Action		MON	TUE	WED	THU	FRI	SAT	SUN
Remove debris and plates from PLANX slots. Move pucks off home position to clean proximity switch. Ensure there is no extra jigging in the PLANX slots.	Shift 1							
	Shift 2							
	Shift 3							
Ensure that all enclosures are clean and dry. Do NOT use compressed air in enclosures or PLANX slots!	Shift 1							
	Shift 2							
	Shift 3							
Test stop on console assembly.	Shift 1							
	Shift 2							
	Shift 3							
Check for bare cords and loose or discolored wires.	Shift 1							
	Shift 2							
	Shift 3							
Check Acme screw and belt for abnormal wear.	Shift 1							
	Shift 2							
	Shift 3							

Notes	Date

MatchPoint PLANX™ Jigging System

Weekly Checklist

Year: _____

Month: _____

⚠ WARNING

Lockout/tagout before performing any maintenance!

If power is required, ensure all personnel are clear.

Preventive Maintenance Action (write dates at top of column)	1	2	3	4	5
Inspect pucks for abnormal wear or cracking.					
Check belt on Acme rod for wear and belt tension.					
Check motor pulleys and belts for abnormal wear, misalignment, and cracked or missing teeth.					
Open the table enclosures and vacuum out any dirt or debris.					
Check electrical enclosures to ensure that no components have vibrated loose.					
Check pushbutton wires and terminals for tightness.					
Check for proper alignment and damage to conduit and conduit hangers.					
Inspect and lubricate the Acme rods.					
Check that PLANX mounting bolts are not loose					
Ensure Acme supports are secure, in good condition, and applying proper tension.					
Turn on power and ensure that Acme rods are not excessively whipping					

Notes	Date

MatchPoint PLANX™ Jigging System

Monthly Checklist

	**⚠ WARNING** **Lockout/tagout before performing any maintenance!** **If power is required, ensure all personnel are clear.**

Year: _____

MONTH (first half of year)		JAN	FEB	MAR	APRIL	MAY	JUNE
Check for bare cords and loose or discolored wires.	1 month						
Check all enclosures for warping and other damage. Replace if necessary.	1 month						
Check electrical enclosures to ensure that no components have vibrated loose.	1 month						
Check pushbutton wires and terminals for tightness.	1 month						
Check for proper alignment and damage to conduit and conduit hangers.	1 month						
Take inventory on supplemental jigging. Replace or repaint as needed. Never use supplemental jigging in PLANX slots!	6 months						

Notes	Date

MatchPoint PLANX™ Jigging System

Monthly Checklist

	**⚠ WARNING** **Lockout/tagout before performing any maintenance!** **If power is required, ensure all personnel are clear.**

Year: _____

MONTH (second half of year)		JULY	AUG	SEPT	OCT	NOV	DEC
Check for bare cords and loose or discolored wires.	1 month						
Check all enclosures for warping and other damage. Replace if necessary.	1 month						
Check electrical enclosures to ensure that no components have vibrated loose.	1 month						
Check pushbutton wires and terminals for tightness.	1 month						
Check for proper alignment and damage to conduit and conduit hangers.	1 month						
Take inventory on supplemental jigging. Replace or repaint as needed. Never use supplemental jigging in PLANX slots!	6 months						

Notes	Date

MatchPoint PLANX™ Jigging System

Checklist by Working Hours

	**⚠ WARNING** **Lockout/tagout before performing any maintenance!** **If power is required, ensure all personnel are clear.**

Year: _____

Preventive Maintenance Action	Working Hours	Sign and Date When Action is Performed				
Check electrical enclosures to ensure that no components have vibrated loose. Check door/power interlocks and latches.	200					
Check pushbutton wires and terminals for tightness.	200					
Check for proper alignment and damage to conduit and conduit hangers.	200					

Notes	Date

Appendix F

Drawings are inserted at the back of the manual or in a separate binder.

Table F-1: Mechanical Drawings

Description	Drawing Number
Shaft Idler "A"	42056-501
Shaft spring "B"	42057-501
Puck & shoe	42100-501
10" end assembly	42103-501
6" X 120" PLANX FOR AUS	42132-501
PLANX assembly, 8"	42151-501
6" end assembly	42162-501
8" end assembly	42177-501
PLANX assembly, 6"	42185-501
6" x 166-3/4 SERVO PLANX	42189-501
PLANX assembly, 10"	42190-501
7-3/4” x 167-1/2”	42191-501
7-3/4 end assembly	42192-501
Top enclosure assembly 6"	42221-501
Top enclosure assembly 8"	42224-501
Top enclosure assembly 10"	42225-501
Flag assembly, 6"	42260-501
Flag assembly, 10"	42265-501
Flag assembly, 8"	42267-501
8" X 120" FOR AUS	42300-501
6" X 144"	42315-501
8” X 191-1/2" STD PLANX ASSEMBLY	42350-501

Table F-2: Electrical Drawings

Description	Drawing Number
Control box (CE)	42200-601
Control box (Standard)	42200-501
Encoder assembly	42203-501
Motor assembly	42210-501
Master console	42250-501
PLANX Master Console, International	42296-501
PLANX console wiring (Standard)	90595-501
PLANX console wiring (CE)	90596-501
PLANX electrical installation drawing	90597
PLANX filter/surge trap assembly	90598
CE PLANX, Servo, 208/240v power distribution	90749

Document Evaluation

Appendix G

A form is included in this appendix so you can provide MiTek with feedback on the usefulness of this manual. We make an ongoing effort to improve the value of our documentation, and your views are important to us.

Please follow the instructions on the form to provide us with comments or suggestions that will help us improve the quality of our documentation services.

Document Evaluation Form

We appreciate your comments on how we can make this document more useful.

Document Identification:

MatchPoint PLANX™	Equipment Manual	001098 Rev. B

General Ratings:

	Poor	Fair	Good	Excellent
Content	❑	❑	❑	❑
Organization	❑	❑	❑	❑
Accuracy	❑	❑	❑	❑
Clarity	❑	❑	❑	❑
Completeness	❑	❑	❑	❑
Examples/Illustrations	❑	❑	❑	❑
Readability	❑	❑	❑	❑

Compared to other truss machinery manufacturers' documentation, how would you rate this document?

❑ Poor ❑ Fair ❑ Good ❑ Excellent

There is room for specific suggestions on the next page. Document general comments here.

Document Evaluation Form (cont'd)

Identify any inaccuracies in the document.
What are the three best features of the document?
What are the three worst features of the document?
What did you like/dislike about the illustrations?

Your Name:	Date:
Company Name:	Address:
Phone:	Email:

Please mail this form to: MiTek Machinery Operations 301 Fountain Lakes Industrial Drive St. Charles, MO 63301 Attn: Engineering Manager	***Or fax this form to:*** 636-328-9218 Attn: Engineering Manager

If you do not receive a reply within 45 days, please call our Customer Service Department and ask for the Documentation Specialist or Engineering Manager: 800-523-3380.

Glossary

Acme screw	carries the puck along the length of the *PLANX*
actuate	to activate, put into action
aisle pad	a type of jigging used when a connector plate needs to be embedded where the table surface gives way to a walk-through aisle
amperage	the strength of an electric current, expressed in amperes
anchor plate	a steel plate that holds the tables in place; it is anchored to the concrete floor and the tables are welded to it
auto-eject	a pneumatic system that raises the truss off the tables and automatically places the truss on the stand-alone conveyors with the use of a transfer roller
bumper	a safety device on each corner of the gantry head (for a total of 4); when the bumper is depressed, the gantry head motion stops
bus bar	an electrical device that allows multiple gantry heads to be used simultaneously
connector plate	the nail-plate that is embedded into the production material to hold it together
cushion	an attribute of a hydraulic cylinder that allows adjustment of the pressure in each cylinder
directional buttons	the 2 black buttons on the pendant control station that tell the gantry head which direction to move
end-eject	a pneumatic system that raises the truss off the tables and allows the truss to be manually pushed or pulled off the end of the tables; this system requires that the gantry head rolls back over the truss or a device must be installed to raise the gantry head when it is parked

Glossary

gantry head	the entire traveling weldment that houses the Roller to embed the connector plates
home	refers to the act of sending a puck back to a default position, the “home position”
home position	the default position that allows the software to identify how far it needs to move each puck to properly set up a truss configuration
hour-meter	a gauge on the gantry head on a 1-enclosure system that tells the amount of time the motor is actually turning and the gantry head is moving; 2-enclosure systems do not have an hour-meter
inner side	refers to the end of the gantry head housing; the side closest to the tables; both ends have an inner side—one can see the inner side of both ends when standing on or between the tables
jigging	any of several devices used to hold the truss in place on the tables
joystick	an option that replaces the pendant control station to control movement of the gantry head
layout	a scaled diagram of the location of components and the space that they occupy
leveling screws	large cap head screws that thread into the table legs and allow the table height to be adjusted and leveled
light bar	the perimeter access guarding device that uses multiple light beams to detect when something is in the way of the gantry head and stops the machine to prevent injury or damage; the RoofTracker uses a set of 3-beam light bars on both sides of the gantry head

Glossary

limit switch	an electro-mechanical device that consists of an actuator mechanically linked to a set of contacts; when an object comes into contact with the actuator, the device operates the contacts to make or break an electrical connection
lockout/tagout	a means of isolating a piece of equipment from its energy source so maintenance can safely occur; guidelines provided in OSHA 29 CFR 1910.147
lubricator	a device that allows controlled amounts of lubricants into the pneumatic system
motor end	used to indicate which end of the gantry head is being discussed; the end of the gantry head that houses the motor
operator control interface	the method in which the operator controls the machine; it may be a touch screen, a control panel, etc.
outer side	refers to the end of the gantry head housing; the side farthest from the tables; both ends have an outer side—one can see the outer side of the one end when standing at the pendant control station
pendant control station	where the operator stands to use the pendant that controls movement of the gantry head
pilot valve	a pneumatic valve that operates the setup valve to control the release or cessation of air in each setup; it is located on the bottom-chord end of one table in each setup
PLANX	assembly consisting of an Acme screw, pucks, motors, and a plank, that comprises automated jigging
plate	see *connector plate*

Glossary

PLC	Programmable Logic Controller; a solid-state control device that can be programmed to control process or machine operations. It consists of five basic components: processor, memory, input/output module, the power supply, and the programming device.
port	a connection point for a peripheral device
potentiometer	a control knob that is a dial; allows a range of values to be set by turning the dial, commonly found on the PLC
proximity switch	a switch that uses an electromagnetic field to detect when an object is near, there is no physical contact between the object and the switch; inductive proximity switches detect only metal objects, capacitive proximity switches can sense both metallic and non-metallic objects
puck	a type of jigging that is small and round
qualified person	a person or persons who, by possession of a recognized degree or certificate of professional training, or who, by extensive knowledge, training, or experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work—ANSI B30.2-1983; one who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved—NEC2002 Handbook
rail	the mechanical assembly, consisting of an Acme rod, Acme nut, and puck, that is used for automated jigging
receiver bar	the light bar that receives the signal from the transmitter bar; every light bar set consists of a receiver bar and a transmitter bar
regulator	a component of the pneumatic system that connects to the main air source and regulates the air pressure allowed into the system

Glossary

Roller	the large roller inside the gantry head that innately embeds the plates into the truss
setup valve	a component of the pneumatic system that control the flow of air to the rest of the setup
side-eject	a pneumatic system that raises the truss off the tables and allows the truss to be manually pushed or pulled off the side of the table and onto the stand-alone conveyors
slider pad	a type of jigging used when a connector plate needs to be embedded where the table surface gives way to a slot for the Ejector
solenoid	an assembly used as a switch consisting of a coil and a metal core free to slide along the coil axis under the influence of the magnetic field
stand-alone conveyor	the conveyor system that carries the truss from the tables to the Finish Roller and out to the stacker
stop	a type of jigging that is long and straight
take-up bearing	adjusts the height of the roller
torque	a turning or twisting force
transfer roller	a motorized roller sitting perpendicular to the tables on an auto-eject system; it automatically transfers the truss from the Ejectors to the stand-alone conveyors
transmitter bar	the light bar that transmits the signal to the receiver bar; every light bar set consists of a receiver bar and a transmitter bar
VFD	Variable Frequency Device; controls speed of the cycle
voltage	Equal to the electric potential difference between two points on a conducting wire carrying a constant current of one ampere when power between the points is 1 watt

Index

Index

MatchPoint PLANX™ Maintenance Manual

001098
Rev. B

™